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YORKVILLE - BRISTOL SANITARY DISTRICT



**STANDARD SPECIFICATIONS
FOR
SANITARY SEWER CONSTRUCTION
IN THE
YORKVILLE-BRISTOL SANITARY
DISTRICT**

OCTOBER 9, 2006

SECTION 1: GENERAL REQUIRMENTS

- 1.1 The Yorkville-Bristol Sanitary District is referred herein as the “District”.
- 1.2 Each sewer which is designed and is to be constructed so as to be an integral part of the sanitary sewer system within the boundaries of the District shall not be constructed without a permit issued by the District and the Illinois Environmental Protection Agency, where required, whether such construction is on private or public property. An Illinois Environmental Protection Agency permit, where required, must be on file at the District prior to starting construction of the sanitary sewer improvements.
- 1.3 No connection shall be made to the District’s sanitary sewer system or to any sanitary sewer system tributary thereto and no additional use shall be made of an existing connection thereto until a permit for such connection or additional use has been issued by the District. Prior to the issuance of such permit by the District, an application for such permit shall be properly completed and filed with the District and all applicable fees and charges paid in full. In addition, the applicant shall, upon the request of the District, submit plans and specifications for the proposed construction in accordance with the provisions of Section 3 of these specifications.
- 1.4 Areas which lie outside the current limits of the Yorkville-Bristol Sanitary District shall be annexed into the District prior to issuance of any permit by the District. The appropriate annexation fees and infrastructure participation fees shall be paid as part of the completion of the annexation and permitting processes.

Said fees shall be calculated based on the gross contiguous acreage included as part of the development, including all lakes, ponds, wetlands, parks, schools and rights-of-way, excluding rights-of-way of roads which have existed for a period of five (5) years prior to the date of annexation or service. Any land area, whether contiguous to the development or not, required by the state, county or municipality to be dedicated as a condition of acceptance of the development, shall be included in the area used to determine the annexation or infrastructure participation fees.
- 1.5 No person shall discharge or cause to be discharged any storm water, surface water, ground water, roof runoff, subsurface drainage, uncontaminated cooling water, or unpolluted industrial process waters, to any sanitary sewer both during and after construction of the sanitary sewer improvements.
- 1.6 Copies of the final District approved engineering plans and specifications must be kept on the job site.
- 1.7 Sanitary sewer contractors for all projects shall notify the District a minimum of two (2) working days prior to starting construction. Notification shall be done via telephone at (630) 553-7657, or fax at (630) 553-7554. A confirming fax shall be sent by the sanitary sewer contractors after all phone notifications.
- 1.8 To prevent any possible infiltration or inflow from entering the existing downstream sanitary sewer system, a factory-made plug shall be placed in the farthest downstream manhole of the proposed improvements by the contractor (providing the placement of the plug(s) does not interrupt the sanitary service of any existing user of the sewer system). This plug is to be

removed only upon approval by the District and only after any accumulated water and/or construction drainage has been properly removed from the pipe. Under no circumstances will new construction be allowed to drain into the sanitary sewer system.

SECTION 2: APPLICABLE RULES AND REGULATIONS

- 2.1 All sanitary sewers, including sewer mains and services, constructed within the Yorkville-Bristol Sanitary District Facility Planning Area shall be designed and constructed in accordance with the following rules, regulations, ordinances and policies listed herein and issued by the authorities indicated.
- a. Yorkville-Bristol Sewer User Ordinance as originally adopted on the 15th day of September, 1975 and as subsequently amended.
 - b. “Standard Specifications for Sanitary Sewer Construction in the Yorkville-Bristol Sanitary District”, latest edition.
 - c. “Standard Specifications for Water and Sewer Main Construction in Illinois”, latest edition.
 - d. “Illinois Recommended Standards for Sewage Works”, latest edition, Environmental Protection Act and other orders, technical releases, rules and regulations issued from time to time by the Illinois Environmental Protection Agency.
 - e. The Illinois Pollution Control Board including all orders, rules and regulations thereof.
 - f. Federal Water Pollution Control Act Amendment of 1972 as amended (33 USC 1251 ET SEQ).
 - g. “Recommended Standards for Sewage Works”, Great Lakes-Upper Mississippi River Board of State Sanitary Engineers (Ten State Standards).
 - h. “77 Illinois Administrative Code, part 890, Illinois Plumbing Code”, latest edition.
- 2.2 In case of conflict between any part or parts of the above listed documents, the more stringent provision shall take precedence and govern.

