Project Manual

Admin-Classroom Building
for
St. Mary Catholic School
Fort Walton Beach, Florida

Quina Grundhoefer Architects
April 24, 2026

Project Manual

Project: **Admin-Classroom Building for St. Mary Catholic School**
Fort Walton Beach, Florida
Date: April 24, 2026

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BID FORM

BID DATE: **Tuesday, June 23, 2026; 3:00 p.m.**

TO OWNER: St. Mary Catholic School
Diocese of Pensacola-Tallahassee
110 Robinwood Dr SW, Fort Walton Beach, FL 32548

RE: **Admin – Classroom Building for St. Mary Catholic School**
Fort Walton Beach, Florida

BIDDER: _____
(name of Firm submitting Bid)

Gentlemen:
I have received the Bidding Documents consisting of Drawings and Specifications (Project Manual) entitled **Admin – Classroom Building for St. Mary Catholic School ,** dated **April 24, 2026** prepared by Quina Grundhoefer Architects, P.A.

I have also received Addenda Numbers: _____
and have included their provisions in my Bid. I have examined both the Bidding Documents and the site.

I will construct this project for the lump sum price of:

BASE BID: _____

_____
write out amount

($_____)

ALTERNATES:

Alternate #1: **Renovate Bldg 2 into Classrooms:** The additive amount for the work associated with the renovations to the existing admin offices, to be converted back into Classrooms and a Teacher Resource Room - as shown on the drawings and specifications:

Add $ _____

BID TIME:
I will construct this project within the following number of calendar days:

_____ Days

GENERAL CONTRACTORS LICENSE: _____

BY (print name): _____

SIGNATURE: _____

TITLE: _____ DATE: _____

AIA® Document A201® – 2017

General Conditions of the Contract for Construction

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

QGA

THE OWNER:
(Name, legal status and address)

THE ARCHITECT:
(Name, legal status and address)

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

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

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(Topics and numbers in bold are Section headings.)

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

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

§ 1.1.2 The Contract

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

§ 1.1.3 The Work

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

§ 1.1.4 The Project

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

§ 1.1.5 The Drawings

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

§ 1.1.6 The Specifications

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

§ 1.1.7 Instruments of Service

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

§ 1.1.8 Initial Decision Maker

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

§ 1.2 Correlation and Intent of the Contract Documents

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

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

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

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

§ 1.3 Capitalization

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

§ 1.4 Interpretation

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

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

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

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

§ 1.6 Notice

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

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

§ 1.7 Digital Data Use and Transmission

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

§ 1.8 Building Information Models Use and Reliance

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

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

ARTICLE 2 OWNER

§ 2.1 General

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

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

§ 2.2 Evidence of the Owner's Financial Arrangements

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

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

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

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

§ 2.3 Information and Services Required of the Owner

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

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

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

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

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

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

§ 2.4 Owner's Right to Stop the Work

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

§ 2.5 Owner's Right to Carry Out the Work

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

ARTICLE 3 CONTRACTOR

§ 3.1 General

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

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

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

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

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

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

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

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

§ 3.3 Supervision and Construction Procedures

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

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

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

§ 3.4 Labor and Materials

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

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

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

§ 3.5 Warranty

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

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

§ 3.6 Taxes

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

§ 3.7 Permits, Fees, Notices and Compliance with Laws

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

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

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

§ 3.7.4 Concealed or Unknown Conditions

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

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

§ 3.8 Allowances

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

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- **.1** allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- **.2** Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- **.3** whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

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

§ 3.9 Superintendent

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

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

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

§ 3.10 Contractor's Construction and Submittal Schedules

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

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

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

§ 3.11 Documents and Samples at the Site

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

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

§ 3.12 Shop Drawings, Product Data and Samples

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

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

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

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

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

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

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

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

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

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

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

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

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

§ 3.13 Use of Site

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

§ 3.14 Cutting and Patching

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

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

§ 3.15 Cleaning Up

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

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

§ 3.16 Access to Work

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

§ 3.17 Royalties, Patents and Copyrights

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

§ 3.18 Indemnification

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

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

ARTICLE 4 ARCHITECT

§ 4.1 General

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

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

§ 4.2 Administration of the Contract

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

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

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

§ 4.2.4 Communications

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

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

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

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

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

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

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

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

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

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

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

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

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

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

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

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

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

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

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

§ 5.3 Subcontractual Relations

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

§ 5.4 Contingent Assignment of Subcontracts

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

- **.1** assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- **.2** assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

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

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

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

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

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

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

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

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

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

§ 6.2 Mutual Responsibility

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

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

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

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

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

§ 6.3 Owner's Right to Clean Up

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

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

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

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

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

§ 7.2 Change Orders

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

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

§ 7.3 Construction Change Directives

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

§ 7.4 Minor Changes in the Work

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

ARTICLE 8 TIME

§ 8.1 Definitions

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

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

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

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

§ 8.2 Progress and Completion

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

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

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

§ 8.3 Delays and Extensions of Time

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

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

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

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

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

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

§ 9.2 Schedule of Values

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

§ 9.3 Applications for Payment

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

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

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

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

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

§ 9.4 Certificates for Payment

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

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

§ 9.5 Decisions to Withhold Certification

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

- **.1** defective Work not remedied;
- **.2** third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- **.3** failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;

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

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

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

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

§ 9.6 Progress Payments

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

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

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

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

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

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

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

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

§ 9.7 Failure of Payment

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

§ 9.8 Substantial Completion

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

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

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

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

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

§ 9.9 Partial Occupancy or Use

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

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

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

§ 9.10 Final Completion and Final Payment

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

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

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

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

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

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

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

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

§ 10.2 Safety of Persons and Property

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

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

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

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

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

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

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

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

§ 10.2.8 Injury or Damage to Person or Property

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

§ 10.3 Hazardous Materials and Substances

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

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

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

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

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

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

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

§ 10.4 Emergencies

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

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

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

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

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

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

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

§ 11.2 Owner's Insurance

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

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

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

§ 11.3 Waivers of Subrogation

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

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

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

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

§11.5 Adjustment and Settlement of Insured Loss

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

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

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

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

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

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

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

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

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

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

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

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

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

§ 12.3 Acceptance of Nonconforming Work

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

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

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

§ 13.2 Successors and Assigns

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

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

§ 13.3 Rights and Remedies

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

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

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and

approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

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

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

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

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

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

§ 13.5 Interest

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

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

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

- **.1** Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- **.2** An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- **.3** Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- **.4** The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

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

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

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

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

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

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

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

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

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

§ 14.3 Suspension by the Owner for Convenience

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

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

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

§ 14.4 Termination by the Owner for Convenience

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

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

- **.1** cease operations as directed by the Owner in the notice;
- **.2** take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- **.3** except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

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

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

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

§ 15.1.2 Time Limits on Claims

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

§ 15.1.3 Notice of Claims

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

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

§ 15.1.4 Continuing Contract Performance

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

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

§ 15.1.5 Claims for Additional Cost

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

§ 15.1.6 Claims for Additional Time

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

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

§ 15.1.7 Waiver of Claims for Consequential Damages

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

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

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

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

§ 15.2 Initial Decision

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

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

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

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

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

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

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

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

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

§ 15.3 Mediation

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

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

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

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

§ 15.4 Arbitration

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

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

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

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

§ 15.4.4 Consolidation or Joinder

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

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

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

00065 - SUPPLEMENTAL GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

SECTION 1A:

1A.1 GENERAL CONDITIONS: "General Conditions of the Contract for Construction", 2007 Edition, Articles 1 through 14 inclusive, AIA Document A201, except as amended herein, shall by reference be made a part of these specifications.

1A.2 DEFINITIONS: The Owner noted in these documents is the **Diocese of Pensacola/Tallahassee**, Pensacola, Florida.

1A.3 SPECIFICATIONS DIVISIONS: The specifications are divided into headings for the convenience of the Contractor. The Contractor shall, however, be held to the furnishing of a complete building according to the meaning and intent of the drawings and specifications whether all of the items involved under any trade are mentioned in one or several headings.

1A.4 CONTRACTOR'S INSURANCE: Article 11, "Insurance", of the General Conditions shall be amended and supplemented as follows:

A. Contractor shall not commence work under this contract until he has obtained all insurance required under this paragraph, certificates of insurance have been submitted, and such insurance has been approved by the Owner, nor shall the Contractor allow any subcontractor to commence work on his subcontract until all similar insurance required of the subcontractor has been so obtained and approved. The successful Contractor shall be prepared at the time of contract award to provide the Owner with an insurance policy number.

B. COMPENSATION INSURANCE: Contractor shall take and maintain during the life of this contract, Workers' Compensation Insurance for all of his employees, employed at the site of the project. In case any work is sublet, Contractor shall require subcontractor similarly to provide Workers' Compensation Insurance for all the latter's employees unless such employees are covered by the protection afforded by the Contractor. Policy shall be in compliance with State of **Florida** statutes for Worker's Compensation which shall include employer's liability in an amount of not less than $100,000 each accident; $500,000 disease policy limit; and $100,000 disease - each employee. The coverage described herein shall be considered minimum requirements.

C. COMPREHENSIVE PUBLIC GENERAL LIABILITY INSURANCE: Contractor shall purchase and maintain during the life of this contract, public liability insurance against bodily injury, personal injury, property damage which shall include comprehensive general liability, contractual liability, products and completed operations liability in limits of not less than $1,000,000 per occurrence ***and $2,000,000 Aggregate.*** The contract shall protect him and any subcontractor performing the work covered by this contract, from claims for damages, which may arise from operations under this contract, whether such operations are by himself or by any subcontractor, or by anyone directly, or indirectly employed by either of them. The Contractor shall indemnify and hold harmless the Owner against any and all claims for personal injuries and/or property damage as a result of Contractor's ***and its Sub-Contractor*** acts, operations, or omissions and shall carry contractual liability and property damage insurance to cover such indemnification. The limits of contractual coverage shall agree with the limits stated above for Contractor's regular public comprehensive general liability coverage and property damage.

D. AUTOMOBILE LIABILITY INSURANCE: The Contractor shall maintain automobile liability insurance against bodily injury and property damage in the amount of $500,000 per occurrence. The Owner shall be named as an additional insured on the automobile policy.

E. OWNER'S AND CONTRACTOR'S PROTECTIVE LIABILITY INSURANCE: **Not included.** ~~Contractor shall purchase and maintain during the life of this contract Owner's and Contractor's Protective Liability Insurance in the name of Diocese of Pensacola/Tallahassee and the amount of insurance shall be in limits of not less than $500,000 per occurrence.~~

F. ADDITIONAL INSURED CLAUSE: The Owner shall be added as an additional insured on all Contractor's liability policies.

G. BUILDER'S RISK INSURANCE: **To be provided by the Diocese.** ~~Contractor shall furnish an All Risk, 100% Completed Value Builder's Risk Policy on the subject. Policy coverage shall include fire, extended coverage, vandalism and malicious mischief. The policy shall be increased in value any time a change order increases the cost of the project. The insured shall include the Owner and subcontractors in addition to the General Contractor. The policy shall remain in effect until final inspection and acceptance of the project~~.

1A.5 PERFORMANCE BOND AND LABOR MATERIAL PAYMENT BOND: Paragraph 11.5.1 of the General Conditions is supplemented as follows:

The Owner may require the Contractor to furnish both a performance bond and a labor and material payment bond (two separate bonds) in the amount of not less than 100% of the contract price for each type of bond, covering faithful performance of the contract and the payment of all obligations arising thereunder in such forms as the Owner may prescribe and with such securities as he may approve. If the bonds are required, the premiums for the required bonds shall added by change order to the contract. **The contractor's base bid amount should not include the cost of these bonds.**

1A.6 PERMITS: Paragraph 3.7 of the AIA Document A101 "General Conditions of the Contract for construction: 2007 Edition". The Contractor shall be responsible to obtain and pay for all required permits from the authority having jurisdiction. The cost of such permits shall be included in the base bid.

1A.7 LABOR: All Contractors and subcontractors employed under the work shall and will be required to conform to the Labor Laws of the State of **Florida**.

1A.8 TEMPORARY LIGHT AND POWER: The Contractor shall furnish all temporary light and power complete with all wiring, lamps and similar equipment, as required for the completion of the work. The Contractor shall pay for all current for all temporary lighting for all trades.

1A.9 MATERIALS: When several materials are specified by name for one use, the Contractor may select for use any of those so specified. Whenever "or approved equal" is indicated, items proposed for use shall be submitted for Architect's approval. Wherever an item or class of material is specified exclusively by trade name or by name of the maker or by catalog reference, only such items shall be used.

1A.10 SHOP DRAWINGS: Shop drawings shall be submitted for manufactured or fabricated materials and equipment as called for in the various sections of the specifications, showing dimensions, materials, design data, finishes, quantities, installation methods and other pertinent data. Submit at least five copies of each item soon enough to allow reasonable time for checking by the Architect. **Digital copies may be submitted to the Architect. One hard copy is to be provided at the end of the project for the owner's use**.

1A.11 CONTRACTOR'S FIELD OFFICES: Trailers may be used for field offices, but their use as living quarters for personnel shall be limited to one staff member such as a night watchman or superintendent. Contractor shall provide suitable space in his field office, or in a separate unit, for review of the construction drawings by the Owner and Architect.

1A.12 WATER FOR CONSTRUCTION: **The owner will allow the contractor to use water from the church's facilities for the construction duration.** ~~The Contractor shall obtain and pay for all water used during construction, including cost of temporary lines and hose bibs.~~

1A.13 GRADES LINES AND LEVELS: The Contractor shall verify all grades, lines, levels and dimensions as shown on the drawings and shall report any errors or inconsistencies in the above to the Architect before commencing work.

1A.14 SCHEDULE OF VALUES: Within ten (10) days after receipt of signed Contract, the Contractor shall submit to the Architect/Engineers and the Owner a correct, complete, itemized Schedule of Values: the different materials or subdivisions of the contracted work, giving quantities and costs for labor and materials. Each item shall include its due proportion of expense and profit, all arranged in a satisfactory form. Total of all items shall equal the total contract sum.

1A.15 PROGRESS CHART OR SCHEDULE: Within 10 days after receipt of signed contract Contractor shall file with the Architect a progress chart showing the order in which the Contractor proposes to begin the various parts of the work and the dates he contemplates completing them. Progress chart shall be updated at request of Architect/Owner and when completion date changes.

1A.16 TIME FOR COMPLETION: Time for construction will be identified by the Contractor in the Bid Form. Time for Substantial Completion of all work included in this contract shall not exceed **two hundred and forty (240)** calendar days from date of written Notice to Proceed. Final Completion shall be achieved not later than **forty-five (45)** calendar days after Substantial Completion.

The number of days allowed includes an allowance for calendar days missed due to weather – see weather table section of these specifications. Refer to A201 General Conditions 15.1.5.2 for claims for additional time.

1A.17 LIQUIDATED DAMAGES: **Deleted.** ~~Since actual damages for any delay in completion of the work are impossible of determination, the Contractor shall be liable for, and shall pay to the Owner, as liquidated damages, the amount of Two hundred and fifty dollars ($250) for each consecutive calendar day the Contractor is late in achieving Substantial Completion. Substantial completion shall be the date on which the construction is sufficiently completed and approved by the Architect, in accordance with the plans and specifications, including change orders, so that the Owner can occupy and utilize the building for the use for which it is intended.~~

1A.18 CHANGES IN WORK (CHANGE ORDERS): Maximum percentages of overhead and profit which may be added by the Contractor to proposed costs of such changes in the work are specifically set forth as follows:

For all work done by the General Contractor: Contractor may add up to **10%** of proposed costs for combined overhead and profit.

For all work done by subcontractors to the General Contractor: subcontractors may add up to **10%** of proposed costs for combined overhead and profit, and the General Contractor may add up to **5%** of the above subcontractor's cost for his overhead and profit or a total of **15%** overhead and profit.

The Contractor shall submit receipts or other evidence showing his costs and his right to the payment claims. Labor costs shall include supervision, estimation, layout, mechanic's and laborer's wages including payroll taxes and assessments and insurance premiums. Material, equipment and equipment rental costs shall be the trade discount costs plus state sales tax where applicable. The Contractor shall utilize the AIA standard Change Order form.

1A.19 APPLICATION FOR PAYMENT: Paragraph 9.3 of the "General Conditions" referred to above is supplemented as follows: "Application for payment shall be made monthly. This application shall be submitted as follows: On or about the 25th day of each month 90% of the value, based on the Contract Prices, or labor and materials incorporated in the work and of materials suitably stored at the site thereof up to the last day of that month as estimated by the Architect, less the aggregate of previous payments. Upon substantial completion of the entire work, application for a sum sufficient to increase the total payment of 90% of the Contract Price shall be made." No payment will be made for materials stored off-site, unless material storage can be substantiated with proof of insurance and identified as property of the Contractor or Owner. An amount equal to 10% of all labor and material incorporated in the work shall be retained. Retainage shall not be paid until satisfactory completion of the project. **The retainage for the project may be reduced to 5% at 50% completion, pending the owner's acceptance that the project is progressing in a satisfactory manner.** Monthly Applications for Payment shall be submitted to the Architect in triplicate by the Contractor utilizing AIA Document G702, 1992 Edition (Application and Certificate for Payment).

1A.20 WARRANTIES AND OPERATING INSTRUCTIONS: Where guarantees are required, secure warranties, countersign and deliver to the Owner prior to request for final payment. Contractor warrants all work performed by him directly and all work performed for him by others. Except where longer periods are specified, all materials, equipment and workmanship incorporated in the work shall be guaranteed for a period of one **(1) year** from date of final acceptance. Any work, material or equipment which during the guarantee period is, in the opinion of the Owner, defective or inferior and not in accordance with the drawings and specifications shall be made good at no additional cost to the Owner, including any other work which may have been damaged because of such deficiencies. The Contractor shall be the contact person and the person responsible for coordinating all warranty work for the Owner.

End of Section 00065.

AIA® Document A101® – 2017

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

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

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

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

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

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

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

QGA

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

The Owner and Contractor agree as follows.

TABLE OF ARTICLES

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

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

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

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

[ ] The date of this Agreement.

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

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

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

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

§ 3.3 Substantial Completion

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

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

[ ] By the following date:

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

Portion of Work	Substantial Completion Date

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

ARTICLE 4 CONTRACT SUM

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

§ 4.2 Alternates

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

Item	Price

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

Item	Price	Conditions for Acceptance

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

Item	Price

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

Item	Units and Limitations	Price per Unit ($0.00)

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

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

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

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

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

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

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

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

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

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

- **.1** That portion of the Contract Sum properly allocable to completed Work;
- **.2** That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
- **.3** That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

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

- **.1** The aggregate of any amounts previously paid by the Owner;
- **.2** The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;
- **.3** Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- **.4** For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and
- **.5** Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:
(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

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

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

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

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

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

§ 5.2 Final Payment

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

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

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

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

§ 5.3 Interest

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

%

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

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

§ 6.2 Binding Dispute Resolution

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

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

[ ] Litigation in a court of competent jurisdiction

[ ] Other *(Specify)*

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

ARTICLE 7 TERMINATION OR SUSPENSION

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

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

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

ARTICLE 8 MISCELLANEOUS PROVISIONS

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

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

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

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

§ 8.5 Insurance and Bonds

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

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

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

§ 8.7 Other provisions:

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

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

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

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

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

.5 Drawings

Number	Title	Date

.6 Specifications

Section	Title	Date	Pages

.7 Addenda, if any:

Number	Date	Pages

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

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

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

[ ] The Sustainability Plan:

Title	Date	Pages

[ ] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

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

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

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

Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, , hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with this certification at 11:30:26 ET on 05/11/2023 under Order No. 2114362410 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A101™ – 2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum,other than changes shown in the attached final document by underscoring added text and striking over deleted text.

_____

(Signed)

_____

(Title)

_____

(Dated)

AIA® Document G701® – 2017

Change Order

PROJECT: *(Name and address)*

CONTRACT INFORMATION:
Contract For: General Construction
Date:

CHANGE ORDER INFORMATION:
Change Order Number: 001
Date:

OWNER: *(Name and address)*

ARCHITECT: *(Name and address)*

CONTRACTOR: *(Name and address)*

THE CONTRACT IS CHANGED AS FOLLOWS:
(Insert a detailed description of the change and, if applicable, attach or reference specific exhibits. Also include agreed upon adjustments attributable to executed Construction Change Directives.)

The original Contract Sum was	$	0.00
The net change by previously authorized Change Orders	$	0.00
The Contract Sum prior to this Change Order was	$	0.00
The Contract Sum will be increased by this Change Order in the amount of	$	0.00
The new Contract Sum including this Change Order will be	$	0.00

The Contract Time will be increased by Zero (0) days.
The new date of Substantial Completion will be

NOTE: This Change Order does not include adjustments to the Contract Sum or Guaranteed Maximum Price, or the Contract Time, that have been authorized by Construction Change Directive until the cost and time have been agreed upon by both the Owner and Contractor, in which case a Change Order is executed to supersede the Construction Change Directive.

NOT VALID UNTIL SIGNED BY THE ARCHITECT, CONTRACTOR AND OWNER.

ARCHITECT *(Firm name)*	CONTRACTOR *(Firm name)*	OWNER *(Firm name)*
SIGNATURE	SIGNATURE	SIGNATURE
PRINTED NAME AND TITLE	PRINTED NAME AND TITLE	PRINTED NAME AND TITLE
DATE	DATE	DATE

AIA® Document G702® – 1992

Application and Certificate for Payment

TO OWNER:

PROJECT:

APPLICATION NO: 001
PERIOD TO:
CONTRACT FOR:
CONTRACT DATE:
PROJECT NOS: / /

Distribution to:
OWNER: ☐
ARCHITECT: ☐
CONTRACTOR: ☐
FIELD: ☐
OTHER : ☐

FROM CONTRACTOR:

VIA ARCHITECT:

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract.
AIA Document G703®, Continuation Sheet, is attached.

1. ORIGINAL CONTRACT SUM	$0.00
2. NET CHANGE BY CHANGE ORDERS	$0.00
3. CONTRACT SUM TO DATE (Line 1 ± 2)	$0.00
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703)	$0.00
5. RETAINAGE:	
a. 0 % of Completed Work (Column D + E on G703)	$0.00
b. 0 % of Stored Material (Column F on G703)	$0.00
Total Retainage (Lines 5a + 5b or Total in Column I of G703)	$0.00
6. TOTAL EARNED LESS RETAINAGE (Line 4 Less Line 5 Total)	$0.00
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT (Line 6 from prior Certificate)	$0.00
8. CURRENT PAYMENT DUE	$0.00
9. BALANCE TO FINISH, INCLUDING RETAINAGE (Line 3 less Line 6)	$0.00

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	$0.00	$0.00
Total approved this Month	$0.00	$0.00
TOTALS	$0.00	$0.00
NET CHANGES by Change Order		$0.00

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR:

By: _____ Date: _____

State of:

County of:

Subscribed and sworn to before me this day of

Notary Public:

My Commission expires:

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED $0.00

(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

ARCHITECT:

By: _____ Date: _____

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

AIA® Document G704® – 2017

Certificate of Substantial Completion

PROJECT: *(name and address)*	**CONTRACT INFORMATION:**	**CERTIFICATE INFORMATION:**
QGA	Contract For: General Construction Date:	Certificate Number: 001 Date:
OWNER: *(name and address)*	**ARCHITECT:** *(name and address)*	**CONTRACTOR:** *(name and address)*

The Work identified below has been reviewed and found, to the Architect's best knowledge, information, and belief, to be substantially complete. Substantial Completion is the stage in the progress of the Work when the Work or designated portion is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. The date of Substantial Completion of the Project or portion designated below is the date established by this Certificate.
(Identify the Work, or portion thereof, that is substantially complete.)

ARCHITECT *(Firm Name)*	**SIGNATURE**	**PRINTED NAME AND TITLE**	**DATE OF SUBSTANTIAL COMPLETION**

WARRANTIES
The date of Substantial Completion of the Project or portion designated above is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below:
(Identify warranties that do not commence on the date of Substantial Completion, if any, and indicate their date of commencement.)

WORK TO BE COMPLETED OR CORRECTED
A list of items to be completed or corrected is attached hereto, or transmitted as agreed upon by the parties, and identified as follows:
(Identify the list of Work to be completed or corrected.)

The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Unless otherwise agreed to in writing, the date of commencement of warranties for items on the attached list will be the date of issuance of the final Certificate of Payment or the date of final payment, whichever occurs first. The Contractor will complete or correct the Work on the list of items attached hereto within ( ) days from the above date of Substantial Completion.

Cost estimate of Work to be completed or corrected: $

The responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work, insurance, and other items identified below shall be as follows:
(Note: Owner's and Contractor's legal and insurance counsel should review insurance requirements and coverage.)

The Owner and Contractor hereby accept the responsibilities assigned to them in this Certificate of Substantial Completion:

CONTRACTOR *(Firm Name)*	**SIGNATURE**	**PRINTED NAME AND TITLE**	**DATE**
OWNER *(Firm Name)*	**SIGNATURE**	**PRINTED NAME AND TITLE**	**DATE**

SECTION 01010 – SUMMARY OF WORK

PART 1 - GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

A. The Project: **Admin – Classroom Building for St. Mary Catholic School**

Complete Contract Documents, dated **4-24-26**, were prepared for the Project by:

Quina Grundhoefer Architects	Architect
Daivd Fitzpatrick	Civil Engineer
RAC Engineers	Structural Engineer
HM Yonge and Associates	Plumbing and HVAC Engineers
HM Yonge and Associates	Electrical Engineers

A. Project Summary:

The project included two parts:

1. A new building of approximately 5,700 square feet, to include admin offices and 2 classrooms.
2. Renovations to the old admin offices into 2 classrooms and a teacher resource room. The work includes some sitework, stormwater and landscaping.

B. The Contract: The Work will be constructed under a single prime contract. The Owner will contract with some firms for portions of the work. These include:

1. Phone, data and security systems

C. An anticipated timeframe for the project is the following: (The contractor is to insert into the Bid Form his actual time to complete the work):

1.	Anticipated Notice to Proceed:	**June 1, 2026**
2.	Start construction on the new building	**June 1, 2026**
3.	Substantial Completion and Owner Occupancy:	**January, 2027**
4.	Final Completion:	**February, 2027**

1.2 CONTRACTOR USE OF PREMISES

A. General: The Work of the Contract is subject to all applicable governing regulations, including the State of Florida and the city of Fort Walton Beach.

B. CONTRACTOR USE OF PREMISES:

1. General: During the construction period the Contractor shall have full use of the premises for construction operations, including use of the site. The Contractor's use of the premises is limited by the Owner's right to perform work or to retain other contractors on portions of the Project.

END OF SECTION 01010.

SECTION 01027 - APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.

B. Coordinate the Schedule of Values and Applications for Payment with the Contractor's Construction Schedule, List of Subcontracts, and Submittal Schedule.

C. The Contractor's Construction Schedule and Submittal Schedule are included in Section "Submittals".

1.3 SCHEDULE OF VALUES

A. Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.

B. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:

1. Contractor's construction schedule.
2. Application for Payment form.
3. List of subcontractors.
4. Schedule of alternates.
5. List of products.
6. List of principal suppliers and fabricators.
7. Schedule of submittals.

C. Submit the Schedule of Values to the Architect at the earliest feasible date, but in no case later than 7 days before the date scheduled for submittal of the initial Application for Payment.

D. Format and Content: Use the Project Manual Table of Contents as a guide to establish the format for the Schedule of Values.

E. Identification: Include the following Project identification on the Schedule of Values:

1. Project name and location.
2. Name of the Architect.
3. Project number.
4. Contractor's name and address.
5. Date of submittal.

F. Arrange the Schedule of Values in a tabular form with separate columns to indicate the following for each item listed:

1. Generic name.
2. Related Specification Section.
3. Name of subcontractor.
4. Name of manufacturer or fabricator.
5. Name of supplier.
6. Change Orders (numbers) that have affected value.
7. Dollar value.
8. Percentage of Contract Sum to the nearest one-hundredth percent, adjusted to total 100 percent.

G. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Break principal subcontract amounts down into several line items.

H. Round amounts off to the nearest whole dollar; the total shall equal the Contract Sum.

I. Schedule Updating: Update and resubmit the Schedule of Values when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.4 APPLICATIONS FOR PAYMENT:

A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and paid for by the Owner.

B. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.

C. Payment Application Times: Each progress payment date is as indicated in the Agreement. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.

D. Payment Application Forms: Use AIA Document G702 and Continuation Sheets G703 as the form for Application for Payment.

E. Application Preparation: Complete every entry on the form, including notarization and execution by person authorized to sign legal documents on behalf of the Owner. Incomplete applications will be returned without action.

1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions have been made.
2. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.

F. Waivers of Mechanics Lien: With each Application for Payment submit waivers of mechanics liens from subcontracts or sub-subcontractors and suppliers for the construction period covered by the previous application

1. Submit partial waivers on each item for the amount requested, prior to deduction for retainage, on each item.
2. When an application shows completion of an item, submit final or full waivers.

3. The Owner reserves the right to designate which entities involved in the Work must submit waivers.

G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include the following:
    1. List of subcontractors.
    2. List of principal suppliers and fabricators.
    3. Schedule of Values.
    4. Contractor's Construction Schedule (preliminary if not final).
    5. Submittal Schedule
    6. Certificates of insurance and insurance policies.

H. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment; this application shall reflect any Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

I. Administrative actions and submittals that shall proceed or coincide with this application include:
    Occupancy permits and similar approvals.
    1. Warranties (guarantees) and maintenance agreements.
    2. Test/adjust/balance records.
    3. Maintenance instructions.
    4. Meter readings.
    5. Start-up performance reports.
    6. Change-over information related to owner's occupancy, use operation and maintenance.
    7. Final cleaning.
    8. Application for reduction of retainage, and consent of surety.
    9. Advice on shifting insurance coverages.
    10. Final progress photographs.
    11. List of incomplete work, recognized as exceptions to Architect's Certificate of Substantial Completion.

J. Final Payment Application: Administrative actions and submittals which must precede or coincide with submittal of the final payment Application for Payment include the following:

    1. Completion of Project closeout requirements.
    2. Completion of items specified for completion.
    3. Assurance that Work not complete and accepted will be completed without undue delay.
    4. Transmittal of required Project construction records to Owner.
    5. Removal of temporary facilities and services.
    6. Removal of surplus materials, rubbish and similar elements.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01027.

SECTION 01040 - PROJECT COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to:

Coordination.
Administrative and supervisory personnel.
Protection of Work and Property
General installation provisions.
Cleaning and protection.

B. Progress meetings: Hold regular weekly coordination meetings at a time convenient to all parties involved. Resolve coordination problems, distribute minutes to those in attendance and those affected by decisions resulting from the meetings.

1.3 COORDINATION

A. Coordination: Coordinate construction activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.

1. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.

2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.

3. Make adequate provisions to accommodate items scheduled for later installation.

4. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.

B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
Preparation of schedules.
Installation and removal of temporary facilities.
Delivery and processing of submittals.
Progress meetings.
Project Close-out activities.

1.4 PROTECTION OF WORK AND PROPERTY

A. The services of a watchman is not a Contract requirement, however, it is the responsibility of the Contractor to protect all new and existing construction work and materials from damage or theft for the duration of the Contract. The Contractor shall provide watchman services as he deems necessary for such protection.

B. Openings in exterior walls and roof shall be enclosed to prevent unauthorized entry. Enclosed access openings shall be provided with operating hardware and shall be locked during non-working hours.

C. The Contractor shall protect all existing construction from damage, including the existing building, adjoining building, streets, sidewalks, curbs, fire hydrants, utility poles, existing site improvements, and other property and equipment on or adjacent to the project site. The Contractor shall repair any damage to such items to the satisfaction of the Architect, without cost to the Owner.

D. The Contractor shall provide all temporary protection required to protect all persons from injury within the area of the operations of the Contract for the duration of the Contract.

E. The Contractor shall provide all temporary construction and safeguards including planking, runways, bridges, fences, guard rails, barricades, lights and warning signs, necessary for the protection of the site improvements, existing building, adjacent property, the workmen, occupants of the existing building, and the public, and as required by local authorities.

F. The Contractor shall provide protection against rain, wind, snow, frost, and heat, to protect the interior of the existing building, and all new work and materials, from damage for the duration of the Contract, and to allow the work to proceed without interruption. The Contractor shall repair any damage to such items to the satisfaction of the Architect, without cost to the Owner.

G. The Contractor shall construct and maintain all necessary temporary drainage facilities and perform all pumping necessary to keep excavations, floors, pits and trenches free of water from any source for the duration of the Contract. Water removal shall be accomplished by such methods which will not damage adjacent property, any item of permanent site improvements, or the existing building.

H. Maintain the sidewalk fronting the premises free of construction debris, ice, and snow, at all times.

I. Conduct all building operations in accordance with "Good Practice Requirements for Building Construction Operations" of the National Fire Protection Association.

1.5 SUBMITTALS

A. Coordination Drawings: Prepare and submit coordination Drawings where close and careful coordination is required for installation of products and materials fabricated off-site by separate entities, and where limited space availability necessitates maximum utilization of space for efficient installation of different components.

B. Show the interrelationship of components shown on separate Shop Drawings.

C. Indicate required installation sequences.

D. Comply with requirements contained in Section "Submittals."

E. Refer to Division-15 Section "Mechanical Requirements," and Division-16 Section "Electrical Requirements" for specific coordination Drawing requirements for mechanical and electrical installations.

F. Staff Names: Within 15 days of Notice to Proceed, submit a list of the Contractor's principal staff assignments, including the Superintendent and other personnel in attendance at the site; identify individuals, their duties and responsibilities; list their addresses and telephone numbers.

G. Post copies of the list in the Project meeting room, the temporary field office, and each temporary telephone.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION PROVISIONS

A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.

C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.

D. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.

E. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Architect for final decision.

F. Recheck measurements and dimensions, before starting each installation.

G. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.

H. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.

I. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Architect for final decision.

3.2 CLEANING AND PROTECTION

A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

C. Limiting Exposures: Supervise construction activities to ensure that no part of the construction completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

END OF SECTION 01040

SECTION 01300 - SUBMITTALS

1.0 PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including;

1. Contractor's construction schedule.
2. Submittal schedule.
3. Daily construction reports.
4. Shop Drawings.
5. Product Data.
6. Samples.

B. Administrative Submittals: Refer to other Division-1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:

1. Permits.
2. Applications for payment.
3. Performance and payment bonds.
4. Insurance certificates.
5. List of Subcontractors.

C. The Schedule of Values submittal is included in Section "Applications for Payment."

D. Inspection and test reports are included in Section "Quality Control Services."

1.3 SUBMITTAL PROCEDURES

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
3. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

B. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals.

1. Allow three weeks for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Architect will promptly advise the Contractor when a submittal being processed must be delayed for coordination.
2. If an intermediate submittal is necessary, process the same as the initial submittal.
3. Allow two weeks for reprocessing each submittal.
4. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.

C. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.

1. Include the following information on the label for processing and recording action taken.
    a) Project name.
    b) Date.
    c) Name and address of Architect.
    d) Name and address of Contractor.
    e) Name and address of subcontractor.
    f) Name and address of supplier.
    g) Name of manufacturer.
    h) Number and title of appropriate Specification Section.
    i) Drawing number and detail references, as appropriate.

D. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Architect using a transmittal form. Submittals received from sources other than the Contractor will be returned without action.

1.4 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Prepare a fully developed, horizontal bar- chart type Contractor's construction schedule. Submit within 30 days of the date established for "Commencement of the Work".

1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the "Schedule of Values".
2. Within each time bar indicate estimated completion percentage in 10 percent increments. As Work progresses, place a contrasting mark in each bar to indicate Actual Completion.
3. Prepare the schedule on a sheet, or series of sheets, of stable transparency, or other reproducible media, of sufficient width to show data for the entire construction period.
4. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the Work.

5. Coordinate the Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.
6. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Architect's procedures necessary for certification of Substantial Completion.

B. Phasing: Provide notations on the schedule to show how the sequence of the Work is affected by requirements for phased completion to permit Work by separate Contractors and partial occupancy by the Owner prior to Substantial Completion.

C. Work Stages: Indicate important stages of construction for each major portion of the Work, including testing and installation.

D. Area Separations: Provide a separate time bar to identify each major construction area for each major portion of the Work. Indicate where each element in an area must be sequenced or integrated with other activities.

E. Distribution: Following response to the initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.

F. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1.5 SUBMITTAL SCHEDULE

A. After development and acceptance of the Contractor's construction schedule, prepare a complete schedule of submittals. Submit the schedule within 10 days of the date required for establishment of the Contractor's construction schedule.

1. Prepare the schedule in chronological order; include submittals required during the first 90 days of construction. Provide the following information:

a) Scheduled date for the first submittal.
b) Related Section number.
c) Submittal category.
d) Name of subcontractor.
e) Description of the part of the Work covered.
f) Scheduled date for resubmittal
g) Scheduled date the Architect's final release or approval.

B. Distribution: Following response to initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.

1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

C. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1.6 DAILY CONSTRUCTION REPORTS

A. Prepare a daily construction report, recording the following information concerning events at the site; and submit duplicate copies to the Architect at weekly intervals:

1. List of subcontractors at the site.
2. Approximate count of personnel at the site.
3. High and low temperatures, general weather conditions.
4. Accidents and unusual events.
5. Meetings and significant decisions.
6. Stoppages, delays, shortages, losses.
7. Meter readings and similar recordings.
8. Emergency procedures.
9. Orders and requests of governing authorities.
10. Change Orders received, implemented.
11. Services connected, disconnected.
12. Equipment or system tests and start-ups.
13. Partial Completions, occupancies.
14. Substantial Completions authorized.

1.7 SHOP DRAWINGS

A. Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.

B. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:

1. Dimensions.
2. Identification of products and materials included.
3. Compliance with specified standards.
4. Notation of coordination requirements.
5. Notation of dimensions established by field measurement.
6. Sheet Size: Except for templates, patterns and similar full- size Drawings, Submit Shop Drawings on sheets at least 8-1/2" x 11" but no larger than 36" x 48".
7. Submittal: Submit one **digital** copy, either emailed or on a flash drive, for the Architect's review.

C. Coordination drawings are a special type of Shop Drawing that show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or function as intended.

1. Preparation of coordination Drawings is specified in section "Project Coordination" and may include components previously shown in detail on Shop Drawings or Product Data.

2. Submit coordination Drawings for integration of different construction elements. Show sequences and relationships of separate components to avoid conflicts in use of space.

1.8 PRODUCT DATA

A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawings."

B. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:
   1. Manufacturer's printed recommendations.
   2. Compliance with recognized trade association standards.
   3. Compliance with recognized testing agency standards.
   4. Application of testing agency labels and seals.
   5. Notation of dimensions verified by field measurement.
   6. Notation of coordination requirements.

C. Do not submit Product Data until compliance with requirements of the Contract Documents have been confirmed.

D. Submittals: Submit 3 copies of each required submittal; submit 4 copies where required for maintenance manuals. The Architect will retain one, and will return the other marked with action taken and corrections or modifications required.

E. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
   1. Do not proceed with installation until an applicable copy of Product Data applicable is in the installer's possession.
   2. Do not permit use of unmarked copies of Product Data in connection with construction.

1.9 SAMPLES

A. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture and pattern.

B. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Prepare Samples to match the Architect's Sample. Include the following:
   1. Generic description of the Sample.
   2. Sample source.
   3. Product name or name of manufacturer.
   4. Compliance with recognized standards.
   5. Availability and delivery time.

C. Where variation in color, pattern, texture or other characteristics are Submit Samples for review of kind, color, pattern, and texture, for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.

1. Inherent in the material or product represented, submit multiple units (not less than 3), that show approximate limits of the variations.
2. Refer to other Sections for Samples to be returned to the Contractor for incorporation in the Work. Such Samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of Sample submittals.

D. Maintain sets of Samples, as returned, at the Project site, for quality comparisons throughout the course of construction.

1. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
2. Sample sets may be used to obtain final acceptance of the construction associated with each set.

1.10 ARCHITECT'S ACTION

A. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Architect will review each submittal, mark to indicate action taken, and return promptly. Compliance with specified characteristics is the Contractor's responsibility.

B. Action Stamp: The Architect will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:

1. Approved: Where submittals are marked "Approved", that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.
2. Approved as Corrected: When submittal are marked "Approved as Corrected", that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
3. Revise and Resubmit: When submittal is marked "Revise and Resubmit", do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
4. Rejected: When submittal is marked "Rejected", do not proceed with that part of the Work covered by the submittal, including fabrication, delivery, or other activity. Prepare a new submittal in accordance with the Contract Documents and submit without delay.
5. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked "Action Not Required".

2.0 PART 2 - PRODUCTS (Not Applicable).
3.0 PART 3 - EXECUTION (Not Applicable).
END OF SECTION 01300

SECTION 01331 – WEATHER TABLE

PART 1 - GENERAL

1.1 INFORMATION AND DATA

A. Information and data furnished or referred to in the weather table is furnished for the Contractor's information.

1.2 CONTRACT TIME LIMITS

A. The contract time limits include weather conditions that are shown in the table listed herein.

1.3 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER

This provision specifies the procedure for the determination of time extensions for unusually severe weather affecting exterior work in accordance with the Contract. The following listing defines the monthly anticipated adverse weather for the contract period and is based on NOAA data for the geographic location of the project.

MONTHLY ANTICIPATED ADVERSE WEATHER CALENDAR DAYS
Pensacola, Florida

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
5	6	6	4	5	7	8	8	6	5	4	5

This listing of anticipated adverse weather will constitute the base line monthly weather time evaluations. Throughout the contract each month, actual adverse weather days will be recorded on a calendar basis (including weekends and holidays) and compared to the monthly anticipated adverse weather in this listing. The term "actual adverse weather days" shall include days impacted by actual adverse weather. The number of actual adverse weather days affecting exterior work shall be calculated chronologically from the first to the last day in each month. Adverse weather days must prevent work for 50 % or more of the contractor's work day and delay work critical to the timely completion of the project. If the number of actual adverse weather days exceeds the number of days anticipated in the above listing, then the Architect will determine the time extension for the Contractor. The Architect will convert any qualifying delays to the calendar days and issue a modification in accordance with the contract.

1.4 TIME EXTENSIONS

A. Time extensions for weather may be granted for adverse weather in excess of normal that impact ongoing activities on the site that have an effect on activities that must be completed in a required sequence for completion of project within the specified performance period. These would be generally labeled as Critical Path Activities when that type of schedule is used.

B. Any request for a time extension for weather must include:

1. Weather data from National Weather Services.
2. Daily report showing the impact on ongoing activities.
3. Relation of those activities to completion of the project.

C. Request for time extensions as indicated above must be made within 30 days of the period of excessive weather. No time extensions will be granted for weather if not requested within 30 days as indicated above.

D. With each pay application, the Contractor shall provide a letter on the Contractor's letterhead to the Architect indicating the number of weather days and of days impacted due to the weather. If no weather days occurred, the contractor shall indicate 0 (zero) days.

END OF SECTION 01331

SECTION 01400 - QUALITY CONTROL SERVICES

1.0 PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for quality control services.
B. Quality control services include inspections and tests and related actions including reports, performed by independent agencies, governing authorities, and the Contractor. They do not include Contract enforcement activities performed by the Architect.
C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.
D. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.

1. Specific quality control requirements for individual construction activities are specified in the Section that specifies those activities. Those requirements, including inspections and tests cover production of standard products as well as customized fabrication and installation procedures.
2. Inspections, tests and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Documents requirements.
3. Requirements for the Contractor to provide quality control services required by the Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.3 RESPONSIBILITIES:

A. Contractor's Responsibilities: The Contractor shall provide inspections, tests and similar quality control services, specified in individual Specification Sections and required by governing authorities, except where they are specifically indicated to be the Owner's responsibility, or are provided by another identified entity; these services include those specified to be performed by an independent agency and not by the Contractor. Costs for these services shall be included in the Contract Sum.

1. The Contractor shall employ and pay an independent agency to perform specified quality control services. The Contractor is to engage and pay for the services of an independent agency to perform the following inspections and tests:

Soil Compaction Testing
Concrete Testing

B. Where the Owner has engaged a testing agency or other entity for testing and inspection of a part of the Work, and the Contractor is also required to engage an entity for the same or related element, the Contractor shall not employ the entity engaged by the Owner, unless otherwise agreed in writing with the owner.

C. Associated Services: The Contractor shall cooperate with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit the assignment of personnel. Auxiliary services required include but are not limited to:

1. Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests.

2. Providing the agency with a preliminary design mix proposed for use for materials mixes that required control by the testing agency.

D. Duties of the Testing Agency: The independent testing agency engaged to perform inspections, sampling and testing of materials and construction specified in individual specifications Sections shall cooperate with the Architect and Contractor in performance of its duties, and shall provide qualified personnel to perform required inspections and tests.

1. The agency shall notify the Architect and Contractor promptly of irregularities or deficiencies observed on the Work during performance of its services.

2. The agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.

3. The agency shall not perform any duties of the Contractor.

A. Coordination: The Contractor and each agency engaged to perform inspections, tests and similar services for the project shall coordinate the sequence of their activities so as to accommodate required services with a minimum of delay in the progress of the work. In addition, the Contractor and each independent testing agency shall coordinate their work so as to avoid the necessity of removing and replacing work to accommodate inspections and tests.

B. The Contractor is responsible for scheduling times for inspections, tests, taking of samples and similar activities.

C. Schedule of Inspections and Tests: Submit a schedule of inspections, tests and similar services required by the Contract Documents within 45 days of the date of the Notice to Proceed.

1.4 SUBMITTALS

A. General: The independent testing agency shall submit a certified written report of each inspection, test or similar service, directly to the Architect and owner, in duplicate, unless the Contractor is responsible for the service. If the Contractor is responsible for the service, Submit a certified written report of each inspection, test or similar service through the Contractor, in duplicate. Submit additional copies of each written report directly to the governing authority, when the authority so directs.

1. Report Data: Written reports of each inspection, test or similar service shall include, but not be limited to the following:

Date of Issue
Project title and number
Name, address and telephone number of testing agency
Dates and locations of samples and tests or inspections
Names of individuals making the inspection or test
Designation of the Work and test method
Identification of product and Specification Section
Complete inspection or test data
Test results and an interpretation of test results
Ambient conditions at the time of sample-taking and testing
Comments or professional opinion as to whether inspected or tested Work complies with Contract Documents requirements.
Name and signature of laboratory inspector
Recommendations on retesting

1.5 QUALITY ASSURANCE

A. Qualifications for Service Agencies: Engage inspection and testing services agencies, including independent testing laboratories, which are prequalified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories, and which specialize in the types of inspections and tests to be performed.

1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the State in which the Project is located.

2.0 PART 2 - PRODUCTS (Not Applicable).

3.0 PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

A. General: Upon completion of inspection, testing, sample-taking and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Document requirements for "Cutting and Patching".

B. Protect construction exposed by or for quality control service activities, and protect repaired construction.

C. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

END OF SECTION 01400

SECTION 01500 - TEMPORARY FACILITIES

1.0 PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection.

B. Temporary utilities required include but are not limited to:

Water service and distribution.
Temporary electric power and light.
Telephone service.
Storm and sanitary sewer.

C. Temporary construction and support facilities required include but are not limited to:

Temporary heat.
Field offices and storage sheds.
Sanitary facilities, including drinking water.
Dewatering facilities and drains.
Temporary enclosures.
Hoists.
Temporary Project identification signs and bulletin boards.
Waste disposal services.
Rodent and pest control.
Construction aids and miscellaneous services and facilities.

D. Security and protection facilities required include but are not limited to:

Temporary fire protection.
Barricades, warning signs, lights.
Environmental protection.

Contractor to maintain a security program for the building and materials for the duration of the project.

1.3 SUBMITTALS

A. Temporary Utilities: Submit reports of tests, inspections, meter readings and similar procedures performed on temporary utilities.

B. Implementation and Termination Schedule: Submit a schedule indicating implementation and termination of each temporary utility within 15 days of the date established for commencement of the Work.

1.4 QUALITY ASSURANCE

A. Regulations: Comply with industry standards and applicable laws and regulations if authorities having jurisdiction, including but not limited to:

Building Code requirements.
Health and safety regulations.
Utility company regulations.
Police, Fire Department and Rescue Squad rules.
Environmental protection regulations.

B. Standards: Comply with NFPA Code 241, "Building Construction and Demolition Operations", ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition", and NECA Electrical Design Library "Temporary Electrical Facilities."

1. Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services", prepared jointly by AGC and ASC, for industry recommendations.

2. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with National Electric Code (NFPA 70).

C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.5 PROJECT CONDITIONS

A. Temporary Utilities: Prepare a schedule indicating dates for implementation and termination of each temporary utility. At the earliest feasible time, when acceptable to the Owner, change over from use of temporary service to use of the permanent service.

B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities or permit them to interfere with progress. Do not allow hazardous dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.

2.0 PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide new materials; if acceptable to the Architect, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.

B. Water: Provide potable water approved by local health authorities.

2.2 EQUIPMENT

A. General: Provide new equipment; if acceptable to the Architect, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.

B. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered glass enclosures, where exposed to breakage. Provide exterior fixtures were exposed to moisture.

C. Temporary Toilet Units: Provide self-contained single-occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material.

D. First Aid Supplies: Comply with governing regulations.

E. Fire Extinguishers: Provide hand-carried, portable UL-rated, class "A" fire extinguishers for temporary offices and similar spaces. In other locations provide hand-carried, portable, UL-rated, class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.

1. Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure.

3.0 PART 3 - EXECUTION

3.1 INSTALLATION

A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION

A. Locate sanitary facilities and other temporary construction and support facilities for easy access.

a. Maintain temporary construction and support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.
b. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy.

B. Temporary Field Office: Provide a temporary field trailer equipped with telephone communication. Field office to have a desk with a set of construction documents present at all times for the contractor's, subcontractors', architect's and owner's use. Documents include drawings, specifications, change orders, architect's supplementary instructions and approved shop drawings.

1. The field trailer is to be sized adequate to accommodate weekly subcontractor coordination meetings, including a table and chairs for attendees.
2. Post all applicable permits, licenses, notices and safety procedures required in a conspicuous location.

C. Temporary Enclosures: Provide temporary enclosure for protection of construction in progress and completed, from exposure, foul weather, other construction operations and similar activities.

D. Where temporary wood or plywood enclosure exceeds 100 square feet in area, use UL-labeled fire-retardant treated material for framing and main sheathing.

E. Project Identification Signs: Engage an experienced sign painter to apply graphics. Comply with details indicated. Remove at the completion of the project.

F. Temporary Signs: Prepare signs to provide directional information to construction personnel and visitors.

G. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner.

3.3 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer as requested by the Architect.

B. Temporary Fire Protection: Until fire protection needs are supplied by permanent facilities, install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers," and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations."

1. Locate fire extinguishers where convenient and effective for their intended purpose.
2. Store combustible materials in containers in fire-safe locations.
3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
4. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.

C. Barricades, Warning Signs and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed provide lighting, including flashing red or amber lights.

D. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.

1. At Substantial Completion, clean and renovate permanent facilities that have been used during the construction period, including but not limited to:

    1. Replace air filters and clean inside of ductwork and housings.
    2. Replace significantly worn parts and parts that have been subject to unusual operating conditions.
    3. Replace lamps that are burned out or noticeably dimmed by substantial hours of use.

END OF SECTION 01500

SECTION 01631 - PRODUCT SUBSTITUTIONS

1.0 PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by the Contractor after award of the Contract are considered requests for "substitutions."

The following are not considered substitutions:

1. Substitutions requested by Bidders during the bidding period, and accepted in writing by the Architect, prior to award of Contract, are considered as included in the Contract Documents and are not subject to requirements specified in this Section for substitutions.

2. Revisions to Contract Documents requested by the Owner or Architect.

3. Specified options of products and construction methods included in Contract Documents.

4. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities and approved by the architect and owner.

1.4 SUBMITTALS

A. Substitution Request Submittal:

1. Submit 3 copies of each request for substitution for consideration. Submit requests in the form and in accordance with procedures required for Change Order proposals.

2. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:

B. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.

C. Samples, where applicable or requested.

D. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect.

E. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors, which will become necessary to accommodate the proposed substitution.

F. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.

G. Cost information, including a proposal of the net change, if any in the Contract Sum.

H. Certification by the Contractor that the substitution proposed is equal-to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the publication indicated. Include the Contractor's waiver of rights to additional payment or time, which may subsequently become necessary because of the failure of the substitution to perform adequately.

2.0 PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Conditions: The Contractor's substitution request will be received and considered by the Architect when one or more of the following conditions are satisfied, as determined by the Architect; otherwise requests will be returned without action except to record noncompliance with these requirements.

1. Proposed changes are in keeping with the general intent of Contract Documents.

2. The request is timely, fully documented and properly submitted.

B. The Contractor's submittal and Architect's acceptance of Shop Drawings, Product Data or Samples that relate to construction Activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01631

SECTION 01700 - PROJECT CLOSEOUT

1.0 PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:

1. Inspection procedures.
2. Project record document submittal.
3. Operating and maintenance manual submittal.
4. Submittal of warranties.
5. Final cleaning.

B. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions-2 through -16.

1.3 SUBSTANTIAL COMPLETION

A. Prerequisites to Substantial Completion: Before requesting inspection for certification of Substantial Completion, complete and/or submit the following:

1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.

    a. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.

2. Advise Owner of pending insurance change-over requirements.

3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.

4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.

5. Submit record drawings, maintenance manuals, final project photographs, damage or settlement survey, property survey, and similar final record information.

6. Deliver tools, spare parts, extra stock, and similar items.

7. Make final change-over of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of change-over in security provisions.

8. Complete start-up testing of systems, and instruction of the Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.

9. Complete final clean up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.

B. Inspection Procedures: At the contractor's request, the Architect will either proceed with Inspection or advise the Contractor of unfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection, or advise the Contractor of construction that must be completed or corrected before the certificate will be issued. Architect will repeat inspection when advised Work is Substantially Complete. Results of completed inspection make-up initial "punch-list" for Final Acceptance.

1.4 FINAL ACCEPTANCE

A. Prerequisites to Final Acceptance: Before requesting final inspection for certification of final acceptance and final payment, complete the following, listing exceptions in the request.

1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.

2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.

3. Submit a certified copy of the Architect's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Architect.

4. Submit consent of surety to final payment.

5. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. On receiving Contractor's notice that Work is complete, including punch list items and excluding items delayed because of acceptable circumstances, the Architect will re-inspect the Work, and prepare a Certificate of Final Acceptance, or will advise Contractor of unfulfilled obligations. If necessary, procedure will be repeated.

1.5 RECORD DOCUMENT SUBMITTALS

A. General: 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 the Architect's reference during normal working hours.

B. Record Drawings: Maintain a clean, undamaged set of black line white - prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record

a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

1. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.

2. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.

3. Note related Change Order numbers where applicable.

4. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.

5. Provide record drawings in PDF format.

C. Record Specifications: Maintain one complete copy of the Project Manual, including addenda, and one copy of other written construction documents such as Change Orders and modifications issued in printed form during construction. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data.

1. Upon completion of the Work, submit record Specifications to the Architect for the Owner's records.

D. Record Product Data: Maintain one copy of each Product Data submittal. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site, and from the manufacturer's installation instructions and recommendations. Give particular attention to concealed products and portions of the Work which cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark-up of record drawings and Specifications.

1. Upon completion of mark-up, submit complete set of record Product Data to the Architect for the Owner's records.

E. Record Sample Submitted: Immediately prior to the date or dates of Substantial Completion, the Contractor will meet at the site with the Architect and the Owner's personnel to determine which of the submitted Samples that have been maintained during progress of the Work are to be transmitted to the Owner for record purposes. Comply with delivery to the Owner's Sample storage area.

F. Maintenance Manuals: Organize operating and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual heavy-duty 2-inch, 3-ring vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Include the following types of information:

Emergency instructions.
Spare parts list.
Copies of warranties.
Wiring diagrams.
Recommended "turn around" cycles.
Inspection procedures.

Shop Drawings and Product Data.
Fixture lamping schedule.

2.0 PART 2 - PRODUCTS (Not Applicable)

3.0 PART 3 - EXECUTION

3.1 CLOSEOUT PROCEDURES: Provide a minimum or (3) three sets of closeout documents.

A. Operating and Maintenance Instructions: Arrange for each installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's representatives. Include a detailed review of the following items:

Maintenance manuals.
Record documents.
Spare parts and materials.
Tools.
Lubricants.
Fuels.
Identification systems.
Control sequences.
Hazards.
Cleaning.
Warranties and bonds.
Maintenance agreements and similar continuing commitments.

B. As part of instruction for operating equipment, demonstrate the following procedures:
Start-up.
Shutdown.
Emergency operations.
Noise and vibration adjustments.
Safety procedures.
Economy and efficiency adjustments.
Effective energy utilization.

3.2 FINAL CLEANING

A. General: General cleaning during construction is required by the General Conditions and included in Section "Temporary Facilities".

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.

1. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.

a. Remove labels that are not permanent labels.
b. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compound and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.

c. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.

d. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.

C. Pest Control: Engage an experienced exterminator to make a final inspection, and rid the Project of rodents, insects and other pests.

D. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.

E. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

Where extra materials of value remaining after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed.

END OF SECTION 01700

SECTION 01740 - WARRANTIES AND BONDS

1.0 PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturer's standard warranties on products and special warranties.

a. Contractor is to provide **one year warranty** for all the Work, established from the date of substantial completion.

1. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.

2. Refer to each individual Section of the Specifications for specific warranties which require a longer warrantee period.

B. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.3 DEFINITIONS

A. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.

B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.4 WARRANTY REQUIREMENTS

A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.

B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding; reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefitted from use of the Work through a portion of its anticipated useful service life.

D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.

E. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.

The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

1.5 SUBMITTALS

A. Submit written warranties to the Architect prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.

B. Form of Submittal: At Final Completion compile two copies of each required warranty and bond properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.

