SECTION UC-250

GRAVITY SEWER SYSTEMS

PART 1 - GENERAL

1.01 SCOPE

A. These Specifications shall govern the design, materials and installation requirements of the Department for gravity sanitary sewer systems constructed in its service area when using Poly (Vinyl Chloride)(PVC) pipe and fittings, Vitrified Clay (V.C.) pipe and fittings or Ductile Iron pipe and fittings. "PVC" shall mean Poly (Vinyl Chloride) as it relates to pipe and fittings.

B. This Specification does not purport to cover all material or installation procedures which may be required, whether by the nature of the proposed work, or by the Department, or by other regulatory agencies.

C. It is intent of the Department to obtain a complete and working installation under this project, and any items of labor, equipment or materials which may reasonably be assumed as necessary to accomplish this end shall be supplied whether or not they are specifically shown on the Plans or stated herein.

1.02 QUALITY ASSURANCE

A. All material and installation shall be in accordance with the Department's Design and Construction Standard Specifications and Details.

B. The material and installation for this project shall be in full compliance with all applicable standards listed in Section 01090, " Reference Standards"

1.03 DEFINITIONS

See Section 01005, "Defined Terms"

1.04 PROJECT APPROVAL

The approval of the Department shall be secured, in accordance with Section 17005, prior to any construction related activity.

1.05 SPECIAL CONDITIONS

The work shall proceed in accordance with the following specification sections, bound herein:

A. Section 01011 - Site Conditions
B. Section 01016 - Safety Requirements and Protection of Property
C. Section 01031 - Grades, Lines and Levels
D. Section 01100 - Special Project Procedures
E. Section 01750 - Maintenance of Traffic and Public Streets

1.06 DESIGN REQUIREMENTS

A. GENERAL

1. Gravity sanitary sewer systems shall be designed in accordance with the State of Florida Department of Environmental Protection (DEP) Rules, Chapter 62-604 for Wastewater Facilities, with OSHA requirements and with the "Florida State Board Health Sewage Guide" and the recommendations of Chapter 12 of the ASCE Manual No. 37, "Sewer Design and Construction", except as otherwise provided herein. Wet wells and manholes shall be classified as hazardous areas, Class 1, Division 2, Group C.

2. In addition, systems shall be designed in accordance with the requirements of the Miami-Dade County Department of Environmental Resource Management (DERM), the requirements of the latest edition of the South Florida Building Code and the Miami-Dade Water and Sewer Department Standards and Specifications.

3. The use of PVC pipe or AWWA C900 PVC pipe within a public water supply wellfield cone of influence or in areas zoned industrial or commercial shall be as stated under "Tightness Standards" in Section UC-370.

4. Manhole to manhole runs shall be kept in the range of no more than 400 feet without permission.

5. Slope shall be such as to maintain two feet per second minimum velocity when running full or half full when calculated using the Manning Equation with a roughness coefficient of .013.

6. Minimum slope for terminal runs shall be 0.40 percent for eight inch pipe. This slope shall be maintained for a minimum of 300 feet and longer if loading is abnormally light.

7. Design shall be performed by experienced personnel who have previously designed sewerage collection systems in Miami-Dade County. Proof of experience shall be provided if required by the Department. All design work submitted for approval shall be signed, sealed and dated by a registered professional engineer licenced to practice in the State of Florida.

8. The Department reserves the right request complete design calculations, which shall be submitted and shall be in a format easily read.

9. Design shall be conservative with sufficient peaking and infiltration factors included. Absolute minimum slopes shall not be used since minor field construction variations will reduce slopes and give actual velocity of less than two feet per second.

10. The Department reserves the absolute right to require greater slopes, higher peaking or infiltration factors if this is considered necessary upon review of design. The design/build firm shall conform with any such requirements and supply said design and construct same at no extra cost to the County.

11. The use of PVC pipe and fittings will only be permitted for gravity sanitary sewers (and service laterals) 15-inches in diameter and smaller.

1.07 PERMITS, INSPECTIONS AND FEES

A. The Contractor shall obtain and pay for all permits, official inspections and all other fees in accordance with Section 01740, "Permits".

B. Inspection by Department personnel is required in addition to, not in lieu of, municipal and County department inspections (if any).