SECTION 3: SUBMITTAL REQUIREMENTS

- 3.1 The applicant shall submit the documents necessary as listed in this section.
- 3.2 The vertical datum shall be indicated on all plans submitted to the District. The datum shall preferably be based on the North American Vertical Datum of 1988 (NAVD 88). If any other datum is used, a conversion equation shall be shown on the plans to relate the datum to that of the NAVD 88 datum.

3.3 Preliminary Study – when an extension of the District’s sanitary sewer system is required to service a proposed development, the following shall be submitted by the applicant:

- a. Preliminary Site Plans showing the details of the area to be served with contours at one foot intervals. The elevations of the beds of streams, ditches and culverts should be ascertained, and the maximum expected ordinary water surface elevations should be supplied, and any other features that may influence, or be influenced by the sanitary sewer system.
- b. Engineering Plans and Documents – Plans drawn on sheets not exceeding twenty-four inches by thirty-six inches (24” x 36”), drawings and documents shall be submitted which include the following information:
 - 1. Location at which the proposed connection into the existing sanitary sewer system will be made. Also, the type of connection (single or multiple dwelling, unit development, commercial or industrial).
 - 2. Legal description of the proposed area or property, street location and/or street address of the property, a survey plat showing the property boundaries and acreage, and if annexed to the District.
 - 3. Name, address and telephone number of the owner, developer and their representative and/or engineer.
 - 4. Design calculations including population equivalents (P.E.), peak design flow, pipe slope, pipe capacity, minimum and maximum pipe cover, etc.

3.4 Final Engineering Plans and Documents – a complete set of plans drawn on sheets not exceeding twenty-four inches by thirty-six inches (24” x 36”), sealed by a Professional Engineer registered in Illinois, showing the complete plan and profile of the proposed sanitary sewer. The plan and profile shall include all of the following:

- a. The length, size and type of pipe, the horizontal location, the elevations of new and existing inverts, the distances and slopes between manholes shall be clearly indicated, the manhole types and locations shall be noted along with unique numbers assigned to each for identification.
- b. All underground structures or facilities that may affect the location of the sewer lines or are in the general area of construction.
- c. Elevation of the existing and proposed ground surfaces over the sewer centerline.
- d. The scale of the plan and profile should be such as to be easily and clearly readable. Recommended are:

Horizontal: 1 inch = 50 feet
Vertical: 1 inch = 5 feet

- e. Engineering specifications that may deviate from the District's Standard Specifications.
- f. Design documents – including all preliminary flow data, minimum and maximum slopes, population density figures and sewer effluent water quality data for non-domestic liquid wastes, as defined by the Illinois Environmental Protection Agency.
- g. Site location map which shows the project site in relation to the surrounding area

3.5 Illinois Environmental Protection Agency Documents:

- a. The Illinois EPA requires that an application be submitted for issuance of an EPA construction permit in any of the following cases:
 - 1. New structure plumbing systems exceeding 15 persons, or discharging more than 1500 gallons per day.
 - 2. Extension of any public sewer system.
 - 3. Structures which discharge industrial wastes.
- b. EPA applications and documents may be obtained from the Illinois Environmental Protection Agency.
- c. When, in the opinion of the owner, contractor or engineer, it is felt that there is no need for an IEPA permit to be filed, the applicant shall submit to the District an affidavit stating the anticipated average and maximum daily flow of wastewater from the new connection and such other information as the District requires.
- d. The appropriate Illinois Environmental Protection Agency permit applications shall be prepared and submitted to the District for review and execution prior to submittal to the Illinois Environmental Protection Agency for all improvements within the Yorkville-Bristol Sanitary District Facility Planning Area. As a minimum, the following documents shall be required:
 - 1. Application to Construct WPC-PS-1
 - 2. Sewer Connection Schedule A
 - 3. Sewer Extension Schedule B
 - 4. Erosion Control Schedule P

