

182000 DIS Cafeteria Expansion

SECTION 00001

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DOCTORS INLET ELEMENTARY CAFETORIUM REMODEL
Clay County School Board

BRIAN BOATRIGHT ARCHITECT, INC.

914 Plainfield Avenue
Orange Park, Florida 32073
(904) 413-8028

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SECTION 00010

**NOTICE TO BIDDERS
(Invitation to Bid)**

Sealed bids will be received by the District School Board of Clay County until

2:00pm on Thursday, 10 October 2019,
in the Business Affairs Conference Room,
814 Walnut Street, Green Cove Springs, FL 32043

at which time and place all bids received will be publicly opened and read aloud for furnishing all labor and materials for the construction of:

DOCTORS INLET ELEMENTARY CAFETERIA EXPANSION

All work shall be done according to the plans and specifications prepared by:

BRIAN BOATRIGHT ARCHITECT, INC.
914 Plainfield Ave, Orange Park, FL 32073
email all questions to brianboatrightaia@gmail.com
include project number in subject line

Plans are on file and open to inspection at the office of the architect and are available for purchase and on file with the following plan room:

LDI Reprinting Center
550 Wells Road, Suite 100, Orange Park, FL 32073
(904) 579-4027 (904) 579-4154 FAX
orangepark@ldireprinting.com

Prime bidders, who will be submitting a bid to the owner, are required to register with the architect their intention to bid and as a plan holder. Any addenda will be sent automatically (electronically) to the known plan holders. Other delivery methods may be arranged with the architect. Partial sets of drawings and/or specifications are not advised and neither the architect nor owner will be responsible for partial information given to subcontractors by the general contractors. ***Electronic drawings and specifications will not be distributed.***

There will be Mandatory Pre-bid Meeting at the site on 3 October 2019 at 9:00am per Section 00100, Part 9.2. Bidders not attending the pre-bid meeting will not be permitted to submit a bid.

Only contractors having been pre-qualified by the Clay County School District are eligible to submit bids for this project. **Only pre-qualified Contractors should submit bids** for this project (Florida Statutes).

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DISCRIMINATION: An entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid on a contract to provide goods or services to a public entity, may **not** submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may **not** submit bids on leases of real property to public entity, may **not** award or perform work as a contractor, supplier, subcontractor, or consultant under contract with any public entity, and may **not** transact business with any public entity.

The owner reserves the right to waive any irregularities and minor technicalities or to reject any and all bids. Each bidder must deposit, with his bid, a bid bond or cashier's check in the amount of five percent (5%) of the base bid price, payable to the owner.

The successful bidder will be required to provide a performance, labor and material bond in the amount of 100% of the accepted bid amount.

No bidder may withdraw his bid within (60) days after the actual date of the opening thereof. Any actual or prospective bidder who disputes the reasonableness or competitiveness of the terms and conditions of the invitation to bid, contract award, or recommendation for contract award, shall file a notice of protest with the superintendent of schools within 72 hours of receipt of the bid solicitation, posting of the bid tabulations, or posting of the bid award and must file a formal written protest within ten (10) days following the filing of the notice to protest. Failure to observe such timelines will constitute a waiver of proceedings and of right to protest as stipulated in Chapter 120 of the Florida Statutes. The school board requires a protestor to post bond in accordance with Florida Statutes, Section 255.0516 F.S.

Bond Requirement:

Should a contractor wish to protest the bid recommendation, the protestor shall be required to post a bond as follows:

- (1) Five percent (5%) of the recommended award for all projects valued less than \$500,000.00;
and
- (2) Twenty-five thousand (\$25,000.00) for all projects in excess of \$500,000.00.

Conditioned upon payment of all cost and fees, which may be adjusted against the protestor, in the administrative hearing. If at the hearing, the school board prevails, it may recover all costs and attorney's fees from the protester; if the protestor prevails, the protestor shall recover from the school board, all costs and attorney's fees.

Bid tabulations shall be posted at the main office, 900 Walnut Street Green Cove Springs, outside the board's meeting room after the intended recommendation is announced on or about four (4) days of the bid opening and after the board's decision is made. The bid tabulation will remain posted for a minimum period of 96 hours.

Addison Davis, Superintendent
Clay County District Schools

END OF SECTION 00010

SECTION 02010

SITE DEMOLITION

PART I - GENERAL

1.1 DESCRIPTION

- A. The General Requirements, Division 1, are hereby made a part of this section as if fully repeated herein.
- B. Work Included:
 - 1. Permits.
 - 2. Demolition and removal of existing trees, fences and sidewalks located on the site.
 - 3. Backfilling and compaction.
- C. Related Work Specified Elsewhere:
 - 1. Site Clearing: Site Clearing and Earthwork - 02210.
 - 2. Removal of existing asphalt pavement: Site Clearing and Earthwork - 02210.
- D. Supervision: All work specified herein shall be under the supervision of the Contractor.

1.2 JOB CONDITIONS

- A. Should any unusual conditions arise, the Architect should be contacted for instructions prior to continuation of demolition operations.

1.3 PERMITS

- A. Obtain and pay for all required permits and inspections.

PART II - EXECUTION

2.1 NOTIFICATION OF UTILITY COMPANIES

- A. Notify all utility companies that may have lines or services on or around the site prior to starting any work. Have the utility company identify and locate their underground lines.
- B. Take responsibility for the repair or replacement of any lines or services damaged during the course of this work.
- C. Remove, plug or cap all abandoned lines, meters, boxes, obstructions or piping in accordance with the requirements and approval of the agencies affected or as directed by the Architect. Use licensed electricians or plumbers for this work.

2.2 PROTECTION

- A. Take responsibility for furnishing, placing and maintaining all support, shoring and sheet piling which may be required for the protection of site personnel and adjacent existing improvements.

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- B. Maintain all bench marks, monuments, and other reference points furnished by others and replace any that are disturbed or destroyed during the course of this work.
- C. Do not damage any trees not indicated for removal. Protect trees near this work so as to prevent damage to the branches, bark and soil around the root system.
- D. Protect all underground utilities in the area of this work.

2.3 PROCEDURE

- A. Demolition: Perform work in an orderly and careful manner. Take responsibility for damages to public property resulting from this operation.
- B. Materials: Promptly remove all materials, rubbish and debris from the premises. Accumulation of same will not be permitted.
- C. Backfill: Fill excavations created by this work in accordance with the requirements of Section 02210 of these specifications.

END OF SECTION 02010

SECTION 02210

SITE CLEARING AND EARTHWORK

PART I - GENERAL

1.1 DESCRIPTION

- A. The General Requirements, Division 1, are hereby made a part of this section as if fully repeated herein.
- B. Work Included:
 - 1. Notification of utility companies
 - 2. Protection
 - 3. Site Clearing
 - 4. Layout and Establishment of Grades
 - 5. Grading and Reshaping Site
 - 6. Temporary Drainage and Erosion Control
 - 7. Consolidation of Existing Soil
 - 8. Importing and Compacting Fill
 - 9. Spreading of Topsoil
 - 10. Mulching and Seeding
 - 11. Clean Up
- C. Work by Others: None
- D. Related Work Specified Elsewhere:
 - 1. Drainage Structures: Storm Drainage - 02700.

1.2 JOB CONDITIONS

- A. Inspection of the site: It is the Contractor's responsibility to have carefully inspected the building site during the bidding period to determine the extent and nature of the site work and the conditions under which it must be performed.
- B. Lines, Grades, Etc.: Verify all grades, lines and dimensions shown on drawings and report any errors or inconsistencies to the Architect before commencing work.
- C. Should any unusual conditions arise, contact the Architect for instructions prior to continuation of clearing and grading operations.

1.3 QUALITY ASSURANCE

- A. Work specified herein will be subject to inspection and testing by an independent testing laboratory selected and compensated by the General Contractor. Selection of the testing laboratory is subject to the approval of the Architect.
- B. Soil tests will be made as follows:
 - 1. A moisture density relationship determination test will be obtained for each type of fill material used in accordance with the ASTM D-1557 for granular or sandy soils.

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2. One in-place density test is required for each layer of fill for every 2,000 sq. ft. of area. Retests will be required in re-compacted areas.

PART II - EXECUTION

2.1 NOTIFICATION OF UTILITY COMPANIES

- A. Notify all utility companies that may have lines or services on or around the site prior to starting any work. Have the utility identify and locate their underground lines.
- B. Active utilities shall be adequately protected from damage and removed or relocated only as indicated or specified. The work shall be adequately protected, supported or relocated as directed by the Architect. Take responsibility for the repair or replacement of any lines or services damaged during the course of this work.
- C. Remove, plug or cap all abandoned lines, meters, boxes, obstructions or piping in accordance with the requirements and approval of the agencies affected or as directed by the Architect. Use licensed electricians or plumbers for this work.

2.2 PROTECTION

- A. Take responsibility for furnishing, placing and maintaining all support, shoring and sheet piling which may be required for the protection of site personnel and adjacent existing improvements.
- B. Maintain all bench marks, monuments and other reference points furnished by others and replace any that are disturbed or destroyed during the course of the work.
- C. Protect all underground utilities in the area of this work.