C. No installation will be accepted until it has passed all inspections, including pavement installation or replacement.

1.08 PRECONSTRUCTION CONFERENCE

Prior to commencement of the work, the Contractor shall attend a "Preconstruction Conference" in accordance with Section 01150, "Preconstruction Conference".

1.09 SUBMITTALS

A. The Contractor shall furnish "As-Builts" in accordance with Section 01725. Project Record Documents shall be submitted in accordance with Section 01720. The Contractor shall submit operating and maintenance instructions and all other submittals in accordance with Section 01730.

B. Where the Specifications require test certification or certification that certain products or material furnished are as specified, the Contractor shall deliver such certification to the Department. No material or equipment shall be approved for use in the work until individual certification has been received.

1.10 SAFETY REQUIREMENTS

A. The Contractor shall be in compliance with all applicable provisions of the Occupational Safety and Health Act of 1970, in general, and any subsequent amendments and revisions thereto and specifically to the provisions concerning confined space entry.

B. The Contractor's personnel will be in the vicinity of raw sewage. For his own protection, as well as for his employees, he shall check with Metropolitan Dade County Health Department, and based upon their recommendation, shall have his personnel properly immunized against disease.

C. Under this project, personnel may be required to enter the existing manholes/sewers to perform certain items of work. Before entering, the Contractor shall be in compliance with Dade County Manhole Ordinance No. 83-3 (which mandates, in part, that above-ground safety personnel shall be on duty at all times when someone enters or works in a manhole/sewer and the air within a manhole / sewer shall be tested with a combination oxygen deficiency meter-explosion meter to determine oxygen content and explosion potential). A test for the presence of hydrogen sulfide shall also be performed. The work area must be ventilated mechanically by the use of an air blower, before entry and during occupancy, to insure that an adequate quantity of oxygen is supplied to the work area.

D. The Contractor shall conduct his operations in such a manner, utilizing warning devices such as traffic cones, barricades and warning lights, and personnel such as flagmen and uniformed police officers, that the public is given adequate warning of hazards of the work site as may be deemed necessary by the authority having jurisdiction and/or the Department. See Section 01750, "Maintenance of Traffic and Public Streets."

E. In the instance of men working within the manholes, the Contractor shall provide safety provisions to cover any possible consequences of structural failure and/or flooding. Such provisions might take the form of, but not be limited to, ladders in position to permit rapid egress; safety harnesses ; stand-by pumping equipment; extra air supplies; and such other measures as the situation and good construction practices might indicate.

F. Certain products specified in these Specifications contain warnings by the manufacturers that under certain conditions, if instructions for use of the product are not followed, a hazardous condition may exist. It is the Contractor's responsibility to instruct his workmen in the safe use of the product, or any product substitution.

PART 2 - PRODUCTS

2.01 GENERAL

A. All material for use in the Project shall be new and of recent domestic manufacture and shall be the products of reliable manufacturers or suppliers who, unless otherwise specified, have been regularly engaged in the manufacture of such materials and equipment for at least five (5) years.

B. All fittings and components shall, wherever possible, be standard stock articles of well known manufacturers.

C. Where the Specifications designate the products of a particular manufacturer, the product specified has been found suitable for the intended use, but, unless otherwise provided, articles or products of similar characteristics may be offered for the approval of the Department, upon approval by the Engineer of Record.

D. Copies of complete descriptive data shall be furnished regarding all material, consisting of dimension drawings, catalog references and other information necessary to clearly identify each article.

E. When substitutions are permitted, the Contractor shall make all necessary changes in adjacent or connected structures and equipment, at his expense

F. Unless otherwise specified, all steel bolts, nuts, washers and all other miscellaneous ferrous metal items (except cast iron) furnished by the Contractor shall be hot-dip galvanized in accordance with ASTM A386, "Zinc Coating (Hot-Dip) on Assembled Steel Products" and ASTM A385, Providing High-Quality Zinc Coatings (Hot-Dip)". Where the word "galvanized" or its abbreviation is used on the Plans or in the Specifications, it shall mean hot-dip galvanized. Fabricated items shall be hot-dip galvanized after fabrication. Internal threads shall be tapped or re-tapped after galvanizing.

G. Where miscellaneous materials are required for a complete installation the Contractor shall provide such materials in conformance with Section 15065, "Miscellaneous Material".