- 3.6 The required documents shall first be submitted to the municipal government which has initial jurisdiction. The municipal government shall endorse said documents and the applicant shall then submit four (4) copies to the District for evaluation, review and counter-endorsement. The District shall retain two (2) sets, send one (1) set to the municipal government and return one (1)

set to the applicant. The applicant shall then forward two (2) copies of the approved documents to the Springfield office of the Illinois EPA. If no municipality is involved, the applicant shall submit four (4) copies to the District for evaluation, review and endorsement.

- 3.7 The design engineer is encouraged to consult with the District in all instances to clarify any questions that he/she may have in connection with the permit and to insure adequacy and conformance of the drawings to the applicable requirements. In all cases, which involve the design of treatment facilities, and any project involving industrial waste, the design engineer should confer with the District prior to the preparation of the final plans. The transmittal letter submitting the plans must bear reference to prior consultations, if any.
- 3.8 The seal and signature referred to shall be those of the Professional Engineer responsible for the design. The seal shall be affixed on the title sheet and table of contents of the specifications, on the index sheet of the plans, and on the location map. Where no index sheet is provided, the seal and signature shall be affixed on each sheet.
- 3.9 No sewer main construction shall commence without an approved IEPA permit and an approved set of plans on file at the District.

SECTION 4: SANITARY MANHOLES

- 4.1 Sanitary manholes shall be a minimum of forty-eight inches (48") in diameter, watertight and constructed of precast reinforced concrete in accordance with A.S.T.M. C-478, these specifications and the details included at the end of these specifications.
- 4.2 Manholes shall be installed at all changes in sewer grade or direction. Maximum spacing shall be 500 feet for sewers eighteen inches (18") in diameter and larger and 400 feet for sewers sixteen inches (16") in diameter and smaller.
- 4.3 For all industrial connections and other connections deemed necessary by the District, a manhole shall be constructed at the connection of the building sewer and the sanitary sewer service. The manhole shall be located not less than three feet (3'), nor more than five feet (5') from the exterior wall of the building foundation. Said manhole shall be for the purpose of inspection, sampling, metering and service or other uses deemed necessary by the District in order to carry out its duties.
- 4.4 Pipe connections to the manholes shall be made using cast in place flexible watertight connectors in accordance with A.S.T.M. C-923. The annular space between the pipe and the interior wall surface, the space between the pipe and flow channel and all manhole section lift holes shall be plugged watertight with an approved non-shrink grout to provide a flush smooth surface.
- 4.5 When a new manhole is approved to be constructed on a District interceptor (30 inches in diameter or less only) only Cascade brand (CR style), or approved equal, stainless steel repair clamps shall be required. Only repair clamps conforming to ANSI/NSF-61 shall be allowed. This work shall be inspected by the District.
- 4.6 Joints of all manhole components, including cast iron frame, adjusting rings, cone and barrel sections shall be sealed watertight with a minimum of two (2) three-quarter inch (3/4") wide

strips of butyl rope joint sealant meeting the requirements of A.S.T.M. C-990. Butyl rope joint sealant shall be CONSEAL™ CS-202 as manufactured by Concrete Sealants, Inc., EZ-STIK as manufactured by Press-Seal Gasket Corporation, or approved equal. The inside joints of manhole sections, adjusting rings and cast iron frame shall not be required to be mortared.

