

THE CITY OF AURORA

ENGINEERING AND CONSTRUCTION STANDARDS

UPDATED: NOVEMBER 2016



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GENERAL NOTES - THE CITY OF AURORA

(UPDATED: 11/16)

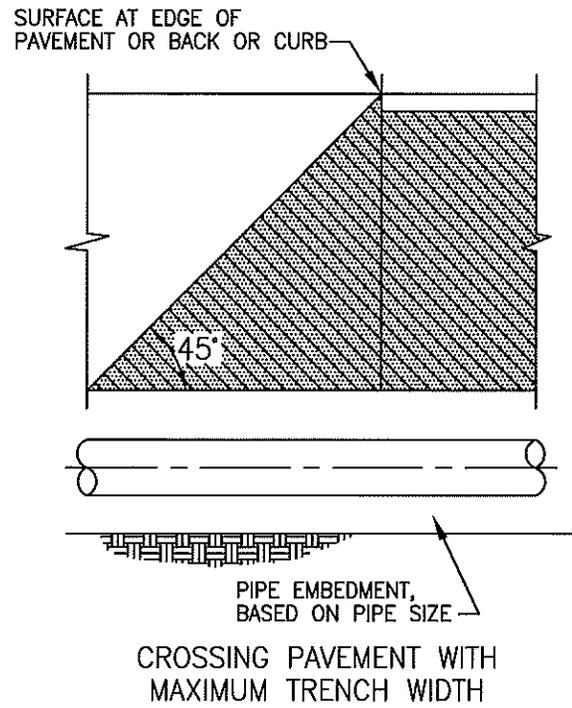
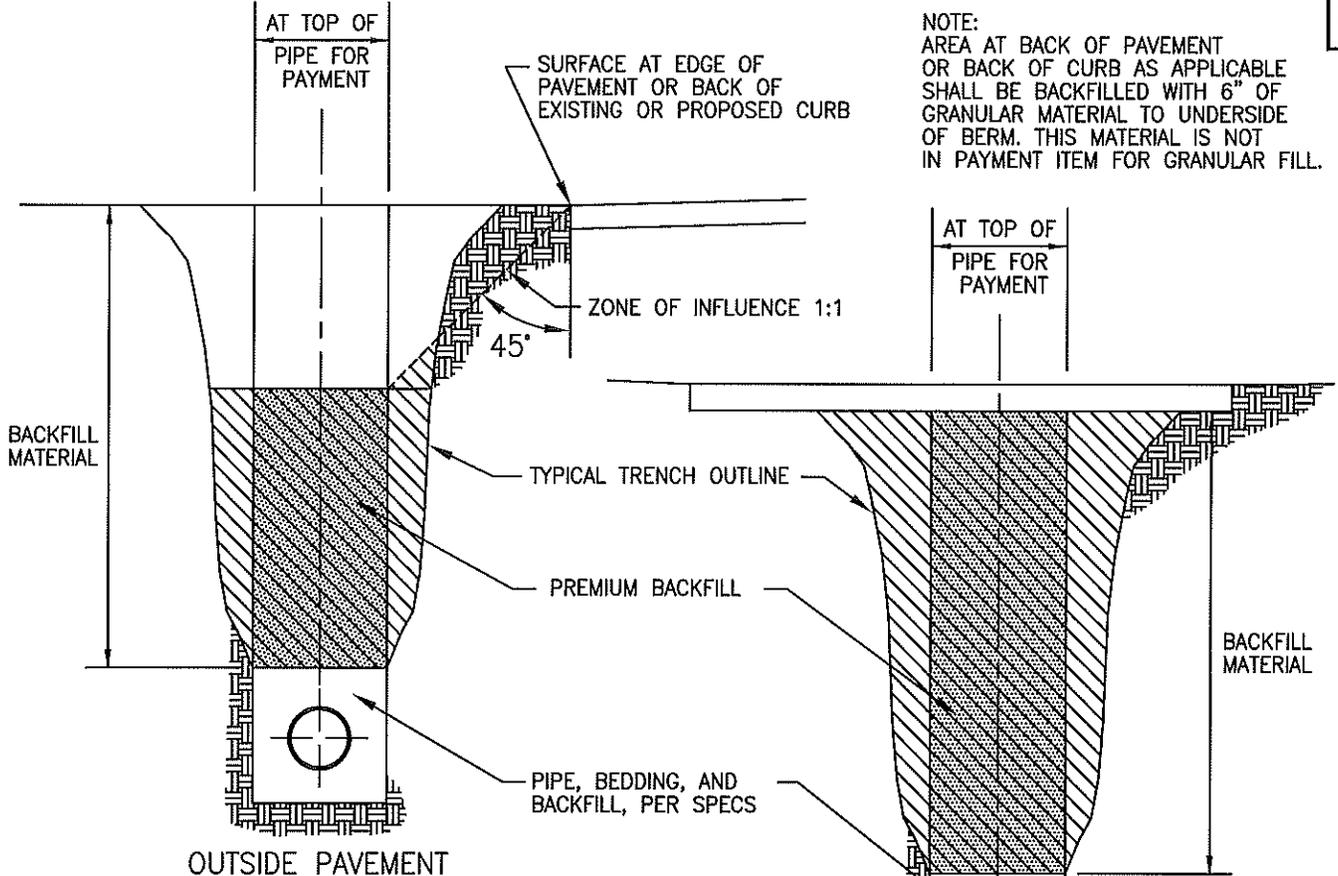
1. ALL CONSTRUCTION AND MATERIALS INCLUDED ON THIS PROJECT SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS (ODOT) AND THE CONSTRUCTION SPECIFICATIONS AND DETAILS OF THE CITY OF AURORA. WHERE CONFLICTS OCCUR IN THE ABOVE, THE ENGINEER OF THE CITY OF AURORA SHALL DETERMINE THE GOVERNING AUTHORITY.
2. THE CONTRACTOR SHALL NOT COMMENCE ANY FORM OF CONSTRUCTION WITHOUT CONTACTING AN AURORA CITY ENGINEER AT (330) 562-9701, TO ARRANGE FOR INSPECTION. FORTY-EIGHT (48) HOURS NOTICE IS REQUIRED.
3. IF ANY CHANGE IN THE WORK SCHEDULE BECOMES NECESSARY, IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE INSPECTOR TO AVOID UNNECESSARY INSPECTION COSTS. IF NO NOTIFICATION IS MADE WITH REGARD TO CANCELLATION OF WORK, THE CONTRACTOR WILL BE CHARGED FOR THE INSPECTION TIME INCURRED.
4. ANY DEFECTS IN THE CONSTRUCTION INCLUDING MATERIALS OR WORKMANSHIP SHALL BE CORRECTED BY REMOVAL AND REPLACEMENT OR OTHER APPROVED METHOD PRIOR TO ACCEPTANCE BY THE CITY.
5. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AT ALL TIMES AND SHALL BACKFILL AND GRADE EXCAVATED AREAS SO AS TO ELIMINATE PONDING WITHIN THE PROJECT AREA.
6. THE CONTRACTOR SHALL, AT HIS COST, DISPOSE OF ALL SURPLUS EXCAVATED MATERIAL.
7. THE LOCATION OF UNDERGROUND UTILITIES AND STRUCTURES SHOWN ON THE PLANS HAS BEEN OBTAINED BY DILIGENT FIELD CHECK AND FROM RECORD DATA AVAILABLE. NO GUARANTEE IS MADE OF THEIR ACCURACY OR COMPLETENESS. THE EXACT LOCATION AND PROTECTION OF UTILITIES AND STRUCTURES IS THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL USE DUE DILIGENCE TO PROTECT FROM DAMAGE ALL EXISTING UTILITIES AND STRUCTURES, WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR RESTORATION OF SAME IN ACCORDANCE WITH THE DIRECTION OF THE AFFECTED UTILITY COMPANY REPRESENTATIVE AND/OR THE ENGINEER.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING AND MAINTAINING TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL IN ACCORDANCE WITH THE APPROVED PLANS AND AS DIRECTED BY THE PROJECT ENGINEER AND THE CITY ENGINEER.
9. THE CONTRACTOR SHALL PROVIDE ALL CONSTRUCTION AND TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
10. ROOF DRAINS, FOUNDATION DRAINS AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER ARE PROHIBITED.
11. ALL EXISTING LAWN AREAS REMOVED OR DISTURBED BY THE WORK SHALL BE REPLACED BY SEEDING AND MULCHING IN ACCORDANCE WITH ODOT ITEM 659 AND SHALL BE RESEEDED AND MULCHED IF SATISFACTORY RE-ESTABLISHMENT OF LAWN DOES NOT OCCUR. ACCEPTANCE SHALL BE BASED UPON EVIDENCE OF SATISFACTORY RE-ESTABLISHMENT OF LAWN AREA. ALL AREAS SHALL BE RESTORED TO THEIR ORIGINAL PRE-CONSTRUCTION CONDITION OR BETTER.
12. AT THE CONCLUSION OF CONSTRUCTION, THE CONTRACTOR SHALL CLEAN UP ALL DEBRIS AND MATERIALS RESULTING FROM CONSTRUCTION AND SHALL RESTORE ALL SURFACES, STRUCTURES, DITCHES AND PROPERTY TO ITS ORIGINAL CONDITION TO THE SATISFACTION OF THE CITY ENGINEER.
13. ALL EXCAVATION UNDER OR NEAR EXISTING OR FUTURE PAVEMENT (INCLUDING SIDEWALKS) SHALL BE BACKFILLED WITH PREMIUM BACKFILL AS DEFINED HEREIN. AT QUESTIONABLE AREAS THE DECISION OF THE CITY ENGINEER, OR HIS REPRESENTATIVE, WILL PREVAIL.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING AND MAINTAINING SOIL EROSION AND SEDIMENTATION CONTROL IN ACCORDANCE WITH THE APPROVED PLANS, THE RAINWATER AND LAND DEVELOPMENT MANUAL, AND AS DIRECTED BY THE CITY ENGINEER.
15. UNDER NO CIRCUMSTANCES SHALL A WATER OR SANITARY SERVICE LINE CROSS PROPERTY LINES.
16. NO RECYCLED OR RECLAIMED MATERIAL SHALL BE USED IN CONSTRUCTION UNLESS APPROVED BY THE CITY IN WRITING. ANY RECYCLED OR RECLAIMED MATERIAL PLACED BY THE CONTRACTOR WITHOUT APPROVAL SHALL BE REMOVED AT THE CONTRACTORS EXPENSE.
17. ALL ODOT 304 AND 448 SHALL BE COMPRISED OF 100% VIRGIN LIMESTONE. CRUSHED GRAVEL WILL NOT BE ACCEPTED.
18. ALL SHOP DRAWINGS AND MATERIAL SPECIFICATIONS SHALL BE APPROVED BY THE CITY ENGINEER OR DIRECTOR OF PUBLIC SERVICES PRIOR TO CONSTRUCTION. THE CITY RESERVES THE RIGHT TO REJECT ANY SUBMITTAL THAT DOES NOT COMPLY WITH CITY SPECIFICATIONS.

BACKFILL DESCRIPTIONS:

ORDINARY BACKFILL SHALL BE CONSIDERED AS BEING COMPOSED OF MATERIALS NOT LARGER THAN FOUR(4) INCHES IN SIZE, SELECTED FROM THE MATERIALS PREVIOUSLY EXCAVATED FROM THE TRENCH AND SHALL BE FREE OF SLAG, CINDERS, RUBBISH, ASHES, ORGANIC OR PERISHABLE MATERIAL OR OTHER OBJECTIONABLE SUBSTANCES, AS APPROVED BY THE CITY ENGINEER. ORDINARY BACKFILL IS PERMITTED IN AREAS NOT LOCATED UNDER EXISTING OR FUTURE PAVED SURFACES AND SHALL BE PLACED AND BROUGHT UP EVENLY IN THE TRENCH IN APPROXIMATELY TWELVE(12) INCH LOOSE LIFTS, EACH LIFT BEING THOROUGHLY COMPACTED BY TAMPING ROLLING, OR OTHER METHODS SATISFACTORY TO THE CITY.

PREMIUM BACKFILL SHALL BE ODOT ITEM NO. 304 LIMESTONE. PREMIUM BACKFILL IS REQUIRED AT ALL PLACES WHERE THE TRENCH IS CONSTRUCTED UNDER EXISTING OR FUTURE PAVED SURFACES (INCLUDING ROADS, DRIVES, BERMS, WALKS, BIKEWAYS, GUTTERS, ETC.), WHERE A PIPE OR STRUCTURE IS LOCATED WITHIN THE 45 DEGREE ZONE OF INFLUENCE, OR WHERE SPECIFICALLY CALLED FOR ON THE PLANS AND SHALL BE PLACED AND BROUGHT UP EVENLY IN THE TRENCH IN LIFTS OF NOT MORE THAN TWELVE(12) INCHES IN DEPTH.

NOTE:
AREA AT BACK OF PAVEMENT
OR BACK OF CURB AS APPLICABLE
SHALL BE BACKFILLED WITH 6" OF
GRANULAR MATERIAL TO UNDERSIDE
OF BERM. THIS MATERIAL IS NOT
IN PAYMENT ITEM FOR GRANULAR FILL.

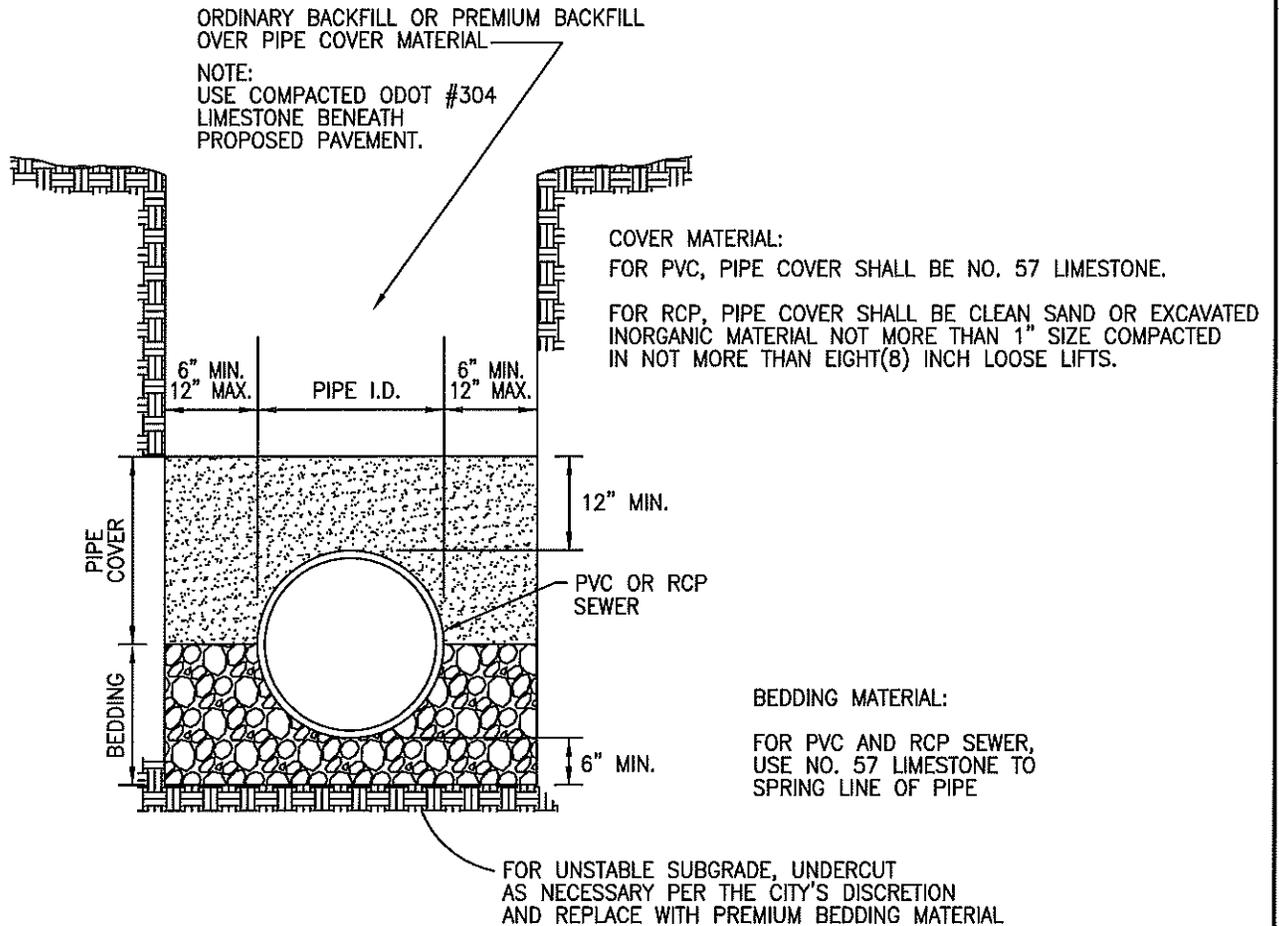


-  PREMIUM BACKFILL
-  PAY LIMITS, CITY PROJECTS

NOTE:
PREMIUM BACKFILL BELOW
45° ZONE OF INFLUENCE LINE
EARTH BACKFILL ABOVE 45° LINE.