H. See Section 01100 for water used in construction.

2.02 CASTINGS

A. GENERAL

1. Material used in the manufacture of the castings shall conform to ASTM A48, "Gray Iron Castings", for Class 30 iron. Manhole and valve box covers shall have a roadway or pedestrian type surface as required by location, and shall be non-rocking.

2. Castings shall be in compliance with Section 05550. Castings shall be as manufactured by U.S.F. Fabrication, Inc., Neenah Foundry, or approved equal.

3. Castings shall be delivered unpainted with a shotblasted finish.

B. MANHOLE FRAMES AND COVERS

Manhole covers and frames shall be Department Type "A" U.S.F.&F No. 310 as manufactured by U.S.F. Fabricating, Inc., Hialeah, Florida, or approved equal. The covers shall be cast labeled "SANITARY SEWER".

2.03 BRICK

A. Clay Brick: Bricks for manhole construction shall be dense, hard burned, common clay brick conforming to ASTM Standard C62, "Building Brick (Solid Masonry Units made from Clay or Shale)".

B. Concrete Brick: Concrete bricks shall conform to ASTM Standard C55, "Concrete Building Brick".

C. All bricks shall have true edges and sharp corners and shall have been cured for at least 14 days before being placed.

2.04 CONCRETE, MORTAR AND GROUT

See Section 17033, " Concrete, Mortar and Grout (Short)"

2.05 EMBEDMENT MATERIAL

Embedment material, for bedding, haunching and initial backfill, shall conform with the requirements of Section UC-300 “Gravity Sewer Pipe Foundation”.

2.06 MANHOLE

A. Shallow manholes shall be constructed of brick or precast concrete. All other manholes shall be constructed of precast concrete. See Section 02536, "Precast Manholes & Covers"

B. Castings for manhole frames, covers and other items shall conform to Subsection 2.02, above. Casting patterns shall conform to those designated in the Miami-Dade Water and Sewer Standard Details.

C. Concrete shall conform to Section 17033.

D. Brick for manhole construction shall be clay brick, in accordance with Subsection 2.03, above.

E. Cement mortar for manhole construction shall conform to Section 17033. It shall be mixed dry and then wetted to proper consistency for use. No mortars that have stood for more than one hour shall be used. Brick manholes shall be coated with 3/4-inch thickness of mortar both inside and outside.

F. The invert channels shall be formed of brick or brick rubble thoroughly bedded and covered with sand-cement grout, accurately shaped to a semicircular bottom conforming to the inside of the adjacent sewer section. Steep slopes outside the invert channels shall be avoided. Changes in size and grade shall be made gradually and evenly. Changes in the direction of the sewer or entering branch shall be a smooth curve with radius as long as practical.

G. Frames and covers shall be set accurately to grade with a minimum of 3 and a maximum of 5 courses of brick provided as a leveling course. It shall be the Contractor's responsibility to assure that the frames and covers are set to match existing and/or proposed finish paving grades at the manhole locations.

H. For PVC Sewers:

1. The first joint at both influent and effluent sewers at each manhole, including service laterals, shall consist of an approved manhole coupling grouted into the manhole wall, and providing a continuous watertight elastomeric gasket seal between the coupling and the pipe inserted therein. The coupling shall have an increasing tapered interior from the gasket groove to allow flexibility for the pipe in the event of future settlement of the manhole or pipeline.

2. The first length of PVC pipe into or out of the manhole shall be 2-feet long, maximum, and shall be either plain-end by plain-end, or plain-end by bell. In the first option, the next joint shall be a double bell PVC repair coupling (no stop) with a maximum 1-inch gap between the pipes inserted therein. In the latter option, the next joint shall be another 2-foot long section, maximum, of plain-end by bell PVC pipe.

I. For Ductile Iron and Vitrified Clay Sewers

The first length of pipe into or out of the manhole shall be a 2-foot length of plain end by plain end ductile iron pipe (i.e. 2' as measured from the outside wall) grouted directly into the opening in the manhole wall. This P.E. X P.E. short shall be joined to the spigot end of an adjacent ductile iron sewer main by use of a ductile iron solid sleeve. In the instance of a vitrified clay main, the ductile iron P.E. X P.E. short manhole stub out shall be joined to the V.C. spigot by use of a double hub connector for vitrified clay pipe. Note that C-900 PVC repair couplings shall not be used in ductile iron or vitrified clay mains.