- 4.7 Each manhole cone and barrel section joint shall also be externally sealed with Type II external sealing bands meeting the requirements of A.S.T.M. C-877. External seals shall be a nine inch (9") wide strip of MAC WRAP with two (2) five-eighths inch (5/8") stainless steel straps as manufactured by Mar-Mac Construction Products Co., Inc., CretexWrap External Joint Seal as manufactured by Cretex Specialty Products, or approved equal.
- 4.8 All manhole adjustment of casting frames shall be made with reinforced precast concrete adjusting rings, having a minimum thickness of two inches (2"), in the manner as set forth on the detail sheet of the Plans. No more than two (2) adjusting rings for a total height of eight inches (8") will be permitted.
- 4.9 The outside joints of each manhole chimney (including cast iron frame, all adjusting rings and top of manhole structure) shall also be externally sealed. External chimney seals shall be INFI-SHIELD® as manufactured by Sealing Systems, Inc., WRAPID-SEAL™ as manufactured by Canusa-CPS, INTERNAL/EXTERNAL ADAPTOR SEAL as manufactured by Adaptor, Inc., Cretex External Manhole Chimney Seal as manufactured by Cretex Specialty Products, or approved equal with a vertical lap and horizontal lap as per the manufacturer.
- 4.10 Each manhole shall be furnished with a cast iron frame and heavy duty cover having a minimum total weight of three hundred and sixty pounds (360 lbs.). Manhole frames and covers shall be at such elevations and at such locations as to prevent surface water from entering. Frames and lids shall be R-1712 as manufactured by Neenah Foundry Company, 1050-Z as manufactured by East Jordan Iron Works, Inc., or approved equal. The cover shall be the concealed pickhole type with a machined bearing surface and watertight rubber gasket seal. Manhole frames and covers of all District owned sanitary manholes shall be a Bolt Down Cover providing a Watertite Assembly with 4 - 1/2" stainless steel hex cap bolts with flat washers. The word "SANITARY" shall be cast into the lid of all District owned sanitary manholes. Wording on lids of all other sanitary manholes shall be per the requirements of the municipal government having jurisdiction. All manholes shall be set to finished grade such that the sides of the frame and all adjusting rings are below grade. For those instances where this is not possible, frames shall be anchored to the manhole cone section per the manufacturer's recommendations.
- 4.11 Polypropylene coated steel reinforced manhole steps shall be furnished and installed as shown in the details included at the end of these specifications. Steps shall be PS1-PF as manufactured by M.A. Industries, Inc., or approved equal.
- 4.12 The inverts of all pipes entering a manhole shall be set so as to match the eighty percent (80%) flow line of the pipe leaving the manhole. For example: *An 8-inch diameter pipe is connected to a manhole with an existing 12-inch diameter outlet having an elevation of 100.00 feet. The 80% flow line of the 12-inch pipe is calculated to be 100.80 feet [100.00' + (1' dia. x 0.80)]. The invert of the 8-inch diameter pipe is then calculated to be 100.27 feet [100.80' - (0.67' dia. x 0.80)].* It is the intent of the District to minimize the use of drop manholes. In cases where the eighty percent (80%) flow lines cannot be met, the gradient and elevation of the pipes shall be

adjusted, as necessary, to facilitate a drop manhole with an external drop pipe precast in concrete, meeting the District requirements and the details included at the end of these specifications.

- 4.13 External grease traps shall be required for all food service establishments in accordance with these specifications and the details included at the end of these specifications. Grease traps shall be Proceptor™ fiberglass reinforced plastic grease interceptors as manufactured by Green Turtle Technologies, or approved equal. Grease traps shall be sized on a case by case basis with a minimum capacity of 1500 gallons. Any building use changes for food preparation use or restaurant use must install an external grease trap. Any multi-tenant building, where food service establishments may be proposed, a second sanitary service line for grease waste should be provided. This “grease line” is in addition to the domestic line and should be easy to locate to accommodate future connections.

