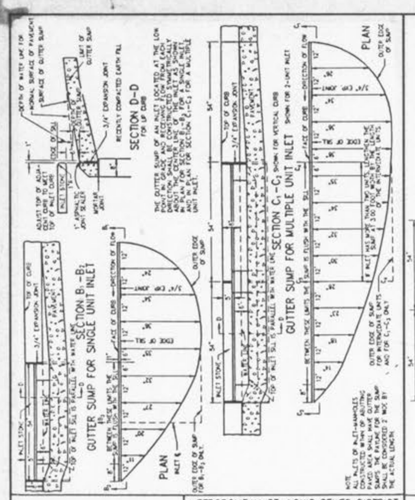
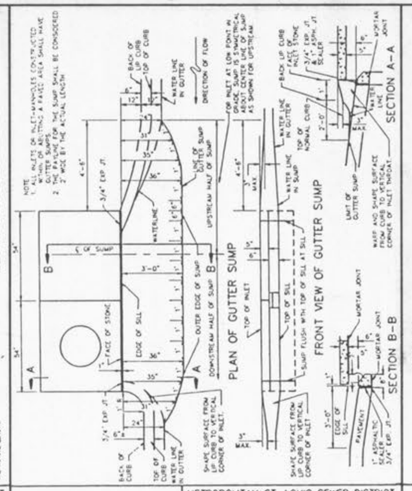
CONSTRUCTION DETAILS



GUTTER SUMPS FOR VERTICAL CURB

METROPOLITAN ST. LOUIS SEWER DISTRICT
Standard Details of Sewer Construction

Dr. W.S.H. Ch. J.C.K.	1992	SHEET 55



GUTTER SUMP FOR LIP CURB

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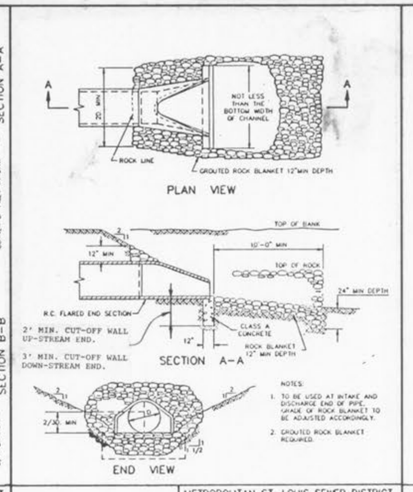
Standard Details of Sewer Construction

Dr. R.G.W. Ch. J.C.K.	1992	SHEET 56



FLARED END SECTION

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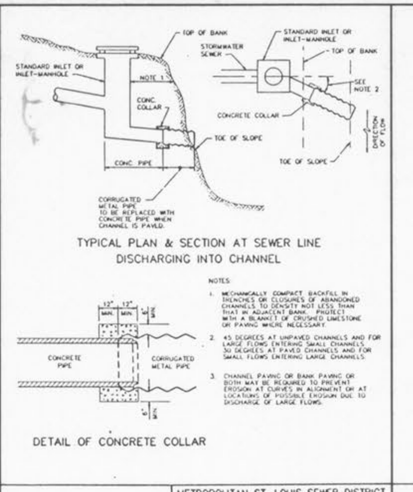
Standard Details of Sewer Construction

Dr. W.S.H. Ch. J.C.K.	1992	SHEET 57



STORMWATER CHANNELS

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Standard Details of Sewer Construction

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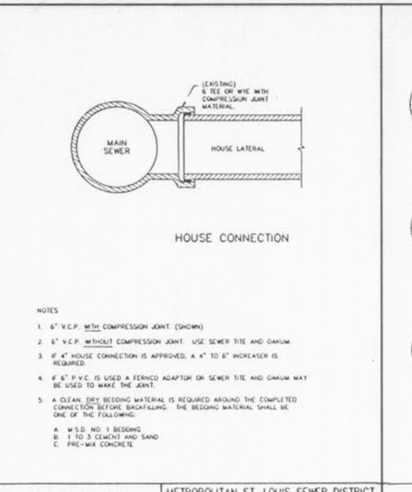