J. Where shown on the drawings, the Contractor shall provide stub-outs for future extensions. Both ends of all such stubouts shall be closed with specified PVC plugs.

K. Precast manholes shall conform to Section 02536, "Precast Manholes & Covers". In precast concrete manholes, holes for sewer line connections, with a diameter equal to the outside diameter of the connecting sewer plus an additional four inches (4"), shall be formed in the manhole walls. No cutting or chipping at pre-formed holes, or cutting additional holes in precast concrete walls will be allowed.

L. A minimum of three to a maximum of five courses of brick shall be constructed atop each manhole corbel.

M. Prior to acceptance of manhole, the Contractor shall verify that he has installed required manhole accessories and coating/lining (See Section 02536)

2.07 POLY (VINYL CHLORIDE) PIPE

Pipe for use in gravity sewer systems shall be Vitrified Clay, Ductile Iron with polyethylene or ceramic epoxy (Protecto 401) lined , PVC SDR 35, or AWWA C900, C905 PVC as shown on the plans or called out elsewhere herein. For further information on these types of pipe, see Section 15060, “Piping and Fittings”.

2.08 REINFORCING STEEL

A. Bar reinforcement for concrete structures shall conform to the requirements of ASTM Standard A615 "Deformed and Plain Billet-Steel Bars for Concrete Reinforcement", Grade 60, Deformed, except that steel manufactured by the Bessemer Process will not be accepted. Wire mesh reinforcing for concrete paving or driveway repairs, if required, shall be welded wire fabric meeting the requirements of ASTM Standard A185, "Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement".

B. The Contractor shall furnish the Department with manufacturer's test certificates showing the steel to meet the above requirements, in addition to which the Department may take representative samples from the material on the job and have them tested by an independent testing laboratory. Completely detailed shop drawings and bending schedules shall be submitted by the Contractor for the approval of the Engineer of Record. Such approval shall be obtained before the bars are cut and bent.

2.09 DUCTILE IRON CASING PIPE

Ductile iron casing pipe shall be ANSI/AWWA Standard C151/A21.51, Class 50, no lining required. Casing pipe shall be one size larger than PVC pipe to be encased, unless otherwise approved.

2.10 DUCTILE IRON SEWER PIPE

A. Ductile iron sewer pipe shall be ANSI/AWWA Standard C151/A21.51, Class 53 for 6-inch, Class

52 for 8-inch, Class 50 for 10-inch through 15-inch. Ductile iron pipe shall conform to Section 15060.

B. All ductile iron pipe and fittings 8-inches and larger in diameter for use in force mains and gravity sewers, except riser pipes, shall be delivered with either heat fused virgin polyethylene lining or ceramic epoxy lining (See Section 15060). The only ceramic epoxy material approved by the Department at this time is a high-build multi-component Amine cured Novalac epoxy, Protecto 401, by Vulcan Painters, Inc. of Bessemer, AL 35021.

2.11 MISCELLANEOUS MATERIAL

A. The Contractor shall furnish and install all miscellaneous material and appurtenances required for a complete installation. Section 15065 specifies material necessary for a complete installation, not specified herein. These material, including the following, shall be installed when required, whether shown on the Plans or not.

1. Paint, Bituminous
2. Caulking Compound
3. Manhole Couplings
4. PVC double bell repair couplings, No-stop (sleeves)
5. PVC double bell transition couplings or adapters PSM SDR-35 PVC Sewer Pipe to ductile-iron or AWWA C900 CI-PVC Pressure pipe.
6. Stainless steel repair clamps, with stainless steel bolts

PART 3 - EXECUTION

3.01 PIPE INSTALLATION, GENERAL

A. Proper and suitable tools and appliances for the safe convenient handling and laying of pipe shall be used and, in general, conform with manufacturer's recommendations. At the time of laying, the pipe shall be examined carefully for defects, and should any pipe be discovered to be defective after being laid, it shall be removed and replaced with sound pipe by the Contractor at his expense.

B. Pipe and fittings shall, at all times, be handled with great care to avoid damage. In loading and unloading, they shall be lifted with cranes or hoists or slid or rolled on skidways in such manner as to avoid shock. Under no circumstances shall this material be dropped or allowed to roll or slide against obstructions. Pipe an other material shall be distributed along the right-of-way in advance of installation only to the extent approved by the Department. Such materials shall be so placed as to keep obstruction to traffic minimum.