SECTION 5: SANITARY SEWERS

- 5.1 Pipe and fittings used in sanitary sewer construction, unless otherwise specified and approved by the District, shall be of the following materials for the specified sizes and depths in Table 1. Pipe and fittings dated over one year old shall not be permitted for use.
- a. Plastic sewer main (PSM) polyvinyl chloride (PVC) sewer pipe and fittings (A.S.T.M. – SDR series), conforming to A.S.T.M. D-1784, D-3034 for SDR 26, D-3212, F-412 and F-477.
 - b. Iron pipe sized (IPS) polyvinyl chloride (PVC) pressure rated pipe and fittings (A.S.T.M. – SDR series), conforming to A.S.T.M. D-1784, D-2241, D-3139, F-412 and F-477.
 - c. Ductile iron sized (DIS) polyvinyl chloride (PVC) pressure rated pipe and fittings (A.W.W.A. – DR series), conforming to A.W.W.A. C-900, C-905 and A.S.T.M. D-1784, D-2241, D-3139, F-412 and F-477.
 - d. Ductile iron pipe (DIP) (for pumping stations and force mains only), Class 52, conforming to A.N.S.I. A-21.5, A-21.11, A-21.50 and A-21.51 (A.W.W.A. C-105, C-111, C-150 and C-151) lined with Protecto 401 ceramic epoxy, as manufactured by Induron Coatings, Inc., or approved equal and installed in an eight mil (8 mil) polyethylene encasement.
 - e. Glass-Fiber-Reinforced Polymer pipe (GFRP) conforming to A.S.T.M. D-3754, D-4161, D-3517, F-477, A.W.W.A. C-950 and A.W.W.A. Fiberglass Pipe Design Manual M-45. Pipe shall be Pressure Class 50.

TABLE 1 - PIPE/FITTINGS					
Type	Depth of Cover	Pipe Diameter	Min. Thickness	National Standards	Min. Pipe Stiffness
PSM PVC	0'-15'	6"-12"	SDR-26	A.S.T.M. D-3034	115
IPS PVC	0'-15'	6"-12"	SDR-26	A.S.T.M. D-2241	115
IPS PVC	0'-20'	6"-12"	SDR-21	A.S.T.M. D-2241	224
DIS PVC	0'-30'	6"-12"	DR-18	A.W.W.A. C-900	364
DIS PVC	0'-30'	14"-24"	DR-18	A.W.W.A. C-905	364
DIS PVC	0'-30'	30"-36"	DR-25	A.W.W.A. C-905	129
DIS PVC	0'-30'	42"-48"	DR-32.5	A.W.W.A. C-905	57
DIP	0'-30'	6"-48"	CL. 52	A.W.W.A. C-151	N.A.
GFRP	0'-30'	30"-36"	CL. 50	A.W.W.A. C-950	129
GFRP	0'-30'	42"-48"	CL. 50	A.W.W.A. C-950	72

