

NOTES

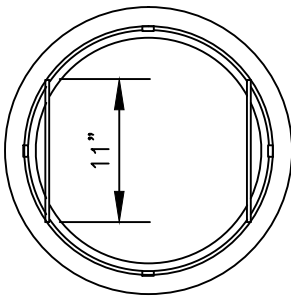
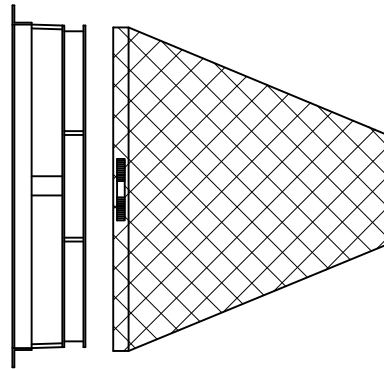
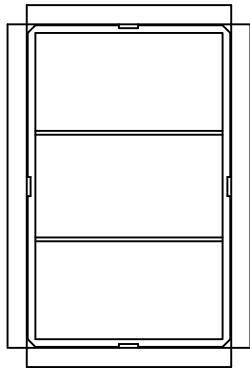
1. FILLING OF ANNULAR SPACE BETWEEN CARRIER PIPE AND CASING PIPE WITH SAND OR PEA GRAVEL IS NOT REQUIRED WHEN UTILIZING CASING SPACERS, UNLESS CONTRACTOR IS INSTRUCTED TO DO SO ON DRAWINGS OR IN SPECIFICATIONS.
2. WHERE CARRIER PIPE IS NOT CENTERED IN CASING PIPE, PROVIDE CASING SPACERS WITH LEGS THAT EXTEND TO WITHIN 1-INCH OF CASING INSIDE DIAMETER ON ALL SIDES.
3. PROVIDE NUMBER OF SPACERS AS INSTRUCTED BY SPACER MANUFACTURER, WITH A MINIMUM OF ONE SPACER ON EACH SIDE OF A PIPE JOINT, AND ONE SPACER BETWEEN JOINTS. (THREE (MIN.) PER PIPE LENGTH)
4. ALL CARRIER PIPE INSTALLED WITHIN CASING PIPE TO BE RESTRAINED JOINT TYPE.

NOT TO SCALE

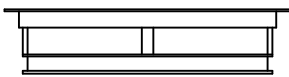
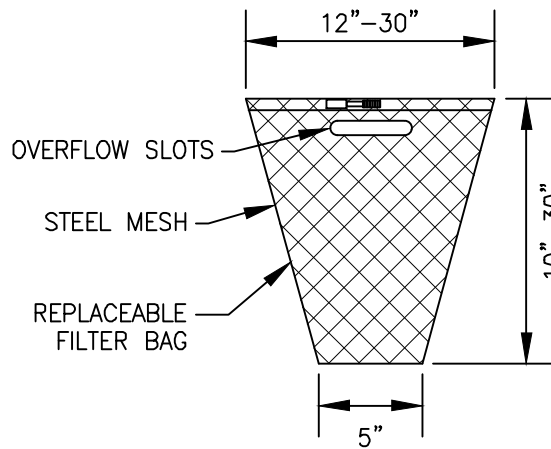
CITY OF JOLIET, ILLINOIS

CASING DETAIL
GEN-01

DATE: MARCH 2019



PLAN



SECTION

GENERAL NOTES:

FRAME: TOP RING CONSTRUCTED FROM 1 1/4" x 1 1/4" x 1/8" ANGLE.
 BASE RING CONSTRUCTED OF 1 1/2" x 1/2" x 1/8" CHANNEL.
 HANDLES & SUSPENSION BRACKETS CONSTRUCTED FROM 1/4" x 1 1/4" FLAT. ALL STEEL CONFORMING TO ASTM-A36.

REPLACEABLE BAG: CONSTRUCTED FROM 4 OZ./SQ. YD. NON-WOVEN POLYPROPYLENE GEOTEXTILE REINFORCED WITH POLYESTER MESH. CONNECTED TO BASE RING WITH STAINLESS STEEL STRAP & LOCK.

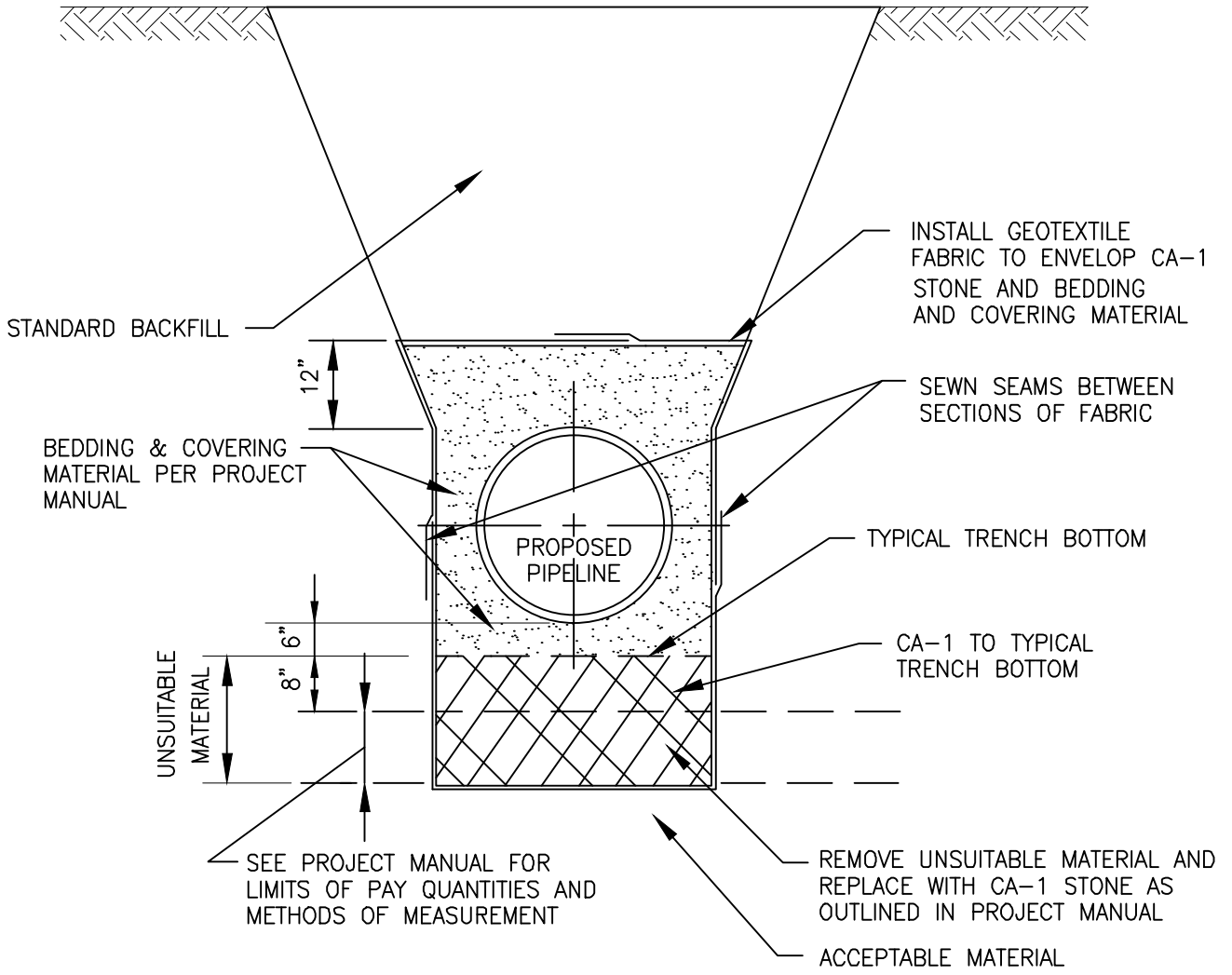
STEEL MESH: REMOVABLE STAINLESS STEEL MESH STRAINER BASKET. 1/4" DIA. HOLE SIZE, 58% OPEN AREA.

NOT TO SCALE

CITY OF JOLIET, ILLINOIS

INLET PROTECTION
 FILTER DETAIL
 GEN-02

DATE: OCT. 2017

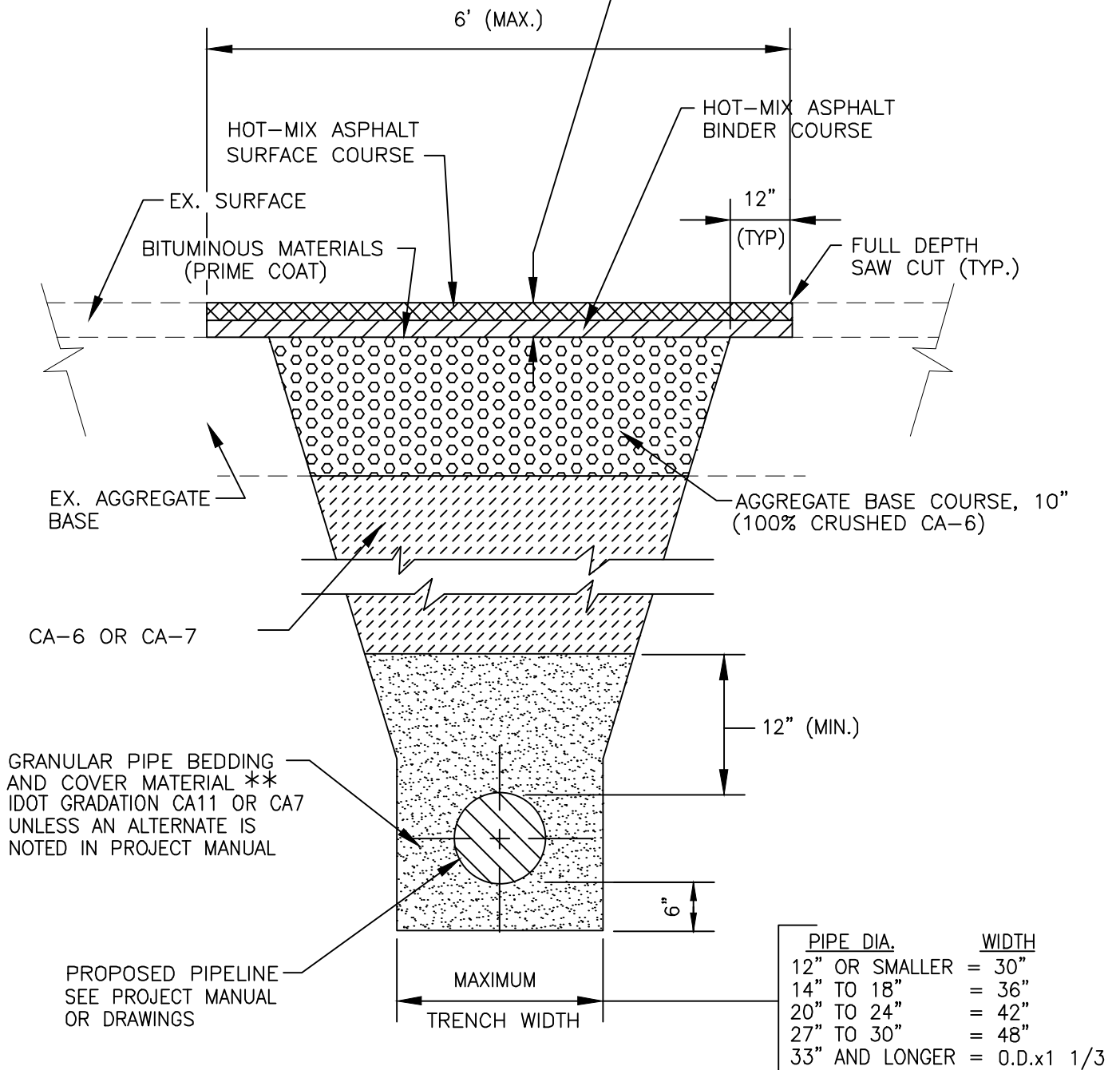


NOT TO SCALE

CITY OF JOLIET, ILLINOIS
 OPEN CUT PIPELINE
 INSTALLATION UNSUITABLE
 MATERIAL
 REMOVAL/REPLACEMENT
 GEN-03
 DATE: OCT. 2017

NOTE:
PROJECT MANUAL REFERS TO "PROJECT SPECIFICATIONS",
NOT TO IDOT STANDARD SPECIFICATIONS.