C. Upon satisfactory completion of the pipe bedding, a continuous trough for the pipe barrel and recesses for the pipe bells, or couplings, shall be excavated by hand digging. When the pipe is laid in the prepared trench, true to line and grade, the pipe barrel shall receive continuous, uniform support with no pressure being exerted on the pipe joints from the trench bottom.

D. Pipe shall be installed in accordance with the manufacturer's recommendation. Before being lowered into the trench, the pipes and accessories shall be carefully examined and the interior of

the pipes shall be thoroughly cleaned of all foreign matter and other deleterious materials by methods acceptable to the Department. During suspension of work, for any reason, at any time, a suitable stopper shall be placed in the end of the pipe last laid to prevent mud, dirt, groundwater or other foreign material from entering the pipe. Any pipe which is disturbed or found defective shall be immediately removed and replaced with sound pipe.

E. Gaskets shall be thoroughly checked for breaks, cuts or other damage, and shall be free of oil, grease, dirt or other foreign matter. Pipe joints shall be assembled with care. Lubricant, if required shall be as recommended by the manufacturer of the pipe, and shall have no deteriorating effects on the gasket and pipe materials. If assembly is under water, lubricant recommended by the manufacturer for underwater use is required.

F. Good alignment of the pipe is required for assembly. Align the spigot to the bell of the previously laid pipe and insert the spigot into the bell until it uniformly contacts the gasket. Apply steady pressure until the spigot easily slips through the gasket. Do not push or swing the spigot into the bell. Smaller diameter pipe and fitting may be assembled manually. Mechanical means such as bars and blocks, ratchets or jacks shall be used for joining larger pipe and fittings. Power equipment such as a backhoe bucket, shall not be used to assemble pipe and fittings, since excessive force may damage the gasket or bell.

G. Cutting the pipe in the field shall be done by the Contractor in a neat and workmanlike manner using manual or power saws. The pipe shall be marked around its entire circumference before cutting to assure a square cut. After cutting, the end shall be beveled with a beveling tool, rasp, or other approved equipment, to the proper taper. Mark the proper insertion depth on the cut and beveled end before installing the cut pipe into the pipeline. Pipe laying shall proceed up-grade from the lowest point of the proposed system, with spigot ends pointing in the direction of flow.

H. All pipe shall be laid straight, true to the lines and grades shown on the Plans, or matching existing grade, in each section between manholes. The pipe shall be laid so that the identification markings are located on the top of the installed pipelines.

I. Each individual length of pipe shall be solidly and evenly bedded and haunched throughout its length on a prepared bed on the floor of the trench and not supported in position on blocks or wedges. Pipe shall only be laid when the two preceding lengths have been thoroughly embedded in place to prevent any movement or disturbance of the finished joint. Any pipe which is disturbed or found to be defective after laying shall be taken up and relaid or replaced.

J. Any work within the pipe and fittings shall be performed with care to prevent damage to the interior wall of the pipe. Damaged interior walls shall be repaired or the pipe section or fitting replaced as required by the Department. No cables, lifting arms, hooks or other devices shall be inserted into the pipe or fitting. All lifting, pulling or pushing mechanisms shall be applied to the exterior of the pipe or fitting.

K. After pipe has been laid, reviewed and found satisfactory, sufficient backfill shall be placed along the pipe barrel to hold the pipe securely in place during the conduction of the required tests.

3.02 INSTALLATION OF DUCTILE IRON AND VITRIFIED CLAY PIPE

A. Installation of gravity sewers shall conform to the applicable requirements of ANSI/AWWA Standard C600-93, "Installation of Ductile Iron Water Mains and Appurtenances".

B. Cutting of ductile iron pipe for fittings and other connections shall be done by the Contractor in a neat and workmanlike manner without damage to the pipe, the lining, or the coating. Pipe shall be cut with a mechanical pipe saw. After cutting the pipe, the plain ends shall be filed to remove all sharp edges and burrs.

C. Polyethylene encasement of valves, cast iron pipe and fittings, if required by the Department, shall be installed in accordance with ANSI/AWWA C105/A21.5, "Polyethylene Encasement for Ductile-Iron Piping for Water and Other Liquids" Method A, B or C.

D. If any difficulty is experienced in assembling lengths of pipe together in the trench, the pipe sections shall be tried on the surface of the ground and each length of pipe plainly marked for position and sequence in which they are to be installed.

