

**GILCHRIST CLASSROOM ADDITION  
GILCHRIST ELEMENTARY SCHOOL  
LEON COUNTY SCHOOLS 33006  
TALLAHASSEE, FLORIDA**

FOR  
LEON COUNTY SCHOOL BOARD

PROJECT MANUAL  
PHASE III SUBMITTAL – BID SET  
VOLUME ONE

June 18, 2012

GILCHRIST CLASSROOM ADDITION  
GILCHRIST ELEMENTARY SCHOOL  
LEON COUNTY SCHOOL DISTRICT

**PROJECT MANUAL VOLUME ONE**

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**SECTION A**

INVITATION TO BID

SCHOOL BOARD OF LEON COUNTY, FLORIDA

You are invited to bid on a General Contract for the Construction of Gilchrist Elementary School Classroom Addition Project in accordance with the Contract Documents. All bids must be a lump sum basis; segregated bids will not be accepted.

PROJECT: Gilchrist Classroom Addition  
PROJECT NO: (Insert Project Number)  
BID DATE/TIME: (To Be Determined) local time  
PLACE: (To Be Determined)

Drawings and Specifications may be obtained at the offices of MLD Architects, Inc., 211 John Knox Road, Suite 105, Tallahassee, Florida, (850) 385-9200, in accordance with the Instructions to Bidders upon receipt of \$[insert dollar amount] refundable deposit per set. All materials furnished and all work performed shall be in accordance with Drawings and Specifications. Each Bid shall be addressed to: Bid #[insert] , Gilchrist Elementary School, Gilchrist Classroom Addition, (Insert date and time of bid)

Bid security in the amount of five (5) percent of the Bid must accompany each Bid in accordance with the Instruction to Bidders. In the event the Contract is awarded to the Bidder, Bidder shall, within eight (8) Owner business days after the award by the Owner of the Contract, furnish the required Performance and Payment Bonds; failing to do such, Bidder shall forfeit their bid guarantee as liquidated damages.

The Performance and Payment Bonds shall be secured from any agency of a surety or insurance company, which agency shall have an established place of business in the State of Florida and be duly licensed to conduct business there.

The Owner reserves the right to waive irregularities and/or informalities in any Bid and to reject any or all Bids in whole or part, with or without cause, and/or accept the Bid that in its judgment will be for the best interest of the School Board of Leon County, Florida.

This is a federal Qualified School Construction Bond (QSCB) funded project that must comply with the Florida Department of Labor, Davis Bacon Act (DBA) regarding the "prevailing wage rates" for construction building in Leon County, Florida.

A Pre-Bid Conference will be held on [insert date and time] at Gilchrist Elementary School located at 1301 Timberlane Road, Tallahassee, Florida, 32312. All bidders or their representatives are encouraged to be in attendance.

THE SCHOOL BOARD OF LEON COUNTY, FLORIDA

BY: Dee Dee Rasmussen,  
Chairperson

**Jackie Pons,**  
Superintendent of Schools

June Kail,  
Interim Director of Purchasing  
End of Section A



## **SECTION B**

### **INSTRUCTION TO BIDDERS**

#### **PROCUREMENT OF BID DOCUMENTS**

Contractors bidding the project may secure Bidding Documents at:

MLD Architects, Inc.

211 John Knox Road, Suite 105

Tallahassee, Florida 32303

#### 1. **DEFINITIONS:**

1.01 All definitions set forth in the General Conditions of the Contract for Construction, The School Board of Leon County, Florida, are applicable to these Instructions to Bidders.

1.02 Bidding Documents include the Advertisement to Bid, Notice to Prospective Bidders, Instructions to Bidders, Policies of the School Board, Contract, General Conditions, Supplementary General Conditions, Special Conditions, Bid Bond, Performance and Payment Bond, Proposal Form, and the proposed Contract Documents including any Addenda issued prior to receipt of bids.

1.03 Addenda are written or graphic instruments issued prior to the execution of the Contract which modify or interpret the bidding documents, clarifications or corrections. Addenda will become part of the Contract Documents when the Construction Contract is executed.

**1.04 ADD** the following language: These are federal **Qualified School Construction Bond (QSCB)** funded projects that must comply with the Florida Department of Labor, Davis Bacon Act (DBA) regarding the "prevailing wage rates" for construction building in Leon County, Florida.

#### 2. **BIDDER'S REPRESENTATION:**

2.01 Each bidder, by making his bid, represents that he has read and understands the bidding documents.

2.02 Each bidder, by making his bid, represents that he has visited the site and familiarized himself with the local conditions under which the Work is to be performed.

**2.03.1 CRIMINAL BACKGROUND CHECKS** (Updated Dec. 8, 2008; May 13, 2009; Sept. 1, 2009 below) The Legislature passed a law effective September 1, 2005 called the Jessica Lunsford Act. This law requires any employee, contractor, vendor who will (1) Be at a school when students are present; or (2) Have direct contact with students; or (3) Have access to or control of school funds; meet Level II Background screening requirements. Level II screening includes fingerprinting, statewide criminal and juvenile justice records checks through the Florida Department of Law Enforcement and federal criminal records checks through the Federal Bureau of Investigation. Level II screening may also include local criminal records checks through the local law enforcement agencies.

Leon County School Board Policy 2.021 also requires a background check of all vendors that meet the above requirements. In addition, all vendors will have a Sexual Predator Check completed if they meet the requirements as listed below.

**LCSB Policy 2.021 is subject to review and change. As a provision of this contract, if awarded, any changes made to this policy will automatically become a part of and be incorporated in this contract. It is the responsibility of the awardee(s) to be aware of any changes that may occur.**

- a. **Sexual Predator Check** – All vendors who provide services under this contract will have a Sexual Predator Check completed by Purchasing Department personnel through the Florida Department of Law Enforcement prior to approval of any contract. This check will be performed at the FDLE website listed here: [http://www3.fdle.state.fl.us/sexual\\_predators/](http://www3.fdle.state.fl.us/sexual_predators/)

**Level II Background Check – (Updated 12-08-08)** Any vendor providing services under this contract who will (1) Be at a school when students are present; or (2) Have direct contact with students; or (3) Have access to or control of school funds, that person shall have a Level II background check submitted through the Leon County School Board. The Leon County School Board shall submit vendor fingerprints and information to the Florida Department of Law Enforcement and the Federal Bureau of Investigations.

The LCSB will inform the contractor of the approval/disapproval of the check within approximately one week. If any person does not meet the Board's requirements, as described in Policy 2.021, that individual shall not be allowed to perform services for Leon County Schools. The contractor shall be required to pay for all costs of the background reports. If it is discovered, during the period of the contract that the successful contractor substituted an unapproved worker for an approved worker, the vendor's contract may be canceled immediately at the discretion of the Leon County School Board.

**Work construction sites that are completely segregated by a chain link fence (minimum height of six foot) and with no students present, may work with a Sexual Offender/Predator check, when under the constant supervision of a Level II screened authorized individual.**

**All Level II cleared contractors must display a Leon County Schools Vendor badge when on school district property.**

In the event that an approved contractor/vendor is arrested for any reason subsequent to the background clearance performed by Leon County School Board, Safety, Security & Emergency Management Dept., they are required to immediately notify his or her supervisor who will then notify the Safety, Security & Emergency Management within 48 hours of the arrest, at which time a determination will be made as to whether the approval of that individual will be rescinded from accessing Leon County School Board properties.

- 2.03.2 **Updated May 13, 2009**– reciprocity if a contractor already is registered with another school district?: The LCSB has an agreement in place for vendors who have been fingerprinted with other school districts. The company will be required to email the list of individuals that will be on: [http://www.leonschools.net/newLCShomeFiles/Safety\\_Security/fingerprinting/fingerprinting.html](http://www.leonschools.net/newLCShomeFiles/Safety_Security/fingerprinting/fingerprinting.html) . Once the individual has been cleared, he/she will need to report to Fingerprint Services to pick up a picture id badge. Contact the office for cost of this process.
- 2.03.3 **Updated Sept. 1, 2009** Leon County Schools' Department of Safety and Security would like to announce **new EVENING** fingerprint hours!! In order to accommodate individuals who cannot make our regular daytime hours of 8:00 a.m. - 5:00 p.m. M-F, we would now like to offer **WEDNESDAY EVENINGS from 5:00 p.m. - 9:00 p.m.!!** After hours fingerprinting will be at the new LCS District Monitoring Center (see address below) and will be open to vendors, new hires, volunteers, student interns, or anyone else who needs to be fingerprinted for Leon County Schools. If you have any questions, please feel free to contact the LCS Fingerprint Office at 850-487-7293.

Please note that the Fingerprint Office is NOT moving and the regular daytime hours will continue to be offered at the main location.

District Monitoring Center  
3420 W. Tharpe Street  
Tallahassee, FL  
2nd Floor (Elevator Entrance)  
850-617-5979

3. **BIDDING PROCEDURES:**

- 3.01 All bids must be prepared using the forms contained in these specifications and submitted in accordance with the Instruction to Bidders.
- 3.02 A bid is invalid if it has not been deposited at the designated location prior to the time and date for receipt of bids indicated in the advertisement or invitation to bid, or prior to any extension thereof issued to the bidders.
- 3.03 Unless otherwise provided in any supplement to these Instructions to Bidders, no bidder shall modify, withdraw or cancel his bid or any part thereof for 60 days after the time designated for the receipt of bids in the advertisement or invitation to bid.
- 3.04 Prior to the receipt of bids, Addenda will be mailed or delivered to each qualified General Contractor recorded by the Architect as having received the bidding documents, and will be available for inspection wherever the bidding documents are kept available for this purpose.

(a) The Prospective Bidder (General Contractor or Construction Manager) must submit a Small Business Participation Plan that shall identify the Small Business Enterprises (SBE) to be utilized, their percentage of utilization, and the commercial services they are providing, consistent with the commodities or services for which they are certified and/or qualified to provide.

The term "Small Business Enterprise" (SBE) is defined as Small Business Enterprise and firms certified by Leon County School Board, which is provided at the current link: <http://sharepoint.leon.k12.fl.us/sbd/Important%20Documents/Program%20Overview.aspx> . For more information please contact **Dexter Martin, Director of Small Business Enterprise, Leon County Schools, Tallahassee, Florida. Telephone: 850-617-1821.**

(b) **SBE Targets:** All prime bidders (general contractor or construction manager) including SBE's shall either meet the Aspirational Target(s) and if applicable, demonstrate in their bid that a good faith effort was made to meet the Aspirational Target(s). All prime bidders will make Contact with the Leon County School SBE Division for a listing of available SBEs who provide the services needed for the bid or proposal.

( c) **Good Faith Effort** The following are examples of good faith efforts that prime bidders can use if they are not meeting the Aspirational Target:

1. Advertising for participation by SBEs in local publications within the Market Area, including a copy of the advertisement and proof of date(s) it appeared; or by sending correspondence, no less than ten (10) days prior to the submission deadline, to all SBEs referred to the Bidder by the SBE Division for the goods and services to be subcontracted and/or supplied.
2. Documentation indicating that the bidding Prime Contractor provided ample time for potential SBE Subcontractors to respond to bid opportunities, including a chart outlining the schedule/time frame used to obtain bids from SBE Vendors as applicable to the Aspirational Target.
3. Contacting SBE Vendors who provide the services needed for the bid or proposal. Include a list of all SBEs that were contacted and the method of contact.
4. Document follow-up telephone calls with potential SBE Subcontractors encouraging their

participation.

5. Allowing potential SBE Subcontractors to review bid specifications, blueprints and all other bid/RFP related items at no charge to the SBEs.
6. Contacting the SBE Division, no less than five (5) business days prior to the Bid/RFP deadline, regarding problems they are having in reaching the Aspirational Targets.
7. Other documentation indicating their Good Faith Efforts to meet the Aspirational Targets.

3.05 Preparation and Submission of Bid Proposal Form:

(a) Each bidder shall copy the Proposal Form on Bidder's own letterhead and indicate their bid prices thereon in the proper spaces for the entire work and for the alternates on which they bid. Any erasures or other corrections in the bid must be explained or noted over the signature of the Bidder. Bids containing any conditions or irregularities of any kind may be rejected by the Owner.

(b) Each Bid shall specify a unit price written in ink in both words and figures, for each of the separate items, as called for, except when the bid is called for on a lump sum basis. Lump sum bids shall be shown in both words and figures; where there is a variation between the written amount and figures, the low one will be taken as the bid price.

(c) Each bid must give the full business address of the bidder, and state whether he is an individual, corporation or partnership. Proposals by a corporation must be signed with the legal name and seal of the corporation followed by the name of the state of its incorporation and by the manual signature and designation of an officer, agent, or other person, authorized to bind the corporation. Proposals by partnerships shall show the names of all partners and must be signed in the partnership name by one of the partners or by an authorized representative. In either case, the partnership signature shall be followed by the manual signature and designation of the person signing.

In every case, the name of the person signing, and his designation, shall be typed or printed below his signature. A bid by a person who affixes to his signature the word "President," "Secretary," "Agent," or other designation without disclosing his principal may be held to be the bid of the individual so signing. Satisfactory evidence of the authority of an officer, agent, attorney, or other person signing for a corporation and for an agent, attorney, etc., signing for a partnership or an individual shall be furnished.

(d) The Owner reserves the right to waive informality in any bid, to reject any and all bids in whole or in part, with or without cause, and/or to accept the bid that in its judgment will be in the best interest of the Leon County School Board. **June Kail**, Director of Purchasing, Leon County Schools, Tallahassee, Florida (850)488-1206.

(e) **Section D** - List of Major Subcontractors shall be enclosed with Bid Documents (see 6.02).

3.06 **BASIS OF BID:** The Bidder shall include with their Bid all unit cost items, quantity estimates and alternates indicated on the Bid Form. Failure to comply may be cause for rejection. If the Owner wishes to learn the relative or additional construction cost of alternate use of material, or an increase or decrease in scope of the project, these items will be defined as alternates and will be specifically described by the Drawings and/or the Specifications. Alternates will be listed in the Bid Form in such a manner that the Bidder shall be able to clearly indicate what sums will add to (or deduct from) their Base Bid. The Owner reserves the right to accept or reject any or all bids or combinations there-of as deemed in the best interest of the Owner.

No segregated Bids or assignments shall be considered.

3.06.1 Each Bidder shall, if so requested by the Owner, present further evidence of Bidder's experience, qualifications and ability to carry out the terms of the Contract, including a financial statement.

3.07 Modification of Bids: Bid Modifications will be accepted from Bidders if addressed to the Owner at the place where Bids are to be received (marked "Modification of Bid") and if received prior to the opening of the Bids. Modifications may be in written or telegraphic form. Modifications will be acknowledged by the Owner or the Architect before opening of formal Bids. Bid modifications written on the outside of the sealed Proposal envelope are acceptable when such notations are made and signed and dated by the Bidder prior to submittal for the bid. No notations may be made and signed by the Bidder after submittal of the bid. Modifications will be read by the Owner prior to opening of formal bids. It is the full responsibility of the Bidder to bring any Bid Modification to the attention of the person opening the bids at the time of opening of the affected bid.

3.08 Withdrawal of Bids: Bids may be withdrawn on written request received from bidders prior to the time fixed for opening. Such request shall be properly signed in accordance with the requirements pertaining to signatures contained on Page B-3, Paragraph 3.05(c). Negligence on the part of the bidder in preparing the bid confers no right for withdrawal of the bid after it has been opened.

3.09 Bid Guarantee - 5% (Total Bid - Base Bid Plus All Alternates) Bids shall be accompanied by a bid guarantee which shall be a Bid Bond (Signed or countersigned by a Florida Resident Insurance Agent); Cashier's Check; Certified Check (Certified Checks offered as Bid Guarantees must have Florida Documentary Stamps attached); or bank Draft; made payable to the SCHOOL BOARD OF LEON COUNTY, FLORIDA. Such check or bond shall be submitted with the understanding that it shall guarantee that the Bidder will not withdraw their bid for a period of 60 consecutive calendar days after the scheduled closing time for the receipt of Bids. That, if this Bid is accepted, the Bidder will enter into a formal contract with the Owner in accordance with the form of agreement included as part of the Contract Documents and that the required Performance Bond and Payment Bond will be given. In the event of the withdrawal of Bid within said period, or failure to enter into said Contract and give said bond within eight (8) owner business days after Bidder has received notice of acceptance of their Bid; the Bidder shall be liable to the Owner for the full amount of the Bid guarantee as representing the damage to the Owner on account of the default of the Bidder in any particular thereof.

The Bid Bonds and checks shall be returned by mail to all except the three (3) lowest Bidders within fifteen (15) days after the formal opening of the Bids. The Owner reserves the right to hold the Bid Guarantee of the lowest three Bidders until after they have executed the Contract with the accepted Bidder and the Performance Bond and Payment and Material Bonds have been approved by the Owner.

If required Contract and Bonds have not been executed within sixty 60 consecutive calendar days after the date of the opening of the bids, then the Bid Bond or check of any Bidder will be returned upon his request, provided Bidder has not been notified of the acceptance of their bid prior to the date of such request.

#### 4. EXAMINATION OF DOCUMENTS AND SITE:

4.01 Each Bidder shall examine the Bidding Documents carefully; and, fourteen (14) days prior to the date for receipt of bids, Bidders shall make a written request to the Architect for interpretation or correction of any ambiguity, inconsistency or error which may be discovered. Any interpretations or corrections will be issued as addenda. The Architect and/or Owner shall not be responsible for oral clarifications. No addendum shall be issued after seven (7) calendar days prior to Bid.

4.02 Bidders shall carefully examine the Bidding Documents and the construction site to obtain first-hand knowledge of the existing conditions. Contractors shall not be given extra payment for conditions which can be determined by examining the site and Bidding Documents.

4.03 The submission of a bid by a Bidder shall be an acknowledgment that Bidder has thoroughly examined the Contract, site, specifications, and drawings and completely understands their obligations and those of the Owner under the documents. Failure to mention any work, materials, appurtenances, or

safety methods in these specifications or plans which are required for the satisfactory and safe completion of an efficient, safe, complete, and working system as implied by these specifications and drawings shall not relieve the Contractor of any responsibility to provide such for the completion of such a system.

4.04 The Owner assumes no responsibility for any understanding or representations made by any of its officers or agents during or prior to the execution of the Contract, unless (1) such understanding or representation are expressly stated in the contract and (2) the Contract expressly provides that the responsibility therefore is assumed by the Owner.

#### 5. SUBSTITUTIONS:

5.01 Each Bidder represents that his bid is based upon the materials and equipment described in Bidding Documents.

5.02 No substitutions for other material and equipment will be considered unless a written request has been submitted to the Architect for approval at least fourteen 14 days prior to the date for receipt of bids. Each such request shall include a complete description of the proposed substitute, the name of the material or equipment for which it is to be substituted, drawings, cuts, performance and test data and any other data or information necessary for a complete evaluation.

5.03 If the Architect approves any proposed substitution, such approval will be set forth in an addendum.

5.04 If any bidder is unable to procure written approval of any substitution from the Architect prior to the opening of bids, then he shall base his bid on the exact items specified.

5.05 Substitutions which have not been approved in writing by the Architect prior to the opening of bids, may be listed on the Bid Proposal form along with the amount the bidder will add to or deduct from the Base Bid if such substitution is approved. Substitutions so submitted shall include any and all adjustments of that work or any other affected thereby. Substitutions listed on the Bid Proposal Form which are approved will be incorporated into the contract with the successful bidder.

5.06 Requests for any substitutions not submitted in accordance with the above instructions will be denied by the Architect.

5.07 Requests for any substitution(s) of subcontractors will need to be in compliance with FS 255.0515:

FS 255.0515: Bid for state contracts; substitution of subcontractors. With respect to state contracts let pursuant to competitive bidding, whether under Chapter **1013**, relating to educational facilities, or this chapter, relating to public buildings, the contractor shall not remove or replace subcontractors listed in the bid subsequent to the lists being made public at the bid opening, except upon good cause shown.

History. -s. 1, ch. 78-389.

#### 6. LIST OF SUBCONTRACTORS AND MATERIALS SUPPLIERS:

6.01 The Contractor shall within twenty-four (24) hours after the Bid is opened, submit to the Owner (at 3420 West Tharpe Street, Suite 100, Tallahassee, FL 32303) a list of subcontractors and materials suppliers. This list, if requested, shall include each company name, the character of its work or the materials it supplies, the address and telephone number and the name of the person with whom the Contractor is dealing. Submit in accordance with Section P.

6.02 When the Contractor submits his bid, he shall include his listing of Major Subcontractors. Submit

in accordance with Section D.

7. REJECTION OF BIDS:

7.01 The Bidder acknowledges the right of the Owner to reject any or all bids and to waive any informality or irregularity in any bid received. In addition, the bidder recognizes the right of the Owner to reject a bid if the bidder failed to furnish any required bid security, or to submit the data required by the bidding documents, or if the bid is in any way incomplete or irregular; to reject the bid of a bidder who is not in a position to perform the contract; and to re-advertise for other or further bid proposals.

7.02 The Owner reserves the right to reject any or all bids when such rejection is in the interest of the Owner, and to reject the Bid of a Bidder who is not in a position to perform the Contract, or whose List of Subcontractors is improperly prepared, or not included in the Bid proposal.

8. SUBMISSION OF POST-BID INFORMATION:

8.01 The selected bidder shall within eight (8) Owner Business days after Notification of Board Award submit the following:

1. Executed Performance Bond and Payment Bond with local agent's name, address, and phone number. In accordance with FS 255.05 . . . . Performance and Payment Bonds are to be recorded prior to the date of commencement of project. The address is: Leon County Clerk of Circuit Court, **313 South Calhoun Street**, Tallahassee, Florida 32301, (850) **577-4030**. Please request a copy of the recorded document to be submitted along with other Post Bid documentation to the Contract Administrator. You'll also receive a receipt from the clerk for your records.

2. Criminal Background Checks Refer to **2.03.1 above Updated Dec. 8, 2008; Sept. 1, 2009**. The Legislature passed a new law this year effective September 1, 2005 called the Jessica Lunsford Act.

Any questions regarding the Background Checks, please call Safety and Security Office at 850-487-7117 or go to the website [www.leon.k12.fl.us](http://www.leon.k12.fl.us) go to District Departments, go to Safety and Security Link.

The notice to proceed will be held until the LCS Construction Department receives an acceptance on the background checks provided by the General Contractor.

3. A progress schedule and all data as required under Article 3.10.4 Supplementary General Conditions.

4. Evidence of Insurance as required under Article 11 Supplementary General Conditions in the Contract Documents with a "Hold Harmless Rider," and a statement of the School Board of Leon County, Florida being listed as "primary additional insured."

5. A letter certifying twenty percent (20%) of work performed by contractor as required under Article 3.4.1 Supplementary General Conditions.

6. Photocopies of General Contractor's registration and either State registrations or Leon County certificate of competency of all subcontractors.

7. Resume of General Contractor's construction superintendent.

8. List of Toxic Substances per Florida Statute FS 442.102.

9.01 The successful bidder shall be required to furnish a Performance Bond and Payment Bond in the amount of one-hundred percent (100%) of the contract amount.

9.02 All required premiums shall be paid for by the successful bidder and the amount of the premium shall be included in his bid proposal.

#### 10. AWARD OF CONTRACT:

10.01 The Contract, if awarded by the Owner, will be awarded within sixty (60) calendar days of receipt of the bids to the lowest responsible Bidder, provided Bidder's bid is reasonable and it is in the best interest of the Owner to accept. The Owner reserves the right to waive any informality in bids received when such waiver is in the best interest of the Owner.

10.02 The method of determining the lowest responsible bid from bidders shall be the Base Bid Price plus or minus Alternate Prices listed on the Bid Proposal Form which are accepted by the Owner. Alternates will be considered for acceptance by the Owner as set forth in the Alternate section of the specifications, SECTION B, 15.1 Alternates and SECTION C - Bid Form.

11. BID PROTEST PROCEDURES - (See Board Policy 6.09 inserted at the end of Section B for more information).

11.01 The agency shall provide notice of its decision or intended decision concerning a bid solicitation or a contract award as follows:

11.01.1 For a bid solicitation, notice of a decision or intended decision shall be given by United States mail or by hand delivery.

11.01.2 For any other agency decision, notice of a decision or intended decision shall be given either by posting the bid tabulation at the location where the bids were opened or by certified United States mail, return receipt requested.

The notice required by this paragraph shall contain the following statement: "Failure to file a protest within the time prescribed in s. 120.53(5), Florida Statutes, shall constitute a waiver of proceedings under Chapter 120, Florida Statutes."

11.02 Any person who is affected adversely by the agency decision or intended decision shall file with the agency a notice of protest in writing within seventy-two (72) hours after the posting of the bid tabulation or after receipt of the notice of the agency decision or intended decision and SHALL FILE A FORMAL WRITTEN PROTEST WITHIN TEN (10) DAYS AFTER THE DATE HE FILED THE NOTICE OF PROTEST. Failure to file a notice of protest or failure to file a formal written protest shall constitute a waiver of proceedings under Chapter 120.

11.03 Upon receipt of a notice of protest which has been timely filed, the agency shall stop the bid solicitation process or the contract award process until the subject of the protest is resolved by final agency action. Unless the agency head sets forth in writing particular facts and circumstances which require the continuance of the bid solicitation process, or the contract award process without delay in order to avoid an immediate and serious danger to the public health, safety, or welfare.

11.04 The agency, on its own initiative or upon the request of a protestor, shall provide an opportunity to resolve the protest by mutual agreement between the parties within fourteen (14) days of receipt of a formal written protest.

11.04.1 If the subject of a protest is not resolved by mutual agreement within fourteen (14) days of receipt of the formal written protest and if there is no disputed issue of material fact, and informal



proceeding shall be conducted pursuant to s. 120.57(2). If the hearing is not requested in the Notice of Bid Protest, it shall be waived. The informal hearing shall be conducted in the presence of the Contract Administrator, as the Superintendent's designee, the legal staff, and any other witnesses deemed appropriate. The protesting party may be present with assistance of counsel and any witnesses he deems appropriate, however, failure to have counsel or witnesses present, shall not invalidate the hearing.

## 12. FAMILIARITY WITH LAWS:

12.01 The Bidder shall be familiar with and shall perform work in accordance with all Federal, State and local laws, ordinances, rules and regulations affecting the work. Special attention is called to, but not limited to, the Local Environmental Ordinances.

Ignorance of them on the part of the bidder shall in no way relieve Bidder from responsibility of compliance with all said laws, ordinances, rules and regulations.

### **1013.371 Conformity to Codes. – (1) CONFORMITY TO FLORIDA BUILDING CODE AND FIRE PREVENTION CODE REQUIRED FOR APPROVAL. –**

(a) Except as otherwise provided in paragraph (b), all public educational and ancillary plants constructed by a board must conform to the Florida Building Code and the Florida Fire Prevention Code, and the plants are exempt from all other state building codes; county, municipal, or other local amendments to the Florida Building Code and local amendments to the Florida Fire Prevention Code; building permits, and assessments of fees for building permits, except as provided in s. 553.80; ordinances; road closures; and impact fees or service availability fees. Any inspection by local or state government must be based on the Florida Building Code and the Florida Fire Prevention Code. Each board shall provide for periodic inspection of the proposed educational plant during each phase of construction to determine compliance with the state requirements for educational facilities.

**12.02 LCS District Building Permit:** Upon acknowledgement of award of contract, the General contractor will receive a Leon County School District – Permit Application Packet along with his/her contracts. This Permit Application is to be completed and submitted with **three (3)** complete sets of 100% Construction Plans, signed and sealed by the Architect /Engineer; and, **three (3)** sets of Construction Specifications.

12.03 Chapter 1013.45 F.S. states that “The services of a registered architect are not required for minor renovation project for which the construction cost is less than \$50,000.00, or for the placement or hookup of relocatable educational facilities that conform to the standards adopted under Chapter 1013, , F.S.”

For minor projects meeting the requirements of Chapter 1013.45(4) Educational facilities contracting and construction techniques -- plans will be required. However an architect seal will not be required. For projects with a construction cost exceeding \$200,000.00, plan review will be done by the Department of Education. The School Board Inspection Department will issue **ALL** permits and Certificates of Occupancy, regardless of the project costs.

(4) Except as otherwise provided in this section and s. 481.229, the services of a registered architect must be used for the development of plans for the erection, enlargement, or alteration of any educational facility. The services of a registered architect are not required for a minor renovation project for which the construction cost is less than \$50,000 or for the placement or hookup of relocatable educational facilities that conform with standards adopted under s. 1013.37. However, boards must provide compliance with building code requirements and ensure that these structures are adequately anchored for wind resistance as required by law. Boards are encouraged to consider the reuse of existing construction documents or design criteria packages where such reuse is feasible and practical. Notwithstanding s. 287.055, a board may purchase

the architectural services for the design of educational or ancillary facilities under an existing contract agreement for professional services held by a district school board in the State of Florida, provided that the purchase is to the economic advantage of the purchasing board, the services conform to the standards prescribed by rules of the State Board of Education, and such reuse is not without notice to, and permission from, the architect of record whose plans or design criteria are being reused. Plans shall be reviewed for compliance with the state requirements for educational facilities. Rules adopted under this section must establish uniform prequalification, selection, bidding, and negotiation procedures applicable to construction management contracts and the design-build process. This section does not supersede any small, woman-owned or minority-owned business enterprise preference program adopted by a board. Except as otherwise provided in this section, the negotiation procedures applicable to construction management contracts and the design-build process must conform to the requirements of s. 287.055. A board may not modify any rules regarding construction management contracts or the design-build process.

**History.**--s. 844, ch. 2002-387.

Procedures for Application for a Building Permit are available through Leon County School District's Facilities/Construction Department by Robert Metcalf, (850)617-1837 or (850)617-1838.

### 13. ASSESSMENTS AND TAXES:

13.01 Although the Owner is not subject to the Florida Sales Tax, any contractor who purchases materials which will be used in the construction of a public works facility **will not** be exempt from the sales tax on those materials, The Owner is exempt from all Federal excise taxes on materials, appliances, etc., which are incorporated into and become a part of the finished improvements. The Owner is not required to pay for any municipal building permit. The Bidder shall take this information into consideration in preparing their proposal.

### 14. FLORIDA PRODUCTS AND LABOR

14.01 The Bidder's attention is called to Section 255.40, Florida Statutes, which requires that on public building contracts, Florida products and labor shall be used whenever price and quality are equal.

#### **14.02 ADD (August 3, 2011) LCSP Purchasing Policies – Local Preference Part III**

It shall be the policy of the Leon County School Board to afford local preference to the lowest responsive Leon County vendors and Florida vendors in accordance with the terms set forth in Board Policy 6.07, Part III.

### 15. ALTERNATES:

15.1 Alternates may be included in the specifications, and where included, the Bidder shall indicate the sum Bidder will deduct from, or add to, their Base Bid. Such Alternates may or may not be accepted.

16. BIDDER'S QUALIFICATIONS: The Bidder and all Subcontractors for this project shall be fully qualified by experience to perform the work and install the type of equipment and systems which are included in this project. The Contractor and each major Subcontractor, including particularly mechanical, electrical and plumbing shall each have successfully completed a minimum of three projects of equal or larger scope and size.

If the price of the mechanical part of the project exceeds \$200,000.00, a full time mechanical foreman shall be assigned. The person assigned shall have a minimum of five (5) years experience installing equipment and systems similar to those to be installed on this project. The mechanical foremen shall be on the site at all times when any mechanical work is being done, and shall be available to the Engineer and Owner's representative to examine work in progress and answer questions about schedule and installations.

17. LICENSE:

17.1 The Contractor and his subcontractors shall meet all requirements of the State of Florida, county and city license regulations. The Bidder shall complete the portion of the Bid Form dealing with licenses; should Bidder fail to complete the license information, the bid may be rejected.

18. DISQUALIFICATION OF BIDDER:

18.1 More than one Bid from an individual, firm, partnership, corporation or association under the same or different names will not be considered. Reasonable grounds for believing that a Bidder is interested in more than one Bid for the same work will cause the rejection of all bids in which such Bidder is believed to be interested. Bids will be rejected if there is reason to believe that collusion exists between Bidders. Bids in which the prices obviously are unbalanced may be rejected.

19. HAZARDOUS MATERIALS AND WASTE:

19.01 Toxic Substances: Each Contractor and their designated subcontractor shall submit a written list of all toxic substances, pursuant to Chapter 1013.49(4) Educational Facilities, to be used on said project. Said list must be sent to the Director of Construction (if it is a construction project) or the Director of Maintenance (if it is a maintenance project) of the School Board of Leon County at least five (5) days prior to the commencement of construction.

Said notification shall contain the following:

- A. The name of the substance to be used;
- B. Where the substance is to be used; and
- C. When the substance will be used.

The Contractor must also attach to the notification a copy of a Material Safety Data Sheet for each toxic substance to be used. A copy of this list is to be kept at the site during duration of construction project.

19.02. Hazardous Waste: Each Contractor and his designated Subcontractor is responsible for the proper storage, handling, and disposal of hazardous wastes generated at a school site during construction or maintenance activities.

Contractors must notify the Industrial Hygienist, **Carl Green** at (850-617-1777) of their intent to generate, store, and remove hazardous waste from a site. Any costs including, but not limited to, fines, disposal, and clean up incurred by the School District to comply with the proper storage and disposal of hazardous waste shall be withheld from Final Payment to the Contractor.

19.03 Asbestos: Any maintenance, construction, renovation, demolition, or other alteration of an educational facility must be cleared by the Industrial Hygienist to preclude disturbance of asbestos containing materials. Failure to obtain proper clearance will subject the Contractor to all expenses incurred in decontaminating the facility.

Architect should denote in plans any known hazardous materials on site, and if it (hazardous materials) impacts construction in any way, then it should be included in scope of work of contractor.

Neither Contractors nor their designated Subcontractors shall use or substitute building materials which contain asbestos for any component of an educational facility. Contractors will be held liable for the cost of removing any asbestos containing building materials (A.C.B.M.) and re-installation of non-asbestos building materials should subsequent sampling of materials reveal the presence of more than 1% asbestos.

No asbestos containing building materials are to be specified or substituted for specified materials.

**Educational Facilities.** The *State Requirements for Educational Facilities* (SREF) is applicable to all public educational facilities and plants: pre-kindergarten (pre-K) through grade twelve (12), including conversion charter schools; area vocational educational schools; area vocational/technical centers; adult education; community colleges and universities; the Florida School for the Deaf and the Blind (FSDB), where referenced; ancillary plants; relocatables; factory-built structures, reconstructable facilities, modular buildings, and manufactured buildings; lease and lease-purchase; and new construction, remodeling, renovation, improvements, and site development projects. It shall be the responsibility of each school board, each community college board of trustees, and each university board of trustees to ensure that all facilities constructed from any fund source meet the standards set forth in SREF where applicable.

- (1) **Authority.** The Office of Educational Facilities (hereinafter referred to as the "Office") shall review, update, and revise SREF and make recommendations for any modification to the State Board of Education (SBE). SREF shall not be changed, amended, interpreted, or modified by any other individual, agency, or entity.
- (2) **Capital Outlay Funds.** Financial criteria for capital outlay funds, including Public Education Capital Outlay (PECO) and Capital Outlay and Debt Service (CO&DS) funds, are administered under SREF.
- (3) **Scope of SREF requirements.** SREF establishes the requirements for public educational facilities under the Florida School Code and Chapter 1013, Florida Statutes, in particular.
- (4) **Rules.** Public educational facilities shall comply with the following rules, as applicable:
  - (a) **DOT-AASHTO.** For on-site transportation improvements including roads, sidewalks, bridges, and drainage structures, districts shall comply with the American Association of State Highway and Transportation Officials, "AASHTO LRFD Bridge Design Specifications (2006)" as modified by the Florida Department of Transportation (DOT) in "Structures Design Manual," January 2007 Revision, and DOT "Drainage Manual" Chapter 4, as required by the structure type and as incorporated by reference in Rule 14-15.002(2), FAC, which is hereby incorporated by reference.
  - (b) **OSHA.** Occupational Safety and Health Administration, U.S. Department of Labor, 29 CFR as revised July 1, 2005, for district employees.
- (5) **Exception.** Facilities projects for universities are administered under Chapter 6C-14, FAC, and facilities projects for the FSDB are administered under Chapter 13D-17, FAC, except where specifically required in the *State Requirements for Educational Facilities*.

See Rule 6A-2.0010, Florida Administrative Code, and Sections 120.542, 1013.02, 1013.12, 1013.32, 1013.37, 1013.40, 1013.45, Florida Statutes.

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**Rule 6A-2.0010, Florida Administrative Code**

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**6A-2.0010 Educational Facilities.** State Board of Education requirements adopted pursuant to Chapter 120, Florida Statutes, to implement the State Uniform Building Code for Public Educational Facilities Construction in Chapter 1013, Florida Statutes, are contained in Section 423 of the Florida Building Code and the Department of Education publication "State Requirements for Educational Facilities 2007," which is hereby incorporated by reference and made a part of this rule to become effective with the effective date of the amended rule. All educational and ancillary facilities constructed by a school board or community college board shall comply with "State Requirements for Educational Facilities 2007."

(1) Copies of the publication "State Requirements for Educational Facilities, 2007," are available from the Office of Educational Facilities, Florida Department of Education, Room 1054, 325 West Gaines Street, Tallahassee, Florida 32399-0400, at a cost to be determined by the Commissioner, but which shall not exceed actual cost, or from the Department of Education's website at: <http://www.fldoe.org/edfacil> in PDF format.

Specific Authority Section 1(a) Article IX, State Constitution, Sections 1001.02(1), 1013.02(2), 1013.37, F.S. Law Implemented: Section 1(a) Article IX, State Constitution, 1001.02, 1001.42(9), 1001.453, 1011.09, 1011.74, 1031.01, 1013.03, 1013.31, 1013.35, 1013.37, 1013.371, 1013.60, 1013.61, 1013.64, 1013.735, 1013.736, 1013.737, F.S. History – New 10-30-94, Amended 4-28-97, Formerly 6A-2.0111, Amended 1-5-00, Formerly 6-2.001, Amended 8-22-05, 7-2-06.

THE SCHOOL BOARD OF LEON COUNTY, FLORIDA  
BOARD POLICY 6.09  
BID PROTESTS

**6.09 Bid Protests.**

(1) **Purpose and Scope.** These rules provide for the speedy resolution of protests arising from the contract bidding and award process. Contracts not subject to competitive bidding or any contract awarded pursuant to an emergency or sole source declaration are not subject to these rules.

2) **Notice of Bid Solicitation.** The Purchasing Department shall provide notice of bid solicitations:

(a) By advertising in a newspaper having a general circulation in the county, or

(b) By U.S. mail or by hand delivery to all qualified contractors who have requested notice of bid solicitation.

(3) **Notice of Intended Decision.** Unless otherwise specified herein all notices referred to in this policy shall be issued by the Purchasing Department.

(a) Notice of intent to award a contract shall be given to all bidders by posting the bid tabulations reflecting the lowest responsible bidder on the date specified in the bid proposal. Such posting will remain on display for no less than three work days. The bid tabulations shall be posted at the Purchasing Department Office located at [3397 W. Tharpe Street](#) in Tallahassee, Florida 32303.

(b) If because of unforeseen circumstances the bid tabulations cannot be posted on the date specified in the bid proposal, all bidders shall be notified by certified mail, return receipt. The notification letter shall also advise all bidders of the new date on which the bid tabulations will be posted, which date shall be at least three days subsequent to the date the notification letter is mailed. Thereafter, notice of intent toward the contract shall be provided by posting the bid tabulations on the date specified in the notification letter. If because of unforeseen circumstances the bid tabulations cannot be posted on the date specified in the notification letter, all bidders shall be so notified by certified mail, return receipt. thereafter, notice of intent to award the contract shall be provided to all bidders by certified mail, return receipt.

(c) If all bids are to be rejected, all bidders shall be so notified by certified mail, return receipt.

(d) All notices of intent to award a bid or to reject all bids shall contain the following statement: "Failure to file a protest within the time prescribed in Section 120.57(3), F.S., shall constitute a waiver of proceedings under Chapter 120, F.S."

**(4) Action Differing from Notice.**

(a) Each action on bids taken by the Board is preceded by a recommendation from the Superintendent. If the Superintendent's recommendation differs from the notice of intended decision as set forth in section (3) of this policy all bidders must be notified by certified mail, return receipt requested, or by hand delivery, at least four (4) days prior to the intended date of Board action.

(b) In the event the Board takes action toward a bid in a manner which differs from the notice of intended decision (or last notice of intended decision if more than one was provided) such award does not become final until seven calendar days after Board action. Within one work day of such Board action all bidders shall be notified of the action by certified mail, return receipt requested, or by hand delivery. A written protest filed by a bidder within seventy-two (72) hours after receipt of this letter shall void the Board award and invoke the procedures of section (5) of this policy.

**(5) Protest.**

(a) Any person adversely affected by project plans / specifications or the decision to solicit bids or the intended decision to award a contract shall file a notice of protest, in writing, within 72 hours after receipt of project plans / specifications or the notice of bid solicitation or the notice of intent to award or to reject all bids. In addition, such persons shall file a formal written protest, in petition form, specifically stating the grounds for the protest and identifying all disputed issues of material fact. The formal written protest shall be filed within ten days of the notice of protest. All protests shall be filed with the Purchasing Department at [3397 W. Tharpe Street](#) in Tallahassee, Florida 32303.

Any person who files an action protesting an intended award shall post with the Purchasing Department, at the time of filing the formal written protest, a bond payable to the Leon County School Board in an amount equal to: (1) Twenty-five thousand dollars or two percent (2%) of the lowest accepted bid, whichever is greater, for projects valued over \$500,000; and (2) five percent (5%) of the lowest accepted bid for all other projects, which bond shall be conditioned upon the payment of all costs which may be adjudged against him in the administrative hearing in which the action is brought and any subsequent appellate court proceedings, the department prevails, it shall recover all costs and charges which shall be included in the final order or judgment, excluding attorney's fees. Upon payment of such costs and charges by the person protesting the award, the bond shall be returned to him. If the person protesting the award prevails, he shall recover from the department all costs and charges which shall be included in the final order or judgment, excluding attorney's fees.

(b) A protest is filed when it is delivered to and received at the Purchasing Department. Accordingly, protest is not timely filed unless it is received by the Department within the times specified in subsection (a).

(c) A written notice of protest filed by 4:30 p.m. on the day on which the seventy-two (72) hours runs shall be timely.

(d) In computing the time in which to file a notice of protest or formal protest, the day of the event from which the designated period of time begins to run shall not be included. The last day of the period so computed shall be included unless it is a Saturday, Sunday, or a holiday when the Purchasing Department office is closed, in which event the period shall run until the end of the next day that is neither a Saturday, Sunday, nor holiday.

**6) Suspension of Bidding Process.**

(a) Upon receipt of a timely written notice of protest, the bid solicitation or contract award process shall be stayed until the subject of the protest is resolved by final agency action School unless the Superintendent sets forth, in writing, particular facts and circumstances which require the continuance of the bid solicitation or contract award process without delay to avoid an immediate and serious danger to the public health, safety, or welfare.

(b) Notice that a protest of a bid solicitation has been filed shall be given by U.S. mail or hand delivery to all bidders to whom bid proposals have been supplied and to all other timely protestants. Notice that a protest of the intent to award a contract has been filed shall be given by U.S. mail or hand delivery to all companies which submitted a bid. Notice that a protest of the intent to reject all bids has been filed shall be give by U.S. mail or hand delivery to all bidders.

**(7) Resolution of Protests.**

(a) The Purchasing Department, on its own initiative, or upon the request of the protestor, shall provide an opportunity to meet with the Superintendent or his designee to resolve the protest by mutual agreement between the parties within fourteen (14) days of receipt of a formal written protest.

(b) If the subject of a protest is not resolved by mutual agreement within fourteen (14) days of receipt of the formal written protest, and if there is a disputed issue of material fact, the protest shall be referred to the Division of Administrative Hearings for proceedings under Section 120.57(1), Florida Statutes.

(c) This Board is not obligated to accept a recommendation placed before it nor is it bound by a notice of intended decision. At its sole discretion it may decide to reject all bids submitted. Such action terminates all procedures invoked or invocable under this policy.

Statutory authority: 230.22(2) F.S.

Law implemented: 120.57(3) F.S., SBER 6A 7.42(2) (f).

Date adopted: July, 1982.

Date amended: March 13, 1984; April 13, 1993; April 7, 1998

END OF SECTION B



**SECTION C**

**BID FORM**

**SUBMIT IN DUPLICATE ON CONTRACTOR'S LETTERHEAD**

SCHOOL BOARD OF LEON COUNTY, FLORIDA

DATE:

DIVISION OF FACILITIES

TIME:

3420 W. THARPE STREET, Suite 100  
TALLAHASSEE, FLORIDA 32303

OWNER'S BID NO.

**REFERENCE:**

I (We), the undersigned, hereby declare that the only persons, firm or corporation interested in this Proposal or the Contract to be entered into, as principals, are named herein, and that this Proposal is made without collusion with any person, firm or corporation, and that it is in all respects fair and in good faith.

The undersigned, hereinafter called "Bidder", having visited the site of the proposed project and become familiar with the local conditions, nature and extent of the work, and having examined carefully the drawings, specifications, the Form of Agreement, and other Contract Documents, with the bond requirements therein, proposes to furnish all labor, materials, equipment and other items, facilities, and services for the proposed execution and completion of the Classroom Addition at Gilchrist Elementary School in full accordance with the drawings and specifications prepared by MLD Architects, Inc., in full accordance with the Advertisement for Bids, Instruction to Bidders, Agreement and all other Contract Documents; and if awarded the Contract, I (We) will contract with the SCHOOL BOARD OF LEON COUNTY, FLORIDA to furnish all necessary labor, equipment, materials, and incidental costs, and that I (We) will substantially complete all necessary work in accordance with the Specifications and Drawings, and the requirements under them within TBD after receipt of Notice-to-Proceed or before TBD for the following Bid price:

**BASE BID** \_\_\_\_\_ Dollars (\$ \_\_\_\_\_).

With the foregoing as a Base Bid, the following Alternate Prices are submitted in accordance with the Drawings and Specifications.

**Alternate No. 1:** \_\_\_\_\_ Dollars (\$ \_\_\_\_\_).

**Alternate No. 2:** \_\_\_\_\_ Dollars (\$ \_\_\_\_\_).

The undersigned further agree(s) to bear the full cost of maintaining all work until the final acceptance, as provided in the Contract Documents.

The above amount, if accepted by the Owner shall form a Contract to be entered into. The undersigned agree(s) to furnish a sufficient and satisfactory bond in the sum of not less than 100 percent (100%) of the Contract Price of the work awarded.

It is further agreed that in the case of failure on the part of the undersigned to execute said Contract and Bond under the conditions of this Proposal within eight (8) "Owner Business Days" after the award of the Contract, the accompanying Proposal Guaranty, made payable to the SCHOOL BOARD OF LEON COUNTY, FLORIDA of not less than five percent (5%) of the total actual bid (Base Bid plus all Alternates), shall be forfeited as liquidated damages; otherwise, said Guaranty is to be returned to the undersigned upon the delivery of the executed Contract, a satisfactory bond and other specified documents.

Name of Bonding Company: \_\_\_\_\_  
Local Agent's Address: \_\_\_\_\_ Phone No. \_\_\_\_\_

Attached hereto, is the said Proposal Guaranty in the form of a Bid Bond, Certified Check, Cashier's Check in the amount of \_\_\_\_\_ Dollars (\$ ), according to the provisions contained herein and to the conditions and provisions of the Contract Documents.

Section D: Major Subcontractors is to be completed and included with this bid form package.

I (We) hereby acknowledge receipt of the following Addendum, if any, issued during the bidding period:  
(List Addendum No. and Date)

It is understood by the Bidder that the Owner shall post its intent to award or reject this Bid. The intent shall remain posted for a period of three (3) working days. Failure to file a protest within the time prescribed in Section 120.57(3), Florida Statutes, shall constitute a waiver of proceedings under Chapter 120, Florida Statutes.

I (We), the undersigned, hereby certify that I (We) have carefully examined the foregoing Proposal after the same was completed and have verified each item placed thereon; and I (We) agree to indemnify, defend and save harmless, the SCHOOL BOARD OF LEON COUNTY, FLORIDA and their agents, against any cost, damage or expense which it may incur or be caused by an error in my (our) preparation of same.

In witness whereof, the Bidder has hereunto set his signature and affixed his seal this \_\_\_\_\_ day of \_\_\_\_\_, A.D., 20\_\_.

\_\_\_\_\_(SEAL)

By:

Title:

The following license is current and the Bidder agrees to maintain it in effect throughout the project duration:

Florida Construction Industries Licensing Board Certification (State Certified of County Registered).

\_\_\_\_\_  
(Name of Holder)

END OF SECTION C

**SECTION D**

**LISTING OF MAJOR SUBCONTRACTORS**

(To be submitted in a separate envelope marked, "LISTING OF MAJOR SUBCONTRACTORS," along with Bidder's Bid Form)

TO: School Board of Leon County, Florida  
3420 West Tharpe Street, Suite 100  
Tallahassee, FL 32303

ATTENTION: Director of Construction

NOTE: To be executed as part of the Bidders Proposal. If, due to Alternate bids, more than one subcontractor must be considered, Contractor shall list each and state which is to be considered for Base Bid work and which is to be considered for alternate work if a specific alternate is to be taken.

Bidder agrees that, if they are apparent low bidder or if so requested by the Owner, they will submit to the Owner a full list of subcontractors and suppliers within 24 hours of bid opening (contained in Section P) to the Contract Administrator for the School Board of Leon County, Florida, 3420 West Tharpe Street, Suite 100, Tallahassee, FL 32303.

All subcontractors and suppliers are subject to approval of the Owner. The following are the subcontractors and suppliers proposed to be used if the undersigned is awarded the contract for the Classroom Addition at Gilchrist Elementary School.

DIVISION OF WORK	CORPORATE NAME AND ADDRESS	PRINCIPAL OR OFFICER'S NAME

The undersigned declares that they have fully investigated each subcontractor listed and have determined to their own complete satisfaction that such contractor maintains a fully-equipped organization capable technically and financially of performing the pertinent work, and has made similar installations in a satisfactory manner.

Name of Firm: \_\_\_\_\_

Signed By: \_\_\_\_\_

Title: \_\_\_\_\_

Address/Zip: \_\_\_\_\_

Telephone No. \_\_\_\_\_ Contractor's Certificate No. \_\_\_\_\_

END OF SECTION D

SECTION E

BID BOND

GENERAL:

A. I. A. BID BOND:

The "Bid Bond" American Institute of Architects Form A-310, Latest Edition, is referenced herein and shall be used on this project.

**Forms shall be obtained by the Contractor from the Florida Association of the American Institute of Architects, located at 104 East Jefferson Street, Tallahassee, Florida 32301, (850) 222-7590**

END OF SECTION E

SECTION F

ACCEPTABLE SURETY COMPANIES

GENERAL:

To be acceptable as Surety on the Performance Bond and Materials and Payment Bond, a surety company shall comply with the following provisions:

The Surety Company must be admitted to do business in the State of Florida.

The Surety Company shall have been in business and have a record of successful and continuous operations for at least five (5) years.

Provide bonds as stipulated herein and in Section 1013.47, Florida Statutes.

The Surety Company shall have at least the following minimum ratings:

<u>CONTRACT AMOUNT</u>	<u>REQUIRED FINANCIAL RATING 1*</u>
\$ 1 to 500,000	B+
500,000 to 1,000,000	A & A-
1,000,000 OR MORE	A+

\*Best's Financial Rating.

The Surety Company shall not expose itself to any loss of any one risk in an amount exceeding ten percent (10%) of its surplus to policy holders, provided:

Any risk or portion of any risk which shall have reinsured (in which case these minimum requirements contained herein also apply to the reinsuring carrier) in an assuming insurer authorized or approved by the insurance commissioner to do such business in this State shall be deducted in determining the limitation of risk prescribed in this Division.

In the case of a surety insurance company, there shall be deducted, in addition to the deduction for reinsurance, the amount assumed by any co-surety, the value of any surety deposited, pledged or held subject to the consent of the surety and for the protection of the surety.

END OF SECTION F

SECTION G

CONTRACT BONDS

GENERAL:

PERFORMANCE BOND and PAYMENT BONDS:

The Performance and Payment Bonds, American Institute of Architect's Form A-312, Latest Edition, shall be used on this project.

**Forms shall be obtained by the Contractor from the Florida Association of the American Institute of Architects, located at 104 East Jefferson Street, Tallahassee, Florida 32301, (850) 222-7590**

SECTION H

CONTRACT AGREEMENT

GENERAL:

The "Standard Form of Agreement Between Owner and Contractor Where the Basis of Payment Is a Stipulated Sum", American Institute of Architects, Document A-101, Latest Edition shall be used on this project.

**FORMS SHALL be obtained by the Contractor from the Florida Association of the American Institute of Architects located at 104 Jefferson Street, Tallahassee, Florida 32301, (850) 222-7590.**

=====

The following information is Supplementary Conditions to the Contract to be amended where indicated.

Article 2

PROJECT:                    Gilchrist Classroom Addition  
                                  Gilchrist Elementary School  
                                  1301 Timberlane Road  
                                  Tallahassee, Florida 32312

PROJECT NO:                **(Insert Project Number)**

Article 3

3.1 The Date of Commencement will be defined in a Notice-to-Proceed.

3.2 Substantial Completion shall be within **[insert days or specific date]** consecutive calendar days following Notice-to-Proceed; Final Completion shall be within **30** consecutive calendar days following Substantial Completion.

Liquidated damages shall be in accordance with Section K, 8.4.1 Supplementary General Conditions of the Contract Documents. Liquidated Damages: **\$500.00** per day.

Article 4

4.2 List Base Bid, and all alternates accepted (if any) for the project. Total Base Bid plus alternates.

Article 5

5.2 See Attached Article 5, Progress Payments, made as Exhibit 'B' to the contract documents as if repeated herein.





ARTICLE 5  
PROGRESS PAYMENTS

Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect and approved by the Owner, the Owner shall make progress payments against the account of the Contract Sum to the Contractor in accordance with the following:

**NOTE:** If this project is federally funded through School Construction Bonds (i.e. Qualified School Construction Bonds [QSCB], or Qualified Zone Academy Bonds (QZAB) then the Department of Labor Standards and Provisions for Federally Assisted Projects and the Prevailing Wage Rates for Construction: Heavy, Highway, and Building for Leon County, Florida must comply with the Davis Bacon Act (DBA). This includes the General Contractor or Construction Manager at Risk Services, and all trades/subcontractors/subs on the site doing work.

- (1) **The Construction Manager or if applicable, the General Contractor's fees only, will be held and distributed in the following manner:**

**Fifty percent (50%) of the Construction Manager or if applicable, the General Contractor's fees will be divided in equal payment on the Application for Payment for the duration of the project until Substantial Completion. The remaining fifty percent (50%) is to be held (Schedule of Values breakdown sheet under the title "Total Completed & Stored to Date" area) until FINAL COMPLETION.**

- (2) Within thirty (30) Owner business days after the Owner's receipt of a Certificate of Payment issued by the Architect, the Owner shall pay ninety percent (90%) of the Contract Sum properly allocable to labor, materials and equipment incorporated in the Work and ninety percent (90%) of the portion of the Contract Sum allocable to materials and equipment suitably stored at the site or at some other location agreed upon in writing, for the period covered by the Application for Payment, less the aggregate of previous payments made by the Owner; and upon Substantial Completion of the entire Work, a sum sufficient to increase the total payments to ninety percent (90%) of the Contract Sum, less such amounts as the Architect and Owner shall determine for all incomplete Work and unsettled claims as provided in the Contract Documents.

The unpaid balance of the Contract Sum will be held until the project is accepted by the School Board. At the time of acceptance by the School Board, three (3) times the value as determined by the Architect of any remaining items will be withheld until the specific items have been completed. If three (3) times the estimated cost of completing remaining items exceeds the unpaid balance of the Contract Sum, the Architect will issue a Change Order for the difference to be payable to the Owner by the Contractor.

Notwithstanding the contractor's compliance with the claim or dispute resolution terms of this contract, the contractor shall not be entitled to any interest on payments which may be due and unpaid by the owner, nor shall the contractor be entitled to any prejudgments interest on any damages awarded to the contractor in any civil action or on any arbitration award, even if the owner is found to have breached the contract.

- 5.6.1 Ten percent (10%).
- 5.6.2 Ten percent (10%).
- 5.7.1 Ninety percent (90).
- 5.8 Retainage will only be released upon recommendation of the Architect and by action by the Board of Education with all documents properly forwarded to the Office of Educational Facilities (D.O.E.).

Article 7

7.2 N/A

7.3 Other Provisions:

- 7.3.1 For the sum of one hundred dollars (\$100.00) and other good and valuable consideration, receipt of which is hereby acknowledged by the contractor, said Contractor does agree to indemnify the Owner and Architect in accordance with Paragraph 3.18 of Contract Document A-201 which was previously entered into by the parties.

- 7.4 Prior to beginning the Work, the Contractor shall obtain and furnish the Owner the Bonds and Insurance policies required by the Contract Documents, which shall be procured from agents authorized to do business in the State of Florida and in such form and amounts acceptable to the Owner. If at any time the Owner shall deem the surety, or sureties to be unsatisfactory of a Bond, and is deemed inadequate by the Owner, they shall be required to furnish an additional Bond or Bonds in such form and amount and with a surety acceptable to the Owner. The failure of the contractor to furnish such Bonds and Insurance policies in a timely manner shall not delay the commencement of the Contract time nor shall be a cause for an extension of the Contract time.

IN WITNESS WHEREOF, this Contract has been fully executed on behalf of the parties hereto by its duly authorized representatives as of the date first written above.

THE SCHOOL BOARD OF LEON COUNTY, FLORIDA

BY: \_\_\_\_\_  
Chairperson

(SEAL)

ATTEST: \_\_\_\_\_  
Board Secretary

\_\_\_\_\_  
Name of Firm

BY: \_\_\_\_\_  
Title

(SEAL)

ATTEST: \_\_\_\_\_  
Secretary of Corporation

Approved as to Form: \_\_\_\_\_  
Attorney to the Board

END OF SECTION H

SECTION J

GENERAL CONDITIONS

GENERAL:

The "General Conditions of the Contract for Construction", American Institute of Architects, Document A-201- 2007, Latest Editions shall be used on this project.

**FORMS SHALL be obtained by the Contractor from the Florida Association of the American Institute of Architects located at 104 Jefferson Street, Tallahassee, Florida 32301, (850) 222-7590.**

End of Section J

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Revised December 4, 2008

SUPPLEMENTARY GENERAL CONDITIONS—to AIA Document A201- 2007

ARTICLE 2 - OWNER

OWNER'S RIGHT TO CARRY OUT THE WORK

2.4 ADD the following:

2.4.1 If the Contractor defaults or neglects to carry out the work in accordance with the Contract Documents and fails within **three (3) business days period** after written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may after such **three (3) business days period**, without further notice and without prejudice to other remedies the owner may have, correct such deficiencies. In such case an appropriate change order shall be issued deducting from payments then or thereafter due the contractor the cost of correcting such deficiencies, including compensation for the Architect's additional services and expenses made necessary by such default, neglect, or failure. Such action by the Owner and the amount charged to the Contractor are NOT subject to approval of the Architect. If payments then or thereafter are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

2.4.1.1 Failure to meet timelines defined in the Critical Path schedule submitted by the Contractor to the Owner under **Article 3.10** of these Supplementary General Conditions and as described in Section 01340 ("Construction Schedule") of the technical specifications shall be evidence of negligence when it appears by examination of the Critical Path Schedule that such failure will result in failure to meet the contracted substantial completion date. Nothing in this paragraph shall prevent the Owner from action against default or neglect for other reasons.

2.4.2 In the event that the Contractor's default, neglect, or failure to carry out the Work in accordance with the Contract Documents will jeopardize the health or safety of the present or future occupants of buildings or structures which are part of the Project, and which constitute a violation of any regulation or Code involving health or safety, the Owner's period of required notice to the Contractor shall be reduced from seventy-two (72) hours to twenty-four (24) hours, and all other provisions of paragraph 2.4.1 shall apply.

2.4.3 If after the lapse of seventy-two (72) hours (or twenty-four (24) hours if applicable), the Owner begins mobilization and procurement as required to correct the Work, and if after that time the Contractor commences and continues correction of the Work diligently and expeditiously, the Contractor shall reimburse the Owner for all expense of mobilization, procurement, labor, and materials incurred between the time that the written notice expired and the time that the Contractor had clearly and unambiguously commenced corrective work, with adequate work force to meet all applicable time lines.

SCHOOL BOARD PROJECT REPRESENTATIVE

2.5 ADD the following: The Owner will designate its School Board Project Coordinator and Inspector who will act as its on-site field representatives and fulfill duties enumerated in the Rules of the Department of Education, State Board of Education, State Requirements for Educational Facilities, Section 4.4(1), **February 12, 2007**.

DECLARATION OF DEFAULT

2.6 ADD the following: The failure of the Contractor to supply enough properly skilled workmen or materials or to make prompt payment to Subcontractors or for materials or labor, or to obey laws, ordinances, rules, regulations or orders of public agencies having jurisdiction, or to comply with the



Contract Documents, shall be sufficient grounds for the Architect to find the Contractor in substantial default and to certify to the Owner that sufficient cause exists to terminate the Contract and to withhold payment or any part thereof until the cause or causes giving rise to the finding of default has been eliminated by the Contractor and approved by the Architect and Owner. If a finding of default is made, the Contractor shall remain responsible for performance of the requirements of the Contract Documents unless and until the Owner terminates the Contract. Upon finding of default, the Architect shall set a reasonable time within which the Contractor shall eliminate the cause or causes of default. When the basis for a finding of default no longer exists, the Architect shall notify the Contractor and Owner in writing that the default has been corrected and that the Contractor is no longer in default. If the Contractor fails to correct the default within the time allowed, the Owner upon certification by the Architect that sufficient cause exists to justify such action, may terminate the Contract and the employment of the Contractor pursuant to [Article 14.2](#) of General Conditions.

### Article 3 - CONTRACTOR

#### CONTRACTOR VERIFICATION OF SURVEY:

##### [3.2.2.1](#) ADD the following:

Prior to commencing any excavation or grading, the Contractor shall satisfy himself as to the accuracy of all survey data as indicated in these Drawings and Specifications and/or as provided by Owner. Should the contractor discover any inaccuracies, errors, or omissions in the survey data, the Contractor shall immediately notify the Architect in order that proper adjustments can be anticipated and ordered. Commencement by the Contractor of any excavation or grading shall be held as an acceptance of the survey data by the Contractor, after which time the Contractor has no claim against the Owner resulting from alleged errors, omissions or inaccuracies of the said survey data.

#### NUMBER OF DOCUMENTS

[3.2.2.2](#) ADD the following: The Contractor will be furnished, free of charge, ten (10) copies of the Drawings and Specifications and may purchase from the Architect as many additional copies as the Contractor may require at (Architect/Engineer's set price for project) per set.

#### CONSTRUCTION PROCEDURE:

##### LABOR AND MATERIALS:

[3.4.1.1](#) ADD the following: The Contractor shall provide, in addition to supervision and layout, not less than twenty percent (20%) of the Contract Sum which shall include two (2) or more of the following: all carpentry work, all form work, all reinforcing steel work, all structural steel work, or all concrete work. Prior to the Contract being awarded, the Contractor shall provide to the Owner for approval a written statement setting forth the portion of Work he shall provide. Once approved, no changes shall be made to this written statement without prior written approval of the Owner.

#### TAX EXEMPTIONS:

[3.6.1](#) ADD the following: Although the Owner is not subject to the Florida Sales and Use Tax, any Contractor who purchases materials which will be used in the construction of a public-owned building *will not be exempt* from the sales tax on these materials as evidences by the following excerpt from the Florida Statutes:

"The State, any county, municipality or political subdivision of this state is exempt from the sales tax, except this exemption shall not include sales of tangible personal property made to contractors employed either directly or as agents of such government or political subdivision thereof when such tangible personal property going into or becomes a part of public works owned by such government or political subdivision thereof."

PERMITS:

3.7.1.1 ADD the following:

The Owner is not subject to cost of the Municipal Building Permits.

3.7.1.2 ADD the following:

Chapter 235.211(4), F.S. states that "The services of a registered architect are not required for minor renovation project for which the construction cost is less than \$50,000.00, or for the placement, or hookup of relocatable educational facilities that conform to the standards adopted under Chapter 235.26(2), F.S."

For minor projects meeting the requirements of Chapter 235.211(4), plans will be required. However an architect seal will not be required. For projects with a construction cost exceeding \$200,000.00, plan review will be done by the Department of Education. The School Board Inspection Department will issue **ALL** permits and Certificates of Occupancy, regardless of the project costs.

Procedures for Application for a Building Permit are available through Leon County School District's Facilities/Construction Department by Robert Metcalf, **(850) 617-1837 or (850) 617-1838**.

**3.7.1.3 Add the following:** "All construction shall be in accordance with the editions of codes currently adopted by Leon County Schools. See Leon County School Building Code Requirements."

SUPERINTENDENT:

3.9 ADD the following:

**3.9.1.1:** The Contractor shall employ and keep at the site of the work during its progress a competent and thoroughly experienced superintendent capable of handling all phases of the project. The Superintendent shall have any necessary assistants, foremen and timekeepers required by the scope of this project, and shall be acceptable to the Architect, and shall not be changed or transferred unless approved by the Architect, or ceases to be in the employ of the Contractor. If the Contractor must replace the Superintendent for any reason between "Notice-to-Proceed" and final Architect's certification of completion of the work, then the Contractor shall: Notify Architect that the existing Superintendent will be leaving the job on (date) and that all job work shall cease after said date until a satisfactory replacement Superintendent is found, approved by Architect, and physically present on the site properly authorized and briefed by Contractor.

**3.9.2.1:** The Superintendent shall represent the Contractor in the Contractor's absence and all directions given to the Superintendent shall be as binding as if given to the Contractor. Major and important directions shall be confirmed in writing to the Contractor. Other directions shall be so confirmed on written request in each case.

SUPERINTENDENT'S NAME:

**3.9.2.2** The Contractor shall submit to the Architect the name and resume of the proposed superintendent for the Contractor at the pre-construction conference to allow investigation by Architect.

SUPERVISION:

**3.9.4:** The Contractor shall give efficient supervision to the work, using the best skill and attention. The Contractor shall carefully study and compare all Drawings, Specifications and other instructions and shall report at once to the Architect any error, inconsistency or omission which is discovered but shall not be held responsible for their existence or discovery. The Superintendent shall be in attendance on the job a minimum of six (6) hours per working day from "Notice-to-Proceed" continuously through final approval of the work by the Architect. No work shall be allowed to transpire on the site unless the Superintendent is in attendance at the site.

### PRECONSTRUCTION CONFERENCE:

**3.9.5:** Before beginning work at the site, the Contractor shall attend a pre-construction conference scheduled by the Architect and he shall bring the superintendent employed for this project. At this time, all parties concerned will discuss the project under Contract and prepare a program of procedures in keeping with requirements of the Contract Documents. The superintendent shall henceforth make every effort to expeditiously coordinate all phases of the work, including the required reporting procedure, to obtain the end result within the full purpose and intent of the Contract Documents for the project.

### PROGRESS SCHEDULE:

#### 3.10 ADD the following:

3.10.4: The contractor shall furnish, not later than fifteen (15) days after receipt of "Notice-to-Proceed", a CPM schedule showing the expected times of completion of the various stages of work on this project. The schedule shall be a C.P.M. (Critical Path Method) chart. The work headings therein shall correspond generally with the headings listed in the Contractor's Schedule of Values. Refer to Division 1 - General Requirements. Final times of completion in the schedule shall not exceed the completion date required by the contract Documents. During progress of the work the Contractor shall enter on the schedule that Actual progress at the end of each month, and shall deliver two (2) copies to the Architect along with the Contractor's pay request. Contractor's pay request will not be processed until receipt and review of monthly updated CPM Chart.

### WORK FORCE:

3.10.5: The Contractor shall furnish sufficient forces, construction plans and equipment, and shall work such hours, including night shifts and overtime operation, as may be necessary to insure the execution of the Work in accordance with the approved progress schedule. If the Contractor falls behind the progress schedule, the Contractor shall take such steps as may be necessary to improve the progress by increasing the number of shifts, overtime operations, days of work and the amount of construction plans, all without additional cost to the Owner.

3.10.6: Failure of the contractor to comply with the requirements under this provision shall be grounds for determination by the Architect that the Contractor is not executing the Work with such diligence as will insure completion within the time specified and such failure constitutes a substantial violation of the conditions of the Agreement.

3.10.7: Upon such determination, the Owner may terminate the Contractor's right to proceed with the Work, or any separable part thereof, in accordance with Article 14 of the General Conditions, or may withhold further payments as indicated in Article 9.5.1.

### DOCUMENTS AND SAMPLES AT THE SITE

3.11.2 ADD the following: A copy of Toxic Substance List submitted by both the Contractor and Subcontractors to the Owner, must be kept at the site during the duration of construction.

### SHOP DRAWINGS; Product Data and Samples:

#### 3.12 ADD the following new subparagraphs:

3.12.11: Shop Drawings and samples shall be dated and contain: name of project; project No.; description or names of equipment, materials and items; and complete identification of locations at which materials or equipment are to be installed. If the shop drawings do not conform completely with the requirements of the Contract Documents, such nonconformance shall be specifically noted on the face of the drawings.

3.12.12: Submission of Shop Drawings and samples shall be accompanied by transmittal letter,

containing project name, Contractor's name, number of drawings and samples, titles and other pertinent data.

3.12.13: Unless otherwise specified, the number of Shop Drawings and the number of samples which the Contractor shall submit and, if necessary, resubmit, is the number that the Contractor requires to be retained for the Contractor's use plus 2 which will be retained by the Architect/Engineer.

CLEAN UP:

3.15.3 ADD the following:

Keep interior of the building free of stored or unattended combustible materials.

ACCESS TO WORK:

3.16.2 ADD the following:

The authorized representatives and agents of the Architect, the Owner and such other persons as the Owner may designate, shall have access to and be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials and other relevant data and records wherever they are in preparation and progress. The contractor shall provide proper facilities for such access, inspection and, when required, exact duplicate copies of the aforementioned data shall be furnished.

CHANGE ORDERS

7.2.the following:

**7.2.2** In subparagraphs **7.2.1.1** and **7.2.1.3** the allowance for overhead and profit combined, included in the total cost to the Owner shall be based upon the following schedule:

- (a) For the Contractor, for any work performed by his own forces, 10% of the cost:
- (b) For each subcontractor, for any work performed by his own forces, 10% of the cost:
- (c) For the Contractor, for work performed by his subcontractor, 5% of the amount due the subcontractor.
- (d) Cost shall be limited to the following: Bond premiums, cost of materials, including sales tax (in effect at time of change order) and cost of delivery, cost of labor and fringe benefits, including Social Security, Old Age and Unemployment Insurance (labor cost may include a pro rate share of foreman's time only in case an extension of Contract Time is granted on account of the change); Workmen's Compensation Insurance; rental value of power tools and equipment.
- (e) Overhead shall include the following: Supervision, superintendence, wage of time keepers, watchmen and clerks, small tools incidentals, general office expense and all other expenses not included in "cost".

7.3.7 ADD the following:

In the 6th and 7th lines change the words " ... a reasonable allowance for overhead and profit in accordance with the schedule set forth above in **Section 7.2.2**".

LIQUIDATED DAMAGES

8.4.1 is amended to read as follows:

Failure to complete the Project within the time fixed in this Agreement will result in substantial injury to the Owner, and as damages arising from such failure cannot be calculated with any degree of certainty, according to the definition of "Substantial Completion" in Subparagraph **9.8.1** of the General Conditions, within the time fixed or within such further time, if any, as may be authorized in accordance with the Contract Documents, the Contractor shall pay to the Owner as Liquidated Damages for such delay, and not as a penalty, **Five hundred dollars (\$500.00)** for each and every calendar day elapsing between the

date fixed for Substantial Completion and the date such Substantial Completion shall have been fully accomplished. It is also hereby agreed that if after thirty **(30)** Calendar Days after Substantial Completion this Project is not fully and finally completed in accordance with the requirements of the Contract Documents, the Contractor shall pay to the Owner as Liquidated Damages, and not as a penalty, for such delay, one-fourth (1/4) of the rate previously indicated. These Liquidated Damages shall be payable in addition to any expenses or costs payable by the Contractor to the Owner under the provisions of the Contract Documents and shall not exclude the recovery of damages of the Owner under the Contract Documents. This provision of Liquidated Damages for delay shall in no manner affect the Owner's right to terminate the Contract. The Owner's exercise of the right to terminate shall not release the Contractor from his obligation to pay Liquidated Damages. It is further agreed that the Owner may deduct from the balance of the Contract Sum held by the Owner the Liquidated Damages stipulated herein, or such portions as said balance will cover.

#### SCHEDULE OF VALUES:

**9.1.1 Add the following:** The Construction Manager or if applicable, the General Contractor's fees only, will be held and distributed in the following manner:

**Fifty (50%) percent of the Construction Manager or if applicable, the General Contractor's fees will be divided in equal payment on the Application for Payment for the duration of the project until Substantial Completion. The remaining fifty (50%) percent is to be held (Schedule of Values breakdown sheet under the title "Total Completed & Stored to Date" area) until FINAL COMPLETION.**

**9.2.1 ADD the following:** The Contractor shall submit to the Architect the Schedule of Values within fifteen (15) days after receipt of Notice-to-Proceed in accordance with the schedule shown at the end of this Section. The General Contractor's overhead and profit for each item and sub-contract shall be included in each item. Refer to Division 1 - General Requirements. This schedule will be re-submitted for approval by the Architect. No pay requests will be approved until contractor has submitted an **acceptable** schedule of values.

#### 9.8 SEMI-FINAL PRELIMINARY INSPECTION:

**9.8.2.1:** Prior to a formal inspection by the Architect, i.e., semi-final inspection, the superintendent or Contractor shall conduct a preliminary inspection, noting on a punch list those items requiring correction. This list shall then be distributed to all project inspectors and subcontractors. All items so noted shall be corrected prior to a formal inspection by the Architect and the check-off list shall be submitted to the Architect with the contractor's request for Substantial Completion inspection.

#### PLUMBING, HVAC & ELECTRICAL CERTIFICATE:

**9.8.2.2 ADD the following:** The contractor shall submit at substantial completion a certificate from each manufacturer's technical representatives that all Plumbing, HVAC and Electrical equipment and material have been installed properly and that all warranties and guarantees will be valid. Submit in triplicate.

#### FINAL PAYMENT:

**9.10.3.1 ADD the following:** Notwithstanding any other provisions of the Contract Documents, no final payment or release of the retainage will be due the Contractor until final acceptance of the work by Owner, Architect and final acceptance inspection and approval of the Department of Education. Final Payment shall be made after this date.

#### ADD 9.11 WRITTEN GUARANTEE

**9.11.1 is amended to read as follows:** The Contractor shall and does hereby guarantee the Work and shall remedy any defects due to faulty materials or workmanship which appear within one (1) year, unless a longer period is specified in the Contract Documents, from the date specified in Subparagraph 8.1.3.

Neither the final payment nor any provision in the Contract Documents shall relieve the Contractor of the responsibility for negligence, defects of manufacturer, faulty materials, or workmanship to the extent within the period provided by law; and upon written notice that they shall remedy any defects due thereto and pay all expenses for any damages to other work resulting therefrom.

#### 9.12 DATA FURNISHED BY THE CONTRACTOR

9.12.1 ADD the following: During the Work and prior to receiving Final Payment, the Contractor shall furnish to the Architect for transfer onto the record drawings one (1) complete set of "record" drawings acceptable to the Architect and Owner, indicating construction changes and actual locations which are at variance with the original drawings.

9.12.2 ADD the following: At the completion of the Work and prior to receiving Final Payment, the Contractor shall furnish to the Architect for delivery to the Owner all bonds, warranties, guarantees, manuals and operating instructions and a complete list of equipment installed in the Project showing manufacturer and model numbers and cost.

9.12.3 ADD the following: At the completion of the Work and prior to receiving final payment, the Contractor shall furnish to the Architect a Schedule of Maintenance, stating frequency and type of service for each piece of equipment.

9.12.4 ADD the following: At the completion of the Work and prior to receiving final payment, the Contractor and Subcontractor shall instruct the Owner how to use all equipment and systems in the Project and supply appropriate instruction manuals.

#### SAFETY PRECAUTIONS AND PROGRAMS

**2.03.1 CRIMINAL BACKGROUND CHECKS (Updated Dec. 8, 2008; May 13, 2009; Sept. 1, 2009 below)** The Legislature passed a law effective September 1, 2005 called the Jessica Lunsford Act. This law requires any employee, contractor, vendor who will (1) Be at a school when students are present; or (2) Have direct contact with students; or (3) Have access to or control of school funds; meet Level II Background screening requirements. Level II screening includes fingerprinting, statewide criminal and juvenile justice records checks through the Florida Department of Law Enforcement and federal criminal records checks through the Federal Bureau of Investigation. Level II screening may also include local criminal records checks through the local law enforcement agencies.

Leon County School Board Policy 2.021 also requires a background check of all vendors that meet the above requirements. In addition, all vendors will have a Sexual Predator Check completed if they meet the requirements as listed below.

**LCSB Policy 2.021 is subject to review and change. As a provision of this contract, if awarded, any changes made to this policy will automatically become a part of and be incorporated in this contract. It is the responsibility of the awardee(s) to be aware of any changes that may occur.**

- a. **Sexual Predator Check** – All vendors who provide services under this contract will have a Sexual Predator Check completed by Purchasing Department personnel through the Florida Department of Law Enforcement prior to approval of any contract. This check will be performed at the FDLE website listed here: [http://www3.fdle.state.fl.us/sexual\\_predators/](http://www3.fdle.state.fl.us/sexual_predators/)

**Level II Background Check – (Updated 12-08-08)** Any vendor providing services under this contract who will (1) Be at a school when students are present; or (2) Have direct contact with students; or (3) Have access to or control of school funds, that person shall have a Level II background check submitted through the Leon County School Board. The Leon County School Board shall submit vendor fingerprints and information to the Florida Department of Law Enforcement and the Federal Bureau of Investigations.



The LCSB will inform the contractor of the approval/disapproval of the check within approximately one week. If any person does not meet the Board's requirements, as described in Policy 2.021, that individual shall not be allowed to perform services for Leon County Schools. The contractor shall be required to pay for all costs of the background reports. If it is discovered, during the period of the contract that the successful contractor substituted an unapproved worker for an approved worker, the vendor's contract may be canceled immediately at the discretion of the Leon County School Board.

**Work construction sites that are completely segregated by a chain link fence (minimum height of six foot) and with no students present, may work with a Sexual Offender/Predator check, when under the constant supervision of a Level II screened authorized individual.**

**All Level II cleared contractors must display a Leon County Schools Vendor badge when on school district property.**

In the event that an approved contractor/vendor is arrested for any reason subsequent to the background clearance performed by Leon County School Board, Safety, Security & Emergency Management Dept., they are required to immediately notify his or her supervisor who will then notify the Safety, Security & Emergency Management within 48 hours of the arrest, at which time a determination will be made as to whether the approval of that individual will be rescinded from accessing Leon County School Board properties.

2.03.2 **Updated May 13, 2009**– reciprocity if a contractor already is registered with another school district?: **The LCSB has an agreement in place for vendors who have been fingerprinted with other school districts. The company will be required to email the list of individuals that will be on:** [http://www.leonschools.net/newLCShomeFiles/Safety\\_Security/fingerprinting/fingerprinting.html](http://www.leonschools.net/newLCShomeFiles/Safety_Security/fingerprinting/fingerprinting.html) . **Once the individual has been cleared, he/she will need to report to Fingerprint Services to pick up a picture id badge. Contact the office for cost of this process.**

2.03.3 **Updated Sept. 1, 2009** Leon County Schools' Department of Safety and Security would like to announce **new EVENING** fingerprint hours!! In order to accommodate individuals who cannot make our regular daytime hours of 8:00 a.m. - 5:00 p.m. M-F, we would now like to offer **WEDNESDAY EVENINGS from 5:00 p.m. - 9:00 p.m.!!** After hours fingerprinting will be at the new LCS District Monitoring Center (see address below) and will be open to vendors, new hires, volunteers, student interns, or anyone else who needs to be fingerprinted for Leon County Schools. If you have any questions, please feel free to contact the LCS Fingerprint Office at 850-487-7293.

Please note that the Fingerprint Office is NOT moving and the regular daytime hours will continue to be offered at the main location.

District Monitoring Center  
3420 W. Tharpe Street  
Tallahassee, FL  
2nd Floor (Elevator Entrance)  
850-617-5979

## 10.2. SAFETY OF PERSONS AND PROPERTY

**10.2.2.1 ADD the following:** The contractor shall comply with all applicable provisions of the Workmen's Compensation Law, specifically, Chapter 440.56, Safety Rules and Provisions and the various safety codes or regulations adopted by the Florida Department of Commerce and the State of Florida. The Contractor shall be familiar with each of these documents and designate a safety officer to be responsible

for compliance with these safety provisions.

**Hazardous Materials** ADD the following:

**10.3.1.1** : The National Emission Standards For Hazardous Air Pollutants (NESHAPS), 40 CFR Part 61, Subpart M and other guidance materials relating to asbestos regulations and as follows shall be the responsibility of the Contractor.

**10.3.1.2**: Subsections 61.145, 61.146, 61.147, 61.152, 61.154, and 61.156, apply to DEMOLITION AND RENOVATION PROJECTS. In accordance with asbestos regulations, Subpart M, a notification must be sent to the Department of Environmental Regulation before the project starts. A notice must be sent for a DEMOLITION project even if NO asbestos containing material is present in the facility.

**10.3.1.3**: Ten (10) days before the start of an asbestos renovation or demolition project the notification must be postmarked or delivered to:

**Florida** Department of Environmental Protection  
**Attn: Mr. Tracy White**  
**630-3 Capital Circle NE**  
Tallahassee, Florida 32301

The Notice shall include the following information:

1. The name, address and phone number of the facility Owner.
2. The name, address and phone number of the demolition or renovation contractor.
3. A description of the structure being demolished or renovated, including the size, age, and prior use.
4. The approximate amount in square feet or linear feet of friable asbestos material present in the facility.
5. The address or location of the structure (including county) to be demolished or renovated.
6. The scheduled starting and completion dates of the demolition or renovation project.
7. The nature of the planned demolition or renovation project and the methods to be used. (saying the regulations will be acceptable.)
8. The procedure to be used to prevent asbestos emissions to the outside air (see Subsection 61.147).
9. The name and location of the waste disposal site where the friable asbestos waste material will be deposited.

Any questions concerning the asbestos regulations can be addressed to DEP.

**Article 11 - INSURANCE AND BONDS** **-(Revised 6/11/07)**

**CONSTRUCTION LIABILITY INSURANCE:**

**11.1.1** ADD the following:

In the second line following the word "located" insert the words "and in a company or companies to which the Owner has no reasonable objection."

In the third line following the word "contractor" insert the words "and the Owner as additional insured".

**11.1.2** ADD the following:

**11.1.2.1**: The insurance required by subparagraph 11.1.1 shall be written for not less than any limits of liability required by law or by those set forth below, which ever is greater, and shall include contractual liability insurance as applicable to the Contractor's obligations under Paragraph 3.18. All of the following monetary insurance requirements are minimum amounts:



11.1.2.2 ADD the following:

11.1.2.2: Worker's Compensation shall be in compliance with Chapter 440, Florida Statutes.

11.1.2.3: Public Liability: Per occurrence:

- |                           |             |
|---------------------------|-------------|
| (1) Each Accident         | \$1,000,000 |
| (2) Disease-Policy Limit  | \$1,000,000 |
| (3) Disease-Each Employee | \$1,000,000 |

11.1.2.4: Automobile Liability: Per Occurrence:

- |                                |             |
|--------------------------------|-------------|
| (1) Bodily and Personal Injury | \$1,000,000 |
| (2) Property Damage            | \$1,000,000 |

11.1.2.5: The Contractor's liability policy shall provide "XCU" (Explosion, Collapse, Underground Damage) coverage for those classifications in which they are excluded.