2.3 SITE CLEARING

- A. Remove all vegetation, debris and any other existing material shown from all areas to receive fill. Remove all material to its full depth or extent unless otherwise indicated or directed by the Architect.
- B. Stage clearing and seeding so that no areas are left defoliated for more than 30 days, unless otherwise authorized.

2.4 LAYOUT AND ESTABLISHMENT OF GRADES

- A. Provide all layout and establish grades as needed for the proper execution of the work.
- B. Base all layout on bench mark provided by others.

2.5 GRADING AND RESHAPING SITE

- A. Uniformly grade all areas as shown on the drawings including cut and filled areas and adjacent transition areas so that finished surfaces are at the elevation indicated on the drawings.
- B. Grade areas to receive future topsoil to allow for such material.

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- C. Surfaces shall not vary from the established grades more than 0.1 feet
- D. Place fill in successive layers of not more than 12 inches in thickness and compact each layer until the maximum dry density indicated on the drawings is obtained.
- E. Re-compact areas which fail to meet the compaction requirements until passing results are achieved.

2.6 TEMPORARY DRAINAGE AND EROSION CONTROL

- A. During all site clearing and grading operation, provide proper temporary drainage, complete with required trenching and pumping equipment, to adequately dispense surface and/or subsurface water and to ensure that the site is kept in an accessible and workable condition at all times.
- B. Perform temporary drainage work in conformance with all governing regulations including protective measures such as silt screens, hay bales, settling ponds and similar devices as required by such regulations.
- C. At the conclusion of the project, prior to spreading the topsoil, restore all areas used for temporary drainage to the grades and elevations shown on the drawings.

2.7 CONSOLIDATION OF EXISTING SOIL

- A. Upon completion of clearing, stripping and/or removal operation, compact the project area to the densities indicated to a depth of 12 inches.

2.8 PLACEMENT OF FILL

- A. All fill material must be approved by the Architect prior to placing it on the site. Materials meeting the requirements below are suitable for use as fill material.

Imported fill material shall be clean sand soil containing less than 10 percent fines (material passing the No. 200 sieve) by weight, containing less than 4% organic matter and free of deleterious material.

- B. Place fill as specified in paragraph 2.5D.

2.9 SPREADING TOPSOIL

- A. Import topsoil and spread uniformly to a depth of 4 inches on all disturbed areas that are to receive sod and to a depth of 2 inches on all areas that are to receive sod. Remove any clay, stones larger than 3/4 inch in diameter, weeds, roots, rubbish and all other foreign matter from the topsoil.
- B. Upon completion of the work, any surplus topsoil may be spread on the school site at locations designated by the Architect, or may be removed from the project site and disposed of by the Contractor.

2.10 SODDING

- A. Fertilize and sod all disturbed areas.

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- B. Sod shall be freshly cut and mature Argentine Bahia sod with a minimum root mat thickness of 2 inches.
- C. Remove all rocks over 3/4 inch in diameter or larger, large roots and other debris of objectionable matter from the top 3 inches of soil by hand raking. Spread lime and fertilize as recommended and disk into soil. Rake area just before seeding so as not to affect proper drainage. Spread seed and cover to an average depth of 1/4 inch by means of a harrow or rake. Do not seed in windy weather or when the ground is too wet to be tilled. Apply mulch to provide complete coverage.
- D. Maintain sodded areas until the work has been completed and accepted and for a minimum period of 30 days thereafter, including watering as necessary and at least one (1) cutting.

If surface becomes eroded or otherwise damaged during this period, repair the affected areas and re-seed as specified above.
- E. Place sod on a properly prepared subgrade of topsoil, fertilized as described above. Peg all sod on slopes to prevent movement.

2.11 CLEAN UP

- A. Minimize the transmission of dirt or debris by equipment or personnel to any property, public or private, outside the project site. Immediately remove any such debris or dirt transmitted.

END OF SECTION 02210

SECTION 02280

TERMITE TREATMENT

PART 1 - GENERAL:

- 1.1 **Related Documents:** The General Provisions of the Contract, including the General Requirements, Supplementary Conditions and Special Conditions (if any), along with the General Requirements, apply to the work specified in this Section.
- 1.2 **Scope:** The work required for this Section includes termite protection under all concrete slabs and inside hollow masonry foundation walls.
- 1.3 **Qualifications:** All soil poisoning shall be performed by a company or individual licensed in Florida as a certified pest control operator under the Bureau of Entomology and Pest Control and the Florida Department of Agriculture and shall have a minimum of five (5) years of proven experience in the pest control business.
- 1.4 **Bonding and Insurance:** The Contractor shall be bonded and insured.
- 1.5 **Contract:** Prior to application of pesticide, a copy of the proposed contract will be executed by the Owner as required by Florida Statutes "Consumer Protection Act".
- 1.6 **Guarantee:**
 - A. Upon completion of soil treatment, and as a condition of Final Acceptance, furnish the Owner a written certification stating the chemicals used for treatment, the percentage of the solution, and the coverage rates applied for each individual building in the project guaranteeing the effectiveness of the treatment against termite infestation for a period not less than five (5) years from the date of treatment.
 - B. Re-treatment, upon evidence of subterranean termite activity, shall be provided at no cost to the Owner, within the warranty period.

PART 2 - MATERIALS:

- 2.1 **Materials:**
 - A. Chemicals shall be water-based emulsion soil chemicals only and containing the minimum concentrations of state-approved pesticides, typically 0.5%.
 - B. Chemical products and solutions shall be mixed according to the manufacturer's suggested instructions and shall conform to Florida Department of Agriculture Regulations.

PART 3 - EXECUTION:

- 3.1 **Time of Application:**

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- A. Do not begin soil poisoning work until all precautions for slab placement have been completed. **Soil poisoning shall be completed prior to placement of membrane dampproofing.** Care must be taken not to disturb the subgrade.
- B. **Do not apply soil poison when surface water is present, when the soil or fill is excessively wet, or immediately after or before heavy rains.**
- C. A second application of termiticide shall be made to the outside of the foundation wall after the finish grading is complete and the landscaping is in place.
- D. Precautions shall be taken to prevent disturbance of the treatment by human or animal contact with the treated soil. The area shall be marked with a sign notifying of recent treatment and industry caution statements.

3.2 **Location:** Apply soil treatment to all areas beneath concrete floor slabs and inside hollow masonry foundation walls.

3.3 **Rate of Application:**

- A. The following rates of application are minimum rates. If the manufacturer's instruction indicate a more concentrated rate, then the most concentrated rate shall apply. However, in no case shall the application rates exceed those permissible under Florida law.
- B. **Horizontal Barriers:** Apply termiticide at the minimum rate of one (1) gallon of dilution to each ten (10) square foot of area under slabs on grade within the building lines.
- C. **Vertical Barriers:** Apply termiticide at the minimum rate of four (4) gallons of dilution per ten (10) lineal feet per foot of depth, at or near top of the footings.
- D. **Hollow Block Foundations:** Treat the voids of the foundation walls at the rate of two (2) gallons of dilution per ten (10) lineal feet, at or near top of the footings.
- E. **Miscellaneous:** Apply termiticide at the rate of two (2) gallons per ten (10) lineal feet per foot of depth, at the following areas:
 - 1. Along inside of foundation walls and where exterior veneers extend below grade.
 - 2. Immediately below expansion joints, control joints, around plumbing lines, backfilled areas, and all areas where slab will be penetrated by construction features.

END OF SECTION 02280

SECTION 02530

ON-SITE GRAVITY SANITARY SEWERAGE

PART I - GENERAL

1.1 DESCRIPTION

- A. The General Requirements, Division 1, are hereby made a part of this section as if fully repeated herein.
- B. Work Included:
 - 1. Notification of Utility Companies.
 - 2. Protection.
 - 3. Excavation.
 - 4. De-watering and Erosion Control.
 - 5. Pipe installation
 - 6. Backfill and Compaction.
 - 7. Clean Up.
- C. Related Work Specified Elsewhere:
 - 1. Site clearing and grading: Site Clearing and Earthwork - 02210.
 - 2. Water Lines: On-Site Water Lines - 02510

1.2 JOB CONDITIONS

- A. Inspection of the Site: It is the Contractor's responsibility to have carefully inspected the building site during the bidding period to determine the extent and nature of the site work and the conditions under which it must be performed.
- B. Subsurface investigations have not been completed.
- C. Lines, Grades, Etc.: Verify all grades, lines and dimensions shown on drawings and report any errors or inconsistencies to the Architect before commencing work.
- D. Should any unusual conditions arise, contact the Architect for instructions prior to continuation of clearing and grading operations.
- E. General Contractor shall be responsible for all layout unless otherwise directed.

