SECTION 02635

STORM DRAINAGE PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Storm drainage piping, fittings, and accessories.

B. Connection of drainage system to private and City storm drain systems..

C. Catch basins, Plant area drains, Paved area drainage, Site surface drainage, and Detention basin.

1.02 RELATED REQUIREMENTS

A. Section 02315 - Excavation: Excavating of trenches.

B. Section 02316 - Fill and Backfill: Bedding and backfilling.

C. Section 02317 - Trenching for Site Utilities: Excavating, bedding, and backfilling.

D. Section 03300 - Cast-in-Place Concrete: Concrete for cleanout base pad construction.

1.03 DEFINITIONS

A. Bedding: Fill placed under, beside and directly over pipe, prior to subsequent backfill operations.

1.04 REFERENCE STANDARDS

A. County of Orange Public Works Department Standards and Specifications.

B. AASHTO M 36 - Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains; American Association of State Highway and Transportation Officials.

C. ASTM A 74 - Standard Specification for Cast Iron Soil Pipe and Fittings.

D. ASTM C 12 - Standard Practice for Installing Vitrified Clay Pipe Lines.

E. ASTM C 14 - Standard Specification for Concrete Sewer, Storm Drain, and Culvert Pipe.

F. ASTM C 14M - Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe [Metric].

G. ASTM C 76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.

H. ASTM C 76M - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe [Metric].

I. ASTM C 425 - Standard Specification for Compression Joints for Vitrified Clay Pipe and Fittings.

J. ASTM C 443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.

K. ASTM C 443M - Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets (Metric).

L. ASTM C 564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.

M. ASTM C 700 - Standard Specification for Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated.

N. ASTM D 1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.

O. ASTM D 2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.

P. ASTM D 2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

Q. ASTM D 2751 - Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings.

R. ASTM D 3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

1.05 SUBMITTALS

A. See Section 01350 - Submittals, for submittal procedures.

B. Product Data: Provide data indicating pipe, pipe accessories.

C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Project Record Documents:
   1. Record location of pipe runs, connections, catch basins, and invert elevations.
   2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.06 REGULATORY REQUIREMENTS

A. Conform to applicable code for materials and installation of the Work of this section.

PART 2 PRODUCTS

2.01 STORM DRAIN PIPE MATERIALS

A. Concrete Pipe: Reinforced, ASTM C 76 (ASTM C 76M), Class III or IV with Wall type B; mesh reinforcement; diameter as specified on the plan, bell and spigot end joints.

B. Reinforced Concrete Pipe Joint Device: ASTM C 443 (ASTM C 443M) rubber compression gasket joint.

C. Plastic Pipe: ASTM D 3034, Type PSM, Poly(Vinyl Chloride) (PVC) material; as specified on plan, bell and spigot style solvent sealed joint end.

2.02 PIPE ACCESSORIES

A. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

B. Trace Wire: Magnetic detectable conductor, brightly colored plastic covering, imprinted with "Storm Sewer Service " in large letters.

2.03 CATCH BASIN, CLEANOUT, AND AREA DRAIN COMPONENTS

A. Lids and Drain Covers: Cast iron, hinged to cast iron frame.
   1. Area Drain:
      a. Nominal Lid and Frame Size: Per design plan

B. Base Pad: Cast-in-place concrete of type specified in Section 03300, levelled top surface to receive concrete shaft sections, sleeved to receive sewer pipe sections.

2.04 BEDDING AND COVER MATERIALS

A. Bedding: As specified in Section 02316.

B. Cover: As specified in Section 02317.

PART 3 EXECUTION

3.01 TRENCHING

A. See Section 02315, Section 02316 and Section 02317 for additional requirements.

B. Hand trim excavation for accurate placement of pipe to elevations indicated.

C. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

3.02 INSTALLATION - PIPE

A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.

B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal joists watertight.
   1. Plastic Pipe: Also comply with ASTM D 2321.

C. Lay pipe to slope gradients noted on drawings; with maximum variation from true slope of 1/8 inch in 10 feet.

D. Connect to building outlet where indicated on drawings.

E. Make connections through walls through sleeved openings, where provided.

F. Install continuous trace wire 6 inches above top of pipe; coordinate with Section 02316.

3.03 INSTALLATION - CATCH BASINS AND CLEANOUTS

A. Form bottom of excavation clean and smooth to correct elevation.

B. Form and place cast-in-place concrete base pad, with provision for sanitary sewer pipe end sections.

C. Level top surface of base pad; sleeve concrete shaft sections to receive storm sewer pipe sections.

D. Establish elevations and pipe inverts for inlets and outlets as indicated.

E. Mount lid and frame level in grout, secured to top cone section to elevation indicated.

3.04 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Section 01410.

B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to County of Orange/OC Public Works.

3.05 PROTECTION

A. Protect pipe and bedding cover from damage or displacement until backfilling operation is in progress.

END OF SECTION