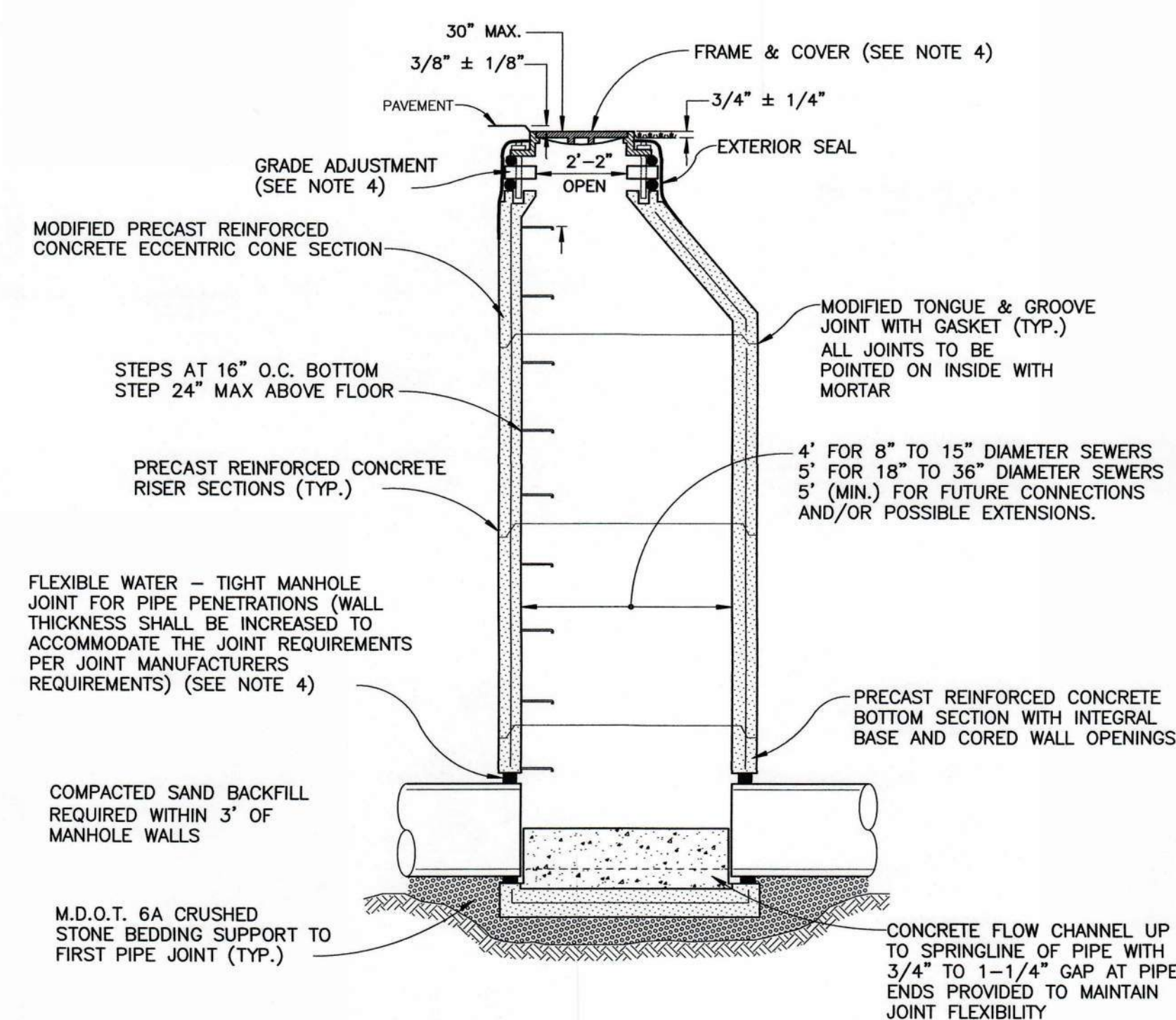
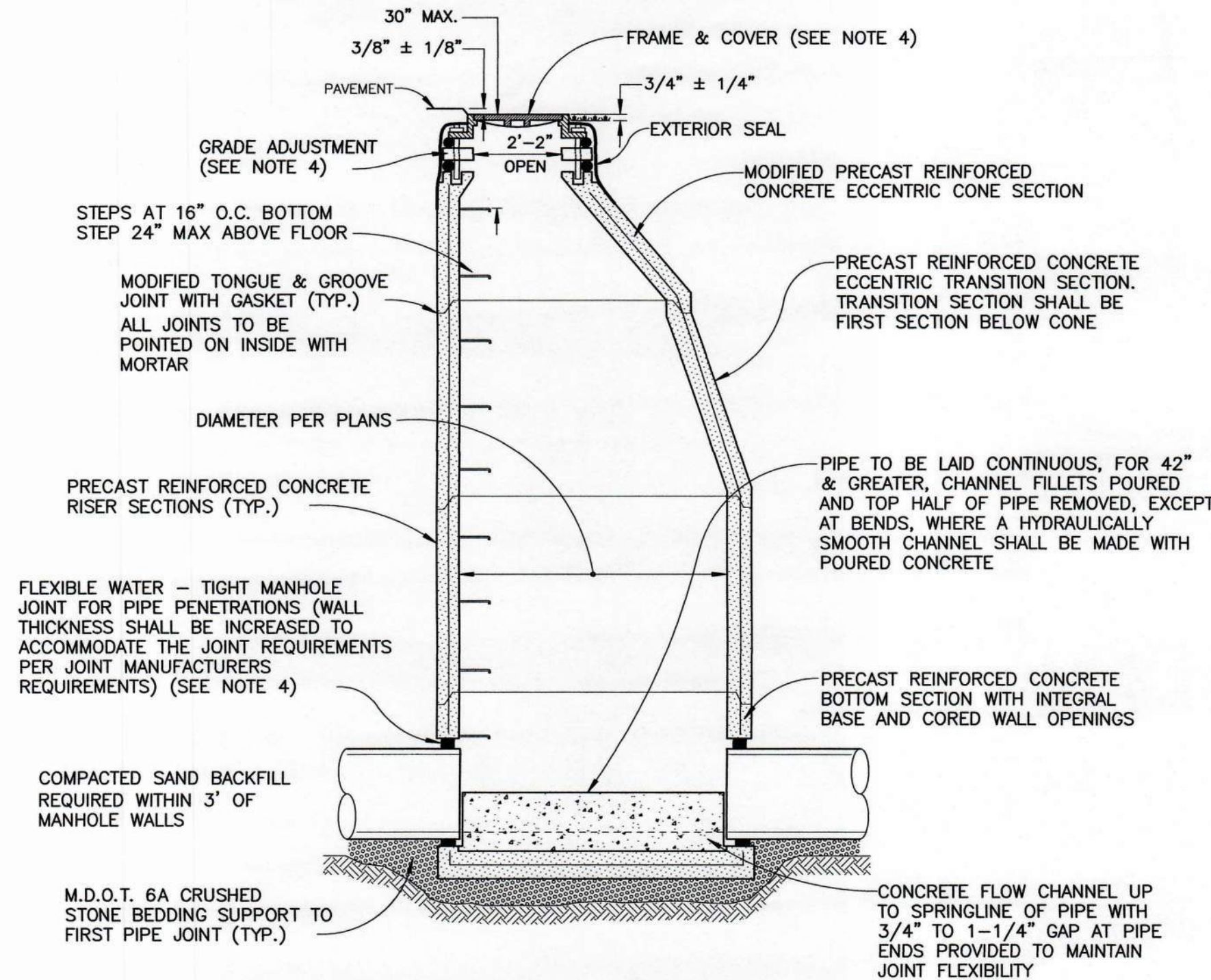
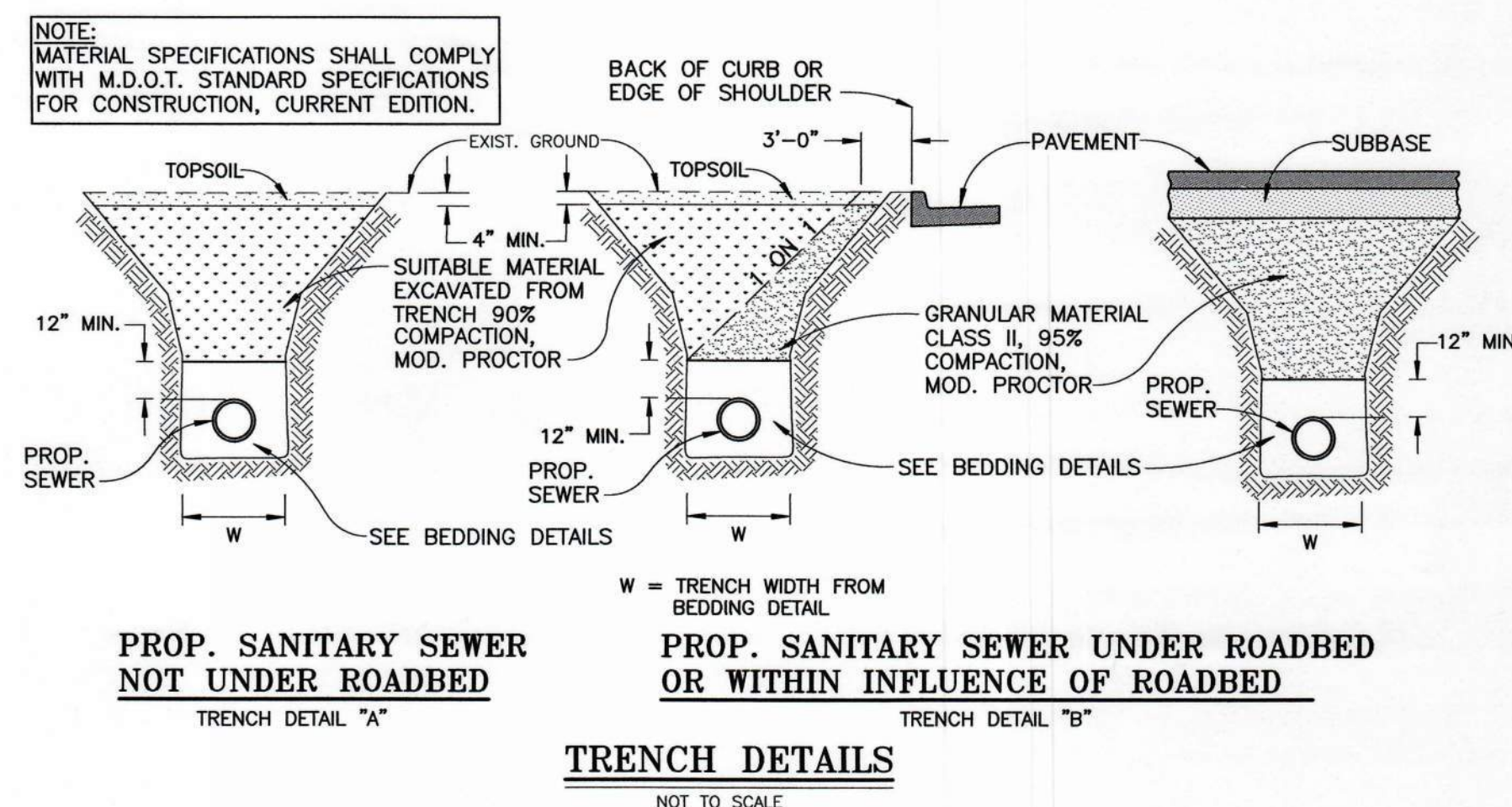




