DRAIN PIPE INSTALLATION

MATERIALS

A. Pipe, fittings, couplings, and joints shall comply with the size, dimensions, materials, and performance requirements of ASTM D 3034, SDR 35. All pipe, fittings, and couplings shall be clearly marked in accordance with ASTM D3034. Sewer pipe shall be furnished in standard 13' or 20' lengths, unless otherwise detailed.

B. PVC pipe shall have common profiles for inter-changeability between rough-barrel dimensions, couplings, ends, and elastomeric gaskets to facilitate future repairs. When assembled, the pipe shall have only one gasket per bell and spigot end, and/or two gaskets per coupling.

C. All pipe shall have a home mark on the spigot end to indicate proper penetration when the joint is made. The bell and spigot configuration for the fittings and couplings shall be compatible with those used for the pipe.

D. The manufacturer of each shipment of pipe shall be required to supply a statement certifying that each lot or load of pipe has been subjected to the tests specified for PVC gravity sewer pipe. Tests shall show that the pipe has been found to meet all the requirements of ASTM D3034.

DELIVERY, STORAGE, AND HANDLING

A. PVC pipe shall be stored in suppliers' yards and on the job site in accordance with AWWA M23 and the manufacturer's recommendations. PVC pipe that has been subjected to excessive ultraviolet radiation from the sun shall not be used. The determination as to the acceptability of PVC pipe faded by the sun's radiation shall rest solely with the Engineer.

B. Store PVC pipe in the field by supporting the pipe uniformly per AWWA M23. Do not stack pipe higher than 4' or stack the pipe with weight on the bell ends. Cover stored PVC pipe to protect it from the sun's ultraviolet radiation. Any pipe that has been contaminated with any petroleum products (inside or outside) shall not be installed.

C. Pipe and fittings shall be handled according to manufacturer's recommendations. Proper care shall be used to prevent damage in handling, moving and placing the pipe. All pipe, fittings, and other pipeline materials shall be lowered into the trench in a manner that prevents damage. The pipe shall not be dropped, dragged or handled in a manner that will cause bruises, cracks, or other damage. PVC pipe or fittings that have been gouged or scratched shall be subject to rejection as determined by the Engineer.

TRENCHING, BACKFILLING AND COMPACTION

Trenching, bedding, backfilling and compaction operations shall be performed in accordance with the Earthwork Specifications.

DEWATERING

A. The Contractor shall provide and maintain at all times during construction ample means and devices to promptly remove and dispose all water from any source entering trench excavations or other parts of the work. Any damage caused by flooding of the trench shall be the Contractors responsibility.

B. Dewatering shall be performed by methods that will maintain a dry excavation, preservation of the final lines and grades and protection of all utilities. Sewer mains shall not be used as drains for dewatering construction trenches. If flooding of the trench does occur, the Contractor shall immediately dewater and restore the trench. Damaged or altered pipeline appurtenances or trench materials shall be repaired or replaced as directed by the Engineer.

PIPE INSTALLATION

When the work requires entry of personnel into a confined space, the Contractor shall comply with all Federal and State regulations for confined space entry. Work inside confined spaces shall not be undertaken until all the tests and safety provisions of the Code of Federal Regulations 1910.146 for confined space entry havî?e been performed and the area is verified as safe to enter.

The Contractor shall furnish and install all pipe, specials, fittings, closure pieces, supports, gaskets, jointing materials, and all other appurtenances as shown and as required to provide a complete and workable installation. Pipe installation shall be as described below and as shown on the Approved Plans.

A. Inspect each section of pipe prior to lowering the pipe into the trench. Thoroughly clean the ends of the pipe. Remove foreign matter and dirt from inside of the pipe and keep pipe clean during and after installation.

B. Install pipe according to the manufacturer's approved order of installation to the proper lines and grades as shown on the Approved Plans.

1. Pipe shall be installed with pipe bells up-grade. Lay pipes uphill if the grade exceeds ten percent (10%).

2. Installation tolerances for the pipe shall not vary more than 2" horizontally or 1" vertically from the alignment and elevations shown on the Approved Plans.

3. Install the pipe such that the identification markings on each pipe section are continuously aligned for the total length of the pipeline alignment. Orient the strip marking upward to the 12 o'clock position (top) of the trench opening.

4. Avoidance of reverse slope: Any pipeline installed with reversed slope, as evidenced by ponding of water or sag, is not allowed. Any such pipeline shall be removed and replaced (at proper line and grade) to the nearest upstream and downstream sewer structure as directed by the Engineer.

C. The pipe shall have firm bearing along its full length, and bell holes shall be provided at each joint to permit visual inspection of the joint and prevent the pipe from being supported by the bell end or coupling.

D. Field cutting and milling shall be accomplished to equal the quality of shop-fabricated ends in accordance with the manufacturer's written instructions.