1.3 QUALITY ASSURANCE

- A. The subcontractor performing this work shall hold a valid, unexpired certificate issued by the Florida Board of Professional Regulation as a State Certified Underground Utilities Contractor or State Certified Plumber.
- B. Submittals and Inspections:

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1. Obtain from the manufacturer and submit to the Architect a Certificate of Inspection to the effect that the materials furnished have been inspected at the plant, meet the requirements of these specifications, and have been tested as called for herein.
 2. All pipes, valves and fittings shall be subject to inspection at time of delivery and also in the field just prior to installation. Remove all pipes, valves or fittings which, in the opinion of the Architect, do not conform to these specifications.
 3. Submit manufacturer's certification of materials' conformance to specifications.
 4. Submit manufacturer's literature, catalog data and installation instructions.
 5. Submit certified field pressure test reports.
 6. Comply with Section 01300, Submittals.
- C. Work specified herein will be subject to inspection and testing by an independent testing laboratory selected and compensated by the General Contractor. Selection of the testing laboratory is subject to the approval of the Architect.
- D. Soil tests will be made as follows:
1. A moisture density relationship determination test will be obtained for each type of fill material used in accordance with the ASTM D -1557 for granular or sandy soils.
 2. One density test shall be performed for each 1,000 sq. ft. of area and for every layer of fill. One test is required under each pad, Test are required at 100 foot intervals under sidewalks and in utility trenches.
- E. Permit Fees and Other Charges: Prepare all documents and obtain required certificates of inspection for this work and deliver same to the Architect.
1. Sanitary Sewerage: General Contractor shall pay sewerage tap fee and other related connection charges. Pollution charge shall be paid by Owner.
 2. Water needed to perform all testing and associated flushing shall be the Contractor's expense.
 3. All testing shall be at the Contractor's expense.
- F. Applicable Codes, Standards and Specifications: The work under this Contract shall be in strict accordance with the following codes and standards.
1. All Local, County, Municipal and Federal Codes.
 2. American National Standards Institute (ANSI).
 3. American Society for Testing and Materials (ASTM).
 4. Florida Dept. of Environmental Protection
- G. Quality Assurance Standards:
1. American Society for Testing and Materials (ASTM)
 - a. D-3034, Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
 - b. ASTM D-3212, Joints for Drain and Sewer Pipes using Flexible Elastomeric Seals.
 2. Manufacturer's name and model numbers are listed to establish a standard of quality. Equivalent items of other manufacturers are acceptable.
- H. Submittals:
1. Submit manufacturer's certification of materials' conformance to specifications.

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2. Submit manufacturer's literature, catalog data and installation instructions.
3. Submit certified field pressure test reports.
4. Comply with Section 01300, Submittals.

J. Product Delivery and Handling:

1. Exercise care to prevent damage of product during loading, transporting, unloading and storage.
2. Do NOT drop pipe or fittings.
3. Do not store directly on ground and assure that materials are kept clean.
4. Store material in areas approved by the Owner.
5. Store material in such a manner as to not create a nuisance or safety hazard.

1.4 WARRANTY

- A. Warranty the work included in this section for a period of 1 year from date of final acceptance.

PART II - PRODUCTS

2.1 SANITARY SEWER PIPING MATERIALS

- A. General: Pipe shall be furnished free from defects impairing strength and durability and should be of best commercial quality for purpose specified. Structural properties shall be sufficient to safely sustain or withstand strains to which it is normally subjected.
- B. Pipe Materials:
1. Polyvinyl Chloride (PVC):
 - a. Specification: ASTM D-3034.
 - b. Thickness: SDR 35
- C. Pipe Joints:
1. Polyvinyl Chloride:
 - a. Push On: ASTM D-3212.
- D. Pipe Marking and Identification: All PVC gravity sewer pipe shall be manufacturer's standard green color.

2.2 PIPE FITTINGS

- A. Polyvinyl Chloride:
1. ASTM D3034, PVC Bell and Spigot Fittings.
 2. ASTM D3212, Joints.

PART III - EXECUTION

3.1 NOTIFICATION OF UTILITY COMPANIES

- A. Notify all utility companies that may have lines or services on or around the site prior to starting any work. Have the utility identify and locate their underground lines.
- B. Active utilities shall be adequately protected from damage and removed or relocated only as indicated or specified. The work shall be adequately protected, supported or relocated as directed by the Architect. Take responsibility for the repair or replacement of any lines or services damaged during the course of this work.
- C. Remove, plug or cap all abandoned lines, meters, boxes, obstructions or piping in accordance with the requirements and approval of the agencies affected or as directed by the Architect. Use licensed electricians or plumbers for this work.

3.2 PROTECTION

- A. Take responsibility for furnishing, placing and maintaining all support, shoring and sheet piling which may be required for the protection of site personnel and adjacent existing improvements.
- B. Protect all bench marks, monuments and other reference points furnished by others and pay for replacement of any that are disturbed or destroyed during the course of this work.
- C. Do not damage any trees not indicated for removal. Protect trees near this work so as to prevent damage to the branches, bark and soil around the root system, as indicated on the Landscape drawings.
- D. Protect all underground utilities in the area of this work.

3.3 EXCAVATION

- A. General: The Contractor shall perform all excavation of every description and of whatever substances encountered to the depths indicated on the drawings or as necessary. This shall include all necessary clearing and grubbing of any foreign substance encountered within the structure or trench area. Excavated material suitable for backfill shall be piled in an orderly manner at a sufficient distance from the trench to prevent slides or cave-ins.
- B. Trench Excavation: The minimum width of the trench shall be equal to the outside diameter of the pipe at the joint plus 8 in. each side of pipe for unsheeted or sheeted trench, with the maximum width of trench, measured at the top of the pipe, not to exceed the outside pipe diameter, plus 24 in., unless otherwise shown on the drawings. Trench walls shall be maintained vertical from the bottom of the trench to a line measured at the top of the pipe. From the top of the pipe to the surface of the trench walls shall be as vertical as possible under soil conditions.
- C. No more than 300 linear feet of trench shall be open in advance of the completed pipe laying operation without prior approval of the Architect. Pipe trenches across roadways and driveways shall be backfilled as soon as the pipe is installed. Where, in the opinion of the Architect, adequate detour facilities are not available, no trench shall be left open across a roadway or commercial property driveway where adequate detour routes are not available for a period in excess of 30 minutes, or as directed by the governing authority. No trench shall be left open across any roadway or driveway for more than one daylight period. It shall be the Contractor's responsibility to provide traffic control and barricades as necessary.

- D. **Pavement Removal:** The Contractor shall remove pavements as part of the trench excavation. The material from permanent pavement removal shall be carefully separated from trench excavation material and disposed of by the Contractor.
- E. **Disposal of Excess Materials:** The Contractor shall dispose of the excavated materials not required or suitable for backfill. All surplus excavated material which is suitable for fill shall become property of the Contractor and shall be disposed of by the Contractor at his expense. See Section 02210 for suitable fill requirements.
- F. **Unsuitable Soil Conditions and Over Excavation:** Where determined by the Geotechnical Observer that the soils encountered in the utility trench excavation are unsuitable for pipe bedding and/or backfill, the depth of excavation shall be increased as described in Section 02210. The bottom of the excavation shall be brought up to the proper excavation elevation utilizing suitable and properly-compacted backfill material or bedding material as directed by the Architect or his representative.

3.4 INSTALLATION

- A. **Manufacturer's Instructions:** Gravity sewer pipe shall be handled, stored and installed in strict accordance with the pipe manufacturer's instructions. A copy of the manufacturer's instructions shall be kept at the site of the work at all times by the Contractor.
- B. **Pipe Laying:** The trench shall be excavated as specified and the bottom of the trench shall be shaped to give sufficient uniform circumferential support to the lower, one-fourth of each pipe. Pipe laying shall proceed upgrade. Each pipe shall be laid true to line and grade. As the work progresses, the interior of the pipe shall be cleaned of all dirt and superfluous materials.
- C. Where cleaning of the pipe after laying is difficult because of the small diameter, the Contractor shall keep a suitable swab or drag in the pipe and shall pull the swab forward past each joint immediately after the jointing operation. At all times when the work is not in progress on the sewer lines, the Contractor shall securely seal the open ends of all pipes in order to prevent the entrance of foreign matter. Stoppers shall be installed in the ends of all services.
- D. In the event that it is necessary to clean the pipe by flushing with water, no water or debris shall be permitted to enter an existing or previously approved sewer. Under no conditions shall the water and debris be removed with lift station pumps or discharged into or through force mains.
- E. **Jointing:** The bell and spigot surfaces shall be wiped free of dust, dirt, gravel or other foreign material before the application of the lubricant sealer. The resilient joint shall be connected by first brushing upon the mating surfaces, the proper lubricant sealer as recommended by the pipe manufacturers. The spigot end shall then be centered on grade into the bell end of the last downstream pipe length and shoved home and properly seated with the application of moderate force by a pry or lever device. The pipes shall be jointed no later than five minutes after the application of the lubricant sealer. Jointing for connections with existing mains, or other special joints, shall be approved by the Engineer before use.
- F. **Wye and Tee Branches and House Services:** The Contractor shall install a wye or tee branches where sewer connections are indicated on the drawings or are required by the . Details of branch installations are shown on the drawings.

- G. Connections to Existing Manholes: Pipe connections to existing manholes shall be made so that finished work will conform as nearly as possible to essential requirements for new manhole construction.
- H. Quality Assurance: It is the responsibility of the Contractor to install the sewer pipe as shown on the plans. The Contractor shall survey the newly installed line before backfilling to determine the actual invert elevations of the pipe. Constructed slopes shall not vary more than 5% from the design value. If the calculated slope is below the minimum acceptable requirements, the Contractor shall remove and relay the sewer pipe at his own expense before further installation continues. The Contractor shall submit the as-built information to the Architect. This information will be included in the daily inspection report.