INSURANCE CERTIFICATE:

11.1.3 ADD the following:

11.1.3.1: Furnish a certificate herein called for and specifically set forth evidence of all coverage required by 11.1.1 and 11.1.2 and 11.1.3; and the Contractor shall furnish to the Architect copies of any endorsements that are subsequently issued amending coverage or limits.

OWNER'S LIABILITY INSURANCE:

11.2.1 ADD the following:

The Contractor shall procure and furnish an Owner's Protective Liability Insurance Policy (the Owner shall be **named insured**) with the following limits:

- |                            |                               |
|----------------------------|-------------------------------|
| Bodily Injury Liability:   |                               |
|                            | \$1,000,000.00 per occurrence |
| Property Damage Liability: |                               |
|                            | \$1,000,000.00 per occurrence |
| Personal Injury Liability: |                               |
|                            | \$1,000,000.00 per occurrence |

PROPERTY INSURANCE:

11.3.1 ADD the following:

**11.3.1.2** add Subparagraph "**11.3.1.2.1** Contractor shall also carry comprehensive general liability insurance".

**11.3.1.6:** The Contractor shall purchase and maintain property insurance upon the entire Work at the site of the full insurable value thereof. This insurance shall include the interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Work and shall insure against the perils of fire and extended coverage and shall include "**all risk**" insurance for physical loss or damage including, without duplication of coverage, theft, vandalism, and malicious mischief. If not covered under the all risk insurance or otherwise provided in the Contract Documents, the Contractor shall effect and maintain similar property insurance on portions of the Work stored off the site or in transit when such portions of the Work are to be included in an Application for Payment under Subparagraph 9.3.2.

INSURED LOSS:

11.4 PERFORMANCE BOND AND PAYMENT BOND

**11.4.3 ADD the following:** Furnish in duplicate a Performance Bond and Payment Bond, each in the amount of 100% of the Contract Sum, written by a surety licensed to do business in the state, FLORIDA, where the project is located. The prescribed form of the Performance Bond and Payment Bond is A.I.A. Document A-312, latest addition.

Article 13 - Miscellaneous Provisions:

13.5.3 ADD the following:

13.5.1.1: Inspection or testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.

13.5.1.2: Owner to notify Contractor of selected testing company. All tests, except those performed exclusively for the Contractor's convenience, shall be paid by the Owner; however, the Contractor must notify and/or coordinate with the testing firms with proper notification to the Owner. Any retests made necessary by the Contractor's failure to perform to the specs in the specifications, these costs shall be paid by the Contractor.

INTEREST

13.6.1 ADD the following new subparagraph to read as follows:

Notwithstanding the contractor's compliance with the claim or dispute resolution terms of this contract, the contractor shall not be entitled to any interest on payments which may be due and unpaid by the owner; nor shall the contractor be entitled to any prejudgments interest on any damages awarded to the contractor in any civil action or on any arbitration award, even if the owner is found to have breached the contract.

Article 13 ADD the following new paragraph 13.8.1 to read as follows:

Except as provided in Article 3.18.1, the contractor shall not be entitled to recovery of any attorney's fees from the owner, and the owner shall not be liable for payment of attorney's fees to the contractor for any reason whatsoever. The contractor hereby waives any right to recovery of attorney's fees from the owner under the payment or performance bond, or the contract between the owner and the contractor, or any other cause of action (except as provided in Article 3.18.1), notwithstanding any provision in Section 57.105, Florida Statutes to the contrary.

**ADD THE FOLLOWING ARTICLE:**

**ARTICLE 15 – Claims and Disputes**

**15.1.4 CLAIMS FOR ADDITIONAL COST**

**15.1.4.1 ADD the following:** If the Contractor wishes to make a claim for an increase in the Contract Sum, he shall give the Architect written notice thereof within twenty (20) days after the beginning of the occurrence of the event giving rise to such claims. This notice shall be given by the Contractor before proceeding to execute the Work, except in an emergency endangering life or property in which case the Contractor shall proceed in accordance with **Section 10.4**.

No such claim shall be valid unless so made. Any change in the Contract Sum resulting from such a claim shall be authorized by a Change Order. Claims not made within the time allowed shall be waived.

If the Contractor claims that additional cost is involved because of, but limited to, (1) any written

interpretation pursuant to Subparagraph **15.1.4.2** ; (2) any order by the Owner to stop the Work pursuant to **Section 2.3** where the Contractor was not at fault, (3) any written order for a minor change in the Work issued pursuant to **Section 3.4.2 or 7.3** , or (4) failure of payment by the Owner pursuant to **Section 9.7**, the Contractor shall make such claims as provided in Subparagraph **3.7.4**.

**TIME EXTENSIONS:**

**15.1.5.3** ADD the following:

Weather, which hinders or prevents work, is not a basis for a time extension unless it surpasses in severity the weather reasonably to be expected in the locality at the particular time of the year. If the contractor files timely notice that he was delayed by weather sufficiently severe as to entitle Contractor to additional time, Contractor should furnish promptly, a statement of the portion of the work affected, an explanation as to the reasons work was prevented or hindered by the weather if not readily apparent, the dates on which such portions of work were affected, the total number of days the job in its entirety was delayed, and other information such as official weather bureau climatological data for a ten year period, local weather bureau data, job daily records, etc. Time extensions due to adverse weather shall not be allowed after the Contract Substantial Completion date. Construction time is based on Local Average weather conditions. Requests for time extensions due to adverse weather, shall be considered only for and equal to the number of "rain days" in excess of the ten year mean average number of days for any given time period as shown on the U.S. Department of Commerce (closest location to the project location). The mean number of "rain days" for a month is as shown on the "U.S. Department of Commerce's Summary Report" under the heading "Number of days -- Precipitation .01 inch or more". If current rainfall is less than average, contract time will not be shortened.

**15.1.5.4** ADD the following:

Extension of time requests due to adverse weather shall be submitted within twenty (20) days after adverse weather. The Contractor shall submit the referenced climatological summary data immediately upon its availability and shall show how the time extension request corresponds with the climatological data.

**LOSS SETTLEMENT:**

**15.3.1** ADD the following: Delete in the 3rd through 6th lines the words, . . . , "if such objection be made, **mediators** shall be chosen as provided in **Section 15.3.2** The Owner as fiduciary shall, in that case, make settlement with insurers in accordance with directions of such **mediators**. If distribution of insurance proceeds by **mediation** is required, the **mediators** will direct such distribution".

**ARBITRATION:**

**15.4** is deleted in its entirety.

**CLAIMS FOR CONSEQUENTIAL DAMAGES:**

**15.1.6.1** ADD the following : The Contractor agrees to make no claim for damages for delay in the performance of the contract occasioned by any act or omission of the Owner or any of its agents or representatives, or because of any injunction which may be brought against the Owner and agrees that any such claim shall be fully compensated for by an extension of time to complete performance of the Work as provided herein.

**15.1.6** add Subparagraph "**15.1.6.1** Claims for damages arising from Products and Completed Operations Liability".

**ADD THE FOLLOWING ARTICLE:**

**Article 16 - Equal Employment Opportunity:**

**16.1** CONTRACTOR'S EMPLOYMENT POLICY

**16.1.1** The Contractor and all subcontractors shall not discriminate against any employee or applicant for

employment because of race, religion, color, sex, national origin or age. The Contractor shall take affirmative actions to insure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, sex national origin or age. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertisement; 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 setting forth the policies of non-discrimination.

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

END OF SECTION K Supplementary General Conditions

SECTION L

INSURANCE CERTIFICATIONS – Revised 6/11/07

GENERAL:

CONTRACTORS INSURANCE CERTIFICATIONS:

Certifications are required for compliance with Supplementary General Conditions for Contractor's Liability, and they shall include the following information:

Insurance Certificates documenting the requirements of the Supplementary General Conditions shall be dated, addressed to the Owner, and shall contain the name of the insured Contractor, the specific job by name and the name of the insurer.

All contractors shall maintain Contractor's Public Liability which shall include comprehensive general liability, contractual liability, and products and completed operations liability. (The board is to be the named insured under this coverage). A minimum of \$1,000,000.00 per occurrence up to the limits of contractor's coverage in force, whichever is greater:

- (1) Bodily Injury limits of liability shall be at least \$1,000,000.00 per occurrence. Higher limits may be required.
- (2) Property Damage limits of liability shall be at least \$1,000,000.00 per occurrence. Higher limits may be required.
- (3) Personal Injury liability limits shall be specified in amounts of at least \$1,000,000.00 per occurrence. Higher limits may be required. Separate coverage from Bodily Injury shall be required.
- (4) The Contractor's liability policy shall provide "XCU" (Explosion, Collapse, Underground Damage) coverage for those classifications in which they are excluded.
- (5) The School Board of Leon County, Florida shall be named as an additional insured on the contractor's policy.
- (6) Indemnification Rider: The Contractor's Liability Policy should include Contractual Liability Coverage designed to protect the Contractor for contractual liabilities assumed by the Contractor in the performance of this Contract.

All Contractor's shall provide commercial Automobile Liability insurance coverage to include owned, non owned, and hired autos with limits of at least:

- |                      |                               |
|----------------------|-------------------------------|
| (1) Bodily Injury:   | \$1,000,000.00 per occurrence |
| (2) Property Damage: | \$1,000,000.00 per occurrence |

OWNER'S PROTECTIVE LIABILITY INSURANCE:

The Contractor shall procure and furnish an Owner's Protective Liability Insurance Policy (the Owner shall be named as insured). A Minimum of \$1,000,000.00 per occurrence up to the limits of contractor's coverage in force, whichever is greater:

- |                            |                                       |
|----------------------------|---------------------------------------|
| Bodily Injury Liability:   | \$1,000,000.00 minimum/per occurrence |
| Property Damage Liability: | \$1,000,000.00 minimum/per occurrence |
| Personal Injury Liability: | \$1,000,000.00 minimum/per occurrence |

PROPERTY INSURANCE:

The Contractor shall purchase and maintain property insurance upon the entire Work at the site of the full insurable **replacement** value thereof. This insurance shall include the interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Work and shall insure against the perils of fire and extended coverage and shall include "**all risk**" insurance for physical loss or damage including, without duplication of coverage, theft, vandalism, and malicious mischief. If not covered under the all risk insurance or otherwise provided in the Contract Documents, the Contractor shall effect and maintain similar property insurance on portions of the Work stored off the site or in transit when such portions of the Work are to be included in an Application for Payment under Subparagraph 9.3.2. Certificates evidencing that all or the above insurance is in force shall be furnished to the board before commencement of any work.

Furnish a certificate and specifically set forth evidence of all coverage required by 11.1.1 and 11.1.2 and 11.1.3; and the Contractor shall furnish to the Architect copies of any endorsements that are subsequently issued amending coverage or limits.

All insurance Certificates are to provide the following information:

- a) A statement of the maximum amount of insurance against injuries, including death resulting from accident to one person, the maximum for each accident against injuries, including death resulting from accident to two or more persons; and,
- b) A statement of the maximum amount of insurance against damage to property of other resulting from any one accident; and,
- c) A statement that should any of the described policies be cancelled before the expiration date, the School Board of Leon County, Florida shall be notified at least thirty (30) days prior to the cancellation of policies by return-receipt, certified mail and that no other form of notification will otherwise relieve the insurance company, its agents, or its representatives of responsibility; and,
- d) A statement that the Worker's Compensation shall be in compliance with Chapter 440, Florida Statutes.
- e) Signature in the name of the insurer by its authorized resident agent, their address, phone number, and email.
- f) Certificates shall be on either an ACORD Form or the Form provided on the following pages.

**CERTIFICATE OF INSURANCE**      Date: \_\_\_\_\_

This Certificate is issued at the request of:  
**THE SCHOOL BOARD OF LEON COUNTY, FLORIDA**  
 Division of Facilities/Department of Construction

The following insurance policies of this company have been issued to:

**INSURED:**

on the construction job designated below:

<b>Name</b>	<b>Location</b>	<b>Project No.</b>
-------------	-----------------	--------------------

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Effective/	Insurance In Force	Minimum Limits in Thousands	Limits in Force in Thousands	Carrier	Name of Insurance Expiration Dates
Worker's Compensation and Employer Liability in compliance with Chapter 440, Florida Statutes Policy No. _____	STATUTORY				
Contractor's Comprehensive General Liability and Property Damage Including Contractual Liability, Products and Completed Operations Liability and Personal Injury Policy No. _____					
1.	Bodily Injury Liability		1000 per occurrence		
2.	Personal Injury		1000 per occurrence		
3.	Property Damage Liability		1000 per occurrence		
Automobile Liability Policy No. _____					
1.	Bodily Injury Liability		1000 per occurrence		
2.	Property Damage Liability		1000 per occurrence		
Owner's and Contractor's Protective Liability Insurance Policy No. _____					
1.	Bodily Injury Liability		1000 per occurrence		
2.	Property Damage Liability		1000 per occurrence		
Builder's Risk			Contract Amount		

**Note:** All blanks on this form must be completely filled in. If the same policy number is indicated for the "Contractor's Comprehensive General Liability and Property Damage Policy" and the "Owner's and Contractor's Protective Liability Policy," then the School Board of Leon County, Florida must be added as an additional named insured on that policy. Indicate that the School Board of Leon County, Florida is a **primary** additional named insured on that policy by checking YES\_\_\_\_\_ here.

OTHER REQUIRED COVERAGES:

1. "XCU (EXPLOSION, COLLAPSE, UNDERGROUND DAMAGE): The Contractor's Liability Policy shall provide "XCU" coverage for those classifications in which they are applicable.
2. CONTRACTUAL LIABILITY-WORK CONTRACTS: The Contractor's Liability Policy should include Contractual Liability Coverage designed to protect the Contractor for contractual liabilities assumed by the Contractor in the performance of this Contract.
3. INDEMNIFICATION RIDER: The Contractor's Liability Policy provides a "Hold Harmless" rider to cover the provisions of Article 3.18 of the referenced A.I.A. General Conditions and is so noted on the Contractor's Certificate of Insurance.
4. BROAD FORM PROPERTY DAMAGE COVERAGE & COMPLETED OPERATIONS: The Contractor's Liability Coverage shall include Broad Form Property Damage Coverage and Completed Operations.
5. BUILDER'S RISK COVERAGE: The Contractor shall secure and maintain during the life of this contract a "Builder's Risk Policy," All Risk Form and issued on a completed valued basis. Installation Floaters and other inland Marine Forms may be utilized where applicable and are in the best interest of the State of Florida.  
 Policy No. \_\_\_\_\_  
 Effective Date \_\_\_\_\_  
 Expiration Date \_\_\_\_\_
6. BINDERS: When binders are issued as interim coverage, it shall be the sole responsibility of the insured to renew such binders as deemed necessary until such a time that the appropriate policy/policies are issued and copies of said policies delivered to the School Board of Leon County, Florida, Division of Facilities/Department of Construction, 3420 West Tharpe Street, Suite 100 Tallahassee, Florida 32303.
7. It is hereby certified that the above listed required policies and other required coverage are in force and that the above listed policies protect the Owner and Contractor performing work under the contract for the construction job designated above, against all claims for damages for **bodily injury and** personal injury, including death, resulting from accidents and for damage to property, which may arise from operations under the contract whether such operations be by the Contractor or anyone directly employed by him in connection with the performance of the contract, but only to those limits of liability specified in pages one (1) and two (2) of this certificate.

In addition, it is also hereby certified that the designated insurer will give notice by return-receipt, certified mail to the School Board of Leon County, Florida, Division of Facilities, Department of Construction at least thirty (30) days prior to any material change in the provisions of or the cancellation of the above listed policies of insurance, and that no other form of notification will otherwise relieve the insurance company, its agents, or its representatives of responsibility.

**INSURER: FLORIDA AUTHORIZED LICENSED RESIDENT AGENT**

**BY:** \_\_\_\_\_ **Social Security No.** \_\_\_\_\_

**Address:** \_\_\_\_\_ **Area Code** \_\_\_\_\_ **Phone** \_\_\_\_\_

END OF SECTION L



## SECTION M

### CONTRACT DOCUMENTS

#### COMPONENT PARTS:

The Contract Documents shall consist of the following component parts.

#### Bidding requirements:

- Advertisement to Bid.
- Instructions to Bidders.
- Contractor's Bid as accepted by the Owner.
- Bid Bond.

#### Contract Forms:

- Acceptable Surety Companies.
- Payment Bond.
- Performance Bond.
- Contract Agreement.
- Addenda.
- Amendments to Contract Agreements.

#### General Conditions:

- General Conditions.
- Supplementary General Conditions.
- Insurance Certificates.

Technical Specifications: Titled: Gilchrist Classroom Addition, Project Manual, Phase III Submittal

Construction Drawings: Titled: Gilchrist Classroom Addition, Leon County Schools

#### INTENT:

The Contract Documents shall be complementary to each other and what is called for by one shall be as binding as if called for by all.

The Specifications are divided into headings for the convenience of the Contractor. The Contractor, however, shall be held to the furnishing of a complete building, facility, etc., according to the meaning and intent of the Contract Documents, whether all of the items involved under any trade are mentioned in one or several places or can be reasonably inferred.

#### PRECEDENCE:

In the event that any provisions of the component parts of the Contract Documents conflicts with any provision of any other component part, the provisions of the Contract Agreement shall govern; the Supplementary General Conditions shall take precedence over the General Conditions.

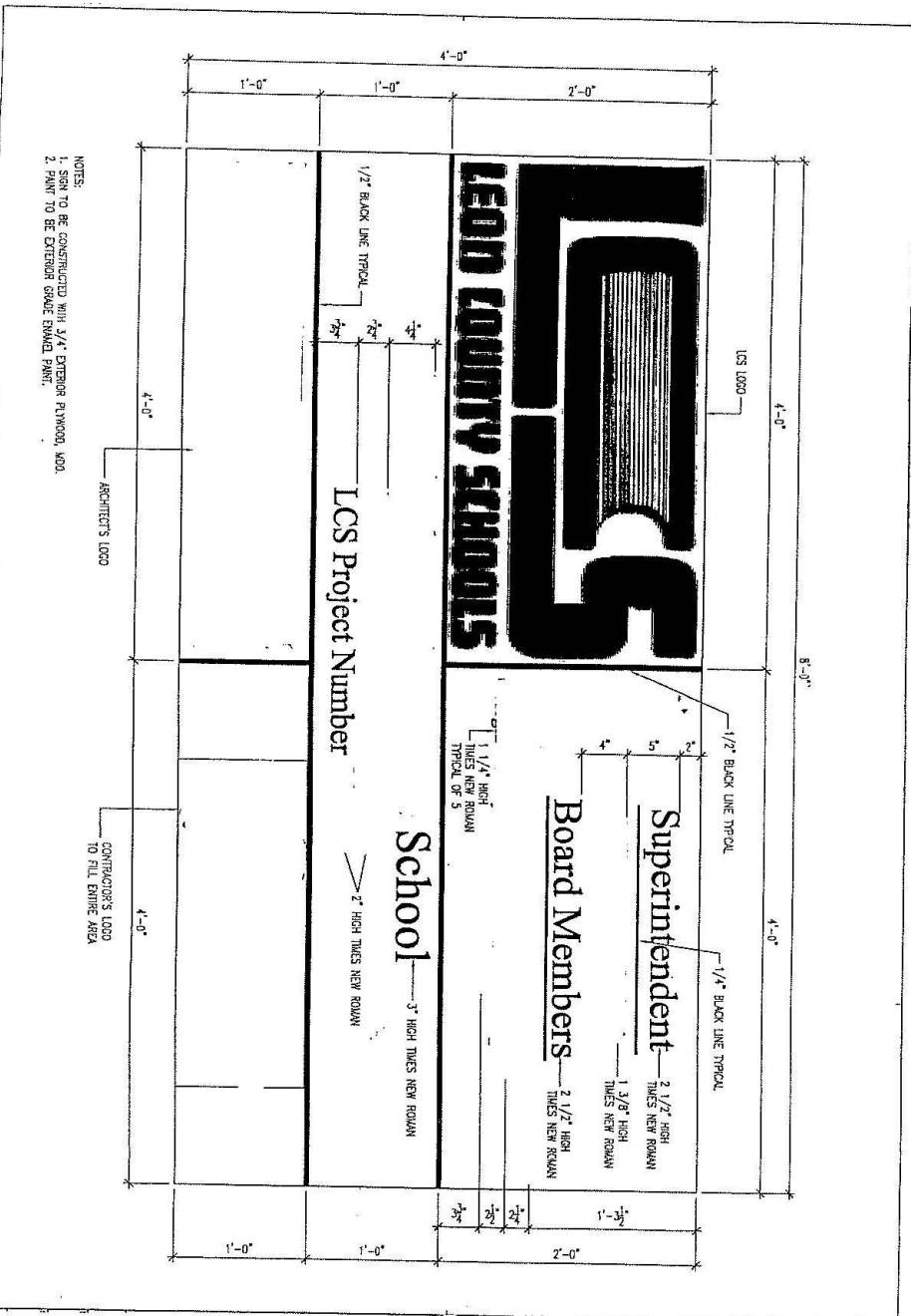
Should the Drawings and Specifications conflict on any point the work shall be done according to the Specification; should the details and schedules shown on the Drawings conflict on any point, the details and schedules shall prevail over the small scale plans and elevations. Should the Structural and Architectural Drawings conflict, the work shall be done in accordance with the Structural Drawings.

Copies of forms of the American Institute of Architects are on file in the office of the Architect and may be examined on request.

END OF SECTION M

**Section N: SMALL BUSINESS DEVELOPMENT PROGRAM (Omitted December 4, 2008) For information go to the Leon County School Board Website at [www.leonschools.net](http://www.leonschools.net)**

**SECTION O: PROJECT SIGN**



INSERT THE FOLLOWING INFORMATION INTO APPROPRIATE AREAS ON SIGN:

- (1) Superintendent:  
Jackie Pons, Supr
- (2) Chairperson:  
Georgia "Joy" Bowen
- (3) Vice Chairperson:  
Maggie B. Lewis-Butler
- (4) Board Members:  
Dee Crumpler  
DeeDee Rasmussen  
Forrest Van Camp
- (5) School Name
- (6) Type of Construction  
(i.e. Renovation, remodeling; or addition)
- (7) LCSB Project Number
- (8) Prime Consultant's logo & information
- (9) Prime GC or CM logo & information
- (10) Paint colors -  
Check with both LCSB and Prime Consultant

**SECTION P**

**LIST OF SUBCONTRACTORS AND SUPPLIERS**

NOTE: To be executed within 24 hours of Bid Opening by apparent low bidder or if requested by Owner. If, due to Alternate Bids, more than one subcontractor or supplier must be considered, Contractor shall list each and state which is to be considered for Base Bid work and which is to be considered if a specific alternate is to be accepted.

All Subcontractors and suppliers are subject to approval by the Owner. The following are the subcontractors and suppliers proposed to be used if the undersigned is awarded the contract for: the General Construction of \_\_\_\_\_ School, Leon County, Florida.

TYPE OF WORK	CORPORATE NAME AND ADDRESS	PRINCIPAL OR OFFICER'S NAME
LANDSCAPE WORK	_____	_____
CONCRETE WALKS	_____	_____
CONCRETE WORK	_____	_____
UNIT MASONRY	_____	_____
MISCELLANEOUS METALS	_____	_____
HANDRAILS AND RAILINGS	_____	_____
LAMINATE CLAD CASEWORK	_____	_____
BITUMINOUS DAMPPROOFING	_____	_____
INSULATION	_____	_____
JOINT SEALERS	_____	_____
STEEL DOORS AND FRAMES	_____	_____
WOOD DOORS	_____	_____
FINISH HARDWARE	_____	_____
GYPSUM DRYWALL	_____	_____
ACOUSTICAL CEILINGS	_____	_____
CARPETING	_____	_____
PAINTING	_____	_____
PIPE AND PIPE FITTING	_____	_____
HANGERS AND SUPPORTS	_____	_____
EQUIPMENT SUPPORTS,		

## SECTION 01010 - SUMMARY OF WORK

### PART 1 - GENERAL:

#### 1. WORK COVERED BY CONTRACT DOCUMENTS

- A. The work of this Contract comprises the construction of a new eight classroom addition at Gilchrist Elementary school. The work includes concrete, masonry walls, light gauge roof trusses, metal roof deck, architectural woodwork, waterproofing, doors and frames, aluminum windows, glazing, acoustical ceilings, carpeting, hardware, interior finishes and furnishings, all mechanical ventilation systems, plumbing and all electrical work, including power, lighting, fire alarm system, and data/communications.
- B. Work to be performed shall be in accordance with drawings and specifications prepared by MLD Architects, Inc.
- C. The Contractor shall lay out the work with appropriately qualified personnel from the information shown on the drawings.

#### 2. RELATED REQUIREMENTS

- A. I. Bidding Conditions
- B. II. Contractual Conditions

#### 3. CONTRACT WORK

The Gilchrist Classroom Addition Construction base bid shall generally include, but not be limited to the following work: Construction of a new eight classroom addition at Gilchrist Elementary school. The work includes concrete, masonry walls, light gauge roof trusses, metal roof deck, architectural woodwork, waterproofing, doors and frames, aluminum windows, glazing, acoustical ceilings, carpeting, hardware, interior finishes and furnishings, all mechanical ventilation systems, plumbing and all electrical work, including power, lighting, fire alarm system, and data/communications.

#### 4. CONTRACT TIME

All work for the building and site work shall be substantially complete within **(time frame to be determined)** calendar days from the date of the Notice-to-Proceed.

#### 5. WORK BY OTHERS

- A. Work on the project which will be executed prior to the start of work on this contract,

and which is excluded from this contract, as follows:

1. None identified at this time.

6. CONTRACTOR'S USE OF PREMISES

- A. Coordinate use of premises under direction of Architect/Engineer. Locate construction staging area as shown on the site plan.
- B. Assume full responsibility for the protection and safekeeping of Products under this Contract, stored on site.
- C. Move any stored Products, under Contractor's control, which interfere with operation of the Owner or any separate Contractor.
- D. Protect all existing site vegetation and improvements not specifically noted to be demolished.

7. OWNER OCCUPANCY

- A. Contractor shall at all times conduct his operations as to insure the safety of and least inconvenience to the students and staff of the school.
- B. Owner may take beneficial occupancy of any portion of the new building so agreed and arranged between Owner, Contractor and Architect/Engineer.

8. OWNER - FURNISHED EQUIPMENT PRODUCTS

Owner furnished equipment or products are planned for installation as a part of this contract and shall be provided to the Contractor upon 60 days written notice. Owner furnished items are as indicated on the drawings.

9. RIGHT OF ACCESS

The Contractor agrees that representatives of the Owner and Architect/Engineer will have access to the work wherever it is in preparation or progress and that the Contractor will provide facilities for such access.

10. SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION

The Contractor shall be solely responsible for all applicable obligations prescribed as employer obligations under any and all governmental regulations.

11. PROTECTION OF EXISTING GROUNDS

- A. Turfs, irrigation systems, shrubbery, etc. shall be protected from any and all damage by construction vehicles or work activities. The Contractor shall be responsible for restoring same to equal or better conditions.
- B. Trees are a valuable natural resource and shall be protected to at least their drip lines with wood fencing acceptable to the Architect/Engineer. Construction vehicles and activities shall in no case, except as specifically shown on the Contract Documents, violate the drip lines of existing trees.
- C. The Contractor's fenced staging and construction areas may or may not include existing trees and shrubs; these shall receive protection. The entire staging and construction area shall be re-sodded as required.
- D. In an effort to document existing grounds conditions, the Contractor shall provide a VHS video tape prior to his commencing any on site Construction Activities. Such video tape shall be delivered to the Architect/Engineer for review with the Owner at the project completion in order to evaluate and direct the Contractor as to restoration required.
- E. Coordinate with Section 01760.

12. GROWTH MANAGEMENT REQUIREMENTS - ENVIRONMENTAL

- A. The Contractor shall comply with all requirements of the City of Tallahassee or Leon County Environmental Management Ordinance, as specifically set forth in the Owner's Environmental Management Permit.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION 01010

## **SECTION 01027 - APPLICATION FOR PAYMENT**

### **PART 1 - GENERAL:**

#### 1. REQUIREMENTS INCLUDED

Procedures for preparation and submittal of Application for Payment.

#### 2. RELATED REQUIREMENTS

A. I. Bidding Conditions

B. II. Contractual Conditions

C. Section 01340 - Submittals: Submission Requirements

D. Section 01370 - Schedule of Values

E. Section 01700 - Contract Closeout: Final Application for Payment

#### 3. FORMAT

Application for Payment Form - AIA Standard G702.

#### 4. PREPARATION OF APPLICATIONS

A. Submit applications for payment to Architect in accordance with the schedule established by conditions of the Contract and agreement between Owner and Contractor.

1. Type required information, or use media-driven printout.

2. Execute certification by signature of authorized officer.

B. Submit Schedule of Values for review and acceptance by the Architect/Engineer and Owner per Section 01370. Schedule of Values shall be broken down for each Work item and shall indicated both materials and labor.

C. Use data on accepted Schedule of Values. Provide dollar value in each column for each line item for portion of Work performed.



- D. Initial progress payment shall not be made until Contractor has established a Contractor's site office, with telephone service, and a temporary field office for the Project Representative.
- E. Prepare Application for Final Payment as specified in Section 01700.
- F. Submit Application for Payment in rough format (percentages complete) for Owner and Architect/Engineer review five (5) days prior to submittal of Application.

5. SUBMITTAL PROCEDURES

- A. Submit seven (7) copies of each Application for payment at times stipulated.
- B. Contractor shall submit to Architect/Engineer not later than the first working day of each month an application for payment completed and signed by the Contractor.

6. SUBSTANTIATING DATA

- A. When Architect/Engineer requires substantiating information, submit data justifying line item amounts in question.
- B. Submit suitable information for each copy of application with a cover letter identifying:
  - 1. Project
  - 2. Application number and date
  - 3. Detailed list of enclosures
- C. Submit one copy of data and cover letter for each copy of application.
- D. Submit with each copy of application continuation sheet providing the following:
  - 1. Fill in total list of all schedule component items of work, with item number and scheduled dollar values for each item.
  - 2. Fill in dollar value in each column for each schedule line item when work has been performed or materials stored.
  - 3. list each change order executed prior to date of submission, at the end of the continuation sheets.
- E. Submit data and applicable insurance as required by Owner to establish Owner's title to material and equipment suitably stored at the site.

1. The Contractor shall be responsible for all expenses of the Architect/Engineer to verify the quantity of stored materials off of the site.

PART 2 - PRODUCTS:

Not used.

PART 3 - EXECUTION:

Not used.

END OF SECTION 01027.

## **SECTION 01030 - ALTERNATES**

### **PART 1 - GENERAL:**

#### **1A DESCRIPTION OF REQUIREMENTS**

"Alternates" are defined as alternate products, materials, equipment, systems, methods, units of work or major elements of the construction which may, at Owner's option and under terms established by Instructions to Bidder, the Contract or Agreement, be selected for the work in lieu of corresponding requirements of Contract Documents. Selection may occur prior to Contract Date or may, be deferred for possible selection at a subsequent date. Alternates may or may not change scope and general character of the work substantially. Requirements of this section may be related to but must not be confused with requirements of contract documents related to "allowances", " unit prices", "change orders", "substitutions" and similar provisions.

Refer to the Contract or "Owner-Contractor Agreement" and subsequent modifications thereof (if any) for determination of which of several scheduled "alternates" herein have been accepted and therefore are in full force and effect as though included originally in the contract documents for the base bid.

Immediately following the award of Contract, prepare and distribute to each entity to be involved in performance of the work, a notification of the status of each alternate scheduled herein. Indicate which alternates have been: 1) Accepted, 2) Rejected, and 3) Deferred for consideration at a later date as indicated. Include full description of negotiated modifications to alternates, if any.

#### **1B GENERAL ALTERNATE REQUIREMENTS**

The description herein for each alternate is recognized to be incomplete and abbreviated but implies that each change must be complete for the scope of work affected. Refer to applicable specification section (Division 2 through 16) and to applicable drawings for specific requirements of the work. coordinate related work and modify surrounding work as required to properly integrate with the work of each alternate. It is recognized that descriptions of alternates are primarily scope definitions and do not necessarily detail full range of materials and processes needed to complete the work as required.

### **PART 2 - PRODUCTS:**

Not used.

### **PART 3 - EXECUTION:**

Not used.

END OF SECTION 01030.

## **SECTION 01040 - COORDINATION**

### **PART 1 - GENERAL:**

#### 1. WORK INCLUDED

- A. Contractor shall supervise and direct the work competently and efficiently, devoting such attention thereto and applying such skills as may be necessary to perform the work in accordance with the Contract Documents.
- B. Contractor shall be solely responsible for all means, methods, techniques, sequences and procedures of construction, and for providing adequate safety precautions and coordinating all portions of the work under the Contract Documents.
- C. Contractor shall be responsible to see that the finished work complies accurately with the Contract Documents.
- D. Contractor shall be responsible for all project coordination.

#### 2. RELATED REQUIREMENTS

- A. Section 01010 - Summary of Work
- B. I. Bidding Conditions
- C. II. Contractual Requirements
- D. Section 01200 - Project Meetings
- E. Section 01410 - Special Testing/Inspection Requirements
- F. Section 01700 - Contract Closeout

#### 3. DESCRIPTION

- A. Coordinate scheduling, submittals, and work of the various sections of specifications to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items to be installed later.
  - 1. Maintain reports and records at job site:
    - a. Daily log of progress of work and other pertinent data. Maintain log accessible to Owner, Architect/Engineer and his representative.
    - b. Assemble documentation for handling of any claims or disputes which may arise.
  - 2. Inspections and Testing:
    - a. Inspect the work to assure that it is performed in accordance with the requirements of the Contract Documents.

- b. Arrange with the Architect/Engineer and/or owner as applicable for special inspections or testing required by Section 01410 or other specification sections.
  - c. Reject work which does not conform to requirements of the Contract Documents.
- B. Coordinate sequence of work to insure proposed completion dates are met.
- 1. Construction Schedule:
    - a. Prepare detailed schedule of Contractor's operations and for all subcontractors on the project.
    - b. Monitor schedules as work progresses.
      - 1. Identify potential variances between scheduled and probable completion date.
      - 2. Recommend to Architect/Engineer any adjustments in schedule to meet required completion date.
      - 3. Provide monthly summary reports of each monitoring.
    - c. Observe work to monitor compliance with schedule.
      - 1. Verify that labor and equipment are adequate to meet and maintain the schedule for the work.
      - 2. Verify that product deliveries are adequate to meet and maintain the schedule for the work.
      - 3. Report any non-compliance to Architect/Engineer, with recommendations for remedy.
      - 4. Verify that adequate services are provided to comply with requirements for work and climatic conditions.
      - 5. Verify proper maintenance and operation of temporary facilities.
      - 6. Administer traffic and parking controls for construction workers. Construction traffic shall not interfere with surrounding traffic movement.

2. Coordination of Subcontractors:
  - a. Coordinate work of all subcontractors and relationship between them.
  - b. Establish on-site lines of authority and communication. Schedule and conduct progress meetings among Owner and Architect/Engineer representatives and subcontractors.
  - c. Ensure that specified cleaning is done during progress of the work and at completion of contract.

#### 4. MEETINGS

In addition to progress meeting specified in Section 01200, hold coordination meetings and pre-installation conferences with personnel and subcontractors to assure coordination of work.

#### 5. COORDINATION OF SUBMITTALS

- A. Schedule and coordinate submittals specified in Section 01340.

Administer processing of shop drawings, product data, and samples.

- B. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

1. Coordinate Testing Laboratory Services:

- a. Notify laboratory of test schedule.
- b. Verify that required personnel are present.
- c. Verify that specified tests are made as scheduled.
- d. Verify compliance of the test results with specified criteria. Determine need for retesting and submit recommendations to Architect/Engineer. Administer and pay for required retesting.

2. Coordinate with Sub-contractors as required:

- a. Provide temporary utilities (electric, water) required by the Subcontractors in the performance of their work.
- b. Provide designated location where the Subcontractors may place

construction debris for removal by the Contractor.

- C. Coordinate requests for changes to assure compatibility of space, of operating elements, and effect on work of other sections.
  - 1. Recommend necessary of desirable changes to Architect/Engineer.
  - 2. Review subcontractor's requests for changes and substitutions. Submit recommendations to Architect/Engineer.
  - 3. Process Change Orders in accord with General Conditions and Change Order Procedures.

## 6. COORDINATION OF SPACE

- A. Coordinate use of Project space and sequence of installation of subcontractor work which is indicated diagrammatically on Drawings. Follow routings shown for pipes, ducts, and conduits as closely as practicable, with due allowance for available physical space; make runs parallel with lines of building. Utilize space efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- B. In finished areas, except as otherwise shown, conceal pipes, ducts, and wiring in the construction. Coordinate locations of fixtures and outlets with finish elements.

## 7. INTERPRETATION OF CONTRACT DOCUMENTS

- A. Consult with Architect/Engineer to obtain interpretation or clarifications for any portions of the contract documents which are unclear or ambiguous. Transmit all requests for interpretation in writing.
- B. Assist in the answering of any questions which may arise.
- C. Transmit written interpretations to Sub Contractors, Suppliers and Others who's work may be affected by the clarification.
- D. Interpretations shall be based on the Architect/Engineers review of the Contract Documents. In case of conflicting data, assumption shall be made that the item of greater quality, cost of quantity was bid.

## 8. START-UP

- A. Direct the check-out of utilities, operational systems, and equipment.
- B. Assist in initial start-up and testing.

- C. Record dates of the start of the operations of systems and equipment.
- D. Submit to Architect/Engineer written notice of the beginning of warranty period for equipment put into service.

9. COORDINATION OF CONTRACT CLOSEOUT

A. Substantial Completion:

- 1. Coordinate completion and cleanup of work of separate sections in preparation for Substantial Completion.
- 2. Upon determination of Substantial Completion of work or portion thereof, prepare for the Architect/Engineer a list of incomplete or unsatisfactory items.

B. Final Completion:

- 1. Upon determination that work is at final completion:
  - a. Submit written notice to Architect/Engineer that the work is ready for final inspection.
  - b. Secure and transmit to Architect/Engineer required closeout submittals.
- 2. Turn over to Architect/Engineer.
  - a. Operations and maintenance data.
  - b. Spare parts and maintenance materials.
  - c. Warranties and other data as required for these specifications.
  - d. Owner file copies of all submittals, changes, etc.

C. After Owner occupancy of premises, coordinate access to site by various sections for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

D. Assemble and coordinate closeout submittals specified.



PART 2 - PRODUCTS:

Not used.

PART 3 - EXECUTION:

Not used.

END OF SECTION 01040.

## **SECTION 01042 - COORDINATION DRAWINGS**

### **PART 1 - GENERAL:**

#### **THE WORK OF THIS CONTRACT COMPRISES:**

1. General:
  - A. Furnish all labor, materials, tools, equipment and services for all Coordination Drawings in accord with provisions of Contract Documents.
  - B. Completely coordinate with work of all other trades.
  - C. Although all such work may not be specifically indicated, furnish and install all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a complete installation.
  - D. See Division 1 for General Requirements.
2. Coordination Drawings: Overlay drawings showing all mechanical, electrical, plumbing, etc. work in and above ceilings, exposed and in mechanical, electrical and related equipment rooms with horizontal and vertical dimensions, to avoid interference with structural framing, ceilings, partitions and other services. Provide plans at 1/4" scale; provide sections/elevations at 1" scale' provide enlarged plans at 1" scale.
3. Prior to start of work in any given area, each subcontractor shall approved, in writing, all coordination drawings affecting his work in that area. Drawings shall have such approval and date of same affixed to each sheet in an approval area. Distribute copies of approved coordination to all parties.
4. Any relocations required as a result of failure to resolve interferences, provide correct Coordination Drawings, or call attention to changes require in other work shall be paid for by responsible Subcontractor.
5. Coordination meetings shall be scheduled by General Contractor. All affected subcontractors are required to attend. Since this is a Contractor meeting, should he so desire the presence of the Architect/Engineer (any or all) the costs shall be billed at their standard hourly rates plus expenses to the Contractor.

### **1A - PRODUCTION OF COORDINATION DRAWINGS**

1. General Contractor shall provide background drawings, showing partitions, ceiling heights, and structural framing locations and elevations, and existing obstructions.

2. Resolve major interferences at initial coordination meeting prior to production of any drawings.
3. General Contractor shall arrange for a competent draft person to produce all initial coordination drawings within 30 days after initial meeting. General Contractor shall arrange for production of said drawings during that time.
4. Contractors shall meet as required to resolve interferences and correct coordination drawings during their preparation. Submit written requests for information to Architect to clarify any and all conflicts.
5. Mechanical contractors and electrical contractors shall provide necessary input for the preparation of these coordination drawings.
6. No cost increase to the Owner for any changes due to coordination will be considered.
7. The Architectural and Structural Contract Documents may not be reproduced for such uses. However, the Contractor may, at his expense, purchase a set of reproducible Contract Documents to assist in the production of the Coordination Drawings.

#### 1B - AFTER APPROVAL

1. After Subcontractors' written approval of coordination drawings, the method used to resolve interferences not previously identified shall be determined by the General Contractor.
2. All changes to approved coordination drawings shall be approved in writing by the General Contractor prior to the start of work in affected areas.
3. No cost increase to the Owner for any changes due to coordination will be considered.

#### 1C - PRECEDENCE OF SERVICES

1. In the event of conflicts involving location and layout of the work following priority will be used to resolve disputes. Structure has the highest priority:
  - A. Structure/Architecture.
  - B. Ceiling grid/tile/light fixtures.

- C. Gravity drainage/vent lines.
- D. Ductwork.
- E. Chilled and hot water piping.
- F. Electrical cable tray.
- G. Small piping and tubing/electrical conduit.
- H. Fire protection system.
- I. Access panels.

1D - SUBMITTALS (SECTION 01340)

1. Project Data:

- A. Six sets of prints and one set reproducibles of approved drawings, for information only, to Architect/Engineer prior to start of work. An additional two sets of prints are to be provided to the Owner.

2. Project Closeout:

Provide corrected as-builts of Coordination Drawings in same quantities as above as part of project close-out documents. Architect/Engineer to receive six sets of prints; Owner to receive reproducibles and two sets of prints.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION 01042.

## **SECTION 01045 - CUTTING AND PATCHING Revised Aug. 26, 2005**

### **PART 1 - GENERAL:**

#### **1A DESCRIPTION OF WORK**

1. "Cutting-and-Patching" is hereby defined to include, but is not necessarily limited to, the cutting and patching of nominally completed and previously existing work in order to accommodate the coordination of work or the installation of other work or to uncover other work for access or inspection.

Restoring or removing and replacing non-complying work is specified separately from cutting-and-patching, but may require cutting-and-patching operations as specified herein.

2. Refer to other sections of these Specifications for specific cutting-and-patching requirements and limitations applicable to individual units of work.

Refer to Division 15 and Division 16 Sections, for additional requirements and limitations on cutting-and-patching of mechanical and electrical work, respectively. The requirements of this section apply to mechanical and electrical work, unless otherwise indicated.

#### **1B QUALITY ASSURANCE**

##### **Requirements for Structural Work:**

Do not cut-and-patch structural work in a manner resulting in a reduction of load-carrying capacity of load/deflection ratio.

Prior to cutting-and-patching the following categories of work, obtain Architect's/Engineer's written direction to proceed with cutting-and-patching as proposed in submittal by Contractor:

Structural steel.

Bearing walls.

Miscellaneous structural metals, including lintels, equipment supports, stair systems and similar categories of work.

#### Operational and Safety Limitations:

1. Do not cut-and-patch operational elements and safety related components in a manner resulting in a reduction of capacities to perform in the manner intended, including energy performances, or resulting in decreased operational life, increased maintenance, or decreased safety.
2. Prior to cutting-and-patching the following categories of work and similar categories where directed, obtain Architect's/Engineer's written direction to proceed with cutting-and-patching as proposed in submittal by Contractor:

Primary operational systems and equipment Control, communication, conveying, and electrical wiring system.

#### Visual Requirements:

1. Do not cut and patch work which is exposed on exterior (or exposed in occupied spaces of the building) in a manner resulting in a reduction of visual qualities or resulting in substantial evidence of cut-and-patch work both as judged solely by Architect. Remove and replace work judged by Architect/Engineer to be cut-and-patched in a visually unsatisfactory manner.
2. Engage recognized expert entities to perform cutting-and-patching of exposed work including, but not limited to:

Roofing  
Plaster  
Stucco  
Gypsum drywall  
Acoustic ceilings

#### 1C SUBMITTALS

##### Proposals for Cutting-and-Patching:

Where prior written direction of cutting-and-patching is required, submit proposal well in advance of time work will be performed and request written direction to proceed. Include description of why cutting-and-patching can not (reasonably) be avoided, how it will be performed, products to be used, forms and tradesmen to perform the work, approximate dates of the work, and anticipated results in terms of variations from work as originally completed (structural, operational, visual and other qualities of significance). Where applicable, include cost proposal, suggested alternatives to cutting-and-patching procedure proposed, and a description of circumstances which lead to need for cutting-and-patching.

Written direction by Architect/Engineer to proceed with proposed cutting-and-patching does not

waive the right to later required complete removal and replacement of work found to be cut-and-patched in an unsatisfactory manner.

## PART 2 - PRODUCTS:

### 2A MATERIALS

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

### 2B PREPARATION

Temporary Support:

Provide adequate temporary support for work to be cut to prevent failure. Do not endanger other work.

### 2C PROTECTION

1. Provide adequate protection of other work during cutting-and-patching to prevent damage and provide protection of the work from adverse weather exposure.
2. At the close of every work day all openings into secure areas and interior spaces left exposed due to cutting and patching activities shall be secured by the contractor to prevent entry or vandalism.

## PART 3 - EXECUTION:

### 3A CUTTING AND PATCHING

1. Employ skilled tradesmen to perform cutting-and-patching. Except as otherwise indicated, proceed with cutting-and-patching at earliest feasible time in each instance and complete work without delay.
2. Cut work by methods least likely to damage work to be retained and work adjoining. Review proposed procedure with original Installer where possible, and comply with recommendations therefrom.
  - a. In general, where physical cutting action is required, cut work with sawing and grinding tools, not with hammering and chopping tools. Core drill openings for pipe and conduit through concrete and masonry.
  - b. Comply with requirements of applicable sections of Division 2 where cutting-and-

patching requires excavating and backfilling.

3. Patch with seams which are durable and as invisible as possible. Where feasible, inspect and test patched areas to demonstrate integrity of work.
4. Restore exposed finishes of patched areas and where necessary extend finish restoration onto retained work adjoining in a manner which will eliminate evidence of patching and refinishing.
5. Where patch occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing patch after patched area has received prime and base coats.
6. All penetrations through fire-rated construction shall be fire stopped as per NEC 300-21 using a through penetration fire-stop system (XHEZ) listed in the Underwriters Laboratory Fire Resistance Directory.

END OF SECTION 01045.



## **SECTION 01050 - FIELD ENGINEERING**

### **PART 1 - GENERAL:**

#### 1. REQUIREMENTS INCLUDED

- A. Provide and pay for field engineering services required for project.
  - 1. Survey work required for execution of Project.
  - 2. Civil, structural or other professional engineering services specified, or required to execute Contractor's construction schedule.
- B. Architect/Engineer and/or Owner's representative will identify existing control points and property line as indicated on the drawings.

#### 2. RELATED REQUIREMENTS

- A. I. Bidding Conditions
- B. II. Contractual Requirements
- C. Section 01010 - "Summary of Work"

#### 3. QUALIFICATIONS OF SURVEYOR OR ENGINEER

- A. Qualified Registered Engineer or Registered Land Surveyor registered in the state of Florida, acceptable to Contractor, Owner and Architect/Engineer.
- B. Registered professional Engineer of the discipline required for the specific service on the Project, licensed in the state of Florida.

#### 4. SURVEY REFERENCED POINTS

- A. Existing basic horizontal and vertical control points for the Project are those designated on the drawings.
- B. Locate and protect control points prior to starting site work, and preserve all permanent reference points during construction.
  - 1. Make no change or relocations without prior written notice to Architect/Engineer and Owner.
  - 2. Report to Architect/Engineer when any reference point is lost or destroyed,

or requires relocation because of necessary changes in grades or locations.

3. Require surveyor to replace Project Control Points which may be lost or destroyed.
  - a. Establish replacement based on original survey control.

## 5. PROJECT SURVEY REQUIREMENTS

- A. Establish a minimum of two permanent bench marks on site, referenced to data established by survey control points.

Record locations, with horizontal and vertical data, on Project Record Documents.

- B. Establish lines and levels, location and layout, by instrumentation and similar appropriate means:
  1. Site Improvements:
    - a. Stakes for grading, fill and topsoil placement.
    - b. Utility slopes and invert elevations.
  2. Batter boards for structures.
  3. Building foundation, column locations and floor levels.
  4. Controlling lines and levels required for mechanical and electrical trades.
- C. Verify building dimensions, layout, location on site and finish floor elevations. Notify Architect/Engineer of any discrepancies in the dimensioning on the drawings.
- D. On a monthly basis, verify layouts by same methods.

## 6. RECORDS

- A. Maintain a complete, accurate log of all control and survey work as it progresses.
- B. On completion of foundation walls and major site improvements, prepare a certified survey showing all dimensions, locations, angles and elevation of construction. Provide three (3) copies and one reproducible of certified survey to Architect/Engineer for distribution.

7. SUBMITTALS

- A. Submit name and address of Surveyor and professional engineer to Architect/Engineer.
- B. On request of Architect/Engineer, submit documentation to verify accuracy of field engineering work.
- C. Submit Certificate signed by registered engineer or surveyor certifying that elevations and locations of improvements are in conformance, or nonconformance with Contract Documents.
- D. Submit six signed and sealed tie-in-surveys upon completion of the ground floor slab. Such survey shall indicated elevations and tie dimensions to existing structures.

PART 2 - PRODUCTS:

Not used.

PART 3 - EXECUTION:

Not used.

END OF SECTION 01050.

## **SECTION 01090 - DEFINITIONS AND STANDARDS**

### **PART 1 - GENERAL:**

1. **RELATED DOCUMENTS:** Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to work of this section.
2. **DEFINITIONS:**
  - A. **General Explanation:** A substantial amount of specification language constitutes definitions for terms found in other Contract Documents, including drawings which must be recognized as diagrammatic in nature and not completely descriptive of requirements indicated thereon. Certain terms used on Contract Documents are defined generally in this article. Definitions and explanations of this section are not necessarily either complete or exclusive, but are general for the work to extent not stated more explicitly in another provision of Contract Documents.
  - B. **General Requirements:** The provision or requirements of Division 1 section. General Requirements apply to entire work of contract and, where so indicated, to other elements which are included in project.
  - C. **Indicated:** The term "indicated" is a cross reference to details, notes or schedules on drawings, to other paragraphs or schedules in the specifications, and to similar means of recording requirements in Contract Documents. Where terms such as "shown", "noted", "scheduled", and "specified" are used in lieu of "indicated", it is for purpose of helping reader locate cross-reference, and no limitation of location is intended except as specifically noted.
  - D. **Directed, Requested, etc.:** Where not otherwise explained, terms such as "directed", "requested", "authorized", "selected", "approved", "required", "accepted", and "permitted" mean "directed by Architect/Engineer", "requested by Architect/Engineer", etc. However, no such implied meaning will be interpreted to extend Architect's/Engineer's responsibility into Contractor's area of construction supervision.
  - E. **Reviewed:** Where used in conjunction with Architect's/Engineer's response to submittals, requests, applications, inquiries, reports and claims by Contractor, the meaning of term "reviewed" will be held to limitations of Architect's/Engineer's responsibilities and duties as specified in General and Supplementary Conditions. In no case will "review" by Architect/Engineer to be interpreted as a release of Contractor from responsibilities to fulfill requirements of Contract Documents.
  - F. **Project Site:** The space available to Contractor for performance of the work, either exclusively or in conjunction with others performing other work as part of the project. The extent of project site is shown on the drawings, and may or may not be identical with description of land upon which project is to be built.
  - G. **Furnish:** Except as otherwise defined in greater detail, term "furnish" is used to mean supply and deliver to project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each instance.
  - H. **Install:** Except as otherwise defined in greater detail, the term "install" is used to describe operations at project site including unloading, storage, unpacking, assembly, erection, placing, anchoring, applying, work to dimension, finishing, curing, protecting, cleaning and similar operations, as applicable in each instance.
  - I. **Provide:** Except as otherwise defined in greater detail, the term "provide" means furnish and install, complete and ready for intended use, as applicable in each instance.

- J. Installer: The entity (person or firm) engaged by Contractor or its subcontractor or subcontractor for performance of a particular unit or work at project site, including installation, erection, application and similar required operations. It is a general requirement that such entities (installers) be expert in operations they are engaged to perform.
- K. Testing Laboratory: An independent entity engaged to perform specific inspections or tests of the work, either at project site or elsewhere; and to report and (if required) interpret results of those inspections or tests.
- L. Owner Furnished - Contractor Installed: Equipment or components of a system that are purchased by the Owner and furnished to the Contractor for installation in the project. The Contractor shall receive, store, protect, install, connect and test each time unless otherwise indicated.
- M. Contractor Furnished - Contractor Installed: Equipment or components of a system that are purchased, furnished, and installed by the Contractor.
- N. Owner Furnished - Owner Installed: Equipment or components of a system that are purchased, furnished and installed by the Owner or his vendors.

3. FORMAT AND SPECIFICATION EXPLANATIONS:

- A. Specification Production: None of these explanations will be interpreted to modify substance of requirements. Portions of these specifications have been produced by Architect's/Engineer's standard methods of editing master specifications, and may contain minor deviations from traditional writing formats. Such deviations are a normal result to this production technique, and no other meaning will be implied or permitted.
- B. Format Explanation: The format of principal portions of these specifications can be described as follows; although other portions may not fully comply and no particular significance will be attached to such compliance or noncompliance.
  - 1. Sections and Divisions: For convenience, basic unit of specification text is a "section", each unit of which is named and numbered. These are organized into related families of sections, and various families of sections are organized into "divisions", which are recognized as the present industry consensus on uniform organization and sequencing of specifications. The section title is not intended to limit meaning or content of section, not to be fully descriptive or requirements specified therein, not to be an integral part of text.

Each section of specifications has been subdivided into 3 (or less) "parts" for uniformity and convenience (Part 1 - General, Part 2 - Products, and Part 3 - Execution). These do not limit the meaning or and are not an integral part of text which specifies requirements.
  - 2. Underscoring: used strictly to assist reader of specification text in scanning text for key works in content (for quick recall). No emphasis on or relative importance of text is intended where underscoring is used.
  - 3. Imperative Language: Used generally in specifications. Except as otherwise indicated requirements expressed imperatively are to be performed by the Contractor. For clarity of reading at certain locations, contrasting subjective language is used to describe responsibilities which must be fulfilled indirectly by the Contractor, or when so noted, by others.

4. Section Numbering: Used to facilitate cross-references in Contract Documents. Sections are placed in Project Manual in numeric sequence; however, numbering sequence is not complete, and listing of sections at beginning of Project Manual must be consulted to determine numbers and names of specification section on Contract Documents.
  5. Page Numbering: Numbered independently for each section' recorded in listing of sections (Index or Table of Contents) in Project Manual. Section number is shown with page number at top right of each page, to facilitate location of text in Project Manual.
- C. Specification Content: Because of methods by which this project specification has been produced, certain general characteristics of content, and conventions in use of language are explained as follows:
1. Specifying Methods: The techniques or methods of specifying to record requirements varies throughout text, and may include "prescriptive", "open generic descriptive", "compliance with standards", "performance", "proprietary", or a combination of these. The method used for specifying one unit of work has no bearing on requirements for another unit of work.
  2. Overlapping and Conflicting Requirements: Where compliance with 2 or more industry standards or sets or requirements is specified, and overlapping of those different standards or requirements establishes different or conflicting minimums or levels or quality, most stringent requirement (which is generally recognized to be also most costly) is intended and will be enforced, unless specifically detailed language written into contract documents (not by way of reference to an industry standard) clearly indicates that a less stringent requirement is to be fulfilled. Refer apparently-equal-but-different requirements, and uncertainties as to which level of quality is more stringent, to Architect/Engineer for a decision before proceeding.
    - a. Contractor's Options: Except for overlapping or conflicting requirements, where more than one set of requirements are specified for a particular unit of work, option is intended to be Contractor's regardless of whether specifically indicated as such.
  3. Minimum Quality/Quantity: In every instance, quality level or quantity shown or specified is intended as minimum for the work to be performed or provided. Except as otherwise specifically indicated, actual work may either comply exactly with that minimum (within specified tolerances), or may exceed that minimum within reasonable limits. In complying with requirements, indicated numeric values are either minimums or maximums as noted or as appropriate for context of requirements. Refer instances of uncertainty to Architect/Engineer for decision before proceeding.
  4. Specialists; Assignments: In certain instances, specification text requires (or at least implies) that specific work be assigned to specialists or expert entities, who must be engaged for performance of those units of work. These must be recognized as special requirements over which Contractor has no choice or option. These assignments must not be confused with (and are not intended to interfere with) normal application of regulations union jurisdictions and similar conventions. One purpose of such assignments is to establish which party or entity involved in a specified unit of work is recognized as "expert" for indicated construction processes or operations. Nevertheless, final responsibility for fulfillment of entire set of requirements remains with Contractor.
  5. Trades: Except as otherwise indicated, the use of title such as "carpentry" in specification text, implies neither that the work must be performed by an accredited or unionized trades person of corresponding generic name (such as "carpenter"), nor that specified requirements apply exclusively to work by trades persons of that corresponding generic name.

6. Abbreviations: The language of specifications and other contract documents is of the abbreviated type in certain instances, and implies words and meanings which will be appropriately interpreted. Actual work abbreviations of self-explanatory nature have been included in texts. Specific abbreviations have been established, principally for lengthy technical terminology and primarily in conjunction with coordination of specification requirement with notations on drawings and in schedules. These are frequently defined in section at first instance of use. Trade association names and titles of general standards are frequently abbreviated.

Singular works will be interpreted as plural and plural words will be interpreted as singular where applicable and where full context of the Contract Documents so indicates.

D. Drawing Symbols:

General: Except as otherwise indicated, graphic symbols used on drawings are those symbols recognized in the construction industry for purposes indicated. Where not otherwise noted, symbols are defined by "Architectural Graphic Standards", published by John Wiley & Sons, Inc., seventh edition.

M/E Drawings: Graphic symbols used on mechanical/electrical drawings are generally aligned with symbols recommended by ASHRAE, supplemented by more specific symbols where appropriate as recommended by other recognized technical associations including ASME, ASPE, IEEE and similar organizations. Refer instances of uncertainty to Architect/Engineer for clarification before proceeding.

E. Industry Standards:

1. General Applicability of Standards: Applicable standards of construction industry have same force and effect (and are made a part of contract Documents) as if published copies were bound herewith.
  - a. Referenced Standards: (referenced directly in Contract Documents or by governing regulations) have precedence over non-referenced standards which are recognized in industry for applicability to work.
  - b. Non-referenced standards are hereby defined to have not particular applicability to the work, except as a general measurement of whether work complies with standards recognized in construction industry.
2. Publication Dates: Except as otherwise indicated, where compliance with an industry standard is required, comply with the latest edition of the standard in effect as of date of Contract Documents.
3. Copies of Standards: Provide as needed for proper performance of the work; obtain directly from publication sources. Architect/Engineer may specifically required the Contractor to obtain copies of certain standards.
4. Abbreviations and names: The following acronyms or abbreviations as referenced in Contract Documents are defined to mean the associated names. Both names and addresses are subject to change, and are believed to be, but are not assured to be, accurate and up-to-date as of date of Contract Documents.

AA

Aluminum Association  
818 Connecticut Avenue NW; Washington, D.C. 20006;

202/862-5100

AAMA	Architectural Aluminum Manufacturers Association 35 E. Wacker Dr.; Chicago, IL 60601; 312/782-8256
AAN	American Association of Nurserymen 230 Southern Bldg.; Washington, D.C. 20005; 202/737-4060
AASHTO	American Association of State Highway & Transportation Officials 444 N. Capital; Washington, D.C. 20001; 202/624-5800
AATCC	American Association of Textile Chemists and Colorists P.O. Box 12215; Research Triangle Park, N.C. 27709; 919/549-8141
ACI	American Concrete Institute P.O. Box 19150; Detroit, MI 48219; 313/532-2600
ACIL	American Council of Independent Laboratories 1725 K Street, NW; Washington, D.C.; 20006; 202/659-3766
ADC	Air Diffusion Council 230 N. Michigan Avenue; Chicago, IL 60601; 312/372-9800
AGA	American Gas Association 1515 Wilson Blvd.; Arlington, VA 22209; 703/841-8400
AI	Asphalt Institute Asphalt Institute Building; College Park, MD 20740; 301/277-4258
AIA	American Institute of Architects 1735 New York Avenue, NW; Washington, D.C. 20006; 202/626-7474
A.I.A.	American Insurance Company 85 John Street; New York, NY 10038; 212/699-0400
AISC	American Institute of Steel Construction 400 North Michigan Avenue; Chicago, IL 60611; 312/670-2400
AISI	American Iron and Steel Institute 1000 16th Street, NW; Washington, D.C. 20036; 202/452-7100
AITC	American Institute of Timber Construction 333 W. Hampden Avenue Englewood, Colorado 80110; 303/761-3212



AMCA	Air Movement and Control Association 30 W. University Dr. Arlington Heights, IL 60004;312/394-0150
ANSI	American National Standards Institute 1430 Broadway New York, New York 10018; 212/354-3300
APA	American Plywood Association Post Office Box 11700 Tacoma, Washington 98411;206/565-6600
ARI	Air Conditioning & Refrigeration Institute 1815 North Fort Myer Dr. Arlington, Virginia 22209;703/524-8800
ASC	Adhesive and Sealant Council 1600 Wilson Boulevard Arlington, Virginia 22209;703/841-1112
ASHRAE	American Society of Heating, Refrigeration & Air-Conditioning Engineers 1791 Tullie Circle, NE Atlanta, Georgia 30329; 404/636-8400
ASME	American Society of Plumbing Engineers 345 E. 47th Street New York, New York 10017; 212/644-7722
ASPE	American Society of Plumbing Engineers 15233 Ventura Boulevard Sherman Oaks, California 91403;213/783-4845
ASSE	American Society of Sanitary Engineering Post Office Box 9712 Bay Village, Ohio 44140; 216/835-3040
ASTM	American Society for Testing and Material 1916 Race Street Philadelphia, PA 19103; 215/299-5400
AWI	Architectural Woodwork Institute 2310 South Walter Reed Dr. Arlington, Virginia 22206; 703/671-9100
AWPA	American Wood-Preservers' Association 7735 Old Georgetown Road Bethesda, Maryland 20014; 301/652-2109
AWPB	American Wood-Preservers Bureau 2772 South Randolph Street Arlington, Virginia 22206; 703/931-8180

AWS American Welding Society  
550 LeJune Road  
Miami, Florida 33135; 305/642-7090

AWWA American Water Works Association  
6666 W. Quincy Avenue  
Denver, Colorado 80235; 303/794-7711

BHMA Builder's Hardware Manufacturer's Association  
(c/o TGAM) 60 EAsT 42nd St. Rm. 1807  
New York, New York 10017; 212/682-8142

BIA Brick Institute of America  
1750 Old Meadow Rd.  
McLean, Virginia 22101; 703/893-4010

CDA Copper Development Association  
405 Lexington Avenue  
New York, New York 10017; 212/953-7300

CE Corps or Engineers (U.S. Dept. of the Army)  
Washington, D.C. 20315

CISPI Cast Iron Soil Pipe Institute  
1499 ChainBridge Rd.  
McLean, Virginia 22101; 703/827-9177

CRSI Concrete Reinforcing Steel Institute  
180 North LaSalle Street  
Chicago, Illinois 60601; 312/372-5059

CS Commercial Standard of NBS (U.S. Dept. of Commerce)  
Government Printing Office  
Washington, D.C. 20402

DHI Door and Hardware Institute  
1815 N. Ft. Meyer Dr.  
Arlington, Virginia 22209; 703/527-2060

EIA Electronic Industries Association  
2001 Eye Street, NW  
Washington, D.C. 20006; 202/457-4900

FAA Federal Aviation Administration (U.S. Dept. of Transportation)  
800 Independence Avenue, SW  
Washington, D.C. 20590

FCC Federal Communications Commission  
1919 M Street, NW  
Washington, D.C. 20554; 202/632-7000

FCI Fluid Controls Institute  
Post Office Box 3854  
Tequesta, Florida 33458; 407/746-6466

FGMA	Flat Glass Marketing Association 3310 Harrison Topeka, Kansas 66611; 913/266-7013
FHA	Federal Housing Administration (U.S. Dept. of HUD) 451 7th Street, SW Washington, D.C. 20201
FM	Factory Mutual Engineering Corp. 1151 Boston-Providene Turnpike Norwood, MA 02062; 617/762-4300
FS	Federal Specification (General Services Administration) Building 197, Washington Navy Yard, SE Washington, D.C. 20407
FTI	Facing Tile Institute Box 8880 Canton, Ohio 44711; 216/488-1211
GA	Gypsum Association 1603 Orrington Avenue Evanston, Illinois 60201; 312/491-1744
HPMA	Hardwood Plywood Manufacturers Association Post Office Box 2789 Reston, Virginia 22090; 703/435-2900
IES	Illuminating Engineering Society of North America 345 E. 47th Street New York, New York 10017; 212/644-7926
ILI	Indiana Limestone Institute of America Stone City Bank Building Bedford, Indiana 47421; 812/275-4426
IRI	Industrial Rick Insurers 85 Woodland Street Hartford, CT 06102; 203/525-2601
MCAA	Mechanical Contractors Association of America 5530 Wisconsin Avenue Washington, D.C. 20015; 202/654-7960
MIA	Marble Institute of America 33505 State Street Farmington, MI 48024; 313/476-5558
MIL	Military Standardization Documents (U.S. Dept. of Defense) Naval Publications and Forms Center 5801 Tabor Avenue Philadelphia, PA 19120

MLSFA	Metal Lath/Steel Framing Association 221 N. LaSalle Street Chicago, IL 60601; 312/346-1600
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry 5203 Leesburg Pike Falls Church, Virginia 22041; 702/998-7996
NAAMM	The National Association of Architectural Metal Manufacturers 221 N. LaSalle Street Chicago, Illinois 60601; 312/346-1600
NAPF	National Association of Plastic Fabricators 1701 N. Street, NW Washington, D.C. 20036; 202/656-8874
NBGOA	National Building Granite Quarries Association 202 South Third Avenue Cold Spring, MN 55107
NBS	National Bureau of Standards (U.S. Dept. of Commerce) Gaithersburg, Maryland 20234
NCMA	National Concrete Masonry Association Post Office Box 781 Herndon, Virginia 22070; 703/435-4900
NEC	National Electric Code (by NFPA)
NECA	National Electric Contractors Association 7315 Wisconsin Avenue Washington, D.C. 20014; 202/657-3110
NEII	National Elevator Industry, Inc. 600 Third Avenue New York, New York 10016; 212/986-1545
NEMA	National Electrical Manufacturers Association 2101 L Street, NW Washington, D.C. 20037; 202/457-8400
NFPA	National Fire Protection Association 470 Atlantic Avenue Boston, MA 02210; 617/482-8755
N.F.P.A.	National Forest Products Association 1619 Massachusetts Avenue, NW Washington, D.C. 20036; 202/797-5800
NHLA	National Hardwood Lumber Association Post Office Box 34518 Memphis, Tennessee 38104; 901/377-1818

NPA	National Particleboard Association 2306 Perkins Place Silver Spring, Maryland 20910; 301/587-2204
NRCA	National Roofing Contractors Association One O'Hare Center 6250 River Road Rosemont, Illinois 60018; 312/318-6722
NSF	National Sanitation Foundation 3475 Plymouth Rd. Ann Arbor, Michigan 48106; 313/769-8010
NSSEA	National School Supply & Equipment Association 1500 Wilson Boulevard Arlington, Virginia 22209; 703/524-8819
NTMA	The National Terrazzo and Mosaic Association 3166 Des Plains Avenue Des Plains, Illinois 60018; 312/635-7744
NWMA	National Wood Manufacturer's Association 205 W. Touhy Avenue Park Ridge, Illinois 60068; 312/823-6747
OSHA	Occupational Safety Health Administration (U.S. Dept. of Labor) Government Printing Office Washington, D.C. 20402
PCI	Prestressed Concrete Institute 20 N. Wacker Dr. Chicago, Illinois 60606; 312/346-4071
PDI	Plumbing and Draining Institute 5342 Boulevard Place Indianapolis, Indiana 46208; 317/251-5298
PEI	Porcelain Enamel Institute 1911 N. Fort Myer Arlington, Virginia 22209; 703/527-5257
PS	Product Standard of NBS (U.S. Dept. of Commerce) Government Printing Office Washington, D.C. 20402
RFCI	Resilient Floor Covering Institute 1030 15th Street, NW Washington, D.C. 20005; 202/833-2635
RIS	Redwood Inspection Service (Grading Rules) 627 Montgomery San Francisco, California 94111

SAMAS	Scientific Apparatus Makers Association 1101 16th Street, NW Washington, D.C. 20036; 202/223-1360
SDI	Steel Deck Institute Post Office Box 3812 St. Louis, MO 63122; 314/965-1741
S.D.I.	Steel Door Institute 712 Lakewood Center, N. Cleveland, Ohio 44107; 216/226-7700
SHLMA	Southern Hardwood Lumber Manufacturers Association 805 Sterick Boulevard Memphis, Tennessee 38103; 901/525-8221
SIGMA	Sealed insulating Glass Manufacturers Association 111 E. Wacker Dr. Chicago, Illinois 60601; 312/644-6610
SJI	Steel Joist Institute 1703 Parham Rd. Richmond, Virginia 23229; 804/288-3071
SMACNA	Sheet Metal & Air Conditioning Contractors' National Association Post Office Box 70 Merrifield, Virginia 22116
SPIB	Southern Pine Inspection Bureau (Grading Rules) 4709 Scenic Highway Pensacola, Florida 32504; 904/434-2611
SSPC	Steel Structures Painting Council 4400 5th Avenue Pgh, PA 15213; 412/578-3327
TCA	Tile Council of America Post Office Box 326 Princeton, New Jersey 08540; 609/921-7050
TIMA	Thermal Insulation Manufacturers Association 7 Kirby Plaza Mt. Kisco, New York 10549; 914/241-2284
TPI	Truss Plate Institute 100 W. Church St. Frederick, Maryland 21701; 301/694-6100
UL	Underwriters Laboratories 333 Pfingsten Rd. Northbrook, Illinois 60062; 312/272-8800

WCLIB	West Coast Lumber Inspection Bureau (Grading Rules) Post Office Box 2315 Portland, Oregon 97223; 503/649-0651
WIC	Woodwork Institute of California 1833 Broadway Fresno, California 93773; 209/233-9035
WRI	Wire Reinforcement Institute 8900 Westpark Drive McLean, Virginia 22101; 703/790-9790
WSFI	Wood and Synthetic Flooring Institute 2400 E. Devon Des Plaines, Illinois 60018; 312/635-7700
WWPA	Western Wood Products Association (Grading Rules) 1500 Yeon Building Portland, Oregon 97204; 503/224-3930
W.W.P.A.	Woven Wire Products Association 108 W. Lake Street Chicago, Illinois 60601; 312/332-6502

F. Governing Regulations/Authorities:

General: The procedure followed by Architect/Engineer has been to contact governing authorities where necessary to obtain information needed for the purpose of preparing Contract Documents; recognizing that such information may or may not be of significance in relation to Contractor's responsibilities for performing the work. Contract governing authorities directly for necessary information and decisions having a bearing on performance of the work.

G. Submittals:

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, judgements, and similar documents, correspondence and records established in conjunction with compliance with records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

PART 2 - PRODUCTS

Not applicable.

PART 3 - EXECUTION

Not applicable.

END OF SECTION 01090.

## **SECTION 01200 - PROJECT MEETINGS**

### **PART 1 - GENERAL:**

#### 1. REQUIREMENTS INCLUDED:

- A. Contractor shall attend a Pre-Construction meeting administered by the Architect/Engineer.
- B. Contractor shall schedule and administer monthly progress meetings and specially called meetings throughout progress of work.
  - 1. Prepare agenda for meetings.
  - 2. Distribute written agenda of each meeting four days in advance of meeting date.
  - 3. Make physical arrangements for meetings.
  - 4. Preside at meetings.
  - 5. Record the minutes; include significant proceedings and decisions.
  - 6. Reproduce and distribute copies of minutes within three days after each meeting.
    - a. To participants in the meeting.
    - b. To parties affected by decisions made at the meetings.
    - c. Furnish three copies of minutes to Architect/Engineer.
- C. Representative of Contractors, Subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.
- D. Owner and Architect/Engineer shall be invited to all such meetings and may attend to ascertain that Work is expedited consistent with Contract Documents and construction schedules.

#### 2. RELATED REQUIREMENTS:

- A. I. Bidding Conditions.
- B. II. Contractual Conditions.



- C. Shop drawings, product data and samples.
  - D. Section 01010 - Summary of Work
  - E. Section 01040 - Coordination.
3. PRECONSTRUCTION MEETING:
- A. Location: A site designated by owner.
  - B. Attendance:
    - 1. Owner's Project Manager.
    - 2. Architect/Engineer and/or his professional consultants.
    - 3. Contractor's Superintendent.
    - 4. Major Subcontractors.
    - 5. Others as Appropriate.
  - C. Suggested Agendum:
    - 1. Distribution and discussion of:
      - a. List of major subcontractors and suppliers.
      - b. Projected Construction Schedules.
    - 2. Critical work sequencing.
    - 3. Major equipment deliveries and priorities.
    - 4. Project Coordination:  
Designation of responsible personnel.
    - 5. Procedures and processing of:
      - a. Field decisions.
      - b. Proposal requests.

- c. Submittals.
    - d. Change Orders.
    - e. Applications for Payment.
  - 6. Adequacy of distribution of Contract Documents.
  - 7. Procedures for maintaining Record Documents.
  - 8. Use of Premises:
    - a. Office, work and storage areas.
    - b. Owner's requirements.
  - 9. Construction facilities, controls and construction aids.
  - 10. Temporary Utilities.
  - 11. Safety and first-aid procedures.
  - 12. Security procedures.
  - 13. Housekeeping procedures.
- 4. PROGRESS MEETINGS:
  - A. Contractor shall schedule regular periodic meetings at least monthly or more often if deemed appropriate by the Architect.
  - B. Hold called meetings as required by progress of work.
  - C. Location of the meetings: Project field office of Contractor.
  - D. Attendance:
    - 1. Owner and Architect/Engineers and his professional consultants as needed.
    - 2. Subcontractors as appropriate to the agenda.
    - 3. Suppliers as appropriate to the agenda.
    - 4. Others.

E. Suggested Agendum:

1. Review, approval of minutes of previous meetings.
2. Review of work progress since previous meetings.
3. Field observations, problems, conflicts.
4. Problems which impeded Construction Schedule.
5. Review of off-site fabrication, delivery schedule.
6. Corrective measures and procedures to regain projected schedule.
7. Revisions to Construction Schedule.
8. Progress, schedule, during succeeding work period.
9. Coordination of schedules.
10. Review submittal schedules; expedite as required.
11. Maintenance of quality standards.
12. Pending changes and substitutions.
13. Review proposed changes for:
  - a. Effect on Construction Schedule and on completion date.
  - b. Effect on other contracts of the Project.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION 01200.

## SECTION 01210 - PROCEDURES AND PERFORMANCES

### PART 1 - PROCEDURES

1. Observation: The Architect and his Consulting Engineers may review all the work including Architectural, Civil, Structural, Plumbing, Electrical and Mechanical on this project.
2. Tests: Required tests on the project will be Soil Density Tests noted in Division 2, concrete cylinder and slump tests noted in Division 3 of the Contract Documents or Drawings, and others as may be deemed appropriated by the Architect/Engineer and Owner.

### PART 2 - PERFORMANCE

1. Measurements and Dimensions: Before ordering materials or doing work which is dependent for proper size, or installation upon coordination with building conditions, the Contractor shall verify all dimensions by taking measurements at the building and shall be responsible for the correctness of same. No consideration will be given any claim based on the difference between the actual dimensions and those indicated on the drawings. Any discrepancies between the drawings and/or the specifications and the existing conditions shall be referred to the Architect for adjustment before any work affected thereby is begun.

### PART 3 - EXECUTION

Not used.

END OF SECTION 01210.

## **SECTION 01310 - CONSTRUCTION SCHEDULE**

### **PART 1 - GENERAL**

1. The progress schedule required under the General Conditions shall be prepared using the critical path method as described in the Supplementary General Conditions and herein.
  - A. The critical path schedules requirement will consist of a two-part network submittal (interim schedule, and detailed schedule), along with monthly progress status reports (Monthly Report), quarterly progress forecast reports (Quarterly Report), and monthly update to the networks and analysis. The planning, scheduling, management, and execution of the Work is the sole responsibility of the Contractor. The progress schedule requirement is established to allow Owner to review Contractor's planning, scheduling, management and execution of the work; to assist owner in evaluating work progress and make progress payments; and to allow other contractors to cooperate and coordinate their activities with those of the Contractor.
  - B. Review of the schedule of submittals shall not relieve Contractor from responsibility for any deviations from the Contract Documents unless Contractor has, in writing, submission and received written concurrence to the specific deviations, nor shall any concurrence by Owner and Architect/Engineer relieve Contractor from, responsibility for errors and omissions in the submittals.
2. INTERIM SCHEDULE SUBMITTALS
  - A. Submittal set shall include a time-scaled graphic arrow diagram, a detailed schedule of values incorporating shop drawing submittals, and interim status reports. The initial submittal shall be delivered within fourteen (14) calendar days of the effective date of the Agreement and shall use the Notice to Proceed as the data date. The submittal shall be submitted on time, be completed, comply with all contract conditions, and represent realistic approach to the Work. No progress payments for work performed shall be made until this submittal set is submitted and accepted.
  - B. The graphic arrow diagram shall show one (1) detailed activity for all work to be performed during the first 120 calendar days after Notice to Proceed, and two (2) summary activities for the remainder of the contract.
  - C. Interim status reports shall be revised and submitted monthly following the initial preliminary schedule submittal, and continue through the first 120 calendar days.
3. DETAILED SCHEDULE SUBMITTAL
  - A. Submittals shall include a time-scaled (day after Notice to Proceed) graphic arrow diagram showing all contract activities, computer printout reports, and a supporting narrative. The initial detailed schedule submittal shall be delivered within 60 calendar days after the Notice to Proceed, and shall use the Notice to Proceed as the data date. The submittal shall be on time, complete, comply with all Contract conditions, and represent a reasonable approach to the Work. No progress payments shall be made for work performed after the first 120 days of the Contract until the detailed schedule submittal is submitted and accepted.
  - B. The graphic arrow diagram shall be formatted in accordance with the paragraph 2A above. The diagram shall include all detailed activities included in the interim schedule submittal grouped by major areas of work and detailed activities, as shown on the Schedule of Values.
4. QUARTERLY PROGRESS REPORTS
  - A. Not later than 120 calendar days after the Notice to Proceed, and at three month intervals thereafter, Contractor shall submit to the Architect/Engineer, a draft Quarterly Progress Report with data as of the

last day of the current pay period. Submittals of a Quarterly Progress Report shall be in lieu of the corresponding Monthly Report. Within thirty calendar days after receipt of this report, Owner, Architect/Engineer, and Contractor shall meet to discuss the draft report and reach an agreement on job progress. Job progress shall specifically include:

1. Actual completion dates for activities completed during the quarterly report period, and actual start dates for activities commenced during the quarterly report period.
2. Estimated start dates for activities scheduled to commence during the following quarterly report period.
3. Changes in the duration of any activity and minor logic changes.
4. Activities not included in the currently accepted, detailed graphic arrow diagram.
5. Major changes in scope and other identifiable changes.

5. SUBMISSIONS

- A. Submit initial schedules within 14 days after award of Contract.
  1. Architect will review schedules and return review copy within 10 days after receipt.
  2. If required, resubmit within 7 days after return of review copy.
- B. Submit revised and/or updated progress schedules with each application for payment.

6. DISTRIBUTION

- A. Distribute copies of the reviewed schedules to:
  1. Architect/Engineer
  2. Owner's Representative
  3. Subcontractors
  4. Other concerned parties
- B. Instruct recipients to report promptly to the Contractor, in writing, any problems anticipated by the projections shown in the schedules.

7. COMPLIANCE

See the Supplementary General Conditions for consequences of non-compliance.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION 01310.

## **SECTION 01340 - SUBMITTALS**

### **PART 1 - GENERAL**

#### 1. REQUIREMENTS INCLUDED:

Submit Shop Drawings, Product Data and Samples required by Contract Documents.

Submittals may include, but are not limited to the following:

As noted in General Requirements of each Specification Section.

#### 2. RELATED REQUIREMENTS:

A. Definitions and Additional Responsibilities of Parties: General Conditions of the Contract.

B. Designate in the Construction Schedule, Application for Payments, or in a separate coordinated schedule, the dates for submission of Shop Drawings, Product Data and Samples.

C. II Contractual Conditions

#### 3. SHOP DRAWINGS:

A. Drawings shall be presented in a clear and thorough manner.

Details shall be identified by reference to sheet and detail, schedule or room numbers shown on Contract Drawings.

B. Shall be original drawings, prepared by Contractor, Subcontractor, Supplier or Distributor, which illustrate some portion of the work, showing fabrication, layout, setting or erection details. **DUPLICATION OF CONTRACT DOCUMENTS FOR ANY SUBMITTAL SHALL NOT BE ACCEPTABLE.**

1. Prepared by a qualified detailer.

2. Identify details by reference to sheet and detail numbers shown on Contract Drawings.

3. The contractor may, at his expense, purchase a limited set of electronic files of the Contract Documents from the Architect/Engineer to assist in the production of the Shop Drawings. The file set shall be limited to the specific area of interest to the Contractor. All fee schedules for the files shall be set by the Architect/Engineer. The Architect/Engineer reserves all rights to the files under copyright laws and reserves the right to not release any electronic files.

C. Shop Drawing transmittal letter shall be submitted separate for each required section as provided at the end of this section. Submittal shall note any and all deviations from Contract Documents.

#### 4. PRODUCT DATA:

A. Preparation

1. Clearly mark each copy to identify pertinent products or models.

2. Show performance characteristics and capacities.

3. Show dimensions and clearances required.
  4. Show wiring or piping diagrams and controls.
  5. Note deviations from Contract Documents.
- B. Manufacturer's standard schematic drawings and diagrams:
1. Modify drawings and diagrams to delete information which is not applicable to the work.
  2. Supplement standard information to provide information specifically applicable to the work.
  3. Note deviations from Contract Documents.
5. SAMPLES:
- A. Office samples shall be of sufficient size and quantity to clearly illustrate materials, equipment or workmanship, and to establish standards by which completed work is to be judged.
1. Functional characteristics of the product, with integrally related parts and attachment devices.
  2. Full range of color, texture and pattern.
  3. After review, samples shall be used for comparison in construction of project.
  4. Note deviations from Contract Documents.
- B. Field samples and mock-ups.
1. Erect at project site at location acceptable to Architect/Engineer.
  2. Construct each sample or mock-up complete, including work of all trades required in finished work.
  3. Note deviations from Contract Documents.
6. CONTRACTOR RESPONSIBILITIES:
- A. Review Shop Drawings, Product Data and Samples prior to submission.  
Check and stamp submittal with his approval.
- B. Determine and verify:
1. Field measurements.
  2. Field construction criteria.
  3. Catalog numbers and similar data.
  4. Conformance with specifications.
  5. Note deviations from Contract Documents.