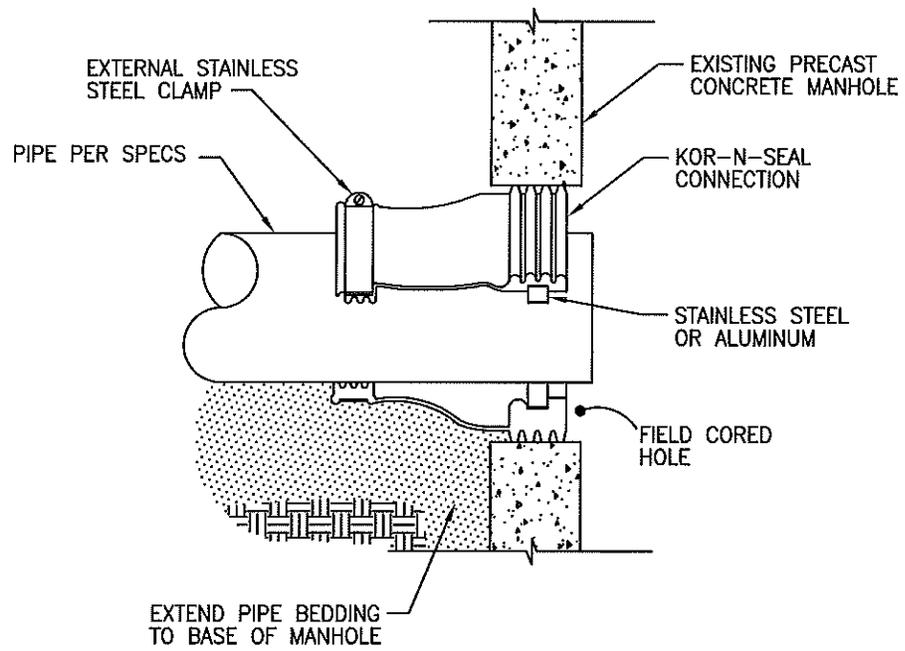
PREMIUM BACKFILL

NOT TO SCALE



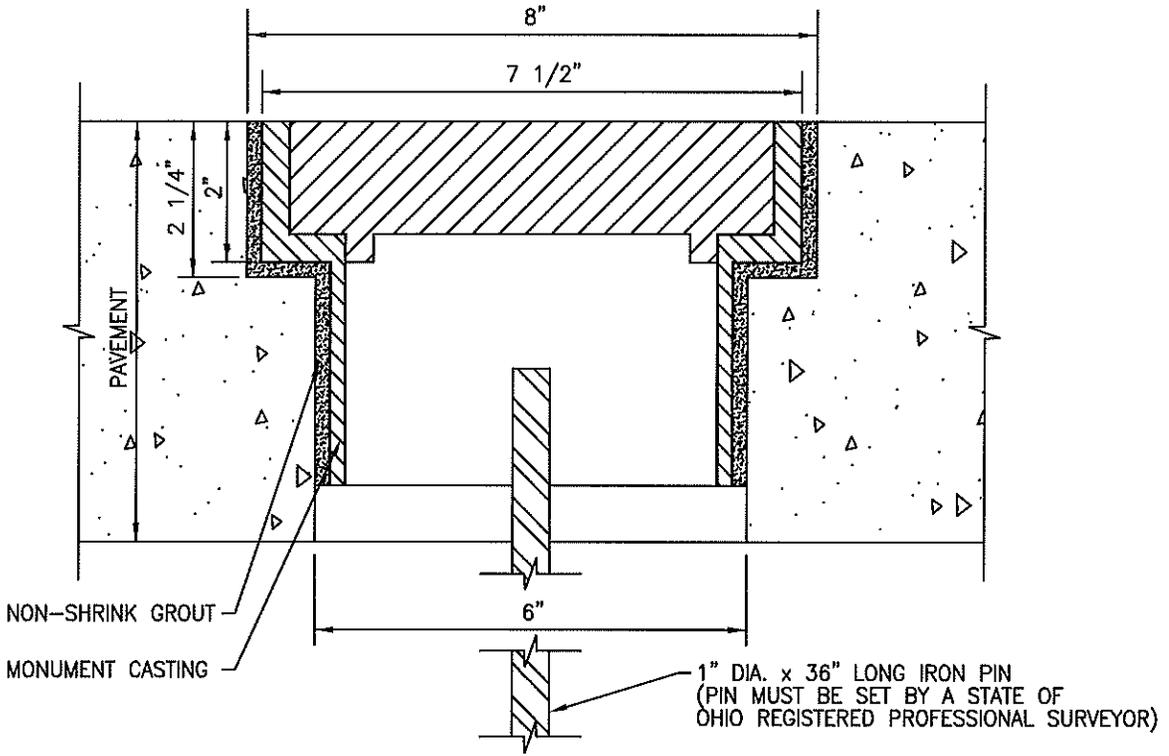
TYPICAL SEWER TRENCH DETAIL

NOT TO SCALE



CONNECTION TO EXISTING SANITARY OR STORM MANHOLE

NOT TO SCALE



NOTES:
MONUMENT BOX CASTING SHALL BE E.J.I.W. #2960 WITH SPECIAL ORDER LID.
ANNULAR SPACE BETWEEN CASTING AND PAVEMENT SHALL BE FILLED WITH NON-SHRINK GROUT PER O.D.O.T. 705.20.
FOR MONUMENT BOXES NOT WITHIN PAVEMENT, USE E.J.I.W. 8365 CASTING WITH 1" DIA. x 36" LONG IRON PIN.

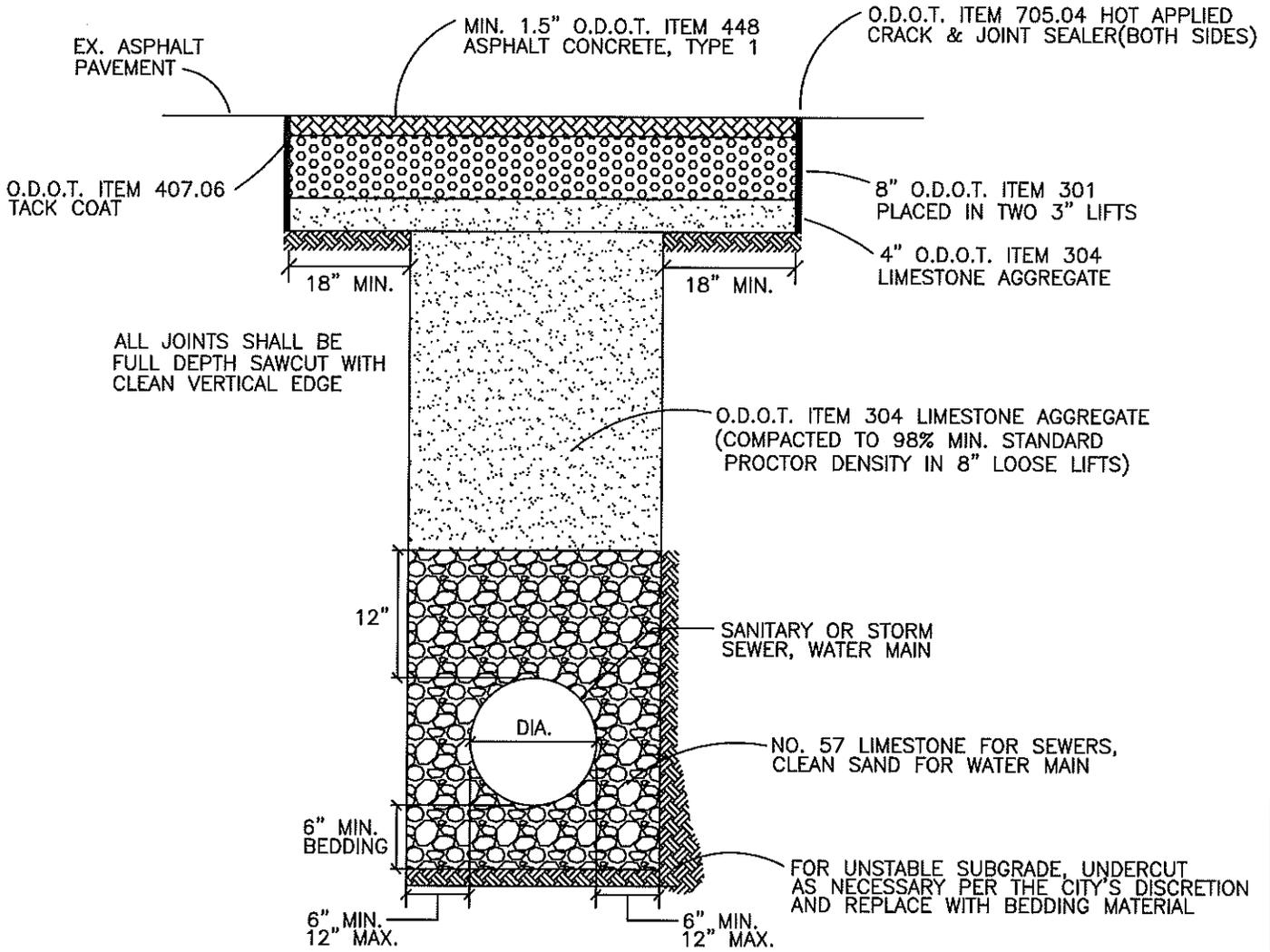
- NOTES ON INSTALLATION:
1. CORE BOTH OPENINGS IN PAVEMENT.
 2. REMOVE DEBRIS AND PREPARE CONCRETE FOR GROUT PER MANUFACTURE'S INSTRUCTIONS.
 3. COAT PAVEMENT OPENING AND EXTERIOR OF CASTING WITH GROUT.
 4. INSTALL CASTING AND FINISH FLUSH WITH EXISTING PAVEMENT.

CORED/BOXLESS MONUMENT ASSEMBLY DETAIL

(FOR USE IN RIGID OR FLEXIBLE PAVEMENT)

NOT TO SCALE

****NO ROADWAY SHALL BE OPEN CUT WITHOUT WRITTEN PERMISSION FROM THE DIRECTOR OF PUBLIC SERVICES.****



NOTE:
 FOR CONCRETE PAVEMENT:
 1. ASPHALT SECTION SHALL BE REPLACED BY 8" OF FIBERMESH REINFORCED CONCRETE,
 2. USE 5/8" DOWELS PLACED AT 30" MAX. SPACING.
 IF EXISTING MATERIAL IS SUPERIOR TO MINIMUM REQUIREMENTS,
 MATCH EXISTING PAVEMENT SECTION

PAVEMENT RESTORATION/ STREET OPENING

(STREET OPENING PERMITS ARE ORIGINATED THROUGH
THE CITY OF AURORA SERVICE DEPARTMENT)

SANITARY SEWER NOTES - THE CITY OF AURORA (UPDATED 11/16)

1. ALL SANITARY SEWER CONSTRUCTION SHALL CONFORM WITH PROVISIONS INCLUDED HEREIN AND/OR ODDT ITEM 603. CONDUIT SHALL BE PVC, CONFORMING WITH REQUIREMENTS OF ASTM D-3034, SDR-35, CELL CLASSIFICATION 12454-B (PER ASTM D-1784), WITH O-RING JOINTS CONFORMING TO ASTM D-3212.
2. THE LINE AND GRADE OF SEWER MAINS SHALL BE CONTROLLED DURING THE SEWER CONSTRUCTION BY USE OF AN APPROVED LASER DEVICE. THE LINE AND GRADE OF THE LASER SHALL BE "CHECKED" FROM LINE AND GRADE STAKES PLACED AT THE MIDPOINT BETWEEN MANHOLES.
3. ALL SEWERS SHALL HAVE PREFORMED WYE-BRANCH FITTINGS, OF THE THICKNESS CLASS OF THE MAIN SEWER, INSTALLED INTEGRALLY WITH THE MAIN, FOR 6" DIAMETER HOUSE SERVICE CONNECTIONS.
4. SANITARY SEWER CONNECTIONS SHALL BE AT A MINIMUM GRADE SHALL BE 1/2" AND TERMINATE 1 FOOT OUTSIDE THE RIGHT-OF-WAY OR UTILITY EASEMENT LINE FOR NON-DEDICATED ROADS, WHICHEVER IS APPLICABLE. CONNECTIONS SHALL BE 6" DIAMETER (MIN.) IN SIZE, INSTALLED AT A MINIMUM GRADE OF 1.00.
5. SANITARY SERVICE CONNECTIONS SHALL BE LOCATED A MINIMUM OF 5 FEET FROM ANY WATER SERVICE CONNECTION.
6. THE END OF EACH SERVICE CONNECTION SHALL BE SEALED WITH A TIGHT-FITTING PLUG AND MARKED WITH A 2" X 2" HARDWOOD STAKE EXTENDING VERTICALLY TO ABOUT 3 FEET ABOVE THE GROUND SURFACE.
7. ALL EXCAVATION UNDER OR NEAR EXISTING OR FUTURE PAVEMENT (INCLUDING SIDEWALKS) SHALL BE BACKFILLED WITH PREMIUM BACKFILL AS DEFINED HEREIN. AT QUESTIONABLE AREAS THE DECISION OF THE CITY ENGINEER, OR HIS REPRESENTATIVE, WILL PREVAIL.
8. AT ALL STORM SEWER MAIN AND SANITARY MAIN INTERSECTIONS (CROSSINGS) LESS THAN 18 INCHES, THE UPPER PIPE IS TO BE BRIDGED OVER THE LOWER PIPE BY CONSTRUCTION OF CEMENT AND HARDWOOD SUPPORTS UNDER THE UPPER PIPE ON EACH SIDE OF LOWER PIPE (SEE DETAIL).
9. WHEREVER UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED, WORK SHALL BE DISCONTINUED UNTIL THE AREA IS STABILIZED TO THE SATISFACTION OF THE PROJECT ENGINEER AND THE CITY ENGINEER. ALL CONDUITS SHALL BE INSTALLED ON A FIRM BED FOR THEIR FULL LENGTH IN ACCORDANCE WITH ODDT ITEM 603.03 UNLESS OTHERWISE SPECIFIED.
10. SANITARY SEWERS SHALL MEET OR EXCEED THE LATEST AIR PRESSURE TEST REQUIREMENTS OF THE OHIO ENVIRONMENTAL PROTECTION AGENCY AND SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST PER ASTM F1417. AIR TESTING SHALL BE PERFORMED NO SOONER THAN 30 DAYS FOLLOWING COMPLETION OF BACKFILLING. TESTING SHALL BE PERFORMED BY AN ACCREDITED INDEPENDENT TESTING SERVICE. A REPRESENTATIVE OF THE CITY SHALL BE PRESENT DURING TESTING.
11. ALL PVC SEWER MAINS SHALL BE TESTED FOR DEFLECTION PER CITY SPECIFICATIONS. THE DIAMETER DEFLECTION SHALL NOT EXCEED 5 PERCENT. DEFLECTION TESTING SHALL BE PERFORMED NO SOONER THAN 30 DAYS FOLLOWING COMPLETION OF BACKFILLING. TESTING SHALL BE PERFORMED BY AN ACCREDITED INDEPENDENT TESTING SERVICE. TESTING SHALL BE IN ACCORDANCE WITH ASTM D-3034. A REPRESENTATIVE OF THE CITY SHALL BE PRESENT DURING TESTING.
12. ALL SANITARY SEWER MAINS 8" AND LARGER SHALL BE VIDED TAPED IN COLOR IN PROVIDED IN DIGITAL FORMAT (DVD).
13. ROOF DRAINS, FOUNDATION DRAINS AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER ARE PROHIBITED.
14. SANITARY MANHOLE CONSTRUCTION SHALL MEET THE REQUIREMENTS OF ASTM C-478 AND C-443. ALL MANHOLES SHALL BE AIR/VACUUM TESTED IN ACCORDANCE WITH AND MEET ALL REQUIREMENTS OF ASTM C1244.
15. ALL NEW SANITARY MANHOLES SHALL INCLUDE INSTALLATION OF AN INTERNAL RUBBER SLEEVE (CHIMNEY SEAL AS MANUFACTURED BY CRETEX, OR PRE-APPROVED EQUAL).
16. INTERNAL DROP MANHOLES ARE REQUIRED WHEN THE INVERT IS 24' ABOVE THE BOTTOM INVERT OF THE MANHOLE.
17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY MAINTAINING EXISTING SANITARY FLOW DURING THE CONSTRUCTION TESTING OF PROPOSED IMPROVEMENTS. THE CONTRACTOR'S METHODS FOR MAINTAINING FLOW MUST BE APPROVED BY THE CITY ENGINEER.
18. MINIMUM VERTICAL CLEARANCE BETWEEN SANITARY SEWER AND WATERLINE SHALL BE 18 INCHES. MINIMUM HORIZONTAL SEPERATION SHALL BE 10 FEET.
19. MINIMUM COVER OVER SANITARY SEWER SHALL BE 4 FEET.
20. MANHOLE TOP OF CASTING ELEVATIONS MAY REQUIRE ADJUSTMENT DURING SITE GRADING. MANHOLE COVERS SHALL NOT BE BURIED. UPON COMPLETION OF CONSTRUCTION AND RESTORATION, ALL MANHOLES, PROPOSED AND EXISTING, SHALL BE IN CONFORMANCE WITH AURORA ENGINEERING DEPARTMENT SPECIFICATIONS AND DETAILS.

NOTES:

SECTIONS OF THE PRECAST MANHOLES SHALL BE CAST AND ASSEMBLED WITH EITHER ALL TONGUE OR ALL GROOVE ENDS UP. LIFT HOLES MAY BE PROVIDED IN EACH SECTION FOR HANDLING.