E. Pipe Assembly: Assemble the pipe joint using the lubricant supplied by the pipe manufacturer. Insert the spigot end into the bell or coupling to the proper insertion mark. Check that the elastomeric ring has not left the groove during assembly by passing a feeler gauge around the completed joint. Drive the spigot end into the bell in accordance with the manufacturer's recommendations. Stabbing shall not be permitted.

F. Horizontal or vertical curve alignments shall be accomplished as required, in accordance with the manufacturer's recommendations. A combination of random pipe lengths, bending, and Joint deflection shall be utilized to create smooth radius curves in accordance with the manufacturer's recommendations and as directed by the Engineer.

G. PVC wyes shall be located where shown on the Approved Plans in accordance with the Drawings. Wyes shall not be placed closer than 5' from the exterior of any structure such as manholes.

CONNECTION TO EXISTING SEWER SYSTEM

A. Connection to the existing sewer pipe shall be made as shown on the Approved Plans. This includes a new concrete manhole that meets the requirements of ASTM 478. All work shall be performed in the presence of the Engineer or his designee.

B. In order to prevent accidental use of the pipe before completion and/or to prevent the entry of foreign debris, each new inlet shall be sealed with expandable plugs. Installation of plugs shall be in accordance with the manufacturer's recommendations and as approved by the Engineer. Plugs shall be removed at the time of final inspection or as directed by the Engineer.

CONCRETE

Concrete for anchor blocks, lugs and other uses shall be installed as called for in accordance with the Structural Drawings. Observe the minimum required curing time.

CLEANOUTS

Cleanouts shall be installed at the locations shown on the Approved Plans in accordance with the Drainage Drawings.

CF?LEANING

A. Before testing, each pipe shall be thoroughly flushed with clean water from end to end with an appropriately-sized inflatable ball.

B. All construction debris and water shall be removed from each trench drain or sump prior to removal of the plugs.

C. Water used in flushing out the new sewer pipes shall not be discharged into the existing sewer system, unless it can be verified that the water if free of dirt and debris that could clog the sewer.

MANDREL TEST

A. Following backfill and compaction, installation of all utilities, and prior to permanent concrete replacement, all sewer pipe shall be mandrelled to check for obstructions. A rigid mandrel, circular in cross section, having a diameter of 95% of the pipe inside diameter, and equal in length to the pipe diameter, shall be pulled through the pipe by hand.

B. Obstructions encountered by the mandrel shall be corrected by the Contractor. If an obstruction is encountered, the Engineer shall approve corrective measures prior to implementation.

AIR TEST FOR PVC GRAVITY SEWERS

A. Each section of sewer pipe, as measured between manholes or manhole and cleanout, shall be tested by plugging all pipe outlets with suitable test plugs.

B. Air shall be slowly added until the internal pressure is raised to 5 psi. The compressor used to add air to the pipe shall have a relief valve set to ensure that the internal pressure in the pipe does not exceed 6 psi. At no time shall the internal pressure in the pipe exceed 6 psi.

C. The internal pressure of 5 psi shall be maintained for at least two minutes to allow the air temperature to stabilize, after which the air supply shall be disconnected.

D. The time in minutes that is required for the internal air pressure to drop from 5 psi to 4 psi shall be measured. The results shall not be less than the minimum permissible duration for air test pressure drop shown in the table below.

Minimum Duration for Air Test Pressure Drop

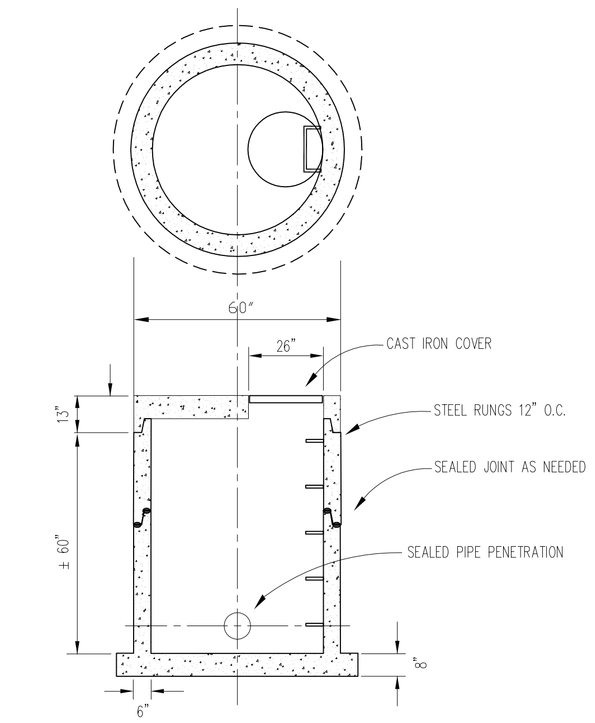
Pipe Size (inches)	Time (Minutes)
6	4
8	5
10	6
12	7
15	9

E. If the pressure drop from 5 psi to 4 psi occurs in less time than shown above, the pipe shall be examined and repaired, and if necessary, replaced or re-laid including backfill and compaction. The test shall be repeated until satisfactory results are obtained.

