PART 1 - GENERAL

The following specification is intended for use for the design, selection of materials, and construction of Charlotte County Utility Projects.

1.1 SCOPE

1.1.1 General

This specification addresses the furnishing all labor, materials, equipment and incidentals required for manufacture, installation, coating, and testing of precast manholes, wet wells, valve vaults, wet well top pads and manhole risers with access covers, and appurtenant materials.

1.1.1 Work Included

The Contractor shall, unless specified otherwise, furnish all labor, materials, equipment, tools, and all other associated appurtenances necessary to do the work required under the contract.

1.1.2 Location of the Work

The location of this work is as shown on the Contract Documents.

1.1.3 Coordination of the Work

The Contractor shall be responsible for the satisfactory coordination of delivering Precast Concrete Products with other construction and activities in the area. Delays in work resulting from lack of such harmony shall not in any way be a cause for extra compensation by any of the parties.

1.1.4 Working Hours

The work shall be carried out in accordance with local ordinance and not to cause any unreasonable nuisance to affected residents. Under emergency conditions, this limitation may be waived by the consent of Charlotte County Utilities (CCU).

1.2 METHOD OF MEASUREMENT & PAYMENT

Measurement and payment of Precast Concrete Products shall be as specified in CCU specification 002320 “Gravity Sewer System”, 002530 “Submersible Sewage Pump Lift Station-Package Design” and 002540 “Submersible Sewage Pump Lift Station- Standard Design”.

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1.3 REFERENCED STANDARDS (Latest Revision)

AASHTO – Standard Specifications for Highway Bridges
ACI 318 – Building Code Requirements for Reinforced Concrete
ACI 350R – Concrete Sanitary Engineering Structures
ASTM A185 – Welded Steel Wire Fabric for Concrete Reinforcement
ASTM A615 – Deformed and Plain Billet – Steel Bars for Concrete Reinforcement
ASTM C109 – Compressive Strength of Hydraulic Cement Mortars (Using 2-in or 50 mm Cube Specimens)
ASTM C827 – Early Volume Change of Cementitious Mixtures
ASTM C890 – Minimum Structural Design Loading for Monolithic or Sectional Precast and Wastewater Structures
ASTM C913 – Precast Concrete Water and Wastewater Structures
ASTM C478 “Standard Specification for Precast Reinforced Concrete Manhole Sections”

1.4 PARTIAL LISTING OF RELATED SECTIONS

002320 - Gravity Sewer System
002335 - Potable Water and Reclaimed Water Mains
002340 - Valves
002530 - Submersible Sewage Pump Lift Station-Package Design
002540 - Submersible Sewage Pump Lift Station- Standard Design

Note: This is only a partial listing of related sections. The Contractor shall be responsible to review the entire contract documents.

1.5 SUBMITTALS

1.5.1 The contractor shall submit four (4) copies of shop drawings in accordance with the contract requirements for Charlotte County Utilities (CCU) review.

1.5.2 Shop drawings shall include as a minimum, material specifications, details of construction, reinforcing, lifting devices, joint details, access openings, pipe penetrations, design calculations, and lifting and buoyancy analysis.

1.5.3 The contractor shall submit manufacturer’s product data if available.

1.5.4 The contractor submittals shall include the statement that the submittals have been reviewed and the materials meet the contract specifications and/or design details.

1.5.5 Final approval is at the discretion of CCU.

PART 2 - PRODUCTS

2.1 MATERIALS

2.1.1 General

The materials used in this work shall be all new and conform to the requirements for class, kind, size and material as specified below.

a. Concrete: ACI 318, Portland Cement Type II.

b. Reinforcing steel: ASTM A615, Grade 60.

c. Welded wire fabric: ASTM A185.

2.1.2 Design Criteria:

a. The design of the precast structures shall confirm to ACI 350 R and ASTM C890.

b. The precast structures shall withstand AASHTO H-20 loading with 30% soil loading at 130 #/cubic ft., and surcharge and ground water elevations as shown on the engineering drawings without failure or leakage.

c. The concrete shall have a minimum compressive strength of 4000 psi for 28 days.

2.1.3 Source Criteria:

a. Concrete shall be tested in accordance with ACI 3118.

b. The plant records and quality control program used during production of the precast structures shall be retained and such records and test results shall be made available to CCU.

c. All sections shall have the date of manufacture indelibly marked on the inside of the wall.

2.1.4 Precast Sections Construction

a. All bases shall have a monolithic floor, anti-flotation ring, floor to wall transition wedge, and wall section.

b. All items such as sleeves, piping holes, and cover frames shown on the engineering plans shall be cast in.

c. The precast concrete structure shall be delivered to the job site with pre-installed elastomeric gasket(s) for all piping. The gasket(s) shall have a stainless steel adjustable strap to seal the gasket to the pipe. An elastomeric gasket(s) with a stainless steel adjustable strap to seal the gasket to the pipe shall be installed in all on site core bored holes.

d. Fabrication shall be in accordance with ASTM C890 and C913.

2.1.5 Grout

a. Grout shall be in accordance with CCU Specification 003600 “Grout”.

2.1.6 Waterproofing

a. All coatings shall be in accordance with CCU Specification 002320 “Gravity Sewer System”

2.1.7 Acceptable Manufacturers

a. Acceptable manufacturers are:

- Cast Systems L.L.C., Port Charlotte, Florida
- Oldcastle Precast East Inc, Cape Coral, Florida

b. Other manufacturers of the contract precast structures shall provide to CCU documentation of a minimum of five (5) years of manufacturing experience of like products, their manufacturing quality control procedures, testing capability, coating processes, and references.

PART 3 - EXECUTION

3.1 INSPECTIONS

3.1.1 CCU shall have access to the quality of all materials, manufacturing processes, coating process, and the product prior to shipment to the project site. Any section shall be subject to rejection due to failure to meeting the engineering drawings and/or CCU specification requirements even if accepted prior to shipping. Sections rejected after delivery shall be marked for identification and removed from the job site. Sections damaged after delivery and/or installation shall be removed and replaced at no cost to CCU.

3.1.2 All sections shall be inspected for general appearance, dimensions, and soundness. The surfaces shall be dense and close-textured and free of blisters, cracks, roughness, and exposed reinforcement.

3.1.3 Repair of imperfections shall be made only with CCU approval of the demonstrated manufacturers repair materials and processes. All repairs shall be approved by CCU prior to acceptance of the project.

3.2 DELIVERY, STORAGE AND HANDLING

3.2.1 Precast sections shall not be shipped until the concrete has attained 4000 psi at 28 days.

3.2.2 Precast sections shall conform to manufacturer’s delivery and handling requirements.

3.2.3 The structure’s edges shall be protected to prevent shipping and/or spalling damage.

3.2.4 The structure shall be lifted and/or supported using lifting points and/or handling devices.

3.3 INSTALLATION

3.3.1 Precast bases shall be placed in a properly dewatered and completely drained sub-grade on a layer of compacted bedding material in accordance with the CCU design details.

3.3.2 Inlet and outlet piping shall be connected and sealed in accordance with the manufacturer's specifications and the engineering drawings.

3.3.3 The exterior waterproofing coat shall be touched up after installation.

3.3.4 Interior concrete fill shall be placed on a clean base slab and against clean walls after the leakage test has been performed and accepted and water used for the test has been completely removed.

3.3.5 The access door and frame shall be placed on the top of the structure or some other means shall be provided to prevent accidental/unauthorized entry until the contractor makes the final adjustments to grade.

END OF SECTION