E. Ductile iron solid sleeves shall be used to connect D.I. pipe spigots to existing D.I. manhole stub spigots. Vitrified clay double hub connectors shall be used to connect D.I. manhole stub outs to V.C. pipe spigots.

F. All bolts, nuts, gaskets or other joint materials for use in the pipeline shall be properly protected.

G. Gaskets shall be properly stored, and care shall be exercised to keep them away from heat, light, oil, gasoline or other petroleum products. Gaskets shall be kept clean at all times and not handled with greasy or dirty hands.

3.03 INSTALLATION OF POLY VINYL CHLORIDE (PVC) PIPE

A. Each length of pipe, immediately prior to being placed in position in the trench, shall be inspected, cleaned and prepared for installation. Gaskets shall be thoroughly checked for breaks, cuts or other damage, and shall be free of oil, grease, dirt or other foreign matter. Pipe joints shall be assembled with care. Lubricant, if required, shall be as recommended by the manufacturer of the pipe, and shall have no deteriorating effects on the gasket and pipe materials. If assembly is underwater, lubricant recommended by the manufacturer for underwater use is required. Good alignment of the pipe is required for assembly. Align the spigot to the bell of the previously laid pipe and insert the spigot into the bell until it uniformly contacts the gasket. Apply steady pressure until the spigot easily slips through the gasket. Do not push or swing the spigot into the bell. Small diameter pipe and fittings may be assembled manually. mechanical means such as bars and blocks, ratchets or jacks shall be used for joining larger pipe and fittings. Power equipment, such as backhoe bucket, shall be not be used to assemble pipe and fittings, since excessive force may damage the gasket or bell.

B. Cutting the pipe in the field shall be done by the Contractor in a neat and workmanlike manner using manual or power saws. The pipe shall be marked around its entire circumference before cutting to assure a square cut. After cutting, the end shall be beveling tool, rasp, or other approved equipment, to the proper taper. Mark the proper insertion depth on the cut and beveled end before installing the cut pipe into the pipeline. Pipe laying shall proceed up-grade from the lowest point of the proposed system, with spigot ends pointing in the direction of flow. All pipe shall be laid straight, true to the lines and matching existing grade, in each section between manholes. The pipe shall be laid so that the identification markings are located on the top of the installed pipelines. At all times when work is not in progress, the exposed ends of all pipes shall be fully protected by an approved stopper to prevent groundwater, dirt, rocks or other substances from entering the pipe.

3.04 PIPE-TO-PIPE CONNECTIONS

Pipe-to-pipe connections shall be made by using solid sleeves for Ductile Iron, double hub

connectors for vitrified clay and double bell couplings for PVC.

3.05 PIPE-TO-PIPE MANHOLE CONNECTIONS

When a sound pipe stub-out exists at a manhole to which connection is to be made, a pipe-to-pipe connection shall be made as described above. If a stub-out is not present or is faulty, an opening shall be cut in the manhole wall and the connection made. The connection shall be constructed as specified above in paragraphs 2.06 H and I with the pipe material/method chosen to match that of the new line. The invert/shelf area inside the manhole shall be cut and reshaped as necessary to construct the new channels in compliance with WASD Standard Details

3.06 GRAVITY SEWER SERVICE LATERALS

See Section UC-310, "Gravity Sewer Service Laterals".

3.07 MODIFICATIONS OF EXISTING MANHOLES

See Section UC-330, "Repairs to Department Sewers"

3.08 EXCAVATION

See Section 02315, "Trenching and Backfilling for Piping Systems"

3.09 SEWER PIPE FOUNDATION

See Section UC-300, "Gravity Sewer Pipe Foundation"

3.10 CLEANING AND TESTING

See Section UC-370, "Cleaning and Testing Gravity Sewers"

3.11 SEWERAGE REMOVAL

See Section UC-290, "Removal of Sanitary Sewerage and Debris"

3.12 SEWAGE FLOW CONTROL

See Section UC-320, "Sewerage Bypass Pumping and Flow Control"

3.13 REPAIR OF DAMAGE TO DEPARTMENT MAINS & SEALING LEAKS

See Section UC-330, "Repairs to Department Sewers"

3.14 DEFLECTION TEST

See Section UC-350, "Sewer Deflection Test"

END OF SECTION