SEE PAVEMENT SECTION
DETAIL AND PROJECT MANUAL



NOT TO SCALE

FOR PAVEMENT WITH AGGREGATE BASE AND
COMPACTED GRANULAR BACKFILL MATERIAL

** FOR FLEXIBLE THERMOPLASTIC PIPE COMPLY WITH ASTM D2321,
CLASS IA, IB, OR II., (IDOT GRADATION CA15)

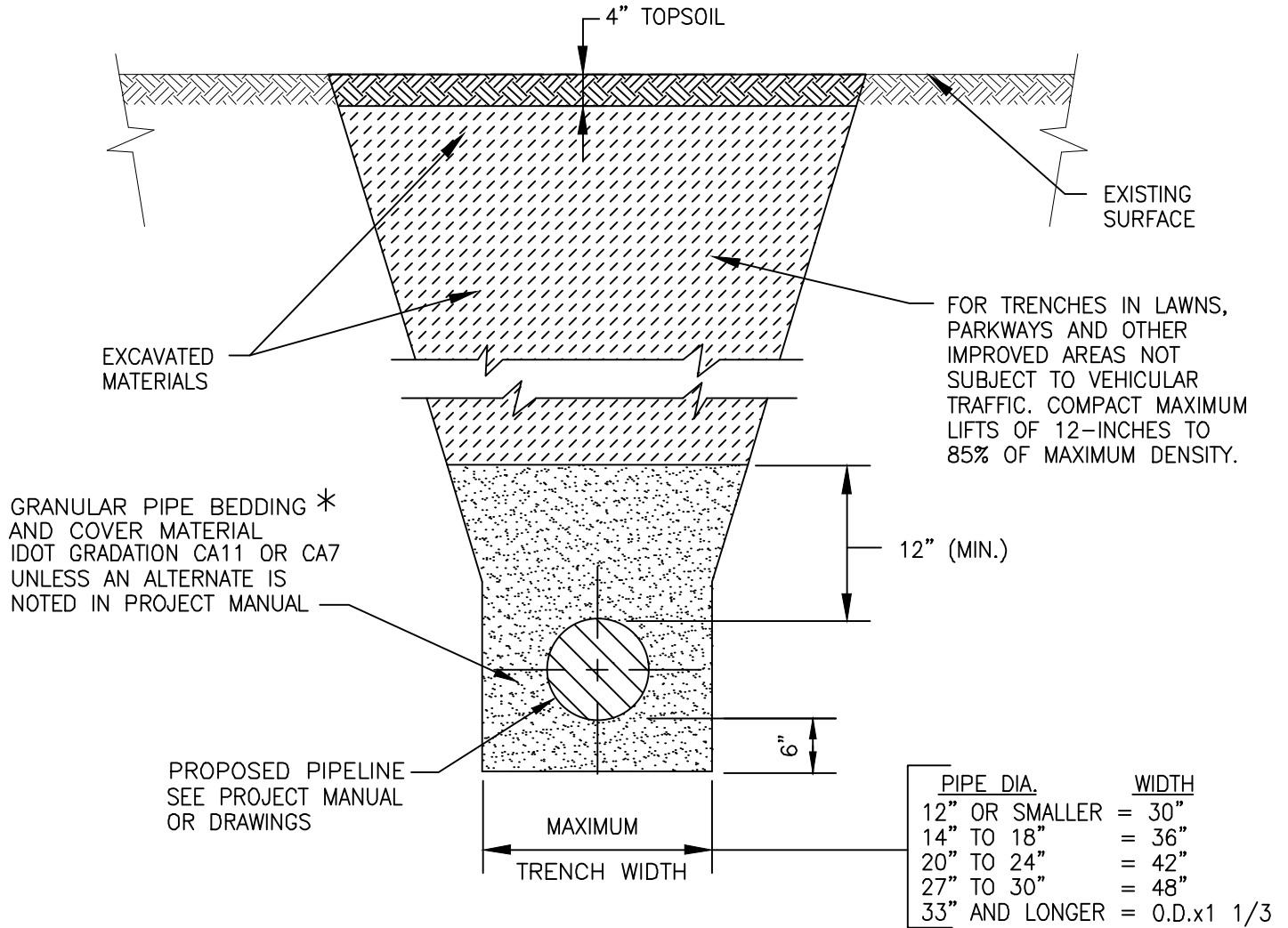
FOR RIGID PIPE COMPLY WITH ASTM C12, BEDDING CLASS B.

CITY OF JOLIET, ILLINOIS

TYPICAL TRENCH DETAIL
PAVEMENT AREA
AGGREGATE BASE
GEN-04
DATE: OCT. 2017

NOTES:

1. PROJECT MANUAL REFERS TO "PROJECT SPECIFICATIONS", NOT TO IDOT STANDARD SPECIFICATIONS.
2. FARM FIELDS, GARDENS, AND WETLAND AREAS MAY REQUIRE STRIPPING, STOCKPILING, AND REPLACING ORIGINAL MATERIAL TO A SPECIFIC DEPTH. SEE PROJECT MANUAL OR GENERAL NOTES FOR REQUIREMENTS.



FOR NON-PAVED AREAS

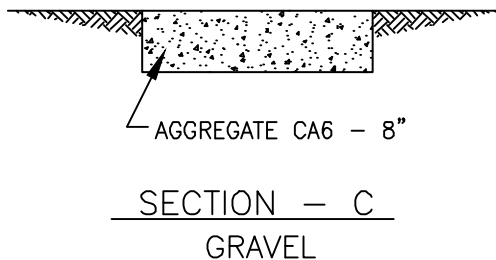
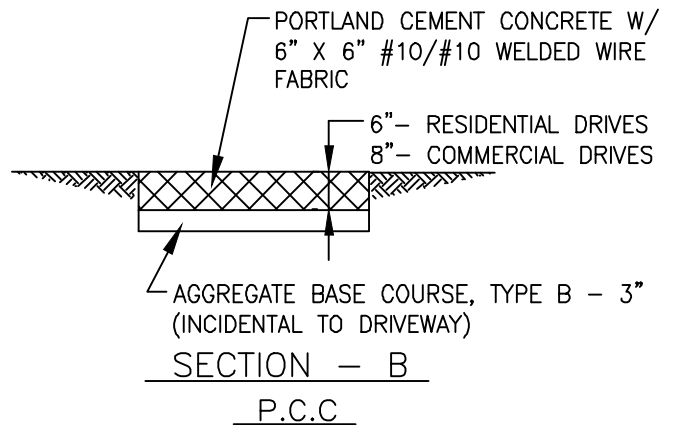
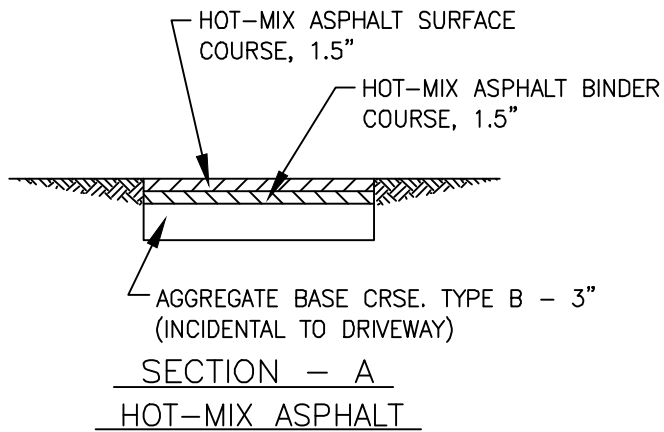
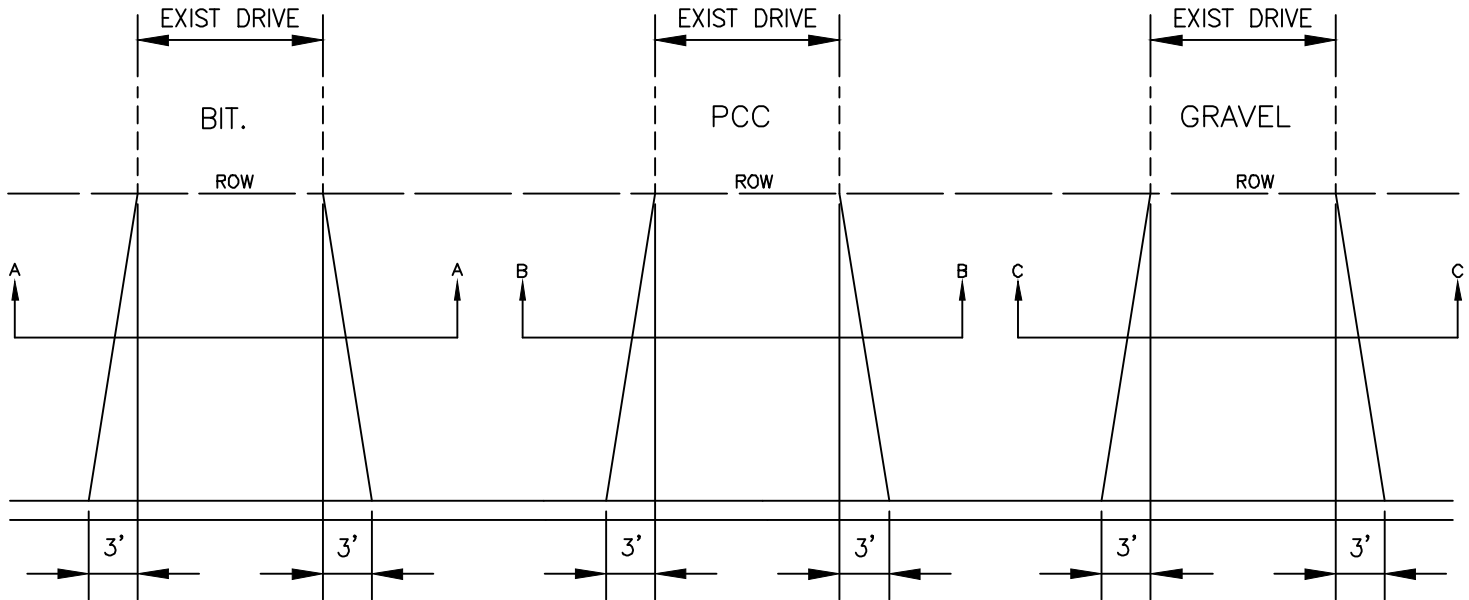
NOT TO SCALE

CITY OF JOLIET, ILLINOIS

TYPICAL TRENCH DETAIL
NON PAVED AREAS
GEN-05

* FOR HDPE PIPE COMPLY WITH ASTM 2321, CLASS I OR II.
FOR RIGID PIPE COMPLY WITH ASTM C12, BEDDING CLASS B.

DATE: OCT. 2017



NOT TO SCALE

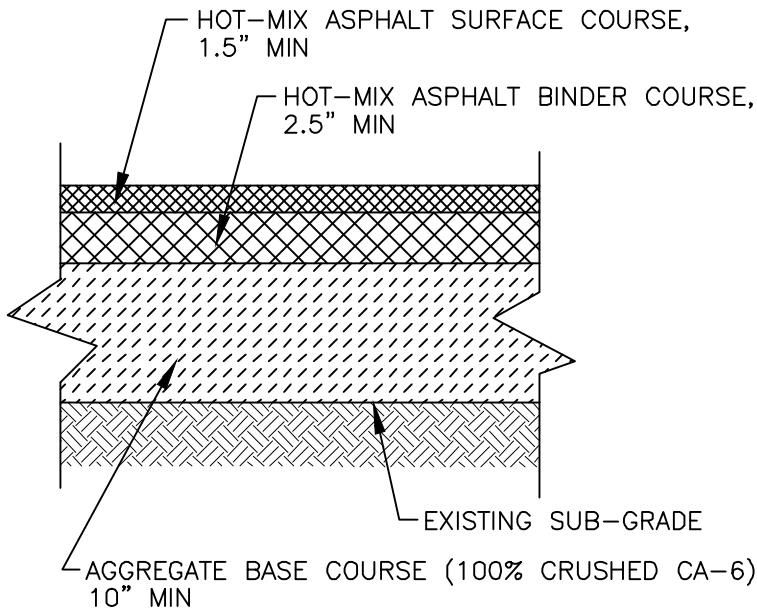
CITY OF JOLIET, ILLINOIS

DRIVEWAY PAVEMENT
DETAIL
PVT-01

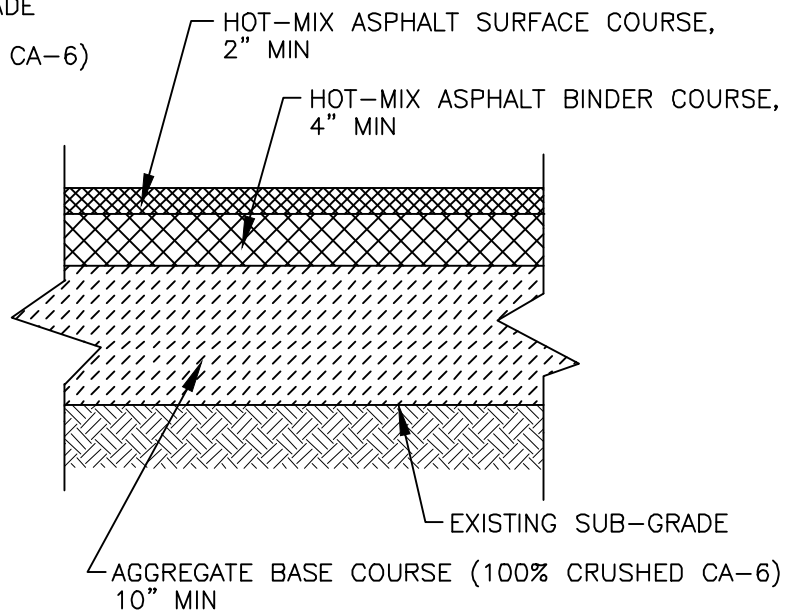
DATE: OCT. 2017

NOTES:

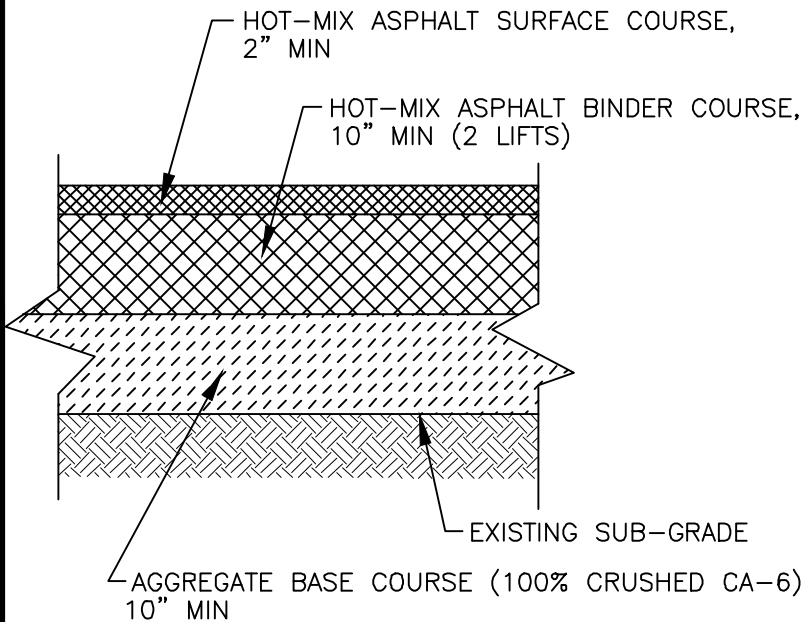
1. APRON: 8:1 SLOPE FROM FRONT OF SIDEWALK TO BACK OF CURB.
2. SIDEWALK: 1/4" / FT SLOPE