TOP AND TRANSITION(FOR REDUCER) SECTIONS MAY BE EITHER ECCENTRIC CONE OR FLAT SLAB FOR SHALLOW INSTALLATIONS(LESS THAN 4'-6" COVER).

BASES FOR MANHOLES ARE SHOWN WITH MONOLITHIC FLOOR AND RISER WHICH MAY BE CAST IN ONE OR TWO OPERATIONS. A PERMISSIBLE ALTERNATE IS TO CAST AND SHIP THE FLOOR AND BARREL SEPARATELY. OPENINGS FOR INLET AND OUTLET PIPES SHALL BE PROVIDED EITHER WHEN THE UNIT IS CAST LATER TO MEET PROJECT REQUIREMENTS. OR MEET PROJECT REQUIREMENTS. BOTTOM CHANNELS MAY BE FORMED OF CONCRETE PRECAST IN THE BASE OR BY FIELD CONSTRUCTION. BASES MAY ALSO BE POURED IN PLACE.

OPENINGS IN RISER SECTIONS FOR 18" AND SMALLER INLET PIPES SHALL BE PREFABRICATED. FLEXIBLE CONNECTIONS SHALL BE PROVIDED. THE FLEXIBLE CONNECTIONS SHALL BE OF "COMPRESSION" TYPE, CAST INTEGRALLY WITH THE MANHOLE WALL AND SHALL BE "A-LOK" OR A-LOK "X-CEL" AS MANUFACTURED BY A-LOK PRODUCTS, INC. OR APPROVED EQUAL, CONFORMING TO THE REQUIREMENTS OF ASTM C-923. FLEXIBLE CONNECTORS WITH EXPANSION RINGS OR TENSION BANDS AND CLAMPS (BAND AND CLAMP) ARE NOT ACCEPTABLE.

JOINT SEAL BETWEEN PRECAST MANHOLE SECTIONS SHALL BE RESILIENT AND FLEXIBLE GASKET JOINTS PER ASTM C-443 OR LATEST EDITION. IN ADDITION TO THE O-RING, A BUTYL RESIN RUBBER STRIP IS TO BE INSERTED INTO AND AROUND THE CIRCUMFERENCE OF EACH MANHOLE JOINT AS MANUFACTURED BY CONCRETE SEALANTS, INC., GRADE NO. CS-202 OR PRE-APPROVED EQUAL.

MATERIALS FOR BASES AND OTHER PRECAST SECTIONS, INCLUDING REINFORCEMENT NOT SPECIFIED HEREON, SHALL COMPLY WITH THE SPECIFICATIONS.

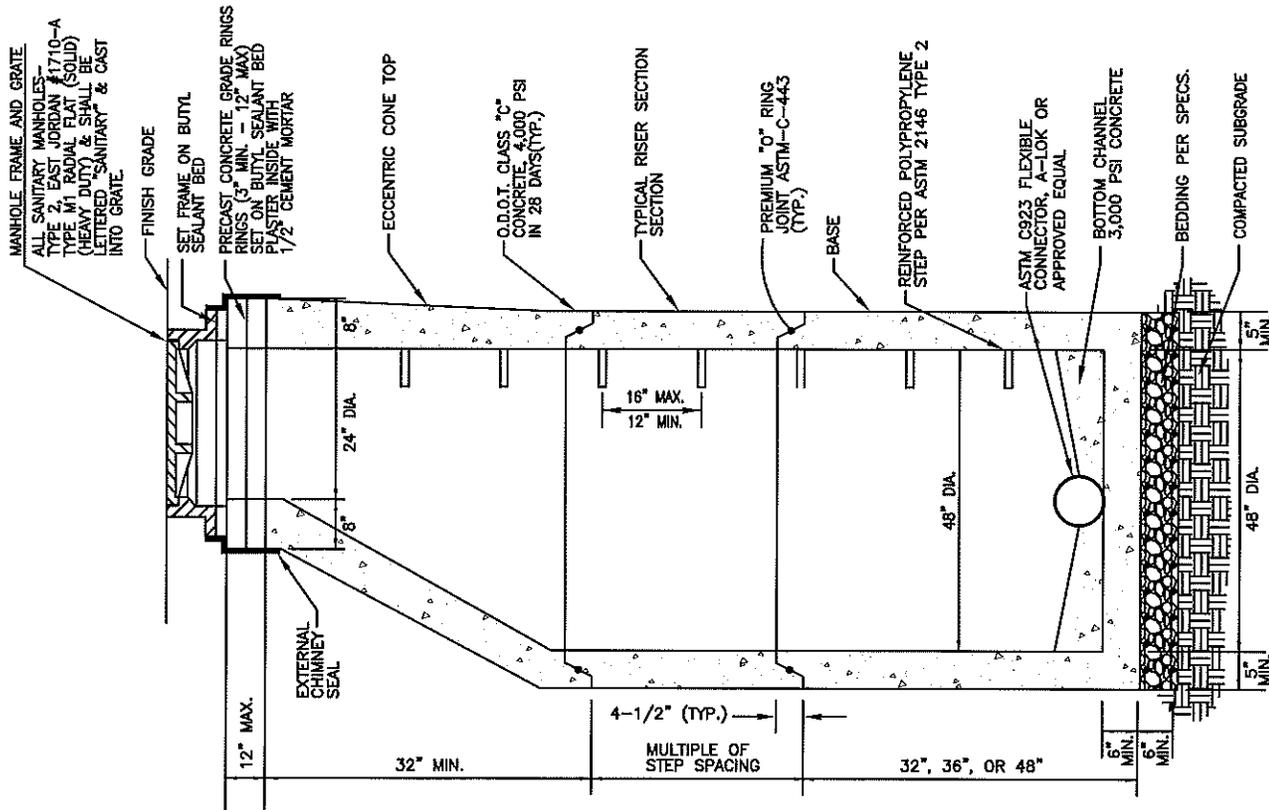
PRECAST MANHOLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-478.

SEAL LIFT HOLES WITH APPROVED CONCRETE PLUGS AND BITUMASTIC SEAL.

WHERE A SERVICE CONNECTION IS TO CONNECT DIRECTLY TO A MANHOLE, THE SERVICE CONNECTION SHALL NOT CONNECT ANY HIGHER THAN 2'-0" ABOVE THE MANHOLE INVERT.

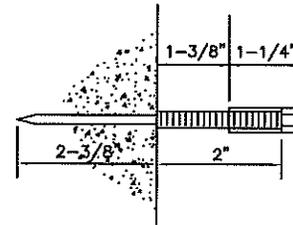
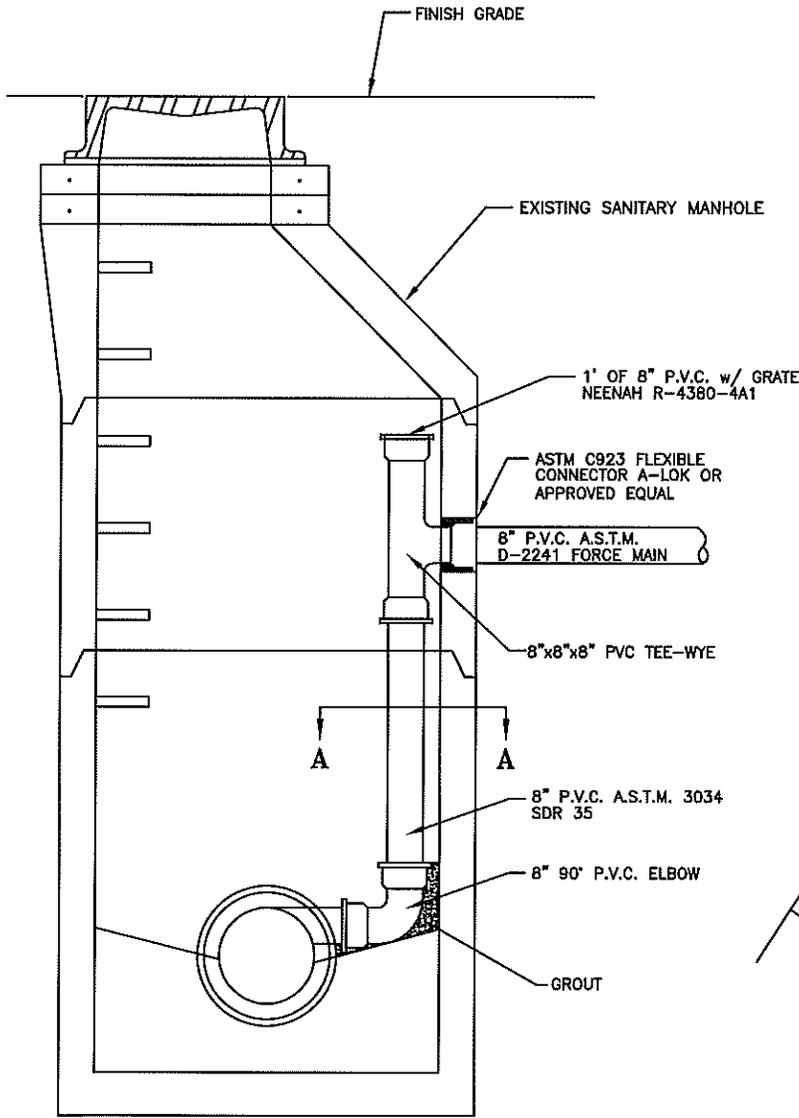
SANITARY MANHOLES SHALL INCLUDE THE INSTALLATION OF AN EXTERNAL RUBBER SLEEVE(CHIMNEY SEAL AS MANUFACTURED BY CRETEX, OR PRE-APPROVED EQUAL).

SANITARY MANHOLES SHALL BE VACUUM TESTED PER ASTM C-1244-93.

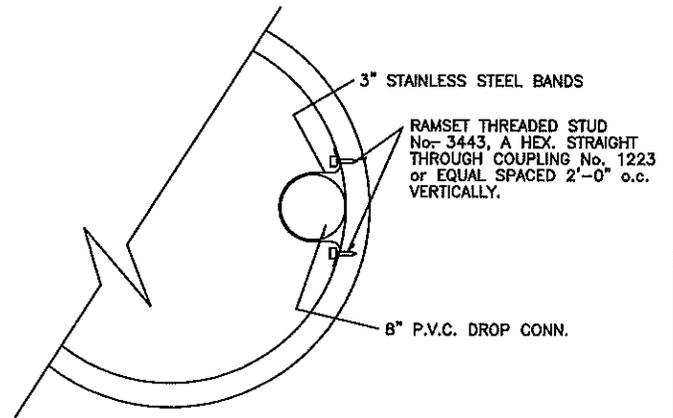


STANDARD 48" PRECAST SANITARY MANHOLE

NOT TO SCALE



STAINLESS STEEL
RAMSET POWDER
ACTUATED FASTENER

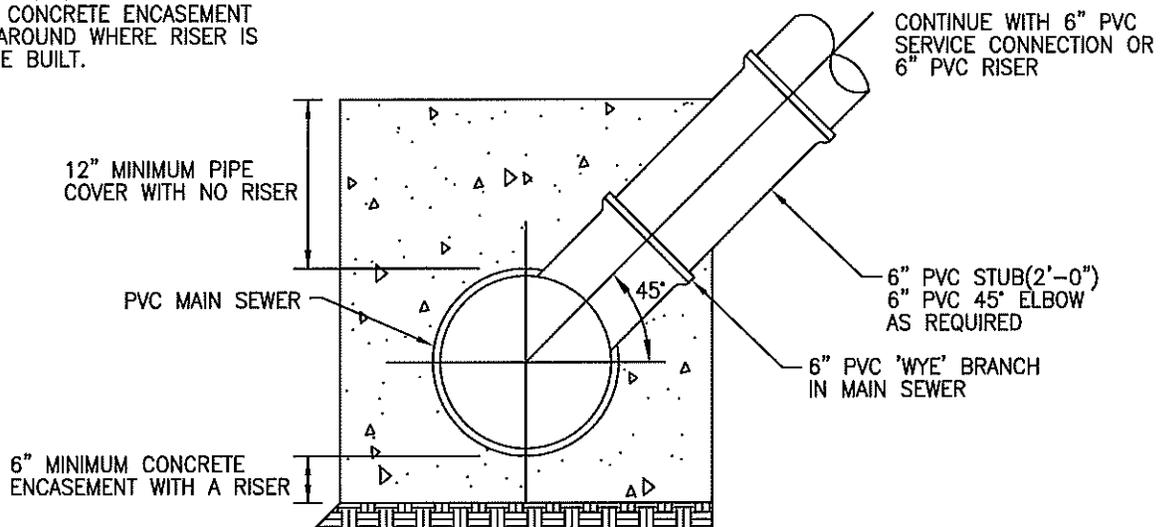


SECTION A - A

INTERNAL DROP CONNECTION TO EXISTING SANITARY MANHOLE

NOT TO SCALE

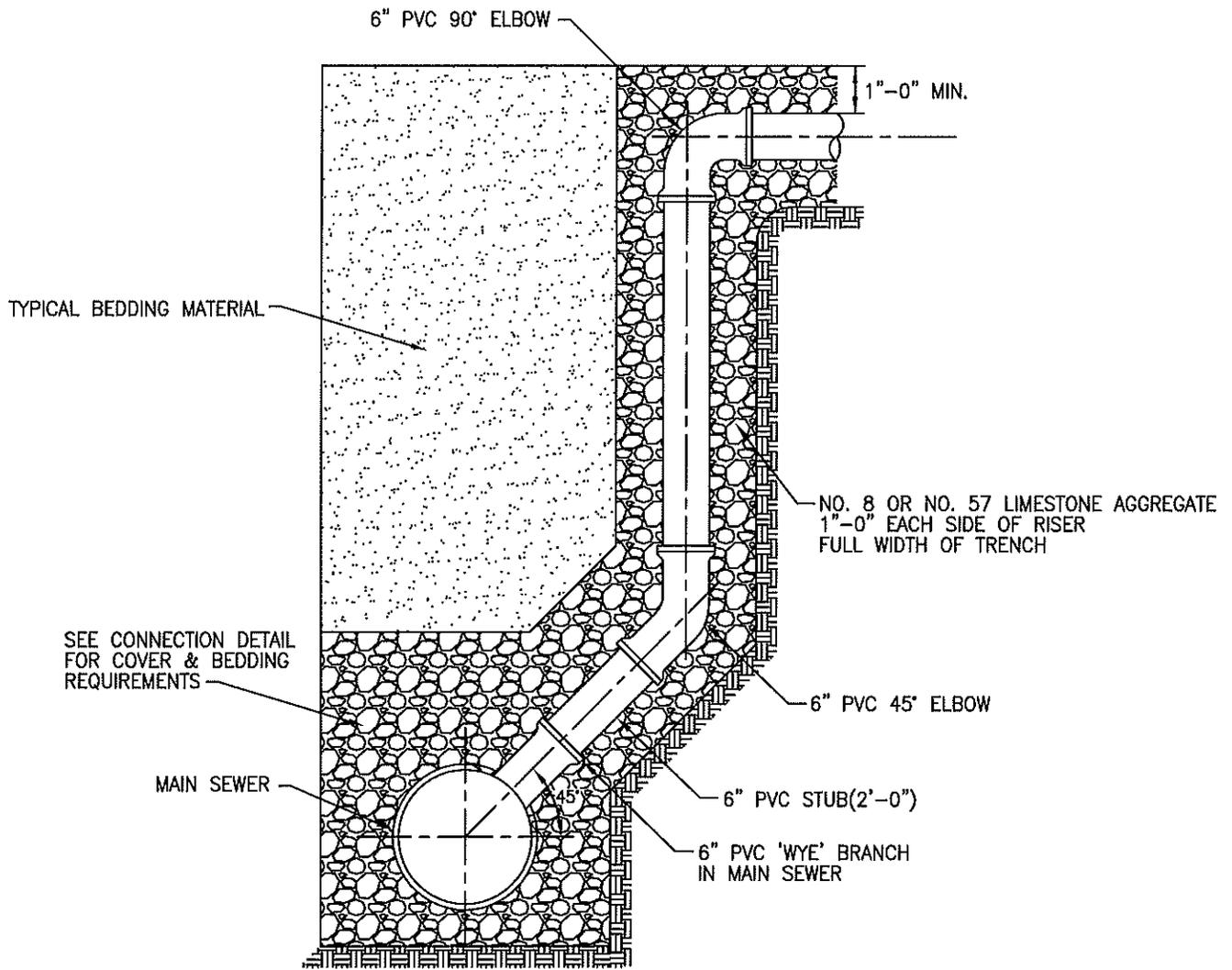
GRANULAR BEDDING AND PIPE COVER AS SPECIFIED WHERE NO RISER TO FOLLOW. REPLACE WITH CONCRETE ENCASEMENT ALL AROUND WHERE RISER IS TO BE BUILT.



WITH A RISER, CONCRETE ENCASEMENT SHALL EXTEND EIGHTEEN(18) INCHES MINIMUM ALONG TRENCH EACH WAY FROM CONNECTION AND TO BE EXTENDED TO FORM A BASE FOR THE RISER STACK(SEE TYPICAL RISER DETAIL).