3.5 BACKFILLING

- A. Material: All backfill shall be excavated or imported material, meeting the requirements of Section 02210 except as described below:
 - 1. Bedding and Pipe Embedment: The material in the bedding, around the pipe and to a depth of 1 ft. over the pipe, shall be sand or a mixture of sand, shell or crushed stone properly graded and mixed so that fine grain material from the side walls of the trench or backfill above the embedment will not migrate into the backfill material. The backfill shall meet the following limitations.
 - a. Plastic Pipe - All materials shall pass through a ½ in. square opening laboratory sieve.
 - 2. Above Pipe Embedment: The material shall be suitable backfill as described in Section 02210.
 - 3. Top of Backfill: The top 12 inches of the backfill shall be topsoil in landscaped areas.
 - 4. Additional Fill: If sufficient suitable backfill material is not available from the excavation, additional fill meeting the above requirements shall be provided by the Contractor at his expense.
- B. Placing and Compaction:
 - 1. Under Pavement:
 - a. The entire backfill material, including the material placed around and one foot above the pipe, shall be compacted to a density of not less than 98% of the maximum density, as determined by AASHTO T-180. Particular care shall be taken to ensure that the backfill at the haunch is free from voids and is properly compacted. Compaction by flooding or puddling will be permitted only by written authorization from the Architect.
 - b. Roads, walks and driveways consisting of broken stone, gravel, clay, marl, shell, shellrock, or a conglomerate of such materials, are not considered as being permanent pavement.
 - 2. In Areas Not Under Permanent Pavement:
 - a. Particular care shall be taken to ensure that the backfill at the haunch is free from voids and is properly compacted.
 - b. The bedding and embedment shall be compacted to a density of not less than 98 percent of maximum as determined by AASHTO T-180.
 - c. The backfill material above 1 ft over the pipe shall be compacted to a density of not less than 90 percent of the maximum density, as determined by AASHTO T-180. Compaction by flooding or puddling will be permitted only by written authorization from the Architect.

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3. Miscellaneous: Backfilling around meter boxes, valve boxes and other structures shall be accomplished in the same manner as the connected pipe. Extreme care shall be used in backfilling wellpoint holes to prevent voids and settlement. If necessary, the holes should be plugged with a concrete slurry, such plugging to be at the expense of the Contractor.
4. Compaction Tests: Contractor shall perform compliance testing as required by Section 02210.

3.6 TESTING

- A. The Contractor shall furnish all necessary equipment and labor to perform testing of all gravity sewers as set forth in the following and shall conduct such tests in the presence of the and other authorized agencies, with five days advance written notice provided.
- B. The watertightness of a sewer which has a crown lying below groundwater level shall be tested by measuring the infiltration. The watertightness of sewers having a crown 1 inch or more above groundwater level shall be tested by filling the pipe with water to produce a hydrostatic head of 2 feet or more above the crown of the sewer at the upper end of the test section or the water table outside of the sewer, whichever is higher, and then measuring the exfiltration. In no case shall the infiltration or exfiltration exceed 75 gallons per mile per inch of diameter of sewer per 24-hour day when field tested by actual infiltration conditions. If exfiltration testing is required an allowance of an additional 10 percent of gallonage shall be permitted for each additional 2-foot head over a basic 2-foot minimum internal head.
- C. The Contractor may use, as an alternate leakage test, air testing by compressed air. Plugs, caps and branch connections must be secured against blow-off during the test. The pipe and manholes shall be free of water during the test.

3.7 RESTORATION

- A. Where pavement, trees, shrubbery, fences or other property and surface structures not designated as pay items, have been damaged, removed or disturbed by the Contractor, whether deliberately or through failure to carry out the requirements of the contract documents, state laws, municipal ordinances or the specific direction of the Architect, or through failure to employ usual and reasonable safeguards, such property and surface structures shall be replaced and repaired at the expense of the Contractor to a condition equal to that before work began within a time frame approved by the Architect.

3.8 PROTECTION

- A. At the end of each workday the mains under construction shall be plugged to prevent the entry of small animals or rodents. Temporary plugs shall be provided for this purpose.

3.9 CLEANUP

- A. The Contractor shall maintain the site of the work in a neat condition. The Contractor shall remove all excess materials, excess excavated materials and all debris resulting from his operations within a time frame approved by the Architect.

END OF SECTION 02530

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SECTION 02700

STORM DRAINAGE

PART I – GENERAL

1.1 DESCRIPTION

- A. The General Requirements, Division 1, are hereby made a part of this section as if fully herein.
- B. Work Included:
 - 1. Excavation and Backfill
 - 2. Bedding
 - 3. Storm drainage piping.
 - 4. Catch Basins.
 - 5. Manholes
- C. Related Work Specified Elsewhere:
 - 1. Site Clearing: Site Clearing and Earthwork - 02210.
 - 2. Excavation and Grading: Site Clearing and Earthwork - 02210.
 - 3. Curbs and Gutters: Sidewalks and Curbs - 02840.
 - 4. Sodding: Site Clearing and Earthwork - 02210.

PART II - PRODUCTS

2.1 MATERIAL

- A. Concrete: Shall have a 28 day strength of 3,000 PSI and meet requirements specified in Section 03300 of these specifications.
- B. "PVC" Pipe: Shall be schedule 40 polyvinyl chloride with solvent welded joints, meeting the requirements of ASTM 1785 or SDR-35 polyvinyl chloride, meeting ASTM D-2241 with gasketed joints meeting ASTM D-3034

PART III - EXECUTION

3.1 PERFORMANCE

- A. Excavation and Backfill: Excavate trenches and foundation areas to proper depth. Where unsuitable material (as defined in Section 02210) occurs at the bottom of the excavation, remove the soft material to a depth of 2 feet and backfill to the bottom of the trench with compactable, granular material. Backfill material and installation shall comply with the provisions of Section 02210. Shape bottom of trenches to fit pipe. Place backfill around the pipe or structure and compact in 8 inch layers with hand held tampers. Compact trench bottom and backfill to 95% of maximum dry density as determined by Proctor Compaction Test ASTM D 1557.
- B. Bedding Material: All pipe to be placed on 6 inches of FDOT #67 stone bedding. Manhole to be placed on 18 inches of FDOT #67 stone bedding. All other structures to be placed on 12 inches of FDOT #67 stone bedding.

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- C. Installation of Pipe: Install pipe accurately to the grades and alignment shown on the drawings. Lay concrete pipe with bell ends upstream and adjust spigots in bells to provide uniform space all around. Make all joints permanently watertight.
- D. Drainage Structures: Concrete drainage structures are to be set plumb and level, to accurate grade. Paved inverts are required.

END OF SECTION 02700

SECTION 02800

ASPHALT PAVING

PART I - GENERAL

1.1 DESCRIPTION

- A. The General Requirement, Division 1, are hereby made a part of this section as if fully repeated herein.
- B. Work Included:
 - 1. Fine Grading for Paving.
 - 2. Paving Base.
 - 3. Asphalt Wearing Surface.
 - 4. Striping and Traffic Control Marking.
- C. Paving Thickness Area: Paving materials shall have the compacted thicknesses indicated on the Drawings.
- D. Related Work Specified Elsewhere:
 - 1. Rough grading and compaction of sub-base: Site Clearing and Grading - 02210.
 - 2. Sidewalks and curbs: Sidewalks and Curbs - 02840.

1.2 QUALITY ASSURANCE

- A. General: Perform all work included in this section in accordance with the appropriate standards of the Florida State Department of Transportation.
- B. Qualifications of Asphaltic Concrete Producer: Use only materials which are furnished by a bulk asphaltic concrete producer regularly engaged in production of hot-mix, hot-laid, asphaltic concrete.
- C. Submittals: Submit asphalt job-mix design with material certifications to the Architect for approval prior to the commencement of any paving operations.
- D. Work specified herein will be subject to inspection and testing by an independent testing laboratory selected and compensated by the General Contractor. Selection of the testing laboratory is subject to the approval of the Architect.

PART II - PRODUCTS

2.1 MATERIAL

- A. Base: Shall be clean, tough, durable limerock. At least 97% of the limerock shall pass a 3-1/2 inch sieve and material shall be uniformly graded down to dust. The fine material shall consist entirely of dust of fracture. All crushing or breaking which may be necessary in order to meet size requirements shall be done before material is put into place. Liquid limit of material shall not exceed 35 and plasticity index shall not exceed 6.

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- B. Prime Coat: Shall conform to the requirements of ASTM standard test for grade RC-70 or grade RC-250.
- C. Asphalt Wearing Surface: Shall meet the Florida State Department of Transportation Specifications for Type SP-9.5 asphaltic concrete. Bitumen content, aggregate size and gradation of material shall meet the applicable section of those specifications. Stability of mix shall be at least 1,200 pounds as determined by Marshall Stability and Flow Test, ASTM D1559.
- D. Striping Paint: Shall be yellow, white and blue as indicated on the Drawings and shall conform to the Florida State Department of Transportation Specifications for traffic paint.