- C. Coordinate each submittal with requirements of the work and of the Contract Documents.
  - D. Notify the Architect/Engineer in writing, at time of submission, of his review and approval of submittal and of any deviations in the submittals from requirements of the Contract Documents.
    - 1. Contractor's responsibility for deviations in submittals from requirements of Contract Documents is not relieved by Architects/Engineers review of submittals, unless specific deviations are called to the attention of the Architect/Engineer in writing and the Architect/Engineer gives written acceptance of specific deviations.
    - 2. Contractor's responsibility for errors and omissions in submittals is not relieved by Architect's/Engineer's review of submittals.
  - E. Begin no fabrication or work which requires submittals until return of submittals with Architect/Engineer review.
  - F. Submittals not reviewed and approved by the Contractor will be rejected.
7. SUBMISSION REQUIREMENTS:
- A. Make submittals promptly in accordance with accepted schedule, and in such sequence as to cause no delay in the work or in the work of any other Contractor. Use transmittal format included herein.
  - B. Number of submittals required:
    - 1. Shop Drawings: Submit sufficient quantity of prints of shop drawing for the Contractor's use and two (2) copies to be retained by the Architect.
    - 2. Product Data: Submit sufficient quantity of Product Data for the Contractor's use and two (2) copies to be retained by the Architect.
    - 3. Samples: Submit the number stated in each specification section. Provide two (2) samples if not indicated.
  - C. Submittals shall contain:
    - 1. The date of submission and the dates of any previous submissions.
    - 2. The project title and number.
    - 3. Contract identification.
    - 4. The names of Contractor, Supplier and Manufacturer.
    - 5. Identification of the product, with the specification section number.
    - 6. Field dimensions, clearly identified as such.
    - 7. Relation to adjacent or critical features of the work or materials.
    - 8. Identification of revisions on re-submittals.
    - 9. Applicable Standards (such as ASTM or Federal Specification numbers).

10. An 8 inch x 3 inch blank space for contractor and Architect/Engineer or provide review status cover page.
11. Contractor's stamp, initialed or signed, certifying to review of submittal, verification of products, field measurements and field construction criteria, and coordination of the information within the submittal with requirements of the work and of Contract Documents.

D. RE-SUBMISSION REQUIREMENTS:

- A. Make any corrections or changes in the submittals required by the Architect/Engineer and resubmit until accepted.
- B. Shop drawings and product data:
  1. Revise initial drawings of data, and resubmit as specified for the initial submittal.
  2. Cloud any change which has been made.
  3. Indicate shop drawing is being resubmitted, use Architect's/Engineer's shop drawing identification number if provided.
- C. Samples: Submit new samples if requested by Architect.

9. DISTRIBUTION

Distribute reproductions of Shop Drawings and copies of Product Data which carry the Architect/Engineer stamp of acceptance to:

1. Job site file.
2. Subcontractors.
3. Supplier or Fabricator.
4. Project close-out documents (Section 01700).

10. ARCHITECT/ENGINEER DUTIES

- A. Review submittals; allowing Architect/Engineer a period of 14 calendar days for review and return of Shop drawings.
- B. Affix stamp and initials or signature and indicate requirements for resubmittal or approval of submittal.
- C. Return submittals to Contractor for distribution of for re-submission.
- D. Forward copy of submittal for Owner's use and information. This shall not relieve contractor's requirements in other sections to provide the Owner with a complete record copy at job close-out.

PART 2 - PRODUCTS

Not used.

### PART 3 - EXECUTION

1. Shop Drawing Submittals shall be reviewed in accord with the following:
  - A. Review by Architect/Engineer of Record of submittals is for general conformance with the design concept as presented by the Contract Documents. No detailed check of quantities or dimensions will be made.
  - B. The General Contractor/Construction Manager is responsible for assuring that all submittals comply with the latest project plans, specifications, governing codes and regulations and is solely responsible for confirming all quantities, dimensions, fabrication techniques and coordinating work with all trades.
  - C. Shop drawings are to be submitted in a timely manner allowing adequate time for processing. An average submittal is reviewed by the Architect/Engineer of Record within 14 calendar days of receipt.
  - D. Submit shop drawings for specific components, such as columns, footings, etc., in their entirety. Shop drawings for similar floors shall be submitted in the same package.
  - E. All submittals are to be accompanied by a letter of transmittal. Do not combine different submittals on the same transmittal.
  - F. All shop drawings must bear evidence of the Contractor's approval prior to submitting to the Architect/Engineer of Record.
  - G. Submit quantities per Part 1; 7.B.
  - H. All changes and additions made on re-submittals must be clearly flagged and noted. The purpose of the re-submittals must be clearly noted on the letter of transmittal. Architect/Engineer of Record review is limited to those items causing the resubmission.
  - I. For criteria applicable to shop drawings requiring engineering input by a specialty engineer, see below.
  - J. Shop drawings not meeting the above criteria or submitted after fabrication will not be reviewed.
  - K. The Contract Documents are not to be reproduced for use as shop drawings.
2. Shop Drawings requiring input by Specialty Engineer shall be reviewed in accord with the following:
  - A. Specialty Engineer:
    1. Definition - A Florida registered professional engineer, not the structural engineer of record, who specializes in and who undertakes the design of structural components or structural systems included in a specific submittal prepared for this project.
    2. Shall be:
      - a. An employee or officer of a fabricator.
      - b. An employee or officer of an entity supplying components to a fabricator.
      - c. An independent consultant retained by the fabricator of his supplier.

- B. Shop Drawings requiring a specialty engineer are fabrication and erection drawings prepared for, but not limited to the following items:
- Aluminum or light gage steel exterior wall systems, prefabricated steel stairs, handrails, precast concrete components, post-tensioning systems, prefabricated wood components, open web steel joists, formwork and falsework shoring and reshoring.
- C. Submittals shall clearly identify the specific project, applicable codes, list the design criteria, and shall show all details and plans necessary for proper fabrication and installation. Calculations and shop drawings shall identify specific product utilized. Generic products will not be accepted.
- D. Shop drawings and calculations must be prepared under the direct supervision and control of the specialty engineer.
- E. Shop drawings and calculations require the impressed seal, date and signature of the specialty engineer. Computer printouts are an acceptable substitute for manual computations provided they are accompanied by sufficient descriptive information to permit their proper evaluation. Such descriptive information shall bear the impressed seal and signature of the specialty engineer as an indication that he has accepted responsibility for the results. Architect/Engineer of Record will retain one signed and sealed print for record.
- F. Drawings prepared solely to serve as a guide for fabrication and installation (such as reinforcing steel shop drawings or structural steel erection drawings) and requiring no engineering input do not require the seal of a specialty engineer.
- G. Catalog information on standard products does not required the seal of a specialty engineer.
- H. Review by the Architect and Structural Engineer of record of submittals is limited to verifying the following:
1. That the specified structural submittals have been furnished.
  2. That the structural submittals have been signed and sealed by the specialty engineer.
  3. That the specialty engineer has understood the design intent and has used the specified structural criteria. (No detailed check of calculations will be made.)
  4. That the configuration set forth in the structural submittals is consistent with the contract documents. (No detailed check of dimensions or quantities will be made.)
- I. List of drawings shall be prepared and maintained for all shop drawings requiring participation of a specialty engineer. The list shall contain project name, name of General Contractor/Construction Manager, name of subcontractor, name of specialty engineer, drawings number, drawing title and latest revision number and date. For partial submittals, the list shall contain all anticipated drawing numbers and titles required to complete the contract. The General Contractor/Construction Manager is responsible for submitting the latest updated list of drawings with each submittal.
- J. Upon the completion of the submittal process for the project, the Contractor shall submit to the Architect/Engineer of Record a notarized affidavit stating the following:

"This is to certify that the undersigned as General Contractor/Construction Manager for the referenced project has furnished to and has received acceptance from the Architect/Engineer of Record for all structural submittals requiring participation of a specialty engineer. These submittals were prepared for work performed by the following subcontractors: (name of

subcontractors)..." The final lists of shop drawings shall be attached to the affidavit.

- K. Submittals not meeting the above criteria will not be reviewed.
- L. Submit quantities per Part 1; 7.B.

END OF SECTION 01340.

## SECTION 01370 - SCHEDULE OF VALUES

### PART 1 - GENERAL

#### GENERAL REQUIREMENTS:

- A. Related requirements specified elsewhere.
  - 1. Progress Meetings: Section 01200.
  - 2. Construction Schedule: Section 01310.
- B. Submit to the Architect/Engineer a Schedule of Values, **no later than** 14 calendar days after date of Notice to Proceed.
- C. Upon request by Architect/Engineer, support values given with data that will substantiate their correctness.
- D. Use Schedule of Values only as basis for Contractor's Application for Payment.

#### FORM OF SUBMITTAL:

- A. Submit Typewritten Schedule of Values on AIA form G702, and G703. Computer generated formats of this form are acceptable.
- B. Use table of Contents of this specification as a minimum basis for format for listing cost of Work. Additional breakdowns shall be as determined and required by the Architect/Engineer and Owner. Work shall be broken into labor and material costs.
- C. Identify each line item with number and title as listed in Table of Contents of this Specification.

#### PREPARING SCHEDULE OF VALUES:

- A. Itemize separate line item cost for each of the following general cost items as applicable.
  - 1. Performance and Payment Bonds.
  - 2. Field Supervision and Layout.
  - 3. General Conditions.
  - 4. Temporary Facilities and Controls.

5. Other items as deemed appropriate.
  6. Mobilization
  7. De-Mobilization
- B. Itemize separate line cost for work required by each section of this Specification. Quantities should be sufficiently detailed and subdivided as necessary to describe all of the labor and materials incorporated into the work to accurately measure the Contractor's progress for periodic payments.
- C. Round off figures to nearest dollar.
- D. Make sum of total cost of all items listed in each schedule equal in total Contract Sum.

REVIEW AND RESUBMITTAL:

- A. After review by owner and Architect/Engineer, revise and resubmit Schedule of Values as required.
- B. Resubmit revised Schedule of Values in the same format.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTIONS

Not used.

END OF SECTION 01370.

## **SECTION 01410 - SPECIAL TESTING & INSPECTION REQUIREMENTS**

### **PART 1 - GENERAL**

#### **REQUIREMENTS INCLUDED:**

Owner will employ and pay for the services of an independent testing laboratory to perform specified testing. Testing to be provided by Owner includes, but is not limited to, construction materials, soil compaction, subsurface improvements, concrete, mortar, grout, steel, roofing and HVAC test and balance.

1. Contractor shall cooperate with the laboratory to facilitate the execution of its required services.
2. Employment of the laboratory shall in no way relieve Contractor's obligations to perform the work of the Contract.
3. RETESTS DUE TO FAILURE FOR ANY AND ALL REASONS SHALL BE AT THE EXPENSE OF THE CONTRACTOR. Costs of retests shall be recovered by deducting the costs of same from the Contract amount by Change Order.

#### **RELATED REQUIREMENTS:**

- A. General Condition of the Contract: Inspections and testing required by laws, ordinances, rules, regulations, orders of approvals of public authorities.
- B. Respective sections of specifications: Certification of products.
- C. Each specification section where required: laboratory tests required, and standards for testing.

#### **LABORATORY DUTIES:**

- A. Cooperate with Architect/Engineer and Contractor; provide qualified personnel after due notice.
- B. Perform specified inspections, sampling and testing of materials and methods of construction:
  1. Comply with specific standards.
  2. Ascertain compliance of materials with requirements of Contract Documents.
- C. Promptly notify Architect/Engineer and Contractor of observed irregularities or deficiencies



of work or products.

D. Promptly submit written report of each test and inspection; two (2) copies each to Architect/Engineer and Contractor, and one (1) copy to Owner's Representative. Each report shall include:

1. Date issued.
2. Project title and number.
3. Testing Laboratory name, address and telephone number.
4. Name and signature of laboratory inspector.
5. Date and time of sampling or inspection.
6. Record of temperature and weather conditions.
7. Date of test.
8. Identification of product and specification section.
9. Location of sample or test in the project.
10. Type of inspection or test.
11. Results or tests and compliance with Contract Documents.
12. Interpretation of test results, when requested by Architect/Engineer.

E. Perform additional tests as required by Architect/Engineer or the Owner.

LIMITATIONS OF AUTHORITY OF TESTING LABORATORY:

Laboratory is not authorized to:

1. Release, revoke, alter or enlarge on requirements of Contract Documents.
2. Approve or accept any portion of the work.
3. Perform any duties of the Contractor.

CONTRACTOR'S RESPONSIBILITIES:

A. **Contractors requesting inspections shall provide UBCI a minimum of 24 hour notice in written format. Inspection will not be conducted under normal circumstances on Saturdays, Sundays, or observed holidays. If required due to extenuating conditions, an inspection may be requested on these days with 3 working days written notice. The UBCI reserves the right to approve or deny such requests.**

1. The following information is to be included in ALL submitted requests:

- Permit number
- Job location
- Contractor requesting inspection
- Contact number of requesting party
- Type of inspection requested
- Date and time when the item will be ready for inspection

B. Cooperate with laboratory personnel, provide access to work, or to manufacturer's operations.

C. Secure and deliver to the laboratory adequate quantities of representational samples of materials proposed to be used and which require testing.

D. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other material mixes which require control by the testing laboratory.

E. Furnish copies of Products test reports as required.

F. Furnish incidental labor and facilities:

1. To provide access to work to be tested.
2. To obtain and handle samples at the Project site or at the source of the product to be tested.
3. To facilitate inspections and tests.
4. For storage and curing of test samples.

G. **Notify the appropriate persons sufficiently in advance (24 hr. minimum) of operations to allow for laboratory assignment of personnel and scheduling of tests.**

When tests or inspections cannot be performed in a timely manner by no fault of the Owner after such notice, reimburse Owner for laboratory personnel and travel expenses incurred due to contractor's negligence.

G. Make arrangements with laboratory and pay for additional samples and tests required for

Contractor's convenience.

- H. Maintain a log at the site of all inspections and tests performed. The log shall indicate the date, time and type of inspection and/or test and shall be initialed by the person who performed the same.
- I. At the A/E's or UBCI's discretion, uncover any work concealed by subsequent construction that was not inspected and/or tested by the appropriate persons. The uncovering shall be performed at the Contractor's expense without change in the Contract time.

PROJECT INSPECTION ITEMS:

Items requiring inspection or notification by the Contractor include, but are not limited to the list below using the following key:

- A. Items for which inspection by the UBCI is mandatory.
- B. Items for which the Contractor shall provide notification. The UBCI shall inspect the item or waive the inspection or the A/E may perform the inspection in the UBCI's stead.

General:

- Any inspections performed by Manufacturer's Representative for any products incorporated in the work B

Sitework:

- Soil removal for over-excavation B
- Soil compaction B
- Soil compaction testing B
- Subsurface preparation for all landscaping B
- Placing piles for foundations B

Concrete (Note: Each occurrence, regardless of size, requires notification):

- Footings immediately prior to placing concrete (dewatered with rebar in place) A

- Concrete slabs immediately prior to placing concrete (reinforcing, vapor barrier and utilities in place) A
- Rebar placement and formwork for all structural concrete elements A
- Structural concrete placement A

Masonry (Note: Each occurrence, regardless of size, requires notification):

- CMU cells with reinforcing in place prior to filling with grout A
- Placing grout in CMU cells B

Steel:

- Structural steel erection B
- Testing of structural steel connections A
- Structural steel members and connections prior to concealment by subsequent construction A

Thermal & Moisture Protection:

- Inspect deck condition prior to commencement of roofing A
- Commencement of roof insulation installation B
- Application of roofing membrane plys (or cap sheet) B
- Installation of metal roofing B
- Inspection of finished roof by Manufacturer's Representative A
- Insulation placement prior to concealment A

Windows:

- Inspection of finished installation by Window Manufacturer's Representative B

Finishes:

- Metal stud walls prior to application of Gypsum Panel Products A
- "Screw Inspection" prior to commencing taping and finishing of Gypsum Panel Products B
- Installation of ceramic tile, carpet, VCT or other building finishes B

Buried Pipe:

- Before insulation A
- Prior to any pour of anchors or other underground concrete over pipes, including foundations A
- Prior to backfill (Insulation Inspection) A
- Witness pressure tests A

Ductwork:

- Prior to external insulation B
- Blower leak test B
- Above gypsum ceilings - before ceiling installed A

Above Ground Pipe:

- Prior to any concrete pour around pipe penetration A
- Prior to insulation B

Gas Pipe, Buried:

- Under slab-inspect before installation in sleeves A
- Inspect all gas pipe in sleeves or not, prior to burial A
- Witness pressure test A

Underground Tanks:

- Inspect steel in deadmen or slabs prior to pour A
- Inspect pit and tank prior to lowering tank B
- Inspect tank and tie-down prior to backfill A

Domestic Water Pipe Below Slab:

- Inspect and witness pressure test before backfill A

Electrical:

- Testing of all electrical systems (intercom, clocks, power, etc.) A
- Installation of electrical conduit, wiring and equipment B
- Inspect underground conduits prior to backfilling A

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION 01410.

## **SECTION 01510 - TEMPORARY UTILITY CONNECTIONS**

### **PART 1 - GENERAL**

**REQUIREMENTS:** Furnish, install and maintain temporary utilities required for construction, remove on completion of work. These may include, but are not limited to, the following:

- A. Temporary lighting and power for all construction activities, including extension of temporary electrical service into building.
- B. Temporary heat and ventilation.
- C. Temporary telephone.
- D. Temporary water for construction, including all distribution systems.
- E. Temporary sanitary facilities for construction personnel.
- F. Temporary fire protection system as required by local authorities.
- G. Provide and make available for use by Subcontractors temporary light, power and water required in the performance of their Work as part of the Work of this Section.

### **RELATED REQUIREMENTS:**

- A. Section 01010, Summary of Work.
- B. Section 01590, Field Offices and Sheds.

### **REQUIREMENTS OF REGULATORY AGENCIES:**

- A. Comply with National Electric Code.
- B. Comply with Federal, State and local codes and regulations and with utility company requirements.

### **PART 2 - PRODUCTS**

**MATERIALS:** may be new or used, but must be adequate in capacity for the required usage, must not create unsafe conditions and must not violate requirements of applicable codes and standards.

### **TEMPORARY ELECTRICITY AND LIGHTING:**

- A. Arrange with utility company, provide service required for power and lighting, and pay all costs for service and for power used.
  - 1. Provide required disconnects, grounding, and all other devices and appurtenances required by all applicable agencies and codes, and remove same upon completion of work.
  - 2. Provide generator, if required, to obtain power required which is greater than temporary services furnished.
  - 3. Provide all required transformers, fused main switches, distribution boards, panels, but-outs, wiring and grounding, sockets, lamps, fuses and motor connections to suit all load and safety requirements.
- B. Install circuit and branch wiring, with are distribution boxes located so that power and lighting is available throughout the construction by the use of construction type power cords.
- C. Provide adequate artificial lighting for all areas of work when natural light is not adequate for Work and for areas accessible to the public.
- D. Provide and maintain temporary feeders to permanent mechanical equipment requiring service, including ventilation, until permanent feeds are connected and energized.
- E. When directed by Architect/Engineer after permanent power has been switched over, remove those portions of temporary light and power installation which are the responsibility of the Contractor.
- F. Provide temporary site security lighting to maintain 3 fc measured minimum light level.

TEMPORARY HEAT AND VENTILATION:

- A. Provide temporary heat and ventilation as required to maintain adequate environmental conditions to facilitate progress of the Work, to meet specified minimum conditions for the installation of materials and to protect materials and finishes from damage due to temperature or humidity.
- B. Provide adequate forced ventilation of enclosed areas for curing of installed materials, to disperse humidity and to prevent hazardous accumulations of dust, fumes, vapors or gases.
- C. Portable heaters shall be standard acceptable units complete with controls.
- D. Pay all costs of installation, maintenance, operation and removal, and for fuel consumed.

TEMPORARY TELEPHONE SERVICE:



- A. Arrange with local telephone service company, provide direct line telephone service at the construction site for the use of personnel and employees. Service required:
  - 1. One direct line instrument in Contractor's Field Office.
  - 2. Other instruments at the option of the Contractor or as required by regulations.
  - 3. One direct line instrument in Architect/Engineer's Field Office.
- B. Pay all costs for installation, maintenance and removal and service charges for local calls. Toll charges shall be paid by the party who places the call unless preapproved by the Contractor.

**TEMPORARY WATER:**

- A. The Contractor shall provide water tap from existing mains for fire protection and construction purposes and pay all costs for installation, maintenance and removal. The Owner will provide the location of the source; Contractor shall provide a meter for reimbursement to the Owner of water consumed. Costs for water shall be calculated by multiplying the quantity of water used by the cost charged the Owner by the Utility Provider. The total cost shall be deducted from the Contract amount by Change Order.
- B. Install branch piping with taps located so that water is available throughout the construction by the use of hoses. Protect piping and fittings against freezing.

**TEMPORARY SANITARY FACILITIES:**

- A. Provide sanitary facilities in compliance with laws and regulations.
  - 1. Since no services will be available for temporary toilets, provide, maintain and remove when directed, portable chemical toilets for construction personnel.
  - 2. Provide quantity and location of temporary toilets as required by authorities having jurisdiction, including, but not limited to OSHA, and subject to further directions by the Engineer. Temporary toilets shall be located as accepted by the Owner and Architect/Engineer.
- B. Service, clean and maintain facilities and enclosures.
- C. Field office trailer toilet may be provided with temporary connections into existing sanitary gravity drains.

**TEMPORARY FIRE PROTECTION SYSTEM:** Provide temporary fire protection systems for the project in accord with NFPA Standard #241.

## PART 3 - EXECUTION

### GENERAL:

- A. Comply with applicable requirements specified in Division 15 Mechanical and in Division 16 Electrical.
- B. Maintain and operate systems to assure continuous service.
- C. Modify and extend systems as work progress requires.

### REMOVAL:

- A. Completely remove temporary materials and equipment when their use is no longer required.
- B. Clean and repair damage caused by temporary installations or use of temporary facilities.
- C. Restore existing facilities used for temporary services to specified, or to original condition.
- D. Restore permanent utilities used for temporary services to specified condition. Prior to Final Inspection, remove temporary lamps and install new lamps.

END OF SECTION 01510.

## SECTION 01580 - PROJECT IDENTIFICATION SIGN

### PART 1 - GENERAL

#### REQUIREMENTS:

- A. Furnish, install and maintain project and identification signs.
- B. Allow no other signs or graphics to be displayed except those herein specified.

#### SIGN:

- A. One painted sign 4'0" high x 8'0" wide in size.
- B. Graphic design and colors:
  - 1. Layout and style of lettering shall be provided by Owner.
  - 2. Colors shall be provided by Architect.
  - 3. **Information to be displayed on sign shall be verified by Owner.**
- C. Erect on the site at a lighted location of high public visibility, adjacent to main entrance to site, as accepted by Owner and Architect/Engineer.

#### QUALITY ASSURANCE:

- A. Sign Painter: Professional experience in type of work required.
- B. Finishes, Painting: Adequate to resist weathering and fading for scheduled construction period.

### PART 2 - PRODUCTS

#### SIGN MATERIALS:

- A. Structure and framing: Shall be new wood or metal, in sound condition structurally adequate to work and suitable for specified finish.
- B. Sign Surfaces: Exterior Plywood, MDO.

Thickness: As required by standards to span framing members, to provide even, smooth surface without waves or buckles; minimum 3/4".

- C. Paint: Exterior quality.

### PART 3 - EXECUTION

#### PROJECT IDENTIFICATION SIGNS:

- A. Paint exposed surfaces of supports, framing and surface material; one coat of primer and one coat of exterior paint.
- B. Paint graphics in styles, sizes and colors selected.
- C. Install at a height for optimum visibility, on ground-mounted posts as required.

#### MAINTENANCE:

- A. Maintain signs and supports in a neat, clean condition; repair damages to structure, framing or sign.
- B. Remove signs, framing, supports and foundations at completion of project.

NON-PERMISSIBLE SIGNAGE: Contractors and subcontractors shall not erect nor maintain any graphic signage of any and all types including that on temporary facilities or trailers.

#### PERMISSIBLE SIGNAGE:

- A. Directional signage.
- B. Signage related to safety.
- C. Signage in above may not include any graphical or text other than that directly related to the conveyed message and is subject to acceptance by the Architect/Engineer and Owner.

END OF SECTION 01580.

## SECTION 01590 - FIELD OFFICES AND SHEDS, AND TEMPORARY BARRIERS

### PART 1 - GENERAL

#### REQUIREMENTS:

- A. Furnish, install and maintain temporary field office during entire construction period.
- B. Furnish, install and maintain storage and work sheds needed for construction.
- C. Furnish and install all barriers, fences and gates, concrete encasement, signs and all other personnel warning and safety measures and devices of every kind required by code, local utility company, or site conditions.
- D. At completion of work, remove field offices, sheds and contents.

#### RELATED DOCUMENTS:

- A. Section 01010 - Summary of Work
- B. Section 01510 - Temporary utilities
- C. Section 01580 - Project Identification Signs

#### OTHER REQUIREMENTS:

- A. Prior to installation of offices and sheds, consult with Owner and Architect/Engineer on location, access and related facilities.
- B. Review location of temporary fencing with Owner and Architect/Engineer prior to installation.
- C. **Installation of any temporary item shall not unnecessarily restrict the daily activities of the school. If necessary, a schedule of erection and removal shall be developed with school personnel and coordinated with the Owner and Architect/Engineer.**

#### REQUIREMENTS FOR FACILITIES:

- A. Field Offices: This Contractor shall provide and maintain at acceptable locations on the site, a field office for his use and for the field administration of the work by the Architect/Engineer and his consultants.
  - 1. **The field office shall be a (minimum) size of 300 s.f. in area, and shall include a**

**door with a locking device, electric lighting and power, heat (in winter), air conditioning (in summer) and one telephones (refer to temporary utilities).**

**The Contractor shall furnish a plan rack, one layout tables, one small conference table and six chairs. Additional furniture may be included at the Contractors discretion. No couches, Futons or bedding shall be allowed in the trailer.**

**The building and furniture provided shall remain the property of the Contractor at completion and shall be removed from the site at time of project completion. This office shall be provided with separate exterior entry. Job related long-distance calls shall be logged and pre-approved cost paid by the Contractor.**

2. The Contractor's field office shall be as required for his use.

**B. Access and Parking:**

1. Minimum of five (5) vehicle parking spaces are to be provided and maintained for visitor use; Designate Architect/Engineer (2); Owner (2) and Other (1).

2. Construction equipment and vehicles shall safely enter or exit site without interrupting local traffic. Coordinate location with Owner and Architect/Engineer.

**C. Subcontractors Field Office:** This shall not preclude subcontractors from setting up their own field offices if accepted by the Owner and Architect/Engineer.

**D. Storage:**

1. Provide storage facilities as needed. Storage space for subcontractors shall be as agreed upon by Contractor and his subcontractors.

2. Locate storage facilities as directed by Owner and Architect/Engineer.

**E. Project Construction Sign:**

Provide project construction sign in accordance with Specification Section 01580 - Project Identification Signs. No added signs by the General or his Subcontractors will be allowed.

**F. Directional Signage:**

Contractor shall provide additional directional signage as deemed appropriate and or required by the Owner and Architect/Engineer.

G. Temporary Fencing and Gates:

1. **Refer to section 02821 Chain Link Fencing and Gates for material requirements for temporary fencing.**
2. **Refer to Civil Engineering Sheets in Construction Documents for temporary silt fence and signage details.**
3. **Install fence posts in a manner that provides adequate load resistance but allows for removal at time of project completion. All surfaces damaged by fence installation shall be repaired or replaced.**
4. **Install visual screening on all fencing identified by Owner and Architect/Engineer at time of pre-installation review and as designated in Construction Documents.**

PART 2 - PRODUCTS

MATERIALS, EQUIPMENT & FURNISHINGS:

May be new or used, but must be serviceable, adequate for required purpose, and must not violate applicable codes or regulations.

PART 3 - EXECUTION

PREPARATION:

Fill and grade sites for temporary structures to provide surface drainage.

INSTALLATION:

- A. Construction temporary field offices and storage sheds on proper subgrade, provide connections for utility services.
  1. Secure portable or mobile buildings when used.
  2. Provide steps and landings at entrance doors.
- B. Mount thermometer at convenient outside location, not in direct sunlight.

MAINTENANCE AND CLEANING:

Provide periodic (weekly minimum) maintenance and cleaning for temporary structures, furnishings, equipment and services.

REMOVAL:

- A. Remove temporary field offices, contents and services at a time no longer needed.
- B. Remove storage sheds when no longer needed.
- C. **Remove foundations and debris; grade site to required elevations and clean the areas and replace any plant material damaged.**
- D. **Remove temporary fencing, gates and signage at the end of project. Replace or repair any damaged surfaces and or plant material.**

END OF SECTION 01590.



SECTION 01600 - MATERIAL AND EQUIPMENT

PART 1 - GENERAL

REQUIREMENTS:

Material and Equipment Incorporated into the Work:

1. Conform to the applicable specifications and standards.
2. Comply with size, make, type and quality specified, or as specifically accepted in writing by the Architect/Engineer.
3. Manufactured and Fabricated Products:
  - a. Design, fabricate and assemble in accord with the best engineering and shop practices.
  - b. Manufacturer like parts of duplicate units to standard sizes and gauges, to be interchangeable.
  - c. Two or more items of the same kind shall be identical, by the same manufacturer.
  - d. Products shall be suitable for service conditions.
  - e. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically accepted in writing.
4. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

RELATED DOCUMENTS:

- A. II. Contractual Conditions
- B. Section 01010 - Summary of Work
- C. Section 01300 - Submittals
- D. Section 01710 - Cleaning

MANUFACTURER'S INSTRUCTIONS:

- A. When Contract Documents require that installation of Work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including two (2) copies each to Owner and Architect/Engineer.

Maintain one set of complete instructions at the job site during installation and until complete.

- B. Handle, install, connect, clean, condition and adjust products in strict accord with such instructions and in conformity with specified requirements.
  1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with Architect/Engineer for further instructions.
  2. Do not proceed with work without clear instructions.

- C. Perform Work in accord with manufacturer's instructions, unless otherwise specified. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

TRANSPORTATION AND HANDLING:

- A. Arrange deliveries of Products in accord with construction schedules, coordinate to avoid conflict with Work and conditions at the site.
  - 1. Deliver Products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.
  - 2. Immediately on delivery, inspect shipments to assure compliance with requirements of Contract Documents and submittals, and that Products are properly protected and undamaged.
- B. Provide equipment and personnel to handle Products by methods to prevent soiling or damage to Products or packaging.

STORAGE AND PROTECTION:

- A. Store products in accord with manufacturer's instructions, with seals and labels intact and legible.
  - 1. Store products subject to damage by the elements in weather-tight enclosures.
  - 2. Maintain temperature and humidity within the ranges required by manufacturer's instructions.
- B. Exterior Storage.
  - 1. Store fabricated products above the ground, on blocking or skids, prevent soiling or staining. Cover products which are subject to deterioration with impervious sheet coverings, provide adequate ventilation to avoid condensation.
  - 2. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.
  - 3. All storage means and methods are subject to acceptance by the Owner and Architect/Engineer.
- C. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored Products to assure that Products are maintained under specified conditions, and free from damage or deterioration.
- D. Protection After Installation:
  - 1. Provide substantial coverings as necessary, to protect installed products from damage from traffic, water and subsequent construction operations. Remove when no longer needed.
  - 2. All protection means and methods are subject to acceptance by the Owner and Architect/Engineer.

SUBSTITUTIONS AND PRODUCT OPTIONS:

- A. Products List:

Within 30 days after Contract Date, submit to Architect, a complete list of major products proposed to be used, with the name of the manufacturer and the installing subcontractor.

B. Product Options:

1. For Products specified only by reference standard, select any product meeting that standard.
2. For Products specified by basis for design and naming several acceptable manufacturers, select any one of the acceptable manufacturers named, which complies with the specification.
3. For Products specified by naming only one Product and manufacturer, there is no option.

C. Substitutions

1. Substitutions after bidding are not acceptable except as indicated in C.2 below.
2. Substitutions of products will be considered after bids are opened only under the following conditions:
  - a. The Contractor shall place orders for specified materials and equipment promptly upon award of contract. No excuse or proposed substitution will be considered for materials and equipment due to unavailability unless proof is submitted that firm orders were placed ten days after review by the Architect/Engineer of the item listed in the specifications.
  - b. The reason for the unavailability is beyond the control of the Contractor; unavailability will be construed as being due to strikes, lockouts, bankruptcy, discontinuance of the manufacture of the product, or acts of God.
  - c. Requests for such substitution shall be made all in writing to the Architect after the award of a contract and within 10 days of the date that the Contractor ascertains that he cannot obtain the material or equipment specified.
  - d. Requests shall be accompanied by a complete description of the material or equipment which the contractor wishes to use as a substitute. Substitutions must be recommended by the Architect/Engineer to the Owner who will accept in writing.
  - e. Contractor's Representative:

A request for substitution constitutes a representation that Contractor:

    1. Has investigated the proposed product and determined that it is equal to or superior in all respects to that specified.
    2. Will provide the same warranties or bonds for the substitution as for the Product specified.
    3. Will coordinate the installation of an accepted substitution into the Work, and make such other changes as may be required to make the Work complete in all respects.
    4. Waives all claims for additional costs, under his responsibility, which may subsequently become apparent.
  - f. Architect/Engineer will review request for substitutions with reasonable promptness and notify Contractor, in writing, of the decision to accept or reject the requested substitution.
  - g. Submit a separate request for each Product, supported with complete data, with drawings and samples as appropriate, including:

1. Comparison of the qualities of the proposed substitution with that specified. Provide data of specified product for comparison.
  2. Changes required in other elements of the work because of the substitution.
  3. Effect on the construction schedule.
  4. Cost data comparing the proposed substitution with the Product specified.
  5. Any required license fees or royalties.
  6. Availability of maintenance service, and source of replacement materials.
  7. Submit a sample of the basis for design and the requested substitution; samples will not be returned. Should basis for design not be available, submit product by listed acceptable manufacturer.
- h. Architect/Engineer shall be the sole judge of the acceptability of the proposed substitution.
- i. Review of substitutions shall be at Contractor's expense. Architect/Engineer shall charge the Contractor his standard hourly rates.
- j. Modification of Contract Documents to accept such substitutions shall be at Contractor's expense. Architect/Engineer shall charge the Contractor his standard hourly rates.
3. Substitutions of products will be considered during bidding only under the following conditions:
- a. Submit a separate request for each Product, supported with complete data, with drawings and samples as appropriate, including:
    1. Comparison of the qualities of the proposed substitution with that specified. Provide data of specified product for comparison.
    2. Changes required in other elements of the work because of the substitution.
    3. Effect on the construction schedule.
    4. Cost data comparing the proposed substitution with the Product specified.
    5. Any required license fees or royalties.
    6. Availability of maintenance service, and source of replacement materials.
    7. Submit a sample of the basis for design and the requested substitution; Samples will not be returned.
  - b. Architect/Engineer shall be the sole judge of the acceptability of the proposed substitution.
  - c. Modifications of contract Documents to accept such substitutions accepted during bidding, should same be used by the Contractor in his bid and presented during the submittal process, shall be charged to the Contractor at the Architect's standard hourly rates.
  - d. Substitutions must be presented to the Architect 15 days prior to the date set for the receipt of bids; telephone requests shall not be accepted. persons requesting substitutions will be

notified only by mail, whether request is acceptable; all bidders holding plans during bidding will receive addenda incorporating acceptable substitutions.

REUSE OF EXISTING MATERIAL:

Except as specifically indicated or specified, materials and equipment removed from an existing structure shall not be used in the completed work.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION 01600.

## SECTION 01700 - CONTRACT CLOSEOUT

Revised Jan. 11, 2007

### PART 1 - GENERAL

#### REQUIREMENTS:

Closeout is hereby defined to include general requirement near 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. Time of closeout is directly related to "Substantial Completion" and therefore may be either a single time period for entire work or a series of time periods for individual parts of the work which have been certified as substantially complete at different dates. That time variation (if any) shall be applicable to other provisions of this section.

#### PREREQUISITES TO SUBSTANTIAL COMPLETION:

- A. Prior to requesting Architect's/Engineer's inspection for certification of substantial completion for either entire Work or portions thereof, complete the following and list known exceptions in request:
1. In progress payment request, show either 100% completion for portion of work claimed as "substantially complete" or list incomplete items, value of incompleteness and reasons for being incomplete.
  2. Include supporting documentation for completion as indicated in these Contract Documents.
  3. Submit statement showing accounting of changes to the Contract sum.
  4. Advise Owner of pending insurance change-over requirements.
  5. Submit specific warranties, workmanship/maintenance bonds, maintenance agreements, final certifications and similar documents.
  6. Obtain and submit releases enabling Owner's full and unrestricted use of the Work and access to services and utilities, including (where required) occupancy permits, operating certificates and similar releases.
  7. Deliver tools, spare parts, extra stocks of materials and similar physical items to Owner.
  8. Complete start-up testing of systems and instructions of Owner's operating/maintenance personnel. Discontinue (or change over) and remove from project site temporary facilities and services, along with construction tools and facilities, mock-ups and similar elements.
  9. **Deliver original, fully executed hard PERMIT Card with all appropriate signatures indicating each applicable Division is finally completed and signed off by the appropriate tradesperson.**
- B. Upon receipt of Contractor's request, Architect/Engineer will either proceed with inspection or advise contractor of prerequisites not fulfilled. Following initial inspection, Architect/Engineer will either prepare certificate of substantial completion or advise the contractor of work which must be performed prior to issuance of certificate; and repeat inspection when requested and assured that work has been substantially completed. Results of completed inspection will form initial "punch-list" for final acceptance.

#### PREREQUISITES TO FINAL ACCEPTANCE

- A. Prior to requesting Architect's/Engineer's final inspection for certification of final acceptance and final payment as required by General Conditions, complete the following and list known exceptions (if any) in request:

1. Submit final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
  2. Submit updated final statement accounting for additional (final) changes to Contract Sum.
  3. Submit certified copy of Architect's/Engineer's final punch-list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, endorsed and dated by Architect/Engineer.
  4. **Asbestos: [Reference: State Requirements for Educational Facilities, Section 4.2(3)(e) Asbestos: *The federal Asbestos Hazard Emergency Response Act (AHERA) of October 22, 1986, requires the architect or engineer of record to sign a statement that NO asbestos-containing building materials were specified, or, to the best of his/her knowledge, were used as a building material in the project. The contractor should certify to the board that to the best of his/her knowledge, no asbestos containing building materials were used as a building material in the project. Section 255.40, F.S. prohibits the use of asbestos-containing materials in the construction of new public buildings.***
  4. Submit final meter readings for utilities, measured record of stored fuel and similar data as of time of substantial completion or when Owner took possession of and responsibility for corresponding elements of the work.
  5. Submit original Consent of Surety.
  6. Submit final liquidated damages settlement statement, acceptable to Owner.
  7. Submit record drawings, maintenance manuals, final project photographs, damage or settlement survey, property survey and similar final record information.
  8. Complete final cleaning up requirements, including touch-up of marred surfaces.
  9. Touch-up and otherwise repair and restore marred exposed finishes.
  10. Revise and submit evidence of final, continuing insurance coverage complying with insurance requirements.
  11. Certificates of elevator inspection.
  12. Mechanical:
    - a. Air System Test and Balance (prepared by Owner's independent agent)
    - b. Piping pressure tests and certificates
    - c. Project certification
  13. Electrical:
    - a. System tests
    - b. Project certification
- B. Reinspection Procedure:

Upon receipt of Contractor's notice that work has been completed including punch-list items resulting from earlier inspections, and excepting incomplete items delayed because of acceptable circumstances, Architect/Engineer will reinspect work. Upon completion of reinspection, Architect/Engineer will either prepare certificate of final acceptance or advise Contractor of work not completed or obligations not fulfilled as required for final acceptance. If necessary, procedure will be repeated.

If re-inspections of above referenced items are required by the Architect/Engineer due to the failure of any of the Work to comply with the claims made by the Contractor as to the status of their completeness, the Owner will deduct the costs incurred by such re-inspections from the Contract amount.

#### RECORD DOCUMENT SUBMITTAL:

- A. Specific requirements for record documents are indicated in individual sections of these specifications. Other requirements are indicated in General Conditions. General submittal requirements are indicated in Section 01340. Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for Architect's/Engineer's reference during normal working hours.

At time of final acceptance, submit complete sets of all required record documents to the Architect/Engineer for Owner's records.

- B. **As-Built** Record Drawings:

Maintain a white-print set of contract drawings and shop drawings in clean, undamaged condition with mark-up of actual installations which vary substantially from the work as originally shown. Mark whichever drawings are most capable of showing "field" condition fully and accurately; however, where shop drawings are used for mark-up, record a cross-reference at corresponding location on working drawings. Mark-up new information which is recognized to be of importance to Owner but was for some reason not shown on either contract drawings or shop drawings. Give particular attention to concealed work which would be difficult to measure and record at a later date. Note related change order numbers where applicable.

**Upon completion of the Work, this data shall be recorded to scale, by a competent draftsman on transparent paper of the Contract Drawings. Where changes are to be recorded, the prints shall be erased in such a way as to properly represent the work as installed. Where the work was installed exactly as shown on the Contract drawings, the prints shall not be disturbed. In showing the changes, the same legend shall be used to identify piping, etc., as was used on the Contract Drawings.**

The Contractor shall review the completed record drawings and ascertain that all data furnished on the drawings are accurate and truly represent the Work as actually installed. When manholes, boxes, underground conduits, plumbing, hot or chilled water lines, etc., are involved as part of the Work, the Contractor shall furnish true elevations and locations, all properly referenced for the site. Information for reference data can be obtained from the office of the Architect/Engineer. Upon completion, the subcontractor involved shall date and sign the drawings, signifying compliance with the requirements set forth herein prior to submission of prints required.

The Contractor shall sign all pages to certify completeness of the **As-Built** Record Set of Drawings. Contractor shall submit the **marked-up** of prints to the Architect/Engineer for the Owner.

**In addition to the marked-up as-built record drawings, the Contractor shall submit two (2) sets of, bound white prints, of the complete record drawings to the Architect/Engineer; which shall be carefully checked and transmitted to the Owner.**

- C. **Electronic Files of Record Drawings**



**If the Construction Documents were created by Computer Aided Drafting (CAD) then upon the receipt of the final record drawings from the Contractor, the Architect/Engineer shall revise the electronic files to reflect the as-built conditions. The CAD files shall be in a file format that can be read by Autocad version 2000 and above.**

**A copy of the electronic files shall be recorded onto compact disk media. Two (2) copies of the disk shall be submitted to the Owner at time of transference of the Record Drawings.**

**Each disk shall be labeled with:**

- **Name of Project**
- **Name of General Contractor and or Construction Manager at Risk**
- **Name of Architect, or Engineer, and their Address**
- **Description of software used to create files**

**D. As-Built Record Specifications:**

Maintain one copy of specifications including addenda, change orders and similar modifications issued in printed form during construction and mark-up variations (of substance) in actual Work in comparison with text of specifications and modifications as issued. Give particular attention to substitutions, selection of options and similar information on work where it is concealed or cannot otherwise be readily discerned at a later date by direct observation. Note related record drawing information and product data where applicable.

**Upon completion of the Record Specifications, the Contractor shall submit two (2) bound and printed copies to the Architect/Engineer; which shall be carefully checked and transmitted to the Owner.**

**E. Record Shop Drawings and Product Data:**

Maintain one copy of each product data submittal and mark-up significant variations in actual work in comparison with submitted information. Include both variations from manufacturer's instructions and recommendations for installation. Give particular attention to concealed products and portions of the Work which cannot otherwise be readily discerned at a later date by direct observation. Note related change orders and mark-up or record drawings and specifications.

**F. Record Sample Submittal:**

Immediately prior to date(s) of substantial completion, Architect/Engineer (and including Owner's personnel where desired) will meet with Contractor at site and will determine which (if any) of submitted samples maintained by Contractor during progress of the work are to be transmitted to Owner for record purposes. Comply with Architect's/Engineer's instructions for packaging, identification marking and delivery to owner's sample storage space.

**G. Miscellaneous Record Submittals:**

Refer to other sections of these specifications for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the Work. Immediately prior to date(s) of substantial completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference.

**H. Operation and Maintenance Data:**

See section 01730

I. Warranties and Bonds:

See section 01740

J. Spare Parts and Maintenance Materials:

See section 01750

FINAL CLEANING

A. Special cleaning for specific units of work is specified in sections of Divisions 2 through 16. General cleaning during progress or work is specified in General Conditions and as temporary service in "Temporary Facilities" section of this Division. Provide final cleaning of the work at time indicated, consisting of cleaning each surface or unit of Work to normal "clean" condition expected for a first-class building cleaning and maintenance program. Comply with manufacturer's instructions for cleaning operations. The following are examples of cleaning levels required:

1. Remove labels which are not required as permanent labels.
2. Clean transparent materials including mirrors and window or 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-surfaced finishes to a dirt-free condition, free of dust, stains, films and similar noticeable distracting substances. 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 substance.
5. Remove debris and surface dust from limited-access spaces including roofs, plenums, shafts, trenches, equipment vaults, manholes 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.
10. Clean project site (yard and grounds) 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.
11. Vacuum clean and sanitize all cabinetwork, equipment, etc. for a move-in condition.

B. Removal of Protection:

Remove temporary protection devices and facilities which were installed during course of the Work to protect previously completed Work during remainder of construction period.

C. Compliances:

Comply with safety standards and governing regulations for cleaning operations. Do not burn waste materials at site or bury debris or excess materials on Owner's property or discharge volatile or other harmful or dangerous materials into drainage systems; remove waste materials from site and dispose of in a lawful manner.

Where extra materials of value remaining after completion of associated Work have become Owner's property, dispose of these to Owner's best advantage as directed.

#### CLOSEOUT DOCUMENTS CHECKLIST

All items listed below, with the exception of Item No. 1 and Item No. 2 shall be bound in individual heavy duty 3-ring vinyl covered binders. Mark appropriate identification on front and spine of each binder.

All items shall be submitted in triplicate within fifteen day of Substantial Completion for the project.

1. Application and Certification for Payment (Final). Four copies with original signatures and seals.
2. Final schedule of contract values. Four copies attached to Application and Certification for Payment.
3. Contractor's Affidavit of Payment of Debts (AIA G706).
4. Contractor's Affidavit of Release of Liens from all Contractors, Subcontractors, and Suppliers (AIA G706A).
5. Power of Attorney from Surety to make Final Payment.
6. Consent of Surety to Final Payment (AIA G707).
7. Contractor's Guarantee and Warranties as specified under Division 01740.
8. Fully executed Roof Warranty in the name of the Owner.
9. Special warranties as required by the specifications, in the name of the Owner.
10. Provide a list summarizing the various guarantees and warranties and stating the following with respect to each:
  - a. Character of work affected.
  - b. Name, address and telephone number of each Subcontractor.
  - c. Name, address and telephone number of each local firm designated to provide warranty service for an out-of-town firm. Copy of agreement between the firms.
  - d. Period of guarantee and effective date.
  - e. Statement of guarantee in the following form.

"If within any guarantee period, repairs or changes are required in conjunction with the guarantee work, which in the opinion of the Architect or Engineer is rendered necessary as the result of the use of materials, equipment or workmanship, which are defective or inferior, or not in accordance with the terms of the Contract, the Contractor shall, upon written notice from the Owner, and without expense to the Owner, proceed within twenty four (24) hours to place in satisfactory condition in every particular all of such guaranteed work, correct all defects therein; and make good all damages to the structure or site or equipment or contents thereof disturbed in fulfilling any such guarantee work.
11. Verification that the Owner's personnel has been trained in the use of their new equipment. Submit attendance lists and videotape record of all training sessions.
12. Operation and Maintenance Manuals.

13. Equipment Inventory List - A list of the following equipment furnished for the project, to include drawings code designation, location (FISH number) description, manufacturer, full model number, serial number, warranty period and warranty expiration date.
  - a. All HVAC equipment.
  - b. Any plumbing equipment which carries a serial number (water heaters, compressors, electric water coolers, etc.)
  - c. Emergency generator.
  - d. Contractor furnished appliances.
14. Notarized Affidavit of all Subcontractor payrolls, bills for materials/equipment and other indebtedness paid and satisfied.
15. As-built drawings. Provide in accordance with other specification sections.
16. Energy management system programming, operation, maintenance, and parts service manuals. Guaranteed parts price list.
17. Date certain schedule for LCS personnel to be trained at Energy Management Supplier's training facility.
18. Punch lists signed off by Owner's Representatives.

Note: A/E shall use the enclosed "Leon County School Board Documents Receipt" form during contract close-out performance.

**LEON COUNTY SCHOOL BOARD DOCUMENTS RECEIPT**

**PROJECT:** \_\_\_\_\_ **SUBSTANTIAL COMPLETION DATE:** \_\_\_\_\_

Note:

1. Receipt or Waiver of all of the following documents must be signed by the A/E and by LCS staff person prior to final payment. Fill in last name in receipt blocks. When this form with documents is received by LCS, having been received by the A/E, then A/E reviewed and accepted it. Acceptance must be signed off by a LCS person within 10 days after receipt, or the A/E must be notified in writing that a document is not acceptable. If no correspondence is received from LCS within 10 days, acceptance is automatic.
2. See specifications for specific requirements.

DESCRIPTION	Received				Accepted (LCS)
	A/E	Date	LCS	Date	
AIA G706 (Payment of Debts)					
AIA G706A (Release of Lien)					
Surety Power of Attorney					
Consent of Surety					
All Required Guarantees & Warranties					
List-Variou s Guarantees/Warranties					
Verification of Training					
Operation & Maintenance Manuals					
Equipment Inventory List					
Certificate-NO Asbestos-materials GC					
Certificate-No Asbestos-materials A/E					
As-Built Drawings					
EMCS Manuals					
EMCS Training Dates					
As-Built Certification to DER					
Punch List Corrections Complete					
Approved Submittals Package					
Control Key and Key Code					
Termite Control					
Fire Alarm Certification					
Stormwater Operating Permit					
Cert. Occupancy & Cert. Final Inspect.					
Fiber & /Copper Test Results					
M/WBE Utilization Report					
HARD COPY PERMIT TO ROBERT METCALF					

Updated September 9, 2005

Revised November 10, 2005 – Asbestos Certificate.

## SECTION 01730 - OPERATION AND MAINTENANCE DATA

### PART 1 - GENERAL

#### REQUIREMENTS:

- A. Format and content of manuals.
- B. Instruction of Owner's personnel.
- C. Schedule of submittals.

#### RELATED REQUIREMENTS:

- A. Shop Drawings, Product Data, and Samples.
- B. Testing, Adjusting, and Balancing of Systems: Test and balance reports.
- C. Section 01700 - Contract Closeout
- D. Warranties and Bonds
- E. Individual Specification Sections: Specific requirements for operation and maintenance data.

#### FORMAT:

- A. Prepare data in the form of an instructional manual.
- B. Binders: Commercial quality, 8-1/2 x 11, three-ring binders with hardback, cleanable, vinyl covers.
- C. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; list title of Project; use volumes as needed.
- D. Arrange content by systems, process flow, under section numbers and sequence of Table of Contents of this Project Manual.
- E. Provide tabbed fly leaf for each separate project and system, with typed description of product and major component parts of equipment.
- F. Text: Manufacturer's printed data, or typewritten data.
- G. Drawings: Provide with reinforced pocket folders. Bind in with text; fold drawings; insert

into pocket folders.

CONTENTS OF EACH VOLUME:

- A. Table of Contents: Provide title of Project; names, addresses, and telephone numbers of Architect/Engineer and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.
- B. For Each Product or System: List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- C. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- D. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- E. Warranties and Bonds: Bind in copy of each.

MANUAL FOR MATERIALS AND FINISHES:

- A. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, color and texture designations. provide information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture-protection and Weather-exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation; delete inapplicable information.
- D. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- E. Warranties and Bonds: Bind in copy of each.

MANUAL FOR MATERIALS AND FINISHES:

- A. Building Products, Applied Materials, and Finishes: Include product data, with catalog

number, size, composition, and color and texture designations. Provide information for re-ordering custom manufactured products.

- B. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture-protection and Weather-exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. provide recommendations for inspections, maintenance, and repair.
- D. Additional Requirements: As specified in individual Specifications sections.

#### MANUAL FOR EQUIPMENT AND SYSTEMS:

- A. Each Item of Equipment and Each System: Include description of unit or system, and component parts. Give function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number or replaceable parts.
- B. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications.
- C. Include as-installed color coded wiring diagrams.
- D. Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- E. Maintenance Requirements: Include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- F. provide servicing and lubrication schedule, and list of lubricants required.
- G. Include manufacturer's printed operations and maintenance instructions.
- H. Include sequence of operation by controls manufacturer.
- I. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- J. Provide as-installed control diagrams by controls manufacturer.



- K. Provide Contractor's coordination drawings, with as-installed color coded piping diagrams.
- L. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- M. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- N. Include test and balancing reports as specified.
- O. Additional Requirements: As specified individual specifications sections.
- P. Provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

#### INSTRUCTION OF OWNER PERSONNEL:

- A. Before final inspection, instruct Owner's designated personnel in operation, adjustment, and maintenance of products, equipment, and systems, at agreed upon times.
- B. Use operation and maintenance manuals as basis of instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
- C. Prepare and insert additional data in Operation and Maintenance Manual when need for such data become apparent during instruction.

#### SUBMITTALS:

- A. Submit one (1) copy of completed volumes in final form 15 days prior to final inspection. Copy will be returned after final inspection, with Architect/Engineer comments. Revise content of documents as required prior to final submittal.
- B. Submit three (3) copies of revised volumes of data in final form within ten days after final inspection.

#### PART 2 - PRODUCTS

Not used.

#### PART 3 - EXECUTION

Not used.

END OF SECTION 01730

## **SECTION 01740 - WARRANTIES AND BONDS**

### **PART 1 - GENERAL**

#### **REQUIREMENTS:**

- A. Preparation and submittal of warranties and bonds.
- B. Schedule of submittals.

#### **RELATED REQUIREMENTS:**

- A. Section of 01700 - Contract Closeout
- B. Individual Specifications Sections: Warranties and bonds required for specific Products or work.

Warranties and Bonds may include, but are not limited to the following:

As noted in the Part 1- General Section of each Specification Section.

#### **FORM OF SUBMITTALS:**

Bind with operation and maintenance manuals specified in Section 01730.

#### **PREPARATION OF SUBMITTALS:**

- A. Obtain warranties and bonds, executed in triplicate (3) by responsible subcontractors, suppliers, and manufacturer's within ten days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.

#### **TIME OF SUBMITTALS:**

- A. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
- B. For items of Work when acceptance is delayed beyond Date of Substantial Completion,

submit within ten days after acceptance, listing the date of acceptance as the beginning of the warranty period.

## PART 2 - PRODUCTS

Not used.

## PART 3 - EXECUTION

### WARRANTY SERVICE

- A. The Contractor shall proceed with warranty repair or replacement within 24 hours of being notified that a warranty deficiency exists.
  
- B. In order to insure prompt and effective correction of warranty deficiencies, the Contractor shall, if he or any of his Subcontractors do not maintain fully staffed service organizations within Leon County, designate firms within Leon County authorized to perform warranty work on the Contractor's behalf. The name, addresses, and phone numbers of these designated firms shall be included within the closeout documents, along with affidavits signed by officers of the designated firms stating that they have been retained and will perform required warranty service.

END OF SECTION 01740.

## **SECTION 01750 - SPARE PARTS AND MAINTENANCE MATERIALS**

### **PART 1 - GENERAL**

#### **REQUIREMENTS:**

- A. Products required.
- B. Storage and delivery of products.

#### **RELATED REQUIREMENTS:**

- A. Materials and Equipment: Storage and protection.
- B. Contract Closeout.
- C. Individual Specifications Sections: Specific spare parts and materials required.

Spare Parts and Maintenance Materials may include, but are not limited to the following:

As noted in the Part 1- General Section of each Specification Section.

#### **PRODUCTS REQUIRED:**

- A. provide quantity of products, spare parts, maintenance tools, and maintenance materials specified in individual sections to be provided to Owner, in addition to that required for completion of Work.
- B. Products: Identical to those installed in the Work. Include quantities in original purchase from supplier or manufacturer to avoid variations in manufacture.

#### **STORAGE AND MAINTENANCE:**

- A. Store products with products to be installed in the Work, under provisions of Section 01600.
- B. Maintain spare products in original containers with labels intact and legible, until delivery to Owner.

#### **DELIVERY:**

Coordinate with Owner: Deliver and unload spare products to Owner at Project site and obtain receipt prior to final payment.

#### **PART 2 - PRODUCTS:**

Not used.

#### **PART 3 - EXECUTION:**

Not used.

END OF SECTION 01750.

SECTION 01760 - PROJECT PHOTOGRAPHS

PART 1 - GENERAL

REQUIREMENTS:

- A. One hour minimum site document VHS format video prior to commencing construction; narrated.
- B. Twenty minute minimum weekly VHS format video progression of work; narrated; show work action in progress.
- C. Monthly ground level, still photographs; 3 x 5; (min. 36 per month); notated for locations; two sets of prints and one set of negatives shall be delivered to the Architect/Engineer each month.

SUBMITTAL:

- A. Submit record video to document site to Architect/Engineer for owner files.
- B. Submit weekly video for review by Owner; video will be returned to Contractor to maintain video library of project; video library shall be transmitted to Owner at end of project.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION 01760.

## SECTION 019113 - GENERAL COMMISSIONING 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.
- B. OPR and BoD documentation are included by reference for information only.

#### 1.2 SUMMARY

- A. Section includes general requirements that apply to implementation of commissioning without regard to specific systems, assemblies, or components.
- B. Related Sections:
  - 1. Section 220800 "Commissioning of Plumbing" for commissioning process activities for HVAC&R systems, assemblies, equipment, and components.
  - 2. Section 230800 "Commissioning of HVAC" for commissioning process activities for HVAC&R systems, assemblies, equipment, and components.
  - 3. Section 260800 "Commissioning of Electrical Systems" for commissioning process activities for HVAC&R systems, assemblies, equipment, and components.

#### 1.3 DEFINITIONS

- A. BoD: Basis of Design. A document that records concepts, calculations, decisions, and product selections used to meet the OPR and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that support the design process.
- B. Commissioning Plan: A document that outlines the organization, schedule, allocation of resources, and documentation requirements of the commissioning process.
- C. CxA: Commissioning Authority.
- D. FPT: Functional Performance Test. Test of dynamic function and operation of equipment and systems. Systems are tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, life safety conditions, power failure, etc. Systems are run through all specified sequences of operation.
- E. Issues Log: A formal and ongoing record of problems or concerns – and their resolution – that have been raised by members of the commissioning team during the course of the commissioning process.

- F. OPR: Owner's Project Requirements. A document that details the functional requirements of a project and the expectations of how it will be used and operated. These include Project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information.
- G. SVC: System Verification Checklist. A list of static inspections and elementary component tests that verify proper installation of equipment (e.g., belt tension, oil levels, labels affixed, gauges in place, sensors calibrated, etc.).
- H. Systems, Subsystems, Equipment, and Components: Where these terms are used together or separately, they shall mean "as-built" systems, subsystems, equipment, and components.
- I. TAB: Testing, Adjusting, and Balancing.

#### 1.4 COMMISSIONING TEAM

- A. Members Appointed by Contractor(s): Individuals, each having the authority to act on behalf of the entity he or she represents, explicitly organized to implement the commissioning process through coordinated action. The commissioning team shall consist of, but not be limited to, representatives of each Contractor, including Project superintendent and subcontractors, installers, suppliers, and specialists deemed appropriate by the CxA.
- B. Members Appointed by Owner:
  - 1. CxA: The designated person, company, or entity that plans, schedules, and coordinates the commissioning team to implement the commissioning process. Owner will engage the CxA under a separate contract.
  - 2. Representatives of the facility user and operation and maintenance personnel.
  - 3. Architect and engineering design professionals.

#### 1.5 OWNER'S RESPONSIBILITIES

- A. Provide the OPR requirements to the CxA .
- B. Assign operation and maintenance personnel and schedule them to participate in commissioning team activities.
- C. Provide the BoD documentation, prepared by Engineer and approved by Owner, to the CxA and each Contractor for use in developing the commissioning plan and operation and maintenance training plan.

#### 1.6 CONTRACTOR'S RESPONSIBILITIES

- A. Contractor shall assign representatives with expertise and authority to act on its behalf and shall schedule them to participate in and perform commissioning process activities including, but not limited to, the following:
  - 1. Review and accept the commissioning plan.



2. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.
3. Cooperate with the CxA for resolution of issues recorded in the Issues Log.
4. Review commissioning progress reports.
5. Integrate and coordinate commissioning process activities with construction schedule.
6. Review and accept system verification checklists (SVC) provided by the CxA.
7. Complete system verification checklists (SVC) as Work is completed and provide to the Commissioning Authority on a weekly basis.
8. Review and accept commissioning process functional performance test (FPT) procedures provided by the Commissioning Authority.
9. Conduct TAB coordination meeting. Notify CxA a minimum of 10 days prior to meeting.
10. Conduct building automation system coordination meeting. Notify CxA a minimum of 10 days prior to meeting.
11. Complete commissioning process functional performance test (FPT) procedures.
12. Coordinate training of Owner's O&M personnel.
13. Ensure that all Sub-Contractors execute their commissioning responsibilities according to the Contract Documents and schedule.
14. Schedule, coordinate, and assist commissioning team in seasonal or deferred testing.

#### 1.7 SUB-CONTRACTOR'S RESPONSIBILITIES

- A. Each Sub-Contractor shall assign representatives with expertise and authority to act on its behalf and shall schedule them to participate in and perform commissioning process activities including, but not limited to, the following:
  1. Review and accept the commissioning plan.
  2. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.
  3. Cooperate with the CxA for resolution of issues recorded in the Issues Log.
  4. Review commissioning progress reports.
  5. Review and accept system verification checklists (SVC) provided by the CxA.
  6. Complete system verification checklists (SVC) as Work is completed and provide to the Commissioning Authority on a weekly basis.
  7. Review and accept commissioning process functional performance test (FPT) procedures provided by the Commissioning Authority.
  8. Provide technically capable representative to participate in functional performance test (FPT) procedures for entire duration of testing of system samples for contracted scope of work.
  9. Participate in training sessions of Owner's O&M personnel for contracted scope of work.
  10. Participate in seasonal or deferred testing, as necessary.

#### 1.8 EQUIPMENT SUPPLIER'S RESPONSIBILITIES

- A. Assist in testing equipment they supplied.
- B. Include all special tools and instruments, except for stand-alone data-logging equipment that may be used by the CxA.

1. Review functional performance test (FPT) procedures provided by the CxA for equipment they supplied for feasibility, safety, equipment, and warranty protection.

#### 1.9 CxA'S RESPONSIBILITIES

- A. The CxA will work on the Owner's behalf to produce the OPR and will provide two copies for distribution to the owner and one copy to the Contractor.
- B. Organize and lead the commissioning team.
- C. Provide commissioning plan.
- D. Provide scheduling input to the Contractor for commissioning process activities.
- E. Provide Project-specific system verification checklists (SVC) and commissioning process functional performance test (FPT) procedures.
- F. Verify the execution of commissioning process activities using random sampling. The sampling rate may vary from 1 to 100 percent. Verification will include, but is not limited to, equipment submittals, construction checklists, training, operating and maintenance data, tests, and test reports to verify compliance with the OPR. When a random sample does not meet the requirement, the CxA will report the failure in the Issues Log.
- G. Prepare and maintain the Issues Log.
- H. Monitor component and equipment installation and document observations in Issues Log. Witness systems, assemblies, equipment, and component startup.
- I. Prepare and maintain completed construction checklist log.
- J. Review and verify testing, adjusting and balance Work by other contractor. Sampling rates shall be as indicated.
  1. Chiller: 100%
  2. Boiler: 100%
  3. Hydronic Pumps: 100%
  4. Air Handling Units: 100%
  5. Terminal Units: 20%
  6. Fan Coils Units: 100%
  7. Fans: 100%
- K. Witness systems, assemblies, equipment, and component startup.
- L. Direct and Witness functional performance test (FPT) procedures.
- M. Verify requirements for training of O&M personnel.
- N. Compile test data, inspection reports, and certificates; include them in the commissioning process report.

## 1.10 COMMISSIONING DOCUMENTATION

- A. Process and schedule for completing system verification checklists and manufacturer's prestart and startup checklists for commissioned systems, assemblies, equipment, and components to be verified and tested.

## PART 2 - PRODUCTS (Not Used)

### 2.1 TEST EQUIPMENT

- A. All standard testing equipment required to perform startup and initial checkout and required functional performance testing shall be provided by the Division Contractor and Sub-Contractor for the equipment being tested. For example, the mechanical contractor of Division 23 shall ultimately be responsible for all standard testing equipment for the mechanical system and controls systems in Division 23, except for equipment specific to and used by TAB in their commissioning responsibilities.
- B. Special equipment, tools, and instruments (only available from vendor, specific to a piece of equipment) required for testing equipment shall be provided and left on site, except for stand-alone data-logging equipment that may be used by the CxA.
- C. All testing equipment shall be of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified in the Specifications. If not otherwise noted, the following minimum requirements apply: Temperature sensors and digital thermometers shall have a certified calibration within the last year and a resolution of + or - 0.1°F. Pressure sensors shall have an accuracy of + or - 2.0% of the value range being measured (not full range of meter) and have been calibrated within the last year. All equipment shall be calibrated according to the manufacturer's recommended intervals and when dropped or damaged. Calibration tags shall be affixed or certificates readily available.

## PART 3 - EXECUTION (Not Used)

### 3.1 COMMISSIONING SCOPE

- A. With respect to this section and other related section, the following systems shall be commissioned.
  - 1. HVAC System
  - 2. HVAC Controls (Building Automation System)
  - 3. Domestic Water Heating and Distribution Systems
  - 4. Lighting Control Systems

### 3.2 SYSTEM VERIFICATION CHECKLISTS

- A. Sample copies of system verification checklists are included at the end of this specification. The sample copies are provided to give the Sub-Contractors a general idea of the Work required to complete the system verification checklists. The system verification checklists included are

prototypical, and do not reflect specific requirements of this project's plans or specification. Specific system verification checklist items may be added, modified, or deleted in the commissioning plan delivered to the Sub-Contractor in order to reflect final construction document requirements. Contractor and Sub-Contractors shall review final construction documentation for applicable details and specifications related to equipment to be commissioned in order to fully ascertain all of the system verification checklist requirements.

B. System Verification Checklists shall be completed for the following systems:

1. Air Handling Units
2. Variable Volume Terminal Units
3. Fans
4. Chillers
5. Boilers
6. Hydronic Pumps
7. Hydronic Piping Systems
8. Ductwork
9. Make-up Water Systems
10. Building Automation System
11. Lighting Controls
12. Domestic Water Heaters
13. Variable Frequency Drives

### 3.3 FUNCTIONAL PERFORMANCE TESTS

A. Sample copies of functional performance tests (FPTs) are included at the end of this specification. The sample copies are provided to give the Sub-Contractors a general idea of the Work required to complete the FPTs. The FPTs included are prototypical, and do not reflect specific requirements of this project's plans or specification. Specific FPT items may be added, modified, or deleted in the commissioning plan delivered to the Sub-Contractor in order to reflect final construction document requirements. Contractor and Sub-Contractors shall review final construction documentation for applicable details and specifications related to equipment to be commissioned in order to fully ascertain all of the FPT requirements.

B. Functional Performance Tests shall be completed for the following systems:

1. Air Handling Units
2. Variable Volume Terminal Units
3. Fans
4. Chilled Water System
5. Heating Hot Water System
6. Lighting Controls
7. Domestic Water Heating Systems

### 3.4 DOCUMENTATION, NON-CONFORMANCE, AND APPROVAL OF TESTS

A. NON-CONFORMANCE

1. The CxA shall record the results of the functional performance tests on the procedure or test form. All deficiencies or non-conformance issues shall be noted and reported to the Contractor.
2. Corrections of minor deficiencies identified may be made during the tests at the discretion of the CxA. In such cases the deficiency and resolution shall be documented on the procedure form.
3. Every effort shall be made to expedite the testing process and minimize unnecessary delays, while not compromising the integrity of the procedures. However, the CxA will not be pressured into overlooking deficient work or loosening acceptance criteria to satisfy scheduling or cost issues, unless there is an overriding reason to do so at the request of the Owner.
4. Cost of Retesting:
  - a. The cost for the Sub-Contractor to retest a system verification check or functional test, if they are responsible for the deficiency, shall be theirs. If they are not responsible, any cost recovery for retesting costs shall be negotiated with the Contractor.
  - b. For a deficiency identified, not related to any system verification checklist or startup fault, the following shall apply: The Commissioning Authority, Contractor, and any applicable Sub-Contractors will retest the equipment once at no "charge". However, the time and expenses for the Commissioning Authority to direct a second retest shall be charged to the Contractor. The Contractor shall be responsible for any cost recovery for retesting costs from the party responsible.
  - c. The time and expenses for the Commissioning Authority to direct any retesting required because a specific System Verification Checklist or startup test item, reported to have been successfully completed, but determined during functional testing to be faulty, shall be charged to the Contractor. The Contractor shall be responsible for any cost recovery for retesting costs from the party responsible for executing the faulty System Verification Checklist or startup test item.
  - d. The time and expenses for the Commissioning Authority to observe any TAB verification retesting shall be charged to the Contractor. The Contractor shall be responsible for any cost recovery for retesting costs from the TAB contractor.

#### B. FAILURE DUE TO MANUFACTURER DEFECT

1. If 10% (or three, whichever is greater) of identical pieces of equipment fail to perform to the Contract Documents (mechanically or substantively) due to a manufacturer defect, not allowing it to meet its submitted performance specification, all identical units may be considered unacceptable by the A/E, upon recommendation by the CxA. In such case, the Contractor shall provide the Owner with the following:
  - a. Within one week of notification from the Owner, the applicable Sub-Contractor or manufacturer's representative shall examine all other identical units making a record of the findings. The findings shall be provided to the Contractor within two weeks of the original notice.
  - b. Within two weeks of the original notification, the applicable Sub-Contractor or manufacturer shall provide a signed and dated, written explanation of the problem, cause of failures, etc., and all proposed solutions. The proposed solutions shall not significantly exceed the specification requirements of the original installation.
  - c. The A/E shall determine whether a replacement of identical units or a repair is acceptable.

- d. Two examples, where applicable, of the proposed solution shall be installed by the applicable Sub-Contractor and the A/E shall be allowed to test the installations for up to one week, upon which the A/E shall decide whether to accept the solution.
- e. Upon acceptance, the applicable Sub-Contractor and/or manufacturer shall replace or repair all identical items, at their expense. The replacement/repair work shall proceed with reasonable speed beginning one week from when parts can be obtained.

C. APPROVAL

- 1. The CxA documents each satisfactorily function on the test form. Final approval of the performance test by the Owner is made after review by the CxA, following recommendations by the Architect or Engineer.

END OF SECTION 019113

## SECTION 02085 – GEOTECHNICAL INVESTIGATION

The geotechnical investigative report is included herein, and is furnished by the Owner from an independent testing laboratory.

The data included in the report may be used by the Contractor for his general information only. The Architect and Owner will not be responsible for the accuracy of the data given therein.

END OF SECTION 02085

**Subsurface Soil Exploration and  
Geotechnical Engineering Evaluation  
for a Proposed Classroom Building,  
Pipeline, Stormwater Facility  
And a Paved Drive  
at Gilchrist Elementary School  
1301 Timberlane Road, Tallahassee, Florida**



**Ardaman & Associates, Inc.**

File No. 113-11-40-1187  
August 26, 2011

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**MEMBERS:**

A.S.F.E.

American Concrete Institute

American Society for Testing and Materials

Florida Institute of Consulting Engineers





## Ardaman & Associates, Inc.

Geotechnical, Environmental and  
Materials Consultants

August 26, 2011  
File No. 113-11-40-1187

Leon County School Board  
3420 West Tharpe Street  
Tallahassee, Florida 32303

Attention: Mr. Rod McQueen

Subject: **Report** of Subsurface Soil Exploration and Geotechnical Engineering Evaluation for the Proposed 1-Story Building Addition, Pipeline, Stormwater Facility, and Paved Drive at Gilchrist Elementary School

Dear Mr. McQueen:

As authorized by the Leon County School Board, Ardaman and Associates, Inc. (Ardaman) has completed the subsurface soil exploration and geotechnical engineering evaluation for the subject project. The purposes were to evaluate subsurface conditions encountered in test borings performed at the site, and to provide geotechnical recommendations regarding: foundation design; pavement section design; suitable fill material; and earthwork preparation for the building and paving areas. We also explored stormwater facility soils and pipeline soils.

This report has been prepared for the exclusive use of the Leon County School Board for specific application to the proposed projects.

We recommend retaining Ardaman and Associates, Inc. to perform recommended site and laboratory testing throughout construction, to confirm compliance with the recommendations presented in this report.

We are pleased to be of assistance to you on this phase of your project. When we may be of further service to you or should you have any questions, please do not hesitate to contact us.

Sincerely,

**ARDAMAN & ASSOCIATES, INC.**

Florida Certificate of Authorization No. 5950

Jeremy M. Clark, E.I.  
Staff Engineer

JMC/WSJ/mss

c: Mr. Chris Childers, P.E.  
Bliss & Nyitray (BNI Project No. 11T14)

William S. Jordan, P.E.  
Senior Project Manager  
FL Engineering License No. 33026

## 1.0 PROJECT DESCRIPTION AND SCOPE OF SERVICES

Based upon correspondence from Bliss & Nyitray, Inc., we understand that the proposed construction includes the addition of an approximate 12,000 square foot 1-story classroom building, a stormwater facility with drive areas, and a storm drain pipeline to the facility.

Building framing materials and siding are proposed to be masonry bearing walls with steel roof framing. Maximum loading conditions for the 1-story addition are estimated to be on the order of 3 to 4 kips/linear foot for the wall foundations, and 5 to 10 kip column loads. Estimated exterior column spacing is 35-feet. Floor loads are estimated to be up to 100 pounds per square foot.

The floor elevation for the building will be approximately +226 feet, requiring only about 1-foot of fill. However, we understand that up to approximately 7-feet of cut may be required to reach final grade for the stormwater management facility, and the cut for the pipeline is unknown.

Geotechnical services were based on the authorized proposal for the project, as follows:

1. Ardaman mobilized a drill rig and crew to the site, and performed a total of eight (8) Standard Penetration Test (SPT) borings within the proposed building footprint, two (2) SPT borings within the stormwater facility footprint, and eight (8) auger borings within the proposed pipeline alignment and drive areas.
2. Ardaman's Drill Crew Chief prepared a field log for each boring, recorded SPT "N"-values (when applicable), visually classified the soils, and transported portions of the samples to our office for further classification by our engineers. The Drill Crew Chief also checked for groundwater in the borings.
3. Ardaman's engineers visually/manually classified recovered soil samples, and developed a soil profile for each boring. Laboratory tests of selected soil samples were directed to further assess engineering and index properties of the encountered soils.
4. Our engineers analyzed and evaluated soil conditions encountered, and developed recommendations regarding: foundation design; pavement section design; suitability of on-site fill material; and earthwork fill quality and compaction for structures and pavement. Recommendations are presented in this report.

## 2.0 FIELD SUBSURFACE EXPLORATION-LOCATIONS AND METHODS

The approximate locations of the test borings (TH and AB) are shown on the attached **Figure 1**. The borings were located on site by our staff using a wheel tape measuring from existing site features. The boring locations indicated shall be considered accurate only to the degree implied by the methods of measurement used.

The SPT borings were performed in general accordance with ASTM D 1586, advanced by rotary drilling with 4-inch diameter flight augers, using a Model CME-55 drill rig mounted on a flat-bed truck. The SPT borings were sampled at 18-inch intervals continuously to 10.5-feet below grade, and at 5-foot intervals thereafter. The auger borings were performed in general accordance with ASTM D1452, and soil samples were grabbed off the augers by our drill crew chief at the same intervals as in the SPT borings.





Upon completion of each test hole, they were either backfilled with auger cuttings or grouted with tremie-placed "neat" cement grout.

### 3.0 LABORATORY TESTING OF SOILS

Laboratory testing was directed by our engineers on selected soil samples from the test borings, to aid classification and to further define the engineering properties of the soils. The laboratory tests included: Nature Moisture Content (ASTM D 2216); Percent Finer than the U.S. No. 200 Sieve (ASTM D 1140, percent silt and clay); and Atterberg Limits determinations (ASTM D 4318, plasticity). The results of the laboratory tests are presented adjacent to the **Soil Boring Profiles** on the attached **Figure 1**, at the respective depths from which the tested samples were recovered.

### 4.0 SUBSURFACE SOIL AND GROUNDWATER CONDITIONS

#### 4.1 General

Ardaman's interpretations of subsurface conditions encountered are depicted in the *Soil Boring Profiles* on the attached Figure 1. The soil descriptions shown in the **Soil Legend** are based upon visual/manual and laboratory test-based classification procedures in general accordance with ASTM D 2488; ASTM D 2487; and AASHTO M145.

The stratification lines on the *Soil Boring Profiles* represent the approximate boundaries between the soil types, but the actual transitions may be more gradual than implied. This report does not address variations which occur between or away from the borings. The nature and extent of such variations may not become evident until during the course of construction. If any variations become evident, Ardaman must be contacted and authorized to provide additional testing and evaluations concerning the projects geotechnical evaluations and recommendations.

#### 4.2 Soil Conditions

The following soil types were encountered during the subsurface exploration:

brown medium to fine sand with clay; fill material (Stratum 1); brown medium to fine sand with silt and surficial roots; topsoil (Stratum 1A); reddish-brown very clayey fine sand to sandy lean clay (Stratum 2); **light brown to reddish-brown silty, sandy lean clay** (Stratum 3); **reddish-brown silty, sandy lean clay with seams of orangish-brown very clayey sand and inclusions of sandy fat clay** (Stratum 3A); marbled reddish-brown very clayey sand and light tan very silty fine sand (Stratum 4); marbled light brown and gray clayey, very silty sand with inclusions of sandy fat clay (Stratum 5).

Soil conditions under the proposed building footprint include moderately plastic to the low end of highly plastic clayey materials encountered as shallow as 6-inches below grade in TH-3. These materials have a moderate potential for shrinkage and swell movements, and include Strata 3 and 3A, and Stratum 2 as a lesser concern. SPT "N"-Values in these strata indicate medium dense to medium stiff soil conditions. Beneath the Strata 3 and 3A materials, silty sands and silty, clayey sands were encountered generally from 13-feet to boring termination.

Some of the auger borings performed in the parking and drive areas encountered shallow plastic materials.



Soil conditions encountered in the proposed stormwater facility mainly consisted of a light brown to reddish-brown silty, sandy lean clay (Stratum 3).

### 4.3 Groundwater Conditions

At the time our test borings were performed, groundwater was not encountered within the vertical reaches of our test borings. Although a groundwater table was not encountered, shallow perched groundwater may be encountered at the site during construction following heavy rains, specifically within sandy layers (Strata 1 and 1A), atop the less permeable Strata 2, 3, and 3A, or in sandy seams within the clayey strata. While such a perched groundwater conditions is not permanent, it could certainly have a negative impact on earthwork operations and the earthwork schedule, if present at the time of construction.

## 5.0 ENGINEERING EVALUATION AND EARTHWORK RECOMMENDATIONS

### 5.1 General Soils Evaluation

In our opinion, subsurface conditions encountered in the building area test borings appear adequate to allow use of a stiffened shallow footing foundation system with a stiffened slab-on-grade, on the condition that the subgrade bearing soils are prepared in accordance with the recommendations presented in Section 5.2, below.

Specifically, all building strip footings shall be stiffened to compensate for potential differential foundation movement due to the presence of plastic Strata 2, 3 and 3A. See also our discussion under Section 5.3: "Foundation Design".

After topsoil stripping and excavation of proposed cut areas, plastic soils shall be undercut in accordance with Section 5.2, below. Proof-rolling compaction of the existing soils is also recommended to provide a more uniform bearing surface for foundations, fills and the slab, and to reveal any areas with objectionable soil conditions which have not necessarily been encountered by our borings.

In parking/drive areas, Strata 2, 3 and 3A are not suitable subgrade materials, and shall be undercut 2-feet, if present in that interval below the bottom of the proposed limerock base.

Ardaman shall be requested to inspect and test exposed subgrade soils during earthwork, to delineate objectionable soils for undercutting and replacement (if present), and to test densities of sub-grade soils and fills.

### 5.2 Typical Site Preparation Procedures

The following are recommendations for site soil preparation and foundation design, which, in our opinion are suitable for the proposed construction and existing soil conditions. These recommendations are made as a guide for the design engineer and/or architect, and shall be incorporated into the project specifications:

1. The construction area "footprints", plus a minimum margin of three feet laterally, shall be stripped and grubbed of all surface vegetation, and other deleterious materials, as encountered. Next, excavate proposed cut areas to the design grades shown on the civil plans.





Where Strata 3 and 3A are present, they shall be undercut and replaced with compacted fill to a depth of at least 2 feet below bottom of slab grade, and 1-foot below bottom of foundation grade(s).

As indicate above, Ardaman shall be requested to inspect and test the exposed subgrade soils, to delineate objectionable inclusions for undercutting and replacement.

2. The cleared surfaces in construction areas shall be proof-rolled using the appropriate compaction equipment for site and soil conditions. Adjust the moisture content of the soil, as necessary, to aid compaction. Sufficient passes shall be made to develop a minimum of 95% of the Modified Proctor maximum dry density (ASTM D 1577) to a depth of 12 inches below the compacted surface.
3. If any areas “yield” during proof rolling, they must be explored in test trenches to evaluate the condition of the soils. Should yielding result from excessive soil moisture, two corrective alternatives may be considered.
  - A. If the existing soils are silty or clayey sands (containing less than 50% clay), harrow and air dry the soils until the moisture content is 2 to 3 percent below the optimum moisture content as determined from the Modified Proctor test (ASTM D 1557); or
  - B. Replace the wet material with select fill soils conforming to Item 6 below.

Remove any materials, if determined to be deleterious, in areas that “yield” during the proof-rolling operation, and replace with select fill.

4. After satisfactory proof-rolling of the cleared/cut areas, filling may proceed in level lifts not exceeding 12 inches in uncompacted thickness. Each lift shall be compacted by repeated passes with appropriate compaction equipment, to achieve at least 95% of the Modified Proctor maximum dry density (ASTM D 1557). The filling and compaction operations shall continue until the desired elevations are achieved. This filling may be performed after foundation work delineated below, as well.
5. Fill required in the slab and footing undercuts, and to elevate the structure areas shall preferably consist of “Select Fill”, defined as uniformly graded, natural, clean silica sand to silty sand (A-3 to A-2-4) (SP or SP-SM or SM), free of organics, plastic soils, and deleterious materials, and with less than 15% passing the U.S. No. 200 Sieve.

In the interest of economy and taking into consideration the types of local soils abundant in the area, fill materials may also consist of “Suitable Fill,” as well. This includes certain silty to clayey sands (A-2-4, SM-SC materials), but with no more than 35% passing the US No. 200 sieve (% of fines); liquid limit (LL) less than 40%; and plasticity index (PI) less than 10%; free of organics, highly plastic soils, and other deleterious materials.

We caution that “Suitable Fill” materials with more than 15% fines are likely to retain excess moisture, and be difficult to dry and compact. Their compactability is dependent upon the amount of soil fines and the soil moisture content at the time of compaction. Construction delays are more likely during rainy periods when such soils are used than when Select fills are used. Consequently, using such “Suitable Fill” soils can have a negative impact on the construction operations and schedule.





6. Excavate continuous wall footing lines and column footings to the proposed bottom of footing elevations, and make every effort to minimize disturbance to the foundation bearing soils. Request Ardaman to inspect the exposed surfaces for the presence of any objectionable inclusions, or excessively plastic soils. Any such areas will be delineated for undercutting and replacement (as indicated in Item 1, above).

Test the density of the foundation bearing soils. The recommended density requirement is at least 95% of the Modified Proctor maximum dry density to a depth of 12 inches below the foundation bearing elevation. If deficient, compact the bearing soils to achieve this requirement. Any fills required in foundation areas shall consist of Select Fill, place in 12-inch maximum loose lifts, and each lift shall be compacted to at least 95% of the Modified Proctor maximum dry density (ASTM D 1557).

