SECTION 02630 - STORM DRAINAGE UTILITIES

1. RELATED DOCUMENTS

   A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING THE GENERAL AND SUPPLEMENTARY CONDITIONS AND SPECIFICATION SECTIONS, APPLY TO THIS SECTION.

2. SUMMARY

   A. THIS SECTION INCLUDES DRAINAGE SYSTEMS OUTSIDE THE BUILDING. SYSTEMS INCLUDE THE FOLLOWING:

      1. STORM-WATER DISPOSAL SYSTEMS.

3. DEFINITIONS

   A. DRAINAGE PIPING: SYSTEM OF SEWER PIPE, FITTINGS, AND APPURTENANCES FOR GRAVITY FLOW OF STORM DRAINAGE.

4. SUBMITTALS

   A. GENERAL: SUBMIT EACH ITEM IN THIS ARTICLE ACCORDING TO THE CONDITIONS OF THE CONTRACT.

   B. PRODUCT DATA FOR THE FOLLOWING:

      1. STORM-WATER DISPOSAL SYSTEMS.

   C. SHOP DRAWINGS FOR PRECAST CONCRETE MANHOLES AND OTHER STRUCTURES. INCLUDE FRAMES, COVERS, AND GRATES.

   D. SHOP DRAWINGS FOR CAST-IN-PLACE CONCRETE OR FIELD-ERECTED STRUCTURES. INCLUDE FRAMES, COVERS, AND GRATES.

   E. REPORTS AND CALCULATIONS FOR DESIGN MIXES FOR EACH CLASS OF CAST-IN-PLACE CONCRETE.

5. QUALITY ASSURANCE

   A. ENVIRONMENTAL AGENCY COMPLIANCE: COMPLY WITH REGULATIONS PERTAINING TO SANITARY SEWERAGE AND STORM DRAINAGE SYSTEMS.

   B. UTILITY COMPLIANCE: COMPLY WITH REGULATIONS PERTAINING TO SANITARY SEWERAGE SYSTEMS.

6. DELIVERY, STORAGE, AND HANDLING

   A. PROTECT PIPE, PIPE FITTINGS, AND SEALS FROM DIRT AND DAMAGE.

   B. HANDLE PRECAST CONCRETE MANHOLES AND OTHER STRUCTURES ACCORDING TO MANUFACTURER’S RIGGING INSTRUCTIONS.

7. PROJECT CONDITIONS

   A. SITE INFORMATION: VERIFY EXISTING UTILITY LOCATIONS.

   B. LOCATE EXISTING STRUCTURES AND PIPING TO BE CLOSED AND ABANDONED.

   C. EXISTING UTILITIES: DO NOT INTERRUPT EXISTING UTILITIES SERVING FACILITIES OCCUPIED BY THE OWNER OR OTHERS EXCEPT WHEN PERMITTED UNDER THE FOLLOWING CONDITIONS AND THEN ONLY AFTER ARRANGING TO PROVIDE ACCEPTABLE TEMPORARY UTILITY SERVICES.

      1. NOTIFY ARCHITECT NOT LESS THAN 48 HOURS IN ADVANCE OF PROPOSED UTILITY INTERRUPTIONS.

      2. DO NOT PROCEED WITH UTILITY INTERRUPTIONS WITHOUT RECEIVING ARCHITECT'S WRITTEN PERMISSION.

8. SEQUENCING AND SCHEDULING

   A. COORDINATE WITH OTHER UTILITY WORK.

9. PIPES AND FITTINGS

   A. REINFORCED CONCRETE PIPE AND FITTINGS: ASTM C 76, CLASS III, WALL B, FOR RUBBER GASKET JOINTS.

   B. REINFORCED CONCRETE ELLIPTICAL PIPE AND FITTINGS: ASTM C 507, CLASS III, WALL B, FOR RUBBER GASKET JOINTS.

   C. POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS: ASTM D 2729

   D. HIGH DENSITY POLYETHYLENE PIPE (HDPE) AND FITTINGS: ASTM F2648, ASTM D3212, ASTM F477, ASTM F2306

   E. GASKETS: ASTM C 443, RUBBER.

   F. SOLVENT-CEMENT: ASTM D 2564

10. INLETS

   A. PRECAST CONCRETE STRUCTURES: PRECAST, REINFORCED CONCRETE, OF DEPTH INDICATED.

   B. FRAMES AND GRATES: ASTM A 536, GRADE 60-40-18, HEAVY-DUTY DUCTILE IRON. INCLUDE FLAT GRATE WITH SMALL SQUARE OR SHORT-SLOTTED DRAINAGE OPENINGS.