SANITARY SEWER MANHOLE
NOT TO SCALE
(4' AND 5' DIAMETER)



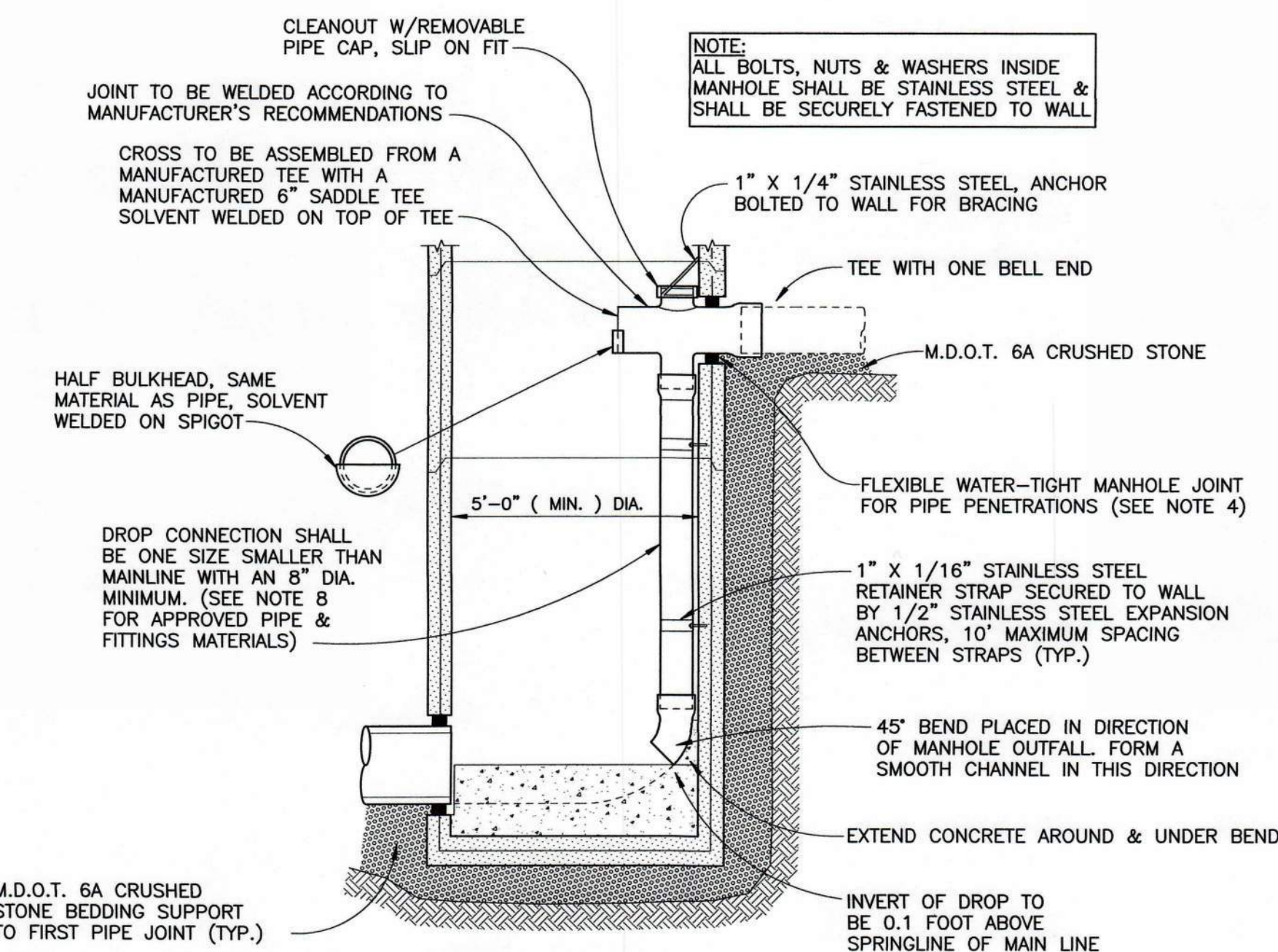
SANITARY SEWER MANHOLE
NOT TO SCALE
(6' DIAMETER AND LARGER)