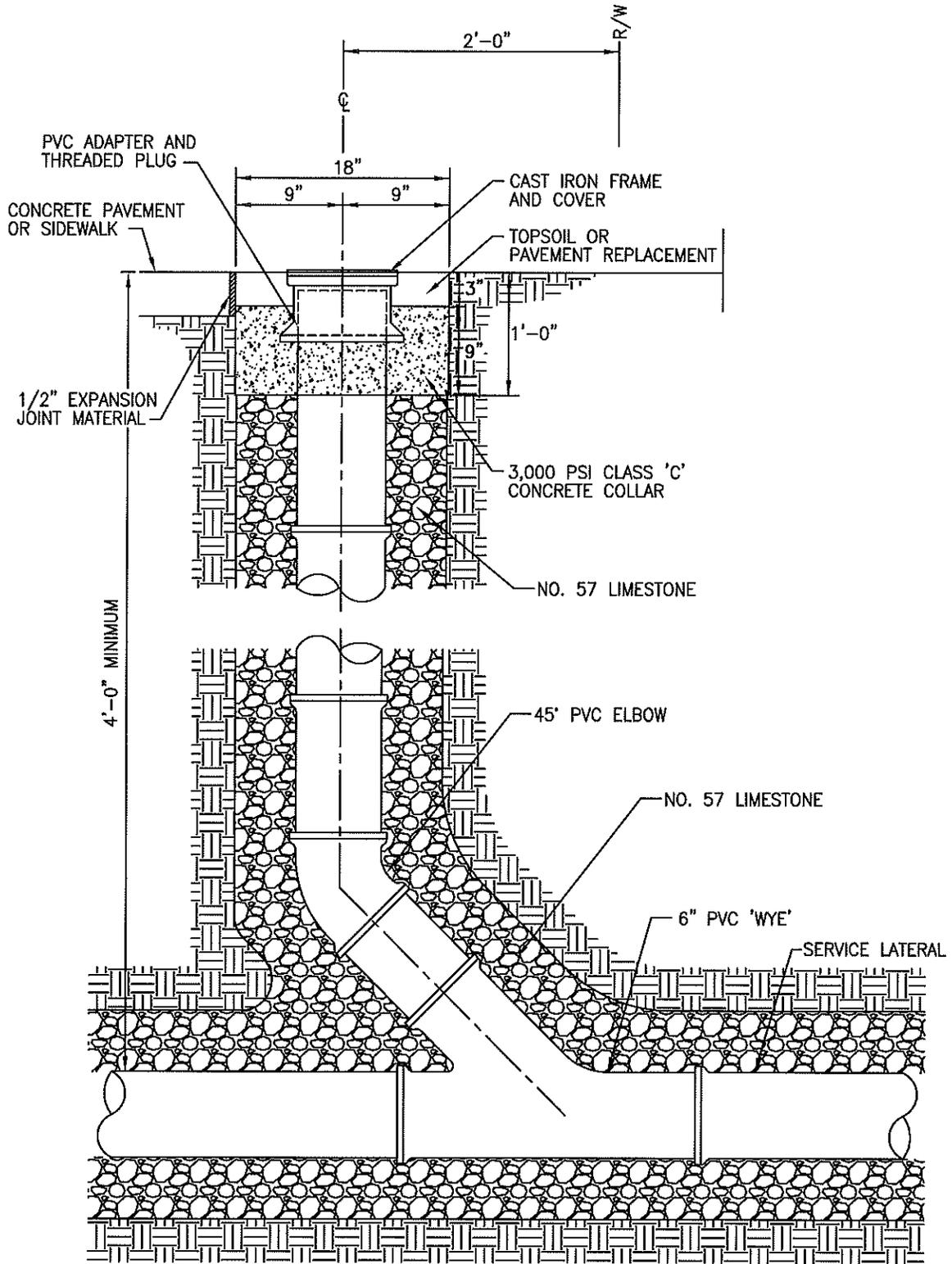
CONNECTION DETAIL FOR PVC SEWERS

NOT TO SCALE



TYPICAL RISER DETAIL

NOT TO SCALE



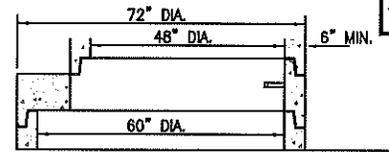
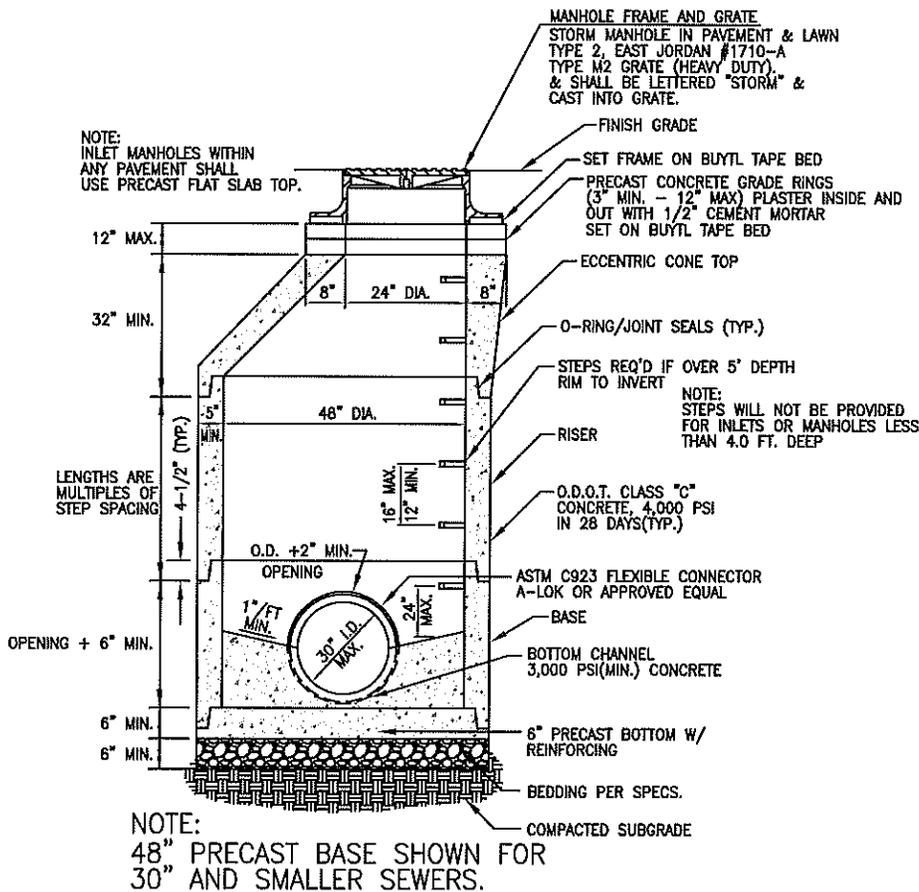
TYPICAL SERVICE CONNECTION CLEANOUT

NOT TO SCALE

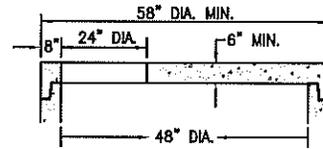
STORM SEWER NOTES - THE CITY OF AURORA (UPDATED 11/16)

ST1

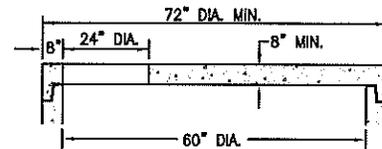
1. ALL STORM SEWER CONSTRUCTION SHALL CONFORM TO ODOT ITEM 611, AND WITH SPECIFIC PROVISIONS INCLUDED HEREIN.
 - A. SERVICE CONNECTIONS SHALL BE 6" DIAMETER (MIN.) IN SIZE, INSTALLED AT A MINIMUM GRADE OF 1.00% AND SHALL BE PVC, CONFORMING TO ASTM D-3034, SDR 35, CELL CLASSIFICATION 12454-B (PER ASTM D-1784) WITH O-RING JOINTS CONFORMING TO ASTM D-3212. SERVICE CONNECTIONS SHALL BE INSTALLED TO A POINT ONE FOOT INSIDE OF THE UTILITY EASEMENT LINE.
 - B. MAIN PIPE 8" TO 15" DIAMETER IN SIZE SHALL BE CORRUGATED POLYETHYLENE CONFORMING TO AASHTO M294, TYPE S WITH MATERIAL CONFORMING TO ASTM D-3350 OR PVC CONFORMING TO ASTM D-3034, SDR 35.
 - C. MAIN PIPE 18" DIAMETER IN SIZE AND ABOVE SHALL BE RCP, CLASS 3, WITH BITUMINOUS JOINTS CONFORMING TO ASTM C-76 OR APPROVED EQUAL.
 - D. ALL MAIN PIPE CONSTRUCTED UNDER EXISTING OR FUTURE PAVEMENT SHALL BE RCP, CLASS 4, WITH BITUMINOUS JOINTS CONFORMING TO ASTM C-76 OR APPROVED EQUAL. WHENEVER ALL OR A PART OF A PIPE SEGMENT BETWEEN MANHOLES IS UNDER EXISTING OR FUTURE PAVEMENT, THE ENTIRE SEGMENT OF PIPE BETWEEN THE MANHOLES SHALL BE RCP.
 - E. INLET OR CATCH BASIN CONNECTIONS UNDER PAVEMENT SHALL BE RCP, CLASS 4, OF THE SIZE SHOWN ON THE PLANS (12" DIAMETER MINIMUM), CONFORMING TO ASTM C-76, AND SHALL BE INSTALLED AT A MINIMUM GRADE OF 1.00
2. THE LINE AND GRADE OF SEWER MAINS SHALL BE CONTROLLED DURING THE SEWER CONSTRUCTION BY USE OF AN APPROVED LASER DEVICE. THE LINE AND GRADE OF THE LASER SHALL BE "CHECKED" FROM LINE AND GRADE STAKES PLACED AT THE MIDPOINT BETWEEN MANHOLES.
3. ALL SEWERS SHALL HAVE PREFORMED WYE-BRANCH FITTINGS, OF THE THICKNESS CLASS OF THE MAIN SEWER, INSTALLED INTEGRALLY WITH THE MAIN, FOR 6" DIAMETER HOUSE SERVICE CONNECTIONS.
4. STORM SERVICE CONNECTIONS SHALL BE LOCATED A MINIMUM OF 5 FEET FROM ANY WATER SERVICE CONNECTION.
5. THE END OF EACH SERVICE CONNECTION SHALL BE SEALED WITH A TIGHT-FITTING PLUG AND MARKED WITH A 2" X 2" HARDWOOD STAKE EXTENDING VERTICALLY TO ABOUT 3 FEET ABOVE THE GROUND SURFACE.
6. AT ALL STORM SEWER MAIN AND SANITARY MAIN INTERSECTIONS (CROSSINGS) LESS THAN 18 INCHES, THE UPPER PIPE IS TO BE BRIDGED OVER THE LOWER PIPE BY CONSTRUCTION OF CEMENT AND HARDWOOD SUPPORTS UNDER THE UPPER PIPE ON EACH SIDE OF LOWER PIPE (SEE DETAIL).
7. WHEREVER UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED, WORK SHALL BE DISCONTINUED UNTIL THE AREA IS STABILIZED TO THE SATISFACTION OF THE PROJECT ENGINEER AND THE CITY ENGINEER. ALL CONDUITS SHALL BE INSTALLED ON A FIRM BED FOR THEIR FULL LENGTH IN ACCORDANCE WITH ODOT ITEM 603.03 UNLESS OTHERWISE SPECIFIED.
8. STORM SEWERS 15" AND SMALLER SHALL BE TELEVISED AFTER INSTALLATION.



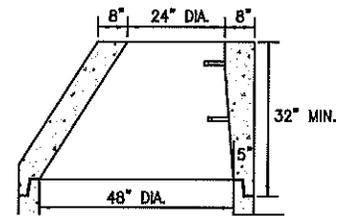
FLAT SLAB
TRANSITION



FLAT SLAB TOP



FLAT SLAB TOP



ALTERNATE
ECCENTRIC CONE TOP

NOTES:
* FOR PIPE SIZE LARGER THAN 30", USE
MANHOLE BASE WITH MINIMUM DIAMETER OF 60"
AND MINIMUM THICKNESS OF 6".

SECTIONS OF THE PRECAST MANHOLE SHALL BE CAST AND ASSEMBLED WITH EITHER ALL TONGUE OR ALL GROOVE ENDS UP. LIFT HOLES MAY BE PROVIDED IN EACH SECTION FOR HANDLING.

TOP AND TRANSITION (FOR REDUCER) SECTIONS MAY BE EITHER ECCENTRIC CONE OR FLAT SLAB.

BASES FOR MANHOLES THAT ARE SHOWN WITH MONOLITHIC FLOOR AND RISER WHICH MAY BE CAST IN ONE OR TWO OPERATIONS. A PERMISSIBLE ALTERNATE IS TO CAST AND SHIP THE FLOOR AND BARREL SEPARATELY. OPENINGS FOR INLET AND OUTLET PIPES SHALL BE PROVIDED EITHER WHEN THE UNIT IS CAST OR LATER TO MEET PROJECT REQUIREMENTS. BOTTOM CHANNELS MAY BE FORMED OF CONCRETE PRECAST IN THE BASE OR BY FIELD CONSTRUCTION. BASES MAY ALSO BE POURED IN PLACE.

OPENINGS IN RISER SECTIONS FOR 18" AND SMALLER INLET PIPES MAY BE PREFABRICATED.

JOINT SEAL BETWEEN PRECAST MANHOLE SECTIONS ON SEWERS SHALL BE RESILIENT AND FLEXIBLE. GASKET JOINTS PER A.S.T.M. C-443 OR LATEST EDITION.

MATERIALS FOR BASES AND OTHER PRECAST SECTIONS, INCLUDING REINFORCEMENT NOT SPECIFIED HEREON, SHALL COMPLY WITH THE SPECIFICATIONS.

PRECAST MANHOLE SHALL CONFORM TO THE REQUIREMENTS OF A.S.T.M. C-478.

SEAL LIFT HOLES WITH APPROVED CONCRETE PLUGS AND BITUMASTIC SEAL.

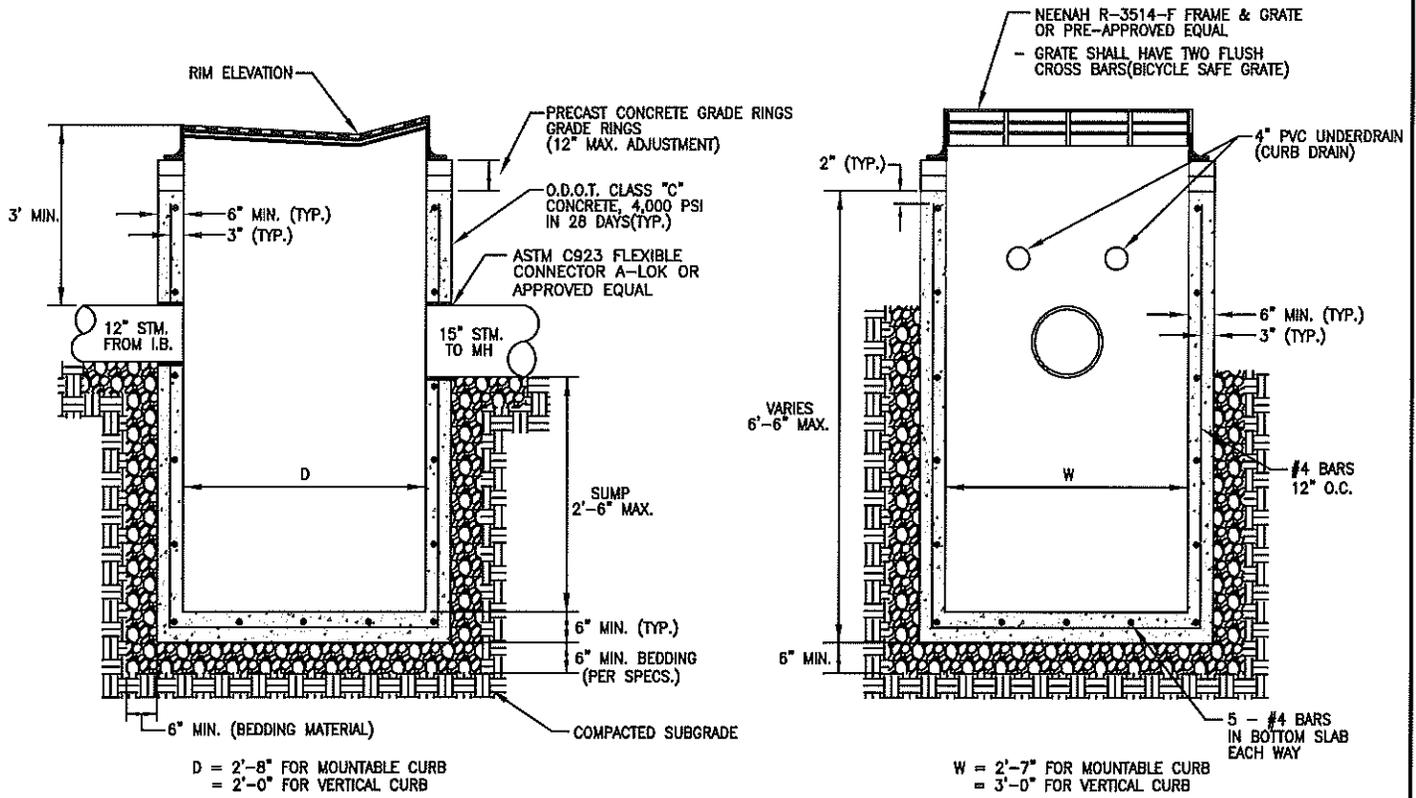
IN ADDITION TO THE "O" RING, A BUTYL RESIN RUBBER STRIP IS TO BE INSERTED INTO AND AROUND THE CIRCUMFERENCE OF EACH MANHOLE JOINT AS MANUFACTURED BY CONCRETE SEALANTS, INC., GRADE NO CS-202, OR EQUAL.