7. We recommend the following minimum testing frequencies in building and paved areas:
  - Cut areas and existing proof-rolled subgrade: One test per 2,000 square feet
  - Fill areas: One test per 1,500 square feet per fill lift
  - Foundation areas: At least one field density test for every 40 lineal feet of continuous (strip) footings, and 100 percent of individual column footings.
8. It is important to contact **Ardaman and Associates, Inc.** at least a few days prior to proof-rolling, so that bulk samples of site soils and proposed fills can be obtained, and Proctor tests performed in the laboratory. In this manner, the Maximum Proctor Dry Density values will be available at the time of proof-rolling and density testing.

### 5.3 Foundation Design

To reduce the potential shrink/swell effects of the moderately expansive plastic clays, we recommend that **strip foundations be stiffened** by increasing the percentage of steel and adding a top layer of steel in the footings. Commonly, strip footings stiffening for expansive clays consists of a top and bottom layer of 3 each #5 bars. Bliss & Nyitray, Inc. will provide more detailed reinforcement requirements. These measures are generally accepted to mitigate the effects of the expansive clays, but some minor cracking of the structure and floor slab may still occur. The floor slab will require special stiffening with 2-way reinforcement.

Column footings shall be a minimum of 24 inches wide and wall footings shall be a minimum of 18 inches wide. Minimum soil coverage of 18 inches shall be maintained from the bottom of the exterior foundations to the adjacent outside finished grades.

Foundations supported on soils prepared in accordance with the recommendations in this report may be designed for a soil contact pressure of 2,000 psf or less. Based on the boring information and the loading conditions noted above, the recommended allowable soil contact pressure will yield a minimum factor of safety in excess of two against bearing capacity failure. The allowable soil bearing pressure is a settlement controlled value calculated based on a maximum allowable total settlement of 1-inch.



## 5.4 Slab-On-Grade

A modulus of subgrade reaction of 150 psi/inch may be used in the floor slab structural design. Ardaman also recommends placement of a minimum 6-mil vapor membrane beneath the slab-on-grade before placing the concrete.

## 6.0 PRELIMINARY PAVEMENT SECTION DESIGN

### 6.1 General

New pavement areas shall be prepared, stripped, proof-compacted, and filled in accordance with items 1 through 5 in Section 5.2, above.

In order to perform a detailed Pavement Section Design analysis to determine the thicknesses of the pavement section components, data needed to perform such analyses include an estimate of the accumulated 18 kip Single Axial Loads over the life of the project ( $ESAL_D$ ).

These data are not available at this time. Therefore, we provide a preliminary pavement section design. The following data was assumed to determine the minimum thicknesses of the pavement section components:

Subgrade Minimum Limerock Bearing Ratio:	20
Reliability (R %):	80%
Resilient Modulus (Based on assumed LBR):	7,500 psi
$ESAL_D$ for Standard Duty:	300,000 (standard light duty traffic)

### 6.2 Flexible Pavement Section

Based on the above assumed data, a preliminary pavement design analysis was performed. Provided below, are minimum thicknesses of the pavement section components, which yield a Structural Number (SN) of 2.9 for standard light duty traffic.

- The top 24 inches of soil beneath the base course (which comprise the Subgrade and Stabilized Subgrade) shall be AASHTO M145 types A-1, A-3, or A-2-4, per FDOT index 500. Strata 2, 3, and 3A do not meet these criteria. See also the third "bullet" item, below.
- Compact the top 24 inches of soil beneath the Base Course (which comprise the Subgrade and Stabilized Subgrade) to at least 95% of the Modified Proctor maximum dry density (AASHTO T-180) in the bottom foot, and minimum 98% in the top foot.
- The top 12 inches of the 24 inches beneath the base course (the Subgrade) must exhibit a minimum laboratory LBR of 40. LBR testing of the proposed Subgrade soils must be performed well in advance of pavement section construction. If necessary to achieve minimum LBR=40, perform stabilization in accordance with FDOT *Standard Specifications for Road and Bridge Construction*, latest edition, Section 160.





- We recommend installing limerock base meeting the quality requirements of FDOT Section 911, placed in accordance with Section 200 of the FDOT Standard Specifications. The base shall be compacted to at least 98% of the Modified Proctor maximum dry density (AASHTO T-180), and must exhibit a minimum LBR value of 100.
- After placement of a prime coat or tack coat (FDOT Section 300), install the asphaltic concrete layer. Specific requirements for the Type SP asphaltic concrete are outlined in Section 334 in the FDOT Standard Specifications.

Pavement section components and their thicknesses are tabulated below.

### SUMMARY DESIGN OF PAVEMENT

**Pavement Slope:** 2% to 3%

**Subgrade Density:** 95% (ASTM D 1557/AASHTO T-180) (Select fill)

#### ASPHALT CONCRETE PAVEMENT SN=2.9 STANDARD LIGHT DUTY TRAFFIC

COMPONENT	STANDARD DUTY	MATERIAL	% OF COMPACTION	MINIMUM REQUIREMENTS
Stabilized (Type B) Subgrade	12"	Controlled Fill	98% (D 1557)	LBR = 40
Base Material	6"	Limerock	98% (D 1557)	LBR = 100
Asphalt Structural Course	1.25"	SP 12.5	FDOT Spec. ( Sec 334)	(1 lift)
Asphalt Friction Course	0.75"	SP 9.5	FDOT Spec. (Sec. 334)	(1 lift)*

#### ASPHALT CONCRETE PAVEMENT SN=3.72 FOR HEAVY DUTY TRAFFIC

COMPONENT	HEAVY DUTY	MATERIAL	% OF COMPACTION	MINIMUM REQUIREMENTS
Stabilized (Type B) Subgrade	12"	Controlled Fill	95% (D 1557)	LBR = 40
Base Material	8"	Limerock	98% (D 1557)	LBR = 100
Asphalt Structural Course	1.5"	SP 12.5	FDOT Spec. ( Sec 334)	(1 lift)
Asphalt Friction Course	1.5"	SP 9.5	FDOT Spec. (Sec. 334)	(1 lift)

\*Less than minimum per FDOT Specifications (334-1.4)

We recommend that the civil design features of the project be planned such that the groundwater table cannot reach an elevation higher than 24 inches below bottom of Limerock base. Such features can include perimeter ditches and, if required, subdrains. Please refer to the "Groundwater" section of this report for discussion of groundwater conditions at the site.

### 7.0 CLOSURE

The recommendations submitted in this report are based upon the data obtained from the soil borings presented on the attached Figure 1. This report does not reflect any variations which may occur between the borings. The nature and extent of variations between the borings may not become evident until construction. If site or soil variations appear evident, it will be necessary to reevaluate the recommendations of this report after performing further on-site observations during the construction period and noting the characteristics of such variations.





In the event any changes occur in the design, nature, location of the facility, or assumed structural loads, Ardaman and Associates, Inc. must be contacted to review the applicability of the conclusions and recommendations in this report. Ardaman and Associates, Inc. must also perform a general review of final design drawings and specifications to determine if earthwork and foundation recommendations have been properly interpreted and implemented in the design specifications.

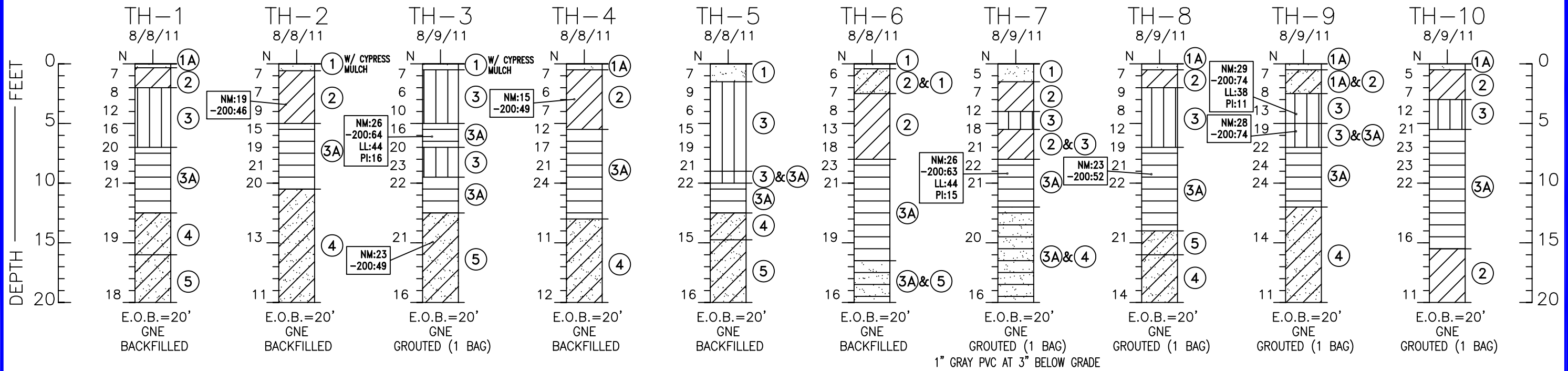
This study does not deal with the possibility of eventual sinkhole development at the site. This exploration and analysis covers only the near surface soil deposits. It is not intended to include deep soil or rock strata where cavities and caverns may exist.

This report has been prepared in accordance with generally accepted geotechnical engineering practices. No other warranty, expressed or implied, is made.

**End of Report**



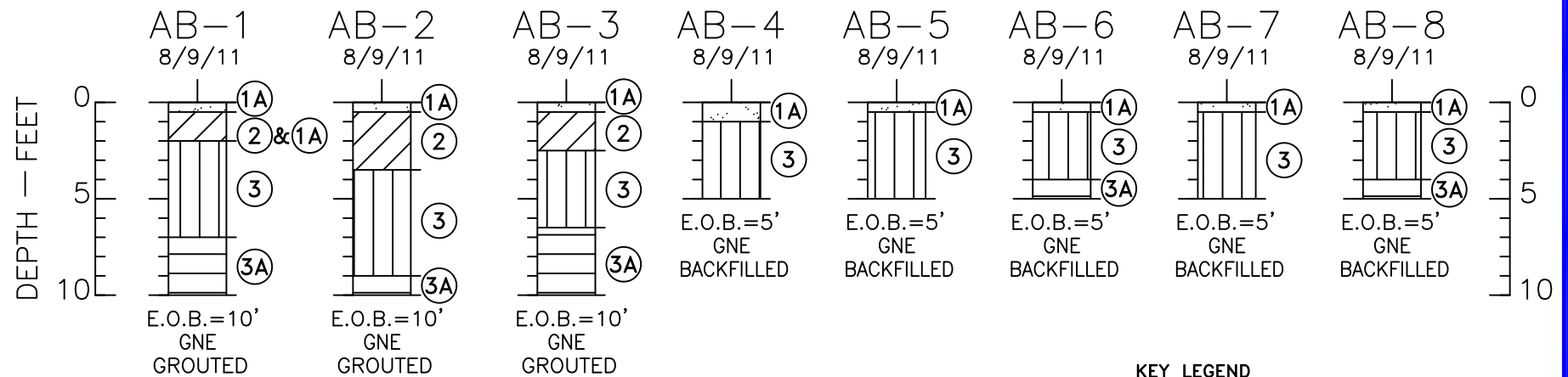
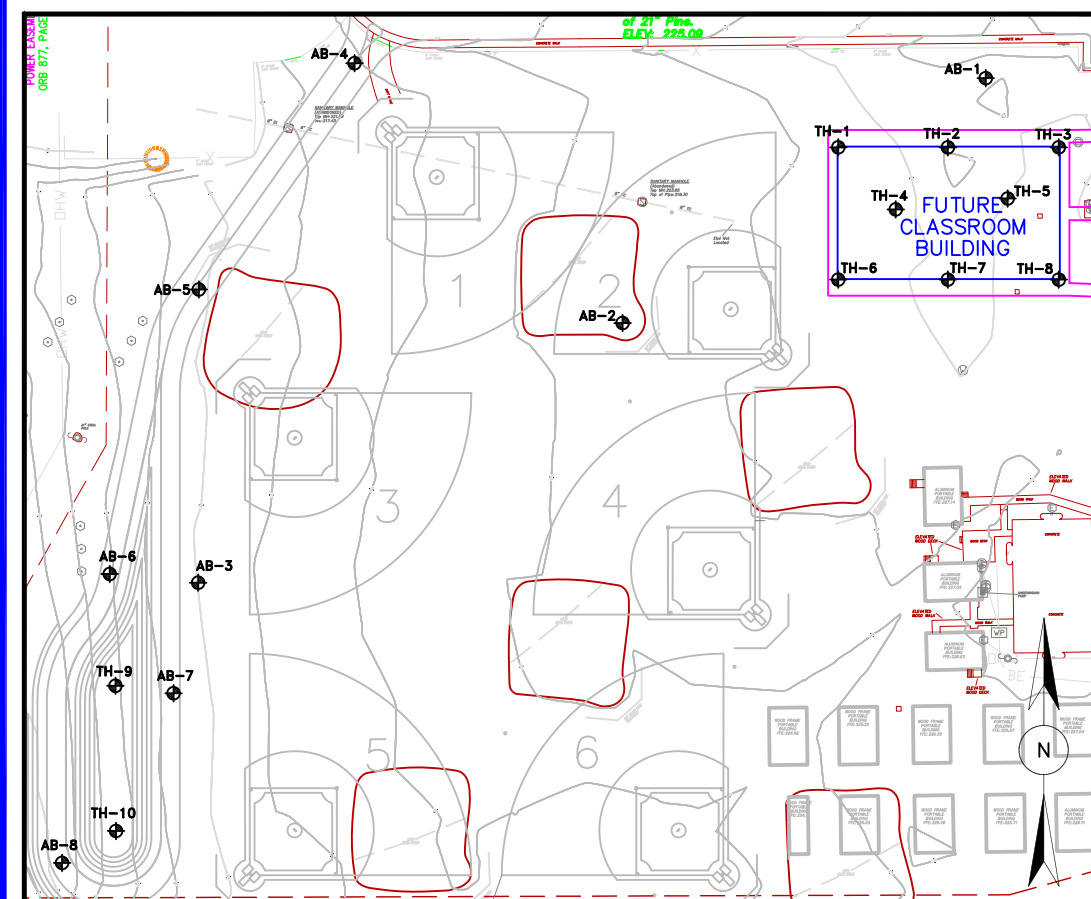
# SOIL BORING PROFILES



WHILE THE BORINGS ARE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT THEIR RESPECTIVE LOCATIONS AND FOR THEIR RESPECTIVE VERTICAL REACHES, LOCAL VARIATIONS CHARACTERISTIC OF THE SUBSURFACE MATERIALS OF THE REGION ARE ANTICIPATED AND MAY BE ENCOUNTERED. THE BORING LOGS AND RELATED INFORMATION ARE BASED ON THE DRILLER'S LOGS AND VISUAL EXAMINATION OF SELECTED SAMPLES IN THE LABORATORY. THE DELINEATION BETWEEN SOIL TYPES SHOWN ON THE LOGS IS APPROXIMATE AND THE DESCRIPTION REPRESENTS OUR INTERPRETATION OF SUBSURFACE CONDITIONS AT THE DESIGNATED BORING LOCATIONS ON THE PARTICULAR DATE DRILLED.

GROUNDWATER ELEVATIONS SHOWN ON THE BORING LOGS REPRESENT GROUNDWATER SURFACES ENCOUNTERED ON THE DATES SHOWN. FLUCTUATIONS IN WATER TABLE LEVELS SHOULD BE ANTICIPATED THROUGHOUT THE YEAR. ABSENCE OF WATER SURFACE DATA ON CERTAIN BORINGS IMPLIES THAT NO GROUNDWATER DATA IS AVAILABLE, BUT DOES NOT NECESSARILY MEAN THAT GROUNDWATER WILL NOT BE ENCOUNTERED AT THESE LOCATIONS OR WITHIN THE VERTICAL REACHES OF THESE BORINGS IN THE FUTURE.

## TEST BORING LOCATION PLAN



- ### SOIL LEGEND
- ① BROWN MEDIUM TO FINE SAND W/ CLAY; FILL MATERIAL (SP W/ SC; A-3)
  - ①A BROWN MEDIUM TO FINE SAND W/ SILT AND SURFICIAL ROOTS; TOPSOIL (SP-SM; A-3)
  - ② REDDISH-BROWN VERY CLAYEY FINE SAND TO SANDY LEAN CLAY (SC TO CL; A-6)
  - ③ LIGHT BROWN TO REDDISH-BROWN SILTY, SANDY LEAN CLAY (CL; A-6)
  - ③A REDDISH-BROWN SILTY, SANDY LEAN CLAY W/ SEAMS OF ORANGISH-BROWN VERY CLAYEY SAND AND INCLUSIONS OF SANDY FAT CLAY (CL W/ CH; A-7)
  - ④ MARBLED REDDISH-BROWN VERY CLAYEY SAND AND LIGHT TAN VERY SILTY FINE SAND (SC; A-4/A-6)
  - ⑤ MARBLED LIGHT BROWN AND GRAY CLAYEY, VERY SILTY SAND W/ INCLUSIONS OF SANDY FAT CLAY (SC W/ CH; A-4 W/ A-7)

- ### KEY LEGEND
- ⊕ TH/AB STANDARD PENETRATION TEST (SPT) HOLE OR AUGER BORING LOCATION
  - N STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT (ASTM D-1586)
  - GNE GROUNDWATER NOT ENCOUNTERED ON DATE DRILLED
  - EOB END OF BORING
  - NM NATURAL MOISTURE CONTENT IN PERCENT (ASTM D-2216)
  - 200 PERCENT PASSING NO. 200 SIEVE SIZE (PERCENT FINES) (ASTM D-1140)
  - LL LIQUID LIMIT (ASTM D-4318)
  - PI PLASTICITY INDEX (ASTM D-4318)
  - SP-SM,SM,SC UNIFIED SOIL CLASSIFICATION SYSTEM
  - A-3,A-2-4 AASHTO SOIL CLASSIFICATION SYSTEM
  - DRILLERS: JDA, BGH
  - DRILL RIG: CME 55, MANUAL HAMMER ABOVE 10.5'; AUTO-HAMMER BELOW

### ENGINEERING CLASSIFICATION

DESCRIPTION	I COHESIONLESS SOILS	
	UNCONFINED COMPRESSIVE STRENGTH, QU, TSF	BLOW COUNT "N"
VERY LOOSE	<1/4	0 TO 4
LOOSE	1/4 TO 1/2	4 TO 10
MEDIUM DENSE	1/2 TO 1	10 TO 30
DENSE	1 TO 2	30 TO 50
VERY DENSE	>2	>50

DESCRIPTION	II COHESIVE SOILS	
	UNCONFINED COMPRESSIVE STRENGTH, QU, TSF	BLOW COUNT "N"
VERY SOFT	<1/4	0 TO 2
SOFT	1/4 TO 1/2	2 TO 4
MEDIUM STIFF	1/2 TO 1	4 TO 8
STIFF	1 TO 2	8 TO 15
VERY STIFF	2 TO 4	15 TO 30
HARD	>4	>30

**Ardaman & Associates, Inc.**  
 3175 W. Tharpe Street  
 Tallahassee, Florida 32303  
 (850) 576-6131

SHEET TITLE:  
**SUBSURFACE SOIL EXPLORATION  
 GILCHRIST ELEMENTARY SCHOOL  
 TALLAHASSEE, LEON COUNTY, FLORIDA**

DRAWN BY: JMC    CHECKED BY: WSI    DATE: 8/26/11  
 FILE NO. 113-11-40-1187    APPROVED BY: W.S.JORDAN, P.E.    FIGURE 1

## SECTION 02200 – GENERAL SITEWORK

### **LCS Supplemental Specifications for Site Work Construction Gilchrist Classroom Addition**

**11/28/11**

The following items are intended to clarify project expectations and serve as a supplement, or in addition to overall project specifications. In the event of conflicting specifications, the more stringent standard shall apply.

#### **Section GSW 100 – Supplemental General Site Work Requirements**

GSW 100.0 – Contractor shall maintain full control over the means and methods of construction and the implementation of the work contained in the construction documents and project specifications. Contractor shall be responsible for the health, safety and welfare of the public and its employees while executing the work.

GSW 100.1 – Contractor shall review the plans, specifications and bid documents and perform all the pre-bid orientation necessary to, within the degree of reason, submit fully informed and comprehensive bids to complete all site work shown on the plans, in the instructions to bidders, in the supplementary instructions and any addenda as may be applicable.

GSW 100.1.1 – If a schedule of values is provided, Contractor shall determine and provide the total cost of completing all the work shown on the plans, in the instructions to bidders, in the supplementary instructions and any addenda as may be applicable, and shall reflect said cost through the items or categories provided to them.

GSW 100.1.2 – If the work is bid lump sum, then the Contractor shall determine and provide the total cost of completing all the work shown on the plans, in the instructions to bidders, in the supplementary instructions and any addenda as may be applicable, and shall reflect said cost in the lump sum amount.

GSW 100.1.3 – Whether the work is bid lump sum or by unit cost, a full and detailed schedule of values will be required from the Contractor meeting the Owner's approval, prior to award of contract. Schedule of values shall include a detailed identification of fees, construction units, quantity of units, cost per unit, and which supports the total project cost identified in the bid.

GSW 100.2 – Grading of the site shall include all manipulation of the materials on the site as necessary to accomplish the finished lines and grades contained in the construction documents.

GSW 100.2.1 – Unless expressly identified to the contrary in the construction documents, all materials generated through grading operations shall be the property of the Contractor.

GSW 100.2.2 - Contractor shall perform grading operations in such a manner as to manage suitable site materials for use in and around vehicular use areas, sidewalk areas and building pad areas in substantial accordance with FDOT Index 505, Embankment Utilization.

GSW 100.2.3 - Any materials that must be exported to accomplish the lines and grades in the construction documents shall be included in the cost of grading.

GSW 100.2.4 - Any materials that must be imported to accomplish the lines and grades in the construction documents shall be included in the cost of grading. No materials shall be imported until all suitable materials onsite have been used in substantial accordance with FDOT Index 505, Embankment Utilization.

GSW 100.2.5 – Unless specifically indicated to the contrary in the Instructions to Bidders, any reference to earthwork measurement in this contract shall be based on struck embankment yardage. The unit cost for removal and replacement of materials shall be embankment yardage, and shall include the total cost of the work reflecting any adjustment factor for expansion, contraction and disposal fees.

GSW 100.2.6 – These earthwork and grading specifications are intended to be supplemental and subordinate to any geotechnical report or recommendations which may include the identification and designation of suitable/unsuitable materials.

GSW 100.3 – Reinforced Concrete Pipe (RCP) as may be called in the plans shall mean steel reinforced concrete pipe.

GSW 100.4 – No material substitution will be allowed unless approved in writing, in advance, by the Engineer of Record and the Owner.

### **Section LS 200 – Supplemental Landscape Requirements**

LS 200.0 – **Landscaping**, for the purpose of these specifications, shall mean the installation of chips, bark or mulch, or the planting and establishment of living ground cover for the purpose of permanent soil stabilization including sodding, turf, permanent grassing (if specifically called), flowers, shrubs and trees. **Landscape areas** shall mean any and all altered areas of the site (either alteration of the topography or to the vegetative cover, or both) that are not buildings, walks or vehicular use areas.

LS 200.1 – All areas to be landscaped shall first be fine graded and have a prepared finished soil layer.

LS 200.1.1 – Finished soil preparation shall comply, at a minimum, with FDOT Section 162, “Finished Soil Layer”.

LS 200.1.2 – Finished soil layer shall consist of a layer of mixed friable materials favorable for the establishment of landscaping as defined herein, with a minimum thickness of 4”. Overly compacted areas which are unsuitable for the establishment of landscaping shall be manipulated by mixing or harrowing, and supplemented with organic materials where necessary. Finished soil layer shall be free of clods, clumps, rocks or other foreign debris which would not be conducive to the establishment or long term maintenance of the facilities or to the safety of the facility occupants and users.

LS 200.1.3 – All areas to be landscaped shall be fine graded to provide uniformity and positive drainage.

LS 200.1.3.1 – Upon completion of the fine grading and preparation of the finished soil layer but prior to the placement of sod (or permanent seeding if specified), Contractor shall inspect the project area to ensure adequate surface drainage has been achieved and that no puddles of standing water or overly saturated areas will exist upon completion. Finished tops of area drains or yard inlets may require adjustment based on final grading (cost of which shall be included in the drain or yard inlet).

LS 200.1.3.2 – Fine grading activities and landscape installation activities shall be coordinated. In the event finished soil grades need to be lowered to allow for the placement of turf or other landscape materials, these efforts shall be coordinated such that the finished product will maintain positive drainage and produce smooth transitions along edges of buildings, sidewalks curbs and vehicular use areas.

LS 200.2 – Prior to project acceptance, turf and landscaping areas shall be established.

LS 200.2.1 – Given the nature of school facilities, turf establishment is critical to the project. All disturbed areas that are not buildings, walks, vehicular use areas, or specifically prescribed mulch areas shall be permanently stabilized with centipede sod (unless specifically noted otherwise) meeting, at a minimum, the requirements of FDOT Section 575, “Sodding”.

LS 200.2.2 – Acceptance shall be made in parts; initially at the time of substantial completion and project delivery, subject to the warranty and maintenance period, and finally at the satisfaction of the warranty and maintenance period.

LS 200.2.3 - Trees and shrubs shall be vibrant, growing and well rooted at the time of inspection prior to acceptance.

LS 200.2.4 - Turf areas shall be uniformly and positively graded, and shall be vibrant, growing, well rooted and weed free, capable of sustaining foot traffic common to school facilities at the time of inspection, prior to acceptance.

LS 200.2.5 – The finished project will be inspected by the Owner (or Owner’s designee) for the criteria specified herein. Any areas not meeting the criteria specified herein will be rejected. Deficiencies shall be corrected by combination of sanding, rolling, and/or removal, re-grading and replacement of landscape materials; whichever may be required to accomplish acceptance criteria.

LS 200.3 – Unless expressly noted to the contrary in the construction documents, all landscape areas as defined herein shall be covered 100% by a fully automated commercial grade irrigation system.

LS 200.3.1 – Irrigation system design shall be provide by the contractor meeting the objectives herein and shall meet the industry standards for commercial-grade systems and shall consist of schedule 40 piping.

LS 200.3.2 – All crossings of the irrigation system under areas proposed for paved vehicular use or sidewalk, shall be in sleeves of sufficient diameter so as to allow for the maintenance of the piping and control wiring. The Contractor shall coordinate the installation of said sleeves, prior to placement of curb, base or pavement.

LS 200.3.3 – Prior to acceptance, irrigation system operation shall be inspected for 100%

coverage of the landscape area.

LS 200.3.4 – Prior to inspection, irrigation system shall be adjusted by the Contractor to reasonably avoid over-spray onto pedestrian use and vehicular use areas. Adjustments shall include the component set-up and programming for the appropriate irrigation frequency and amount of water to be applied.

LS 200.4 – Prior to acceptance, Contractor shall submit to the Owner in satisfactory form, a 12 month Maintenance Bond for the landscaping as defined herein.

LS 200.4.1 – Maintenance bond shall be for an amount equal to 25% of the cost of installation of the landscape package (which includes all landscape materials and the cost of the irrigation system).

LS 200.4.2 - Maintenance Bond shall be sufficient to cover the maintenance as defined in Section LS 200.5.

LS 200.4.3 – At the end of the maintenance and warranty period, the landscaping shall be re-inspected by the Owner (or its designee) to determine if the acceptance criteria have been sustained through the full year warranty.

LS 200.4.4 - In the event that landscape materials are entering a dormant period at or near the end of the maintenance and warranty period, Contractor shall coordinate and arrange for an inspection and evaluation by the Owner prior to entering said dormancy period; else the maintenance and warranty period shall be extended into the next growing season where the acceptance criteria can more readily be verified.

LS 200.4.5 - Maintenance Bond shall be returned by the Owner at the end of the maintenance period provided that the landscape materials have survived the full year warranty period and satisfied the acceptance criteria through a final inspection.

LS 200.5 – All landscaping shall be maintained and guaranteed by the installing Contractor, for a period of 12 months from the date of initial acceptance.

LS 200.5.1 - At the end of said maintenance and warranty period, the landscaping shall be re-inspected for compliance with acceptance criteria.

LS 200.5.2 - Maintenance of landscaping shall include pruning, fertilizing, and pest and disease control for the landscape materials.

LS 200.5.3 – Maintenance of landscaping shall include the operation and maintenance expense associated with the automated irrigation system.

LS 200.6 – Due to maintenance considerations and protection of the occupants and users of the facilities, certain landscape materials shall be prohibited.

LS 200.6.1 – Large-leaf varieties of deciduous trees shall be avoided as they have been found to occlude gutters, inlets and storm drainage systems thereby resulting in more intensive maintenance associated with this type of plant material and higher facility operation costs. Examples of deciduous plant materials to be avoided include White Magnolia, Maple, Tulip

Poplar and trees of similar characteristics and nature.

LS 200.6.2 – Plant and shrub varieties which produce sharp points, needles or thorns shall be avoided as they present a potential hazard to the facility occupants and users. Examples of plant and shrub varieties to be avoided include Needle Point Holly, Indian Hawthorn, and varieties of similar characteristics and nature.

LS 200.6.3 – In the event a conflict is identified between the landscape plans and these specifications, the Owner and Engineer of Record shall be notified immediately, prior to installing the prohibited materials, as material substitutions may be required.

### **Section PC 300 – Supplemental Post Construction Requirements**

PC 300.1 – Site Work Contractor shall cause to be prepared record drawings of the completed work representing the as-built conditions. Record drawings shall be certified by a Registered Surveyor or Engineer.

PC 300.1.1 – Prior to engaging in any construction activities, the Contractor shall verify and document pre-existing conditions of the site. Upon completion of construction, all areas of the site which have been modified from the pre-existing conditions shall be documented as to the finished conditions through record drawings prepared and certified by a Registered Surveyor or Engineer. Any unmarked underground utilities encountered during the execution of the work shall be recorded and depicted on the record drawings.

PC 300.1.2 – Record drawings shall be provided in hard copy form, as well as digital form for the use of the Owner.

PC 300.1.3 – Record drawings of the work area shall be surveyed to include and reflect the following;

- Finished floor elevations.
- As-built grades, contours and spot shots representing the post-construction conditions, and which demonstrate compliance with the construction documents, positive drainage as well as any special grading features contained therein.
- Detail of the pond control structure(s) including type, size, invert, orifices, weirs, grates, skimmers, or other details which may be required to demonstrate compliance with the construction documents.
- Detail of sand filter, cross section, under drain size and invert at each cleanout, elevation of the top of each cleanout, thickness of sand and gravel, or other details which may be required to demonstrate compliance with the construction documents.
- Pond construction details showing the topography, top of berm elevations, bottom of pond elevations, sand filter locations, primary and emergency spillway locations and elevations, or other details which may be required to demonstrate compliance with the construction documents.

- Entire stormwater conveyance system (all pipes, leaders, down-spouts, inlets, junctions, clean-outs, gutters, swales and berms) including size, type of material, tops and inverts.
- Record drawings of all sidewalks and vehicle use areas within the area of the work.
- Record drawings of the area of the work shall reflect detailed shots of the accessible ramps and sidewalks and disabled parking facilities to demonstrate compliance with the FDOT Standard Index 304, ADAAG and Florida Accessibility Codes.
- Record drawings of the area of the work shall reflect detailed traffic control devices including signage, signals, flashers, pavement markings, parking stalls, drive aisles (with directional arrows), or other details which may be required to demonstrate compliance with the construction documents.
- Record Drawings of the area of the work shall include as-built statistics of the site data reflecting the elements identified in the site statistics table in the construction documents, including impervious area (expressed in square footage and percentage of the site), urban forest area (expressed in square footage and percentage of the site), green space area (expressed in square footage and

(PC 300.1.3 – Record Drawings Cont.)

percentage of the site), number of parking stalls provided, or other details which may be required to demonstrate compliance with the construction documents.

- Record Drawings of the area of the work shall include the tree and or landscaping installed as part of the work, and shall include the number, size, location, species and type of landscape materials installed. Landscape installer shall provide for incorporation into the record drawings, a post-construction tree preservation and replant schedule or other details which may be required to demonstrate compliance with the construction documents.
- Record drawings of the area of the work shall reflect the irrigation system, including system controls, zones, valves and heads (including areas served by drip).

PC 300.1.4 - Record Drawings shall denote any modifications to the natural areas or conservation areas. Encroachments shall be identified along with any tree or vegetation removal not authorized by the construction documents.

PC 300.1.5 – Record Drawings shall denote any changes or modifications to the construction documents, whether authorized or un-authorized, which may have occurred during the execution of the work. These changes, as identified by the Contractor, will be evaluated by the Engineer of Record during the preparation of compliance report, prior to inspection and acceptance.

PC 300.1.6 – Record Drawings of sewer and water utilities will be required for all utility construction within the area of the work and shall comply with the “As-built Specifications” contained in the current City of Tallahassee Standard Specifications for Design and Construction of Water and Wastewater Facilities, available for purchase from the City of Tallahassee Water Utilities Division.



PC 300.1.7 – Any revisions to the record drawings necessitated by non-compliance with these requirements shall be the responsibility of the Contractor.

PC 300.2 – Upon substantial completion, post construction documentation shall be submitted for review by the Owner.

PC 300.2.1 – Upon completion of the work and prior to acceptance, Contractor shall cause a sample to be collected from the in-place sand filters and tested by an approved testing laboratory. Sample is to be tested to demonstrate that the specifications contained in the construction documents have been achieved through the end of construction. Certified test results shall be provided to the Owner.

PC 300.2.2 – Landscape installer shall provide operation and maintenance plan manual specifying the recommended irrigation, fertilization, pruning and pest control programs to sustain the landscaping and support landscape systems, suitable to guide the Owner or its designee after final acceptance.

PC 300.2.3 - Upon completion of the work, Contractor shall cause the drainage system to be inspected. Inspection of mains shall be by use of a self-contained television system. A digital video recording of the storm drain system shall be prepared and provided for the Owner's review. Drainage components to be inspected include all trunk lines, courtyard drainage and roof drain collectors (individual roof drains are not included). Video shall include stationing for location purposes and shall be inspected for line, grade, joints, deflection, cleanliness and workmanship, and to verify that the system is undamaged and ready to be placed in service. The Contractor shall provide testing equipment and test supervision.

PC 300.2.4 – For publically dedicated infrastructure, the Contractor shall provide upon completion of the work all necessary forms, lien waivers, performance and/or warranty bonds as may be required.

END OF LCS SUPPLEMENTARY SPECIFICATIONS FOR SITE WORK CONSTRUCTION AND IMPROVEMENT PROJECTS – GILCHRIST CLASSROOM ADDITION

END OF SECTION 02200

## SECTION 02361 - TERMITE CONTROL

### PART 1 - GENERAL

#### 1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data and product certificates for each type of product indicated. Include the EPA-Registered Label.
- B. Installer Qualifications: A specialist who is licensed according to regulations of authorities having jurisdiction to apply termite control treatment and products in jurisdiction where Project is located, and who employs workers trained and approved by manufacturer to install manufacturer's products.
- C. Regulatory Requirements: Formulate and apply termiticides according to the EPA-Registered Label and according to the Florida Building Code, Section 1816, Termite Protection Specification Standards.
- D. Continuing Service: Provide 12 months' continuing service including monitoring, inspection, and re-treatment for occurrences of termite activity.
- E. Special Warranty: Submit installer's warranty against infestation of treated areas.
  - 1. Warranty period: 5 years.

### PART 2 - PRODUCTS

#### 2.1 TERMITE CONTROL PRODUCTS

- A. Soil Treatment Termiticide: Provide EPA-registered termiticide complying with requirements of authorities having jurisdiction, in an aqueous solution.
  - 1. Termador.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's EPA-Registered Label for products.
- B. Soil Treatment Application: Provide quantity required for application at the label volume and rate for the maximum specified concentration of termiticide, according to manufacturer's EPA-Registered Label, to the following so that a continuous horizontal and vertical termiticidal barrier or treated zone is established around and under building construction.

1. At foundations.
  2. Under concrete floor slabs on grade.
  3. At hollow masonry.
  4. At expansion and control joints and slab penetrations.
  5. At crawlspaces; treat soil under and adjacent to foundations. Treat adjacent areas including around entrance platform, porches, and equipment bases.
- C. Post warning signs in areas of soil treatment application.
- D. Reapply soil termiticide treatment solution to areas disturbed by subsequent excavation or other construction activities following application.
- E. Wood Treatment Application: Provide quantity of borate solution required for application at the label volume and rate for the maximum specified concentration of borate, according to manufacturer's EPA-Registered Label, so that wood framing, sheathing, siding, and structural members subject to infestation receive treatment.

END OF SECTION 02361

## SECTION 02821 - CHAIN-LINK FENCES AND GATES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. Section Includes:
  - 1. Chain-link fences.
  - 2. Gates: Swing.

#### 1.3 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design chain-link fences and gates, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance: Chain-link fence and gate framework shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to all applicable codes:
  - 1. Minimum Post Size and Maximum Spacing: Determine according to CLFMI WLG 2445, based on mesh size and pattern specified and on the following:
    - a. Wind Loads: 110 mph.
    - b. Exposure Category: B.
    - c. Fence Height: 10 feet (3 m).
    - d. Material Group: IA, ASTM F 1043, Schedule 40 steel pipe.

#### 1.4 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for chain-link fences and gates.
  - 1. Fence and gate posts, rails, and fittings.
  - 2. Chain-link fabric, reinforcements, and attachments.
  - 3. Accessories: Privacy slats
  - 4. Gates and hardware.

- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Show accessories, hardware, gate operation, and operational clearances.
- C. Samples for Verification: Prepared on Samples of size indicated below:
  - 1. Polymer-Coated Components: In 6-inch (150-mm) lengths for components and on full-sized units for accessories.
- D. Product Certificates: For each type of chain-link fence and gate, from manufacturer.
- E. Product Test Reports: For framing strength according to ASTM F 1043.
- F. Field quality-control reports.
- G. Operation and Maintenance Data: For the following to include in emergency, operation, and maintenance manuals:
  - 1. Polymer finishes.
  - 2. Gate hardware.
- H. Warranty: Sample of special warranty.

#### 1.5 QUALITY ASSURANCE

- A. Emergency Access Requirements: Comply with requirements of authorities having jurisdiction for gates with panic hardware and closers serving as a required means of access.

#### 1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

#### 1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which Installer agrees to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Faulty operation of gate operators and controls.
    - b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
  - 2. Warranty Period: Five years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 CHAIN-LINK FENCE FABRIC

- A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist. Comply with CLFMI Product Manual and with requirements indicated below:
1. Fabric Height: As indicated on Drawings.
  2. Steel Wire Fabric: Wire with a diameter of 0.192 inch (4.88 mm).
    - a. Mesh Size: 2 inches (50 mm).
    - b. Zinc-Coated Fabric: ASTM A 392, Type II, Class 1, 1.2 oz./sq. ft. (366 g/sq. m) with zinc coating applied after weaving.
    - c. Coat selvage ends of fabric that is metallic coated before the weaving process with manufacturer's standard clear protective coating.
  3. Selvage: Knuckled at both selvages.

### 2.2 FENCE FRAMING

- A. Posts and Rails: Comply with ASTM F 1043 for framing, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F 1043 based on the following:
1. Fence Height: As indicated on Drawings.
  2. Heavy Industrial Strength: Material Group IA, round steel pipe, Schedule 40.
  3. Horizontal Framework Members: Intermediate, top and bottom rails complying with ASTM F 1043.
  4. Brace Rails: Comply with ASTM F 1043.
  5. Metallic Coating for Steel Framing:
    - a. Type A, consisting of not less than minimum 2.0-oz./sq. ft. (0.61-kg/sq. m) average zinc coating per ASTM A 123/A 123M or 4.0-oz./sq. ft. (1.22-kg/sq. m) zinc coating per ASTM A 653/A 653M.
    - b. Type B, zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. (0.27 kg/sq. m) of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film.
    - c. External, Type B, zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. (0.27 kg/sq. m) of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film. Internal, Type D, consisting of 81 percent, not less than 0.3-mil- (0.0076-mm-) thick, zinc-pigmented coating.
    - d. Type C, Zn-5-Al-MM alloy, consisting of not less than 1.8-oz./sq. ft. (0.55-kg/sq. m) coating.
    - e. Coatings: Any coating above.

## 2.3 SWING GATES

- A. General: Comply with ASTM F 900 for gate posts and single swing gate types.
  - 1. Gate Leaf Width: As indicated, but minimum of 36" wide.
  - 2. Gate Fabric Height: As indicated.
- B. Pipe and Tubing:
  - 1. Zinc-Coated Steel: Comply with ASTM F 1043 and ASTM F 1083; manufacturer's standard protective coating and finish.
  - 2. Gate Posts: Round tubular steel.
  - 3. Gate Frames and Bracing: Round tubular steel.
  - 4. Frame Corner Construction: Welded.
- C. Hardware:
  - 1. Hinges: 180-degree outward swing.
  - 2. Latches/Lock: Surface mounted panic bar with keyed cylinder.
  - 3. Lock Box: With keyed cylinder, keyed per Owner's master key system.
  - 4. Closer: Manufacturer's standard.

## 2.4 PRIVACY SLATS

- A. Material: Polyethylene tubular slats, not less than 0.023 inch (0.58 mm) thick, manufactured for chain-link fences from virgin polyethylene containing UV inhibitor, sized to fit mesh specified for direction indicated; with vandal-resistant fasteners and lock strips.
- B. Color: As selected by Architect from manufacturer's full range

## 2.5 FITTINGS

- A. General: Comply with ASTM F 626.

## 2.6 GROUT AND ANCHORING CEMENT

- A. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout, recommended in writing by manufacturer, for exterior applications.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.

1. Do not begin installation before final grading is completed unless otherwise permitted by Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet (152.5 m) or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

### 3.3 INSTALLATION, GENERAL

- A. Install chain-link fencing to comply with ASTM F 567 and more stringent requirements indicated.

### 3.4 CHAIN-LINK FENCE INSTALLATION

- A. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.
- B. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.
1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
  2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
    - a. Exposed Concrete: Extend 2 inches (50 mm) above grade; shape and smooth to shed water.
    - b. Posts Set into Concrete in Sleeves: Use steel pipe sleeves preset and anchored into concrete for installing posts. After posts have been inserted into sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions, and finished sloped to drain water away from post.
- C. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 30 degrees or more.
- D. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Diagonally brace terminal posts to adjacent line posts with truss rods and turnbuckles. Install braces at end and gate posts and at both sides of corner and pull posts.
1. Locate horizontal braces at midheight of fabric 72 inches (1830 mm) or higher, on fences with top rail and at two-third fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.



2. Extended along top and bottom of fence fabric. Install top tension wire through post cap loops. Install bottom tension wire within 6 inches (152 mm) of bottom of fabric and tie to each post with not less than same diameter and type of wire.
- E. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.
  - F. Intermediate and Bottom Rails: Install and secure to posts with fittings.
  - G. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 2 inches (50 mm) between finish grade or surface and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.
  - H. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts with tension bands spaced not more than 15 inches (380 mm) o.c.
  - I. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric per ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.
    1. Maximum Spacing: Tie fabric to line posts at 12 inches (300 mm) o.c. and to braces at 24 inches (610 mm) o.c.

### 3.5 GATE INSTALLATION

- A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

### 3.6 ADJUSTING

- A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- B. Lubricate hardware and other moving parts.

### 3.7 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's personnel to adjust, operate, and maintain chain-link fences and gates.

END OF SECTION 02821

## SECTION 02826 - ORNAMENTAL METAL FENCES AND GATES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. Section Includes:

- 1. Decorative metallic-coated steel tubular picket fences.
  - 2. Swing gates.

- B. Related Sections:

- 1. Division 2 Section "Earthwork" for site excavation, fill, and backfill where decorative metal fences and gates are located.

#### 1.3 SUBMITTALS

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

- B. Shop Drawings: For gates. Include plans, elevations, sections, details, and attachments to other work.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Fabricator of products.

- B. Emergency Access Requirements: Comply with requirements of authorities having jurisdiction for automatic gate operators on gates that must provide emergency access.

### PART 2 - PRODUCTS

#### 2.1 STEEL AND IRON

- A. Plates, Shapes, and Bars (Galvanized): ASTM A653/A653M, with a minimum yield strength of 45,000 psi (310 MPa) and a minimum zinc (hot-dip galvanized) coating weight of 0.90 oz/ft<sup>2</sup> (276 g/m<sup>2</sup>), Coating Designation G-90.

- B. Bars (Pickets): Ornamental Fences Employing Galvanized Steel Tubular Pickets, ASTM F2408.
- C. Composition: A minimum of 62% of the steel material shall be derived from recycled scrap metal.

## 2.2 COATING MATERIALS

- A. Epoxy Primer and Finish Coats on Galvanized Steel: Manufacturer's standard E-coat process consisting of four primary layers including a pre-galvanized steel, zinc phosphate, epoxy primer, and an acrylic topcoat.

## 2.3 MISCELLANEOUS MATERIALS

- A. Concrete: Normal-weight, air-entrained, ready-mix concrete complying with requirements in Division 3 Section "Cast-in-Place Concrete" with a minimum 28-day compressive strength of 3000 psi (20 MPa), 3-inch (75-mm) slump, and 1-inch (25-mm) maximum aggregate size or dry, packaged, normal-weight concrete mix complying with ASTM C 387 mixed with potable water according to manufacturer's written instructions.
- B. Nonshrink Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107 and specifically recommended by manufacturer for exterior applications.

## 2.4 DECORATIVE METALLIC-COATED STEEL TUBULAR PICKET FENCES

- A. Decorative Metallic-Coated Steel Tubular Picket Fences: Comply with ASTM F 2408, for light industrial (commercial) application (class) unless otherwise indicated.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 2. Basis-of-Design Product: Subject to compliance with requirements, provide Ameristar Fence Products, Montage II Welded and Rackable (ATF - All Terrain Flexibility) Ornamental Steel in Majestic, flush picket bottom rail treatment, 4-Rail style, manufactured by Ameristar Fence Products in Tulsa, Oklahoma, in black finish, or comparable product by one of the following:
    - a. Fortress Iron; a division of Woodmark International, LP.
    - b. Iron Eagle Industries, Inc.
    - c. Master Halco.
    - d. Merchants Metals; a division of MMI Products, Inc.
    - e. Payne Fence Products; a division of Payne Metal Works, Inc.
    - f. Xcel Fence.
- B. Construction: Material shall be 1" square x 14 gauge tubing. The rails shall be steel channel, 1.75" x 1/75" x .105". Picket holes in the rail shall be spaced 4.715" o.c.

- C. Fence posts and gate posts shall meet the minimum size and space recommended by manufacturer.
- D. Pickets, rails and posts shall be pre-cut to specified lengths. Rails shall be pre-punched to accept pickets.
- E. Pickets shall be inserted into the pre-punched holes in the rails and shall be aligned to standard spacing using a specially calibrated alignment fixture. The aligned pickets and rails shall be joined at each picket-to-rail intersection by welding, thus completing the rigid panel assembly.
- F. The system shall include all components (panels, posts, gates, hardware, etc.) required for the complete system and installation.
- G. The manufactured fence system shall be capable of meeting the vertical load, horizontal load, and infill performance requirements for Industrial weight fences under ASTM F2408.

## 2.5 SWING GATES

- A. Gate Configuration: Single leaf.
- B. Gate Frame Height: 72 inches (1830 mm).
- C. Gate Opening Width: 36 inches (914 mm).
- D. Construction: Material shall be 1.75" x 14 gauge forerunner double channel rail, 2" square x 11 gauge gate ends, and 1" square x 14 gauge pickets. Gates that exceed 6' in width will have a 1.75" square x 14 gauge intermediate uprights. All rail and upright intersections shall be joined by welding. All picket and rail intersections shall also be joined by welding. Gusset plates will be welded at each upright to rail intersection. Cable kits will be provided for additional trussing for all gate leaves over 6'.
- E. The manufactured fence system shall be capable of meeting the vertical load, horizontal load, and infill performance requirements for Industrial weight fences under ASTM F2408.
- F. Hinges: BHMA A156.1, Grade 1, suitable for exterior use.
  - 1. Function: 39 - Full surface, triple weight, antifriction bearing.
  - 2. Material: Wrought steel, forged steel, cast steel, or malleable iron.
- G. Exit Hardware: BHMA A156.3, Grade 1, Type 1 (rim exit device), with push pad actuating bar, suitable for exterior use.
  - 1. Function: 01 - Exit only, no trim or blank escutcheon.
  - 2. Mounting Channel: Bent-plate channel formed from 1/8-inch- (3.2-mm-) thick, steel plate. Channel spans gate frame. Exit device is mounted on channel web, recessed between flanges, with flanges extending 1/8 inch (3.2 mm) beyond push pad surface.
- H. Galvanizing: For items other than hardware that are indicated to be galvanized, hot-dip galvanize to comply with ASTM A 123/A 123M unless otherwise indicated. For hardware items, hot-dip galvanize to comply with ASTM A 153/A 153M.

- I. Metallic-Coated Steel Finish: High-performance coating.

## 2.6 METALLIC-COATED STEEL FINISHES

- A. Surface Preparation: Clean surfaces with nonpetroleum solvent so surfaces are free of oil and other contaminants. After cleaning, apply a zinc-phosphate conversion coating suited to the organic coating to be applied over it. Clean welds, mechanical connections, and abraded areas and repair galvanizing to comply with ASTM A 780.
- B. High-Performance Coating: Apply epoxy primer, epoxy intermediate coat, and polyurethane topcoat to prepared surfaces.
  - 1. Provide a 20 year finish warranty.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, construction layout, and other conditions affecting performance of the Work.
- B. Do not begin installation before final grading is completed unless otherwise permitted by Architect.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet (152.5 m) or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

### 3.3 DECORATIVE FENCE INSTALLATION

- A. Install fences according to manufacturer's written instructions.
- B. Post Excavation: Drill or hand-excavate holes for posts in firm, undisturbed soil. Excavate holes to a diameter of not less than 4 times post size and a depth of not less than 24 inches (600 mm) plus 3 inches (75 mm) for each foot (300 mm) or fraction of a foot (300 mm) that fence height exceeds 4 feet (1200 mm).
- C. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.
  - 1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.

2. Concrete Fill: Place concrete around posts and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
  - a. Concealed Concrete: Top 2 inches (50 mm) below grade to allow covering with surface material. Slope top surface of concrete to drain water away from post.
  - b. Footer Depth: Minimum depth of 36".
3. Posts Set in Concrete: Extend post to within 6 inches (150 mm) of specified excavation depth, but not closer than 3 inches (75 mm) to bottom of concrete.
4. Space posts uniformly at 8 feet (2.44 m) o.c.

### 3.4 GATE INSTALLATION

- A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

### 3.5 ADJUSTING

- A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- B. Lubricate hardware, gate operators, and other moving parts.

END OF SECTION 02826

## SECTION 02870 - SITE FURNISHINGS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Seating.
- B. Related Sections include the following:
  - 1. Division 2 Section "Earthwork" for excavation for installation of concrete footings.
- C. Products furnished, but not installed under this Section, include anchor bolts to be installed in paving.

#### 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For units with factory-applied color finishes.
- C. Maintenance Data: For site furnishings to include in maintenance manuals.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Steel and Iron: Free of surface blemishes and complying with the following:
  - 1. Steel Pipe: Rails shall be fabricated from 3/4 inch i.d. schedule 40 mild steel seamless pipe. Legs shall be fabricated from 1-1/4 inch i.d. schedule 40 mild steel seamless pipe.
  - 2. Perforated Metal: Seat assembly from 12 gauge formed perforated mild steel plate with 5/16 inch diameter holes spaced 1 inch on center.
- B. Anchors, Fasteners, Fittings, and Hardware: All assembly hardware to be stainless steel. Stainless steel threaded mounting hardware for pedestal (fixed leveling) hardware shall have non-marring UHMW pads.

- C. Erosion-Resistant Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound; resistant to erosion from water exposure without needing protection by a sealer or waterproof coating; recommended in writing by manufacturer, for exterior applications.

## 2.2 SEATING

- A. Provide the product indicated on Drawings and as specified.
  - 1. Manufacturer: Columbia Cascade Company, 1300 SW Sixth Avenue, Suite 310, Portland, OR 97201-3464, USA, [www.timberform-site.com](http://www.timberform-site.com).
  - 2. Series: TimberForm Boulevard Series
  - 3. Model: No. 2611
  - 4. Finish: As selected by Owner's Representative from standard colors.

## 2.3 FABRICATION

- A. Metal Components: Form to required shapes and sizes with true, consistent curves, lines, and angles. Separate metals from dissimilar materials to prevent electrolytic action.
- B. Welded Connections: Weld connections continuously. Weld solid members with full-length, full-penetration welds and hollow members with full-circumference welds. At exposed connections, finish surfaces smooth and blended so no roughness or unevenness shows after finishing and welded surface matches contours of adjoining surfaces.
- C. Pipes and Tubes: Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cylindrical cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of handrail and railing components.
- D. Exposed Surfaces: Polished, sanded, or otherwise finished; all surfaces smooth, free of burrs, barbs, splinters, and sharpness; all edges and ends rolled, rounded, or capped.
- E. Factory Assembly: Entire seat shall be assembled and welded into a single unit. Welds shall be smooth and continuous with no gaps or pin holes.

## 2.4 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- 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 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.



## 2.5 STEEL AND CAST IRON FINISHES

- A. Powder Coat Finish: Manufacturer's CASPAX-7 opaque, UV resistant exterior grade polyester powder coating applied to a minimum thickness of 6 mils.
- B. Preparation: Substrate preparation shall consist first of mechanical cleaning to remove heavy mill scale, rust, varnish, grease, etc., with surfaces uniformly abraded to promote quality of finish coating. Chemical cleaning in accordance with TT-C-490C, Methods I and III shall remove impurities for surfaces.
- C. Pre-coating: After two-step cleaning, the metal substrate shall receive a corrosion-inhibiting iron phosphate pre-coating in accordance with TT-C-490C, Type II, prior to the application of the powder color coat.
- D. Finish Coat: The color coating shall be applied by the electrostatic method and then oven-cured at 400 degrees Fahrenheit to chemically bond the coating to the substrate and to render the coated metal resistant to abrasion, impact, chipping, weathering, and rusting.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance.
  - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION, GENERAL

- A. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required.
- B. Unless otherwise indicated, install site furnishings after landscaping and paving have been completed.
- C. Install site furnishings level, plumb, true, and securely anchored at locations indicated on Drawings.

### 3.3 CLEANING

- A. After completing site furnishing installation, inspect components. Remove spots, dirt, and debris. Repair damaged finishes to match original finish or replace component.

END OF SECTION 02870

## SECTION 03100 -CONCRETE FORMWORK

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes, but is not limited to, the design, engineering, construction and removal of formwork required for cast-in-place concrete as shown on the drawings and specified herein.
- B. Related Sections include, but are not limited to, the following:
  - 1. Division 3 Section “Cast-In-Place Concrete” for finishes.
- C. Work Installed and Furnished by Others:
  - 1. Install built-in anchors, inserts, and bolts for connection of other materials; dovetail anchor slots, plates, frames, seats and all other embedded items including Owner furnished items.
  - 2. Coating of forms and other surfaces as required by this Section.

#### 1.3 SUBMITTALS

- A. Product Data: Submit, for record only, not for approval, data for each type of product and material indicated including others as requested by Architect. Substitutions for specified items or manufacturers are to be submitted in accordance with Division 1 and will be subject to approval, rejection or other appropriate action.
- B. Formwork Shop Drawings: Prepare shop drawings in compliance with ACI 347R. If requested by the Architect, submit shop drawings showing general construction of forms for concrete permanently exposed to view; including jointing, special form joints or reveals, location and pattern of form tie placement, and other items that visually affect exposed concrete. Architect’s review is for general architectural applications and features only. Formwork design for safety, structural adequacy and efficiency is Contractor’s responsibility.
- C. Shoring and reshoring shop drawings, including for precast prestressed concrete framing: Submit signed and sealed shop drawings prepared by a Delegated Engineer experienced in such work and licensed in the State of Florida. The drawings shall conform to ACI 347R and contain, as a minimum, the location, size and type of all shoring, reshoring, mud sills, blocking, temporary lateral bracing and other accessories necessary to safely support and brace the structure during construction. The drawings shall also show the sequence of installation, load relief and removal. Use a safety factor of 2 for metal shores and 3 for wood shores. Submit drawings to the Architect, Engineer, Special Inspector and Building Official for record only.

Shoring and reshoring design and construction is the sole responsibility of the Contractor and his Engineer.

1. Design structural members to support form facing materials without deflection. Design camber into formwork as required to compensate for anticipated deflections due to weight and pressures of fresh concrete and construction loads for longspan members without intermediate supports.
2. Prior to each concrete pour, the Delegated Engineer who prepares the shoring and reshoring drawings or his authorized representative shall inspect the shoring and reshoring. He shall provide a field report of each inspection to the Contractor and Special Inspector prior to leaving the site. Upon completion of the project, he shall submit a signed and sealed statement to the Architect and Special Inspector that this work was performed in accordance with his plans and specifications.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed concrete work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Delegated Engineer Qualifications: A licensed engineer who is legally qualified to practice in the State of Florida and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for formwork and shoring and reshoring installations that are similar to those indicated for this Project in material, design, and extent.
- C. Codes and Standards: Comply with the following, unless more stringent provisions are indicated:
  1. Florida Building Code, 2007 Edition with 2009 Supplement
  2. ACI 301, "Specification for Structural Concrete for Buildings."
  3. ACI-318, "Building Code Requirements for Reinforced Concrete."
  4. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
  5. ACI 347, "Recommended Practice for Concrete Formwork."
  6. ACI SP-4, "Formwork for Concrete."
  7. National Forest Products Association (NFPA), "National Design Specifications for Stress Grade Lumber and its Fastenings."
  8. American Plywood Association (APA): "Plywood Design Specification" (Form Y-510); "Concrete Forming: (Form V345) and " Voluntary Product Standard PS 1-95 for Construction and Industrial Plywood" (Form V995).

#### 1.5 JOB CONDITIONS AND COORDINATION OF TRADES

- A. General: It is the Contractor's sole responsibility to coordinate with all trades for the setting of sleeves, anchor bolts, dovetail slots, inserts, frames, flashing, pipes, ducts and other embedded items and provide all openings required for installation of other work in accordance with the Contractor's shop drawings and the Contract Documents.

- B. Structural Integrity: Provide no sleeves or openings in structural members unless shown on the structural drawings or approved by the Architect.
- C. Inspection: Architect may inspect formwork at any time and may reject formwork if forms do not conform to the lines, levels, and tolerances as required in this Section, the shop drawings or the Design Drawings. If formwork is rejected, the Contractor must repair or replace the rejected portion with no additional cost to the Owner.

## PART 2 - PRODUCTS

### 2.1 FORMWORK MATERIALS

- A. 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.
- B. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
  - 1. Plywood, metal, or other approved panel materials.
  - 2. Exterior-grade plywood panels, minimum 5/8" thickness, suitable for concrete forms, complying with VPS PS 1 (Form V995), and as follows:
    - a. High-density overlay, Class 1, or better for concrete columns
    - b. Medium-density overlay, Class 1, or better, mill-release agent treated and edge sealed. For other exposed concrete.
    - c. B-B (Concrete Form), Class 1, or better, mill oiled and edge sealed. For concealed concrete.
- C. Forms for Cylindrical Columns, Pedestals, and Supports: glass-fiber-reinforced plastic, paper, or fiber tubes that will produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class 1. Provide paper or fiber tubes of laminated plies with water resistant adhesive and wax impregnated exterior for weather and moisture protection. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.
- D. Stable Soil: In the event stable soil is encountered and straight-line embankments can be maintained, concrete foundations may be placed into accurately excavated earth trenches, free from water, debris, or loose dirt. Excavations shall be minimum 2" wider and longer than specified.
- E. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch.
- F. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces. Formulate form-release agent with rust inhibitor for steel form-facing materials.

- G. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
1. Furnish units that will leave no corrodible metal closer than 1 1/2 inches to the plane of the exposed concrete surface.
  2. Furnish ties that, when removed, will leave holes not larger than 1 1/4 inches in diameter in concrete surface.
- H. Accessories: Provide necessary anchors, form ties, shores, construction joints, scaffolds, and bracing as required to install forms. Provide construction joints, control joints, expansion joints and waterstops where indicated on the drawings.
1. Form Joint Gasket: Closed cell rubber sponge. Take care that form joints are sealed from leakage of cement paste and moisture.
  2. Material to form drips, reveals, rustification strips or weep holes shall be extruded plastic.

### PART 3 - EXECUTION

#### 3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 347, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:
1. Class A, 1/8 inch: Surfaces prominently exposed to public view.
  2. Class B, 1/4 inch: Coarse-textured concrete intended to receive plaster.
  3. Class C, 1/2 inch: Other permanently exposed surfaces.
  4. Class D, 1 inch: Permanently concealed surfaces.
- D. Construct forms tight enough to prevent loss of concrete mortar.
- E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal. Do not use rust-stained steel form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to

prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

- H. Chamfer exterior corners and edges of permanently exposed concrete.
- I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- J. Set anchor rods to required tolerance.
- K. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- L. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- M. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

### 3.2 EARTH FORMS

- A. Hand trim sides and bottom of earth forms. Remove loose soil and rocks and compact to specified density prior to placing reinforcing or concrete. Moisten sides and bottom immediately prior to concrete placement. Comply with OSHA's "Trench Safety Act".

### 3.3 REMOVING AND REUSING FORMS

- A. General: Formwork, for sides of beams, walls, columns, and similar parts of the Work, that does not support weight of concrete may be removed after cumulatively curing at not less than 50 degrees F for 24 hours after placing concrete provided concrete is hard enough to not be damaged by form-removal operations and provided curing and protection operations are maintained.
- B. Leave formwork, for beam soffits, joists, slabs, and other structural elements, that supports weight of concrete in place until concrete has achieved the strength and age listed in the Structural Notes.
  - 1. Determine compressive strength of in-place concrete by testing representative field- or laboratory-cured test specimens according to ACI 301.
  - 2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
- C. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. The Architect's approval is required for reusing forms for exposed surfaces. Apply new form-release agent.
- D. Reuse forms to greatest extent possible without damaging structural integrity of concrete and without damaging aesthetics of exposed concrete. When forms are reused, clean surfaces,

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

#### 3.4 SHORES AND RESHORES

- A. Comply with ACI 318, ACI 301, and recommendations in ACI 347R for design, installation, and removal of shoring and reshoring.
- B. Plan sequence of removal of shores and reshores to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection. Shores must be readily adjustable so that settlement during concrete placement may be taken up at once.

END OF SECTION 03100

## SECTION 03200 – CONCRETE REINFORCEMENT

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes, but is not limited to, concrete reinforcement, and necessary accessories.

#### 1.3 SUBMITTALS

- A. Do not reproduce Structural Drawings for use as shop or placement drawings without prior approval of the Architect.
- B. Product Data: Submit, for record only, not for approval, data for each type of product and material indicated including others as requested by Architect. Indicate manufacturing process used for steel reinforcing. Substitutions for specified items or manufacturers are to be submitted in accordance with Division 1 and will be subject to approval, rejection or other appropriate action.
- C. Steel Reinforcement Shop Drawings: Complete details of fabrication, bending, and placement, prepared according to ACI 315, "Details and Detailing of Concrete Reinforcement" and ACI SP-66 "Detailing Manual". Include material, grade, bar schedules, stirrup spacing, bent bar diagrams, arrangement, and supports of concrete reinforcement.
- D. Material Certificates: Signed by manufacturers and contractor certifying that the steel reinforcement and reinforcement accessories comply with requirements of the Contract Documents. Unidentifiable steel is prohibited.
- E. Environmental Objective Documentation: Provide documentation of level of compliance with the following:
  - 1. Provide data indicating post-consumer and post-industrial recycling percentages of steel reinforcing.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed concrete work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.



- B. Codes and Standards: Comply with the following, unless more stringent provisions are indicated:

1. Florida Building Code, 2007 Edition with 2009 Supplement.
2. ACI 301, "Specification for Structural Concrete for Buildings."
3. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
4. ACI 315, "Details and Detailing of Concrete Reinforcement."
5. ACI-318, "Building Code Requirements for Reinforced Concrete."
6. "CRSI Manual of Standard Practice."

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle steel reinforcement to prevent bending and damage.

1. Deliver reinforcement to the job site bundled, tagged and marked. Use durable metal or embossed plastic tags indicating bar size, lengths, and reference information corresponding to markings shown on placement drawings.

## 1.6 ENVIRONMENTAL OBJECTIVES

- A. Manufacturer/Fabricator to supply documentation of level of compliance or non-compliance with the following requirements before consideration as an "Acceptable Manufacturer".

1. All steel reinforcing shall use steel made in an electric arc furnace (EAF).

## PART 2 - PRODUCTS

### 2.1 STEEL REINFORCEMENT

- A. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.
- B. Reinforcing Bars: ASTM A 615, Grade 60, deformed.
- C. Plain-Steel Welded Wire Fabric: ASTM A 185, fabricated from as-drawn steel wire into flat sheets. Rolls are not acceptable.

### 2.2 REINFORCEMENT ACCESSORIES

- A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete, and as follows:
1. For concrete surfaces where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected or CRSI Class 2 stainless-steel bar supports.

2. For welded wire fabric in slabs on grade use precast slab bolsters, concrete brick or sand plate chairs spaced no farther than 3'-0" c/c.

### 2.3 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."
- B. Shop bend and fabricate reinforcing bars to conform with shapes and dimensions indicated on drawings. In case of errors, do not bend or straighten reinforcement without prior approval of Architect. Make all bends cold.

## PART 3 - EXECUTION

### 3.1 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
  1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover specified on the drawings. Tie bars and bar supports together with 16 gauge wire and set wire ties with ends directed into concrete, not toward exposed concrete surfaces. Do not tack weld crossing reinforcing bars.
- D. Splices: Locate only where indicated on the drawings or approved shop drawings except with prior approval of Architect.
  1. For standard splices, lap ends, placing bars in contact, and tightly wire tie. See drawings for lap lengths.
  2. Do not weld splices.
- E. Provide template for all column dowels.
- F. Install welded wire fabric in longest practicable lengths on bar supports spaced to minimize sagging (3'-0" o.c. max.). Lap edges and ends of adjoining sheets at least two mesh spacings. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with 16 gauge wire.
- G. Do not bend bars embedded in hardened or partially hardened concrete without approval from the Architect.
- H. Do not weld reinforcing bars unless specifically shown. Where shown comply with AWS D1.4. Bars to be welded shall conform to ASTM A706.

END OF SECTION 03200

## SECTION 03300 - CAST-IN-PLACE CONCRETE

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes, but is not necessarily limited to, concrete, concrete materials, mix design, placement procedures, curing and finishes.
- B. Related Sections include, but are not necessarily limited to, the following:
  - 1. Division 2 Section "Earthwork" for drainage fill under slabs-on-grade, including grade beams and pile caps.
  - 2. Division 3 Section "Concrete Formwork".

#### 1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume.

#### 1.4 SUBMITTALS

- A. Product Data: Submit, for record only, not for approval, data for each type of product and material indicated including admixtures, patching compounds, waterstops, joint systems, curing compounds, and others as requested by Architect. Substitutions for specified items or manufacturers are to be submitted in accordance with Division 1 and will be subject to approval, rejection or other appropriate action.
- B. Design Mixes: For each concrete mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments. Substantiating data to be no older than one year from date of submittal for each mix design.
  - 1. Indicate amounts of mix water to be withheld for later addition at Project site.
- C. Material Certificates: Signed by manufacturers and contractor certifying that each of the following items complies with requirements of the Contract Documents:
  - 1. Cementitious materials and aggregates.
  - 2. Admixtures.

3. Floor and slab treatments.
4. Waterstops.
5. Curing materials.
6. Bonding agents.
7. Adhesives.
8. Vapor retarders.
9. Repair materials.
10. Epoxy joint filler.
11. Joint filler strips.

## 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed concrete Work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance. Submit written evidence of at least ten such projects.
1. Submit written evidence that flatwork placer/finisher has not less than (3) years continuous experience and a minimum of (5) projects in the successful placement and finishing of concrete slabs with flatness and levelness requirements equal to or higher than those specified for this project. Submit evidence that flat work finishers are ACI certified.
- B. Manufacturer Qualifications: A firm experienced in the successful manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production and delivery, facilities and equipment.
- C. Source Limitations: For each placement, obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.
- D. Codes and Standards: Comply with the following, unless more stringent provisions are indicated:
1. Florida Building Code, 2007 Edition with 2009 Supplement.
  2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
  3. ACI 211.1 "Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete."
  4. ACI 211.2 "Standard Practice for Selecting Proportions for Structural Lightweight Concrete."
  5. ACI 301, "Specification for Structural Concrete for Buildings."
  6. ACI-304, "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete."
  7. ACI-305, "Hot Weather Concreting."
  8. ACI-306, "Recommended Practice for Cold Weather Concreting."
  9. ACI-308, "Recommended Practice for Curing Concrete."
  10. ACI-309, "Recommended Practice for Consolidation."
  11. ACI-311, "Guide for Concrete Inspection."
  12. ACI-318, "Building Code Requirements for Reinforced Concrete."

## PART 2 - PRODUCTS

### 2.1 CONCRETE MATERIALS

#### A. Portland Cement:

1. General: ASTM C 150, Type I.
2. Slabs on Grade: Type I or Type II with a C3A content less than 8%.

#### B. Other Cementitious Materials: Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

#### C. Pozzolans:

1. Fly Ash: ASTM C 618, Class C or F.

#### D. Normal-Weight Aggregate:

1. Fine Aggregate: Natural quartz sand or manufactured sand from local stone aggregates conforming to ASTM C33, produced from FDOT approved sources, with fineness modulus not less than 2.4, and having a proven service record.
2. Coarse Aggregate: Clean, washed, sound, crushed natural stone products produced from FDOT approved sources. Free from salt, clay, mud, loam or other foreign matter. Conform to ASTM C33; sizes No. 67 (3/4 inch) or No. 57 (1 inch), No. 8 or No. 89 (3/8 inch), and No. 467 (1 1/2 inch). Use largest size practical for members being cast..
3. Class: Negligible weathering region, class per ASTM C33.

#### E. Water: Potable and complying with ASTM C 94.

### 2.2 CONCRETE ADMIXTURES

#### A. General: Provide admixtures produced by acceptable manufacturers and used in compliance with the manufacturer's printed directions. Use only admixtures which have been incorporated and tested in the accepted mixes, unless otherwise authorized in writing by the Architect. Do not use admixtures which increase the shrinkage properties of concrete. Submit substantiating data, if requested.

#### B. Air-entraining admixture: Conform to ASTM C260. Use air-entraining admixture in all concrete except in concrete having a design strength greater than 4000 psi.

#### C. Water-reducing admixture: Conform to ASTM C494, Type A, D or E free of chlorides, fluorides, or nitrates, except for those attributable to the water used in manufacturing. Use in all structural concrete.

#### D. High Range Water Reducing Admixture: Conform to ASTM C494, Type F or Type G and ASTM C1017. Formulate HRWR from sulfonated melamine formaldehyde condensates or sulfonated naphthalene formaldehyde condensate or carboxylated polyether. The admixture is to be added to the concrete mix after initial mixing has taken place. If added at the batch plant HRWR to have an effective life without redosing (third generation HRWR) of at least 2 Hours. If added at the jobsite, the addition shall be by certified technicians employed by the concrete

supplier or an authorized representative of the admixture manufacturer. This admixture is in addition to and not a substitute for any other admixtures specified elsewhere.

- E. Calcium Chloride: Do not use calcium chloride in concrete. Do not use any admixtures which contribute free chloride ions to the concrete mix.

## 2.3 FIBER REINFORCEMENT

- A. Synthetic Fiber: Fibrillated polypropylene fibers engineered and designed for use in concrete, complying with ASTM C 1116, Type III, 1/2 to 1-1/2 inches long.
- B. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Fibrillated Fibers:
    - a. Fibermesh; Fibermesh, Div. of Synthetic Industries.
    - b. Forta; Forta Corporation.
    - c. Grace Fibers; W. R. Grace & Co., Construction Products Div.

## 2.4 WATERSTOPS

- A. Self-Expanding Strip Waterstops: Manufactured rectangular or trapezoidal strip bentonite for adhesive bonding to concrete.
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Volclay Waterstop-RX; Colloid Environmental Technologies Co.

## 2.5 VAPOR RETARDERS

- A. Vapor Retarder: Polyethylene sheet, ASTM E 1745, Class B, not less than 10 mils thick.

## 2.6 CURING MATERIALS

- A. Liquid Membrane Curing Compound: A dissipating resin type compound, conforming to ASTM C309, Type 1 or 2. The film must chemically break down in a 4 to 6 week period after application.
- B. Liquid Membrane-Forming Cure and Seal Compound: VOC Compliant, conforming to ASTM C309, Type 1, Class B and ASTM C1315, Type 1, Class A or B. The compound shall be a clear styrene acrylate type, 25% solids content minimum, and have test data from an independent testing laboratory indicating to a maximum moisture loss of .040 grams per square cm. When applied at a coverage rate of 200 sq. ft. per gallon.
- C. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. Liquid Membrane Curing Compounds Dissipating Type:
  - a. Aqua Kure-Clear; Lambert Corp.
  - b. Resin Cure-E; Nox-crete, Inc.
  - c. Kurez D.R. Vox; Euclid Chemical Company
  - d. Res X-Cure WB; Burke
  - e. 1100 Clear; W.R. Meadows, Inc.
  - f. Day Chem Rez Cure (J-11-W) ; Dayton Superior Corporation
  - g. L&M Cure R ; L&M Construction Chemicals, Inc.
2. Liquid Membrane-Forming Cure and Seal Compound:
  - a. Kure 1315; Sonneborn Building Products
  - b. Day-Chem Cure & Seal 1315; Dayton Superior Corporation
  - c. Super Aqua-Cure VOX or Super Diamond Clear VOX; Euclid Chemical Company
  - d. Crystal Gard 0800; Lambert Corp.
  - e. Cure & Seal 250E; Nox-crete, Inc.
  - f. Spartan Cote 30%; Burke
  - g. Dress & Seal 25; L&M Construction Chemicals
  - h. CS 309-25 or VOCOMP-25; W.R. Meadows, Inc.

## 2.7 RELATED MATERIALS

- A. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.
- B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene. Subject to compliance with requirements, products that may be incorporated into the work include, but are not limited to the following:
  1. Acrylbond; Lambert Corp.
  2. J-40 Bonding Agent; Dayton Superior Corp.
  3. Admix 101; Larsen Products
  4. Acryl-60; Std. Drywall
  5. AcrylSet; Master Builders
  6. Sonocrete; Sonneborn-Contech
  7. SBR Latex; Euclid Chemical Co.
  8. Sika Latex; Sika Corp.
- C. Epoxy-Bonding Adhesive: ASTM C 881, two-component, 100% solid, epoxy resin, capable of humid curing and bonding to damp surfaces, of class and grade to suit requirements. Use Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete. Subject to compliance with requirements, products that may be incorporated into the work include, but are not limited to the following:
  1. Epiweld 58; Lambert Corp.
  2. Epoxitite; A.C. Horn
  3. Sikadur Hi-Mod; Sika Chemical Corp.
  4. Euco Epoxy 452; Euclid Chemical Co.
  5. Concessive LPL; Master Builders
  6. Nitrobond Epoxy; Fosroc

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

## 2.8 CEMENT GROUT AND DRYPACK

- A. Prepackaged Non-Shrink Non-Metallic Non-Gaseous Grout: ASTM C 1107, Grade B or C at a fluid consistency (flow cone) of 20 to 30 seconds. Grout shall be bleed free and attain 7500 psi compressive strength in 28 days at fluid consistency. Use for structural repairs.
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Masterflow 928; Master Builders
    - b. Crystex; L & M Construction Chemicals
    - c. Five Star Fluid Grout 100; U.S. Grout
    - d. Euco N-S; Euclid Chemical Co.
    - e. Sikagrout; Sika Corp.
    - f. Conbextra HF; Fosroc
    - g. Vibropruf #20; Lambert Corp.
- B. Cement Grout: Mix one part Portland cement, 2-1/2 parts fine aggregate, and enough water and liquid bonding agent in a 50/50 mix for required consistency depending on use. Consistency may range from mortar consistency to a mixture that will flow under its own weight. Use for leveling, preparing setting pads of beds, for filling non-structural voids, and similar uses. Do not use for grouting under bearing plates or structural members in place.
- C. Drypack: Mix one part Portland cement, 2 parts fine aggregate, and enough water and liquid bonding agent in a 50/50 mix to hydrate cement and provide a mixture that can be molded with hands into a stable ball (a stiff mix). Do not mix more than can be used in 30 minutes. Use for patching tie holes and large surface defects in concrete.

## 2.9 SLAB REPAIR MATERIALS

- A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations. For use on slabs not receiving finishes.
1. Cement Binder: ASTM C 150, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
  2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
  3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
  4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C 109/C 109M.
- B. Repair Topping: Traffic-bearing, cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch. For use on slabs not receiving finishes.



1. Subject to compliance with requirements, products that may be incorporated into the work include, but are not limited to, the following:
  - a. Levelayer III; Daytonn Superior
  - b. Levelex HS ; L&M Construction
  - c. Certi-Vex SLU TC ; Vexcon.
  - d. Mastertop 112 Topping; Master Builders.
  - e. Quikrete Self-Leveling Floor Resurfacer Fast-Set; Quikcrete.

2.10 CONCRETE MIXES

- A. Concrete for all parts of the concrete work shall be homogenous and, when hardened, possess the required strength, durability, watertightness, appearance, resistance to deterioration and abrasion, and other qualities as specified or required.
- B. Mix proportioning: Proportion concrete according to ACI 211.1. Trial mixes shall be designed by the testing laboratory approved by Architect or designed by the producer and witnessed and tested by the testing laboratory, in accordance with ACI 318 Chapter 5.3. Proportioning on the basis of field experience with complete statistical data, not more than one year old from date of submittal, to confirm mixes is acceptable.
- C. Provide concrete which will develop ultimate compressive strength at 28 days equal to that noted on drawings and listed below.
- D. Concrete Grades:

Mix No.	Strength	Air Yes/No	Max. Aggregate Size	W/C or W/C&P*
1	3000	Y	1"	0.64
2	3000	N	1"	0.64
3	4000	N	1"	0.54
4	4000	N	3/8"	0.52

- E. Concrete Use:

Element	Mix No.
1. Footings and Pile Caps	2
2. Grade Beams / Wall Footings	2
3. Slab on Grade	1
4. Columns and Poured Walls	3
5. Pumped Elements, Tie Beams, Tie Columns	4
6. Slabs on Steel Deck	3

- F. Design Slump:

1. General: 4 inches.
2. Concrete Containing High Range Water Reducer: 2 to 3 inches before addition of HRWR, 8 inches after.
3. Slump Tolerance: Plus/minus 1 inch.
4. Slump Of Corrosion Inhibited Concrete: 7 ±2, inch with the use of HRWR.

- G. **Chloride Ion Content for Corrosion Protection:** Determine the chloride content of the component concrete materials, excluding admixtures, and provide this information to the Architect when submitting mix design. Design mixes will not be approved when the sum of chloride content of component materials indicates that the concrete mix derived from those materials will have a water soluble chloride ion content exceeding 0.1% for concrete exposed to the elements and 0.2% for concrete protected from the elements, when percent is determined by weight of cement. When the source of any component material for the concrete is changed or when the design mix is altered, a chloride content determination test shall be made immediately. Resubmit the altered design mix for approval by the Architect.
- H. **Cementitious Materials:** Minimum Portland cement content of any concrete mix is 423 lbs.
1. Provide concrete mixes having a fly ash content of 15% to 20%, by weight, of cementitious material.
- I. **Air Content:** Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content of 3 to 5 percent. Except for concrete exposed to freezing temperatures, do not use air-entraining admixture for interior slabs to receive a hard trowel finish, unless otherwise indicated.
- J. **Air Content:** Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content as follows within a tolerance of plus or minus 1 percent, unless otherwise indicated:
1. Air Content: 6 percent for 3/4-inch- nominal maximum aggregate size.
- K. **Synthetic Fiber:** Uniformly disperse in concrete mix at manufacturer's recommended rate, but not less than 1.5 lb/cu. yd.. Concrete shall meet the toughness requirements of ASTM 1018.
- L. **Admixtures:** Use admixtures according to manufacturer's written instructions.
1. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in all structural concrete.
  2. Use high range water-reducing admixture in pumped concrete, walls 8" thick and less, at areas of reinforcing steel congestion, and as required for placement and workability, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.40.
- M. **Adjustment to Concrete Mixes:** Mix design adjustments may be requested by contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant; at no additional cost to Owner and as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect before using in work.

## 2.11 CONCRETE MIXING

- A. **Ready-Mixed Concrete:** Measure, batch, mix, and deliver concrete according to ASTM C 94.

- B. Mixing and Delivery Time: When air temperature is between 95 and 100 degrees F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 100 degrees F, reduce mixing and delivery time to 60 minutes.
  - 1. Concrete Containing Corrosion Inhibitor: Reduce mixing and delivery time to one hour.
- C. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mix type and number, batch time, mix time, quantity, and amount of water added. Record approximate location of final deposit in structure.

### PART 3 - EXECUTION

#### 3.1 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use Setting Drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  - 1. Install anchor bolts, accurately located, to elevations required.
  - 2. Install dovetail anchor slots in concrete structures as indicated.
  - 3. Do not provide sleeves or openings in structural members unless shown on the structural drawings or approved by the Architect.

#### 3.2 VAPOR RETARDERS

- A. Vapor Retarder: Place, protect, and repair vapor-retarder sheets according to manufacturer's written instructions. Use below interior floor slabs only.

#### 3.3 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
  - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Provide dowels as shown on drawings or as required by Architect. Do not continue reinforcement through sides of strip placements of slabs.
  - 2. For members 5" thick or more, form keys from preformed galvanized steel, plastic keyway-section forms or bulkhead forms with keys, unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete. Submit detail to Architect for review.
  - 3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
  - 4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs. Allow 4 hours (minimum) between when column or wall is cast and when concrete supported by column or wall is cast.

5. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces. In beams and girders use epoxy-bonding adhesive at locations when fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated on drawings. If requested, the contractor shall prepare and submit to the Architect a joint layout. Construct contraction joints as follows:
1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades using the “Soff-Cut” early entry dry-cut saws. Cut 1/8 inch wide and 1 inch deep joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks. This is usually within 2 hours of final finish at each control joint but not more than 8 hours after completion of concrete pour.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.
  2. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
- E. Coordinate construction and control joints with requirements of finish material joints.

### 3.4 WATERSTOPS

- A. Self-Expanding Strip Waterstops: Install in construction joints at locations indicated, according to manufacturer's written instructions, bonding or mechanically fastening and firmly pressing into place. Install in longest lengths practicable.

### 3.5 CONCRETE PLACEMENT

- A. Complete the following before placing concrete:
1. Excavate and compact subgrade, arrange for compaction testing, place vapor barrier and remove excess water.
  2. Secure all formwork. Verify that shoring and reshoring has been inspected and accepted by Delegated Engineer. Moisten wood forms except where form coatings are used.
  3. Accurately locate all steel reinforcement, conduits, outlet boxes, anchors, hangers, sleeves, bolts, expansion joint materials and other embedded items and secure against shifting during concrete placement or consolidation.
  4. Cooperate with other trades and verify that their work is installed.
  5. Notify testing agency to test concrete.
  6. Ensure that all required inspections are performed.
- B. Comply with ACI 301, ACI 304, ACI 308 and ACI 318.