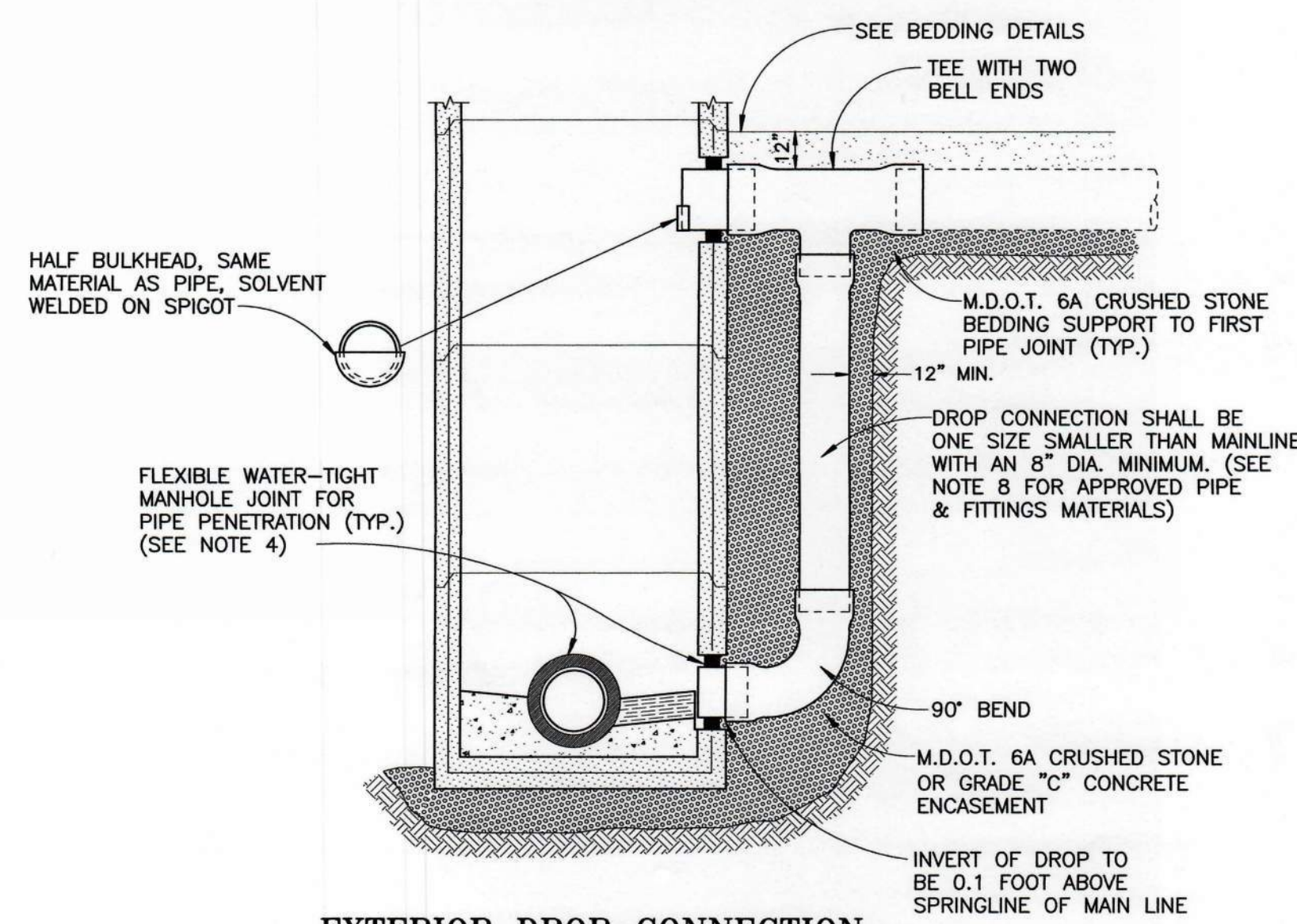
PROP. SANITARY SEWER NOT UNDER ROADBED
TRENCH DETAIL "A"

PROP. SANITARY SEWER UNDER ROADBED OR WITHIN INFLUENCE OF ROADBED
TRENCH DETAIL "B"

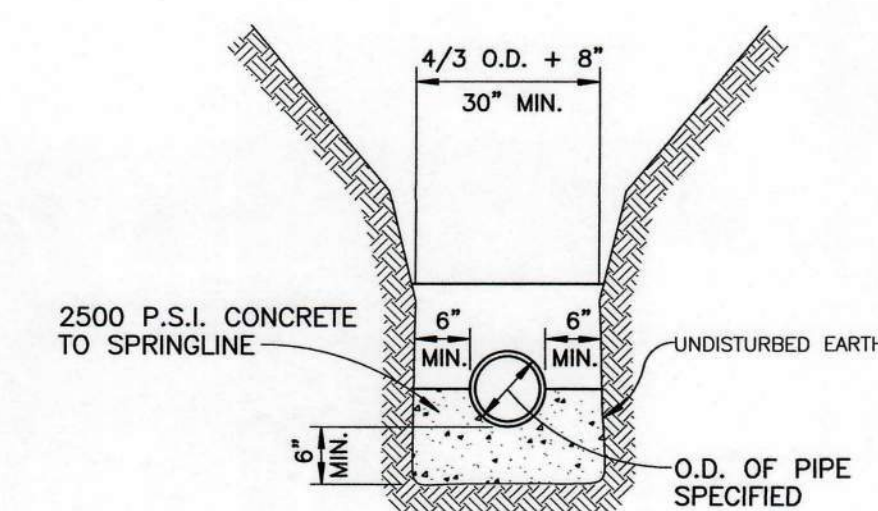
TRENCH DETAILS
NOT TO SCALE



INTERIOR DROP CONNECTION
NOT TO SCALE
(FOR ALL DROP CONNECTIONS)