PART 2 - PRODUCTS (not applicable).

PART 3 - EXECUTION (not applicable).

END OF SECTION 01740

02000 - SITEWORK

EXCAVATION, FILL. AND PREPARATION OF SUBGRADE

All work within the State right of way is to be in accordance with the latest standards of FDOT and all work within the County right of way is to be in accordance with the latest standards for Escambia County.

1.0 SCOPE OF WORK

1.1 Contractor shall furnish all labor, material, tools, equipment and services required to perform all the work in connection with construction of the new Parish Hall in Spanish Fort, Alabama, in strict conformance with and as required by the Contract Documents. The project includes site grading, installation of drainage structures, asphalt paving, striping, curb and gutter and miscellaneous site work items.

2.0 SITE INFORMATION

2.1 Soil data can be found in the Geotechnical Engineering Testing, Inc. (GET) Report Project No. 19-211 included with this specification.

3.0 EXCAVATION

3.1 General. The term fill used hereinafter is defined as “unclassified excavation”. Excavation of every description, regardless of material encountered within the limits of the project, shall be performed to the lines and grades indicated or specified. Suitable excavated material shall be stockpiled or transported to and placed in fill areas within the limits of the work. (During construction, excavation and filling shall be performed in a manner and sequence that will provide drainage at all times.)

3.2 Stockpiling. Generally, it will be necessary to stockpile excavated materials prior to final placement or disposal. Suitable materials shall be kept segregated from unsatisfactory materials. All satisfactory material may be placed onsite at the west of the property. All top soil shall be stockpiled for landscaping and future use. The material shall be graded to a maximum 1% slope and grassed. Coordinate area of material placement with Owner.

3.3 Structures. Excavation for structures shall be made accurately to the lines, grades, and elevations shown or as directed. Trenches and foundation pits shall be of sufficient size to permit the placement and removal of forms for the full length and width of structure footings and foundations as shown. Excavation to the final grade level shall not be made until just before the concrete is to be placed.

3.4 Temporary Excavations. Temporary excavation above the water table may proceed with vertical side slopes to depths of three (3) feet. Shoring will be required for vertical cuts to deeper depths. Large area excavations above the water table should have 2.5 to 1 (horizontal: vertical) side slopes or flatter as required for stability. Excavations deeper than the existing water surface shall require engineering design to address dewatering requirements and potential soil instabilities due to seepage pressures.

3.5 Permanent Slopes. Permanent slopes should not be steeper than 3 horizontal to 1 vertical for fill materials and compacted in-situ soils unless otherwise recommended by the geotechnical engineer. Permanent slopes of 4 horizontal to 1 vertical may be required for loose in-situ soils. Erosion protection shall be provided for slopes above mean low water elevation. Erosion protection may include placement of topsoil, erosion control netting, grass sod, seeding, or geotextile/rip-rap.

3.6 Trenches.

3.6.1 General.

a. Perform all excavation of every description and of whatever substance encountered so that pipe can be laid to the alignment and depth shown on the drawings.

b. Brace and shore all trenches, where required, in accordance with the Safety and Health Regulations for Construction, Occupational Safety and Health Administration, Department of Labor.

c. Make all excavations by open cut unless otherwise specified or indicated on the drawings.

3.6.2 Width of Trenches. Excavate trenches sufficiently wide to allow proper installation of concrete, pipe, fittings, and other materials and not less than 12" clear of pipe and formwork on either side at any point. Do not widen trenches by scraping or loosening materials from the sides. Where supports, sheeting, and bracing are required, trench may be of extra width to permit the placing of the trench supporting material.

3.6.3 Trench Excavation in Earth. Earth excavation includes all excavation of whatever substance encountered. In locations where pipe is to be bedded in earth excavated trenches, fine grade the bottom of such trenches to allow firm bearing for the bottom of the pipe on undisturbed earth. Where any part of the trench has been excavated below the grade of the pipe, fill the part excavated below such grade with pipe bedding material and compact at the Contractor's expense.

4.0 BORROW MATERIAL

4.1 Selection of Borrow Material. Borrow material shall be in accordance with these specifications. All borrow should be available on site. However, if additional borrow material is required; it shall be obtained from approved off-site sources by the Contractor. Service records of the source and analysis of the material by a reputable laboratory shall be submitted to the Engineer.

5.0 BACKFILL

5.1 Backfill Around Structures

5.1.1 General. Unless otherwise specified or indicated on the drawings, use suitable material for backfill, which was removed in the course of making the construction excavations.

5.1.2 Material. Approved selected materials available from the excavations may be used for backfilling around structures. Obtain material needed in addition to that of construction excavations from approved sites or other approved deposits. Furnish all borrow material needed for the work. Place and compact all material, whether from the excavation or borrow, to make a dense, stable fill. Use fill material which contains no vegetation, masses of roots, individual roots over 6" long or more than ½" in diameter, stones over 4" in diameter, or porous matter

5.1.3 Placing Backfill.

a. Do not place backfill against or on structures until they have attained sufficient strength to support the loads (including construction loads) to which they will be subjected without distortion, cracking, or other damage. Use the best of the excavated materials in backfilling within 2 ft. of the structure. Avoid unequal soil pressures by depositing the material evenly around the structure.

b Place fill and backfill in layers not more than 6" thick, except as specified otherwise herein, and compact each layer evenly to the specified density. Do not backfill against concrete without Engineer's approval.

5.2 Trench Backfill

5.2.1 General.

a. Unless otherwise specified or indicated on the drawings, use suitable material for backfill, which was removed in the course of making the construction excavations. Start backfilling as soon as practicable after the pipes have been laid or the structures have been built and are structurally adequate to support the loads, including construction loads, to which they will be subjected, and proceed until its completion.

b. With the exception mentioned below in this paragraph, do not backfill trenches at pipe joints until after that section of the pipeline has successfully passed any specified test required. Should the Contractor wish to minimize the maintenance of lights and barricades and the obstruction of traffic, he may, at his own risk, backfill the entire trench as soon as practicable after installation of pipe, and the related structures have acquired a suitable degree of strength. He shall, however, be responsible for removing and later replacing such backfill, at his own expense,

should he be ordered to do so in order to locate and repair or replace leaking or defective joints or pipe.

5.2.2 Materials. The nature of the materials will govern both their acceptability for backfill and the methods best suited for their placement and compaction in the backfill. Both are subject to the approval of the Engineer. Place no stone or rock fragment larger than 4" in greatest dimension in the backfill. Drop no large masses of backfill material into the trench in such a manner as to endanger the pipeline. Use a timber grillage to break the fall of material dropped from a height of more than 5 feet. Exclude pieces of bituminous pavement from the backfill unless their use is expressly permitted.

5.2 3 Zone Around Pipe Place bedding material to the level shown on the drawings and work material carefully around the pipe to ensure that all voids are filled. For backfill up to a level of 2 ft. over the tops of the pipe, use only selected materials containing no rocks, clods, or organic materials. Place the backfill and compact thoroughly under the pipe haunches and up to the mid-line of the pipe in layers not exceeding 6" in depth. Place each layer and tamp carefully and uniformity so as to eliminate the possibility of lateral displacement. Place and compact the remainder of the zone around the pipe and to a height of 1 ft. above the pipe in layers not exceeding 6" and compact to a maximum density of at least 95% as determined by ASTM D1557 modified.

5.2.4 Tamping

a. Deposit and spread backfill materials in uniform, parallel layers not exceeding 12" thick before compaction. Tamp each layer before the next layer is placed to obtain a thoroughly compacted mass. Furnish and use, if necessary, an adequate number of power-driven tampers, each weighing at least 20 pounds, for this purpose. Take care that the material close to the bank, as well as in all other portions of the trench, is thoroughly compacted.

b. When the trench width and the depth to which backfill has been placed are sufficient to make it feasible, and it can be done effectively and without damage to the pipe, backfill may, on approval, be compacted by the use of suitable rollers, tractors, or similar powered equipment instead of by tamping. For compaction by tamping (or rolling), the rate at which backfill material is deposited in the trench shall not exceed that permitted by the facilities for its spreading, leveling, and compacting as furnished by the Contractor.

c. Wet the material by sprinkling, if necessary, to ensure proper compaction by tamping (or rolling). Perform no compaction by tamping (or rolling) when the material is too wet from rain or applied water to be compacted properly.

6.0 PREPARATION OF SUBGRADE

6.1 Ground surface on which fill is to be placed shall be stripped of live, dead, or decayed vegetation, rubbish, debris, boulders, and other unsatisfactory material; plowed, disked, or otherwise broken up; pulverized; and moistened or aerated as required just prior to placement of fill materials to assure adequate bond between fill material and the prepared ground surface. The exposed ground surface of area graded to elevations as noted above shall be screened and graded to clean native soil material.

7.0 STRUCTURAL FILLS

7.1 Fills shall be constructed from satisfactory materials free of organic material from the required excavations and from borrow, if necessary. The material shall be placed in successive horizontal layers of loose material not more than 10" in depth. Each layer shall be spread uniformly on a prepared surface, i.e., a soil surface that has been moistened or aerated as necessary and scarified or otherwise broken up in such a manner that the fill will bond with the surface on which it is placed; plowed, disked, or otherwise broken up; moistened or aerated as necessary; thoroughly mixed; and compacted to at least 98% standard proctor density. Compaction requirements for the upper portion of earth fills forming subgrade for base course shall be identical with those requirements specified herein. Compaction shall be accomplished by sheepsfood rollers, pneumatic-tired rollers, steel wheeled rollers, vibratory compactors, or other approved equipment.

8.0 SUBBASE PREPARATION

8.1 Construction. The final lift for subgrade shall not be more than 6" in depth. Subgrade shall be shaped to line, grade and cross section, and compacted as specified. This operation shall include plowing, disking, and any moistening or aerating required to obtain proper compaction. Soft or otherwise unsatisfactory material shall be removed and replaced with satisfactory excavated material or other approved material as directed. After rolling, the surface of the subbases for base shall not show deviation greater than ¼" when tested with a 10 ft. straightedge applied both parallel and at right angles to the centerline of the area. The elevation of the finished subbase shall not vary more than 0.05 ft. from the established grade and approved cross section.

8.2 Compaction. Compaction shall be accomplished by cultipacker rollers or other approved equipment.

9.0 FINISHING

The surface of all excavations, fills, and subgrades shall be finished to a reasonably smooth and compact surface substantially in accordance with the lines, grades, and cross sections or elevations shown. The degree of finish for all graded areas shall be within 0.1 ft. of the grades and elevations indicated except that the degree of finish for subgrades shall be as specified above.

10.0 SUBBASE AND FILL PROTECTION

During construction, fills and excavations shall be kept shaped and drained. Ditches and drains along subgrade shall be maintained in such a manner as to drain effectively at all times. The finished

subgrade shall not be disturbed by traffic or other operation and shall be protected and maintained by the Contractor in a satisfactory condition until base course is placed. The storage or stockpiling of materials on the finished subgrade will not be permitted. No base course shall be laid until the subgrade has been checked and approved, and in no case shall base be placed on a muddy, spongy, or frozen subgrade.

11.0 DISPOSAL OF UNSUITABLE OR EXCESS MATERIAL

The Contractor shall dispose of all unsuitable or excess materials resulting from the excavation that are not permitted or required in the fills or required in other features of the work. Materials shall be disposed of on the Owner's property.

12.0 MEASUREMENT

12.1 Borrow. The unit of measurement for borrow will be the cubic yard. Yardage of borrow to be paid for will be the number of cubic yards of borrow based upon in place measurement as determined by the average end area method.

13.0 SUBSIDIARY OBLIGATIONS

13.1 General. The following operations and construction will not be measured for direct payment, but will be considered subsidiary obligations of the Contractor, and will be covered under the contract prices for the structures involved or under the unit prices per yard as specified below.

13.2 Excavation. Excavation for drainage structures, foundations, and operations required in connection therewith, including bracing or sheeting, drainage, and pumping, will be covered under the contract price for drainage structures or the subject structure.

13.3 Backfill. Backfill for drainage structures and other structures below grade, including attendant operations, will be covered under the contract price for drainage structures or the subject structure.

13.4 Fill. Fill construction including the preparation of ground surface for placement of fill up to the finished subgrade elevation will be covered under the unit prices per cubic yard for Excavation or Fill.

13.5 Subgrade preparation. Subgrade preparation, including dressing, shaping, wetting, aerating, and compacting of the subgrade, will be covered under the unit prices per cubic yard for Excavation or Fill.

13.6 Water used for sprinkling and wetting materials during construction in connection with compaction of fills, unless otherwise specified, will be covered under the contract unit prices per cubic yard for Excavation or Fill.

13.7 Disposal of Unsuitable Material will be covered under the unit prices per cubic yard for Excavation to required elevations.

14.0 REMOVAL AND DEMOLITION WORK

14.1 Scope of Work

The work included under this Section shall consist of furnishing all the labor, tools, equipment, material, services, and supervision necessary for the removal, and disposal of existing miscellaneous debris, and other items within the Contract limits shown on the Drawings and specified.

14.2 Protection of Existing Structures

The removal and disposal work required shall be performed in such a manner so as not to damage any existing structures that are to remain and any damage thereto caused by the Contractor's operations shall be repaired by the Contractor at no cost to the Owner.

14.3 Disposal of Removed Materials

Removed materials as noted herein or as may be designated by the Engineer shall remain the property of the Owner and shall be neatly stockpiled as directed. Material specified to be disposed of shall become the Contractor's property and shall be disposed of off Owner's property.

14.4 Existing Construction

It shall be the Contractor's responsibility to determine all necessary details of the existing construction as relative to its effects on his work.

15.0 EROSION CONTROL

15.1 During this site construction process and until all site drainage improvements are operational, the Contractor shall maintain an erosion control system satisfactory to the Engineer, the Owner, ADEM and all local authorities. Erosion control shall consist of silt fences, hay bales, ditches, pipes, inlets, and appurtenances required to prevent the transportation of sediments in stormwater runoff to the existing watercourse.

15.2 The Contractor shall provide, establish, maintain, and install erosion control as required by the parties noted above.

15.3 All erosion control shall be maintained by the Contractor during the contract period, and until contract acceptance.

15.3.1 The Contractor shall examine the site and site conditions.

15.3.2 Once the work has begun on a section it will be the responsibility of the Contractor to control all erosion during construction. This may include, but is not limited to, seeding, sodding, fences, berms, dikes, drains, netting, hay bales, sand bags, etc., as specified herein.

15.4 All practices and materials shall conform to the Alabama Highway Department Standard Specification for Highway Construction, Latest Edition.

15.5 A BMP plan shall be submitted to the Engineer for approval 15 days prior to the start of excavation and earthwork.

15.6 All materials shall comply with the plans and specifications. Certain materials can be substituted if authorized by the Engineer.

15.6.1 Hay bales may either be hay or straw containing 5 Cu. ft. of material.

15.6.2 Sand bags may be of cotton or burlap which will confine the sand inside the bag and be of a volume of approximately 1 Cu. ft.

15.6.3 Silt fences shall consist of a woven wire fabric mounted on wood stakes or posts with a polymeric filter fabric attached to the fence fabric. Filter fabric shall be a polymeric fabric formed from a plastic yam of a long-chain synthetic polymer composed of at least 85% by weight of propylene ethylene, amide, ester, or vinyledenechloride and shall contain stabilizers to make the filaments resistant to deterioration from ultraviolet and heat exposure for at least six months.

15.7 Performance Requirements

15.7.1 Sand bags shall be securely fastened when placed. The bags shall have a thickness of approximately 6”.

15.7.2 Hay bales shall be securely anchored by the use of stakes and wire or other approved methods.

15.7 3 Silt fences shall be constructed at locations as required. Field splices can be made by overlapping the fabric a minimum of 3 ft. and securely fastening the fabric to the wire fence. Contractor shall maintain the fence until the contract has been accepted.

15.7.4 If the fabric should become damaged an additional layer of fabric can be attached with at least a 3 ft. overlap.

15.7.5 Temporary drainage sumps or sediment basins can be constructed near the ends of excavations or ditches to control silting.

15.7.6 Sumps shall be cleaned periodically by the removal of the silt to keep the sump functional.

15.8 The Contractor shall be responsible for protecting the site and all adjacent surface waters from any and all erosion. If erosion does occur, the Contractor shall repair all damage and provide all additionally needed topsoil at the Contractor's expense.

End of Section 02000.

SECTION 02282 - TERMITE CONTROL

1.0 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. Provide soil treatment for termite control, as herein specified.

1.3 QUALITY ASSURANCE

A. In addition to requirements of these specifications, comply with manufacturer's instructions and recommendations for work, including preparation of substrate and application.

B. Engage a professional pest control operator, licensed in accordance with regulations of governing authorities for application of soil treatment solution.

C. Use only termiticides which bear a Federal registration number of the U.S. Environmental Protection Agency.

1.4 JOB CONDITIONS

A. Restrictions: Do not apply soil treatment solution until excavating, filling and grading operations are completed, except as otherwise required in construction operations.

B. To insure penetration, do not apply soil treatment to frozen or excessively wet soils or during inclement weather. Comply with handling and application instructions of the soil toxicant manufacturer.

1.5 SPECIFIC PRODUCT WARRANTY

A. Furnish written warranty certifying that applied soil termiticide treatment will prevent infestation of subterranean termites and, that if subterranean termite activity is discovered during warranty period, Contractor will re-treat soil and repair or replace damage caused by termite infestation.

1. Provide warranty for a period of 5 years from date of treatment, signed by Applicator and Contractor.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Treat with a non-repellant subterranean termiticide, registered by EPA.

B. Termiticide used shall meet the following standards:

1. Active Ingredients: Fipronil:5-amino-1(2,6-dichloro-4(trifluoromethyl) pheny)4-(1,R,S)-(trifluoromethyl)sulfiny)-1-H-pyrazole-3-carbonitrile……..8%

PART 3 - EXECUTION

3.1 INSTALLATION

A. Soil treatment shall be strictly applied in accordance with the manufacturer's label, the recommendations of the National Pest Control Association, and as follows:
   1. All aspects of the label shall be done according to the specific job site requirement.
   2. Termiticides shall be mixed at the "maximum" ratio allowed as per individual label specifications.
   3. All horizontal barriers shall be treated at the rate of one gallon per ten square feet.
   4. All vertical barriers shall be treated at the rate of four gallons per ten linear feet (per foot of depth), not to exceed four feet of depth.
   5. All void barriers shall be treated at the rate of two gallons per ten linear feet.
   6. All critical areas, such as penetrations through slab, plumbing, conduit, electrical, etc. shall be treated at the rate of one gallon per square foot.
   7. All foundation block shall be treated with termiticide before being filled with concrete.
   8. Exterior applications shall be done before sidewalks, porches, patios, and driveways, etc. are completed.
   9. All final vertical applications shall be done after final landscaping and grading is completed.
   10. Applicator shall have dedicated tank. Tank that is used for applying repellant type termiticides will not be allowed.

B. Surface Preparation: Remove foreign matter which could decrease effectiveness of treatment on areas to be treated. Loosen, rake and level soil to be treated, except previously compacted areas under slabs and foundations. Toxicants may be applied before placement of compacted fill under slabs, if recommended by toxicant manufacturer.

C. Application Rates: Apply soil treatment solution as follows:

D. Under slab-on-grade structures, treat soil before concrete slabs are placed, using the following rates of application:
   1. Apply 4 gallons of chemical solution per 10 lin. ft. to soil in critical areas under slab, including entire inside perimeter inside of foundation walls, along both sides of interior partition walls, around plumbing pipes and electric conduit penetrating slab, and around interior column footers.
   2. Apply one gallon of chemical solution per 10 sq. ft. as an overall treatment under slab and attached slab areas where fill is soil or unwashed gravel. Apply 1-1/2 gallons of chemical solution to areas where fill is washed gravel or other coarse absorbent material.
   3. Apply 4 gallons of chemical solution per 10 lin. ft. of trench, for each foot of depth from grade to footing, along outside edge of building. Dig a trench 6" to 8" wide along outside of foundation to a depth of not less than 12". Punch holes to top of footing at not more than 12" o.c. and apply chemical solution. Mix chemical solution with the soil as it is being replaced in trench.

C. At hollow masonry foundations or grade beams, treat voids at rate of 2 gal. per 10 lin. ft., poured directly into the hollow spaces.

E. At expansion joints, control joints, and areas where slabs will be penetrated, apply at rate of 4 gals. per 10 lin. ft. of penetration.

F. Post signs in areas of application to warn workers that soil termiticide treatment has been applied. Remove signs when areas are covered by other construction.

G. Reapply soil treatment solution to areas disturbed by subsequent excavation, landscape grading, or other construction activities following application.

END OF SECTION 02282

SECTION 02486 - PLANTING IRRIGATION

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. Piping.
2. Encasement for piping.
3. Manual valves.
4. Pressure-reducing valves.
5. Automatic control valves.
6. Automatic drain valves.
7. Transition fittings.
8. Miscellaneous piping specialties.
9. Sprinklers.
10. Quick couplers.
11. Controllers.
12. Boxes for automatic control valves.

1.3 DEFINITIONS

A. Circuit Piping: Downstream from control valves to sprinklers, specialties, and drain valves. Piping is under pressure during flow.

B. Drain Piping: Downstream from circuit-piping drain valves. Piping is not under pressure.

C. Main Piping: Downstream from point of connection to water distribution piping to, and including, control valves. Piping is under water-distribution-system pressure.

D. Low Voltage: As defined in NFPA 70 for circuits and equipment operating at less than 50 V or for remote-control, signaling power-limited circuits.

1.4 PERFORMANCE REQUIREMENTS

A. Irrigation zone control shall be **automatic operation with controller and automatic control** valves.

B. Location of Sprinklers and Specialties: Design location is approximate. Make minor adjustments necessary to avoid plantings and obstructions such as signs and light standards. Maintain 100 percent irrigation coverage of areas indicated.

C. Minimum Working Pressures: The following are minimum pressure requirements for piping, valves, and specialties unless otherwise indicated:

1. Point of Connection: 60 psi

2. Irrigation Main Piping: **60 psi (1380 kPa)**.
3. Circuit Piping: **50 psi (1035 kPa)**].

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories.

B. Wiring Diagrams: For power, signal, and control wiring.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

B. Field quality-control reports.

1.7 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For **sprinklers, isolation valves, and automatic control valves**, to include in operation and maintenance manuals.

B. Provide the following attic stock:
1. Sprinkler heads: 3 for each type
2. Electric control valves: 2
3. Solenoids: 3

1.8 QUALITY ASSURANCE

A. Installer Qualifications: Company must have three years of experience installing systems of similar size and complexity. Company must have qualified superintended on-site at all times who has minimum three years' experience installing irrigation systems of similar size and complexity.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

B. Contractor is responsible for storage and security of all materials stored on site.

1.10 PROJECT CONDITIONS

A. Interruption of Existing Water Service: Do not interrupt water service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water service according to requirements indicated:

1. Notify **Owner** no fewer than five days in advance of proposed interruption of water service.
2. Do not proceed with interruption of water service without **Owner's** written permission.

PART 2 - PRODUCTS

2.1 PIPES, TUBES, AND FITTINGS

A. Comply with requirements in the piping schedule for applications of pipe, tube, and fitting materials, and for joining methods for specific services, service locations, and pipe sizes.

B. PVC Pipe, Pressure Rated: ASTM D 2241, PVC 1120 compound, **SDR 21** class 200.

1. PVC Socket Fittings: ASTM D 2467, Schedule 80.

2. PVC Socket Unions: Construction similar to MSS SP-107, except both headpiece and tailpiece shall be PVC with socket or threaded ends.

2.2 PIPING JOINING MATERIALS

A. Solvent Cements for Joining PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.

2.3 PRESSURE-REDUCING VALVES

A. Water Regulators:
1. As indicated on the drawings.

B. Water Control Valves:

1. As indicated on the drawings.

2.4 AUTOMATIC CONTROL VALVES

A. Plastic, Automatic Control Valves:

1. As indicated on the drawings.
2. Description: Molded-plastic body, normally closed, diaphragm type with manual-flow adjustment, and operated by 24-V ac solenoid.

2.5 AUTOMATIC DRAIN VALVES

A. Description: Spring-loaded-ball type of corrosion-resistant construction and designed to open for drainage if line pressure drops below 2-1/2 to 3 psig (17 to 20 kPa).

2.6 TRANSITION FITTINGS

A. General Requirements: Same size as, and with pressure rating at least equal to and with ends compatible with, piping to be joined.

2.7 SPRINKLERS

A. General Requirements: Designed for uniform coverage over entire spray area indicated at available water pressure.

B. Plastic, Pop-up, Gear-Drive Rotary Sprinklers:

C. As indicated on the drawings. Plastic, Surface, Pop-up Spray Sprinklers:

1. As indicated on the drawings.

D. Plastic, Pop-up Spray Sprinklers:
1. As indicated on the drawings.

E. Plastic Flood Bubblers:

1. As indicated on the drawings.

2.8 CONTROLLERS

A. Connect wiring to existing.

2.9 BOXES FOR AUTOMATIC CONTROL VALVES

A. Plastic Boxes:
1. Description: Box and cover, with open bottom and openings for piping; designed for installing flush with grade.

a. Size: As required for valves and service.
b. Shape: As required for valves and service.
c. Sidewall Material: **PE**.
d. Cover Material: **PE**.

1) Lettering: "**VALVE BOX**"

PART 3 - EXECUTION

3.1 EARTHWORK

A. Excavating, trenching, and backfilling are specified in Section 31 2000 "Earth Moving."

B. Provide minimum cover over top of underground piping according to the following:

1. Irrigation Main Piping: Minimum depth of 30 **inches (900 mm)** below finished grade, or not less than **18 inches (450 mm)** below average local frost depth, whichever is deeper.
2. Circuit Piping: **12 inches (300 mm)**.
3. Drain Piping: **12 inches (300 mm)**.
4. Sleeves: **36 inches under roadways**.

3.2 PREPARATION

A. Set stakes to identify locations of proposed irrigation system. Obtain Landscape Architect's approval before excavation.

3.3 PIPING INSTALLATION

A. Location and Arrangement: Drawings indicate location and arrangement of piping systems. Install piping as indicated unless deviations are approved on Coordination Drawings.

B. Install piping at minimum uniform slope of 0.5 percent down toward drain valves.

C. Install piping free of sags and bends.

D. Install groups of pipes parallel to each other, spaced to permit valve servicing.

E. Install fittings for changes in direction and branch connections.

F. Install unions adjacent to valves and to final connections to other components with NPS 2 (DN 50) or smaller pipe connection.

G. Install flanges adjacent to valves and to final connections to other components with NPS 2-1/2 (DN 65) or larger pipe connection.

H. Lay piping on solid subbase, uniformly sloped without humps or depressions.

I. Install ductile-iron piping according to AWWA C600.

J. Install PVC piping in dry weather when temperature is above 40 deg F (5 deg C). Allow joints to cure at least 24 hours at temperatures above 40 deg F (5 deg C) before testing.

K. Install piping in sleeves under parking lots, roadways, and sidewalks.

L. Install sleeves made of **Schedule 40** PVC pipe and socket fittings, and solvent-cemented joints.

3.4 JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

D. PVC Piping Solvent-Cemented Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:

1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
2. PVC Pressure Piping: Join schedule number, ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.

3. PVC Nonpressure Piping: Join according to ASTM D 2855.

3.5 VALVE INSTALLATION

A. Underground Iron Gate Valves, Resilient Seat: Comply with AWWA C600 and AWWA M44. Install in valve casing with top flush with grade.

1. Install valves and PVC pipe with restrained, gasketed joints.

B. Pressure-Reducing Valves: Install in boxes for automatic control valves or aboveground between shutoff valves.

C. Drain Valves: Install in underground piping in boxes for automatic control valves.

3.6 SPRINKLER INSTALLATION

A. Install sprinklers after hydrostatic test is completed.

B. Install sprinklers at manufacturer's recommended heights.

C. Locate part-circle sprinklers to maintain a minimum distance of 4 inches (100 mm) from walls and 4 inches (50 mm) from other boundaries unless otherwise indicated.

3.7 AUTOMATIC IRRIGATION-CONTROL SYSTEM INSTALLATION

A. Equipment Mounting: Install exterior wall-mounted devices on exterior wall in specific location approved by Owner and Landscape Architect.

1. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor bolts to elevations required for proper attachment to supported equipment.
3. All wiring extending above grade to controller shall be in conduit and securely neatly to wall.

B. Install control cable in same trench as irrigation piping **beside** piping. Provide conductors of size not smaller than recommended by controller manufacturer. Install cable in separate sleeve under paved areas.

3.8 CONNECTIONS

A. Install piping adjacent to equipment, valves, and devices to allow service and maintenance.

B. Connect wiring between controllers and automatic control valves.

3.9 FIELD QUALITY CONTROL

A. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

B. Tests and Inspections:

1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.

2. Operational Test: After electrical circuitry has been energized, operate controllers and automatic control valves to confirm proper system operation.
3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

C. Any irrigation product will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

3.10 STARTUP SERVICE

A. **Perform** startup service.

1. Complete installation and startup checks according to manufacturer's written instructions.

2. Verify that controllers are installed and connected according to the Contract Documents.
3. Verify that electrical wiring installation complies with manufacturer's submittal.

3.11 ADJUSTING

A. Adjust settings of controllers.

B. Adjust automatic control valves to provide flow rate at rated operating pressure required for each sprinkler circuit.

C. Adjust sprinklers and devices, except those intended to be mounted aboveground, so they will be flush with, or not more than **1/2 inch (13 mm)** above, finish grade.

3.12 CLEANING

A. Flush dirt and debris from piping before installing sprinklers and other devices.

3.13 DEMONSTRATION

A. **Train** Owner's maintenance personnel to adjust, operate, and maintain **automatic control valves and controllers**.

3.14 PIPING SCHEDULE

A. Install components having pressure rating equal to or greater than system operating pressure.

B. Piping in control-valve boxes and aboveground may be joined with flanges or unions instead of joints indicated.

C. Underground irrigation main piping shall be following:

1. SDR 21, PVC, pressure-rated pipe class 200; PVC socket fittings; and solvent-cemented joints.

D. Circuit piping shall be the following:
1. SDR 21, PVC, pressure-rated pipe class 200; PVC socket fittings; and solvent-cemented joints.

3.15 VALVE SCHEDULE

A. Underground, Shutoff-Duty Valves: Use the following:

1. As indicated on the drawings.

B. Drain Valves:

1. As Indicated on the drawings.

END OF SECTION 02486

SECTION 02830 – CHAIN LINK FENCES AND GATES

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 this Section.

B. Refer to Section 01352 LEED requirements.

1.2 SUMMARY

A. This Section includes the following:

Galvanized steel chain link fence and gates -**Polyvinyl Chloride (PVC) coated steel chain link fence and gates - Black.**

1.3 SUBMITTALS

A. Product data in the form of manufacturer's technical data, specifications, and installation instructions for fence and gate posts, fabric, gates, and accessories.

B. Shop drawings showing location of fence, gates, each post, and details of post installation, extension arms, gate swing, hardware, and accessories.

PART 2 - PRODUCT

2.1 MANUFACTURERS: Subject to compliance with requirements, provide products by one of the following:

A. Galvanized Steel Fencing and Fabric:

Allied Tube and Conduit Corp.
American Chain Link Fence Company
American Tube Company
Anchor Fence, Inc.
Capitol Wire and Fence Co., Inc.
Century Tube Corp.
Cyclone Fence Div./USX Corp.

2.2 FABRIC

A. Steel Fabric: Comply with Chain Link Fence Manufacturers Institute (CLFMI) Product Manual. Furnish one-piece fabric widths for fencing up to 12 feet high. Wire size includes zinc coating.

B. Size: 2-inch mesh, 9-gage (0.192-inch diameter) wire with knuckled top and bottom shelvages.

C. Galvanized Steel Finish: ASTM A 392, Class 1, with not less than 1.2 oz. zinc per sq. ft. of uncoated wire surface.

2.2 COATING:

Polyvinyl Chloride (PVC) Finish: Comply with ASTM F 668, with core wire diameter (gage) measured prior to application of PVC coating with not less than 0.40 oz. zinc per sq. ft. of uncoated surface on 6 gage wire and not less than 0.30 oz. zinc per sq. ft. of uncoated surface on 9 and 11 gage wire.

Color: **Black**.

2.3 FRAMING

A. Strength requirements for posts and rails conforming to ASTM F 669.

B. Steel Framework, General: Posts, rails, braces, and gate frames.

Type I Pipe: Hot-dipped galvanized steel pipe conforming to ASTM F 1083, plain ends, standard weight (schedule 40) with not less than 1.8 oz. zinc per sq. ft. of surface area coated.

C. Section: Rolled form steel shapes conforming to ASTM F 669, group II produced from steel conforming to A 446, grade D, or ASTM A 570, grade 45, cold formed, hot-dip galvanized with minimum 2.0 oz. zinc per sq. ft. of surface area conforming to ASTM A 123 or ASTM A 525; or 5 percent aluminum-mischmetal coated with minimum 1.0 oz. coating per sq. ft. of surface area each side conforming to ASTM A 875.

D. End or corner posts

Over 6 feet: 2.875-inch OD Type I steel pipe.

E. Line or intermediate posts for following fabric heights:

Over 6 feet: 2.375-inch OD Type I

F. Top Rail: Manufacturer's longest lengths, with expansion-type couplings, approximately 6 inches long, for each joint. Provide means for attaching top rail securely to each gate corner, pull, and end post.

2.4 FITTINGS AND ACCESSORIES

A. Zinc Coating: Unless specified otherwise, galvanize steel fence fittings and accessories in accordance with ASTM A 153, with zinc weights per Table I.

B. Tension Wire: 0.177-inch-diameter metallic-coated steel marcelled tension wire conforming to ASTM A 824 with finish to match fabric.

C. Tie Wires: 12-gage (0.106-inch diameter) galvanized steel with a minimum of 0.80 oz. per sq. ft. of zinc coating of surface area in accordance with ASTM A 641.

D. Post Brace Assembly: Manufacturer's standard adjustable brace at end and gate posts and at both sides of corner and pull posts, with horizontal brace located at midheight of fabric. Use same material as top rail for brace, and truss to line posts with 3/8-inch- diameter rod and adjustable tightener. Provide manufacturers standard galvanized steel.

E. Bottom and Center Rail: Same material as top rail. Provide manufacturer's standard galvanized steel for each end.

F. Post and Line Caps: Provide weathertight closure cap for each post. Provide line post caps with loop to receive tension wire or top rail.

G. Tension or Stretcher Bars: Hot-dip galvanized steel with minimum length 2 inches less than full height of fabric, minimum cross-section of 3/16 inch by 3/4 inch and minimum 1.2 oz. zinc coating per sq. ft. of surface area. Provide one bar for each gate and end post, and two for each corner and pull post, except where fabric is integrally woven into post.

H. Tension and Brace Bands: Minimum 3/4-inch-wide hot-dip galvanized steel with minimum 1.2 oz. zinc coating per sq. ft. of surface area.

I. Concrete: Provide concrete consisting of Portland cement, ASTM C 150, aggregates ASTM C 33, and clean water. Mix materials to obtain concrete with a minimum 28-day compressive strength of 2500 psi. Use at least 4 sacks of cement per cu. yd., 1-inch maximum size aggregate, maximum 3-inch slump, and 2 to 4 percent entrained air.

2.5 GATES

A. Fabrication: Fabricate perimeter frames of gates from metal and finish to match fence framework. Assemble gate frames by welding. Provide horizontal and vertical members to ensure proper gate operation and attachment of fabric, hardware, and accessories. Space frame members maximum of 8 feet apart unless otherwise indicated.

Provide same fabric as for fence unless otherwise indicated. Install fabric with tension bars and bands at vertical edges and at top and bottom edges.

Install diagonal cross-bracing consisting of 3/8-inch-diameter adjustable-length truss rods on gates to ensure frame rigidity without sag or twist.

Swing Gates: Comply with ASTM F 900.

Walkthrough gates shall have a minimum clear width of 60 inches.

B. Steel: Over to 6 feet High and 8 Feet Wide: Fabricate perimeter frames of minimum 1.90-inch OD Type I.

C. Gate Hardware: Provide hardware and accessories for each gate, galvanized per ASTM A 153, and in accordance with the following:

Hinges: Size and material to suit gate size, non-lift-off type, offset to permit 180-deg gate opening. Provide 1-1/2 pair of hinges for each leaf over 6-foot nominal height.

Latch: Forked type or plunger-bar type to permit operation from either side of gate, with padlock eye as integral part of latch.

Keeper: Provide keeper for vehicle gates, which automatically engages gate leaf and holds it in open position until manually released.

Gate Stops: Provide gate stops for double gates, consisting of mushroom-type flush plate with anchors, set in concrete, and designed to engage center drop rod or plunger bar. Include locking device and padlock eyes as integral part of latch, permitting both gate leaves to be locked with single padlock.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Install fence in compliance with ASTM F 567. Do not begin installation and erection before final grading is completed, unless otherwise permitted.

Apply fabric to outside of framework. Install fencing on boundary lines inside of property line established by survey as required by Division 1.

B. Excavation: Drill or hand-excavate (using post-hole digger) holes for posts to diameters and spacings indicated, in firm, undisturbed or compacted soil.

If not indicated on drawings, excavate holes for each post to minimum diameter recommended by fence manufacturer, but not less than 4 times largest cross-section of post.

Unless otherwise indicated, excavate hole depths approximately 3 inches lower than post bottom, with bottom of posts set not less than 36 inches below finish grade surface.

C. Setting Posts: Center and align posts in holes 3 inches above bottom of excavation. Space maximum 10 feet o.c., unless otherwise indicated.

Protect portion of posts above ground from concrete splatter. Place concrete around posts and vibrate or tamp for consolidation. Check each post for vertical and top alignment, and hold in position during placement and finishing operations.

Unless otherwise indicated, extend concrete footings 2 inches above grade and trowel to a crown to shed water.

D. Top Rails: Run rail continuously through line post caps, bending to radius for curved runs and at other posts terminating into rail end attached to posts or post caps fabricated to receive rail. Provide expansion couplings as recommended by fencing manufacturer.

E. Center Rails: Provide center rails where indicated. Install in one piece between posts and flush with post on fabric side, using rail ends and special offset fittings where necessary.

F. Brace Assemblies: Install braces so posts are plumb when diagonal rod is under proper tension.

G. Bottom Tension Wire: Install tension wire within 6 inches of bottom of fabric before stretching fabric and tie to each post with not less than same gage and type of wire. Pull wire taut, without sags. Fasten fabric to tension wire with 11-gage hog rings of same material and finish as fabric wire, spaced maximum 24 inches o.c.

H. Top Tension Wire: Install tension wire through post cap loops before stretching fabric and tie to each post cap with not less than same gage and type of wire. Pull wire taut, without sags. Fasten fabric to tension wire with 11-gage hog rings of same material and finish as fabric wire, spaced maximum 24 inches o.c.

I. Fabric: Leave approximately 2 inches between finish grade and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Install fabric on security side of fence, and anchor to framework so that fabric remains in tension after pulling force is released.

J. Tension or Stretcher Bars: Thread through or clamp to fabric 4 inches o.c., and secure to end, corner, pull, and gate posts with tension bands spaced not over 15 inches o.c.

K. Tie Wires: Use U-shaped wire of proper length to secure fabric firmly to posts and rails with ends twisted at least 2 full turns. Bend ends of wire to minimize hazard to persons or clothing.

Maximum Spacing: Tie fabric to line posts 12 inches o.c. and to rails and braces 24 inches o.c.

L. Fasteners: Install nuts for tension bands and hardware bolts on side of fence opposite fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

M. Gates: Install gates plumb, level, and secure for full opening without interference. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

END OF SECTION 02830

SECTION 02920 - SODDING

PART 1 – GENERAL

All work within the State or County right of way is to be in accordance with the latest standards of FDOT and all work within the County right of way is to be in accordance with the latest standards for Escambia County.

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other specifications sections within this project manual, apply to this Section.

1.02 DESCRIPTION OF WORK

A. This work consists of sodding areas cleared during construction and not paved, or as otherwise shown on the Construction Plans. All material and construction methods shall be in accordance with Section 570 of the Florida Department of Transportation Standard Specifications, Latest Edition.

B. Sodding: Areas noted on Construction Plans shall be sodded.

1.03 MATERIAL

A. Sod shall be **Tifway 419 Bermuda** unless existing sod is present, in which case new sod species must match existing. The sod shall be live, fresh, and uninjured at the time of planting and shall have a thick mat of roots with enough adhering soil to assure growth. Apply sod within 48 hours of cutting or stack and keep moist. Do not plant dormant sod or if ground is frozen.

B. Placement: Prepare the ground by loosening the soil and raking. Place sod on the prepared soil to form a solid mass with tightly fitted joints. Butt ends and sides of sod strips; do not overlap. Stagger strips to avoid a continuous downhill seam. Tamp or roll lightly to ensure contact with subgrade. Tamp the outer edges of the sodded area to produce a smooth contour. Work sifted soil into minor cracks between pieces of sod; remove excess to avoid smothering of adjacent grass. Water sod thoroughly with a fine spray immediately after planting.

C. Watering: Keep sod continuously moist to a depth below the root zone for three weeks after placement. If there is not water available to the site, the Contractor shall provide the water for the sod, and include cost of same in his bid.

D. Maintenance: Maintain sod by watering, fertilizing, weeding, mowing, trimming and other operations such as rolling, re-grading, and re-planting as required to establish a lawn free of eroded or bare areas and acceptable to the Architect/Engineer. Where inspected work and materials do not comply with requirements, replace rejected work and continue maintenance until re-inspected by Architect/Engineer and found to be acceptable. Remove rejected materials promptly from the project site. Contractor shall include costs for maintaining sod in his bid.

1.04 WARRANTY

A. Contractor shall warranty all work and material for a period of 90 days beginning from date of acceptance of substantial completion.

END OF SECTION 02920

SECTION 03300 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes cast-in-place concrete, including reinforcement, concrete materials, mix design, placement procedures, and finishes.

B. See Division 2 Section "Earthwork" for drainage fill under slabs-on-grade.

1.2 SUBMITTALS

A. Product Data: For each manufactured material and product indicated.

B. Design Mixes: For each concrete mix indicated.

C. Shop Drawings: Include details of steel reinforcement placement including material, grade, bar schedules, stirrup spacing, bent bar diagrams, arrangement, and supports.

D. Material certificates.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.

B. Comply with ACI 301, "Specification for Structural Concrete," including the following, unless modified by the requirements of the Contract Documents.

1. General requirements, including submittals, quality assurance, acceptance of structure, and protection of in-place concrete.
2. Formwork and form accessories.
3. Steel reinforcement and supports.
4. Concrete mixtures.
5. Handling, placing, and constructing concrete.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Formwork: Furnish formwork and form accessories according to ACI 301.

B. Steel Reinforcement:

1. Reinforcing Bars: ASTM A 615 Grade 60, deformed.
2. Plain-Steel Wire: ASTM A 82, as drawn.
3. Plain-Steel Welded Wire Fabric: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.

C. Concrete Materials:

1. Portland Cement: ASTM C 150, Type I or II or I/II.

2. Normal-Weight Aggregate: ASTM C 33, uniformly graded, not exceeding 1-1/2-inch nominal size.
3. Water: Complying with ASTM C 94.

4. Synthetic Fiber: Fibrillated or monofilament polypropylene fibers engineered and designed for use in concrete, complying with ASTM C 1116, Type III, 1/2 to 1-1/2 inches long.

D. Admixtures:

1. Air-Entraining Admixture: ASTM C 260.

2. Water-Reducing Admixture: ASTM C 494, Type A.
3. Water-Reducing and Accelerating Admixture: ASTM C 494, Type E.
4. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.

A. Vapor Barrier: ASTM E 1745, Class A, Not less than 10 mils thick.

1. Sheet Vapor Barrier: Permeance of less than 0.01 Perms [grains/(ft^2 · hr · inHg)] as tested in accordance with ASTM E 1745 Section 7. Include manufacturer's recommended polyethylene pressure-sensitive seam tape and vapor-proofing mastic.

B. Joint-Filler Strips: ASTM D 1752, cork or self-expanding cork.

C. Curing Materials:

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

2. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf.
3. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
4. Water: Potable.

5. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.

2.2 CONCRETE MIXES

A. Comply with ACI 301 requirements for concrete mixtures.

B. Prepare design mixes, proportioned according to ACI 301, for normal-weight concrete determined by either laboratory trial mix or field test data bases, as follows:

1. Compressive Strength (28 Days): As indicated on sheet S-0.1 on the contract drawings.
2. Slump: 4 to 8 inches, or as indicated on the approved mix design.

C. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content of 4 to 6 percent at any exterior exposed structural concrete.

2.3 CONCRETE MIXING

A. Ready-Mixed Concrete: Comply with ASTM C 94 and ASTM C 1116.

1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

B. 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 INSTALLATION, GENERAL

A. Formwork: Design, construct, erect, shore, brace, and maintain formwork according to ACI 301.

B. Vapor Retarder: Install, protect, and repair vapor-retarder sheets according to ASTM E 1643; place sheets in position with longest dimension parallel with direction of pour.

1. Lap joints 6 inches and seal with manufacturer's recommended tape.

C. Steel Reinforcement: 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.

D. Joints: Construct joints true to line with faces perpendicular to surface plane of concrete.

1. Construction Joints: Locate and install so as not to impair strength or appearance of concrete, at locations indicated S.C.J. on the structural contract drawings or as approved by Engineer of Record.
2. Isolation Joints: Install joint-filler strips at junctions with slabs-on-grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

a. Extend joint fillers full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.

3. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows:

a. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with groover tool to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover marks on concrete surfaces.

b. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into

concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

E. Tolerances: Comply with ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

3.2 CONCRETE PLACEMENT

A. Comply with recommendations in ACI 304R for measuring, mixing, transporting, and placing concrete.

B. Consolidate concrete with mechanical vibrating equipment.

3.3 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, and fins and other projections exceeding 1/4 inch in height rubbed down or chipped off.

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. Completely remove fins and other projections.

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, or painting.

2. Apply smooth-rubbed finish, defined in ACI 301, to smooth-formed finished concrete.

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.

3.4 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 the surface.

1. Do not further disturb surfaces before starting finishing operations.

C. Scratch Finish: Apply scratch finish to surfaces to receive concrete floor topping or mortar setting beds for ceramic or quarry tile, and other bonded cementitious floor finish, unless otherwise indicated.

D. Float Finish: Apply float finish to surfaces indicated, to surfaces to receive trowel finish, and to floor and slab surfaces to be covered with fluid-applied or sheet waterproofing.

E. Trowel Finish:

1. After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel.
2. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance.
3. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
4. Do not add water to concrete surface. Use of an approved finishing aid is acceptable.
5. Do not apply troweled finish to concrete, which has a total air content greater than 3 percent.
6. 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, paint, or another thin film-finish coating system.
7. Finish surfaces to the following tolerances, in accordance with ASTM E1155 (ASTM E1155M), for a randomly trafficked floor surface:

a. Slabs on Ground:

1) Specified overall values of flatness, F_F 35; and of levelness, F_L 25; with minimum local values of flatness, F_F 24; and of levelness, F_L 17.

b. Suspended Slabs:

1) Specified overall values of flatness, F_F 25; and of levelness, F_L 20; with minimum local values of flatness, F_F 17; and of levelness, F_L 15.

F. Trowel and Fine-Broom Finish: Apply a partial trowel finish, stopping after second troweling, to surfaces indicated and to surfaces where ceramic tile is to be installed by thin-set methods. Immediately after second troweling, and when concrete is still plastic, slightly scarify surface with a fine broom.

G. Nonslip Broom Finish: Apply a nonslip broom finish to surfaces indicated and to exterior concrete platforms, steps, and ramps. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route.

3.5 CONCRETE PROTECTION 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 follow recommendations in ACI 305R for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions occur 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. Cure formed and unformed concrete for at least seven days as follows:

1. Moisture Curing: Keep surfaces continuously moist with water or continuous water-fog spray or absorptive cover, water saturated and kept continuously wet.
2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. 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.

3.6 FIELD QUALITY CONTROL

A. Testing Agency: The Contractor will engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement. Tests will be performed according to ACI 301. All tests and inspection results shall be submitted to the engineer of record within 48 hours of the inspection or test results.

1. Testing Frequency: One composite sample for each day's pour of each concrete mix exceeding 5 cu. yd, but less than 25 cu. yd, plus one set for each additional 50 cu. yd. or fraction thereof.

2. Testing Frequency: At least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mix placed each day.
3. Test Cylinders: A minimum of four (4) shall be cast for each composite sample. Test one (1) at seven (7) days, two (2) at twenty-eight (28) days and hold one (1) as a spare.

END OF SECTION 033000

SECTION 04200 – UNIT MASONRY

PART 1 - GENERAL

1.01 SUMMARY

A. Provide unit masonry for walls and partitions:
   1. Exterior face brick at concrete masonry cavity walls.
   2. Exterior concrete masonry bearing walls.

1.02 SUBMITTALS

A. Submit for approval samples, product data, and test reports.

1.03 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.

1.04 PROJECT CONDITIONS:

A. Protection of Work: During erection, cover top of walls with waterproof sheeting at end of each day's work.

B. Staining: Prevent grout or mortar or soil from staining the face of masonry to be left exposed or painted. Remove immediately grout or mortar in contact with such masonry.

C. Protect base of walls from rain-splashed mud and mortar splatter by means of coverings spread on ground and over wall surface.

D. Protect sills, ledges and projections from droppings of mortar.

E. Cold Weather Protection:

   1. Do not lay masonry units which are wet or frozen.
   2. Remove any ice or snow formed on masonry bed by carefully applying heat until top surface is dry to the touch.
   3. Remove masonry damaged by freezing conditions.
   4. For clay masonry units with initial rates of absorption (suction) which require them to be wetted before laying, comply with the BIA recommendations for laying masonry.

F. Perform the following construction procedures while masonry work is progressing. Temperature ranges indicated below apply to air temperatures existing at time of installation except for grout.
For grout, temperature ranges apply to anticipated minimum night temperatures. In heating mortar and grout materials, maintain mixing temperature selected within 10 deg.F (6 deg.C).

   1. 40 deg.F (4 deg.C) to 32 deg.F (0 deg.C):
   Mortar: Heat mixing water to produce mortar temperature between 40 deg.F (4 deg.C) and 120 deg.F (49 deg.C).
   Grout: Follow normal masonry procedures.

   2. Do not lay brick or masonry when temperatures drop below 32 deg. F.

G. Protect completed masonry and masonry not being worked on in the following manner. Temperature ranges indicated apply to mean daily air temperatures except for grouted masonry. For grouted masonry, temperature ranges apply to anticipated minimum night temperatures.

1. 40 deg.F (4 deg.C) to 32 deg.F (0 deg.C):
Protect masonry from rain or snow for at least 24 hours by covering with weather-resistive membrane.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Brick: Standard modular, 2-1/4" by 3-5/8" by 7-5/8". Comply with ASTM C 216, Grade SW, Type FBS. Special shapes as indicated or as required by building configuration. Brick shall match existing where applicable.

Standard modular, nominal **2-1/4" by 3-5/8" by 7-5/8**".

Brick: US Brick Company "Chestnut Velour" modular size

B. Concrete masonry unit: Lightweight, ASTM C 140 and C 90 Type II, Grade N; 7-5/8" by 15-5/8" face size. Special shapes as indicated or as required. Provide units with minimum average net-area compressive strength of 2000 psi. Provide bullnose units at jambs and sills of all openings, and at all outside corners and end wall terminations, unless otherwise indicated.

C. Wall flashing: **40 mil** minimum; self-sealing, self-healing, fully adhering composite flexible flashing consisting of **32** mil thick pliable and highly adhesive rubberized asphalt compound bonded completely to **8** mil thick, high density, four ply, cross laminated polyethylene film. Manufacturer producing a product that conforms to this specification is W.R. Grace 'Perm-A-Barrier'.

D. Mortar: ASTM C 270, masonry cement mortar, Type M or S. Inorganic oxide mortar pigments.

Mortar at brick shall be **Argos "Sahara".**

E. Grout for unit masonry: Comply with ASTM C 476.

F. Reinforcing:
1. Ties and reinforcing: Hot-dipped galvanized, ASTM A 153.
2. Horizontal reinforcing: Welded ladder type, 9 gage wire with deformed side rods.
3. Brick to block ties: 3/16" diameter adjustable double hook & eye; Hohmann & Barnard Lox-All Adjustable Eye-Wire (eye and pintle) or approved equal.
4. Brick to steel stud ties: 3/16" diameter vee ties with drip, 12 gage wall slot; Hohmann & Barnard DW-10HS or approved equal.
5. Reinforcing bars: Deformed bars, ASTM A 615, Grade 60; in accordance with drawings.

G. Miscellaneous Materials:
1. Cavity Drainage Material: 2-inch thick, high density polyethylene, 90% open mesh, dovetail shaped to maintain unobstructed drainage at weep holes; Mortar Net Green or approved equal.
2. Weep Holes: "Weeps Vents" by Mortar Net USA Ltd. Install 4" to 6" above finish grade.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Comply with PCA "Recommended Practices for Laying Concrete Block" and BIA Tech Notes 11, 11A, 11B, 11C, 11D, and 11E.
B. Weather Protection: Cold weather; heat mortar water and sand, enclose walls and provide temporary heat as recommended by BIA Tech Notes 1, 1A, 1B, and 1C. Hot weather; use mortar within 1-1/2" hours after mixing for ambient 80 degrees F or above.
C. Tolerances: From dimensions and locations in Contract Documents for plumb, level and alignment, plus or minus 1/8 in 20'.
D. Fire-Rating: Where indicated, provide assemblies identical to tested assemblies and accepted by authorities having jurisdiction.
E. Bond: Lay exposed face brick in running bond except in areas of special coursing as indicated on Drawings.
F. Joints: Maintain uniform 3/8" width; tool concave. Provide full bed, head and collar joints except at weep holes; keep cavity clean at cavity walls.
G. Weep holes: Provide weeps at 16” o.c. above all ledges, flashings and lintels. Fill cavity 10" high with cavity drainage material.
H. Install steel lintels and provide reinforced masonry lintels where indicated.
I. Coordinate installation of flashings; prepare masonry surfaces smooth and bed flashings in mortar. Comply with manufacturer's instructions for asphaltic membrane flashings.
J. Coordinate installation of embedded brick ties with insulated concrete forms supplied under Section 03130.
K. Ties and Horizontal Reinforcing: Comply with codes; space ties not more than 16" o.c. vertically and horizontally.
L. Provide L and T sections of reinforcing at corners and intersections. Lap reinforcing a minimum of 6". Reinforce masonry openings greater than 1'-0" wide with horizontal reinforcements place in 2 horizontal joints approximately 8" apart immediately above the lintel and below the sill. Extend the reinforcement a minimum of 2'-0" beyond jambs of the openings.
M. Remove and replace damaged units. Enlarge holes in mortar and re-point. Prepare joints to receive sealants. Clean brick using bucket and brush method; comply with BIA Tech Note 20. Clean Concrete masonry by dry brushing; comply with NCMA TEK No. 28.

3.02 CONSTRUCTION TOLERANCES:

A. Variation from Plumb: For vertical lines and surfaces of columns, walls and arises do not exceed 1/4" in 10', or 3/8" in a story height not to exceed 20', nor 1/2" in 40' or more. For external corners, expansion joints, control joints and other conspicuous lines, do not exceed 1/4" in any story or 20' maximum, nor 1/2" in 40' or more. For vertical alignment of head joints do not exceed plus or minus 1/4" in 10', 1/2" maximum.

B. Variation from Level: For bed joints and lines of exposed lintels, sills, parapets, horizontal grooves and other conspicuous lines, do not exceed 1/4" in any bay or 20' maximum, nor 1/2" in 40' or more. For top surface of bearing walls do not exceed 1/8" between adjacent floor elements in 10' or 1/16" within width of a single unit.

C. Variation of Linear Building Line: For position shown in plan and related portion of columns, walls and partitions, do not exceed 1/2" in any bay or 20' maximum, nor 3/4" in 40' or more.

D. Variation in Cross-Sectional Dimensions: For columns and thickness of walls, from dimensions shown, do not exceed minus 1/4" nor plus 1/2".

E. Variation in Mortar Joint Thickness: Do not exceed bed joint thickness indicated by more than plus or minus 1/8", with a maximum thickness limited to 1/2". Do not exceed head joint thickness indicated by more than plus or minus 1/8".

3.03 LAYING MASONRY WALLS:

A. **Appearance:** Lay brick so that not less than a ½ brick (3 1/2") is laid at all areas including end walls, window openings, lintels and headers. Do not cut header bricks so the height is less than a full brick (2 1/4").

B. Layout walls in advance for accurate spacing of surface bond patterns with uniform joint widths and to accurately locate openings, movement-type joints, returns and offsets. Avoid the use of less-than-half-size units at corners, jambs and wherever possible at other locations.

C. Lay-up walls to comply with specified construction tolerances, with courses accurately spaced and coordinated with other work.

D. Pattern Bond: Lay exposed masonry in running bond with vertical joint in each course centered on units in courses above and below. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2". Bond and interlock each course of each wythe at corners. Do not use units with less that nominal 4" horizontal face dimensions at corners or jambs.

E. Stopping and Resuming Work: Rack back 1/2-unit length in each course; do not tooth. Clean exposed surfaces of set masonry, wet units lightly (if required) and remove loose masonry units and mortar prior to laying fresh masonry.

F. Fill cores in hollow concrete masonry units with grout 3 courses (24") under bearing plates, beams, lintels, posts and similar items, unless otherwise indicated.

3.04 MORTAR BEDDING AND JOINTING:

A. Lay solid brick size masonry units with completely filled bed and head joint; butter ends with sufficient mortar to fill head joints and shove into place. Do not slush head joints.

B. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells. Bed webs in mortar in starting course on footings and in all courses of piers, columns and pilasters, and where adjacent to cells or cavities to be reinforced or filled with concrete or grout. For starting course on footings where cells are not grouted, spread out full mortar bed including areas under cells.