MINOR RESIDENTIAL STREETS



ARTERIAL STREETS



MAJOR ARTERIAL STREETS

NOTES:

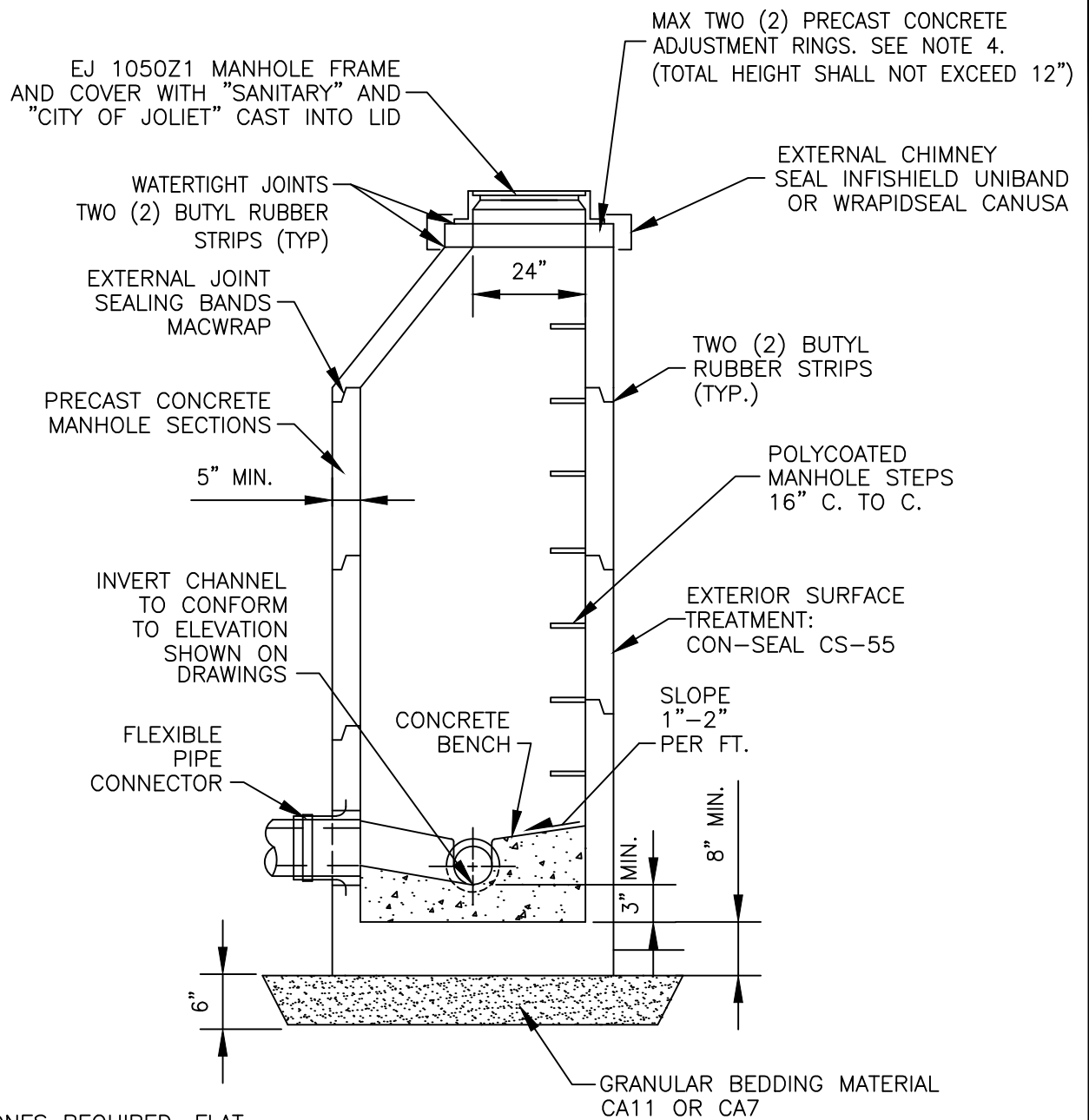
1. ALL PAVEMENT PATCHES SHALL BE SAWCUT FULL-DEPTH.
2. MAXIMUM ALLOWABLE WIDTH USED FOR TRENCH RESTORATION PAY QUANTITY CALCULATIONS SHALL BE 6'.
3. DETAILS APPLY UNLESS OTHERWISE NOTED ON PLANS.

NOT TO SCALE

CITY OF JOLIET, ILLINOIS

TYPICAL PAVEMENT
SECTION
PVT-02

DATE: OCT. 2017



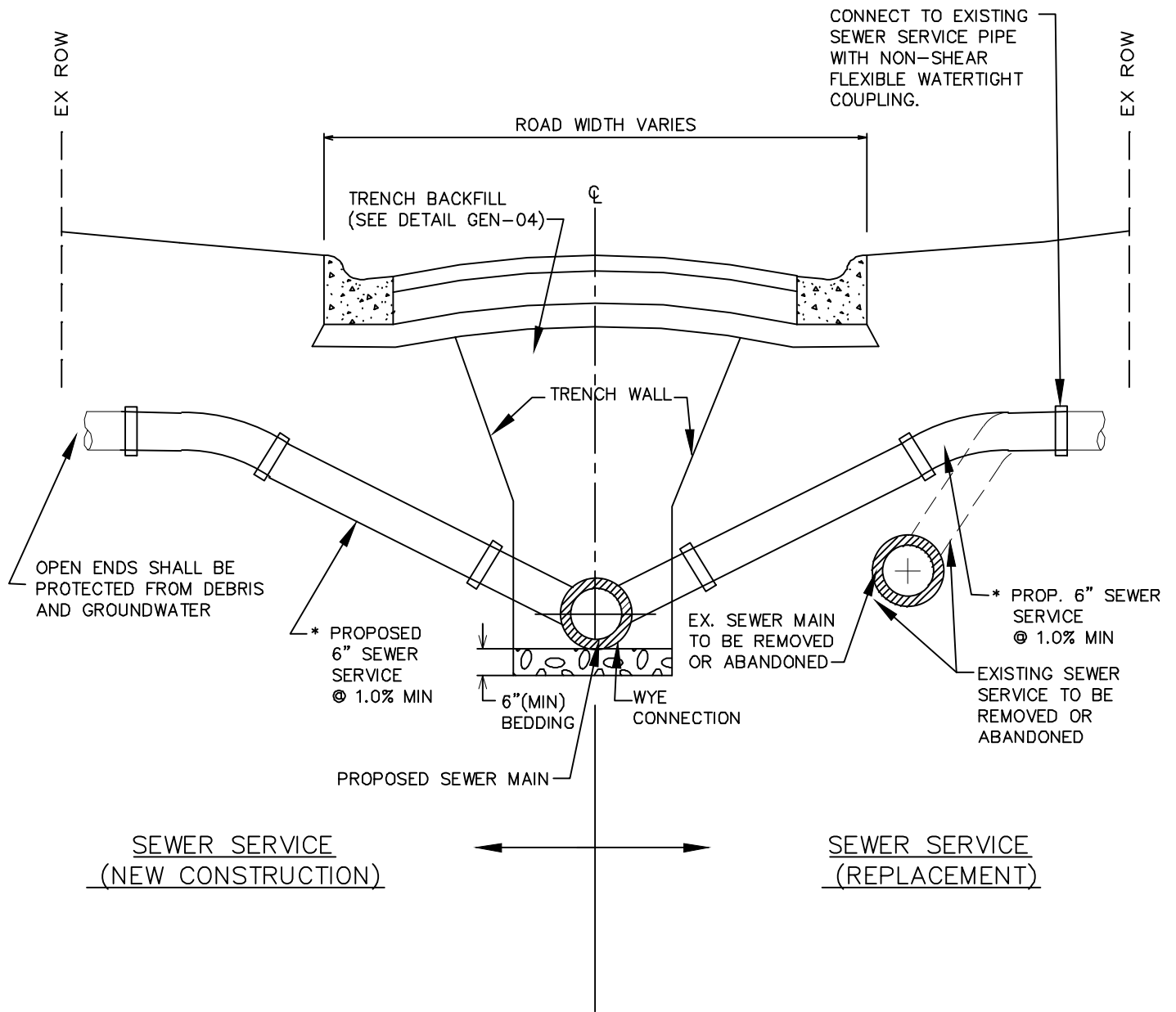
NOTE:

1. ECCENTRIC CONES REQUIRED, FLAT SLAB TOPS PERMITTED ONLY FOR MANHOLES TOO SHALLOW FOR CONES.
2. MANHOLE DIAMETER SHALL BE DETERMINED BY THE SEWER DEPTH, THE SEWER OUTSIDE DIAMETER, RELATIVE ANGLES OF SEWERS TO EACH OTHER, THE SIZE OF HOLES CORED/CAST FOR BOOTS, AND A MINIMUM OF 8" BETWEEN CORED/CAST HOLES. REFER TO DESIGN MANUAL.
3. ALL LIFT HOLES ARE TO BE GROUTED FROM THE INSIDE AND OUTSIDE BEFORE BACKFILLING.
4. FOR MANHOLES INSTALLED IN PAVEMENT, PROVIDE ONE RUBBER COMPOSITE ADJUSTMENT RING. EJ INFRA-RISER OR APPROVED EQUAL.