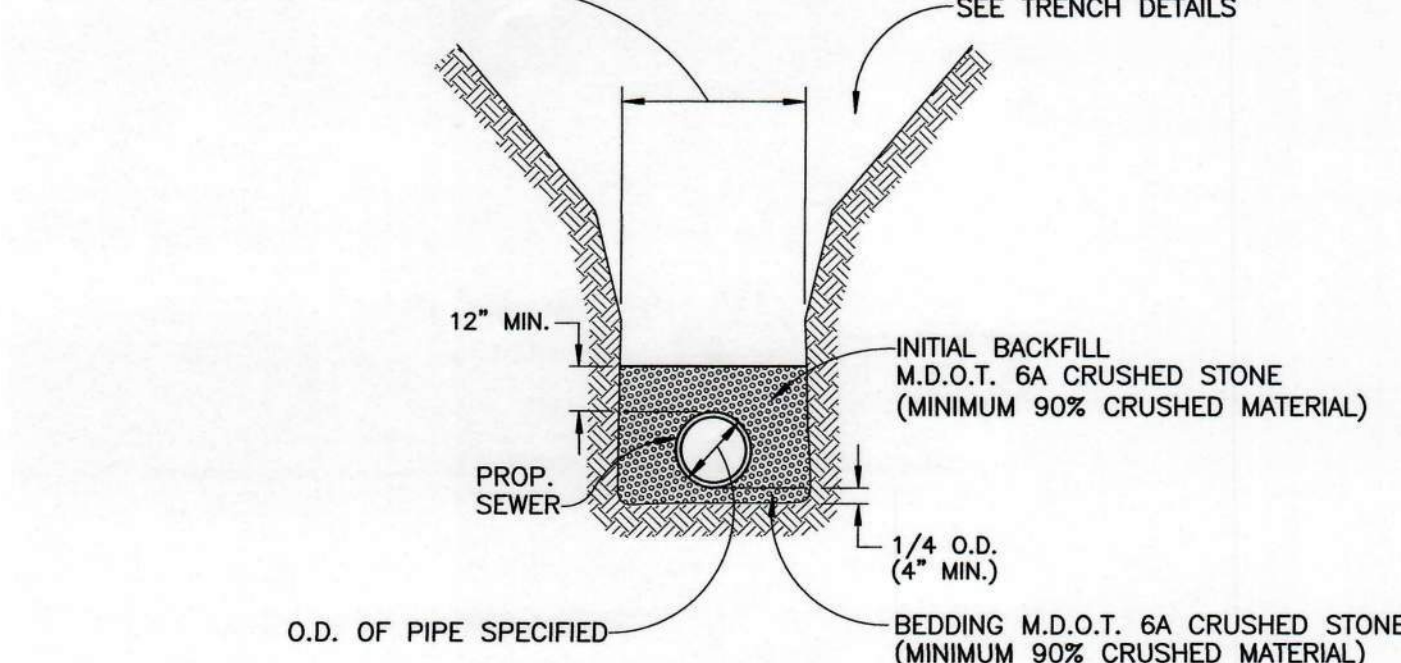


EXTERIOR DROP CONNECTION
NOT TO SCALE
(ONLY WITH OWNER/ENGINEER APPROVAL)



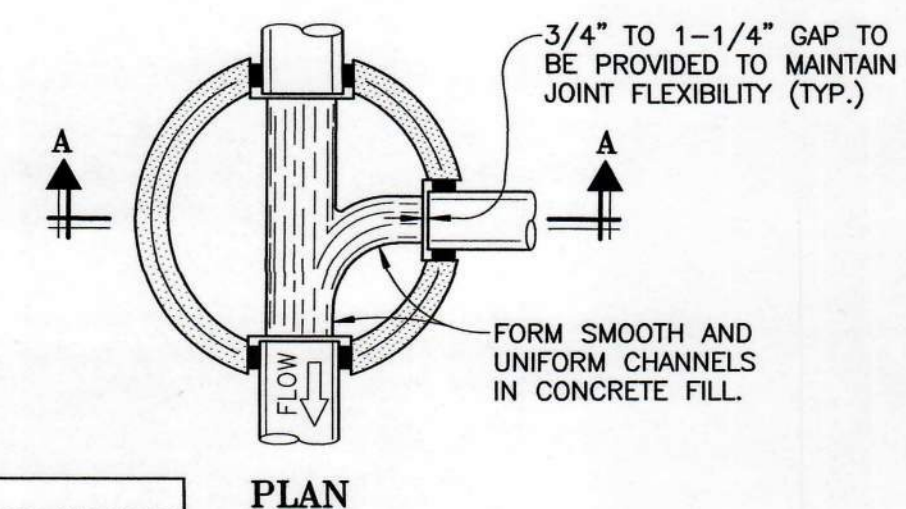
CONCRETE CRADLE
NOT TO SCALE

MAXIMUM TRENCH WIDTH= 30" FOR 8" TO 15" I.D.
O.D. + 12" FOR 18" TO 36" I.D.
O.D. + 24" FOR 42" I.D. & LARGER

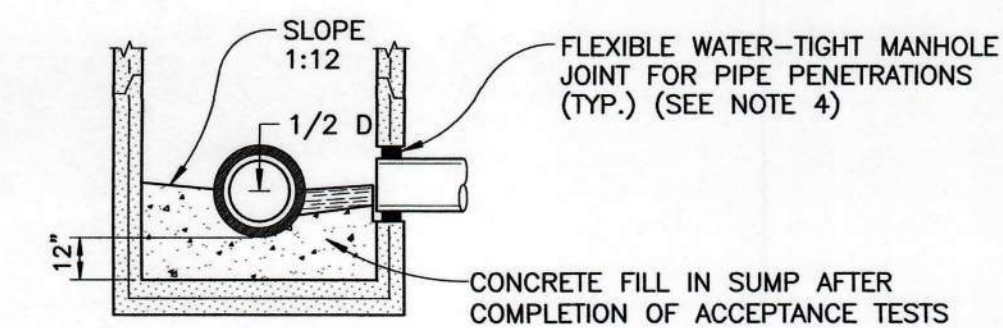


NOTE: WELL ROUNDED PEA PEBBLES, PASSING A 1/2" SIEVE, MAY BE SUBSTITUTED FOR M.D.O.T. 6A CRUSHED STONE FOR BEDDING AND INITIAL BACKFILL IF COMPOSITE (TRUSS) OR C78 CONCRETE SEWER IS INSTALLED IN UN-DEWATERED TRENCHES THAT DO NOT EXCEED 20' IN DEPTH AND THE MAXIMUM WIDTH SPECIFIED ABOVE.

BEDDING DETAIL
NOT TO SCALE



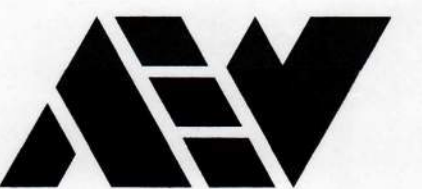
PLAN



SECTION A-A

SUMP MANHOLE

FOR TESTING, CLEANING & DEWATERING



ANDERSON, ECKSTEIN AND WESTRICK, INC.

CIVIL ENGINEERS SURVEYORS ARCHITECTS

51301 Schoenherr Road Phone 586 726 1234
Shelby Township Fax 586 726 8780
Michigan 48315

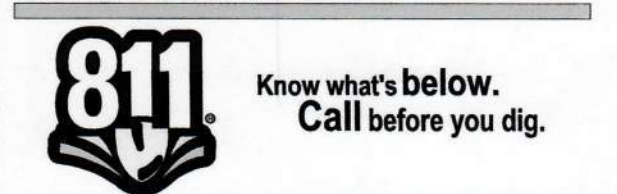
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ENGINEERING STRONG COMMUNITIES



11/23/22 RO	SANITARY SEWER UPDATES
DRAWN BY: KJP	CHECKED BY: KMS
DATE: AUGUST 2017	

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Kyle M. Seidel
KYLE M. SEIDEL P.E. NO. 6201048152

Department of Public Utilities

APPROVED BY: *Leonard Bertrand*
LEONARD BERTRAND, UTILITIES DIRECTOR

DATE: **NOVEMBER 29, 2022**

CITY OF MOUNT CLEMENS

STANDARD SANITARY SEWER DETAILS
(1 OF 2)

SHEET NO.

SN1

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SANITARY SEWER NOTES

1. STANDARDS AND SPECIFICATIONS

- A. ALL SANITARY SEWER AND SANITARY SYSTEM CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF MOUNT CLEMENS AND THE CURRENT EDITION OF THE RECOMMENDED STANDARDS FOR WASTEWATER FACILITIES (COMMONLY REFERRED TO AS THE TEN STATES STANDARDS). CONSTRUCTION AND MATERIALS SHALL ALSO CONFORM TO THE APPLICABLE CURRENT ASTM STANDARD SPECIFICATION OR PRACTICE, WHEN REFERENCED. DETAILED WRITTEN SPECIFICATIONS ARE AVAILABLE UPON REQUEST.
- B. ANY MATERIALS OTHER THAN THOSE LISTED ON THE STANDARD DETAIL SHEETS MUST BE APPROVED IN WRITING BY THE CITY OF MOUNT CLEMENS. CONTRACTOR MUST SUBMIT THREE (3) COPIES OF SHOP DRAWINGS AND SPECIFICATIONS FOR PROPOSED ALTERNATE MATERIAL TO THE CITY OF MOUNT CLEMENS UTILITIES DEPARTMENT FOR REVIEW AS AN APPROVED EQUAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH REVIEW OF THE PROPOSED ALTERNATE MATERIAL AS AN APPROVED EQUAL.