- C. Jobsite Tempering: Place concrete within 1-1/2 hours after introduction of water to mix. Submit time stamped batching tickets upon delivery of concrete to job site.
1. Do not add water to ready-mix concrete except as provided in ASTM C 94, Paragraph 11.7. When so allowed, limit addition of water to maximum of one (1) gallon per cubic yard. Addition of water may only be authorized by Architect, the concrete producer's quality control representative, a preapproved representative of Contractor, or the Special Inspector.
  2. Concrete produced with high range water reducer may only be tempered with additional high range water reducer.
- D. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation.
1. Maximum height of concrete free fall is 4 feet. Columns up to 8 feet in height may be poured in one lift. Concrete in columns and walls over 8 feet may be poured full height with the use of drop chutes or tremies or up to a maximum of 16 feet if HRWR admix concrete is used.
- E. Deposit concrete in forms in horizontal layers no deeper than 24 inches and in a manner to avoid inclined construction joints. Place each layer while preceding layer is still plastic, to avoid cold joints.
1. Consolidate placed concrete with mechanical vibrating equipment. Use equipment and procedures for consolidating concrete recommended by ACI 309R.
  2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the vibrator. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix constituents to segregate.
  3. Concrete in columns and walls shall be cast at least twenty four (24) hours before horizontal members they support are cast. Exception: Tie columns concrete and grout in masonry cells shall be cast at least four (4) hours before beams cast on top of masonry.
- F. Deposit and consolidate concrete for slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
  2. Maintain reinforcement in position on chairs during concrete placement.
  3. Screed slab surfaces with a straightedge and strike off to correct elevations.
  4. Slope surfaces uniformly to drains where required.
  5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, free of humps or hollows, before excess moisture or bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

- G. Pumping: Slumps in excess of six (6) inches at the pump will not be permitted except for concrete produced with HRWR. If placing by means of pump, a specifically designed concrete mix shall be submitted to the Architect for review. No pumps smaller than 4 inches will be permitted. Exception: A 3" pump may be used for 8" wide beams and columns cast on top of or between masonry walls or for filling masonry cells.
- H. Cold-Weather Placement: Comply with ACI 306.1 and as follows: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures. Cold weather is defined as a period when, for more than three (3) consecutive days, the average daily air temperature is less than 40 degrees F and the air temperature is not greater than 50 degrees F for more than 1/2 of any 24-hour period. The average daily air temperature is the average of the highest and lowest temperatures occurring during the period from Midnight to Midnight.
1. When air temperature has fallen to or is expected to fall below 40 degrees F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 degrees F at point of placement.
  2. Provide protected and heated environments for onsite storage of test cylinders.
  3. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
  4. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators.
  5. Temporary heat devices shall be operated with special care to protect against concentrations of heat, or direct contact with combustion gases. All surfaces within the enclosure shall be kept wet for curing.
- I. Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows, except concrete temperature shall not exceed 100 degrees F:
1. Cool ingredients before mixing to maintain concrete temperature below 100 degrees F at time of placement.
  2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
  3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.
  4. Use Type D water reducing admixtures when ambient temperature exceeds 90 degrees F or other adverse placing conditions exist.
- J. Do not place concrete in exposed conditions when it is raining unless adequate protection is provided.

### 3.6 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defective areas repaired and patched. Remove fins and other projections exceeding 1/4" rubbed down or chipped off. Use for concrete surfaces not exposed to view in the finished work.

- 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 defective areas. Remove fins and other projections exceeding 1/8 inch in height.
  - 1. Apply to concrete surfaces exposed to public view or to be covered with a coating or covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, painting, or staining.
- C. Rubbed Finish: Apply the following to smooth-formed finished concrete:
  - 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.

### 3.7 FINISHING FLOORS AND SLABS

- A. General: Comply with recommendations in ACI 302.1R for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces. Slope surfaces to drains.
- B. Trowel Finish: After applying float finish, apply first trowel finish and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighen 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 indicated and to floor and slab 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
- C. Trowel and Fine-Broom Finish: Apply a partial trowel finish, stopping after second troweling, to surfaces indicated and to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set method. Immediately after second troweling, and when concrete is still plastic, slightly scarify surface with a fine broom.
- D. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and 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.
- E. Floor Flatness and Levelness: Finish surfaces to the following tolerances according to ASTM E 1155 for a randomly trafficked floor surface and measured within 72 hours and before supporting formwork or shoring is removed:
  - 1. Carpeted Slabs: Specified overall values of flatness, F(F) 25; and levelness, F(L) 20; with minimum local values of flatness, F(F) 17; and levelness, F(L) 15.

2. Thin or No Floor Covering: Specified overall values of flatness, F(F) 30; and levelness, F(L) 20; with minimum local values of flatness, F(F) 20; and levelness, F(L) 17; for suspended slabs.
  3. Specified overall values of flatness, F(F) 40; and levelness, F(L) 30; with minimum local values of flatness, F(F) 25; and levelness, F(L) 22.
- F. Floor Flatness and Levelness Acceptance: The Architect may authorize the testing agency to verify that the specified F(F) and F(L) numbers have been achieved for any slab pours except for unshored or sloped construction. Slabs that do not meet the specified F(F) or F(L) numbers shall be removed and replaced. Alternatively, the Contractor may propose repairs to the slab or a credit to the Project.

### 3.8 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete Work.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates of manufacturer furnishing machines and equipment.
- D. Base Plates and Foundations: Grout using specified non-shrink, non-metallic grout. Where applicable, grout at least 3 days prior to casting concrete on supported structure.

### 3.9 CONCRETE PROTECTION AND CURING

- A. General: Comply with ACI 308 "Recommended Practice for Curing Concrete" and ACI 301. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with recommendations in ACI 305R for hot-weather protection during curing.
- B. 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 by one or a combination of the methods listed under C. Unformed Surfaces:
- C. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including slabs, concrete floor toppings, and other surfaces, by one or a combination of the following methods:
  1. Curing Compound: Apply to all concrete surfaces that are not permanently exposed. Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Provide a second coat applied at 90 degrees to initial



application within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

2. Curing and Sealing Compound: Apply to permanently exposed concrete surfaces. Apply uniformly 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.

### 3.10 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- B. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
  1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface. If reinforcing steel is exposed, remove concrete to provide a minimum of 3/4" clearance all around. Prior to patching allow the Architect and Threshold Inspector adequate time to review prepared areas. Clean, dampen with water, and brush-coat prepared surfaces with bonding agent or slurry coat. Fill and compact with dry pack grout or non-shrink non-metallic grout before bonding agent has dried. Fill form-tie voids with cement grout, dry pack grout or cone plugs secured in place with bonding agent.
  2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
  3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.
- C. Repairing Unformed Surfaces: Test unformed surfaces, such as slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
  1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
  2. After concrete has cured at least 14 days, correct high areas by grinding.
  3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
  4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's

written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.

5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
  6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with square cuts and expose steel reinforcement with at least 3/4 inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mix as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
  7. Repair random cracks and single holes 1 inch or less in diameter with dry pack grout or non-shrink non-metallic grout. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- D. Perform structural repairs of concrete, not covered herein, only with Architect's and Structural Engineer's approval, using repair procedures they recommend.
- E. Other repair materials and installation not specified above may be used, subject to Architect's approval.

### 3.11 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement. Sampling and testing for quality control may include those specified in this Article.
- B. Testing Services: Sample concrete after all water and admixtures have been added. Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mix placed each day. For slabs 6" or thinner, increase frequency to each 50 cu. yd. or fraction thereof of each concrete mix placed each day.
  2. Slump: ASTM C 143; one test at point of placement for each composite sample. Perform additional tests when concrete consistency appears to change.
  3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; ASTM C 173, volumetric method, for structural lightweight concrete; one test for each composite sample.
  4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 degrees F and below and when 85 degrees F and above, and one test for each composite sample.

5. Compression Test Specimens: ASTM C 31; cast and laboratory cure one set of four standard cylinder specimens for each composite sample. For pumped concrete, take sample at point of placement.
    - a. Cast and field cure one set of four standard cylinder specimens for each composite sample.
  6. Compressive-Strength Tests: ASTM C 39; test one specimen at 7 days for information and three at 28 days for acceptance. If one of the first two 28 day tests fall below specified strength, test the remaining specimen at 56 days.
- C. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
- D. Strength of each concrete mix will be satisfactory if every average of any three consecutive compressive-strength tests (3 sets of 2 cylinders each) equals or exceeds specified compressive strength and no compressive-strength test (1 set of 2 cylinders) value falls below specified compressive strength by 10% or 500 psi, whichever is less.
- E. Strength tests that are not satisfactory indicate questionable concrete. The testing agency and Contractor shall submit to the Architect a report of the questionable concrete plus the two test reports immediately prior to and after (5 reports total) for evaluation.
1. If the questionable concrete is not accepted by the Architect, the testing agency shall take core tests per ACI 301 and ASTM C42 minimum diameter of cores -4 inches. Concrete will be considered structurally adequate if average of 3 cores is at least 85% f'c and no single core is less than 75% f'c.
  2. Concrete not considered adequate by core testing shall be removed and replaced or load tested per ACI 318, Chapter 20.
- F. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for each test.
- G. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed by Architect.
- H. The contractor may be required to pay all costs of additional testing or evaluation of questionable concrete and provide a credit to the Owner for acceptance of questionable concrete.

**END OF SECTION 03300**

## SECTION 033053.1 - MISCELLANEOUS CAST-IN-PLACE CONCRETE FOR MECHANICAL AND ELECTRICAL SYSTEMS

### 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 cast-in-place concrete, including reinforcement, concrete materials, mixture design, placement procedures, and finishes.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Other Action Submittal:
  - 1. Design Mixtures: For each concrete mixture.

#### 1.4 QUALITY ASSURANCE

- A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
- B. Comply with the following sections of **ACI 301 (ACI 301M)**, unless modified by requirements in the Contract Documents:
  - 1. "General Requirements."
  - 2. "Formwork and Formwork Accessories."
  - 3. "Reinforcement and Reinforcement Supports."
  - 4. "Concrete Mixtures."
  - 5. "Handling, Placing, and Constructing."
  - 6. "Lightweight Concrete."
- C. Comply with ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

## PART 2 - PRODUCTS

### 2.1 FORMWORK

- A. Furnish formwork and formwork accessories according to **ACI 301 (ACI 301M)**.

### 2.2 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 (Grade 420)**, deformed.
- C. Plain-Steel Wire: ASTM A 82/A 82M, as drawn.
- D. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, fabricated from as-drawn steel wire into flat sheets.
- E. Deformed-Steel Welded Wire Reinforcement: ASTM A 497/A 497M, flat sheet.

### 2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source throughout Project:
  - 1. Portland Cement: ASTM C 150, Type I .
- B. Normal-Weight Aggregate: ASTM C 33, graded, **1-1/2-inch (38-mm)** nominal maximum aggregate size.
- C. Water: ASTM C 94/C 94M.

### 2.4 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.

### 2.5 CONCRETE MIXTURES

- A. Comply with **ACI 301 (ACI 301M)** requirements for concrete mixtures.

- B. Normal-Weight Concrete: Prepare design mixes, proportioned according to **ACI 301 (ACI 301M)**, as follows:
1. Minimum Compressive Strength: **3000 psi (20.7 MPa)** at 28 days.
  2. Slump Limit: **4 inches (100 mm)** , plus or minus **1 inch (25 mm)**.
  3. Air Content: Maintain within range permitted by **ACI 301 (ACI 301M)**. Do not allow air content of trowel-finished floor slabs to exceed 3 percent.

## 2.6 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 above **90 deg F (32 deg C)**, reduce mixing and delivery time to 60 minutes.
- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.
1. For mixer capacity of **1 cu. yd. (0.76 cu. m)** or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
  2. For mixer capacity larger than **1 cu. yd. (0.76 cu. m)**, increase mixing time by 15 seconds for each additional **1 cu. yd. (0.76 cu. m)**.
  3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mix type, mix time, quantity, and amount of water added. Record approximate location of final deposit in structure.

## PART 3 - EXECUTION

### 3.1 FORMWORK

- A. Design, construct, erect, brace, and maintain formwork according to **ACI 301 (ACI 301M)**.

### 3.2 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work 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 STEEL REINFORCEMENT

- A. 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.

### 3.4 CONCRETE PLACEMENT

- A. Comply with **ACI 301 (ACI 301M)** for placing concrete.
- B. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of **ACI 301 (ACI 301M)**.
- C. Do not add water to concrete during delivery, at Project site, or during placement.
- D. Consolidate concrete with mechanical vibrating equipment.

### 3.5 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defective areas repaired and patched. Remove fins and other projections exceeding **1/2 inch (13 mm)**.
  - 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 defective areas. Remove fins and other projections exceeding **1/8 inch (3 mm)**.
  - 1. Apply to concrete surfaces exposed to public view, .
- C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

### 3.6 FINISHING UNFORMED SURFACES

- A. General: Comply with ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Screed surfaces with a straightedge and strike off. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane before excess moisture or bleedwater appears on surface.
  - 1. Do not further disturb surfaces before starting finishing operations.
- C. Trowel Finish: Apply a hard trowel finish to surfaces indicated and to floor and slab 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.

### 3.7 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 with **ACI 301 (ACI 301M)** for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching **0.2 lb/sq. ft. x h (1 kg/sq. m 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. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- D. Curing Methods: Cure formed and unformed concrete for at least seven days by one or a combination of the following methods:
  - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
    - a. Water.
    - b. Continuous water-fog spray.
    - c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with **12-inch (300-mm)** lap over adjacent absorptive covers.
  - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least **12 inches (300 mm)**, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
  - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
  - 4. 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.

### 3.8 REPAIRS

- A. Remove and replace concrete that does not comply with requirements in this Section.

END OF SECTION 033053



## SECTION 04230 - REINFORCED MASONRY

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes grouted reinforced masonry consisting of grout and reinforcing steel.
- B. Related Sections include the following:
  - 1. Division 3 Section "Concrete Reinforcement" for reinforcing steel.
  - 2. Division 3 Section "Cast-In-Place Concrete" for concrete.
  - 3. Division 4 Section "Unit Masonry Assemblies" for all other elements of masonry construction.

#### 1.3 DEFINITIONS

- A. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

#### 1.4 SUBMITTALS

- A. Shop Drawings: Show fabrication and installation details Reinforcing Steel. Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement." Show bar schedules, bent bar diagrams and other arrangements as required for fabrication and placement. Show elevations of reinforced walls.
- B. Material Test Reports: From a qualified testing agency indicating and interpreting test results of the following for compliance with requirements indicated:
  - 1. Grout mixes complying with compressive strength requirements of ASTM C 476. Include description of type and proportions of grout ingredients and design slump.

#### 1.5 QUALITY ASSURANCE

- A. Comply with the provisions of the following codes, specifications and standards, unless more stringent requirements are specified or shown on the Drawings. Reference is made to the edition in force at the time these specifications are issued.

1. Florida Building Code, 2007 Edition with 2009 Supplement.
2. ACI 530/ASCE 5 “Building Code Requirements for Concrete Masonry Structures”
3. ACI 530.1/ASCE 6 “Specifications for the Design and Construction of Load Bearing Concrete Masonry”

#### 1.6 PROJECT CONDITIONS

- A. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least 3 days after building masonry walls or columns.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. General: Refer to Division 4 Section “Unit Masonry Assemblies” for masonry materials and accessories and grout materials not included in this section.
- B. Concrete Masonry Units: Use special shapes where shown and as required for corners, jambs, sashes, control joints, lintels, bond beams and other special conditions.

#### 2.2 GROUT MATERIALS

- A. Aggregate for Grout: ASTM C 404 for fine grout.

#### 2.3 REINFORCING STEEL

- A. Uncoated Steel Reinforcing Bars: ASTM A 615, Grade 60. Shop fabricate bent bars. Joint reinforcing and anchors: ASTM A 153 Class B2, with a coating thickness of 1.50 oz/sf in exterior walls, ASTM A 641 in interior walls. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells with loops for holding reinforcing bars in center of cells. Units are formed from 0.142-inch steel wire, hot-dip galvanized after fabrication.

1. Provide units with either two loops or four loops as needed for number of bars indicated.

#### 2.4 GROUT MIXES

- A. Grout for Unit Masonry: Comply with ASTM C 476 with a minimum compressive strength of 3000 psi in 28 days.
  1. Use fine grout with a slump of 8 to 10 inches.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
  - 1. Verify that foundations are within tolerances specified.
  - 2. Verify that reinforcing dowels are properly placed.
  - 3. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION, GENERAL

- A. Refer to Division 4 Section “Unit Masonry Assemblies” for general installation requirements of unit masonry.
- B. Cut masonry units with motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide a continuous pattern and to fit adjoining construction, including the first course of walls where required. Cut units which are not in multiples of 8”. Install cut units with cut surfaces and, where possible, cut edges concealed.
- C. Allow wet masonry units to dry prior to placement.

### 3.3 CONSTRUCTION TOLERANCES

- A. Comply with tolerances in ACI 530.1/ASCE 6/TMS 602.

### 3.4 LAYING MASONRY WALLS

- A. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern: Lay masonry in one-half running bond with vertical joint in each course centered on units in courses above and below, unless otherwise indicated on Drawings. Interlock each course at corners.
- C. Place clean units while the mortar is soft and plastic. Remove and relay in fresh mortar any unit disturbed to the extent that initial bond is broken after initial positioning.
- D. Stopping and Resuming Work: In each course, rack back one-half-unit length for one-half running bond; do not tooth.
- E. Fill cores in hollow concrete masonry units with grout 24 inches under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.

- F. Design, provide and install bracing that will assure stability of masonry during construction. Include provisions to project against wind or other natural or construction forces that might collapse or otherwise damage a partially or completely built masonry wall in a partially completed structure.

### 3.5 MORTAR BEDDING AND JOINTING

- A. Lay hollow masonry units as follows:
  - 1. With full mortar coverage on horizontal and vertical face shells.
  - 2. Bed webs in mortar in starting course at base of wall and in all courses of piers, columns, and pilasters, and where adjacent to cells to be filled with grout.
  - 3. For starting course at base of wall where cells are not grouted, spread out full mortar bed, including areas under cells.

### 3.6 MASONRY JOINT REINFORCEMENT

- A. General: Provide continuous masonry joint reinforcement as indicated. Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch. Lap reinforcement 6 inches.
- B. Provide continuity at corners and wall intersections by using prefabricated "L" and "T" sections. Cut and bend reinforcing units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

### 3.7 LINTELS

- A. Provide masonry lintels where shown and where openings of more than 24 inches are shown. Reinforce and grout lintels as shown on the Drawings.
  - 1. Provide precast lintels made from concrete matching concrete masonry units in color, texture, and compressive strength and with reinforcing bars indicated or required to support loads indicated. Cure precast lintels by the same method used for concrete masonry units.
  - 2. Provide prefabricated or built-in-place masonry lintels. Use specially formed bond beam units 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.
  - 3. Provide either of above at Contractor's option or provide precast or formed-in-place concrete lintels complying with requirements in Division 3 Section "Cast-in-Place Concrete."
- B. Install steel lintels where indicated.
- C. Provide minimum bearing of 8 inches at each jamb, unless otherwise indicated.

### 3.8 REINFORCED UNIT MASONRY INSTALLATION

- A. Laying Masonry Walls: Construct masonry walls as follows:
1. Lay masonry units to top of grout pour prior to placing grout. Maximum grout pour height is 24' or top of bond beam, whichever is lower.
  2. Construct wall such that vertical cells to be grouted are aligned and unobstructed openings for grout are 3"x4" (minimum). Construct grout spaces free of mortar droppings, debris, loose aggregates, and any material deleterious to grout; or, clean the cells prior to grouting. Remove masonry protrusions extending 1/2" or more into cells to be grouted.
  3. Do not lay masonry until grouted masonry below is cured.
  4. In bond beams, use special units or modify regular units to allow placement of horizontal bars. Place small mesh, expanded metal lath or wire screening in mortar joints under bond beam courses over cells of non-reinforced vertical cells.
- B. Temporary Formwork and Shores: Construct formwork and shores to support reinforced masonry elements during construction.
1. Construct formwork to conform to shape, line, and dimensions shown. Make it 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 temporary loads that may be placed on them during construction.
- C. Placing Reinforcement: Comply with requirements of ACI 530.1/ASCE 6/TMS 602 and as follows:
1. Place reinforcement and accessories as indicated.
  2. Support and fasten reinforcement together to prevent displacement by construction loads or by placement of grout.
  3. Clean reinforcement by removing mud, oil, or other materials that will reduce the bond at the time grout is placed. Reinforcement with tightly bound rust and/or mill scale is acceptable without cleaning provided the dimensions and weights, including heights of deformations, of the cleaned sample are not reduced.
  4. Place all reinforcement prior to grouting. Tie vertical reinforcement to dowels at base of masonry with tie wire and thread masonry units over or around reinforcement. Support vertical reinforcement at 10'-0" o.c. Extend vertical bars the specified lap length above top of pour and support bar in proper position at top of grout pour. Where vertical bars are placed after laying masonry, place wire loops extending into cells as masonry is laid and loosen before mortar sets. After insertion of bar, pull loops and bar to proper position and tie free ends.
  5. Do not bend reinforcement after it is embedded in grout.
  6. Splice bars only where indicated. Provide 48 bar diameter lap splices, U.O.N. Place bars in contact and wire tie. Bars spliced by noncontact lap splices shall be spaced 6" apart (maximum).
  7. Bar placement tolerance is  $\pm 1/2$ " perpendicular to wall and 2" along wall. The clear distance between parallel bars that are not contact lap spliced shall be not less than 1" in walls and 1 1/2" in columns and pilasters. Maintain 1/4" clear between bars and any face of masonry.

D. Cleanouts: Provide cleanout openings at each vertical bar at the base of walls in which one of the following applies:

1. Grout pour height exceeds 5'.
2. Vertical bars are not otherwise fastened to prevent displacement. In this case, use cleanout to securely tie bar in position.
3. To remove dust, dirt, mortar droppings, loose pieces of masonry and other foreign materials from cell and top of support in cells to be grouted.

Construct cleanout by cutting opening in face shell. Construct cleanouts with openings of sufficient size to permit removal of debris and tying of bars. Minimum size is 3"x3". After cleaning and inspection, close cleanout opening and brace closure to resist grout pressure.

E. Grouting: Do not place grout until entire height of masonry to be grouted has attained sufficient strength to resist grout pressure.

1. Comply with requirements of ACI 530.1/ASCE 6/TMS 602.
2. Place grout within 1 1/2 hours from introducing water in the mixture and prior to initial set.
3. Confine grout to the areas indicated.
4. Place grout by pumping into grout spaces unless alternate methods are acceptable to the Architect.
5. Place grout continuously in lintels and bond beams. Grout walls in lifts not exceeding 5' or the elevation of top of bond beam, whichever is lower.
6. If grout pour during one day exceeds 5', grout in lifts 5' each or less, with not less than 30 minutes and not more than one hour between lifts.
7. Terminate grout 1 1/2" below bond beam course or where cell above is to be grouted.
8. Place grout in bond beam course before filling vertical cores above bond beam.
9. Consolidate grout with mechanical vibrators having a 3/4" diameter head. Grout pours 12" high or less may be puddled in lieu of mechanical vibration.

### 3.9 FIELD QUALITY CONTROL

A. Owner will engage a qualified independent testing agency to perform field quality-control testing indicated below.

1. Payment for these services will be made by Owner.
2. Retesting of materials failing to meet specified requirements shall be done at Contractor's expense.

B. Four grout cubes will be sampled and tested for compressive strength per ASTM C 1019 for each 5000 ft.<sup>2</sup> of wall surface.

END OF SECTION

## SECTION 05120 - STRUCTURAL STEEL

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. The work specified in this section includes all labor, materials, equipment, permits, and services necessary for the fabrication and erection of structural steel and related work, complete, in accordance with the Drawings and as specified herein, including the detailing of all connections.
- B. Structural steel is that work defined in AISC “Code of Standard Practice” and as otherwise shown on Drawings.

#### 1.3 RELATED SECTIONS SPECIFIED ELSEWHERE

- A. Division 3 Section “Cast-In-Place Concrete” for Grouting Base Plates.
- B. Division 3 Section “Concrete Formwork” for Placing Anchor Rods.
- C. Division 5 Section “Steel Deck.”
- D. Division 5 Section “Miscellaneous Metal Fabrication.”

#### 1.4 RESPONSIBILITIES

- A. The Engineer of Record is responsible for the design of the steel framing and connections as presented in the Contract Documents. No changes to the requirements of the Contract Documents will be considered without complying with the applicable requirements for substitutions. This includes, but is not limited to, connection details, member sizes or steel grades.
- B. The fabricator is responsible for the preparation of Shop and Erection Drawings pursuant to the requirements of the Contract Documents. The fabricator shall, where necessary, complete the details presented on the Contract Documents and adapt those details to accommodate the atypical conditions. These drawings do not require his signature and seal. Acceptance of the Shop and Erection Drawings by the Architect/Engineer does not relieve the fabricator of the responsibility for accuracy of detail dimensions on the shop drawings and the general fit-up of parts to be assembled in the field.

- C. Environmental Objective Documentation: For each steel product specified a document signed by the manufacturer/fabricator stating compliance with the requirements of the environmental objectives.
- D. The fabricator is responsible for the design and detailing of all substitutions, which shall be prepared by or under the direct supervision and control of a Delegated Engineer as defined in the Contract Documents.
- E. The fabricator is responsible for the coordination of all surveyed field conditions and field measurements necessary for the detailing, fabrication and erection of their work. All field measurements shall be provided on the shop drawings prior to submittal.
- F. The Engineer of Record is responsible for the structural adequacy of the structure in the completed project. The erector is responsible for the means, methods and safety of the erection, including all temporary guys, beams, falsework, cribbing or other elements required for the erection operation. If the erector is unsure of these requirements, he shall retain a Florida Licensed Engineer to determine and design all temporary requirements.

#### 1.5 SUBMITTALS

- A. Submit in accordance with conditions of Contract and Division 1 Specification Sections.
- B. Environmental Objective Documentation: Provide documentation of level of compliance with the following:
  - 1. Product Data for Credit MR 4.1 and Credit MR 4.2: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating costs for each product having recycled content.
  - 2. The products supplied are manufactured/fabricated within a radius of 500 miles from the project site and/or the manufactured products are extracted, or recovered within 500 miles of the project site.
  - 3. Paints and coatings must meet or exceed the VOC and chemical component limits of Green Seal requirements.
  - 4. Provide data indicating post-consumer and post-industrial percentages of steel reinforcing and steel embedments.
- C. Qualifications: Include lists of Qualification data for firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- D. Product Data for each type of product specified, including the following:
  - 1. Bolts, nuts, and washers, including mechanical properties.
  - 2. Direct-tension indicators.
  - 3. Shear stud connectors.



4. Structural steel coatings.
- E. Fabricator's certification that the chemical and physical properties of the following materials comply with the Project requirements:
1. Structural steel
  2. Bolts, nuts and washers.
  3. Direct-tension indicators.
  4. Shear studs.
  5. Welding electrodes.
- F. Welder's certification. Submit to Owner's inspection agency.
- G. The fabricator shall submit details and complete calculations that clearly identify proposed substitutions for Engineer's review prior to preparation of detailed shop drawings. Proposed variations to details shown on the Contract Drawings will be considered and such variations must have preliminary acceptance prior to the preparation of detailed shop drawings. The details and calculations shall clearly show the capacity of the connections designed by the fabricator. The calculations shall show details of the assembled joint with all bolts and welds required. All design calculations, drawings and details shall be signed, sealed and dated by the Delegated Engineer.
- H. Submit to the Architect for acceptance shop and erection drawings. See "Shop Drawings and Other Submittals" notes regarding the possible reproduction of Structural Drawings for use as shop or erection drawings. Drawings shall include complete details, dimensions, schedules and procedures for the fabrication, assembly, and sequence of erection.
1. Include details of cuts, connections, camber, holes, threaded fasteners and other pertinent data. Indicate welds by standard AWS A2.4 symbols and show size, length, and type of each weld. Show shop welds on shop drawings and field welds on erection drawings.
  2. Provide setting drawings, templates, and directions for installation of anchor rods, embeds and other anchorages to be installed by others.
  3. Indicate surface preparation, such as primed, galvanized, etc., of each surface of each piece.
- I. Fabricator's shop inspection and test reports.
- 1.6 CODES AND STANDARDS
- A. Florida Building Code, 2007 Edition with 2009 Supplement.
- B. AISC "Code of Standard Practice for Steel Buildings and Bridges".
1. Paragraph 4.4. "Approval" is modified such that the Structural Engineer will return submittals to the Architect within ten working days from time of receipt.
- C. AISC "Specifications for Structural Steel Buildings", including Commentary and Supplements thereto as issued.

- D. AISC “Specifications for Structural Joints using ASTM A 325 or A490 Bolts” approved by the Research Council on Structural Connections of the Engineering Foundation.
- E. AWS D1.1 “Structural Welding Code”.
- F. ASTM A 6 “General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling and Bars for Structural Use”.
- G. S.S.P.C. Society for Protective Coatings.
- H. Occupational Safety and Health Act (OSHA), as amended to date.

#### 1.7 QUALITY ASSURANCE

- A. Fabricator Qualifications: Fabricator shall have a minimum five years of documented successful experience on equivalent projects. Submit copy of résumé demonstrating equivalent project experience.
- B. Erector Qualifications: Erector shall have a minimum five years of documented successful experience on equivalent projects. Submit copy of résumé demonstrating equivalent project experience.
- C. Qualifications for welding work: Qualify welding procedures and operators in accordance with AWS “Standard Qualification Procedure”.
  - 1. The Fabricator for shop welds and the Erector for field welds shall retain a \_\_\_\_\_ Licensed Engineer, who specializes in the design of weldments to prepare a written welding program pursuant to the requirements of ANSI/AWS D1.1. The program shall include all necessary Welding Procedure Specifications (WPS), all necessary requirements for qualification testing of WPS and welding personnel. The WPS shall include the welding process, sequence of assembly, preheat, interpass and postheat requirements. Welded joints of heavy sections and plates 2 inch thick and greater shall be detailed to limit the amount of weld metal. Double bevels shall be used in lieu of single bevels. Welding shall start at the most restrained part of the weldment and proceed to the least restrained.
  - 2. The Fabricator and Erector, as applicable, shall conduct all necessary tests required by ANSI/AWS D1.1 to qualify the WPS.
  - 3. Provide certification that welders to be employed in work have satisfactorily passed AWS qualification tests for the welding process and position used and have been continuously employed as a welder since certification. If recertification of welders is required, retesting will be Contractor’s responsibility.
- D. The Fabricator shall ultrasonically inspect for laminations all joints where material is subjected to tension in the through thickness direction. Ultrasonic inspection shall extend for a distance of six times the material thickness subject to the through thickness tension, either side of the element delivering the tension.
- E. Stud Application Qualification Test:

1. Prior to erection, conduct stud application qualification tests in accordance with AWS D1.1 Chapter 7.6 and Annex IX. The tests are the responsibility of the Contractor or stud applicator.
  2. Prepare specimen plates of A992 steel, minimum 1/2 inch thick, with an SP-6 surface preparation.
  3. Weld a minimum of ten (10) studs through steel deck to the prepared plate(s). The studs and steel deck shall be of the same type as specified for use in the project. Test the studs by the bend test specified in AWS 7.6.6 or Annex IX.
  4. If the tests are conducted by other than the Owner's testing agency, that agency shall be properly notified so that they may be present to witness the entire test procedure.
- F. The Fabricator shall provide a system of quality control, including shop welding inspections and testing, to ensure that the minimum standards specified herein are attained. Submit to Owner, Architect, Engineer and Owner's Testing and Inspection Agency complete details of the quality control program to be used and all testing and inspection reports. Visually inspect 100% of shop welds. Also, as a minimum, perform non-destructive tests of welds in conformance with AWS D1.1 as follows:
1. Splices: 100%.
  2. Full penetration welds: 100% of cantilevered members, 50% for all others.
  3. Partial penetration welds: 25%.
  4. Fillet welds: 10%.
- G. The fabricator may use the following examination methods, in descending order of importance. When a particular examination method for a joint is unfeasible, the highest order method that is practicable shall be used. Standard of acceptance shall be in accordance with AWS D1.1.
1. Ultrasonic Method: In accordance with AWS D1.1.
  2. Radiographic Method: In accordance with ASTM E 94 and ASTM E 142, with a minimum quality level of "2-2T". This procedure is limited to the inspection of groove welds in butt joints only and is not to be used for fillet welds.
  3. Magnetic Particle Method: In accordance with ASTM E109. Use for examining partial penetration welds. Percentage of examinations is defined elsewhere in these specifications. The Yoke method may be used only for supplementary surface examination.
  4. Dye Penetrant Examination Method: In accordance with ASTM E165.
- H. Cleaning and lubrication of ASTM F1852 twist-off-type tension-control bolt assemblies is not permitted.
- I. Turn-of-nut method of bolt tightening is not acceptable.
- J. Preconstruction Meeting: There shall be a Preconstruction Meeting with the Owner, Architect, Structural Engineer, Contractor, Fabricator, Erector, Testing Laboratory and Special Inspector to clarify responsibilities and requirements as set forth in the Contract Documents.
- 1.8 DELIVERY, STORAGE, AND HANDLING
- A. Deliver materials to site at such intervals to insure uninterrupted progress of work

- B. Deliver anchor rods and anchorage devices which are to be embedded in cast-in-place concrete or masonry in ample time to not delay work.
- C. Store materials to permit easy access for inspection and identification. Keep steel members off ground, using plates, platforms, or other supports. Protect steel members and packaged materials from corrosion and deterioration.
- D. Store fasteners components in sealed containers until ready to use. Reseal open containers to prevent contamination by moisture or other deleterious substances. Store closed containers in a protective shelter to protect fasteners from dirt and moisture. Only as many fastener components as are anticipated to be installed during the work shift shall be taken from protective storage. Fastener components that are not incorporated into the work shall be returned to protective storage at the end of the work shift. Fasteners from open containers and fasteners that accumulate rust or dirt shall not be used and shall be immediately and permanently removed from the project site.
- E. Do not store materials on structure in a manner that might cause distortion or damage to members or supporting structures. Repair or replace damaged materials or structures as directed.

#### 1.9 ENVIRONMENTAL OBJECTIVES

- A. Manufacturer/Fabricator to supply documentation of level of compliance or non-compliance with the following requirements before consideration as an "Acceptable Manufacturer."

All structural steel sections, steel plate, pipes, and HSS shall use steel made in an electric arc furnace (EAF).

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 50 percent.
- B. Structural steel rolled M, S, C and MC shapes and Angles: ASTM A 36, Fy=36 ksi.
- C. Structural steel plates and bars: ASTM A 36, Fy=36 ksi.
  - 1. All steel plates exceeding 2" in thickness shall conform to the requirements of ASTM A435, "Straight-Beam Ultrasonic Examination of Steel Plates", to assure delivery of steel plates free of gross internal discontinuities such as pipe, ruptures, or laminations. Plates shall be identified by stamping or stenciling "UT 435" adjacent to marking required by the material specification. The Fabricator shall submit to the Architect evidence of compliance by the mill with this requirement.
- D. Unfinished threaded fasteners: ASTM A 307, Grade A, regular low-carbon steel bolts and nuts.

1. Provide square head and nuts.
- E. High-strength threaded fasteners: Heavy-hex structural bolts, heavy-hex nuts, and hardened washers, as follows:
1. Quenched and tempered medium-carbon steel bolts, nuts and washers, complying with ASTM A325 or A490.
- F. Bolt Lubrication: All bolts shall be well lubricated at time of installation, dry, rusty bolts will not be allowed. Bolts or nuts shall be wax dipped by the bolt supplier or “Johnson’s Stick Wax 140” shall be used with all bolts in the shop or field. Cleaning and lubrication of ASTM 1852 twist-off type tension-control bolts is not permitted.
- G. Electrodes for welding: Comply with AWS D1.1-98, Table 3.1.
1. For complete-joint penetration groove welds, weld metal shall have a charpy V-notch impact strength of 20 ft./lbs. –20°F.
- H. Structural steel primer paint: SSPC – Paint 11 lead and chromate free, V.O.C. complaint, minimum solids 55% by volume. Use for steel not receiving special coatings or fireproofing. Refer to Architectural Drawings and Division 9.
1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Steel spec Heavy Duty Primer; Sherwin Williams.
    - b. Tnemec – Series 10; Tnemec.
    - c. Primatite; Devoe.
  2. Provide shop primer and shop applied top coat paint in accordance with Division 9 Section “Special Coatings” where shown on the Architectural Drawings.
  3. Steel permanently exposed to the elements that does not receive a coating, such as cooling tower supports, shall be hot dip galvanized.
- I. Non-metallic shrinkage-resistant grout: Provide in accordance with Section 03300.

## 2.2 FABRICATION

- A. Shop fabrication and assembly: Fabricate and assemble structural assemblies in shop to greatest extent possible. Fabricate items of structural steel in accordance with AISC Specifications and as indicated on final shop drawings. Provide camber in structural members where indicated.
- B. Properly mark and match-mark materials for field assembly. Fabricate for delivery sequence that will expedite erection and minimize field handling of materials.
- C. Where finishing is required, complete the assembly, including welding before start of finishing operations. Provide finish surfaces of members exposed in final structure free of markings, burrs, and other defects.
- D. Camber: Camber of structural steel members is indicated on the drawings.

1. Where possible, camber of beams shall be applied by a cold bend process. The local application of heat may be used to introduce or correct camber, curvature, or straightness, provided the temperature of the heated area, as measured by temperature crayons or other approved means, does not exceed 1200 F.
  2. Where indicated on the Drawings in a camber diagram, cantilever or double cantilever beams shall be cambered for the main span and cantilever end separately, either by a staged cold bending process or by the application of heat.
  3. Cambers indicated on the drawings are intended to be final cambers at time of erection. The fabricator shall account for camber loss in the initial camber operations and during transportation of material to the site.
  4. Beams and trusses detailed without specified camber shall be fabricated so that after erection any natural camber due to rolling or shop fabrication is upward.
  5. Specified camber for beams at time of erection shall be within a tolerance of minus zero to plus one-eighth inch for each ten feet of member length.
  6. Specified camber for trusses shall be built into the fabrication process with a tolerance of minus zero to plus 10% of the specified camber.
- E. Splices in Structural Steel: Splicing of structural steel members in the shop or the field is prohibited without prior approval of the Architect. Any member having a splice not shown and detailed on approved shop drawings will be rejected.
- F. Connections:
1. Weld shop connections, as indicated.
  2. Bolt field connections, except where welded connections are indicated.
  3. Provide high-strength, threaded fasteners except for temporary bracing to facilitate erection or otherwise indicated.
- G. High-strength bolted construction: Install high-strength threaded fasteners in accordance with AISC "Specifications for Structural Joints using ASTM A 325 or A 490 Bolts" (RCSC June 30, 2004).
- H. Welded construction: Comply with AWS D1.1 for procedures, appearance and quality of welds, and method used in correcting welding work.
- I. Holes for other work: Provide holes required for securing other work to structural steel framing, and for passage of other work through steel framing members, as shown on final shop drawings.
- J. Provide threaded nuts welded to framing, and other specialty items as indicated to receive other work.
- K. Cut, drill, or punch holes perpendicular to metal surfaces. Do not flame cut holes, or enlarge holes by burning. Drill holes in bearing plates.
- L. Provide weep hole in any confined steel surface capable of retaining water during erection or service. Seal weld as required to prevent migration of water into confined region.

## 2.3 SHOP PAINTING

- A. Surface preparation: After inspection and before shipping, clean steel work to be painted. Remove loose rust, loose mill scale, and spatter, slag or flux deposits. Clean steel in accordance with SSPC: the Society for Protective Coatings. Use SSPC-SP 6, "Commercial Blast Cleaning" for steel to be painted or receive a coating and SSPC-SP 2, "Hand Tool Cleaning," or SSPC-SP 3, "Power Tool Cleaning" for all other conditions.
- B. Priming: Unless specified otherwise in Division 9 "Special Coatings" comply with the following: Immediately after surface preparation, apply VOC compliant structural steel primer paint in accordance with manufacturer's instructions and at a rate to provide dry film thickness of not less than 2.5 mils. Use painting methods that result in full coverage of joints, corners, edges and exposed surfaces. Refer to Division 9 Section "Special Coatings" for priming and painting of members to receive coatings.

Shop prime structural steel, except do not prime:

- 1. Members or portions of members to be embedded in concrete or mortar. Prime embedded steel that is partially exposed on exposed portions and initial 2" of embedded areas only.
  - 2. Surfaces that are scheduled to receive sprayed-on fireproofing.
  - 3. Members that are to be hot dip galvanized.
  - 4. Surfaces within 2" of welds.
  - 5. The faying surfaces of slip-critical bolted connections. The exception is for members that receive a coating system. There the faying surfaces should receive a primer providing a Class A surface, with a slip coefficient of 0.33. Submit substantiating data in conformance with Appendix A of the AISC "Specification for Structural Joints".
  - 6. Mask off and do not prime a strip 2" wide on any surfaces to receive a row of headed studs or puddle welds.
- C. Steel members which cannot be readily painted after fabrication, such as back-to-back angles and tees, shall be primed and finish coated prior to fabrication.
  - D. Hot dip galvanize members permanently exposed to the elements, such as cooling tower support steel.
  - E. Do not print or emboss the name of the fabricator on exposed steel unless it is completely concealed by the finish painting.

## PART 3 - EXECUTION

### 3.1 ERECTION

- A. Surveys: Employ a Florida Licensed Engineer or Land Surveyor for accurate erection of structural steel. Check elevations of concrete and masonry bearing surfaces and locations of anchor bolts and similar devices, before erection work proceeds, and report discrepancies to Architect. Do not proceed with erection until corrections have been made, or until compensating adjustments to structural steel work have been agreed upon with Architect.
- B. Temporary shoring and bracing: Provide temporary shoring and bracing members and connections of sufficient strength to bear imposed loads from steel self weight and erection

procedures or any other loads created by other contractors on a temporary basis. Remove temporary members and connections when permanent members are in place and final connections are made. Provide temporary guidelines to achieve proper alignment of structures as erection proceeds.

- C. Temporary planking: Provide temporary planking and working platforms as necessary to effectively complete work.
- D. Anchor rods and bolts: Furnish anchor rods, bolts and other connectors required for securing structural steel to foundations and other in-place work.
  - 1. Furnish templates and other devices as necessary for pre-setting rods, bolts and other anchors to accurate locations.
  - 2. Refer to Division 3 of these specifications for anchor rod installation requirements in concrete, and Division 4 for masonry installation.
- E. Setting bases and bearing plates: Clean concrete and masonry bearing surfaces of bond-reducing materials and clean bottom of base and bearing plate.
  - 1. Set base or bearing plate wedge or other adjusting devices.
  - 2. Tighten anchor rods after structural steel frame has been plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of base or bearing plate prior to packing with grout.
  - 3. Pack or pour non-shrink grout solidly between bearing surface and base or plate. Ensure that no voids remain. Finish exposed surfaces, protect grout and allow to cure.
  - 4. For proprietary grout materials, comply with manufacturer's instructions.
  - 5. Base plates must be grouted a minimum of 72 hours prior to placing concrete slabs on supporting steel structure.
- F. Field assembly: Set structural members accurately to lines and elevations indicated. Align and adjust various members forming a part of a complete frame or structure before permanently fastening. Clean bearing surfaces and other surfaces which will be in permanent contact before assembly. Perform necessary adjustments to compensate for discrepancies in elevations and alignment. Comply with AISC Code of Standard Practice except where more stringent requirements are contained herein.
  - 1. Level and plumb individual members of structure within specified AISC tolerances.
  - 2. Establish required leveling and plumbing measurements on mean operating temperature of structure. Make allowances for difference between temperature at time of erection and mean temperature at which structure will be when completed and in service.
- G. Splice members only where indicated and accepted on shop drawings.
- H. Erection bolts: On exposed welded construction, remove erection bolts, fill holes with plug welds and grind smooth at exposed surfaces.
- I. Comply with AISC Specification for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds.
- J. Do not enlarge unfair holes in members by burning or by use of drift pins. Ream holes that must be enlarged to admit bolts as permitted by Architect.



- K. Tighten bearing-type bolts (A-325N, A-325X, A-490N, and A-490X) to the snug tight condition as follows:
1. Bolts shall be placed in all holes, with washers positioned as required and nuts threaded to complete the assembly.
  2. Compacting the joint to the snug-tight condition shall progress systematically from the most rigid part of the joint.
  3. The snug-tightened condition is the tightness that is attained with a few impacts of an impact wrench or the full effort of an ironworker using an ordinary spud wrench.
  4. More than one cycle through the bolt pattern may be required to achieve the snug-tightened joint.
- L. Tighten slip-critical bolts (A-325SC and A-490SC) to the minimum fastener tension indicated in Table 8.1 of the “Specification for Structural Joints using ASTM A-325 or ASTM A-490 Bolts” as follows:
1. Begin final tightening of slip-critical bolts only after a snug-tight joint as described above is achieved. Progress systematically from the most rigid part of the joint.
  2. If splined end of tension-control bolts is severed prior to achieving snug-tight joint, remove and replace the fastener assembly.
  3. Progress systematically from the most rigid part of the joint.
  4. Determine tension using either load indicator washers or tension-control bolts.

At the Contractor’s option, slip-critical bolts may be installed in either standard, oversize, or short slotted holes. Design of connections using slip-critical bolts is based on a Class A faying surface and oversized holes.

- M. Provide hardened washers conforming to ASTM F436 and place under the part being turned.
- N. Do not reuse or retighten bolts which have been fully tightened. Use only non-galvanized nuts and bolts that are clean, rust-free, and well lubricated. Bolts and nuts shall be wax dipped by the bolt supplier or lubricated with Johnson’s Stick Wax 140. Cleaning and lubrication of ASTM F1852 twist-off-type tension-control bolts is not permitted.
- O. Where slotted holes are used to accommodate thermal movement, notify the Architect if bolt is expected to hit the end of slot, based on temperature at time of installation.
- P. Store fastener components in sealed containers until ready for use. Reseal open containers to prevent contamination by moisture or other deleterious substances. Store closed containers from dirt and moisture in a protective shelter. Take from protective storage only as many fastener components as are anticipated to be installed during the work shift. Fastener components that are not incorporated into the work shall be returned to protective storage at the end of the work shift. Fasteners from open containers and fasteners that accumulate rust or dirt shall not be used and shall be immediately and permanently removed from the project site.
- Q. Headed shear studs: All welding ferrules for shear connectors shall be removed prior to placement of concrete.
- R. Gas cutting: Do not use gas-cutting torches in field for correcting fabrication errors in primary structural framing. When permitted, finish gas-cut sections equal to a sheared appearance by grinding or reaming. Do not use gas cutting to fabricate bolt holes.

- S. Touch-up painting: Immediately after erection, slag field welds and clean bolted connections and abraded areas of shop paint. Apply paint to exposed areas using original shop primer or cold galvanizing compound. For exposed steel having special coatings system, reapply both primer and top coat per Division 9 Section, "Special Coatings". For galvanized steel, apply Zinc Clad Cold Galvanizing by Sherwin-Williams or Cold Galvanizing by ZRC Chemical by brush or spray to provide a minimum dry film thickness of 3 mils.

### 3.2 QUALITY CONTROL

- A. Shop testing and inspection by the Owner is to evaluate the effectiveness of the Fabricator's required Quality Control and Assurance Program.
- B. Owner will engage a Structural Inspector to perform field inspections pursuant to the Structural Inspection Plan presented on the Drawings.
- C. Owner will engage a testing agency to perform shop inspections, shop testing, field-testing, and to prepare test and inspection reports.
- D. Testing agency shall conduct and interpret tests and state in each report whether test specimens comply with requirements, and specifically state any deviations therefrom.
- E. Provide access for testing agency to places where structural steel work is being fabricated or produced and unobstructed views to all members in nearby storage so that required inspection and testing can be accomplished.
- F. Testing agency may inspect structural steel at plant before shipment; however, Architect reserves the right, at any time before final acceptance, to reject material not complying with specified requirement.
- G. Correct deficiencies in structural steel work which inspections or laboratory test reports have indicated to be not in compliance with requirements. Perform additional tests, at Contractor's expense, as may be necessary to reconfirm any noncompliance of original work, and as may be necessary to show compliance of corrected work.
- H. Shop Inspection and Tests: Testing Agency is to inspect and test during fabrication of structural steel assemblies, as follows:
  - 1. Review shop drawings and shop procedures with Fabricator's supervisory personnel.
  - 2. Request and obtain necessary mill certifications of steel and verify proper material throughout the duration of the job.
  - 3. Verify welding procedure qualifications, either by prequalifications or by witnessing qualification tests.
  - 4. Verify welder qualifications, either by certification and/or by retesting. Obtain welder certificates.
  - 5. Spot check layout and dimensions of jigs and fixtures for joint preparation, and fit up of members.
  - 6. Verify welding electrodes to be used and other welding consumables as the job progresses.
  - 7. Check preheating procedures for conformance to AWS D1.1.

8. Verify procedures for welding in accordance with applicable portions of section 4, "Technique", AWS D1.1.
  9. Verify that quality of welds meet the requirements of Paragraph B.15, "Quality of Welds", AWS D1.1.
  10. Provide inspection of surface preparation for coating and coating operations in accordance with SSPC VIS 1 and 2.
  11. Perform visual inspection of all welds for compliance with Contract Documents. Provide random non-destructive tests of welds in conformance with Section 6 of AWS D1.1, as may be required by Architect, but not less than:
    - a. Full penetration welds: 25%.
    - b. Partial penetration welds: 15%.
    - c. Fillet Welds: 10%.
  12. Testing laboratory may use the following examination methods, in descending order of importance. When a particular examination method for a joint is unfeasible, the highest order method that is practicable shall be used. Standard of acceptance shall be in accordance with AWS D1.1.
    - a. Ultrasonic Method: In accordance with AWS D1.1.
    - b. Radiographic Method: In accordance with ASTM E 94 and ASTM E 142, with a minimum quality level of "2-2T". This procedure is limited to the inspection of groove welds in butt joints only and is not to be used for fillet welds.
    - c. Magnetic Particle Method: In accordance with ASTM E109. Use for examining partial penetration welds. Percentage of examinations is defined elsewhere in these specifications. The Yoke method may be used only for supplementary surface examination.
    - d. Dye Penetrant Examination Method: In accordance with ASTM E165.
  13. Ultrasonically inspect for laminations after welding all joints with Group 4 and 5 rolled shapes and plates greater than 1 1/2" thick, where material is subjected to tension in the through thickness direction. The ultrasonic inspection shall extend for a distance of six times the thickness of the plate receiving the through thickness tension, either side of the plate delivering the tension.
  14. Interpret, record, and report all results of the non-destructive tests.
  15. Mark for repair, any area not meeting Specification requirements. Correction of rejected welds shall be made in accordance with Paragraph 3.7, "Corrections", AWS D1.1
  16. Re-examine all repair areas and interpret, record, and report the results of examinations of repair welds.
- I. Field Inspection and Tests: Inspect and Test during the erection of structural steel assemblies as directed by the Engineer of Record, but not less than the following
1. Verify field welding procedures and obtain welder certificates.
  2. Check joint preparation and fit up, backing strips, and runout plates.
  3. Check preheating to assure proper temperature, uniformity, and thoroughness through the full material thickness.
  4. Review welding sequence.
  5. Perform visual inspection of all welds for compliance with Contract Documents. Perform non-destructive tests of welds in conformance with Section 6 of AWS D1.1 as may be required by Architect, but not less than:
    - a. Splices: 100%.
    - b. Fillet Welds: 10%.

6. Check 100% of bolted connections according to inspection procedures outlined in the “Specification for Structural Joints using ASTM A325 or A490 Bolts” and as required elsewhere in these specifications.
  7. Production Stud Application Testing: Test the first two studs per welder per day for each set-up and size and type of stud. Test by bending studs 30 degrees using a 4 lb. hammer per AWS D1.1 Section 7.7. Use a 4 lb. hammer to sound 100% of studs. A pinging sound usually represents a sound weld. Studs that produce a “thud” should be bend tested. Passing studs may remain bent while failing studs must be replaced.
  8. Interpret, record, and report all results of the non-destructive tests.
  9. Mark for repair any area not meeting Specification requirements. Correction of rejected welds shall be made in accordance with Paragraph 3.7, “Corrections”, AWS D1.1.
  10. Re-examine all repair areas and interpret, record, and report the results of examinations of repair welds.
- J. Pre-installation testing of as-received fastener assemblies shall be performed according to the Specifications for Structural Joints using ASTM A325 or A490 Bolts, Section 7 and as follows:
1. Tension Calibrator (a hydraulic device that indicates the pretension that is developed in a bolt that is installed in it) shall be provided by the testing agency, at the Project Site, to confirm the tension force in the fastener assembly.
  2. A sample of not fewer than three complete fastener assemblies from each shipping container shall be checked at the site.
  3. Fastener assemblies tested shall develop a pretension force not less than 1.05 times that required by Table 8.1 in AISC. Minimum passing test force: A325: 3/4”=29.4 kips,

END OF SECTION 05120

## SECTION 05300 - STEEL DECK

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes the following:

1. Roof deck.
2. Composite floor deck.

- B. Related Sections include the following:

1. Division 3 Section "Cast-in-Place Concrete" for concrete fill and reinforcing steel.
2. Division 5 Section "Structural Steel" for shop-welded shear connectors.
3. Division 5 Section "Metal Fabrications" for framing deck openings with miscellaneous steel shapes.

#### 1.3 SUBMITTALS

- A. Product Data: For each type of deck, accessory, and product indicated, or requested by the Architect.

- B. LEED Submittal:

1. Product Data for Credit MR 4.1 and Credit MR 4.2: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content.
  - a. Include statement indicating costs for each product having recycled content.

- C. Shop Drawings: Show layout and types of deck panels, anchorage details, reinforcing channels, pans, deck openings, special jointing, accessories, and attachments to other construction.

- D. Product Certificates: Signed by steel deck manufacturers certifying that products furnished comply with requirements.

- E. Welding Certificates: Copies of certificates for welding procedures and personnel. Submit to general contractor.

- F. Product Test Reports: From a qualified testing agency indicating that each of the following complies with requirements, based on comprehensive testing of current products:

1. Mechanical fasteners.

#### 1.4 QUALITY ASSURANCE

- A. Fabricator Qualifications: Member of the Steel Deck Institute.
- B. Installer Qualifications: An experienced installer who has completed steel deck installations similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.
- D. Fabrication and Erection: Fabricate and erect deck per the Steel Deck Institute's "Design Manual for Composite Decks, Form Decks and Roof Decks".
- E. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel," and AWS D1.3, "Structural Welding Code--Sheet Steel."
- F. Fire-Test-Response Characteristics: Where indicated, provide steel deck units identical to those steel deck units tested for fire resistance per ASTM E 119 by a testing and inspection agency acceptable to authorities having jurisdiction.
  1. Steel deck units shall be identified with appropriate markings of applicable testing and inspecting agency.
- G. AISI Specifications: Calculate structural characteristics of steel deck according to AISI's "Specification for the Design of Cold-Formed Steel Structural Members."
- H. Governing Building Code: Comply with Florida Building Code, 2007 Edition with 2009 Supplement.
- I. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.

#### 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 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Steel Deck:
    - a. Consolidated Systems, Inc.
    - b. Epic Metals Corp.
    - c. Marlyn Steel Products, Inc.
    - d. Nucor Corp.; Vulcraft Div.
    - e. Roof Deck, Inc.
    - f. United Steel Deck, Inc.
    - g. Wheeling Corrugating Co.; Div. of Wheeling-Pittsburgh Steel Corp.

## 2.2 ROOF DECK

- A. Steel Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 30, and the following:
1. Galvanized Steel Sheet: ASTM A 653, Structural Steel (SS), Grade 33, G90 zinc coating.
  2. Deck Profile; Depth and Design Uncoated-Steel Thickness: As indicated on Drawings.
  3. Span Condition: Triple span typical, Double span minimum, U.O.N. on Drawings.
  4. Side Laps: Interlocking seam.

## 2.3 COMPOSITE FLOOR DECK

- A. Composite Steel 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. 30, the minimum section properties indicated, and the following:
1. Galvanized Steel Sheet: ASTM A 653, Structural Steel (SS), Grade 33, G60 zinc coating.
  2. Shear Lugs (Web Embossments): 0.050 inch high (min.).
  3. Profile Depth and Design Uncoated-Steel Thickness: As indicated on Drawings.
  4. Span Condition: Triple span typical, double span minimum, U.O.N. on Drawings.

## 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. Steel Sheet Accessories: Steel sheet, of same material, finish, and thickness as deck, unless otherwise indicated.
- G. Pour Stops and Girder Fillers: Steel sheet, minimum yield strength of 33,000 psi, of same material and finish as deck, and of thickness and profile recommended by SDI Publication No. 29 for overhang and slab depth unless otherwise indicated.
- H. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck, unless otherwise indicated.
- I. Flat Sump Plate: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck. For drains, cut holes in the field.
- J. Shear Connectors: ASTM A 108, Grades 1010 through 1020 headed stud type, cold-finished carbon steel, AWS D1.1, Type B, with arc shields.
- K. Galvanizing Repair Paint: Provide “Galvacon”, “ZRC Cold Galvanizing” or Architect accepted alternate.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.

#### 3.2 INSTALLATION, GENERAL

- A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 29, manufacturer's written instructions, and requirements in this Section.
- B. Deck has been designed to span unshored, U.O.N. on Drawings.
- C. Locate decking bundles to prevent overloading of supporting members.
- D. 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.
- E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.
- F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to decking.



- G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of decking, and support of other work.
- H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.
- I. Mechanical fasteners may be used in lieu of welding to fasten deck. Provide mechanical fasteners according to deck manufacturer's written instructions and per the Structural Notes on the Drawings.

### 3.3 ROOF DECK INSTALLATION

- A. Fasten roof deck panels to steel supporting members by arc spot (puddle) welds or mechanical fasteners. Welds of the surface diameter indicated or seam welds with an equal perimeter, but not less than 1-1/2 inches long, screws of diameter indicated and as follows:
  - 1. Weld Diameter: 5/8 inch nominal.
  - 2. Weld Spacing: Weld deck units as indicated on the Drawings.
  - 3. Mechanical Fasteners: Install #12 TEK Screws
  - 4. Mechanical Fastener Spacing: Fasten to light gage trusses as indicated on Drawings.
- B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, as indicated on the Drawings.
- C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:
  - 1. End Joints: Lapped 2 inches minimum.
- D. Roof Sump Pans and Sump Plates: Install over openings provided in roof decking and weld flanges to top of deck. Space welds not more than 12 inches apart with at least 1 weld at each corner.
- E. Miscellaneous Roof Deck Accessories: Install ridge and valley plates, finish strips, cover plates, end closures, and reinforcing channels according to deck manufacturer's written instructions. Weld to substrate to provide a complete deck installation.
- F. Flexible Closure Strips: Install flexible closure strips over partitions, walls, and where indicated. Install with adhesive according to manufacturer's written instructions to ensure complete closure.

### 3.4 FLOOR DECK INSTALLATION

- A. Fasten floor deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated and to masonry walls with mechanical fasteners as follows:
  - 1. Weld Diameter: 5/8 inch nominal.
  - 2. Mechanical Fasteners: 1/4" diameter by 1 3/4" Tapcon or equivalent.
  - 3. Spacing: Space welds at 12" on center.

- B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, as indicated on the Drawings.
- C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:
  - 1. End Joints: Butted.
- D. Shear Connectors: Weld shear connectors through deck to supporting frame according to AWS D1.1 and manufacturer's written instructions. Butt end joints of deck panels; do not overlap. Remove and discard arc shields after welding shear connectors.
- E. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure according to SDI recommendations, unless otherwise indicated.
- F. Floor Deck Closures: Weld steel sheet cell closures, and Z-closures to deck, according to SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of decking. Weld cover plates at changes in direction of floor deck panels, unless otherwise indicated.

### 3.5 FIELD QUALITY CONTROL

- A. Testing: Owner will engage a qualified independent testing agency to perform field quality-control testing.
- B. Field welds will be subject to inspection.
- C. Shear connector stud welds will be inspected and tested according to AWS D1.1 for stud welding and as follows:
  - 1. Shear connector stud welds will be visually inspected.
  - 2. Bend tests will be performed if visual inspections reveal less than a full 360-degree flash or welding repairs to any shear connector stud.
  - 3. Tests will be conducted on additional shear connector studs if weld fracture occurs on shear connector studs already tested according to AWS D1.1.
- D. Testing agency will report test results promptly and in writing to Contractor and Architect.
- E. Remove and replace work that does not comply with specified requirements.
- F. Additional testing and/or inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

### 3.6 REPAIRS AND 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.

END OF SECTION 05300

## SECTION 05400 - COLD-FORMED METAL FRAMING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes, but is not limited to the following:
  - 1. Interior load-bearing wall framing.
  - 2. Exterior non-load-bearing -wall framing.
  - 3. Roof trusses.
  - 4. Roof rafter framing.
  - 5. Gypsum sheathing and air-infiltration barriers.

#### 1.3 RELATED WORK SPECIFIED ELSEWHERE

- 1. Division 3 Section "Cast-In-Place Concrete".
- 2. Division 5 Section "Metal Fabrications" for masonry shelf angles and connections.
- 3. Division 6 Section "Rough Carpentry" for subflooring, wall sheathing, or roof sheathing using wood-based structural-use panels, particleboard, fibrous-felted board, and foam-plastic sheathing.
- 4. Division 7 Section "Roofing".
- 5. Division 9 Section "Gypsum Board Assemblies" for interior non-load-bearing metal-stud framing and ceiling-suspension assemblies.
- 6. Division 9 Section "Gypsum Board Shaft-Wall Assemblies" for interior non-load-bearing, metal-stud-framed, shaft-wall assemblies.

#### 1.4 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide cold-formed metal framing capable of withstanding specified design loads within limits and under conditions indicated.
  - 1. Design Loads: As indicated on drawings or required by Code.
  - 2. Deflection Limits: Design framing systems to withstand design loads without deflections greater than the following:
    - a. Interior Non-Load-Bearing Wall Framing: Horizontal deflection of 1/240 of the wall height.
    - b. Exterior Non-Load-Bearing Curtain-Wall Framing: Horizontal deflection of 1/360 of the wall height.
    - c. Roof Trusses: Vertical deflection of 1/360 of the span.

- d. Roof Rafter Framing: Horizontal deflection of 1/360 of the horizontally projected span.
- 3. Design framing systems to provide for movement of framing members 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.
- 4. Design framing system to maintain clearances at openings, to allow for construction tolerances, and to accommodate live load deflection of primary building structure as follows:
  - a. Upward and downward movement of 1/2 inch.
- B. Design exterior non-load-bearing wall framing to accommodate horizontal deflection without regard for contribution of sheathing materials.
- C. Design roof trusses according to AISI's "Design Guide for Cold-Formed Steel Trusses."

#### 1.5 SUBMITTALS

- A. Product Data and installation instructions for each type of cold-formed metal framing product and accessories, including fasteners, materials and finishes.
- B. LEED Submittal:
  - 1. Product Data for Credit MR 4.1 and Credit MR 4.2: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content.
    - a. Include statement indicating costs for each product having recycled content.
- C. Shop Drawings: Show layout, spacings, sizes, thicknesses, and types of cold-formed metal framing; fabrication; and fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining Work.
  - 1. For cold-formed metal framing indicated to comply with design loads, include shop drawings and calculations signed and sealed by the delegated (specialty) engineer responsible for their preparation.
- D. Welding Certificates: Copies of certificates for welding procedures and personnel.
- E. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- F. Product Test Reports: From a qualified testing agency indicating that each of the following complies with requirements, based on comprehensive testing of current products:
  - 1. Expansion anchors.

2. Power-actuated anchors.
3. Mechanical fasteners.
4. Miscellaneous structural clips and accessories.

## 1.6 QUALITY ASSURANCE

- A. Reference specifications and standards: Comply with the provisions of the following Codes and Standards. (Reference is to edition in force at the time these specifications are issued.)
1. Florida Building Code, 2007 Edition with 2009 revision.
  2. ASCE 7-05“Minimum Design Loads for Buildings and Other Structures”.
  3. AISI: “Specification for the Design of Cold-Formed Steel Structural Members”.
  4. AISI: “Design Guide for Cold-Formed Steel Structural Members”.
  5. AISI: “Specification Provision for Screw Connections”, CCFSS Technical Bulletin.
  6. AWS: D1.1 Structural Welding Code – Steel.
  7. AWS: D1.3 “Specification for Welding Sheet Steel in Structures”.
- B. Qualifications:
1. Fabricator Qualifications: Company with not less than five (5) documented satisfactory experiences designing and fabricating cold-formed steel framing systems equal in material, design and extent to the systems required for this Project.
  2. Installer Qualifications: An experienced installer who has completed cold-formed metal framing similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- C. Engineering Responsibility: Engage a delegated licensed engineer to prepare design calculations, Shop Drawings, and other structural data.
- D. Delegated Engineer Qualifications: A licensed engineer who is legally qualified to practice in State of Florida and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of cold-formed metal framing that are similar to those indicated for this Project in material, design, and extent.
- E. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel," and AWS D1.3, "Structural Welding Code--Sheet Steel."
- F. Fire-Test-Response Characteristics: Where metal framing is part of a fire-resistance-rated assembly, provide framing identical to that of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.
1. Fire-Resistance Ratings: Indicated by GA File Numbers in GA-600, "Fire Resistance Design Manual," or by design designations from UL's "Fire Resistance Directory" or from the listings of another testing and inspecting agency.
- G. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings."

## 1.7 FIELD MEASUREMENTS

- A. Verify all dimensions and conditions by field measurement. Indicate and flag on shop drawings all discrepancies between actual conditions and contract documents.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's unopened containers or bundles, fully identified by manufacturer's name, job number, and member number. Exercise care to avoid damage during unloading, storing and erection.
- B. Store framing members on blocking, pallets, platforms or other supports off the ground, sufficiently braced to avoid damage from excessive bending.
- C. Protect members and accessories from corrosion, deformation, damage and deterioration when stored at job site; keep free of dirt and other foreign matter.

#### 1.9 PROJECT CONDITIONS

- A. During construction, adequately distribute all loads applied to member so as not to exceed the carrying capacity of any framing member.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering cold-formed metal framing that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Clark Steel Framing Industries.
  - 2. Consolidated Systems, Inc.
  - 3. Dale Industries, Inc.
  - 4. Dietrich Industries, Inc.
  - 5. MarinoWare; Div. of Ware Industries, Inc.
  - 6. Steel Construction Systems.
  - 7. Super Stud Building Products, Inc.
  - 8. Unimast, Inc.

#### 2.2 MATERIALS

- A. Recycled Content of Steel Products: Provide products with an average recycled content of steel products so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.
- B. Steel Sheet: ASTM A 653/A 653M, structural steel, zinc coated, of grade and coating as follows:

1. Grade: 33 for minimum uncoated steel thickness of 0.0428 inch; 50, Class 1 or 2 for minimum uncoated steel thickness of 0.0538 inch and greater.
2. Coating: G60.

C. Structural Framing Members: ASTM C955.

## 2.3 NON-LOAD-BEARING -WALL FRAMING

A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges and as follows:

1. Minimum Uncoated-Steel Thickness: 0.0428 inch.
2. Flange Width: 1-5/8 inches minimum.

B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with unstiffened flanges and as follows:

1. Minimum Uncoated-Steel Thickness: 0.0428 inch.
2. Flange Width: 1-1/4 inches.

## 2.4 ROOF TRUSSES

A. Roof Truss Members: Manufacturer's standard C-shaped steel sections, of web depths indicated, unpunched, with stiffened flanges and as follows:

1. Minimum Uncoated-Steel Thickness: 0.0428 inch.
2. Flange Width: 1-5/8 inches, minimum.

## 2.5 ROOF-RAFTER FRAMING

A. Steel Rafters: Manufacturer's standard C-shaped steel sections, of web depths indicated, unpunched, with stiffened flanges and as follows:

1. Minimum Uncoated-Steel Thickness: 0.0428 inch.
2. Flange Width: 1-5/8 inches, minimum.

B. Built-up Members: Built-up members of manufacturer's standard C-shaped steel section, with stiffened flanges, nested into a U-shaped steel section joist track, with unstiffened flanges; unpunched; of web depths indicated and as follows:

1. Minimum Uncoated-Steel Thickness: 0.0428 inch.
2. Flange Width: 1-5/8 inches, minimum.

## 2.6 FRAMING ACCESSORIES

A. Fabricate steel-framing accessories of the same material and finish used for framing members, with a minimum yield strength of 33,000 psi.

- B. As a minimum provide accessories of manufacturer's standard thickness and configuration as follows:
1. Supplementary framing.
  2. Bracing, bridging, and solid blocking.
  3. Web stiffeners.
  4. End clips.
  5. Foundation clips.
  6. Gusset plates.
  7. Stud kickers, knee braces, and girts.
  8. Joist hangers and end closures.
  9. Hole reinforcing plates.
  10. Backer plates.

## 2.7 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.
- B. Anchor Bolts: ASTM F 1554, Grade 55, threaded carbon-steel with encased end threaded, bolts and carbon-steel nuts each end; and flat, hardened-steel washers; zinc coated by mechanically deposition according to ASTM B 695, Class 50.
- C. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.
- D. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times design load, as determined by testing per ASTM E 1190 conducted by a qualified independent testing agency.
- E. Mechanical Fasteners: Corrosion-resistant-coated, self-drilling, self-threading steel drill screws.
1. Use low-profile head beneath sheathing, manufacturer's standard elsewhere.
- F. Welding Electrodes: Comply with AWS standards.

## 2.8 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: ASTM A 780.
- B. Cement Grout: Portland cement, ASTM C 150, Type I; and clean, natural sand, ASTM C 404. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.
- C. Nonmetallic, Nonshrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage-compensating agents, and



plasticizing and water-reducing agents, complying with ASTM C 1107, with fluid consistency and 30-minute working time.

## 2.9 FABRICATION

- A. Fabricate cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to manufacturer's written recommendations and requirements in this Section.
  - 1. Fabricate framing assemblies using jigs or templates.
  - 2. Cut framing members by sawing or shearing; do not torch cut.
  - 3. Fasten cold-formed metal framing members by welding or screw fastening, as standard with fabricator. Wire tying of framing members is not permitted.
    - a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
    - b. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads.
- B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.
- C. Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet 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 EXAMINATION

- A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Grout bearing surfaces uniform and level to ensure full contact of bearing flanges or track webs on supporting concrete or masonry construction.

### 3.3 INSTALLATION, GENERAL

- A. Cold-formed metal framing may be shop or field fabricated for installation, or it may be field assembled.
- B. Install cold-formed metal framing according to ASTM C 1007, unless more stringent requirements are indicated.
- C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.
  - 1. Bolt or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch.
- D. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to manufacturer's written recommendations and requirements in this Section.
  - 1. Cut framing members by sawing or shearing; do not torch cut.
  - 2. Fasten cold-formed metal framing members by welding or screw fastening, as standard with fabricator. Wire tying of framing members is not permitted.
    - a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
    - b. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads.
- E. Install framing members in one-piece lengths, unless splice connections are indicated for track or tension members.
- F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
- G. Do not bridge building expansion and control joints with cold-formed metal framing. Independently frame both sides of joints.
- H. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.
- I. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
  - 1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

#### 3.4 NON-LOAD-BEARING-WALL INSTALLATION

- A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure as indicated.
- B. Fasten both flanges of studs to top and bottom track, unless otherwise indicated. Space studs as follows:
  - 1. Stud Spacing: 16 inches.
- C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements.
- D. Install horizontal bridging in curtain-wall studs, spaced in rows indicated on Shop Drawings but not more than 54 inches apart. Fasten at each stud intersection.
  - 1. **Bridging:** Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.
- E. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, fasteners, and stud girts, to provide a complete and stable curtain-wall-framing system.

### 3.5 TRUSS INSTALLATION

- A. Install, bridge, and brace trusses according to Shop Drawings and requirements in this Section.
- B. Truss Spacing: 48 inches.
- C. Do not alter, cut, or remove framing members or connections of trusses.
- D. Erect trusses with plane of truss webs plumb and parallel to each other, align, and accurately position at spacings indicated.
- E. Erect trusses without damaging framing members or connections.
- F. Install continuous bridging and permanently brace trusses as indicated on Shop Drawings.

### 3.6 FIELD QUALITY CONTROL

- A. Inspection: Owner will engage a qualified inspection agency to perform field inspections.
- B. Field and shop welds will be subject to inspection.
- C. Remove and replace Work that does not comply with specified requirements.
- D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of corrected Work with specified requirements.

### 3.7 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.

END OF SECTION 05400

## SECTION 055000.1 - METAL FABRICATIONS FOR MECHANICAL AND ELECTRICAL SYSTEMS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. Section Includes:
  - 1. Steel framing and supports for mechanical and electrical equipment.
  - 2. Metal bollards.
- B. Products furnished, but not installed, under this Section:

#### 1.3 ACTION SUBMITTALS

- A. Shop Drawings: Show fabrication and installation details for metal fabrications.
  - 1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Welding certificates.
- B. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.

#### 1.5 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Welding Qualifications: Qualify procedures and personnel according to the following:
  - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
  - 2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."
  - 3. AWS D1.6, "Structural Welding Code - Stainless Steel."

## 1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

## 1.7 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

## PART 2 - PRODUCTS

### 2.1 METALS, GENERAL

- 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.

### 2.2 FERROUS METALS

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- C. Stainless-Steel Sheet, Strip, and Plate: ASTM A 240/A 240M or ASTM A 666, Type 304 .
- D. Stainless-Steel Bars and Shapes: ASTM A 276, Type 304 .
- E. Steel Pipe: ASTM A 53/A 53M, standard weight (Schedule 40) unless otherwise indicated.
- F. Slotted Channel Framing: Cold-formed metal box channels (struts) complying with MFMA-4.
  - 1. Size of Channels: 1-5/8 by 1-5/8 inches (41 by 41 mm) .
  - 2. Material: Galvanized steel, ASTM A 653/A 653M, commercial steel, Type B , with G90 (Z275) coating; 0.108-inch (2.8-mm) nominal thickness.

### 2.3 NONFERROUS METALS

- A. Aluminum Plate and Sheet: ASTM B 209 (ASTM B 209M), Alloy 6061-T6.

- B. Aluminum Extrusions: **ASTM B 221 (ASTM B 221M)**, Alloy 6063-T6.

## 2.4 FASTENERS

- A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or **ASTM F 1941 (ASTM F 1941M)**, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
  - 1. Provide stainless-steel fasteners for fastening aluminum.
  - 2. Provide stainless-steel fasteners for fastening stainless steel.
- B. Steel Bolts and Nuts: Regular hexagon-head bolts, **ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6)**; with hex nuts, **ASTM A 563 (ASTM A 563M)**; and, where indicated, flat washers.
- C. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, **ASTM F 593 (ASTM F 738M)**; with hex nuts, **ASTM F 594 (ASTM F 836M)**; and, where indicated, flat washers; Alloy Group **1 (A1)**.
- D. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563; and, where indicated, flat washers.
  - 1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.
- E. Eyebolts: ASTM A 489.
- F. Machine Screws: **ASME B18.6.3 (ASME B18.6.7M)**.
- G. Lag Screws: **ASME B18.2.1 (ASME B18.2.3.8M)**.
- H. Plain Washers: Round, **ASME B18.22.1 (ASME B18.22M)**.
- I. Lock Washers: Helical, spring type, **ASME B18.21.1 (ASME B18.21.2M)**.
- J. Anchors, General: Anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
- K. Cast-in-Place Anchors in Concrete: Either threaded type or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F 2329.
- L. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors.
  - 1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or **ASTM F 1941 (ASTM F 1941M)**, Class Fe/Zn 5, unless otherwise indicated.

2. Material for Exterior Locations and Where Stainless Steel is Indicated: Alloy Group 1 (A1) stainless-steel bolts, ASTM F 593 (ASTM F 738M), and nuts, ASTM F 594 (ASTM F 836M).

- M. Slotted-Channel Inserts: Cold-formed, hot-dip galvanized-steel box channels (struts) complying with MFMA-4, 1-5/8 by 7/8 inches (41 by 22 mm) by length indicated with anchor straps or studs not less than 3 inches (75 mm) long at not more than 8 inches (200 mm) o.c. Provide with temporary filler and tee-head bolts, complete with washers and nuts, all zinc-plated to comply with ASTM B 633, Class Fe/Zn 5, as needed for fastening to inserts.

## 2.5 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. 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."
- C. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
  1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
- D. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.
- E. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- F. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.
- G. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

## 2.6 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 will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
  - 1. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, **1/8 by 1-1/2 inches (3.2 by 38 mm)**, with a minimum **6-inch (150-mm)** embedment and **2-inch (50-mm)** hook, not less than **8 inches (200 mm)** from ends and corners of units and **24 inches (600 mm)** o.c., unless otherwise indicated.

## 2.7 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.
- B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.
  - 1. Fabricate units from slotted channel framing where indicated.
  - 2. Furnish inserts for units installed after concrete is placed.
- C. Galvanize miscellaneous framing and supports where indicated.
- D. Prime miscellaneous framing and supports with zinc-rich primer where indicated.

## 2.8 METAL BOLLARDS

- A. Fabricate metal bollards from Schedule 40 steel pipe.

1. Cap bollards with **1/4-inch- (6.4-mm-)** thick steel plate.
  2. Where bollards are indicated to receive controls for door operators, provide necessary cutouts for controls and holes for wire.
  3. Where bollards are indicated to receive light fixtures, provide necessary cutouts for fixtures and holes for wire.
- B. Fabricate bollards with **3/8-inch- (9.5-mm-)** thick steel baseplates for bolting to concrete slab. Drill baseplates at all four corners for **3/4-inch (19-mm)** anchor bolts.
1. Where bollards are to be anchored to sloping concrete slabs, angle baseplates for plumb alignment of bollards.
- C. Fabricate sleeves for bollard anchorage from steel pipe with **1/4-inch- (6.4-mm-)** thick steel plate welded to bottom of sleeve. Make sleeves not less than **8 inches (200 mm)** deep and **3/4 inch (19 mm)** larger than OD of bollard.
- D. Fabricate internal sleeves for removable bollards from Schedule 40 steel pipe or **1/4-inch (6.4-mm)** wall-thickness steel tubing with an OD approximately **1/16 inch (1.5 mm)** less than ID of bollards. Match drill sleeve and bollard for **3/4 inch (19 mm)** steel machine bolt.
- E. Prime bollards with zinc-rich primer.

## 2.9 STEEL AND IRON FINISHES

- A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.
1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
- B. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.
1. Shop prime with universal shop primer unless zinc-rich primer is indicated.
- C. Preparation for Shop Priming: Prepare surfaces to comply with SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning." requirements indicated below:
1. Exterior Items: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  2. Items Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  3. Other Items: SSPC-SP 3, "Power Tool Cleaning."
- D. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.
1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

## 2.10 ALUMINUM FINISHES

- A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- B. As-Fabricated Finish: AA-M10 (Mechanical Finish: as fabricated, unspecified).

## 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, toggle bolts, through bolts, lag screws, wood screws, and other connectors.
- E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
- F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:
  - 1. Cast Aluminum: Heavy coat of bituminous paint.
  - 2. Extruded Aluminum: Two coats of clear lacquer.

### 3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

### 3.3 INSTALLING METAL BOLLARDS

- A. Fill metal-capped bollards solidly with concrete and allow concrete to cure seven days before installing.
  - 1. Do not fill removable bollards with concrete.
- B. Anchor bollards to existing construction with anchor bolts . Provide four **3/4-inch (19-mm)** bolts at each bollard unless otherwise indicated.
  - 1. Embed anchor bolts at least **4 inches (100 mm)** in concrete.
- C. Anchor bollards in concrete with pipe sleeves preset and anchored into concrete . Fill annular space around bollard solidly with nonshrink, nonmetallic grout; mixed and placed to comply with grout manufacturer's written instructions. Slope grout up approximately **1/8 inch (3 mm)** toward bollard.
- D. Anchor bollards in place with concrete footings. Center and align bollards in holes **3 inches (75 mm)** above bottom of excavation. Place concrete and vibrate or tamp for consolidation. Support and brace bollards in position until concrete has cured.
- E. Anchor internal sleeves for removable bollards in concrete by inserting into pipe sleeves preset into concrete . Fill annular space around internal sleeves solidly with nonshrink, nonmetallic grout; mixed and placed to comply with grout manufacturer's written instructions. Slope grout up approximately **1/8 inch (3 mm)** toward internal sleeve.
- F. Anchor internal sleeves for removable bollards in place with concrete footings. Center and align sleeves in holes **3 inches (75 mm)** above bottom of excavation. Place concrete and vibrate or tamp for consolidation. Support and brace sleeves in position until concrete has cured.
- G. Place removable bollards over internal sleeves and secure with **3/4-inch (19-mm)** machine bolts and nuts. After tightening nuts, drill holes in bolts for inserting padlocks. Owner will furnish padlocks.
- H. Fill bollards solidly with concrete, mounding top surface to shed water.
  - 1. Do not fill removable bollards with concrete.

### 3.4 ADJUSTING AND CLEANING

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
  - 1. Apply by brush or spray to provide a minimum **2.0-mil (0.05-mm)** dry film thickness.
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 055000

## SECTION 06100 - ROUGH CARPENTRY

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Section Includes:

1. Carpentry work not specified as part of other sections and which generally is not exposed, except as otherwise indicated.
2. Rough carpentry for:
  - a. Miscellaneous lumber for attachment and support of other work.
3. Preservative treatment.

##### B. Related Sections:

1. Finish carpentry: Elsewhere in Division 6.

#### 1.2 REFERENCES

- A. APA Form E30L -- Residential & Commercial; American Plywood Association; 1990.
- B. APA PRP-108 -- Performance Standards and Policies for Structural-Use Panels; American Plywood Association; 1988 (Revised 1989).
- C. ASTM A 153-82(87) -- Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 1982 (Reapproved 1987).
- D. AWPB LP-2-88 -- American Wood Preservers Bureau Quality Control and Inspection Procedures for Softwood Lumber, Timber and Plywood Pressure Treated with Waterborne Preservatives for Above Ground Use; 1988.
- E. AWPB LP-22-88 -- American Wood Preservers Bureau Quality Control and Inspection Procedures for Softwood Lumber, Timber and Plywood Pressure Treated with Waterborne Preservatives for Ground Contact Use; 1988.
- F. Standard Grading Rules for Southern Pine Lumber; Southern Pine Inspection Bureau (SPIB); 1991 (with Supplements No. 1, 2, 3 and 4).
- G. National Design Specification for Wood Construction; American Forest and Paper Association (formerly National Forest Products Association); 1991.
- H. Design Values for Wood Construction, A Supplement to the 1991 Edition National Design Specification; American Forest and Paper Association (formerly National Forest Products Association); 1991.

- I. NBS PS 1-83 -- Construction and Industrial Plywood; U.S. Department of Commerce, National Bureau of Standards; 1983 (with 1984 Revision).
- J. NBS PS 20-70(86) -- American Softwood Lumber Standard; U.S. Department of Commerce, National Bureau of Standards; 1970 (Amended 1986).
- K. NFPA WCD #1 -- Manual for Wood Frame Construction; American Forest and Paper Association (formerly National Forest Products Association); 1988.

### 1.3 SUBMITTALS

- A. Framing Connectors and Supports: Submit manufacturer's standard data demonstrating compliance with building code requirements.
- B. Material Certificates: For dimension lumber specified by minimum allowable unit stress, submit:
  - 1. Statement of species and grade selected for each application.
  - 2. Grading agency's grading rules showing allowable design values accepted by the Board of Review of American Lumber Standards Committee.
- C. Treated Wood: Treating plant's instructions for use, including storage, cutting, and finishing.
  - 1. Pressure preservative treatment: Treating plant's certification of compliance with specified standards and stating process employed and preservative retention values.

### 1.4 QUALITY ASSURANCE

- A. Lumber: Comply with NBS PS 20 and approved grading rules and inspection agencies.
- B. Grade Stamps for Concealed Lumber: Each piece of lumber, applied by inspection agency and showing compliance with each specified requirement.

### 1.5 DELIVERY STORAGE AND HANDLING

- A. Protect wood products against moisture and dimensional changes. Support stacks at several uniformly spaced points to prevent deformation. Store stacks raised above ground. Cover to protect from rain and snow. Select and arrange cover to allow air circulation under and all around stacks to prevent condensation. Maintain and restore displaced coverings. Remove from the site any wood products that have been subjected to moisture or that do not comply with the specified moisture requirements.