MANHOLE STEPS TO BE REINFORCED POLYPROPYLENE CONFORMING TO A.S.T.M. 2146, TYPE 2.

LANDING PLATFORMS SHALL BE INSTALLED IN THE MANHOLES THAT ARE OVER 28 FEET DEEP TO THE INVERT WITH A MAXIMUM VERTICAL SPACING OF 20 FEET.

STANDARD PRECAST STORM MANHOLE

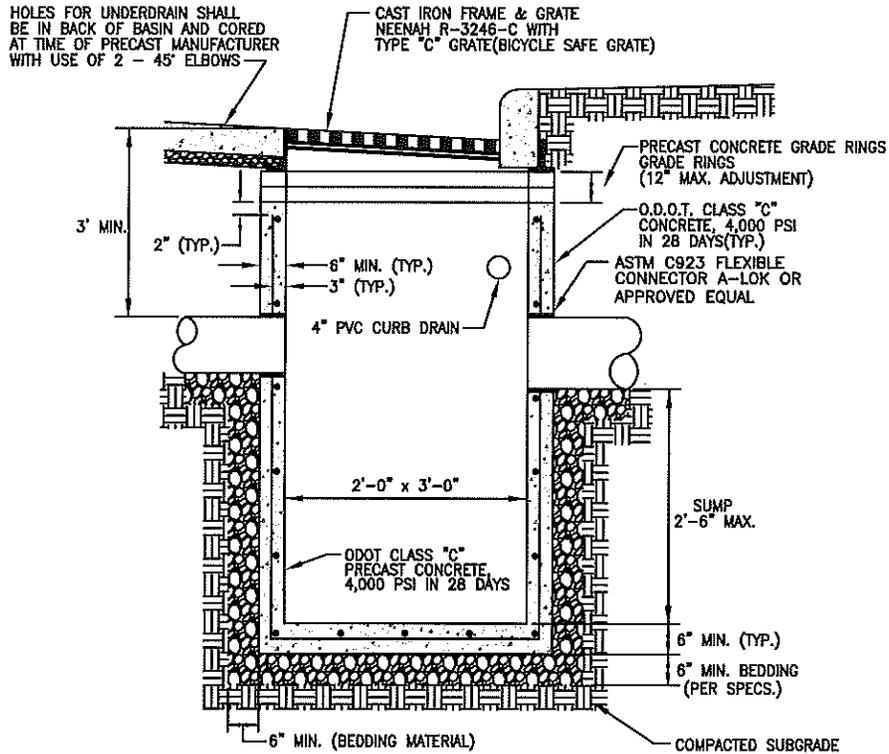
NOT TO SCALE



- NOTES:
1. ALL REINFORCING STEEL SHALL BE #4 DEFORMED BARS.
 2. CONCRETE SHALL BE O.D.O.T. CLASS "C", 4,000 PSI IN 28 DAYS.
 3. DOUBLE INLET/CATCH BASIN SHALL BE 2 PRECAST BASINS SIDE BY SIDE WITH 15" PIPE TO CONNECT AT WATER LEVEL.

RECTANGULAR PRECAST CONCRETE CATCH BASIN

NOT TO SCALE



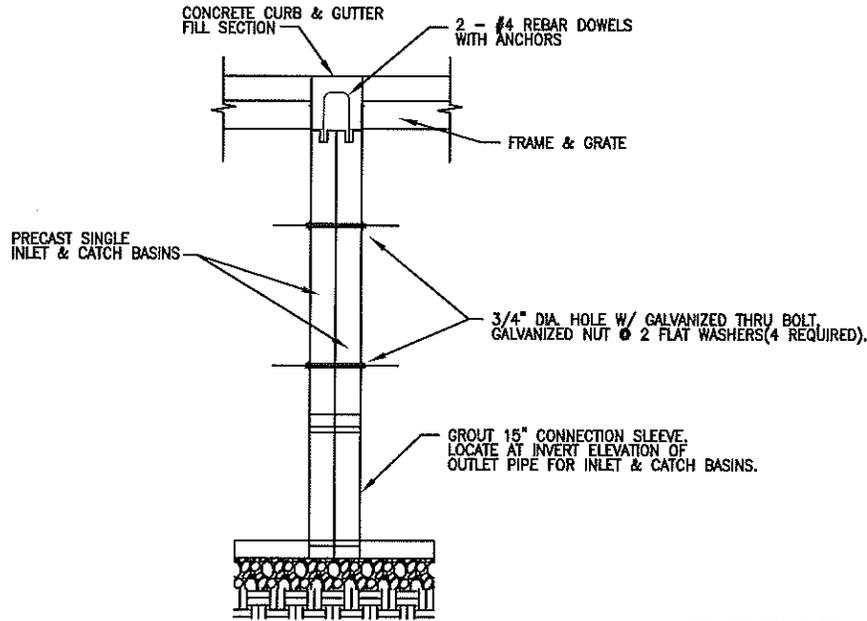
D = 2'-8" FOR MOUNTABLE CURB
= 2'-0" FOR VERTICAL CURB

NOTES:

1. CATCH BASIN AND INLET BASIN CONNECTIONS UNDER PAVEMENT TO BE MINIMUM SIZE 12" R.C.P. (A.S.T.M. C-78 DESIGN) CONFORMING TO ODOT ITEM 603-706.02, CLASS IV.

RECTANGULAR PRECAST CONCRETE CATCH BASIN (FOR STANDING CURB)

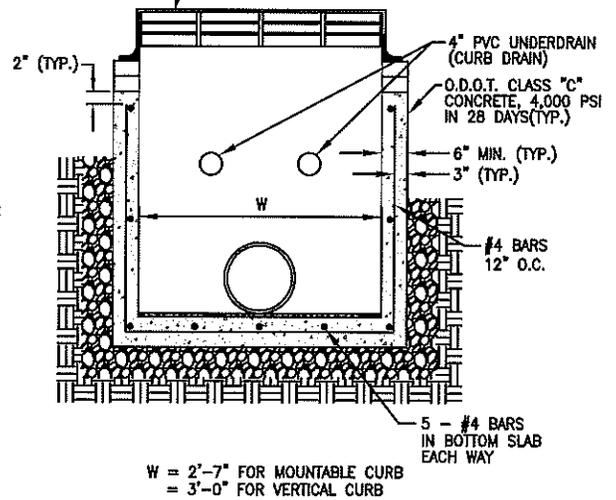
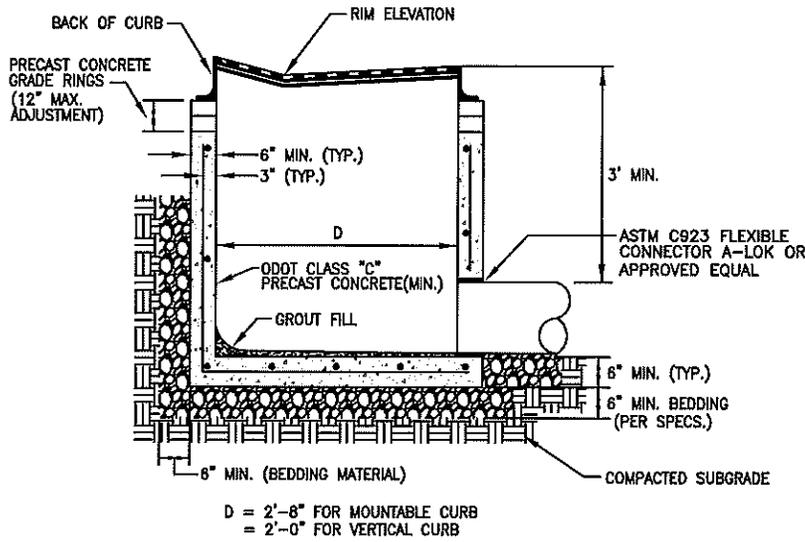
NOT TO SCALE



DOUBLE INLET & CATCH BASIN

FOR VERTICAL CURB:
 USE NEENAH R-3246 OR EJIW NO. 7030 WITH M2 GRATE & T4 BACK (BICYCLE SAFE GRATE) OR PRE-APPROVED EQUAL.

FOR MOUNTABLE CURB:
 USE NEENAH R-3514-F FRAME & GRATE OR PRE-APPROVED EQUAL.
 - GRATE SHALL HAVE TWO FLUSH CROSS BARS (BICYCLE SAFE GRATE)



D = 2'-8" FOR MOUNTABLE CURB
 = 2'-0" FOR VERTICAL CURB

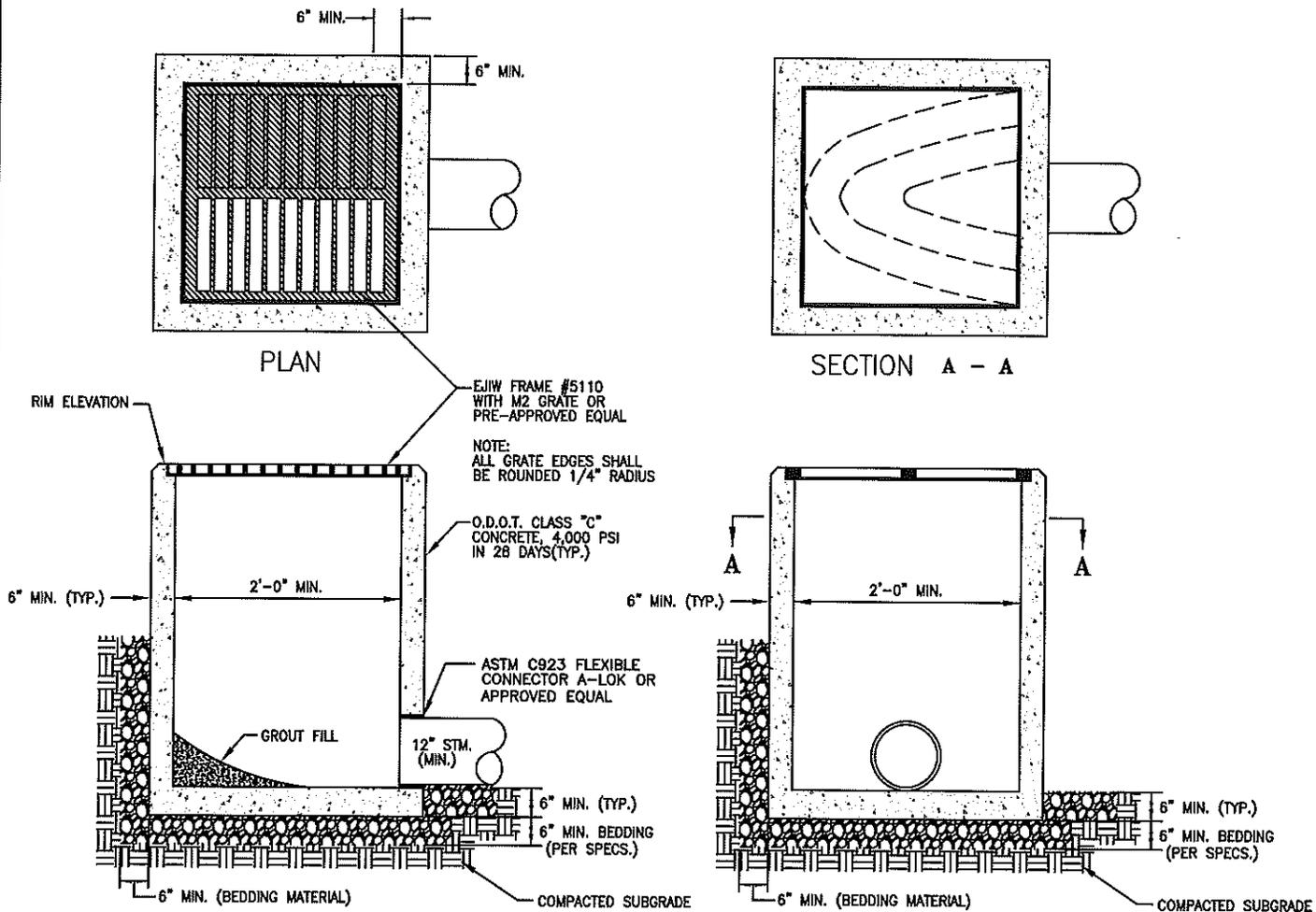
W = 2'-7" FOR MOUNTABLE CURB
 = 3'-0" FOR VERTICAL CURB

NOTES:

1. ALL REINFORCING STEEL SHALL BE #4 DEFORMED BARS.
2. CONCRETE SHALL BE ODOT CLASS "C", 4,000 PSI IN 28 DAYS.
3. DOUBLE INLET/CATCH BASIN SHALL BE 2 PRECAST BASINS SIDE BY SIDE WITH 15" PIPE TO CONNECT AT WATER LEVEL.
4. CATCH BASIN AND INLET BASIN CONNECTIONS UNDER PAVEMENT TO BE MINIMUM SIZE 12" R.C.P.(A.S.T.M. C-78 DESIGN) CONFORMING TO ODOT ITEM 603-706.02, CLASS IV.