PART III - EXECUTION

3.1 PREPARATION

- A. Establishment of Grades: Establish grades and make allowance for existing improvements, proper drainage, adjoining property rights, good appearance and other pertinent considerations.
- B. Preparation of Subgrade: Fine grade the area to be paved and remove any excess material from site. Construct the subgrade true to grade, hard, uniform and smooth, using such methods and equipment as may be necessary. Final compaction shall meet the requirements specified for paving subgrade in Section 02210 of these specifications.
- C. Subgrade Tolerance: The subgrade shall be plus or minus 0.05 foot prior to placement of limerock base.

3.2 INSTALLATION

- A. Limerock Base: Base material shall not be placed until the concrete in any new adjacent curbs has reached a strength of 2,850 psi as evidenced by cylinder breaks. Spread base uniformly in one (1) course, scarify and then shape so as to produce the required grade. Bring material to proper moisture content by wetting or drying and compact to an average density of not less than 98% of maximum density as determined by ASTM D1557.
- B. Prime Coat: Apply the prime coat only when the base meets the specified density requirements and the moisture content in the top half of the base not exceed 90% of the optimum moisture for the base material. At the time of priming, the base shall be firm and unyielding.

Apply the prime coat from a pressure distributor at the rate of 0.20 gallon per square yard, only in clear weather at an ambient temperature of 60 degrees Fahrenheit or greater. If sand is applied before curing is complete, sand must be removed and a tack coat of 0.025 gallon per square yard of RC-70 or RC-250 must be applied just prior to placing the wearing surface. In any event, the base must be freshly primed just prior to paving.

- C. Wearing Surface: Spread wearing surface with a self-propelled spreading machine equipped with a receiving and disbursing hopper and a mechanical screed or strike-off member. Roll material with a tandem steel roller, a self-propelled, rubber-tired roller and then provide a final rolling with an 8 to 10 ton steel roller, ensuring a density of at least 95% of the laboratory compacted density of the paving mixture.
- D. Hold hand raking behind the paving machine to a minimum. Use the rake only to remove excess material and add additional material only to low areas. Where hand spreading, methods must be

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used, complete the work in a competent and careful manner and use a labor force of sufficient size and skill so that the operation will be rapid and smooth and mix will not become chilled before spreading is completed. Do not place mix at atmospheric temperatures below 40 degrees Fahrenheit. Use only hot tools.

- E. Protect all adjacent finished surfaces from bituminous material. Repair any curbs or walks that are damaged by paving operations.
- F. Asphalt Wearing Surface: Shall meet the Florida State Department of Transportation Specifications for Type SP-12.5 asphaltic concrete. Bitumen content, aggregate size and gradation of material shall meet the applicable section of those specifications. Stability of mix shall be at least 1,200 pounds as determined by Marshall Stability and Flow Test, ASTM D1559.
- G. Striping: Paint automobile lane lines and parking spaces with 4 inch wide stripes with clean, true edges without breaks in alignment. Paint directional arrows and other markings where indicated on the plan. Apply a uniform coating of paint so the finished stripe will not contain light spots or paint skips. Provide a minimum wet film thickness of 15 mils. Do not paint stripes or markings until necessary to achieve substantial completion. Apply one coat at that time. Apply a second coat only after pavement has cured for 30 days.

3.3 TESTING

- A. Base material tests shall be made as follows:
 - 1. Determine moisture/density relationship of base material in accordance with ASTM D1557
 - 2. Perform in-place density tests in the compacted base material at the rate of at least one test for each 2,500 sq. ft. of fraction thereof. Re-compact areas which fail to meet compaction requirements, then retest until passing results are obtained. Reference test locations to easily identified points on the Site Plan.
- B. Asphalt tests shall be made as follows:
 - 1. At the start of paving operations, obtain one sample wearing surface asphalt delivered to the job. Conduct extraction and gradation analysis, Marshall Stability, and laboratory-compacted bulk specific gravity for each sample.
 - 2. Upon completion of paving, obtain one 4 inch diameter core through the asphalt paving for each to 2,000 sq. yd. at locations selected by the Architect. Grout core holes with non-shrink grout after core removal. Reference test locations to easily identified points on the Site Plan.
 - 3. Measure each asphalt core for thickness and test for bulk specific gravity. Compute the compaction percentage of each core, using the bulk specific gravity of the laboratory compacted specimen as the compaction standard.

END OF SECTION 02800

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SECTION 02840

SIDEWALKS and CURBS

PART I - GENERAL

1.1 DESCRIPTION

- A. The General Requirements, Division 1, are hereby made a part of this section as if fully repeated herein.
- B. Work Included:
 - 1. Fine Grading.
 - 2. Reinforcing.
 - 3. Sidewalks.
- C. Related Work Specified Elsewhere:
 - 1. Earthwork and site preparation: Site Clearing Earthwork - 02210.
 - 2. Storm drainage structures: Storm Drainage - 02700.
 - 3. Asphalt paving: Asphalt Paving - 02800.
 - 4. Concrete: Cast-in-Place Concrete - 03300.

PART II - PRODUCTS

2.1 MATERIALS

- A. Reinforcement: Shall conform to the requirements set forth in Section 03300 of these specifications.
- B. Concrete: Shall conform to the requirements set forth in Section 03300 of these specifications. Concrete shall have a 28 day strength of 3,000 PSI.
- C. Expansion Joint Material: Shall be non-extruding, pre-molded joint filler board, 1/2 inch thick, "Tremco" or "Woodmont 500" by Chem-Comp, "Willseal 150" by Litton Industries, or approved equal. Expansion joint filler shall be full depth of joint.
- D. Sidewalks: Shall be cast-in-place concrete of the size, configuration and location shown on the drawings.

PART III - EXECUTION

3.1 PREPARATION

- A. Establishment of Grades: Establish grades and make allowance for existing improvements, proper drainage, adjoining property rights, good appearance and other pertinent considerations.
- B. Preparation of Subgrade: Fine grade the area to be improved and remove all excess material from the site. Construct the subgrade true to grade, hard, uniform and smooth, using such methods and equipment as required. Final compaction shall meet the requirements previously specified for paving subgrade in Section 02210 of these specifications. Properly moisturize dry

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subgrades with water prior to placing the concrete.

3.2 INSTALLATION

A. Sidewalks:

1. **Placing and Finishing:** Place the concrete on the moist subgrade for the full depth called for on the plans. Bring to the required cross section by means of screeds, forms or templates as appropriate and thoroughly vibrate. Finish concrete by floating and trowelling until the surface is dense and smooth, true to cross-section and grade, free from humps or depressions.
2. Provide the final finish by lightly brooming the surface immediately before the concrete takes its final set as directed.
3. **Joints:** Cut the cast-in-place concrete into sections by expansion, construction or control joints. Construct the joints as shown on the Drawings unless otherwise specified. Provide expansion joints in sidewalks no more than 50 feet apart and locate control or construction joints at 5 foot intervals between the expansion joints unless otherwise indicated. Provide expansion joints in curbs no more than 50 feet apart and locate control or construction joints at 10 foot intervals unless otherwise indicated.
4. **Curing and Protection:** As soon as finishing has been completed, cover the concrete with plastic sheets or a curing compound similar to that specified in Section 03300. Apply the curing compound uniformly at the rate recommended by the manufacturer. Do not allow traffic on the surface for a period of 72 hours.

END OF SECTION 02840

SECTION 02900

FENCING

PART I - GENERAL

1.1 DESCRIPTION

- A. The General Requirements, Division 1, are hereby made a part of this section as if fully repeated herein.
- B. Work Included:
 - 1. Fencing.
 - 2. Gates.
- C. Related Work Specified Elsewhere:
 - 1. Finish grading: Site Clearing and Earthwork - 02210.

1.2 SUBMITTALS

- A. Shop Drawings: Prior to installation, submit drawings and manufacturer's data to Architect for approval. Indicate construction of all parts, member sizes, gate details, anchorage and hardware.

PART II - PRODUCTS

2.1 MATERIAL

- A. General Requirements: Fence shall be standard chain link fence with top rail and bottom tension wire. Height of fabric shall be 4 feet or 6 feet as indicated on the Drawings. Gates shall be swing type as indicated on the drawings.
- B. Fabric: Shall be 9 gauge woven in a 2 inch mesh with knuckle to knuckle selvage at top and bottom. Finish shall be galvanized with 2.0 ounces zinc per sq. ft. complying with ASTM A392, Class II or aluminum coated with .40 ounce aluminum per sq. ft. complying with ASTM A491, Class II.
- C. Posts, Rails and Appurtenances: Tubular members shall comply with the provisions of ASTM A120 for weight and coating. Posts shall have weather-tight closure caps.
 - 1. Intermediate Posts: Shall be 2-1/2 inch pipe weighing 5.79 pounds per foot.
 - 2. End, Corner and Pull Posts: Shall be 2-1/2 inch pipe weighing 5.79 pounds per foot.
 - 3. Top Rail and Braces: Shall be 1-1/4 inch pipe weighing 2.27 pounds per foot.
 - 4. Gate Posts: Shall be 3-1/2 inch pipe weighing 9.11 pounds per foot.
 - a. Leaves over 13 feet to 18 feet wide: 6 inch pipe weighing 18.97 pounds per foot.
 - b. Leaves over 18 feet wide: 8 inch pipe weighing 28.55 pounds per foot.
- D. Tension Wire: Shall be 7 gauge with same finish as fabric.
- E. Gates: Frames shall be fabricated from 1-1/2 inch pipe weighing 2.72 pounds per foot. Provide additional horizontal and vertical members to ensure proper gate operation and for attachment of

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fabric, hardware and accessories.