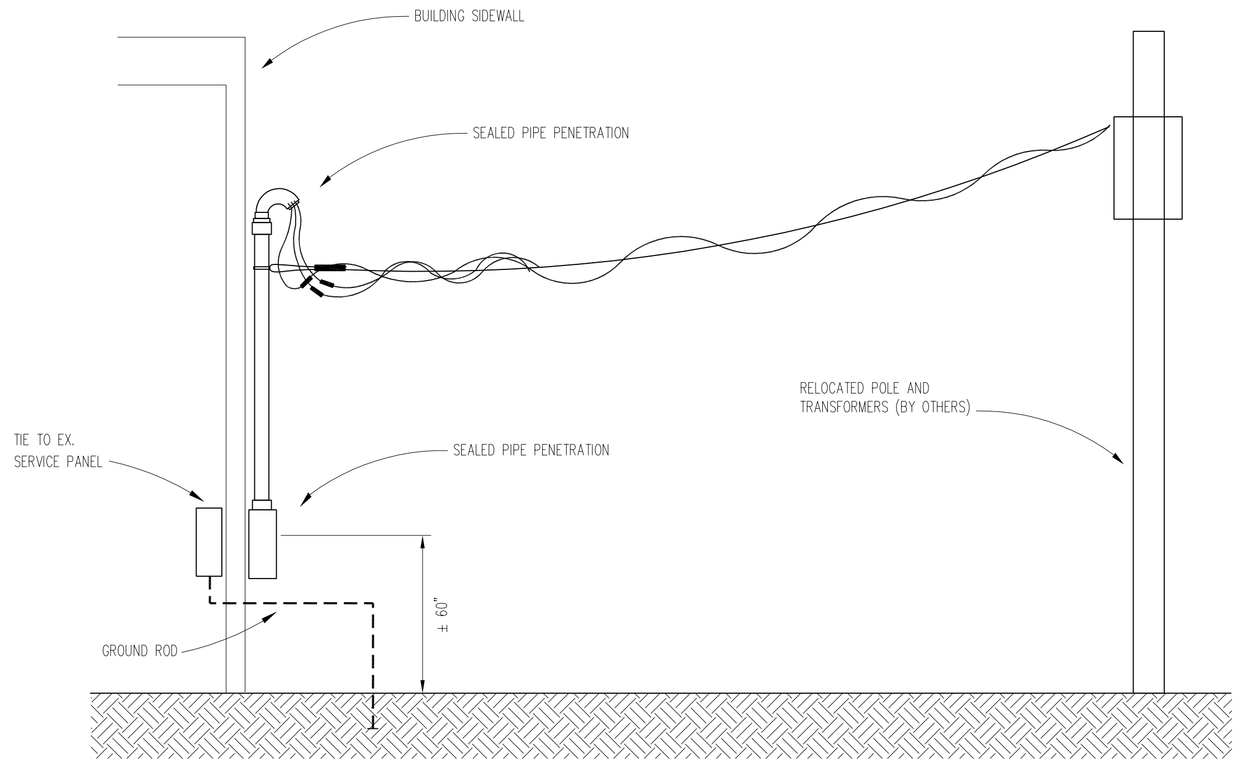
FINAL INSPECTION

A final visual inspection shall be made after concrete paving has been completed and all trench drain and sump frames have been raised to grade. The Contractor shall have a responsible person present and shall furnish the necessary labor to assist the Engineer in making the final inspection. Acceptance of the system will be pending completion or correction of items identified during this inspection.

FOR REVIEW AND BIDDING
NOT FOR CONSTRUCTION



CONCRETE MANHOLE
DETAIL 1/C3
N.T.S.



ELECTRICAL CONNECTION
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7-18-2012

PROJECT TITLE:
RUTHERFORD COUNTY, N.C,
CDNTRAL MSW FACILITY
TRANSFER STATION UPGRADE
PERMIT #81-04T

DRAWING TITLE:
GENERAL CIVIL SPECIFICATIONS
SHEET 3 OF 3

DESIGNED BY: G.D.G.	DRAWN BY: A.W.H.
CHECKED BY: G.D.G.	PROJECT NO.: RUTH-2
SCALE: AS SHOWN	DATE: JUN 2012
FILE NAME: RUTH-D0116_Transfer Station	
SHEET NO. 9	DRAWING NO. C3