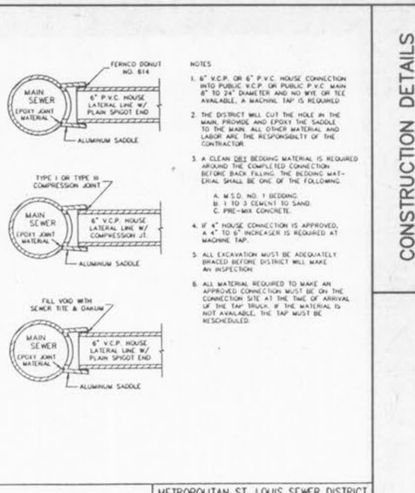
NOTES

1. 6" V.C.P. WITH COMPRESSION JOINT. (SHOWN)
2. 6" V.C.P. WITHOUT COMPRESSION JOINT. USE SEWER TITE AND OAKUM.
3. IF 4" HOUSE CONNECTION IS APPROVED, A 4" TO 6" INCREASER IS REQUIRED.
4. IF 6" P.V.C. IS USED A FERNCO ADAPTOR OR SEWER TITE AND OAKUM MAY BE USED TO MAKE THE JOINT.
5. A CLEAN, DRY BEDDING MATERIAL IS REQUIRED AROUND THE COMPLETED CONNECTION BEFORE BACKFILLING. THE BEDDING MATERIAL SHALL BE ONE OF THE FOLLOWING:
   A. M.S.D. NO. 1 BEDDING
   B. 1 TO 3 CEMENT AND SAND
   C. PRE-MIX CONCRETE.

HOUSE CONNECTION TO EXISTING TEE OR WYE

METROPOLITAN ST. LOUIS SEWER DISTRICT
Standard Details of Sewer Construction

Dr. D.A.B. Ch. J.C.K.	1992	SHEET 59



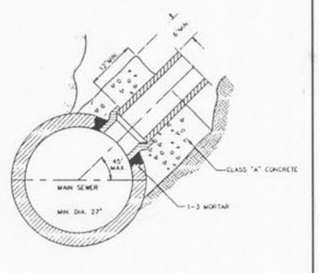
NOTES

1. 6" V.C.P. OR 6" P.V.C. HOUSE CONNECTION INTO PUBLIC V.C.P. OR PUBLIC P.V.C. MAIN 8" TO 24" DIAMETER AND NO WYE OR TEE AVAILABLE. A MACHINE TAP IS REQUIRED.
2. THE DISTRICT WILL CUT THE HOLE IN THE MAIN, PROVIDE AND EPOXY THE SADDLE TO THE MAIN. ALL OTHER MATERIAL AND LABOR ARE THE RESPONSIBILITY OF THE CONTRACTOR.
3. A CLEAN DRY BEDDING MATERIAL IS REQUIRED AROUND THE COMPLETED CONNECTION BEFORE BACK FILLING. THE BEDDING MATERIAL SHALL BE ONE OF THE FOLLOWING:
   A. M.S.D. NO. 1 BEDDING
   B. 1 TO 3 CEMENT TO SAND
   C. PRE-MIX CONCRETE.
4. IF 4" HOUSE CONNECTION IS APPROVED, A 4" TO 6" INCREASER IS REQUIRED AT MACHINE TAP.
5. ALL EXCAVATION MUST BE ADEQUATELY BRACED BEFORE DISTRICT WILL MAKE AN INSPECTION.
6. ALL MATERIAL REQUIRED TO MAKE AN APPROVED CONNECTION MUST BE ON THE CONNECTION SITE AT THE TIME OF ARRIVAL OF THE TAP TRUCK. IF THE MATERIAL IS NOT AVAILABLE, THE TAP MUST BE RESCHEDULED.