- 5.2 All PVC plastic pipe and fittings shall have a cell classification of 12454-B or C, as defined in A.S.T.M. D-1784, and shall have a minimum pipe stiffness as shown in Table 1. The required Standard Dimension Ratio (SDR) or Dimension Ratio (DR) for PVC pipe and fittings shall be selected based upon the depth of cover (see Table 1).
- 5.3 PVC pipe fittings conforming to A.S.T.M. D-3034 and D-2241 shall have a minimum wall thickness of SDR-26 plastic pipe as defined in Table 1 of A.S.T.M. D-3034 or Table 2 of A.S.T.M. D-2241, and at least the same thickness of the main sewer line that they are installed in. Fittings in sizes eight inches (8") and smaller shall be molded in one piece with elastomeric joints and minimum socket depths as specified in each respective section. Fittings that are ten inches (10") and larger shall be molded or fabricated with elastomeric joints in accordance with A.S.T.M. standards D-1784 and D-3139 incorporating the manufacturer's standard pipe bells and gaskets. Gaskets shall conform to A.S.T.M. F-477 and F-913.
- 5.4 PVC joints shall meet the requirements of A.S.T.M. D-3212 or D-3139, whichever is applicable. Fittings with a gasket retention race formed by heating or crimping are not permitted throughout the District. Solvent cemented (welded) joints are not permitted, except when used in the fabrication of fittings prior to installation.
- 5.5 PVC pipe shall be constructed in full compliance with the A.S.T.M. Standard Specification D-2321 "Underground Installation of Flexible Thermoplastic Sewer Pipe". Initial backfilling and bedding materials shall be Class IA crushed stone or crushed gravel, as outlined in A.S.T.M. D-2321 and shall have an I.D.O.T. Gradation of CA-7, unless otherwise specified by the District. Materials shall meet a plasticity index of zero to four percent (0% to 4%) as determined by the method given in A.A.S.H.T.O. T-90 and shall have a specific gravity (dry) of greater than 2.45.

- 5.6 DIP shall be used for sanitary sewer pumping station piping and force mains only. All DIP fittings deflecting eleven and one-quarter degrees ($11\frac{1}{4}^\circ$) or greater shall be thrust protected to prevent movement of lines under pressure. The blocking shall be Class SI concrete, a minimum of 12 inches thick, placed between solid ground and the fitting to be anchored and shall be so placed that pipe and fittings remain accessible for repairs. Upon completion of the newly laid force main, the main shall be flushed at a rate of not less than two and one-half feet per second (2.5 fps), to remove any foreign matter that might be in the main. Deflection tests, air tests, or T.V. tests will not be required on DIP sanitary sewer force mains. After the pipe has been laid and partially backfilled, the newly laid pipe shall be temporarily plugged and subjected to hydrostatic tests in accordance with Section 13 of A.W.W.A. Specification C-600. The duration of the test shall be a minimum of one hour at one-hundred and fifty pounds per square inch (150 psi). Upon completion of the pressure test, a leakage test shall be conducted. The duration of the test shall be a minimum of one hour at one-hundred and fifty pounds per square inch (150 psi) pressure. The allowable leakage shall be determined by the formula:

$$L = \frac{(S * D * \sqrt{P})}{133,200}$$

Where L = Allowable leakage in gallons per hour
 S = Length of pipe line tested in feet.
 D = Nominal Diameter of pipe in inches
 P = Average test pressure in pounds per square inch.

Leakage is defined as the quantity of water to be supplied in the section under test which is necessary to maintain the test pressure after the pipe has been filled with water and the air expelled.

- 5.7 GFRP pipe shall be installed in accordance with the manufacturer's recommendations. NSF potable water rating and factory hydrotesting will be required, unless specified otherwise. Joints shall be fiberglass sleeve couplings sealed watertight using elastomeric sealing gaskets made of EDPM rubber compound meeting the performance requirements of A.S.T.M. D-4161. The Hoop-Tensile strength of the pipe shall meet the requirements of A.S.T.M. D-3517 for pressure Class 50. Glass reinforcement fibers used to manufacture the pipe and fittings shall be of the highest quality commercial grade of glass filaments suitably treated with binder and sizing compatible with impregnating resins. The manufacturer shall be required to provide the necessary coupling on one end of the pipe as part of the manufacturing process. Couplings shall be manufactured with a stop inside the coupling so as to assure that the coupling is centered over the joint.
- 5.8 The District reserves the right to approve all fittings and pipe on a case by case basis.
- 5.9 Pipe size shall be a minimum of eight inches (8") for sanitary sewer mains and six inches (6") for sanitary sewer services. All sanitary sewer mains and services shall be installed with a minimum of five feet (5') of cover over the top of pipe. Curvilinear sewers are not permitted.
- 5.10 The pipe shall be laid so that it will be uniformly supported for its entire length. No blocking of any kind shall be used to adjust the pipe to grade except when embedment concrete is used. Bedding shall be a minimum of six inches (6") in depth. The bedding material shall be placed