C. Maintain joint widths shown, except for minor variations required to maintain bond alignment. If not shown, lay walls with 3/8" joints.

D. Cut joints flush for masonry walls which are to be concealed or to be covered by other materials, unless otherwise indicated.

E. Tool exposed joints slightly concave using a jointer larger than joint thickness.

F. Remove masonry units disturbed after laying; clean and reset in fresh mortar. Do not pound corners or jambs to shift adjacent stretcher units which have been set in position. If adjustments are required, remove units, clean off mortar and reset in fresh mortar.

3.05 FLASHING OF MASONRY WORK:

A. General: Provide concealed flashing in masonry work at, or above, angles, ledges and other

obstructions to the downward flow of water in the wall so as to divert such water to the exterior. Prepare masonry surfaces smooth and free from projections which could puncture flashing. Place through-wall flashing on sloping bed of mortar and cover with mortar. Seal penetrations in flashing with mastic before covering with mortar.

3.06 REINFORCED UNIT MASONRY

A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.

1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and that of other loads that may be placed on them during construction.

B. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.

C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.

1. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.

2. Limit height of vertical grout pours to not more than 60 inches.

3.07 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.

B. Inspections: Special inspections according to Level **C** in TMS 402/ACI 530/ASCE 5. Level 1 Special Inspections according to IBC Table 1704.5.1

1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
3. Place grout only after inspectors have verified proportions of site-prepared grout.

C. Testing Prior to Construction: One set of tests.

D. Testing Frequency: One set of tests for each 5000 sq. ft. (464 sq. m) of wall area or portion thereof.

E. Clay Masonry Unit Test: For each type of unit provided, according to ASTM C67 for compressive strength.

F. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C140 for compressive strength.

G. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, according to ASTM C780.

H. Mortar Test (Property Specification): For each mix provided, according to ASTM C780. Test mortar for **mortar air content and compressive strength**.

I. Grout Test (Compressive Strength): For each mix provided, according to ASTM C1019.

3.08 REPAIR, POINTING AND CLEANING:

A. Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge any voids or holes, except weep holes, and completely fill with mortar. Point-up all joints including corners, openings and adjacent work to provide a neat, uniform appearance, and prepare for application of sealants.

C. Final Cleaning: After mortar is thoroughly set and cured, clean masonry as follows:

Remove large mortar particles by hand with wooden paddles and non-metallic scrape hoes or chisels.

Test cleaning methods on sample wall panel; leave 1/2 panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.

Saturate wall surfaces with water prior to application of cleaners; remove cleaners promptly by rinsing thoroughly with clear water.

Use bucket and brush hand cleaning method described in BIA"Technical Note No. 20 Revised" to clean brick masonry made from clay or shale, except use detergent masonry cleaner

Clean concrete unit masonry to comply with masonry manufacturer's directions and applicable NCMA "Tek" bulletins.

D. Protection: Provide final protection and maintain conditions in a manner acceptable to Installer, which ensures unit masonry work being without damage and deterioration at time of substantial completion.

END OF SECTION 04200

SECTION 05120 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes structural steel.

1.2 SUBMITTALS

A. Product Data: For each product indicated.

B. Shop Drawings: Show fabrication of structural-steel components, including connections (as designed by delegated design engineer), stairs and railings (as designed by delegated design engineer), splices, holes, welds, and bolts.

C. Signed and Sealed Shop Drawings and Calculations: Provide signed and sealed shop drawings and calculations for all delegated designs including connection designs, stairs and railings. Delegated Design Engineer shall be licensed in the project state.

D. Mill certificates.

E. Welding certificates.

1.3 QUALITY ASSURANCE

A. Fabricator Qualifications: Fabricator shall ensure that (1) or more of the following requirements is met:
   1. A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD and receives approval from the building official having jurisdiction.
   2. Fabrication is done on the premises of a fabricator registered and approved by the building official to perform such work without special inspection. This approval shall be based upon review of the fabricator's written procedural and quality control manuals and periodic auditing of fabrication practice by an approved special inspection agency. At the completion of fabrication, the approved fabricator shall submit a certificate of compliance to the building official stating that the work was performed in accordance with the approved construction documents.
   3. Special Inspection procedures for fabricators shall be implemented in accordance with FBC 1704.2.5, FBC 1705.2.1 and the quality assurance inspection requirements of AISC 360. If chosen, the owner shall employ one or more approved agencies to perform inspections required in accordance with FBC chapter 17. The fabricator is responsible to acknowledge the requirement for fabricator special inspection in his bid/quote to the contractor/owner.

B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

C. Comply with applicable provisions of the following specifications and documents:

1. AISC 303.
2. AISC 360.
3. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

1.4 STORAGE AND PROTECTION

A. Store steel members off ground and protect steel members and packaged materials from erosion and deterioration.

B. Store fasteners in a protected place. Clean and relubricate bolts and nuts that become dry or rusty before use.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Connections: Provide details of simple shear connections required by the Contract Documents to be selected or completed by structural-steel fabricator to withstand loads indicated and comply with other information and restrictions indicated. All connections shall be coordinated with the sizes and details shown in the contract drawings.

1. Select and complete connections using schematic details indicated and AISC 360.
2. Use Allowable Stress Design; data are given at service-load level.

2.2 MATERIALS

A. Structural-Steel Shapes are ASTM A992, Plates, and Bars: ASTM A 36, carbon steel or ASTM A 572, Grade 50, high-strength, low-alloy columbium-vanadium steel. See construction drawings.

B. Cold-Formed Structural-Steel Tubing: ASTM A 500, Grade B.

C. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy hex steel structural bolts, heavy hex carbon-steel nuts, and hardened carbon-steel washers, uncoated. All high-strength bolts shall be twist-off type torque indicating bolts.

D. Typical Shop Primer: Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer, except where noted in “Shop Priming” below.

E. Nonmetallic, Shrinkage-Resistant Grout: Premixed, ASTM C 1107, of consistency suitable for application.

2.3 GROUT

A. Metallic, Shrinkage-Resistant Grout: ASTM C 1107/C 1107M, factory-packaged, metallic aggregate grout, mixed with water to consistency suitable for application and a 30-minute working time.

B. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107/C 1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.4 FABRICATION

A. Fabricate and assemble structural steel in shop to greatest extent possible. Fabricate structural steel according to AISC specifications referenced in this Section and in Shop Drawings.

1. Comply with fabrication tolerance limits in AISC's "Code of Standard Practice for Steel Buildings and Bridges" for structural steel.
2. Shop install and tighten high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

    a. Connection Type: Bolts shall be twist-off type torque indicating bolts.

3. Weld Connections: Comply with AWS D1.1 for procedures, appearance and quality of welds, and methods used in correcting welding work.

B. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M and manufacturer's written instructions.

2.5 SHOP PRIMING

A. Shop prime steel surfaces except the following:

1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches (50 mm).
2. Surfaces to be field welded or receive headed shear studs.
3. Surfaces of high-strength bolted, slip-critical connections.
4. Surfaces to receive sprayed fire-resistive materials (applied fireproofing). Refer to architectural drawings for locations.
5. Galvanized surfaces.
6. Surfaces enclosed in interior construction.

B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:

1. SSPC-SP 2, "Hand Tool Cleaning."
2. SSPC-SP 3, "Power Tool Cleaning."

3. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."

C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils (0.038 mm). Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

D. Coordinate shop primer with high performance paint system requirements selected by the contractor at the exterior cross. Fabricator/Contractor coordination is required prior to priming.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

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

3.2 ERECTION

A. Examination: Verify elevations of concrete and masonry bearing surfaces and locations of anchorages for compliance with requirements.

B. Erect structural steel accurately in locations and to elevations indicated and according to AISC specifications referenced in this Section.

C. Base and Bearing Plates: Clean concrete and masonry bearing surfaces of bond-reducing materials and roughen surfaces before setting base and bearing plates. Clean bottom surface of base and bearing plates and set on wedges, shims, or setting nuts as required.

1. Tighten anchor bolts, cut off wedges or shims flush with edge of base or bearing plate, and pack grout solidly between bearing surfaces and plates.

D. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."

E. Install and tighten high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

1. Connection Type: Bolts shall be twist-off type torque indicating bolts.

F. Weld Connections: Comply with AWS D1.1 for procedures, appearance and quality of welds, and methods used in correcting welding work.

G. Field Touch-Up and Repair: All areas damaged during shipping, storage (scaling rust), welding and erection shall be cleaned in accordance with SSPC-SP 11 Power Tool Cleaning to Bare Metal to remove all loose or damaged coatings, rust and any other foreign matter. Contractor shall field apply primer and paint system as required based on location per section 2.2B above.

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Bolted Connections: Inspect bolted connections according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

C. Field Welded Connections: Visually inspect field welds according to AWS D1.1/D1.1M.

END OF SECTION 051200

SECTION 05400 – LIGHTGAGE METAL FRAMING

PART 1 - GENERAL

1.01 SUMMARY

A. Provide lightgage metal framing:

1. Metal pre-engineered roof trusses
2. Metal joists for interior ceilings

1.03 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide cold-formed metal framing capable of withstanding design loads within limits and under conditions indicated. Sizes indicated on drawings are considered minimum and shall be upsized if required by loads.

1. Wind Loads: As indicated on structural drawings.

2. Deflection Limits: Horizontal deflection of L/360.

1.04 SUBMITTALS

A. Product data: For each type of truss and cold-formed metal framing product and accessory indicated.

B. Shop Drawings: Submit shop drawings showing pitch, span, camber, configuration and spacing for each truss required; type, size, material, finish, design values, location of metal connector plates; and bearing and anchorage details. Erection and detail drawings to include size, location and connection requirements of all permanent bracing required to satisfy design criteria for members subject to compression loading which require lateral bracing at their ends or at any point between supports. Shop drawings to include designation of truss hold down connectors and if appropriate special nailing requirements for said hold down.

C. Submit design analysis and test reports indicating loading, section modulus, assumed allowable stress, stress diagrams and calculations, and similar information needed for analysis and to ensure that trusses and their hold downs comply with requirements of the Contract Documents.

D. Provide shop drawings which have been signed and stamped by a structural engineer licensed to practice in Florida.

1.05 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. Engineering Responsibility: Engage a qualified professional engineer to prepare design calculations, Shop Drawings, and other structural data.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Manufacturers: Marino, Dietrich, Dale/Incor, Superior, USG, Gold Bond, Unimast, or approved equal.

B. Cold-Formed Metal Framing Materials: Refer to drawings for specific member requirements:
1. Exterior Framing: C-shaped load-bearing steel studs with 1.625-inch flange and flange return lip.

2.02 COLD-FORMED METAL FRAMING

A. Interior Framing: C-shaped load-bearing steel studs with 1.625-inch flange and flange return lip.

B. Runner Channel: U-shaped with 1.25-inch minimum flange.

C. Joist Framing: C-shaped load-bearing steel joists with 1.625-inch flange and flange return lip.

D. Furring Channel: W-shaped load-bearing steel furring channels.

E. Deflection Channel: Single slip track design with 2.0-inch minimum flange length.

F. Units 16 gage (.0598-inch) and heavier: ASTM A 446, yield point 50,000.
Units 18 gage (.0358-inch): ASTM A 446, yield point 33,000 psi.
Units 20 gage (.0329-inch): ASTM A 446, yield point 33,000 psi.

G. Finish: Galvanized, ASTM A 525, G60.

H. Framing Accessories: With each type of metal framing required, provide manufacturers standard accessories as recommended by manufacturer for applications indicated, as needed to provide a complete metal framing system, including:

I. Supplementary framing.
Lateral bracing, bridging, and solid blocking.
Strap: 1-1/2” x 20 gage.
Channels: 1-1/2” x 20 gage.
Web stiffeners.
Gusset plates.
Deflection track and vertical side clips.
Stud kickers and girts.
Joist hangers and end closures.
Reinforcement plates.
Anchors, clips, and fasteners

PART 3 - EXECUTION

3.01 GENERAL

A. Install materials and systems in accordance with manufacturer’s instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Coordinate with work of other sections.

B. Comply with requirements of ASTM C 1007 for installation of steel studs and accessories and Metal Lath/Steel Framing Association Lightweight Steel Framing Systems Manual.

C. Make provisions for erection stresses. Provide temporary alignment and bracing. Framing components may be prefabricated into panels prior to erection. Perform lifting of prefabricated panels in a manner to prevent damage or distortion in any members in the assembly. Wire tying of framing components is NOT permitted.

3.02 INSTALLATION

A. Runner Tracks: Install continuous tracks sized to match studs. Align tracks accurately to the layout at base and top of studs. Secure tracks as recommended by the stud manufacturer for the type of construction involved, except do not exceed 16-inches on center spacing for nail or power driven fasteners, nor 16-inches on center for other types of attachment. Provide fasteners at corners and ends of tracks.

B. Studs: Install at 16-inches on center, unless otherwise indicated.

1. Set studs plumb, except as needed for diagonal bracing or required for non-plumb walls or warped surfaces and similar requirements.

2. Secure studs to top and bottom runner tracks by either welding or screw fastening at both inside and outside flanges. Erect horizontal and vertical load bearing studs one piece full length. Splicing of studs is NOT permitted. Punch-outs shall be 10- inches minimum from ends of studs.

3. Allow for deflection, directly below horizontal building framing for non-load bearing framing as indicated on drawings.

4. Install horizontal stiffeners in stud system, spaced vertically at not more than 4 feet on center. Fasten at each stud intersection.

5. Construct corners using minimum 3 studs. Double stud wall openings, door and window jambs with opening larger than 2 feet square, except where indicated in manufacturer's instructions. Install runner tracks and jamb studs with stud shoes or by welding and space jack studs same as full height studs of the wall. Secure stud system all around to wall opening frame in the manner indicated.

6. Install supplementary framing, blocking, and bracing in the metal framing system wherever walls or partitions are indicated to support fixtures, equipment, services, casework, heavy trim and furnishing, and similar work requiring attachment to the wall or partition. Where type of supplementary support is not otherwise indicated, comply with the stud manufacturer's recommendations and industry standards in each case, considering the weight of loading resulting from the items supported.

7. Where stud system abuts structural columns or walls, anchor ends of stiffeners to supporting structure.

8. Install diagonal racking bracing at each corner where walls are free standing and not attached to structure.

9. Frame both sides of expansion and control joints, with separate studs; DO NOT bridge the joint with components of the stud system.

C. Restore damaged components. Protect work from damage.

END OF SECTION 05400.

SECTION 05500 - METAL FABRICATIONS

1.0 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. This section includes the following metal fabrications:

1. Miscellaneous metal fabrication, including steel beams.
2. Loose shelf and relieving angles.

1.3 SUBMITTALS

A. Product data for products used in miscellaneous metal fabrications, including paint products and grout.

B. Shop drawings detailing fabrication and erection of each metal fabrication indicated. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide templates for anchors and bolts specified for installation under other sections. Submit shop drawings in pdf format. Do not reproduce contract documents for inclusion as part of shop drawings.

1.4 PROJECT CONDITIONS

A. Field Measurements: Check actual locations of walls and other construction to which metal fabrications must fit, by accurate field measurements before fabrication; show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of Work.

2.0 PART 2 - PRODUCTS

2.1 FERROUS METALS

A. Metal Surfaces, General: For metal fabrications exposed to view upon completion of the Work, provide materials selected for their surface flatness, smoothness, and freedom from surface blemishes. Do not use materials whose exposed surfaces exhibit pitting, seam marks, roller marks, rolled trade names, roughness, and, for steel sheet, variations in flatness exceeding those permitted by reference standards for stretcher leveled sheet.

Steel Plates, Shapes, and Bars: ASTM A 36.

Steel Tubing: Product type (manufacturing method) and as follows:

Cold-Formed Steel Tubing: ASTM A 500, grade as indicated below:

Grade A, unless otherwise indicated or required for design loading.

Brackets, Flanges and Anchors: Cast or formed metal of the same type material and finish as supported rails, unless otherwise indicated.

B. FASTENERS

General: Provide zinc-coated fasteners for exterior use or where built into exterior walls. Select fasteners for the type, grade, and class required.

Bolts and Nuts: Regular hexagon head type, ASTM A 307, Grade A.
Lag Bolts: Square head type, FS FF-B-561.
Machine Screws: Cadmium plated steel, FS FF-S-92.
Wood Screws: Flat head carbon steel, FS FF-S-111.
Plain Washers: Round, carbon steel, FS FF-W-92.

Drilled-In Expansion Anchors: Expansion anchors complying with FS FF-S-325, Group VIII (anchors, expansion, [nondrilling]), Type I (internally threaded tubular expansion anchor); and machine bolts complying with FS FF-B-575, Grade 5.

Toggle Bolts: Tumble wing type, FS FF-B-588, type, class, and style as required.

Lock Washers: Helical spring type carbon steel, FS FF-W-84.

C. PAINT

Shop Primer for Ferrous Metal: Manufacturer's or fabricator's standard, fast curing, lead-free, universal modified alkyd primer selected for good resistance to normal atmospheric corrosion, for compatibility with finish paint systems indicated, and for capability to provide a sound foundation for field applied topcoats despite prolonged exposure complying with performance requirements of FS TT-P-645.

Galvanizing Repair Paint: High zinc dust content paint for regalvanizing welds in galvanized steel, with dry film containing not less than 94 percent zinc dust by weight, and complying with DOD-P-21035 or SSPC-Paint-20.

Bituminous Paint: Cold applied asphalt mastic complying with SSPC-Paint 12 except containing no asbestos fibers.

Zinc Chromate Primer: FS TT-P-645.

2.2 FABRICATION, GENERAL

A. Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements indicated. Work to dimensions indicated or accepted on shop drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of each metal fabrication.

2.3 LOOSE SHELF ANGLES

A. Provide shelf angles for steel items bearing on masonry or concrete construction, made flat, free from warps or twists, and of required thickness and bearing area. Drill plates to receive anchor bolts and for grouting as required. Galvanize after fabrication.

B. Size loose lintels for equal bearing of one inch per foot of clear span but not less than 8 inches bearing

at each side of openings, unless otherwise indicated.

C. Galvanize loose steel lintels located in exterior walls.

3.0 PART 3-EXECUTION

3.1 INSTALLATION, GENERAL

A. Fastening to In Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in place construction; include threaded fasteners for concrete and masonry inserts, toggle bolts, through bolts, lag bolts, wood screws, and other connectors as required.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installation of miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

C. 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 the surfaces of exterior units which have been hot dip galvanized after fabrication, and are intended for bolted or screwed field connections.

3.2 SETTING

A. Set loose angles on wedges, or other adjustable devices. After the bearing members have been positioned and plumbed, tighten the anchor bolts. Do not remove wedges or shims, but if protruding, cut off flush with the edge of the bearing plate before packing with grout.

C. Use metallic non-shrink grout in concealed locations where not exposed to moisture; use nonmetallic non-shrink grout in exposed locations, unless otherwise indicated.

D. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

END OF SECTION 05500

SECTION 06100 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wood products.
2. Wood-preservative-treated lumber.
3. Fire-retardant-treated lumber.
4. Dimension lumber framing.
5. Framing with engineered wood products.
6. Miscellaneous lumber.
7. Plywood backing panels.

1.2 DEFINITIONS

A. Boards or Strips: Lumber of less than **2 inches nominal** size in least dimension.

B. Dimension Lumber: Lumber of **2 inches nominal** size or greater but less than **5 inches nominal** size in least dimension.

C. Exposed Framing: Framing not concealed by other construction.

D. Lumber grading agencies, and abbreviations used to reference them, include the following:

1. NeLMA: Northeastern Lumber Manufacturers' Association.
2. NLGA: National Lumber Grades Authority.
3. SPIB: The Southern Pine Inspection Bureau.
4. WCLIB: West Coast Lumber Inspection Bureau.
5. WWPA: Western Wood Products Association.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.

1.4 INFORMATIONAL SUBMITTALS

A. Material Certificates:

1. For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

2. For preservative-treated wood products. Indicate type of preservative used and net amount of preservative retained.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece.
3. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
4. Provide dressed lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.

C. Engineered Wood Products: Provide engineered wood products acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.

1. Allowable Design Stresses: Provide engineered wood products with allowable design stresses, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1, Use categories as follows:

1. After treatment, redry boards, dimension lumber to 19 percent maximum moisture content.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

D. Application: Treat items indicated on Drawings, and the following:

1. Wood floor plates that are installed over concrete slabs-on-grade.
2. Wood exposed to the elements.

2.3 DIMENSION LUMBER FRAMING & ENGINEERED WOOD PRODUCTS (LVL)

A. All Lumber (Load-Bearing & Non-Load-Bearing) by Grade:

No. 2 grade.

1. Species:

a. Southern Pine

B. Laminated-Veneer Lumber (LVL): Structural composite lumber made from wood veneers with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D 5456 and manufactured with an exterior-type adhesive complying with ASTM D 2559.

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. Boise Cascade Corporation.
b. Finnforest USA.
c. Georgia-Pacific.
d. Louisiana-Pacific Corporation.
e. Weyerhaeuser Company.

2. Extreme Fiber Stress in Bending, Edgewise: 2,600 psi.
3. Modulus of Elasticity, Edgewise: 1,800,000 psi.

2.4 FASTENERS

A. General: Fasteners are to be of size and type indicated and comply with requirements specified in this article for material and manufacture. Provide nails or screws, in sufficient length, as indicated in the drawings.

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M or ASTM F2329.

B. Nails, Brads, and Staples: ASTM F1667.

C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01 ICC-ES AC58 ICC-ES AC193 or ICC-ES AC308 as appropriate for the substrate.

2.5 METAL FRAMING ANCHORS

A. Manufacturers: Subject to compliance with requirements, provide products by the following:

1. Simpson Strong-Tie Co., Inc.

B. Post Bases: as indicated on the drawings..

C. Rafter Tie-Downs: as indicated on the drawings.

D. Rafter Tie-Downs (Hurricane or Seismic Ties): as indicated on the drawings.

E. Hold-Downs: as indicated on the drawings.

F. Materials: Unless otherwise indicated, fabricate from the following materials:

1. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653/A653M, **G60** coating designation.

a. Use for interior locations unless otherwise indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

B. Set work to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate furring, nailers, blocking,and similar supports to comply with requirements for attaching other construction.

C. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels.

D. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.

E. Do not splice structural members between supports unless otherwise indicated.

F. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

G. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

1. Use inorganic boron for items that are continuously protected from liquid water.
2. Use copper naphthenate for items not continuously protected from liquid water.

H. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

1. Table 2304.10.1, "Fastening Schedule," in ICC's International Building Code (IBC).
2. ICC-ES evaluation report for fastener.

I. Securely attach roofing nailers to substrates by anchoring and fastening to withstand bending, shear, or other stresses imparted by Project wind loads and fastener-resistance loads as designed

in accordance with ASCE/SEI 7.

J. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 INSTALLATION OF WOOD BLOCKING AND NAILERS

A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.

B. Attach wood blocking to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

C. Attach wood roofing nailers securely to substrate to resist the designed outward and upward wind loads indicated on Drawings and in accordance with ANSI/SPRI ED-1, Tables A6 and A7.

D. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than **1-1/2 inches** wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

3.3 INSTALLATION OF WALL FRAMING

A. General: Provide single bottom plate and double top plates using members of **2-inch nominal** thickness whose widths equal that of studs. Fasten plates to supporting construction unless otherwise indicated.

1. For exterior walls, provide 2-by-6-inch nominal- size wood studs spaced16 inches o.c. unless otherwise indicated.
2. For interior load-bearing walls, provide 2-by-6-inch nominal size wood studs spaced 16 inches o.c. unless otherwise indicated.

B. Construct corners and intersections as indicated in the drawings.

C. Frame openings with multiple studs and headers as indicated in drawings. Provide nailed header members of thickness equal to width of studs as indicated in drawings. Support headers on jamb studs as indicated in drawings.

3.4 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000

SECTION 06160 - STRUCTURAL WOOD SHEATHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Structural Wall sheathing.
2. Structural Roof sheathing.
3. Underlayment.
4. Sheathing joint and penetration treatment.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements.

B. Manufacturer's Certification: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.

C. Warranty Documentation: Submit manufacturer's standard warranty.

1.3 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For following products, from ICC-ES:

1. Preservative-treated plywood.
2. Fire-retardant-treated plywood.

1.4 QUALITY ASSURANCE

A. Preinstallation Conference: Conduct conference at Project site requiring the attendance of all involved parties including but not limited to Installer, Framer, General Contractor, Structural Engineer, Inspector and Architect. Review materials, preparation, installation, protection, and coordination with other work.

1.5 SHEATHING DELIVERY REQUIREMENTS

A. Deliver materials to site with labels clearly identifying product name and manufacturer.

B. Ensure sheathing panels are identified by the following:
1. Label or stamp bearing manufacturer's name or trademark.
2. APA assigned plant number.
3. Panel thickness.

4. Panel span rating.
5. APA logo.
6. Date of manufacture.

1.6 SHEATHING STORAGE AND HANDLING REQUIREMENTS:

A. Store OSB or Plywood sheathing panels flat, indoors or under cover, protected from weather.

B. Protect materials during storage, handling, and installation to prevent damage.

C. Keep sheathing panels off ground on flat base, if stored outdoors.

D. Align blocking/supports to prevent warping, if sheathing panels are stacked.

E. Do not expose OSB panels to weather or moisture on a continuous basis.

F. Cover OSB panels loosely to allow air circulation at sides.

G. Place full-width blocking 6 inches from each end and at 24-inch intervals over length of unit, on OSB panels too large to have supports banded to unit.

H. Use inventories of OSB panels on first-in, first-out basis.

I. Exposure to adverse moisture conditions could result in edge swell for OSB. Sanding may be required to level uneven edges before finish-covering application.

1.7 SHEATHING WARRANTY

A. Warranty Period for Plywood or OSB: 25 years from date of manufacture.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For assemblies with fire-resistance ratings, provide materials and construction identical to those 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 design designations from UL's "Fire Resistance Directory

2.2 WOOD PANEL PRODUCTS

A. Oriented Strand Board: DOC PS 2.

B. Plywood: DOC PS 1.

C. Informational: PS 1 and PS 2 are nationally recognized Voluntary Product Standards developed under procedures published by the U.S.Department of Commerce. PS 1, Structural Plywood, establishes requirements for structural plywood. PS 2, Performance Standard for Wood-Based

Structural-Use Panels, establishes requirements for structural wood-based panels such as oriented strand board (OSB), waferboard.

2.3 OSB WALL PANELS:

A. Walls shall be sheathed with PS 2, Exposure 1 oversized panels of OSB extending full-length vertically from bottom of bottom plate, sill plate, or joist area onto raised heel roof trusses or ends of floor trusses in one piece. Extend sheathing to top of top plate where truss does not bear on wall at level to be sheathed.

2.4 PRESERVATIVE-TREATED PLYWOOD

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction, Use Category UC3b for exterior construction.

B. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.

C. Application: Treat items indicated on Drawings and plywood in contact with masonry or concrete or used with roofing, flashing, vapor barriers, and waterproofing.

2.5 FIRE-RETARDANT-TREATED PLYWOOD

A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet (3.2 m) beyond the centerline of the burners at any time during the test.

1. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.

C. Kiln-dry material after treatment to a maximum moisture content of 15 percent.

D. Identify fire-retardant-treated plywood with appropriate classification marking of qualified testing agency.

E. Application: Treat plywood indicated on Architectural or other Drawings.

2.6 WALL SHEATHING

A. Plywood Wall Sheathing: As indicated in structural drawings.

B. Oriented-Strand-Board Wall Sheathing: Exposure 1; Thickness as indicated in structural drawings.

C. Paper-Surfaced Gypsum Wall Sheathing: ASTM C 1396/C 1396M, gypsum sheathing; with water-resistant-treated core and with water-repellent paper bonded to core's face, back, and long edges.

1. Type and Thickness: As Scheduled on Drawings.

2.7 ROOF SHEATHING

A. Plywood Roof Sheathing: As indicated in structural drawings.

B. Oriented-Strand-Board Roof Sheathing: As indicated in structural drawings.

2.8 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

1. For roof and wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

2.9 MISCELLANEOUS MATERIALS

A. Adhesives for Field Gluing Panels to Framing: Formulation complying with APA AFG-01 or ASTM D 3498 that is approved for use with type of construction panel indicated by manufacturers of both adhesives and panels.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.

B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated. Provide specified gaps at panel edges were required by manufacturer.

C. Securely attach to substrate by fastening as indicated, complying with the following:

1. NES NER-272 for power-driven fasteners.

2. Notes on Structural Drawings.

3. Table 2304.9.1 of the Florida Building Code unless more stringent fastening requirements are required by the Structural Drawings.

D. Coordinate wall and roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

E. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

F. Acclimate OSB wall sheathing panels to surroundings for a minimum of 24 hours before installation.

3.2 WOOD STRUCTURAL PANEL INSTALLATION

A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

B. Fastening Methods: Fasten panels as indicated below:

1. Subflooring:

   a. Glue and nail to wood framing.
   b. Space panels 1/8 inch (3 mm) apart at edges and ends.

2. Wall and Roof Sheathing:

   a. Nail to wood framing.
   b. Screw to cold-formed metal framing.
   c. Space panels 1/8 inch (3 mm) apart at edges and ends.

C. Install nails a minimum of 3/8 inch from sheathing panel edges.

D. Install Wall Sheathing panels flush with top of wall top plate, mid band, or into raised heel trusses.

E. Apply sheathing tape to joints at items penetrating sheathing. Apply at upstanding flashing to overlap both flashing and sheathing.

END OF SECTION 061600

SECTION 06200 - FINISH CARPENTRY - INTERIOR AND EXTERIOR

1.0 PART 1- GENERAL

1.1 RELATED DOCUMENTS:

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: Finish carpentry includes carpentry work which is exposed to view, is non-structural, and which is not specified as part of other sections.

B. Types of finish carpentry work in the section include:

1. Painted interior and exterior running and standing trim.

C. Architectural woodwork is specified in Section 06402.

1.3 QUALITY ASSURANCE:

A. Factory marks each piece of lumber and plywood with type, grade, mill and grading agency identification.

1.4 SUBMITTALS:

A. Samples: Submit 24" full board, unfinished showing molding configuration.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING:

A. Protect finish carpentry materials during transit, delivery, storage and handling to prevent damage, soiling and deterioration.

B. Do not deliver finish carpentry materials, 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 finish carpentry materials must be stored in other than installation areas, store only in areas meeting requirements specified for installation areas.

1.6 JOB CONDITIONS:

A. Conditioning: Do not install finish carpentry 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 finish carpentry within a 1.0 percent tolerance of optimum moisture content, from date of installation through remainder of construction period. The fabricator of woodwork shall determine optimum moisture content and required temperature and humidity conditions.

2.0 PART 2-PRODUCTS

2.1 WOOD PRODUCT QUALITY STANDARDS:

A. Softwood Lumber Standards: Comply with PS 20 and with applicable grading rules of the respective grading and inspecting agency for the species and product indicated.

B. Wood working Standard: Where indicated for a specific product complies with specified provision of the following:

1. Architectural Woodwork Institute (AWI) "Quality Standards".
2. Woodwork Institute of California (WIC) "Manual of Millwork."

2.2 MATERIALS:

A. Nominal sizes are indicated, except as shown by detailed dimensions. Provide dressed or worked and dressed lumber, as applicable, manufactured to the actual sizes as required by PS 20 or to actual sizes and patterns as shown unless otherwise indicated.

B. Moisture Content of Softwood Lumber: Provide seasoned (KD) lumber having moisture content from time of manufacture until time of installation not greater than values required by the applicable grading rules of the respective grading and inspecting agency for the species and product indicated.

C. Lumber for Painted Finish: At Contractor's option, use pieces which are either glued up lumber or made of solid lumber stock.

D. Interior Standing and Running Trim for Painted Finish: Any western soft-wood species graded and inspected by WWPA; Grade: "C Select" or "Choice".

E. Exterior Trim/fascia:
1. **For wood: Cedar or redwood**; inspected by WWPA: Grade: "C Select" or "Choice".
2. **For cement boards or trim**: manufactured by James Hardie Corporation or approved equal.

F. Miscellaneous Materials:
Fasteners and Anchorages: Provide nails, screws and other anchoring devices of the type, size, material and finish required for application indicated to provide secure attachment, concealed where possible, and complying with applicable Federal Specifications.

Exterior fasteners: Corrosion resistant, galvanized, or stainless steel fasteners.

3.0 PART 3-EXECUTION

3.1 INSTALLATION:

A. Discard units of material which are unsound, warped, bowed twisted, improperly treated, not adequately seasoned or too small to fabricate work with minimum of joints or optimum jointing arrangements, or which are of defective manufacturer with respect to surfaces, sizes or patterns.

B. Install the work 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; and with 1/16" maximum offset in flush adjoining 1/8" maximum offsets in revealed adjoining surfaces.

C. Scribe and cut work to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.

D. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum lengths of lumber available) to the greatest extent possible. Stagger joints in adjacent and related members. Cope at returns, miter at corners, to produce tight fitting joints with full surface contact throughout length of joint. Use scarf joints for end-to-end joints.

E. Anchor finish carpentry work to anchorage devices or blocking built-in 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 nail for exposed nailings, countersunk and filled flush with finished surface, and matching final finish where transparent is indicated.

3.2 ADJUSTMENT, CLEANING, FINISHING AND PROTECTION:

A. Repair damaged and defective finish carpentry work wherever possible to eliminate defects functionally and visually; where not possible to repair properly, replace woodwork. Adjust joinery for uniform appearance.

B. Clean finish carpentry on exposed and semi exposed surfaces. Touch-up shop applied finishes restoring damaged or soiled areas.

C. Refer to Division-9 sections for final finishing of installed running and standing trim work.

D. Back prime all standing and running trim and fascia.

E. Protection: Installer of finish carpentry work shall advise Contractor of final protection and maintained conditions necessary to ensure that work will be without damage or deterioration at time of acceptance.

END OF SECTION 06200

SECTION 06402 - INTERIOR ARCHITECTURAL WOODWORK

1.0 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 this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Plastic laminate cabinets and countertops
4. Solid surface countertops
5. Solid surface window sills

1.3 SUBMITTALS

A. Shop drawings showing location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

B. Samples for initial selection purposes of the following in form of manufacturer's color charts consisting of actual units or sections of units showing full range of colors, textures, and patterns available for each type of material indicated.

1. Plastic laminate.
2. Shop applied wood finishes.
3. Exposed cabinet hardware, one unit of each type and finish.
4. Solid surfacing and granite.

1.4 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. WIC Quality Standard: Comply with applicable requirements of "Manual of Millwork" published by Woodwork Institute of California (WIC) unless otherwise indicated.

C. Where homogeneous plastic or solid polymer is indicated on drawings, the material shall be Avonite Surfaces, manufactured by ARISTECH ACRYLICS LLC, 7350 Empire Drive, Florence, KY 41042, 800-428-6648.

D. Installer Qualifications: Installation of all surfaces shall be by a firm that is authorized by the manufacturer to fabricate and install these surfaces and that can demonstrate successful experience in installing finished carpentry items similar in type and quality to those required for this project.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect woodwork during transit, delivery, storage, and handling to prevent damage, soilage, and deterioration.

B. Do not deliver woodwork until painting, wet work, grinding, and similar operations that could damage, soil, or deteriorate woodwork have been completed in installation areas.

C. Transport and handle sheets and fabricated items by methods that will prevent damage and defacing.

D. Storage: If units are not installed immediately upon delivery to site, store in covered location, off the ground or floor, and cover with moisture and stain-resistant paper or plastic.

1.6 PROJECT CONDITIONS

A. Environmental Conditions: Obtain and comply with Woodwork Manufacturer's and Installer's coordinated advice for optimum temperature and humidity conditions for woodwork during its storage and installation, whether stored on site or off site. Do not install woodwork until these conditions have been attained and stabilized so that woodwork is within plus or minus 1.0 percent of optimum moisture content from date of installation through remainder of construction period.

Obtain and comply with manufacturer=s advice for optimum temperature and humidity conditions for the product during its storage and installation.

B. Field Measurements: Where woodwork is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before manufacturing woodwork; show recorded measurements on final shop drawings. Coordinate manufacturing schedule with construction progress to avoid delay of Work.

1.7 WARRANTY

A. Furnish manufacturer=s warranty against defective materials and workmanship.

2.0 PART 2 - PRODUCTS

2.1 HIGH PRESSURE DECORATIVE LAMINATE MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide high pressure decorative laminates of one of the following:

1. Formica Corp.
2. Laminart.
3. Nevamar Corp.
4. Wilsonart

2.2 SOLID SURFACE:

A. Surfaces sheets in 1/2" thickness, Class I or Class III rated
Finish: Matte.
Color: From manufacturer’s standard colors.

B. Manufacturers:
1. Avonite - Studio, or approved equal by:
2. Wilsonart

3. Formica solid surfacing
4. Corian

C. Solid Surfaces shall be non-porous, homogenous blend of polyester or acrylic alloys and fillers to create a material that cuts like wood. The color and pattern shall extend throughout the material. The material shall be in 1/4@ (6mm) or 1/2@ (12mm) thickness as indicated, in one piece wherever possible.

Joint Adhesive: Type recommended by manufacturer, in color to match surfaces.

Silicone sealant: Type recommended by manufacturer.

2.4 WOOD MATERIALS

A. General: Provide materials that comply with requirements of the AWI woodworking standard for each type of woodwork and quality grade indicated and, where the following products are part of woodwork, with requirements of the referenced product standards, that apply to product characteristics indicated:

Hardboard: ANSI/AHA A135.4
High Pressure Laminate: NEMA LD 3.
Softwood Plywood: PS 1.

B. Wood trim for transparent finish: Rift cut or plain sliced Red Oak if indicated on drawings, premium grade.

2.5 FABRICATION, GENERAL

A. Wood Moisture Content: Comply with requirements of referenced quality standard for moisture content of lumber in relation to relative humidity conditions existing during time of fabrication and in installation areas.

B. Fabricate woodwork to dimensions, profiles, and details indicated.

C. Complete fabrication, including assembly, finishing, and hardware application, 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. Granite:
1. Color selected from manufacturer's standard colors
2. Ease top and front edges and corners.
3. Surfaces shall be fabricated to field measurements. Seams shall be located where shown on approved shop drawings. Provide seam blocks under all seams where necessary in accordance with manufacturer's recommendations.

2.6 LAMINATE CLAD CABINETS

A. Quality Standard: Comply with AWI Section 400 and its Division 400B "Laminate Clad Cabinets."

B. Quality Standard: Comply with WIC Section 15 "Plastic-Covered Casework."

C. WIC Section 16: "Laminated Plastic Countertops, Splashes and Wall Paneling."

D. Type of Top: High pressure decorative, premium grade, color to be selected by architect from manufacturer's standard colors.

2.7 HARDWARE

A. Hinges: shall be Blum Module 170 concealed, European style, 170 degree opening (90 degree opening where adjacent to wall), self-closing.

B. Pulls shall be cast brass, accurately positioned on door and drawer front with machine screws. Pulls shall be Stanley #4484. Finish shall be brushed aluminum.

C. Drawers and glide out shelves shall be suspended on nylon roller steel slides to insure quiet, smooth operation. Slides shall have 100 pound load rating (minimum) with built in drawer stop and self close feature in the last one inch of travel. Glides shall be full extension Knape & Vogt (K&V) 8400 typical.

D. File drawers shall be suspended on full extension steel slides with ball bearings and a 100 pound minimum load rating, equal to K&V 8400.

E. Locks will be provided where shown on drawings or cabinet description. Locks shall be cylinder type, dye cast, with five-disc tumbler mechanism. Each lock shall be provided with 3 milled brass keys. Provide option of selecting keyed alike, keyed different, and master keyed locks. K&V 986, Corbin 02067, Yale 9730.

F. Adjustable shelf standards and supports shall be Stanley 798/799, K&V 255 or Grant 120/121. Line Boring is acceptable with metal shelf supports (note: plastic is not acceptable).

G. Grommets may be solid plastic or metal with cord slot cover equal to Mockett with at least 8 colors to choose from.

3.0 PART 3 - EXECUTION

3.1 PREPARATION

A. Install woodwork plumb, level, true, and straight with no distortions. Shim as required with concealed shims. Install to a tolerance of 1/8 inch 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 pre-finished matching fastener 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.

E. 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.

F. Tops: Anchor securely to base units and other support systems as indicated.

3.2 ADJUSTMENT AND CLEANING

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.

3.3 PROTECTION

A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and installer that ensures that woodwork is being without damage or deterioration at time of Substantial Completion.

END OF SECTION 06402

SECTION 07200 - INSULATION

1.0 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. Applications of insulation specified in this section include the following:

1. Cavity Insulation
2. Spray-applied insulation
3. Batt-type insulation for wall noise reduction.
4. Vapor barriers under slabs-on-grade

Roof insulation is specified in Roofing Sections.

1.3 QUALITY ASSURANCE:

A. Thermal Resistivity: Where thermal resistivity properties of insulation materials are designated by r-values they represent the rate of heat flow through a homogenous material exactly 1" thick, measured by test method included in referenced material standard or otherwise indicated. They are expressed by the temperature difference in degrees F between the two exposed faces required to cause one BTU to flow through one square foot per hour at mean temperatures indicated.

B. Fire Performance Characteristics: Provide insulation materials which are identical to those whose fire performance characteristics, as listed for each material or assembly of which insulation is a part, have been determined by testing, per methods indicated below, by UL or other testing and inspecting agency acceptable to authorities having jurisdiction.

1. Surface Burning Characteristics: ASTM E 84.
2. Fire Resistance Ratings: ASTM E 119.
3. Combustion Characteristics: ASTM E 136.

1.4 SUBMITTALS:

A. Product Data: Submit manufacturer's product literature and installation instructions for each type of insulation and vapor retarder material required.

1.5 DELIVERY, STORAGE, AND HANDLING:

A. General Protection: Protect insulations from physical damage and from becoming wet, soiled, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection during installation.

2.0 PART 2 - PRODUCTS

2.1 MATERIALS:

1. Cavity Wall Insulation: Provide rigid closed-cell extruded board with integral high density skin; comply with ASTM C 578 for
   Type IV and the following:
   a. Meet the typical 5 year aged thermal conductivity, K factor of .20 BTU in/hr square feet degree F. when tested at 75 degrees F mean temperature per ASTM C-518-75e.
   b. Compressive strength of 40 psi per ASTM D-1621-73.
   c. Maximum water absorption of 0.3% by volume when tested per ASTM 272-72
   d. Water vapor permeance for one inch product of 1.0 perm max. per ASTM E96-80.
   e. Manufacturer's standard length and width:
   f. Square Edge
   g. **2"**
   h. R = 10
   i. Acceptable Manufacturer: **Styrofoam SM** by Dow Chemical Co., or approved equal.

2. Batt-type Insulation and acoustical insulation: Provide unfaced glass fiber units:

   a. Flame spread and smoke developed as per ASTM E84.
   b. Manufacturer's standard length and width as, per drawings.
   c. Size: 4" or 6" nom.; R = 19 at exterior walls.
   d. Acceptable manufacturer's: Certainteed Corp., Manville Corp., or Owens-Corning Fiberglas Corp.

3. Spray-applied insulation (**Icynene**):
   a. Water-blown foam insulation, applied by spraying and adhering to substrates.
      Mfr: Icynene, Inc. or approved equal.
   b. ASTM D6866, for renewable content, ASTM C518 for thermal performance: Developed thermal resistance is as shown on the drawings.: R/in = R3.7 hr. ft2 ºF/BTU
   c. Fire resistance: Class A; Surface burning characteristics per ASTM E84:
      Flame Spread less than 25
      Smoke Development less than 450
   d. R value at floor: R=20
   e. Installation by licensed Icynene installer with 3years minimum experience.

4. Vapor barriers under slabs-on-grade: **10 mil** polyethylene film with laboratory tested vapor)transmission rating of 0.2 perms.

5. Miscellaneous Materials:

   Adhesive for bonding insulation to be as recommended by insulation manufacturer, and complying with the requirements for fire performance characteristics.

   Mechanical Anchors to be the type and size recommended by the insulation manufacturer for type of application and condition of substrate.

   Mastic Sealer to be type recommended by insulation manufacturer for bonding edge joints between units and filling voids in work.

3.0 PART 3 - EXECUTION

3.1 INSPECTION AND PREPARATION:

A. Require Installer to examine substrates and conditions under which insulation work is to be performed. A satisfactory substrate is one that complies with requirements of the section in which substrate and related work is specified. Obtain installer's written report listing conditions detrimental to performance of work in this section. Do not proceed with installation of insulation until unsatisfactory conditions have been corrected.

B. Clean substrates of substances harmful to insulations or vapor retarders, including removal of projections which might puncture vapor retarders.

3.2 INSTALLATION, GENERAL:

A. Comply with manufacturer's instructions for particular conditions of installation in each case. If printed instructions are not available or do not apply to project conditions, consult manufacturer's technical representative for specific recommendations before proceeding with work.

B. Extend insulation full thickness as shown over entire area to be insulated. Cut and fit tightly around obstructions, and fill voids with insulation. Remove projections which interfere with placement.

3.3 INSTALLATION OF CAVITY INSULATION:

A. Install small pads of adhesive spaced approximately 1'-0" o.c. both ways on inside face, as recommended by manufacturer. Fit courses of insulation between wall ties and other confining obstructions in cavity, with edges butted tightly both ways. Press units firmly against inside wythe of masonry or other construction as shown.

Certify that adhesive is compatible with Liquid Air Barrier specified in Section 07160

3.4 INSTALLATION OF BATT INSULATION:

A. Apply insulation units to substrate by method indicated, complying with manufacturer's recommendations.

3.5 INSTALATION OF SPRAY-APPLIED INSULATION:

A. Installation per manufacturer’s written instructions by licensed Icynene installer with 3years minimum experience.

3.6 INSTALLATION OF VAPOR RETARDERS:

A. General: Extend vapor retarder to extremities of areas to be protected from vapor transmission. Secure in place with adhesives or other anchorage system as indicated. Extend vapor retarder to cover miscellaneous voids in insulated substrates, including those which have been stuffed with loose fiber-type insulation.

B. Seal overlapping joints in vapor retarders with adhesives per vapor retarder manufacturer's printed directions. Seal butt joints and fastener penetrations with tape of type recommended by vapor retarder manufacturer.

C. Repair any tears or punctures in vapor retarders immediately before concealment by other work. Cover with tape or another layer of vapor retarder.

3.7 PROTECTION:

A. General: Protect installed insulation and vapor retarders from harmful weather exposures and from possible physical abuses, where possible by no delayed installation of concealing work or, where that is not possible, by temporary covering or enclosure.

END OF SECTION 07200

SECTION 07241-EXTERIOR INSULATION AND FINISH SYSTEMS

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 exterior insulation and finish systems is indicated on drawings.

B. Types of exterior insulation and finish system applications in this section include the following:

Applications over concrete masonry units.

C. Sealing joints for this system is specified in this section.

1.3 DEFINITIONS:

A. Exterior insulation and finish system refers to an exterior assembly composed of an inner layer of thermal insulation board and an outer layer forming the protective finish coating. The assembly is applied to a supporting substrate of construction indicated. Designations below for the class and type of exterior insulation and finish system specified in this section are based on those developed by the Exterior Insulation Manufacturers Association (EIMA).

B. Class PB Type A designates a polymer-based protective finish coating (Class PB), externally reinforced (Type A).

C. System in this section refers to Class PB Type A exterior insulation and finish systems.

D. System manufacturer refers to the manufacturer of the exterior insulation and finish system.

1.4 SYSTEM DESCRIPTION:

A. Provide system complying with the following performance requirements:

B. Bond Integrity: Free from bond failure within system components for between system and supporting wall construction, resulting from exposure to fire, wind loads, weather, or other in-service conditions.

C. Weather tightness: Resistant to water penetration from exterior into system and assemblies behind it or through them into interior of building which results in deterioration of thermal insulating effectiveness or other degradation of system and assemblies behind system including substrates, supporting wall construction, and interior finish.

1.5 SUBMITTALS:

A. Product Data: Manufacturer's technical data for each component of exterior insulation and finish system.

B. Samples for Initial Selection Purposes: Manufacturer's standard color charts and small scale samples indicating textural choices available.

C. Submit sealant manufacturer's standard bead samples consisting of strips of actual products showing full range of colors available.

D. Samples for Verification Purposes: Samples, 2' square, for each finish, color, and texture indicated; prepare samples using same tools and techniques intended for actual work.

E. Incorporate within each sample a typical control joint filled with sealant of color indicated or selected.

F. Installer certificates signed by manufacturer certifying that Installers comply with specified requirements.

G. Sealant compatibility and test report from sealant manufacturer certifying that materials forming joint substrates of system have been tested for compatibility and adhesion with joint sealants; include sealant manufacturer's interpretation of results relative to sealant performance and recommendations for primers and substrate preparation needed to obtain adhesion.

1.6 QUALITYASSURANCE:

A. Manufacturer Qualifications: Firm regularly engaged in manufacturing products for system indicated and with at least 3 years successful experience in applications similar to that required for this Project.

B. Installer Qualifications: Engage an Installer that is certified in writing by system manufacturer as qualified for installation of systems indicated.

C. Single Source Responsibility: Obtain materials for system from either a single manufacturer or from manufacturers approved by the system manufacturer as compatible with other system components.

1.7 PROJECT CONDITIONS:

A. Environmental Conditions: Do not install system when ambient outdoor temperatures are 40 deg F (4 deg C) and falling unless temporary protection and heat is provided to maintain ambient temperatures above 40 deg F (4 deg C) during installation of wet materials and for 24 hours after installation or longer to allow them to become thoroughly dry and weather resistant.

1.8 SEQUENCING AND SCHEDULING:

A. Sequence installation of system with related work specified in other sections to ensure that wall assemblies, including flashing, trim, and joint sealers, are protected against damage from weather, aging, corrosion, or other causes.

PART 2-PRODUCTS

2.1 MANUFACTURERS:

A. Manufacturers: Provide System from one of the following:

Dryvit System, Inc.	ISPO, Inc.
Finestone, Inc.	Parex System
Sto Industries, Inc.	Senergy Inc.

2.2 MATERIALS:

A. Compatibility: Provide adhesive, board insulation, reinforcing fabrics, base and finish coat materials, sealants, and accessories which are compatible with one another and approved for use by system manufacturer.

B. Provide colors and texture of protective coating to comply with following requirements:

C. Provide selection made by Architect from manufacturer's full range of standard colors and textures available for type of finish coat indicated.

D. Surface Sealer: System manufacturer's standard adhesion intermediary designed to improve bond between substrate of type indicated and adhesive for application of insulation.

E. Plastic Tracks for Application of Insulation: System manufacturer's standard plastic track system consisting of horizontal starter tracks, horizontal holding tracks, and vertical tee-shaped members designed for mechanical attachment to substrates indicated and for attaching insulation by engaging grooves in edges of insulation.

F. Adhesive for Application of Insulation: System manufacturer's standard formulation designed for indicated use, compatible with substrate and complying with the following requirements:

Factory-mixed formulation designed for adhesive attachment of insulation to substrates of type indicated, as approved by system manufacturer.

G. Molded Polystyrene Board Insulation: Rigid, cellular thermal insulation formed by the expansion of polystyrene resin beads or granules in a closed mold to comply with ASTM C 578 for Type I; aged in block form prior to cutting and shipping by air drying for not less than 6 weeks or by another method approved by system manufacturer and producing equivalent results; 2' x 4' x thickness indicated but not less than the minimum thickness allowed by system manufacturer; and complying with requirements of system manufacturer for corner squareness and other dimensional tolerances.

Manufacture insulation with edges grooved for track installation method.

H. Reinforcing Fabric: Balanced, alkali-resistant open weave glass fiber fabric treated for compatibility with other system materials; made from continuous multi-end strands with tensile strength of not less than 120 lbs. and 140 lbs. in warp and fill directions, respectively, per ASTM D 1682 and complying with ASTM D 578 and the following requirements:

Weight of Heavy Weight Resistant Reinforcing Fabric: Not less than 21 oz. per sq. yd.
Weight of Strip Reinforcing Fabric: Not less than 3.75 oz. per sq. yd.

I. Base Coat Materials: System manufacturer's standard, job mixed formulation of Portland cement complying with ASTM C 150, Type I, white or natural color; and system manufacturer's standard polymer based adhesive designed for use indicated.

J. Finish Coat Materials: System manufacturer's standard mixture complying with the following requirements for material composition and method of combining materials:

Factory-mixed formulation of polymer emulsion admixture, color- fast mineral pigments, sound stone particles, and fillers.

Water: Clean and potable.

K. Mechanical Fasteners: System manufacturer's standard corrosion- resistant fastener assemblies, complete with system manufacturer's standard washer and shaft attachments, selected for properties of pull-out, tensile, and shear strength required to resist design loads of application indicated, capable of pulling fastener head below surface of insulation board, and of the following description:

For attachment to wood framing members provide steel drill screws complying with ASTM C 1002.

2.3 ELASTOMERIC SEALANTS:

A. Sealant Products: Provide manufacturer's standard chemically curing, elastomeric sealant which is compatible with joint fillers, joint substrates, and other related materials.

Multi-Part Nonsag Silicone Sealant.

B. Sealant Color: Provide color of exposed sealants to comply with the following requirement:

Match finish coat color of system.

2.4 MIXING:

A. General: Comply with system manufacturer's requirements for combining and mixing materials. Do not introduce admixtures, water, or other materials except as approved by system manufacturer. Mix materials in clean containers. Use materials within time period specified by system manufacturer or discard.

PART 3-EXECUTION

3.1 EXAMINATION:

A. Examine substrates, with Installer present, to determine if they are in satisfactory condition for installation of system. Do not proceed with installation of system until unsatisfactory conditions have been corrected.

3.2 PREPARATION:

A. Protect contiguous work from moisture deterioration and soiling resulting from application of systems. Provide temporary covering and other protection needed to prevent spattering of exterior finish coatings on other work.

B. Protect system, substrates, and wall construction behind them from inclement weather during installation. Prevent infiltration of moisture behind system and deterioration of substrates.

C. Substrate Preparation: Prepare and clean substrates to comply with system manufacturer's requirements to obtain optimum bond between substrate and adhesive for insulation.

Apply surface sealer over substrates where required by system manufacturer for improving adhesion.

3.3 INSTALLATION:

A. General: Comply with system manufacturer's current published instructions for installation of system as applicable to each type of substrate indicated.

B. Mechanically attach insulation by track method to comply with the following requirements:

Apply boards over dry substrates in courses with long edges oriented horizontally; begin first course from a level base line and work upwards.

3.4 CLEANING AND PROTECTION:

A. Remove temporary covering and protection of other work. Promptly remove protective coatings from window and door frames, and any other surfaces outside areas indicated to receive protective coating.

B. Provide final protection and maintain conditions, in a manner acceptable to Installer and system manufacturer, which ensures system being without damage or deterioration at time of Substantial Completion.

END OF SECTION 07241

SECTION 07272 – FLUID-APPLIED AIR BARRIER

PART 1 - GENERAL

1.01 SUMMARY

A. Provide fluid-applied vapor permeable air barrier membrane over exterior face of concrete masonry units as indicated or required.
B. Supply labor, materials and equipment to complete the Work as shown on the Drawings and as specified herein to bridge and seal the following air leakage pathways and gaps:
   1. Openings and penetrations of window, door, and louver frames.
   2. Piping, conduit, duct, and similar penetrations.
   3. Embedded brick ties, screws, bolts, and similar penetrations.
   4. All other air leakage pathways in the building envelope.
C. Supply materials and installation methods of the primary vapor permeable air barrier membrane system and accessories.
D. Materials and installation methods of through-wall flashing membranes.

1.02 RELATED SECTIONS

A. 03300 – Cast-In-Place Concrete
B. 04200 – Unit Masonry
C. 08110 – Steel Doors and Frames
D. 08520 – Aluminum Windows
E. 10200 – Louvers and Vents

1.03 REFERENCES

A. The following standards are applicable to this section:
   1. ASTM E 2357: Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.
   2. ASTM E 2178: Standard Test Method for Air Permeance of Building Materials.
   3. ASTM E 283: Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
   4. ASTM E 1677 Specification for Air Retarder (AR) Material or System for Low-Rise Framed Building Walls.
   5. ASTM E 330: Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
   6. ASTM E 331: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
   7. ASTM E 96: Water Vapor Transmission of Materials.
   8. CGSB 37-GP-56M: Membrane, Modified, Bituminous, Prefabricated, and Reinforced.
   9. AMMA 2400: Standard Practice for Installation of Windows with a Mounting Flange in Stud Frame Construction.
   10. ASTM E 2112: Standard Practice for Installation of Exterior Windows, Doors and Skylights.

1.04 PERFORMANCE REQUIREMENTS

A. Air barrier shall be capable of performing as a continuous vapor-permeable air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air barrier membrane assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, and transitions at perimeter conditions without deterioration.

B. Air barrier shall be fully compatible with concrete masonry units.

1.05 SUBMITTALS

A. Product Data: Include manufacturer's written instructions for evaluating, preparing, and treating substrate; technical data; and tested physical and performance properties of air barrier membrane.

B. Shop Drawings: Show locations and extent of air barrier. Include details for substrate joints and cracks, counterflashing strip, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
   1. Include details of interfaces with other materials that form part of air barrier.

C. Submit documentation from an approved independent testing laboratory certifying the air leakage rates of the air barrier membrane assembly, including primary membrane, primer and sealants have been tested to meet ASTM E 2357.
   1. Test report submittals shall include test results on porous substrate and include sustained wind load and gust load air leakage results.

D. Submit copies of manufacturers' current ISO certification.

1.06 QUALITY ASSURANCE

A. Submit document stating the applicator of the primary air barrier membrane specified in this section is qualified by the manufacturer as suitable for the execution of the Work.