NOT TO SCALE

CITY OF JOLIET, ILLINOIS
 SANITARY MANHOLE DETAIL
 SAN-01

DATE: MARCH 2019



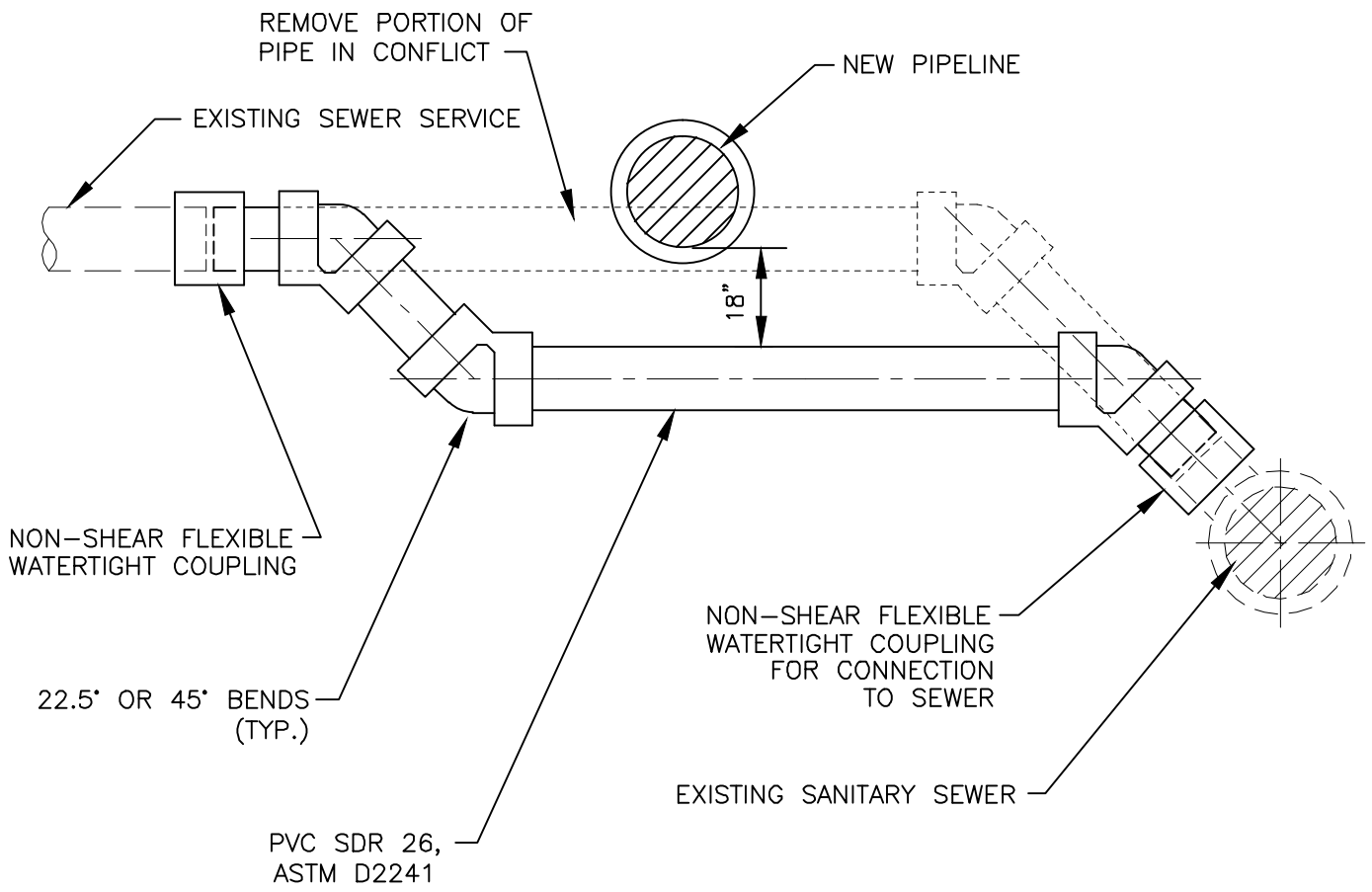
NOT TO SCALE

* SERVICE PIPE MATERIAL: PVC SDR 26, ASTM D2241

CITY OF JOLIET, ILLINOIS

SANITARY SEWER SERVICE
SAN-02

DATE: OCT. 2017

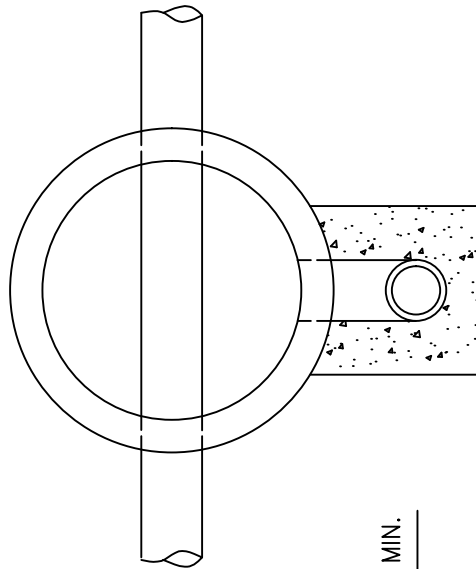


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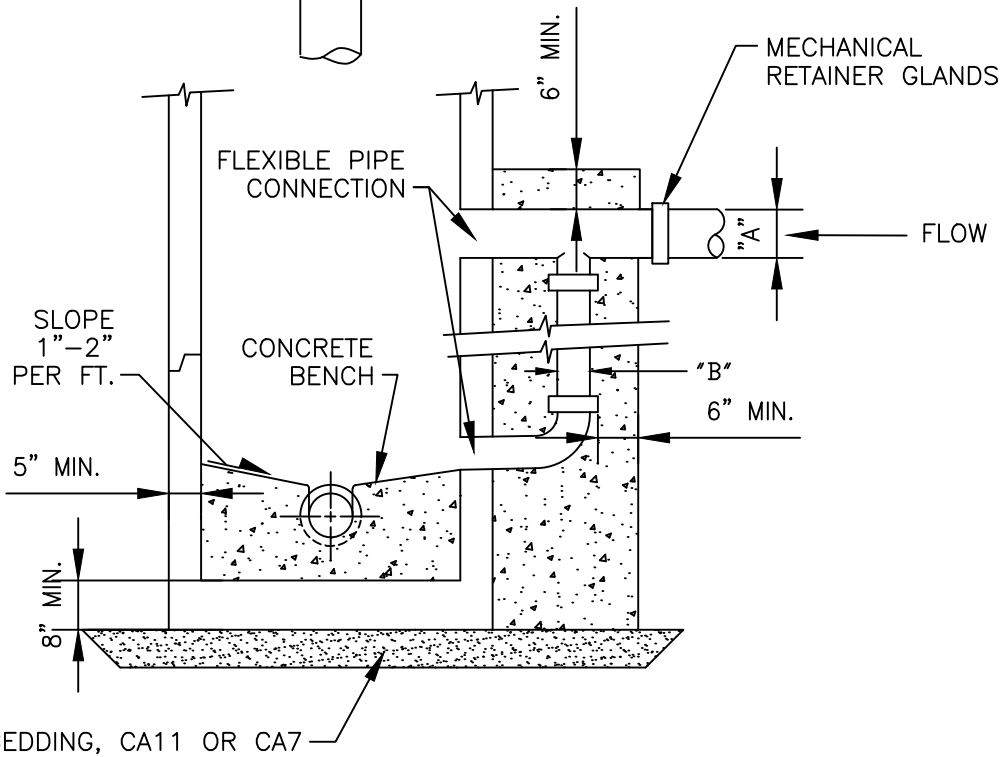
CITY OF JOLIET, ILLINOIS

SANITARY SEWER SERVICE
RELOCATION
SAN-03

DATE: OCT. 2017



NOTE;
 USE OUTSIDE DROP WHEN ANY ENTERING
 SEWER INVERT DIFFERS BY 2'-0" OR
 MORE FROM INVERT OF MANHOLE. MATCH
 CROWN OF OUTLET PIPE WHERE OUTLET PIPE
 IS 30-INCH DIA. OR SMALLER. SEE PLAN
 SHEETS FOR INVERT ELEVATIONS FOR PIPE
 SIZES LARGER THAN 30-INCH DIAMETER.



NOTES:

1. 8-INCH TO 12-INCH DIAMETER DROP: DUCTILE IRON CLASS 50. UTILIZE DUCTILE IRON RESTRAINED JOINT PIPE AND FITTINGS FOR DROP ELBOW, PIPE, AND TEE AT INCOMING SEWER. ENCASE ENTIRE DROP PIPE FROM BASE OF MANHOLE TO 6 INCHES ABOVE TOP OF INCOMING SEWER WITH 4000 PSI CONCRETE AT A MINIMUM THICKNESS OF 6 INCHES.
2. OVER 12-INCH DIAMETER DROP: DUCTILE IRON CLASS 50. ENCASE DROP ELBOW AT BASE OF MANHOLE TO 2 FEET ABOVE TOP OF ELBOW IN CONCRETE. UTILIZE DUCTILE IRON RESTRAINED JOINT PIPE AND FITTINGS FOR DROP ELBOW, PIPE, AND DUCTILE IRON TEE AT INCOMING SEWER. SUPPORT DROP PIPE TO MANHOLE WALL WITH STAINLESS STEEL BRACKETS AND STRAPPING WHERE DROPS ARE OVER 10 FEET LONG.

"A" - DIAMETER OF INCOMING SEWER
 "B" - DIAMETER OF DROP PIPE

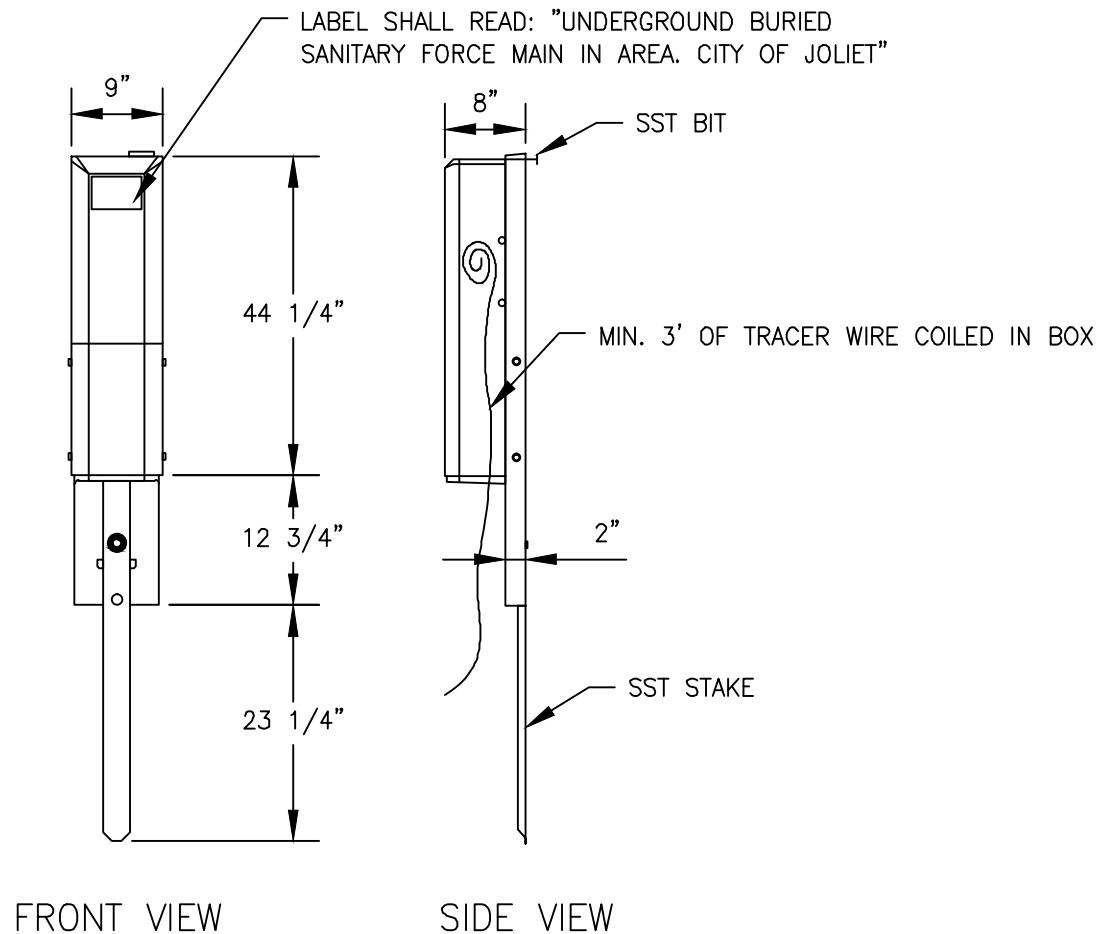
- WHEN: "A"=12-INCH OR LESS,
 "B"="A" BUT NOT SMALLER THAN 8-INCH.
 WHEN: "A"=GREATER THAN 12-INCH, BUT
 LESS THAN OR EQUAL TO 18-INCH,
 "B"=12-INCH.
 WHEN: "A"=GREATER THAN 18-INCH,
 "B"=2/3 "A" MINIMUM.

NOT TO SCALE

CITY OF JOLIET, ILLINOIS

EXTERIOR DROP MANHOLE
 DETAIL
 SAN-04

DATE: FEBRUARY 2019



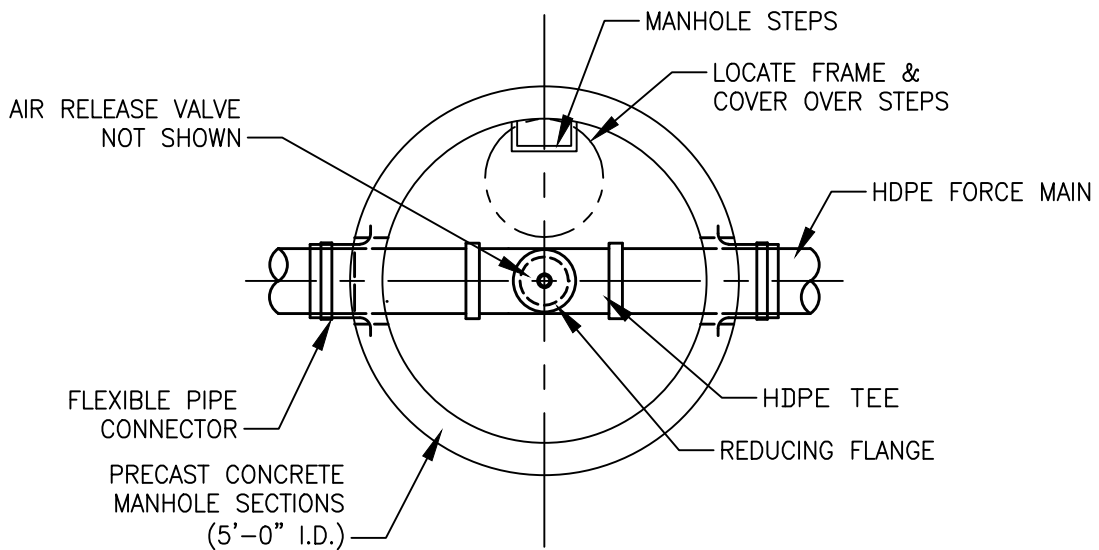
NOTES:

1. MARKER POSTS SHALL BE LOCATED A MINIMUM OF EVERY 500 FEET ALONG THE FORCE MAIN ROUTE AT THE NEAREST R.O.W. LINE. COORDINATE LOCATION WITH OWNER.
2. POST SHALL BE LOCATED AT THE R.O.W. LINE. TRACER WIRE SHALL BE INSTALLED PERPENDICULAR FROM MARKER POST TO PIPE. TRACER WIRE SHALL BE INSTALLED PER SPECIFICATIONS. TRACER WIRE SHALL BE NEPTCO TRACE SAFE.
3. MARKER POST SHALL BE NORDIC FIBERGLASS INC. WARREN MN, MODEL NUMBER P-50-MG-P-52, OR EQUAL.
4. MARKER POST SHALL BE INSTALLED AS PART OF SAME CONTRACT WITH VALVE VAULT AND VALVE. CONTRACTOR SHALL EXTEND DOWNSTREAM TRACER WIRE TO MARKER POST.