MACHINE TAP

METROPOLITAN ST. LOUIS SEWER DISTRICT
Standard Details of Sewer Construction

Dr. W.S.H. Ch. J.C.K.	1992	SHEET 60



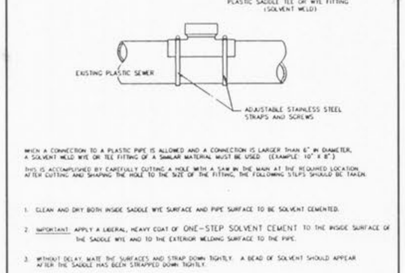
NOTES

1. THE OPENING SHALL BE CUT BY THE CONTRACTOR TO A SUFFICIENT SIZE TO PERMIT INSERTING A TEE SADDLE OR SHORT LENGTH OF PIPE AT THE REQUIRED ELEVATION AND ANGLE TO ALLOW AT LEAST TWO (2) INCHES SPACE AROUND THE PIPE. THIS SPACE WILL BE SOLIDLY FILLED WITH 1-3 CEMENT-SAND MORTAR AND THE NEW PIPE NEATLY TROWELED AND POINTED UP FLUSH WITH THE INSIDE OF THE MAIN SEWER.
2. IF THERE ARE REINFORCING BARS IN THE SEWER WALL, ONLY THOSE PREVENTING INSERTION OF THE PIPE MAY BE CUT. ALL OTHERS SHALL BE BENT INTO A CLASS "A" CONCRETE COLLAR AT THE JUNCTION OF THE CONNECTION PIPE AND THE MAIN SEWER.

HOUSE CONNECTIONS ALLOWED BY TEE SADDLE

METROPOLITAN ST. LOUIS SEWER DISTRICT
Standard Details of Sewer Construction

Dr. D.A.B. Ch. J.C.K.	1992	SHEET 61



WHEN A CONNECTION TO A PLASTIC PIPE IS ALLOWED AND A CONNECTION IS LARGER THAN 6" IN DIAMETER, A SOLVENT WELD WYE OR TEE FITTING OF A SIMILAR MATERIAL MUST BE USED. (EXAMPLE: 10" X 8").

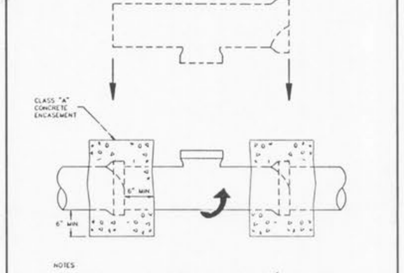
THIS IS ACCOMPLISHED BY CAREFULLY CUTTING A HOLE WITH A SAW IN THE MAIN AT THE REQUIRED LOCATION. AFTER CUTTING AND SHAPING THE HOLE TO THE SIZE OF THE FITTING, THE FOLLOWING STEPS SHOULD BE TAKEN.

1. CLEAN AND DRY BOTH INSIDE SADDLE WYE SURFACE AND PIPE SURFACE TO BE SOLVENT CEMENTED.
2. IMPORTANT: APPLY A LIBERAL, HEAVY COAT OF ONE-STEP SOLVENT CEMENT TO THE INSIDE SURFACE OF THE SADDLE WYE AND TO THE EXTERIOR WELDING SURFACE TO THE PIPE.
3. WITHOUT DELAY, WAITE THE SURFACES AND STRAP DOWN TIGHTLY. A BEAD OF SOLVENT SHOULD APPEAR AFTER THE SADDLE HAS BEEN STRAPPED DOWN TIGHTLY.
4. USING A RAG OR PAPER TOWEL, WIPE BEAD AND ANY EXCESS SOLVENT CEMENT OFF PIPE AND SADDLE.
5. ALLOW 30-60 MINUTES FOR SET-UP TIME BEFORE BACKFILLING. CURE TIME DEPENDS ON SIZE FIT OF MATERIALS BEING INSTALLED AND VARIOUS COLD SNAP CONDITIONS.
6. DISCARD OLD SOLVENT IF IT BECOME JELLED OR LUMPY.
7. A CLEAN, DRY BEDDING MATERIAL IS REQUIRED AROUND THE COMPLETED CONNECTION BEFORE BACKFILLING. THE BEDDING MATERIAL SHOULD BE ONE OF THE FOLLOWING:
   A. M.S.D. #1 BEDDING
   B. 1 TO 3 CEMENT TO SAND MIX
   C. "PRE-MIX" CONCRETE