B. Perform the Work in accordance with manufacturer's written instructions and this specification.

C. Maintain one copy of manufacturer's written instructions on site.

D. Allow access to the Work site by the air barrier membrane manufacturer's representative.

E. Components used shall be sourced from one manufacturer, including primary membrane, transition and flashing membranes, air barrier sealants, primers, mastics, and adhesives.

F. Single-Source Responsibility:

   1. Obtain air barrier materials from a single manufacturer regularly engaged in manufacturing the product.
   2. Provide products which comply with all federal, state and local regulations controlling use of volatile organic compounds (VOCs).

1.07 PRE-INSTALLATION CONFERENCE

A. Schedule pre-installation conference a minimum of one (1) week prior to commencing work of this section.

B. Include installers of other construction connecting to air barrier, including masonry, sealants, windows, door frames, and louvers.

C. Review air barrier requirements including surface preparation, substrate condition and pre-treatment, forecasted weather conditions, special details and sheet flashings, installation procedures, sequence of installation, testing and inspecting procedures, and protection and repairs.

1.08 DELIVERY, STORAGE AND HANDLING

A. Refer to current Product MSDS for proper storage and handling.

B. Deliver materials to the job site in undamaged and original packaging indicating the name of the manufacturer and product.

C. Store roll materials on end in original packaging. Protect rolls from direct sunlight until ready for use.

D. Store air barrier membranes, adhesives and primers at temperatures of 40 degrees F and rising.

E. Keep solvent away from open flame or excessive heat.

1.09 COORDINATION

A. Ensure continuity of the air barrier throughout the scope of this section.

1.10 PROJECT CONDITIONS

A. Environmental Limitations: Apply air barrier within the range of ambient and substrate temperatures recommended by air barrier manufacturer. Protect substrates from environmental conditions that affect performance of air barrier. Do not apply air barrier to a damp or wet substrate or during snow, rain, fog, or mist.

1.11 WARRANTY

A. Provide manufacturer’s standard 10-year material warranty.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Basis-of-Design Product: The design for the air barrier system is based on the following manufacturer. Subject to compliance with requirements, provide the named products or an equivalent product by one of the manufacturers listed in paragraph 2.1.B below. Air barrier membrane components and accessories shall be obtained as a single-source from the membrane manufacturer to ensure total system compatibility and integrity.

1. Basis-of-Design Manufacturer: Henry Company.
   909 N Sepulveda Blvd, Suite 650
   El Segundo, CA 90245
   800-598-7663
   Web Site: www.henry.com

B. 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. Grace Construction Products.
2. Marflex Building Solutions.
3. Prosoco, Inc.
4. Sto Corp.
5. Tremco, Inc.
6. W.R. Meadows, Inc.
7. Tyvek Brand, Dupont Corp.

2.02 MEMBRANES (Basis-of-Design). Contractor is to verify compatibility of fluid applied air barrier products with adjacent materials, in particular, with the **wall cavity insulation and mastic** used to install the insulation.

A. Primary air and rain barrier membrane for temperatures above 40 degrees F and rising shall be Air-Bloc 31 manufactured by Henry; a single component water based elastomeric emulsion membrane, trowel or spray applied. Membrane shall have the following physical properties:

1. Air permeability: 0.0002 CFM/ft^2 @ 1.6 lbs/ft^2 to ASTM E2178 and ASTM E283 and have no increased air leakage when subjected to a sustained wind load of 10.5 lbs/ft^2 for 1 hour and gust wind load pressure of 62.8 lbs/ft^2 for 10 seconds when tested at 1.6 lbs/ft^2 to ASTM E331.
2. Tested to ASTM E2357 for Air Leakage of Air Barrier Assemblies.
3. Water vapor permeance (43 mil dry thickness): 21 perms to ASTM E96 Method B.
4. Nominal wet film thickness: 90 mils.
5. Elongation (ASTM D412): 1000% (Typical).
6. Low temperature flexibility and crack bridging: Pass -4 degrees F to ASTM C836.
7. Long term flexibility: Pass to CGSB 71-GP-24M.
8. Watertightness (CGSB 37-GP-56M): Pass.

B. Self-adhering vapor permeable air barrier membrane for transition and joint treatment shall be Blueskin® Breather manufactured by Henry; a self-adhering membrane consisting of a microporous film laminate, backed with a specially applied adhesive, which allows water vapor to permeate through while acting as a barrier to air and rain water. Membrane shall have the following physical properties:
1. Air leakage: <0.002 CFM/ft^2 @ 1.6 lbs/ft^2 to ASTM E283-91.
2. Water vapor permeance: 37 perms to ASTM E96.
3. Membrane Thickness: 17 mils.
4. Low temperature flexibility -40 degrees F: Pass to ASTM D3111.
5. Hydrostatic Water Resistance: 18 psi ASTM D751 Procedure A.

C. Self-adhering membrane for all window and window sill flashings, louver and louver sill flashings, door openings, inside and outside corners and other transitions shall be Blueskin® SA manufactured by Henry; an SBS modified bitumen, self-adhering sheet membrane complete with a cross-laminated polyethylene film. For application temperatures down to 10 degrees F use Blueskin® SA LT. Membrane shall have the following physical:

1. Air leakage: <0.0001 CFM/ft² @1.6 lbs/ft² to ASTM E 2178 and ASTM E 283 and have no increased air leakage when subjected to a sustained wind load of 10.5 lbs/ft² for 1 hour and gust wind load pressure of 62.8 lbs/ft² for 10 seconds when tested at 1.6 lbs/ft² to ASTM E331.
2. Tested to ASTM E 2357 for the air barrier assembly.
3. Vapor permeance: 0.05 perms to ASTM E96.
4. Membrane Thickness: 0.0394" (40 mils).
5. Low temperature flexibility: -22 degrees F to CGSB 37-GP-56M.
6. Elongation: 200% to ASTM D412-modifed.
7. Meets CAN/CGSB-51-33 Type I Water Vapor Permeance requirements.

D. Self-adhering through-wall flashing membrane shall be Blueskin® TWF manufactured by Henry; an SBS modified bitumen, self-adhering sheet membrane complete with a cross-laminated polyethylene film. Membrane shall have the following physical properties:

1. Membrane Thickness: 0.0394 inches (40 mils).
2. Film Thickness: 4.0 mils.
3. Flow (ASTM D5147): Pass @ 212 degrees F.
4. Puncture Resistance: 134 lbf to ASTM E 154.
5. Tensile Strength (film): 5723 psi ASTM D882.
6. Tear Resistance: 13lbs. MD to ASTM D1004.
7. Low temperature flexibility: -22 degrees F to CGSB 37-GP-56M.

2.03 PRIMERS

A. Primer for self-adhering membranes at temperatures above 25 degrees F shall be Aquatac™ Primer manufactured by Henry; a polymer emulsion-based adhesive, quick setting. Primer shall have the following physical properties:

1. Color: Aqua.
2. Weight: 8.7 lbs/gal.
3. Solids by weight: 53%.
4. Water based, no solvent odors, low VOC.
5. Drying time (initial set): 30 minutes at 50% RH and 70 degrees F.

B. Primer for self-adhering membranes at all temperatures shall be Blueskin® Adhesive manufactured by Henry, a synthetic rubber-based adhesive, quick setting, having the following physical properties:

1. Color: Blue.
2. Weight: 6 lbs/gal.
3. Solids by weight: 35%.
4. Drying time (initial set): 30 minutes.

2.04 PENETRATION & TERMINATION SEALANT

A. Termination Sealant shall be HE925 BES Sealant manufactured by Henry; a moisture cure, medium modulus polymer modified sealing compound having the following physical properties:
   1. Compatible with sheet air barrier, roofing and waterproofing membranes and substrate.
   2. Complies with Fed. Spec. TT-S-00230C, Type II, Class A.
   3. Complies with ASTM C 920, Type S, Grade NS, Class 25.
   4. Elongation: 450 – 550%.
   5. Remains flexible with aging.
   6. Seals construction joints up to 1 inch wide.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance.
B. Verify that surfaces and conditions are ready to accept the Work of this section. Notify Architect in writing of any discrepancies. Commencement of the Work or any parts thereof shall mean acceptance of the prepared substrates.
C. All surfaces shall be sound, dry, clean and free of oil, grease, dirt, or other contaminants. Fill voids and gaps in substrate to provide an even plane.
D. Do not proceed with application of air barrier membrane when rain is expected within 24 hours.
E. Condition materials to room temperature prior to application to facilitate handling.

3.02 SURFACE PREPARATION

A. Ensure all preparatory work is complete prior to applying primary air barrier membrane.
B. Clean, prepare, treat, and seal substrate according to manufacturer's written instructions. Provide clean, dust-free, and dry substrate for air barrier application.
C. Apply primer at rate recommended by manufacturer to all areas to receive self-adhering sheet air/vapor barrier membrane and or through-wall flashing membrane as indicated on drawings by roller or spray and allow minimum 30 minute open time. Primed surfaces not covered by self-adhering membrane or self-adhering through-wall flashing membrane during the same working day shall be re-primed.

3.03 INSTALLATION OF AIR BARRIER SYSTEM

A. JOINT TREATMENT

   1. Seal joints ¼ inch and less between concrete masonry units and steel with joint treatment sealant.
      a) Fill joint with approved joint treatment sealant ensuring contact with all edges of panel. Strike flush any excess sealant over joint layer to form a continuous layer over the joint.

   2. Seal gaps and voids or irregular joints greater than ¼ inch with a strip of self-adhering air/vapor barrier transition membrane lapped a minimum of 1 1/2 inches on both sides of the joint.
      a) Prime surfaces as per manufacturers' instructions and allow to dry.
      b) Align and position self-adhering air/vapor barrier transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inches overlap at all end and side laps of membrane.

c) Roll all laps and membrane with a counter top roller to ensure seal.

3. Alternately, joints not exceeding 1/8 inch can be sealed with yellow open weave glass fabric.
   a) Apply yellow open weave glass fabric centered over joint followed by a 1/8 inch (120mils) thick trowel application of air/vapor barrier membrane.
   b) Allow to dry prior to application of primary vapor permeable air barrier membrane.

B. INSIDE AND OUTSIDE CORNERS

1. Seal inside and outside corners with a strip of self-adhering transition membrane extending a minimum of 3 inches on either side of the corner detail.
   a) Prime surfaces as per manufacturers' instructions and allow to dry.
   b) Align and position self-adhering transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inches overlap at all end and side laps of membrane.
   c) Roll all laps and membrane with a counter top roller to ensure seal.

C. CRACK TREATMENT – Concrete Masonry Units

1. Seal cracks over 1/16 inches with a strip of self-adhering transition membrane lapped a minimum of 1 ½ inches on both sides of the crack.
   a) Prime surfaces as per manufacturer's instructions and allow to dry.
   b) Align and position self-adhering transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inches overlap at all end and side laps of membrane.
   c) Roll all laps and membrane with a counter top roller to ensure seal.

2. Alternately, static cracks 1/16 inch to 1/8 inch can be sealed with primary air barrier membrane.
   a) Fill crack with primary air barrier membrane.
   b) Allow to dry prior to application of primary vapor permeable air barrier membrane.

D. TRANSITON AREAS

1. Tie-in to structural beams, columns, floor slabs, foundation walls, roofing systems and at the interface of dissimilar materials as indicated in drawings with self-adhering air barrier transition membrane.
   a) Prime surfaces as per manufacturers' instructions and allow to dry.
   b) Align and position self-adhering transition membrane, remove protective film and press firmly into place. Provide minimum 3 inch lap to all substrates.
   c) Ensure minimum 2 inch overlap at all end and side laps of membrane.
   d) Roll all laps and membrane with a counter top roller to ensure seal.

E. WINDOWS, DOORS, LOUVERS AND ROUGH OPENINGS

1. Wrap head and jamb of rough openings with specified self-adhering transition membrane as detailed. Place specified sill flashing membrane across sills and end dam terminations.
   a) Prime surfaces as per manufacturers' instructions and allow to dry.
   b) Align and position self-adhering transition membrane, remove protective film and press firmly into place. Ensure minimum 2 inch overlap at all end and side laps of membrane.
   c) Roll all laps and membrane with a counter top roller to ensure seal.

F. THROUGH-WALL FLASHING MEMBRANE

1. Apply through-wall flashing membrane along the base of brick veneer walls and over window, louver, and door openings as detailed.

a) Prime surfaces and allow to dry, press membrane firmly into place, overlap minimum 2 inches at all end and side laps. Promptly roll all laps and membrane to ensure the seal.
b) Applications shall form a continuous flashing membrane and shall extend up a minimum of 8 inches up the insulated concrete form wall.
c) Seal the top edge of the membrane where it meets the substrate using termination sealant. Trowel-apply a feathered edge to seal termination to shed water.
d) Install through-wall flashing membrane and extend 1/2 inch from outside edge of veneer. Provide “end dam” flashing as detailed.

G. PRIMARY AIR BARRIER

1. Apply by spray or flat trowel a complete and continuous unbroken film of liquid air and rain barrier membrane.

a) For temperatures above 40 degrees F and rising, apply single component water based elastomeric emulsion air barrier membrane at a rate of18.6 sq.ft/gallon to a uniform wet film thickness of 90 mils.

2. Spray apply or trowel around all projections and penetrations ensuring a complete and continuous air barrier membrane. Lap liquid applied membrane 1 inch over self-adhering membranes to seal leading edge.

3. Allow air barrier membrane to dry as per manufacturers recommendations prior to placement of insulating materials.

3.04 APPLICATION OF TERMINATION SEALANT

A. Seal membrane terminations, heads of mechanical fasteners, embedded brick ties, around penetrations, duct work, electrical and other apparatus extending through the primary water resistive air barrier membrane and around the perimeter edge of membrane terminations at window, louver, and door frames with specified termination sealant.

3.05 FIELD QUALITY CONTROL

A. Make notification when sections of the Work are complete to allow review prior to covering air barrier system.

3.06 PROTECTION

A. Protect air barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.
B. Protect air barrier from exposure to UV light and harmful weather exposure as required by manufacturer.
C. Damp substrates shall not be inhibited from drying out. Do not expose the backside of the

substrate to moisture or rain.

D. Cap and protect exposed back-up walls against wet weather conditions during and after application of membrane. Drying time varies depending on temperature and relative humidity. Protect the air barrier Work against wet weather conditions for a minimum of 24 hours.

END OF SECTION 07272.

SECTION 07311 - ASPHALT SHINGLES

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 roof shingles are indicated on drawings and is hereby defined to include units employed as weather protection for walls as well as for steep roofs.

1.3 QUALITY ASSURANCE:

A. UL Listing: Provide labeled materials which have been tested and listed by UL for Class and Rating indicated for each shingle type required.

1.4 SUBMITTALS:

A. Product Data: Submit technical product data, installation instructions and recommendations from shingle manufacturer, including data that materials comply with requirements.

B. Samples: Submit full range of samples for color and texture selection. After selection, submit 2 full-size shingles for verification of each color/style/texture selected.

C. Maintenance Stock: 2% of each type/color/texture shingle used in the work.

1.5 DELIVERY, STORAGE AND HANDLING:

A. Deliver materials in manufacturer's unopened, labeled bundles, rolls or containers.

B. Store materials to avoid water damage, and store rolled goods on end. Comply with manufacturer's recommendations for job-site storage and protection.

1.6 JOB CONDITIONS:

A. Substrate: Proceed with shingle work only after substrate construction and penetrating work have been completed.

B. Weather Conditions: Proceed with shingle work only when weather conditions are in compliance with manufacturer's recommendations and when substrate is completely dry.

1.7 SPECIFIED PRODUCT WARRANTY:

A. Provide shingle manufacturer's warranty on installed work, agreeing to pay for repair or replacement of defective shingles as necessary to eliminate leaks. Period of warranty is 20 years from date of substantial completion.

PART 2 - PRODUCTS

2.1 ASPHALT SHINGLE MATERIALS:

A. 3-Dimensional Laminated Strip Shingle, UL Class "A": Mineral- surfaced, self-sealing, laminated multi-ply overlay construction fiberglass based strip shingle complying with ASTM D 3018, Type 1, and with ASTM D 3462. Provide shingles bearing UL Class "A" external fire exposure label and UL "Wind Resistant" label. Color as selected by Architect.

1. **Timberline HDZ Lifetime High Definition shingles by GAF Corp.**, or approved equal by one of the following:

Johns Manville Building Materials Corp.
Tammko Corp.

B. UNDERLAYMENT: Underlayment Membrane: Self adhering rubberized asphalt bonded to flexible polyethylene sheet not less than 30 mils thick; high temperature (240 °F minimum) underlayment:

Ice and Water Shield:
a. Peel and Stick Grace Ultra by W. R. Grace & Co. (30 mil, 300 °F)
b. Water and Ice Protection WIP 300 HT by Carlisle (40 mil, 250 °F)
c. Titanium PSU30 Synthetic Roofing Underlayment by InterWrap (45 mil, 240 °F)

Membrane to meet ASTM D1970 for high temperature underlayment requirements

C. Asphalt Plastic Cement: Fibrated asphalt cement complying with ASTM D 2822, designed for trowel application.

D. Nails: Aluminum or hot-dip galvanized 11 or 12-gage, sharp- pointed, conventional roofing nails with barbed shanks, minimum 3/8" diameter head, and of sufficient length to penetrate 3/4" into solid decking or to penetrate through plywood sheathing.

E. Metal Drip Edge: Minimum .040" mill finish aluminum sheet, brake-formed to provide 3" roof deck flange, and fascia flange as shown on drawings. Furnish in 8' or 10' lengths.

F. Metal Flashing: See Section 07600 – Flashing and Sheet Metal.

PART 3 - EXECUTION

3.1 INSPECTION:

A. Examine substrate and conditions under which shingling work is to be performed and must notify Contractor in writing of unsatisfactory conditions. Do not proceed with shingling work until unsatisfactory conditions have been corrected.

3.2 PREPARATION OF SUBSTRATE:

A. Clean substrate of any projections and substances detrimental to shingling work. Cover knotholes or other minor voids in substrate with sheet metal flashing secured with roofing nails.

B. Coordinate installation of shingles with flashing and other adjoining work to ensure proper sequencing.

Do not install shingle roofing until all vent stacks and other penetrations through roofing have been installed and are securely fastened against movement.

3.3. INSTALLATION:

A. General: Comply with instructions and recommendations of shingle manufacturer, except to extent more stringent requirements are indicated.

B. Underlayment: Apply two layers felt horizontally over entire surface, lapping succeeding courses 2" minimum and fastening with sufficient nails to hold in place until shingle application.

C. Comply with installation details and recommendations of shingle manufacturer and NRCA Steep Roofing Manual.

D. Flashing and Edge Protection: Install metal flashing, vent flashing and edge protection as indicated and in compliance with details and recommendations of the NRCA Steep Roofing Manual.

3.4 EXTRA STOCK:

A. Provide minimum of 2% of installed quantity of each type/color/ texture shingle used in the work. Provide in unopened clearly labeled bundles or containers.

END OF SECTION 07311

SECTION 07600 - FLASHING AND SHEET METAL

PART 1 - GENERAL

1.01 SUMMARY

A. Provide flashing and sheet metal components for building construction.
   1. Aluminum copings.
   2. Aluminum gutters and downspouts.
   3. Exposed metal trim units.
   4. Miscellaneous sheet metal accessories.

1.02 PERFORMANCE REQUIREMENTS

A. System Design: Provide flashing and sheet metal components that are identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE 7-10.
   1. Design wind speed, velocity and design pressures are indicated on the structural drawings.

1.03 SUBMITTALS

A. Submit for approval samples, shop drawings, product data.

B. Manufacturer Certificates: Signed by roofing manufacturer certifying that flashing and sheet metal components comply with requirements specified in "Performance Requirements" Article.

1.04 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.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Copings: Minimum **.040" formed aluminum** with hold-down clips and splice plates.

B. Gutters and downspouts: Minimum **.040" formed aluminum** with welded seams for prefabricated items prior to finish coating. Provide support straps and brackets as required. Support straps for downspouts to be anchored to the wall.

C. Cleats for gutters and flashing: to be one gage heavier than adjacent metal.

D. Finish: Fluropolymer Coating: Full-strength 70% "Kynar 500" coating baked-on for 15 minutes at 450 deg.F (232 deg.C), in a dry film thickness of 1.0 mils, 30% reflective gloss (ASTM D 523), over min. 0.2 mil baked-on modified epoxy primer.

Colors:

Copings, gutters and downspouts: matching Pac-Clad "**Sandstone**"

PART 3 - EXECUTION

3.01 INSTALLATION

A. Follow recommendations of SMACNA "Sheet Metal Manual". Allow for expansion. Isolate dissimilar materials to prevent galvanic corrosion.

B. Provide an expansion joint construction for gutters in lengths that exceed 50', per SMACNA recommendations. Coordinate expansion joint locations with downspout locations.

C. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate installation with roofing system and work of other sections to ensure weather tight performance. Anchor securely to structure to withstand inward and outward loads.

D. Restore damaged components and finishes. Clean and protect work from damage.

END OF SECTION 07600

SECTION 07900 - JOINT SEALERS

1.0 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 this Section.

1.2 SUMMARY:

A. This Section includes joint sealers for the following locations:

1. Multi-Part, Nonsag Urethane Sealant for junctures between masonry and other materials.
2. Multi-Part, Pourable Urethane Sealant for horizontal surfaces of concrete.
3. One-Part Mildew-Resistant Silicone Sealant for around plumbing fixtures and ceramic tile work.
4. Latex-Acrylic Joint Sealants for exposed interior painted applications

B. Sealants for glazing purposes are specified in Division-8 Section "Glass and Glazing."

C. Sealing concealed perimeter joints of gypsum drywall partitions to reduce sound transmission characteristics is specified in Division-9 Section "Gypsum Drywall."

D. Sealing tile joints is specified in Division-9 Section "Tile."

1.3 SYSTEM PERFORMANCES:

A. Provide joint sealers that have been produced and installed to establish and maintain watertight and airtight continuous seals.

1.4 SUBMITTALS:

A. Product Data from manufacturers for each joint sealer product required, including instructions for joint preparation and joint sealer application.

B. Manufacturer's Standard Color Chart.

1.5 QUALITY ASSURANCE:

A. Installer Qualifications: Engage an Installer who has successfully completed within the last 3 years at least 3 joint sealer applications similar in type and size to that of this Project.

1.6 PROJECT CONDITIONS:

A. Environmental Conditions: Do not proceed with installation of joint sealers When ambient and substrate temperature conditions are outside the limits permitted by joint sealer manufacturers.

2.0 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. Materials:

1. One-Part Nonsag Urethane Sealant for junctures between masonry and other materials: Type M, Grade NS, Class 25, capable of withstanding an increase and decrease of 50%; per ASTM C 920.
   a. Acceptable manufacturers:
      Dow 790 or approved equal

2. Multi-Part Pourable Urethane Sealant for horizontal surfaces of concrete. Type M, Class 25.
   a. Acceptable manufacturers:
      Pecora Urexpan NR-200
      Sonneborn Sonolastic PvJtSt
      Tremco THC-900

3. One-Part Mildew Resistant Silicone Sealant for around plumbing fixtures and ceramic tile work. Type S, Grade NS; Class 25.
   a. Acceptable manufacturers:
      Dow Corning 786 Silicone rubber; Tremco Proglaze or approved equal.

4. Latex-Acrylic Sealant for exposed interior painted applications. Acrylic Emulsion Sealant, one part, non-sag, mildew resistant, comply with ASTM C 834.
   a. Acceptable manufacturers
      Acrylic latex; Tremco Acrylic Latex or approved equal.

5. Seam sealant for small metal to metal joints; Tremco Seam Sealer or approved equal.

6. Precompressed expanding foam secondary sealant; Emseal Greyflex or approved equal.

7. Miscellaneous primers, bond breakers, and backer rods to be compatible with sealant and adjacent surfaces.

8. Fire-retardant sealant; refer to Division 7 Section “Firestopping”.

9. Provide sealants in colors as selected from manufacturer's standards. Sealants shall match adjacent surfaces unless otherwise specified.

2.2 JOINT SEALANT BACKING:

A. General: Provide sealant backings of material and type which are nonstaining; are compatible with joint substrates, sealants, primers and other joint filers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Plastic Foam Joint Fillers: Preformed, compressible, resilient, nonwaxing, nonextruding strips of flexible, nongassing plastic foam of material indicated below; nonabsorbent to water and gas; and of size, shape and density to control sealant depth and otherwise contribute to producing optimum sealant performance. Either open-cell polyurethane foam or closed-cell polyethylene foam, unless otherwise indicated, subject to approval of sealant manufacturer, for cold-applied sealants only.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

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 testsand 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.

2.4 JOINT FILLERS FOR CONCRETE PAVING:

A. Bituminous Fiber Joint Filler: Preformed strips of Asphalt Saturated Fiberboard, complying with ASTM D 1751.

3.0 PART 3 - EXECUTION

3.1 EXAMINATION:

A. Examine joints indicated to receive joint sealers, with Installer present, 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 repellants; 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. 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.

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. Comply with requirements of ASTM 962, 804, C790, and C 919.

B. 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 which discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

C. Provide concave joint configuration per Figure 6A in ASTM C 962, unless otherwise indicated.

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 DOOR FRAMES

1.0 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 grout filled steel frames is indicated and scheduled on drawings.

B. Wood Doors are specified in Section 08211.

C. Finish hardware is specified in Section-08710

1.3 QUALITY ASSURANCE:

A. Provide door frames complying with Steel Door Institute recommended Specifications: Standard Steel Doors and Frames" (SDI-100) and as herein specified.

1.4 SUBMITTALS:

A. Shop Drawings: Submit for fabrication and installation of steel doors and frames. Include details of each frame type, elevations of frame 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.

1.5 DELIVERY, STORAGE AND HANDLING:

A. Deliver hollow metal work in cartons or created to provide protection during transit and job storage.

B. Inspect hollow metal work upon delivery for damage. Minor damages may be repaired provided prefinished items are equal in all respects to new work and acceptable to Architect; otherwise, remove and replace damaged items as directed.

2.0 PART 2 - PRODUCTS

2.1 MATERIALS:

A. Hot-Rolled Steel Sheets and Strip: Commercial quality carbon steel, pickled and oiled, complying with ASTM A 569 and ASTM A 568; 16 or **18 gage**.

B. Supports and Anchors: Fabricate of not less than 18-gage galvanized sheet steel.

C. Inserts, Bolts, and Fasteners: Manufacturer's standard units, complying with ASTM A 153, Class C or D as applicable.

D. Shop Applied Paint: Primer: Rust-inhibitive enamel or paint, either air-drying or baking, suitable as a base for specified finish paints.
Finish: Finish Paint to be applied under Section 09900.

2.2 FABRICATION, GENERAL:

A. Fabricate steel door frame units to be rigid, neat in appearance, free from defects, warp or buckle.

B. Fabricate frames, concealed stiffeners, reinforcement, edge channels, louvers and moldings from either cold-rolled or hot-rolled steel (at fabricator's option).

C. 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.

D. Reinforce door frames to receive surface-applied hardware. Drilling and tapping for surface-applied finish hardware may be done at project site.

E. 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.

F. Shop Painting: Clean steel surfaces of mill scale, rust, oil, grease, dirt, and other foreign materials before application of paint.
Apply shop coat of prime paint of even consistency to provide a uniformly finished surface ready to receive finish paint.

2.3 STANDARD STEEL FRAMES:

A. Provide metal frames for doors as shown on drawings and schedules. Fabricate frames of minimum 16 or 18-gage cold-rolled furniture steel.
B. Fabricate frames with welded seams.

C. Door Silencers: Except on weatherstripped frames, drill stops to receive 3 silencers on strike jambs of frames.

3.0 PART 3 - EXECUTION

3.1 INSTALLATION:

A. Placing Frames: Comply with provisions of SDI-105 "Recommended Erection Instructions For Steel Frames", unless otherwise indicated.

B. At in-place construction, set frames and secure to adjacent construction with machine screws and concrete anchorage devices.

C. 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.

3.3 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.

END OF SECTION 08110

SECTION 08211 - FLUSH WOOD DOORS

1.0 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 and location of each type of wood door is indicated on drawings and in schedules.

B. Types of doors: Solid core flush wood doors with **red oak veneer** faces.

a. Flush stained wood doors
b. Flush stained pocket doors

C. Finish: At contractor's option provide factory-finishing or job site painting - see section 09900 - Painting for job site painting. Note: contractor to provide in his base bid the finishing of wood doors.

D. Factory-pre-fitting to frames and factory-pre-machining for hardware for wood doors is included in this section.

1.3 SUBMITTALS:

A. Product Data: Door manufacturer's technical data, including details of core and edge construction, and factory-finishing specifications.

B. Shop Drawings: Submit shop drawings indicating location and size of each door, elevation of each kind of door, details of construction, location and extent of hardware blocking, fire ratings, requirements for factory finishing and other pertinent data.

C. Samples: Submit samples, 12" square.

1.4 QUALITY ASSURANCE:

A. Quality Standards: Comply with the following standards:

1. NWWDA Quality Standard: I.S.1 "Industry Standard for Wood Flush Doors", of National Wood Window and Door Association (NWWDA).

2. AWI Quality Standard: "Architectural Woodwork Quality Standards"; including Section 1300 "Architectural Flush Doors", of Architectural Woodwork Institute (AWI) for grade of door, core construction, finish and other requirements exceeding those of NWWDA quality standard.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING:

A. Protect doors during transit, storage and handling to prevent damage, soiling and deterioration. Comply with requirements of referenced standards and recommendations of

NWWDA pamphlet "How to Store, Handle, Finish, Install, and Maintain Wood Doors", as well as with manufacturer's instructions.

1.6 PROJECT CONDITIONS:

A. Conditioning: Do not deliver or install doors until conditions for temperature and relative humidity have been stabilized and will be maintained in storage and installation areas during remainder of construction period to comply with the following requirements applicable to project's geographical location:

1. Referenced AWI quality standard including Section 100-S-3 "Moisture Content".
2. Referenced WIC quality standard including "Section 1 - General Information - Technical Bulletin".

2.0 PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. Acceptable Manufacturers:
1. Algoma Hardwoods, Inc.
2. Eggers Industries, Architectural Door Division.
3. Mohawk Flush Doors, Inc.
4. Weyerhauser Company.
5. Buell Door Company.

2.2 INTERIOR FLUSH WOOD DOORS:

A. Solid Core Doors for Transparent Finish: Premium grade, **Natural red oak veneer**, **rift cut**. Solid core construction: 5 ply or 7 ply doors. Note: All doors for this project to be the same construction with the same wood species veneer.

B. Door stops: **Wood species** matching the door with concealed fasteners.

2.3 INTERIOR POCKET FLUSH WOOD DOORS:

A. Track & Carriage: Heavy-duty, extruded aluminum, "jump-proof" track design with ball-bearing wheels for smooth, low-resistance operation
1. Acceptable Manufactures:
a. Johnson Hardware
b. Anderson Windows
c. CS Cavity Sliders
d. Hager Companies
2. Load Capacity: Capable of handling doors from 150 lbs up to 500 lbs, depending on the specific model
3. Frame Structure: Steel-reinforced, warp-proof split studs and wood/steel headers
4. Door Thickness: 1-3/4” thick doors
5. Size: 36" x 84” door
6. Heavy-duty pocket frames/cavity sliders

2.4 FABRICATION:

A. Fabricate flush wood doors to produce doors complying with AWI for tolerances and alignment.

2.5 FACTORY FINISHING:

A. General: Comply with referenced AWI quality standard including Section 1500 "Factory Finishing".

B. Transparent Finish: Comply with requirements indicated for grade, finish system, staining effect and sheen.

1. AWI Grade: Premium.
2. Finish: AWI System #2 catalyzed lacquer or #3 alkyd-urea conversion varnish as standard with manufacturer.

3.0 PART 3 – EXECUTION

3.1 EXAMINATION:

A. Examine installed door frames prior to hanging door:

1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with plumb jambs and level heads. Reject doors with defects.

B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION:

A. Hardware: For installation see Division-8 "Finish Hardware" section of these specifications.

B. Manufacturer's Instructions: Install wood doors to comply with manufacturer's instructions and of referenced AWI standard and as indicated.

C. Fitting Clearances for Doors: Provide 1/8" at jambs and heads; and 1/8" from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4" clearance from bottom of door to top of threshold.

D. Bevel doors 1/8" in 2" at lock and hinge edges.

END OF SECTION 08211

SECTION 08410 - ALUMINUM ENTRANCES AND FIXED FRAMING

1.0 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 aluminum entrances and fixed framing is indicated on drawings and schedules.

B. Aluminum entrances and fixed framing types required for the project include:

1. **Exterior entrance doors,** meeting impact resistant ratings per the State of Florida for coastal construction.
2. **Aluminum storefront fixed-frames,** meeting impact resistant ratings per the State of Florida for coastal construction**.**

C. Glazing: Refer to "Glass and Glazing" Section 08800 for glazing requirements for aluminum entrances and storefronts. All exterior glazing to be **Impact Resistant** to meet the requirements for the state of Florida for coastal construction.

D. Some Door Hardware for the Aluminum Entrances is included in this Section.

1.3 SYSTEM DESCRIPTION:

A. Performance Requirements: Provide aluminum entrance and storefront assemblies that comply with specified performance characteristics. Each system shall be tested by a recognized testing laboratory or agency in accordance with specified test methods. Provide certified test results.

B. Thermal Movement: Provide systems capable of withstanding thermal movements resulting from an ambient temperature range of 120 deg.F.

C. Wind Loading: Provide assemblies capable of withstanding a uniform test pressure of **157 mph** winds and as determined by the manufacturer based on the requirements of the latest Edition of the Standard Building Code and tested in accordance with ASTM E 330.

D. Transmission Characteristics of Entrances: Air Infiltration: Provide doors with an air infiltration rate of not more than 0.50 CFM for single doors and 1.0 for pairs of doors when tested in accordance with ASTM E 283 at an inward test pressure differential of 1.567 psf.

E. Transmission Characteristics of Fixed Framing: Air Infiltration of not more than 0.06 cfm per sq. ft. of fixed area per ASTM E-283 and no uncontrolled water penetration per ASTM E-331 at pressure differential of 6.24psf (excluding operable door edges).

F. Structural performance of fixed framing:
Max. Deflection = 1/175 of the span
Allowable stress with safety factor = 1.65

G . The manufacturer will be required to verify to the architect, the State of Florida's Product approval number before the product will be reviewed in the shop drawing Submittal phase.

1.4 SUBMITTALS:

A. Product Data: Submit manufacturer's product specifications, technical product data, standard details.

B. Shop Drawings: Submit shop drawings for fabrication and installation of entrances and storefronts, including the following:

1. Elevations.
2. Detail sections of typical composite members.
3. Hardware, mounting heights.
4. Anchorages and reinforcements.
5. Expansion provisions.
6. Glazing details.

C. Samples: Submit 12" long sections of extrusions showing color and finish.

1.5 QUALITY ASSURANCE:

A. Manufacturer's Qualifications: Provide entrances and fixed framing produced by manufacturers with not less than 5 years successful experience in the fabrication of assemblies of the type and quality required.

1.6 PROJECT CONDITIONS:

A. Field Measurements: Check openings by field measurement before fabrication to ensure proper fitting of work; show measurements on final shop drawings.

1.7 WARRANTY:

A. Warranty period for aluminum entrances and storefront is 5 years after the date of substantial completion.

2.0 PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. Manufacturer: Subject to compliance with requirements, provide products of one of the following:

1. Entrance doors: **Medium** Stile equal to **Coral MS-381** outswing entrance doors:

2. Fixed frames: **Coral FL550T (Thermal) Storefront fixed frames** (depending which frame system is needed to meet design criteria). Systems meeting the requirements by the following manufacturers:
   a. Kawneer
   b. YKK AP
   c. Vistawall Architectural Products.
   g. EFCO

2.2 MATERIALS:

A. Aluminum Members: Provide alloy and temper recommended by the manufacturer for strength,

corrosion resistance, and application of required finish; comply with ASTM B 221 for extrusions and ASTM B 209 for sheet or plate.

B. Fasteners: Provide fasteners of aluminum, nonmagnetic stainless steel, or other materials warranted by the manufacturer to be noncorrosive and compatible with aluminum components, hardware, anchors and other components.

Reinforcement: Where fasteners screw-anchor into aluminum less than 0.125" thick, reinforce the interior with aluminum or nonmagnetic stainless steel to receive screw threads, or provide standard non-corrosive pressed-in splined grommet nuts.

Exposed Fasteners: Except where unavoidable for application of hardware, do not use exposed fasteners. For the application of hardware, use fasteners that match the finish of member or hardware being fastened.

Provide Phillips flat-head machine screws for exposed fasteners.

C. Concealed Flashing: Provide 26 gage minimum dead-soft stainless steel, or 0.026" minimum extruded aluminum of alloy and type selected by manufacturer for compatibility with other components.

D. Brackets and Reinforcements: Where feasible, provide high-strength aluminum brackets and reinforcements; otherwise provide nonmagnetic stainless steel or hot-dip galvanized steel complying with ASTM A 386.

E. Concrete/Masonry Inserts: Provide concrete and masonry inserts fabricated from cast-iron, malleable iron, or hot-dip galvanized steel complying with ASTM A 386.

F. Compression Weatherstripping: Provide the manufacturer's standard replaceable compressible weatherstripping gaskets of molded neoprene complying with ASTM D 2000 or molded PVC complying with ASTM D 2287.

G. Glass and Glazing Materials: Glass and glazing materials shall comply with requirements of Section 08800 "Glass and Glazing".

2.3 COMPONENTS:

A. Fixed Framing System: Provide framing system with provisions for glass replacement. Shop-fabricate and preassemble frame components where possible.

B. Aluminum Door Frames, including aluminum sliders: Fabricate tubular and channel frame assemblies, as indicated, with welded or mechanical joints in accordance with manufacturer's standards; reinforce as necessary to support required loads.

C. Stile-and-Rail Type Aluminum Doors:

1. Frame: Provide tubular frame members, fabricated with mechanical joints using heavy inserted reinforcing plates and concealed tie-rods of j-bolts.
2. Design: Provide 1-3/4" thick doors; Medium stile.
3. Glazing: Fabricate doors to facilitate replacement of glass or panels, without disassembly of stiles and rails. Provide snap-on extruded aluminum square glazing stops, with exterior stops anchored for non-removal.

2.4 HARDWARE:

A. Provide manufacturer's heavy-duty hardware units as indicated, scheduled, or required for operation of each door, including the following items of sizes, number, and type recommended by manufacturer for service required, finished to match door.

B. Overhead Surface Closers: Provide overhead closers; comply with ANSI A156.4, grade 2. Comply with manufacturer's recommendations for size of closer, depending on door size, exposure to weather and anticipated frequency of use. Include the following:

Automatic hold open.

C. Pulls and Push bars: Provide manufacturer's standard pull and horizontal push bar in finish to match frames.

For standard doors: 1" Bronze anodized push/pulls: Equal to Kawneer "**Architects Classic**" CS-9 Pull and CP-II Push, mount back-to-back.

Finish: Clear anodized aluminum or satin stainless steel.

D. Weather stripping: Provide sliding weatherstripping retained in adjustable strip mortised into door edges.

E. Thresholds: Provide extruded aluminum threshold the full width of door openings. Set in full bed of butyl-rubber or polyisobutelene mastic sealant:

Manufacturer: Pemco model 2005AV or approved equal.

F. Exit Devices: Panic devices by the aluminum door supplier. Panic hardware to be part of a tested assembly. **See Hardware Schedule – Section 087000 for doors that require panic devices, which are to be provided by the aluminum door supplier.**

H. Offset pivots:

2.5 FABRICATION:

A. General: Sizes of door and frame units, and profile requirements, are indicated on drawings. Variable dimensions are indicated, with maximum and minimum dimensions required to achieve design requirements and coordination with other work.

B. Prefabrication: Before shipment to the project site, complete fabrication, assembly, finishing, hardware application, and other work to the greatest extent possible. Disassemble components only as necessary for shipment and installation. Pre-glaze door and frame units to greatest extent possible.

C. Do not drill and tap for surface-mounted hardware items until time of installation at project site. Perform fabrication operations, including cutting, fitting, forming, drilling and grinding of metal wore to prevent damage to exposed finish surfaces. For hardware, perform these operations prior to application of finishes.

D. Welding: Comply with AWS recommendations; grind exposed welds smooth and restore mechanical finish.

E. Reinforcing: Install reinforcing as required for hardware and necessary for performance

requirements, sag resistance and rigidity.

F. Dissimilar Metals: Separate dissimilar metals with zinc chromate primer, bituminous paint, or other separator that will prevent corrosion.

G. Continuity: Maintain accurate relation of planes and angles, with hairline fit of contacting members.

H. Uniformity of Finish: Abutting extruded aluminum members shall not have an integral color or texture variation greater than half the range indicated in the sample pair submittal.

I. Fasteners: Conceal fasteners wherever possible.

2.6 FINISHES:

A. For all frames and doors.
Dark bronze Anodized Finish: Provide NAAMM AA-M12C22A41, Class II, 5-year warranty; (non-specular as fabricated mechanical finish; chemical etch, medium matte; minimum thickness 0.7 mil) **dark bronze,** anodic coating.

3.0 PART 3 - EXECUTION

3.1 INSTALLATION:

A. Comply with manufacturer's instructions and recommendations for installation.

B. Set units plumb, level, and true to line, without warp or rack of framing members, doors, or panels. Provide proper support and anchor securely in place.

C. Separate aluminum and other corrodible metal surfaces from sources of corrosion of electrolytic action at points of contact with other materials. Comply with requirements specified under paragraph "Dissimilar Materials" in the Appendix to AAMA 101-85.

D. Drill and tap frames and doors and apply surface-mounted hardware items. Comply with hardware manufacturer's instructions and template requirements. Use concealed fasteners wherever possible.

E. Set sill members and other members in bed of sealant as indicated, or with joint fillers or gaskets as indicated to provide weathertight construction. Comply with requirements of Division 7 for sealants, fillers, and gaskets.

F. Refer to "Glass and Glazing" Section 08800 installation of glass.

3.2 ADJUSTING:

A. Adjust operating hardware to function properly, for smooth operation without binding, and for weathertight closure.

3.3 CLEANING:

A. Clean the completed system, inside and out, promptly after installation, exercising care to avoid damage to coatings.

B. Clean glass surfaces after installation. Remove excess glazing and sealant compounds, dirt and other substances from aluminum surfaces.

3.4 PROTECTION:

A. Institute protective measures required throughout the remainder of the construction period to ensure that aluminum entrances and fixed framing will be without damage or deterioration, other than normal weathering, at time of acceptance.

END OF SECTION 08410.

SECTION 08710 – FINISH HARDWARE

PART 1 - GENERAL

1.1 SUMMARY:

A. Section Includes: Finish Hardware for door openings, except as otherwise specified herein.
   1. Door hardware for aluminum and doors.

B. Related Sections:
   1. Section 08410 - Aluminum Entrances and Fixed Framing
   2. Section 08211 - Wood Doors.

C. References: Comply with applicable requirements of the following standards. Where these standards conflict with other specific requirements, the most restrictive shall govern.

   1. Builders Hardware Manufacturing Association (BHMA)
   2. NFPA 101 Life Safety Code
   3. NFPA 80 -Fire Doors and Windows
   4. ANSI-A156.xx- Various Performance Standards for Finish Hardware
   5. UL10C – Positive Pressure Fire Test of Door Assemblies
   6. ANSI-A117.1 – Accessible and Usable Buildings and Facilities
   7. DHI /ANSI A115.IG – Installation Guide for Doors and Hardware
   8. ICC – International Building Code

D. Intent of Hardware Groups

   1. Should items of hardware not definitely specified be required for completion of the Work, furnish such items of type and quality comparable to adjacent hardware and appropriate for service required.
   2. Where items of hardware aren't definitely or correctly specified, are required for completion of the Work, a written statement of such omission, error, or other discrepancy to be submitted to Architect, prior to date specified for receipt of bids for clarification by addendum; or, furnish such items in the type and quality established by this specification, and appropriate to the service intended.
   3. Special Instructions:
      a. Cross Bar Exit devices are not tested for hurricane impact. If impact required, push bar type exit devices will be required
      b. Door Elevations A must be changed to 4'0"x10'0" for hardware to work.
         1) Pivots are not designed for use on doors over 4' in width and for weight above 660 pounds
         2) Vertical rod cross bar panics are not designed for doors over 10' in height
         3) If cross bar panics are not required at opening 01, the hardware can be changed to a deadlock with push and pull plates.

1.2 SUBMITTALS:

A. Special Submittal Requirements: Combine submittals of this Section with Sections listed below to ensure the "design intent" of the system/assembly is understood and can be reviewed together.

B. Product Data: Manufacturer's specifications and technical data including the following:

   1. Detailed specification of construction and fabrication.
   2. Manufacturer's installation instructions.

3. Wiring diagrams for each electric product specified. Coordinate voltage with electrical before submitting.
4. Submit 6 copies of catalog cuts with hardware schedule.
5. Provide 9001-Quality Management and 14001-Environmental Management for products listed in Materials Section 2.2

C. Shop Drawings - Hardware Schedule: Submit 6 complete reproducible copy of detailed hardware schedule in a vertical format.

1. List groups and suffixes in proper sequence.
2. Completely describe door and list architectural door number.
3. Manufacturer, product name, and catalog number.
4. Function, type, and style.
5. Size and finish of each item.
6. Mounting heights.
7. Explanation of abbreviations and symbols used within schedule.
8. Detailed wiring diagrams, specially developed for each opening, indicating all electric hardware, security equipment and access control equipment, and door and frame rough-ins required for specific opening.

D. Templates: Submit templates and "reviewed Hardware Schedule" to door and frame supplier and others as applicable to enable proper and accurate sizing and locations of cutouts and reinforcing.

1. Templates, wiring diagrams and "reviewed Hardware Schedule" of electrical terms to electrical for coordination and verification of voltages and locations.

E. Samples: (If requested by the Architect)

1. 1 sample of Lever and Rose/Escutcheon design, (pair).
2. 1 samples of metal finishes

F. Contract Closeout Submittals: Comply with Division 1 including specific requirements indicated.

1. Operating and maintenance manuals: Submit 1 set containing the following.

a. Complete information in care, maintenance, and adjustment, and data on repair and replacement parts, and information on preservation of finishes.
b. Catalog pages for each product.
c. Name, address, and phone number of local representative for each manufacturer.
d. Parts list for each product.

2. Copy of final hardware schedule, edited to reflect, "As installed".
3. Copy of final keying schedule
4. As installed “Wiring Diagrams” for each piece of hardware connected to power, both low voltage and 110 volts.
5. One set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

1.3 QUALITY ASSURANCE: Provide the following information:

1. Statement of qualification for distributor and installers.
2. Statement of compliance with regulatory requirements and single source responsibility.
3. Distributor's Qualifications: Firm with 3 years experience in the distribution of commercial hardware.

a. Distributor to employ full time Architectural Hardware Consultants (AHC) for the purpose of scheduling and coordinating hardware and establishing keying schedule.
b. Hardware Schedule shall be prepared and signed by an AHC.

4. Installer's Qualifications: Firm with 3 years experienced in installation of similar hardware to that required for this Project, including specific requirements indicated.
5. Regulatory Label Requirements: Provide testing agency label or stamp on hardware for labeled openings.

a. Provide UL listed hardware for labeled and 20 minute openings in conformance with requirements for class of opening scheduled.
b. Underwriters Laboratories requirements have precedence over this specification where conflict exists.

6. Single Source Responsibility: Except where specified in hardware schedule, furnish products of only one manufacturer for each type of hardware.

B. Review Project for extent of finish hardware required to complete the Work. Where there is a conflict between these Specifications and the existing hardware, notify the Architect in writing and furnish hardware in compliance with the Specification unless otherwise directed in writing by the Architect.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping: Comply with Division 1.

1. Deliver products in original unopened packaging with legible manufacturer's identification.
2. Package hardware to prevent damage during transit and storage.
3. Mark hardware to correspond with "reviewed hardware schedule".
4. Deliver hardware to door and frame manufacturer upon request.

B. Storage and Protection: Comply with manufacturer's recommendations.

1.5 PROJECT CONDITIONS:

A. Coordinate hardware with other work. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated, as necessary for the proper installation and function, regardless of omissions or conflicts in the information on the Contract Documents.

B. Review Shop Drawings for doors and entrances to confirm that adequate provisions will be made for the proper installation of hardware.

1.6 WARRANTY:

A. Manufacturer’s Warranty:

1. Closers: Ten years
2. Exit Devices: Five Years
3. Locksets & Cylinders: Three years
4. All other Hardware: Two years.

1.7 MAINTENANCE:

A. Extra Service Materials: Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Division 1 Closeout Submittals Section.

1. Special Tools: Provide special wrenches and tools applicable to each different or special hardware component.
2. Maintenance Tools: Provide maintenance tools and accessories supplied by hardware component manufacturer.
3. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra service materials.

B. Maintenance Service: Submit for Owner's consideration maintenance service agreement for electronic products installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. The following manufacturers are approved subject to compliance with requirements of the Contract Documents. Approval of manufacturers other than those listed shall be in accordance with Division 1.

Item:	Manufacturer:	Approved:
Hinges	Stanley	Bommer, McKinney
Locksets	Best 45H Series	Schage, Russwin Corbin
Cylinders	Best 1E, 12E	Schlage, Russwin Corbin
Exit Devices	Precision Olympian Series	Von Duprin
Closers	Stanley D-4550, D4551	Dorma 8900, LCN 4040XP
Push/Pull Plates	Trimco	Burns, Rockwood
Protection Plates	Trimco	Burns, Rockwood
Door Stops	Trimco	Burns, Rockwood
Flush Bolts	Trimco	ABH, Burns
Threshold & Gasketing	National Guard	Reese, K.N. Crowder

2.2 MATERIALS:

A. Hinges: Shall be Five Knuckle Ball bearing hinges

1. Template screw hole locations
2. Bearings are to be fully hardened.
3. Bearing shell is to be consistent shape with barrel.
4. Minimum of 2 permanently lubricated non-detachable bearings on standard weight hinge and 4 permanently lubricated bearing on heavy weight hinges.
5. Equip with easily seated, non-rising pins.
6. Non Removable Pin screws shall be slotted stainless steel screws.
7. Hinges shall be full polished, front, back and barrel.
8. Hinge pin is to be fully plated.
9. Bearing assembly is to be installed after plating.
10. Sufficient size to allow 180-degree swing of door
11. Furnish five knuckles with flush ball bearings
12. Provide hinge type as listed in schedule.
13. Furnish 3 hinges per leaf to 7 foot 6 inch height. Add one for each additional 30 inches in height or fraction thereof.

14. Tested and approved by BHMA for all applicable ANSI Standards for type, size, function and finish
15. UL10C listed for Fire rated doors.

B. Mortise Type Locks and Latches:

1. Tested and approved by BHMA for ANSI A156.13, Series 1000, Operational Grade 1, Extra-Heavy Duty, Security Grade 2 and be UL10C.
2. Furnish UL or recognized independent laboratory certified mechanical operational testing to 4 million cycles minimum.
3. Provide 9001-Quality Management and 14001-Environmental Management.
4. Fit ANSI A115.1 door preparation
5. Functions and design as indicated in the hardware groups
6. Solid, one-piece, 3/4-inch (19mm) throw, anti-friction latchbolt made of self-lubricating stainless steel
7. Deadbolt functions shall have 1 inch (25mm) throw bolt made of hardened stainless steel
8. Latchbolt and Deadbolt are to extend into the case a minimum of 3/8 inch (9.5mm) when fully extended
9. Auxiliary deadlatch to be made of one piece stainless steel, permanently lubricated
10. Provide sufficient curved strike lip to protect door trim
11. Lever handles must be of forged or cast brass, bronze or stainless steel construction and conform to ANSI A117.1. Levers that contain a hollow cavity are not acceptable
12. Lock shall have self-aligning, thru-bolted trim
13. Levers to operate a roller bearing spindle hub mechanism
14. Mortise cylinders of lock shall have a concealed internal setscrew for securing the cylinder to the lockset. The internal setscrew will be accessible only by removing the core, with the control key, from the cylinder body.
15. Spindle to be designed to prevent forced entry from attacking of lever
16. Provide locksets with 7-pin removable and interchangeable core cylinders
17. Each lever to have independent spring mechanism controlling it
18. Core face must be the same finish as the lockset.

C. Mortise Deadbolt:
1. Tested and approved by ANSI A156.36, Operational Grade 1.
2. Provide 9001-Quality Management and 14001-Environmental Management.
3. Locksets and cores to be of the same manufacturer to maintain complete lockset warranty
4. 2-3/4 inch (70mm) backset
5. 1 inch throw deadbolt
6. Provide locksets with 7-pin core.

D. Exit Devices: Exit devices to meet or exceed BHMA for ANSI 156.3, Grade 1.
1. Exit devices to be tested and certified by UL or by a recognized independent laboratory for mechanical operational testing to 10 million cycles minimum with inspection confirming Grade 1 Loaded Forces have been maintained.
2. Exit devices chassis to be investment cast steel, zinc dichromate.
3. Exit devices to have stainless steel deadlocking ¾" through latch bolt.
4. Exit devices to be equipped with sound dampening on touchbar.
5. Non-fire rated exit devices to have cylinder dogging.
6. Non-fire rated exit devices to have ¼" minimum turn hex key dogging.
7. Touchpad to be "T" style constructed of architectural metal with matching metal end caps.
8. Touchbar assembly on wide style exit devices to have a ¼" clearance to allow for vision frames.
9. All exposed exit device components to be of architectural metals and "true" architectural finishes.
10. Provide strikes as required by application.
11. Fire exit hardware to conform to UL10C and UBC 7-2. UL tested for Accident Hazard.
12. The strike is to be black powder coated finish.

13. Exit devices to have field reversible handing.
14. Provide heavy duty vandal resistant lever trim with heavy duty investment cast stainless steel components and extra strength shock absorbing overload springs. Lever shall not require resetting. Lever design to match locksets and latchsets.
15. Provide 9001-Quality Management and 14001-Environmental Management.
16. Vertical Latch Assemblies to have gravity operation, no springs.
17. Approved Manufacturers
    a. The following manufacturers will be approved contingent on meeting or exceeding the above performance criteria:
        1) Precision Manufactured by Precision Hardware, Div. of dormakaba USA

E. Door Closers shall:

1. Tested and approved by BHMA for ANSI 156.4, Grade 1
2. UL10C certified
3. Provide 9001-Quality Management and 14001-Environmental Management.
4. Closer shall have extra-duty arms and knuckles
5. Conform to ANSI 117.1
6. Maximum 2 7/16 inch case projection with non-ferrous cover
7. Separate adjusting valves for closing and latching speed, and backcheck
8. Provide adapter plates, shim spacers and blade stop spacers as required by frame and door conditions
9. Full rack and pinion type closer with 1½“ minimum bore
10. Mount closers on non-public side of door, unless otherwise noted in specification
11. Closers shall be non-handed, non-sized and multi-sized.

F. Push Plates: Provide with four beveled edges ANSI J301, .050 thickness, size as indicated in hardware set. Furnish oval-head countersunk screws to match finish.

G. Pulls with plates: Provide with four beveled edges ANSI J301, .050 thickness Plate s with ANSI J401 Pull as listed in hardware set. Provide proper fasteners for door construction.

H. Kickplates: Provide with four beveled edges ANSI J102, 10 inches high by width less 2 inches on single doors and 1 inch on pairs of doors. Furnish oval-head countersunk screws to match finish.

I. Mop plates: Provide with four beveled edges ANSI J103, 4 inches high by width less 1 inch on single doors and 1 inch on pairs of doors. Furnish oval-head countersunk screws to match finish.

J. Door Bolts: Flush bolts for wood or metal doors.

1. Provide a set of Automatic bolts, Certified ANSI/BHMA 156.3 Type 25 for hollow metal label doors.
2. Provide a set of Automatic bolts, Certified ANSI/BHMA 156.3 Type 27 at wood label doors.
3. Manual flush bolts, Certified ANSI/BHMA 156.16 at openings where allowed local authority.
4. Provide Dust Proof Strike, Certified ANSI/BHMA 156.16 at doors with flush bolts without thresholds.

K. Seals: All seals shall be finished to match adjacent frame color. Seals shall be furnished as listed in schedule. Material shall be UL listed for labeled openings.

2.3 FINISH:

A. Designations used in Schedule of Finish Hardware - 3.05, and elsewhere to indicate hardware finishes are those listed in ANSI/BHMA A156.18 including coordination with traditional U.S. finishes shown by certain manufacturers for their products

B. Powder coat door closers to match other hardware, unless otherwise noted.

C. Aluminum items shall be finished to match predominant adjacent material. Seals to coordinate with frame color.

2.4 KEYS AND KEYING:

A. Provide keyed brass construction cores and keys during the construction period. Construction control and operating keys and core shall not be part of the Owner's permanent keying system or furnished in the same keyway (or key section) as the Owner's permanent keying system. Permanent cores and keys (prepared according to the accepted keying schedule) will be furnished to the Owner.

B. Cylinders, removable and interchangeable core system: Best CORMAX™ Patented 7-pin.

C. Permanent keys and cores: Stamped with the applicable key mark for identification. These visual key control marks or codes will not include the actual key cuts. Permanent keys will also be stamped "Do Not Duplicate."

D. Transmit Grand Masterkeys, Masterkeys and other Security keys to Owner by Registered Mail, return receipt requested.

E. Furnish keys in the following quantities:

1. 1 each Grand Masterkeys
2. 4 each Masterkeys
3. 2 each Change keys each keyed core
4. 5 each Construction masterkeys
5. 1 each Control keys

F. The Owner, or the Owner's agent, will install permanent cores and return the construction cores to the Hardware Supplier. Construction cores and keys remain the property of the Hardware Supplier.

G. Keying Schedule: Arrange for a keying meeting, and programming meeting with Architect Owner and hardware supplier, and other involved parties to ensure locksets and locking hardware, are functionally correct and keying and programming complies with project requirements. Furnish 3 typed copies of keying and programming schedule to Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of conditions: Examine doors, frames, related items and conditions under which Work is to be performed and identify conditions detrimental to proper and or timely completion.