   C. MANUFACTURED PLASTIC STRUCTURES: NYOPLAST, OR EQUIVALENT, TO DEPTH AND PIPE SIZES AND INVERTS INDICATED.

11. EARTHWORK

   A. SEE SECTION 02300, EARTHWORK.

12. DRAINAGE PIPING APPLICATIONS

    A. GENERAL: INCLUDE WATERTIGHT JOINTS.

    B. REFER TO PART 2 OF THIS SECTION FOR DETAILED SPECIFICATIONS FOR PIPE AND FITTING PRODUCTS LISTED BELOW. USE PIPE, FITTINGS, AND JOINING METHODS AS SPECIFIED ON PLANS.

13. INSTALLATION, GENERAL

    A. GENERAL LOCATIONS AND ARRANGEMENTS: DRAWINGS (PLANS AND DETAILS) INDICATE THE GENERAL LOCATION AND ARRANGEMENT OF UNDERGROUND DRAINAGE SYSTEMS PIPING. LOCATION AND ARRANGEMENT OF PIPING LAYOUT TAKE INTO ACCOUNT MANY DESIGN CONSIDERATIONS. INSTALL PIPING AS INDICATED, TO EXTENT PRACTICAL.

    B. INSTALL PIPING BEGINNING AT LOW POINT OF SYSTEMS, TRUE TO GRADES AND ALIGNMENT INDICATED WITH UNBROKEN CONTINUITY OF INVERT. PLACE BELL ENDS OF PIPING FACING UPSTREAM. INSTALL GASKETS, SEALS, SLEEVES, AND COUPLINGS ACCORDING TO MANUFACTURER'S RECOMMENDATIONS FOR USE OF LUBRICANTS, CEMENTS, AND OTHER INSTALLATION REQUIREMENTS. MAINTAIN SWAB OR DRAG IN LINE AND PULL PAST EACH JOINT AS IT IS COMPLETED.

14. PIPE JOINT CONSTRUCTION AND INSTALLATION

    A. JOIN AND INSTALL PIPE AND FITTINGS ACCORDING TO THE MANUFACTURER’S RECOMMENDATIONS AND SPECIFICATIONS.

15. INLET INSTALLATION

    A. CONSTRUCT DROP INLETS TO SIZES AND SHAPES INDICATED.

    B. SET FRAMES AND GRATES TO ELEVATIONS INDICATED.

16. FIELD QUALITY CONTROL

    A. CLEAR INTERIOR OF PIPING AND STRUCTURES OF DIRT AND SUPERFLUOUS MATERIAL AS THE WORK PROGRESSES. MAINTAIN SWAB OR DRAG IN PIPING AND PULL PAST EACH JOINT AS IT IS COMPLETED.

        1. IN LARGE, ACCESSIBLE PIPING, BRUSHES AND BROOMS MAY BE USED FOR CLEANING.

        2. PLACE PLUG IN END OF INCOMPLETE PIPING AT END OF DAY AND WHENEVER WORK STOPS.

        3. FLUSH PIPING BETWEEN MANHOLES AND OTHER STRUCTURES, IF REQUIRED BY AUTHORITIES HAVING JURISDICTION, TO REMOVE COLLECTED DEBRIS.

    B. INSPECT INTERIOR OF PIPING TO DETERMINE WHETHER LINE DISPLACEMENT OR OTHER DAMAGE HAS OCCURRED. INSPECT AFTER APPROXIMATELY 24 INCHES OF BACKFILL IS IN PLACE, AND AGAIN AT COMPLETION OF THE PROJECT.

        1. SUBMIT SEPARATE REPORTS FOR EACH SYSTEM INSPECTION.

2. DEFECTS REQUIRING CORRECTION INCLUDE THE FOLLOWING:

   A. ALIGNMENT: LESS THAN FULL DIAMETER OF INSIDE OF PIPE IS VISUAL BETWEEN STRUCTURES.

   B. DEFLECTION: FLEXIBLE PIPING WITH DEFLECTION THAT PREVENTS PASSAGE OF A BALL OR CYLINDER OF A SIZE NOT LESS THAN 92.5 PERCENT OF PIPING DIAMETER.

   C. CRUSHED, BROKEN, CRACKED, OR OTHERWISE DAMAGED PIPING.

3. REPLACE DEFECTIVE PIPING USING NEW MATERIALS AND REPEAT INSPECTIONS UNTIL DEFECTS ARE WITHIN ALLOWANCES SPECIFIED.

4. RE-INSPECT AND REPEAT PROCEDURE UNTIL RESULTS ARE SATISFACTORY.

END OF SECTION