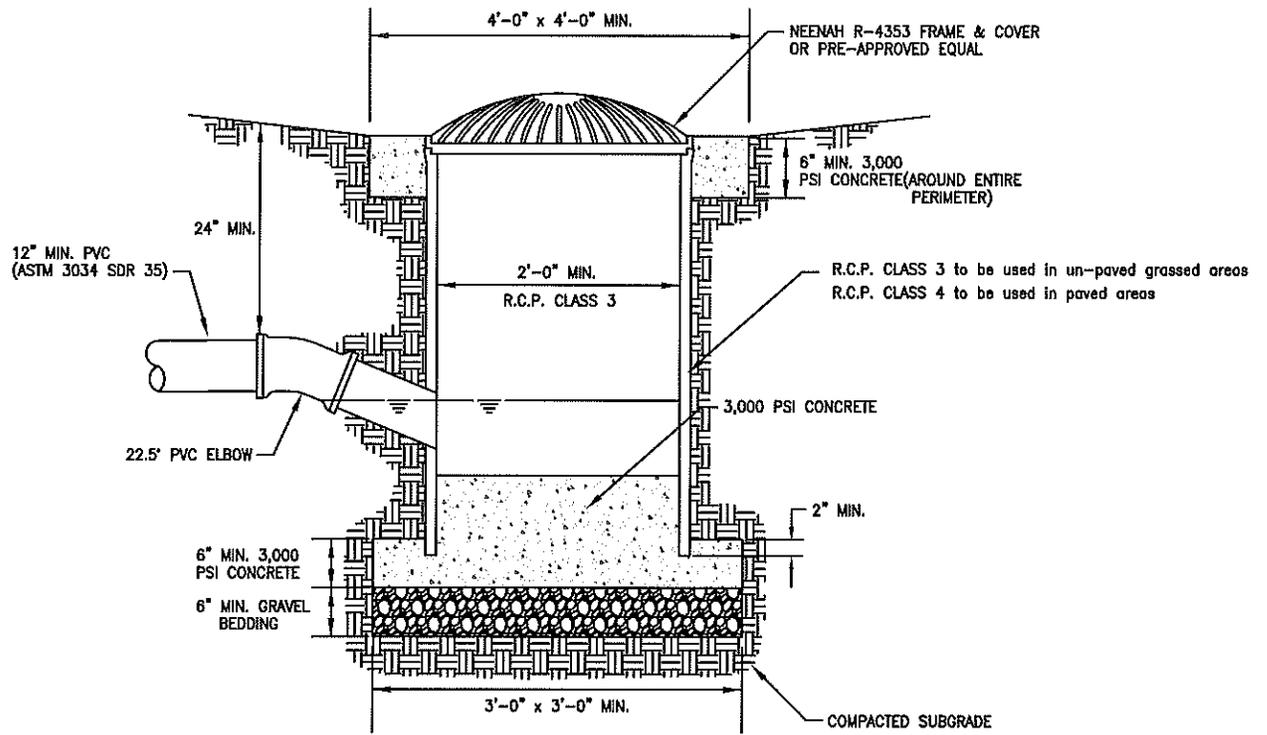
RECTANGULAR PRECAST CONCRETE INLET BASIN

NOT TO SCALE



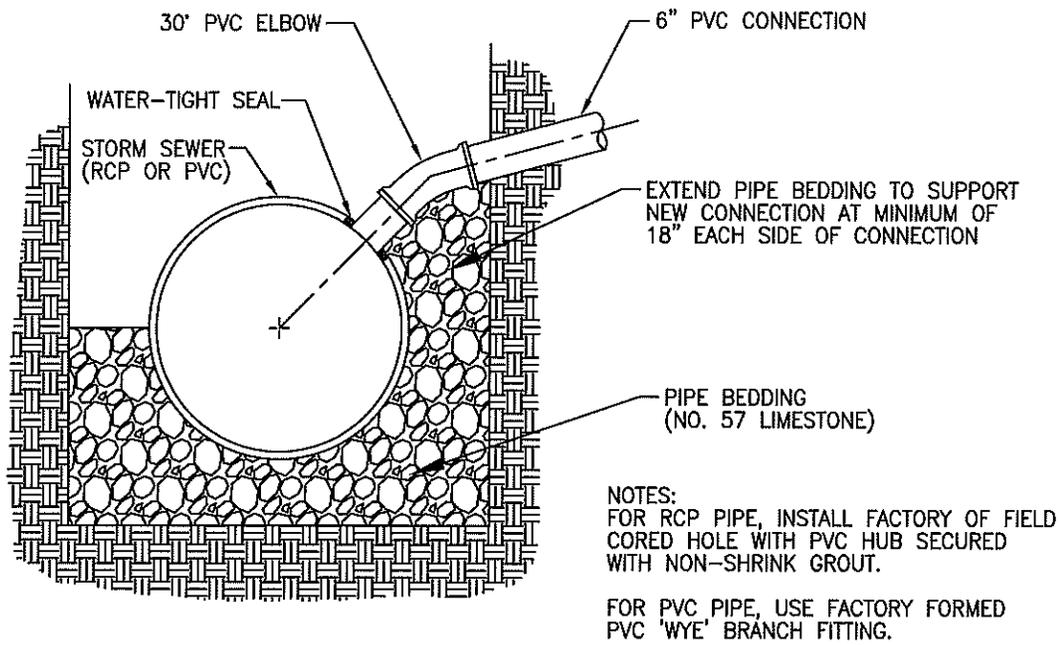
YARD BASIN

NOT TO SCALE



YARD DRAIN

NOT TO SCALE

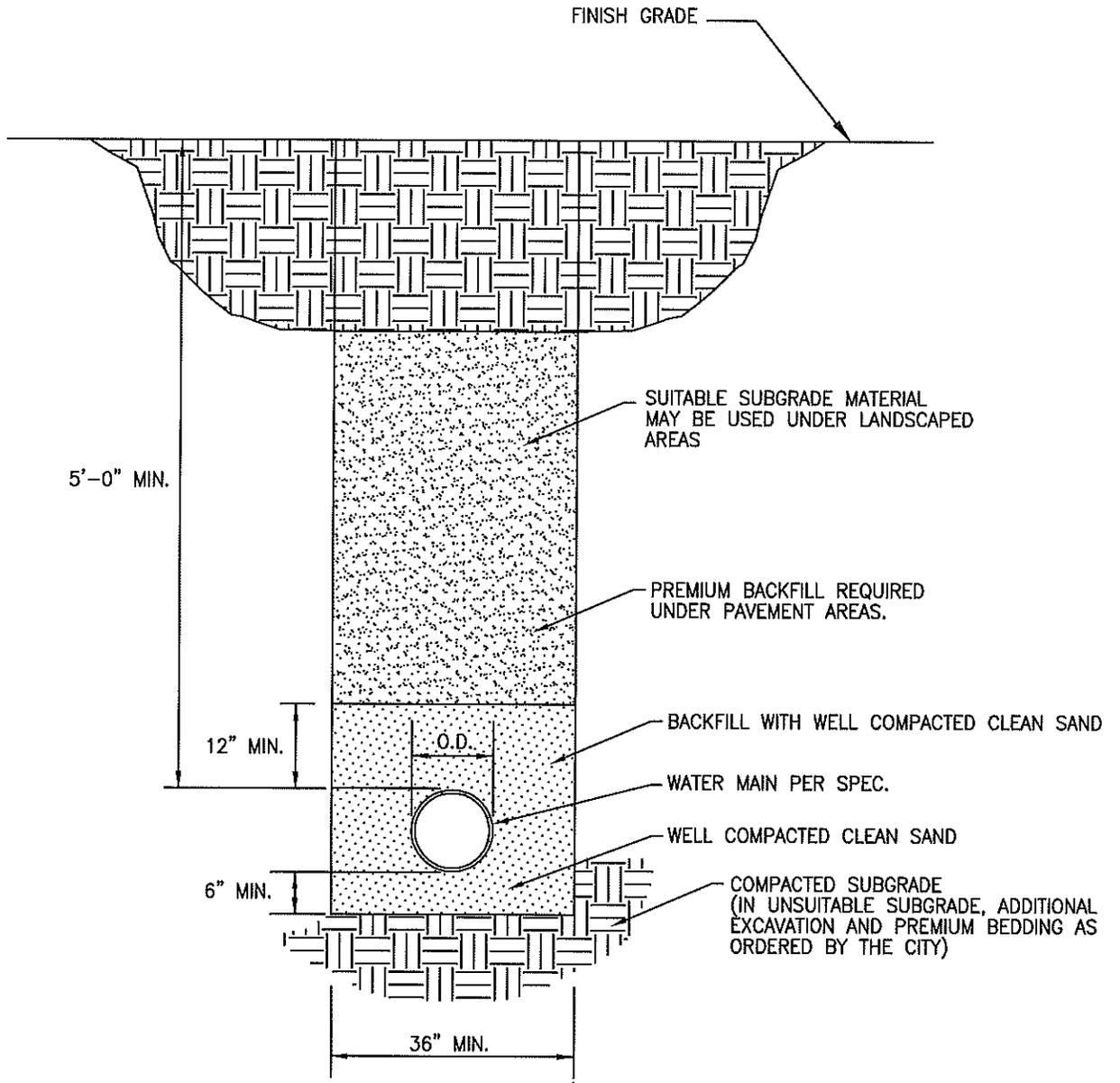


STORM SEWER LATERAL CONNECTION DETAIL

NOT TO SCALE

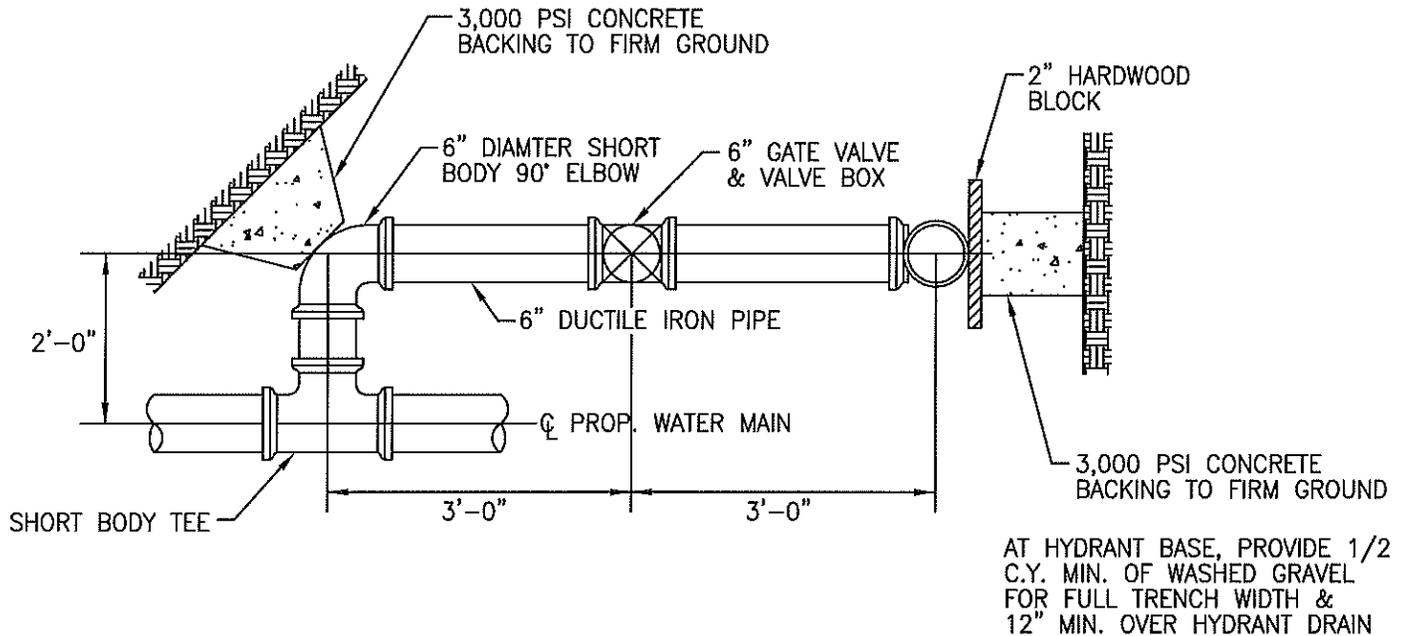
WATER MAINS - THE CITY OF AURORA GENERAL NOTES (UPDATED 11/16)

1. ALL WATER MAINS ARE TO BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE CONSTRUCTION AND MATERIAL SPECIFICATIONS, AND STANDARD DETAILS, OF THE CITY OF AURORA WATER DEPARTMENT.
2. ALL WATER MAIN PIPING SHALL BE PVC PRESSURE PIPE (PR235) CONFORMING TO AWWA C900-16, AS MANUFACTURED BY JM EAGLE COMPANY OR APPROVED EQUAL. JOINTS SHALL MEET THE REQUIREMENTS OF ASTM D-3139. PVC C909 SHALL BE USED IN AREAS WHERE SERVICE TAPS WILL BE LOCATED. PVC C900 WITH EAGLE LOC 900 RESTRAINED JOINT AS MANUFACTURED BY JM EAGLE COMPANY, OR APPROVED EQUAL, SHALL BE USED WHERE RESTRAINED JOINTS ARE REQUIRED. RESTRAINED JOINTS EMPLOYING EXTERNAL SADDLING OF PIPES WILL NOT BE ACCEPTED. FITTINGS SHALL BE CEMENT LINED DUCTILE IRON PIPE CONFORMING TO AWWA C110 OR C153 FOR USE WITH PVC PIPE. ALL MECHANICAL JOINT RESTRAINTS SHALL BE "MEGALUG" BRAND OR APPROVED EQUAL. ALL DUCTILE IRON FITTINGS SHALL BE COATED WITH BITUMASTIC PAINTING AND BE ENCASED WITH A POLYETHYLENE WRAP (8 MIL THICK) CONFORMING TO ANSI A21.5/AWWA C-105, METHOD A, AFTER FIELD INSTALLATION. ALL MATERIALS SHALL BE DOMESTICALLY MANUFACTURED.
3. FOR STRAIGHT RUNS OF PIPE, THE USE OF "PUSH-ON" JOINTS, CONFORMING TO ANSI A21.11/AWWA C-111 WITH RADIALLY COMPRESSED, LOCKED IN PLACE RUBBER RING GASKETS, IS PERMITTED.
4. ALL HYDRANTS, VALVES AND FITTINGS ARE TO HAVE MECHANICAL JOINTS OF THE STUFFING BOX TYPE WITH A RUBBER RING GASKET AND BOLTED FOLLOWER GLAND. UNLESS APPROVED OTHERWISE BY THE WATER DEPARTMENT, ALL MECHANICAL JOINTS ARE TO INCLUDE A RESTRAINT GLAND (MEGA-LUG AS MFR. BY EBAA IRON, INC. OR APPROVED EQUAL). THE CONTRACTOR SHALL PROVIDE MANUFACTURERS' CATALOG DATA FOR ALL VALVES AND NON-STANDARD FITTINGS INSTALLED, INCLUDING ILLUSTRATIONS AND A PARTS SCHEDULE IN SUFFICIENT DETAIL TO SERVE AS A GUIDE FOR ORDERING PARTS.
5. ALL BOLTS AND NUTS FURNISHED WITH MECHANICAL JOINTS OR MECHANICAL JOINT RESTRAINT GLANDS, SHALL BE STAINLESS STEEL AND SHALL HAVE ONE COAT OF BITUMASTIC PAINTING, FIELD APPLIED. EACH MECHANICAL JOINT AND GLAND RING ASSEMBLY SHALL HAVE SACRIFICIAL ANODE CAPS INSTALLED ON EVERY OTHER BOLT.
6. A HYDRANT ASSEMBLY SHALL INCLUDE THE HYDRANT, VALVE, FITTINGS, PIPE AND EXTENSION SECTIONS AND SHALL BE SIX (6) INCHES IN SIZE. HYDRANTS ARE TO BE "KENNEDY K-81" OR APPROVED EQUAL. THE TWO 2 1/2" HOSE NOZZLE THREADS ARE TO BE NATIONAL STANDARD. THE 4" PUMPER NOZZLE SHALL HAVE A 4" DIAMETER "STDRZ" FITTING AND CAP IN PLACE OF THE PUMPER NOZZLE. HYDRANTS SHALL HAVE AIRCRAFT GRADE CABLE ON ALL NOZZLES. THE HYDRANT AND VALVE ARE TO OPEN TO THE LEFT. HYDRANTS SHALL HAVE A 5-1/4" MAIN VALVE OPENING. STEM OPERATING AND CAP NUTS SHALL BE PENTAGONS, APPROXIMATELY 1-1/8" POINT TO FLAT. HYDRANTS SHALL BE BEDDED AND BACKFILLED WITH #8 WASHED PEA GRAVEL. HYDRANTS SHALL HAVE A DEPTH OF BURY TO MEET THE FINISHED GRADE AND REDUCE OR ELIMINATE THE USE OF INTERMEDIATE BARREL EXTENSIONS. HYDRANTS SHALL BE LOCATED A MINIMUM OF FIVE FEET FROM VEHICULAR TRAFFIC.
7. IN CERTAIN CASES THERE MAYBE A POTENTIAL FOR CONFLICT WITH THE EXISTING WATERLINE WHEN INSTALLING THE PROPOSED FIRE HYDRANTS. THE CONTRACTOR SHALL VERIFY EXISTING WATERLINE LOCATION & DEPTH PRIOR TO INSTALLATION OF THE PROPOSED WATERLINE & HYDRANT LEADS. HYDRANT BURY DEPTHS SHALL BE ADJUSTED ACCORDINGLY IN ORDER TO MAINTAIN A MINIMUM OF 5 FOOT OF COVER AND PROPER CLEARANCES.
8. ALL WATER MAINS AND SERVICE CONNECTIONS SHALL BE BUILT AT A FIVE (5) FOOT MINIMUM DEPTH OF COVER BELOW FINISHED GRADE, UNLESS NOTED OTHERWISE ON THE PLANS.
9. WATER SERVICE CONNECTIONS SHALL BE LOCATED A MINIMUM OF FIVE (5) FEET FROM ANY SANITARY OR STORM SEWER CONNECTION. INDIVIDUAL SERVICE CONNECTIONS AND CURB STOPS SHALL BE LOCATED AS FOLLOWS:
 - A. ALONG PUBLIC ROADS, WITHIN THE RIGHT-OF-WAY.
 - B. ALONG PRIVATE ROADS, WITHIN A RECORDED UTILITY EASEMENT.
 - C. IN CLUSTER DEVELOPMENTS, WITHIN A RECORDED UTILITY EASEMENT OR DESIGNATED COMMON AREA
 ALL INDIVIDUAL METERED RESIDENCES THAT ARE PART OF A MULTI-UNIT STRUCTURE SHALL HAVE A SEPARATE SERVICE LINE AND CURB STOP.
10. WHEREVER UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED, WORK SHALL BE DISCONTINUED UNTIL THE AREA IS STABILIZED TO THE SATISFACTION OF THE PROJECT ENGINEER AND THE CITY ENGINEER. ALL CONDUITS SHALL BE INSTALLED ON A FIRM BED FOR THEIR FULL LENGTH IN ACCORDANCE WITH DDDT ITEM 60903 UNLESS OTHERWISE SPECIFIED.
11. ALL VALVES SHALL BE OPEN LEFT. MAINLINE VALVES SHALL BE BEDDED AND BACKFILLED IN #8 WASHED PEA GRAVEL. VALVE BOXES FOR MAIN LINE VALVES SHALL BE THREE-PIECE, THREADED AND ADJUSTABLE (#22 "ROADWAY" BOX OR APPROVED EQUAL). THE CONTRACTOR SHALL MEET WITH THE CITY WATER DEPARTMENT PRIOR TO THE START OF CONSTRUCTION TO IDENTIFY VALVES THAT SHALL BE REMOVED AND RETURNED TO THE CITY, WITH SPECIAL CARE TO MAINTAIN THEIR WORKING CONDITION.
12. SERVICE CONNECTIONS ARE TO BE 3/4" DIAMETER COPPER (TYPE K) WITH FLARED FITTINGS, UNLESS NOTED OTHERWISE ON THE PLANS. CORPORATION STOPS SIZED 3/4" AND 1" ARE TO HAVE A FLARED END. LARGER SIZE CORPORATION STOPS MAY BE COMPRESSION TYPE. ALL SIZE CURB STOPS MAY BE COMPRESSION TYPE. WATER SERVICE CONNECTIONS SHALL BE BEDDED IN 6" CLEAN SAND AND BACKFILLED WITH 12" OF CLEAN SAND.
13. CURB STOP BOXES SHALL BE ARCH PATTERN BASE, WITH STAINLESS STEEL STATIONARY ROD. CURB STOP BOXES SHALL BE OF A LENGTH TO BE ADJUSTABLE TO THE FINAL GRADE WITHOUT THE USE OF EXTENSIONS. STATIONARY RODS ARE NOT TO EXTEND ABOVE THE FINAL GRADE. LID SHALL BE ERIE PATTERN. PENTAGON PLUG LIDS SHALL BE USED IN ALL PAVEMENT LOCATIONS.
14. ALL FLUSHING, STERILIZATION AND DISINFECTION OF WATER MAINS SHALL BE DONE AT THE EXPENSE OF THE CONTRACTOR. CHLORINATED WATER MAY NOT BE DISCHARGED INTO NATURAL WATERCOURSES OR STORM DRAINAGE SYSTEMS. FLUSHING WATER MUST BE DISCHARGED INTO SANITARY SEWER LINE OR MUST BE DECHLORINATED. TWO BACTERIA SAMPLES ARE REQUIRED. THE FIRST SHALL BE TAKEN 24 HOURS AFTER CHARGING THE MAIN. THE SECOND SAMPLE SHALL BE TAKEN 24 HOURS AFTER THE FIRST SAMPLE. CONTRACTOR SHALL COORDINATE TESTING WITH THE WATER DEPARTMENT SUPERVISOR.
15. WATER MAIN INSTALLATION AND PRESSURE TESTING SHALL CONFORM TO AWWA C-600.
16. WATER MAIN DISINFECTION PROCEDURES SHALL CONFORM TO AWWA C-651.
17. THE FIELD TESTING "HEAD" SHALL BE 75 P.S.I. PLUS THAT DUE TO STATIC "HEAD," AND IN NO CASE SHALL BE LESS THAN 160 P.S.I.
18. THE CONTRACTOR SHALL PROVIDE A 6' X 6' I.D. SHEETED AND SHORED CHLORINATION PIT AT VARIOUS LOCATIONS AS DETERMINED BY THE WATER DEPARTMENT.
19. IN TESTING OF THE NEW WATER MAIN, WHERE IT IS INTERCONNECTED WITH AN EXISTING WATER MAIN, RESULTING IN FAILURE OF THE TEST OR DAMAGE TO THE EXISTING WATER MAIN OR APPURTENANCES, SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
20. BOOSTER PUMPS ARE NOT PERMITTED ON SERVICE CONNECTIONS. THE WATER DEPARTMENT MAY PERMIT BOOSTER PUMPS FOR BUILDINGS SIX STORIES AND HIGHER.
21. EXISTING FIRE HYDRANTS REMOVED FROM CONSTRUCTION ARE THE PROPERTY OF THE CITY OF AURORA. THE CONTRACTOR SHALL TURN OVER ALL FIRE HYDRANTS TO THE CITY. THE CONTRACTOR SHALL MEET WITH THE CITY WATER DEPARTMENT PRIOR TO THE START OF CONSTRUCTION TO IDENTIFY HYDRANTS THAT SHALL BE REMOVED WITH SPECIAL CARE IN ORDER TO MAINTAIN THEIR WORKING CONDITION.
22. CONTRACTOR SHALL NOTIFY THE CITY OF AURORA ENGINEER OF ANY WATER SERVICE INTERRUPTIONS AT LEAST 48 HOURS IN ADVANCE. THE CONTRACTOR SHALL KEEP TO A MINIMUM THE NUMBER OF RESIDENTS WITHOUT WATER SERVICE AND THE AMOUNT OF TIME EACH IS WITHOUT WATER SERVICE. UNDER NO CIRCUMSTANCES SHALL THE WATER SERVICE BE INTERRUPTED OVER NIGHT.
23. ALL EXISTING WATERLINES NOT IN USE SHALL BE ABANDONED AND COMPLETELY FILLED WITH GROUT. PRIOR TO GROUT FILLING THE LINE, THE CONTRACTOR SHALL VERIFY THAT NO LIVE SERVICES REMAIN CONNECTED TO THE LINE. GROUT SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
24. FIRE AND DOMESTIC SUPPLY LATERALS SHALL BE SEPARATE CONNECTIONS TO THE WATER MAIN CONNECTED IN THE RIGHT-OF-WAY. FIRE SERVICE IS NOT PERMITTED TO TEE OFF THE DOMESTIC SERVICE LINE.
25. RESTRAINT JOINT DISTANCES SHALL BE CALCULATED AND SHOWN ON THE PLANS FOR WATER MAINS.
26. ALL FITTINGS AND MATERIALS SHALL BE LEAD FREE.
27. ALL WATER SERVICES SHALL BE INSTALLED PRIOR TO ROADWAY STABILIZATION OR PLACEMENT OF BASE MATERIAL.
28. NEW WATERMAINS SHALL BE HYPER-CHLORINATED FOR A MINIMUM OF 24 HOURS. HYPER-CHLORINATED WATERMAINS SHALL BE FLUSHED NO LATER THAN 32 HOURS AFTER CHARGING THE MAIN.
29. A SERVICE CONNECTION TO A WATERMAIN SHALL BE PERMITTED ONLY IF THE WATERMAIN EXTENDS ACROSS THE FRONTAGE OF THE PREMISES. ON CORNER LOTS OR LOTS THAT ARE ADJACENT TO MORE THAN ONE STREET, A SERVICE CONNECTION WILL BE PERMITTED ONLY IF THE LOT HAS A WATER MAIN THAT IS EXTENDED ACROSS THE FULL FRONTAGE AS WELL AS ACROSS THE PROPERTY LIMITS ON THE OTHER ADJACENT STREETS.