2. PRECONSTRUCTION REQUIREMENTS

- A. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL ATTEND A PRECONSTRUCTION MEETING AT A TIME AND PLACE AS ARRANGED BY THE CITY OF MOUNT CLEMENS. THE CONTRACTOR SHALL NOTIFY AFFECTED UTILITY COMPANIES AND GOVERNMENTAL AGENCIES A MINIMUM OF THREE (3) WORKING DAYS PRIOR TO THE PRECONSTRUCTION MEETING. THE OWNER'S ENGINEER SHALL SUBMIT APPROVED PLANS TO ALL UTILITY COMPANIES AND GOVERNMENTAL AGENCIES A MINIMUM OF TEN (10) DAYS PRIOR TO PRECONSTRUCTION MEETING.
- B. THE CONTRACTOR SHALL NOTIFY MISS DIG AT 811 AND THE CITY OF MOUNT CLEMENS UTILITIES DEPARTMENT AT (586) 469-6847 AND ANDERSON, ECKSTEIN AND WESTRICK, INC. AT (586) 726-1234 THREE (3) WORKING DAYS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL ALSO NOTIFY REPRESENTATIVES OF ANY OTHER FACILITIES, LOCATED IN THE VICINITY OF THE WORK, WHICH ARE NOT PARTICIPANTS OF THE MISS DIG SYSTEM.

3. PIPE MATERIAL

- A. EIGHT INCH (8") THROUGH FIFTEEN INCH (15") PIPE SHALL BE ACRYLONITRILE BUTADIENE STYRENE (ABS) COMPOSITE (TRUSS) SEWER PIPE (ASTM D2680) WITH SLEEVE COUPLING TYPE "SC" CHEMICALLY WELDED JOINTS (ASTM D2680 & ASTM D2235) OR POLYVINYL CHLORIDE (PVC) COMPOSITE (TRUSS) SEWER PIPE (ASTM D2680) WITH GASKETED JOINTS (ASTM D3212). SANITARY SERVICE CONNECTIONS FOR PROPOSED ABS OR PVC COMPOSITE SEWER PIPE SHALL BE MADE BY INSTALLING FACTORY FABRICATED (NOT EXTRUDED), SIX INCH (6") WYES OF THE SAME MATERIAL AS THE MAIN LINE SANITARY SEWER.
- B. EIGHTEEN INCH (18") AND LARGER PIPE SHALL BE REINFORCED CONCRETE CIRCULAR SEWER PIPE, MANUFACTURED WITH TYPE II, IIA, OR IP (MS) CEMENT AND WALL THICKNESS C (ASTM C76). SIZE AND CLASS OF PIPE SHALL BE AS INDICATED ON THE PLANS. ALL REINFORCED CONCRETE SEWER PIPE SHALL BE CAST WITH REINFORCING STEEL EXTENDING INTO THE BELL. ALL JOINTS SHALL BE MODIFIED TONGUE AND GROOVE WITH GASKET (ASTM C361). GASKETS SHALL BE SYNTHETIC RUBBER. NATURAL RUBBER GASKETS ARE NOT ACCEPTABLE. SANITARY SERVICE CONNECTIONS FOR PROPOSED REINFORCED CONCRETE SEWER PIPE SHALL BE MADE BY CORE DRILLING A PORT IN THE SEWER WALL AND INSTALLING A LATERAL CONNECTOR FOR CONCRETE PIPE. LATERAL CONNECTOR SHALL BE NPC KOR-N-TEE.
- C. DUCTILE IRON PIPE WITH EXTERIOR ASPHALTIC MATERIAL COATING SHALL MEET THE REQUIREMENTS OF ANSI A21.51 CURRENT SPECIFICATIONS. DUCTILE IRON PIPE SHALL BE SPECIAL THICKNESS CLASS 54 FOR PUSH-ON-JOINT DUCTILE-IRON PIPE. DUCTILE IRON PIPE SHALL BE DOUBLE CEMENT LINED WITH ASPHALTIC MATERIAL SEAL COATING MEETING THE REQUIREMENTS OF ANSI A21.4 CURRENT SPECIFICATIONS. PUSH-ON JOINTS SHALL MEET THE REQUIREMENTS OF ANSI A21.11 CURRENT SPECIFICATIONS. PUSH ON JOINTS SHALL BE TYTON OR SUPER BELLITE.

4. MANHOLES

- A. ALL PROPOSED MANHOLES SHALL BE PRECAST REINFORCED CONCRETE (MANUFACTURED WITH TYPE IIA OR IP (MS) CEMENT), FLEXIBLE-JOINT TYPE (ASTM C478). THE TOP SECTION SHALL BE A MODIFIED CONCENTRIC OR ECCENTRIC CONE SECTION WITH STUD INSERTS CAST IN PLACE AND A SMOOTH TROWEL-FINISHED TOP SURFACE. THE BASE SECTION SHALL BE A PRECAST RISER SECTION WITH AN INTEGRAL BASE. JOINTS AND GASKETS SHALL BE MODIFIED TONGUE AND GROOVE (ASTM C443). ALL LIFTING HOLES SHALL BE FILLED WITH A NON-SHRINK TYPE MORTAR COMPOSED OF TYPE IIA CEMENT. NON-SHRINK TYPE MORTAR SHALL BE PRECO OR SEKA SET. NO LIME SHALL BE USED IN THE MORTAR.
- B. PIPE PENETRATION JOINTS FOR PROPOSED PRECAST REINFORCED CONCRETE MANHOLES SHALL BE A FLEXIBLE WATER-TIGHT JOINT, "KOR-N-SEAL" FOR SEWERS SIX INCH (6") THROUGH THIRTY INCH (30") IN DIAMETER AND "A-LOK" FOR SEWERS THIRTY-SIX INCH (36") IN DIAMETER AND LARGER. HOLES FOR PIPES SHALL BE CAST IN THE RISER SECTION SO AS TO PROVIDE A MINIMUM CLEARANCE OF TWO INCHES (2") BETWEEN THE INSIDE BOTTOM OF THE BASE SECTION AND THE OUTSIDE WALL OF THE PIPE. PIPE SHALL NOT EXTEND INTO A MANHOLE BEYOND THE INTERIOR FACE OF THE MANHOLE WALL.
- C. EXISTING PRECAST MANHOLES SHALL BE TAPPED WITH THE "KOR-N-SEAL" METHOD, WITH A WATER-TIGHT RUBBER BOOT FOR SEWERS SIX INCH (6") THROUGH FIFTEEN INCH (15") IN DIAMETER. EXISTING BRICK MANHOLES, AND TAPS FOR SEWERS EIGHTEEN INCH (18") IN DIAMETER AND LARGER, SHALL HAVE HOLES DRILLED AT FOUR INCHES (4") CENTER TO CENTER AROUND THE PERIPHERY OF THE OPENING TO CREATE A PLANE OF WEAKNESS BEFORE BREAKING OUT THE SECTION. NON-SHRINK GROUT, PRECO OR SEKA SET, SHALL BE USED TO SEAL THE OPENING. A CONCRETE COLLAR SHALL BE POURED TWELVE INCHES (12") AROUND THE PIPE AND EXTEND TWELVE INCHES (12") EXTERIOR TO THE MANHOLE.
- D. GRADE ADJUSTMENT SHALL BE MADE USING GRADE S-II CONCRETE BRICKS (ASTM C55) IN FULL MORTAR BED. MINIMUM ADJUSTMENT SHALL BE THREE INCHES (3") AND MAXIMUM ADJUSTMENT SHALL BE TWELVE INCHES (12"). MORTAR COAT ALL OPEN SPACES AND IRREGULARITIES ON THE INSIDE OF BRICKWORK TO FORM MANHOLE INTERIOR. MORTAR COAT ALL OPEN SPACES AND IRREGULARITIES ON THE OUTSIDE OF THE BRICKWORK. TAPER OUTSIDE MORTAR COAT A MINIMUM OF ONE PERCENT (1%) FROM THE FRAME FLANGE TO THE MANHOLE OUTSIDE DIAMETER. NO BRICKWORK OR MORTAR COATING SHALL EXTEND BEYOND THE OUTSIDE DIAMETER OF THE MANHOLE.
- E. ALL MANHOLES SHALL BE PROVIDED WITH WATER-TIGHT COVERS. MANHOLE FRAMES AND COVERS SHALL BE E.J.I.W. 1040 WITH TYPE C2 COVER.
- F. ALL CONCRETE FOR CHANNELIZATION, BENCHES, COLLARS, AND BULKHEADS SHALL BE MADE WITH TYPE II, IIA, OR IP (MS) CEMENT. CONCRETE PLACED INSIDE PROPOSED MANHOLES TO FORM THE CHANNEL SHALL NOT BE PLACED BETWEEN THE PIPE AND THE OPENING IN THE MANHOLE BASE SECTION SO AS TO INTERFERE IN ANY WAY WITH THE FLEXIBILITY OF THE JOINT.
- G. AT ALL CONNECTIONS TO MANHOLES, SEWERS OR EXTENSIONS THERETO, DROP CONNECTIONS SHALL BE REQUIRED WHEN THE DIFFERENCE IN INVERT ELEVATIONS EXCEEDS EIGHTEEN INCHES (18"). ALL DROP CONNECTIONS SHALL BE INTERIOR DROP CONNECTION ASSEMBLIES. EXTERIOR DROP CONNECTIONS ARE ONLY ACCEPTABLE WITH THE WRITTEN APPROVAL OF THE CITY OF MOUNT CLEMENS.