## PART 2 - PRODUCTS

### 2.1 DIMENSION LUMBER

- A. Size: Provide nominal sizes indicated, complying with NBS PS 20 except where actual sizes are specifically required.
  - 1. Surfacing: Smooth lumber.
  - 2. Moisture content: Kiln-dry or MC15 (15 percent maximum moisture content).
- B. Miscellaneous Lumber: Provide dimension lumber and boards necessary for the support of work specified in other sections, whether or not specifically indicated, and including but not limited to blocking, nailers, etc.
  - 1. Moisture content: 15 percent maximum (kiln-dry).
  - 2. Lumber: S4S, No. 2 or standard grade.
  - 3. Boards: Construction, 2 common, or No. 2 grade.

### 2.2 BOARDS - LESS THAN 2 INCHES THICKNESS

- A. Moisture Content: Kiln-dry (15 percent maximum).
- B. Surfacing: Smooth.
- C. Grading Agency:
  - 1. SPIB.
- D. Species:
  - 1. Any allowed under referenced grading rules.
- E. Grade: No. 2, 2 common, or construction boards.

### 2.3 MISCELLANEOUS MATERIALS

- A. Fasteners: Provide as required by applicable codes and as otherwise indicated.
  - 1. Provide fasteners with a hot-dip zinc coating (ASTM A 153) for treated lumber and where wood is in ground contact, subjected to high relative humidity, or exposed to weather.
- B. Framing Connectors and Supports: Prefabricated, formed steel units; hot-dip galvanized finish unless otherwise indicated; type and size as required; approved by applicable codes.

### 2.4 WOOD TREATMENT BY PRESSURE PROCESS

- A. Above ground Lumber: AWPB ACQ (waterborne preservatives).
  - 1. Manufacturer's standard moisture content.
  - 2. Treat the following:
    - a. Wood in contact with roofing, flashing, or waterproofing.
    - b. Wood in contact with masonry or concrete.
    - c. Wood within 18 inches of grade.
    - d. All wood to be pressure treated.
    - e. Other members indicated.
- B. Ground Contact Treatment: AWPB ACQ. (waterborne preservatives).
  - 1. Treat the following:
    - a. Wood in contact with ground.
    - b. All wood to be pressure treated.
- C. Fasteners for Preservative Treated Wood: Hot-dip galvanized steel (ASTM A153).

## PART 3 - EXECUTION

### 3.1 INSTALLATION - GENERAL

- A. Arrange work to use full length pieces except where lengths would exceed commercially available lengths. Discard pieces with defects that would lower the required strength or appearance of the work.
- B. Cut and fit members accurately. Install plumb and true to line and level.
- C. Fasten carpentry in accordance with applicable codes and recognized standards.
- D. Where exposed, countersink nails and fill flush with suitable wood filler.
- E. Use fasteners of appropriate type and length. Pre-drill members when necessary to avoid splitting wood.

### 3.2 MISCELLANEOUS CARPENTRY

- A. Provide miscellaneous blocking, nailers, grounds, and framing as shown and as required for support of facing materials, fixtures, specialty items, and trim. Cut and shape to the required size. Provide in locations required by other work.
- B. Use countersunk fasteners appropriate to applied loading.
- C. Install permanent grounds for concrete and masonry where required.

### 3.3 WOOD FRAMING - GENERAL



- A. Comply with sizes, spacing, and configurations indicated. Where not specifically indicated, comply with applicable codes and NFPA "Manual for Wood Frame Construction." Splice members only where specifically indicated or approved.
- B. Space fasteners as indicated. Where not specifically indicated, comply with applicable codes and the "Recommended Nailing Schedule" of NFPA "Manual for Wood Frame Construction" and "National Design Specification for Wood Construction."

END OF SECTION 06100

## SECTION 06400 - ARCHITECTURAL WOODWORK

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

#### 1.2 DESCRIPTION OF WORK:

- A. Extent of each type of architectural woodwork is indicated on drawings and in schedules.
- B. Types of architectural woodwork include the following:
  - 1. Architectural laminate clad cabinets.
  - 2. Laminate clad countertops.
  - 3. Closet and utility shelving.

#### 1.3 QUALITY ASSURANCE:

- A. AWI Quality Standard: Comply with applicable requirements of "Architectural Woodwork Quality Standards" published by the Architectural Woodwork Institute (AWI), except as otherwise indicated.
- B. Installer Qualifications: Arrange for installation of architectural woodwork by a firm which can demonstrate successful experience in installing architectural woodwork items similar in type and quality to those required for this project.

#### 1.4 SUBMITTALS:

- A. Quality Certification: Submit woodwork Manufacturer's (Fabricator's) certification, stating that fabricated woodwork complies with quality grades and other requirements indicated.
- B. Shop Drawings: Submit shop drawings showing location of each item, dimensioned plans and elevations, large scale details, attachment devices and other components. Show edge details, locations and sizes of cutouts and holes for plumbing fixtures, faucets, and other items installed in solid surface.
- C. Samples:
  - 1. Plastic laminate, for each type, color, pattern and surface finish.

#### 1.5 DELIVERY, STORAGE, AND HANDLING:

- A. Protect woodwork during transit, delivery, storage and handling to prevent damage, soiling and deterioration.
- B. Do not deliver woodwork, until painting, wet work, grinding and similar operations which could damage, soil or deteriorate woodwork have been completed in installation areas. If, due to unforeseen circumstances, woodwork must be stored in other than installation areas, store only in areas meeting requirements specified for installation areas.

1.6 PROJECT CONDITIONS:

- A. Conditioning: Woodwork Manufacturer and Installer shall advise Contractor of temperature and humidity requirements for woodwork installation and storage areas. Do not install woodwork until required temperature and relative humidity have been stabilized and will be maintained in installation areas.
- B. Maintain temperature and humidity in installation area as required to maintain moisture content of installed woodwork within a 1.0 percent tolerance of optimum moisture content, from date of installation through remainder of construction period. Require Woodwork Manufacturer to establish optimum moisture content and required temperature and humidity conditions.

1.7 WARRANTY:

- A. Provide manufacturer's warranty against defects in materials for plastic laminate and solid surface materials.
  - 1. Warranty shall provide material and labor to repair or replace defective materials.
  - 2. Damage caused by physical or chemical abuse or damage from excessive heat will not be warranted.
- B. Manufacturer's warranty period:
  - 1. Plastic Laminate: One year from date of substantial completion.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

- A. Plastic Laminate Manufacturers: Subject to compliance with requirements, manufacturers offering high pressure decorative laminates which may be incorporated in the work include the following:
  - 1. Plastic Laminate:
    - a. Formica
    - b. Nevamar
    - c. Wilsonart
    - d. Pionite

## 2.2 FABRICATION, GENERAL:

- A. Wood Moisture Content: Comply with requirements of referenced quality standard for moisture content of lumber at time of fabrication and for relative humidity conditions in the installation areas.
- B. Fabricate woodwork to dimensions, profiles, and details indicated with openings and mortises precut, where possible, to receive hardware and other items and work.
  - 1. Ease edges to a 1/16" radius, for corners of cabinets and edges of solid wood (lumber) members less than 1" in nominal thickness, 1/8" radius for edges of rails and similar members over 1" in nominal thickness.
- C. Complete fabrication, assembly, finishing, hardware application, and other work before shipment to project site to maximum extent possible. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
- D. Pre-Cut Openings: Fabricate architectural woodwork with pre-cut openings, where possible, to receive hardware, appliances, plumbing fixtures, electrical work and similar items. Locate openings accurately and use templates or roughing-in diagrams for proper size and shape. Smooth edges of cutoffs and, where located in countertops and similar exposures seal edges of cutouts with a water-resistant coating.
- E. Measurements: Before proceeding with fabrication of woodwork required to be fitted to other construction, obtain field measurements and verify dimensions and shop drawing details as required for accurate fit.

## 2.3 ARCHITECTURAL CABINETS, LAMINATE CLAD:

- A. Quality Standard: Comply with AWI Section 400 and its Division 400B.
- B. Laminate Clad Cabinets: Comply with the following requirements:
  - 1. Grade: Premium.
  - 2. Type of Cabinet Construction: European styled construction
  - 3. Laminate Cladding: High pressure decorative laminate complying with NEMA LD 3 and as follows:
    - a. Colors, Patterns and Finishes: As noted in schedule 3.4.
    - b. Laminate Grade for Exposed Surfaces: Provide laminate cladding complying with the following requirements for type of surface and grade.
      - 1) Horizontal Surfaces Other Than Tops: GP-50 (0.050" nominal thickness).
      - 2) Postformed Surfaces: PF-42 (0.042" nominal thickness).
      - 3) Vertical Surfaces: GP-50 (0.050" nominal thickness).
      - 4) Edges: GP-50 (0.050" nominal thickness).
      - 5) Semi-Exposed Surfaces: Provide surface materials indicated below:
      - 6) Woodworker's standard low pressure laminate.
  - 4. Adhesives: Do not use adhesives that contain urea formaldehyde.

5. VOC Limits for Adhesives and Glues: Use installation adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59 , Subpart D (EPA Method 24).
  - a. Wood Glues: 30 g/L.
  - b. Contact Adhesive: 250 g/L.

#### 2.4 CABINET HARDWARE AND ACCESSORY MATERIALS:

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets, except for items which are specified in Division-8 section "Finish Hardware".
- B. Hardware Standard: Comply with ANSI/BHMA A156.9 "American National Standard for Cabinet Hardware" for items indicated by reference to BHMA numbers or referenced to this standard.
- C. Hardware Finishes: Comply with BHMA 1301 for finishes indicated by BHMA Code Numbers or if not otherwise indicated, provide finishes complying with requirements indicated below:
  1. For exposed hardware comply with requirements indicated for finish and base indicated by BHMA Code Number below.
    - a. "Satin Chrome"
  2. For concealed hardware provide manufacturer's standard finish which complies with product class requirements of ANSI/BHMA A156.9.
- D. Adjustable Shelf Brackets: K & V 2562C flush mounted standards with #256 shelf support clips (nickel finish).
- E. Adjustable Shelf Brackets (wall mounted): K & V 87ANO Standards and 187 Bracket with 210, 211 and 212 shelf rests with 129 rubber cushions.
- F. Drawer Guides: K & V 1600-21 extension self closing drawer slide.
- G. Concealed Hinges: Grass 3703; 110 degree opening, full overlay. One pair for doors up to 48" in height; 1-1/2 pair for higher doors.
- H. Pulls: Stanley 4484, #348315, wire pulls in 26D finish "satin chrome."
- I. Magnetic Catches: All doors - EPCO #592 with BHMA Code 613 (Oil Rubbed Bronze) finish (US 10B).
- J. Shelf Supports: Allen Field 55011, white finish.
- K. Clothes Rod: Stanley V7052, 2C finish.

#### 2.5 ARCHITECTURAL CABINET TOPS:

- A. Quality Standard: Comply with applicable 400 and its Division 400C.
- B. Type of Top: High Pressure Decorative Laminate:

1. Grade: Premium.
2. Laminate Cladding for Horizontal Surface: High pressure decorative laminate complying with NEMA LD 3 and as follows:
  - a. Colors, Patterns, and Finishes: (As noted on Schedule 3.4)
    - 1) Edge Treatment: Square.
3. Core Material: Exterior grade plywood.
4. Backer Sheet: Provide plastic laminate backer sheet, Grade BKL, on underside of countertop substrate.

## 2.6 FASTENERS AND ANCHORS:

- A. Screws: Select material, type, size and finish required for each use. Comply with FS FF-S-111 for applicable requirements.
- B. Nails: Select material, type, size and finish required for each use. Comply with FS FF-N-105 for applicable requirements.
  1. Provide stainless steel or aluminum nails for exposed exterior woodwork which is to receive transparent finish (if any). Provide any type of non-corrosive nail for other exterior woodwork.
- C. Anchors: Select material, type, size and finish required by each substrate for secure anchorage. Provide non-ferrous metal or hot- dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion-resistance. Provide toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts and anchors, as required, to be set into concrete or masonry work for subsequent woodwork anchorage.

## PART 3 - EXECUTION

### 3.1 PREPARATION:

- A. Condition woodwork to average prevailing humidity conditions in installation areas prior to installing.
- B. Pre-Installation Meeting: Meet at project site prior to delivery of architectural woodwork and review coordination and environmental controls required for proper installation and ambient conditioning in areas to receive work. Include in meeting the Contractor; Architect and other Owner Representatives (if any); Installers of architectural woodwork, wet work such as plastering, other finishes, painting, mechanical work and electrical work; and firms or persons responsible for continued operation (whether temporary or permanent) of HVAC system as required to maintain temperature and humidity conditions. Proceed with woodwork installation only when everyone concerned agrees that required ambient conditions can be maintained.
- C. Deliver concrete inserts and similar anchoring devices to be built into substrates, well in advance of time substrates are to be built.
- D. Prior to installation of architectural woodwork, examine shop fabricated work for completion, and complete work as required, including back priming and removal of packing.

### 3.2 INSTALLATION:

- A. Install woodwork plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level (including tops); and with no variations in flushness of adjoining surfaces.
- B. Scribe and cut woodwork to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.
- C. Anchor woodwork to anchors or blocking built-in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where prefinished matching fasteners heads are required, use fine finishing nails for exposed nailing, countersunk and filled flush with woodwork, and matching final finish where transparent finish is indicated.
- D. Cabinets: Install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated. Maintain veneer sequence matching (if any) of cabinets with transparent finish.
- E. Countertops Tops: Install components plumb, level and rigid, scribed to adjacent finishes, in accordance with approved shop drawings and product data.
  - 1. Provide product in largest pieces possible.
  - 2. Anchor securely to base cabinets or other support systems as indicated.
  - 3. Install countertops with no more than 1 /8 inch sag, bow or other variation in straight line.
  - 4. Calk space between backsplash and wall with sealant specified in Divison 07 Section - Joint Sealants.

### 3.3 ADJUSTMENT, CLEANING, FINISHING, AND PROTECTION:

- A. Repair damaged and defective woodwork where possible to eliminate defects functionally and visually; where not possible to repair replace woodwork. Adjust joinery for uniform appearance.
- B. Clean, lubricate and adjust hardware.
- C. Clean woodwork on exposed and semi-exposed surfaces. Touch-up shop-applied finishes to restore damaged or soiled areas.
- D. Complete the finishing work specified as work of this section, to whatever extent not completed at shop or prior to installation of woodwork.
- E. Provide final protection and maintain conditions, in a manner acceptable to Fabricator and Installer, which ensures architectural woodwork being without damage or deterioration at time of final acceptance by Owner.

### 3.4 SCHEDULE:

- A. Countertops:

1. Plastic Laminate: Planning, Storage, Primary and Intermediate Classrooms
  - a. Manufacturer: One of the approved manufacturers.
  - b. Color: As selected from manufacturer's standard colors.
  
- B. Base Cabinets, Storage Cabinets, Shelves, and Cubbies: Planning, Storage, Primary and Intermediate Classrooms, and Science Lab and Demonstration
  1. Plastic Laminate:
    - a. Manufacturer: One of the approved manufacturers.
    - b. Color: As selected from manufacturer's standard colors.

END OF SECTION 06400



## SECTION 07210 - BUILDING INSULATION

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Section Includes:

1. Rigid polyisocyanurate foam board.
2. Foil faced rigid polyisocyanurate foam board.
3. Spray cellulosic insulation.

##### B. Related Sections include the following:

1. Division 7 Section "Metal Roof and Fascia Panels" for roof insulation.

#### 1.2 DEFINITIONS

- ##### A. Thermal Resistance (R-value):
- The temperature difference in degrees F between the two surfaces of a material of given thickness, required to make 1 Btu of energy flow through 1 square foot of the material in 1 hour.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- ##### A. Provide manufacturer's standard preformed insulation units, sized for proper fit in indicated applications.

##### B. Polyisocyanurate Board Insulation: Exterior Cavity Walls

1. Polyisocyanurate Board Insulation: ASTM C 1289, Type I, Class I glass-fiber mat face on interior face and foil faced on exterior surface with minimum 1" clear air space.
2. Total R-value: 1 1/2 inch board, R-9.8
3. Manufacturers:
  - a. GAF Materials Corporation
  - b. Honeywell Commercial Roofing Systems.
  - c. Johns Manville International, Inc.

##### C. Polyisocyanurate Board Insulation: Roof Deck

1. Polyisocyanurate Board Insulation: ASTM C 1289, Type I, Class I glass-fiber mat faced.
2. Total R-value: 1 inch board at connector canopy, see Section 07410 for roof insulation.
3. Manufacturers:
  - a. GAF Materials Corporation

- b. Honeywell Commercial Roofing Systems.
- c. Johns Manville International, Inc.

D. Spray-Applied Cellulosic Insulation: Exterior Wall Assemblies & Mezzanine

- 1. Self-Supported, Spray-Applied Cellulosic Insulation: ASTM C 1149, Type I (materials applied with liquid adhesive, suitable for either exposed or enclosed applications), chemically treated for flame resistance, processing, and handling characteristics.

2.2 ACCESSORIES

- A. Provide accessories as necessary to properly install specified products.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with insulation manufacturer's recommendations and installation sequence. Provide permanent placement and support of insulation.
- B. Install materials in a manner which will maximize continuity of thermal envelope. Use a single layer of insulation wherever possible to achieve indicated requirements, unless otherwise indicated.
- C. Insulation Boards:
  - 1. Cut insulation neatly as required to fit tightly around obstructions.
  - 2. Install boards as indicated. Butt board edges and ends tightly. Form solid joints where insulation boards meet protrusions and between adjacent boards. Stagger joints.
- D. Spray-Applied Insulation:
  - 1. Application: Apply spray-applied insulation according to manufacturer's written instructions. Do not apply insulation until installation of pipes, ducts, conduits, wiring, and electrical outlets in walls is completed and windows, electrical boxes, and other items not indicated to receive insulation are masked.
  - 2. Finishing: After insulation is applied, make flush with face of studs by using method recommended by insulation manufacturer.

3.2 Protection

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. 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 07210

## SECTION 07410 - METAL ROOF AND FASCIA PANELS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Formed standing-seam roof panels for machine seaming during installation.
  - 2. Formed fascia, gutters, downspouts and wall panels of type and profile indicated.
  - 3. Wall panels and vented metal soffit panels.
- B. This section also includes the following roof and fascia related work:
  - 1. Fascia and miscellaneous trim.
  - 2. Gutters and downspouts.
  - 3. Rigid foam insulation board.
  - 4. Membrane underlayments.
  - 5. Panel supports, steel framing, and anchorage.
- C. Related Sections include the following:
  - 1. Division 5 Section "Cold-Formed Metal Framing" for metal framing.
  - 2. Division 5 Section "Steel Deck" for steel roof deck.
  - 3. Division 6 Section "Rough Carpentry" for wood blocking, nailers and sheathing.
  - 4. Division 7 Section "Roof Specialties and Accessories" for miscellaneous accessories.
  - 5. Division 7 Section "Flashing and Sheet Metal" for flashing not part of roofing.
  - 6. Division 7 Section "Joint Sealants" for field-applied sealants.

#### 1.3 DEFINITIONS

- A. Metal Roof Panel Assembly: Metal roof panels, attachment system components, miscellaneous metal framing, thermal insulation, and accessories necessary for a complete weathertight roofing system.

#### 1.4 PERFORMANCE REQUIREMENTS

- A. General: Provide manufactured roof panel assemblies complying with performance requirements indicated and capable of withstanding structural movement, thermally induced movement, and exposure to weather without failure or infiltration of water into the building interior.

- B. Air Infiltration: Provide manufactured roof panel assemblies with permanent resistance to air leakage through assembly of not more than 0.09 cfm/sq. ft. (0.45 L/s/sq. m) of fixed roof area when tested according to ASTM E 1680 at a static-air-pressure difference of 4.0 lbf/sq. ft. (192 Pa).
- C. Water Penetration: Provide manufactured roof panel assemblies with no water penetration as defined in the test method when tested according to ASTM E 1646 at a minimum differential pressure of 20 percent of inward acting, wind-load design pressure of not less than 6.24 lb/sq. ft. (300 Pa) and not more than 12.0 lb/sq. ft. (575 Pa).
- D. All structural design for wind forces shall conform to ASCE 7098, importance factor of 1.15. Wind speed shall be 110 mps for Leon County, Florida.
- E. Wind-Uplift Resistance: Provide roof panel assemblies that meet requirements of 110 mph wind and UL 580 for Class 90 wind-uplift resistance.
- F. Structural Performance: Provide manufactured roof panel assemblies capable of safely supporting design loads indicated under in-service conditions with vertical deflection no greater than the following, based on testing manufacturer's standard units according to ASTM E 1592 by a qualified independent testing and inspecting agency.
  - 1. Maximum Deflection: 1/140 of the span.
- G. Continuous length panels: Provide roof panels to run continuous from eave edge to ridge with **NO** end laps.

## 1.5 SUBMITTALS

- A. Product Data: Include manufacturer's product specifications, standard details, certified product test results, and general recommendations, as applicable to materials and finishes for each component and for total panel assemblies.
- B. Shop Drawings: Show layouts of panels on roofs, details of edge conditions, joints, panel profiles, supports, anchorages, trim, flashings, underlayment, closures, and special details. Show expansion joint details, valley, ridge and eave details. Waterproof connections to adjoining work and at obstruction and penetration. Distinguish between factory and field assembled work.
  - 1. For installed products indicated to comply with certain design loadings, include structural analysis data signed and sealed by the qualified professional engineer registered in the State of Florida, responsible for their preparation.
  - 2. Manufacturer's curb, panel head closure, panned ends, ridge, rake and other connections and closure details which deviate from the construction documents are to be approved by the project architect prior to bidding.
- C. Samples for Initial Selection: Manufacturer's color charts or chips showing the full range of colors, textures, and patterns available for roof panels with factory-applied finishes.

- D. Samples for Verification: Provide sample panels 12 inches (300 mm) long by actual panel width, in the profile, style, color, and texture indicated. Include clips, caps, battens, fasteners, closures, and other exposed panel accessories.
- E. Certification: Submit written certification prepared and signed by a professional engineer, registered to practice in the state of Florida, verifying that roof panels and fastening system design meet indicated loading requirements and codes of authorities having jurisdiction. See "Required Performance" under 1.4 this section.
  - 1. Submit written certification from panel manufacturer or acceptable 3<sup>rd</sup> party laboratory/ test agency that the metal panel roll forming machine and mechanical seamer has been inspected, calibrated, and certified for use by the installer within six months prior to roof panel installation.
- F. Product Test Reports: Indicate compliance of manufactured roof panel assemblies and materials with performance and other requirements based on comprehensive testing of current products.

## 1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who has completed metal roof panel projects similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in the jurisdiction where the Project is located and who is experienced in providing engineering services of the kind indicated.
- C. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated without delaying the Work, as documented according to ASTM E 699.
- D. Fire-Test-Response Characteristics: Where fire-resistance-rated roof panel assemblies are indicated, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.
- E. Industry Standard: Unless otherwise shown or specified, comply with the Sheet Metal and Air Conditioning Contractors National Association's (SMACNA) "Architectural Sheet Metal Manual." Conform to dimensions and profiles shown.
- F. Mockups: Before installing metal roof and fascia panels construct mockup of construction and finish required to verify selections made under Sample submittals and to demonstrate aesthetic effects and qualities of materials and execution. Build mockups to comply with the following requirements, using exposed and concealed materials and forming methods indicated for completed work.
  - 1. Locate mockups in the location and of the size indicated or, if not indicated, as directed by Architect.

2. Notify Architect seven days in advance of the dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain Architect's approval of mockups before starting metal roofing work.
5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed work.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver panels and other components so they will not be damaged or deformed. Package panels for protection against damage during transportation or handling.
- B. Handling: Exercise care in unloading, storing, and erecting roof panels to prevent bending, warping, twisting, and surface damage.
- C. Stack materials on platforms or pallets, covered with tarpaulins or other suitable weathertight and ventilated covering. Store panels to ensure dryness. Do not store panels in contact with other materials that might cause staining, denting, or other surface damage.

#### 1.8 PROJECT CONDITIONS

- A. Field Measurements: Verify location of structural members and openings in substrates by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
  1. Established Dimensions: Where field measurements cannot be made without delaying the Work, either establish opening dimensions and proceed with fabricating roof panels without field measurements or allow for trimming panel units. Coordinate roof construction to ensure actual locations of structural members and to ensure opening dimensions correspond to established dimensions.

#### 1.9 WARRANTY

- A. General Warranty: Special warranties specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Special Finish Warranty: Submit a written warranty, signed by manufacturer, covering failure of the factory-applied exterior finish on metal roof or wall panels within the specified warranty period and agreeing to repair finish or replace roof panels that show evidence of finish deterioration. Deterioration of finish includes, but is not limited to, color fade, chalking, cracking, peeling, and loss of film integrity.
- C. Finish Warranty Period: 20 years from date of Substantial Completion.

- D. Special Weathertight Warranty: Submit a written warranty executed by manufacturer agreeing to repair or replace metal roof panel assembly that fails to remain weathertight within the specified warranty period.
- E. Weathertight Warranty Period: 20 years from date of Substantial Completion.
- F. Contractor and Authorized Installer's Warranty: Provide written warranty signed by Contractor and authorized installed agreeing to replace/repair materials and workmanship. Repairs and replacements required because of events beyond Contractor's/Installer's/Manufacturer's control ( and which exceed performance requirements) shall be completed by Contractor/Installer and paid for by Owner. Warranty period is two years after date of substantial completion with **NO DOLLAR LIMIT** and **NO PENAL SUM**.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide panels by one of the following:
  - 1. Steel Roof Panels:
    - a. AEP-Span
    - b. Architectural Metal Systems
    - c. Englert, Inc.

### 2.2 METALS AND FINISHES

- A. Metallic-Coated Steel Sheet Prepainted with Coil Coating: Steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755 (ASTM A 755M) and the following requirements:
  - 1. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792, Class AZ-50 coating, Grade 40 (ASTM A 792M, Class AZ-150 coating, Grade 275); structural quality.
  - 2. Thickness: 22 gauge, 0.02 inch roof panel; 24 gauge, 0.024 fascia and wall panels unless otherwise indicated.
  - 3. Fascia and Wall Panel Finish: Apply the following coating in thickness indicated. Furnish appropriate air-drying spray finish in matching color for touchup.
    - a. Fluoropolymer 2-Coat Coating System: Manufacturer's standard 2-coat, thermocured system composed of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight with a total minimum dry film thickness of 0.9 mil (0.023 mm) and 30 percent reflective gloss when tested according to ASTM D 523.
      - 1) Durability: Provide coating field tested under normal range of weather conditions for a minimum of 20 years without significant peel, blister, flake, chip, crack, or check in finish; without chalking in excess of a chalk rating of 8 according to ASTM D 4214; and without fading in excess of 5 Hunter units.

- 2) Color: To be selected by Architect from manufacturer's standard colors (minimum nine colors to be submitted for selection).

### 2.3 ROOF PANEL ASSEMBLIES

- A. Standing-Seam Roof Panels: Manufacturer's standard formed, standing-seam roof panel assembly designed for concealed mechanical attachment of panels to roof purlins.
  1. Clips: Provide minimum 0.0625-inch- (1.6-mm-) thick, stainless steel two piece panel clips designed to meet negative-load requirements, and allowing limited thermal movement.
  2. Cleats: Mechanically seamed cleats formed from minimum 0.0250-inch- (0.65-mm-) thick, stainless steel or nylon-coated aluminum-zinc alloy coated steel sheets.
- B. Basis of Design: Englert Inc., Zee Lock Panel System
  1. Roof Profile: Flat panel, standing seam at 16" o.c. with 2" seams
  2. Fascia Profile: Flat seams.
  3. Color: To be selected by Architect from manufacturer's standard colors.
  4. Formed roof panel shall be continuous length from eave to ridge with no lap joints.

### 2.4 WALL, FASCIA AND SOFFIT PANEL ASSEMBLIES

- A. Wall and Fascia Panels: Manufacturer's standard formed, flush wall panel assembly designed for concealed mechanical attachment.
  1. Basis of Design: Englert, Inc. Series 4000 Wall Panel System
  2. Panel Size: 1 1/2" x 14" wide, flat panel with ribs, to match existing.
  3. Substrate: 24 gauge baked on finish over Galvalume ASTM A-792-83, AZ50, 50 KSI yeild point, 52 KSI tensile strength.
  4. Flame Spread: Class 1.
  5. Finish: PermaColor 2000 standard 30-year color coating.
  6. Color: As selected by Architect from Manufacturer's standard colors.
  7. Flashing and Trim: Same gauge, color and finish to match wall panels.
  8. Accessories: Concealed fasteners, closers, etc. as recommended by Manufacturer.
- B. Soffit Panels: Manufacturer's standard formed, vented soffit panel assembly designed for concealed mechanical attachment.
  1. Basis of Design: Englert, Inc., Series E-375 Soffit
  2. Panel Style: 3/8" Deep-V-Groove soffit panel, to match existing.
  3. Flame Spread: Class 1.
  4. Finish: PermaColor 2000 standard 30-year color coating.
  5. Color: As selected by Architect from Manufacturer's standard colors.
  6. Flashing and Trim: Same gauge, color and finish to match wall panels.
  7. Accessories: Concealed fasteners, closers, etc. as recommended by Manufacturer.



## 2.5 THERMAL INSULATION

- A. Polyisocyanurate Board Insulation: ASTM C 1289, Type I, Class 1 glass-fiber mat facer on both major surfaces. Rigid boards of minimum 2.0 lb/cu.ft. density polyisocyanurate based foam core, permanently bonded to roofing felt facer sheets. Provide in thickness indicated, with minimum aged K-value of 0.17 (when conditioned per RIC/TIMA Bulletin No. 281-1) – maximum board size 4' x 8'. New insulation to provide average overall aged insulation value of R-20.
  - 1. Manufacturers:
    - a. Apache Products Company
    - b. Atlas Roofing Corporation
    - c. Celotex Corporation
    - d. GAF Materials Corporation
    - e. Honeywell Commercial Roofing Systems
    - f. Johns Manville International, Inc.
    - g. Koppers Industries
    - h. RMAX

## 2.6 UNDERLAYMENT MATERIALS

- A. Self-Adhering, Polymer-Modified, Bituminous Sheet Underlayment: ASTM D 1970, minimum of 60 mils (1.5 mm) thick. Provide primer when recommended by underlayment manufacturer.
  - 1. Products: Subject to compliance with requirements, products that may be incorporated into the work include, but are not limited to, the following:
    - a. Jiffy Seal Rainproof - 60; Protecto Wrap Co.
- B. Building Paper: Minimum 5 lb/100 sq. ft. (2.4 kg/sq. m), rosin sized.
- C. Felts: ASTM D 226, Type II (No. 30), asphalt-saturated organic felts.

## 2.7 MISCELLANEOUS MATERIALS

- A. General: Provide materials and accessories required for a complete roof panel assembly and as recommended by panel manufacturer, unless otherwise indicated.
- B. Thermal Spacers: Where panels attach directly to purlins, provide thermal spacers recommended by panel manufacturer.
- C. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads.
  - 1. Use stainless-steel fasteners for exterior applications and galvanized steel fasteners for interior applications.
  - 2. Provide exposed fasteners with head matching color of panel by means of plastic caps or factory applied coating.
  - 3. Provide metal-backed neoprene washers under heads of exposed fasteners bearing on weather side of panels.

4. Locate and space exposed fasteners in true vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of neoprene washer.
- D. Accessories: Unless otherwise specified, provide components required for a complete roof panel assembly including trim, copings, fasciae, mullions, sills, corner units, ridge closures, clips, seam covers, battens, flashings, gutters, downspouts, sealants, gaskets, fillers, closure strips, and similar items. Match materials and finishes of panels unless otherwise indicated.
1. Sealing Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealing tape with release paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape.
  2. Elastomeric Joint Sealant: ASTM C 920, of base polymer, type, grade, class, and use classifications required to seal joints in panel roofing and remain weathertight. Provide sealant recommended by panel manufacturer.
  3. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal roof panels, unless otherwise indicated.
  4. Flashing and Trim: Formed from same material as roof panels. Provide flashing and trim as required to seal against weather and to provide finished appearance. Finish flashing and trim with same finish system as adjacent metal roof panels, unless otherwise indicated.
  5. Gutters: Formed from same material roof panels. Match profile of gable trim, complete with end pieces, outlets, and other special pieces as required unless otherwise indicated. Fabricate in minimum 96-inch-(2400 mm) long sections, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Furnish gutter supports spaced a maximum of 36 inches (900 mm) o.c.
  6. Downspouts: Formed from same material as roof panel. Fabricate in 10 ft. (3 m) long sections, complete with formed elbows and offsets, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Finish downspouts to match gutters unless otherwise indicated.
  7. Roof Curbs: Shall be either supplied by the metal roof manufacturer or one of their approved roof curb fabricators. Prefabricated from same or compatible material as roof panels with bottom skirt profiled to match roof panel profiles, and fully welded joints and integral full-length cricket. Fabricated curb and subframing to withstand indicated loads, of size and heights indicated. Finish roof curbs to match metal roof panels. Contractor to verify curb locations on the steep slope opposite the main (street) entrance where possible. All curbs must be warranted as previously described in section 1.9.
- E. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil (0.4-mm) dry film thickness per coat, unless otherwise indicated. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.
- F. Expansion-Joint Sealant: For hooked-type expansion joints that must be free to move, provide nonsetting, nonhardening, nonmigrating, heavy-bodied polyisobutylene sealant.

## 2.8 FABRICATION

- A. General: Fabricate and finish panels and accessories to comply with the details shown to greatest extent possible, by manufacturer's standard procedures and processes with metal

roofing manufacturer's written instructions, and with recommendations of SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of installation indicated, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

- B. Fabricate panel joints with captive gaskets or separator strips that provide a tight seal.

## 2.9 PANEL SUPPORTS AND ANCHORAGE

- A. Secondary Framing: Provide components complying with the Light Gage Structural Institute's "Guide Specifications," Division 5 specifications, and the Drawings.
- B. Required Performances: Fabricate panels and other components of roof/wall system for the following installed-as-indicated performances:
  - 1. Structural stability: ANSI A58.1, using exposure "C" for small tributary areas. Metal roofing will resist 110 mph winds (IV – 120 per ANSI A58.1).
  - 2. Meet UL class 90 wind uplift requirements and been tested in accordance with Underwriters Laboratories 580 and received a Class 90 uplift rating, or certified by State of Florida registered engineer to meet requirements for Underwriters Laboratories Class 90 uplift rating.
  - 3. Wall loading: 20 lbs. per sq. ft. inward; 15 lbs per sq. ft. outward.
  - 4. Roof loading: 40 lbs per sq. ft. inward; 15 lbs. Per sq. ft. outward.
  - 5. Water penetration: No significant, uncontrolled leakage at 4 lbs. Per sq. ft. pressure with spray test.
  - 6. Air infiltration: 0.02 cfm per sq. ft. for gross roof/wall areas, with 4 lbs. Per sq. ft. differential pressure.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements indicated for conditions affecting performance of metal panel roofing.
  - 1. Panel Supports and Anchorage: Examine roof framing to verify that purlins, angles, channels, and other secondary structural panel support members and anchorage have been installed according to written instructions of panel manufacturer.
  - 2. Do not proceed with roof panel installation until unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Coordinate metal panel roofing with rain drainage work; flashing; trim; and construction of other adjoining work to provide a leakproof, secure, and noncorrosive installation.

- B. Promptly remove protective film, if any, from exposed surfaces of metal panels. Strip with care to avoid damage to finish.
- C. Secondary Structural Supports: Install purlins, bracing, and other secondary structural panel support members and anchorage according to the Light Gage Structural Institute's "Guide Specifications," and Division 5.

### 3.3 PANEL INSTALLATION

- A. General: Comply with panel manufacturer's written instructions and recommendations for installation, as applicable to project conditions and supporting substrates. Anchor panels and other components of the Work securely in place, with provisions for thermal and structural movement.
  - 1. Field cutting exterior panels by torch is not permitted.
  - 2. Install panels with concealed fasteners, unless otherwise indicated.
  - 3. Install panels continues from eave to ridge with no lap joints.
  - 4. Install panels over solid substrate. Install waterproofing underlayment from lower edge up, with at least 3-inch (75-mm) side laps and 4-inch (100-mm) end laps.
- B. Accessories: Install components required for a complete roof panel assembly including trim, fascia, ridge closures, clips, seam covers, flashings, gutters, down spouts sealants, gaskets, fillers, closure strips, and similar items.
- C. Separate dissimilar metals by painting each metal surface in area of contact with a bituminous coating, by applying rubberized-asphalt underlayment to each metal surface, or by other permanent separation as recommended by manufacturers of dissimilar metals.
- D. Install rubberized asphalt underlayment and building-paper slip sheet on metal valley support pan under valley flashing and metal panels, and over open expansion joints. Apply from eave to ridge wrinkle free, in shingle fashion to shed water and end laps a minimum of 6 inches (150 mm) staggered 24 inches (600 mm) between courses. Overlap side edges not less than 3 ½ inches (90 mm). Extend underlayment into gutter trough as detailed and cover underlayment within the allotted manufacturer's exposure limitations. Apply primer if required by manufacture.
- E. Coat back side of metal panels with bituminous coating where it will contact wood, ferrous metal, or cementitious construction.
- F. Form and fabricate sheets, seams, strips, cleats, valleys, ridges, edge treatments, integral flashings, and other components of metal roofing to profiles, patterns, and drainage arrangements shown and as required for leakproof construction. Provide for thermal expansion and contraction of the work. Seal joints as shown and as required for leakproof construction. Shop fabricate materials to greatest extent possible.
- G. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of panel assemblies. Provide types of gaskets, fillers, and sealants indicated or, if not otherwise indicated, types recommended by panel manufacturer.

1. Install weatherseal under ridge cap. Flash and seal panels at eave and rake with rubber, neoprene, or other closures to exclude weather.
  2. Seal panel end laps with double beads of tape or sealant, full width of panel. Seal side joints where recommended by panel manufacturer.
  3. Prepare joints and apply sealants to comply with requirements of Division 7 Section "Joint Sealants."
- H. Standing-Seam Roof Panel Assembly: Fasten panels to supports with concealed clip according to panel manufacturer's written instructions.
1. Install clips at each support with self-drilling/self-tapping fasteners.
  2. Install -calked cleats at standing-seam joints to provide a weathertight joint.
  3. Seaming: Complete seaming of panel joints by operating portable power-driven equipment of type recommended by panel manufacturer to provide a weathertight joint.
- I. Fabricate and install work with lines and corners of exposed units true and accurate. Form exposed faces flat and free of buckles, excessive waves, and avoidable tool marks, considering temper and reflectivity of metal. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant. Fold back sheet metal to form a hem on concealed side of exposed edges, unless otherwise indicated.
- J. 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.
- K. Installation Tolerances: Shim and align 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.

### 3.4 METAL SOFFIT PANEL INSTALLATION

- A. In addition to complying with requirements in "Metal Roof Panel Installation, General" Article, install metal soffit panels to comply with requirements in this article.
- B. The metal panel system shall be installed plumb, level, and straight over a layer of 30 lb felt, (dry) with a minimum 6" for horizontal lap and 12" of end lap.
- C. All panels shall be continuous with no horizontal end laps. End lap all flashing and trim a minimum of 3".
- D. Metal Soffit Panels: Provide metal soffit panels full width of soffits. Install panels perpendicular to support framing.
1. Flash and seal panels with weather closures where metal soffit panels meet walls and at perimeter of all openings.
- E. Metal Fascia Panels: Align bottom of panels and fasten with blind rivets, bolts, or self-tapping screws. Flash and seal panels with weather closures where fascia meet soffits, along lower panel edges, and at perimeter of all openings.

### 3.5 ACCESSORY INSTALLATION

- A. General: 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 roof panel assembly including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
- B. 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 excessive oil canning, 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 to result in 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 (600 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).
- C. Gutters: Join sections with riveted and soldered or lapped and sealed joints. Attach gutters to eave with gutter hangers spaced not more than 36 inches (914 mm) o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion. All gutters must be mitered, soldered, and caulked with a lining of Ice and Watershield applied at the laps. All butt joints must be caulked. Soldered areas shall be counterflashed or painted to match.
- D. Downspouts: Join sections with telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch (25 mm) away from walls; locate fasteners at top and bottom and at approximately 60 inches (1500 mm) o.c. in between.
  - 1. Provide elbows at base of downspouts to direct water away from building, where indicated on drawings.
  - 2. Connect downspouts to underground drainage system, as indicated on drawings.
- E. Roof Curbs: Install curbs at locations indicated on Drawings. Install flashing around bases where they meet metal roof panels.
- F. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to metal roof panels as recommended by manufacturer.

### 3.6 CLEANING AND PROTECTING

- A. Damaged Units: Replace panels and other components of the Work that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

- B. Cleaning: Remove temporary protective coverings and strippable films, if any, as soon as each panel is installed. On completion of panel installation, clean finished surfaces as recommended by panel manufacturer and maintain in a clean condition during construction.

END OF SECTION 07410

## SECTION 07600 - FLASHING AND SHEET METAL

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

#### 1.2 DESCRIPTION OF WORK:

- A. The Types of work specified in this section are associated with modified bitumen membrane roofing and include the following:
  - 1. Metal counterflashing; and base flashing.
  - 2. Edge metal.
  - 3. Exposed metal trim.
  - 4. Miscellaneous sheet metal accessories.
  - 5. Plastic flashing.

#### 1.3 JOB CONDITIONS:

- A. Coordinate work of this section with interfacing and adjoining work for proper sequencing of each installation. Ensure best possible weather resistance and durability of work and protection of materials and finishes.

### PART 2 - PRODUCTS

#### 2.1 FLASHING AND SHEET METAL MATERIALS:

- A. Stainless Steel: AISI Type 302/304, complying with ASTM A 167, 2D annealed finish, soft, except where harder temper required for forming or performance; 0.0156-inch thick (28 gauge) except as otherwise indicated.
- B. Aluminum: ASTM B 209, alloy 3003, temper H14, unless harder temper required for forming and performance, 0.032 thick (20 gage) except as otherwise indicated. Mil finish prepared for coating system as noted below. Color to be selected by Architect from manufacturer's standard selection.
  - 1. Fluoropolymer coating: Full strength 70% "Kynar 500" coating baked on for 15 minutes at 450 degrees F (232 degrees C), in a dry film thickness of 1.0 mil, 30% reflective gloss (ASTM D 523), over 0.2 mil baked on modified epoxy primer.
  - 2. Durability: Provide coating which has been field tested under normal range of weathering conditions for minimum of 20 years without significant peel, blister, flake,



chip, crack or check in finish, and without chalking in excess of 8 (ASTM D 659), and without fading in excess of five NBS units.

C. Elastic Sheet Flashing:

1. Provide only flashings compatible with and acceptable to roofing system manufacturer.

D. Copper: ASTM B 370, cold-rolled except where soft temper is required for forming; 16 oz (0.0216" thick) except as otherwise indicated.

E. Lead Flashing: 2-1/2 pound to 4 pound sheet of common desilverized pig lead.

F. Miscellaneous Materials and Accessories:

1. Solder: For use with stainless steel, provide 60 - 40 tin/lead solder (ASTM B 32), with acid-chloride type flux, except use rosin flux over tinned surfaces.
2. Fasteners: Same metal as flashing/sheet metal or, other noncorrosive metal as recommended by sheet manufacturer. Match finish of exposed heads with material being fastened.
3. Epoxy Seam Sealer: 2-part noncorrosive metal seam cementing compound, recommended by metal manufacturer for exterior/interior non-moving joints including riveted joints.
4. Adhesives: Type recommended by flashing sheet manufacturer for waterproof / weather-resistant seaming and adhesive application of flashing sheet.
5. Paper Slip Sheet: 5-lb rosin-sized building paper.
6. Polyethylene Underlayment: 6-mil carbonated polyethylene film; FS L-P-512.
7. Reglets: Metal or plastic units of type and profile indicated, compatible with flashing indicated, noncorrosive.
8. Metal Accessories: Provide sheet metal clips, straps, anchoring devices and similar accessory units as required for installation of work, matching or compatible with material being installed, noncorrosive, size and gage required for performance.
9. Roofing Cement: ASTM D 2822, asphaltic.

## 2.2 FABRICATED UNITS:

A. General Metal Fabrication: Shop fabricate work to greatest extent possible. Comply with details shown and with applicable requirements of SMACNA "Architectural Sheet Metal Manual" and other recognized industry practices. Fabricate for waterproof and weather resistant performance; with expansion provisions for running work, sufficient to permanently prevent leakage, damage or deterioration of the work. Form work to fit substrates comply with material manufacturer instructions and recommendation for forming material. Form exposed sheet metal work without excessive oil-canning, buckling and tool marks, true to line and levels indicated, with exposed edges folded back to form hems.

B. Seams: Fabricate non-moving seams in sheet metal with flat-lock seams. For metal other than aluminum, tin edges to be seamed, form seams, and solder. Form aluminum seams with epoxy seam sealer; rivet joints for additional strength where required.

- C. Expansion Provisions: Where lapped or bayonet-type expansion provisions in work cannot be used, or would not be sufficiently water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1" deep, filled with mastic sealant (concealed within joints).
- D. Sealant Joints: Where movable, non-expansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with SMACNA standards.
- E. Form section square, true and accurate in size, in maximum possible lengths and free of distortions and defects detrimental to appearance or performance. Hem exposed edges. (Allow for expansion at joints.)
- F. Separations: Provide for separation of metal from non-compatible metal or corrosive substrates by coating concealed surfaces at locations of contact, with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION REQUIREMENTS:

- A. General: Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations, and with SMACNA "Architectural Sheet Metal Manual". Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints and seams, which will be permanently watertight and weatherproof.
- B. Underlayment: Where stainless steel or aluminum is to be installed directly on cementitious or wood substrates, install a slip sheet of red rosin paper and a course of polyethylene underlayment.
- C. Bed flanges of work in a thick coat of bituminous roofing cement where required for waterproof performance.
- D. Install reglets to receive counter-flashing in manner and by methods required.
  - 1. Install counterflashing in reglets, either by snap-in seal arrangement, or by wedging in place for anchorage and filling reglet with mastic or elastomeric sealant.
- E. Install elastic flashing without stretching. Install elastic flashing filler strips to provide for movement by forming loops or bellows in width of flashing. Locate filler strips to facilitate complete drainage of water from flashing. Seam flashing sheets with adhesive, and anchor edges as required by manufacturer.

#### 3.2 CLEANING AND PROTECTION:

- A. Clean exposed metal surfaces, removing substances, which might cause corrosion of metal or deterioration of finishes.

- B. Protection: Installer shall advise Contractor of required procedures for surveillance and protection of flashings and sheet metal work during construction, to ensure that work will be without damage or deterioration, other than natural weathering, at time of substantial completion.

END OF SECTION 07600

## SECTION 07700 - ROOF SPECIALTIES AND ACCESSORIES

### PART 1 - GENERAL

#### 1.1 STANDARDS:

- A. Comply with SMACNA "Architectural Sheet Metal Manual" details for fabrication of units, including flanges and cap flashing to coordinate with type of roofing indicated. Comply with "NRCA Roofing and Waterproofing Manual" details for installation of units.

### PART 2 - PRODUCTS

#### 2.1 ROOF ACCESSORY MATERIALS: MISCELLANEOUS UNITS

- A. Fasteners: Same metal as metals being fastened, or nonmagnetic stainless steel or other noncorrosive metal as recommended by manufacturer. Match finish of exposed fasteners with finish of material being fastened.
- B. Roofing Cement: FS SS-C-153, type which is compatible with roofing, containing no asbestos and normally free of sulfur.
- C. Mastic Sealant: Polyisobutylene, nonhardening, nonskinning, nondrying, nonmigrating sealant.
- D. Roof Drains: General purpose type, cast iron with aluminum dome strainer, flashing collar, deck clamp.
  - 1. Wade W-3220; Jay R. Smith 1310; Josam 22010; Zurn 121 for sizes 2" through 4".
  - 2. Wade W-3100-CC; Jay r. Smith 1040-K; Josam 21520; Zurn 104-1 for 5" and 6".
- E. Pipe Penetration Flashings: Stainless steel roof penetration flashing for pipes and conduits by S.B.C. Industries, Post Office Box 610397, North Miami, Florida 33261, or equal. Install according to manufacturer's recommendations, solder seams in field during final assembly and installation.
- F. Pillow Block Pipestand: Model 24-R by Miro Industries, Inc.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION REQUIREMENTS

- A. Flange Seals: Except as otherwise indicated, set flanges of accessory units in a thick bed of roofing cement or mastic sealant, to form a seal.

- B. Anchor units securely to supporting structure, except for small accessory items which are bedded and stripped into roofing support.
- C. Coordinate installation with deck construction, vapor barrier (if any), insulation, roofing and flashing work, to provide waterproof and weatherproof installations, in accordance with Construction Details of NRCA Roofing and Waterproofing Manual.
- D. Separate dissimilar metals by coating surfaces with bituminous coating or other permanent separation.

END OF SECTION 07700

## SECTION 07841 - THROUGH-PENETRATION FIRESTOP SYSTEMS

### PART 1 - GENERAL

#### 1.1 SECTION REQUIREMENTS

- A. Submittals: Product Data and product certificates signed by manufacturer certifying that products furnished comply with requirements.
- B. Provide firestopping systems with fire-resistance ratings indicated by reference to UL designations as listed in its "Fire Resistance Directory," or to designations of another testing agency acceptable to authorities having jurisdiction.
- C. Provide through-penetration firestopping systems with F-ratings indicated, as determined according to ASTM E 814, but not less than fire-resistance rating of construction penetrated.
  - 1. Provide through-penetration firestopping systems with T-ratings as well as F-ratings, as determined according to ASTM E 814, where indicated.
- D. For exposed firestopping, provide products with flame-spread indexes of less than 25 and smoke-developed indexes of less than 450, as determined according to ASTM E 84.

### PART 2 - PRODUCTS

#### 2.1 FIRESTOP SYSTEMS

- A. Any through-penetration firestop system that is classified by UL for the application and with F-rating indicated may be used.
- B. UL-classified system fire-resistive rating designations are indicated on Drawings.
- C. Firestop Systems with No Penetrating Items.
- D. Firestop Systems for Metallic Pipes, Tubing, or Conduit: 3 Hr. fire-resistive rating.
- E. Firestop Systems for Electrical Cables: 3 Hr. fire-resistive rating.
- F. Firestop Systems for Air Ducts: 3 Hr. fire-resistive rating.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Install firestopping systems to comply with requirements listed in testing agency's directory for indicated fire-resistance rating.

- B. Identification: Identify through-penetration firestop systems with permanent labels attached to surfaces adjacent to firestop systems so that labels will be visible to anyone seeking to remove penetrating items or firestop systems. Include the following information on labels:
1. The words "Warning - Through-Penetration Firestop System - Do Not Disturb."
  2. Classification/listing designation of applicable testing and inspecting agency.
  3. Through-penetration firestop system manufacturer's name and product name.

END OF SECTION 07841

## SECTION 07900 - JOINT SEALERS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

#### 1.2 SUMMARY:

- A. Extent of each form and type of joint sealer is indicated on drawings and schedules.
- B. This Section includes joint sealers for the following locations:
  - 1. Exterior joints in vertical surfaces and nontraffic horizontal surfaces as indicated below.
    - a. Silicone sealants:
      - 1) Expansion and control joints in masonry and concrete joints indicated.
      - 2) Joints in hollow metal window frames and prefinished metal panel joints indicated.
      - 3) Perimeter joints between materials listed above and metal flashings associated with roofing system.
      - 4) Wet glazing bead at glass windows indicated.
      - 5) Joints between different materials listed above.
      - 6) Perimeter joints between hollow metal frame and masonry or concrete.
    - b. Urethane sealants:
      - 1) Joints between concrete, stucco, and masonry panels specifically indicated to be or painted.
      - 2) Other joints as specifically indicated.
      - 3) Perimeter joints between materials listed above and metal flashings associated with roofing system.

#### 1.3 RELATED SECTIONS:

- A. Special Coatings and Painting are specified in Division 9.

#### 1.4 SYSTEM PERFORMANCES:

- A. Provide joint sealers that have been produced and installed to establish and maintain watertight and airtight continuous seals.



1.5 SUBMITTALS:

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The Bidder/Applicator of the sealant system specified in this section shall submit evidence of sealant manufacturer's approval of applicator for this specific project on manufacturer's letterhead, and copy of sample sealant warranty within four days of bid opening.  
\*\*\*\*\*

- A. Product Data from manufacturers for each joint sealer product required, including instructions for joint preparation and joint sealer application.
- B. Certificates from manufacturers of joint sealers attesting that their products comply with specification requirements and suitable for the use indicated.
- C. Compatibility and adhesion test reports from elastomeric sealant manufacturer indicating that materials forming joint substrates and joint sealant backings have been tested for compatibility and adhesion with joint sealants. Include sealant manufacturer's interpretation of test results relative to sealant performance and recommendations for primers and substrate preparation needed to obtain adhesion.
- D. Compatibility with elastomeric coating system manufacturer certification and test reports indicating that materials forming joint substrates and joint sealant backings have been tested for compatibility and adhesion with elastomeric coating system specified and submitted. Include elastomeric coating manufacturer's test results relative to coating performance and recommendations for primers and substrate preparation needed to obtain adhesion.
- E. Product test reports for each type of joint sealers indicated, evidencing compliance with requirements specified.
- F. Preconstruction field test reports indicating which products and joint preparation methods demonstrated acceptable adhesion to joint substrates.

1.6 QUALITY ASSURANCE:

- A. Single Source Responsibility for Joint Sealer Materials: Obtain joint sealer materials from a single manufacturer for each different product required.
  - 1. Investigate materials failing compatibility or adhesion tests and obtain joint sealer manufacturer's written recommendations for corrective measures, including use of specially formulated primers.
- B. Preconstruction Field Testing: Prior to installation of joint sealants, field-test their adhesion to joint substrates as follows:
  - 1. Locate test joints where indicated or, if not indicated, as directed by Architect.
  - 2. Conduct field tests for each application indicated below:
    - a. Each type of elastomeric sealant and joint substrate indicated.
  - 3. Test Method: Test joint sealers by hand pull method described below:

- a. Install joint sealants in 5-foot joint lengths using same materials and methods for joint preparation and joint sealant installation required for completed Work. Allow sealants to cure fully before testing.
  - b. Make knife cuts as follows: A horizontal cut from one side of joint to the other followed by 2 vertical cuts approximately 2 inches long at side of joint and meeting horizontal cut at top of 2 inch cuts. Place a mark 1 inch from top of 2 inch piece.
  - c. Use fingers to grasp 2 inch piece of sealant just above 1 inch mark; pull firmly down at a 90 degree angle or more while holding a ruler along side of sealant. Pull sealant out of joint to the distance recommended by sealant manufacturer for testing adhesive capability, but not less than that equaling specified maximum movement capability in extension; hold this position for 10 seconds.
4. Report whether or not sealant in joint connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each type of product and joint substrate.
  5. Evaluation of Field Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.
  6. Inspection and approval of joint preparation by Architect, Owner, and/or Manufacturer's Representative prior to application of new sealant.
  7. Test cuts of completed joint sealant installation at 25 locations determined by the Architect, owner's Representative or Manufacturer's Representative to verify compliance.
- C. References: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.
1. ASTM D 4258-83 (1988) Standard Practice for Surface Cleaning Concrete for Coating.
  2. ASTM D 4262-83 (1988) Test Method for pH of Chemically Cleaned Concrete Surfaces.
  3. ASTM C-920, Type S, Grade NS, Class 25, Use T, NT, M, G, A, and O.
  4. Federal Specification TT-S-001543 A for silicone building sealants.
  5. Federal Specification TT-S-00230C for one-component building sealants.

#### 1.7 DELIVERY, STORAGE, AND HANDLING:

- A. Deliver materials to Project site in original unopened containers or bundles with labels informing about manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multicomponent materials.
- B. Store and handle materials in compliance with manufacturers' recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

#### 1.8 PROJECT CONDITIONS:

- A. Environmental Conditions: Do not proceed with installation of joint sealers under the following conditions:
  1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealer manufacturer or below 40 deg F (4.4 deg C).
  2. When joint substrates are wet due to rain, frost, condensation, or other causes.

- B. Joint Width Conditions: Do not proceed with installation of joint sealers where joint widths are less than allowed by joint sealer manufacturer for application indicated.
- C. Joint Substrate Conditions: Do not proceed with installation of joint sealers until contaminants capable of interfering with their adhesion are removed from joint substrates.

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**SPECIAL PROJECT SEALANT WARRANTIES**

Special Project Warranties: Submit for verification at bid opening two copies of special 10 year "Sealant Guarantee" from Manufacturer, covering urethane sealant products of this section, to be issued in conjunction with the manufacturer's elastomeric coating warranty. Provide written warranties by the Contractor, and his authorized installer, agreeing to replace/repair defective materials and workmanship. Provide written warranty by the manufacturers of the sealant material agreeing to replace defective or failed materials within the specified warranty period. Repairs and replacements required because of events beyond Contractor's/Installer's/Manufacturer's control (and which exceed performance requirements) shall be completed by Contractor/Installer and paid for by the Owner.

Manufacturer's sealant warranty period is 20 years for silicone sealants. The manufacturer's sealant warranty period is 5 years for urethane sealants (to be issued in conjunction with manufacturer's elastomeric coating warranty). Warranties to be nonprorated and no penal sum.

The Contractor and Installer's warranty period is two years after date of substantial project completion with no dollar limit and no penal sum.

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**1.9 SEQUENCING AND SCHEDULING:**

- A. Installation of joint sealer with other products as recommended by manufacturer of sealant, and other products. Submit manufacturer's recommendation of sequence.
- B. Sequence schedule installation of joint sealers as soon as possible following cut out of existing sealant, grinding and thoroughly cleaning joint, and inspection of joint preparation by Architect or Owner's Representative, unless otherwise indicated.

**PART 2 - PRODUCTS**

**2.1 MATERIALS, GENERAL:**

- A. Compatibility: Provide joint sealers, joint fillers and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
- B. Colors: Provide color of exposed joint sealers indicated or, if not otherwise indicated, as selected by Architect from manufacturer's standard colors.

2.2 ELASTOMERIC JOINT SEALANTS:

- A. Elastomeric Sealant Standard: Provide manufacturer's standard neutral curing, elastomeric sealant of base polymer indicated which complies with requirements of Federal Specifications TT-S-00230C, Type II, Class A, and with ASTM C 920 requirements, including those referenced for Type, Grade, Class, and Uses.
- B. Single Part Neutral Curing Silicone Sealants for concrete, aluminum and glass joints, and other joints specifically indicated; use NT: Type S, Grade NS, Class 25; and Uses NT, M, A, and O.

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

- a. Dow Corning 790 Silicone Sealant.
- b. Dow Corning 791 Silicone Sealant.

1) Minimum Performance Criteria:

Colors:	Minimum 10 standard colors	
MIL-S-8802 Tack-Free Time, 50% RH, hours		1
Curing Time RH @ 25 deg.C. (77 deg.F), days		7-14
MIL-S-8802 Full Adhesion, days		14-21
Flow, Sag or Slump, in 3-inch wide joint		None
Working Time, minutes		10-20

2) As Cured, after 7 days at 25 deg.C (77 deg.F) and 50% RH

ASTM D 2240 Durometer Hardness, Shore A, points		15
ASTM D 412 Ultimate Tensile Strength, max. elongation, psi		100
ASTM D 412 Elongation, percent maximum		1600
MIL-S-8802 Peel Strength, lbs/in.		25
ASTM C 1135 Tensile Adhesion		
With 25% extension		15
With 50% extension		20
TT-S-001543 Staining, after 14 days of 50% compression, at 158 deg.F. on concrete, granite, limestone and brick		None
Ozone Resistance		Good
Weathering, after 6000 hours in Atlas Weatherometer: Min. change in hardness		
Joint Movement Capabilities, percent,		
Extension		+100
Compression		-50
Fire Endurance, hours		2

C. One-Part Nonsag Urethane Sealants for Concrete, Stucco, Aluminum and other joints, unless indicated otherwise, Use NT: ASTM C-920, Type S; Grade NS; Class 25; and Uses NT, M, A, and, as applicable to joint substrates indicated, (Federal Specification TT-S-0023C, Type II, Class A).

1. Products: Subject to compliance with requirements and approval by the elastomeric coating manufacturer, provide one of the following products.

- a. One-Part Nonsag, low modulus, high performance, Urethane Sealant for Use NT:
  - 1) "Vulkem 116"; Mameco International, Inc.
  - 2) "Vulkem 921"; Mameco International, Inc.
  - 3) "Dynatrol I"; Pecora Corp.
  - 4) "Sikaflex-1a"; Sika Corp.
  - 5) "Sikaflex 15 LM"; Sika Corp.
  - 6) "Sonolastic NP 1"; Sonneborn Building Products Div., Rexnord Chemical Products, Inc.
  - 7) "Dyynamic"; Tremco, Inc.

\*\*\*\*Applicator to verify sealant manufacturer will provide specified warranty and products will comply with performance criteria.\*\*\*\*

### 2.3 MISCELLANEOUS MATERIALS:

- A. Primer: Provide type recommended by joint sealer manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint sealer-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Provide nonstaining, chemical cleaners of type which are acceptable to manufacturers of sealants and sealant backing materials, which are not harmful to substrates and adjacent nonporous materials, and which do not leave oily residues or otherwise have a detrimental effect on sealant adhesion or in-service performance.
- C. Masking Tape: Provide nonstaining, nonabsorbent type compatible with joint sealants and to surfaces adjacent to joints.

## PART 3 - EXECUTION

### 3.1 EXAMINATION:

- A. Examine joints indicated to receive joint sealers, with Installer present, for compliance with requirements for compliance with requirements for joint configuration, installation tolerances and other conditions affecting joint sealer performance. Do not proceed with installation of joint sealers until unsatisfactory conditions have been corrected.

### 3.2 PREPARATION:

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealers to comply with recommendations of joint sealer manufacturers and the following requirements:
  - 1. Remove all foreign material from joint substrates which could interfere with adhesion of joint sealer, including dust; paints, except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer; old joint sealers; oil; grease; waterproofing; water repellents; water; surface dirt; and frost.
  - 2. Clean concrete, masonry, unglazed surfaces of ceramic tile and similar porous joint substrate surfaces, by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing

- optimum bond with joint sealers. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
3. Remove laitance and form release agents from concrete.
  4. Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile; and other nonporous surfaces by chemical cleaners or other means, which are not harmful to substrates or leave residues capable of interfering with adhesion of joint sealers.
- B. Joint Priming: Prime joint substrates where indicated or where recommended by joint sealer manufacturer based on preconstruction joint sealer-substrate tests or prior experience. Apply primer to comply with joint sealer manufacturer's recommendations. Confine primers to areas of joint sealer bond, do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces which 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 SEALERS:

- A. General: Comply with joint sealer manufacturers' printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.
- B. Elastomeric Sealant Installation Standard: Comply with recommendations of ASTM C 1193 for use of joint sealants as applicable to materials, applications and conditions indicated.
- C. Installation of Sealant Backing: Install sealant backings to comply with the following requirements:
- D. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealant relative to joint widths that allow optimum sealant movement capability.
1. Do not leave gaps between ends of joint fillers.
  2. Do not stretch, twist, puncture, or tear joint fillers.
  3. Remove absorbent joint fillers that have become wet prior to sealant application and replace with dry material.
- E. Install bond breaker tape between sealants and joint fillers, compression seals or back of joints where required to prevent third-side adhesion of sealant to back of joint.
- F. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths which allow optimum sealant movement capability.
- G. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

1. Provide concave joint configuration per Figure 6A in ASTM C 1193, unless otherwise indicated.
2. Provide flush joint configuration per Figure 6B in ASTM C 1193, where indicated.
3. Use masking tape to protect adjacent surfaces of recessed tooled joints.

3.4 CLEANING:

- A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealers and of products in which joints occur.

3.5 PROTECTION:

- A. Protect joint sealers during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealers immediately and reseal joints with new materials to produce joint sealer installations with repaired areas indistinguishable from original work.

END OF SECTION 07900

## SECTION 08110 - STEEL DOORS AND FRAMES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

#### 1.2 DESCRIPTION OF WORK:

- A. Extent of standard steel doors and frames is indicated and scheduled on drawings.
- B. Finish hardware is specified elsewhere in Division-8.
- C. Building in of anchors and grouting of frames in masonry construction is specified in Division 4.

#### 1.3 QUALITY ASSURANCE:

- A. Provide doors and frames complying with Steel Door Institute "Recommended Specifications: Standard Steel Doors and Frames" (SDI-100) and as herein specified.
- B. Fire-Rated Door Assemblies: Where fire-rated door assemblies are indicated or required, provide fire-rated door and frame assemblies that comply with NFPA 80 "Standard for Fire Doors and Windows", and have been tested, listed, and labeled in accordance with ASTM E 152 "Standard Methods of Fire Tests of Door Assemblies" by a nationally recognized independent testing and inspection agency acceptable to authorities having jurisdiction.
- C. Glazing: All glazing in doors to be tempered. Provide fire rated glazing in all rated door assemblies.

#### 1.4 SUBMITTALS:

- A. Product Data: Submit manufacturer's technical product data substantiating that products comply with requirements.
- B. Shop Drawings: Submit for fabrication and installation of steel doors and frames. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of finish hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.
  - 1. Provide schedule of doors and frames using same reference numbers for details and openings as those on contract drawings.
  - 2. Indicate coordination of glazing frames and stops with glass and glazing requirements.



- C. Label Construction Certification: For door assemblies required to be fire-rated and exceeding sizes of tested assemblies, submit manufacturer's certification for that each door and frame assembly has been constructed to conform to design, materials and construction equivalent to requirements for labeled construction.

#### 1.5 DELIVERY, STORAGE AND HANDLING:

- A. Deliver hollow metal work cartoned or crated to provide protection during transit and job storage. Provide additional sealed plastic wrapping for factory finished doors.
- B. Inspect hollow metal work upon delivery for damage. Minor damages may be repaired provided refinished items are equal in all respects to new work and acceptable to Architect; otherwise, remove and replace damaged items as directed.
- C. Store doors and frames at building site under cover. Place units on minimum 4" high wood blocking. Avoid use of non-vented plastic or canvas shelters which could create humidity chamber. If cardboard wrapper on door becomes wet, remove carton immediately. Provide 1/4" spaces between stacked doors to promote air circulation.

### PART 2 - PRODUCTS

#### 2.1 ACCEPTABLE MANUFACTURERS:

- A. Acceptable Manufacturers: Subject to compliance with requirements, manufacturers offering steel doors and frames which may be incorporated in the work include, but are not limited to, the following:
  - 1. Steel Doors and Frames, (General):
    - a. Allied Steel Products, Inc.
    - b. Amweld/Div. American Welding & Mfg. Co.
    - c. Ceco Corp.
    - d. Copco Door Co.
    - e. Curries Mfg., Inc.
    - f. Dittco Products, Inc.
    - g. Fenestra Corp.
    - h. Kewanee Corp.
    - i. Mesker Industries, Inc.
    - j. Pioneer Bldrs. Products Corp./Div. CORE Industries, Inc.
    - k. Steelcraft/Div. American Standard Co.
    - l. Trussbilt, Inc.
    - m. Republic Builders Products Corp./Subs. Republic Steel.

#### 2.2 MATERIALS:

- A. Hot-Rolled Steel Sheets and Strip: Commercial quality carbon steel, pickled and oiled, complying with ASTM A 569 and ASTM A 568.

- B. Cold-Rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A 366 and ASTM A 568.
- C. Galvanized Steel Sheets: Zinc-coated carbon steel sheets of commercial quality, complying with ASTM A 526, with ASTM A 525, G60 zinc coating, mill phosphatized.
- D. Supports and Anchors: Fabricate of not less than 18 gage galvanized sheet steel.
- E. Inserts, Bolts and Fasteners: Manufacturer's standard units, except hot-dip galvanize items to be built into exterior walls, complying with ASTM A 153, Class C or D as applicable.
- F. Shop Applied Paint:
  - 1. Primer: Rust-inhibitive enamel or paint, either air-drying or baking, suitable as a base for specified finish paints.

### 2.3 FABRICATION, GENERAL:

- A. Fabricate steel door and frame units to be rigid, neat in appearance and free from defects, warp or buckle. Wherever practicable, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory assembled before shipment, to assure proper assembly at project site. Comply with SDI-100 requirements as follows:
  - 1. Interior Doors: SDI-100, Grade II, heavy-duty, Model 1, minimum 18-gage faces.
  - 2. Exterior Doors: SDI-100, Grade III, extra heavy-duty, Model 2, minimum 16-gage faces.
- B. Fabricate exposed faces of doors and panels, including stiles and rails of nonflush units, from only cold-rolled steel.
- C. Fabricate frames, concealed stiffeners, reinforcement, edge channels, louvers and moldings from either cold-rolled or hot-rolled steel (at fabricator's option).
- D. Fabricate exterior doors, panels, and frames from galvanized sheet steel. Close top and bottom edges of exterior doors as integral part of door construction or by addition of minimum 16-gage inverted steel channels.
- E. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat Phillips heads for exposed screws and bolts.
- F. Finish Hardware Preparation: Prepare doors and frames to receive mortised and concealed finish hardware in accordance with final Finish Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A115 series specifications for door and frame preparation for hardware.
- G. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied finish hardware may be done at project site.
- H. Locate finish hardware as indicated on final shop drawings or, if not indicated, in accordance with "Recommended Locations for Builder's Hardware", published by Door and Hardware Institute.

I. Shop Painting:

1. Clean, treat, and paint exposed surfaces of steel door and frame units, including galvanized surfaces.
2. Clean steel surfaces of mill scale, rust, oil, grease, dirt, and other foreign materials before application of paint.

J. Apply shop coat of prime paint of even consistency to provide a uniformly finished surface ready to receive finish paint.

2.4 STANDARD STEEL DOORS:

A. Provide metal doors of types and styles indicated on drawings or schedules.

B. Door Louvers:

1. Provide sightproof stationary louvers for interior doors where indicated, constructed of inverted V-shaped or Y-shaped blades formed of 24-gage cold-rolled steel set into 20-gage steel frame.

2.5 STANDARD STEEL FRAMES:

A. Provide metal frames for doors, transoms, sidelights, borrowed lights, and other openings, of types and styles as shown on drawings and schedules. Conceal fastenings, unless otherwise indicated. Fabricate frames of minimum 16-gage cold-rolled furniture steel.

1. Fabricate frames with metered corners, welded construction for exterior applications and interior masonry wall applications, knocked-down for field assembly at interior applications.
2. Form exterior frames of hot dip galvanized steel.

B. Door Silencers: Except on weatherstripped frames, drill stops to receive 3 silencers on strike jambs of single-swing frames and 2 silencers on heads of double-swing frames.

C. Plaster Guards: Provide 26-gage steel plaster guards or mortar boxes, welded to frame, at back of finish hardware cutouts where mortar or other materials might obstruct hardware operation and to close off interior of openings.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. General: Install standard steel doors, frames, and accessories in accordance with final shop drawings, manufacturer's data, and as herein specified.

B. Placing Frames: Comply with provisions of SDI-105 "Recommended Erection Instructions For Steel Frames", unless otherwise indicated.

1. Except for frames located at in-place concrete or masonry and at drywall installations, place frames prior to construction of enclosing walls and ceilings. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders leaving surfaces smooth and undamaged.
2. In masonry construction, locate 3 wall anchors per jamb at hinge and strike levels.
3. At in-place concrete or masonry construction, set frames and secure to adjacent construction with machine screws and masonry anchorage devices.
4. Install fire-rated frames in accordance with NFPA Std. No. 80.
5. In metal stud partitions, install at least 3 wall anchors per jamb at hinge and strike levels. In open steel stud partitions, place studs in wall anchor notches and wire tie. In closed steel stud partitions, attach wall anchors to studs with tapping screws.

C. Door Installation:

1. Fit hollow metal doors accurately in frames, within clearances specified in SDI-100.
2. Place fire-rated doors with clearances as specified in NFPA Standard No. 80.

3.2 ADJUST AND CLEAN:

- A. Prime Coat Touch-up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.
- B. Protection Removal: Immediately prior to final inspection, remove protective plastic wrappings from prefinished doors.
- C. Final Adjustments: Check and readjust operating finish hardware items, leaving steel doors and frames undamaged and incomplete and proper operating conditions.

END OF SECTION 08110

## SECTION 08211 - FLUSH WOOD DOORS

### PART 1 - GENERAL

#### 1.1 SECTION REQUIREMENTS

- A. Submittals: Samples for factory-finished doors.
- B. Quality Standard: WDMA I.S.1-A.
- C. Verify availability of certification in paragraph below with manufacturers selected before retaining.
- D. Forest Certification: Provide doors produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC 1.2, "Principles and Criteria."

### PART 2 - PRODUCTS

#### 2.1 FLUSH WOOD DOORS

- A. Doors for Opaque Finish: Premium grade.
  - 1. Faces: Any closed-grain hardwood.
- B. Interior Veneer-Faced Solid-Core Doors: Five-ply, particleboard OR structural composite lumber cores.
- C. Provide blocking in particleboard cores or provide structural composite lumber cores for doors with closers exit devices and kick plates.

#### 2.2 FABRICATION AND FINISHING

- A. Factory fit doors to suit frame-opening sizes indicated and to comply with referenced quality standard.
- B. Factory machine doors for hardware that is not surface applied.
- C. Cut and trim openings to comply with referenced standards.
  - 1. Trim light openings with moldings indicated.
  - 2. Factory install louvers in prepared openings.
- D. Factory finish doors indicated for transparent finish with stain and manufacturer's standard finish comparable to AWI System TR-6, catalyzed polyurethane. Finish to be selected by Architect.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Comply with WDMA's "How to Store, Handle, Finish, Install, and Maintain Wood Doors."
- B. Align and fit doors in frames with uniform clearances and bevels. Machine doors for hardware. Seal cut surfaces after fitting and machining.
- C. Repair, refinish, or replace factory-finished doors damaged during installation, as directed by Architect.

END OF SECTION 08211

## SECTION 083113.1 - ACCESS DOORS AND FRAMES FOR MECHANICAL AND ELECTRICAL SYSTEMS

### 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 for walls and ceilings.

- B. Related Requirements:

- 1. Section 233300 "Air Duct Accessories" for heating and air-conditioning duct access doors.

#### 1.3 ACTION SUBMITTALS

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

- 1. Include construction details, fire ratings, materials, individual components and profiles, and finishes.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Access Doors and Frames: Units complying with NFPA 80 that are identical to access door and frame assemblies tested for fire-test-response characteristics according to the following test method and that are listed and labeled by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

- 1. NFPA 252 or UL 10B for fire-rated access door assemblies installed vertically.
- 2. NFPA 288 for fire-rated access door assemblies installed horizontally.

#### 2.2 ACCESS DOORS AND FRAMES FOR WALLS AND CEILINGS

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

- B. **Basis-of-Design Product:** Subject to compliance with requirements, provide product indicated or comparable product by one of the following:
1. [Acudor Products, Inc.](#)
  2. [MIFAB, Inc.](#)
  3. [Milcor Inc.](#)
- C. Source Limitations: Obtain each type of access door and frame from single source from single manufacturer.
- D. Flush Access Doors with Exposed Flanges:
1. Basis-of-Design Product: Acudor Products, Inc.; UF-5000.
  2. Assembly Description: Fabricate door to fit flush to frame. Provide manufacturer's standard-width exposed flange, proportional to door size.
  3. Locations: Wall and ceiling .
  4. Door Size: 16 inches x 16 inches unless noted otherwise on plans.
  5. Metallic-Coated Steel Sheet for Door: Nominal **0.064 inch (1.63 mm)**, 16 gage.
    - a. Finish: Factory prime.
  6. Frame Material: Same material, thickness, and finish as door.
  7. Hinges: Continuous, concealed.
  8. Hardware: Latch.
- E. Fire-Rated, Flush Access Doors with Exposed Flanges:
1. Basis-of-Design Product: Acudor Products, Inc.; FB-5060.
  2. Assembly Description: Fabricate door to fit flush to frame, with a core of mineral-fiber insulation enclosed in sheet metal . Provide self-latching door with automatic closer and interior latch release. Provide manufacturer's standard-width exposed flange, proportional to door size.
  3. Locations: Wall and ceiling.
  4. Fire-Resistance Rating: Not less than that of adjacent construction.
  5. Metallic-Coated Steel Sheet for Door: Nominal **0.062 inch (1.59 mm)**, 16 gage.
    - a. Finish: Factory prime.
  6. Frame Material: Same material, thickness, and finish as door.
  7. Hinges: Manufacturer's standard.
  8. Hardware: Latch.
- F. Hardware:
1. Latch: Cam latch operated by screwdriver.
- 2.3 MATERIALS
- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.



- B. Rolled-Steel Floor Plate: ASTM A 786/A 786M, rolled from plate complying with ASTM A 36/A 36M or ASTM A 283/A 283M, Grade C or D.
- C. Steel Sheet: Uncoated or electrolytic zinc coated, ASTM A 879/A 879M, with cold-rolled steel sheet substrate complying with ASTM A 1008/A 1008M, Commercial Steel (CS), exposed.
- D. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.
- E. Stainless-Steel Sheet, Strip, Plate, and Flat Bars: ASTM A 666, Type 304. Remove tool and die marks and stretch lines or blend into finish.
- F. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), Alloy 6063-T6.
- G. Frame Anchors: Same type as door face.
- H. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A 153/A 153M or ASTM F 2329.

## 2.4 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 attachment devices and fasteners of type required to secure access doors to types of supports indicated.
  1. Provide mounting holes in frames for attachment of units to metal or wood framing.
  2. Provide mounting holes in frame for attachment of masonry anchors.
- D. Latching Mechanisms: Furnish number required to hold doors in flush, smooth plane when closed.

## 2.5 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" 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.

D. Steel and Metallic-Coated-Steel Finishes:

1. Factory Prime: Apply manufacturer's standard, fast-curing, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.
2. Factory Finish: Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat, with a minimum dry-film thickness of 1 mil (0.025 mm) for topcoat.

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.
- B. Install doors flush with adjacent finish surfaces or recessed to receive finish material.

3.3 ADJUSTING

- A. Adjust doors and hardware, after installation, for proper operation.
- B. Remove and replace doors and frames that are warped, bowed, or otherwise damaged.

END OF SECTION 083113.1

## SECTION 08510 - 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. This Section includes operable aluminum-framed windows for exterior locations.

#### 1.3 PERFORMANCE REQUIREMENTS

- A. General: Provide aluminum windows capable of complying with performance requirements indicated, based on testing manufacturer's windows that are representative of those specified, and that are of minimum test size indicated below:
  - 1. Size indicated in the door schedule.
- B. Structural Performance: Provide aluminum windows capable of withstanding the effects of the following loads, based on testing units representative of those indicated for Project that pass AAMA/WDMA 101/I.S.2/NAFS, Uniform Load Structural Test:
  - 1. Design Wind Loads: Determine design wind loads applicable to Project from basic wind speed indicated in miles per hour (meters per second) at 33 feet (10 m) above grade, according to ASCE 7, Section 6.5, "Method 2-Analytical Procedure," based on mean roof heights above grade indicated on Drawings.
    - a. Basic Wind Speed: 110 mph.
    - b. Importance Factor: 1.15.
    - c. Exposure Category: B.
  - 2. Deflection: Design glass framing system to limit lateral deflections of glass edges to less than 1/175 of glass-edge length or 3/4 inch (19 mm), whichever is less, at design pressure based on testing performed according to AAMA/WDMA 101/I.S.2/NAFS, Uniform Load Deflection Test or structural computations.
- C. 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 (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C) material surfaces.

- D. Air Infiltration: With window sash and ventilators closed and locked, test unit in accordance with ASTM E 283 at static air pressure difference of 6.24 psf.
  - 1. Air infiltration shall not exceed .19 cfm (P.I.), and 15 psf (P.O.) and (Casement) per foot of perimeter crack length.
- E. Water Resistance: With window sash and ventilators closed and locked, test unit in accordance with ASTM E 331 and ASTM 547 at static air pressure difference of 7.5 psf (P.I.), and 15 psf (P.O.) and (Casement) minimum.
  - 1. There shall be no uncontrolled water leakage.

#### 1.4 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, fabrication methods, dimensions of individual components and profiles, hardware, finishes, and operating instructions for each type of aluminum window indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, hardware, attachments to other work, operational clearances, installation details, and the following:
  - 1. Joinery details.
  - 2. Expansion provisions.
  - 3. Flashing and drainage details.
  - 4. Weather-stripping details.
  - 5. Thermal-break details.
  - 6. Glazing details.
  - 7. For installed products indicated to comply with design loads, include structural analysis data prepared by or under the supervision of a qualified professional engineer detailing fabrication and assembly of aluminum windows and used to determine the following:
    - a. Structural test pressures and design pressures from wind loads indicated.
    - b. Deflection limitations of glass framing systems.
- C. Product Schedule: For aluminum windows. Use same designations indicated on Drawings.
- D. Product Test Reports: Based on evaluation of comprehensive tests performed within the last four years by a qualified testing agency for each type, class, grade, and size of aluminum window. Test results based on use of downsized test units will not be accepted.
- E. Maintenance Data: For operable window sash, operating hardware, weather stripping and finishes to include in maintenance manuals.
- F. Warranty: Special warranty specified in this Section.

#### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An installer acceptable to aluminum window manufacturer for installation of units required for this Project.

1. Installer's responsibilities include providing professional engineering services needed to assume engineering responsibility.
  2. Engineering Responsibility: Preparation of data for aluminum windows, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
- B. Manufacturer Qualifications: A manufacturer capable of fabricating aluminum windows that meet or exceed performance requirements indicated and of documenting this performance by inclusion in lists and by labels, test reports, and calculations.
- C. Source Limitations: Obtain aluminum windows through one source from a single manufacturer.
- D. Product Options: Drawings indicate size, profiles, and dimensional requirements of aluminum windows and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements." Do not modify size and dimensional requirements.
- E. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01. Review methods and procedures related to aluminum windows including, but not limited to, the following:
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 structural anchorage, glazing, flashing, weeping, sealants, and protection of 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.

## 1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify aluminum window openings by field measurements before fabrication and indicate measurements on Shop Drawings.

## 1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which 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, air infiltration, or condensation.
    - c. Faulty operation of movable sash and hardware.

- d. Deterioration of metals, other materials, and metal finishes beyond normal weathering.
- e. Failure of insulating glass.
- 2. Warranty Period:
  - a. Window Assembly: Three years from date of Substantial Completion.
  - b. Glazing: Ten years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings, Series C3100 Thermal Fixed and C2050 Thermal Projected, as manufactured by Columbia Commercial Building Products, or a comparable product by one of the following:
  - 1. EFCO Corporation.
  - 2. Kawneer; an Alcoa Company.
  - 3. Peerless Products Inc.
  - 4. Wausau Window and Wall Systems.

### 2.2 GLAZING

- A. Glass: PPG Solarban 60, Guardian Super Neutral 68 (SN68), or equal. One inch clear insulating glass insulating units: 1/4 inch glazing with 1/2 inch argon gas filled air space, with low-E coating pyrolytic on second surface or sputtered on second or third surface. Tempered units as required by all applicable codes.
- B. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal. Provide tempered glazing as indicated on drawings.

### 2.3 HARDWARE

- A. General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, carbon steel complying with AAMA 907, or other corrosion-resistant material compatible with aluminum; designed to smoothly operate, tightly close, and securely lock aluminum windows, and sized to accommodate sash or ventilator weight and dimensions. Do not use aluminum in frictional contact with other metals. Where exposed, provide extruded, cast, or wrought aluminum.
- B. Handles: Locking handles shall be manufacturer's standard cam type handles as manufactured by Truth.
- C. Operating Arms - Project Vents: Concealed Anderberg Series 301 heavy duty 4-bar stainless steel arms or equal.