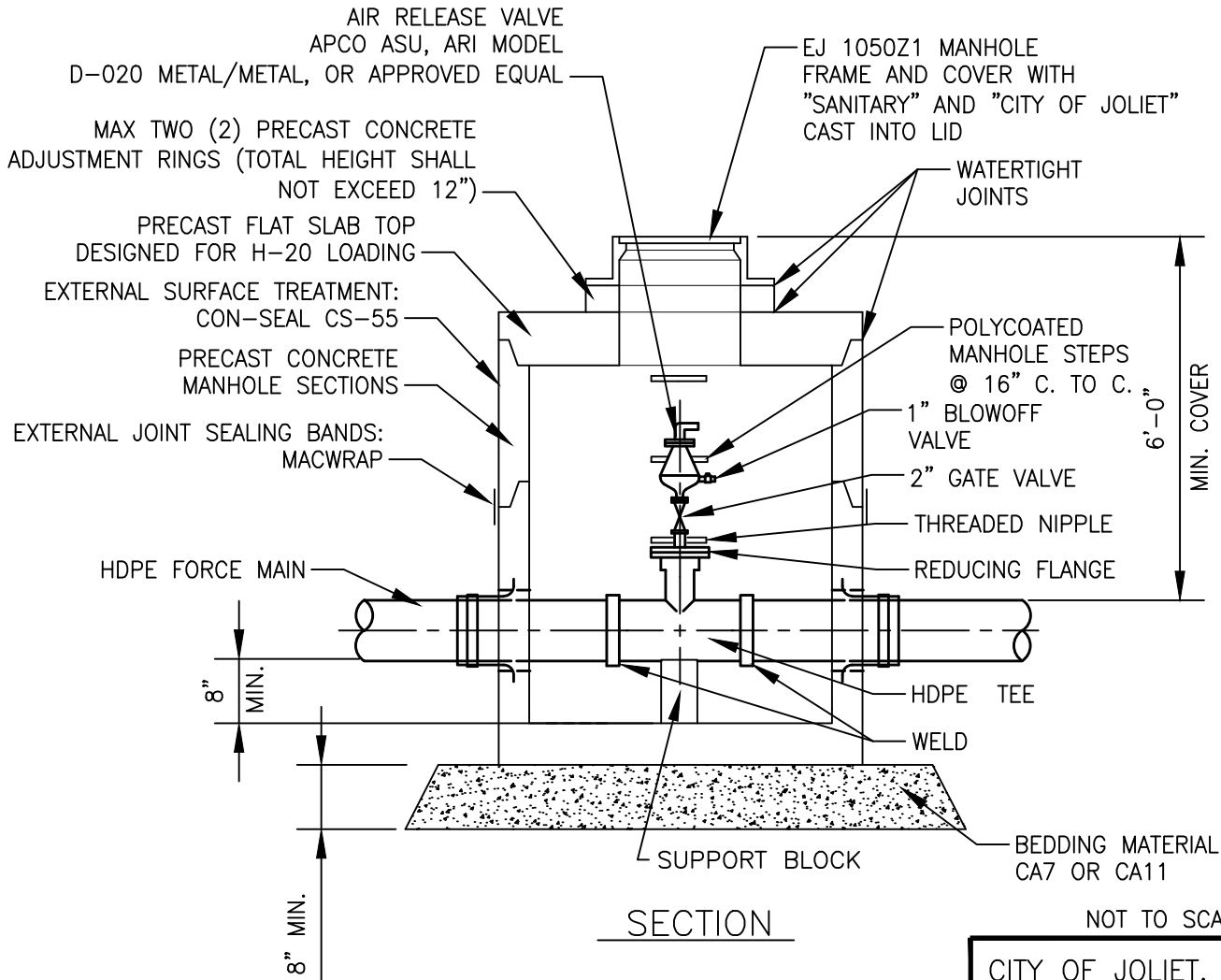
NOT TO SCALE

CITY OF JOLIET, ILLINOIS
 FORCE MAIN MARKER POST
 SAN-05

DATE: OCT. 2017



PLAN



SECTION

NOT TO SCALE

CITY OF JOLIET, ILLINOIS

AIR RELEASE / VACUUM
VALVE AND VAULT
SAN-06

DATE: MARCH 2019

* DETERMINE DEPTH OF COVER AT MANHOLE BASED ON FORCE MAIN SIZE AND MANUFACTURER/MODEL OF AIR RELEASE/VACUUM VALVE. DETERMINE AND ADJUST ELEVATIONS OF FORCE MAIN PIPE ON BOTH SIDES OF MANHOLE, IF REQUIRED, TO AVOID INTERMEDIATE HIGH POINTS IN FORCE MAIN.

PALMER-BOWLUS FLUMES ARE A FORM OF THE TYPE IV FLUME, BEING DEPENDENT UPON AN EXISTING CONDUIT SLOPE AND CHANNEL CONTRACTIONS (PROVIDED BY THE FLUME) TO PRODUCE SUPERCRITICAL FLOW. THIS TYPE OF FLUME AROSE OUT OF A DESIRE TO HAVE A PRIMARY MEASURING DEVICE THAT COULD BE INSERTED INTO AN EXISTING CONDUIT, USUALLY ROUND, WITH MINIMAL SITE REQUIREMENTS OTHER THAN SUITABLE SLOPE.

Flume Size	Maximum US Slope (%)	Min Flow (gpm)	Max Flow (gpm)
6 inch	2.2	7.0	131
8 inch	2.0	14	310
10 inch	1.8	23	502
12 inch	1.6	31	752
15 inch	1.5	49	1385
18 inch	1.4	70	2071
21 inch	1.4	100	3161
24 inch	1.3	132	4248
27 inch	1.3	169	5870
30 inch	1.3	216	7410

1. THE STANDARD FLUME TYPE (PALMER BOWLUS FLUME) MUST BE SELECTED UNLESS THE SITE DOES NOT MEET THE CRITERIA BELOW. IF THE SITE DOES NOT MEET THE CRITERIA BELOW THEN THE SECONDARY FLUME (TRAPEZOIDAL) SHALL BE SELECTED FOR THE SITE.
2. THE MINIMUM FLOW FOR THE SITE (TYPICALLY IN NIGHT) AND THE MAXIMUM FLOW FOR A SITE (TYPICALLY DURING WET WEATHER EVENTS) MUST BE WITHIN THE ACCURATE FLOW RANGES DEPICTED IN TABLE 1.
3. IF THE FLOW RANGES ARE SUITABLE FOR THE MINIMUM AND MAXIMUM FLOWS OBSERVED AT THE SITE, THE FLUME SIZE SELECTED SHALL MATCH THE UPSTREAM NOMINAL PIPE SIZE.
4. THE FLUME SIZE REQUIRED TO MEET THE FLOW RANGES MUST BE WITHIN (2) NOMINAL PIPE SIZES OF THE SITE'S UPSTREAM PIPE. IF THE NOMINAL UPSTREAM PIPE SIZE AND THE FLUME SIZE ARE NOT THE SAME, A GRADUAL SMOOTH TRANSITIONAL TAPERED APPROACH FROM PIPE TO FLUME SHALL BE FORMED DURING INSTALLATION AT A 3:1 CONVERGENCE OR DIVERGENCE.
5. THE UPSTREAM PIPE'S SLOPE MUST BE LESS THAN THE MAXIMUM SLOPES IN TABLE 1 FOR THE CORRESPONDING FLUME SIZE.

STANDARD FLUME – PALMER BOWLUS FLUMES

IN AN ATTEMPT TO OBTAIN WIDER RANGES OF DISCHARGE THAN THOSE AVAILABLE WITH PALMER BOWLUS FLUMES, SEVERAL INVESTIGATORS HAVE CONSIDERED SUPERCRITICAL TRAPEZOIDAL FLUMES. TRAPEZOIDAL FLUMES GENERALLY OPERATE AS TYPE IV FLUMES. THE OUTWARD SLOPING OF THE FLUME WALLS PROVIDES INCREASED SENSITIVITY TO LOW DISCHARGE RATES FOR A GIVEN SIZE AND, HENCE, INCREASED RANGE.

Flume Size	Approach Width	Minimum Flow	Maximum Flow
Small 60 degree Trapezoidal	6	1.4	24
Large 60 degree Trapezoidal	10	5.2	116
X-Large 60 degree Trapezoidal	18	0.4	695
2-inch WSC 60 degrees	18	8.1	1126
2-inch WSC 45 degrees	24	12	1128
2-inch WSC 30 degrees	36	14	1737

1. THE MINIMUM FLOW FOR THE SITE (TYPICALLY IN NIGHT) AND THE MAXIMUM FLOW FOR A SITE (TYPICALLY DURING WET WEATHER EVENTS) MUST BE WITHIN THE ACCURATE FLOW RANGES DEPICTED IN TABLE 2.
2. IF THE FLOW RANGES FOR THE SITE DO NOT FIT WITHIN THE RANGES DEPICTED IN TABLE 1 OR TABLE 2, ALTERNATIVE FLUME TYPES OR FLOW MONITORING METHODS MUST BE DISCUSSED AND APPROVED BY THE CITY OF JOLIET.
3. IF THE FLOW RANGES ARE SUITABLE FOR THE SITE, THE FLUME SIZE SELECTED SHOULD BE THE FLUME WITH APPROACH WIDTH CLOSEST TO THE UPSTREAM NOMINAL PIPE SIZE. A GRADUAL SMOOTH TRANSITIONAL TAPERED APPROACH SHALL BE FORMED DURING INSTALLATION BETWEEN THE UPSTREAM PIPE AND THE FLUME AT A 3:1 CONVERGENCE OR DIVERGENCE.

SECONDARY FLUME – TRAPEZOIDAL FLUMES

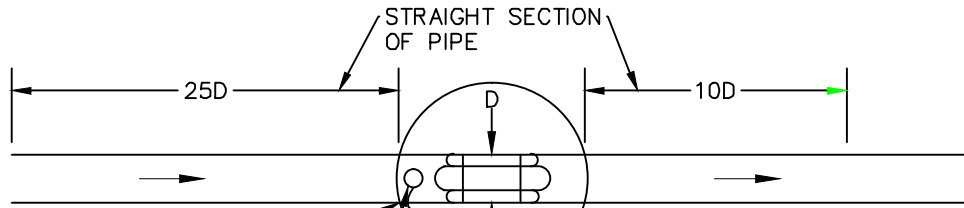
NOTES:

1. SEE TELEDYNE ISCO OPEN CHANNEL FLOW MEASUREMENT, 7TH EDITION FOR MORE DETAIL.
2. UNLESS APPROVED BY THE CITY, THE FOLLOWING FLUMES WILL NOT BE ACCEPTED AS FLOW MEASURING DEVICES:
 - MONTANA FLUMES
 - PARSHALL FLUMES
 - LEOPOLD-LAGCO FLUMES
 - H, HS AND HL FLUMES
 - BRITISH RECTANGULAR FLUMES
 - VENTURI FLUMES
 - KHAFAGI FLUMES
 - SAN DIMAS FLUMES

NOT TO SCALE

CITY OF JOLIET, ILLINOIS
SEWER FLOW MONITORING
(GRAVITY)
SELECTION AND
SIZING OF FLUME
SAN-07

DATE: OCT. 2017



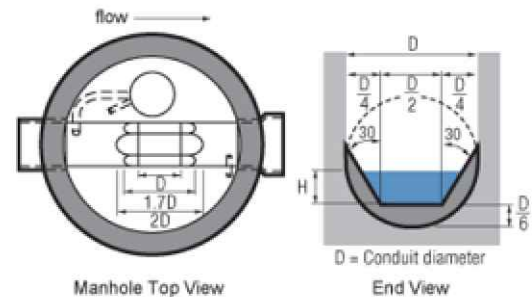
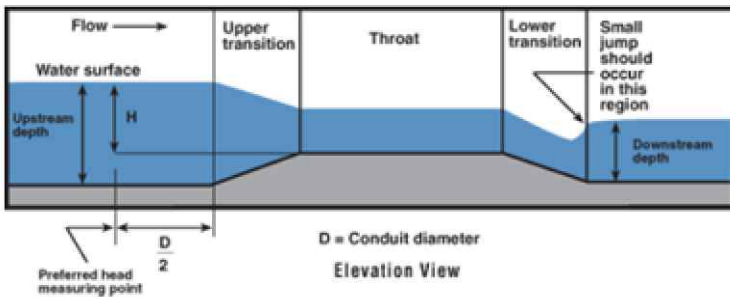
IF FLUME SIZE AND THE UPSTREAM PIPE'S NOMINAL DIAMETER DO NOT MATCH, ALLOW SPACE FOR GRADUAL TRANSITION APPROACH

MOUNT ULTRA SONIC SENSOR $D/2$ DISTANCE UPSTREAM OF THE UPPER TRANSITION OF THE FLUME

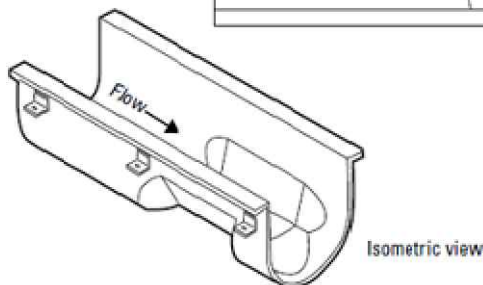
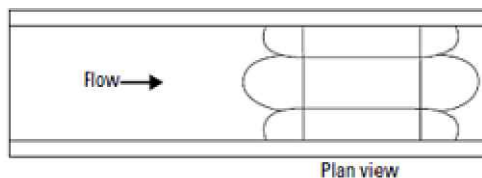
ISCO SIGNATURE SERIES OR SIGMA sc200 IN ENCLOSURE W/ DOWN LOOKING UNTRASONIC SENSOR

SIZE MANHOLE STRUCTURE TO FIT A FULL SIZED (OR $3D+1$) PALMER BOWLUS FLUME OF THE SELECTED DIAMETER (5' MANHOLES UP TO 15" PALMER BOWLUS FLUME)

1. FLUME SIZING AND LOCATION OF INSTALLATION MUST BE APPROVED BY THE CITY OF JOLIET BEFORE CONSTRUCTION.
2. THERE MUST BE 25 DIAMETERS LENGTH OF STRAIGHT PIPE UPSTREAM OF THE FLUME AND 10 DIAMETERS LENGTH OF STRAIGHT PIPE DOWNSTREAM OF THE FLUME, FREE OF BENDS, DROP MANHOLES, JUNCTIONS, DIAMETER CHANGES, AND TURBULENCE.
3. THE UPSTREAM SLOPE MUST BE LESS THAN THE MAXIMUM SLOPE FOR THE SELECTED SIZE FLUME. THE DOWNSTREAM SLOPE MUST BE GREAT ENOUGH TO MAINTAIN A SUBMERGENCE RATIO OF LESS THAN 85%.
4. INSTALLATION OF THE FLUME AND METER SENSOR SHALL BE PER MANUFACTURER'S SPECIFICATIONS. SOME GENERAL NOTES INCLUDE:
 - 4.1. FLUME MUST BE LEVEL IN ALL DIRECTIONS.
 - 4.2. FLUME MUST BE ANCHORED (USING THREADED ROD) TO THE BENCH BEFORE GROUTING TO ENSURE FLOATING DOES NOT OCCUR.
 - 4.3. THERE MUST BE A GRADUAL SMOOTH TRANSITIONAL TAPERED APPROACH BETWEEN THE UPSTREAM PIPE AND THE FLUME.
 - 4.4. THE ULTRASONIC SENSOR MUST BE LEVEL IN ALL DIRECTIONS AND MOUNTED $D/2$ DISTANCE UPSTREAM OF THE UPPER TRANSITION.
 - 4.5. THE ULTRASONIC SENSOR MUST BE PROPERLY CALIBRATED AND OBSERVED BY CITY REPRESENTATIVE. (NOTE: $H = \text{DEPTH} - D/6$)