1. Do not proceed until unsatisfactory conditions have been corrected.

3.2 HARDWARE LOCATIONS:

A. Mount hardware units at heights indicated in the following publications except as specifically indicated or required to comply with the governing regulations.

1. Recommended Locations for Builder’s Hardware for Standard Steel Doors and Frames, by the Door and Hardware Institute (DHI).

2. Recommended locations for Architectural Hardware for flush wood doors (DHI).

3. WDMA Industry Standard I.S.-1A-04, Industry Standard for Architectural wood flush doors.

3.3 INSTALLATION:

A. Install each hardware item per manufacturer's instructions and recommendations. Do not install surface mounted items until finishes have been completed on the substrate. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

B. Conform to local governing agency security ordinance.

C. Install Conforming to ICC/ANSI A117.1 Accessible and Usable Building and Facilities.

1. Adjust door closer sweep periods so that from the open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the landing side of the door.

D. Installed hardware using the manufacturers fasteners provided. Drill and tap all screw holes located in metallic materials. Do not use “Riv-Nuts” or similar products.

3.4 FIELD QUALITY CONTROL AND FINAL ADJUSTMENT

A. Contractor/Installers, Field Services: After installation is complete, contractor shall inspect the completed door openings on site to verify installation of hardware is complete and properly adjusted, in accordance with both the Contract Documents and final shop drawings.

1. Check and adjust closers to ensure proper operation.

2. Check latchset, lockset, and exit devices are properly installed and adjusted to ensure proper operation.

a. Verify levers are free from binding.
b. Ensure latchbolts and dead bolts are engaged into strike and hardware is functioning.

3. Report findings, in writing, to architect indicating that all hardware is installed and functioning properly. Include recommendations outlining corrective actions for improperly functioning hardware if required.

3.5 SCHEDULE OF FINISH HARDWARE:

. Provide the following finishes for hardware, unless noted otherwise:

Hinges:	Satin Chromium US26D interior US 32D exterior
Locksets and Auxiliary Locks:	
Exit Devices:	Satin Chromium US26D
Push/Pulls:	Satin Chromium US26D
Door Stops:	Satin Chromium US26D
Door Closers:	Bronze Lacquer LAQ
Misc. Items:	Satin Chromium US26D

HARDWARE SETS: Provide silencers for all doors.

SET NO. 1:

2 sets	Offset pivots - by alum door mfr.	US32D	
1	Electric Panic device	US32D	See Section 08750
1	Lever set	US32D	
1	Power supply		See Section 08750
1	Access control device	US32D	See Section 08750
2	Concealed Closer in head - by door mfr		
1	Cylinder	US32D	
2 sets	Weatherstripping - all four sides including bottom sweep		
1	Threshold: Pemco 2005AV	Alum	

SET NO. 2:

1 set	Offset pivot - by door mfr.	US32D	
1	Exit Device - by door mfr	US32D	
1	Concealed Closer in head - by door mfr		
1	Cylinder	US32D	
1	Lever set – by door mfr	US32D	
1 set	Weatherstripping - all four sides including bottom sweep		
1	Threshold: Pemco 2005AV	Alum	

SET NO. 3:

3pr	Butts 2714	US26D	
1	Exit Rim Device 900 series electric panic	US26D	
1	Lever set	US26D	
1	Power supply		See Section 08750
1	Access control device	US26D	See Section 08750
1 set	Surface bolts top & bottom	US26D	
1	Cylinder	US26D	
1	Remote counter mounted buzzer to release latch		
2	Closers 1250	Al laq.	
2	Floor Stops 8016	US26D	

SET NO. 4:

1 1/2pr	Butts 2714	US26D	
1	Office Lockset	US26D	
1	Floor Stop 8016	US26D	

SET NO. 5:

1 set	Offset pivots - by alum door mfr.	US32D	
1	Electric Panic device	US32D	See Section 08750
1	Lever set	US32D	
1	Power supply		See Section 08750
1	Access control device	US32D	See Section 08750
2	Concealed Closer in head - by door mfr		
1	Cylinder	US32D	
1 set	Weatherstripping - all four sides including bottom sweep		
1	Threshold: Pemco 2005AV	Alum	

SET NO. 6:

1 1/2pr	Butts	US26D
1	Classroom Lockset AL70PD	US26D
1	Closer 1250	Al Laq
1	Floor Stop	US26D

SET NO. 7:

1 1/2pr	Butts 2714	US26D
1	Privacy Set	US26D
1	Floor Stop 8016	US26D

SET NO. 8:

1 1/2pr	Butts 2714	US26D
1	Passage AL10S	US26D
1	Closer 1250	Al laq.
1	Floor Stop 8016	US26D

SET NO. 9:

1 set	Recessed pulls for sliding doors	US26D

SET NO. 10:

1 1/2pr	Butts	US26D
1	Classroom Lockset AL70PD	US26D
1 set	Surface bolts top & bottom	US26D
2	Floor Stops	US26D

SET NO. 11:

1 1/2pr	Butts	US26D
1	Classroom Lockset AL70PD	US26D
1	Floor Stop	US26D

END OF SECTION 08710

SECTION 08750 – ACCESS CONTROL SYSTEM (ACS) DOORS AND HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Complete Access Control System (ACS) with all operating and access control hardware, required for special applications at specific doors as indicated on the Drawings.

2. Furnish and install all equipment, accessories, and materials in accordance with these specifications and drawings to provide a complete and operating door Access Control System. Any material and/or equipment necessary for the proper operation of the access control system not specified or described herein shall be deemed part of this specification.

3. All doors that are monitored or provided with access control devices shall be provided with mechanical panic hardware that has the ability to be manually locked in the event of failure by the Access Control System.

4. System Description:
   a. The system shall allow for access to the facility by use of proximity card readers at door locations indicated on the Drawings.
   b. The system shall allow for monitoring of doors indicated on the Drawings.
   c. The system shall provide for computer based configuration so as to allow the greatest control of access both during configuration and ongoing operation.
   d. The system shall be modular in nature, and shall permit expansion of both capacity and functionality through the addition of control panels, proximity card readers, sensors, etc.
   e. The system shall incorporate the necessary hardware, software, and firmware to collect, transmit, and process alarm, tamper and trouble conditions, access requests, and advisories in accordance with the security procedures of the facility. The system shall control the flow of authorized personnel traffic through the secured areas of the facility.
   f. The user interface at the host computer (server) and at the operator workstation terminal computers shall be existing to remain.
   g. ACS shall interface with electric doors utilized for ADA access. This interface is to interconnect to the electric door contact in its respective control panel to provide opening of door when card reader is utilized.
   h. Installed ACS must be capable of interconnection to the owner provided dedicated Ethernet LAN/WAN network for connection to remote building Main and/or Terminal Controllers.

5. ACS components include, but are not limited to:
   a. Exit devices and trim.
   b. Electrically activated locksets.
   c. Electric strikes.
   d. Proximity card readers.
   e. Control panels.
   f. Panel interface boards.
   g. Power transfer and/or electric hinges
   h. Wiring and cabling.
   i. Key switches.

j. Electronic access.
k. Miscellaneous material required for complete installation and programming.

6. Scope of work for the Access Control System Contractor shall include, but not be limited to:
   a. Electrically activated exit devices, locksets, and strikes.
   b. Local control panels.
   c. Proximity card readers.
   d. Termination of all field wiring including the card readers.
   e. Testing and programming of local system.
   f. Interface with ADA door operators where applicable.

7. KeyID cards shall be furnished and programmed.

B. Related Sections:
   1. Section 08410 – Aluminum Doors
   2. Section 08710 - Finish Hardware.

1.02 REFERENCES

A. American National Standards for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People ANSI A117.1 and Uniform Federal Accessibility Standards.

B. Wiring:
   1. Perform all wiring and electrical work in accordance with NFPA No. 70, "National Electric Code".

   2. Control circuits shall be low-voltage Class 2 type only.

   3. Contact ECSD Protection Services for standard ACS wiring diagrams prior to submittals.

1.03 SUBMITTALS

A. Manufacturer's technical product data of each item of hardware.
   1. Submittals shall include installation and wiring diagrams and instructions for installation, operation and maintenance, to be suitable for inclusion in the Operation & Maintenance Manuals.

   2. Submittals shall include descriptive literature for all system components, size and type of recommended conduit and wiring, and sequence of system operation.

B. Shop Drawings:
   1. Submit shop drawings customized to this installation showing system design, layout and wiring diagrams.

C. Hardware Schedule:
   1. Organize hardware schedule into "hardware sets" indicating complete designations of every item.

   2. Coordinate with other hardware requirements of Section 08710.

D. Templates:
1. Hardware templates to fabricators of other work which is to receive electromechanical hardware.

E. Record Drawings:
1. Submit complete as-built PDF drawings identifying each component, system operation, and wiring system.

F. Charts:
1. Port charts for all new and modified construction.

G. Wiring Diagram:
1. Factory authorized wiring diagram for all electrified hardware.

1.04 QUALITY ASSURANCE

A. Supplier Qualifications:
1. Recognized hardware and security system supplier with warehousing facilities.

2. Hardware supplier shall operate out of a stocking builders hardware warehouse located within seventy-five (75) miles of the School District's Maintenance Department located at 30 East Texar Drive, Pensacola, Florida, 32503.

3. Employ an experienced hardware consultant with electronic hardware experience, available for consultation during the course of the work.

4. Factory authorized and certified for installation of Allegion security door hardware.

5. Factory authorized and certified for installation of S2 Security Corporation products. Submit copy of certification with bid proposal.

B. All components of this system shall be installed in a workmanlike manner, following access control system industry "best practices" and in strict adherence to the manufacturer's specifications and applicable codes.

C. All access control hardware and software shall be of a single manufacturer including controller panels, and input and output terminal modules.

D. All published specifications of the system manufacturer shall be considered as being a part of this specification, even though they have not been written in complete detail.

E. The complete installation shall conform to the requirements set forth by the National Electrical Code, applicable State and Local Building Codes as required by the "Authority Having Jurisdiction" and the requirements of the Owner.

F. The system shall be listed by Underwriters Laboratories for UL 294 Access Control Systems and shall carry the UL labels as required.

1.05 WARRANTY

A. The Contractor shall guarantee this system in its entirety to be free from mechanical and electrical defects for a period of one (1) year from the date of Substantial Completion.

B. Warranty shall cover failure on parts of all electro-mechanical hardware for two (2) years.

C. The Contractor's guarantee shall cover all costs associated with the troubleshooting, repair, and replacement of defective work, including costs of labor, transportation, lodging, materials, and equipment.

D. The Equipment Supplier shall make available to the Owner a maintenance contract proposal.

1.06 MAINTENANCE

A. Operation and Maintenance Manuals:
1. Submit operation and maintenance manuals identifying operating procedures and normal maintenance required for each type of hardware required. Include a complete parts list.

PART 2 - PRODUCTS

2.01 PANELS
A. Manufacturers:
1. S2 Security Corporation
a. S2 Expansion Node
b. S2 ACM Board

2.02 PROXIMITY CARD READERS
A. Manufacturers:
1. HID Global Corporation
a. HID – Thinline II 5395 Reader
b. HID – MiniProx 5365 Reader

2. Rosslare Security Products, Inc.
a. goPROX – AYC-M60 Backlit Pin/Proximity Reader
b. goPROX – AYC-G60 Backlit Pin/Proximity Reader

2.03 KEY SWITCHES
A. Manufacturers:
1. Securitron Magnalock Corporation
a. Securitron MKA Mortise Keyswitch

2.04 ELECTRIC STRIKES
A. Manufacturers: Various
1. Hanchett Entry Systems HES 1006 Series
2. Hanchett Entry Systems HES 9500 Series
3. Schlage ES-6400 Series

2.05 ELECTRIFIED LEVER SETS
A. Von Duprin E996

2.06 POWER SUPPLIES
A. Manufacturers: Various
1. Von Duprin PS914-2RS x 2BB
2. Altronix Maxim 33 with PD4

2.07 ELECTRICAL POWER TRANSFER
A. Manufacturer: Various
1. Von Duprin EPT-10
2. Securitron Door Loop

2.08 ELECTRICAL MATERIALS

A. Conduits and boxes shall be concealed and flush mounted. Interconnecting conduit and necessary pullboxes shall be run throughout the building in accordance with the NEC.

B. Conduits shall be 3/4" trade size, minimum, unless otherwise noted on the Drawings or within these Specifications. Where sizes are not shown, conduits shall be as required to accommodate the number and type of conductors in accordance with the National Electrical Code wiring tables, but shall not be smaller than 3/4". Provide 1" conduit from each secure door main junction box to the serving access control system panel.

2.10 WIRING AND CABLING

A. Each access control/secure door location shall receive a cable containing all necessary cables to operate the access control system. Each cable shall be contained under one jacket. Each cable shall be homerun to the serving access control system panel, shall be continuous from end to end and shall not be spliced under any circumstances.

B. Each access control cable shall contain as a minimum the following cables within its construction: (1) 4-conductor/18awg, (1) 3-pair/ 22awg, (1) 2-conductor/ 22awg and (1) 4-conductor/22awg.

C. All access control cables shall be run continuously in conduit and shall not be free-routed.

D. Conduits, sleeves, J-hooks or cable trays used for Division 17 communications structured cabling system (SCS), including horizontal Category 6, horizontal fiber optic, and horizontal ITV cabling shall not be used for access control system cabling specified under this Section 08750.

2.11 FINISHES

A. Match the finish of the locksets specified in Section 08710.

B. Coordinate all the various manufactured items furnished on this work to ensure an acceptable uniform finish.

PART 3 - EXECUTION

3.01 General Provisions

A. All low voltage control, data, and other cables shall be terminated using terminal strips, with crimp type lugs, no "b style crimp connectors" or wire nuts will be allowed.

B. Electrical Contractor shall provide all raceway systems required for complete rough-in.

C. All readers shall be configured with the reader electronics mounted separately, on the "secure" side of the door such that only the reader head is mounted in the reader housing on the "entry" side of the door.

D. The equipment mounting heights shall be as noted on the Drawings. Mounting heights shall be in accordance with Americans with Disability Act (ADA).

3.02 START-UP, DEMONSTRATION, AND INSPECTION

A. Perform full system check-out and any required adjustments such that system meets Owner's operating requirements and any Code requirements.

B. Demonstrate system operation to Owner's personnel. Instruct Owner's personnel in proper operation and maintenance of each item.

C. Provide three (3) complete printed operation and maintenance manuals in a format as provided by technology system equipment manufacturer.

END OF SECTION 08750

SECTION 08800 - GLASS AND GLAZING

1.0 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 glass and glazing work is indicated on drawings and schedules.

B. Types of work in this section include glass and glazing for:

1. Glass for fixed framing: **1 5/16" Low-E, tinted, insulated, impact, tempered and non-tempered glass.**
2. Glass for entrance doors - 1/4" tinted tempered glass, impact resistant.
3. Glass in interior frames and doors - 1/4" clear laminated or safety glass.
4. Mirrored glass in the Men and Women's Toilet rooms: 1/4" float glass.

1.3 SYSTEM DESCRIPTION:

A. Provide glass and glazing that has been produced, fabricated and installed to withstand normal thermal movement, wind loading and impact loading, as described in the 2010 International Building Code, and to remain water and air tight without deterioration or other defects.

1.4 SUBMITTALS:

A. Product Data: Submit manufacturer's technical data for each glazing material and fabricated glass product required, including installation and maintenance instructions.

B. Samples: Submit 12" square samples of each type of glass indicated, including samples of the colored film.

1.5 QUALITY ASSURANCE:

A. Glazing Standards: Comply with recommendations of Flat Glass Marketing Association (FGMA) "Glazing Manual" and "Sealant Manual" except where more stringent requirements are indicated.

1.6 WARRANTY:

A. Manufacturer's Special Project Warranty on Insulating Glass: Provide written warranty signed by manufacturer of insulating glass agreeing to furnish f.o.b. point of manufacture, freight allowed project site, within specified warranty period indicated below, replacements for those insulating glass units developing manufacturing defects. Manufacturing defects are defined as failure or hermetic seal of air space (beyond that due to glass breakage) as evidenced by intrusion of dirt or moisture, internal condensation or fogging, deterioration of protected internal glass coatings, if any, and other visual indications of seal failure or performance; provided the manufacturer's instructions for handling, installing, protecting and maintaining units have been complied with during the warranty period.

B. Warranty Period: Manufacturer's standard but not less than **10** years after date of substantial completion.

2.0 PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. Acceptable Manufacturers:
   1. Trulite
   2. Oldcastle
   3. Guardian
   4. PPG Industries
   5. Pilkington
   6. Schott
   7. Viracon

2.2 GLASS PRODUCTS, GENERAL:

A. Primary Glass Standard: Provide primary glass which complies with ASTM C 1036 requirements, including those indicated by reference to type, class, quality, and, if applicable, form, finish, mesh and pattern.

B. Heat-Treated Glass Standard: Provide heat-treated glass which complies with ASTM C 1048 requirements, including those indicated by reference to kind, condition, type, quality, class, and, if applicable, form, finish, and pattern.

C. Sizes: Fabricate glass to sizes required for glazing openings indicated, with edge clearances and tolerances complying with recommendations of glass manufacturer. Provide thicknesses indicated or, if not otherwise indicated, as recommended by glass manufacturer for application indicated.

2.3 PRIMARY GLASS PRODUCTS:

A. Clear Float Glass: Type I (transparent glass, flat), Class 1 (clear), Quality q3 (glazing select).

B. HEAT-TREATED GLASS PRODUCTS:

   1. Manufacturing Process: Manufacture heat-treated glass by horizontal (roller hearth) process with roll wave distortion parallel with bottom edge of glass as installed, unless otherwise indicated.

   2. Uncoated Heat-Treated Float Glass: Condition A (uncoated surfaces), Type I (transparent glass, flat), Class 2 (heat absorbing and light reducing), Quality q3 (glazing select), with tint color and performance characteristics for 1/4" thick glass matching those indicated for non-heat-treated tinted float glass; kind as indicated below:
      a. Kind FT (fully tempered) where indicated.

C. SEALED INSULATING GLASS UNITS:

   1. General: Provide preassembled units consisting of organically sealed panes of glass enclosing a hermetically sealed dehydrated air space and complying with ASTM E 774 for performance classification indicated as well as with other requirements specified for glass characteristics, air space, sealing system, sealant, spacer material, corner design and desiccant.

   2. For properties of individual glass panes making up units, refer to product requirements specified elsewhere in this section applicable to types, classes, kinds and conditions of

glass products indicated.

3. Provide heat-treated panes of kind and at locations indicated or, if not indicated, provide heat-strengthened panes where recommended by manufacturer for application indicated and tempered where indicated or where safety glass is designated or required.

4. Performance characteristics designated for coated insulating glass are nominal values based on manufacturer's published test data for units with 1/4" thick panes of glass and 1/2" thick air space.
   a. U-values indicated are expressed in the number of Btu's per hour per sq. ft. per degree F difference.
   b. Performance Classification per ASTM E 774: Class A.
   c. Thickness of Each Pane: 1/4".
   d. Air Space Thickness: 1/2".

D. Tinted Insulated Units: PPG 1-5/16" Bronze Solarban 70 #2 Impact IG - .21 SHGC
U-Value Winter = .28
U-Value Summer = .26
Solar Heat Gain Coefficient = .21
Shading coefficient: = .24
Visible light reflectance - exterior: 8%
Visible light transmittance: 37%
Mfr: PPG, Trulite, Old Castle

2.4 ELASTOMERIC GLAZING SEALANTS AND PREFORMED GLAZING TAPES:

A. General: Provide products of type indicated and complying with the following requirements:

B. Compatibility: Select glazing sealants and tapes of proven compatibility with other materials with which they will come into contact, including glass products, seals of insulating glass units, and glazing channel substrates, under conditions of installation and service, as demonstrated by testing and field experience.

C. Suitability: Comply with recommendations of sealant and glass manufacturers for selection of glazing sealants and tapes which have performance characteristics suitable for applications indicated and conditions at time of installation.

D. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealant of base polymer indicated which complies with ASTM C 920 requirements, including those for Type, Grade, Class and Uses.

E. Provide multi-part urethane sealant as specified in Section 07900 "Sealers" and follow manufacturer's recommendations as approved by glass supplier.

F. Provide glazing tape, gaskets, cleaners, primers, sealers and joint fillers as recommended by sealant and glass manufacturers.

3.0 PART 3 - EXECUTION

3.1 EXAMINATION:

A. Glazier Contractor to inspect work of glass framing erector for compliance with manufacturing and installation tolerances, including those for size, squareness, offsets at corners; for presence and

functioning of weep system; for existence of minimum required face or edge clearances; and for effective sealing of joinery.

B. Clean glazing channels and other framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to substrates. Remove lacquer from metal surfaces where elastomeric sealants are indicated for use.

3.2 GLAZING, GENERAL:

A. Comply with combined printed recommendations of glass manufacturers, of manufacturers of sealants, gaskets and other glazing materials, except where more stringent requirements are indicated, including those of referenced glazing standards.

B. Glazing channel dimensions as indicated in details are intended to provide for necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by job conditions at time of installation.

C. Protect glass from edge damage during handling and installation; use a rolling block in rotating glass units to prevent damage to glass corners. Do not impact glass with metal framing. Use suction cups to shift glass units within openings; do not raise or drift glass with a pry bar. Rotate glass with flares or bevels along one horizontal edge which would occur in vicinity of setting blocks so that these are located at top of opening. Remove from project and dispose of glass units with edge damage or other imperfections of kind that, when installed, weakens glass and impairs performance and appearance.

D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.

3.3 GLAZING:

A. Install setting blocks of proper size in sill rabbet, located one quarter of glass width from each corner, but with edge nearest corner not closer than 6" from corner, unless otherwise required. Set blocks in thin course of sealant which is acceptable for heel bead use.

B. Provide spacers inside and out, of correct size and spacing to preserve required face clearances, for glass sizes larger than 50 united inches (length plus height), except where gaskets or glazing tapes with continuous spacer rods are used for glazing. Provide 1/8" minimum bite of spacers on glass and use thickness equal to sealant width, except with sealant tape use thickness slightly less than final compressed thickness of tape.

C. Provide edge blocking to comply with requirements of referenced glazing standard, except where otherwise required by glass unit manufacturer.

D. Set units of glass in each series with uniformity of pattern, draw, bow and similar characteristics.

E. Provide compressible filler rods or equivalent back-up material, as recommended by sealant and glass manufacturers, to prevent sealant from extruding into glass channel weep systems and from adhering to joints back surface as well as to control depth of sealant for optimum performance, unless otherwise indicated.

F. Force sealants into glazing channels to eliminate voids and to ensure complete "wetting" or bond of sealant to glass and channel surfaces.

G. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage to ensure that gasket will not "walk" out when installation

is subjected to movement.

H. Miter cut wedge-shaped gaskets at corners and install gaskets in manner recommended by gasket manufacturer to prevent pull away at corners; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

I. Lock-Strip Gasket Glazing: Comply with ASTM C 716 and gasket manufacturer's printed recommendations. Provide supplementary wet seal and weep system unless otherwise indicated.

3.4 PROTECTION AND CLEANING:

A. Protect exterior glass from breakage immediately upon installation by use of crossed streamers attached to framing and held away from glass. Do not apply markers to surfaces of glass. Remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove immediately by method recommended by glass manufacturer.

C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less often than once a month, for build-up of dirt, scum, alkali deposits or staining. When examination reveals presence of these forms of residue, remove by method recommended by glass manufacturer.

D. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during construction period, including natural causes, accidents and vandalism.

E. Wash glass on both faces not more than 4 days prior to date scheduled for inspections intended to establish date of substantial completion in each area of project. Wash glass by method recommended by glass manufacturer.

END OF SECTION 08800

SECTION 09250 - GYPSUM DRYWALL

1.0 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 this Section.

1.2 SUMMARY:

A. This Section includes the following types of construction:

1. Steel framing members to receive gypsum board.
2. Gypsum board screw-attached to steel framing and furring members.

1.3 DEFINITIONS:

A. Gypsum Board Construction Terminology: Refer to ASTM C 11 and GA 505 for definitions of terms for gypsum board construction not otherwise defined in this section or other referenced standards.

1.4 SUBMITTALS:

A. Product data from manufacturers for each type of product specified.

1.5 QUALITY ASSURANCE:

A. Fire resistance ratings: Provide materials and construction which are identical to those assemblies whose fire resistance rating has been determined per ASTM E119.

B. Single source Responsibility: Obtain each type of gypsum board and related joint treatment materials from a single manufacturer.

C. Insulation Fire performance characteristics: Provide insulation materials that have been UL tested with the following characteristics:

Surface Burning: ASTM E 84.
Fire Resistance Ratings: ASTM E 119.
Combustion: ASTM E 136.

1.6 DELIVERY, STORAGE, AND HANDLING:

A. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic and other causes. Neatly stack gypsum boards flat to prevent sagging.

1.7 PROJECT CONDITIONS:

A. Environmental Conditions, General: Establish and maintain environmental conditions for application and finishing gypsum board to comply with ASTM C 840 and with gypsum board manufacturer's recommendations.

2.0 PART 2 - PRODUCTS

2.1 MANUFACTURERS: Subject to compliance with the requirements, provide one of the following:

1. Steel Framing and Furring:

a. Bostwick Steel Framing Co.
b. Dale Industries, Inc.
c. Gold Bond Building Products Div., National Gypsum Co.
d. Incor, Inc.
e. Marino Industries Corp.
f. United States Gypsum Co.

2. Grid Suspension Systems:

a. Chicago Metallic Corp.
b. National Rolling Mills Co.

3. Gypsum Boards and Related Products:

a. Domtar Gypsum Co.
b. Georgia-Pacific Corp.
c. Gold Bond Building Products Div., National Gypsum Co.
d. United States Gypsum Co.

2.2 STEEL FRAMING COMPONENTS FOR SUSPENDED AND FURRED CEILINGS:

A. General: Provide components which comply with ASTM C 754 for materials and sizes, unless otherwise indicated.

B. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper.

C. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.

D. Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.

E. Angle-Type Hangers: Angles with legs not less than 7/8 inch wide, formed from 0.0635 inch thick galvanized steel sheet complying with ASTM A 446, Coating Designation G90, with bolted connections and 5/16 inch diameter bolts.

F. Channels: Cold-rolled steel, 0.0598 inch minimum thickness of base (uncoated) metal and 7/16 inch wide flanges, protected with rust-inhibitive paint, and as follows:

Carrying Channels: 1-1/2 inch deep, 475 lbs per 1000 ft., unless otherwise indicated.

Furring Channels: 3/4 inch deep, 300 lbs per 1000 ft., unless otherwise indicated.

G. Steel Studs for Furring Channels: ASTM C 645, with flange edges bent back 90 deg and doubled over to form 3/16 inch minimum lip (return), minimum thickness of base (uncoated) metal and minimum depth as follows:

1. Thickness: 0.0179 inch, unless otherwise indicated.

2. Depth: 1-5/8 inches, unless otherwise indicated.
3. Gage: 25

H. Steel Rigid Furring Channels: ASTM C 645, hat-shaped, depth of 3/4 inch, and minimum thickness of base (uncoated) metal as follows:

1. Thickness: 0.0179 inch, unless otherwise indicated.
2. Gage: 25

I. Grid Suspension System: At the contractor's option, provide metal suspended grid system sized for the required loading; ASTM C 645, manufacturer's standard grid suspension system composed of main beams and cross furring members which interlock to form a modular supporting network.

2.3 STEEL FRAMING FOR WALLS AND PARTITIONS:

A. Steel Studs and Runners: ASTM C 645, with flange edges of studs bent back 90 deg and doubled over to form 3/16" minimum lip (return) and complying with the following requirements for minimum thickness of base (uncoated) metal and for depth:

1. Thickness: 0.0179 inch, unless otherwise indicated.
2. Depth: 3-5/8 inches, unless otherwise indicated.
3. Gage: **Studs: 20 or 25 ga. Tracks: 20 ga.**
4. Spacing for studs (unless otherwise noted on drawings): 16" o.c. for interior and exterior walls.

B. Steel Rigid Furring Channels: ASTM C 645, hat-shaped, depth and minimum thickness of base (uncoated) metal as follows:

1. Depth: 7/8 inch.
2. Thickness: 0.0179 inch, unless otherwise indicated.

C. Fasteners: Provide fasteners of type, material, size, corrosion resistance, holding power and other properties required to fasten steel framing and furring members securely to substrates involved; complying with the recommendations of gypsum drywall manufacturers for applications indicated.

2.4 GYPSUM BOARD:

A. General: Provide gypsum board of types indicated in maximum lengths available to minimize end-to-end joints.

B. Thickness: 5/8 inch, comply with ASTM C 840 for application system and support spacing indicated.

C. Gypsum Wallboard: ASTM C 36, Type X, Regular; tapered edges; 5/8".

D. Water-Resistant Gypsum Backing Board: ASTM C 630; Regular, tapered edges; 5/8"

E. Finish: **Level 5**; on all exposed surfaces. Contractor to install sample of finish for approval.

2.5 TRIM ACCESSORIES:

A. Cornerbead and Edge Trim for Interior Installation: Provide corner beads, edge trim and control joints which comply with ASTM C 1047; Sheet steel zinc-coated by hot-dip process.

B. One-Piece Control Joint: Formed with vee-shaped slot per Fig. 1 in ASTM C 1047, with slot opening covered with removable strip.

2.6 GYPSUM BOARD JOINT TREATMENT MATERIALS:

A. General: Provide materials complying with ASTM C 475, ASTM C 840, and recommendations of manufacturer of both gypsum board and joint treatment materials for the application indicated.

B. Joint Tape: Paper reinforcing tape, unless otherwise indicated.

C. Setting-Type Joint Compounds: Factory-prepackaged, job-mixed, chemical-hardening powder products formulated for uses indicated.

2.7 MISCELLANEOUS MATERIALS:

A. General: Provide auxiliary materials for gypsum drywall construction which comply with referenced standards and the recommendations of the manufacturer of the gypsum board.

B. Fastening Adhesive for Wood: ASTM C 557.

C. Gypsum Board Screws: ASTM C 1002.

D. Concealed Acoustical Sealant: Paintable, gunnable per ASTM C-919.
Acceptable manufacturers:
1. USG Acoustical Sealant
2. Tremco Acoustical Sealant

3.0 PART 3 - EXECUTION

3.1 EXAMINATION:

A. Examine substrates to which drywall construction attaches or abuts, preset hollow metal frames, cast-in-anchors, and structural framing, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of drywall construction. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION:

A. Ceiling Anchorages: Coordinate installation of ceiling suspension system with installation of overhead structural systems to ensure that inserts and other structural anchorage provisions have been installed to receive ceiling anchors in a manner that will develop their full strength and at spacing required to support ceiling.

B. Furnish inserts and other devices indicated, to other trades for installation well in advance of time needed for coordination with other construction.

3.3 INSTALLATION OF STEEL FRAMING, GENERAL:

A. Steel Framing Installation Standard: Install steel framing to comply with ASTM C 754 and with ASTM C 840 requirements that apply to framing installation.

B. Install supplementary framing, blocking and bracing at terminations in the work and for support of fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, and similar

construction to comply with details indicated and with recommendations of gypsum board manufacturer, or if none available, with "Gypsum Construction Handbook" published by United States Gypsum Co.

C. Isolate steel framing from building structure to prevent transfer of loading imposed by structural movement, at locations indicated below to comply with details shown on Drawings:

Where edges of suspended ceilings abut building structure horizontally at ceiling perimeters or penetration of structural elements.

Where partition and wall framing abuts overhead structure.

Provide slip or cushioned type joints as detailed to attain lateral support and avoid axial loading.

D. Do not bridge building expansion and control joints with steel framing or furring members; independently frame both sides of joints with framing or furring members or as indicated.

3.4 INSTALLATION OF STEEL FRAMING FOR SUSPENDED AND FURRED CEILINGS:

A. Screw furring members to wood framing.

B. Secure hangers to structural support by connecting directly to structure where possible or other anchorage devices or fasteners as indicated.

C. Do not attach hangers to metal deck tabs.

D. Do not attach hangers to metal roof deck.

E. Do not connect or suspend steel framing from ducts, pipes or conduit.

F. Keep hangers and braces 2 inches clear of ducts, pipes and conduits.

G. Sway-brace suspended steel framing with hangers used for support.

H. Install suspended steel framing components in sizes and at spacings indicated but not less than that required by referenced steel framing installation standard.

I. Wire Hangers: 0.1620 inch diameter (8 gage), 4 ft. on center.

J. Carrying Channels (Main Runners): 1-1/2 inch, 4 ft. on center.

K. Rigid Furring Channels (Furring Members): 16 inches on center.

L. Installation Tolerances: Install steel framing components for suspended ceilings so that cross furring members or grid suspension members are level to within 1/8 inch in 12 ft. as measured both lengthwise on each member and transversely between parallel members.

M. Wire-tie or clip furring members to main runners and to other structural supports as indicated.

N. Grid Suspension System: Attach perimeter wall track or angle where grid suspension system meets vertical surfaces. Mechanically join main beam and cross furring members to each other and butt-cut to fit into wall track.

3.5 INSTALLATION OF STEEL FRAMING FOR WALLS AND PARTITIONS:

A. Install runners (tracks) at floors, ceilings and structural walls and columns where gypsum drywall stud system abuts other construction.
B. Where studs are installed directly against exterior walls, install asphalt felt strips between studs and wall.
C. Installation Tolerances: Install each steel framing and furring member so that fastening surface do not vary more than 1/8 inch from plane of faces of adjacent framing.

D. Extend partition framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing over frames for doors and openings and frame around ducts penetrating partitions above ceiling to provide support for gypsum board.

E. Install steel studs and furring in sizes and at spacings 24"on center.

F. Install steel studs so that flanges point in the same direction and gypsum boards can be installed in the direction opposite to that of the flange.

G. Frame door openings to comply with details indicated, with GA-219 and with applicable published recommendations of gypsum board manufacturer. Attach vertical studs at jambs with screws either directly to frames or to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.

H. Frame openings other than door openings to comply with details indicated, or if none indicated, in same manner as required for door openings; and install framing below sills of openings to match framing required above door heads.

3.6 APPLICATION AND FINISHING OF GYPSUM BOARD, GENERAL:

A. Gypsum Board Application and Finishing Standard: Install and finish gypsum board to comply with ASTM C 840.

B. Install sound attenuation blankets where indicated, prior to gypsum board unless readily installed after board has been installed.

C. Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 24 inches in alternate courses of board.

D. Install ceiling boards across framing in the manner which minimizes the number of end-butt joints, and which avoids end joints in the central area of each ceiling. Stagger end joints at least 24 inches.

E. Install wall/partition boards in manner which minimizes the number of end-butt joints or avoids them entirely where possible. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs.

F. Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16 inch open space between boards. Do not force into place.

G. Locate either edge or end joints over supports, except in horizontal applications where intermediate

supports or gypsum board back-blocking is provided behind end joints. Position boards so that like edges abut, tapered edges against tapered edges and mill-cut or field-cut ends against mill-cut or field-cut ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions.

H. Attach gypsum board to steel studs so that leading edge or end of each board is attached to open (unsupported) edge of stud flange first.

I. Attach gypsum board to supplementary framing and blocking provided for additional support at openings and cutouts.

J. Spot grout hollow metal door frames for solid core wood doors, hollow metal doors and doors over 32 inches wide. Apply spot grout at each jamb anchor clip just before inserting board into frame.

K. Form control joints and expansion joints at locations indicated, with space between edges of boards, prepared to receive trim accessories.

L. Cover both faces of steel stud partition framing with gypsum board in concealed spaces (above ceilings, etc.), except in chase walls which are braced internally.

M. Fit gypsum board around ducts, pipes, and conduits.

N. Isolate perimeter of non-load-bearing drywall partitions at structural abutments. Provide 1/4 inch to 1/2 inch space and trim edge with "U" bead edge trim. Seal joints with acoustical sealant.

O. Floating Construction: Where feasible, including where recommended by manufacturer, install gypsum board over wood framing, with "floating" internal corner construction.

P. Seal construction at perimeters, control and expansion joints, openings and penetrations with a continuous bead of acoustical sealant including a bead at both faces of partitions. Comply with ASTM C 919 and manufacturer's recommendations for location of edge trim, and close off sound-flanking paths around or through construction, including sealing of partitions above acoustical ceilings.

Q. Space fasteners in gypsum boards in accordance with referenced gypsum board application and finishing standard and manufacturer's recommendations.

3.7 METHODS OF GYPSUM BOARD APPLICATION:

A. Install gypsum wallboard as follows:
On ceilings apply gypsum board prior to wall/partition board application to the greatest extent possible.

On partitions/walls apply gypsum board vertically (parallel to framing), unless otherwise indicated, and provide sheet lengths which will minimize end joints.

B. Wall Tile Base: Where drywall is base for thin-set ceramic tile and similar rigid applied wall finishes, install gypsum backing board.

In "dry" areas install gypsum backing board or wallboard with tapered edges taped and finished to produce a flat surface.

At "wet" areas install water- resistant gypsum backing board to comply with ASTM C 840 and recommendations of gypsum board manufacturer.

C. On ceilings apply base layer prior to application of base layer on walls/partitions; apply face layers in same sequence. Offset joints between layers at least 10 inches. Apply base layers at right angles to supports unless otherwise indicated.

D. On partitions/walls apply base layer and face layers vertically (parallel to framing) with joints of base layer over supports and face layer joints offset at least 10 inches with base layer joints.

E. On furring members apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.

F. Single-Layer Fastening Methods: Apply gypsum boards to supports as follows:
1. Fasten with screws.
2. Fasten to concrete with adhesive at locations as shown on the drawings.

3.8 INSTALLATION OF DRYWALL TRIM ACCESSORIES:

A. General: Where feasible, use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports. Otherwise, fasten flanges to comply with manufacturer's recommendations.

B. Install corner beads at external corners.

C. Install control joints at locations indicated, or if not indicated, at spacings and locations required by referenced gypsum board application and finish standard and approved by the Architect for visual effect.

3.9 FINISHING OF DRYWALL:

A. General: Apply joint treatment at gypsum board joints (both directions); flanges of corner bead, edge trim, and control joints; penetrations; fastener heads, surface defects and elsewhere as required to prepare work for decoration.

B. Surface Finish: Provide Level 5 finish on all exposed gypsum surfaces. Provide Level 2 finish on all water-resistant gypsum backing board used as a substrate for tile. Provide Level 4 finish on all surfaces that are scheduled to receive wall covering.

C. Prefill open joints and rounded or beveled edges, if any, using setting-type joint compound.

D. Apply joint tape at joints between gypsum boards, except where trim accessories are indicated.

E. Finish interior gypsum wallboard by applying the following joint compounds in 3 coats (not including prefill of openings in base), and sand between coats and after last coat.

F. Water-Resistant Gypsum Backing Board Base for Ceramic Tile: Comply with ASTM C 840 and manufacturer's recommendations for treatment of joints behind tile.

3.10 INSTALLATION OF INSULATION: Install insulation complying with manufacturer’s written Recommendations.

3.11 PROTECTION:

A. Provide final protection and maintain conditions, in a manner suitable to Installer, which ensures gypsum drywall construction being without damage or deterioration at time of Substantial Completion.

END OF SECTION 09250

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 this Section.

1.2 SUMMARY

A. This Section includes:
   1. Unglazed Porcelain (Ceramic) floor and wall tiles
   2. Marble thresholds

1.3 SUBMITTALS

A. Submit samples of wall and floor tile showing size, color, and texture specified.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who has successfully completed tile installations similar in material, design, and extent to that indicated for Project.

1.5 PROJECT CONDITIONS

A. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.

PART 2 - PRODUCTS

2.1 PRODUCTS, GENERAL

A. ANSI Standard for Ceramic Tile: Comply with ANSI A137.1 "American National Standard Specifications for Ceramic Tile" for types, compositions, 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.

2.2 MATERIALS:

A. **Porcelain Tile:**
   1. Wearing surface: Textured, Unglazed tiles
   2. Nominal size: various - see plan for sizes
   3. Face: Plain.
   4. Mfr: Dal-Tile.
      Crossville Ceramics
      Stonepeak Ceramics
   5. Product: **12”x12” - Crossville “Color Blox”**
   6. Mosaic accent tile: **Daltile Stratford Place - 3**" x 3" Square Mosaic Wall Tile - Unpolished Stone Visual

2. 3 MARBLE THRESHOLDS:

A. Marble Thresholds: Provide marble thresholds complying with ASTM C 503 requirements for exterior use and for abrasion resistance where exposed to foot traffic, a minimum hardness of 10 per ASTM C 241.

B. Provide white, honed marble complying with MIA Group "A" requirements for soundness.

2.4 SETTING MATERIALS

A. Thinset Cement Mortar Installation Materials: Provide materials complying with ANSI A108.1.

B. Dry-Set Factory Mixed Mortars and Grouts: As recommended by tile manufacturer and tile installer for project applications.

2.5 GROUTING MATERIALS

A. Sand-Portland or Commercial Portland Cement Grout: ANSI A 108.10 and ANSI A 118.6, composed of white or gray cement and white or colored aggregate as required to produce color indicated.
    1. Color: As selected by Architect from manufacturer's standards.

2.6 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with requirements of referenced standards and manufacturers including those for accurate proportioning of materials, water, or additive content; type of mixing equipment, selection of 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 substrates and areas where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
B. Verify that substrates for setting tile are firm, dry, clean, and free from oil or waxy films and curing compounds.
C. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.

3.2 INSTALLATION, GENERAL

A. ANSI Tile Installation Standard: Comply with parts of ANSI 108 series of tile installation standards included under "American National Standard Specifications for the Installation of Ceramic Tile that apply to type of setting and grouting materials and methods indicated.

B. TCA Installation Guidelines: TCA "Handbook for Ceramic Tile Installation"; comply with TCA installation methods indicated.

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 sewn, lay tile in grid pattern. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out 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. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so that extent of each sheet is not apparent in finished work.

3.3 WALL TILE INSTALLATION METHODS

A. Install types of tile designated for wall application to comply with requirements indicated below for setting-bed methods, TCA installation methods related to subsurface wall conditions.

3.5 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, and otherwise defective tile work.

D. Provide final protection and maintain conditions in a manner acceptable to manufacturer and installer that ensures that tile is without damage or deterioration at time of Substantial Completion.

E. When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Project installed tile work-with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.

F. Prohibit foot and wheel traffic from tiled floors for at least 7 days after grouting is completed.

G. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION 09300

SECTION 09510 – ACOUSTICAL TILE CEILINGS

PART 1 - GENERAL

1.01 SUMMARY

A. Provide acoustical ceilings and metal suspension system.
   1. Acoustical panel ceilings, exposed suspension, complete with moldings and trim.

1.02 SUBMITTALS

A. Submit for approval samples, product data, extra stock.

1.03 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. Obtain both acoustical ceiling panels and suspension system from the same manufacturer.

1.04 WARRANTY

A. Manufacturer shall warrant all components of the acoustical ceiling system against failure associated with humidity including sagging, warping, and rusting for a minimum period of thirty (30) years.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Acoustical panels:
   1. Acoustical Lay-in Tile Panels: 3/4" thick, wet-formed, fine fissured mineral fiber; white vinyl latex paint; **Armstrong "Fine Fissured" High NRC; No. 1713 with HumiGuard Plus and BioBlock** paint or approved equal.
      a) Panel size: 24" by 24".
      b) Panel edge: Square edge; flush mount with grid.
      c) Application: Typical use. Refer to drawings for scheduled locations.

B. Exposed grid suspension system: Hot dipped galvanized, intermediate duty painted steel, 15/16" T-Grid, White.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Measure and layout to avoid less than 1/2 panel units.

B. Install suspension by following manufacturer's instructions and recommendations and ASTM C636.

C. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Coordinate with work of other sections.

D. Adjust, clean, and touch-up all system components.

E. Provide wrapped and labeled maintenance stock of new material equal to two percent (2%) of ceiling panels and suspension installed.

END OF SECTION 09510

SECTION 09650 - RESILIENT FLOORING

1.0 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 resilient flooring is shown on drawings.

B. Type of resilient flooring:
   1. **Luxury Vinyl Tile (LVT).**
   2. **Vinyl Base.**

1.3 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. Fire Test Performance: Provide resilient flooring which complies with the following fire test performance criteria as determined by an independent testing laboratory acceptable to authorities having jurisdiction.

   1. Flame Spread: Not more than 75 per ASTM E 84.
   2. Smoke Developed: Not more than 450 per ASTM E 84.
   3. Smoke Density: Not more than 450 per ASTM E 662.

C. Installer's Qualifications: Engage Installer who is certified in writing by resilient flooring manufacturer as qualified for installation of sheet vinyl employing heat welded seams.

1.4 SUBMITTALS:

A. Product Data: Submit manufacturer's technical data for each type of resilient flooring and accessory.

B. Color samples: Submit color chart and two actual size tiles for each color selected by architect.

C. Maintenance Instructions: Submit 2 copies of manufacturer's recommended maintenance practices for each type of resilient flooring and accessory required.

D. Shop Drawings: For each type of floor tile. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
   1. Show details of special patterns.

1.5 PROJECT CONDITIONS:

A. Maintain minimum temperature of not less than 68 degrees F (20 degrees C) or more than 72 degrees F (22 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 not less than 58 degrees F (15 degrees C) or more than 72 degrees F (22 deg C) in areas where work is completed.

B. Close spaces to traffic during floor tile installation. Close spaces to heavy traffic for 48 hours after floor tile installation and to light foot traffic for 24 hours after floor tile installation

C. 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.

2.0 PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

A. Acceptable Manufacturer of Luxury Vinyl Tile:
   1. Vinyl Plank: **Centiva, Inc**.
   2. Acceptable Manufacturers of Vinyl Wall Base:
      a) Azrock Floor Products Div., Azrock Industries, Inc.
      b) Flexco Div., Textile Rubber Co.
      c) Johnsonite Rubber Co., Inc.
      d) Burke-Mercer Plastics Co., Inc.

2.2 RESILIENT FLOORING:

A. Vinyl Plank : **Contour Series**

2.3 ACCESSORIES:

A. Wall Base: Provide base complying with FS SS-W-40; either Type I rubber or Type II vinyl, with matching end stops and preformed or molded corner units, and as follows:
   1. Height: 4"
   2. Style: Standard top-set cove.
   3. Finish: Matte
   4. Note: Wall vinyl or rubber base susceptible to shrinkage will not be allowed.

B. Resilient Edge Strips: 1/8" thick, homogeneous vinyl or 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.

3.0 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. Do not allow resilient flooring work to proceed until subfloor surfaces are satisfactory.

3.2 PREPARATION:

A. Prepare subfloor surfaces as follows:

B. Use leveling and patching compounds as recommended by resilient flooring manufacturer for filling small cracks, holes and depressions in subfloors.

C. Follow Centiva, Inc. Installation guide, SubFloor Preparation 1.0 found at www.centiva.com.

D. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by floor tile manufacturer. Do not use solvents.

E. Broom clean or vacuum surfaces to be covered, and inspect subfloor.

F. Apply concrete slab primer, if recommended by flooring manufacturer, prior to application of adhesive. Apply in compliance with manufacturer's directions.

G. Moisture Testing: Proceed with installation only after substrates pass testing according to floor tile manufacturer's written recommendations.

3.3 INSTALLATION:

A. INSTALLATION, GENERAL:

1. 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.

2. Scribe, cut, and fit resilient flooring/to permanent fixtures, built-in furniture and cabinets, pipes, outlets and permanent columns, walls and partitions.

3. 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 devices.

4. 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.

B. INSTALLATION OF TILE FLOORS: Lay tile from center marks established with principal walls, discounting minor offsets, so that tile at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter. Lay tile square to room axis, unless otherwise shown.
   1. 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 tile are not acceptable.
   2. Lay tiles carefully, noting directional arrows on the back of tiles when present, with grain running in one direction or in pattern of colors and sizes indicated. Adhere tile flooring to substrates using full spread of adhesive applied in compliance with flooring manufacturer's directions.
   3. Some pre-blending may be required depending on color or shade variation, refer to section 2 of Installation instruction on Centiva website.

3.4 INSTALLATION OF BASE:

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.

B. On masonry surfaces, or other similar irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.

C. Place resilient edge strips tightly butted to flooring and secure with adhesive. Install edging strips at edges of flooring which would otherwise be exposed.

3.5 CLEANING AND PROTECTION:

A. Perform following operations immediately upon completion of resilient flooring:
   1. Sweep or vacuum floor thoroughly.
   2. Do not wash floor- 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 after 48 hours.
   4. Remove any excess adhesive or other surface blemishes, using appropriate cleaner recommended by resilient flooring manufacturers.

B. Clean floor, not less than 48 hours after installation, with a Centi Clean Green neutral liquid cleaner or a neutral liquid cleaner, followed by Centi Maintain, per manufacturer’s directions.

C. Apply protective floor polish to resilient flooring surfaces free from soil, excess adhesive or surface blemishes. Use commercially available metal cross-linked acrylic products acceptable to resilient flooring manufacturer.

D. Protect resilient flooring against damage from rolling loads for initial period following installation by covering with plywood or hardboard. Use dollies to move stationary equipment or furnishings across floors.

E. 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.

END OF SECTION 09650

SECTION 09680 - CARPETING

1.0 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 the work of this section.

1.2 SUMMARY:

A. Extent and location carpeting are indicated on drawings.

B. Work of this section includes furnishing and installation of carpeting, adhesives and accessories.

C. This section includes:
   1. Modular Carpet Tile
   2. Modular Walk-off Carpet Tile

1.3 DEFINITIONS:

A. Commercial Carpet: Carpet intended for use in commercial and public spaces, with construction, fire ratings, static control and appearance appropriate for this use.

1.4 SUBMITTALS:

A. Product Data: Submit manufacturer's product literature.
B. Samples for Verification Purposes: Submit the following:

18" square samples of each type of carpet material required.

1.5 QUALITY ASSURANCE:

A. Fire Performance Characteristics: Provide carpeting that is identical to that tested for the following fire performance requirements, according to test method indicated, by UL or other testing and inspecting agency acceptable to authorities having jurisdiction.

Finish Classification: Class A, per Standard Building Code.
Flame Spread: Not more than 25.
Smoke Developed: Not more than 50.

1.6 WARRANTY:

A. Special Project Warranty: Submit a written warranty, executed by the Contractor, Installer and the Manufacturer, agreeing to repair or replace carpeting which fails in materials or workmanship within the specified warranty period. This warranty shall be in addition to and not a limitation of other rights the Owner may have against the Contractor under the Contract Documents.

B. Warranty period is 2 years after the date of substantial completion.

2.0 PART 2 - PRODUCTS

2.1 MATERIALS:

A. Modular Carpet
1. Carpet Tile “A” and “B”: One of the following:
i. **Mannington "Palma 2**”
2. Or approved equal by:
a. Interface
b. Mohawk

3. Modular Walk-Off Carpet Tile:
i. Manufacturer: J+J Invision or equal
ii. Style: Runway (7000)

B. Adhesives: Provide manufacturer's recommended adhesives, produced expressly for use with selected carpet cushion on substrate as shown on drawings. Provide materials which are mildew resistant.

C. Carpet Edge Guard, Non-metallic: Extruded or molded heavy-duty vinyl or rubber carpet edge guard of size and profile indicated; minimum 2" wide anchorage flange.

D. Installation Adhesive: Water-resistant, non-staining as recommended by carpet manufacturer, which complies with flammability requirements for installed carpet.

E. Seaming Cement: Hot-melt seaming adhesive or similar product recommended by carpet manufacturer, for taping seams and butting cut edges at backing to form secure seams and preventing pile loss at seams.

3.0 PART 3 - EXECUTION

3.1 EXAMINATION:

A. Examine substrates for moisture content and other conditions under which carpeting is to be installed. Notify contractor in writing of major conditions detrimental to proper completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION:

A. Repair minor holes, cracks, depressions, and rough areas using material recommended by carpet or adhesive manufacturer.

B. Clear away debris and scrape up cementitious deposits from surfaces to receive carpeting; vacuum clean immediately before installation. Check concrete surfaces to ensure no dusting through installed carpet; apply sealer where required to prevent dusting.

3.3 INSTALLATION:

A. Comply with manufacturer's recommendations for seam locations and direction of carpet; maintain uniformity of carpet direction and lay of pile. Follow seaming diagram as submitted and approved. At doors, center seams under doors; do not place seams in traffic direction at doorway.

B. Extend carpet under open-bottomed obstructions and under removable flanges and furnishings, and into

alcoves and closets of each space.

C. Provide cut-outs where required, and bind cut edges properly where not concealed by protective edge guards or overlapping flanges.

D. Install carpet edge guard where edge of carpet is exposed; anchor guards to substrate.

E. Glue-Down Installation:

Fit sections of carpet into each space prior to application of adhesive. Trim edges and butt cuts with seaming cement.

Apply adhesive uniformly to substrate in accordance with manufacturer's instructions. Butt carpet edges tightly together to form seams without gaps. Roll entire carpet area lightly to eliminate air pockets and ensure uniform bond. Remove any adhesive promptly from face of carpet by method which will not damage carpet face.

3.4 CLEANING:

A. Remove and dispose of debris and unusable scraps. Vacuum carpet using commercial machine with face-beater element. Remove spots and replace carpet where spots cannot be removed. Remove any protruding face yarn using sharp scissors.

3.5 PROTECTION:

A. Provide protective methods and materials needed to ensure that carpeting will be without deterioration or damage at time of substantial completion.

END OF SECTION 09680

SECTION 09900 - PAINTING

1.0 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 this section.

1.2 SUMMARY

A. This Section includes surface preparation, painting, and finishing of exposed interior and exterior items and surfaces.

B. Surface preparation, priming, and finish coats specified in this section are in addition to shop priming and surface treatment specified under other sections.

C. Paint exposed surfaces whether or not colors are designated in "schedules," except where a surface or material is specifically indicated not to be painted or is to remain natural. Where an item or surface is not specifically mentioned, paint the same as similar adjacent materials or surfaces. If color or finish is not designated, the Architect will select from standard colors or finishes available.

D. Painting is not required on prefinished items, finished metal surfaces, concealed surfaces, operating parts, and labels.

1.3 DEFINITIONS

A. "Paint" includes coating systems materials, primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime, intermediate, or finish coats.

1.4 SUBMITTALS

A. Product Data: Manufacturer's technical information, label analysis, and application instructions for each material proposed for use.

B. List each material and cross-reference the specific coating and finish system and application. Identify each material by the manufacturer's catalog number and general classification.

C. Samples for initial color selection in the form of manufacturer's color charts.

After color selection, the Architect will furnish color chips for surfaces to be coated.

D. Samples for verification purposes: Provide samples of each color and material to be applied, with texture to simulate actual conditions, on representative samples of the actual substrate. Define each separate coat, including block fillers and primers. Use representative colors when preparing samples for review. Resubmit until required sheen, color, and texture are achieved.

1.5 QUALITY ASSURANCE

A. Single-Source Responsibility: Provide primers and undercoat paint produced by the same manufacturer as the finish coats.

B. Coordination of Work: Review other sections in which primers are provided to ensure compatibility of the total systems for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

1.6 JOB CONDITIONS

A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are within the manufacturer's recommendations.

2.0 PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide products of one of the following:

Devoe and Reynolds Co. (Devoe).
The Glidden Company (Glidden).
Benjamin Moore and Co. (Moore).
PPG Industries, Pittsburgh Paints (PPG).
Pratt and Lambert (P & L).
The Sherwin-Williams Company (S-W).

B. See "Paint Schedule" at the end of this Section.

3.0 PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions under which painting will be performed for compliance with requirements for application of paint. Do not begin paint application until unsatisfactory conditions have been corrected.

B. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.

3.2 PREPARATION

A. General Procedures: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items in place that are not to be painted, or provide surface-applied protection prior to surface preparation and painting. Remove these items if necessary for complete painting of the items and adjacent surfaces. Following completion of painting operations in each space or area, have items reinstalled by workers skilled in the trades involved.

B. Clean surfaces before applying paint or surface treatments. Remove oil and grease prior to cleaning. Schedule cleaning and painting so that dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

C. Surface Preparation: Clean and prepare surfaces to be painted in accordance with the manufacturer's instructions for each particular substrate condition and as specified.

D. Provide barrier coats over incompatible primers or remove and re-prime. Notify Architect in writing of problems anticipated with using the specified finish-coat material with substrates primed by others.

E. Cementitious Materials: Prepare concrete, concrete masonry block, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.

F. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.

Scrape and clean small, dry, seasoned knots and apply a thin coat of white shellac or other recommended knot sealer before application of primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.

Prime, stain, or seal wood to be painted immediately upon delivery. Prime edges, ends, faces, undersides, and backsides of wood, including cabinets, counters, cases, and paneling.

When transparent finish is required, back prime with spar varnish.
Back prime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on backside.

G. Ferrous Metals: Clean non-galvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with recommendations of the Steel Structures Painting Council.

H. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by the paint manufacturer, and touch up with the same primer as the shop coat.

I. Galvanized Surfaces: Clean galvanized surfaces with non-petroleum-based solvents so that the surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.

J. Materials Preparation: Carefully mix and prepare paint materials in accordance with manufacturer's directions.

K. Maintain containers used in mixing and application of paint in a clean condition, free of foreign materials and residue.

L. Stir material before application to produce a mixture of uniform density; stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.

M. Use only thinners approved by the paint manufacturer, and only within recommended limits.

N. Tinting: Tint each undercoat a lighter shade to facilitate identification of each coat where multiple coats of the same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.3 APPLICATION

A. Apply paint in accordance with manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.

B. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.

C. Provide finish coats that are compatible with primers used.

D. The number of coats and film thickness required is the same regardless of the application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. Sand between applications where sanding is required to produce an even smooth surface in accordance with the manufacturer's directions.