8" (& LARGER) CONNECTION TO PLASTIC MAIN

METROPOLITAN ST. LOUIS SEWER DISTRICT
Standard Details of Sewer Construction

Dr. D.A.B. Ch. J.C.K.	1992	SHEET 62



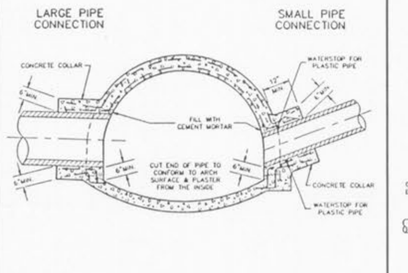
NOTES

1. WHEN A CONNECTION IS ALLOWED LARGER THAN 6" DIAMETER A SADDLE MAY BE USED IF THE I.D. OF THE CONNECTION PIPE IS NOT GREATER THAN ONE-HALF (1/2) OF THE I.D. OF THE MAIN SEWER. (EXAMPLE: 24" X 10").
2. IF THE I.D. OF THE CONNECTION PIPE IS GREATER THAN ONE-HALF (1/2) THE I.D. OF THE MAIN SEWER THE WYE OR TEE MUST BE "ROLLED IN". (EXAMPLE: 15" X 8").
3. THIS IS ACCOMPLISHED BY BREAKING AWAY AND REMOVING ONE SECTION OF PIPE. THE TOP HALF OF THE BELL ON THE PIPE LYING ADJACENT TO THE GAP IS CAREFULLY BROKEN OFF. THE TOP HALF OF THE BELL ON THE MAIN REPLACEMENT SECTION (WITH A "TEE" "WYE") FITING IS ALSO BROKEN OFF. THE REPLACEMENT PIPE IS THEN PLACED IN THE LINE GAP WITH THE STUB POINTED IN THE WRONG DIRECTION. THE BROKEN BELLS ON THE REPLACEMENT AND ADJOINING PIPE MAKE POSSIBLE FOR THE REPLACEMENT SECTION TO FIT INTO THE SEWER LINE WITHOUT DISTURBING THE ADJOINING PIPE SECTIONS. THE REPLACEMENT SECTION IS THEN ROTATED TO THE DESIRED POSITION AND THE BROKEN BELLS ARE ENCASED WITH A 6" CLASS "A" CONCRETE ENCASEMENT.

"ROLL-IN" (FOR EXISTING CLAY OR CONCRETE PIPE)

