

SANITARY SEWER, STORM SEWER, WATERMAIN (CONTD.)

B. TESTING:

- SUBJECT THE FORCE MAINS TO THE FOLLOWING HYDROSTATIC PRESSURE:
 - NORMAL OPERATING PRESSURE OF 20 PSIG OR GREATER: 150 PSI
 - NORMAL OPERATING PRESSURE OF LESS THAN 20 PSIG: 50 PSIG
 - AIR AND GAS PIPING: PNEUMATIC PRESSURE OF 15 PSIG.
 - HOLD THE TEST PRESSURE FOR A DURATION OF TWO HOURS WITHOUT PRESSURE LOSS OR FURTHER PRESSURE APPLICATION.
 - REPLACE OR REMAKE JOINTS SHOWING VISIBLE LEAKAGE.
 - REMOVE CRACKED PIPE, DEFECTIVE PIPE, AND CRACKED OR DEFECTIVE JOINTS, FITTINGS, AND VALVES. REPLACE WITH SOUTH MATERIAL AND REPEAT THE TEST UNTIL RESULTS ARE SATISFACTORY.
 - MAKE REPAIR AND REPLACEMENT WITHOUT ADDITIONAL COST TO THE OWNER.
- C. LEAKAGE TEST:**
- CONDUCT A METERED LEAKAGE TEST AFTER THE PRESSURE TEST HAS BEEN SATISFACTORY COMPLETED.
 - DURATION OF EACH LEAKAGE TEST: AT LEAST 24 HOURS.
 - DURING THE TEST, SUBJECT FORCE MAIN TO A WATER PRESSURE OF 150 PSI.
 - MAXIMUM ALLOWABLE LEAKAGE: ONE GALLON PER INCH OF PIPE DIAMETER PER 1,000 FEET OF PIPE PER 24 HOURS AS RECORDED BY A METER APPROVED BY THE ENGINEER.
 - SHOULD ANY TEST OF PIPE DISCLOSE LEAKAGE GREATER THAN THE MAXIMUM ALLOWABLE AMOUNT, LOCATE AND REPAIR THE DEFECTIVE JOINT OR JOINTS AND THEN REPEAT THE 24-HOUR METERED LEAKAGE TEST UNTIL THE LEAKAGE IS WITHIN THE SPECIFIC ALLOWANCE AND AT NO ADDITIONAL COST TO THE OWNER.

MATERIALS

PVC (POLYVINYL CHLORIDE) PLASTIC PIPE, ALL PIPE AND FITTINGS SHALL CONFORM TO TYPE PSM IN ACCORDANCE WITH ASTM D-3034 OR ASTM D-2241 FOR SIZES SIX (6) THROUGH FIFTEEN (15) INCHES. THE STANDARD DIMENSION RATIO (SDR) FOR THE PIPE SHALL BE 26 AS A MINIMUM AND SHALL BE DEPENDENT UPON THE DEPTH OF COVER. FOR PIPE DIAMETERS EIGHTEEN (18) TO TWENTYSEVEN (27) INCHES, PIPE AND FITTINGS SHALL CONFORM TO ASTM D2241 OR AWWA C905. ALL PVC PLASTIC PIPE SHALL HAVE A CELL CLASSIFICATION OF 12454-B.

FITTINGS

PIPE FITTINGS SHALL CONFORM TO ASTM D-3034 OR ASTM D-2241 AND SHALL MEET THE REQUIREMENTS OF ASTM STANDARD D-3212 OR D-3159, WHICHEVER IS APPLICABLE. SOLVENT JOINTS ARE NOT PERMITTED.

PVC SEWER FITTINGS CONFORMING TO ASTM D-3034 SHALL HAVE A MINIMUM WALL THICKNESS OF SDR 35. FITTINGS IN SIZES THROUGH 10" SHALL BE MOLDED IN ONE PIECE WITH ELASTOMERIC JOINTS AND MINIMUM SOCKET DEPTHS. FITTINGS 12" AND LARGER SHALL BE MOLDED OR FABRICATED WITH MANUFACTURED STANDARD PIPE BELLS AND GASKETS. GASKETS SHALL HAVE A MINIMUM CROSS SECTIONAL AREA OF 0.20 SQ. IN. AND CONFORM TO ASTM F-477 SPECIFICATION.

INTERNAL DIAMETER

PIPE SHALL BE CONSTRUCTED SO THAT THE INTERNAL DIAMETER DOES NOT DECREASE BY MORE THAN 5 PERCENT, IN ORDER TO PROVIDE THE COMPLETE HYDRAULIC CARRYING CAPACITY, AND TO OBTAIN THE JOINT PERFORMANCE AT 5 PERCENT MAXIMUM DIAMETRIC DEFLECTION. IF THE DISTRICT FINDS ANY LENGTHS OF PIPELINE DEFLECTED GREATER THAN 5 PERCENT, THE CONTRACTOR SHALL BE REQUIRED TO REMOVE AND REPLACE THOSE SECTIONS OF PIPE AT HIS SOLE EXPENSE.