5. CONSTRUCTION

- A. NO GROUND WATER, STORM WATER, CONSTRUCTION WATER, DOWNSPOUT DRAINAGE OR WEEP TILE DRAINAGE SHALL BE ALLOWED TO ENTER ANY SANITARY SEWER INSTALLATION.
- B. A HORIZONTAL SEPARATION OF TEN FEET (10') (MINIMUM) MUST BE MAINTAINED BETWEEN THE SANITARY SEWER AND THE WATERMAIN.
- C. A MINIMUM VERTICAL CLEARANCE OF ONE AND ONE-HALF FEET (1-1/2') MUST BE MAINTAINED BETWEEN THE SANITARY SEWER AND ANY UTILITIES.
- D. ALL SEWER PIPE SHALL BE LAID USING A LASER TO MAINTAIN GRADE AND ALIGNMENT. THE USE OF A BLOWER IS MANDATORY FOR INSTALLATION OF ABS COMPOSITE (TRUSS) SEWER PIPE WITH SLEEVE COUPLING TYPE "SC" CHEMICALLY WELDED JOINTS. THE BLOWER SHALL BE ADVANCED FOR EACH MANHOLE TO MANHOLE INSTALLATION.
- E. ALL SEWER PIPE AND APPURTENANCES SHALL BE STAKED FOR LINE AND GRADE. CUT SHEETS SHALL BE PROVIDED TO THE CITY'S ENGINEER. NO SEWER SHALL BE LAID WITHOUT STAKES.
- F. INDIVIDUAL SANITARY SERVICE LEADS SHALL BE REQUIRED FOR EACH SEPARATE BUILDING WITHIN PROPOSED COMMERCIAL, INDUSTRIAL AND/OR MULTIPLE FAMILY RESIDENTIAL DEVELOPMENTS.

6. TESTING AND ACCEPTANCE

- A. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY MATERIALS, EQUIPMENT AND PERSONNEL TO CONDUCT REQUIRED TESTING. THE CITY OF MOUNT CLEMENS UTILITIES DEPARTMENT SHALL WITNESS ALL TESTS. ALL SEWER INSTALLATIONS SHALL BE COMPLETE, INCLUDING SANITARY SERVICE LEADS WITH CHEMICALLY WELDED OR GLUED WATER-TIGHT CAPS, PRIOR TO PERFORMING REQUIRED TESTS.
- B. ALL SEWERS TWENTY-FOUR INCHES (24") IN DIAMETER AND SMALLER SHALL BE TESTED USING LOW PRESSURE AIR (ASTM C924 OR ASTM F1417 BASED UPON PIPE MATERIAL). INFILTRATION TESTING WILL BE PERFORMED IF GROUND WATER PROHIBITS LOW PRESSURE AIR TESTING AS DETERMINED BY THE CITY'S ENGINEER.
- C. ALL SEWERS TWENTY-SEVEN INCHES (27") IN DIAMETER AND LARGER, AND SEWERS TWENTY-FOUR INCHES (24") AND SMALLER WHERE GROUND WATER PROHIBITS LOW PRESSURE AIR TESTING, SHALL BE INFILTRATION TESTED. INFILTRATION TESTING SHALL BE CONDUCTED WITH THE DEWATERING SYSTEM TURNED OFF AND AFTER THE GROUND WATER HAS RETURNED TO ITS NORMAL LEVEL. NO SEWER INSTALLATION SHALL HAVE AN INFILTRATION EXCEEDING FIFTY (50) GALLONS PER INCH OF DIAMETER PER MILE OF PIPE PER TWENTY-FOUR (24) HOUR PERIOD. IF THERE IS NOT SUFFICIENT GROUND WATER FOR INFILTRATION TESTING, AS DETERMINED BY THE CITY'S ENGINEER, INFILTRATION TESTING SHALL BE WAIVED.
- D. THE CONTRACTOR SHALL PROVIDE FOR CLOSED CIRCUIT TELEVISION (CCTV) INSPECTION OF ALL SANITARY SEWER INSTALLED. ALL SANITARY SEWER INSTALLED SHALL BE CLEANED, BY AND AT THE CONTRACTOR'S EXPENSE, IMMEDIATELY PRIOR TO CCTV INSPECTION TO ENSURE THE SEWERS ARE FREE OF DEBRIS. THE INSPECTION SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT GUIDELINES OF THE NATIONAL ASSOCIATION OF SEWER SERVICE COMPANIES (NASSCO). ALL CCTV INSPECTION SHALL BE WITNESSED BY THE CITY OF MOUNT CLEMENS UTILITIES DEPARTMENT AND THE CONTRACTOR.
- E. THE COLOR CCTV CAMERA USED FOR THE INSPECTION SHALL BE ONE SPECIFICALLY DESIGNED AND CONSTRUCTED FOR SUCH INSPECTION. THE CAMERA, PAN AND TILT, SHALL BE OPERATIVE IN 100% HUMIDITY CONDITIONS, AND HAVE A HIGH RESOLUTION LENS CAPABLE OF SCANNING 360-DEGREES CIRCUMFERENCE AND 270-DEGREES ON A HORIZONTAL AXIS TO TELEVIEW SEWERS AND SERVICE CONNECTIONS. LIGHTING FOR THE CAMERA SHALL BE SUITABLE TO ALLOW A CLEAR PICTURE OF THE ENTIRE PERIPHERY OF THE PIPE. ALL CCTV INSPECTION SHALL BE RECORDED ON CONTINUOUS RUNNING VIDEO TAPE AND/OR DVD ON WHICH SOUND AND COLORED VIDEO INFORMATION SHALL BE RECORDED.
- F. THE PROJECT NAME, DATE, TIME, FOOTAGE COUNTER AND STRUCTURE TO STRUCTURE SECTION SHALL BE DISPLAYED CONTINUOUSLY. THE CAMERA SHALL BE MOVED THROUGH THE SEWER AT A RATE OF SPEED NOT TO EXCEED THIRTY FEET (30') PER MINUTE, STOPPING WHEN NECESSARY TO PERMIT PROPER AUDIO AND VIDEO DOCUMENTATION OF THE SEWER'S CONDITION. THE CAMERA SHALL BE STOPPED IMMEDIATELY ADJACENT TO ALL POINTS OF INFILTRATION, CRACKED OR BROKEN PIPE, DEFECTIVE JOINTS, MISALIGNMENT IN LINE OR GRADE AND LOCATION OF SERVICE CONNECTIONS. THE CAMERA SHALL BE ROTATED TO ALLOW VIEWING OF THE PROBLEM AREA OR INTO THE SERVICE CONNECTION. THE PRECISE LOCATION OF EACH SERVICE CONNECTION AND PROBLEM AREA SHALL BE NOTED IN RELATION TO THE UPSTREAM MANHOLE AND ENTERED ON THE REPORT SUPPLIED BY THE CCTV INSPECTION CONTRACTOR. THE REPORT SHALL UTILIZE WINCAN AMERICA OR COBRA TECHNOLOGIES CCTV INSPECTION SOFTWARE OR APPROVED EQUAL. ALL CCTV REPORTS AND/OR LOGS SHALL BE DOWNLOADED OR RECORDED WITHIN THE CCTV INSPECTION VEHICLE.