METROPOLITAN ST. LOUIS SEWER DISTRICT
Standard Details of Sewer Construction

Dr. D.A.B. Ch. J.C.K.	1992	SHEET 63



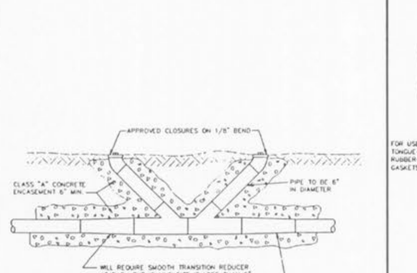
NOTES

1. OPENING INTO EXISTING SEWER TO BE CUT CAREFULLY TO AVOID DAMAGE TO ADJACENT MASONRY.
2. HOLE TO BE CUT TO PROPER GRADE AND ELEVATION AND TO BE OF SUCH SIZE AS TO PERMIT A TWO-INCH SPACE ALL AROUND THE OUTSIDE OF THE PIPE.
3. THIS SPACE SHALL BE CAREFULLY FILLED WITH ONE PART CEMENT AND THREE PARTS SAND MORTAR COMPACTED INTO PLACE AFTER THE PIPE HAS BEEN INSERTED AND PROPERLY SUPPORTED TO LINE AND GRADE.
4. EXISTING REINFORCING BARS ARE TO BE BENT BACK INTO THE CONCRETE COLLAR AROUND THE PIPE TO PROVIDE REINFORCEMENT EQUALLY ON ALL SIDES.

CONNECTIONS TO LARGE SEWERS

METROPOLITAN ST. LOUIS SEWER DISTRICT
Standard Details of Sewer Construction

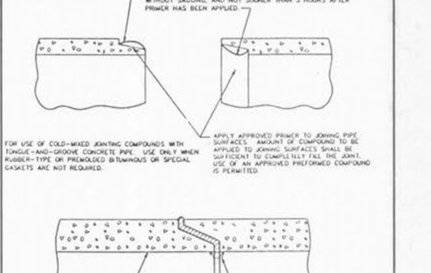
Dr. W.S.H. Ch. J.C.K.	1992	SHEET 64



FORCE MAIN CLEANOUT (6" DIA. & SMALLER)

METROPOLITAN ST. LOUIS SEWER DISTRICT
Standard Details of Sewer Construction

Dr. R.G.W. Ch. J.C.K.	1992	SHEET 65

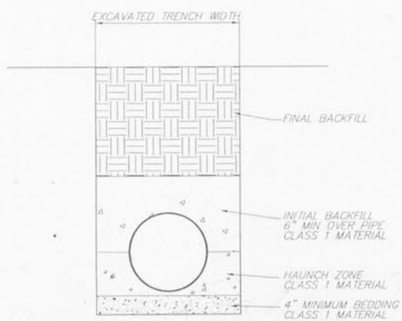


TONGUE AND GROOVE CONCRETE PIPE JOINTS

METROPOLITAN ST. LOUIS SEWER DISTRICT
Standard Details of Sewer Construction

Dr. D.A.B. Ch. J.C.K.	1992	SHEET 66

H.D.P.E. PIPE DETAIL



1. The use of High Density Polyethylene Corrugated pipe A.D.S. N12 or Equal will be permitted as an acceptable alternative to reinforced concrete pipe. Pipe shall meet A.S.T.M. D-2321 and AASHTO M-294-921. Concrete flared end sections and inlet structures shall be required. Pipe must have smooth interior wall and is not to be used inside the Public Right-of-Way.

All concrete pipe or HDPE pipe shall be installed with o-ring rubber type gaskets per M.S.D. Standard Construction Specifications or Manufacturer.

2. In typical conditions the minimum trench width is determined by the size of the pipe and the ability to get compaction equipment between the pipe and the trench walls. The minimum trench width should not be less than the outside diameter plus 16 inches or the pipe outside diameter times 1.25 plus 12 inches; whichever is greater. High speed trenchers may enable satisfactory installation of pipe in narrower trenches. Poor insitu soil conditions such as peat, muck, running sands, or expansive clays will require substantially wider backfill as well as deeper foundation and bedding. Trench width and foundation depth should be based on a thorough site investigation.

3. Backfill in the area up to the springline should be carefully placed and compacted to achieve a minimum E value of 1,000 psi as detailed in ASTM D2321. A minimum of 12" of backfill should be placed and compacted above the crown of the pipe. It is typical for trenches to be backfilled entirely with Type I or Type II materials when under pavement.

4. Flexible pipe should never be installed in a concrete cradle, as done for rigid pipe in a Class A installation. This type of installation could create concentrated forces at the ends of the cradle when the pipe has deformed.

CD4