E. Apply additional coats when undercoats, stains, or other conditions show through final coat of paint until paint film is of uniform finish, color, and appearance. Give special attention to ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners, receive a dry film thickness equivalent to that of flat surfaces.

F. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convector covers, covers for finned tube radiation, grilles, and similar components are in place. Extend coatings in these areas as required to maintain the system integrity and provide desired protection.

G. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat only before final installation of equipment.

H. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, nonspecular black paint.

I. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.

J. Sand lightly between each succeeding enamel or varnish coat.

K. Omit primer on metal surfaces that have been shop-primed and touch up painted.

L. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

   Allow sufficient time between successive coats to permit proper drying. Do not recoat until paint has dried to where it feels firm, and does not deform or feel sticky under moderate thumb pressure and where application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

M. Minimum Coating Thickness: Apply materials at not less than the manufacturer's recommended spreading rate. Provide a total dry film thickness of the entire system as recommended by the manufacturer.

N. Prime Coats: Before application of finish coats, apply a prime coat of material as recommended by the manufacturer to material that is required to be painted or finished and has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to assure a finish coat with no burn through or other defects due to insufficient sealing.

O. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, cloudiness, color irregularity, runs, brush marks, orange peel, nail holes, or other surface imperfections.

P. Provide satin finish for final coats.

Q. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not in compliance with specified requirements.

3.4 CLEANING

A. Cleanup: At the end of each work day, remove empty cans, rags, rubbish, and other discarded paint materials from the site.

B. Upon completion of painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping, using care not to scratch or damage adjacent finished surfaces.

3.5 PROTECTION

A. Protect work of other trades, whether to be painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.

B. Provide "wet paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others for protection of their work after completion of painting operations.

C. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR PAINT SCHEDULE

A. Wood: Alkyd Semi-Gloss Finish: 2 finish coats over primer with total dry film thickness not less than 3.5 mils.

Primer: PPG 6-6 Enamel Undercoater
First Coat: PPG 20- Line Alkyd LO Luster Enamel
Second Coat: Same as first

B. Zinc-Coated Metal:

Primer: PPG 6-209 Galvanized Primer
First Coat: PPG 6-252 Line Enamel
Second Coat: Same as first

3.7 INTERIOR PAINT SCHEDULE

A. Wood shown to be painted:

First Coat: PPG 6-6 Enamel Undercoater
Second Coat: PPG 20 Line Alkyd Lo Luster Enamel
Third Coat: Same as second

B. Stained Wood:

First Coat: Rez oil stain, Transparent
Second Coat: Rez 77-7 Satin Finish Varnish
Third Coat: Same as second

C. Gypsum wall boards at walls and ceilings:

First Coat: PPG 6-2 Sealer
Second Coat: PPG 6-70 Latex Flat
Third Coat: Same as second

D. Ferrous Metals:

First Coat: PPG 6-208 Metal Primer
Second Coat: PPG 20- Line LO Luster Enamel
Third Coat: Same as second

END OF SECTION 09900

SECTION 10100 – MARKER BOARDS

PART 1 - GENERAL

1.01 SUMMARY

A. Provide markerboards as shown on the drawings.

1.02 SUBMITTALS

A. Submit for approval samples, shop drawings, product data, maintenance data.

1.03 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.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Porcelain-on-metal markerboards: Enameling grade sheet steel with porcelain finish with gloss finish for use with liquid chalk markers, aluminum frame and trim, chalktray, map rail with hooks and clips, flag holder; **Claridge Products and Equipment, Inc**. or approved equal.

See drawings for sizes of markerboards.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Take field measurements before fabrication where possible; do not delay progress.

B. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections. Mount markerboards and tackboards at heights indicated on drawings or as directed by Owner.

C. Tolerances: +1/16" in 20' from true plumb, level and alignment. Limit variation in "flush" between adjacent panels to 1/16". Provide tight and closed gaps between panels unless detailed otherwise.

D. Restore damaged finishes. Clean and protect work from damage.

END OF SECTION 10100

SECTION 10440 – SPECIALTY SIGNS

1.0 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 the work of this section.

1.2 DESCRIPTION OF WORK:

A. Forms of specialty signs required are:

1. Unframed Acrylic plaques

1.3 QUALITY ASSURANCE:

A. Uniformity of Manufacturer: For each sign form and graphic image process indicated furnish products of a single manufacturer.

1.4 SUBMITTALS:

A. Shop Drawings: Submit shop drawings showing size, material and message.

1. Furnish full-size sample.

B. Product Data: Submit manufacturer's technical data and installation instructions.

2.0 PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

A. Manufacturers: Subject to compliance with requirements, provide products of one of the following or approved equal:

a. APCO Graphics Inc.
b. ASI Sign Systems, Inc.
c. Take form Architectural Graphics

2.2 MATERIALS:

A. Cast Acrylic Sheet: Provide cast (not extruded or continuous cast) methyl methacrylate monomer plastic sheet, in sizes and thicknesses indicated, with a minimum flexural strength of 16,000 psi when tested in accordance with ASTM D 790, a minimum allowable continuous service temperature of 176 deg.F (80 deg.C), and of the following general types:

2.3 FABRICATION:

A. Unframed Acrylic Plaques: Fabricate unframed panel signs with edges mechanically and smoothly finished; 5/8" raised letters, with Braille designations.

1. **Provide (5) unframed 8" x 8" plaques, with Braille and pictogram for restrooms:**
   a. **"Men"**
   b. **"Women"**

2. **Provide (22) unframed 6" x 6" plaques, with braille.**
   Architect is to provide the names for these signs.

3.0 PART 3 - EXECUTION

3.1 INSTALLATION:

A. General: Install signs at locations as directed by the architect. Use mounting methods in compliance with the manufacturer's instructions.

Install sign units level, plumb and at the height indicated, with sign surfaces free from distortion or other defects in appearance.

3.2 CLEANING AND PROTECTION:

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.

END OF SECTION 10440

SECTION 10522 - FIRE EXTINGUISHERS, CABINETS, AND ACCESSORIES

1.0 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 fire extinguishers, cabinets and accessories is indicated on drawings.

B. Definition: "Fire extinguishers" as used in this section refers to units which can be hand-carried as opposed to those which are equipped with wheels or to fixed fire extinguishing systems.

C. Types of products required include:

1. Fire extinguishers with cabinets (3 each).

1.3 QUALITY ASSURANCE:

A. Single Source Responsibility: Obtain products in this section from one manufacturer.

B. Coordination: Verify that fire extinguisher cabinets are sized to accommodate fire extinguishers of type and capacity indicated which will be provided by Owner under separate contract.

C. UL-Listed Products: Provide new portable fire extinguishers which are UL-listed and bear UL "Listing Mark" for type, rating, and classification of extinguisher indicated.

D. FM Listed Products: Provide new portable fire extinguishers which are approved by Factory Mutual Research Corporation for type, rating, and classification of extinguisher indicated and carry appropriate FM marking.

1.4 SUBMITTALS:

Product Data: Submit product data for each type of product included in this section. For fire extinguisher cabinets include roughing-in dimensions and details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type and materials, trim style and door construction, and panel style and materials.

2.0 PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

A. Manufacturer: Subject to compliance with requirements, provide products of one of the following:

J.L. Industries
Larsen's Mfg. Co.
Johnson-Lee, Division of W.F. Lee Corp.
Muckle Manufacturing, Division of Technico, Inc.
Watrous, Inc.

2.2 FIRE EXTINGUISHERS:

A. General: Provide fire extinguishers for each extinguisher cabinet and other locations indicated, in colors and finishes selected by Architect from manufacturer's standard which comply with requirements of governing authorities.

B. Fill and service extinguishers to comply with requirements of governing authorities and manufacturer's requirements.

C. Abbreviations indicated below to identify extinguisher types related to UL classification and rating system and not, necessarily to type and amount of extinguishing material contained in extinguisher.

D. Multi-Purpose Dry Chemical Type: UL-rated 2-A:10:B:C, 10 lb. nominal capacity, in enameled steel container, for Class A, Class B and Class C fires.

2.3 FIRE EXTINGUISHER CABINETS:

A. General: Provide fire extinguisher cabinets where indicated or suitable size for housing fire extinguishers of types and capacities indicated.

B. Construction: Manufacturer's standard enameled steel box, with trim, frame, door and hardware to suit cabinet type, trim style, and door style indicated. Weld all joints and grind smooth. Miter and weld perimeter door frames.

C. Cabinet Type: Recessed: Cabinet box (tub) fully recessed in walls of sufficient depth to suit style of trim indicated.

D. Finish: Mil-finished aluminum

3.0 PART 3 - EXECUTION

3.1 INSTALLATION:

A. Install items included in this section in locations and at mounting heights indicated, or if not indicated, at heights to comply with applicable regulations of governing authorities.

B. Prepare recesses in walls for fire extinguisher cabinets as required by type and size of cabinet and style of trim and to comply with manufacturer's instructions.

C. Securely fasten fire extinguisher cabinets to structure, square and plumb, to comply with manufacturer's instructions.

D. Where exact location of surface-mounted cabinets and bracket-mounted fire extinguishers is not indicated, locate as directed by Architect.

3.2 IDENTIFICATION:

A. Identify existence of fire extinguisher in cabinet with lettering spelling "FIRE EXTINGUISHER" applied to door by Silk Screen Process.

END OF SECTION 10522

SECTION 10800 – TOILET ACCESSORIES

1.0 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. Types of toilet accessories required include the following:

1. Paper towel dispenser and
2. Trash receptacle (Rubbermaid)
3. Toilet tissue dispenser - stainless steel
4. Grab bars - stainless steel
5. Robe hook - stainless steel
6. Underlavatory guard
7. Soap dispenser
8. Custodial shelf/mop holder

C. Mirrors are specified in Section "Glass and Glazing".

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.

1.4 SUBMITTALS:

A. Product Data: Submit manufacturer's technical data and installation instructions for each toilet accessory.

B. Samples: Submit full-size samples of units to Architect for review of design and operation. Acceptable samples will be returned and may be used in the work.

C. Setting Drawings: Provide setting drawings, templates, instructions, and directions for installation of anchorage devices and cut-out requirements in other work.

2.0 PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

A. Manufacturers: Subject to compliance with requirements, provide toilet accessories by one of the following:

A & J Washroom Accessories	American Specialties, Inc.
Bobrick Washroom Equipment, Inc.	Bradley Corporation

Hallmack-Nutone/Div. Scovill
Parker-Scovill.
McKinney/Subsidiary Kidde, Inc.
Watrous, Inc.

2.2 MATERIALS, GENERAL:

A. Stainless Steel: AISI Type 302/304, with polished No. 4 finish, 22 gage (.034") minimum, unless otherwise indicated.

3.0 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 and at heights 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 and protective coatings.

END OF SECTION 10800

SECTION 15100 - MECHANICAL GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 CONDITIONS AND REQUIREMENTS

A. The General Conditions, Supplementary Conditions, and Division-1, General Requirements apply to this section.

1.02 GENERAL PROVISIONS

A. The contract drawings indicate the extent and general arrangement of the work. The Contractor shall be responsible for installing the proposed systems as indicated, without violation of applicable codes, standards, or specification requirements. The Contractor is also responsible for coordinating the installation and operation of these systems with the other sections of this specification to provide a complete and operable system. Equipment, piping, and ductwork arrangements shall fit the space as indicated and shall allow adequate and approved clearance for entry, servicing, and maintenance. Detailed drawings of any proposed departures due to actual field conditions shall be submitted to the Architect for approval. All work shall conform to the requirements of the referenced publications and as specified herein.

1.03 CONFORMANCE WITH AGENCY REQUIREMENTS

A. Where materials or equipment are specified to conform to requirements of the Underwriters' Laboratories, Inc., Factory Mutual Systems, Air Conditioning and Refrigeration Institute, Air Diffusion Council, American Society of Heating, Refrigerating and Air Conditioning Engineers, or the Air Moving and Conditioning Association, Inc., the Contractor shall submit proof of such conformance. The label or listing of the specified agency will be acceptable evidence. In lieu of the label or listing, the Contractor may submit a written certificate from any approved, nationally recognized testing organization adequately equipped and competent to perform such services, stating that the items have been tested and that the units conform to the requirements, including methods of testing, of the specified agency. Where equipment is specified to conform to requirements of the ASME Boiler and Pressure Vessel Code, the design, fabrication, and installation shall conform to the code in every respect.

1.04 CAPACITIES

A. Capacities of all equipment and material shall be not less than those indicated, nor exceed maximum values shown on the drawings. Physical dimensions of equipment shall be verified against contract documents to ensure manufacturers maintenance space is available.

1.05 EQUIPMENT INSTALLATION

A. Necessary supports shall be provided for equipment, appurtenances, pipe, and ductwork as required. Isolation vibration units shall be provided to minimize the intensity of vibration transmission to the building structure where required.

1.06 ELECTRICAL WORK

A. Electric-motor-driven equipment specified herein shall be provided complete with motors and controls. Electric equipment and wiring shall be in accordance with Division 16000, "Electrical Work". Electrical characteristics shall be as indicated. Each motor shall be of sufficient capacity to drive the equipment at the specified capacity without exceeding the nameplate rating of motor when operating at proper electrical system voltage. Manual or automatic control and protective or signal devices required for the operation herein specified and any control wiring required for controls and devices, but not shown on the electrical plans, shall be provided under this section.

1.07 APPROVAL OF MATERIALS AND EQUIPMENT

A. After notice to proceed and before purchasing, the Contractor shall submit to the Architect for approval, in electronic format, a list of materials he proposes for the work. Items to be submitted include, but are not limited to, the items listed in each individual section. Partial submittals will not be acceptable and will be returned without review. Submittals shall include the manufacturer's names, trade name, catalog model or number, nameplate data, size, layout dimensions, capacity, project specification and paragraph reference, applicable Federal, industry, and technical society publication references, and other information necessary to establish contract compliance of each item the Contractor proposes to furnish.

1. Shop Drawings: Drawings shall be a minimum of 8 1/2" x 11" in size, except as specified otherwise.
2. Manufacturer's Data: Submittals for each manufactured item shall be manufacturer's descriptive literature of cataloged products, equipment drawings, diagrams, performance and characteristic curves, and catalog cuts. All equipment selections shall be clearly marked with name designations shown on drawings (i.e., AHU-1, HPU-2, etc.).
3. Delivery and Storage: Equipment and materials shall be carefully handled, properly stored, and adequately protected to prevent damage before and during installation, in accordance with the manufacturer's recommendations and as approved by the Architect. Damaged or defective items, in the opinion of the Architect, shall be replaced.
4. Cataloged Products: Materials and equipment shall be cataloged products of manufacturers regularly engaged in production of such materials or equipment and shall be manufacturer's latest design that complies with the specification requirements. Materials and equipment shall duplicate items that have been in satisfactory commercial or industrial use at least 2 years prior to bid opening. Where two or more items of the same class of equipment are required, these items shall be products of a single manufacturer; however, the component parts of the items need not be the products of the same manufacturer.

1.08 NAMEPLATES

A. Each major item of equipment shall have the manufacturer's name, address, serial, and model numbers on a plate securely attached to the item.

1.09 VERIFICATION OF DIMENSIONS

A. The Contractor shall visit the premises to thoroughly familiarize himself with all details of the work and working conditions and verify all dimensions in the field and shall advise the Architect of any discrepancy before performing any work. The Contractor shall be specifically responsible for the coordination and proper relation of his work to the building structure and to the work of all trades.

1.10 DRAWINGS

A. Because of the scale of the drawings, it is not possible to indicate all offsets, fittings, and accessories that are required. The Contractor shall carefully investigate the structural and finish conditions affecting his work and he shall furnish fittings, offsets, transitions, unions, etc., as may be required to meet such conditions at no additional cost to the Owner.

1.11 CUTTING AND REPAIRING

A. The work shall be carefully laid out in advance and no excessive cutting of construction will be permitted. Damage to building, piping, wiring, or equipment as a result of cutting for installation shall be repaired by mechanics skilled in the trade involved at no additional expense to the Owner.

1.12 SAFETY REQUIREMENTS

A. Belts, pulleys, chains, gears, couplings, projecting setscrews, keys, and other rotating parts located so that any person can come in close proximity thereto shall be fully enclosed or properly guarded. High-temperature equipment and piping so located as to endanger personnel or create a fire hazard shall be properly guarded or covered with insulation of a type as specified herein. Items such as catwalks, ladders, and guard rails shall be provided where required for safe operation and maintenance of equipment.

1.13 MANUFACTURER'S RECOMMENDATIONS

A. Where installation procedures or any part thereof are required to be in accordance with the recommendations of the manufacturer of the material being installed, printed copies of these recommendations shall be furnished to the Architect prior to installation. Installation of the item will not be allowed to proceed until the recommendations are received. Failure to furnish these recommendations can be cause for rejection of the material.

1.14 PAINTING

A. At the completion of all work, all equipment on this project shall be checked for damage, and any factory finished paint that has been damaged shall be repaired to match the adjacent areas. Any metal or especially covered areas that have been deformed shall be replaced with new material and repainted to match adjacent areas. Painting of new work shall be as specified herein.

1.15 FINAL CLEAN UP

A. At the completion of all work, all equipment on the project shall be checked and thoroughly cleaned, including coils, plenums, under equipment, and any and all other areas around or in equipment. Any filters used during construction shall be replaced with new filters during final cleanup.

1.16 OPERATING AND MAINTENANCE INSTRUCTIONS

A. Bound Instructions: Three (3) complete sets of instructions containing the manufacturer's operating and maintenance instructions for each piece of equipment shall be furnished to the Architect before the contract is completed. Each set shall be permanently bound and shall have a hard cover. The following identification shall be inscribed on the covers: The words "Operating and Maintenance Instructions", the name and location of the building, the name of the Contractor and the contract number. Flysheet shall be placed before instructions covering each subject. The instruction sheet shall be approximately 8 1/2" x 11", with large sheets of drawings folded in. The instructions shall include, but shall not be limited to, the following:

1. Approved wiring and control diagrams, with data to explain the detailed operation and control of each component.
2. A control sequence describing start-up, operation and shutdown.
3. Operating and maintenance instructions for each piece of equipment, including lubrication instructions.
4. Manufacturer's bulletins, cuts and descriptive data.
5. Parts lists and recommended spare parts.

END OF SECTION 15100

SECTION 15200 - TESTING AND BALANCING AIR DISTRIBUTION SYSTEMS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. The General Conditions, Supplementary Conditions and Division 1, General Requirements, apply.

1.02 QUALITY ASSURANCE

A. Testing Agency:

1. Submit name, address, and qualifications of testing agency to Architect for approval prior to start of testing.
2. All system adjustments, test and balances are to be performed by a company regularly and exclusively engaged in this work. Agency shall be a member in good standing of the Associates Air Balance Council (AABC).
3. Procedures shall be as outlined in the AABC Publication "National Standards for Total System Balance," 6th edition (2002).

1.03 SUBMITTALS

A. Test Reports: After completion, submit three (3) certified copies of test and balance report to the Architect for review and as a project record document.

1.04 JOB CONDITIONS

A. Commencement of Test: Do not begin balancing until the systems have been completed and are in full working order, or at the direction of the Architect, place any part thereof in operation for the purpose of balancing.

B. Plans and Data: Furnish the balance agency one (1) complete set of all approved up-to-date mechanical plans and shop drawings of all cooling, heating and air distribution equipment.

1.05 FIELD QUALITY CONTROL

A. Performance Data: Record the following data and submit to the Architect.

1. Leak test all duct systems and submit results to Architect. Testing procedure shall conform to AABC and leakage rate shall not exceed their recommendations.
2. Air Volumes and Velocities: Determine and tabulate at each grille, diffuser, louver, outside air intake, etc., and adjust dampers, control devices and fan drives to obtain the indicated air quantities. Adjust or modify each supply grille and diffuser distribution pattern as required to maintain air motion, noise level and temperature variations within acceptable limits throughout each space. Clearly and permanently mark all dampers at final setting for reported air balance.
3. System Component Capacity: Record and calculate all data necessary to demonstrate capacity under actual operating conditions, and adjust dampers, valves, control valves and machine drives to obtain a suitable operating balance for each system. Record data for each item of equipment simultaneously with data from all associated equipment together with coincident outside air dry bulb temperatures to permit evaluation of total system performance. Data to include the following:

a. Supply, return and outside air quantities for each air conditioning and ventilation system.
b. Air volumes and velocities for each fan, cooling coil and air cleaning assembly.
c. Entering and leaving air dry bulb and wet bulb temperature for each cooling and heating coil. Leaving dew point for each cooling coil.
d. Static pressures for all air handling units and major fans.
e. Actual voltage and current input for each motor.
f. Test and adjust each diffuser grille, and register within 10 percent of design requirements. Test and record temperature rise, voltage, and current across duct heaters.

4. In readings and test diffusers, grilles and registers include required fpm velocity and test fpm velocity, and required cfm and test cfm after adjustments.

1.06 TEMPERATURE CONTROLS

A. Set adjustments of all controllers to operate as indicated. Make four hour temperature traverse of each area or zone. Provide testing agency personnel with instruments to verify reports to Architect.

1.07 FINAL TEST

A. At conclusion of testing agency's work, demonstrate to the Architect that the equipment is mechanically sound, that the systems deliver the rated output without objectionable noise, distress or vibration, and that the temperature controls are functioning properly.

END OF SECTION 15200

SECTION 15400 - PLUMBING

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The work to be performed under this section of the Specification shall include all labor, materials, equipment, transportation, construction, facilities, and incidentals necessary for the proper execution and completion of all Plumbing work as shown and indicated on the Contract Drawings, and/or specified herein with the intent that the installation shall be complete in every respect and ready for use.

1.02 GUARANTEE

A. All materials and equipment provided and/or installed under this section of the specifications shall be guaranteed for a period of one year from the date of acceptance of the work by the Owner. Should any trouble develop during this period due to defective materials or faulty workmanship, the Contractor shall furnish all necessary labor and materials to correct the trouble without any cost to the Owner.

1.03 CODES AND REGULATIONS

A. All work performed under this section shall conform with all local governing regulations, and in case of conflicting requirements, the most stringent shall apply. Minimum requirements shall be the Florida Plumbing Code. All electrically operated equipment specified in this section shall comply with the National Electrical Code.

B. Should it be found that any part of the work shown or specified is not in accordance with local regulations, the Architect shall be so advised at the time of bidding and all work installed as required to meet the local codes.

C. The Contractor shall comply with the latest revisions of all county, district, municipal, or local building codes, interpretations, buildings permits to include but not be limited to:

1. Florida Building Code – 2023 with all supplements
2. Florida Mechanical Code – 2023 with all supplements
3. Florida Plumbing Code – 2023 with all supplements
4. Local Municipal Codes

1.04 FEES AND PERMITS

A. The Plumbing Subcontractor shall obtain and pay for all permits, fees for inspection, and other charges that may be necessary for fully completing the work. The Plumbing Subcontractor shall make all necessary tests required by City, County, or State authorities, legal regulations, and/or the Architect, and return to the Architect any certificates of approval issued in this district for plumbing work, etc. signed by the inspector in charge of each particular part of the work.

1.05 RESPONSIBILITY OF BIDDER

A. Each bidder shall visit the site of the proposed work and fully acquaint himself with conditions relating to the construction requirements so that he may fully understand the facilities, difficulties and restrictions contingent upon the execution of the work under this contract. The failure or omission of any bidder to receive or examine any form, instrument, addendum or other document shall in no way relieve any bidder from his obligations with respect to his bid or the contract. The submission of a bid shall be taken as prima facia evidence of compliance with this paragraph and that he has included in his proposal every item of cost necessary for a complete installation of air conditioning, heating and ventilation operations strictly as planned, specified, and intended.

1.06 PIPING

A. Provide pipe sleeves through masonry construction, and install escutcheon plates around exposed piping in all rooms.

B. Soil, waste, and vent lines shall be Schedule 40 PVC-DWV in accordance with Commercial Standards CS272-65 or ASTM Standards D2665-68. Soil, waste, and vent lines penetrating a fire rated wall or floor shall be service weight cast iron at the point of penetration only.

C. Piping within walls and below grade shall be Schedule 40 PVC-DWV in accordance with Commercial Standards CS272-65 or ASTM Standards D2665-68.

D. All plastic pipe shall bear the NSF Seal of Approval, and such other markings as required by the aforementioned standards.

E. Above slab cold water and hot water piping shall be Type "L" hard copper with sweated joints, using wrought fittings and non-corrosive flux. Below slab cold water piping shall be type "K" soft copper tubing.

1.07 PIPE SUPPORT

A. Hangers: Support all suspended piping with clevis type hangers equal to Grinnell #260, 5'-0" o.c. Architect shall approve all methods of attachment of hangers to construction. Hangers in contact with copper piping shall be copper, or copper plated.

B. Vertical Support: Steel bar base clamped to pipe or grip strut channel with offset clamps. Support members to be of same material as supported material where possible.

1.08 PIPING PLACEMENT

A. Place in most direct manner permitted by construction, free of unnecessary offsets. Changes in direction by means of standard fittings.

B. Grade 2" waste lines 1/4" per foot and 3" and 4" waste lines 1/8" per foot for positive flow. Secure all piping to structure.

C. Soil Pipe: Support to firm earth below floor slabs.

1. Changes in direction of drainage pipe shall be made by means of suitable bends and branches of Y's and long sweeps. Short radius quarter bends are prohibited.
2. Connections to vertical soil pipe to all connections in horizontal soil pipe to be made by "Y" fittings.

3. Do not begin work until elevation of final connection point is verified and grading of entire system can be determined (even if final connection is specified under another section).

D. Vent Pipes:

1. Main soil pipe stacks to be extended up through the building full size with increaser through roof per code.
2. Connect branch vents into main stacks with connections not less than 4 feet above the highest fixture.
3. All vent stacks shall be connected at the bottom to main drainage system and all horizontal runs shall be graded so as to discharge all water or condensation.

E. Water Piping: Place supply pipes as shown or as directed in neat arrangement and parallel or at right angles to walls, joists, etc.

1. Place air chamber extensions 12" long on top of all risers and one pipe size larger than the riser.
2. Place shock absorbers at each fixture group as recommended by manufacturer. Shock absorbers shall be PDI certified.
3. Place valves on all water pipe risers and branch lines at point where risers and branch lines connect to main water lines.

PART 2 - PRODUCTS

2.01 WATER PIPING

A. All water piping, unless otherwise shown or specified shall be copper pipe Type L or K as specified having a wall thickness of not less than .035 inches. It shall be clean, round, straight, and true to size, free from flaws and other defects.

B. All fittings on copper pipe shall be copper. The pipe and fittings shall be thoroughly cleaned before inserting into the joint and then soldered with lead free solder.

2.02 UNIONS

A. Unions shall be provided on inlet and outlet of all apparatus and equipment. Where valves are adjacent to equipment, unions shall be on downstream side of valves.

B. Unions in copper pipe shall be cast bronze, WOG pattern, ground joint, 150 psi type.

C. Unions in steel pipe shall be malleable iron, WOG female pattern brass seat, ground joint, 150 psi type.

D. Unions connecting dissimilar metals shall be dielectric type.

2.03 TRAP PRIMER DISTRIBUTION UNIT

A. Zurn Z1072 barrier trap seal or equal to be provided for all floor drains in lieu of trap primer.

B. ProSet Systems Trap Guard or equal to be provided for all hub drains in lieu of trap primer.

2.04 VALVES AND COCKS

A. Valves and cocks shall be installed where shown on the drawings, and/or where found to be necessary for proper operation of the system. All branches from risers, all branches from mains, and all fixtures or equipment not having stops shall be provided with valves whether shown or not.

B. Angle or straightway chromium plated stops on the supplies to all fixtures accessible from the same room in which the fixtures are located.

C. All valves shall be the product of one manufacturer as cataloged by Milwaukee, Stockham, Crane, or Nibco.

D. For water piping, valves shall be equal to 125 psi SWP/200 psi WOG Nibco as follows:
1. Gate valves 1/2" to 3" = S-111.
2. Ball valves 1/2" to 2" = S-585.
3. Check valves 1/2" to 3" = S-413W.

2.05 THERMAL INSULATION WORK

A. All insulation work shall be performed by experienced insulation application mechanics thoroughly familiar with and experienced in the application of insulation materials. All insulation materials shall be applied in accordance with manufacturer's published recommended methods. Installation and finish of insulation materials shall meet with complete data for approval of materials and application methods as proposed for use. All piping shall be pressure tested and all surfaces shall be thoroughly cleaned before covering is applied. Insulation materials, including sealer, adhesive, finished, etc., shall meet NFPA Standards with regard to flame spread and support of combustion.

B. All hot and cold water piping shall be covered with 1" thick heavy density fiberglass sectional pipe insulation equal to Owens Corning Fiberglass 25 ASJ/SSL, excluding piping below grade or chromium plated fixture connections.

C. Fittings for the above shall be insulated with premolded fitting insulation of the same material and thickness as the adjacent insulation and shall be covered with a premolded plastic (PVC) vapor barrier and sealed with vapor barrier lagging adhesive. Covering adjacent to unions and other points of termination shall be finished with the plastic material neatly beveled.

D. It shall be the responsibility of the insulation subcontractor to coordinate hanger locations and prevent crushing or breaking finishes.

E. Contractor shall insulate hot water supply assembly and P-Trap assembly with Armaflex 3/8" foam insulation kit on handicapped lavatories.

F. Floor drain traps and horizontal piping above finished areas used for a/c condensate drainage shall be insulated with 1" thick blanketed insulation.

2.06 FLOOR, WALL, AND CEILING PLATES

A. Nickel plated floor, wall, and ceiling plates shall be provided on all pipes passing through floor, ceiling, or partition. Nickel or chromium plated escutcheons shall be provided on all fixture supplies.

2.07 PLUMBING FIXTURES AND EQUIPMENT

A. Provide roughing-in for and connect to supply lines, waste and vent lines, all equipment, fixtures, drains, etc., specified herein or in other sections of the specifications which require such connections.

B. Provide stops in hot and cold water connections to each fixture, equipment items, etc. Where not otherwise specified, stops shall be same as specified hereinbefore for ball valves. Provide deep escutcheon on all sinks and lavatories where waste pipe goes into wall. Anchor all supplies from wall securely within wall construction.

C. Provide stops for all fixtures. Traps for all fixtures shall be 17- gauge chromium plated brass.

D. Plumbing fixtures shall be equal to American Standard, Crane, Kohler, or Eljer. No others will be accepted.

E. Faucets shall be lead free, code compliant, and certified to NSF Standard 61, Section 9.

F. Plumbing fixtures shall be as follows:

P-1 WATER CLOSET: Kohler K-4350 elongated bowl with Sloan Royal 111 flush valve. Provide with flexible riser with stop and Beneke 523 white open front seat less cover.

P-1A WATER CLOSET (Handicapped): Kohler K-4368 17" high elongated bowl with Sloan Royal 111 flush valve. Provide with flexible riser with stop and Beneke 523 white open front seat less cover.

P-2 LAVATORY: Kohler K-2005, 20" x 18" wall hung with Delta 520-DST faucet with grid waste. Provide 1-1/4", 17-gauge P-Trap, flexible supplies equal to Eastman and feet supported concealed arm carrier equal to Zurn Z-1231.

P-2A LAVATORY (Handicapped): Kohler K-2005, 20" x 18" wall hung with Delta 520-DST faucet with grid waste. Provide 1-1/4", 17-gauge P-Trap, flexible supplies equal to Eastman and feet supported concealed arm carrier equal to Zurn Z-1231. Provide trap wrap 500R protective kit by Brocar or equal.

P-3 WATER COOLER (Handicapped): Elkay EZSTL8WSLK barrier free with bottle filling station, split level, wall hung type with 8 GPH capacity. Provide 1-1/4", 17-gauge P-Trap, flexible supply equal to Eastman and carrier equal to Zurn Z-1225. Install per ADA requirements.

P-4 MOP SINK: Fiat Model TSB-100, 24” x 24” x 12” deep, floor mounted Terrazzo mop sink with strainer for 3” drain. Provide 830-AA service faucet with vacuum breaker and pail hook, hose and hose bracket, and mop hanger.

P-5 BREAKROOM SINK: Just USXF-1824-A, 18" x 24" x 10-1/2" deep stainless steel, single compartment, under counter mounted sink with Just J-901deck faucet with spray. Provide Just J-35 grid strainer, 1-1/2" 17-gauge chromium plated tail piece, P-Trap, flexible supplies with stops equal to Eastman and garbage disposal equal to InSinkErator.

P-6 ICE MAKER VALVE BOX: 9" x 6" full recessed, Guy Gray BIM875 with 1/2" FIP inlet x 1/4" O.D. outlet compression angle valve.

G. Floor Drains (All Locations): Zurn ZN-415 Series with nickel bronze top and flashing collar. Floor drains shall be provided with trap primer tap as indicated on plans. Floor drain traps and horizontal piping above finished areas used for a/c condensate drainage shall be insulated with 1" thick blanketed insulation.

2.08 CLEANOUTS

A. Provide in cast iron sanitary piping at all changes in direction at ends of branches, at intervals not exceeding 40' on straight runs, and elsewhere as shown. Cleanouts shall be full opening type completely accessible. Size same as lines in which they occur, but not larger than 4". Tees and extensions shall be of same weight as pipe. Plugs shall be countersunk type. Catalog numbers from Josam or approved equal.

B. Outside cleanouts to grade shall be brought up flush with finished grade and installed in 12" x 12" x 6" concrete pad, cleanout plug shall be countersunk.

C. In Outside Line: 58190 cast iron head and ferrule with cadmium plug. Terminate at grade or pavement in 18" x 18" x 6" concrete pad with tooled edges.

D. In Finished Walls: 58790 cast iron cleanout tee with cadmium plug and stainless steel wall plate cover. Where distance from plug to finish wall will exceed 4", provide 58710 extend cover from sanitary tee to bring plug within 4".

2.09 ACCESS DOORS

A. Provide Phillip Carrey, J.R. Smith, Zurn or equal Smith Model #4761, 12" x 16" chromium plated steel access panels where valves, trap primers, or shock absorbers occur in inaccessible walls or ceilings. All doors and covers shall be completely removable from frames. All hinges must be concealed type. Steel frames shall be 16-gauge with 14-gauge steel doors. Access doors installed in fire rated assemblies shall be UL fire rated type with automatic closures.

2.10 ELECTRIC WATER HEATER

A. Water heater shall have storage capacity and input KW as scheduled on the drawings. Units shall meet or exceed the energy requirements of ASHRAE Standard 90, shall be UL listed, and shall bear the Underwriters' Laboratories label. Tanks shall be coated with a ceramic coating which shall be warranted for a period of five (5) years against defects in materials and workmanship.

B. Thermostats shall be immersion type with low wattage density element of the screw-in type.

C. Provide unit complete with ASME rated pressure and temperature relief valve, vacuum relief valve, hose bibb, and galvanized drain pan.

D. Terminate blow-off from relief valve full outlet size to points indicated.

E. Water heater shall be Rheem, Ruud, Bradford White or A. O. Smith and shall be commercial type as indicated. Verify voltage from electrical plans.

PART 3 - EXECUTION

3.01 COMPLETION OF WORK

A. This Contractor shall arrange for the installation of all equipment in order that it progresses along with the general construction of the building, and in no case shall be hold up other phases of the work due to the fact his equipment is not properly installed.

3.02 TESTING

A. General: Perform all tests in the presence of the Architect or his representative. Test shall conform to local code requirements. File copies of all test reports in duplicate to physical plant.

B. Soil, Waste, and Vent Systems: Plug all openings, fill entire system with water to point of overflow and hold for at least one hour before inspection. System must remain full during the test without leakage. Each vertical stack with its branches may be tested separately, but any portion tested must have a 10' head. Provide test tees and plugs for all tests as required.

C. Water Supply System: Test and secure acceptance of entire system before the piping or hot water heaters are otherwise concealed. Test as follows: Disconnect and cap all outlets to plumbing fixtures and all other equipment not designed for the full test pressure. Fill the system with water; apply 150 psi hydrostatic pressure and hold until inspection is completed. All piping throughout shall be tight under test. Water piping shall remain under normal water pressure during construction where freezing conditions do not exist.

3.03 DISINFECTION

A. Disinfect all domestic water piping in accordance with local health department guidelines.

END OF SECTION 15400

SECTION 15510 - FIRE SPRINKLER SYSTEM

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The Contractor shall furnish all labor, materials, tools, and equipment, and perform all work and services necessary for or incidental to the installation, complete, of the fire protection system which shall be completely coordinated with the work of all other trades. All work shall be performed by an automatic sprinkler contractor licensed in the State of Florida who shall certify the complete installation.

B. Although such work is not specifically shown or specified, all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a complete and operable installation shall be furnished and installed as part of this work.

C. The subcontractor for the fire sprinkler system shall include in the cost of the work, detail sprinkler system drawings, custom designed to the actual field conditions and the installation shall exactly match the drawings prepared. Such sprinkler system design shall incorporate features to cause maximum insurance rating benefit to the Owner. In addition, drawings shall be prepared per the requirements of NFPA 13. Documents shall be signed and sealed by a professionally registered engineer in the State of Florida and submitted for permitting.

D. Shop drawings shall be suitable for permitting and signed and sealed by a professional engineer registered in the State of Florida.

1.02 DESCRIPTION OF WORK

A. Work included in this section of the specifications shall consist generally of, but is not limited to, the following major systems or categories of work:

The work includes the hydraulic design and installation of an automatic wet pipe fire extinguishing sprinkler system for light hazard occupancy for the entire building. Wet pipe protection shall be for all spaces located below the ceiling. The wet piping shall be located as close to ceiling as possible to allow for ceiling insulation to cover wet pipe system. The design, equipment, materials, installation and workmanship shall be in strict accordance with the required and advisory provisions of NFPA 13, except as modified herein. System shall include all materials, accessories, and equipment necessary to provide an automatic system which is complete and ready to use. Design and install system to give full consideration to lighting blind spaces, piping, electrical equipment, ductwork, and all other construction and equipment to afford complete coverage in accordance with prevailing code requirements. Devices and equipment for fire protection service shall be of an approved make and type listed by the Underwriters' Laboratories, Inc., or approved by the Factory Mutual System.

1.03 SPRINKLER CODES AND STANDARDS

A. Entire system shall be installed in accordance with the following codes and standards for the occupancy hazards as hereinbefore specified.

B. Standards of the National Fire Protection Association: Sprinkler Systems No. 13.

C. A new fire service main including excavation and connection where indicated.

D. Any special requirements of the building's Insurance Underwriter or IRA.

E. Requirements of the fire inspection bureau having jurisdiction.

F. Florida Building Code.

1.04 INSTALLATION

A. Furnish and install a complete fire protection system in accordance with this specification and as required by state and local governing codes.

B. System shall consist of connection to water service, valves, piping, all underground piping to sprinkler system. Provide sleeves at all floor and wall penetrations.

C. The Contractor shall conduct a flow test to insure available flow and pressure at point of connection.

D. The system classification shall be for light hazard occupancy to protect the facility. Should particular areas of the facility be classified other than as indicated coordinate with Engineer.

1.05 SUBMITTALS

A. Submit a 1/8" = 1'-0" minimum scale reproducible shop drawing in accordance with NFPA #13 to the Architect. The Architect will forward copies to the Owner's insurance underwriter for approval and/or comments. Verify all clearances, lighting fixtures, piping, etc., at job site or from contract documents.

B. Approval by Architect will be for general location only. Approval by insurance carrier will be for specific recommendations which shall be strictly adhered to. Where there is conflict between authority's recommendations and these drawings and specifications, recommendations by the authority shall govern.

C. Submit to Architect for approval actual photographs or samples of all items of equipment which will be visible with the finished work. Include such items as siamese connections, valves, flow switches, sprinkler heads, etc.

PART 2 - PRODUCTS

2.01 MATERIALS SPECIFICATIONS

A. All material and equipment shall be furnished by an established and reputable manufacturer. All material and equipment shall be new, unused, and of first class construction designed and guaranteed to perform the service required and shall be approved by NFPA and UL.

B. Underground pipe shall be polyvinyl chloride (PVC) DR 18 pressure pipe, with push-on joint, thickness class 150 in accordance with AWWA C900. Cast iron piping may be used as an alternative. Coordinate materials and installation with the site utilities contractor.

C. Above grade piping shall be black steel, Schedule 10 for sizes 2-1/2" and larger; ASTM A135. Fittings shall be UL and FM approved mechanical couplings. Piping 2" and smaller shall be Schedule 40 black steel with 175 lb. screw pattern fittings. Provide thrust restraints where steel piping is connected to cast iron.

D. All piping exposed to view shall be painted before final acceptance by Owner. Remove all rust, scale, dirt, etc., and prime and finish with red pipeline enamel.

2.02 PIPE HANGERS

A. Pipe hangers shall be spaced in accordance with requirements of NFPA. Hangers, hanger rods, inserts and clamps shall be constructed as approved by same and have zinc or galvanized coating. Hangers shall be same type as specified in plumbing section.

2.03 DRAINS

A. Install approved drains at low points of all piping and elsewhere as required to permit complete drainage of system without disconnection of any piping. Drain and test connections on end of sprinkler branches shall be piped to exterior of building.

2.04 VALVES

A. Only approved OS&Y as required by Underwriters' Laboratories and NFPA shall be used. Check valves shall be approved by NFPA. Test and drain valves and hangers shall be approved and shall conform to requirements of NFPA. All OS&Y valves used in fire protection system shall have provisions for padlocking and tamper switches. (Tamper switches shall be furnished and installed by the fire protection contractor and wired by the electrical contractor. Fire protection contractor shall coordinate power requirements of tamper switches with Electrical Engineer.)

2.05 BALL DRIP

A. Install ball drips at each location shown on plans or where required. Ball drips to be 1/2" size, Elkhart No. 701 or equal.

2.06 SIAMESE CONNECTIONS

A. Provide and install as shown on drawings two-way siamese connection with a 4" x 2-1/2" x 2-1/2" cast brass angle body with chrome plated connections. On face of siamese shall be written the words "Automatic Sprinkler". Automatic ball drip and check valve shall be UL and NFPA pamphlet No. 14 approved. Threads on each siamese shall meet local fire department requirements. Siamese connections shall be provided for mounting on backflow preventer as indicated on Civil Drawings. Provide brass plugs and chain with entire assembly chrome plated finish. Unit shall be Elkhart 156 with dependent drop clapper valves. Acceptable manufacturers: Potter-Roemer and Croker-Standard.

2.07 SPRINKLER HEADS

A. Install all sprinkler heads as required by NFPA No. 13. Heads shall be rated for various temperatures and flows as determined by National Fire Protection Association. In no case shall they be rated at more than 165EF.

B. Furnish spare sprinkler heads and wrench as required by NFPA and place in metal cabinet on job site where directed by Architect.

C. All sprinkler heads shall be of type and operating temperature as required by specific location of installation. All sprinkler heads in finished areas with ceilings shall be recessed type covered by white metal plates. Sprinkler heads shall be equal to those manufactured by Grinnel, Automatic Sprinkler or Viking.

2.08 SPACE LIMITATIONS

A. Route piping to avoid interferences with ducts, piping, lighting, etc. Necessary offsets, crossover or other routing shall be provided to permit all systems to be installed in available space. Offsets, crossovers, etc., are not shown on drawings. Investigate mechanical, electrical, and architectural drawings to ascertain how work of other trades affect installation.

2.09 FLOW SWITCHES

A. Install UL approved flow switches and alarm devices where shown or required. Flow switches shall be Autocall, Notifier with electrical rating for pilot duty only. Switches shall be suitable for working pressures of 150 psi with adjusting screw to provide sensitivity. Wiring from flow switches to fire alarm system provided under another section. Coordinate power requirements and points of connection with electrical contractor. Switch shall have contacts required for interconnection to the fire alarm system.

2.10 POST INDICATOR

A. Supervisor switch shall be weather proof, 24 volt, AC or DC. Supervisory switch shall be tested and listed by UL and/or FM. Coordinate installation with site utility contractor.

2.11 BACKFLOW PREVENTER

A. Shall be of the double check type assembly equal to Watts Series No. 709, 6" in size. Coordinate installation with site utility contractor.

PART 3 - EXECUTION

3.01 TESTS AND INSPECTION

A. Work included herein shall include all tests and inspections by State authority and/or local Fire Marshall and all permits or inspection fees connected therewith. At completion of work and prior to acceptance by Owner, demonstrate complete operation of system including alarms.

3.02 DRAWINGS

A. Drawings are diagrammatic. Field route all piping on job site. All piping in finished spaces shall be run concealed.

3.03 COORDINATION

A. Sprinkler contractor shall coordinate with utility the requirements of pressure and water supply for satisfactory operation of this system.

END OF SECTION 15510

SECTION 15800 - HEATING, VENTILATION AND AIR CONDITIONING

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The work consists of furnishing all labor, materials and incidentals necessary for a completely functional system. In general, the work shall include, but not necessarily be limited to the following major components, products and materials.

1. Ductwork, Grilles, Registers and Diffusers
2. Temperature Controls
3. Insulation Materials
4. Split System Direct Expansion Heat Pump Units
5. Fans (Exhaust)
6. Dampers
7. Air Purification Device

1.02 CODES, FEES, PERMITS

A. The Contractor shall comply with all county, district, municipal, or local building code, interpretations, building permits and assessments of fees for building permits, and ordinances.

B. The Contractor shall obtain and pay for all required permits, inspections, and certificates of inspection. Certificates of inspection shall be delivered to the Architect upon completion of the job.

C. The Contractor shall comply with the latest revisions of all county, district, municipal, or local building codes, interpretations, buildings permits to include but not be limited to:

1. ASHRAE, 2012 "HVAC Systems and Equipment" - Chapter 19, Duct Construction
2. SMACNA Standards for Duct Construction
3. Florida Building Code - 2023
4. Florida Mechanical Code - 2023
5. Florida Plumbing Code - 2023
6. ASHRAE 90.1 - 2013
7. ASHRAE 62.1-2013
8. NFPA-90A (2015) - Installation of Air Conditioning and Ventilation Systems
9. NFPA-101 (2015) - Life Safety Code
10. Local Municipal Codes

1.03 RESPONSIBILITY OF BIDDER

A. Each bidder shall visit the site of the proposed work and fully acquaint himself with conditions relating to the construction requirements so that he may fully understand the facilities, difficulties and restrictions contingent upon the execution of the work under this contract. The failure or omission of any bidder to receive or examine any form, instrument, addendum or other document shall in no way relieve any bidder from his obligations with respect to his bid or the contract. The submission of a bid shall be taken as prima facia evidence of compliance with this paragraph and that he has included in his proposal every item of cost necessary for a complete installation of air conditioning, heating and ventilation operations strictly as planned, specified, and intended.

1.04 SUB-DIVISIONS OF WORK

A. Each sub-division of work includes furnishing and installing all materials to make that part of work complete, and shall comprise all auxiliaries, setting of equipment, sleeves through building construction where required and etc., all in complete coordination with General Contractor and in cooperation with other trades. It is contemplated that all sub-divisions of work when completed will form a fully operational heating, air conditioning, and ventilation system for this project.

1.05 DRAWINGS

A. The drawings for the Heating, Ventilating and Air Conditioning for this job are diagrammatic. The Contractor shall make his own measurements at the site and in the building during construction and install the systems as the work progresses in such a manner that the equipment, piping, conduit, panels, and ductwork will fit into the finished space provided while maintaining headroom; and be neatly installed. All equipment and its interconnecting piping, ductwork, conduit, etc., shall be provided.

B. Due to differences between various manufacturers, it is not practicable to show exact dimensions of units, nor to show or specify all minor details of equipment. Contractor shall provide all valves, fittings and accessories as necessary for a complete installation, whether or not specifically mentioned or shown.

C. Equipment shall not be acceptable if operated in excess of the recommended and published ratings of the manufacturer.

1.06 FOUNDATIONS

A. The Contractor shall furnish all special foundations and supports for equipment, ductwork and piping which he installs, and which are separate and distinct from building construction as shown by Architectural drawings.

1.07 SAFETY PROVISIONS

A. Contractor shall be required at all times to perform his work in strict accordance with the Williams-Steiger Occupational Health and Safety Act of 1970.

B. Equipment with any projecting or rotating parts shall be totally enclosed or properly guarded.

1.08 NOISE AND VIBRATION

A. This Contractor shall be held responsible for elimination of all noises or vibrations transmitted to occupied areas from equipment which he may install. This applies particularly to airborne noises in ductwork, vibration and noises in piping, and vibration from mechanical equipment transmitted through bases to building structure.

B. This Contractor shall furnish and install all flexible connectors for ductwork connected to motor driven equipment.

C. Contractor shall closely coordinate work for location of mechanical equipment and roof openings.

1.09 CUTTING AND PATCHING

A. Mechanical subcontractors shall not do cutting and patching. This work shall be performed only by the original contractor whose work is to be cut or patched. No structural members may be cut, patched or disturbed without approval of the Architect.

B. The Contractor shall be responsible for blocking out and sleeving all openings in floors, walls, and ceilings for new piping, ductwork, etc., before concrete is poured.

1.10 RELATED WORK

A. The following items of material and labor incidental to or related to the work will be provided as follows:

1. Concrete forming and pouring, custom metal fabrication, painting, and general corrosion proofing and any other collateral work made necessary by the requirements of this section shall be performed by persons who are qualified in and specialize in that type of work or trade.

1.11 MOTORS AND STARTERS

A. This Contractor shall be responsible for the furnishing in place of all electric motors required for the operation of all heating, ventilating and air conditioning equipment. Electrical Contractor to provide all power wiring and conduit required for the operation of electrical motors as specified. Electric motors shall be selected in sizes as required to properly operate the equipment furnished but in no case smaller than those indicated on Equipment Schedules. Verify all electrical characteristics from electrical drawings before releasing motors for shipment. Electric motors shall have a service factor of 1.15 and power factor in accordance with ASHRAE 90-75.

B. This Contractor shall furnish all magnetic motor starters required to operate heating, ventilating, and air conditioning equipment and turn over to the Electrical Contractor for installation. All motor starters shall be provided with:

1. 1 thermal overload per phase leg.
2. A 110 volt coil and a hand-off-automatic switch, if motors are subject to electrical interlock unless otherwise specified.

C. If equipment is provided with R.L.A. in excess of design conditions the Mechanical Contractor shall stand the expense of associated electrical changes.

D. It is the responsibility of the Mechanical Contractor to provide thermal overloads of the proper size as required by the actual motor nameplate amps. Motor starters shall comply with the requirements of the latest edition of the National Electrical Code and the local utility service company.

E. Enclosures: Enclosures for starters and other controls equipment installed indoors may be NEMA 1. Outdoor enclosures shall be NEMA 4 or 4X of aluminum, stainless steel, or reinforced polyester resin construction.

1.12 PAINTING

A. All equipment furnished without factory paint or galvanized finish shall be thoroughly cleaned and given a prime coat, then a finish coat of paint in a color as selected by Architect/Engineer. Any equipment finish that is damaged or chipped, shall be spot painted to match existing surface. Any miscellaneous metals used by this Contractor that are not galvanized shall be given two coats of paint in color specified by Architect. Any rusty or corroded finishes shall be thoroughly cleaned and painted two coats of paint - one prime and one finish coat.

1.13 TESTS AND GUARANTEES

A. After completion of his work, and when the building is ready for occupancy, this Contractor shall operate the air conditioning or heating system for a period of two days. During the tests, the Contractor shall adjust controls, outlets, etc.

B. The Contractor shall repeat operational sequence during heating and/or cooling season, whichever had not been subject to prior test period.

1.14 SHOP DRAWINGS

A. Materials and equipment schedules shall be submitted as soon as practicable but not later than thirty (30) days after the date of award of contract, and before commencement of installation of any material or equipment. A complete schedule of the material and equipment proposed for installation shall be submitted for approval. The schedule shall include catalogs, cuts, diagrams, drawings, specifications and such other descriptive data as may be required by the Engineer. All materials required to be submitted for approval under this section shall be submitted at one time. Partial submittals will not be considered. They will be returned as "not approved".

B. Shop drawings shall be submitted for approval on the following items of equipment: Subject drawings shall include all data pertinent to the performance and installation of all equipment.

1. Air Distribution Devices - Grilles, Diffusers, Registers
2. Temperature Controls
3. Insulation Materials
4. Split System Direct Expansion Heat Pump Units
5. Exhaust Fans
6. Dampers
7. Air Purification Device

1.15 QUALITY OF MATERIALS AND EQUIPMENT

A. It is not the intent of these specifications to limit material and/or equipment selections to one manufacturer; however, the Engineer reserves the right to be the final and sole judge with regard to equals.

B. Approvals of equipment are based on capacities, equality of workmanship and components, or general and special construction features. Approval of equipment does not relieve the Contractor of coordination responsibility with other trades. Equipment shall fit within the physical space of equipment shown and have same general connection as that shown on drawings. Manufacturer’s required clearances shall be maintained for servicing and maintaining equipment.

C. Where equipment submitted varies from the general arrangement of that specified, Contractor shall submit detailed sheet-metal and equipment brochures. Shop drawings shall indicate any and all sheet-metal, electrical, piping and structural changes required to facilitate change. Any and all additional costs incurred by changes will be borne by this Contractor.

1.16 PRODUCT DELIVERY, STORAGE & HANDLING

A. Deliver distribution devices in individual wrappings to prevent damage to finish surface of device. Store in a dry, protected area until installed. After installation of devices, clean soiled surfaces.

PART 2 – PRODUCTS

2.01 SINGLE WALL LOW PRESSURE DUCTWORK

A. The sizes, runs, and connections of ducts shall be as indicated. Adhere to drawings as closely as possible. The right is reserved, however, if required to meet structural or other interferences, to vary run and shape of ducts and offsets during progress of work, at no extra cost to the Owner. Ductwork specified herein shall have rectangular cross section, unless otherwise indicated.

B. Materials - Methods of Construction: Details of construction and materials not specified herein shall be in accordance with SMACNA Low Velocity and ASHRAE "Guide" recommendations. Fabricate ductwork in workmanlike manner with airtight joints presenting smooth surface on inside, neatly finished on outside. Seal all duct joints airtight with approved tape or mastic before insulation is applied. Construct ductwork air extractors, spin-in taps with air scoops, turning vanes, splitter dampers, etc., to ease air flow and balancing of air. The joint between the trunk duct and any air extractor or spin-in tap shall be sealed with approved tape or mastic. Unless otherwise indicated, where square elbows have to be used, provide fixed deflectors. Construct, brace and support ducts in manner that they will not sag or vibrate to any perceptible extent when fans are operating at maximum speed and capacity. Ductwork shall be galvanized sheet steel unless otherwise specified. Distance between joints of any size duct shall not exceed 8'.

C. Sheet metal gauges for rectangular duct construction shall be:

Steel U.S. Std. Gauge	Maximum Size Inches	Type of Transverse Joint Conn.	Bracing
24	up to 12	S-Drive, pocket or bar clips on 7"-10" centers	None
24	13 to 24	S-Drive, pocket or bar clips on 7"-10" centers	None
24	25 to 30	A-Drive, pocket or bar clips on 7"-10" centers	1x1x1/8" angle
20	30 and greater	S-Drive, pocket or bar clips on 7"-10" centers	1x1x1/8" angle

D. Duct Support: Support horizontal ducts with hangers spaced not more than 8' apart, place hangers at changes in directions. Use metal strap hangers for ducts up to 30" wide, angle hangers for ducts over 30" wide. Make strap hangers 1" by 16-gauge minimum, extended down both sides of duct and turn under bottom 2" minimum, fasten sides and bottom with sheet metal screws.

D. Provide flexible duct connectors between ducts and air handler. Connectors shall be constructed of 29 ounce, fire resistant, neoprene-coated fiberglass approximately 6" wide, bordered by crimping to sheet metal and fastened to ducts with screws not more than 2" on centers. Connection shall meet pressure classification of duct system used. Acceptable manufacturers shall be Ductmate, DuroDyne, or FanAir.

F. Flex duct runouts to air devices shall be the acoustical insulated type with mechanical lock helix. Flex duct shall have factory wrapped, fiberglass insulation and fire retardant, reinforced metalized aluminum vapor barrier. Helix shall be corrosion resistant galvanized steel, formed and mechanically locked to fabric. Flexible duct shall have a CPE inner film liner. Ductwork shall be in accordance with UL 181. Flexible duct shall have a working pressure of up to 6" w.g. positive pressure (thru 16" diameter). Operating temperature shall be from -20 °F to 200 °F. Flame spread shall be less than 25 and smoke developed rating shall be less than 50. Ductwork shall have a minimum insulating value of R=6.0. Maximum length shall be limited to 8'-0". Where branch duct runouts exceed 8'0" in length install round snap-lock duct from trunk duct take-off to within 8'0" of air device as required for flex duct connection. Flexible duct shall be Flexmaster Type 9M or equal. Fabric type duct supports are not acceptable.

G. Spin-in fittings for connecting flex duct run-outs to trunk duct shall be Air-Trac, Flexmaster, Ductmate, or approved equal. Fitting shall have a balancing butterfly damper and air extractor. Provide minimum 22-gage spin-in and scoop with a 20-gage damper. Perimeter clearance of damper in spin-in shall not exceed 1/8".

2.02 DAMPERS

A. Provide splitter and deflecting vanes for control of air volume and direction, and for balancing system where indicated, specified, directed or required.

B. Dampers shall be of same materials as duct, at least one gauge heavier than duct, reinforced where directed, and shall have an accessible location indicating quadrant, locking device for adjusting and locking dampers in position.

C. Stiffen duct at damper location, install damper in manner to prevent rattling.

D. Manual volume dampers shall be of the opposed blade type. They shall be furnished in sizes shown on plans. Frame and blades shall be 16-gauge galvanized steel with mill galvanized finish. Frames shall be structurally equivalent to 13-gage U-channel. Blades shall have horizontal orientation. Provide with 2" hand quadrant standoff bracket for insulated ductwork. Manual volume dampers shall be suitable for application in HVAC systems with velocities up to 1500 fpm. Dampers shall be tested in accordance with AMCA 500. Equal to Ruskin Model MD35.