PIPE INSTALLATION AND FIELD TESTING

PIPE SHALL BE CONSTRUCTED IN FULL COMPLIANCE WITH THE ASTM STANDARD SPECIFICATION D-2321 "UNDERGROUND INSTALLATION OF FLEXIBLE THERMOPLASTIC SEWER PIPE".

INITIAL BACKFILLING AND BEDDING MATERIALS SHALL BE CLASS I, AS OUTLINED IN ASTM D-2321 AND SHALL HAVE AN IDOT GRADATION OF CA-7.

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 FOUR INCHES IN DEPTH. THE BEDDING MATERIAL SHALL BE PLACED AND COMPACTED AROUND AND OVER THE CROWN OF THE PIPE BY A MINIMUM THICKNESS OF TWELVE (12) INCHES. THE CONTRACTOR SHALL BE REQUIRED TO INSTALL THE PIPE IN SUCH A MANNER THAT THE DIAMETRIC DEFLECTION OF THE PIPE SHALL NOT EXCEED 5 PERCENT AND THE MATERIALS SURROUNDING THE PIPE SHALL BE COMPACTED TO THE REQUIRED STANDARD PROCTOR DENSITIES OUTLINED IN D-2321.

THE PROJECT IS TO BE CONSTRUCTED UNDER THE FOLLOWING PERMITS:
 IEPA WATER POLLUTION CONTROL PERMIT NO. _____ DATED _____
 IEPA PUBLIC WATER SUPPLIES CONTROL PERMIT NO. _____ DATED _____

SANITARY SEWER, STORM SEWER, WATERMAIN (CONTD.)

FINAL ACCEPTANCE

BEFORE FINAL ACCEPTANCE, THE SANITARY SEWERS SHALL BE TESTED IN ACCORDANCE WITH SECTION 31-1.11 OF THE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS. SPECIFICALLY, ALL PIPELINES CONSTRUCTED OF FLEXIBLE MATERIALS SHALL BE SUBJECTED TO AN AIR EXFILTRATION TEST, TELEVISION TEST AND DEFLECTION TEST. THE DEFLECTION TEST SHALL BE PERFORMED NO SOONER THAN THIRTY (30) DAYS OF COMPLETION OF THE BACKFILLING OPERATION AND SHALL CONSIST OF MEASURING THE PIPE FOR VERTICAL RING DEFLECTION. MAXIMUM RING DEFLECTION OF THE PIPELINE UNDER LOAD SHALL BE LIMITED TO 5 PERCENT OF THE VERTICAL INTERNAL PIPE DIAMETER. ALL PIPE EXCEEDING THIS DEFLECTION SHALL BE CONSIDERED TO HAVE REACHED THE LIMIT OF ITS SERVICEABILITY AND SHALL BE RELAID OR REPLACED BY THE CONTRACTOR AT HIS SOLE EXPENSE.

THE COST OF ALL DEFLECTION TESTING SHALL BE BORNE BY THE CONTRACTOR AND SHALL BE ACCOMPLISHED BY PULLING A MANDREL, SPHERE, OR PIN-TYPE "GO/NO-GO" DEVICE THROUGH THE PIPELINE. THE DIAMETER OF THE MANDREL, SPHERE, OR "GO/NO-GO" DEVICE SHALL BE 95 PERCENT OF THE UNDEFLECTED INSIDE DIAMETER OF THE FLEXIBLE PIPE.