- D. Weatherstrip: All weatherstrip to be Amesbury Foam-Tite T-Slot compression weatherseal with TPE elastomeric skin over closed cell hollow foam, or equal.
- E. Thermal Barrier: Barrier shall be poured-in-place two part polyurethane. A non-structural thermal barrier is unacceptable.

## 2.4 INSECT SCREENS

- A. General: Design windows and hardware to accommodate screens in a tight-fitting, removable arrangement, with a minimum of exposed fasteners and latches. Fabricate insect screens to fully integrate with window frame. Locate screens on inside of window and provide for each operable exterior sash or ventilator.
  - 1. Aluminum Tubular Frame Screens: Comply with SMA 1004, "Specifications for Aluminum Tubular Frame Screens for Windows," Architectural C-24 class.
- B. Aluminum Insect Screen Frames: Manufacturer's standard aluminum alloy complying with SMA 1004. Fabricate frames with mitered or coped joints or corner extrusions, concealed fasteners, and removable PVC spline/anchor concealing edge of frame.
- C. Glass-Fiber Mesh Fabric: 18-by-14 (1.1-by-1.4-mm) or 18-by-16 (1.0-by-1.1-mm) mesh of PVC-coated, glass-fiber threads; woven and fused to form a fabric mesh resistant to corrosion, shrinkage, stretch, impact damage, and weather deterioration; in the following color. Comply with ASTM D 3656.
  - 1. Mesh Color: Silver gray or natural bright.
  - 2. Mounting: Screw mounting holes to be factory drilled.

## 2.5 FABRICATION

- A. Fabricate aluminum windows in sizes indicated. Include a complete system for assembling components and anchoring windows.
- B. Fabricate aluminum windows that are reglazable without dismantling sash or ventilator framing.
- C. Thermally Improved Construction: Fabricate aluminum windows 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.
  - 1. Provide thermal barriers tested according to AAMA 505; determine the allowable design shear flow per the appendix in AAMA 505.
- D. Weather Stripping: Provide full-perimeter weather stripping for each operable sash and ventilator.
- E. Weep Holes: Provide weep holes and internal passages to conduct infiltrating water to exterior.
- F. Subframes: Provide subframes with anchors for window units as shown, of profile and dimensions indicated but not less than 0.062-inch- (1.6-mm-) thick, and .125" where fasteners are to be inserted, extruded aluminum. Miter or cope corners, and weld and dress smooth with concealed mechanical joint fasteners. Finish to match window units. Provide subframes capable of withstanding design loads of window units.

- G. Frame: Depth of frame and sash shall not be less than 2 1/4". Frame components shall be mortised and tightly joined using two (2) #10 stainless steel screws per joint.
- H. Sash: All sash extrusions shall be tubular double hollow extrusions. Each corner shall be mitered, reinforced with two (2) extruded aluminum corner keys (one on each side of the thermal barrier, hydraulically crimped, and sealed with small joint seam sealer). Each sash shall have two rows of Amesbury Foam-Tite T-Slot compression weather seal with TPE elastomeric skin over closed cell hollow foam weather stripping installed in specially designed T-Slot grooves in the sash extrusion and the main frame opening.
- I. Factory-Glazed Fabrication: Glaze aluminum windows in the factory where practical and possible for applications indicated. Comply with AAMA/WDMA 101/I.S.2/NAFS. All glazed units shall be glazed with butyl tape, extruded aluminum glazing bead, and a EPDM drive-in wedge.

## 2.6 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" 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: 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.

## 2.7 ALUMINUM FINISHES

- A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- B. Finish all exposed areas of aluminum windows and components with AA-M12-C41-R1X, Kynar-Base PPG Duranar or Desoto Fluoropon, AAMA Guide Specification 605.2. Color to be selected by Architect from manufacturer's standard or custom colors.

## 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 work. Verify rough opening dimensions, levelness of sill plate, and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weathertight window installation.



1. Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.
2. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

- A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing windows, hardware, accessories, and other components.
- 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.
- C. Set sill members in bed of sealant or with gaskets, as indicated, for weathertight construction.
- D. Install windows and components to drain condensation, water penetrating joints, and moisture migrating within windows to the exterior.
- E. 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 ventilators, screens, hardware, operators, and accessories for a tight fit at contact points and weather stripping for smooth operation and weathertight closure. Lubricate hardware and moving parts.
- B. Clean aluminum surfaces immediately after installing windows. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.
- C. Clean factory-glazed glass immediately after installing windows. Comply with manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels, and clean surfaces.
- D. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.
- E. Protect window surfaces from contact with contaminating substances resulting from construction operations. In addition, monitor window surfaces adjacent to and below exterior concrete and masonry surfaces during construction for presence of dirt, scum, alkaline deposits, stains, or other contaminants. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written recommendations.

END OF SECTION 08510

SECTION 08710 – Door Hardware

**PART 1 – GENERAL**

1.01 SUMMARY

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.
- B. This Section includes the following:
  - 1. Commercial door hardware for the following:
    - a. Swinging doors
    - b. Sliding doors
    - c. Other doors to the extent indicated.
  - 2. Cylinders for doors specified in other Sections.
    - a. Tempered glass doors
  - 3. Electrified door hardware.
    - a. Locks
    - b. Closers
    - c. Exit devices
    - d. Strikes
    - e. Power Supplies
    - f. Others hardware as listed
  - 4. It is intended that the hardware listed herein will cover all finish hardware and electrical hardware, including fasteners and wiring diagrams to complete the project. It shall be the supplier's responsibility to furnish hardware in accordance with the intent of this section. Omissions and discrepancies shall be brought to the architect's attention during the bid period. Where by virtue of design or function, a change is necessary, hardware of equal design and quality shall be furnished.
- C. Related Sections include the following:
  - 1. Division 8 Section "Steel Doors and Frames"
  - 2. Division 8 Section "Flush Wood Doors"
  - 3. Division 8 Section "Stile and Rail Wood Doors"
  - 4. Division 8 Section "Sound Control Doors"
  - 5. Division 8 Section "Aluminum Entrances and Storefronts"
  - 6. Division 16 Section Products

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- D. Items furnished in this section and installed elsewhere.
  - a. Storefront door hardware
- E. Items furnished and installed elsewhere related to this section:
  - wire/conduit
  - wire pulls/pulling wire
  - wire termination for electrified hardware

1.02 REFERENCES

- A. in addition to current model building codes, state and local building codes, comply with the documents and standards of the following:

- BHMA/ANSI Standards A156 1-30
- ICC/ANSI A117.1 1998 Usable Buildings and Facilities
- NFPA-80 Fire Door and Windows – 1999
- NFPA-101 Life Safety Code – 2000
- NFPA-105 Installation of Smoke Control Door Assemblies – 1999
- Door and Hardware Institute Standards
  - Keying Terminology – 1989
  - Installation Guide for Doors and Hardware – 1994
  - Wood Door Hardware Standards – 1996
  - Abbreviations and Symbols – 1983
  - Sequence and Format for the Hardware Schedule - 1996

1.03 SUBMITTALS

- A. General requirements: All submittals shall be in accordance with Section 01330
- B. Hardware Schedule: Submit six copies prepared by the supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
  - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule, 1993."
  - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening.
  - 3. Content: Schedules without the following will not be acceptable:
    - location, type, style, function, size, fire rating, hand, and finish of each door hardware item

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- manufacturer of each item
  - fastenings and other pertinent information
  - cross reference of specification set number to schedule item number
  - cross reference manufacturer's product numbers of each type of hardware specified to the specified hardware included in schedule
  - door index
  - explanation of abbreviations, symbols, and codes contained in schedule
  - mounting locations for door hardware
  - door and frame sizes and materials
4. Include in Hardware Schedule a description of each electrified door hardware function, including product's location sequence of operation, and interface with other building control systems.
- sequence of operation: include description of component functions that occur in the following situations: outside operation, inside operation, LED indicators, power on/power off and any other pertinent information
- C. Product Data: Include catalog cuts installation details, material descriptions, dimensions of individual components and profiles, and finishes. Identify submitted items when multiple examples occur on the same page. Data sheets shall be of good, readable quality. Poor copies will be returned for re-submission.
- D. Samples: Provide samples upon request in specified finish, design, and size. Tag or label with full description and coordinated with hardware schedule. Samples will be returned to contractor.
- E. Templates: Distribute templates for all hardware items to all manufacturers as required, including but not limited to:
- hollow metal doors and frames
  - wood doors and frames
  - aluminum storefront doors and frames
  - others, as needed
- Check shop drawings of other work to confirm that adequate provisions for re-enforcement, location and installation of hardware comply with intended requirements.
- F. Keying schedule: Submit six copies as prepared by the supplier, detailing the owner's final keying instructions in the required key meeting. Include a cross reference of door number and location to key set symbols. Include schematics and explanations as required.
- G. Wiring Diagrams: Provide six copies of all wiring diagrams required for electrified hardware systems.
- system schematic.
  - point-to-point wiring diagram.

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- riser diagram with gauge of wire.
- elevation of each door.
- sequence of operation.

For products interfaced with other systems, differentiate wiring diagrams and products between this section and those specified elsewhere.

### H. Operations and Maintenance Manual

At completion of project, provide owner with a manual consisting of the following information:

- a final (as built) copy of hardware schedule
- a final copy of keying schedule
- wiring diagrams, sequence of operation or narratives of each opening with electric hardware include elevations showing actual locations.
- a copy of product data sheet as submitted
- parts lists for locks, closers, and exit devices
- a copy of installation instructions for each type of hardware
- maintenance instructions
- name, address, phone number of each manufacturer
- a copy of each manufacturer's warranty as listed in this section
- complete set of specialized tools (see 1.07A)

## 1.04 QUALITY ASSURANCE

- A. Product Qualifications: Manufacturers and model numbers listed are to establish a standard of quality for this project. Similar items by manufacturers other than those listed which are equal in design; function and quality may be accepted. Submit manufacturer's technical information for each item; include appropriate information required to show compliance with the requirements of the specific hardware. (Actual samples may be required). Request for substitution must be submitted ten days prior to date. All requests shall be submitted on "Request For Substitution form found in Division 1.
- B. Supplier Qualifications: Only recognized builder's hardware suppliers who have regularly engaged in furnishing hardware in the project's vicinity for a period of not less than two years will be acceptable. This supplier shall be a factory authorized distributor of each manufacturer listed. This supplier must have in it's employ an Architectural Hardware Consultant as certified by the Door and Hardware Institute, who is available, at reasonable times, during the course of the work, for consultation about the project's hardware details, installation or adjustment. For suppliers without certified consultants, include in submittals a letter of qualifications listing similar projects furnished, including projects name, architect, date and year in this project's vicinity.
- C. Installer Qualifications: The hardware for this project shall be installed by factory authorized personnel who have successfully completed factory courses and shall have certificates for certified installation, including but not limited to,

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locksets, exit devices, and door closers. The authorized installer shall inspect all door frames for proper plum and square. Prior to installation of hardware, general contractor shall be notified of all frames not plum and square, or otherwise unsuitable for hardware installation, at the preinstallation meeting. If an authorized installer is not available please include in submittals a letter of qualification listing similar projects installed, including project's name, location and date.

- D. Electrified Hardware Installation: The electrified hardware for this project shall be installed by factory authorized personnel who have successfully completed factory courses and shall have certificates for certified installation, including but not limited to, electric locksets, electric exit devices, electric door closers, and power supplies. The authorized installer shall inspect all openings for proper preparation of doors, frames, walls, etc. General contractor shall be notified of any opening unsuitable for electrified hardware installation at the pre-installation meeting. If an authorized installer is not available please include in submittals a letter of qualification listing similar projects installed, including project's name, location and date.
- E. Storefront Door Hardware: Installation of the aluminum and glass storefront door hardware shall be accomplished at the jobsite in order to reach and maintain suitable minimum tolerances and clearances needed. The hardware for these doors shall be installed by factory authorized personnel who have successfully completed factory courses and shall have certificates for certified installation, including but not limited to, locksets, exit devices, surface door closers, floor closers and pivot sets, etc. If an authorized installer is not available please include in submittals a letter of qualification listing similar projects installed, including project's name, location and date.
- F. Keying Conference: This supplier shall meet with the owner to finalize the building's keying requirements. Provide the level of keying as specified. Review with the owner the details of paragraph 2.04 and 2.05 to determine contract specifications. Provide and explain all administrative documents, including but not limited to; notice of acceptance, registration forms, authorized distributor forms, security policy, etc. for patented, high security, and conventional systems as applicable.
- G. Preinstallation Conference: Conduct conference at project site to comply with requirements in Division 1 Section "Project Meetings." Review methods and procedures of installation related to mechanical door hardware including, but not limited to floor closers, locks, overhead closers and exit devices.
- H. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings." Review methods and procedures related to electrified door hardware, including but not limited

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to:Electrical roughing-in and other preparatory work performed by other trades and sequence of operation for each opening.

- I. Fire Rated Openings provide hardware for fire-rated openings in compliance with NFPA-80 whether indicated in hardware sets or not. Provide only hardware, which has been tested and listed for types and sizes of doors, required and complies with requirements of designated labels including fasteners.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Marking and Packaging: Hardware shall be delivered to the project site, or as otherwise required, in manufacturer's original packages, numbered and labeled to identify each opening for which it is intended and to correspond to item numbers on the approved hardware schedule.
- B. Storage: The General Contractor shall check quantities of all deliveries to verify complete hardware requirements. Contractor shall provide clean, dry, locked room with shelves for storage and protection of all items.
- C. Deliver to other sites, including but not limited to:
  - 1. Storefront hardware to storefront contractor
  - 2. Keys and/or master keys directly to owner via registered mail.

1.06 WARRANTY

- A. General Warranty: All hardware shall comply with warranties under requirements of contract documents.
- B. Written Warranty: Provide a written warranty stating all materials and workmanship are guaranteed against defects for a period of one year from date of substantial completion, and shall be repaired or replaced at no expense to the owner.
- C. Special Warranty: Provide separate written warranties as follows:
  - Manual closers-----10 years
  - Floor closers-----10 years
  - Exit devices----- 5 years
  - Cylindrical locks-----5 years

1.07 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of hardware; Present all tools to owner at same time as operations and maintenance manual as specified in part 103.H

## PART 2 – PRODUCTS

### 2.01 MANUFACTURERS

- A. Approved manufacturers are listed within the product paragraphs. Products of the approved manufacturers shall comply with all aspects of governing paragraphs.

### 2.02 MATERIALS

#### A. Fasteners:

- 1. All screws shall be of matching finish to their product and shall be manufacturer's standard unless otherwise listed. Door closers, door holders, and exit devices installed on fire rated wood doors and hollow metal doors shall be attached with sex nuts and bolts or as tested and listed by U.L. Consult manufacturer's catalogs and templates for specific requirements.

#### B. Hinges:

- 1. Hinges shall comply with ANSI/BHMA A156.1 requirements and spring hinges with ANSI/BHMA A156.17. All hinges shall be standardized template type square corners. Provide undercut Phillips head screws for all hinges.
- 2. Each door shall not have less than three hinges. For all doors over 7'6" high, provide one additional hinge for every additional 30" or fraction thereof.
- 3. The width of all hinges shall be sufficient to clear trim to allow all doors to open 180 degrees.
- 4. The height of all hinges shall be as follows:
  - for doors to 3'0" wide, provide minimum 4 1/2" high wide.
  - for doors over 3'0", provide minimum 5" high hinge.
- 5. Exterior doors shall have hinges as follows:
  - non-ferrous base metal with stainless steel pin
  - heavy weight (.180 or .190) four knuckle type
  - non-removable pins
  - safety stud (SS) where listed
  - or, as otherwise listed in hardware sets
- 6. Interior doors shall have hinges as follows:
  - steel base metal unless listed otherwise
  - standard weight (.134) for doors up to 3'0" wide
  - heavy weight (.180 or .190) for doors over 3'0" wide
  - or, as otherwise listed in hardware sets
- 7. All doors with door closers shall have anti-friction bearing hinges.
- 8. Provide electrified hinges as listed:
  - concealed contacts for monitoring
  - eight-wire or four-wire as required for power transfer
- 9. Provide other hinges as listed in hardware sets



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10. Subject to compliance with requirements, provide products from one of the following:

**McKinney Products Co.  
Hager Companies  
Stanley Commercial Hardware**

11. Provide continuous gear / pin hinges as listed:
- fabricated to full height of door
  - minimum .120 thick with 4" leaves
  - non-ferrous for exterior doors

C. Pivots:

1. All pivots and pivot sets shall comply with ANSI/BHMA 156.4 Grade 1 requirements.
2. Pivot sets shall be selected based upon the weight of the door as scheduled:
  - offset pivots shall have a 600 lb. capacity
3. Pivots tested and approved for use for fire rated doors shall have a steel base material plated to the specified finish.
4. Provide spindle heights required for door undercuts or floor material.
5. Provide pivots of the same manufacturer as floor closer to insure visible components match in appearance and adjustability.
6. Power transfer pivots for electrified hardware shall be available with 18 gauge concealed thru-wires.
7. Subject to compliance with requirements, provide products from one of the following:

**Rixson  
Dorma  
LCN**

D. Floor Closers

1. Floor closers shall comply with ANSI/BHMA A156.4- Grade 1 requirements and shall be furnished with a rust proof cycolac cement case. Furnish four machine screws for attachment.
2. Floor closers shall have a helical torsion spring with adjustable spring power.
3. Closers shall have independent adjustment valves for closing speed, latch speed, backcheck, and delayed action. All features shall be adjustable without removing door or threshold.
4. Provide non-hold open units unless otherwise listed in hardware sets. Where hold open units are required, furnish closers designed for specific degree of

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opening built into the spindle assembly and at same point as the dead stop. Where hold open is listed, provide one of the following:

- AHO Automatically holds open at specified degree
  - SHO selective hold open may be switched ON / OFF by a separate valve
5. Exterior doors shall be provide with sealed cement cases.
  6. Provide floor closer that is removable from cement case without removing door from opening.
  7. Provide floor closers of the same manufacturer as pivots to insure visible components match in appearance and adjustability
  8. Subject to compliance with requirements, provide products from one of the following:

**Rixson**  
**Dorma**  
**Doromatic**

E. Flush Bolts

1. Automatic and self-latching flush bolts shall comply with ANSI/BHMA A156.3 requirements; manual flush bolts and surface bolts shall comply to ANSI/BHMA A156.16 and each shall be provided as listed in hardware sets.
2. Provide minimum 1/2" diameter rods of brass, bronze, or stainless steel with minimum 3/4" throw.
3. Provide bolts tested and listed for labeled fire rated doors.
4. Provide dust proof strikes at all locations except where thresholds are shown.
5. Subject to compliance with requirements, provide products from one of the following:

**Rockwood Mfg. Co.**  
**Trimco Mfg. Co.**  
**Ives**

F. Coordinators and Carry Bars:

1. Coordinators and carry bars shall comply with ANSI/BHMA A156.3 requirements.
2. Provide stop mounted coordinators as listed in hardware sets. Coordinators shall be complete with necessary closer brackets and special strike preparations for vertical rod exit devices as required.
3. Provide proper size coordinators for size of door, plus a filler piece to complete the total length of the frame stop.
4. Subject to compliance with requirements, provide products from one of the following:

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**Rockwood Mfg. Co.  
Trimco Mfg. Co.  
Ives**

G. Grade 1 Cylindrical Locks

1. All lock and latch sets shall comply with ANSI/BHMA A156.2 requirements for Series 4000 Grade 1 and shall be furnished in the function as specified in the hardware sets. All locks shall comply with ICC/ANSI A117.1 accessibility requirements.
2. Chassis shall be constructed of heavy gauge cold rolled steel dichromated plated and shall be through-bolted outside the 2 1/8" door prep. Latch bolts shall be 2 3/4" backset with deadlocking feature.
3. Levers shall be solid cast with 3 1/2" diameter rose and shall be free-wheeling in all functions and shall have a lifetime warranty against lever sag.
4. Subject to compliance with requirements above, provide products by one of the following:

<b>MFG</b>	<b>SERIES</b>	<b>DESIGN</b>
<b>Corbin Russwin</b>	<b>CL3300</b>	<b>NZD</b>
<b>Schlage</b>	<b>D90</b>	<b>RHO</b>
<b>Yale</b>	<b>5400LN</b>	<b>AU</b>

H. Grade 1 Mortise Locks

1. All lock and latch sets shall comply with ANSI/BHMA A156.13 requirements Series 1000 Operational Grade 1 mortise locks and shall be furnished in the function as specified in the hardware sets. All locks shall have a corrosion resistant stamped steel case and shall comply with ICC/ANSI A117.1 accessibility requirements. The handing of the lock shall be reversible without disassembly of the lock.
2. All knobs, levers, escutcheons, roses and cylinders shall be the product of one manufacturer. Provide a two-piece anti-friction latch bolt with a minimum 3/4" throw and a stainless steel auxiliary deadlocking latch. Minimum throw for deadbolt functions shall be 1". Deadbolts when fully extended shall have a minimum 3/16" of the bolt captured in the lock case. One piece latch bolts are not acceptable.
3. Furnish curved lip strikes with sufficient lip length to clear trim. Straight lip strikes are acceptable for pairs of doors only. Strikes shall match the function of the lock. Strikes with deadbolt holes shall be used only with deadbolt functions.

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4. Electrified mortise locks, where listed, shall comply with all of the requirements as listed above and also incorporate a continuous duty solenoid available in both 24V AC or DC, and be furnished with either Fail Safe or Fail Secure function. Electrified mortise locks shall be same manufacturer as mechanical locks.

5. **All Classroom Entrances are to have a Corbin Russwin type ML2072 Classroom Security Mortise Lock. Below is a detailed function description:**

- **Latchbolt by lever from either side unless outside lever is locked by projection of deadbolt**
- **Deadbolt thrown by key from either side**
- **Inside lever simultaneously retracts latchbolt and deadbolt; outside lever remains locked**
- **Retracting latchbolt by key unlocks outside lever**
- **Auxiliary latch deadlocks latchbolt**

6. Subject to compliance with requirements above, provide products by one of the following:

<b>MFG</b>	<b>SERIES</b>
<b>Corbin Russwin</b>	<b>ML2000</b>
<b>Schlage</b>	<b>L9000</b>
<b>Yale</b>	<b>8700FL</b>

H. Lock Trim

1. Mortise lock trim shall comply with the requirements of ICC/ANSI A117.1 – 1998 Accessible and Usable Buildings and Facilities and shall be sectional (lever and rose). Lock trim shall be thru-bolted through the lock case for positive alignment.

Levers shall be wrought stainless steel, type 302, with wrought roses.

<b>MFG</b>	<b>DESIGN</b>
<b>Corbin Russwin</b>	<b>NSA</b>
<b>Schlage</b>	<b>06C</b>
<b>Yale</b>	<b>AUR</b>

J. Deadbolts

1. Mortise type deadbolts shall comply with ANSI A156.5 Grade 1 requirements and shall be constructed of heavy gauge wrought, corrosion resistant steel. Bolts shall be stainless steel with a 1" throw and have two hardened steel roller pins. Deadbolts shall be products of the same manufacturer and keyway as all other locks.

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2. Subject to compliance with requirements above, furnish one of the following:

<b>MFG</b>	<b>SERIES</b>
<b>Corbin Russwin</b>	<b>DL4000</b>
<b>Schlage</b>	<b>L400</b>
<b>Yale</b>	<b>300</b>

4. Cylindrical type deadlocks shall comply with ANSI A156.5 Grade 1 requirements and shall have a tapered collar to resist vandalism. Furnish a 1" throw bolt with hardened steel roller pins. Deadbolts shall be the same manufacturer and keyway as all other locks
5. Subject to compliance with requirements above, furnish one of the following:

<b>MFG</b>	<b>SERIES</b>
<b>Corbin Russwin</b>	<b>DL3100</b>
<b>Schlage</b>	<b>460</b>
<b>Yale</b>	<b>3600</b>

K. Exit Devices

1. Exit devices shall comply with ANSI/BHMA A156.3 requirements for grade 1 and shall be furnished in the function as specified in the hardware sets. Latch shall be investment cast stainless steel, pullman type with deadlock feature. Plastic or painted end caps will not be acceptable.
2. Where security exit devices are listed, provide units capable of exceeding 1000lb door pull test. Latch shall be ¾" throw with slide action positive deadlocking. Outside trim shall be thru-bolted to chasis in two locations.
3. Devices shall be push pad type meeting NFPA -101 means of egress requirements. Push pads extending the full rail length of device will not be acceptable. Heavy weight impact resistant end caps shall be made of architectural metal, the same finish as the device. Plastic end caps will not be acceptable. Except on fire rated doors, equip exit devices with keyed dogging device to hold the push bar down and the latchbolt in a retracted position.
4. Exit devices shall be constructed of smooth architectural metals; brass, bronze, or stainless steel, finished as per Para. 2.03. Aluminum metal devices will not be acceptable. Devices with exposed painted or powder coated lock style covers will not be acceptable.
5. Where function of exit device requires a cylinder, provide a conventional type cylinder (Rim or Mortise) as required and keyed as per instructions.

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6. Where exit devices are required on fire rated doors, provide devices that comply with NFPA-80 and with UL labeling indicating "Fire Exit Hardware". Provide proper fasteners to install all devices as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements. Note that the quantity and type of fasteners other than those provided and required by manufacturer voids the label and the warranty.
7. For doors without fire rating, provide devices listed and labeled for "Panic Hardware based on testing according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts for hollow metal doors not prepared for machine screws and all particle board core wood doors.
8. **For devices with lever trim, predominately on interior fire-rated openings, furnish manufacturers heavy duty trim with cold forged escutcheons with beveled edges and four threaded studs for thru-bolts. Lever design, material, and finish shall match locks and shall be free wheeling in the locked position. Rigid levers will not be acceptable. Equal to Corbin Russwin N955 Trim**  
**For devices with pull type trim, predominately on exterior non-rated openings, furnish a Rockwood type BF 157 or equal.**
9. Electrified Exit Devices shall match mechanical devices in design and finish. Where Latch Hold Back is listed, provide unit that retains the latchbolt in a retracted position and maintain the push bar in depressed position magnetically.
10. For doors with narrow stiles or as listed in hardware sets, provide devices designed for maximum 2" wide stiles.
11. When listed in hardware sets provide removable mullions of the same manufacturer as the exit devices. For fire rated openings, furnish removable mullions complying with NFPA-80. Units, indicated in hardware sets, shall be key removable type with cylinder keyed as directed. Mullions shall be used only with exit devices for which they have been listed and tested.
- 12 Subject to compliance with requirements above, provide products by one of the following:

<b>Exterior</b>	<b>MFG</b>	<b>SERIES</b>	<b>SERIES</b>
	<b>Corbin Russwin</b>	<b>ED5200S(A)</b>	<b>ED4200S(A)</b>
	<b>Von Duprin</b>	<b>HS98(F)</b>	<b>35(F)</b>
	<b>Yale</b>	<b>7150(F)</b>	<b>7250(F)</b>
<b>Interior</b>	<b>Corbin Russwin</b>	<b>ED5200(A)</b>	<b>ED4200(A)</b>
	<b>Von Duprin</b>	<b>98(F)</b>	<b>35(F)</b>
	<b>Yale</b>	<b>7100(F)</b>	<b>7200(F)</b>

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L. Surface Closers:

1. All surface closers shall comply with ANSI/BHMA A156.4 requirements for grade 1 and shall be fully adjustable type, with complete spring power adjustment, sizes 2 thru 6; field adjustable according to door size and frequency of use. Closers shall be rack and pinion type and shall have adjustable backcheck to provide a cushioning effect toward the end of the opening cycle. Separate non-critical valves for adjusting the sweep and latch speeds shall be provided. Backcheck positioning valve shall be provided on all institutional grade closers.
2. Where closers are indicated provide units with arms having stop mechanism located approximately 2" from arm pivot point to absorb dead stop on arm and hinge shock. Spring stop hold-open arms shall be spring loaded detent mechanism in addition to shock absorber assembly. The hold-open strength shall be adjustable to increase or decrease as conditions require. Arms shall be available in different lengths to correspond with actual door size. Provide parallel or top jamb brackets as indicated in hardware sets. Heavy duty overhead stops and holders may be provided in lieu of unitized arms.
3. Where closers are indicated to be delayed action provide units designed with an adjustable delay that holds the door open before the closing cycle begins. Consult architect/owner for time of delay.
4. Where closers are indicated for doors required to be accessible to the physically handicapped provide units complying with ANSI ICC/A117.1 provisions for door opening force and delayed action closing.
5. All closers shall be one manufacturer and shall match in design. Provide full covers with installation and adjusting information on inside of cover.
6. Furnish top jamb or parallel arm brackets for all closers opening out. Furnish flush mount transom bracket where no transom bar exists. Furnish top jamb closer and bracket where required by job conditions. Indicate in hardware schedule all doors requiring parallel arm, flush mount or top jamb brackets.
7. Subject to compliance with requirements above, provide products by one of the following:

<b>MFG</b>	<b>SERIES</b>
<b>Corbin Russwin</b>	<b>DC6200</b>
<b>LCN</b>	<b>4040</b>
<b>Norton</b>	<b>7500</b>

8. Where closers are indicated to be smoke-check, provide units that comply with the requirements ANSI/BHMA A156.15 Grade 1 and shall have a integral electro-magnetic holder mechanism designed to hold door in open position under normal usage and to release and automatically close upon signal from fire alarm or smoke detector. Provide units with integral smoke detector where listed in hardware sets.

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9. Subject to compliance with requirements above, provide products by one of the following:

<b>MFG</b>	<b>SERIES</b>
<b>Norton</b>	<b>7700PT</b>
<b>Rixson</b>	<b>4 PUSH/PULL</b>
<b>LCN</b>	<b>4040SE</b>

M. Door Trim Units

1. Door trim units shall be of type and design as listed below or in hardware sets.
2. Fabricate protection plates (armor, kick or mop) not more than 1 1/2" less than door width on stop side and not more than 1" less than door width on pull side. Height shall be 8" or as listed in hardware sets. Metal plates shall be stainless steel, .050" (US 18 ga.) thick.
3. Door trim units shall be type and design as listed in hardware sets.

N. Door Stops

In general, door stops shall be Rockwood 400 series wall stops, either convex or concave with proper anchorage as required. Where two doors interfere with one another, stops shall be Rockwood 455 or 456. Where wall stops are not practical, use dome stops of proper height as required. Where wall or floor stops are not practical, use overhead stops in size and function as required.

1. Wall mounted or floor mounted holders shall be listed in hardware sets and be automatic type with adjustable holding force. Furnish proper strike as required.
2. Overhead door holders shall be surface or recessed in desired function as listed in hardware sets. Furnish flush mounted transom brackets and intermediate bracket as required. Overhead stops shall be furnished where wall or floor stops are not practical due to construction detail as per 2.02L.1.
3. Acceptable Manufacturers:

O. Thresholds and Weatherstrip:

1. Except as otherwise indicated on plans or in hardware sets, provide thresholds and weatherstrip of the type, size and profile as follows:

<b>Thresholds</b>	<b>177AS, 180AS, 181AS as required</b>
<b>Handicap Thresholds</b>	<b>2005AS, 2001AS, 171A or as required</b>
<b>Door Sweeps</b>	<b>18062AP</b>
<b>Weatherstrip</b>	<b>305CR</b>
<b>Soundseal</b>	<b>296CR</b>
<b>Auto Dr. Bottoms</b>	<b>430CRL</b>
<b>Astragal Strips</b>	<b>18062AP</b>
<b>Overlap Astragals</b>	<b>355CS</b>



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2. Provide flat saddles at all fire rated doors where combustible material is shown on both sides.
3. Subject to compliance with above, provide products by one of the following:

**Pemko Mfg. Co.**  
**National Guard Products Co.**  
**Rixson**

P. Storefront Door Hardware:

1. Provide all hardware as listed in hardware sets for all aluminum and glass storefront doors. Door manufacturer shall prepare doors to accept hardware as listed.
2. Weatherstrip and flush bolts, if required, shall be provided by the door manufacturer.

Q. Low Energy Power Operators

1. Power operators shall be low energy type for swinging doors and shall comply with ANSI/BHMA A156.19. Operators shall also meet UL. cUL, UI10c, and UL10B. Each operator shall provide conventional door closer opening and closing forces until the motor is activated by a switching device. Door closing force shall be adjustable to insure adequate closing control. Conventional closer mechanism shall have adjustable valves that control closing force, sweep speed, latch speed, and backcheck, Electric controls shall include a speed control valve for opening and closing speed and a pressure adjustment valve to control closing. Mechanical closer shall comply with requirements of ICC/ANSI A117.1 and Americans with Disabilities Act (ADA).

Power operators shall have a three position switch that will permit operator to be switched "ON" for normal operation, "HO" for indefinite hold open function and "OFF" which will deactivate all electric controls but allows door operation by means of the internal mechanical closer.

2. Power operators shall include the following operational features:
  - standard external switch or push and go function
  - obstruction detection that reverses cycle when activated
  - SPDT relay for interfacing with latch retraction exit devices
  - delay switches for motor activation for proper sequencing
  - input for presence detector
  - input for electric strikes, locks, radio frequency receivers, etc.
  - input for vestibule sequencing for two units
  - input for smoke ventilation to power doors open
3. Subject to compliance with requirements above, provide products by one of the following:

**MFG**

**SERIES**

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**Norton  
Besam  
Horton**

**6900  
Navig-Aider  
7100**

R. Electric Strikes

1. Electric Strikes shall comply with ANSI/BHMA A156.5 requirements for Grade 1 and shall be UL listed as burglary resistant. Strikes shall be furnished in the function as specified in the hardware sets, with all options as listed; latch bolt monitor, locking cam monitor, or others. All electric strikes shall be constructed of corrosion resistant metals; stainless steel face plate and investment cast stainless steel case.
2. Electric strikes shall be UL listed for fire rated doors and frames where listed.
3. Subject to compliance with requirements above, provide products by one of the following:

**Folger Adam  
HES  
Von Duprin**

S. Electro-Magnetic Door Holders:

Electro-magnetic door holders where listed in paragraph 3.06 hardware sets, provide wall mounted electro-magnetic units having a holding power of 40lbs or more.

All electrical wiring shall be concealed. Provide units with the required clearance needed for trim projection. Provide in voltage as required.

PROVIDE UNITS WITH TRIPLE-VOLTAGE COIL HAVING 12 VDC, 24 VDC/AC, OR 120 VAC AVAILABLE IN THE SAME HOLDER

**MFG  
RIXSON  
DORMA  
LCN**

T. Silencers:

1. All interior wood and metal door frames shall have door silencers type 33 or 34, three single door; two per pair of doors.

2.03 FINISHES

- A. The designations used in hardware sets and elsewhere indicate hardware finishes are to be industry recognized standard commercial finishes as established by BHMA.

- |                     |         |
|---------------------|---------|
| - Hinges – Exterior | 630     |
| - Hinges – Interior | 652     |
| - Locks             | 630/626 |

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- Push, Pull & Kick Plates 630
- Closers 689
- Exit Devices 630
- Door Stops and Miscellaneous 630/626

2.04 KEYING

- A. All cylinders shall comply with the requirements of ANS/BHMA Grade1 and shall have a minimum of 6 pins. All cylinders shall be of the same manufacturer as the lock sets.
- B. As directed by the owner, provide a factory keyed cylinder keyed into the owners existing system. This supplier shall meet with the owner as specified in Part 1 of this section to finalize all keying requirements.
- C. The key system shall be factory based and supported and all cylinders shall be keyed at the factory. All keyways shall be assigned by the manufacturer's key systems administrator based on the systems requirements. Furnish the owner a complete bitting list indicating all bittings generated for this project indexed by key set number and door number.
- D. For Registry Numbers and and Keyway information, please contact DSS of Florida prior to placing orders (contact info detailed below)
  - DSS of Florida
  - 407-905-0201 fax 407-905-4955
  - ldpysg@earthlink.net
- E. All keys shall be nickel silver and shall be factory cut. Furnish the following:
  - 3 change keys per cylinder
  - 5 keys for each keyed alike group
  - 3 master keys for each group
  - 3 grand master keys if required
  - 3 control keys (if required)
  - 100 key blanks of each keyway
  - Bitting List (all projects)

All master keys, keyblanks and bitting list are to ship directly to Leon County locksmith. (address detailed below)

Leon County Schools Maintenance Department  
150 Progress Drive  
Tallahassee, FL 32304

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- G. Furnish all change keys with manufacturer's standard key bow. All keys shall be stamped "DO NOT DUPLICATE" and "PROPERTY OF LEON COUNTY SCHOOLS" on the opposite side.. In addition, all change keys shall be stamped with the key set number as listed on the approved keying schedule. Master keys shall be stamped as directed by owner.

2.05 KEY CONTROL

- A. Provide a key control system including envelopes, labels, tags, receipt forms, three-way card index, temporary markers, permanent markers and standard metal cabinet with capacity for 200% of the number of locks required for this project.
- B. Complete cross-index system shall be set up by the hardware supplier. Organize and set up in accordance numbering system as required by owner. Architect's room numbers, if different from the owner's number, shall not be referenced. Tag, file and cross reference all keys in accordance with manufacturer's instructions. All index cards shall be typed.
- C. Subject to compliance with requirement above, provide products by one of the following:
  - Telkee, Inc.
  - Key Control, Inc.
  - Lund Equipment Co.

**PART 3 – EXECUTION**

3.01 EXAMINATION

- A. Examine doors and frames, for compliance with requirements for installation. Labeled fire door assembly construction and related items that would prevent proper installation.
- B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. 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

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with finishing work specified in Division 9 Sections. 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.
- B. Co-ordinate instruction of all electrified hardware opening with installer for compliance with manufacturer's instructions and point-to-point systems wiring diagrams to insure proper operation.
- C. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
1. Standard Steel Doors and Frames: DHI's Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
  2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
- D. Other than those doors that are restricted to less than 180 degree opening by building or by overhead holders or stops, all hinges and/or closer arms shall be of sufficient size and properly installed to allow full 180 degree opening of doors.
- F. All hardware shall be installed and adjusted at time of installation to meet accessibility guidelines governing the contract document.

### 3.03 FIELD QUALITY CONTROL

- A. After installation has been completed, adjust and check each operating item of hardware and each door, to ensure proper operation and function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended.
- B. Supplier and installer shall comply with Para. 1.09 by instructing owner's personnel in operation and maintenance of each electrified hardware opening prior to owner's acceptance. This includes explanation of point-to-point systems wiring diagrams, riser diagrams, and operations narratives.

### 3.04 ADJUSTING AND CLEANING

- A. Whenever hardware installation is made more than one month prior to acceptance or occupancy of a space or area, the hardware supplier shall return to the work during the week prior to acceptance of occupancy and make final check and adjustment of all hardware items in such spaces or area. Clean operating items as necessary to restore proper function finish or

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hardware and doors. Adjust door control devices to compensate for final operation of air conditioning and ventilating equipment.

- B. Comply with Para. 1.07.A by instructing owner's personnel in recommended maintenance and operations procedure of each mechanical and electrified product.

3.05 PROTECTION

- A. All hardware shall be protected from damage of other trades until substantial completion.

SECTION 08715 – DOOR HARDWARE SCHEDULE

HARDWARE SCHEDULE:

A. Hardware Group 1: Doors D1 (Classrooms & Science Labs)  
Single Doors to Receive:

3 ea.	Hinges	TA2714 4½ x 4½ x NRP	BHMA630	McKinney
1 ea.	Class Intruder Lock	ML2072 x NSA	BHMA630	Corbin/Russwin
1 ea.	Closer	DC6210 x A11 x Door Width (Mount Stop First)	689	Corbin/Russwin
1 ea.	Kickplate	8" x LDW x .050 x BFE	US32D	Rockwood
1 Set	Weatherstrip	296CR	Alum.	Pemko
1 ea.	Threshold	2005AS	Alum.	Pemko

B. Hardware Group 2: Doors D2 (Corridor)  
Double Doors to Receive:

6 ea.	Hinges	TA2714 4½ x 4½ x NRP	BHMA630	McKinney
1 ea.	Exit Device	ED5201S x K1 x M52 x M54 x M107	630	Corbin/Russwin
1 ea.	Exit Device	ED5201S x M52 x M54 x M107	630	Corbin/Russwin
3 ea.	Cylinders	As Required	US32D	Corbin/Russwin
2 ea.	Door Pulls	BF157	US32D	Rockwood
1 ea.	Mullion	907 x KRM		Corbin/Russwin
2 ea.	Closers	DC6210 x A3	689	Corbin/Russwin
2 ea.	Kickplates	8" x LDW x .050 x BFE	US32D	Rockwood
1 Set	Weatherstrip	S88D x LAR	Brown	Pemko
1 Set	Weatherstrip	305CR x LAR at Meeting Edge	Alum.	Pemko
2 ea.	Stops	409	US32D	Rockwood
1 ea.	Threshold	2005AS x LAR	Alum.	Pemko

C. Hardware Group 3: Doors D3 (Communications)  
Single Doors to Receive:

3 ea.	Hinges	TA2714 4½ x 4½ x NRP	BHMA630	McKinney
1 ea.	Storeroom Lock	ML2024 x NSA	BHMA630	Corbin/Russwin
1 Set	Weatherstrip	S88D x LAR	Brown	Pemko
1 ea.	Threshold	2005AS x LAR	Alum.	Pemko

D. Hardware Group 4: Doors D4 (Electrical)  
Single Doors to Receive:

3 ea.	Hinges	TA2714 4½ x 4½ x NRP	BHMA630	McKinney
1 ea.	Exit Device	ED5201S x K1 x M52 x M54 x M107	630	Corbin/Russwin
1 ea.	Cylinders	As Required	US32D	Corbin/Russwin
1 ea.	Door Pulls	BF157	US32D	Rockwood
1 Set	Weatherstrip	S88D x LAR	Brown	Pemko
1 ea.	Threshold	2005AS x LAR	Alum.	Pemko

E. Hardware Group 5: Doors D5 (Classrooms & Science Labs)

Single Doors to Receive:

3 ea.	Hinges	TA2714 4½ x 4½	BHMA652	McKinney
1 ea.	Class Intruder Lock	ML2072 x NSA	BHMA630	Corbin/Russwin
1 ea.	Closer	DC6210 x A3	689	Corbin/Russwin
1 ea.	Kickplates	8" x LDW x .050 x BFE	US32D	Rockwood
1 ea.	Smoke Seal	S88D x LAR	Brown	Pemko
1 ea.	Stop	409 or 440 as required	US32D	Rockwood

F. Hardware Group 6: Doors D6 (Boys & Girls Toilets)

Single Doors to Receive:

3 ea.	Hinges	TA2714 4½ x 4½	BHMA652	McKinney
1 ea.	Public Restroom Lock	CL3359 x NSA	BHMA630	Corbin/Russwin
1 ea.	Closer	DC6210 x A3	689	Corbin/Russwin
1 ea.	Kickplates	8" x LDW x .050 x BFE	US32D	Rockwood
1 ea.	Smoke Seal	S88D x LAR	Brown	Pemko
1 ea.	Stop	409 or 440 as required	US32D	Rockwood

G. Hardware Group 7: Doors D7 (Faculty Toilets)

Single Doors to Receive:

3 ea.	Hinges	TA2714 4½ x 4½	BHMA652	McKinney
1 ea.	Public Restroom Lock	CL3359 x NSA	BHMA630	Corbin/Russwin
1 ea.	Closer	DC6200 x A3	689	Corbin/Russwin
1 ea.	Kickplates	8" x LDW x .050 x BFE	US32D	Rockwood
1 ea.	Smoke Seal	S88D x LAR	Brown	Pemko
1 ea.	Stop	409 or 440 as required	US32D	Rockwood

H. Hardware Group 8: Doors D12 (Mechanical)

Single Doors to Receive:

3 ea.	Hinges	TA2714 4½ x 4½ x NRP	BHMA630	McKinney
1 ea.	Exit Device	ED5201S x K1 x M52 x M54 x M107	630	Corbin/Russwin
1 ea.	Cylinders	As Required	US32D	Corbin/Russwin
1 ea.	Storeroom Lock	CL3357 x NSA	BHMA630	Corbin/Russwin
1 ea.	Closer	DC6200 x A3	689	Corbin/Russwin
1 Set	Weatherstrip	S88D x LAR	Brown	Pemko
1 ea.	Threshold	2005AS x LAR	Alum.	Pemko

I. Hardware Group 9: Doors D9 and D11 (Teacher Storage and Planning Rooms)

3 ea.	Hinges	TA2714 4½ x 4½	BHMA652	McKinney
1 ea.	Classroom Lock	CL3355 x NSA	BHMA630	Corbin/Russwin
1 ea.	Stop	409 or 440 as required	US32D	Rockwood
3 ea.	Silencers	608	Grey	Rockwood



J. Hardware Group 10: Doors D10 (Unisex Toilets)

3 ea.	Hinges	TA2714 4½ x 4½	BHMA652	McKinney
1 ea.	Public Restroom Lock	CL3359 x NSA	BHMA630	Corbin/Russwin
1 ea.	Kickplates	8" x LDW x .050 x BFE	US32D	Rockwood
1 ea.	Stop	409 or 440 as required	US32D	Rockwood
3 ea.	Silencers	608	Grey	Rockwood

END OF SECTION 08715

## SECTION 09260 - GYPSUM BOARD AND ACOUSTICAL ASSEMBLIES

### PART 1 - GENERAL

#### 1.1 SECTION REQUIREMENTS

- A. Submit Product Data.
- B. Where STC-rated assemblies are required, provide materials and construction identical to assemblies whose STC ratings were determined according to ASTM E 90 and classified according to ASTM E 413 by a qualified independent testing agency.
- C. Where fire-resistance-rated assemblies are required, provide materials and construction identical to assemblies tested according to ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

### PART 2 - PRODUCTS

#### 2.1 METAL FRAMING AND SUPPORTS

- A. Steel framing components for suspended and furred ceilings complying with ASTM C 645 and ASTM C 754.
  - 1. Wire Ties: ASTM A 641 (ASTM A 641M), Class 1 zinc coating, soft temper, 0.062 inch thick.
  - 2. Hangers: Wire, ASTM A 641 (ASTM A 641M), Class 1 zinc coating, soft temper, 0.162-inch diameter.
  - 3. Carrying Channels: Cold-rolled steel, 1-1/2 inches deep.
  - 4. Hot-dip galvanized coating complying with ASTM A 653, G40 (ASTM A 653M, Z90) for framing for exterior soffits and suspended ceilings within 10 feet of exterior walls.
  - 5. Direct-hung grid suspension system for interior ceilings.
- B. Steel framing for partitions complying with ASTM C 645.
  - 1. Studs and Runners: In depth indicated and 0.0179-inch thick, unless otherwise indicated.
  - 2. Rigid Hat-Shaped Furring Channels: In depth indicated and 0.0179-inch thick, unless otherwise indicated.
  - 3. Hot-dip galvanized coating complying with ASTM A 653, G40 (ASTM A 653M, Z90) for framing members attached to and within 10 feet of exterior walls.

#### 2.2 GYPSUM BOARD

- A. Gypsum board products in maximum lengths available to minimize end-to-end butt joints.
  - 1. Gypsum Wallboard: ASTM C 36, in thickness indicated, with manufacturer's standard edges.

## 2.3 ACOUSTIC MATERIALS

- A. Acoustical Board Materials: "SelectSound Acoustic Board" by Owens Corning at mezzanine and interior walls above ceiling, as noted on Drawings.
  - 1. Material: Inorganic glass fibers
  - 2. Thickness: 2"
  - 3. Density: 3.0 pcf
  - 4. Surface Burning of Core Material: Flame spread 25, smoke developed 50
  - 5. Water Vapor Sorption: <3% at 120 degrees F at 95% relative humidity.
  - 6. Minimum Compressive Strength: at 10% deformation - 25 lb/ft<sup>2</sup>
  - 7. Minimum Compressive Strength: at 25% deformation - 90 lb/ft<sup>2</sup>
  - 8. Fungi Resistance: Meeting ASTM C1338

## 2.4 ACCESSORIES

- A. Accessories for Interior Installation: Cornerbead, edge trim, and control joints complying with ASTM C 1047, formed from steel sheet zinc coated by hot-dip process or rolled zinc or plastic.
- B. Accessories for Exterior Installations: Cornerbead, edge trim, and control joints formed from steel sheet zinc coated by hot-dip process or rolled zinc complying with ASTM C 1047.
- C. Aluminum Accessories: Extruded-aluminum accessories indicated with manufacturer's standard corrosion-resistant primer.
- D. Gypsum Board Joint Treatment Materials: Comply with ASTM C 475. Paper reinforcing tape and setting-type compounds.
- E. Cementitious Backer Units: ANSI A118.9.
- F. Cementitious Backer Unit Joint Treatment Materials: Comply with ASTM C 475.
- G. Acoustical Sealant for Exposed and Concealed Joints: Nonsag, paintable, nonstaining latex sealant complying with ASTM C 834.
- H. Miscellaneous Materials: Auxiliary materials for gypsum board construction that comply with referenced standards.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install steel framing to comply with ASTM C 754 and with ASTM C 840 requirements that apply to framing installation.
  - 1. Isolate steel framing from building structure, except at floor, to prevent structural movement from transferring loading to partitions.

2. Where studs are installed directly against exterior walls, install asphalt felt strips or foam gaskets between studs and wall.
- B. Install and finish gypsum panels to comply with ASTM C 840 and GA-216.
1. Isolate the perimeter of non-load-bearing gypsum board partitions where they abut structural elements, except floors, by providing a 1/4- to 1/2-inch- wide space between gypsum board and the structure. Trim edges with U-bead edge trim where edges of gypsum panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
  2. Where STC-rated gypsum board assemblies are required, comply with ASTM C 919 for location of edge trim and closing off sound-flanking paths around or through gypsum board assemblies.
  3. Install cementitious backer units to comply with ANSI A108.11.
  4. Single-Layer Fastening Methods: Fasten gypsum panels to supports with screws.
- C. Finishing Gypsum Board Assemblies: Level 4 finish, unless otherwise indicated.
- D. Install SelectSound Acoustic Board to drywall, concrete block, precast concrete or other manufacturer approved surfaces using impaling pins or construction adhesives. When using adhesives, prep surfaces and pattern adhesive according to manufacturer's recommendations.

END OF SECTION 09260

## SECTION 09300 – CERAMIC TILE

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

#### 1.2 DESCRIPTION OF WORK:

- A. Definition: Tile includes ceramic surfacing units made from clay or other ceramic materials.
- B. Extent of tile work is indicated on drawings and schedules.
- C. Types of tile work in this section include the following:
  - 1. Unglazed porcelain tile.
  - 2. Glass accent tile.

#### 1.3 QUALITY ASSURANCE:

- A. Source of Materials: Provide materials obtained from one source for each type and color of tile, grout, and setting materials.

#### 1.4 SUBMITTALS:

- A. Product Data: Submit manufacturer's technical information and installation instructions for materials required, except bulk materials.
- B. Shop Drawings: Submit shop drawings indicating tile patterns and locations and widths of control, contraction and expansion joints in tile surfaces.
- C. Samples for Verification Purposes: Submit samples for each type of tile and for each color and texture required. Include samples of grout and accessories involving color selection. Submit the following:
  - 1. Full size samples for each type of trim, accessory and for each color.
- D. Closeout Submittals: Submit the following:
  - 1. Maintenance Data: Maintenance data for installed products in accordance with Division 1 Closeout Submittals, Maintenance Data and Operations Data Section; include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.

#### 1.5 QUALITY ASSURANCE:

- A. Installer Qualifications: Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project and who is acceptable to the product manufacturer.

- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.

1.6 DELIVERY, STORAGE, AND HANDLING:

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Prevent damage or contamination to materials by water, freezing, foreign matter or other causes.

1.7 PROJECT CONDITIONS:

- A. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.
- B. Vent temporary heaters to exterior to prevent damage to tile work from carbon dioxide buildup.
- C. Maintain temperatures at not less than 50 deg.F (10 deg.C) in tiled areas during installation and for 7 days after completion, unless higher temperatures are required by referenced installation standard or manufacturer's instructions.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

- A. Manufacturers: Provide the following products (**Substitutions must be approved by Architect prior to bid**):
- B. Manufacturers of Unglazed Porcelain Field Tile:
  - 1. Crossville Inc.
- C. Manufacturers of Glass Accent Tile:
  - 1. Crossville Inc.
- D. Manufacturers of Dryset Mortars:
  - 1. American Olean Tile Co., Inc.
  - 2. Boiardi Products Corp.
  - 3. Cambridge Tile Mfg. Co.
  - 4. Custom Building Products.
  - 5. C-Cure Chemical Co., Inc.
  - 6. H. B. Fuller Co.
  - 7. Jamo, Inc.
  - 8. L & M Surco Mfg., Inc.
  - 9. Laticrete International, Inc.
  - 10. Southern Grouts & Mortars, Inc.
  - 11. Summitville Tiles, Inc.
  - 12. Syracuse Adhesives Co.
  - 13. Upco Co. Div., Emhart Corp.

14. W. R. Bonsal Co.

E. Manufacturers of Commercial Portland Cement Grouts:

1. American Olean Tile Co., Inc.
2. Cambridge Tile Mfg. Co.
3. Custom Building Products.
4. C-Cure Chemical Co., Inc.
5. H. B. Fuller Co.
6. Jamo, Inc.
7. L & M Surco Mfg., Inc.
8. Laticrete International, Inc.
9. Southern Grouts & Mortars, Inc.
10. Summitville Tiles, Inc.
11. Upco Co. Div., Emhart Corp.
12. W. R. Bonsal Co.

F. Manufacturers of Dry-set Grouts:

1. Boiardi Products Corp.
2. Cambridge Tile Mfg. Co.
3. Custom Building Products.
4. C-Cure Chemical Co., Inc.
5. H. B. Fuller Co.
6. Jamo, Inc.
7. L & M Surco Mfg., Inc.
8. Laticrete International, Inc.
9. Southern Grouts & Mortars, Inc.
10. Summitville Tiles, Inc.
11. Syracuse Adhesives Co.
12. Upco Co. Div., Emhart Corp.
13. W. R. Bonsal Co.

G. Manufacturers of Tile Cleaners:

1. Hillyard Chemical Co.
2. L & M Surco Mfg. Co., Inc.

2.2 PRODUCTS, GENERAL:

- A. ANSI Standard for Ceramic Tile: Comply with ANSI A137.1 "American National Standard Specifications for Ceramic Tile" for types and grades of tile indicated.
- B. Furnish tile complying with "Standard Grade" requirements unless otherwise indicated.
- C. ANSI Standard for Tile Installation Materials: Comply with ANSI standard referenced with products and materials indicated for setting and grouting.
- D. Colors, Textures and Patterns: For tile, grout and other products requiring selection of colors, surface textures or other appearance characteristics, provide products to match characteristics indicated or, if not otherwise indicated, as selected by Architect from manufacturer's standards. Provide tile trim and accessories, which match color and finish of adjoining flat tile.

## 2.3 TILE PRODUCTS:

- A. Unglazed Porcelain Tile: Provide flat tile and bullnose complying with the following requirements for walls as shown on drawings, designated as **“Field Tile #1”** on Finish Schedule, see Drawings:
1. Composition: Porcelain.
  2. Nominal Facial Dimensions: 3" x 3" and 3" x 3" bullnose.
  3. Nominal Thickness: 1/4"
  4. Face: Unglazed surface with solid or speckle colorbody, beveled edge flat tile and bullnose.
  5. Coefficient of Friction: ASTM C1028, to exceed measure of 0.60 dry and 0.60 wet.
  6. Tile Manufacturer: Crossville, Inc.
  7. Tile Color & Pattern: Color Blox Mosaics selected from Price Group 1, approximately 70% of Field Tile.
  8. Grout Color: As selected by Architect.
- B. Unglazed Porcelain Tile: Provide flat tile complying with the following requirements for walls as shown on drawings, designated as **“Field Tile #2”** on Finish Schedule, see Drawings:
1. Composition: Porcelain.
  2. Nominal Facial Dimensions: 3"x 3".
  3. Nominal Thickness: 1/4"
  4. Face: Unglazed surface with solid or speckle colorbody, beveled edge flat tile.
  5. Coefficient of Friction: ASTM C1028, to exceed measure of 0.60 dry and 0.60 wet.
  6. Tile Manufacturer: Crossville, Inc.
  7. Tile Color & Pattern: Color Blox Mosaics selected from Price Group 4, approximately 30% of Field Tile.
  8. Grout Color: As selected by Architect.
- C. Glass Tile: Provide flat tile complying with the following requirements for walls as shown on drawings, designated as **“Accent Tile”** on Finish Schedule, see Drawings:
1. Composition: Glass.
  2. Nominal Facial Dimensions: 3"x 3".
  3. Nominal Thickness: 1/4"
  4. Face: Solid glass tile, beveled edge flat tile.
  5. Tile Manufacturer: Crossville, Inc.
  6. Tile Color & Pattern: Brilliante Glass, IG12 Ruby.
  7. Grout Color: As selected by Architect.

## 2.4 SETTING MATERIALS:

- A. Portland Cement Mortar Installation Materials: Provide materials to comply with ANSI A108.1 as required for installation method designated, unless otherwise indicated.
- B. Dry-Set Portland Cement Mortar: Provide product complying with ANSI A118.1.

## 2.5 GROUTING MATERIALS:

- A. Commercial Portland Cement Grout: Provide product complying with ANSI A118.6 of



color indicated.

- B. Dry-Set Grout: Provide product complying with ANSI A118.6 of color indicated.
- C. Application: Use to grout joints in floor tile, unless otherwise indicated.
- D. Grout Type: Dry-set grout specified or supplied by latex manufacturer. Use latex additive without a retarder with dry-set grout.
- E. Application: Use to grout joints in glazed wall tile unless otherwise indicated.

#### 2.6 MISCELLANEOUS MATERIALS:

- A. Tile Cleaner: Product specifically acceptable to manufacturer of tile and grout manufacturer for application indicated and as recommended by National Tile Promotion Federation, 112 North Alfred St., Alexandria, VA 22134 or Ceramic Tile Institute, 700 N. Virgil Ave., Los Angeles, CA 90029.

#### 2.7 MIXING MORTARS AND GROUT:

- A. Mix mortars and grouts to comply with requirements of referenced standards and manufacturers for accurately proportioning of materials, water or additive content, mixing equipment and mixer speeds, mixing containers, mixing time, and other procedures needed to produce mortars and grouts of uniform quality with optimum performance characteristics for application indicated.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION:

- A. Examine surfaces to receive tile work and conditions under which tile will be installed. Do not proceed with tile work until surfaces and conditions comply with requirements indicated in referenced tile installation standard.

#### 3.2 INSTALLATION, GENERAL:

- A. ANSI Tile Installation Standard: Comply with applicable parts of ANSI 108 series of tile installation standards included under "American National Standard Specifications for the Installation of Ceramic Tile".
- B. TCA Installation Guidelines: TCA "Handbook for Ceramic Tile Installation"; comply with TCA installation methods indicated or, if not otherwise indicated, as applicable to installation conditions shown.
- C. Extend tile work into recesses and under or behind equipment and fixtures, to form a complete covering without interruptions, except as otherwise shown. Terminate work neatly at obstructions, edges\_ and corners without disrupting pattern or joint alignments.
- D. 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 that plates, collars, or covers overlap tile.

- E. Jointing Pattern: Unless otherwise shown, lay tile in grid pattern. Align joints when adjoining tiles on floor, base, wall and trim are same size. Layout tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise shown.
- F. Lay out tile wainscots to next full tile beyond dimensions indicated.
- G. Expansion Joints: Locate expansion joints and other sealant filled joints, including control, contraction and isolation joints, where indicated. Do not saw cut joints.
- H. Prepare joints and apply sealants to comply with requirements of referenced standards and sealant manufacturer.
- I. Grout tile to comply with the requirements of the following installation standards:
- J. For ceramic tile grouts (sand-portland cement, dry-set, commercial portland cement, and latex-portland cement grouts) comply with ANSI A108.10.

### 3.3 CLEANING AND PROTECTION:

- A. Cleaning: Upon completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
- B. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's printed instructions, but no sooner than 14 days after installation. Protect metal surfaces, cast iron and vitreous plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.
- C. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, or otherwise defective tile work.
- D. Protection: When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage and wear.
- E. Prohibit foot and wheel traffic from using tiled floors for at least 7 days after grouting is completed.
- F. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION 09300

## SECTION 09511 - ACOUSTICAL CEILINGS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

#### 1.2 SUMMARY:

- A. Extent of each type of acoustical ceiling is shown and scheduled on drawings.
- B. Types of acoustical ceilings specified in this section include the following:
  - 1. Acoustical panel ceilings, exposed suspension.

#### 1.3 SUBMITTALS:

- A. Product Data: Submit manufacturer's technical data for each type of acoustical ceiling unit and suspension system required.
- B. Coordination Drawings: Submit reflected ceiling plans, prepared by Installer for installation purposes, drawn accurately to scale and coordinated with related mechanical, electrical and other work above, penetrating, or connected to acoustical ceiling. Show ceiling suspension members, method of anchorage to building structure of hangers, size and location of initial access modules for acoustical tile ceilings (if any), and ceiling-mounted work including light fixtures, diffusers, grilles, and special moldings.
  - 1. Scale: 1/8" = 1'-0".
- C. Samples for Verification Purposes: Submit the following:
  - 1. 6" square samples of each acoustical panel type, pattern and color.
  - 2. Set of 12" long samples of exposed runners and moldings for each color and system type required.
- D. Certificates: Submit certificates from manufacturers of acoustical ceiling units and suspension systems attesting that their products comply with specification requirements.

#### 1.4 QUALITY ASSURANCE:

- A. Fire Performance Characteristics: Provide acoustical ceiling components that are identical to those tested for the following fire performance characteristics, according to ASTM test method indicated, by UL or other testing and inspecting agency acceptable to authorities having

jurisdiction. Identify acoustical ceiling components with appropriate marking of applicable testing and inspecting agency.

1. Surface Burning Characteristics: As follows, tested per ASTM E 84.
  - a. Flame Spread: 25 or less.
  - b. Smoke Developed: 50 or less.

- B. Coordination of Work: Coordinate layout and installation of acoustical ceiling units and suspension system components with other work supported by, or penetrating through, ceilings, including light fixtures, HVAC equipment, fire-suppression system components (if any), and partition system (if any).

#### 1.5 DELIVERY, STORAGE AND HANDLING:

- A. Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination or other causes.
- B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical ceiling units carefully to avoid chipping edges or damaging units in any way.

#### 1.6 PROJECT CONDITIONS:

- A. Space Enclosure: Do not install interior acoustical ceilings until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete, and ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.

## PART 2 - PRODUCTS

#### 2.1 ACOUSTICAL CEILING UNITS, GENERAL:

- A. Standard for Acoustical Ceiling Units: Provide manufacturer's standard units of configuration indicated which are prepared for mounting method designated and which comply with FS SS-S-118 requirements, including those indicated by reference to type, form, pattern, grade (NRC or NIC' as applicable), light reflectance coefficient (LR), edge detail, and joint detail (if any).
- B. Colors, Textures, and Patterns: Provide products to match appearance characteristics indicated or, if not otherwise indicated, as selected by Architect from manufacturer's standard colors, surface textures, and patterns available for acoustical ceiling units and exposed metal suspension system members of quality designated.

## 2.2 ACOUSTICAL PANELS:

- A. Mineral Fiber Composition Panels - Water Formed, with Acoustical Transparent Membrane and Acrylic Latex painted finish: Provide Type IV, Form 2 Pattern E per ASTM E 1264 and complying with the following requirements:
1. Corridor: Panel characteristics as follows:
    - a. Standard of Design: Armstrong – “School Zone Fine Fissured” #465.
    - b. Fire Resistance: Class A (UL listed)
    - c. Sag Resistance: HumiGuard Plus
    - d. Anti-microbial: BioBlock+
    - e. Color/Light Reflectance: White/LR 0.85 (per ASTM 1477).
    - f. Acoustics: NRC .55
    - g. CAC: 35
    - h. Size: 24" x 24" x 5/8" - unless otherwise indicated.
    - i. Edge Detail: Square lay-in.
  2. All Other Locations: Panel characteristics as follows:
    - a. Standard of Design: Armstrong – “School Zone Fine Fissured” #1713.
    - b. Fire Resistance: Class A (UL listed)
    - c. Sag Resistance: HumiGuard Plus
    - d. Anti-microbial: BioBlock+
    - e. Color/Light Reflectance: White/LR 0.85 (per ASTM 1477).
    - f. Acoustics: NRC .70
    - g. CAC: 35
    - h. Size: 24" x 24" x 3/4" - unless otherwise indicated.
    - i. Edge Detail: Square lay-in.

## 2.3 METAL SUSPENSION SYSTEMS, GENERAL:

- A. Standard for Metal Suspension Systems: Provide metal suspension systems of type, structural classification and finish indicated which comply with applicable ASTM C 635 requirements for service.
- B. Finishes and Colors: Provide manufacturer's environmental performance factory- applied finish for type of system indicated. For exposed suspension members and accessories with painted finish, provide color indicated or, if not otherwise indicated, as selected by Architect from manufacturer's full range of standard colors.
- C. Attachment Devices: Size for 5 times design load indicated in ASTM C 635, Table 1, Direct Hung.
- D. Hanger Wire: Galvanized carbon steel wire, ASTM A 641, soft temper, prestretched, Class 1 coating, sized so that stress at 3-times hanger design load (ASTM C 635, Table 1, Direct Hung), will be less than yield stress of wire, but provide not less than 12 gage.
- E. Edge Moldings and Trim: Metal or extruded plastic of types and profiles indicated or, if not indicated, provide manufacturer's standard molding for edges and penetrations of ceiling which fits with type of edge detail and suspension system indicated.

1. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.
  2. For secondary suspended open grids above main desk and health bar, use compass 4" trim by USG Interiors or equivalent. Color to be selected by Architect. Manufacturer to have minimum of 24 colors available.
- F. Hold-Down Clips for Non-Fire-Rated Ceilings: For interior ceilings composed of lay-in panels weighing less than 1 lb. per sq. ft., provide hold-down clips spaced 2'-0" o.c. on all cross tees.

#### 2.4 EXPOSED METAL DIRECT-HUNG SUSPENSION SYSTEMS:

- A. Non-Fire-Resistance-Rated Double Web Steel Suspension System: Manufacturer's standard system roll-formed from prefinished cold-rolled, hot dipped galvanized steel sheet with 15/16" wide aluminum cap exposed faces on structural members; other characteristics as follows:
1. Basis of Design: Armstrong Prelude Plus XL
  2. Structural Classification: Intermediate-Duty System.
  3. Finish: Natural aluminum cap.
  4. Manufacturers of Non-Fire-Resistance-Rated Double Web Steel Suspension Systems:
    - a. Armstrong
    - b. Chicago Metallic Corporation.
    - c. Donn Corporation.
    - d. Eastern Products Div., Armstrong World Industries, Inc.
    - e. National Rolling Mills, Inc.

#### 2.5 MISCELLANEOUS MATERIALS:

- A. Acoustical Sealant: Resilient, non-staining, non-shrinking, non-hardening, non-skinning, non-drying, non-sag sealant intended for interior sealing of concealed construction joints.
1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
    - a. BA-98; Pecora Corp.
    - b. Tremco Acoustical Sealant; Tremco.

### PART 3 - EXECUTION

#### 3.1 PREPARATION:

- A. Coordination: Furnish layouts for inserts, clips, or other supports required to be installed by other trades for support of acoustical ceilings.
- B. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less-than-half width units at borders, and comply with reflected ceiling plans wherever possible.

### 3.2 INSTALLATION:

- A. General: Install materials in accordance with manufacturer's printed instructions, and to comply with governing regulations, fire-resistance rating requirements as indicated, and Cisca standards applicable to work.
- B. Arrange acoustical units and orient directionally-patterned units (if any) in manner shown by reflected ceiling plans.
  - 1. Install tile with pattern running in alternating directions to form "checkerboard" layout.
- C. Install suspension systems to comply with ASTM C 636, with hangers supported only from building structural members. Locate hangers not less than 6" from each end and spaced 4'-0" along each carrying channel or direct-hung runner, unless otherwise indicated, leveling to tolerance of 1/8" in 12'-0".
  - 1. Secure wire hangers by looping and wire-tying, either directly to structures or to inserts, eye-screws, or other devices which are secure and appropriate for substrate, and which will not deteriorate or fail with age or elevated temperatures.
  - 2. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum which are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal force by bracing, countersplaying or other equally effective means.
- D. Install edge moldings of type indicated at perimeter of acoustical ceiling area and at locations where necessary to conceal edges of acoustical units.
  - 1. Sealant Bed: Apply continuous ribbon of acoustical sealant, concealed on back of vertical leg before installing moldings.
  - 2. Screw-attach moldings to substrate at intervals not over 16" o.c. and not more than 3" from ends, leveling with ceiling suspension system to tolerance of 1/8" in 12'-0". Miter corners accurately and connect securely.
- E. Install acoustical panels in coordination with suspension system, with edges concealed by support of suspension members. Scribe and cut panels to fit accurately at borders and at penetrations.
  - 1. Install hold-down clips in areas indicated, and in areas where required by governing regulations or for fire-resistance ratings; space as recommended by panel manufacturer, unless otherwise indicated or required.

### 3.3 CLEANING:

- A. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members; comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace work which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09511

## SECTION 09650 - RESILIENT FLOORING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

#### 1.2 SUMMARY

- A. Section includes:
  - 1. Rubber sheet flooring.
  - 2. Vinyl composition floor tile.
  - 3. Rubber base and accessories.

#### 1.3 DESCRIPTION OF WORK:

- A. Extent of resilient flooring and accessories is shown on drawings and in schedules.

#### 1.4 QUALITY ASSURANCE:

- A. Manufacturer: Provide each type of resilient flooring and accessories as produced by a single manufacturer, including recommended primers, adhesives, sealants, and leveling compounds.
- B. Rubber Flooring Installer's Qualifications: Engage installer who has not less than five years of experience in the installation of rubber flooring, who is recognized by the flooring manufacturer, and who has performed installations of the same scale in the past three years.
- C. Vinyl Tile Installer's Qualifications: Engage Installer who has not less than five years experience in the installation of vinyl composition tile.

#### 1.5 SUBMITTALS:

- A. Product Data: Submit manufacturer's technical data for each type of resilient flooring and accessory.
- B. Samples for Initial Selection Purposes: Submit manufacturer's standard color charts in form of actual sections of resilient flooring, including accessories, showing full range of colors and patterns available, for each type of resilient flooring required.
- C. Samples for Verification Purposes: Submit the following samples of each type, color, and pattern of resilient flooring required, showing full-range of color and pattern variations.



1. Full size tile samples.
  2. 12" long samples of resilient flooring accessories.
  3. Other materials as requested.
- D. Maintenance Instructions: Submit 2 copies of manufacturer's recommended maintenance practices for each type of resilient flooring and accessory required.

#### 1.6 PROJECT CONDITIONS:

- A. Maintain minimum temperature of 65 deg F (18 deg C) in spaces to receive resilient flooring for at least 48 hours prior to installation, during installation, and for not less than 48 hours after installation. Store resilient flooring materials in spaces where they will be installed for at least 48 hours before beginning installation. Subsequently, maintain minimum temperature of 55 deg F (13 deg C) in areas where work is completed.
- B. Install resilient flooring and accessories after other finishing operations, including painting, have been completed. Do not install resilient flooring over concrete slabs until the latter have been cured and are sufficiently dry to achieve bond with adhesive as determined by resilient flooring manufacturer's recommended bond and moisture test.

### PART 2 - PRODUCTS

#### 2.1 RESILIENT FLOORING COLORS AND PATTERNS:

- A. Provide color and patterns as indicated, or if not otherwise indicated, as selected by Architect from manufacturer's full selection of vinyl composition tile.
- B. Submit seaming patterns for sheet flooring for review by Architect.

#### 2.2 RUBBER SHEET FLOORING:

- A. Manufacturer: Subject to compliance with requirements, provide the following:
1. Mondo America, Inc.
  2. Or approved equal.
- B. Product Line: "Harmoni" rubber flooring.
- C. Manufacturing Process: Manufacture from two layers that are vulcanized together. The shore hardness of the top layer will be greater than that of the bottom layer.
- D. Thickness: 0.157 inch (4 mm).
- E. Width: 6'-4" roll.
- F. Finish: Sealskin

- G. Colors and Patterns: As selected by Architect from full range of industry colors. Provide two colors; a field color and a 1' wide border color.
- H. Adhesive: MP 900 acrylic adhesive, PU 105 polyurethane adhesive, or EP 55 epoxy adhesive.
- I. Patching or Leveling Compound: Flooring installer to provide manufacturer's recommended material.
- J. Heat Weld Thread: Flooring installer to provide manufacturer's recommended material.
- K. Performance: Tested in accordance with ASTM F1860 (sheet flooring) and ASTM F1344 (tile flooring). Product to conform to the following criteria:

Hardness Shore A (ASTM D 2240)	91/75
Critical Radiant Flux (ASTM E 648, NFPA 101)	0.85 W/cm <sup>2</sup> , Type I
Optical Density of Smoke (ASTM E 662)	< 450, Class I
Static Load Limit (ASTM F 970)	1000 psi (residual intention 0.001 in. at 50 psi)
Fungal Resistance Test (ASTM G 21-90)	No Growth
Coefficient of Friction (ASTM D 2047)	0.79 dry, 0.91 wet
VOC Compliance (ASTM D 5116)	Yes
Color Stability	Good
Light Reflection	Average
Chemical Resistance	Good
Impact Sound Transmission (ASTM E 2179)	IICc = 50 dB, Delta IIC = 22 dB (4mm) IICc = 48 dB, Delta IIC = 20 dB (3mm)

- L. Substitutions: **All substitutions must be approved prior to bid opening.**

2.3 VINYL COMPOSITION FLOOR TILE:

- A. Products: Subject to compliance requirements, provide the following:
  - 1. Johnsonite, Inc. or approved equal.
  - 2. Color Essence, The Azrock Collection.
- B. Sustainable Design: PVC and plasticizer free product.
- C. Tile Standard: ASTM F 1006, Class 2, through-pattern tile.
- D. Wearing Surface: Smooth.
- E. Thickness: 1/8" Through-pattern.
- F. Size: 12 inch x 12 inch.
- G. Color and Patterns: As selected by Architect from full range of industry colors.
- H. Substitutions: **All substitutions must be approved prior to bid opening.**

## 2.4 ACCESSORIES:

- A. Wall Base: Provide base complying with FS SS-W-40; Type I rubber with matching end stops and preformed or molded corner units, and as follows:
  - 1. Height: 4".
  - 2. Thickness: 1/8" gage.
  - 3. Style: Cove base at VCT area.
  - 4. Style: Straight base without cove at carpet area.
  - 5. Finish: Matte.
  - 6. Package: Rolls not less than 100 feet in length.
- B. Resilient Edge Strips: 1/8" thick, homogeneous rubber composition, tapered or bullnose edge, color to match flooring, or as selected by Architect from standard colors available; not less than 1" wide.
- C. Adhesives (Cements): Waterproof, stabilized type as recommended by flooring manufacturer to suit material and substrate conditions.
- D. Concrete Slab Primer: Non-staining type as recommended by flooring manufacturer.
- E. Leveling and Patching Compounds: Latex type as recommended by flooring manufacturer.
- F. Acceptable Manufacturers of rubber base and accessories:
  - 1. Johnsonite
  - 2. Armstrong
  - 3. Roppe
  - 4. Mercer

## PART 3 - EXECUTION

### 3.1 INSPECTION:

- A. Require Installer to inspect subfloor surfaces to determine that they are satisfactory. A satisfactory subfloor surface is defined as one that is smooth and free from cracks, holes, ridges, coatings preventing adhesive bond, and other defects impairing performance or appearance.
- B. Perform bond and moisture tests on concrete subfloors to determine if surfaces are sufficiently cured and dry as well as to ascertain presence of curing compounds.
- C. Do not allow resilient flooring work to proceed until subfloor surfaces are satisfactory.

### 3.2 PREPARATION:

- A. Prepare subfloor surfaces as follows:

1. Use leveling and patching compounds as recommended by resilient flooring manufacturer for filling small cracks, holes and depressions in subfloors.
2. Remove coatings from subfloor surfaces that would prevent adhesive bond, including curing compounds incompatible with resilient flooring adhesives, paint, oils, waxes and sealers.

B. Vacuum surfaces to be covered, and inspect subfloor.

C. Apply concrete slab primer, if recommended by flooring manufacturer, prior to application of adhesive. Apply in compliance with manufacturer's directions.

### 3.3 INSTALLATION GENERAL:

A. Install resilient flooring using method indicated in strict compliance with manufacturer's printed instructions. Extend resilient flooring into toe spaces, door reveals, and into closets and similar openings.

B. Scribe, cut, and fit resilient flooring to permanent fixtures, built-in furniture and cabinets, pipes, outlets and permanent columns, walls and partitions.

C. Maintain reference markers, holes, or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other non-permanent marking device.

D. Install resilient flooring on covers for telephone and electrical ducts, and similar items occurring within finished floor areas. Maintain overall continuity of color and pattern with pieces of flooring installed on these covers. Tightly cement edges to perimeter of floor around covers and to covers.

E. Tightly cement resilient flooring to subbase without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections. Hand roll resilient flooring at perimeter of each covered area to assure adhesion.

### 3.4 INSTALLATION OF RUBBER SHEET FLOORING

A. Concrete subfloors to be placed a minimum of 28 days prior to the installation of the rubber flooring.

B. Concrete subfloors on or below grade are to be installed over a suitable moisture retardant membrane complying with ASTM E1745.

C. Do not apply sealers or mix in curing compounds into concrete subfloors

D. Moisture and alkalinity tests must be performed. Moisture content must not exceed the capacity of the specified adhesive and pH level should be in the range of 7 to 8.5.

E. Concrete subfloor to be smooth and flat with a tolerance of 1/8 inch in a 10 foot radius.

- F. Install rubber flooring and welded seams according to manufacturer's current printed installation manual.
- G. Initial cleaning should only be performed 72 hours after the rubber surface has been completely installed.
- H. Maintain rubber flooring according to manufacturer's current maintenance instructions for specified product.
- I. Protect the flooring with Masonite during and after installation, prior to acceptance by the Owner.

### 3.5 INSTALLATION OF TILE FLOORS:

- A. Lay tile from center marks established with principal walls, discounting minor offsets, so that tile at opposite edges of room area of equal width. Adjust as necessary to avoid use of cut widths less than 1/2 tile at room perimeters. Lay tile square to room axis, unless otherwise shown.
- B. Match tiles for color and pattern by using tile from cartons in same sequence as manufactured and packaged if so numbered. Cut tile neatly around all fixtures. Broken, cracked, chipped, or deformed tiles are not acceptable.
- C. Adhere tile flooring to substrates using full spread of adhesive applied in compliance with flooring manufacturer's directions.

### 3.6 INSTALLATION OF ACCESSORIES:

- A. Apply wall base to walls, columns, pilasters, casework and other permanent fixtures in rooms or areas where base is required. Install base in lengths as long as practicable, with preformed corner units, or fabricated from base materials with mitered or coped inside corners. Tightly bond base to substrate throughout length of each piece, with continuous contact at horizontal and vertical surfaces.
  - 1. On masonry surfaces, or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.
- B. Place resilient edge strips tightly butted to flooring and secure with adhesive. Install edging strips at edges of flooring which would otherwise be exposed.

### 3.7 CLEANING AND PROTECTION:

- A. Perform following operations immediately upon completion of resilient flooring:
  - 1. Sweep or vacuum floor thoroughly.
  - 2. Do not wash floor until time period recommended by resilient flooring manufacturer has elapsed to allow resilient flooring to become well-sealed in adhesive.
  - 3. Damp-mop floor being careful to remove black marks and excessive soil.

4. Remove any excess adhesive or other surface blemishes, using appropriate cleaner recommended by resilient flooring manufacturers.
- B. Protect flooring against damage during construction period to comply with resilient flooring manufacturer's directions.
- C. Clean resilient flooring not more than 4 days prior to date scheduled for inspections intended to establish date of substantial completion in each area of project. Clean resilient flooring by method recommended by resilient flooring manufacturer.
  1. Apply floor wax after cleaning and prior to accepting by Owner.

3.8 EXTRA STOCK:

- A. Deliver stock of maintenance materials to Owner. Furnish maintenance materials from same manufactured lot as materials installed and enclosed in protective packaging with appropriate identifying labels.
  1. Tile Flooring: Furnish not less than one box for each 50 boxes or fraction thereof, for each type, color, pattern and size installed.

END OF SECTION 09650

## SECTION 09680 - CARPET

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY:

- A. This Section includes carpet, accessories and installation.

#### 1.3 SUBMITTALS:

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data for each type of carpet material and installation accessory specified. Submit manufacturer's printed data on physical characteristics, durability, fade resistance and fire test response characteristics. Submit methods of installation for each type of substrate.
- C. Shop Drawings showing columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet. Indicate the following:
  - 1. Carpet type, color, and dye lot.
  - 2. Seam locations, types, and methods.
  - 3. Pattern type, repeat size, location, direction, and starting point.
  - 4. Type, color, and location of edge, transition, and other accessory strips.
  - 5. Transition details to other flooring materials.
- D. Samples for initial selection in the form of manufacturer's Samples of materials showing the full range of colors, textures, and patterns available for each type of carpet indicated.
- E. Samples for verification of the following products, in manufacturer's standard sizes, showing the full range of color, texture, and pattern variations expected. Prepare Samples from the same material to be used for the Work. Label each sample with manufacturer's name, material type, color, pattern, and designation indicated on Drawings and carpet schedule. Submit the following:
  - 1. 12-inch-square Samples of each type of carpet material required.
  - 2. 12-inch Samples of each type of exposed edge stripping and accessory item.
- F. Methods for maintaining carpet including manufacturer's recommended frequency for maintaining carpet.

1. Precautions for cleaning materials and methods that could be detrimental to finishes and performance. Include cleaning and stain-removal products and procedures.

#### 1.4 QUALITY ASSURANCE:

- A. Installer Qualifications: Engage an Installer with a minimum of 10 years experience in commercial carpet installation, who is certified by the Floor Covering Installation Board (FCIB) or who can demonstrate compliance with FCIB certification program requirements.
- B. Single-Source Responsibility: Obtain all carpet from one source and by a single manufacturer.
- C. Carpet Fire-Test-Response Characteristics: Provide carpet with the following fire-test-response characteristics as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify carpet with appropriate markings of applicable testing and inspecting agency.
  1. Surface Flammability: Passes ASTM E 648, Class I (glue Down)
  2. Flame Spread: 25 or less per ASTM E 84.
  3. Flame Radiant Panel Test: Meets NFPA Class I, per ASTM E-648 gluedown.
  4. Smoke Density: ASTM E 662, Less than 450
  5. Electrostatic Propensity: Less than 3.0 kV per AATCC 134.

#### 1.5 DELIVERY, STORAGE, AND HANDLING:

- A. General: Comply with the Carpet and Rug Institute's CRI 104, Section 5: "Storage and Handling."
- B. Deliver materials to Project site in original factory wrappings and containers, labeled with identification of manufacturer, brand name, and lot number.
- C. Store materials on-site in original undamaged packages, inside well-ventilated area protected from weather, moisture, soilage, extreme temperatures, and humidity. Lay flat, with continuous blocking off ground.

#### 1.6 PROJECT CONDITIONS:

- A. General: Comply with CRI 104, Section 6: "Site Conditions."
- B. Space Enclosure and Environmental Limitations: Do not install carpet until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete, and ambient temperature and humidity conditions are and will be continuously maintained at values near those indicated for final occupancy.
- C. Subfloor Moisture Conditions: Moisture emission rate of not more than 3 lb/1000 sq. ft./24 hours when tested by calcium chloride moisture test in compliance with CRI 104, 6.2.1, with subfloor temperatures not less than 55 deg F (12.7 deg C).



- D. Subfloor Alkalinity Conditions: A pH range of 5 to 9 when subfloor is wetted with potable water and pHYdrion paper is applied.

#### 1.7 WARRANTY:

- A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Special Carpet Warranty: Submit a written warranty executed by carpet manufacturer and Installer agreeing to repair or replace carpet that does not meet requirements or that fails in materials or workmanship within the specified warranty period. Failures include, but are not limited to, more than 10 percent loss of face fiber, edge raveling, snags, runs, and delamination.
- C. Warranty Period: Lifetime of Carpet.