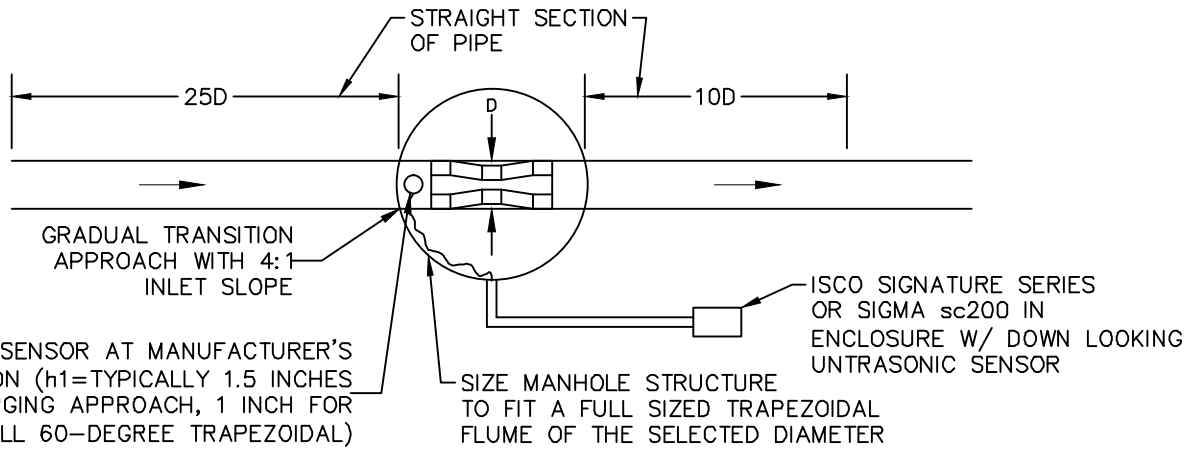
Permanent Type



PALMER BOWLUS FLUME

CITY OF JOLIET, ILLINOIS
SEWER FLOW MONITORING
(GRAVITY)
PALMER BOWLUS FLUME
INSTALLATION
SAN-08

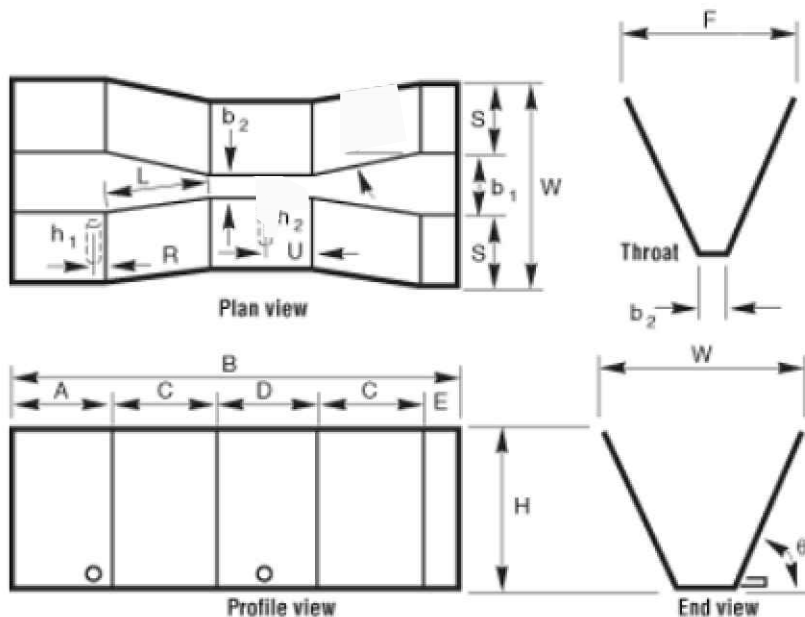
DATE: OCT. 2017



MOUNT ULTRA SONIC SENSOR AT MANUFACTURER'S RECOMMENDED LOCATION (h_1 =TYPICALLY 1.5 INCHES UPSTREAM OF CONVERGING APPROACH, 1 INCH FOR SMALL 60-DEGREE TRAPEZOIDAL)

1. FLUME SIZING AND LOCATION OF INSTALLATION MUST BE APPROVED BY THE CITY OF JOLIET BEFORE CONSTRUCTION.
2. THERE MUST BE 25 DIAMETERS LENGTH OF STRAIGHT PIPE UPSTREAM OF THE FLUME AND 10 DIAMETERS LENGTH OF STRAIGHT PIPE DOWNSTREAM OF THE FLUME, FREE OF BENDS, DROP MANHOLES, JUNCTIONS, DIAMETER CHANGES, AND TURBULENCE.
3. THE UPSTREAM SLOPE MUST BE LESS THAN THE MAXIMUM SLOPE FOR THE SELECTED SIZE FLUME. THE DOWNSTREAM SLOPE MUST BE GREAT ENOUGH TO MAINTAIN A SUBMERGENCE RATIO OF LESS THAN 80%.
4. INSTALLATION OF THE FLUME AND METER SHALL BE PER MANUFACTURER'S SPECIFICATIONS. SOME GENERAL NOTES INCLUDE:
 - 4.1. FLUME MUST BE LEVEL IN ALL DIRECTIONS.
 - 4.2. FLUME MUST BE ANCHORED (USING THREADED ROD) TO THE BENCH BEFORE GROUTING TO ENSURE FLOATING DOES NOT OCCUR.
 - 4.3. THERE MUST BE A GRADUAL SMOOTH TRANSITIONAL TAPERED APPROACH BETWEEN THE UPSTREAM PIPE AND THE FLUME BETWEEN THE UPSTREAM PIPE AND THE FLUME AT MANUFACTURER'S RECOMMENDED LOCATION.
 - 4.4. THE ULTRASONIC SENSOR MUST BE LEVEL IN ALL DIRECTIONS AND MOUNTED $D/2$ DISTANCE UPSTREAM OF THE UPPER TRANSITION OF THE FLUME.
 - 4.5. THE ULTRASONIC SENSOR MUST BE PROPERLY CALIBRATED AND OBSERVED BY CITY REPRESENTATIVE.

Flume Type	b1	b2	A	L	C	D	E	F	H	B	R	S	U	W	θ	h1
Small 60 degree Trapezoidal	2"	0	5"	4 1/8"	4 3/64"	5"	2"	4 3/4"	4"	20 3/32"	1"	2 3/8"	2 1/2"	6 1/4"	60°	1"
Large 60 degree Trapezoidal	2"	0	7"	7"	6 15/16"	7"	3"	8"	6 3/4"	30 7/8"	1 1/2"	4"	3 1/2"	10"	60°	1 1/2"
X-Large 60 degree Trapezoidal	3 3/4"	0	7"	7 7/8"	6 15/16"	18"	3"	13 7/8"	12"	41 7/8"	1 1/2"	7 1/2"	9"	18 3/8"	60°	1 1/2"
2-inch WSC 60 degrees	4 7/8"	2"	8"	8 1/2"	8 13/32"	8 1/2"	3"	14"	10 3/8"	36 5/16"	1 1/2"	6"	4 1/4"	16 7/8"	60°	1 1/2"
2-inch WSC 45 degrees	4 7/8"	2"	8"	8 1/2"	8 3/8"	8 1/2"	3"	22 13/16"	10 19/32"	36 1/4"	1 1/2"	10 19/32"	4 1/4"	26 1/16"	45°	1 1/2"
2-inch WSC 30 degrees	4 7/8"	2"	8"	8 1/2"	8 3/8"	8 1/2"	3"	36 41/64"	10"	36 1/4"	1 1/2"	17 5/16"	4 1/4"	39 33/64"	30°	1 1/2"

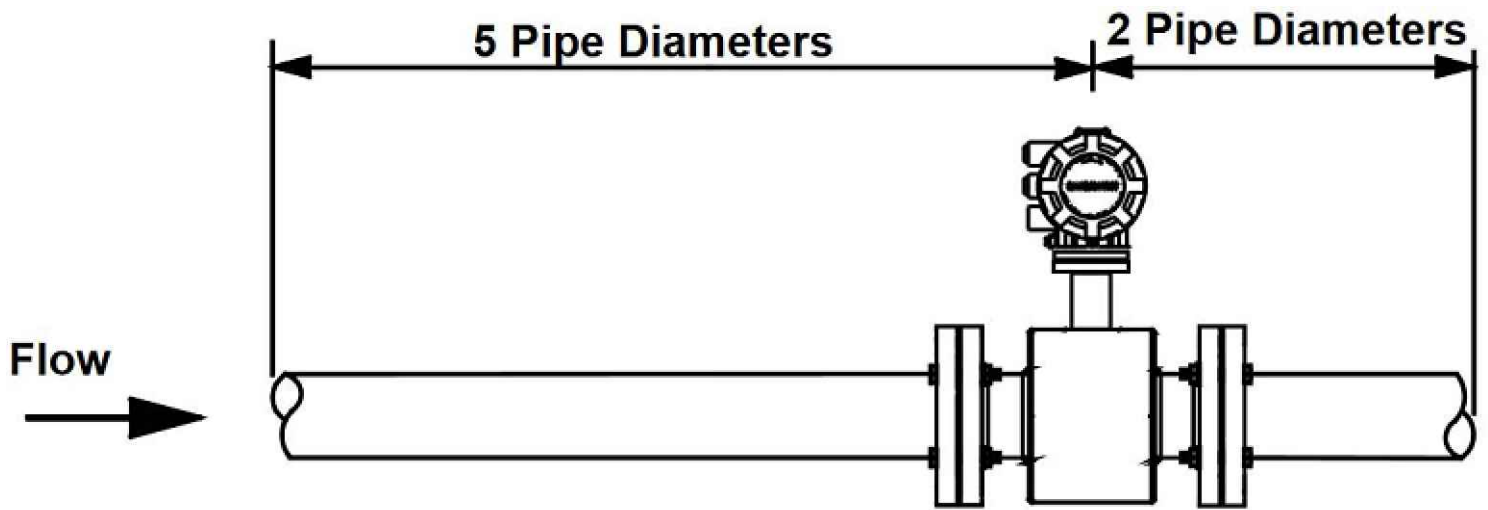


TRAPEZOIDAL FLUME

NOT TO SCALE

CITY OF JOLIET, ILLINOIS
SEWER FLOW MONITORING
(GRAVITY)
TRAPEZOIDAL FLUME
INSTALLATION
SAN-09

DATE: OCT. 2017



1. MAG METER MUST BE MANUFACTURED BY ABB OR SIEMENS.
2. MAG METER MUST HAVE DUAL 4–20 mA ANALOG OUTPUT CHANNELS.
3. MAG METER SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. AT LEAST 5 PIPE DIAMETERS AND 2 PIPE DIAMETERS OF STRAIGHT PIPE SPOOL ARE REQUIRED UPSTREAM AND DOWNSTREAM OF THE MAG METER.
4. PIPE SUPPORTS SHALL BE INSTALLED ONLY ON THE PIPE SPOOL (AND NOT THE MAG METER).
5. GASKETS SHALL BE THE SAME DIAMETER OF PIPE.

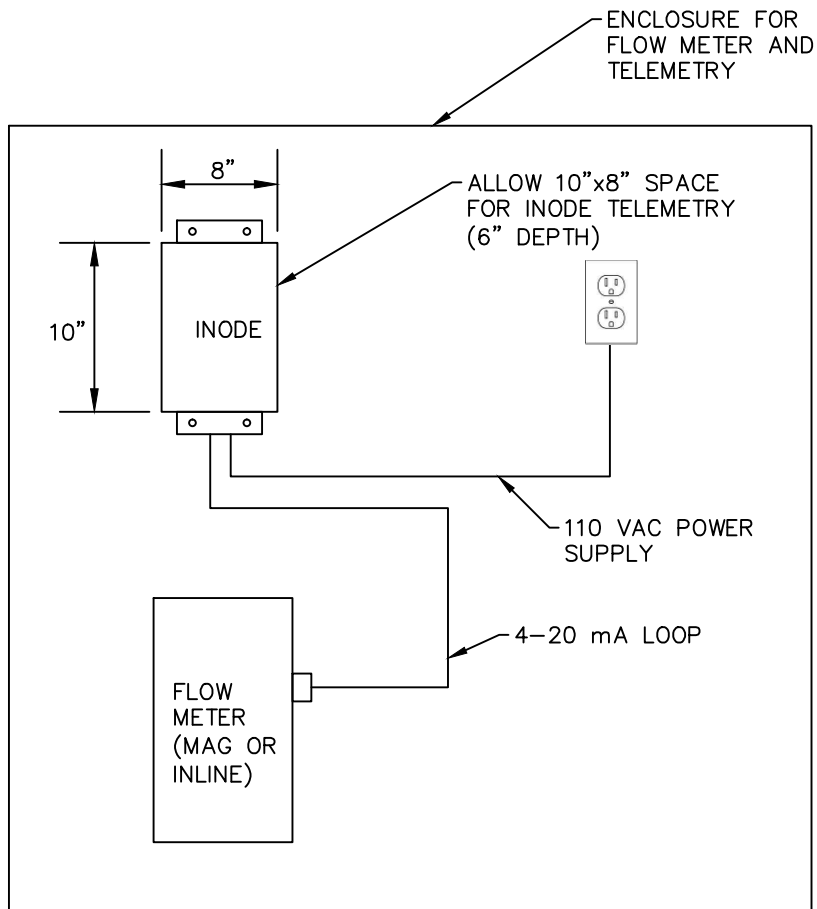
MAGNETIC FLOW METER

NOT TO SCALE

CITY OF JOLIET, ILLINOIS
SEWER FLOW MONITORING
(PRESSURIZED)

WASTE WATER MAG METER
INSTALLATION
SAN-10

DATE: OCT. 2017



1. MOUNT INODE INTO ENCLOSURE.
2. ENCLOSURE SHALL HAVE 110 VAC POWER SUPPLY.
3. SET UP CURRENT LOOP WITH FLOW MONITORS 4-20 mA ANALOG OUTPUT.
4. INODE MUST HAVE AN INPUT FOR A PULSE TOTALIZER.