- F. Gate frames shall be fabricated by welding or fittings and rivets for rigid connections. Use same fabric as for fence, unless otherwise indicated. Install fabric with stretcher bars at vertical edges and tie at top and bottom edges. Attach stretcher bars to gate frame at not more than 15 inches on center. Attach hardware with rivets or by other means which will provide security against removal or breakage.
- G. Provide diagonal cross bracing consisting of 3/8 inch diameter adjustable length truss rods on gates where necessary to provide frame rigidity without sag or twist.
- H. Gate Hardware: Provide the following hardware and accessories for each gate:
 - 1. Hinges: Pressed steel or malleable iron to suit gate size, non-lift-off type, offset to permit gate opening of 180 degrees. Provide one pair of hinges for each leaf.
 - 2. Latch: Forked type or plunger-bar type to permit operation from either side of gate. Provide padlock eye as integral part of latch.
 - 3. Keeper: Provide keeper for all vehicle gates, which automatically engages the gate leaf and holds it in the open position until manually released.
 - 4. Double Gates: Provide gate stops for all double gates, consisting of mushroom type or flush plate with anchors. Set in concrete to engage the center drop rod or plunger bar. Provide locking device and padlock eyes as an integral part of the latch, requiring 1 padlock for locking both gate leaves.

PART III - EXECUTION

3.1 INSTALLATION

- A. Erection: Erect fence in a workmanlike manner with skilled mechanics experienced in erection of this type of fence. Erect the fence on line and to grade shown on the plans. Set all posts in 2500 PSI concrete foundations with a minimum depth of 36 inches and a minimum diameter of 9 inches. Extend all foundations approximately 2 inches above grade and slope top away from the post to provide for proper drainage. Evenly space the posts 10 feet or less on centers. Stretch the fabric and barbed wire to proper tension between terminal posts and securely fasten to the framework members. Connect the fabric to line posts with 6 gauge wire clips every 14 inches, to top rail with 9 gauge wire clips every 2 feet, to terminal and corner posts by integrally weaving into the post or by using 1/4 inch x 3/4 inch tension bars tied to the posts every 14 inches with 11 gauge 1 inch wide steel bands and 3/8 inch diameter bolts, fastened to tension wire with 11 gauge hop rings every 2 feet. Leave approximately 2 inches between finish grade and bottom of fabric.

END OF SECTION 02900

SECTION 05425

LIGHT GAUGE METAL TRUSSES

PART 1 - GENERAL

- 1.1 **Related Documents:** The General Provisions of the Contract, including the General Conditions, Supplementary Conditions and Special Conditions (if any), along with the General Requirements, apply to the work specified in this Section.
- 1.2 **Direct Purchasing:** This Section is subject to the terms described in Section 01042, Direct Purchasing Procedures, whereby the Owner reserves the right to recover the sales tax on materials by purchasing directly the materials required for this Section. Issuance of Construction Purchase Orders (CPO) by the Owner shall not relieve the Contractor of any of his responsibilities regarding material purchases or installations, with the exception of the payments for the materials as purchased.
- 1.3 **Description:**
- A. Work Included:
 - 1. Cold formed steel open web floor trusses.
 - 2. Cold formed steel roof trusses.
 - 3. Anchorage, bracing and bridging.
 - B. Related Work Specified Elsewhere:
 - 1. 05300 - metal decking.
 - 2. 05400 - cold-formed metal framing.
- 1.4 **Quality Assurance:**
- A. Fabricator Qualifications: Fabrication shall be performed by an experienced cold-formed steel truss fabricator with not less than three satisfactory experiences designing and fabricating cold-formed steel truss systems equal in material, design, and extent to the systems required for this Project. Fabricator shall be approved by the Light Gauge Steel Components Association (LGSCA).
 - 1. Cold Formed steel truss system installation shall be performed by an experienced installer approved by the steel truss system fabricator.
 - B. Welding Standards: Comply with applicable provisions of AWS D1.1 "Structural Welding Code-Steel" and AWS D1.3 "Structural Welding Code-Sheet Steel."
 - 1. Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure."
 - C. All trusses shall be factory built. Field assembly of light gauge metal trusses is not allowed.
- 1.5 **Performance Requirements:**
- A. AISI "Specifications": Cold-formed steel truss members and components shall be engineered in accordance with AISI's "Specification for the Design of Cold-Formed Steel Structural Members, (2012 Edition)."

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- B. Structural Performance: Design, engineer, fabricate, and erect cold-formed steel trusses to withstand specified design loads within limits and under conditions required.
 - 1. Design Loads: As specified.
 - 2. Deflections: Live load deflection meeting the following (unless otherwise specified):
 - a. Floor Trusses: Vertical deflection less than or equal to 1/360 of the span.
 - b. Roof Trusses: Vertical deflection less than or equal to 1/240 of the span.
 - 3. Design framing systems to provide for movement of framing members without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change (range) of 120 deg F (67 deg C).

1.6 Submittals:

- A. Submit manufacturer's product data and installation instructions for each type of cold-formed steel framing and accessory required.
- B. Submit drawings showing member type, configuration, location, spacing, size and thickness of members, method of attachment to supporting members, method of connecting member to member, erection details, supplemental bracing, strapping, splices, bridging, and other accessories and details required for proper installation.
- C. Submit detailed roof truss layouts.
- D. Submit truss drawings, sealed and signed by a qualified registered Professional Engineer, verifying ability to meet local code and design requirements. Include:
 - 1. Description of design criteria.
 - 2. Engineering analysis depicting member stresses and truss deflection.
 - 3. Truss member sizes and gauges and connections at truss joints.
 - 4. Truss support reactions.
 - 5. Top chord, Bottom chord and Web bracing requirements.
- E. Submit detailed truss bracing drawing for this specific project. Drawing should include the location and attachment requirements of all temporary and permanent truss bracing.

1.7 References:

- A. Reference standards:
 - 1. ASTM:
 - a. ASTM A653M-97 "Sheet Steel, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanealed) by the "Hot Dip Process."
 - b. ASTM A780-93a "Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings."
 - 2. American Welding Society (AWS)
 - a. AWS D1.1 "Structural Welding Code - Steel."
 - b. AAWS D1.3 "Structural Welding Code - Sheet Steel."

- 1.8 **Project Conditions:** During construction, adequately distribute all loads applied to trusses so as not to exceed the carrying capacity of any one truss or group of trusses.

1.9 Delivery, Storage and Handling:

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- A. Deliver materials in manufacturer's unopened containers or bundles, fully identified by manufacturer's name, job number, and truss number. Exercise care to avoid damage during unloading, storing and erection.
- B. Store trusses on blocking, pallets, platforms or other supports off the ground or in an upright position sufficiently braced to avoid damage from excessive bending.
- C. Protect trusses and accessories from corrosion, deformation, damage and deterioration when stored at job site. Keep trusses free of dirt and other foreign matter.

PART 2 - PRODUCTS

2.1 **Manufacturers:** Manufacturer: (As specified in the Contract Documents).

2.2 **Components:**

- A. System components: (Cold-formed steel floor truss and roof truss components provided by the manufacturer, as specified in the Contract Documents).
- B. Provide manufacturer's standard steel truss members, bracing, bridging, blocking, reinforcements, fasteners and accessories with each type of steel framing required, as recommended by the manufacturer for the applications indicated and as needed to provide a complete cold-formed steel truss system.

2.3 **Materials:**

- A. Materials:
 - 1. All component gauges: Fabricate components of structural quality steel sheet per ASTM A653 with a minimum yield strength of 50,000 psi, or as specified by the Truss Designer.
 - 2. Bracing, bridging and blocking members: Fabricate components of commercial quality steel sheet per ASTM A653 with a minimum yield strength of 33,000 psi.
- B. Cold formed steel truss components: Provide sizes, shapes and thicknesses (gauge/mm) indicated. Cold-formed steel thicknesses shall be stated in "minimum uncoated thicknesses."
 - 1. Minimum Uncoated-Steel Thickness: 22 ga., 0.0269 inch (0.68 mm).
 - 2. Minimum Uncoated-Steel Thickness: 20 ga., 0.0329 inch (0.83 mm).
 - 3. Minimum Uncoated-Steel Thickness: 18 ga., 0.0428 inch (1.11 mm).
 - 4. Minimum Uncoated-Steel Thickness: 16 ga., 0.0538 inch (1.37 mm).
 - 5. Minimum Uncoated-Steel Thickness: 14 ga., 0.0677 inch (1.72 mm).
- C. Finish: Provide components with protective coating complying with ASTM A924, minimum G60 coating, or equal.
- D. Fastenings:
 - 1. Manufacturer recommended self-drilling, self-tapping screws with corrosion-resistant finish. Fasteners shall be of sufficient size and number to ensure the strength of the connection, as specified by the Truss Designer.
 - 2. Welding: Comply with AWS D1.1 when applicable and AWS D1.3 for welding base metals less than 1/8" thick.
 - 3. Other fasteners as accepted by truss engineer.
- E. Shape: Truss top and bottom chords shall be symmetrical about the vertical plane of the truss. Trusses fabricated with standard "C" shaped wall studs will not be accepted.