**FOX RIVER WATER RECLAMATION DISTRICT
MINIMUM REQUIREMENTS FOR MANHOLE STRUCTURES**

- SANITARY MANHOLE LID MUST HAVE CONCEALED PICK HOLES AND HAVE THE WORD "SANITARY" STAMPED IN THE COVER WITH AN INTACT RUBBER GASKET SEAL.
- THE FRAME LIP SHALL BE CLEANED OF ALL MUD AND DEBRIS TO PROVIDE A WATERTIGHT SEAL BETWEEN THE FRAME AND THE MANHOLE COVER GASKET.
- THERE MUST BE EZ-STIK BETWEEN THE FRAME AND ADJUSTING RINGS AND BETWEEN THE ADJUSTING RINGS AND THE CONE SECTION.
- THE AREAS BETWEEN THE ADJUSTING RINGS AND THE MANHOLE FRAMES MUST NOT BE TUCKPOINTED WITH MORTAR.
- ALL STEPS MUST BE INSTALLED, ALIGNED AND CLEAN.
- THE BARREL SECTION JOINTS MUST BE TUCKPOINTED WITH HYDRAULIC CEMENT OR MORTAR WITH A BRUSH FINISH.
- ALL PINHOLES MUST BE MORTARED WITH A BRUSH FINISH TO PROVIDE A WATERTIGHT SEAL.
- THE UPSTREAM AND DOWNSTREAM PIPE CAVITIES MUST BE FILLED WITH MORTAR AND SMOOTHED WITH A BRUSH FINISH.
- THE UPSTREAM AND DOWNSTREAM FLOW LINES (INVERTS) SHALL HAVE A SMOOTH TRANSITION FROM THE PIPE TO THE MANHOLE INVERT.
- ALL MANHOLE STRUCTURES SHALL BE FREE OF ANY TYPE OF INFILTRATION (WATER LEAKING INTO THE STRUCTURE).
- IF THERE IS AN INTERNAL DROP IN THE STRUCTURE THERE MUST BE A SMOOTH TRANSITION FROM THE PIPE TO THE INVERT (I.E. CHANNEL THE FLOW FROM THE PIPE TO THE MANHOLE INVERT).
- ALL MANHOLES SHALL BE CLEANED OF ANY ACCUMULATION OF SILT, DEBRIS, OR FOREIGN MATTER OF ANY KIND, AND SHALL BE FREE FROM SUCH ACCUMULATIONS AT THE TIME OF FINAL INSPECTION.

COMBINATION AIR VALVE SPECIFICATIONS

SEWAGE COMBINATION AIR VALVE SHALL ALLOW LARGE VOLUMES OF AIR TO ESCAPE OR ENTER THROUGH THE LARGER DIAMETER ORIFICE WHEN FILLING OR DRAINING A PIPELINE.

THEN THE PIPELINE IS FILLED AND PRESSURIZED, THE LARGE AIR/VACUUM ORIFICE SHALL STAY CLOSED, BUT THE SMALLER DIAMETER AIR RELEASE ORIFICE SHALL REMAIN OPERATIVE AND OPEN TO ALLOW SMALL POCKETS OF AIR ACCUMULATION TO ESCAPE AUTOMATICALLY AND INDEPENDENTLY OF THE LARGE ORIFICE.

THE LARGE AIR/VACUUM ORIFICE SHALL SHUT OFF WHEN THE FREE FLOATING-CENTER GUIDED PLUG IS RAISED INTO THE ORIFICE BY THE LIFTING FORCE OF THE BOTTOM FLOAT. THE LARGE ORIFICE SHUT-OFF SHALL BE WITHOUT SPILLING.

THE BUNA-N SEAT MUST BE FASTENED TO THE VALVE COVER, WITHOUT DISTORTION, FOR DRIP-TIGHT SHUT-OFF.