E. Automatic (motorized) dampers shall be of the parallel blade type. They shall be furnished in sizes shown on plans. Frame and blades shall be 14-gage galvanized steel with mill galvanized finish. Blades shall have horizontal orientation and be airfoil type for low pressure drop and low noise generation. Linkage and hardware shall be zinc plated steel. Dampers shall be provided with solid stops for tight closing with sales on the blade edges and the sides of the damper frame which will stand a temperature of up to 200°F. These stops shall be so assembled that they may be easily replaced if they become damaged. Damper gasket shall be continuous 3/16" x 1/2" closed cell neoprene type. Bearings shall be corrosion resistant oil tight stainless steel sleeve type. Dampers shall be tight closing and shall be capable of less than 3.5% leakage based on an approach velocity of 1500 feet per minute when closed against a pressure of 4" w.g. Submit leakage and flow characteristic data. Motorized dampers shall be suitable for application in HVAC systems with velocities up to 2000 fpm. Motorized dampers shall be equal to Ruskin No. CD60.

F. Manufacturers: Dampers may also be manufactured by Air Balance, Arrow United Industries, Greenheck, Industrial Louvers, Louvers and Dampers, or Nailor-Hart.

2.03 ACCESS DOORS

A. Air duct access doors shall be steel of the double wall insulated type complete with hinges and camlock latches. Insulation shall be 1" thick fiberglass with "K" factor of .26 at 75°F mean temperature. Provide access doors at all fire dampers and where indicated. Doors smaller than 8" shall have plexiglass window. Coordinate access door locations with Architectural reflected ceiling plan (this contractor to furnish).

Duct Diameter	Access Opening
8" thru 10"	7" dia.
11" thru 13"	10" dia.
14" thru 19"	13" dia.
20" and over	10" dia.

B. For rectangular ducts, the nominal size of the access opening shall be:

When mounted on minor axis:

Minor Axis	Access Opening
8" thru 11"	8" x 12"
12" thru 13"	12" x 12"
14" and over	14" x 20"

When mounted on major axis:

Major Axis	Access Opening
8" thru 16"	8" x 12"
17" thru 24"	12" x 12"
25" and over	14" x 20"

C. When used with insulated ducts, the access sections shall have glazed covers to prevent condensation.

2.04 GRILLES, REGISTERS, AND DIFFUSERS

A. Location of ceiling mounted type, sidewall type and floor mounted type air devices shall be as shown on plans. Install and fasten air distribution devices per manufacturer's detailed drawings. Use gaskets to make air-tight joints with adjoining construction. All air devices shall be sized not to exceed a N.C. level of (25).

B. Ceiling diffusers shall be equal to Titus series TDC-AA- adjustable type with 24" x 24" lay-in panel with opposed blade balancing damper of size and capacity as indicated on drawings. Provide with square to round duct connection. Round duct connection and face size shall be as shown on plans. Delete panel for ceiling diffusers installed in rigid ceilings. Ceiling surface mounted diffusers shall have a beveled drop face border type frame. Finish shall be off-white color.

C. Ceiling mounted return and transfer air grilles shall be equal to Titus Series 50F. Grilles shall be of aluminum construction with a 1/2"x1/2"x1/2" aluminum grid. Grille shall have a 90% free area (minimum). Provide with opposed blade damper (except for transfer/pressure relief). Border shall have countersunk screw holes for a neat appearance. Sizes shall be as indicated on plans. Finish shall be off-white color.

D. Sidewall supply grilles shall be equal to Titus 272RS with opposed blade balancing damper. Blades shall be double deflection type with the blades parallel to the short dimension. Blades shall be spaced at 3/4" on center. Grilles shall be of aluminum construction. Border shall have countersunk screw holes for a neat appearance.

E. Sidewall return air grilles shall be equal to Titus 4FL with opposed blade damper (unless otherwise noted on the architectural drawings). Blades shall be fixed deflection type with blades parallel to the long dimension. Blades shall be at a 45° deflection angle. Grilles shall be of aluminum construction. Border shall have countersunk screw holes for a neat appearance.

F. Location of ceiling mounted air distribution devices shall be coordinated with the architectural reflected ceiling plan. Install and fasten ceiling diffuser and return air grilles as per manufacturer's detailed drawings, use gaskets to make airtight joints with adjoining construction, join neatly with adjoining finished surface.

G. Acceptable manufacturers are Carnes, Nailor, Greenheck, Metal-aire, Titus, Price, or an approved equal.

2.05 INSULATION

A. General: All insulation work shall be done by workmen thoroughly competent in this trade and employed by a full-time insulation contractor. Failure to finish work neatly, failure to vapor proof joints, ragged edges, failure to cover all fittings, valves, dents on surface, etc., shall be proper cause to reject this work. This Contractor shall call same to the attention of the Architect before such work has progressed beyond the point of economical correction.

B. All material used shall be new and of first line quality and shall be as recommended by the manufacturer for the service intended. All insulation materials, including sealer material, adhesive, finishes, etc., shall be non-combustible. Complete installation shall be in accordance with manufacturer's requirements.

C. This Contractor shall be responsible for the removal from the site of all excess materials, cartons, scrap, etc. He shall protect equipment installed by others, cleaning such equipment should mortar, plaster, adhesive, etc., fall on same.

D. The following service shall be insulated with the listed thickness of materials:

SERVICE	INSULATION MATERIAL	THICKNESS	FINISH
Condensate Drain Piping & Refrigerant Piping	Armaflex Type ER	3/4"	Paint with acrylic protective paint where exposed to sun
Rectangular Supply, Return, Exhaust, and Outside Air Ductwork	1 lb. density blanket type fiberglass duct wrap (minimum R=6.0)	2”	Reinforced aluminum foil

E. All Armaflex insulation shall be slipped over piping with all butt joints and seams brushed with manufacturer’s recommend adhesive and sealed with an approved exterior grade mastic.

F. All insulation shall be installed as per material manufacturer's printed instructions.

G. Where piping insulation for condensate drain lines and/or refrigerant piping is exposed to the sun, the Contractor shall paint the insulation with two (2) coats of acrylic protective paint for UV protection. The first coat shall be white and the second coat shall be gray.

H. Insulation subcontractor shall submit complete product data brochures on insulation materials, jackets, finishes, mastics, cements, etc., for approval along with complete installation brochures for all materials used on this project. Installation methods shall be in accordance with printed instructions from material manufacturers.

I. It shall be the responsibility of the insulating subcontractor to coordinate hanger locations and prevent crushing or breaking of finishes.

J. All insulation materials, jackets, adhesives, coatings, etc., shall meet the Underwriters' Laboratories fire hazard classification (UL 723), for flame spread rating of 25, smoke developed rating of 50, and fuel contributed rating of 50.

K. Duct wrap insulation shall be applied to the outside surface of all heating, air conditioning and exhaust ductwork for a 100% coverage in accordance with SMACNA Standards. Insulation shall be constructed of glass fiber and shall be 1.0 pound density, 2" thick and comply with NFPA Bulletins 90A and 90B (minimum R value = 6). Insulation shall be secured with duct bands. All joints in insulation shall be butted together and brushed with adhesive. Insulation shall be by Owens Corning, Knauf, Pittsburg Corning, or equal.

2.06 REFRIGERANT PIPING

A. Piping shall be type "K" hard drawn copper, ASTM Spec. B280, and shall be mill cleaned, dried, and capped.

B. Fittings shall be extra heavy wrought copper in accordance with ANSI B9.1 with joints soldered using a high content silver alloy solder.

C. Installation shall be in accordance with unit manufacturer's requirements with all piping secured to walls and suspended above ceilings with approved galvanized hangers and clamps. Entire installation shall be in accordance with ANSI Standard B31.5 for refrigerant piping.

D. Insulate refrigerant suction line with 3/4" wall foamed plastic insulation slipped over tubing and all joints thoroughly sealed. Paint insulation with two coats of acrylic protective paint where insulation is exposed to weather. The first coat shall be white; the second coat shall be dark gray. Protect insulation with metal saddles and shields at all hanger points.

E. Suspend overhead piping and pipe runs above ceiling as detailed on the drawings with trapeze hangers at 4'-0" on center.

F. If field piping is used, piping diagrams shall be submitted by unit manufacturer showing pipe sizes, traps, service valves, etc., required for proper operation of equipment. Pre-charged tubing may be used at Contractor's option.

G. Test refrigerant system at 300 psi before charging system where units are to be field charged. System is to be thoroughly purged and evacuated before charging with refrigerant in accordance with manufacturer's recommendations. If factory pre-charged tubing is used, unit shall be checked and monitored for proper charge and efficient operation.

2.07 SPLIT SYSTEM HEAT PUMP CONDENSING UNIT

A. Units shall be completely factory assembled, wired, and statically tested. Units shall be ARI certified and rated in accordance with the latest ARI Standard for Heat Pump Units.

B. Construction shall be heavy gage galvanized steel with a weather resistant powder finish. Unit shall have a corrosion and weatherproof base.

C. Condenser coil shall be copper tube type with aluminum fins mechanically bonded to the tubes. If all aluminum coils are provided, manufacturer shall provide five-year warranty for the coil. Condenser coil shall be protected on all four sides by louvered panels.

D. Condenser fan shall be propeller type, vertical discharge with vinyl coated fan guard. Fan shall be electronically balanced to eliminate vibration and noise. Fan motor shall be direct drive, inherently protected with sealed ball bearings. Provide coil coating for sea coast application.

E. Compressors shall be designed for split system direct expansion use.

F. Compressors shall be sealed hermetic type with external vibration isolating mounts. Compressors shall have crankcase heaters to prevent oil dilution. Compressor section to contain filter drier and accumulator. Compressors shall have factory-mounted suction and discharge line service valves. Manufacturer shall provide five-year warranty on compressors and file warranty with Architect.

G. Controls shall be factory mounted and wired in an accessible enclosure within the compressor compartment. System controls shall have a fully automatic defrost cycle for heating operation. Safety controls shall consist of high-low pressure cut-out and compressor overload protection. Cabinet shall be set standard of quality in appearance and construction. Cabinet shall be of zinc coated sheet steel and finished with epoxy paint. Compressor section shall have a large access panel for ease of service.

H. Unit shall be provided with the following options:

1. Anti-short cycle timer
2. Evaporator defrost control
3. Indoor fan delay
4. Seacoast coil coatings and hardware kit
5. Low ambient kit
6. Rubber isolators

I. Unit shall have capacities as per schedule on drawings and shall be Trane, Carrier, Lennox, York, or an approved equal. EER (or SEER) and COP shall meet minimum requirements of heat pump unit schedule on the drawings.

2.08 SPLIT SYSTEM HEAT PUMP AIR HANDLING UNIT

A. Unit shall be completely factory assembled with direct expansion coil, insulated drain pan, fan and toolless filter section. Units shall be designed for vertical mounting as shown on the plans.

B. Evaporator coil shall be direct expansion, R-410A, copper tube with aluminum fins mechanically bonded. Thermal expansion valves shall have bypass line and check valve installed for heat pump use. Minimum tube size shall be 1/2" o.d

C. Evaporator fan shall be forward curved double inlet mounted on a common shaft with permanently lubricated ball bearings. Fan shall be statically and dynamically balanced for smooth operation. Evaporator fans shall have V-belt drives with adjustable pitch pulley or direct driven fans with multiple speed taps for adjustment.

D. Cabinet shall be constructed of hot dip galvanized sheet steel a minimum thickness of 18-gauge. Interior panels and top shall be covered with insulation to prevent heat gain and noise transmission. Drain pan shall be coated to prevent condensation and corrosion.

E. Filter shall be of standard size throwaway and not less than 1" thick. Filter section shall be toolless accessible from front of unit. Filters shall be a minimum of MERV 7 per ASHRAE 52.2.

F. Units shall have capacity as per schedule on drawings and shall be Trane, Carrier, Lennox, York, or an approved equal.

G. Electric heaters shall be UL listed and factory installed as an integral part of the air handler with timed defrost control. See section Electric Heaters hereinafter specified.

2.09 DRAIN CONNECTIONS

A. Ground Supported Elevated Frame Mounted A/C Equipment: Provide drain connection with 3" deep seal trap for all air conditioning units. Drain piping shall be schedule 40 PVC pipe with drainage pattern fittings and fusion welded type joints.

2.10 CEILING MOUNTED EXHAUST FANS

A. Ceiling cabinet type fans shall have 1/2" thick acoustical lined steel housing, direct drive centrifugal fan, backdraft damper, integral aluminum white powder coated ceiling grille, integral disconnect switch and speed controller. No plastic grilles will be acceptable. Fans shall be designed for ceiling mounting with exhaust duct termination where indicated. Fans shall have capacities as scheduled on drawings and shall be controlled as indicated. Fans shall be equal to Greenheck SP Series, Loren Cook GC Series, Twin City or an approved equal.

2.11 A/C CONTROL OPERATIONS

A. General space temperature shall be controlled by wall mounted thermostats located within the spaces as indicated on drawings. Thermostats shall be 7-day programmable (auto change over) and have battery back-up with night low and high limit settings. Thermostats shall have auxiliary output signal for control of a motorized damper in the outdoor air.

B. All controls including thermostats, humidistats and subbases shall be furnished by the a/c equipment manufacturer and installed by Mechanical Contractor.

C. Wiring: All control wiring external to the heat pump equipment shall be installed by the Controls sub-contractor under the direct supervision of the HVAC subcontractor. Control wiring shall be installed in conduit (see below) and shall be color coded to match system wiring diagrams and shall be installed in accordance with the electrical section of the project specifications.

*NOTE: All power wiring required for equipment operations shall be by the Electrical contractor. This contractor shall also provide all conduits as required for control wiring.

D. Test all units for two (2) 8-hour days under the supervision of manufacturer's representative, who shall make all necessary adjustments and instruct designated operating personnel in operation and maintenance of equipment and controls.

2.12 AIR CONDITIONING FILTRATION

A. Air Conditioning Systems Filtration Notes: It is the mechanical contractors responsibility to ensure the inside of each air handling unit with associated air distribution system is kept cleaned and not allow construction dust to infiltrate the system. Should the system become contaminated as determined by Architect, Engineer or Owner, the mechanical contractor shall be responsible for cleaning. The mechanical contractor shall take any precautions necessary to prevent construction dust from entering the system which shall include as a minimum:

B. Prior to activating the air conditioning system for building finish work, all filters shall be installed in each air handling unit.

C. The mechanical contractor shall maintain clean filters at all times. Regular filter replacement is recommended.

D. Prior to the Owner taking possession of the building, all filters in each air handling unit shall be replaced new. One complete set of replacement filters for each air handling unit shall be turned over to Owner for future installation.

E. At no time are any air handling units to be operated without air filters. Return grilles are to be covered with filter media during construction when units are in operation.

2.13 AIR PURIFICATION DEVICE (Bi-polar Ionization)

A. Quality Assurance:

1. The air purification system shall be a product of an established manufacturer in the USA. A qualified representative from the manufacturer shall be available to inspect the installation of the air purification system(s) to ensure installation in accordance with the manufacturer's recommendation. Technologies that do not address gas disassociation such as UV lights, powered particulate filters, and/or polarized media filters shall not be allowed. Uni-polar ion generators or plasma particulate filters shall not be allowed.
2. This project is designed in accordance with ASHRAE Standard 62 IAQ Procedure and shall require the manufacturer to provide Indoor Air Quality calculations using the formulas within ASHRAE 62.1-2007 to validate acceptable indoor air quality at the quantity of outside air scheduled with the technology submitted.
3. The air purification system shall be tested by UL or ETL to prove conformance to UL 867-2007 including the ozone chamber testing and peak ozone test for electronic devices. Manufacturers that achieve UL 867 prior to December 21, 2007 and have not been tested in accordance with the newest UL 867 standard with the ozone amendment shall not be acceptable. All manufacturers shall submit independent UL 867 test data with ozone results to the engineer during the submittal process. All manufacturers shall submit a copy with their quotation. Contractors shall not accept any proposal without the proper ozone testing documentation.
4. The maximum allowable ozone concentration per the UL 867-2007 chamber test shall be 0.007 PPM. The maximum peak ozone concentration per the UL 867-2007 peak test as measured 2 inches away from the electronic air cleaner's output shall be no more than 0.0042 PPM. Manufacturers with ozone output exceeding these ozone values shall not be acceptable.

B. Submittals:

1. Submit manufacturer's technical product data for ion generators including:
2. Schedule of plasma generators indicating unit designation, number of each type required for each unit/application.
3. Data sheet for each type of plasma generator, and accessory furnished; indicating construction, sizes, and mounting details.
4. Performance data for each type of plasma device furnished.
5. Indoor Air Quality calculations using the formulas within ASHRAE 62.1-2007 to validate acceptable indoor air quality at the quantity of outside air scheduled.
6. Product drawings detailing all physical, electrical, and control requirements.
7. Copy of UL 867 independent ozone test.

C. Delivery, Storage, & Handling:

1. Deliver in factory shipping containers. Identify on outside of container type of product and location to be installed. Avoid crushing or bending. Store in original cartons and protect from weather and construction work traffic. Store indoors and in accordance with the manufacturer's recommendation for storage.

D. Warranty:

1. Equipment shall be warranted by the manufacturer against defects in material and workmanship for a period of 2 years after shipment. Labor to replace equipment under warranty shall be provided by the installing contractor.

E. General:

1. The air purification system(s) shall be of the size, type, arrangement, and capacity indicated and required by the unit furnished and shall be of the manufacturer (or listed equal) specified.
2. All other suppliers of comparable products requesting prior approval shall submit for prior approval in accordance with the requirements of Section 15100. In addition, supplier shall provide their ASHRAE 62.1-2007 calculations that prove conformance to the ASHRAE Standard with the reduction of outside air to the scheduled values. A letter on the manufacturer's letterhead requesting prior approval must accompany the request for prior approval stating their calculations are ASHRAE compliant. A third party validation study performed on a previous installation of the same application shall also be included. Provide independent test data from ETL or UL showing ozone levels produced during the UL 867 ozone chamber test. Manufacturers without this test data shall not be acceptable.

F. Design & Performance Criteria:

1. Each piece of air handling equipment, so designated on the plans, details, equipment schedules, and/or specifications shall contain a plasma generator with bi-polar ionization output as described herein.
2. The bi-polar ionization system shall be capable of:
    a. Effectively killing microorganisms downstream of the bi-polar ionization equipment (mold, bacteria, virus, etc.).
    b. Controlling gas phase contaminants generated from human occupants, building structure and furnishings.
    c. Capable of reducing static space charges.
    d. Increasing the interior ion levels, both positive and negative, to a minimum of 800 ions/cm^3 measured 5 feet from the floor.

3. The bi-polar ionization system shall operate in a manner such that equal amounts of positive and negative ions are produced. Uni-polar ion devices shall not be acceptable.
4. Air exchange rates may vary through the full operating range of a constant volume or VAV system. The quantity of air exchange shall not be increased due to the requirements of the air purification system.
5. The air purification device shall not have maximum velocity profile.
6. Plasma generators shall not require preheat protection when the relative humidity of the entering air exceeds 85%. Relative humidity from 0-100% condensing shall not cause damage, deterioration, or dangerous conditions within the air purification system. Air purification system shall be capable of wash down duty.

G. Equipment Requirements:

1. Electrode specifications:
   a. Each Plasma generator with bi-polar ionization output shall include the required number of electrodes and power generators sized to the air handling equipment capacity. Unit shall be capable of treating total airflow scheduled on plans. Bi-polar ionization tubes manufactured of glass and steel mesh shall not be allowed due to replacement requirement, maintenance, performance reduction over time, ozone production and corrosion.
   b. Electrodes shall be energized when the main unit disconnect is turned on and the fan is operating. Electrodes shall be made from carbon fiber to prevent oxidation over time.
   c. Electrode pair shall provide a minimum of 140 million ions per cubic centimeter, both positive and negative ions in equal quantities. Devices providing less than the rated ion densities shall not be acceptable.
2. Air Handler Mounted Units: Where so indicated on the plans and/or schedules, plasma generators shall be provided and installed. The mechanical contractor shall mount the plasma generator and wire it to the AHU control power (24 VAC) as instructed by the air purification manufacturer's instructions or line voltage subject to power available. Each unit shall be designed with in integral illuminated LED and dry contacts to prove ion output is operating properly. The dry contacts shall close to prove the ion generator is working properly and may be daisy chained in series such that only one dry contact per AHU is required to interface to the BAS or the optional DDC controller. Dry contacts proving power has been applied in lieu of the ion output is actually operating are not acceptable.
3. Plenum/Duct Mounted Units: Where so indicated on the plans and/or schedules, plasma generators shall be provided and installed. The generator shall be installed through the duct wall and into the airstream with the external power head in a convenient location for visual indication of power, removal and servicing, by the mechanical contractor. The dry contacts shall close to prove the ion generator is working properly and may be daisy chained in series such that only one dry contact per duct is required to interface to the BAS or the optional DDC controller.
4. Ionization Requirements: Plasma generators with bi-polar ionization output shall be capable of controlling gas phase contaminants and shall be provided for all equipment listed above.
   a. The bi-polar ionization system shall consist of bi-polar plasma generator and power supply. The bi-polar system shall be installed where indicated on the plans or specified to be installed and powered by 24 VAC.
   b. The ionization output shall be controlled such that an equal number of positive and negative ions are produced. Imbalanced levels shall not be acceptable.
   c. Ionization output from each electrode shall be a minimum of 140 million ions/cc when tested at 1" from the ionization generator.

5. All manufacturers shall provide documentation by an independent NELEC accredited laboratory that proves the product has minimum kill rates for the following pathogens given the allotted time and in a space condition:
   a. MRSA - >96% in 30 minutes or less
   b. E.Coli - >99% in 15 minutes or less
   c. TB - >69% in 60 minutes or less
   d. C.diff - >86% in 30 minutes or less
6. Manufacturers not providing the equivalent space kill rates shall not be acceptable. All manufacturers requesting prior approval shall provide to the engineer independent test data from a NELEC accredited independent lab confirming kill rates and time meeting the minimum requirements stated above. Products tested only on Petri dishes to prove kill rates shall not be acceptable.
7. The operation of the electrodes or bi-polar ionization units shall conform to UL 867-2007 with respect to ozone generation. There shall be no ozone generation during any operating condition, with or without airflow.

H. Electrical Requirements:

1. Wiring, conduit, and junction boxes shall be installed within housing plenums in accordance with NEC NFPA 70. The contractor shall coordinate electrical requirements with the air purification manufacturer during submittals.
2. Control Requirements:
3. All plasma generators shall have internal short circuit protection, overload protection, and automatic fault reset.
4. Integral airflow sensing shall modulate the plasma output as the airflow varies or stops. A mechanical airflow switch shall not be acceptable as a means to activate the plasma device due to high failure rates and possible pressure reversal.
5. The installing contractor shall mount and wire the plasma device within the air handling unit specified or as shown on plans. The contractor shall follow all manufacturer IOM instructions during installation.
6. All plasma devices shall have a means to interface with the BAS system. Dry contacts shall be provided to prove there are ions being produced. Systems providing indication that power is applied to the plasma device, but not directly sensing the power at the ion output shall not be acceptable.
7. Plasma systems that use multiple modules with ion output alarm wires wired to the same terminal such that all ion modules must fain to show an alarm status shall not be acceptable.

I. Execution:

1. The Contractor shall be responsible for maintaining all air systems until the Owner accepts the building.
2. All equipment shall be assembled and installed in a workman like manner to the satisfaction of the Owner, Architect, and Engineer.
3. Any material damaged by handling, water, or moisture shall be replaced by the mechanical contractor at no cost to the Owner.
4. All equipment shall be protected from dust and damage on a daily basis throughout construction.
5. Provide the manufacturer's recommended electrical tests.
6. A manufacturer's authorized representative shall provide start-up supervision and training of Owner's personnel in the proper operation and maintenance of all equipment.
7. Acceptable manufacturers shall be Top Product Innovations, Global Plasma Solutions, or approved equal.

PART 3 - EXECUTION

3.01 TESTING AND BALANCING

A. Reference Specification Section 15200.

3.02 GUARANTEE

A. The Contractor shall guarantee, in writing, the entire system when completed to be free from any and all defects and shall guarantee the entire system, controls, and other equipment against defective materials and workmanship for a period of one (1) year from date of completion and acceptance.

B. Upon receipt of notice from the Owner of the failure or any part of the guaranteed equipment during the guarantee period, the affected part or parts shall be promptly repaired or replaced with new parts by and at the expense of the Contractor.

C. Under the guarantee clause, the Contractor shall include free routine maintenance for a period of one (1) year from the date of final acceptance. At the end of one year of operation, the mechanical contractor shall inspect and repair any problems which may exist. Contractor shall lubricate bearings, adjust or replace belts, replace filters, and provide all necessary preventative and corrective maintenance required. Contractor shall provide Engineer with a table identifying each air handler unit model and serial number, quantity and size of filters, filter manufacturer and efficiency, belt manufacturer and size, motor HP, frame, and power supply.

3.03 CLEANING VENTILATING SYSTEMS

A. All ducts shall be thoroughly cleaned and blown out to prevent any debris from damaging fan wheels or discharging through diffusers before systems are placed in operations. All temporary connections required for blowing out the system, cheesecloth for all duct openings, and any other equipment or labor for cleaning shall be provided by the heating and ventilating subcontractor. All filters shall be renewed after ventilating systems have been cleaned. The cost of renewal shall be borne by the General Contractor.

END OF SECTION 15800

SECTION 16100 - ELECTRICAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. The General and/or Special Conditions Sections are a part of this specification and the Contractor shall consult them in detail for instructions pertaining to this work. Section 16 is sub-divided for convenience only.

1.02 SCOPE

A. Furnishing of all labor, material, equipment, supplies, and services necessary to construct and install the complete electrical systems as shown on the drawings and specified herein. Work shall include but is not necessarily limited to the following items:

1. Demolition
2. Service
3. Grounding
4. Surge Protection Device (SPD)
5. Interior Distribution/Branch Circuits
6. Lighting
7. Equipment Connections
8. Fire Alarm
9. Telecommunication Systems

1.03 JOB CONDITIONS

A. Site Inspections: Before submitting proposals, each bidder should visit the site and should become familiar with all job conditions and shall be fully informed as to the extent of the work. No consideration will be given after bid opening date for alleged misunderstanding as to the requirements of work involved in connecting to the utilities, as to requirements of materials to be furnished, or as to the extent of demolition required.

B. Existing Conditions: All utilities, existing systems, and conditions shown on the plans as existing are approximate, and the Contractor shall verify before any work is started.

C. Scheduled Interruptions: Planned interruptions of utilities service, to any facility affected by this contract, shall be carefully planned and approved by the Architect at least ten (10) days in advance of the requested interruption. The Contractor shall not interrupt services until specific approval has been granted by the Architect. The request shall indicate services to be affected, date and time of interruption and duration of outage. Request for interruption of service will not be approved until all equipment and material required for the completion of that particular phase of work are on the job site. The work may have to be scheduled after normal working hours.

D. Maintaining Service: Any existing service (or operating system) which must be interrupted for any length of time shall be supplied with a temporary service as necessary for continuation of the normal operation of this facility.

E Removal of Existing Work: here noted or indicated on the drawings, or specified herein, existing electrical materials and equipment shall be removed from the building. All materials designated to be removed by the Contractor, and not required to be reinstalled, including scrap, shall become the property of the Contractor, and shall be promptly removed from the site. Hazardous materials shall be disposed of in approved hazardous material disposal facility. Existing items required to be removed temporarily in order to properly install new work shall be replaced in a satisfactory manner upon completion.

1.04 TEMPORARY POWER

A. Furnish and maintain temporary wiring system for light and power for use during construction by all trades. Use solidly grounded system. Limit over-current protection to 20 amperes on No. 12 conductors. Pay for all charges incurred while furnishing power for construction. Verify whether charges for electrical power consumption are specified in Division One; if so, payment of bills for power consumption are not included under this section.

B. Accidental Interruptions: All excavation and/or remodeling work required shall be performed with care so as not to interrupt other existing services (water, gas, electrical, sewer, sprinklers, etc.). If accidental utility interruption resulting from work performed by the Contractor occurs, service shall be immediately restored to its original condition without delay, by and at the expense of the Contractor, using skilled workmen of the trade required.

1.05 CODES, PERMITS AND INSPECTIONS

A. The installation shall comply with all local, state, and federal laws and ordinances applicable to electrical installation and with the regulations of the latest published edition of the National Electrical Code (N.E.C.) where such regulations do not conflict with those laws and ordinances. The Contractor shall obtain and pay for all permits and inspection fees, and after completion of the work, shall furnish the Architect a certificate of final inspection and approval from the applicable local inspection authorities. Any charges by a utility for providing service as shown shall be included in the bid and paid by the Contractor.

1.06 DRAWINGS AND SPECIFICATIONS

A. The drawings and these specifications are complimentary each to the other. What is called for by one shall be as binding as if called for by both. Where the drawings and/or specifications differ as to quantity or quality, the greater quantity or higher quality shall be provided. Omissions from the drawings and specifications of details of work which are evidently necessary to carry out the intent of the drawings and specifications, or which are customarily performed, shall not relieve the Contractor from performing such work. In any case of discrepancy in the figures or catalog numbers, the matter shall be submitted to the Architect, who shall promptly make a determination in writing. Any adjustment by the Contractor shall be at the Contractor's own risk and expense. Electrical drawings are diagrammatic only. Do not scale these drawings. All equipment shall be installed in accordance with manufacturer's recommendations and any conflicting data shall be verified before bidding.

1.07 STANDARDS OF MATERIALS AND WORKMANSHIP

A. Materials: All materials shall be new and shall be listed and approved by the Underwriters' Laboratories, Inc., in every case where a standard has been established for a particular type of material in question. All work shall be executed in a workmanlike manner and shall present a neat appearance.

B. Prior Approvals: Equipment and materials of the same type or classification and used for the same purpose, shall be products of the same manufacturer. It is the intention of these specifications to indicate a standard of performance and quality for all materials incorporated in this work. Manufacturer's names and catalog numbers are used to designate the item of equipment or material as a means of establishing grade and quality. Where several manufacturers are named, only those named manufacturers' products will be considered and the Contractor's bid shall be on their products. The first named of several manufacturers is the manufacturer whose product was used in engineering the project. Other named manufacturers, although acceptable as manufacturers, shall guarantee that their product will perform as specified and will meet space requirements. Where performance characteristics of such equipment differs from the equipment scheduled on the drawings, the Architect shall reserve the right to reject it. Where use of such equipment requires different quantity or arrangement of foundations, supports, ductwork, piping, wiring, conduit and any other equipment, the Contractor shall furnish said changes and additions and pay all costs for all changes to the work and the work of others affected by using such equipment.

C. For approval of products other than those specified, bidders shall submit to the Architect, a request in writing, at least ten (10) days prior to bid date. Requests received after this time will not be reviewed or considered regardless of cause. Requests shall clearly define and describe the product for which approval is requested. Requests shall be accompanied by manufacturer's literature, specifications, drawings, cuts, performance data, model numbers, list of references or other information necessary to completely describe the item. Approval will be in the form of an Addendum to the specifications issued to all prospective Prime Contract Bidders on record. The Addendum will indicate the additional products which are approved for this project.

D. If a bidder proposes to use substitute materials or equipment for the following items, he shall obtain a minimum of ten (10) days before Bid "Prior Approval" or longer as described in "Instructions to Bidders" for the items indicated below:

1. Low voltage switchboards.
2. Busway.
3. Panelboards.
4. Emergency generator units.
5. Automatic transfer switches.
6. Dry type transformers.
7. Enclosed circuit breakers.
8. Safety switches.
9. Motor starters.
10. Lighting controls.
11. Lighting fixtures.
12. Fire alarm system.

E. Approval on other items shall be handled in the normal manner, as described in "Instructions to Bidders", under the heading "Approval of Materials".

F. Substitutions: Reference to a particular product by manufacturer, trade name, or catalog number establishes the quality standards of material and equipment required for this installation and is not intended to exclude products equal in quality and similar design. The Architect reserves the sole right to decide the equality of materials proposed for use in lieu of these specified. It shall be the Contractor's responsibility to furnish the information and data sufficient to establish the quality and utility of the items in question, including furnishing samples if required.

G. Shop Drawings: The Contractor shall submit a list of items proposed for use. He shall also submit catalog data and shop drawings on proposed systems and their components, panelboards, safety switches, starters and contactors, transformers, lighting fixtures, and wiring devices. Where substitutions alter the design or space requirements, the Contractor shall defray all items of cost for the revised design and construction including costs to all allied trades involved. Data shall be submitted within ten (10) calendar days after the contract is awarded. Provide six (6) copies of shop drawings unless a greater number of copies is required by the General Conditions. Each submittal data section shall be covered with an index sheet listing Contractor, Sub-Contractor, Project Name, and an index to the enclosed submittals.

H. Each major section of submittals such as power, equipment, lighting equipment, fire alarm, etc., shall be secured in a booklet or stapled with a covering index which lists the following information:

1. General contractor with phone number and project manager.
2. Subcontractor with phone number and project manager.
3. Supplier of equipment with phone number and person responsible for this project.
4. Index of each item covered in submittal and model number as proposed in the attached.
5. Any deviation from contract documents shall be specifically noted on submittal cover index and boldly on specific submittal sheet.

1.08 TYPE OF PERMANENT ELECTRICAL SERVICE

A. Electrical service shall be 208/120Y volts, 3-phase, 4-wire served from an underground utility service. Contractor shall verify all details of electrical service with the serving utility company prior to bid. Contractor shall include any and all costs associated with the service in his bid price and shall pay these costs to the serving utility company.

1.09 DOCUMENTATION

A. Operating and Maintenance Manuals: At completion of the work, furnish three (3) copies of written operation instructions which shall include manufacturer's descriptive bulletins, operating and maintenance manuals and parts lists of all equipment installed. Also include in such instructions, the specified size and capacity ratings of all equipment installed. Each set of instructions shall be assembled into a suitable looseleaf type binder and presented to the Architect for delivery to the Owner.

B. Record Drawings: Maintain one extra set of black-line, white print drawings for use as record drawings. Records shall be kept daily, using colored pencil. As the work is completed, relevant information shall be transferred to a reproducible set, and copies made to be given to the Architect.

C. Comply with the following for all work specified in this document. As-built information shall be shown to scale, using standard symbols listed in the legend. As a minimum, show the following:

1. Location of stub-outs dimensioned from permanent building lines.
2. Location and depth of under-slab and in-slab raceways.
3. All routing of raceways.
4. Corrected panelboard and equipment schedules.
5. Corrected circuit numbers as they appear on panelboard directories.
6. Corrected motor horsepower and full load amperages.
7. Number, size, type of insulation, and number of wires in each conduit or multiconductor cable whether in conduit or exposed.
8. Location of junction boxes and splices.
9. Location of access panels.

1.10 INTERFACE WITH OTHER CONTRACTS

A. It shall be the responsibility of the Contractor to cooperate with all other crafts working on this project. All cutting, trenching, backfill, and structural removals to permit entry of the electrical system components shall be done by this Contractor. All patching and finishing shall be done by the General Contractor.

B. This Contractor shall furnish and install all conduit and pull strings for control wiring provided under other contracts. Control wire conduit requirements shall be coordinated with the proper trade.

1.11 EQUIPMENT FURNISHED UNDER OTHER SECTIONS

A. This Contractor shall furnish and install complete electrical roughing-in and connection to all equipment furnished under other sections as indicated on drawings. All such equipment shall be set in place as work of other sections.

1.12 EQUIPMENT CONNECTIONS

A. In general, provide electrical power and control systems connections to all equipment shown on drawings. Included are wiring raceways, disconnects, starters, and other devices shown. Excluded are devices furnished integrally with the manufacturer's package and work specified in other sections of these specifications.

B. Residential appliances are furnished with cords, cord caps, and will be set in place by contractors performing work under other divisions of specifications. Packaged air conditioning units are all with starters and contactors. Provide disconnecting means and connect. Low voltage control of these devices is specified for installation in Division 15.

1.13 GROUNDING

A. Provide grounding and bonding systems in strict accordance with the latest published edition of N.E.C., except where more stringent requirements are specified herein. Inter-connection of neutral and ground is not permitted except at service entrance equipment. Install grounding conductors to permit shortest and most direct path to ground. Concealed joints shall be made by Cadweld method. Where grounding conductors are in raceway, bond conductor and raceway at both ends. Grounding and bonding fittings used shall be UL listed and be compatible with metals used in system. Sheet metal type strap are not acceptable.

B. Service entrance ground electrode system shall consist of driven electrodes, connection to water piping, and building grounding grid, as required by NEC Article 250-50. Unless otherwise shown on drawings, each driven electrode shall consist of one 3/4 inch diameter 10 ft. long copperweld steel rod. Rod made of wrought iron may be used in lieu of copperweld at option of contractor. Water pipe connection shall be made to a minimum one inch diameter metallic cold water pipe. Extend grounding conductor to main telephone equipment space. Interconnect conduits entering and leaving service entrance equipment using grounding bushing and copper.

C. A green insulated ground conductor shall be run in all branch circuit and feeder conduit with phase and/or neutral conductors. Ground conductor shall be sized per NEC or as noted on drawings. Minimum size #12 AWG. Conduit box to device strap or yoke screw connection is not sufficient. Provide an insulated grounding jumper for receptacle circuits.

1.14 GUARANTEE AND SERVICE

A. Upon completion of all tests and acceptance, the Contractor shall furnish the Owner of a written guarantee covering the electrical work done for a period of one (1) year from date of acceptance. Guarantee includes equipment capacity and performance ratings specified without excessive noise levels. Upon notice from the Architect or the Owner, the Contractor shall, during the guarantee period, rectify and replace any defective material or workmanship and repair any damage caused thereby without additional cost.

PART 2 - PRODUCTS

2.01 GENERAL

A. All equipment and materials shall have ratings established by the recognized independent agency or laboratory. The Contractor shall apply the items used on the project within the ratings and subject to any stipulations or exceptions established by the independent agency or laboratory. Use of equipment or materials in applications beyond that certified by the agency or beyond that recommended by the manufacturer shall be cause for removal and replacement of such misapplied items.

2.02 LOW VOLTAGE SWITCHBOARD

A. General - The Contractor shall furnish and install, where indicated, a free-standing, dead-front type low-voltage distribution switchboard, utilizing group mounted circuit protective devices as specified herein, and as shown on the contract drawings. The low-voltage distribution switchboards and all components shall be designed, manufactured and tested in accordance with the latest applicable following standards:

1. NEMA PB-2
2. UL Standard 891.

The manufacturer of the assembly shall be the manufacturer of the circuit protective devices within the assembly. The low-voltage switchboard shall be UL labeled.

B. Ratings - The assembly shall be rated to withstand mechanical forces exerted during short-circuit conditions when connected directly to a power source having available fault current as shown on the drawings. Voltage rating to be as indicated on the drawings.

C. Construction

1. Switchboard shall consist of the required number of vertical sections bolted together to form a rigid assembly. The sides and rear shall be covered with removable bolt-on covers. All edges of front covers or hinged front panels shall be formed. Provide adequate ventilation within the enclosure.
2. All sections of the switchboard shall be rear aligned with depth as shown on the drawings.
3. All protective devices shall be group mounted. Devices shall be front removable and load connections front accessible enabling switchboard to be mounted against a wall.
4. The assembly shall be provided with adequate lifting means.
5. The switchboard shall utilize the components herein specified and as shown on the drawings.
6. The switchboard shall be suitable for use as service entrance equipment and be labeled in accordance with UL requirements.

D. Bus

1. All bus bars shall be silver-plated copper. Bus sizing shall be based on NEMA standard temperature rise criteria of 65 degrees C over a 40 degrees C ambient (outside the enclosure).
2. Provide a full capacity neutral bus.
3. A copper ground bus (minimum 1/4 x 2 inch), shall be furnished firmly secured to each vertical section structure and shall extend the entire length of the switchboard.
4. All hardware used on conductors shall be high-tensile strength and zinc-plated. All bus joints shall be provided with conical spring-type washers.

E. Wiring/Terminations

1. Small wiring, necessary fuse blocks and terminal blocks within the switchboard shall be furnished as required. Control components mounted within the assembly, such as fuse blocks, relays, pushbuttons, switches, etc., shall be suitably marked for identification corresponding to appropriate designations on manufacturer's wiring diagrams.
2. Mechanical-type terminals shall be provided for all line and load terminations suitable for copper cable rated for 75 degrees C of the size as indicated on the drawings.
3. Lugs shall be provided in the incoming line section for connection of the main grounding conductor. Additional lugs for connection of other grounding conductors shall be provided as indicated on the drawings.

F. Circuit Breakers - Where indicated, provide circuit breakers UL listed for application at 100% of their continuous ampere rating in their intended enclosure.

G. Nameplates

1. Engraved nameplates, mechanically fastened on the face of the assembly, shall be furnished for all main and feeder circuits as indicated on the drawings. Nameplates shall be laminated plastic, white characters on black background. Characters shall be 3/16-inch high, minimum. Nameplates shall give item designation and circuit number as well as frame ampere size and appropriate trip rating. Furnish master nameplate giving switchboard designation, voltage ampere rating, short-circuit rating, manufacturer's name, general order number, and item number.
2. Control components mounted within the assembly, such as fuse blocks, relays, pushbuttons, switches, etc., shall be suitably marked for identification corresponding to appropriate designations on manufacturer's wiring diagrams.

H. Finish - All exterior and interior steel surfaces of the switchboard shall be properly cleaned and provided with a rust-inhibiting phosphatized coating. Color and finish of the switchboard shall be ANSI 61 light gray.

2.03 BUSWAY

A. General - The low-voltage busway and all components shall be designed, manufactured and tested in accordance with the latest applicable following standards of ANSI and NEMA:

1. NEMA BU.1
2. ANSI/UL 857

B. All components shall be of the same manufacturer as the busway.

C. Ratings

1. The busway shall be Cutler-Hammer type Pow-R-Way III:3-phase, 4-wire with 100% neutral, 50% housing and 50% internal ground with voltage and current ratings as indicated on the contract drawings.
2. The busway shall, have a minimum of 6-cycle short-circuit rating of 85 kA RMS symmetrical for ratings through 800A, 100 kA RMS symmetrical for ratings through 1350A, 125 kA RMS symmetrical for ratings through 1600A, 150 kA RMS symmetrical ratings through 2500A, and 200 kA RMS symmetrical for ratings through 5000A.

D. Construction - The busway and associated fittings shall consist of copper conductors totally enclosed in a 2-piece extruded aluminum housing. Outdoor feeder and indoor feeder busway shall be interchangeable at the same rating without the use of adapters or special splice plates. The busway shall be capable of being mounted flatwise, edgewise, or vertically without derating. The busway shall consist of standard 10-foot sections with special sections and fittings provided to suit the installation. Horizontal runs shall be suitable for hanging on 10-foot maximum centers. Vertical runs shall be suitable for mounting on 16-foot maximum centers. Provide one (1) hanger for every ten (10) feet of horizontally mounted duct. On vertical runs provide one adjustable hanger per floor.

E. Bus

1. Bus bars shall be fabricated from high strength, 98% conductivity copper and suitably plated at all electrical contact surfaces.
2. Bus bars shall be insulated over their entire length, except at joints and contact surfaces, with a UL listed insulating material consisting of epoxy applied by fluidized bed process. Tape or heat-shrink sleeve insulation, or any other method of insulation which can allow air-gaps or insulation breakdown, shall not be acceptable.
3. The busway shall be capable of carrying rated current continuously without exceeding a temperature rise of 55 degrees C based on a 40 degrees C ambient.

F. Busjoints - Each busway section shall be furnished complete with joint hardware and covers. The busway joints shall be a single-bolt, non-rotating, removable bridge design. All bridge joints shall be furnished with torque-indicating double head joint bolts and Belleville washers.

G. Housing

1. The busway housing shall be a 2-piece design fabricated from extruded aluminum. The busway enclosure finish shall be ANSI 61 gray baked epoxy powder paint applied by an electrostatic process.
2. Outdoor feeder busway housing shall be identical to indoor feeder busway housings and shall be UL listed for outdoor use. Busway shall be completely weatherized at the factory and designed such that only protective joint covers are required for outdoor application.

2.04 PANELBOARDS

A. General

1. The Contractor shall furnish and install the panelboards as specified and as shown on the contract drawings.
2. The panelboards and all components shall be designed, manufactured and tested in accordance with the latest applicable standards of NEMA and UL as follows:
   a. UL 67 -- Panelboards

b. UL 50 -- Cabinets and boxes
c. NEMA PB1
d. Fed. Spec. W-P-115C
e. Circuit breaker -- Type I class I

3. The manufacturer of the panelboard shall be the manufacturer of the major components within the assembly, including circuit breakers and fusible switches.

B. Ratings - Panelboards shall be fully rated to the short-circuit rating indicated on the drawings.

C. Construction

1. Interiors shall be completely factory assembled devices. They shall be designed such that switching and protective devices can be replaced without disturbing adjacent units and without removing the main bus connectors.
2. Trims for lighting and appliance panelboards shall be supplied with a hinged door over all circuit breaker handles. Doors in panelboard trims shall not uncover any live parts. Doors shall have a semiflush cylinder lock and catch assembly. Doors over 48 inches in height shall have auxiliary fasteners.
3. Distribution panelboard trims shall cover all live parts. Switching device handles shall be accessible.
4. Surface trims shall be same height and width as box. Flush trims shall overlap the box by 3/4 of an inch on all sides.
5. A directory card with a clear plastic cover shall be supplied and mounted on the inside of each door.
6. All locks shall be keyed alike.

D. Bus

1. Main bus bars shall be plated copper sized in accordance with UL standards to limit temperature rise on any current carrying part to a maximum of 65 degrees C above an ambient of 40 degrees C maximum.
2. A bolted ground bus shall be included in all panels.
3. Full-size (100%-rated) insulated neutral bars shall be included for panelboards shown with neutral. Bus bar taps for panels with single-pole branches shall be arranged for sequence phasing of the branch circuit devices. Neutral busing shall have a suitable lug for each outgoing feeder requiring a neutral connection.

E. Circuit Breakers

1. Molded case circuit breakers shall provide circuit overcurrent protection with inverse time and instantaneous tripping characteristics. Ground fault protection shall be provided where indicated.
2. Circuit breakers shall be operated by a toggle-type handle and shall have a quick-make, quick-break over-center switching mechanism that is mechanically trip-free. Automatic tripping of the breaker shall be clearly indicated by the handle position. Contacts shall be nonwelding silver alloy and arc extinction shall be accomplished by means of arc chutes. A push-to-trip button on the front of the circuit breaker shall provide a local manual means to exercise the trip mechanism.
3. Provide shunt trips, bell alarms, and auxiliary switches as shown on the contract drawings.

F. Enclosure shall be at least 20 inches wide made from galvanized steel. Provide minimum gutter space in accordance with the National Electric Code. Where feeder cables supplying the mains of a panel are carried through its box to supply other electrical equipment, the box shall be sized to include the additional required wiring space. At least four interior mounting studs with adjustable nuts shall be provided. Enclosures shall be provided with blank ends.

G. Nameplates - Provide a mechanically fastened engraved phenolic nameplate for each panel section.

H. Finish - Surfaces of the trim assembly shall be properly cleaned, primed, and a finish coat of gray ANSI 61 paint applied.

2.05 SURGE PROTECTIVE DEVICES (SPDs)

A. General - This section describes the quality, performance, and installation of AC Power, Panel Type, Surge Protective Devices (SPDs).

B. Quality Assurance: All Surge Protective Devices (SPDs) shall be tested and *listed* to *ANSI/UL 1449-2006* (*UL 1449 3rd Edition*) and Complimentary Listed to UL 1283 by an independent testing agency, with the experience and capability to conduct the testing indicated, that is a member company of the International Electrical Testing Association or is a Nationally Recognized Testing Laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction. This agency must comply with ANSI/IEEE C62.45 test procedures for all categories established in C62.41 (1991). "Manufactured in accordance with UL 1449" is not equivalent to being listed to ANSI/UL 1449-2006 and does not meet the intention of this specification. The UL 1449 suppression voltage ratings (SVR) label shall be permanently affixed to the APD unit.

C. Codes and Standards:

1. ANSI/IEEE Std C62.41.1™-2002, IEEE Guide on the Surge Environment in Low- Voltage (1000 V and Less) AC Power Circuits
2. ANSI/IEEE Std C62.41.2™-2002, IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and Less) AC Power Circuits
3. ANSI/IEEE Std C62.45™ -2002, IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000 V and Less) AC Power Circuits
4. ANSI C84.1, American National Standard for Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)
5. ANSI/IEEE Standard 1100-2005, IEEE Recommended Practice for Power and Grounding Electronic Equipment (Emerald Book) – Clause 8.6.1
6. National Fire Protection Association (NFPA) 70 (N.E.C.) – 2002 – Article 285
7. ANSI/UL Standards 1449-2006 Listed (UL 1449 Third Edition), UL 1283 Listed, CUL Listed & CE compliant "low-voltage directive."
8. IEEE Standard C62.72™ - 2007 – IEEE Guide for the Application of Surge-Protective Devices for Low-Voltage (1000 V or less) AC Power Circuits

D. Manufacturer Qualifications:

1. All SPDs at the service entrance, distribution panels, and sub-panels shall be from the same manufacturer.

2. All surge suppression devices shall be manufactured by an ISO 9001-2000 certified company normally engaged in the design, development, and manufacture of such equipment, with at least 10 years of engineering experience in the design and manufacture of permanently connected SPD devices.
3. Subject to compliance with specification requirements, provide products equivalent to Surge Suppression Incorporated.

E. Warranty:

1. All SPD devices shall be warranted to be free from defects in materials and workmanship under normal use in accordance with the instructions provided for a period not less than Ten (10) years from date of substantial completion.
2. Any SPD device that shows evidence of failure or incorrect operation, including damage as the result of lightning strikes, during the warranty period shall be replaced as a complete unit (not just modules, subassemblies, or components) by the manufacturer at no charge to the owner.

F. Enclosures: Unless otherwise noted, provide NEMA 1 or better enclosure for indoor mounting and NEMA 4 enclosure or better for all outdoor locations.

G. Maintenance Restrictions: No suppression unit shall be supplied which requires scheduled preventive maintenance or replacement parts. Units requiring functional testing, special test equipment, or special training to monitor surge protection device (SPD) status are not acceptable. SPD shall require NO routine maintenance.

H. Installation:

1. SPDs located integral within the switchboard or panelboard(s) shall expressly meet or exceed ALL parameters of this specification for the SPDs. These SPDs shall be individually tested and Listed to ANSI/UL 1449-2006 according to their type and not be listed solely as part of the larger assembly. Externally mounted SPDs shall be located immediately adjacent to the switchboard or panelboard being protected.
2. Do not energize or connect service entrance equipment and panelboards to their sources until SPDs devices are properly installed and connected.
3. Do not perform insulation resistance tests of the distribution wiring equipment with the SPD installed.
4. Install the SPD with #10 AWG minimum conductors to dedicated 30-amp breaker(s) in panel per manufacturer's installation instructions and close to the Neutral Bus. The dedicated breaker shall serve as a means of service disconnect for the SPD so that the electrical panel remains energized during SPD servicing. The installer may rearrange breaker locations to ensure the shortest and straightest leads to the SPD. If a dedicated breaker is not provided, an SPD with internal 30-amp fuse or a UL Listed fused disconnect switch shall be installed as a minimum. The conductors serving the SPD shall be twisted together (one twist per 12" of wire) to reduce the SPD system input impedance and shall be kept at the minimum length. The SPD shall be installed in strict accordance with the manufacturer's recommended practices and in compliance with N.E.C. requirements, State, and Local Codes.
5. If any lead lengths exceed 18", the Contractor responsible for installation ***must*** contact the specifying electrical engineer and the surge suppression manufacturer or distributor for installation assistance.

6. The electrical contractor shall verify the proper application of the SPD (i.e., voltage, phases, etc.). The electrical contractor shall ensure that all Neutral conductors are bonded to the system Ground at the service entrance or the serving isolation transformer prior to installation of the associated SPD. The electrical contractor will ensure that neutral-to-ground bonds do not exist at locations that are not service entrances or newly derived power sources.
7. The SPD installation shall be certified by a licensed electrician that the installation is in accordance with the manufacturer's recommendations, applicable electrical code requirements and the requirements of the specification above. Any deficiencies noted shall be corrected by the Contractor. Provide written documentation of this inspection as part of the closeout documentation.

2.06 SAFETY SWITCHES

A. General - The Contractor shall furnish and install the low-voltage fused and non-fused switches as specified herein and as shown on the contract drawings.

B. Provide heavy duty switches as shown on drawings, with the following ratings:

1. 30 to 1200 amperes
2. 250 volts AC, DC; 600 volts AC (30A to 200A 600 volts DC)
3. 2, 3, 4, and 6 poles
4. Fusible and non-fusible

5. Copper/aluminum standard mechanical lugs.

C. Construction - Switch blades and jaws shall be plated copper. Switches shall have a handle that is easily padlockable in the OFF position. Switches shall have defeatable door interlocks that prevent the door from opening when the handle is in the ON position. Switch assembly and operating handle shall be an integral part of the enclosure base. Switches rated 100A to 600A shall have reinforced fuse clips. Switch blades shall be readily visible in the OFF position. Switch Operating mechanism shall be non-teasible, positive quick-make/quick-break type.

D. Enclosures. - All enclosures shall be NEMA 1 general purpose unless otherwise noted.

E. Nameplates - Nameplates shall be phenolic type, front cover mounted, contain a permanent record of switch type, ampere rating, and maximum voltage rating. Nameplates shall be mechanically fastened.

2.07 DRY-TYPE TRANSFORMERS

A. General: Dry-type distribution transformers for non-linear loads with three-phase primary and secondary voltages of 600 volts or less and capacity ratings of 15-750kva.

B. Standards: The transformers and all components shall be designed, manufactured, and tested in accordance with the latest applicable standards of the following:

1. Transformers 750 kVA and smaller shall be UL listed.
2. Transformers shall conform to the requirements of ANSI/NFPA 70.
3. Transformers are to be manufactured and tested in accordance with NEMA ST20.
4. Transformer losses shall conform to NEMA TP1 requirements.
5. Transformer losses shall be tested in accordance with NEMA TP2 procedures.

6. Transformers shall be labeled in accordance with NEMA TP3 requirements.

C. Ratings:

1. KVA and voltage ratings shall be as shown on the drawings.
2. Transformers shall be designed for continuous operation at rated kVA for 24 hours a day, 365 days a year operation, with normal life expectancy as defined in ANSI C57.96.
3. Transformer sound levels shall not exceed
   a. Up to 9 kVA 40 db.
   b. 10 to 50 kVA 45 db
   c. 51 to150 kVA 50 db
   d. 151 to 300 kVA 55 db
   e. 301 to 500 kVA 60 db
   f. 501 to 700 kVA 62 db
   g. 701 to 1000 kVA 64 db
4. Transformer insulation system shall exceed NEMA ST20 standards and be rated at 220 degrees C, for full load operation at a maximum temperature rise of 115 degrees C. Required performance shall be obtained without exceeding the above indicated temperature rise in a 40 degrees C maximum ambient. Provide continuous emergency overload capability for 15 percent on 115 degree C rise. Taps shall be two (2) steps above and four (4) steps below nominal voltage in 2.5% increments.
5. Transformers shall be low loss type with minimum efficiencies per the table below when operated at 35% of full load capacity. Efficiency shall be tested in accordance with NEMA TP-2.

{TABLE ON NEXT PAGE}

Single-Phase		Three-Phase	
kVA	% Efficiency	kVA	% Efficiency
15.0	97.7	15.0	97.0
25.0	98.0	30.0	97.5
37.5	98.2	45.0	97.7
50.0	98.3	75.0	98.0
75.0	98.5	112.5	98.2
100.0	98.6	150.0	98.3
167.0	98.7	225.0	98.5
250.0	98.8	300.0	98.6
333.0	98.9	500.0	98.7
-	-	750.0	98.8
Table per NEMA TP-1 and Energy Act of 2005 (US Public Law 109-58)			

6. The transformer coils shall be copper and of continuous wound construction and shall be impregnated with non-hydroscopic, thermosetting varnish and cured to reduce hot spots and seal out moisture. The cores shall be constructed with low hysteresis and eddy current losses. Magnetic flux densities are to be kept well below the saturation point to prevent core overheating. The completed assembly shall be bolted to the base of the enclosure, but isolated by means of rubber vibration-absorbing mounts. There shall be no metal-to-metal contact between the core and coil and the enclosure except for a flexible safety ground strap. Sound isolation systems requiring the complete removal of all fastening devices will not be acceptable.

7. All transformers shall be equipped with a wiring compartment suitable for conduit entry and large enough to allow convenient wiring.

D. The core of the transformer shall be visibly grounded to the enclosure by means of a flexible grounding conductor sized in accordance with applicable UL and NFPA 70 standards.

E. The transformer enclosure shall be ventilated heavy gauge, sheet steel construction. It shall be degreased, cleaned, and phosphatized, followed by electrostatic deposition of polymer polyester powder coating and baking cycle. The coating shall be UL listed for outdoor use. Provide NEMA 2 drip-proof, with lifting holes. The maximum temperature of the enclosure shall not exceed 90 degrees C.

F. Provide a 4" thick housekeeping pad under all floor mounted transformers. The pad shall extend 6" beyond the dimensions of the transformer on all sides.

G. Acceptable producers:

1. Eaton, General Electric, Square D, Siemens
2. Approved manufacturers shall be registered firms in accordance with ISO 9001: 1994 SIC 3612 (US), which is the design and manufacturer of low voltage dry-type power, distribution, and specialty transformers.