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2.4 Fabrication:

- A. Factory fabricate cold-formed steel trusses plumb, square, true to line, and with connections securely fastened, according to manufacturer's recommendations and the requirements of this Section.
 - 1. Fabricate truss assemblies in jig templates.
 - 2. Cut truss members by sawing or shearing or plasma cutting (torch cutting not allowed).
 - 3. Fasten cold-formed steel truss members by welding or screw fastening, or other methods as standard with fabricator. Wire tying of framing members is not permitted.
 - a. Comply with AWS requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
 - b. Locate mechanical fasteners and install according to cold-formed steel truss component manufacturer's instructions with screw penetrating joined members by not less than 3 exposed screw threads.
- B. Care shall be taken during handling, delivery and erection. Brace, block, or reinforce truss as necessary to avoid member and connection overstress.
- C. Fabrication Tolerances: Fabricate trusses to a maximum allowable tolerance variation from plumb, level, and true to line of 1/8 inch in 10 feet (1:960).

PART 3 - EXECUTION

3.1 Examination:

- A. Examine structure, substrates and installation conditions. Do not proceed with cold-formed steel truss installation until unsatisfactory conditions have been corrected.
- B. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance.

3.2 Installation, General:

- A. General:
 - 1. Erection of trusses, including proper handling safety precautions, temporary bracing and other safeguards or procedures are the responsibility of the Contractor and Contractor's installer.
 - 2. Exercise care and provide erection bracing required to prevent toppling or dominoeing of trusses during erection.
- B. Erect trusses with plane of truss webs vertical and parallel to each other, and locate at the design spacings as indicated on the construction design documents.
- C. Provide proper lifting equipment suited to sizes and types of trusses required, applied at lift points recommended by truss fabricator. Exercise care to avoid damage to truss members during erection and to keep horizontal bending of the trusses to a minimum.
- D. Members, components, and connection plates shall be straight and free of defects.
- E. Provide framing anchors as indicated or accepted on the engineering design drawing or erection drawings. Anchor trusses securely at bearing points.
- F. Install roof framing and accessories plumb, square, true to line, and with connections securely fastened, according to manufacturer's recommendations.

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1. Cutting, notching, and drilling of truss members, components, and connections shall be prohibited, unless approved by the truss engineer.
2. Fasten cold-formed steel roof framing by welding or screw fastening, as standard with fabricator. Wire tying of roof framing is not permitted.
 - a. Comply with AWS requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
 - b. Locate mechanical fasteners and install according to cold-formed roof framing manufacturer's instructions with screw penetrating joined members by not less than 3 exposed screw threads.
 - c. Install roof framing in one-piece lengths, unless splice connections are indicated.
 - d. Provide temporary bracing and leave in place until trusses are permanently stabilized.
- G. Erection Tolerances: Install trusses to a maximum allowable tolerance variation from plumb, level, and true to line of 1/8 inch in 10 feet (1:960) and as follows:
 1. Space individual trusses no more than plus or minus 1/8 inch (3mm) from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.3 Roof Truss Installation:

- A. Install, bridge, and brace trusses according to manufacturer's recommendations and requirements of this Section.
- B. Space trusses as follows:
 1. Truss Spacing: 24 inches
 2. Truss Spacing: 48 inches
- C. Do not alter, cut, or remove truss members or connections of trusses.
- D. Erect trusses with plane of truss webs plumb and parallel to each other. Align, and accurately position at spacings indicated.
- E. Erect trusses without damaging truss members or connections.
- F. On steel-framed walls, align truss bottom chords with load-bearing studs or continuously reinforce track to transfer loads to structure.
- G. Anchor trusses securely at all bearing points.
- H. Install continuous bridging and permanent truss bracing per truss manufacturer design requirements.
- I. Install necessary roof cross and diagonal bracing per truss bracing plan provided by truss manufacturer.

3.4 Repairs and Protection:

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanizing repair paint according to ASTM A 780 and the manufacturer's instructions.
- B. Physical Repairs: Damaged chords, webs, or complete trusses shall be repaired or replaced as directed and approved by a Florida Registered Professional Engineer. Any altered or replaced members must be approved by the truss engineer.

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END OF SECTION 05425

SECTION 05720

ALUMINUM HANDRAILS AND RAILINGS

PART 1 - GENERAL

- 1.1 **Related Documents:** The General Provisions of the Contract, including the General Conditions, Supplementary Conditions and Special Conditions (if any), along with the General Requirements, apply to the work specified in this Section.
- 1.2 **Direct Purchasing:** This Section is subject to the terms described in Section 01042, Direct Purchasing Procedures, whereby the Owner reserves the right to recover the sales tax on materials by purchasing directly the materials required for this Section. Issuance of Construction Purchase Orders (CPO) by the Owner shall not relieve the Contractor of any of his responsibilities regarding material purchases or installations, with the exception of the payments for the materials as purchased.
- 1.3 **Scope:** This section includes furnishing and installing all aluminum handrails and guardrails as indicated on drawings and includes miscellaneous aluminum handrails and guardrails not included in other sections of these specifications, such as aluminum pipe railing systems, ornamental railing systems, glass railing systems.
- 1.4 **System Performance Requirements:**
 - A. **General:** In engineering handrail and railing systems to withstand structural loads indicated determine allowable design working stresses of railing materials based on the following:
 1. For Aluminum: The Aluminum Association's specification for Aluminum Structures
 - B. **Structural Performance of Handrails and Railing Systems:** Engineer, fabricate, and install handrails and railing systems to withstand the following structural loads without exceeding the allowable design working stress of the materials for handrails, railing systems, anchors, and connections. Apply each load to produce the maximum stress in each of the respective components comprising handrails and railing systems.
 1. **Top Rail of Guardrail Systems:** Capable of withstanding the following loads applied as indicated:
 - a. Concentrated load of 200 lb applied at any point and in any direction.
 - b. Uniform load of 50 lb per linear ft. applied horizontally and concurrently with uniform load of 100 lb per linear ft. applied vertically downward.
 - c. Concentrated load need not be assumed to act concurrently with uniform loads.
 2. Handrails Not Serving as Top Rails: Capable of withstanding the following loads applied as indicated:
 - a. Concentrated load of 200 lb applied at any point and in any direction.
 - b. Uniform load of 50 lb per linear ft. applied in any direction

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- c. Concentrated and uniform loads need not be assumed to act concurrently.
 3. Infill Area of Guardrail Systems: Capable of withstanding a horizontal concentrated load of 200 lb applied to one sq. ft. at any point in the system.
 - a. Above load need not be assumed to act concurrently with loads on top rails of railing systems in determining stress on guard.
- C. **Control of Corrosion:** Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
- D. **Thermal Movements:** Allow for thermal movement resulting from the following maximum change (range) in ambient temperature in the design, fabrication, and installation of handrails and railings to prevent buckling, opening up of joints, overstressing of components, connections and other detrimental effects. Base design calculation on actual surface temperatures of materials due to both solar heat gain and nighttime sky heat loss.
 1. Temperature Change (Range): 100 deg F ambient; 150 deg F material surfaces.

1.5 Submittals:

- A. Product Data for each type of product specified.
- B. Shop drawings showing Welding, Fabrication and Installation of handrails including all plans, typical elevations, sections, details of components, and attachment to other units of work.
 1. Where installed products are indicated to comply with certain design loadings, include structural computations, material properties and other information needed for structural analysis review by the design architect and/or engineer of record.
 2. Submit all shop drawing product data. Also submit calculations if specifically requested by Architect.
- C. Samples for initial selection purposes in the form of manufacturer's color chart showing full range of colors available from factories standards: Or for custom color request minimum 2" x 2" color chip from customer for color matching purposes. Then submit at least 2 chips of color match for approval by Architect or Owner.
- D. Submit at least 2 - 6" long samples of the top rail when its shape is other than standard rounds, squares or rectangles and when specifically requested by Architect.

1.6 Quality Assurance:

- A. **Single Source Responsibility:** Obtain handrails and railing systems from a single fabricator/manufacturer.
- B. **Engineering Responsibility:** Engineer handrailing and railing systems by the fabricator/manufacturer unless sizes and configurations are specifically called out on architectural/engineering drawings. Provide sealed drawings and calculations by a Florida registered engineer.

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- 1.7 **Storage:** Store handrails and railing systems in clean, dry location, away from uncured concrete and masonry, protected against damage.
- 1.8 **Field Measurements:** Where handrails and railings are indicated to fit to other construction, check actual dimensions of other construction by accurate field measurements before fabrication; show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of Work.
- A. Where field measurements cannot be made without delaying the Work, obtain guaranteed dimensions in writing and proceed with fabrication of products without field measurements if specifically requested to do so by Architect, Owner or Contractor.