- G. CONTRACTOR SHALL SUBMIT TWO (2) COPIES OF ALL VIDEO ALONG WITH ONE (1) DIGITAL COPY AND TWO (2) COLOR COPIES OF INSPECTION REPORTS, WITH TABLE OF CONTENTS, IN TABBED, THREE (3) HOLE PUNCHED BINDERS, TO THE CITY OF MOUNT CLEMENS UTILITIES DEPARTMENT UPON COMPLETION OF THE CCTV INSPECTION.

- H. ANY DEFECTS NOTED DURING TESTING AND/OR CCTV INSPECTION SHALL BE SATISFACTORILY REPAIRED OR REPLACED, BY AND AT THE CONTRACTORS EXPENSE. DEFECTS SHALL INCLUDE, BUT NOT BE LIMITED TO FAILING LOW PRESSURE AIR TESTING, EXCEEDING INFILTRATION LIMITS, CRACKED OR BROKEN PIPE, DEFECTIVE JOINTS, MISALIGNMENT IN LINE OR GRADE, AND VISIBLE LEAKS OR INFILTRATION. ADDITIONAL TESTING AND CCTV INSPECTION SHALL BE PERFORMED AT EACH AFFECTED SEGMENT, FROM MANHOLE TO MANHOLE, SUBSEQUENT TO REPAIR AND/OR REPLACEMENT.

- I. BEFORE FINAL ACCEPTANCE, A FINAL INSPECTION MUST BE MADE BY THE OWNER AND (1) SET OF AS-BUILT PRINTS MUST BE SUBMITTED, ALONG WITH (1) DIGITAL SET OF AS-BUILTS IN PDF FORMAT. AS-BUILTS SHOULD BE SENT TO THE COMMUNITY DEVELOPMENT DEPARTMENT AT 1 CROCKER BOULEVARD, MOUNT CLEMENS, MI 48043.

7. MAINTENANCE AND GUARANTEE BOND

- A. THE CONTRACTOR SHALL PROVIDE A ONE (1) YEAR MAINTENANCE AND GUARANTEE BOND TO THE CITY OF MOUNT CLEMENS FROM A SURETY LICENSED IN THE STATE OF MICHIGAN, DATED FROM THE TIME OF ACCEPTANCE BY THE CITY OF MOUNT CLEMENS, FOR 100% OF THE CONSTRUCTION COSTS. THE CONTRACTOR SHALL ALSO PROVIDE THE CITY OF MOUNT CLEMENS WITH A PERFORMANCE BOND FOR 5% OF THE CONSTRUCTION COSTS AND A LABOR AND MATERIAL PAYMENT BOND FOR 2.5% OF THE CONSTRUCTIONS COSTS.