and worked in around the pipe by hand to provide uniform support, the around and over the crown of the pipe by a minimum thickness of twelve inches (12”) for flexible pipe, and four inches (4”) for rigid pipe. The contractor shall be required to install PVC pipe in such a manner that the diametric deflection of the PVC pipe shall not exceed five percent (5%) and the materials surrounding the pipe shall be compacted to the required standard proctor densities outlined in A.S.T.M. D-2321. The contractor shall be required to install GFRP pipe in such a manner that the diametric deflection of the GRRP pipe shall not exceed 3% of the original pipe diameter within the first 24 hours after installation, backfilling and removal of the dewatering system. The diametric deflection of the GFRP pipe shall also not exceed 4% of the original pipe diameter after 30 days of the completed installation. All pipes exceeding the above deflection limits shall be corrected to the satisfaction of the District and/or municipal government having jurisdiction.

5.11 Non-shear Flex-Seal® adjustable repair couplings, as manufactured by Mission Rubber Company, or approved equal shall be used when joining pipes made of dissimilar material or where no “hub” end exists. For all new construction, PVC transition fittings shall be used when joining PVC pipes of dissimilar material specifications (differing outside diameters) such as with storm sewer, water main or structure crossings where no “hub” end exists. Repairs during construction are not permitted. If a pipe is damaged during construction, the damaged pipe shall be removed to the closest downstream joint and relaid.

5.12 The District reserves the right to require a contractor to submit certified copies of all reports of tests conducted by an independent laboratory before installation of the pipe. Tests for PVC pipe shall be conducted in accordance with standard method of test for “External Loading Properties of Plastic Pipe by Parallel-Plate Loading”.

5.13 Sanitary Services:

a. All private sanitary sewer service connections shall be granted a District permit prior to performing the work. The installation of the sanitary service shall be inspected by the District for services connected to the District’s interceptors and by the City of Yorkville for services connected to the City’s sewer system. For services connected to the District’s interceptors, the contractor shall notify the District a minimum of 24 hours prior to performing the work.

b. For sanitary sewers serving buildings with basements, the sewer shall be a minimum of ten feet (10’) below the top of foundation or the building shall be constructed with overhead plumbing.

c. Service connections to new mains shall be with a tee/wye fitting with a six inch (6”) branch. All fittings, riser pipe, and service line piping shall be of the same material as the main sewer.

d. When connecting to an existing sanitary main when a tee or wye is not provided, an INSERTA TEE® fitting, as manufactured by Inserta Fittings Co., must be installed. The minimum distance between fittings is four feet (4’) center to center. Disruption of any existing sanitary main by breaking or cutting in a tee/wye is prohibited unless the existing main is cracked or broken at the point of connection with the INSERTA TEE®. A representative of the District or

municipal government having jurisdiction shall determine the existing main repair or replacement required on a case by case basis prior to connection, construction or installation.

- e. All newly constructed sanitary service lines must be secured with a factory-made plug to prevent unnecessary infiltration, inflow, dirt or debris from entering the downstream sewer system. Under no circumstances shall the sanitary sewer system be used to drain newly excavated basements.
- f. Cast iron clean-out covers conforming to ASTM class 25 or higher shall be required for all sanitary sewer services located in any paved surface. Locations of said covers shall be constructed per the approved engineering plan. Cast iron clean-out covers shall meet the requirements of these specifications and the detail included at the end of these specifications.