TYPICAL WATER MAIN TRENCH

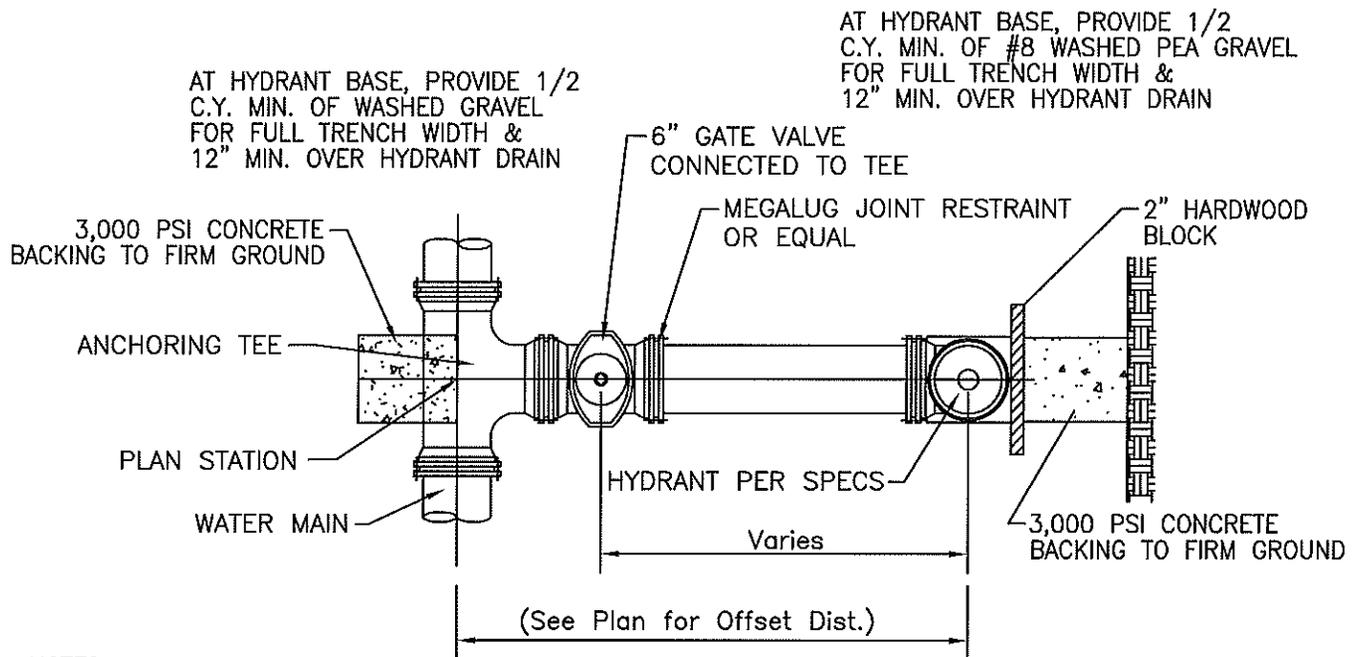
NOT TO SCALE

**NOTES:**

1. THE TEE, ELBOW, VALVE AND HYDRANT ARE TO HAVE MECHANICAL JOINTS.
2. A BRICK BASE BEDDING IS TO BE PROVIDED FOR THE VALVE AND HYDRANT.
3. ALL MECHANICAL JOINTS AND PIPE SHALL BE POLYETHYLENE WRAPPED IN ACCORDANCE WITH A.W.W.A. C-105/421 82 CLASS "C" METHOD "C."
4. ALL BOLTS AND NUTS FURNISHED WITH MECHANICAL JOINTS OR RETAINED MECHANICAL JOINTS INCLUDING RETAINER OR WEDGE ACTION TYPE GLANDS SHALL BE STAINLESS CORROSION RESISTANT STEEL AND HAVE ONE(1) COAT OF BITUMASTIC PAINTING PRIOR TO POLYETHYLENE WRAPPING.
5. HYDRANTS SHALL BE KENNEDY K-81 OR APPROVED EQUAL.
6. THE TWO(2) 2 1/2" HOSE NOZZLE THREADS ARE TO BE NATIONAL STANDARD. THE 4" PUMPER NOZZLE SHALL HAVE A 4" "STORZ" FITTING AND CAP IN PLACE OF THE PUMPER NOZZLE. THE HYDRANT AND VALVE ARE TO OPEN TO THE LEFT.
7. HYDRANTS SHALL BE PAINTED AS REQUIRED IN THE TYPICAL FIRE HYDRANT ASSEMBLY DETAIL OR THE END OF LINE FIRE HYDRANT ASSEMBLY DETAIL.

OFFSET FIRE HYDRANT

NOT TO SCALE

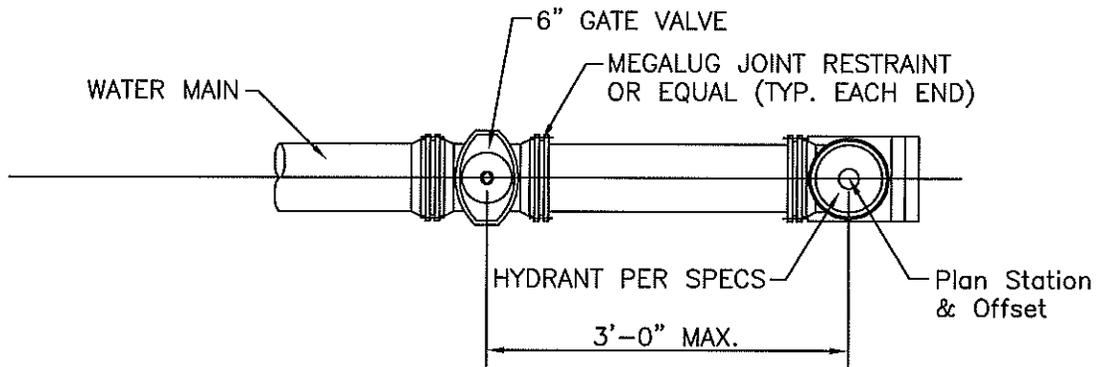
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7. HYDRANTS SHALL BE FACTORY PRIMED WITH SHERWIN WILLIAMS MACROPOXY 646. AFTER INSTALLATION, CONTRACTOR SHALL PAINT THE HYDRANTS WILL SHERWIN WILLIAMS ACROLON ULTRA HP AS FOLLOWS: BODY - 'RAINFOREST' (SW4071), BONNET - EXTRA WHITE (B65W00821)

TYPICAL FIRE HYDRANT ASSEMBLY DETAIL

N.T.S.

AT HYDRANT BASE, PROVIDE 1/2
C.Y. MIN. OF #8 WASHED PEA GRAVEL
FOR FULL TRENCH WIDTH &
12" MIN. OVER HYDRANT DRAIN



NOTES:

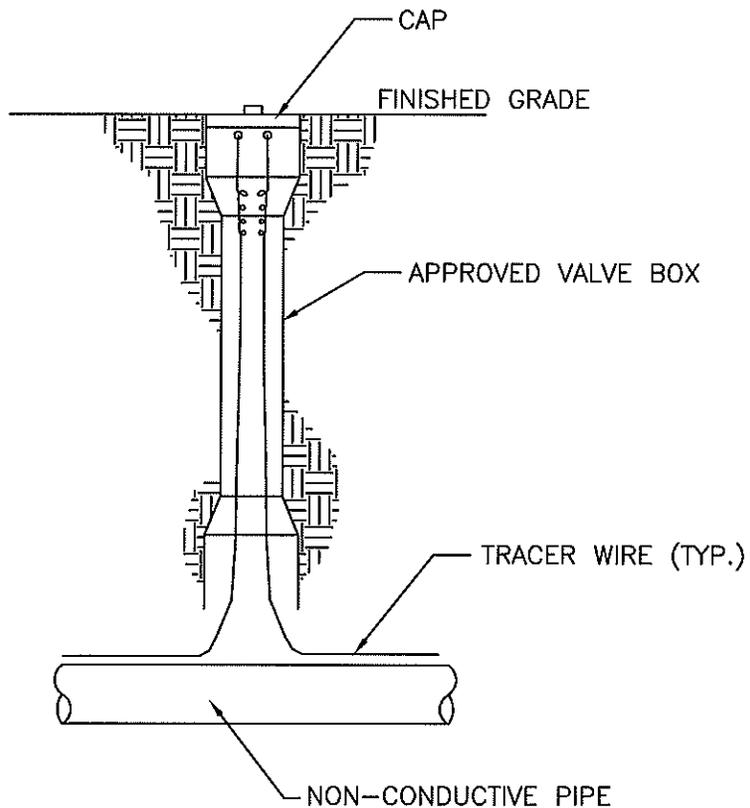
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7. HYDRANTS SHALL BE FACTORY PRIMED WITH SHERWIN WILLIAMS MACROPOXY 646. AFTER INSTALLATION, CONTRACTOR SHALL PAINT THE HYDRANTS WITH SHERWIN WILLIAMS ACROLON ULTRA HP IN 'SAFETY RED' (B65R00820).

END OF LINE FIRE HYDRANT ASSEMBLY
DETAIL

N.T.S

NOTE:

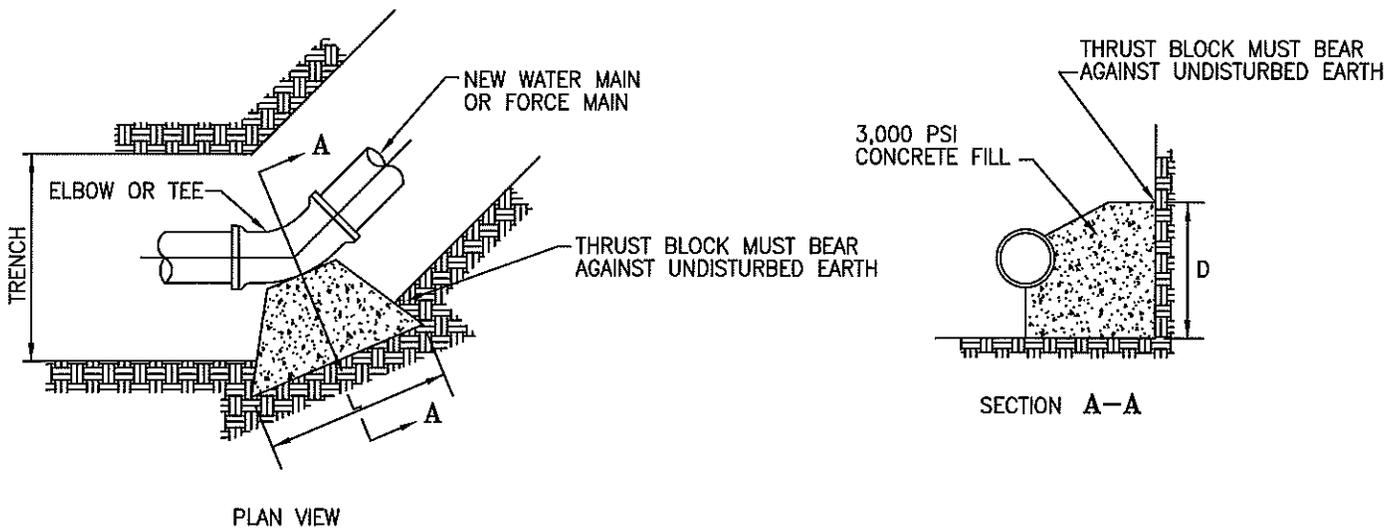
1. TRACER WIRE SHALL BE TIED INTO EVERY VALVE, BLOW-OFF, AND OTHER DEVICES OF CHANGES IN DIRECTION.
2. PROVIDE ONE TRACER LEAD IN EACH DIRECTION UNLESS OTHERWISE NOTED.
3. TRACER WIRE ACCESS BOX SHALL BE A APPROVED VALVE BOX.
4. TRACER LEADS SHALL HAVE ADEQUATE SLACK THROUGHOUT THE INSTALLATION TO REDUCE BREAKAGE FROM PULLING.
5. 12 INCHES OF SLACK SHALL BE LEFT IN BOX AND WIRES SHALL BE PROPERLY CONNECTED TO THE LID TOP PER MANUFACTURES SPECIFICATIONS.
6. ALL SPLICES AND PIGTAILS SHALL USE WIRE NUTS FOR DIRECT BURIAL AND WET APPLICATIONS.



TYPICAL WATER MAIN
TRACER WIRE ACCESS BOX DETAIL

N.T.S.