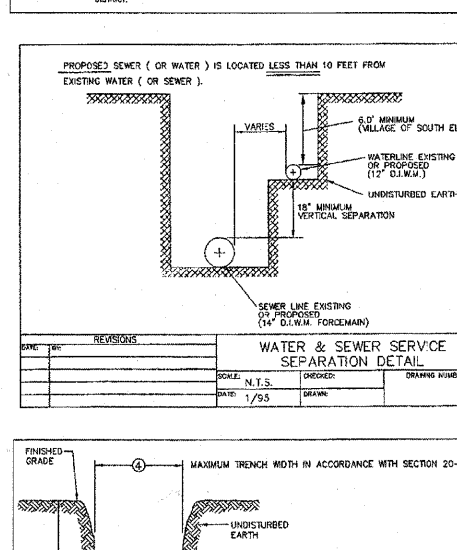
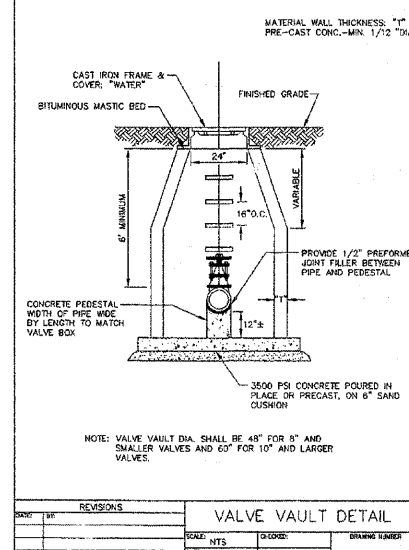
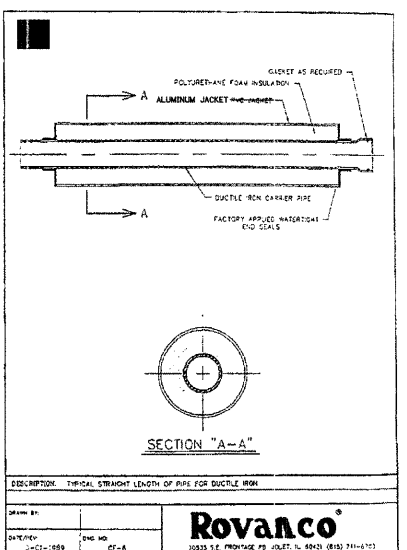
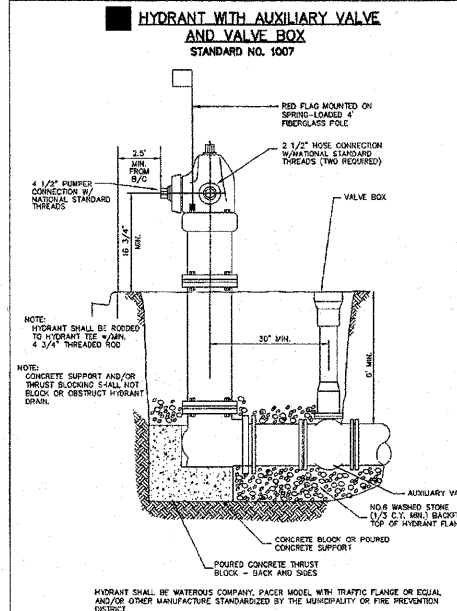
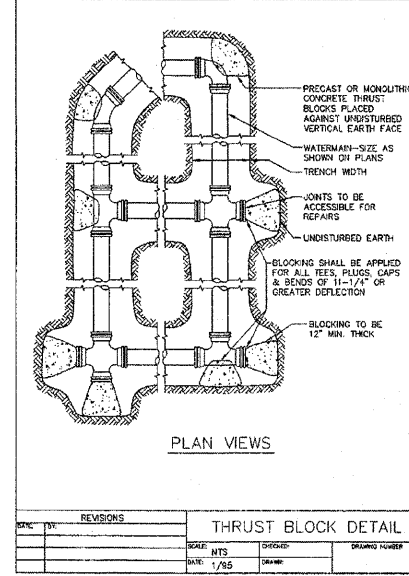
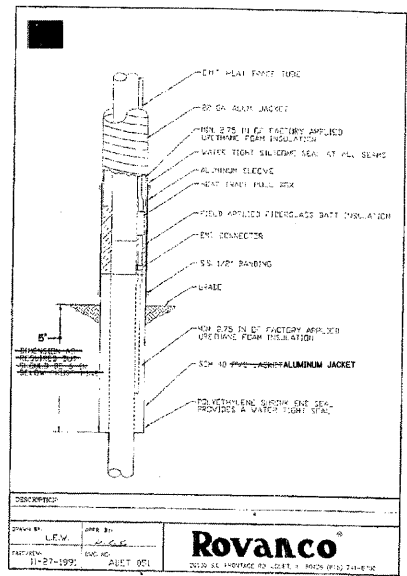
THE VALVE INLET SHALL HAVE A 2-INCH DIAMETER INLET AND A 1-INCH DIAMETER OUTLET.

THE VALVE MANUFACTURER SHALL FURNISH PROFESSIONALLY PRINTED INSTALLATION AND MAINTENANCE INSTRUCTION MANUALS WITH EACH VALVE.

MATERIALS OF CONSTRUCTION SHALL BE CERTIFIED TO CONFORM TO FOLLOWING A.S.T.M. SPECIFICATIONS:

BODY & COVER	CAST IRON	ASTM A126 GR.B
FLOAT	STAINLESS STEEL	ASTM A240 T304
STEM	STAINLESS STEEL	SERIES T300
NEEDLE AND SEAT	BUNA-N	NITRILE RUBBER
PLUG	BRASS	ASTM B124
LEVERAGE FRAME	DELTRIN	ASTM D4181
EXTERIOR PAINTING	UNIVERSAL METAL PRIMER	FDA APPROVED FOR POTABLE WATER

THE VALVE SHALL BE MODEL VM-801ABW AS MANUFACTURED BY VAL-MATIC.



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DESIGNED - PK	REVISED -
DRAWN - PK	REVISED -
CHECKED - RTM	REVISED -
DATE - 3/25/2011	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

DRAINAGE AND UTILITIES GENERAL NOTES AND DETAILS

SHEET NO. 2 OF 3 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
361	06-00214-27-BR	KANE	87	29
CONTRACT NO. 63595				
FED. ROAD DIST. NO. 1 ILLINOIS FED. AID PROJECT				