### PART 2 - PRODUCTS

#### 2.1 CARPET:

- A. Products: Subject to compliance with requirements, provide:
  - 1. Classrooms: Horsepower KD953 505 Braselton by The Mohawk Group.
  - 2. Corridor Walk-Off Carpet: Tuff Stuff; Step in Style, First Step, or Step Up, by Lees Carpets.

#### 2.2 INSTALLATION ACCESSORIES:

- A. Concrete-Slab Primer: Nonstaining type as recommended by the carpet manufacturer.
- B. Trowelable Underlayments and Patching Compounds: As recommended by the following carpet manufacturer.
- C. Adhesives: Water-resistant, mildew-resistant, nonstaining type to suit products and subfloor conditions indicated and to comply with flammability requirements for installed carpet as recommended by the following carpet manufacturer.
- D. Seaming Cement: Hot-melt adhesive tape or similar product recommended by carpet manufacturer for taping seams and butting cut edges at backing to form secure seams and to prevent pile loss at seams.

## PART 3 - EXECUTION

### 3.1 EXAMINATION:

- A. Examine subfloors and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting performance of carpet. Do not proceed with installation until unsatisfactory conditions have been corrected. Proceeding with carpet installation prior to subfloor conditions being corrected constitutes acceptance of the subfloor conditions by the carpet installer.
- B. Verify that subfloors and conditions are satisfactory for carpet installation and comply with requirements specified in this Section and the carpet manufacturer.

### 3.2 PREPARATION:

- A. General: Comply with carpet manufacturer's installation recommendations to prepare substrates indicated to receive carpet installation.
- B. Level subfloor within 1/4 inch in 10 feet, noncumulative, in all directions. Sand or grind protrusions, bumps, and ridges. Patch and repair cracks and rough areas. Fill depressions.
  - 1. Use leveling and patching compounds to fill cracks, holes, and depressions in subfloor as recommended by the carpet manufacturer.
- C. Remove subfloor coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone.
- D. Broom or vacuum clean subfloors to be covered with carpet. Following cleaning, examine subfloors for moisture, alkaline salts, carbonation, or dust.
- E. Concrete-Subfloor Preparation: Apply concrete-slab primer, according to manufacturer's directions, where recommended by the following carpet manufacturer.

### 3.3 INSTALLATION

- A. Direct Glue-Down Installation: Comply with CRI 104, Section 8: "Direct Glue-Down."
- B. Comply with carpet manufacturer's recommendations for seam locations and direction of carpet; maintain uniformity of carpet direction and lay of pile. At doorways, center seams under door in closed position. Do not bridge building expansion joints with continuous carpet.
- C. Where demountable partitions or other items are indicated for installation on top of finished carpet floor, install carpet before installation of these items.
- D. Cut and fit carpet to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet manufacturer.

- E. Extend carpet into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- F. Install pattern parallel to walls and borders.

### 3.4 CLEANING:

- A. Perform the following operations immediately after completing installation.
  - 1. Remove visible adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet manufacturer.
  - 2. Remove protruding yarns from carpet surface.
  - 3. Vacuum carpet using commercial machine with face-beater element.

### 3.5 PROTECTION:

- A. General: Comply with CRI 104, Section 15: "Protection of Indoor Installation."
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure carpet is without damage or deterioration at the time of Substantial Completion.

### 3.6 PRODUCT DATA:

- A. Carpet Designation: C-1
  - 1. Construction: Tufted
  - 2. Surface Texture: Patterned Loop
  - 3. Pile Thickness: .097" avg.
  - 4. Gauge: 1/12"
  - 5. Yarn Weight: 22 oz per sq. yd.
  - 6. Dye system: Yarn dyed.
  - 7. Fiber Product: Duracolor, Premium Fiber with Antron Legacy nylon 6,6
  - 8. Dry Soil Retardant: DuraTech Soil Protection by DuPont
  - 9. Backing: EcoFlex ICT
  - 10. Bonding Agent: 100% Renewable Bio-Based Resource (no latex or urethanes)
  - 11. Size: 24" x 24"
  - 12. Tuft Bind: 20 lb average tuft bind wet or dry per ASTM D-1335-67
  - 13. Performance Characteristics: As follows:
    - a. Surface Flammability: ASTM E 648, Class I (Glue Down)
    - b. Flame Spread: 25 or less per ASTM E 84.  
Flame Radiant Panel Test: Meets NFPA Class I, per ASTM E-648 gluedown.
    - c. Smoke Density: ASTM E 662, Less than 450
    - d. Electrostatic Propensity: Less than 3.0 kV per AATCC 134.
  - 14. Color: 505 Braselton.
  - 15. Manufacturer: The Mohawk Group
  - 16. Style: Horsepower DK953 with EcoFlex ICT Backing

B. Carpet Designation: C-2

1. Construction: Tufted, Modular
2. Surface Texture: Multilevel or level loop pile
3. Gauge: 1/12"
4. Yarn Weight: 38 oz per sq. yd.
5. Dye system: Solution dyed/Yarn dyed.
6. Fiber Product: Fortis 6,6 Nylon with Nylon 6,6 scrapper yarn
7. Dry Soil Retardant: Sentry Soil Protection
8. Backing: Fiberglass Reinforced Thermoplastic Composite
9. Bonding Agent: Manufacturer's recommended adhesive
10. Width: 24" x 24"
11. Performance Characteristics: As follows:
  - a. Surface Flammability: Passes DOC-FF-1-70 Pill Test
  - b. Flooring Radiant Panel Test: Meets NFPS Class I for ASTM E-648 (glue down).
  - c. Smoke Density: NBS Smoke Chamber NFPA-298 - Less than 455 Flaming Mode
  - d. Electrostatic Propensity: Less than 3.0 kV per Standard Shuffle Test 70 degrees (21C) - 20% R.H.
12. Color: To be selected.
13. Manufacturer: Lees Carpet
14. Style: Tuff Stuff

- C. Substitutions: Products to be evaluated for equivalency shall be submitted by a General Contractor to the Architect for evaluation 14 days prior to the bid date.

END OF SECTION 09680

## SECTION 09700 - RES-TEK FULL FLAKE SL FLOORING SYSTEM

### PART 1 - GENERAL

#### 1.1 WORK INCLUDED

- A. Work described in this section includes surface preparation and installation of Methyl Methacrylate (MMA) Acrylic Floor Coating System.
- B. See drawings for locations and quantities.

#### 1.2 SYSTEM DESCRIPTION

- A. The RT-805 Full Flake flooring system shall consist of 1/8" of a slurry consisting of RT-805 resin and Res-Tek Filler SL (color and texture selected by owner), with appropriate Primer and Topcoat. If added skid resistance is required, bleached aluminum oxide, glass bead, or similar material may be broadcast into the topcoat resin to achieve specified skid/slip resistance requirements. Size and rate shall be determined by owner.
- B. The RT-805 Full Flake flooring system shall cure and be available to normal traffic in no more than 60 minutes at 68° F. after application of last coat. The cured material shall have a minimum compressive strength of 7,000 psi in accordance with ASTM C109. It shall have a maximum water absorption value of 0.04 weight percent in accordance with ASTM D570. It shall be chemically resistant to a wide range of acids, alkalis, salts, fats, oils, and other chemicals.
- C. The finished floor coating system shall be uniform in color, texture, and appearance. All edges that terminate at walls, floor discontinuities, and other embedded items shall be sharp, uniform, and cosmetically acceptable with no thick or ragged edge. The Contractor shall work out an acceptable masking technique to ensure the acceptable finish of all edges.
- D. See Paragraph 3.04 and/or 3.07 for number and thicknesses of each coat/layer in each system.

#### 1.3 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
  - 1. Acceptable manufacturer: Res-Tek Inc. 110 Riverside Drive Cartersville, Georgia 30120 PH: (770) 427-4034, (888) 737-8351, FAX: (770) 427-4037.
  - 2. No request for substitution shall be considered that would change the generic type of coating system specified (i.e., 100% reactive, Methyl Methacrylate based acrylic liquid). Equivalent materials of other manufacturer's may be substituted only on approval of the Architect or Engineer. Requests for substitution will be considered if submitted within 10 days after the execution of the contract. Requests shall include the respective manufacturer's technical literature for each product giving the name, generic type, descriptive information, recommended dry film thickness (DFT), Material Safety Data

Sheet (MSDS), and certified test reports showing results to equal performance criteria of products specified herein.

B. Applicator Qualifications:

1. Pre-qualification requirements: Each bidder for this project shall be prequalified and approved by the material manufacturer at the time of bid submittal. Acceptability will include judgement on equipment, history, and financial strength. In no case will Res-Tek Inc. allow the application of any of its materials by untrained, non-approved Contractors or personnel.
2. Each approved applicator shall have been trained by the Manufacturer in all phases of surface preparation and application of the specified flooring system(s).
3. Each approved applicator must have five years experience installing the specified flooring system and submit a list of five projects/references as a prequalification requirement. At least one of the five projects/references must be of equal size, quantity, and magnitude to this project as a prequalification requirement. Owner has the option to personally inspect the projects/references to accept or reject any of the Contractors prior to bid time as a prequalification requirement.

C. Subcontractor Qualifications:

1. The only approved and specified subcontractors for this resurfacing work shall be for shot-blast cleaning of the concrete substrate.

D. Acceptance Sample:

1. A minimum one-foot square representative sample of the specified flooring system shall be prepared by the Manufacturer's representative and submitted to the Owner prior to the bidding phase of the project. All bidders shall inspect the "acceptance sample" before submitting their bids.
2. The installed flooring system shall be similar to the acceptance sample in thicknesses of respective film layers, color, texture, overall appearance and finish.

E. Bond Testing:

1. Surface preparation efforts shall be evaluated by conducting Bond Tests at the site prior to application of the flooring system(s).
2. See paragraph 3.03 - B or consult with Material Manufacturer for specific procedure.

F. Pre-job Meeting:

1. Owner requires a Pre-Job Meeting with representatives of Owner, Contractor and approved Applicator, in attendance. The agenda shall include a review and clarification of this specification, application procedures, quality control, inspection and acceptance criteria, and production schedules. Applicator is not authorized to proceed until this meeting is held or waived by Owner.

#### 1.4 REFERENCE STANDARDS

- A. ACI 308 - Standard Practice for Curing Concrete.
- B. ACI 302.1R-80 - Guide for Concrete Floor and Slab Construction.
- C. United States Department of Agriculture (USDA) and Food and Drug Administration (FDA) authorization for incidental contact with foodstuffs.

#### 1.5 SUBMITTALS

- A. Acceptance Sample: One foot square (1 ft. by 1 ft.) sample of the specified acrylic flooring system applied to hardboard or similar backing for rigidity and ease of handling.
- B. Manufacturer's Literature: Descriptive data and specific recommendations for surface preparation, mixing, and application of materials.
- C. Manufacturer's Material Safety Data Sheets (MSDS) for each respective product to be used.

#### 1.6 DELIVERY, STORAGE AND HANDLING

- A. All material shall be delivered in original Manufacturer's sealed containers with all pertinent labels intact and legible.
- B. Store materials in dry protected area between 25° and 80° Fahrenheit. Keep out of direct sunlight. Protect from open flame; keep all containers grounded.
- C. Follow all Manufacturer's specific label instructions and prudent safety practices for storage and handling.

#### 1.7 PROJECT / SITE CONDITIONS

- A. Material, air, and surface temperatures shall be in the range of 25° to 85° Fahrenheit during application and cure, unless a special formulation is being used and Manufacturer has been consulted.
- B. Relative humidity in the specific location of the application shall be less than 85 percent and the surface temperature shall be at least 5 degrees Fahrenheit above the dew point.
- C. Conditions required of new concrete to be coated with MMA materials:
  - 1. Concrete shall be moisture cured for a minimum of 7 days at 70° F. The concrete must be fully cured for a minimum of 28 days prior to application of the coating system pending moisture testing.
  - 2. Surface contaminants such as curing agents, membranes, or other bond breakers should not be used.
  - 3. Concrete shall have a "rubbed" finish; float or darby finish the concrete (a hard steel trowel is neither necessary nor desirable).

- 4. Drains should be set to the concrete grade rather than raised to the finished grade of the topping.
- D. Concrete shall have a moisture emission rate of no more than 5 lbs. per 1000 sq. ft. per 24 hour period as determined by proper Calcium Chloride Testing.
- E. Foodstuffs are the responsibility of the Owner and shall have been removed from the area of application by the Owner or his representatives.
- F. Vapor barriers and/or suitable means shall have been installed beneath grade slabs to prevent vapor transmission.

## 1.8 WARRANTY

- A. Res-Tek Inc. warrants that materials shipped to buyers are at the time of shipment substantially free from material defects and will perform substantially according to Res-Tek's published literature if used strictly in accordance with Res-Tek's prescribed procedures and prior to expiration date.
- B. Res-Tek's liability with respect to this warranty is strictly limited to the value of the material purchased.
- C. Res-Tek has no responsibility for the application and processing of products and is under no circumstances liable to any third party whatsoever.

## PART 2 - PRODUCTS

### 2.1 ACCEPTABLE MANUFACTURERS

- A. Res-Tek Inc., 110 Riverside Drive, Cartersville, Georgia 30120, Phone (770)427-4034 or (888)737-8351, Fax (770) 427-4037.

### 2.2 MATERIALS

- A. RT-805 SL Methyl Methacrylate (MMA) Reactive Acrylic Flake System:
  - 1. Penetrating / Reinforcing Primer: RT-710 with R Comp.
  - 2. Coving (if required): Res-Tek RT-800 with appropriate RT filler.
  - 3. Patching / Sloping (if required): RT-05 Polymer Concrete.
  - 4. Topping: RT-805 Self-Leveling, consisting of Res-Tek RT-805 resin and RT Filler SL with Res-Tek Colored Flake broadcast.
  - 5. Topcoat: RT-925 sealer resin.
  - 6. Pigment: Color to compliment Colored Flake.
  - 7. RT Colored Flake for Broadcasting: Color/s as selected by Architect.
  - 8. Skid Resistance (if required): Added skid resistance to be provided by including bleached aluminum oxide, glass bead, or similar material broadcast into the topcoat resin to achieve specified skid / slip resistance requirements. Size and rate shall be determined by Architect.



2.3 PRODUCT PERFORMANCE CRITERIA

A. Res-Tek RT-710 Primer

Percentage Reactive Resin	100%
Percent Solids	100%
Water Absorption, Wt. % (ASTM D570)	less than 0.6
Tensile Strength, psi (ASTM D638)	3,550
Tensile Modulus, psi (ASTM D638)	230,000
Coefficient of Thermal Expansion, in./in./deg. F (ASTM D696)	.000035
Electrical Resistivity (ASTM D257)	
Volume Resistance, ohm-cm	10 <sup>15</sup>
Surface Resistance, ohm	10 <sup>12</sup>
Water Vapor Transmission (DIN 53122), g/cm-hr-mm Hg X 10 <sup>-9</sup>	1.4

B. Res-Tek RT-05 Polymer Concrete Resin

Percentage of Reactive Resin	100%
Water Absorption, Wt. % (ASTM D570)	0.02
Tensile Strength, psi (ASTM D638)	1,200
Tensile Modulus, psi X 10 to the 5th (ASTM D638)	1.2
Coefficient of Thermal Expansion, in./in./deg. F (ASTM D696)	.000018
Compressive Strength, psi (ASTM C39)	7,800
Compressive Strength, psi (ASTM C109)	9,200

C. Res-Tek RT-805 Resin

Percentage of Reactive Resin	100%
Percentage of Solids	100%
Water Absorption, Wt. % (ASTM D570)	0.04
Compressive Strength, psi (ASTM C109)	6,000-8,000
Compressive Strength, psi (ASTM D695)	6,000
Tensile Strength, psi (ASTM D638)	1,950
Tensile Modulus, psi (ASTM D638)	230,000
Flexural Strength, psi (ASTM D790)	3,500
Coefficient of Thermal Expansion, in./in./deg. F (ASTM D696)	.000019
Electrical Resistivity, (ASTM D257)	
Volume Resistance, ohm-cm	10 <sup>14</sup>
Chemical Resistance, (ASTM D543)	
Effect of Weak Acids	None
Effect of Strong Acids	Slight
Effect of Alkilis	None
Effect of Salt Solutions	None
Effect of Oil, Grease	None
Effect of Sunlight (UV Radiation)	None

D. Res-Tek RT-925 Sealer Resin

Percentage of Reactive Resin	100%
Percentage of Solids	100%

Water Absorption, Wt. % (ASTM D570)	0.5
Tensile Strength, psi (ASTM D638)	3,850
Tensile Modulus, psi (ASTM D638)	470,000
Coefficient of Thermal Expansion, in./in./deg. F (ASTM D696)	.000035
Electrical Resistivity, (ASTM D257)	
Volume Resistance, ohm-cm	10 <sup>15</sup>
Surface Resistance, ohm	10 <sup>12</sup>
Water Vapor Transmission (DIN 53122) g/cm-hr-mm Hg X 10 <sup>-9</sup>	1.43
Chemical Resistance, (ASTM D543)	
Effect of Weak Acids	None
Effect of Strong Acids	Slight
Effect of Alkilis	None
Effect of Salt Solutions	None
Effect of Oil, Grease	None
Effect of Sunlight (UV Radiation)	None

## 2.4 PRODUCT INSTALLATION & APPLICATION CRITERIA

### A. All Res-Tek Material Systems:

- |                         |               |
|-------------------------|---------------|
| 1. Pot Life at 68° F.:  | 15-20 minutes |
| 2. Cure Time at 68° F   | 60 minutes    |
| 3. Recoat Time at 68° F | 60-90 minutes |

## PART 3 - EXECUTION

### 3.1 PREWORK INSPECTION

- A. Examine all surfaces to be coated with MMA material systems and report to the Owner and/or Engineer any conditions that will adversely affect the appearance or performance of these coating systems and that cannot be put into acceptable condition by the preparatory work specified in Paragraph 3.03.
- B. Do not proceed with application until the surface is acceptable or authorization to proceed is given by the Engineer.
- C. In the event that Applicator has employed all acceptable methods of surface preparation and cannot remedy adverse conditions that would lead to failure of the installation, Applicator shall withdraw from the contract and Owner will be financially responsible only for preparation efforts. Comply with insulation manufacturer's recommendations and installation sequence. Provide permanent placement and support of insulation.

### 3.2 GENERAL

- A. Material storage area must be selected and approved by Applicator and Owner or his representative.

- B. Owner will furnish electricity and water for use by Applicator.
- C. If existing ventilation is inadequate, Applicator will provide sufficient ventilation to allow complete air exchange every five (5) minutes.
- D. Owner shall provide means for disposal of construction waste.
- E. Applicator will protect adjacent surfaces not to be coated with masking and/or covers. Owner's equipment shall be protected from dust, cleaning solutions, and flooring materials.

### 3.3 PREPARATION

#### A. Surface Preparation - General:

1. Concrete substrate must be clean and dry. Dislodge dirt, mortar spatter, paint overspray, and other dry surface accumulations and contamination by scraping, brushing, sweeping, vacuuming, and/or compressed air lowdown.
2. Surfaces that are heavily contaminated shall be cleaned with the appropriate degreaser, detergent, or other appropriate cleaner/surfactant followed by thoroughly rinsing with fresh water to remove the accumulation prior to mechanical cleaning efforts. Mechanical cleaning will not remove such deposits, but only drive them deeper.
3. Concrete shall have a moisture emission rate of no more than 5 lbs. per 1000 sq. ft. per 24 hour period as determined by proper Calcium Chloride Testing.

#### B. Bond Testing

1. The applicator shall evaluate all surface preparation by conducting bond tests at strategic locations.
2. Mix six (6) ounces of the primer to be used in the application with #10-#12 mesh, dry quartz sand until an easily trowelable mixture is obtained. Add 10% by volume Res-Tek Powder Hardener (BPO) and mix well. Apply palm-sized patties 1/8" to 1/4" thick.
3. After one (1) hour at (68° F.), patties must be cured tack-free and cooled to ambient temperature of concrete. Remove patties with hammer and chisel and examine fracture/delamination plane. Concrete with fractured aggregate must be attached to the entire underside of the patty.
4. If only laitance or a small amount of concrete is attached or if interface between patty and substrate is tacky, further substrate preparation is required.
5. If further surface preparation is required, bond tests shall be conducted again when this has been completed.
6. If no amount or kind of surface preparation produces satisfactory bond tests, the applicator shall report that to the Owner, Engineer, and Manufacturer.

#### C. Mechanical Surface Preparation and Cleaning

1. All accessible concrete floor surfaces shall be mechanically blast cleaned using a mobile steelshot, dust recycling machine such as BLASTRAC®, as manufactured by Wheelabrator Corp., or approved equivalent. All surface and embedded accumulations of paint, toppings, hardened concrete layers, laitance, power trowel finishes, and other similar surface

characteristics shall be completely removed leaving a bare concrete surface having a profile similar to 40 grit sandpaper and exposing the upper fascia of concrete aggregate.

2. Floor areas inaccessible to the mobile blast cleaning machines shall be mechanically abraded to the same degree of cleanliness, soundness, and profile using vertical disc scarifiers, starwheel scarifiers, needle guns, scabblers, or other suitably effective equipment.
3. After blasting, traces or accumulations of spent abrasive, laitance, removed toppings, and other debris shall be removed with brush or vacuum.
4. Conduct Bond Tests to check adequacy of surface preparation. See Paragraph 3.03 - B (Bond Testing).
5. Application of the respective specified material system(s) must be completed before any water or other contamination of the surface occurs.

### 3.4 INSTALLATION

#### A. Application of RT-805 SL Colored Flake Flooring System

- 1) apply the primer/sealer
- 2) apply coving (if required)
- 3) perform patching and sloping with RT-05 PC
- 4) re-prime areas patched with RT-05 PC
- 5) apply slurry consisting of RT-805 Resin and Res-Tek Filler SL
- 6) apply the (2) topcoats,

Time for curing (45 - 60 minutes) shall be allowed between each coat.  
Thicknesses specified in "COATING SCHEDULE."

- B. Open only the containers of component materials to be use in each specific application as needed. Refer to Manufacturer's data sheets for pot-life/temperature relationship to determine size of batches to mix and mix ratios for each respective coat of the system.
- C. Measure, add, and mix the initiator (Res-Tek Powder Hardener) into the respective resin components in the proportions recommended by the Material Manufacturer. Pot life is short, so mix only as much material at a time as can be easily and efficiently applied.

### 3.5 INSTALLATION: PRIME COAT

- A. Measure, add, and mix the R-component, and initiator (Res-Tek Powder Hardener) into the RT-710 Primer in the proportions recommended by the Material Manufacturer.
- B. Pour the mixture batches onto the floor surface and use a 9" or 18" wide, 1/2" - 3/4" thick-napped, solvent-resistant paint roller to roll out the material at a rate of 100 sq. ft. / gal. To form a uniform, continuous film, ensuring that all crevices, cracks, and other surface discontinuities have been saturated and coated. Use a paint brush to reach areas inaccessible to the roller. Work quickly and deliberately; the pot life is short (15 -20 minutes). Do not leave any "puddles"; roll out any such accumulations.
- C. Allow the primer/sealer coat to cure.

- D. If any of the concrete has absorbed all of the primer or if the concrete still has a dry look, reprime these areas before applying wear coat or topcoat.

### 3.6 INSTALLATION: COVING (IF REQUIRED)

#### A. Surface Preparation

1. If concrete walls are to be painted prior to installation of cove base, the bottom portion of the walls shall remain un-coated to the height of the cove base to insure a proper bond to the concrete wall.
2. If walls are constructed of a non-compatible material or if a coating exists, a backer board of ¼" Plexiglas or ½" cement board cut to the desired height of the cove base needs to be installed. The top of the backer board should be cut at a 45° angle to create a "beveled" edge.
3. If a backer board needs to be installed it shall be fastened using a high grade construction adhesive as well as counter sunk screws or concrete masonry anchors.

#### B. System Description

1. Cove base shall be installed according to manufacturers recommendations and shall be one of two systems:
  - a. RT-CB Cove Base consisting of radius and brush on body coat.
  - b. Trowel-On Cove Base consisting of a trowel applied radius/base mix with a termination strip installed at the top of the base.
2. Cove base will receive a broadcast and top coat consistent with flooring system.

### 3.7 INSTALLATION: PATCHING / SLOPING (IF REQUIRED)

- A. Measure, add, and mix the RT-05 Resin, Filler PC, and necessary aggregate (if required) in the proportions recommended by the Material Manufacturer.
- B. Use mixture to repair any damaged concrete, or to slope any areas as needed.
- C. Once cured, material must be re-primed before topping system is applied.

### 3.8 INSTALLATION: TOPPING

- A. Size the batches, and mix according to Manufacturer's instructions. The entire batch should be poured and spread at once, i.e., do not let material set in pail.
- B. Spread the topping material with a gauge rake set to a depth of 1/8" Lightly trowel to a uniform thickness of 1/8" as necessary.
- C. Immediately after application, roll with a porcupine roller available from the Manufacturer to release any trapped air from the topping.
- D. Broadcast Colored Flake into the fresh material before it begins to cure. It is important that the flake "rains" down, and not be thrown into, the surface.

- E. Allow the topping to cure.
- F. Remove excess flakes by sweeping, “blow-down”, and/or vacuuming. Lightly abrade surface to remove loosely bonded Colored Flake with a medium-stiff brush on a swing style floor machine or abrade using med-coarse fiber pad, or stiff bristle push-broom. Vacuum prior to next step.

### 3.9 INSTALLATION: TOP COAT

- A. Apply with clean rollers at a rate of 100 - 110 sq. ft. /gal. in the same way as the Primer/Sealer was applied as described in Paragraph 3.04.01.
- B. (If Required) Broadcast aluminum oxide, glass beads, or other suitable material into wet topcoat resin; size and rate as determined by owner.
- C. Allow topcoat to cure. Floors without aluminum oxide or glass bead broadcast may be lightly sanded if required. Vacuum all dust, paying particular attention to edges and corners.

### 3.10 INSTALLATION: SECOND TOP COAT

- A. Apply with clean rollers at a rate of 100 - 125 sq. ft. /gal. in the same way as the Primer/Sealer was applied as described in Paragraph 3.04.01.
- B. Allow topcoat to cure.

### 3.11 FIELD QUALITY CONTROL / INSPECTION

- A. Applicator shall request acceptance of surface preparation from the Engineer before application of the prime/seal coat.
- B. Applicator shall request acceptance of the prime/seal coat from the Engineer before application of subsequent specified materials.
- C. All work not acceptable to the Architect, Engineer, or Owner must be corrected before consideration of final acceptance.

### 3.12 CLEANING

- A. Applicator shall remove any material spatters and other material that is not where it should be. Remove masking and covers taking care not to contaminate surrounding area.
- B. Applicator shall repair any damage that should arise from either the application or clean-up effort.

### 3.13 COATING SCHEDULE

- A. Primer shall be RT-710 with R-Component. Rate shall be approx. 100 sq.ft. Per gallon (approx. 12 mils).

- B. Coving shall be RT-800 with appropriate fillers
- C. Patching/Sloping material shall be RT-05 PC
- D. Body coat shall be a slurry of RT-805 Resin and Res-Tek Filler SL applied with a gauge rake set at 1/8" for a rate of 36-40 sq. ft. per batch. Flake to be broadcast into the uncured topping. Broadcast the Colored Quartz at the rate of 0.10 – 0.15 pounds per sq. ft.
- E. Clear topcoat shall be RT-925 at the rate of 100 - 110 sq. ft. per gallon for the first coat and 100 - 125 sq. ft. per gallon for the second application.

END OF SECTION

## SECTION 09910 - PAINTING

### PART 1 - GENERAL

#### 1.1 SUMMARY

A. Provide the following:

1. Painting and surface preparation for interior unfinished surfaces as scheduled.
2. Painting and surface preparation for exterior unfinished surfaces as scheduled.

#### 1.2 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.

B. Samples: Submit two representative samples of each material specified indicating visual characteristics and finish. Include range samples if variation of finish is anticipated.

1. Include manufacturer's full range of color and finish options if additional selection is required.

C. Extra Stock: Submit 1 unopened gallons of each paint and color used in the project.

#### 1.3 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers, which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. Regulations: Compliance with VOC and environmental regulations.

C. Applicator: Firm with not less than 5 years of successful experience in painting work similar in scope to work of this project.

1. Maintain throughout duration of the work a crew of painters who are fully qualified to satisfy requirements of the specifications.

D. Mock-Ups: Provide mock-up as required to demonstrate quality of workmanship.

1. Provide 4 foot x 4 foot mock-ups of each type of surface.



#### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials in manufacturer's original containers bearing coating name and color, material composition data, date of manufacture, legal notices if applicable, and mixing, thinning, and application instructions.
- B. Storage:
  - 1. Store materials in an orderly fashion and in clean, well-closed containers with labels intact.
  - 2. Maintain above 40 degrees F. Do not allow materials to freeze.

#### 1.5 PROJECT CONDITIONS

- A. Apply coatings only under the following environmental conditions:
  - 1. Air and surface temperatures are between 50 and 90 degrees F, unless otherwise recommended by manufacturer.
  - 2. Surface temperature is at least 5 degrees F above dew point.
  - 3. Relative humidity is less than 85 percent.
- B. Do not apply coatings during inclement weather except within enclosed, conditioned spaces.
  - 1. Provide temporary lighting to achieve a well-lit surface with a level of at least 80 footcandles measured mid-height.

#### 1.6 COORDINATION

- A. General: Perform work in proper sequence with work of other trades to avoid damage to finished work.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Manufacturers of Regular Paints:
  - 1. Benjamin Moore
  - 2. ICI Devco Coatings
  - 3. Sherwin Williams
  - 4. Or approved equal.
- B. Basis of Design: Sherwin Williams

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Inspect surfaces, report unsatisfactory conditions in writing; beginning work means acceptance of substrate.
- B. Apply coatings in accordance with coating manufacturer's instructions and using application method best suited for obtaining full, uniform coverage of surfaces to be coated. Coordinate with work of other sections.
- C. Apply successive coats after adequate cure of the preceding coat and within the recommended recoating time.
- D. Apply each coat to achieve the dry film thickness per coat recommended by the coating manufacturer. Application rates in excess of those recommended and fewer numbers of coats than specified will not be accepted.
- E. Completed coatings shall be free of defects such as runs, sags, variations in color, lap or brush marks, holidays, and skips.
- F. At existing areas to be repainted, remove blistered or peeling paint to sound substrate. Remove chalk deposits and mildew and wash all surfaces with mild detergent. Perform related minor preparation including caulk and glazing compounds. Spot prime bare areas before priming and painting as specified.
- G. Match approved mock-ups for color, texture, and pattern. Re-coat or remove and replace work which does not match or shows loss of adhesion. Clean up, touch up, and protect work.

### 3.2 PRIME COATS

- A. General:
  - 1. Field apply bottom coats scheduled except where the contract documents require shop coating.
  - 2. Where first coat shows signs of suction spots or poorly sealed areas, reapply first coat material to adequately seal surface before proceeding with successive coats.

### 3.3 FINISH COATS

- A. Number of Coats and Minimum Coating Thickness:
  - 1. Apply not less than the number of coats indicated.
  - 2. Apply each coat to achieve not less than the dry film thicknesses indicated per coat.
  - 3. Apply additional coats at no additional cost to the owner when necessary to achieve complete hiding, uniform texture, or uniform sheen and appearance.

### 3.4 CLEANING AND PROTECTION

#### A. Cleaning:

1. Clean work area on a daily basis; dispose of spent materials and empty containers. If requested, turn over the architect all empty coatings containers used during the course of each day.
2. Remove all trace of coatings from adjacent surfaces not scheduled to be coated. Remove by appropriate methods that do not damage surfaces, paving or landscaping. Use shade cloth to protect landscaping in lieu of plastic covers.

#### B. Protection:

1. Protect work against damage until fully cured. Provide signs identifying wet surfaces until surfaces are adequately cured.
2. Shortly before final completion of the project, examine surfaces for damage to coatings and restore coatings to new, undamaged condition.
3. Touch-up of minor damage will be acceptable where result is not visibly different from surrounding surfaces. Where result is different either in color, sheen, or texture, recoat entire surface.

### 3.5 PAINT SCHEDULE - INTERIOR

#### A. Gypsum Drywall: Ceilings in Restrooms

##### 1. Latex System: Semi-Gloss

- a. Prime Coat: Primer sealer, latex, interior.
  - 1) Sherwin-Williams: ProMar 200 0 VOC Interior Latex Primer B28W600 (43 g/l VOC)
- b. Intermediate Coat: Latex, interior, high performance architectural.
  - 1) Sherwin-Williams: Harmony Interior Acrylic Latex Semi-Gloss B11 Series (0 g/l VOC)
- c. Topcoat: Latex, interior, high performance architectural.
  - 1) Sherwin-Williams: Harmony Interior Acrylic Latex Semi-Gloss B11 Series (0 g/l VOC)

#### B. Concrete Masonry Units: Walls in Restrooms, Classrooms, Corridors, Storage Rooms, Planning Rooms, Mechanical, Electrical, Communication and Custodial

##### 1. Industrial Low-Odor/VOC Latex System: Semi-Gloss

- a. Prime Coat: Block filler, latex.
  - 1) Sherwin-Williams: PrepRite Interior/Exterior Block Filler B25W25 (<50 g/l VOC)
- b. Intermediate Coat: Latex, industrial low odor/VOC, semi-gloss.
  - 1) Sherwin-Williams: Pro Industrial Pre-Catalyzed WB Epoxy Semi-Gloss, K46W151 (<150 g/l VOC)
- c. Topcoat: Latex, industrial low odor/VOC, semi-gloss.

- 1) Sherwin-Williams: Pro Industrial Pre-Catalyzed WB Epoxy Semi-Gloss, K46W151 (<150 g/l VOC)
- C. Water-Based Clear Sealer System: Mechanical Room and Storage Room
- a. First Coat: Sealer, water based, for concrete floors.
    - 1) Sherwin-Williams: H&C Concrete & Masonry Waterproofing Sealer.
  - b. Topcoat: Sealer, water based, for concrete floors.
    - 1) Sherwin-Williams: H&C Concrete & Masonry Waterproofing Sealer.
- D. Steel Substrates: Hollow Metal Doors and Frames
- 1. Alkyd-Based Light Industrial High Performance Coating System: Gloss (If shop primed, verify that shop primer is compatible with alkyd paint system).
    - a. Prime Coat: Primer, rust-inhibitive, water based.
      - 1) Sherwin-Williams: ProIndustrial ProCryl Universal Primer B66-310 (<100 g/l VOC)
    - b. Intermediate Coat: Light industrial coating, interior, oil based, matching topcoat.
      - 1) Sherwin-Williams: Pro Industrial Industrial Enamel 100 Gloss B54WZ211 Series (,100 g/l VOC)
    - c. Topcoat: Light industrial coating, interior, oil based.
      - 1) Sherwin-Williams: Pro Industrial Industrial Enamel 100 Gloss B54WZ211 Series (,100 g/l VOC)

### 3.6 PAINT SCHEDULE - EXTERIOR

- A. Concrete Masonry Units: Exterior Walls
- 1. Premium Exterior Masonry Coating System: Smooth or Textured, as Noted on Plans
    - a. Prime Coat: Block filler, latex.
      - 1) Sherwin-Williams: Loxon Block Surfacer, A24W200 (<100 g/l VOC)
    - b. Intermediate Coat: High performance acrylic coating.
      - 1) Loxon Masonry Coating, Smooth A24 Series, Clear or Tinted, Based on Drawings.
    - c. Topcoat: High performance acrylic coating.
      - 1) Loxon Masonry Coating, Smooth A24 Series, Clear or Tinted, Based on Drawings.
- B. Concrete: Exterior Concrete Columns
- 1. Premium Exterior Acrylic System: Gloss
    - a. Prime Coat: Block filler, latex.
      - 1) Sherwin-Williams: Loxon Block Surfacer, A24W200 (<100 g/l VOC)
    - b. Intermediate Coat: Premium acrylic coating.
      - 1) Sherwin-Williams: Resilience Premium Acrylic Exterior Latex, Gloss, K44 Series.
    - c. Topcoat: High performance acrylic coating.

- 1) Sherwin-Williams: Resilience Premium Acrylic Exterior Latex, Gloss, K44 Series.

C. Steel Substrates: Misc. Metals

1. Water-Based Light Industrial Coating System: Gloss (If shop primed, verify that shop primer is compatible with acrylic paint system. If not, request substitute system from architect).
  - a. Prime Coat: Primer, rust-inhibitive, water based.
    - 1) Sherwin-Williams: ProIndustrial ProCryl Universal Primer B66W310
  - b. Intermediate Coat: Light industrial coating, water based, matching topcoat.
    - 1) Sherwin-Williams: Resilience Premium Acrylic Exterior Latex, Gloss, K44 Series.
  - c. Topcoat: Light industrial coating, water based.
    - 1) Sherwin-Williams: Resilience Premium Acrylic Exterior Latex, Gloss, K44 Series.

D. Galvanized Metal Substrates: Misc. Metals

1. Water-Based Light Industrial Coating Over Waterborne Primer System: Gloss
  - a. Prime Coat: Primer, galvanized, water based.
    - 1) Sherwin-Williams: ProIndustrial ProCryl Universal Primer B66W310
  - b. Intermediate Coat: Light industrial coating, water based, matching topcoat.
    - 1) Sherwin-Williams: Resilience Premium Acrylic Exterior Latex, Gloss, K44 Series.
  - c. Topcoat: Light industrial coating, water based.
    - 1) Sherwin-Williams: Resilience Premium Acrylic Exterior Latex, Gloss, K44 Series.

END OF SECTION 09910

## SECTION 099113.1 - EXTERIOR PAINTING FOR MECHANICAL AND ELECTRICAL SYSTEMS

### 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 surface preparation and the application of paint systems on the following exterior substrates:
  - 1. Steel.
  - 2. Galvanized metal.
  - 3. Aluminum (not anodized or otherwise coated).

#### 1.3 DEFINITIONS

- A. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
- B. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- C. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
- D. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
- E. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.
- F. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

#### 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
- B. Product List: For each product indicated, include the following:
  - 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
  - 2. Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.

3. VOC content.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
  1. Maintain containers in clean condition, free of foreign materials and residue.
  2. Remove rags and waste from storage areas daily.

#### 1.6 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
- B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

### PART 2 - PRODUCTS

#### 2.1 PAINT, GENERAL

- A. MPI Standards: Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List."
- B. 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 manufacturers of topcoat for use in paint system and on substrate indicated.
- C. VOC Content: Provide materials that comply with VOC limits of authorities having jurisdiction.
- D. Colors: As indicated in a color schedule .

#### 2.2 METAL PRIMERS

- A. Primer, Alkyd, Anti-Corrosive for Metal: MPI #79.
- B. Primer, Alkyd, Quick Dry, for Metal: MPI #76.
- C. Primer, Galvanized, Water Based: MPI #134.
- D. Primer, Quick Dry, for Aluminum: MPI #95.

## 2.3 SOLVENT-BASED PAINTS

- A. Alkyd, Exterior Gloss (Gloss Level 6): MPI #9.

## 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. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- C. 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 Manual" applicable to substrates and paint systems indicated.
- B. 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 indicated.
- C. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer.
- D. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- E. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- F. Aluminum Substrates: Remove loose surface oxidation.

### 3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Manual."
  - 1. Use applicators and techniques suited for paint and substrate indicated.



2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
  3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
  4. Paint entire exposed surface of window frames and sashes.
  5. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
  6. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- C. 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.
- D. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
1. Paint the following work where exposed to view:
    - a. Uninsulated metal piping (Bare copper piping not required to be painted unless noted otherwise).
      - 1) Fire Protection (Red)
      - 2) Natural Gas (Yellow)
      - 3) Other (To be determined by Engineer)
    - b. Uninsulated plastic piping.
    - c. Pipe hangers and supports.
    - d. Metal conduit.
    - e. Plastic conduit.
    - f. Tanks that do not have factory-applied final finishes.

### 3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
1. Contractor shall touch up and restore painted surfaces damaged by testing.
  2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

### 3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. 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.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

### 3.6 EXTERIOR PAINTING SCHEDULE

- A. Steel Substrates:
  - 1. Alkyd System:
    - a. Prime Coat: Primer, alkyd, anticorrosive for metal, MPI #79.
    - b. Intermediate Coat: Exterior alkyd enamel matching topcoat.
    - c. Topcoat: Alkyd, exterior, gloss (Gloss Level 6), MPI #9.
- B. Galvanized-Metal Substrates:
  - 1. Alkyd System:
    - a. Prime Coat: Primer, galvanized metal, as recommended in writing by topcoat manufacturer for exterior use on galvanized-metal substrates with topcoat indicated.
    - b. Intermediate Coat: Exterior alkyd enamel matching topcoat.
    - c. Topcoat: Alkyd, exterior, gloss (Gloss Level 6), MPI #9.
- C. Aluminum Substrates:
  - 1. Alkyd System:
    - a. Prime Coat: Primer, quick dry, for aluminum, MPI #95.
    - b. Intermediate Coat: Exterior alkyd enamel matching topcoat.
    - c. Topcoat: Alkyd, exterior, gloss (Gloss Level 6), MPI #9.

END OF SECTION 099113.1

## SECTION 099123.1 - INTERIOR PAINTING FOR MECHANICAL AND ELECTRICAL SYSTEMS

### 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 surface preparation and the application of paint systems on the following interior substrates:
  - 1. Steel.
  - 2. Galvanized metal.
  - 3. Aluminum (not anodized or otherwise coated).
  - 4. ASJ insulation covering.

#### 1.3 DEFINITIONS

- A. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
- B. Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- C. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- D. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
- E. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
- F. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.
- G. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

#### 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
- B. Product List: For each product indicated, include the following:

1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.
3. VOC content.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
  1. Maintain containers in clean condition, free of foreign materials and residue.
  2. Remove rags and waste from storage areas daily.

#### 1.6 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

### PART 2 - PRODUCTS

#### 2.1 PAINT, GENERAL

- A. MPI Standards: Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List."
- B. 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 manufacturers of topcoat for use in paint system and on substrate indicated.
- C. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction and, for interior paints and coatings applied at Project site, the following VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
  1. Nonflat Paints and Coatings: 150 g/L.
  2. Primers, Sealers, and Undercoaters: 200 g/L.
  3. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.
  4. Floor Coatings: 100 g/L.
- D. Colors: As indicated in a color schedule .

## 2.2 PRIMERS/SEALERS

- A. Primer Sealer, Latex, Interior: MPI #50.
- B. Primer, Bonding, Water Based: MPI #17.
- C. Primer, Bonding, Solvent Based: MPI #69.

## 2.3 METAL PRIMERS

- A. Primer, Alkyd, Anti-Corrosive, for Metal: MPI #79.
- B. Primer, Galvanized, Water Based: MPI #134.
- C. Primer, Quick Dry, for Aluminum: MPI #95.

## 2.4 WATER-BASED PAINTS

- A. Latex, Interior, Gloss, (Gloss Level 6, except minimum gloss of 65 units at 60 degrees): MPI #114.
- B. Latex, Interior, Institutional Low Odor/VOC, Flat (Gloss Level 1): MPI #143.
- C. Latex, Interior, Institutional Low Odor/VOC, Semi-Gloss (Gloss Level 5): MPI #147.

## 2.5 SOLVENT-BASED PAINTS

- A. Alkyd, Interior, Gloss (Gloss Level 6): MPI #48.

## 2.6 FLOOR COATINGS

- A. Floor Enamel, Alkyd, Gloss (Gloss Level 6): MPI #27.

## 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. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- C. 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 Manual" applicable to substrates indicated.
- B. 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 indicated.
- C. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
- D. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer.
- E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- G. Aluminum Substrates: Remove loose surface oxidation.
- H. Cotton or Canvas Insulation Covering Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

### 3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."
  - 1. Use applicators and techniques suited for paint and substrate indicated.
  - 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
  - 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
  - 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
  - 5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

- C. 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.
- D. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
  - 1. Paint the following work where exposed to view:
    - a. Uninsulated metal piping (Bare copper piping not required to be painted unless noted otherwise).
      - 1) Fire Protection (Red)
      - 2) Natural Gas (Yellow)
      - 3) Other (Color to be determined by Engineer)
    - b. Uninsulated plastic piping.
    - c. Pipe hangers and supports.
    - d. Metal conduit.
    - e. Plastic conduit.
    - f. Tanks that do not have factory-applied final finishes.
  - 2. Paint the following work where exposed in occupied spaces:
    - a. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
    - b. Other items as directed by Architect.
  - 3. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

### 3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
  - 1. Contractor shall touch up and restore painted surfaces damaged by testing.
  - 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

### 3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

- C. 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.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

### 3.6 INTERIOR PAINTING SCHEDULE

#### A. Concrete Substrates, Traffic Surfaces:

- 1. Alkyd Floor Enamel System:
  - a. Prime Coat: Floor enamel, alkyd, gloss (Gloss Level 6), MPI #27.
  - b. Intermediate Coat: Floor enamel, alkyd, gloss (Gloss Level 6), MPI #27.
  - c. Topcoat: Floor enamel, alkyd, gloss (Gloss Level 6), MPI #27.

#### B. Steel Substrates:

- 1. Institutional Low-Odor/VOC Latex System:
  - a. Prime Coat: Primer, rust-inhibitive, water based MPI #107.
  - b. Intermediate Coat: Latex, interior, institutional low odor/VOC, matching topcoat.
  - c. Topcoat: Latex, interior, institutional low odor/VOC, semi-gloss (Gloss Level 5), MPI #147.
- 2. Alkyd System:
  - a. Prime Coat: Primer, alkyd, anti-corrosive, for metal, MPI #79.
  - b. Intermediate Coat: Alkyd, interior, matching topcoat.
  - c. Topcoat: Alkyd, interior, gloss (Gloss Level 6), MPI #48.

#### C. Galvanized-Metal Substrates:

- 1. Institutional Low-Odor/VOC Latex System:
  - a. Prime Coat: Primer, galvanized, water based, MPI #134.
  - b. Intermediate Coat: Latex, interior, institutional low odor/VOC, matching topcoat.
  - c. Topcoat: Latex, interior, institutional low odor/VOC, flat (Gloss Level 1), MPI #143.

#### D. Aluminum (Not Anodized or Otherwise Coated) Substrates:

- 1. Institutional Low-Odor/VOC Latex System:
  - a. Prime Coat: Primer, quick dry, for aluminum, MPI #95.
  - b. Intermediate Coat: Latex, interior, institutional low odor/VOC, matching topcoat.
  - c. Topcoat: Latex, interior, institutional low odor/VOC, semi-gloss (Gloss Level 5), MPI #147.
- 2. Alkyd System:



- a. Prime Coat: Primer, quick dry, for aluminum, MPI #95.
  - b. Intermediate Coat: Alkyd, interior, matching topcoat.
  - c. Topcoat: Alkyd, interior, gloss (Gloss Level 6), MPI #48.
- E. Fiberglass and Plastic Substrates:
- 1. Institutional Low-Odor/VOC Latex System:
    - a. Prime Coat: Primer, bonding, water based, MPI #17.
    - b. Intermediate Coat: Latex, interior, institutional low odor/VOC, matching topcoat.
    - c. Topcoat: Latex, interior, institutional low odor/VOC, flat (Gloss Level 1), MPI #143.
    - d. Topcoat: Latex, interior, institutional low odor/VOC, semi-gloss (Gloss Level 5), MPI #147.
  - 2. Alkyd System:
    - a. Prime Coat: Primer, bonding, solvent based, MPI #69.
    - b. Intermediate Coat: Alkyd, interior, matching topcoat.
    - c. Topcoat: Alkyd, interior, gloss (Gloss Level 6), MPI #48.
- F. Cotton or Canvas and ASJ Insulation-Covering Substrates: Including pipe and duct coverings.
- 1. Institutional Low-Odor/VOC Latex System:
    - a. Prime Coat: Primer sealer, latex, interior, MPI #50.
    - b. Intermediate Coat: Latex, interior, institutional low odor/VOC, matching topcoat.
    - c. Topcoat: Latex, interior, institutional low odor/VOC, flat (Gloss Level 1), MPI #143.

END OF SECTION 099123.1

## SECTION 10101 - VISUAL DISPLAY SURFACES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Markerboards.
  - 2. Tackboards.

#### 1.2 DEFINITIONS

- A. Tackboard: Framed or unframed, tackable, visual display board assembly.
- B. Visual Display Board Assembly: Visual display surface that is factory fabricated into composite panel form, either with or without a perimeter frame; includes chalkboards, markerboards, and tackboards.
- C. Visual Display Surface: Surfaces that are used to convey information visually, including surfaces of chalkboards, markerboards, tackboards, and surfacing materials that are not fabricated into composite panel form but are applied directly to walls.

#### 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for visual display surfaces.
- B. Samples for Initial Selection: For each type of visual display surface indicated, for units with factory-applied color finishes, and as follows:
  - 1. Fabric swatches of polyester-fabric-faced tack assemblies.
  - 2. Include accessory Samples to verify color selected.
- C. Maintenance Data: For visual display surfaces to include in maintenance manuals.
- D. Warranties: Sample of special warranties.

#### 1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain visual display surfaces from single source from single manufacturer.

- B. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 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.
- C. Preinstallation Conference: Conduct conference at Project site.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver factory-built visual display surfaces, including factory-applied trim where indicated, completely assembled in one piece without joints, where possible. If dimensions exceed maximum manufactured panel size, provide two or more pieces of equal length as acceptable to Architect. When overall dimensions require delivery in separate units, prefit components at the factory, disassemble for delivery, and make final joints at the site.
- B. Store visual display surfaces vertically with packing materials between each unit.

#### 1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install visual display surfaces until spaces are enclosed and weathertight, wet work in spaces are 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.

#### 1.7 WARRANTY

- A. Special Warranty for Porcelain-Enamel Face Sheets: Manufacturer's standard form in which 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: 50 years from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS, GENERAL

- A. Porcelain-Enamel Face Sheet: Manufacturer's standard steel sheet with porcelain-enamel coating fused to steel; uncoated thickness indicated.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- a. Claridge Products and Equipment, Inc.
    - b. PolyVision Corporation; a Steelcase company.
  - 2. Matte Finish: Low reflective; chalk wipes clean with dry cloth or standard eraser.
  - 3. Gloss Finish: Gloss as indicated; dry-erase markers wipe clean with dry cloth or standard eraser.
- B. High-Pressure Plastic Laminate: NEMA LD 3.
  - C. Polyester Fabric: Nondirectional weave, 100 percent polyester; weighing not less than 15 oz./sq. yd. (508 g/sq. m); with surface-burning characteristics indicated.
  - D. Hardboard: ANSI A135.4, tempered.
  - E. Particleboard: ANSI A208.1, Grade M-1, made with binder containing no urea formaldehyde.
  - F. Fiberboard: ASTM C 208.
  - G. Extruded Aluminum: ASTM B 221 (ASTM B 221M), Alloy 6063.

## 2.2 MARKERBOARD ASSEMBLIES

- A. Porcelain-Enamel Markerboards: Balanced, high-pressure, factory-laminated markerboard assembly of three-ply construction consisting of backing sheet, core material, and 0.021-inch thick, porcelain-enamel face sheet with high-gloss finish.
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. AARCO Products.
    - b. Claridge Products and Equipment, Inc.
    - c. PolyVision Corporation; a Steelcase company.
  - 2. Particleboard Core: 3/8 inch thick; with 0.015-inch thick, aluminum sheet thick, galvanized-steel sheet backing.
  - 3. Laminating Adhesive: Manufacturer's standard, moisture-resistant thermoplastic type.

## 2.3 TACKBOARD ASSEMBLIES

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. AARCO Products.
  - 2. Claridge Products and Equipment, Inc.
  - 3. PolyVision Corporation; a Steelcase company.
- B. Polyester-Fabric-Faced Tackboard: 1/8-inch- thick, polyester-fabric-faced cork sheet factory laminated to 3/8-inch- thick fiberboard backing.

## 2.4 SMARTBOARDS

- A. Smartboards to be provided by Owner. Contractor to coordinate and install Owner provided materials.

## 2.5 MARKERBOARD AND TACKBOARD ACCESSORIES

- A. Aluminum Frames and Trim: Fabricated from not less than 0.062-inch- (1.57-mm-) thick, extruded aluminum; standard size and shape.
  - 1. Factory-Applied Trim: Manufacturer's standard.
- B. Chalktray: Manufacturer's standard, continuous.
  - 1. Box Type: Extruded aluminum with slanted front, grooved tray, and cast-aluminum end closures.
- C. Map Rail: Provide the following accessories:
  - 1. Display Rail: Continuous and integral with map rail; fabricated from cork approximately 1 to 2 inches wide.
  - 2. End Stops: Located at each end of map rail.
  - 3. Map Hooks: Two map hooks for every 48 inches of map rail or fraction thereof.
  - 4. Paper Holder: Extruded aluminum; designed to hold paper by clamping action.

## 2.6 FABRICATION

- A. Porcelain-Enamel Visual Display Assemblies: Laminate porcelain-enamel face sheet and backing sheet to core material under heat and pressure with manufacturer's standard flexible, waterproof adhesive.
- B. Factory-Assembled Visual Display Units: Coordinate factory-assembled units with trim and accessories indicated. Join parts with a neat, precision fit.
  - 1. Make joints only where total length exceeds maximum manufactured length. Fabricate with minimum number of joints, balanced around center of board, as acceptable to Architect.
  - 2. Provide manufacturer's standard vertical-joint spline system between abutting sections of markerboards.
  - 3. Provide manufacturer's standard mullion trim at joints between markerboards and tackboards of combination units.
  - 4. Where size of visual display boards or other conditions require support in addition to normal trim, provide structural supports or modify trim as indicated or as selected by Architect from manufacturer's standard structural support accessories to suit conditions indicated.
- C. Aluminum Frames and Trim: Fabricate units straight and of single lengths, keeping joints to a minimum. Miter corners to a neat, hairline closure.

1. Where factory-applied trim is indicated, trim shall be assembled and attached to visual display units at manufacturer's factory before shipment.

## 2.7 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" 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. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

## 2.9 VISUAL DISPLAY SURFACE SCHEDULE

- A. Visual Display Board: Factory assembled.
  1. Markerboard: Porcelain-enamel markerboard assembly.
    - a. Color: White.
  2. Corners: Square.
  3. Width: As indicated on Drawings.
  4. Height: As indicated on Drawings.
  5. Mounting: Wall or Rail support system, as required by installation location.
  6. Mounting Height: 60" to top rail.
  7. Factory-Applied Aluminum Trim: Manufacturer's standard with clear anodic finish.
  8. Accessories:
    - a. Chalktray: Box type.
    - b. Map rail with display rail, end stops, map hooks and clips.
- B. Tackboard: Factory assembled.
  1. Tack Surface: Polyester-fabric-faced tackboard assembly.
    - a. Color: As selected by Architect from full range of industry colors.
  2. Corners: Square.
  3. Width: As indicated on Drawings.
  4. Height: As indicated on Drawings.
  5. Mounting: Wall or Rail support system, as required by installation location.
  6. Mounting Height: 60" to top rail.
  7. Edges: Concealed by trim.
    - a. Factory-Applied Aluminum Trim: Manufacturer's standard, with clear anodic finish.

## 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 walls and partitions for proper preparation and backing for visual display surfaces.
- C. 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 that could impair the performance of and affect the smooth, finished surfaces of visual display boards, including dirt, mold, and mildew.

### 3.3 INSTALLATION, GENERAL

- A. General: Install visual display surfaces in locations and at mounting heights indicated on Drawings, or if not indicated, at heights indicated below. Keep perimeter lines straight, level, and plumb. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation.

### 3.4 INSTALLATION OF FACTORY-FABRICATED VISUAL DISPLAY BOARDS AND ASSEMBLIES

- A. Visual Display Boards: Attach concealed clips, hangers, and grounds to wall surfaces and to visual display boards with fasteners at not more than 16 inches o.c. Secure both top and bottom of boards to walls.
  - 1. Field-Applied Aluminum Trim: Attach trim over edges of visual display boards and conceal grounds and clips. Attach trim to boards with fasteners at not more than 24 inches o.c.
    - a. Attach chalktrays to boards with fasteners at not more than 12 inches o.c.

### 3.5 INSTALLATION OF VISUAL DISPLAY RAILS

- A. Display Rails: Install rails in locations and at mounting heights indicated on Drawings, or if not indicated, at height indicated below. Attach to wall surface with fasteners at not more than 16 inches o.c.
  - 1. Mounting Height: 60 inches above finished floor to top of rail.

3.6 CLEANING AND PROTECTION

- A. Clean visual display surfaces according to manufacturer's written instructions. Attach one cleaning label to visual display surface in each room.
- B. Touch up factory-applied finishes to restore damaged or soiled areas.
- C. Cover and protect visual display surfaces after installation and cleaning.

END OF SECTION 10101



## SECTION 10425 - SIGNS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes the following types of signs:
  - 1. Interior and exterior room signage.
- B. Related Sections: The following sections contain requirements that relate to this section:
  - 1. Division 1 Section "Temporary Facilities" for temporary project identification signs.
  - 2. Division 15 Section "Mechanical Identification" for labels, tags, and nameplates for mechanical equipment.
  - 3. Division 16 Section "Electrical Identification" for labels, tags, and nameplates for electrical equipment.

#### 1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data: Include manufacturer's construction details relative to materials, dimensions of individual components, profiles, and finishes for each type of sign required.
- C. Shop Drawings: Provide shop drawings for fabrication and erection of signs. Include plans, elevations, and large-scale sections of typical members and other components. Show anchors, grounds, reinforcement, accessories, layout, and installation details. Identify mounting location for each sign on floor plan.
  - 1. Provide message list for each sign required, including large - scale details of wording and layout of lettering.
  - 2. Complete description of compliance with all ADA rules and regulations for each sign type as it applies shall be provided.
  - 3. For signs supported by or anchored to permanent construction, provide setting drawings, templates, and directions for installation of anchor bolts and other anchors to be installed as a unit of Work in other Sections.

- D. Samples: Provide the following samples of each sign component for initial selection of color, pattern and surface texture as required and for verification of compliance with requirements indicated.

#### 1.4 QUALITY ASSURANCE

- A. Design Criteria: The Contractor shall provide room identification signage for all rooms added or remodeled in this project.
- B. All signs indicating accessibility information shall meet ADA (American Disabilities Act), ANSI (American National Standards Institute) A117.1, HEW (U.S. Department of Health, Education and Welfare), OSHA (Occupational Safety and Health Administration), VA (Veterans Administration) and MIL - SPEC LP-387 a Type NDP.
  - 1. Character Height: Characters are to be sized according to viewing distance from which they are to be read. Raised tactile characters must be at least 5/8" and no higher than two inches.
  - 2. Typestyles: Characters must be upper case sans serif or simple serif type. Characters must also have a width-to-height ratio between 3:5 and 1:1 and stroke-width-to-height ratio between 1:5 and 1:10.
  - 3. Raised and Braille Characters: Raised characters must be accompanied with Grade 2 Braille. The characters are required to be a minimum of 1/32" in depth.
  - 4. Finish and Contrast: The characters and background are required to be a non-glare finish, and the characters and background must contrast their background (either light characters on a dark background or dark characters on a light background).
  - 5. Pictorial Symbols: Pictograms are required on certain signs. Where they are used, pictograms should be accompanied by verbal description placed below the pictogram. the border dimension of the pictogram should be 6" minimum in height. Universal symbols shall be utilized.
  - 6. Mounting Location and Height: Where permanent identification is provided for rooms or spaces, signs should be installed on the wall adjacent to the latch side of the door. Mounting height should be 60 inches from the floor to the centerline of the sign. Mounting location for such signage must be so that a person may approach within 3 inches of the signage without encountering protruding objects or standing within the swing of a door. Minimum clearance between the overhead sign and the floor is 80 inches.

#### 1.5 PROJECT CONDITIONS

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication to ensure proper fitting. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay.

### PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers
- B. Offering products that may be incorporated in the work include, but are not limited to, the following:
  - 1. ASI Sign Systems, Inc.
  - 2. Best Manufacturing Co., Best Sign Systems
  - 3. DGS Corp.
- C. Basis of Design: Best Sign Systems, ImPressions Line, Custom Design. Interior and exterior signs to include Room Name and Room Number. Interior classroom signs to include Room Name, Room Number and Paper Insert Panel.

## 2.2 MATERIALS

- A. Plastic Laminate: Provide high-pressure plastic laminate engraving stock with face and core plies in contrasting colors, in finishes and color combinations indicated or, if not indicated, as selected from the manufacturer's standards.
- B. Fasteners: Use concealed fasteners fabricated from metals that are not corrosive to the sign material and mounting surface.
- C. Anchors and Inserts: Use nonferrous metal or hot-dipped galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

## 2.3 PANEL SIGNS

- A. Panel Signs: Produce smooth, even, level sign panel surfaces, constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally.
- B. Graphic Content and Style: Provide sign copy that complies with the requirements indicated for size, style, spacing, content, position, material, finishes, and ADA requirements of raised copy and braille, and colors of letters, numbers, and other graphic devices.
- C. Unframed Panel Signs: Fabricate signs with edges mechanically and smoothly finished and integral text to conform with the following requirements:
  - 1. Style: Custom ImPressions Sign by Best Sign Systems, Inc.
  - 2. Material: Extruded PVC/Acrylic allow with integral background colors and high impact resistance.
  - 3. Sign Thickness: 1/4 inch (6 mm).
  - 4. Tactile Characters/Symbols: Raised 1/32 inch (1 mm) from sign plate face.
  - 5. Construction: One-piece; added on or engraved characters not acceptable.

6. Lettering Style: Typeface as selected from the manufacturer's standard sans serif or simple serif typefaces, upper case letters, minimum height 5/8", maximum height 2" (except for building sign, which will have 2" letters).
7. Braille: Grade 2 braille, placed directly below last line of letters or numbers.
8. Contrast: Letters, numbers and symbols shall contrast with background.
9. Bevel Options: Classic.
10. Profiles: Radiused Corner.
11. Color of Background: As selected from manufacturer's standard background colors.
12. Color of Text and Raised Characters: As selected from manufacturer's standard colors.
13. Surface Texture: Stipple.
14. Options: Updatable paper insert window holder.

## 2.4 FINISHES

- A. Colors and Surface Textures: For exposed sign material that requires selection of materials with integral or applied colors, surface textures or other characteristics related to appearance, provide color matches indicated, or if not indicated, as selected by the Architect from the manufacturer's standards.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.
  1. Install signs level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.
  2. Exterior post mounted signs shall be installed in concrete foundations in accordance with Section 33100.
- B. Wall Mounted Panel Signs: Attach panel signs to wall surfaces using the methods indicated below:
  1. Vinyl-Tape Mounting: Use double-sided foam tape, of thickness indicated, to mount signs to smooth, nonporous surfaces. Do not use this method for vinyl-covered or rough surfaces.
  2. Shim Plate Mounting: Provide concealed aluminum shim plates 1/8 inch thick, with predrilled and countersunk holes, at locations indicated and where other mounting methods are not practicable. Attach the plate with fasteners and anchors suitable for secure attachment to the substrate. Attach panel sign units to the plate using the method specified above.

### 3.2 CLEANING AND PROTECTION

- A. At completion of the installation, clean soiled sign surfaces in accordance with the manufacturer's instructions. Protect units from damage until acceptance by the Owner.

3.3 SCHEDULE

- A. New signs shall be ADA compliant with both text and Braille. Provide signs for ALL CLASSROOMS, STORAGE ROOMS, TOILETS, ETC. WITHIN THE SCOPE OF WORK. Provide one sign per room, unless noted otherwise, and as listed on schedule as follows:

Room Number	Room Name	Quantity
	BUILDING NO. 8	2
08-001A	ELECTRICAL ROOM	1
08-001B	MECHANICAL ROOM	1
08-001C	GIRLS	1
08-001D	BOYS	1
08-001E	MENS FACULTY	1
08-001F	WOMENS FACULTY	1
08-001G	GIRLS	1
08-001H	BOYS	1
08-001J	CUSTODIAL	1
08-001K	COMMUNICATION ROOM	1
08-002	CLASSROOM	2
08-002A	TEACHER STORAGE	1
08-002B	RESTROOM	1
08-002C	TEACHER PLANNING	2
08-003	CLASSROOM	2
08-003A	TEACHER STORAGE	1
08-003B	TEACHER PLANNING	2
08-004	CLASSROOM	2
08-004A	TEACHER STORAGE	1
08-004B	RESTROOM	1
08-005	SCIENCE CLASSROOM	2
08-005A	TEACHER STORAGE	1
08-006	CLASSROOM	2
08-006A	TEACHER STORAGE	1
08-006B	RESTROOM	1
08-006C	TEACHER PLANNING	2
08-007	SCIENCE CLASSROOM	2
08-007A	TEACHER STORAGE	1
08-007B	TEACHER PLANNING	2
08-008	CLASSROOM	2
08-008A	TEACHER STORAGE	1
08-008B	RESTROOM	1
08-008C	TEACHER PLANNING	2
08-009	CLASSROOM	2
08-009A	TEACHER STORAGE	1

END OF SECTION 10425

## SECTION 10522 - FIRE EXTINGUISHERS AND ACCESSORIES

### PART 1 - GENERAL

#### 1.1 SECTION REQUIREMENTS:

- A. Submit Product Data.
- B. Provide fire extinguishers approved and listed with UL or FM, and bearing UL or FM markings, for the type, rating, and classification of extinguisher.
- C. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers".

#### 1.2 WARRANTY:

- A. Special Warranty: Manufacturer's stand form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.
- B. Warranty Period: Six years from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 FIRE EXTINGUISHERS AND MOUNTS:

- A. Fire Extinguishers: Multipurpose dry-chemical type, with minimum UL rating of 2A:20BC.
- B. Mounting Cabinets: Provide manufacturers standard semi recessed wall cabinet with glass panel door as indicated on the drawings. Coordinate extinguisher type and cabinet selection for compatibility. Locate as directed by architect.
- C. Mounting Brackets: manufacturer's standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or red baked-enamel finish.
  - 1. Manufacturers:
    - a. Ansul Incorporated; Tyco International Ltd.
    - b. Badger Fire Protection; a Kidde Company.
    - c. Fire End & Croker Corporation.
    - d. J. L. Industries, Inc.; a division of Activar Construction Products Group.
    - e. Larsen's Manufacturing Company.

## PART 3 - EXECUTION

### 3.1 INSTALLATION:

- A. Provide a mounting bracket for each fire extinguisher.
- B. Install brackets at heights indicated or, if not indicated, at heights to comply with applicable regulations of authorities having jurisdiction.
- C. Identify bracket-mounted extinguishers with "FIRE EXTINGUISHER" in red letter decals applied to wall surface. Letter size, style, and location as selected by Architect.
- D. Examine fire extinguishers for proper charging and tagging. Remove and replace damaged, defective, or undercharged fire extinguishers.

END OF SECTION 10522

## SECTION 10530 - ALUMINUM WALKWAY COVERS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 specifications section, apply to work of this section.

#### 1.2 DESCRIPTION OF THE WORK:

- A. The extent of aluminum walkway covers is shown on the drawings.

#### 1.3 PERFORMANCE REQUIREMENTS:

- A. Aluminum walkway covers shall be entirely of anodized aluminum extrusions. Understructure shall consist of heli-arc welded one piece bents and the deck of interlocking anodized aluminum extrusions. The structure shall be capable of sustaining severe hurricane winds and being walked upon. Design wind for this project is 110 mph with an importance factor of 1.15. **Structural design for wind forces shall conform to ASCE 7-05.**

#### 1.4 SUBMITTALS:

- A. Shop Drawings: Submit fabrication and installation drawings. Contractor shall field confirm bent locations, dimensions and elevations shown on the shop drawings prior to submittal to the Architect. Submit structural calculations prepared and certified by a Structural Engineer registered in the State of Florida certifying compliance with the above design requirements.

#### 1.5 PRODUCT HANDLING:

- A. Inspect aluminum walkway covers upon delivery for damage. Minor damage may be repaired, provided finished items are equal in all respects to new work and acceptable to the Architect; otherwise remove and replace damaged items as necessary.

#### 1.6 QUALITY ASSURANCE:

- A. Final shop drawings shall be signed and sealed by a Florida Registered Engineer and state that the design meets or exceeds the requirements of the Contract Documents.
- B. In addition to requirements of these specifications, comply with manufacturer's instructions and recommendations for work.



- C. Guarantee: The work of this section shall be guaranteed against defects in material and workmanship, including watertightness, for a period of two years from date of substantial completion. Contractor shall replace and repair any defects or fix leaks at no cost to Owner.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Lawrence Commercial Systems
  - 2. Perfection architectural Systems
  - 3. Royal Aluminum, Inc.
  - 4. Dittmer Architectural Aluminum

### 2.2 MATERIALS

- A. General: All sections shall be 6063 alloy heat treated to a T-G temper. Deck screws shall be type 18-8 stainless steel, sealed with neoprene "O" ring beneath stainless steel, trim rivets may be aluminum. A dip-coat of clear acrylic enamel shall insulate column ends from electrolytic reaction with grout.
- B. Internal Drainage: Waterflow shall be directed from deck to beams and columns, for discharge out "weepholes with diverter plate". Weepholes shall have required extension welded so as to extend out 2" beyond face of column.
- C. Bent Construction: Beams and columns shall be heli-arc welded into rigid, one piece units in the manufacturer's plant. Column ends shall be pierced to "key" grout to bent for maximum uplift protection. Bents shall be so connected to allow water to drain from deck, through beams, into columns and discharge at ground level where indicated. Bents shall be constructed of 4" columns and gutter beams.
- D. Roof Deck: Extruded self-flashing deck sections interlocked into a composite unit, spanning double-bays for superior loading, where possible. Deck shall be staked into a camber sufficient to offset deadload deflection and to cause positive drainage.
  - 1. Deck shall be extruded sections of minimum 0.80" thickness. It shall interlock into rigid joint connection, which is self-flashing with no exposed ribs on underside.
- E. Finish: Deck, fascia, gutter, columns, downspouts, and bents, shall be AA-M-10C-22A-31 (AMMA.601.1) clear anodized finish.
  - 1. Trim: Finish of trim and flashing shall match respective deck color.
- F. Fasteners: All fasteners in direct contact with dissimilar materials shall be stainless steel.
- G. Do not allow panels or trim to come in contact with dissimilar materials.

- H. Accessories: All accessories associated with decking system, such as closures, J-trim, eave trim, sealant, etc., shall be included to make a complete and watertight system.
- I. Expansion Joints: Entire structure(s) shall be properly designed according to normal engineering requirements to temperature ranges of 120 deg. F. Expansion joints shall be detailed and shown on shop drawings. Connections shall be properly installed to allow for necessary expansion and contraction.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION:

- A. Install aluminum walkway covers after all other work has been complete. Bents shall be carefully aligned prior to grouting; downspout column interior shall have been deflectors and drain extensions installed prior to field erection.
- B. Adjust all components for correct fit and function.

END OF SECTION 10530

## SECTION 10800 - TOILET AND BATH ACCESSORIES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

#### 1.2 DESCRIPTION OF WORK:

- A. Extent of each type of toilet accessory is indicated on drawings and schedules.
- B. Mirrors are specified in Section, "Mirror Units".

#### 1.3 QUALITY ASSURANCE:

- A. Inserts and Anchorages: Furnish inserts and anchoring devices which must be set in concrete or built into masonry; coordinate delivery with other work to avoid delay.
- B. Accessory Locations: Coordinate accessory locations with other work to avoid interference and to assure proper operation and servicing of accessory units.
- C. Products: Provide products of same manufacturer for each type of accessory unit and for units exposed in same areas, unless otherwise acceptable to Architect.

#### 1.4 SUBMITTALS:

- A. Product Data: Submit manufacturer's technical data and installation instructions for each toilet accessory.

### PART 2 - PRODUCTS

#### 2.1 ACCEPTABLE MANUFACTURERS:

- A. Manufacturer: Subject to compliance with requirements, provide toilet accessories by one of the following:
  - 1. American Specialties, Inc.
  - 2. Bobrick Washroom Equipment, Inc.
  - 3. Bradley Corporation.
- B. Toilet accessories basis of design: Bradley Corporation:

1. Refer to Drawings for type and style of accessories

## 2.2 MATERIALS, GENERAL:

- A. Stainless Steel: AISI Type 302/304, with polished No. 4 finish, 22 gage (.034") minimum, unless otherwise indicated.
- B. Brass: leaded and unleaded, flat products, FS QQ-B-613; Rods, shapes, forgings, and flat products with finished edges, FS QQ-B-626.
- C. Sheet Steel: Cold rolled, commercial quality ASTM A 366, 20-gage (.040") minimum, unless otherwise indicated. Surface preparation and metal pretreatment as required for applied finish.
- D. Galvanized Steel Sheet: ASTM A 527, G60.
- E. Chromium Plating: Nickel and chromium electro-deposited on base metal, ASTM B 456, Type SC 2.
- F. Galvanized Steel Mounting Devices: ASTM A 153, hot-dip galvanized after fabrication.
- G. Fasteners: Screws, bolts, and other devices of same material as accessory unit or of galvanized steel where concealed.

## 2.3 GRAB BARS:

- A. Stainless Steel Type: Provide grab bars with wall thickness not less than 18 (.050") gage and as follows:
  1. Mounting: Concealed, manufacturer's standard flanges and anchorages.
  2. Clearance: 1-1/2" clearance between wall surface and inside face of bar.
  3. Gripping Surfaces: Smooth, satin finish.
  4. Gripping Surfaces: Manufacturer's standard non-slip texture.
  5. Heavy-Duty Size: 1-1/2" outside diameter of 1-1/2".

## 2.4 FABRICATION:

- A. General: Only an unobtrusive stamped logo of manufacturer, as approved by Architect, is permitted on exposed face of toilet or bath accessory units. On either interior surface not exposed to view or back surface, provide additional identification by means of either a printed, waterproof label or a stamped nameplate, indicating manufacturer's name and product model number.
- B. Surface-Mounted Toilet Accessories, General: Except where otherwise indicated, fabricate units with tight seams and joints, exposed edges rolled. Hang doors or access panels with continuous stainless steel piano hinge. Provide concealed anchorage wherever possible.

## PART 3 - EXECUTION

3.1 INSTALLATION:

- A. Install toilet accessory units in accordance with manufacturers' instructions, using fasteners which are appropriate to substrate and recommended by manufacturer of unit. Install units plumb and level, firmly anchored in locations indicated.

3.2 ADJUSTING AND CLEANING:

- A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.
- B. Clean and polish all exposed surfaces after removing temporary labels protective coatings.

END OF SECTION 10800

## SECTION 10830 - MIRROR UNITS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

#### 1.2 DESCRIPTION OF WORK:

- A. Extent of mirror units is indicated on drawings.
- B. Types of mirror units required include the following:
  - 1. Stainless steel framed mirrors.
- C. Toilet accessories are specified elsewhere in Division 10.

#### 1.3 QUALITY ASSURANCE:

- A. General: Provide framed mirror units produced by single manufacturer for entire project.

#### 1.4 SUBMITTALS:

- A. Product Data: Submit manufacturer's technical data, detail drawings, and installation instructions for mirror units.
- B. Schedule: Submit schedule indicating mirror types, quantities, sizes and installation locations for each mirror to be provided for project.

#### 1.5 SPECIFIED PRODUCT WARRANTY:

- A. Provide manufacturer's written 5-year warranty against silver spoilage of mirrors, agreeing to replace any mirrors, which develop visible defects within warranty period.

### PART 2 - PRODUCTS

#### 2.1 ACCEPTABLE MANUFACTURERS:

- A. Manufacturer: Subject to compliance with requirements, provide mirror units of one of the following:

1. American Specialties, Inc.
2. Bobrick Washroom Equipment, Inc.
3. Bradley Corp.

B. Basis of Design: Bradley Corporation. Refer to drawings for sizes and locations.

## 2.2 MATERIALS:

- A. Mirror Glass: 1/4" thick, Type I, Class 1, Quality q2, conforming to FS DD-G-451, with silvering, copper coating, and protective organic coating complying with FS DD-M-411.
- B. Stainless Steel Framing: AISI Type 302/304, with polished No. 4 finish.
- C. Galvanized Steel Sheet: ASTM A 527, G60.
- D. Galvanized Steel Mounting Devices: ASTM A 153, hot-dip galvanized after fabrication.

## 2.3 FABRICATION:

- A. Edge Protection: Fabricate frames for glass mirrors to accommodate wood, felt, plastic, or other glass edge protection material.
- B. Backing: Provide mirror backing and support system which will permit rigid, tamperproof glass installation and prevent accumulation of moisture, as follows:
- C. Galvanized steel backing sheet, not less than 22 gage and full mirror size, with non-absorptive filler material. Corrugated cardboard is not an acceptable filler material.
- D. Hangers: Provide system of mounting mirror units which will permit rigid, tamperproof and theftproof installation, as follows:
  1. One-piece galvanized steel wall hanger device with spring action locking mechanism to hold mirror unit in position with no exposed screws or bolts.
  2. Heavy-duty wall brackets of galvanized steel, equipped with concealed locking devices requiring special tool to remove.
- E. Stainless Steel Framed Mirrors:
  1. Heavy-Duty Type: Fabricate frame with angle shapes of not less than 18 gage (0.050"), with square corners mitered, welded, and ground smooth. Provide in No. 4 satin polished finish.

## PART 3 - EXECUTION

### 3.1 INSTALLATION:

- A. Secure mirrors to walls in a concealed tamperproof manner with special hangers, toggle bolts, or screws. Set units plumb, level, and square at locations indicated, in accordance with manufacturer's instructions for type of substrate involved.
- B. Refer to drawings for installation details at vanities with backsplashes.

### 3.2 ADJUST AND CLEAN:

- A. Clean exposed surfaces of mirror units in compliance with manufacturer's recommendations.

END OF SECTION 10830



## SECTION 12511 - HORIZONTAL LOUVER BLINDS

### PART 1 - GENERAL

#### 1.1 SUMMARY:

##### A. Section Includes:

1. Horizontal louver blinds.
2. The locations of window treatment are all exterior and interior windows unless indicated otherwise in the schedules.

#### 1.2 SUBMITTALS:

##### A. Product Data: Manufacturer's specifications describing features, colors, options, accessories, for each type of unit.

1. Include installation instructions and show how installation methods may differ for different openings and mounting substrates.

##### B. Samples:

1. For color selection: Color charts showing full range of colors and finishes available.
2. For color verification: Samples of actual components to be used; provide for all exposed materials.

##### C. Certificates: For review and approval, submit manufacturer's written certification stating compliance with requirements for the following:

1. Physical properties indicated.

##### D. Contract Closeout Submittals:

1. Operation and maintenance data: Include manufacturer's written operation and maintenance instructions.

#### 1.3 QUALITY ASSURANCE:

##### A. Qualifications:

1. Manufacturer qualifications: A company manufacturing all components of products specified in this section, which have performed in a satisfactory manner for at least 3 years.
2. Installer qualifications: Company specializing in fabrication and installation of specified products, with at least 2 years of experience fabricating and installing similar products.

1.4 DELIVERY, STORAGE, AND HANDLING:

- A. Deliver materials in factory packages, marked with manufacturer and product name and location of installation.
- B. Store materials in dry area maintained at building's operating temperature and humidity.
- C. Follow manufacturer's instructions to prevent damage.

1.5 SEQUENCING AND SCHEDULING:

- A. Do not install window treatment until wet and dirty work is complete.

1.6 WARRANTY:

- A. Submit manufacturer's standard 2 year warranty, which shall not reduce or otherwise limit any other rights to correction which the owner may have under the contract documents.

PART 2 - PRODUCTS

2.1 HORIZONTAL LOUVER BLINDS

A. Horizontal Louver Blinds - General:

- 1. Comply with FS AA-V-00200.
- 2. Horizontal Blind Units: Complete with accessories, installation brackets, hardware, and fasteners; for each type, provide products of only one manufacturer.

B. Head Rail: Formed steel channel section, enclosing tilt and lift mechanisms; minimum 24 gage sheet; long edges returned or rolled; with reinforcing as required for rigidity.

- 1. Track size:
  - a. 1 inch high by 1 inch wide.
- 2. Enclose all hardware required for blind operation in headrail.
- 3. Finish rails the same color as louvers.

C. Bottom Rail: Finish to match louvers.

- 1. Formed steel rail, designed not to twist or sag.
- 2. Curve top of rail to match louver radius.
- 3. Cap ends with plastic or metal caps; color to match rail.

D. Louvers: Aluminum minimum 0.008 inch thick, curved cross-section with smooth round corners.

- 1. Width: As indicated; size other parts to fit.
  - a. 1 inch (25 mm) nominal.

2. Design and space louvers to minimize light penetration when closed.
- E. Ladders: Hold louvers at correct spacing and angle in all tilt positions.
1. Braided polyester cord ladder; verticals of 0.04 to 0.07 inch diameter; horizontals of not less than 2 threads braided into verticals; spaced to prevent long-term louver sag, but not over 24 inches apart and not over 7 inches from ends of louvers.
- F. Tilt Mechanism: Hold louvers at any tilt angle despite normal building vibration; worm gear that disengages at limits of tilt with low friction tilter; provide drum at each ladder, linkage rod, and grommets for ladder and operating cords.
1. Tilt wand: Clear plastic, detachable; length as necessary to make operation convenient from floor level.
- G. Lift Mechanism: Lift cords of nylon or polyester with pulls; cord lock that holds bottom rail securely at any level; cord separators.
- H. Brackets: Design for easy removal and re-installation of blind.
1. Design to withstand dead weight and operating stresses.
  2. Provide brackets at ends and at intervals recommended by manufacturer.
  3. Include fasteners appropriate for substrate.
- I. Accessories:
1. Valance: Two louvers in clear plastic frame; removable; match appearance of blind.
  2. Hold-downs: Provide two brackets at lowest position of bottom rail, engaging hook or pin on bottom rail end caps.
- J. Finish: All components factory-finished.
1. Steel: Baked-on enamel finish; prepared by galvanizing, and phosphatizing or priming.
  2. Aluminum: Baked-on enamel finish; prepared by chemical conversion coating.
  3. Concealed components: Corrosion-resistant finish.
  4. Pattern/color: Selected by architect, after contract award, from manufacturer's standard patterns/colors.
  5. Exposed items other than louvers: Match color of rails.
- K. Manufacturers:
1. Provide products complying with requirements of the contract documents and made by one of the following:
    - a. Hunter Douglas, Inc./Window Covering Division.
    - b. Bali
    - c. Skandia
    - d. Basis of Design: Levelor, Riveria Classic Dustguard.

## 2.2 FABRICATION:

- A. Fabricate to fit actual construction; take field measurements of openings before starting fabrication.
- B. Use materials that are compatible, will not need to be lubricated, and which will not adversely affect adjacent materials.
- C. Make blinds fill each opening completely, from jamb to jamb and from head to sill, with a single blind unit, unless multiple units are specifically indicated.
- D. Horizontal Louver Blinds:
  - 1. Space ladders in accordance with manufacturer's instructions.
  - 2. Space louvers to positively overlap when closed.
  - 3. Provide fully tilting louvers, approximately 180 degrees of rotation.
  - 4. Install tilt control on right side when facing interior side of blind.
  - 5. Install lift cords on left side when facing interior side of blind.

## PART 3 - EXECUTION

### 3.1 EXAMINATION:

- A. Examine substrates at locations in which window blinds will be installed. Do not begin installation until conditions are correct.

### 3.2 INSTALLATION:

- A. Install blinds in accordance with manufacturer's installation instructions.
- B. Set units in correct location, plumb, and level; allow clearance for window operating hardware.
- C. Fasten securely to substrates.
- D. Separate metal components from concrete and masonry using plastic tape or other suitable material.

### 3.3 3.3 ADJUSTING

- A. Adjust each blind for proper operation.
- B. Replace defective and damaged units.

### 3.4 PROTECTION

- A. Protect installed work.

3.5 SCHEDULE

- A. Provide horizontal louver blinds for all new windows.

END OF SECTION 12511