SECTION 6: TESTING AND APPROVAL

- 6.1 All newly constructed sanitary sewers shall be cleaned of debris and flushed clean, as necessary, prior to conducting the required tests. All debris shall be removed from the sanitary sewer system. Under no circumstances shall debris be flushed into the downstream sanitary sewer system.
- 6.2 All newly constructed sanitary sewers are required to be tested for deflection and watertightness (air test only). Testing shall be performed in accordance with the “Standard Specifications for Water and Sewer Main Construction in Illinois”. Results of all testing shall be sent to the District within thirty (30) days of completion of said testing.
- 6.3 All newly constructed sanitary sewer mains, and the interior of each new lateral from the point of connection with the main, shall be subject to closed circuit television inspection. The televising shall be performed from manhole to manhole with each lateral referenced by station from the upstream manhole. The television camera used for the inspection shall be one specifically designed and constructed for such inspection and shall be suitable to allow a clear picture of the entire periphery of the pipe. Picture quality and definition shall be to the satisfaction of the District and if unsatisfactory, shall be redone.

The inspection will be done one manhole section at a time under no flow conditions. Each manhole shall be identified by the manhole numbers shown on the approved engineering plans. The camera shall be moved through the line at a uniform rate, stopping when necessary to insure proper documentation of the sewer's condition. Manual winches, power winches, TV cable and powered rewinds or other devices that do not obstruct the camera view or interfere with proper documentation of the sewer conditions may be used to move the camera through the sewer line. One (1) copy of the complete videotapes and written logs shall be sent to the District within thirty (30) days of completion of said testing.

- 6.4 Each new manhole shall be vacuum tested after final surface restoration has been completed. The manhole frame and adjusting rings shall be in place when testing. No grout will be placed in the horizontal joints before testing. All pipes entering the manhole shall be temporarily plugged, taking care to securely brace the plugs from being drawn into the manhole.

All work of vacuum testing shall be performed in accordance with A.S.T.M. C-1244 and the following requirements. A vacuum of ten inches (10") of mercury (Hg) shall be drawn and the vacuum pump shut off. With the valves closed, the time shall be measured for the vacuum to drop to nine inches (9") of mercury (Hg). The manhole shall pass if the vacuum does not drop below nine inches (9") of mercury (Hg) for the following time periods for each size of manhole:

48" Diameter - 60 seconds
60" Diameter - 75 seconds
72" Diameter - 90 seconds

Should the manhole fail the vacuum test, all leaks shall be sealed with an approved non-shrink grout and the test repeated until a satisfactory test is obtained. Results of all testing shall be sent to the District within thirty (30) days of completion of said testing.

- 6.5 All defects in material and/or workmanship noted during inspection shall be repaired by the contractor, to the satisfaction of the District, before release is granted and the sewer accepted. Upon completion of the repairs, the above tests shall be repeated until a satisfactory test is obtained.
- 6.6 Within sixty (60) days after final inspection and approval by the District and/or the appropriate municipal government, a set of "Record Drawings" of the completed project shall be furnished to the District. Record drawings shall indicate any deviations from the approved plans based on the completed improvements as constructed. Conditions to be noted shall include, but not be limited to deviations in size, slope, materials, invert and rim elevations and horizontal locations of the sanitary pipe, connections, manholes or other appurtenant structures. Information relative to other existing features or as constructed which may impact the operation or maintenance of the sanitary sewer system shall also be noted on the record drawings. These shall include, but not be limited to, existing or proposed utilities and appurtenances, overland flow routes, structures, pavement or buildings. Record drawings shall be prepared under the direction of, and certified by, a Professional Engineer registered in the State of Illinois.

SECTION 7:

STANDARD DETAILS

STD-001	Typical Trench Detail for Sanitary Services and Mains
STD-002	Service Connection
STD-003	Typical Riser for Service Lateral
STD-004	Pipe to Manhole Connector
STD-005	Type "A" Manhole
STD-006	Type "B" Manhole
STD-007	Drop Manhole / New Construction
STD-008	Drop Manhole to Existing Manhole
STD-009	Sanitary Sewer at Storm Sewer Crossing
STD-010	Sanitary Sewer Service and Potable Water Service Separation
STD-011	Grease Trap (1500 gallon capacity)