PART 2 - PRODUCTS

2.1 **Manufacturers/Fabricators:**

- A. **Acceptable Manufacturers:** Products specified as a standard of quality are fabricated by White Aluminum Fabrication, Inc., 3195 SE Lionel Terrace, Stuart, FL 34997. Telephone 772-219-3245
- B. ***No "approved equal" material or equipment will be considered unless written request has been submitted to the Architect for approval at the latest ten (10) days prior to date for receipt of bids.***

2.2 **Metals:**

- A. **Aluminum:** Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, with not less than the strength and durability properties of the alloy and temper designated below for each aluminum form required:
1. Structural extrusions such as posts shall be 6061-T6 or 6005-T5 Alloy/Temper.
 2. All other extrusions such as Caps, Pickets, Mid and Bottom Rails shall be at least 6063-T5.
 3. Castings: To be high quality prime material or materials remelted from prime extrusion

2.3 **Grout and Anchoring Cement:**

- A. **Nonshrink, Nonmetallic Grout:** Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with CE CRD-C 621. Provide grout specifically recommended by manufacturer for interior and exterior applications of type specified in this Section.
- B. **Erosion-Resistant Anchoring Cement:** Factory-prepackaged, nonshrink, nonstaining, high strength cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure or provide a sealer or waterproof coating recommended for exterior use by manufacturer to be applied by the installer or other qualified contractor or subcontractor.

2.4 **Welding Materials, Fasteners, and Anchors:**

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- A. **Welding Electrodes and Filler/Metal:** Provide type and alloy of filler metal and electrodes as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.
- B. **Fasteners for Anchoring Railings to Other Construction:** Select fasteners of the type, grade, and class required to produce connections that are suitable for anchoring railing to other types of construction indicated and capable of withstanding design loadings.
 - 1. For aluminum railings in coastal environments provide fasteners fabricated from stainless steel or aluminum only.
- C. **Fasteners for Interconnecting Railing Components:** Use fasteners of same basic metal as the fastened metal, unless otherwise indicated. Do not use metals that are corrosive or incompatible with materials joined.

2.5 Fabrication:

- A. **General:** Fabricate handrails and railing systems to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thickness of hollow members, post spacings, and anchorage, but not less than those required to support structural loads.
- B. Preassemble railing systems in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for field assembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- C. Assembly shall be in a neat workmanlike manner using MIG or TIG Welding Processes as required. Horizontal Channels shall be punched to receive pickets and welds in this application shall be concealed from view.
 - 1. Channels to receive a snap cover only when specifically required and noted on drawings.
 - 2. All Posts shall be structurally welded to top rail and middle and lower horizontal members to assure fixed fastening for the life of the rail.
 - 3. Corners shall be hairline fitted by mitre and further welded as required to obtain maximum assurance of strength through the railing's useful life.
 - 4. All splices shall be accomplished by butting one top rail to the next with a structural sleeve insert extending from one top rail to the next and further secured by means of a stainless steel, aluminum or other proper screw or pop-rivet. **Note:** Butt splices to be either hairline fitted or properly gapped to provide for proper expansion and contraction movement. For expansion joints be sure that only one side of the sleeve insert is fastened to the top rail.
 - 5. End connections required to fasten to the building structure require either a welded end clip or a separate slide clip.
 - 6. Provide weep holes when necessary to drain closed sections from pretreatment immersion and sprays also for moisture from condensation to escape.

2.6 Aluminum Finishes:

- A. All aluminum railings to receive a baked-on painted finish over full pretreatment except when specified to be natural or mill finish or when anodizing is specified.

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- Note:** Anodizing is not recommended for welded railings due to the likelihood of discoloration from dissimilar alloys, dissimilar tempers, oxidation, welding filler metals, weld heat zones, marring caused during fabrication and handling.
- B. **Pretreatment Process:** A multi-stage pretreatment process is required prior to shop painting.
1. The railing shall be dipped or sprayed in a concentrated alkaline cleaner then rinsed in clear water. This process provides cleaning, degreasing and deep etching on the surface.
 2. The product shall then be dipped or sprayed in a concentrated acidic treatment to deoxidize, de-smut and neutralize the surface then rinsed in clear water.
 3. The product shall then be dipped or sprayed in an acidic conversion coating to act as a bonding coating for paint adhesion.
 4. The product must be completely dried before painting.
- C. **Painting:**
1. ESP-applied thermosetting TGIC polyester powder paint over pretreatment bond coating. Paint to be 1.5 to 2.0 mills.
 2. DFT Paint shall be baked on at approx. 400° F for a minimum of 10 minutes duration.
- D. **Color:** To be selected from manufacturer's standard colors.

PART 3 - EXECUTION

3.1 Preparation:

- A. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, such as sleeves, concrete inserts, anchor bolts, and miscellaneous items having integral anchors, that are to be embedded in concrete as masonry construction. Coordinate delivery of such items to project site.

3.2 Installation General:

- A. Fit exposed connections accurately together to form tight, hairline joints, except as required for expansion.
- B. **Cutting, Fitting, and Placement:** Perform cutting, drilling, and fitting required for installation of handrails and railings. Set handrails and railings accurately in location, alignment, and elevation, measured from established lines and levels and free from rack.
1. Set posts plumb within a tolerance of 1/16" to 12".
 2. Align rails so that variations from level for horizontal members and from parallel with rake of steps and ramps for sloping members do not exceed 1/32" in 12".
- C. **Corrosion Protection:** Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of paint or epoxy.
- D. **Fastening to In-Place Construction:** Provide anchorage devices and fasteners where necessary for securing handrails and railings to in-place construction.

3.3 Anchoring Posts:

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- A. Anchor post in concrete by means of preset sleeves into concrete. After posts have been inserted into sleeves, fill space between post and sleeve solid with the following anchoring material, mixed and placed to comply with anchoring material manufacturer's directions.
- B. Anchor posts in concrete by core drilling holes not less than 3" deep and 1" greater than outside diameter of post. Clean holes of all loose material, insert posts, and fill space between post and concrete with the following anchoring material, mixed and placed to comply with anchoring material manufacturer's directions.
 - 1. Nonshrink, nonmetallic grout.
 - 2. Nonshrink, nonmetallic grout or anchoring cement.
- C. Leave anchoring material down approximately 1/2" to allow for final topping with a waterproof material matching the surrounding areas by others. Whenever possible fill hole with waterproof topping slightly higher than the adjacent surfaces and taper and taper away from the post.

3.4 **Cleaning, Protection and Touch-up Painting:**

- A. On delivery all railing will have protective cover over cap only. Immediately upon completion of installation of railing installer shall remove cap cover and clean all work for inspection and approval.
- B. After installation the Contractor or Owner shall be responsible for protecting the railings during the balance of construction.
- C. Painted aluminum surfaces shall be cleaned with plain water containing a mild soap or detergent. No abrasive agents or harsh chemicals are to be used. **Note:** All railings require periodic maintenance. All railing surfaces require periodic washing especially those subject to ocean salt air or harmful chemical environments. Waxing after washing is recommended.

END OF SECTION 05720

SECTION 07830

DAMPPROOFING

PART 1 - GENERAL:

- 1.1 **Related Documents:** The General Provisions of the Contract, including the General Conditions, Supplementary Conditions and Special Conditions (if any), along with the General Requirements, apply to the work specified in this Section.
- 1.2 **Direct Purchasing:** This Section is subject to the terms described in Section 01042, Direct Purchasing Procedures, whereby the Owner reserves the right to recover the sales tax on materials by purchasing directly the materials required for this Section. Issuance of Construction Purchase Orders (CPO) by the Owner shall not relieve the Contractor of any of his responsibilities regarding material purchases or installations, with the exception of the payments for the materials as purchased.
- 1.3 **Scope:** Provide dampproofing coatings, where indicated on Drawings and as specified herein.
- 1.4 **Related Work Specified in other Sections:**
 - A. Cast-In-Place Concrete, Section 03300.
 - B. Concrete Masonry Unit Work, Section 04200.
 - C. Rigid Insulation, Section 07212.
- 1.5 **Quality Assurance:** Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts, and who are completely familiar with the specified requirements and methods needed for proper performance of the work of this Section.
- 1.6 **Submittals:**
 - A. Submit manufacturer's catalog data for approval prior to installation.

PART 2 - PRODUCTS

- 2.1 **Manufacturers:**
 - A. Vertical dampproofing material shall be a liquid-applied continuous, seamless cementitious:
 1. StoGuard VaporSeal
 2. Dryvit Backstop NT-VB
- 2.2 Material must be compatible with EIFS and insulation system and be a Class I Vapor Retarder with a perm rating of 0.1 perm or less.

PART 3 - EXECUTION

- 3.1 **Inspection:** Examine the areas and conditions under which work of the Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected. See that all receiving surfaces are dry and clean.
- 3.2 Vertical dampproofing shall be provided for the full height exterior CMU walls and concrete beams, from top of footing to top of wall, prior to the installation of the rigid insulation.
- 3.3 **Location:** Unless indicated otherwise or to the contrary, provide dampproofing on the exterior face of all concrete masonry units which are scheduled to receive face brick veneer.

END OF SECTION 07830