MINIMUM AREA (L x D) TO BE PROVIDED (IN SQUARE FEET)														
PIPE SIZES	6"	8"	10"	12"	14"	16"		PIPE SIZES	6"	8"	10"	12"	14"	16"
TEES	2.2	3.8	5.9	8.5	11.6	15.1		30° ELBOWS	1.3	2.0	3.0	4.3	5.8	7.8
90° ELBOWS	3.3	5.3	8.0	11.8	16.0	21.0		22.5° ELBOWS	0.9	1.5	2.3	3.3	4.5	5.8
45° ELBOWS	1.8	2.9	4.5	6.3	8.8	11.6		11.25° ELBOWS	0.5	0.8	1.2	1.7	2.3	3.0



TYPICAL CONCRETE THRUST BLOCK DETAIL FOR WATER MAIN & SANITARY FORCE MAIN

NOT TO SCALE

NOTES:

ENTIRE OFFSET INCLUDING ELBOWS SHALL BE BUILT USING DUCTILE IRON PIPE RETAINED MECHANICAL JOINTS CLASS 52 CEMENT LINED PIPE.

CULVERTS SHALL BE FROST-PROOF WITH WITCOLITE OR PRE-APPROVED EQUAL.

CASING REQUIRED IF SEWER IS 24" OR LARGER. PRE-APPROVED EQUAL.

ONE LENGTH OF DUCTILE IRON PIPE RETAINED OUT OF BEND

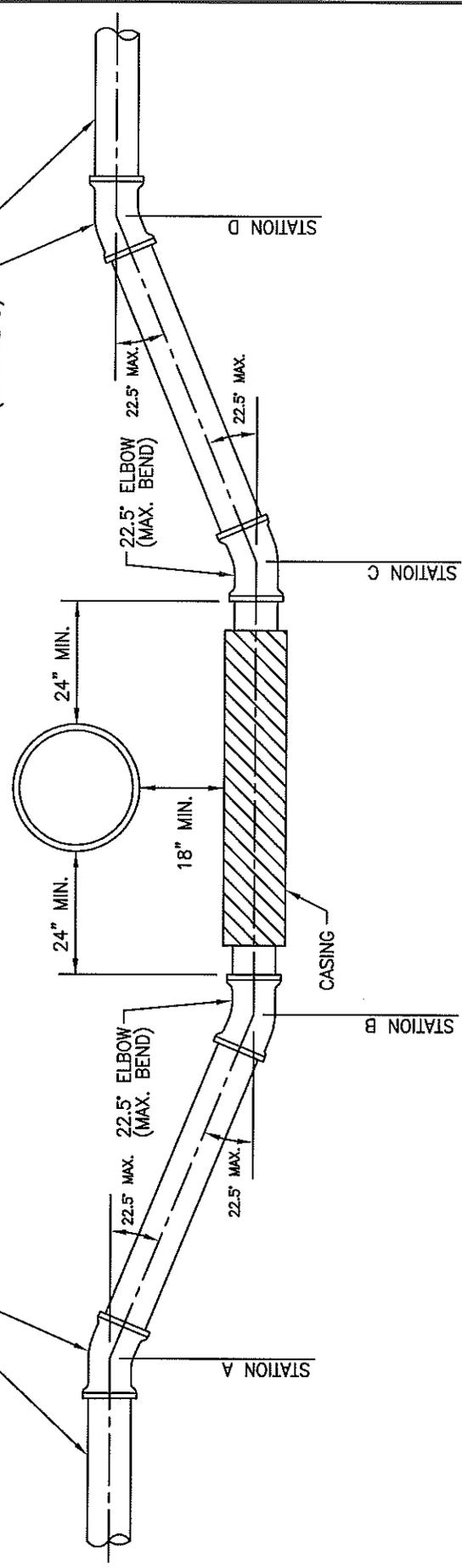
22.5' ELBOW (MAX. BEND)

STATION A

STATION B

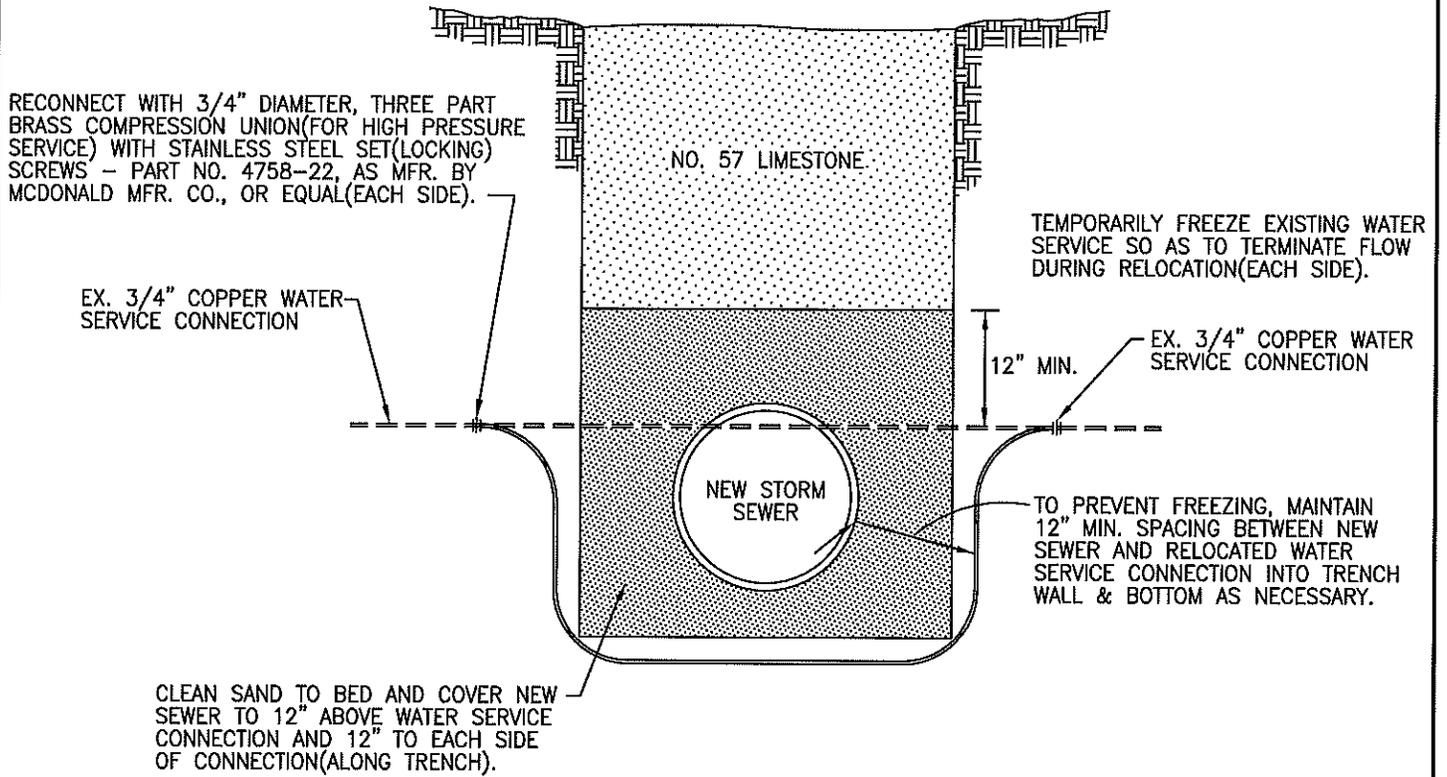
STATION C

STATION D



TYPICAL WATER MAIN OFFSET BENDS FOR CULVERTS AND SEWERS

NOT TO SCALE

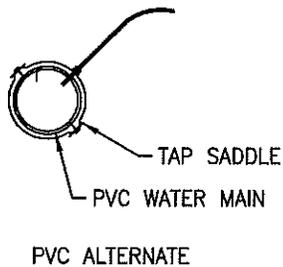
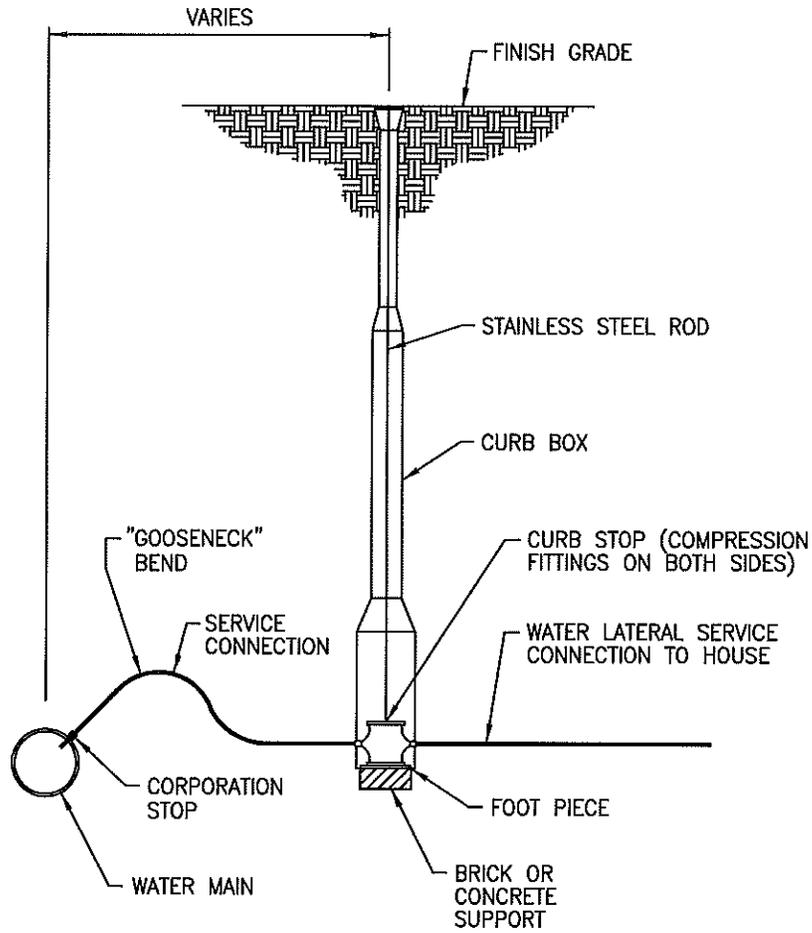


EXISTING WATER SERVICE RELOCATION DETAIL

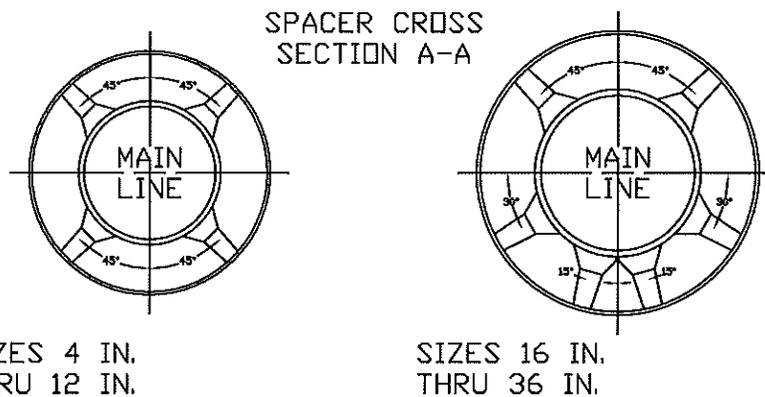
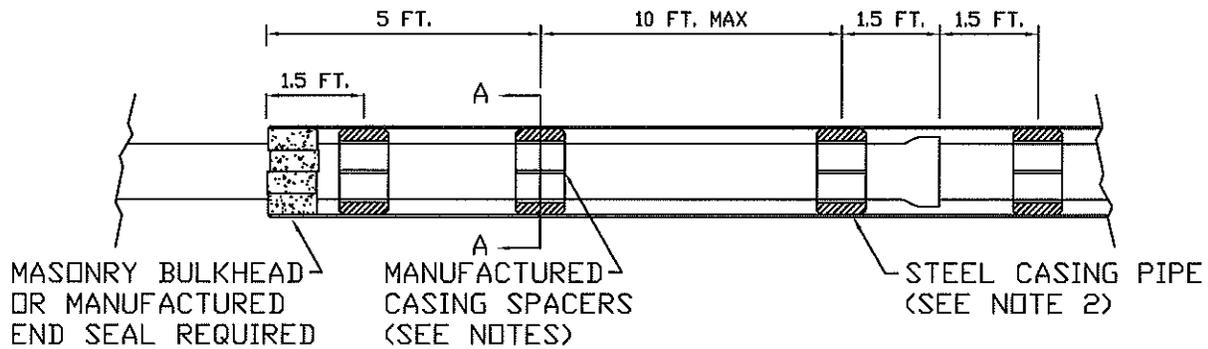
NOT TO SCALE

NOTES:

- 1. CURB BOX TO BE ARCH PATTERN BASE WITH ERIE PATTERN LID.
- 2. WATER SERVICE CONNECTIONS SHALL BE BEDDED IN 6" CLEAN SAND AND BACKFILLED WITH 12" OF CLEAN SAND.
- 3. PVC ALTERNATE SADDLE SHALL BE EPOXY COATED WITH STAINLESS STEEL STRAP AND BOLTS.



WATER SERVICE (LATERAL)
CONNECTION
NOT TO SCALE



NOT TO SCALE

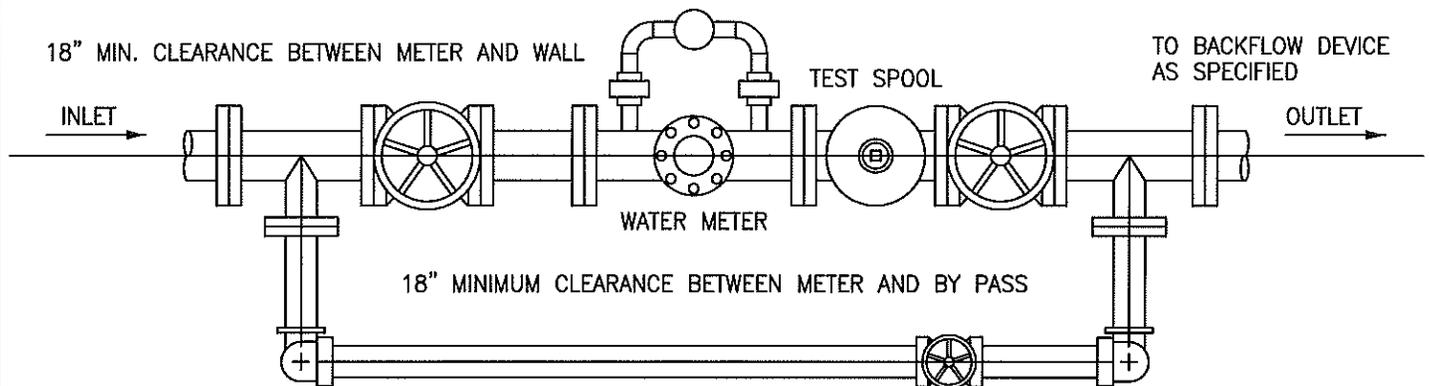
NOTES:

1. THIS DETAIL SHALL BE THE MINIMUM STANDARD FOR THE INSTALLATION OF CASING PIPE FOR WATER AND WASTEWATER PIPELINES.
2. CASING PIPE SIZE SHALL BE DETERMINED BY ODOT ITEM 638.11 AND CASING PIPE WALL THICKNESS SHALL BE DETERMINED BY ODOT ITEM 748.06.
3. CASING PIPE SHALL BE EXTENDED A MINIMUM OF 5 FT. BEYOND THE EDGE OF PAVEMENT OR BACK OF CURB.
4. ALL PUSH-ON JOINTS WITHIN CASING SHALL HAVE FIELD LOK GASKETS INSTALLED.
5. ONLY MANUFACTURED CASING SPACERS SHALL BE USED TO SPACE MAINLINE WITHIN CASING. SELECTED SPACERS MUST ACCOUNT FOR THE CARRIER/CASING DIFFERENTIAL AND SHALL BE APPROVED BY THE CITY ENGINEER.
6. CASING SHALL BE FILLED WITH FLOWABLE FILL SUCH AS HOT SAND.

WATER METER AS SPECIFIED BY THE CITY OF AURORA

2' AND SMALLER WATER METER AND SPOOL MAY BE PURCHASED FROM THE CITY OF AURORA WATER DEPARTMENT. FLANGES, GASKETS AND BOLTS PROVIDED BY THE INSTALLER

FOR METERS 3' AND LARGER, CONTACT THE AURORA WATER DEPARTMENT FOR SPECIFICATIONS (MAKE, MODEL, PART NUMBER). THESE METERS ARE NOT PROVIDED BY THE CITY. FLANGES, GASKETS, AND BOLTS PROVIDED BY THE INSTALLER.



THE VALVE BYPASS MUST BE LOCKABLE AND IN THE CLOSED POSITION

THE DISTANCE BETWEEN THE FLOOR AND THE METER SHALL BE 20" TO 30"

THERE MUST BE ACCESS TO THE OUTSIDE OF THE BUILDING WITH 25' OF THE METER FOR THE DISCHARGE HOSE USED IN METER TESTING OR A FLOOR DRAIN OF ADEQUATE SIZE TO ACCEPT THE FULL METER FLOW PROVIDED.

THE SUPPORT BRACKETS CANNOT BE ATTACHED TO THE METER OR THE BACKFLOW DEVICE.

THERE SHOULD BE FIVE PIPE DIAMETERS UPSTREAM AND DOWNSTREAM OF THE METER FOR TURBULANCE COMPENSATION.