2.08 HARMONIC MITIGATING TRANSFORMERS

A. General: Division 16 – Dry Type Transformers sections apply to work in this section.

B. Ratings:

1. Transformer insulation system shall exceed NEMA ST20 standards and be rated at 200 degrees C, UL-component-recognized, insulation system for full load operation at a maximum temperature rise of 130 degrees C. Required performance shall be obtained without exceeding the above indicated temperature rise in a 40 degrees C maximum ambient. Taps shall be two (2) steps above and four (4) steps below nominal voltage in 2.5% increments.
2. The transformer(s) shall supply a phase shift of -15°, 0°, +15°, or 30°.
3. Zero sequence impedance for transformers with zigzag secondaries must not exceed 20% of the positive/negative sequence impedance.
4. Transformers shall have a minimum reactance of 2% in order to help reduce neutral current when supplying loads with large amounts of third harmonic current.
5. Transformers shall be low loss type with minimum efficiencies per the table below when operated at 35% of full load capacity. Efficiency shall be tested in accordance with NEMA TP-2.

Three-Phase			
kVA	% Efficiency	kVA	% Efficiency
15.0	97.0	150.0	98.3
30.0	97.5	225.0	98.5
45.0	97.7	300.0	98.6
75.0	98.0	500.0	98.7
112.5	98.2	750.0	98.8

2.09 WIRING METHODS

A. Conduit Systems: Acceptable types of conduit:

1. Hot dipped galvanized rigid steel (GRS) - Shall be galvanized steel, protected inside and outside.
2. Electrical Metallic Tubing (EMT) - Shall be steel, protected inside and outside by a coating of approved corrosion-resistant material such as zinc or cadmium.
3. Rigid Nonmetallic - Shall be polyvinyl chloride (PVC), schedule 40 or schedule 80, as indicated on the drawings.
4. Flexible Metallic Conduit (1/2" min. trade size) (FLEX) - shall be galvanized steel, protected inside and outside.
5. Liquid Tight Flexible Metallic Conduit (½" min. trade size) (LQFLEX) - shall be galvanized steel, protected inside and outside with an extruded outer liquid tight, non-metallic, sunlight resistant jacket. Use with standard liquid tight fittings.

B. Raceway Fittings:

1. Rigid Metal Conduit - Shall have threaded fittings, galvanized steel or threadless compression galvanized steel or threadless compression cadmium plated malleable iron. Fittings shall be rain tight/concrete tight.
2. Electrical Metallic Tubing (EMT) - Material of steel or malleable iron is acceptable. Couplings and connectors shall be concrete and rain tight, with connectors having insulated throats. Use gland and ring compression type couplings and connectors for conduit sizes 2" and smaller. Use set screw type couplings with four set screws each for conduit sizes over 2". Use set screws of casehardened steel with hex head and cup point to firmly seat in wall of conduit for positive grounding. Indent type connectors or couplings are prohibited. Die-cast or pressure-cast zinc-alloy fittings or fittings made of "pot metal" are prohibited.
3. Rigid Non-Metallic Conduit - shall have polyvinyl chloride (PVC) fittings suited for the purpose and joined together by a method approved for the purpose. Schedule 80 conduit sections may be joined together with threaded fitting connectors.
4. Flexible Metal Conduit - fittings shall be zinc plated steel or cadmium plated malleable iron screw type with insulated throat and angular wedge fitting between convolutions of conduit.
5. Liquid tight Flexible Metal Conduit - fittings shall be cadmium plated, malleable iron or steel with compression type steel ferrule and neoprene gasket sealing rings, with insulated throat.
6. Wireway fittings shall be steel with rust resistant undercoat and finish coat to match the wireway. The fittings shall be so designed that the sections can be electrically and mechanically fitted together to form a complete system. Dead ends shall be closed.
7. Couplings and Unions shall be galvanized steel, tapered thread standard conduit couplings for intermediate metal conduit and rigid metal conduit. PVC couplings for rigid non-metallic conduit shall use approved adhesive, and threaded couplings shall be used for schedule 80 conduit. Split couplings shall be galvanized steel. Unions shall be ground joint type galvanized steel.

C. Conduits installed concealed in earth fill, concrete or, solid masonry structures shall be PVC 40, 3/4" minimum. PVC shall not be installed in any exposed locations. All exposed exterior conduits shall be GRS. Any GRS installed below grade or in concrete shall have two coats of bitumastic applied prior to installation. See paragraph "E" for EMT requirements.

D. Conduits used for connection to recessed lighting fixtures shall be FLEX not over 6 feet in total length. Conduits for connection to motors or vibrating equipment shall be LQFLEX not less than 18" long and not over 60" long.

E. Conduits run concealed in the hollow space of non-masonry walls or, above suspended/hard ceilings shall be EMT. Exposed conduits shall be run at right angles to or parallel with building lines and exposed structure. In all cases, conduit runs shall be grouped together where possible and shall be supported from the building structure, not from any suspended ceiling support system.

F. PVC 80 shall not be used unless specifically indicated on the drawings. Where approved for installation, install conduits passing through building sidewalls or through beams below grade with expansion/deflection fittings. Install expansion fittings where conduit crosses an expansion joint. Where conduit penetrates damp-proofing membranes, cut the membrane carefully around the conduit and seal the joint with pressure sensitive tape.

G. Support raceways securely with pipe straps, wall brackets, conduit hangers or ceiling trapeze. Fastenings shall be by wood screws or screw type nails to wood, by toggle bolts to concrete block, expansion bolts on concrete or brick, and beam clamp types on steel or bar joists. Raceways shall not be fastened to suspended ceiling supports but must have independent support from the structure. Supporting devices shall be of materials having corrosion protection at least equal to the raceway. A support shall be provided as close as practical to, and not exceeding 18" from an unsupported box or from change of direction. In horizontal runs, this support may be omitted if the box is independently supported and the box connection is not made with chase nipple or threadless box connector. In vertical runs, load produced by weight of the raceway and conductors shall not be carried by the raceway terminal, but must be carried entirely by conduit supports. Install conduit supports in strict accordance with the following table, except as required by support for boxes and changes in direction:

{TABLE ON NEXT PAGE}

TRADE SIZE	LOCATION OF RUNS	MAXIMUM SUPPORT SPACING
1/2, 3/4	Exposed, Horizontal	7 feet
1 and larger	Exposed, Horizontal	10 feet
All sizes	Concealed, Horizontal	10 feet
1/2, 3/4	Exposed, Vertical	7 feet
1, 1 1/4	Exposed, Vertical	8 feet
1 1/2 and larger	Exposed, Vertical	10 feet
All sizes	Concealed, Vertical	10 feet

H. For conduit runs that are not sized on drawings, the maximum conduit fill shall be computed using the requirements for Type THW conductors although the actual wiring is with Type THWN or other type of conductors having smaller cross-sections. This requirement is made to provide spare conduit capacity.

I. Install all required sleeves for conduits passing through concrete slabs. Fire proof space between conduit and sleeve after installation using mineral wool.

J. Bushings: Shall be provided at the end of all conduits prior to pulling cables to protect the insulation of the conductor. Provide grounding bushings for metal raceways, boxes, and cabinets to ensure that all metallic surfaces are effectively grounded. Metallic raceway may be bonded to cabinets, boxes and panelboards by double locknut and bushing to ensure the metallic parts are all effectively grounded.

K. Expansion Joints:

1. Conduits 3” and larger, that are secured to the building structure on opposite sides of a building expansion joint, require expansion and deflection couplings. Install couplings in accordance with the manufacturer’s recommendations.
2. Provide conduits smaller than 3” with junction boxes on both sides of the expansions joint. Connect conduits to junction boxes with sufficient slack of flexible conduit to produce 5” vertical drop midway between ends. Flexible conduit shall have a green copper ground-bonding jumper installed. In lieu of this flexible conduit, expansion and deflection couplings as specified above for three inches and larger conduits are also acceptable for conduits smaller than 3”.
3. Expansion fittings shall be provided for raceways to compensate for thermal expansion and contraction in conduit runs 200ft or greater and at building expansion joints. Bonding jumpers shall be provided for electrical continuity of the raceway system at the expansion fittings.

L. Conductors: All conductors shall be installed in conduit. Conductors for building wiring shall have THHN/THWN, 600-volt insulation and shall be soft-drawn copper of standard American Wire Gauge (AWG) size. Minimum size shall be No. 12. 20-amp branch circuits more than 100 feet in length shall be upsized to No. 10. Provide individual neutral conductors for all single-pole branch circuits. Tied breaker handles are not acceptable. All wire No. 8 and larger shall be stranded. All branch circuits No. 10 and smaller shall be wired with color-coded wire with the same color used for a system throughout the building. Power feeders and branch circuits larger than No. 10 shall either be fully color coded or shall have black insulation and be similarly color coded with tape or paint in all junction boxes and panels. Where tape or paint is used to identify conductors, apply at all terminations, junction boxes, pull boxes and wireways. Apply tape, butt lapped, or paint for a minimum distance of 2" and, where applied to ends of conductors, start at cut end of the conductor insulation. Tape shall not cover manufacturers conductors shall be color coded or labeled as necessary for clear identification. Color coding of all conductors shall be as follows:

Grounding	Bare or Green
208Y120 volt Three Phase (wye)	
Phase Conductors:	φA-Black, φB-Red, φC-Blue
Neutral:	White

2.10 JUNCTION AND PULL BOXES

A. Junction and pull boxes shall meet requirements of National Electrical Code. Standard manufactured boxes shall be listed by Underwriters' Laboratories, Inc. Where custom designed and fabricated boxes are needed, they shall meet the construction standards of Underwriters' Laboratories, Inc. and the N.E.C.

B. Junction and pull boxes shall be installed where required by National Electrical Code and where necessary to facilitate pulling of wire or cable. Considerations are sizes of wire and cable, number of bends in raceway, and conductor support requirements in vertical raceways. Maximum distance between terminations at junction or pull boxes, cabinets, or other points of termination shall not exceed 250 feet for straight horizontal runs. This length shall be decreased 50 feet for each 90˚ bend.

C. Junction boxes for exposed work shall be FS or FD type. Boxes shall be threaded, cadmium-plated iron with weatherproof stainless-steel cover and neoprene cover gaskets.

2.11 OUTLETS

A. Outlet boxes shall be one piece or projection welded, galvanized stamped steel for gang sizes required. Where several devices are located on drawings in the same general location, use multi-gang boxes. Sectional boxes are not acceptable. Boxes shall be sized in accordance with National Electrical Code. Boxes required for communications systems, mechanical control devices, etc., shall be installed under this section of the specifications. Verify outlet box locations and sizes required for systems other than electrical power from shop and manufacturer's drawings and install outlets as per those requirements.

B. Boxes for wall and ceiling outlets shall finish flush and straight. Wall outlets in exposed concrete block, masonry, and tile walls shall be installed with extra deep square corner boxes or with standard boxes and square cornered tile wall covers so that conduit offsets are not required. Openings in concrete blocks or masonry walls shall be saw cut with an opening tolerance of 1/8" on all sides, the opening shall have bottom of box at nearest masonry joint to dimension indicated. For other wall finishes, boxes shall be installed with plaster or device type covers as required. No outlets shall be installed back-to-back. Where outlets occur in stud walls back to back on opposite sides, they shall be isolated by a stud between them.

C. Floor Boxes (at grade) shall be four-compartment cast iron combination box equal to Wiremold Catalog No. RFB4-CI-1, complete with two CIHT-D internal duplex receptacle brackets and two CILT-2AB communication brackets. Provide brass-colored flanged activation kit (cover), UL listed for use on tile, terrazzo, carpet, and wood floors, equal to Wiremold Catalog No. S36BBTCBS.

D. Floor Boxes (above grade) shall be poke-through type, UL listed as suitable for use on tile and terazzo floor applications, equal to Wiremold RC3ATCAB, complete with a 20A prewired duplex receptacle.

E. Multi-Outlet Assemblies (Horizontal Mounting) shall be electrically pre-wired steel raceways with receptacles mounted 24' on center, equal to Wiremold Catalog No. V4000HR1024, equipped with two-circuit power wiring, and ready to accommodate Pass & Seymour activation inserts.

F. Multi-Outlet Assemblies (Vertical Mounting) shall be electrically pre-wired steel raceways with receptacles mounted 24" on center, equal to Wiremold Catalog No. V4000TD8, equipped with two-circuit power wiring, and ready to accommodate Pass & Seymour activation inserts.

2.12 WIRING DEVICES

A. Colors: Wiring device and wall plate colors shall be selected by Architect for individual rooms from one of the following colors (unless another color is noted): Almond, black, brown, white, gray, ivory, light almond, or stainless steel.

B. Receptacles: Duplex receptacles shall be specification grade, 20 amps,125 volts with grounding terminal.

C. Switches: Switches shall be specification grade, 20 amps, 120/277 volts A-C only, single pole, three-way or four-way as shown, single throw with screw terminals arranged for side wiring.

D. Device Plates: Shall be of the constructed of polycarbonate.

E. Ground Fault Receptacles: Furnish and install receptacles with ground fault circuit interrupters as indicated on plans. Receptacles shall be NEMA 5-20R configuration with 120V ac 20 amperes circuit rating. All receptacles shall be such depth as to permit mounting in outlet boxes 1 1/2" or greater in depth without the use of spacers. Units shall have line and load terminals such that connection to load terminals will provide ground fault protection for other receptacles. All receptacles shall accept standard duplex wall plates. All receptacles shall be noise suppressed and shall be UL listed.

F. Isolated Ground (IG) Receptacles: Furnish and install specification grade type IG receptacles, orange in color. Plates for these devices shall also be stainless steel, compatible with the receptacle type.

G. Automated Lighting Controls: Where indicated on the drawings, provide occupancy sensors, time switches, control relays and wiring for automatic control of lighting fixtures. Controls shall be as manufactured by Watt-Stopper, Crestron, Lutron, nLight, Sensorswitch, Philips, or Leviton.

2.13 THERMOSTATS

A. Thermostats for HVAC equipment shall be provided as part of that equipment, connected up by the electrical subcontractor, and be tested by the HVAC subcontractor. Coordinate with HVAC subcontractor for wiring requirements.

2.14 LIGHTING FIXTURES

A. Provide wired, cleaned, and with lamps specified, all fixtures designated on drawings. Contractor shall verify the ceiling construction for correct trim and support arrangement of lighting fixtures; corrosion resistant plaster frames are required in plaster ceilings. Shop drawing submittals shall consist of properly identified copies of manufacturer's catalog pages showing all features and accessories specified.

B. Secure mounting and support of all lighting fixtures shall be accomplished under this section of these specifications. Lighting fixtures shall be installed plumb, square, and level with the ceiling, wall, and in alignment with adjacent lighting fixtures. Mounting heights indicated shall be to the bottom of the fixture for ceiling-mounted fixtures and to center of fixture for wall-mounted fixtures. Lay-in troffer fixtures shall be supported with a minimum of 4 ceiling support wires per fixture and not more than 6 inches from each corner of the fixture. For fixtures smaller in size than the ceiling grid, provide a minimum of four wires per fixture. Do not support fixtures by ceiling acoustical panels. All concealed fixture mounting accessories shall be securely tied to structure. Flexible connections to fixtures shall not exceed 6 feet in length. Fixtures shall be solidly grounded to raceway system.

C. In areas where the reflected ceiling plan is shown, all work shall be in conformance with this plan. If the ceiling grid is installed other than shown on the electrical plan, it shall be the responsibility of the installer of the lighting fixtures to call this fact immediately to the attention of the Architect and Contractor, and work shall not proceed until Architect's decision in the matter is obtained.

D. Fluorescent ballasts shall be electronic type, class A noise rating, class P safety standards, high power factor greater than .98, programmed start, auto restart, 10% total harmonic distortion or less, 42 kHz – 54 kHz hertz ballast frequency, .85 or greater ballast factor, less than 1.7 lamp current crest factor, meeting the requirements of ANSI/IEE C62.41 & C82.11, FCC Part 18 (RFI & EMI), CBM, UL, Public Law No. 100-357, and NAECA. All ballasts shall include internal fusing. Ballast shall be compatible for use with energy saving lamps. For outdoor applications ballast shall be rated for zero degrees Fahrenheit starting temperature.

E. High Intensity Discharge (HID) lamp ballasts shall be high power factor type greater than .98, protected by in-line fuse, UL 1029, UL class P, ANSI C82.4, 15% total harmonic distortion or less, 100 kHz – 200 kHz ballast frequency, end-of-life detection and shutdown. Ballasts in fixtures for interior spaces shall be encapsulated in a Class H potting compound to provide a Class A noise rating. Ballasts in fixtures installed outdoors shall be weatherproof. Provide 0 degrees Fahrenheit starting temperature for HID below 250W. Provide -20 degrees Fahrenheit starting for HID 250W and above.

F. LED drivers shall be highly efficient, class A noise rating, 0.9 or greater power factor, power supplies rated for the wattage requirements of the fixture. THD at full load shall be <10% at 120v and <20% at 277v. <3% line regulation, <1W stand-by power. LED power up time to be <1 sec. Load regulation <5%. Provide over voltage protection, non-latching output short circuit protection, current reduction LED load temperature protection. Ambient operating temperature range -30 degrees Celsius to 50 degrees Celsius at 85% non-condensing relative humidity. Driver shall meet ANSI C62.41 Cat.A 2.5kv transient protection. Power supply shall be field programmable with 1mA resolution. Programmer shall not require the power supply to be powered up or connected to AC line voltage while programming. Provide integrated configurable LED thermal protection. Drivers shall be universal voltage input. Power supply shall be UL Class 2. LED dimming drivers shall provide continuous flicker-free dimming from 100%-1%.

G. All lamps shall be the product of one manufacturer and shall be as manufactured by General Electric Osram/Sylvania, or Phillips. HPS lamps shall comply with the current published ANSI standards.

2.15 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Protections: Take necessary precautions to protect all material, equipment, apparatus, and work from damage. Failure to do so to the satisfaction of the Architect will be sufficient cause for the rejection of the material, equipment, or work in question. Contractor is responsible for the safety and good condition of the materials installed until final acceptance by the Owner.

B. Cleaning: Conduit openings shall be capped or plugged during installation. Fixtures and equipment shall be tightly covered and protected against dirt, moisture, chemical, and mechanical injury. At the completion of the work, the fixtures, material and equipment shall be thoroughly cleaned and delivered in condition satisfactory to the Architect.

PART 3 - EXECUTION

3.01 EXCAVATION, TRENCHING AND BACKFILLING

A. Trenches for all underground conduits shall be excavated to the required depth. The bottom of trenches shall be tamped hard. Before backfilling the excavation shall be cleaned of trash and debris. Backfill shall consist of excavation or borrow of sand, gravel, or other approved material free of trash, lumber, sawdust or other debris. Backfill shall be placed in 9" thick moistured and hand or machine tamped layers. Backfill shall be brought to suitable elevation above ground to provide for anticipated settlement and shrinkage. All paving broken up shall be repaired and returned to the original condition.

3.02 PAINTING

A. Contractor shall touch-up or refinish all items of electrical equipment furnished with a factory finish coat of paint and which may have been damaged regardless of cause.

3.03 TESTING AND BALANCING

A. Balance all single-phase loads connected to all panelboards to ensure an approximate equal division on these loads on main power supply serving building. All tests shall be made in accordance with the latest standards of the IEEE and the NEC. The installation shall be tested for performance, grounds and insulation resistance. "Megger" type instruments shall be used. Contractor shall perform circuit continuity and operational tests on all equipment furnished or connected by Contractor. The tests shall be made prior to final inspection. The Contractor shall provide all testing equipment and all costs shall be borne by him. Written reports shall be made of all tests. These reports shall be turned over to the Architect at time of final inspection. All faults shall be corrected immediately.

3.04 CLEANING UP

A. The Contractor shall remove all oil, grease, or other stains resulting from his work performed in the building or the exterior thereof.

END OF SECTION 16100

GULF COAST GEOTECH, INC.
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GEOTECHNICAL ENGINEERING REPORT

St. Mary Catholic School Expansion

Fort Walton Beach, Okaloosa County, Florida

GCGI Project Number: GCGI25-019

PREPARED FOR:
Quina Grundhoefer Architects
400 West Romana Street
Pensacola, Florida 32502

January 26, 2026

GULF COAST GEOTECH, INC.
BUILT ON EXPERIENCE. GROUNDED IN INTEGRITY.

January 26, 2026

Mr. Danny Grundhoefer
Quina Grundhoefer Architects
400 West Romana Street
Pensacola, Florida 32502

Subject: **Geotechnical Engineering Report**
ST. MARY CATHOLIC SCHOOL EXPANSION
Fort Walton Beach, Okaloosa County, Florida
GCGI Project Number GCGI25-019

Dear Mr. Grundhoefer:

Gulf Coast Engineering Inc. (GCGI) has completed Scope of Services authorized for the proposed expansion to the St. Mary's school campus in Fort Walton Beach, Florida. Our work on this project was as described in our Proposal Number 2025-026, dated December 25th, 2025. The primary objectives of this work were to perform a geotechnical exploration within the proposed structure and Stormwater Management System (SMS) basin areas, and to assess these findings as they relate to geotechnical aspects of the planned site development. The authorized geotechnical engineering services included a site reconnaissance, soil test borings and sampling, engineering evaluation of the field and laboratory data, and the preparation of this report.

GCGI appreciates being a part of the Design Team for this project. If you have any questions, or if we may be of further assistance, please do not hesitate to contact us.

Sincerely,
Gulf Coast Engineering, Inc.

Digitally signed by William L Lawrence
Date: 2026.01.26 12:58:41 -06'00'

William L. Lawrence, P.E.
President
Florida P.E. No. 60147

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1.0 SUMMARY OF FINDINGS

Based on the boring results, the encountered subsurface conditions present beneath the proposed structure footprint appear to be adaptable for supporting the proposed structure while maintaining tolerable settlements (typically, 1 inch of total settlement, with half that being differential). The existing retention basin should be re-designed as a wet-dry hybrid given the presence of very low permeability sandy peat above groundwater. The table provided below summarizes the conclusions provided in the subsequent sections of this report.

SUMMARY TABLE	
SITE PREPARATION	
Recommended Compaction of Exposed Subgrade (post-stripping)	98% of Modified Proctor (ASTM D-1557), *via non-vibratory methods*
Additional Site Preparation Considerations and/or Concerns	All compaction efforts for this project should be accomplished via non-vibratory methods, given the presence of abutting structures.
BUILDING FOUNDATION DESIGN OPTIONS	
Allowable Design Soil Bearing Pressure	Allowable design soil bearing pressure following successful compaction of the planned wall footing system as recommended herein = 1,500 psf.
STORMWATER MANAGEMENT SYSTEM	
Wet-Dry Hybrid or Wet Pond SMS Design Considerations	Avg. Depth to Stabilized GW Table = 3½ feet Est. Depth to SHGW Table = 2 feet Est. Depth to SLHW Table = 5 feet

2.0 PROJECT INFORMATION

Our understanding of this project is based on discussions with the Client and the Design Team, review of the provided site plan, a site reconnaissance during boring layout, and our experience with similar projects in the greater Fort Walton Beach, Florida area.

2.1 PROJECT SITE

At the time of our field exploration, the proposed structure footprint within the existing school campus was observed to be a grassed courtyard. The existing retention basin was located in the extreme northwestern corner of the overall campus, and the dry pond bottom was observed to be vegetated with short grasses.

2.2 PROPOSED DEVELOPMENT

GCGI understands that a new single-story slab-on-grade structure is planned as part of the school campus expansion, preferably to be supported by a perimeter wall foundation system. A re-design of an existing stormwater retention pond is also planned to treat and dispose of stormwater attributed to the planned property improvements.

Structural details and loadings were provided by the Design Team. We understand that a ±12-inch-wide perimeter wall footing is planned for this structure, with a maximum loading that will not exceed 1 kip per lineal foot.

Site Grading

Based on our discussions with the Design Team, we understand that achieving the desired finished floor elevation for this structure will require not more than 1 foot of fill above current site grade elevations. The re-designed retention basin is anticipated to remain on the order of 2 feet to 3 feet in depth.

3.0 SUBSURFACE EXPLORATION

3.1 FIELD EXPLORATION

Our field exploration was conducted between January 12th and January 13th, 2026, and included performing:

- Three 25-foot-deep Standard Penetration Test (SPT) borings (referenced as Borings B-1, B-2 and B-3 in the attached Appendix) within the proposed building footprint.
- Two 4½-foot-deep auger borings (R-1 and R-2) within the proposed SMS basin.

The boring locations were staked in the field by GCGI, and ground surface elevations were not obtained for the boring locations.

The Boring Logs in Appendix B present the soil conditions encountered in the borings. These records represent our interpretation of the subsurface conditions based on visual examination of the recovered soil samples and generally accepted geotechnical engineering practices. The depth designations represent approximate boundaries between various subsurface strata, and actual transitions between the encountered strata will be gradual and could be variable with respect to depth.

The groundwater levels reported on the Boring Logs represent measurements made at the completion of each test boring, following a suitable stabilization period. The test borings were subsequently backfilled with soil cuttings from the drilling process for safety concerns.

SPT Borings

The structure borings were performed using the guidelines of ASTM Designation D-1586, "Penetration Test and Split-Barrel Sampling of Soils". A mud rotary drilling process was used to advance the borings once groundwater was encountered. At regular intervals, soil samples were obtained with a standard 1.4-inch I.D., 2.0-inch O.D., split-tube sampler. The sampler was first seated six inches and then driven an additional foot with blows of a 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the final foot is designated the "Penetration Resistance".

Auger Borings

The borings were performed using the guidelines of ASTM Designation D-1452. A mechanically advanced 4-inch diameter auger was utilized, with disturbed samples acquired within each stratum break for the full depth of each boring. Representative portions of the encountered soil strata, obtained from the auger bucket, were placed in sealed containers and transported to our laboratory for further evaluation and potential laboratory testing.

3.2 LABORATORY TESTING

Following completion of the field work, soil samples obtained in the field were returned to our office for classification of the subsurface materials relative to the Unified Soil Classification System (USCS). Additional laboratory testing was not performed. The soil samples will be discarded 30 days following the submittal of this report, unless you request otherwise.

3.3 SUBSURFACE CONDITIONS

The following paragraph provides a generalized description of the subsurface profiles and soil conditions encountered in the borings conducted during this study. The Boring Logs provided in the Appendix should be reviewed to provide detailed descriptions of the conditions encountered at each boring location. Conditions may vary at other locations. The structural borings encountered different soil conditions relative to the SMS borings, and therefore they are discussed separately below.

The structural borings (B-1, B-2 and B-3) generally encountered loose to medium dense slightly silty sand fill (USCS classification of SP/SM) to a depth of about 1½ feet below existing grade (BEG) underlain by very loose to dense sands (SP) with varying degrees of organic stain to the maximum depth explored of roughly 25 feet BEG. We note that the upper 1½ feet of fill material noted above at the Boring B-1 location contained buried debris (observed to include pieces of brick, asphalt and concrete), and Boring B-2 encountered a buried pavement section consisting of asphalt over a thin sand/clay base material just beneath this fill zone.

Beneath approximately 3 inches of topsoil, the SMS borings (R-1 and R-2) generally encountered slightly silty sand (SP/SM) to depths of about 1 foot to 1½ feet BEG underlain by sandy peat (PT) to roughly 4½ feet BEG, where the boreholes collapsed due to groundwater intrusion.

Groundwater Conditions

Groundwater in the Gulf Coastal Plain typically occurs as an unconfined aquifer condition. Recharge is provided by the infiltration of rainfall and surface water through the soil overburden. More permeable zones in the soil matrix can affect groundwater conditions. The groundwater table is expected to be a subdued replica of the original surface topography. Groundwater levels vary with changes in season and rainfall, construction activity, surface water runoff and other site-specific factors. Groundwater levels in the Okaloosa County area are typically lowest in the late fall to winter and highest in the early spring to mid-summer with annual groundwater fluctuations by seasonal rainfall; consequently, the water table may vary at times.

A stabilized groundwater table was encountered in the test borings at depths varying between about 3½ feet to 5 feet BEG during our field exploration, which occurred during a period of relatively normal seasonal rainfall.

Based on comparisons of current annual monthly rainfall data to historical rainfall data extending back 50+ years in time, we estimate that the normal permanent seasonal high groundwater (SHGW) and seasonal low groundwater (SLGW) tables for this site will occur within about 1½ feet above and below the measured depths to groundwater at the boring locations at the time of drilling, during the wet season.

4.0 RECOMMENDATIONS

4.1 SITE PREPARATION

Based on our discussions with the Design Team, we understand that achieving the desired finish floor elevation for this structure will require not more than 1 foot of fill above current site grade elevations.

Prior to proceeding with construction, all topsoil and vegetation, trees and/or associated root systems, existing structures and substructures scheduled for demolition as part of this project, and any other deleterious non-soil materials found to be present should be stripped from the proposed structure and expanded retention basin footprints. Clean topsoil may be stockpiled and subsequently re-used in landscaped areas. Debris-laden materials should be excavated, transported, and disposed of off-site in accordance with appropriate solid waste rules and regulations. All existing utility locations should be reviewed to assess their impact on the proposed construction and relocated/grouted in-place as appropriate.

The soils exposed at the stripped grade elevation should be compacted via non-vibratory methods (due to the presence of abutting structures on this property) to a minimum soil density of at least 98 percent of the maximum dry density as determined by the Modified Proctor test method (ASTM D-1557). Any observed zones of soft, weak, or excessively wet fill or in-situ soils present at the time of construction should be undercut and replaced with structural fill or stabilized in-place by scarifying and re-densifying.

A geotechnical engineer should carefully evaluate all subgrades prior to building foundation construction to confirm compliance with this report; evaluate geotechnical sections of the plans and specifications for the overall project; and provide any additional recommendations that may be required based on the observed conditions of the site.

Groundwater Control

As noted above, a stabilized groundwater table was encountered in the test borings at depths of about 3½ feet to 5 feet BEG during our field exploration. Based on our understanding of the proposed construction and assumed maximum fill heights of up to 1 foot above current grades within the proposed structure footprint, we do not anticipate that significant groundwater control issues will develop during mass grading and foundation construction.

We note that groundwater levels are subject to seasonal, climatic, and other variations and may be different at other times and locations.

4.2 FILL PLACEMENT

Fill Suitability

Fill materials should be relatively clean sands with less than 12 percent fines (material passing the No. 200 sieve, SP and SP/SM soils), and free of non-soil materials and rock fragments larger than 3 inches in diameter. Soils with fines contents between 13 and 25 percent (generally, SM and SM/SC soils) may also be used as fill soils for this project, but we note that strict moisture control would be required at the time of placement for these moisture-sensitive soils.

Based on the boring results as well as limited laboratory soil testing, the native near-surface slightly silty sand (SP/SM) soils encountered above groundwater in the test borings appear to be suitable for re-use as structural fill and backfill materials, provided any embedded debris is removed prior to placement.

Prior to construction, bulk samples of all proposed fill materials (both imported and native to the project site) should be laboratory tested to confirm their suitability. Organic and/or debris-laden materials are not suitable for re-use as structural fill. Topsoil, mulch, and

similar organic materials can be wasted in architectural areas. Debris-laden materials should be excavated, transported, and disposed of off-site in accordance with appropriate solid waste rules and regulations, or the debris may be screened out.

Soil Compaction

Fill soils should be placed in thin, horizontal loose lifts (maximum 12-inch) and compacted via non-vibratory methods to a minimum soil density of at least 98 percent of the Modified Proctor maximum dry density (ASTM D-1557), and subsequent footing excavations should also be compacted to at least 98 percent.

Soil moisture content should be maintained within 3 percent of the optimum moisture content. We recommend that the grading contractor have equipment on site during earthwork for both drying and wetting fill soils.

Field tests, using thin-wall tube, nuclear or sand cone testing methods (ASTM D-2937, D-6938, or D-1556 respectively) should be performed by an approved materials testing company. One compaction test per 2,500 square feet of building footprint should be specified at the stripped grade elevation and in each lift of fill.

4.3 BUILDING FOUNDATION

General

GCGI understands that a new single-story slab-on-grade structure is planned as part of the planned school campus expansion, preferably to be supported by a perimeter wall foundation system. Structural details and loadings were provided by the Design Team. We understand that a ±12-inch-wide perimeter wall footing is planned for this structure, with a maximum loading that will not exceed 1 kip per lineal foot. If these design assumptions are found to be incorrect or are revised, GCGI should be contacted immediately so that additional analyses can be performed to determine if the recommendations presented herein will need to be modified.

Based on the boring results, the encountered subsurface conditions present beneath the proposed structure footprint appear to be adaptable for supporting the proposed structure while maintaining tolerable settlements (typically, 1 inch of total settlement, with half that being differential).

Shallow Foundation System

Design: After the recommended site and subgrade preparation and fill placement has been completed, it is our opinion that the desired shallow foundation system can be used to support the proposed structure. A shallow foundation system bearing on densified existing

soils and/or compacted structural fill, as recommended in this report, may be designed employing a maximum allowable soil bearing pressure of **1,500 pounds per square foot (psf)**.

We recommend a value of 0.35 can be employed as the coefficient of friction (sliding resistance) between foundations and the underlying residual or fill soils. Footings should be a minimum of 12 inches in width for ease of construction and to reduce the possibility of localized shear failures. Isolated exterior and interior footing bottoms should be established at least 16 inches below finished surrounding exterior grades.

4.4 STORMWATER MANAGEMENT SYSTEM

Based on conversations with the Design Team, we understand that the project will include re-designing an existing stormwater retention basin to treat and dispose of stormwater runoff associated with the planned property improvements. We anticipate that the expanded basin will remain on the order of 2 feet to 3 feet in depth, relative to existing site grades. Based on the results of the SMS test borings, the subsurface conditions encountered beneath the desired SMS basin appear to poorly suited for employing a conventional shallow dry pond concept due to the presence of very low permeability sandy peat above groundwater. The expanded retention basin should be re-designed as a wet-dry hybrid or possibly a wet pond, using the groundwater level estimates provided below.

Table 1 - SMS Soil Design Parameters, Wet or Wet-Dry Hybrid Detention Basin	
Corresponding Soil Boring Test Locations	R-1 and R-2
Measured Average Depth to Stabilized GW table, BEG	3½ feet
Estimated Depth to Normal Permanent SHGW table, BEG	2 feet
Estimated Depth to Normal Permanent SLGW table, BEG	5 feet

The provided seasonal high groundwater level estimate provided in the tables above is based on our experience with projects in this locale; the soil strata encountered in our borings; the groundwater levels measured at the site; and the published information by the "Web Soil Survey" National database, NRCS division of the United States Department of Agriculture (USDA).

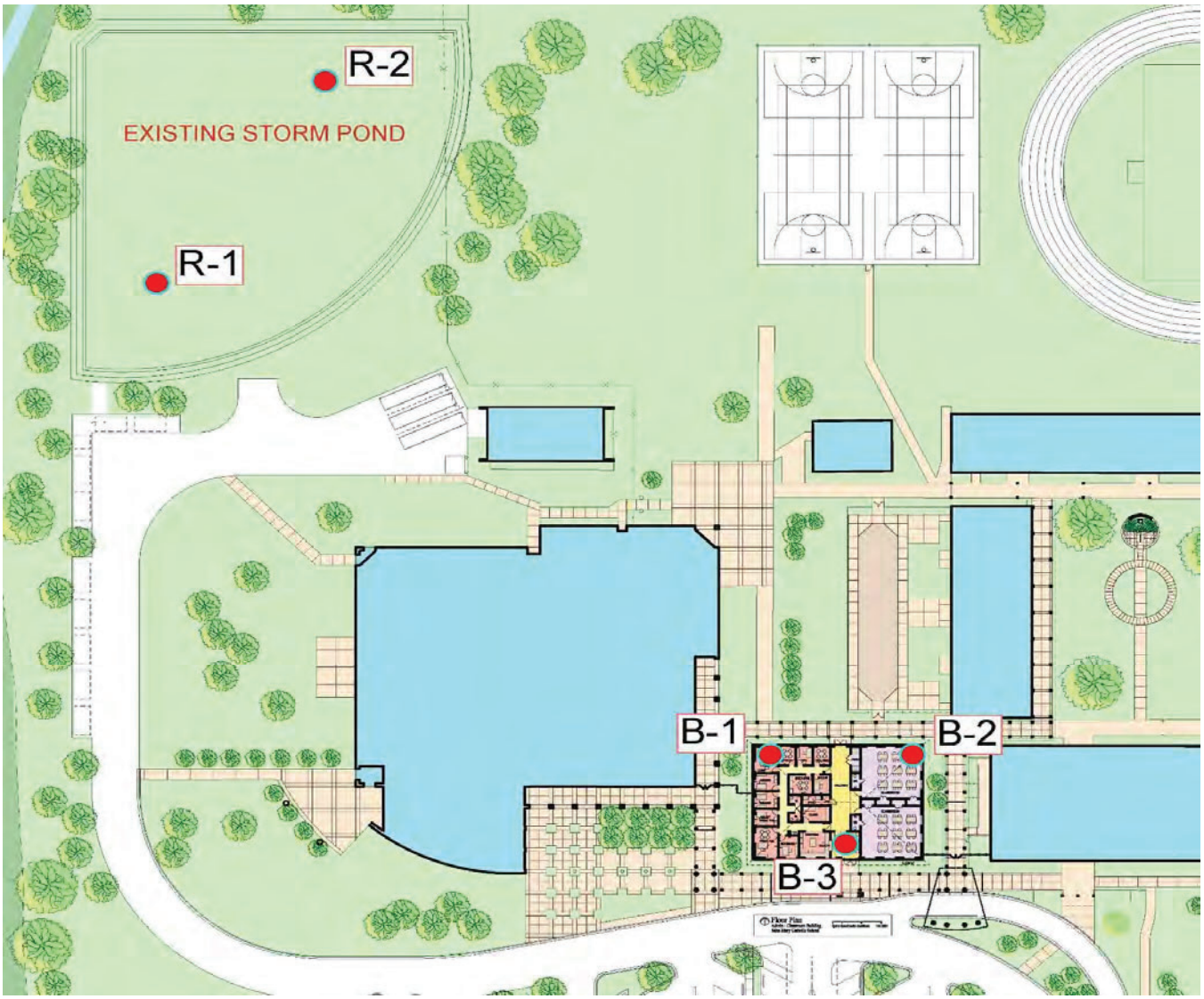
5.0 LIMITATIONS

The findings, conclusions and recommendations presented in this report represent our professional opinions concerning subsurface conditions at the site. The opinions presented are relative to the date of our site work and should not be relied on to represent conditions at significantly later dates or at locations not explored. The opinions included herein are based on information provided to us, the data obtained at specific locations during the study and our experience. If additional information becomes available that might impact our geotechnical opinions, it will be necessary for GCGI to review the information, reassess the potential concerns, and re-evaluate our conclusions and recommendations.

Regardless of the thoroughness of a geotechnical exploration, there is the possibility that conditions between test locations will differ from those encountered at specific test locations, that conditions are not as anticipated by the designers and/or the contractors, or that either natural events or the construction process have altered the subsurface conditions. These variations are an inherent risk associated with subsurface conditions in this region and the approximate methods used to obtain the data. These variations may not be apparent until construction.

This report is intended for the sole use of **Quina Grundhoefer Architects** for the above noted project. The scope of work performed during this study may not satisfy other user's requirements. Use of this report or the findings, conclusions or recommendations by others will be at the sole risk of the user. GCGI is not responsible or liable for the interpretation by others of the data in this report, nor their conclusions, recommendations or opinions. Our professional services have been performed, our findings obtained, our conclusions derived and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices in the State of Florida. This warranty is in lieu of all other statements or warranties, either expressed or implied.

APPENDIX



N

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LEGEND

R-x = SMS Auger Borings (4.5 ft.)

B-x = Structure SPT Borings (25 ft.)

BORING LOCATION PLAN - NOT TO SCALE

Project: St. Mary Catholic School Expansion

Date Drawn: 1/26/2026

Drawn By: WLL

GCGI

KEY TO BORING LOGS

SYMBOLS AND ABBREVIATIONS

SYMBOL	DESCRIPTION
N-Value	No. of Blows of a 140-lb. Weight Falling 30 Inches Required to Drive a Standard Spoon 1 Foot
WOR	Weight of Drill Rods
WOH	Weight of Drill Rods and Hammer
	Sample from Auger Cuttings
	Standard Penetration Test Sample
	Thin-wall Shelby Tube Sample (Undisturbed Sampler Used)
% REC	Percent Core Recovery from Rock Core Drilling
RQD	Rock Quality Designation
	Stabilized Groundwater Level
	Seasonal High Groundwater Level (also referred to as the W.S.W.T.)
NE	Not Encountered
GNE	Groundwater Not Encountered
BT	Boring Terminated
-200 (%)	Fines Content or % Passing No. 200 Sieve
MC (%)	Moisture Content
LL	Liquid Limit (Atterberg Limits Test)
PI	Plasticity Index (Atterberg Limits Test)
K	Coefficient of Permeability
Org. Cont.	Organic Content
G.S. Elevation	Ground Surface Elevation

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE-GRAINED SOILS More than 50% retained on the No. 200 sieve*	GRAVELS 50% or more of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
		GRAVELS WITH FINES	GM	Silty gravels and gravel-sand-silt mixtures
			GC	Clayey gravels and gravel-sand-clay mixtures
	SANDS More than 50% of coarse fraction passes No. 4 sieve	CLEAN SANDS 5% or less passing No. 200 sieve	SW**	Well-graded sands and gravelly sands, little or no fines
			SP**	Poorly graded sands and gravelly sands, little or no fines
		SANDS with 12% or more passing No. 200 sieve	SM**	Silty sands, sand-silt mixtures
			SC**	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS 50% or more passes the No. 200 sieve*	SILTS AND CLAYS Liquid limit 50% or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid limit greater than 50%		MH	Inorganic silts, micaceous or diamicaceous fine sands or silts, elastic silts
			CH	Inorganic clays or clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity
			PT	Peat, muck and other highly organic soils

*Based on the material passing the 3-inch (75 mm) sieve
** Use dual symbol (such as SP-SM and SP-SC) for soils with more than 5% but less than 12% passing the No. 200 sieve

RELATIVE DENSITY
(Sands and Gravels)
Very loose – Less than 4 Blow/Foot
Loose – 4 to 10 Blows/Foot
Medium Dense – 11 to 30 Blows/Foot
Dense – 31 to 50 Blows/Foot
Very Dense – More than 50 Blows/Foot

CONSISTENCY
(Silts and Clays)
Very Soft – Less than 2 Blows/Foot
Soft – 2 to 4 Blows/Foot
Medium Stiff – 5 to 8 Blows/Foot
Stiff – 9 to 15 Blows/Foot
Very Stiff – 16 to 30 Blows/Foot
Hard – More than 30 Blows/Foot

RELATIVE HARDNESS
(Limestone)
Soft – 100 Blows for more than 2 Inches
Hard – 100 Blows for less than 2 Inches

MODIFIERS

These modifiers Provide Our Estimate of the Amount of Minor Constituents (Silt or Clay Size Particles) in the Soil Sample
Trace – 5% or less
With Silt or With Clay – 6% to 11%
Silty or Clayey – 12% to 30%
Very Silty or Very Clayey – 31% to 50%

These Modifiers Provide Our Estimate of the Amount of Organic Components in the Soil Sample
Trace – Less than 3%
Few – 3% to 4%
Some – 5% to 8%
Many – Greater than 8%

These Modifiers Provide Our Estimate of the Amount of Other Components (Shell, Gravel, Etc.) in the Soil Sample
Trace – 5% or less
Few – 6% to 12%
Some – 13% to 30%
Many – 31% to 50%

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BORING AND WELL LOG LEGEND

SURFACE
- ASPHALT
- CONCRETE
- FILL
- TOPSOIL
- AIR
- ICE

USCS
- Well-graded GRAVEL (GW)
- Poorly graded GRAVEL (GP)
- Silty GRAVEL (GM)
- Clayey GRAVEL (GC)
- Silty, Clayey GRAVEL (GC-GM)
- Well-graded GRAVEL with silt (GW-GM)
- Poorly graded GRAVEL with silt (GP-GM)
- Well-graded GRAVEL with clay (GW-GC)
- Poorly graded GRAVEL with clay (GP-GC)
- Well-graded SAND (SW)
- Poorly graded SAND (SP)
- Silty SAND (SM)
- Clayey SAND (SC)
- Silty, Clayey SAND (SC-SM)
- Well-graded SAND with silt (SW-SM)
- Poorly graded SAND with silt (SP-SM)
- Well-graded SAND with clay (SW-SC)
- Poorly graded SAND with clay (SP-SC)
- SILT (ML)
- Lean CLAY (CL)
- Silty CLAY (CL-ML)
- Organic SOIL (OL)
- Elastic SILT (MH)
- Fat CLAY (CH)
- Organic SOIL (OH)
- Organic SOIL (OL/OH)
- PEAT (PT)
- BEDROCK
- WATER

Non-USCS
- Gravel
- Sand
- Silt
- Clayey silt
- Silt & clay
- Clay & silt
- Silty clay
- Clay
- Boulders
- Cobbles
- Peastone
- Glacial till
- Iron ore
- Wood
- Peat
- Partially Weathered Rock (PWR)
- Saprolite
- Ash
- Waste
- Mud
- Alluvium
- Colluvium
- Residuum

Soil/Rock Contact Lines
- Inferred
- Abrupt
- Gradational

Volume Descriptors
- Trace = <5%
- Few = 5-10%
- Little = 15-25%
- Some = 30-45%
- Mostly = >=50%

Water Levels
- Water Level During Drilling
- Water Level at End of Drilling/in Completed Well

Well/Boring Completion
- Cap
- Riser
- Screen
- End Plug
- Annular Seal
- Sanitary Seal (Bentonite Slurry/Chips/Pellets/Powder, Other)
- Filter Pack (Sand, Gravel, Other)
- Backfill

Sample Type
- GR — Grab
- EN — Encore
- SS — Split Spoon
- SH — Shelby Tube
- CO — Core Barrel
- DP — Direct Push
- ID — Lab Sample and ID

Rock
- IGNEOUS Rock
- METAMORPHIC Rock
- SEDIMENTARY Rock
- Agglomerate
- Andesite
- Basalt
- Diorite
- Gabbro
- Granite
- Rhyolite
- Tuff
- Volcanic breccia
- Gneiss
- Granulite
- Hornfels
- Marble
- Phyllite
- Quartzite
- Schist
- Serpentinite
- Skarn
- Slate
- Amphibolite
- Breccia
- Chalk
- Chert
- Claystone
- Coal
- Conglomerate
- Diatomite
- Dolomite
- Evaporite
- Graywacke
- Limestone
- Mudstone
- Sandstone
- Shale
- Siltstone

GCGI	**Client:** Quina Grundhoefer Architects **Project:** St. Mary Catholic School Expansion **Address:** 110 Robinwood Dr. SW, Fort Walton Beach, FL	**BORING LOG** **Boring No.** B-1 **Page:** 1 of 1

Drilling Start Date:	**1/13/2026**	Boring Depth (ft):	**25**
Drilling End Date:	**1/13/2026**	Boring Diameter (in):	**4.0**
Drilling Company:	**ERGI**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Mud Rotary**	DTW During Drilling (ft):	**5**
Drilling Equipment:	**Kenco**	DTW After Drilling (ft):	**N/A**
Driller:	**BK**	Ground Surface Elev. (ft):	**N/A**
Logged By:	**BK**	Location (Lat, Long):	**N/A**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	BORING COMPLETION	COLLECT: Sample Type	COLLECT: Time	Blow Counts	Recovery (ft)	N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	DEPTH (ft)
0				SS		2 5 5	1.50	10	(0.00') Poorly graded SAND with silt (SP-SM); loose, brown/tan, with pieces of brick/asphalt/concrete debris (Fill)		0
				SS		3 3 2	1.50	5	(1.50') Poorly graded SAND (SP); loose, off-white		
				SS		3 3 2	1.50	5	(3.00') Poorly graded SAND (SP); loose, dark brown, with organic stain		
5		▽							(4.00') Poorly graded SAND (SP); loose, off-white		5
				SS		2 2 3	1.50	5	(5.00') Poorly graded SAND (SP); loose, brown, with slight organic stain		
				SS		3 4 6	1.50	10	(6.00') Poorly graded SAND (SP); loose, off-white		
10									(11.00') Poorly graded SAND (SP); medium dense, dark brown, with organic stain		10
				SS		7 9 8	1.50	17			
15											15
				SS		6 8 10	1.50	18			
20									(21.00') Poorly graded SAND (SP); medium dense, off-white		20
				SS		5 9 10	1.50	19			
25									(25.00') Boring terminated		25
30											30

NOTES:

Checked by: WLL

GCGI	Client:	Quina Grundhoefer Architects	BORING LOG
	Project:	St. Mary Catholic School Expansion	Boring No. B-/
	Address:	110 Robinwood Dr. SW, Fort Walton Beach, FL	Page: 1 of 1

Drilling Start Date:	13123 0/ 6	Boring Depth (ft):	/ 5
Drilling End Date:	13123 0/ 6	Boring Diameter (in):	4.0
Drilling Company:	ERGI	Sampling Method(s):	Split Spoon
Drilling Method:	Mud Rotary	DTW During Drilling (ft):	4.5
Drilling Equipment:	Kenco	DTW After Drilling (ft):	N3A
Driller:	BK	Ground Surface Elev. (ft):	N3A
Logged By:	BK	Location (Lat, Long):	N3A

DEPTH (ft)	LITHOLOGY	WATER LEVEL	BORING COMPLETION	COLLECT: Sample Type	COLLECT: Time	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	DEPTH (ft)
0				SS		2 6 6	1.50	12	(0.00') Poorly graded SAND with silt (SP-SM); medium dense, light brown		0
				SS		5 3 2	1.50	5	(1.00') BEDROCK: Buried asphalt pavement section - 1" Asphalt, 3" Sand/Clay Base		
5				SS		2 3 4	1.50	7	(1.50') Poorly graded SAND (SP); medium dense, gray (2.00') Poorly graded SAND (SP); loose, off-white		5
				SS		1 2 5	1.50	7	(3.00') Poorly graded SAND (SP); loose, dark brown, with organic stain		
				SS		3 6 8	1.50	14	(8.00') Poorly graded SAND (SP); medium dense, off-white		
10											10
				SS		4 8 17	1.50	25			
15											15
				SS		7 10 14	1.50	24			
20											20
				SS		9 15 11	1.50	26			
25									(25.00') Boring terminated		25
30											30

NOTES:

Checked by: WLL

GCGI	Client:	Quina Grundhoefer Architects	BORING LOG
	Project:	St. Mary Catholic School Expansion	Boring No. B-/
	Address:	110 Robinwood Dr. SW, Fort Walton Beach, FL	Page: 1 of 1

Drilling Start Date:	1 3I/ 32026	Boring Depth (ft):	25
Drilling End Date:	1 3I/ 32026	Boring Diameter (in):	4.0
Drilling Company:	ERGI	Sampling Method(s):	Split Spoon
Drilling Method:	Mud Rotary	DTW During Drilling (ft):	5
Drilling Equipment:	Kenco	DTW After Drilling (ft):	N3A
Driller:	BK	Ground Surface Elev. (ft):	N3A
Logged By:	BK	Location (Lat, Long):	N3A

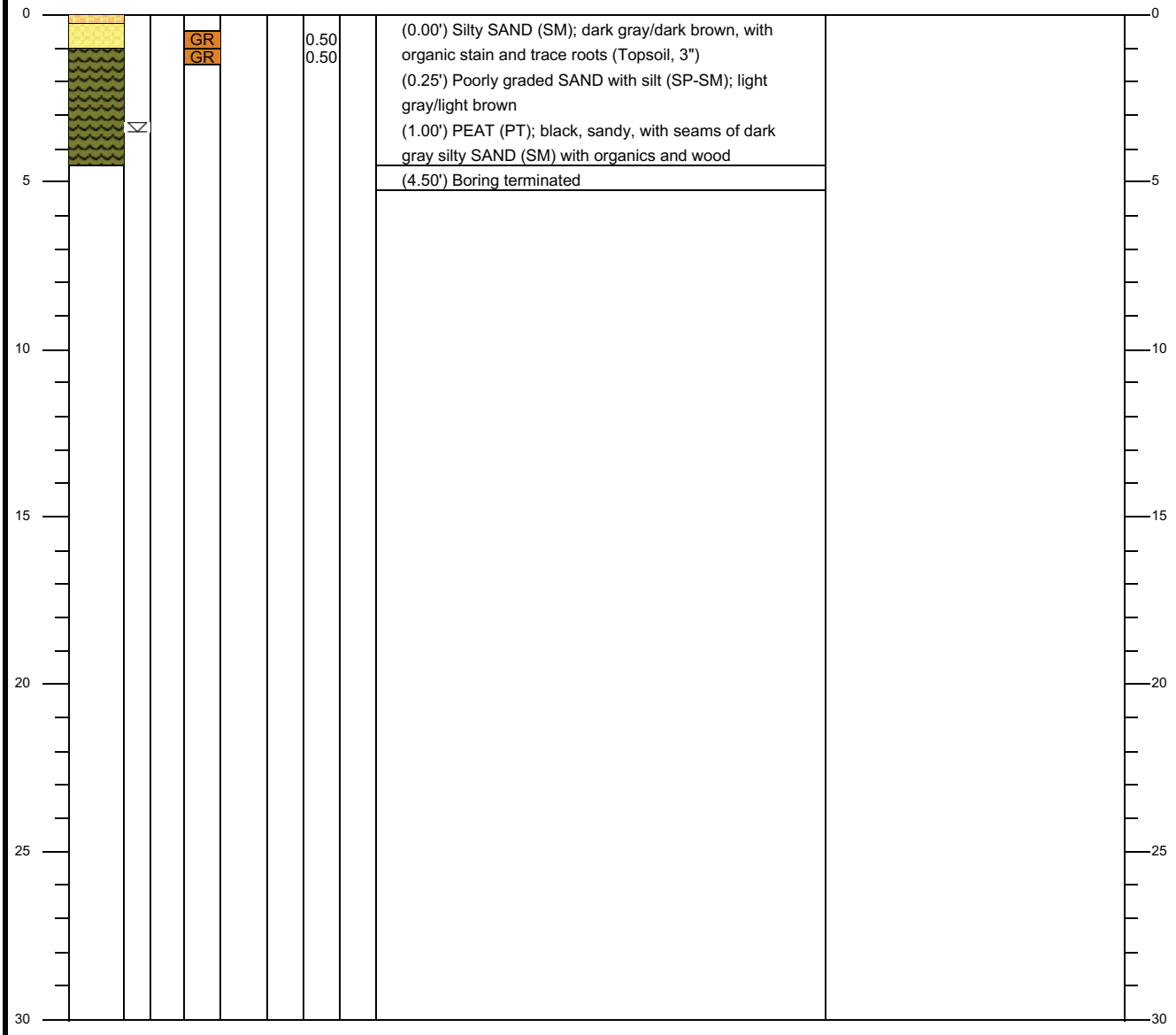
DEPTH (ft)	LITHOLOGY	WATER LEVEL	BORING COMPLETION	COLLECT: Sample Type	COLLECT: Time	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	DEPTH (ft)
0				SS		2 5 5	1.50	10	(0.00') Poorly graded SAND with silt (SP-SM); poorly graded, loose, brown/tan (kill)		0
				SS		3 4 5	1.50	8	(1.00') Silty SAND (SM); loose, orange (kill) (1.50') Poorly graded SAND (SP); loose, off-white		
5		▽		SS		2 2 1	1.50	3	(4.00') Poorly graded SAND (SP); very loose to loose, brown, with slight organic stain		5
				SS		2 3 2	1.50	5			
				SS		1 2 1	1.50	3	(9.00') Poorly graded SAND (SP); very loose to dense; off-white		
10											10
				SS		6 7 11	1.50	19			
15											15
				SS		9 19 25	1.50	43			
20											20
				SS		8 19 17	1.50	35			
25									(25.00') Boring terminated		25
30											30

NOTES:

ChecFed by: WLL

GCGI	**Client:** Quina Grundhoefer Architects **Project:** St. Mary Catholic School Expansion **Address:** 110 Robinwood Dr. SW, Fort Walton Beach, FL	**BORING LOG** **Boring No.** R-1 **Page:** 1 of 1

Drilling Start Date:	**1/12/2026**	Boring Depth (ft):	**4.5**
Drilling End Date:	**1/12/2026**	Boring Diameter (in):	**4.0**
Drilling Company:	**GCGI**	Sampling Method(s):	**Grab**
Drilling Method:	**Hand Auger Rig**	DTW During Drilling (ft):	**3.5**
Drilling Equipment:	**Hand Auger**	DTW After Drilling (ft):	**N/A**
Driller:	**WLL**	Ground Surface Elev. (ft):	**N/A**
Logged By:	**WLL**	Location (Lat, Long):	**N/A**



NOTES:

Checked by: WLL

GCGI	**Client:** Quina Grundhoefer Architects **Project:** St. Mary Catholic School Expansion **Address:** 110 Robinwood Dr. SW, Fort Walton Beach, FL	**BORING LOG** **Boring No.** R-/ **Page:** 1 of 1

Drilling Start Date:	12/20/6	Boring Depth (ft):	4.5
Drilling End Date:	12/20/6	Boring Diameter (in):	4.0
Drilling Company:	GCGI	Sampling Method(s):	Grab
Drilling Method:	Hand Auger Rig	DTW During Drilling (ft):	3.5
Drilling Equipment:	Hand Auger	DTW After Drilling (ft):	N/A
Driller:	WLL	Ground Surface Elev. (ft):	N/A
Logged By:	WLL	Location (Lat, Long):	N/A

DEPTH (ft)	LITHOLOGY	WATER LEVEL	BORING COMPLETION	COLLECT: Sample Type	COLLECT: Time	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	REMARKS	DEPTH (ft)
0				GR			0.50		(0.00') Silty SAND (SM); dark gray/dark brown, with organic stain and trace roots (Topsoil, 3")		0
				GR			0.50		(0.25') Poorly graded SAND with silt (SP-SM); light brown		
		▽							(1.50') PEAT (PT); black, sandy, with seams of dark gray silty SAND (SM) with organics and wood		
5									(4.50') Boring terminated		5
10											10
15											15
20											20
25											25
30											30

NOTES:

Checked by: WLL

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

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