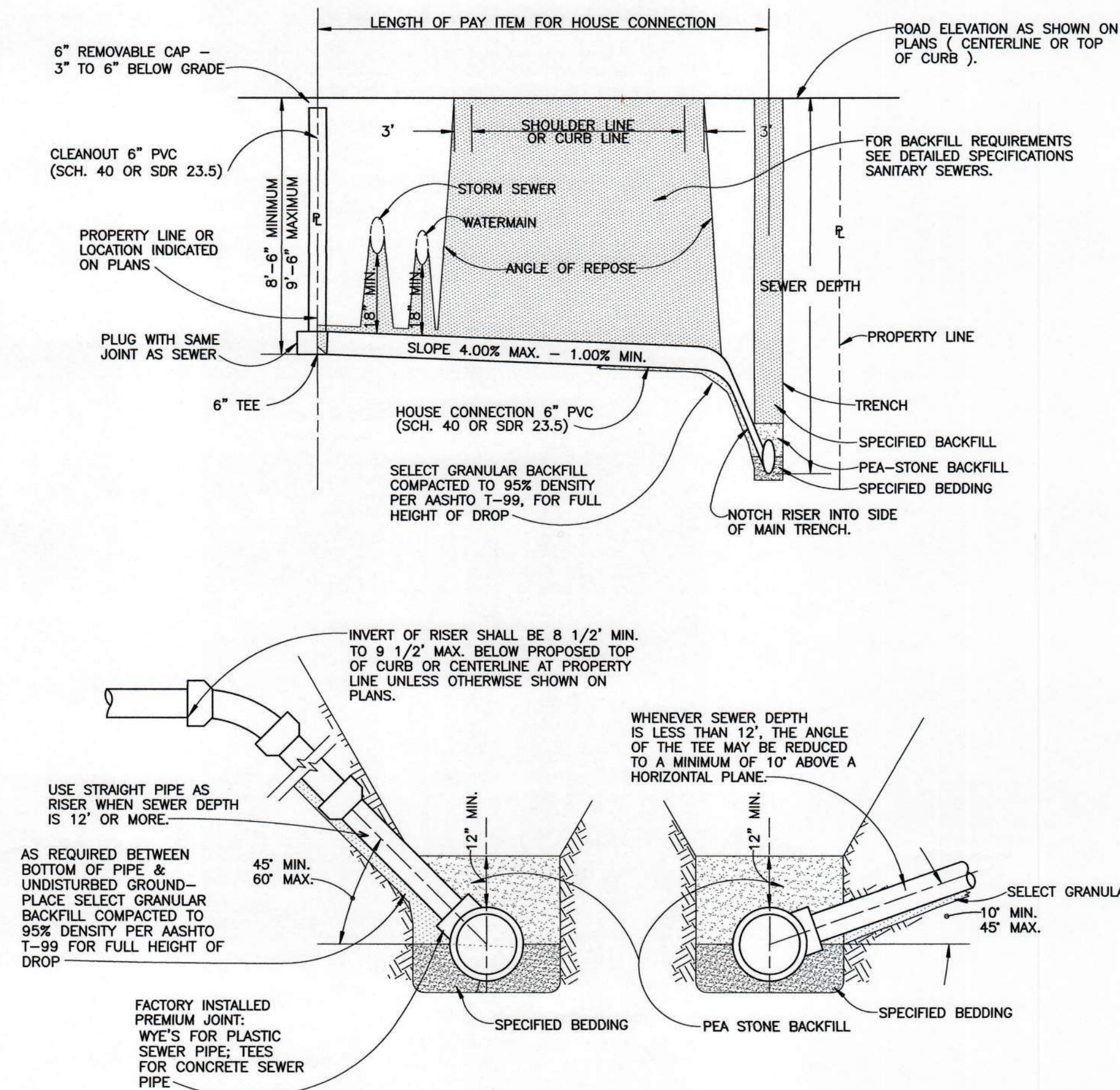
8. SANITARY SERVICES

- A. ALL PIPE AND FITTINGS FOR SANITARY SERVICES SHALL BE ABS SOLID PLASTIC PIPE AND FITTINGS, SDR 23.5 (ASTM D2751), SIX INCH (6") DIAMETER, WITH SLEEVE COUPLING TYPE "SC" CHEMICALLY WELDED JOINTS (ASTM D2680 & ASTM D2235).
- B. SIX INCH (6") DIAMETER SANITARY SERVICE RISERS SHALL BE INSTALLED WITH AN EIGHT INCH (8") DIAMETER PIPE SLEEVE, FULL LENGTH OF THE RISER, WHEN THE SERVICE CONNECTION DEPTH EXCEEDS FIFTEEN FEET (15') FROM FINISH GRADE. EIGHT INCH (8") DIAMETER PIPE SLEEVES, WHEN REQUIRED, SHALL BE CORRUGATED PVC SEWER PIPE WITH A SMOOTH INTERIOR SURFACE (ASTM F949).
- C. SANITARY SERVICE CONNECTIONS TO EXISTING SEWER PIPE SHALL BE MADE BY CORE DRILLING A PORT IN THE SEWER WALL AND INSTALLING THE APPROVED FITTING, BASED UPON THE TYPE OF EXISTING SEWER.
- ABS COMPOSITE PIPE: FACTORY FABRICATED (NOT EXTRUDED), SIX INCH (6") ABS SADDLE WYES. SADDLE WYES SHALL BE FUSED TO THE EXISTING SEWER WITH A TYPE "SC" CHEMICALLY WELDED JOINT (ASTM D2680).
- PVC COMPOSITE PIPE: FACTORY FABRICATED (NOT EXTRUDED), SIX INCH (6") PVC SADDLE WYES. SADDLE WYES SHALL BE FUSED TO THE EXISTING SEWER WITH A TYPE "SC" WELDED JOINT (ASTM D2680).
- CONCRETE PIPE: SIX INCH (6") NPC KOR-N-TEE FLEXIBLE WATER-TIGHT BOOT, INSTALLED PER MANUFACTURERS SPECIFICATIONS.

- D. ALL PROPOSED AND/OR IMPROVED SANITARY SERVICES SHALL INCLUDE A CLEAN OUT AT THE RIGHT-OF-WAY OR EASEMENT LINE. CLEAN OUT SHALL CONSIST OF A SIX INCH (6") TEE, SIX INCH (6") RISER PIPE AND SIX INCH (6") REMOVABLE CAP. MATERIALS AND JOINTS FOR CLEAN OUT PIPE AND FITTINGS SHALL BE AS SPECIFIED IN THESE STANDARDS.

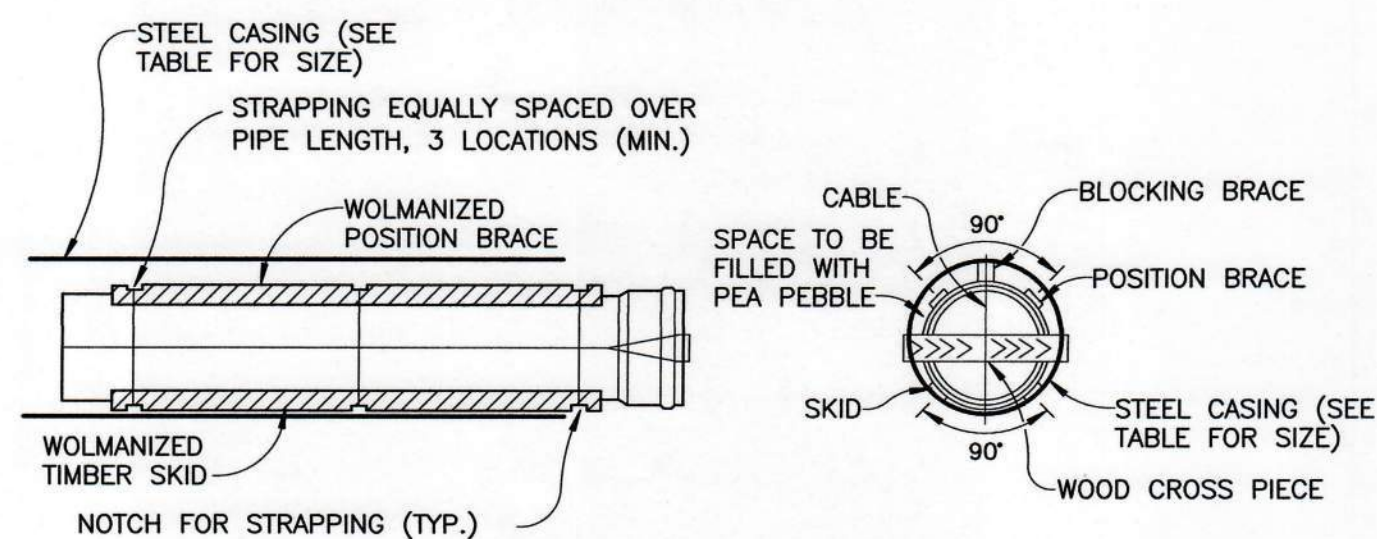
- E. SANITARY SERVICES SHALL BE CONSTRUCTED TO A DEPTH OF SIX FEET (6') MINIMUM BELOW FINISH GRADE OF STRUCTURE AND NINE AND ONE-HALF FEET (9.5') MAXIMUM BELOW THE PROPOSED GRADE AT THE RIGHT-OF-WAY OR UTILITY EASEMENT LINE. SANITARY SERVICES SHALL BE CONSTRUCTED WITH A MINIMUM SLOPE OF ONE PERCENT (1%).

- F. THE SANITARY SERVICES SHALL BE CONSTRUCTED FROM THE SEWER MAIN TO THE RIGHT-OF-WAY OR EASEMENT LINE. THE END OF THE SANITARY SERVICE LEAD SHALL BE CONSTRUCTED TO A DEPTH AS SPECIFIED IN THESE STANDARDS. ALL SANITARY SERVICE LEADS SHALL BE CLOSED WITH WATER-TIGHT, SOLVENT WELDED CAPS, COMPATIBLE WITH THE PIPE USED. CAPS SHALL BE SECURED IN PLACE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND ABLE TO WITHSTAND AIR TESTING PRESSURES.



SANITARY SEWER HOUSE/ BUILDING CONNECTION

NOT TO SCALE



NOTE:
VOID BETWEEN CASING AND SANITARY SEWER TO BE PRESSURE GROUTED WITH 1:2 MIXTURE UNTIL ALL VOIDS HAVE BEEN FILLED. GROUTING TO BE DONE UPON COMPLETION OF ALL TESTING OF SANITARY SEWER.

PIPE SIZE	RECOMMENDED MINIMUM CASING DIAMETER (O.D.)	MINIMUM CASING WALL THICKNESS
6"	12"	0.375"
8"	16"	0.375"
10"	18"	0.375"
12"	20"	0.375"
15"	24"	0.406"
18" & 21"	36"	0.532"
24"	42"	0.563"
27" & 30"	48"	0.625"
36"	54"	0.688"
42"	60"	0.750"
48"	66"	0.813"

STEEL CASING REQUIREMENTS

NOT TO SCALE



ANDERSON, ECKSTEIN AND
WESTRICK, INC.

CIVIL ENGINEERS SURVEYORS ARCHITECTS

51301 Schoenherr Road Phone 586 726 1234
Shelby Township Fax 586 726 8780
Michigan 48315

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ENGINEERING STRONG COMMUNITIES



11/23/2022	SANITARY SEWER UPDATES	
DRAWN BY:	CHECKED BY:	DATE:
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Know what's below.
Call before you dig.



Kyle M. Seidel

KYLE M. SEIDEL P.E. NO. 6201048152

Department of
Public Utilities

APPROVED BY: *Leonard Bertrand*
LEONARD BERTRAND, UTILITIES DIRECTOR

DATE: *NOVEMBER 29, 2022*

CITY OF
MOUNT CLEMENS

STANDARD
SANITARY SEWER
DETAILS
(2 OF 2)

SHEET NO.

SN2

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