INODE TELEMETRY FOR PERMANENT MONITORING SITES

NOTE:

1. PURCHASING CONTACT: EMNET, LLC, WWW.EMNET.NET, 121 S. NILES AVE., SOUTH BEND, IN 46617, PHONE: 574.855.1012

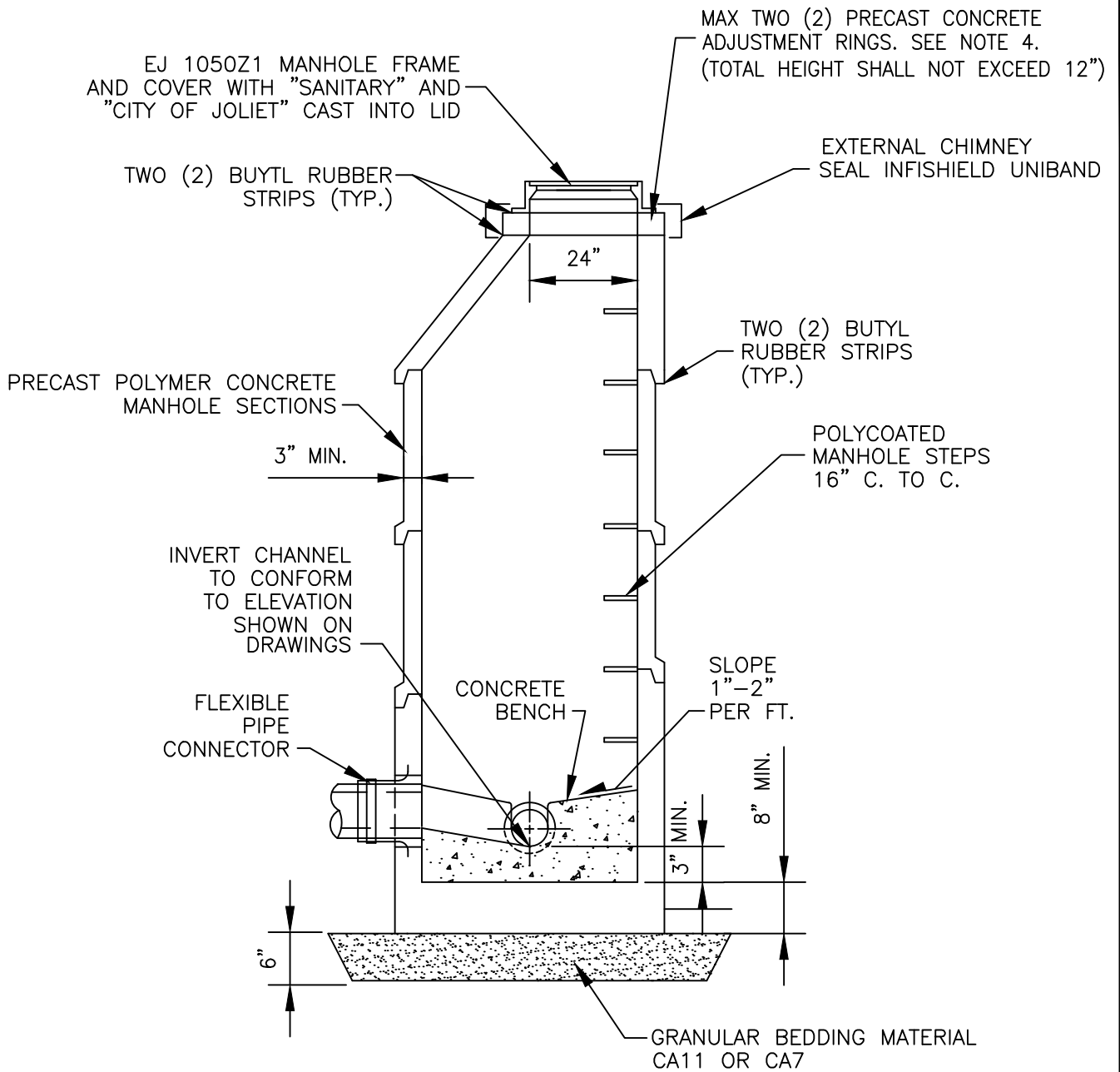
NOT TO SCALE

CITY OF JOLIET, ILLINOIS
SEWER FLOW MONITORING
(GRAVITY)

INODE TELEMETRY FOR PERMANENT
MONITORING SITES

SAN-11

DATE: MARCH 2019



NOTE:

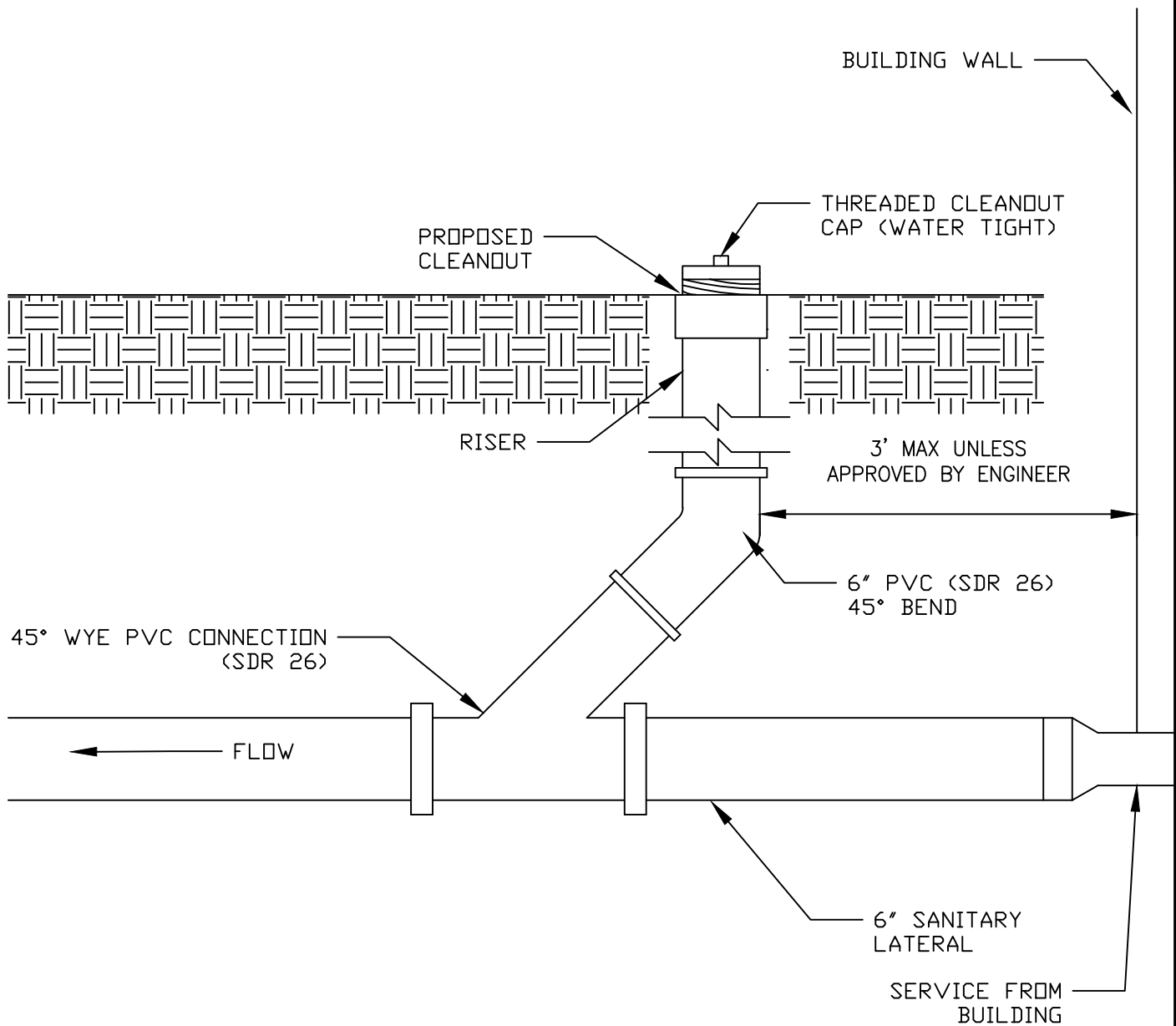
1. ECCENTRIC CONES REQUIRED, FLAT SLAB TOPS PERMITTED ONLY FOR MANHOLES TOO SHALLOW FOR CONES.
2. MANHOLE DIAMETER SHALL BE DETERMINED BY THE SEWER DEPTH, THE SEWER OUTSIDE DIAMETER, RELATIVE ANGLES OF SEWERS TO EACH OTHER, THE SIZE OF HOLES CORED/CAST FOR BOOTS, AND A MINIMUM OF 8" BETWEEN CORED/CAST HOLES. REFER TO DESIGN MANUAL.
3. ALL LIFT HOLES ARE TO BE GROUTED FROM THE INSIDE AND OUTSIDE BEFORE BACKFILLING.
4. FOR MANHOLES INSTALLED IN PAVEMENT, PROVIDE ONE RUBBER COMPOSITE ADJUSTMENT RING. EJ INFRA-RISER OR APPROVED EQUAL.
5. BOUYANCY DESIGN SUBMITTALS ARE REQUIRED.

NOT TO SCALE

CITY OF JOLIET, ILLINOIS

SANITARY POLYMER
MANHOLE DETAIL
SAN-12

DATE: MARCH 2019



NOTE;

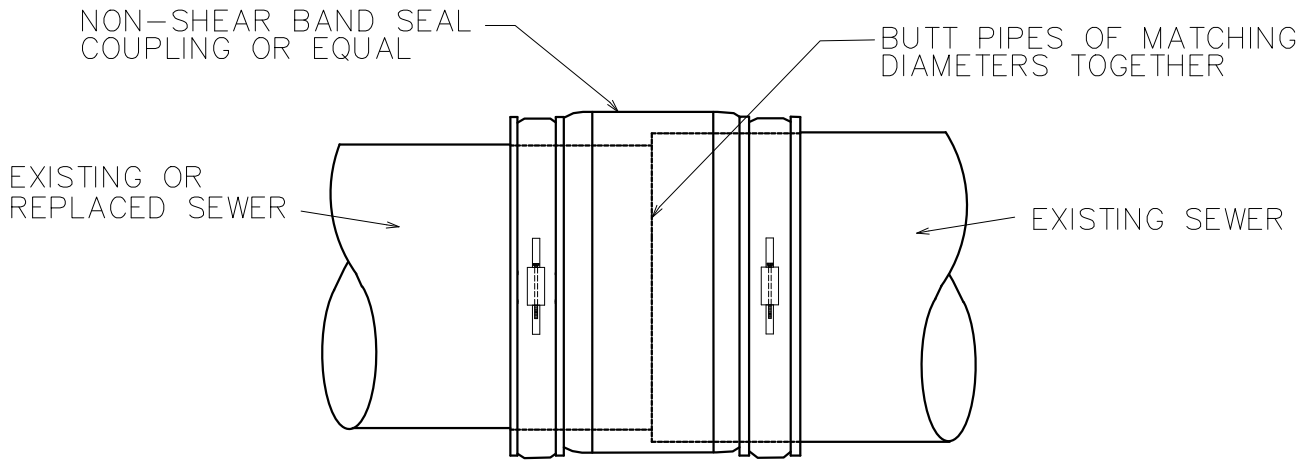
1. PROPOSED CLEANOUT TO BE INSTALLED FLUSH TO THE EXISTING SURFACE.
2. CLEANOUT SHALL BE INSTALLED AS CLOSE TO BUILDING AS POSSIBLE
3. CONNECTIONS TO DISSIMILAR MATERIAL PIPES SHALL BE MADE WITH NON-SHEAR MISSION COUPLINGS WITH STAINLESS STEEL BANDS
4. CLEANOUTS IN PAVED AREAS SHALL BE INSTALLED WITH EAST JORDAN 1574 CAST IRON CLEANOUT. FRAME AND LID INSTALLED FLUSH WITH FINISHED SURFACE.

NOT TO SCALE

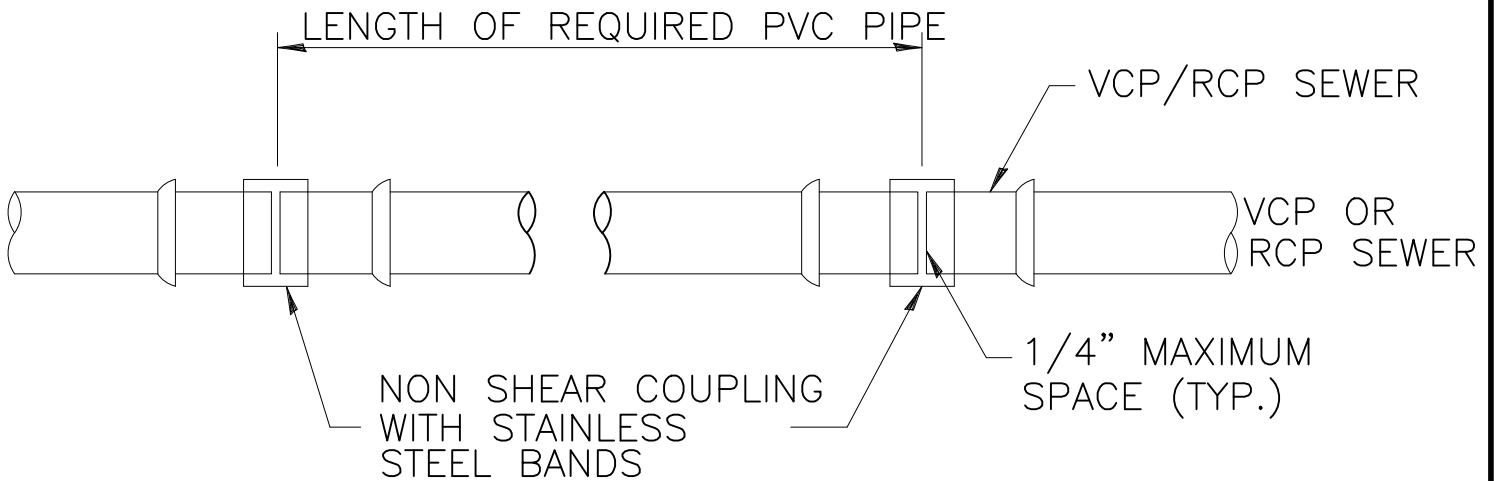
CITY OF JOLIET, ILLINOIS

SANITARY SERVICE
CLEANOUT DETAIL
SAN-13

DATE: NOVEMBER 2022



PIPE COUPLING DETAIL



NOTES:

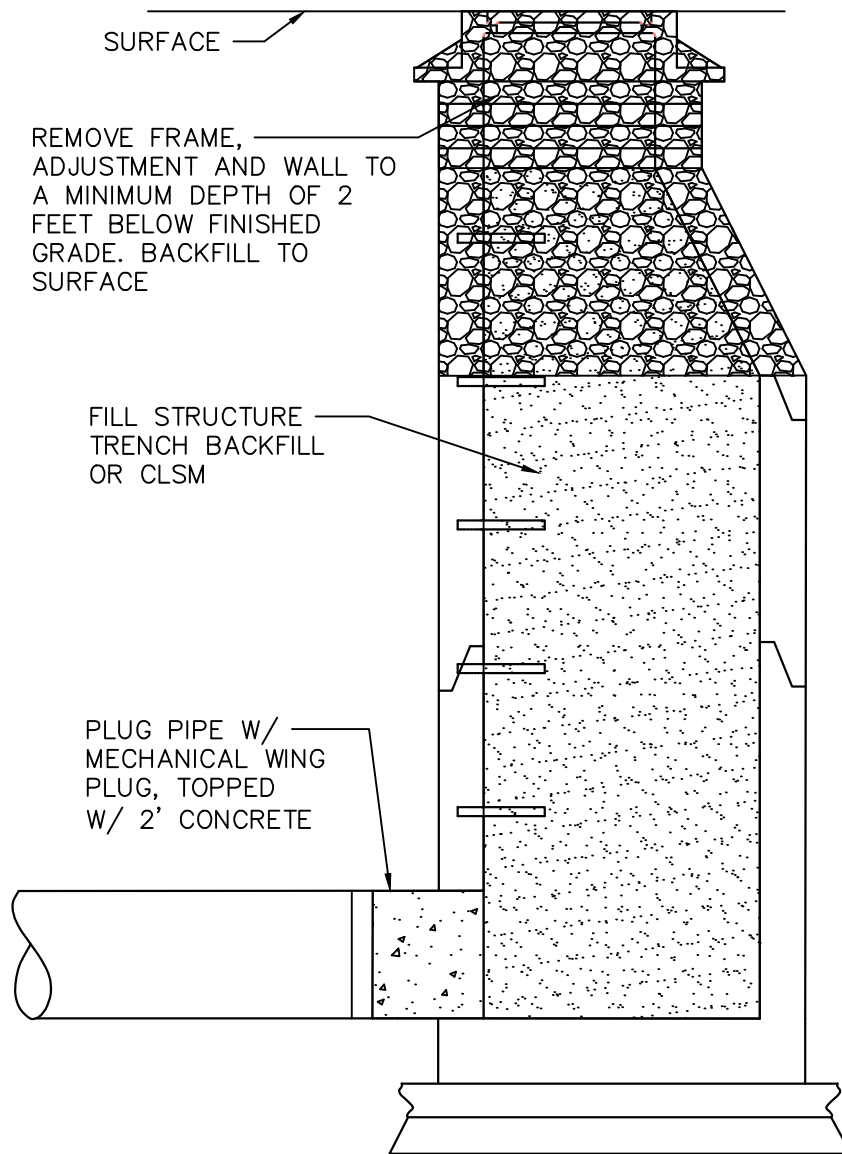
1. CONNECTION TO CIPP LINING SHALL BE NON-SHEAR COUPLINGS THAT ARE MADE SPECIFICALLY TO FIT THE OUTSIDE DIAMETER OF CURED-IN-PLACE PIPE (CIPP)

NOT TO SCALE

CITY OF JOLIET, ILLINOIS

CONNECTING SEWER PIPES
OF DISSIMILAR MATERIAL
SAN-14

DATE: NOVEMBER 2022



NOTE:

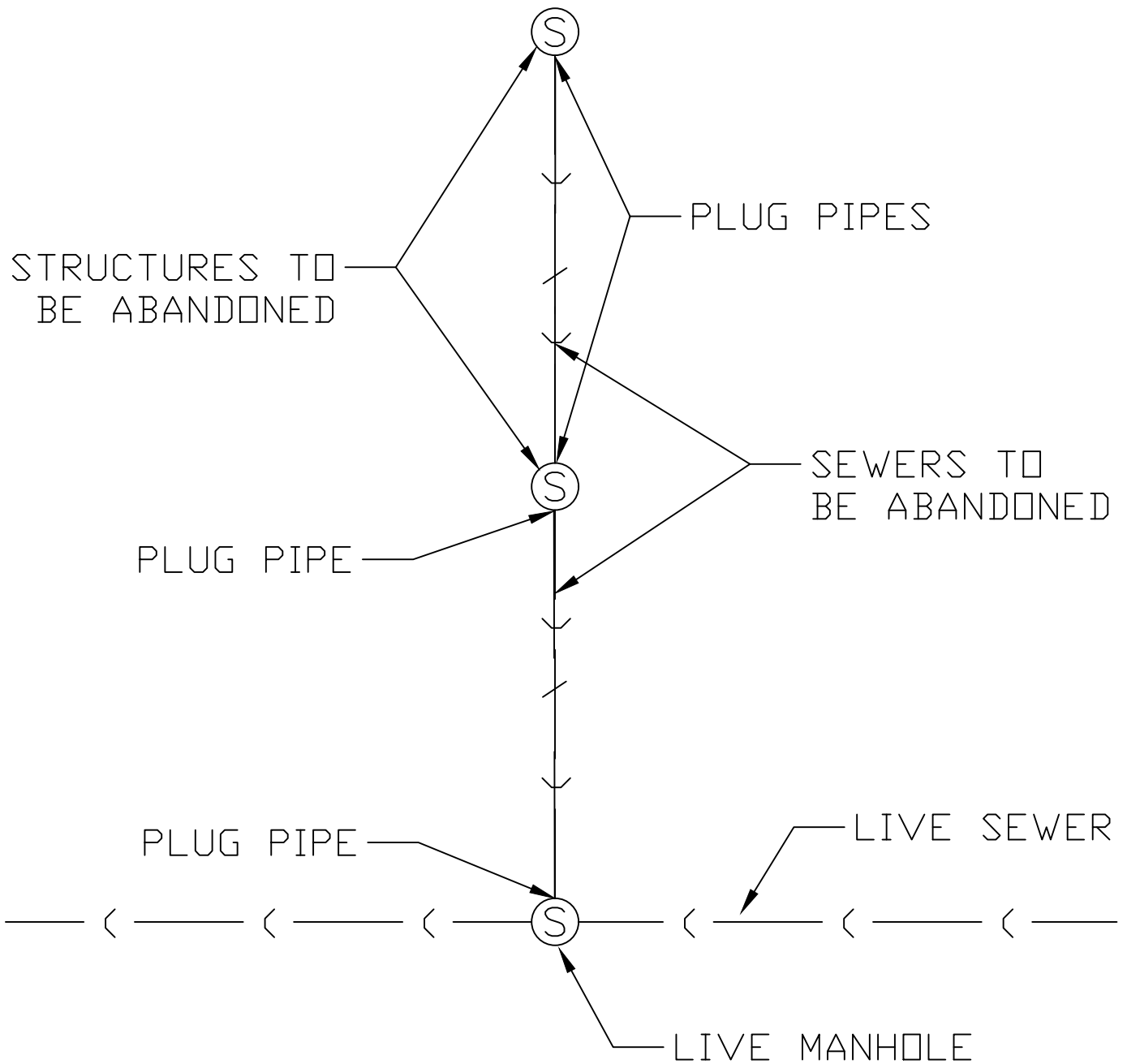
- ALL CONNECTING PIPES SHALL BE PLUGGED WITH MECHANICAL WING PLUGS OF THE SPECIFIED DIAMETER AND TOPPED WITH CONCRETE PLUG. BRICK AND MORTAR PLUGS WILL NOT BE ACCEPTABLE IN LIEU OF CONCRETE.
- THE MINIMUM THICKNESS OF THE CONCRETE TO THE PLUG SHALL BE TWO PIPE DIAMETERS UP TO 24 INCHES.
- CONTRACTOR SHALL REMOVE FRAME, COVER, CONE AND ADJUSTMENT RINGS OF THE MANHOLE STRUCTURES, AND CONE/FLAT-TOP/WALL TO A MINIMUM OF TWO (2') FEET BELOW FINISHED GRADE.
- REMAINDER OF THE STRUCTURE IS TO BE FILLED WITH TRENCH BACKFILL.
- CONTRACTOR SHALL BE RESPONSIBLE FOR OFF-SITE DISPOSAL OF ADJUSTMENT RINGS, FRAME AND COVER MUST BE RETURNED TO THE CITY.

NOT TO SCALE

CITY OF JOLIET, ILLINOIS

STRUCTURE ABANDONMENT
SAN-15

DATE: NOVEMBER 2022



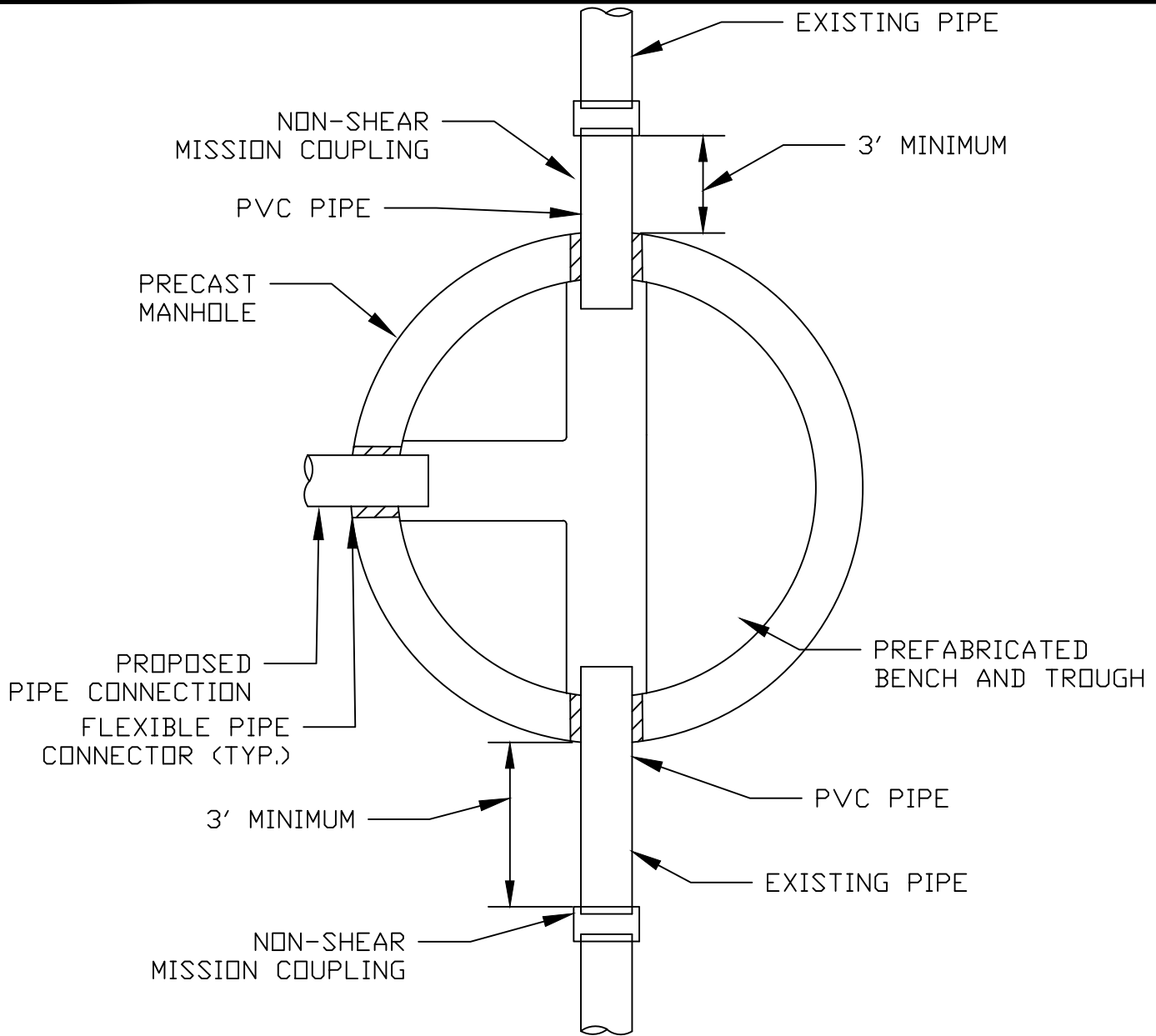
NOTE:

- REMOVE ABANDONED SEWERS IF WITHIN TRENCH OR IF DIRECTED BY ENGINEER.
- FILL ABANDONED PIPES WITH CLSM IF WITHIN IDOT, COUNTY OR RAIL ROAD RIGHT OF WAY.
- FILL ABANDONED PIPES WITH CLSM IF PIPE DIAMETER IS 15-INCHES OR GREATER.
- PLUG ALL PIPES IN STRUCTURES TO BE ABANDONED
- ABANDON STRUCTURES PER THE "ABANDONMENT OF STRUCTURES" DETAIL (SAN-15).

NOT TO SCALE

CITY OF JOLIET, ILLINOIS
 ABANDONMENT OF SEWERS
 SAN-16

DATE: NOVEMBER 2022



NOTE:

1. MANHOLE INSTALLATION MUST CONFORM TO CITY OF JOLIET STANDARD MANHOLE DETAIL (SAN-01).
2. EXTERNAL DROP CONNECTION MUST BE PROVIDED IF INVERT OF CONNECTING SEWER IS 24" OR MORE ABOVE THE INVERT OF OUTLET.
3. DOGHOUSE MANHOLES WILL NOT BE ACCEPTED UNLESS APPROVED BY THE ENGINEER.

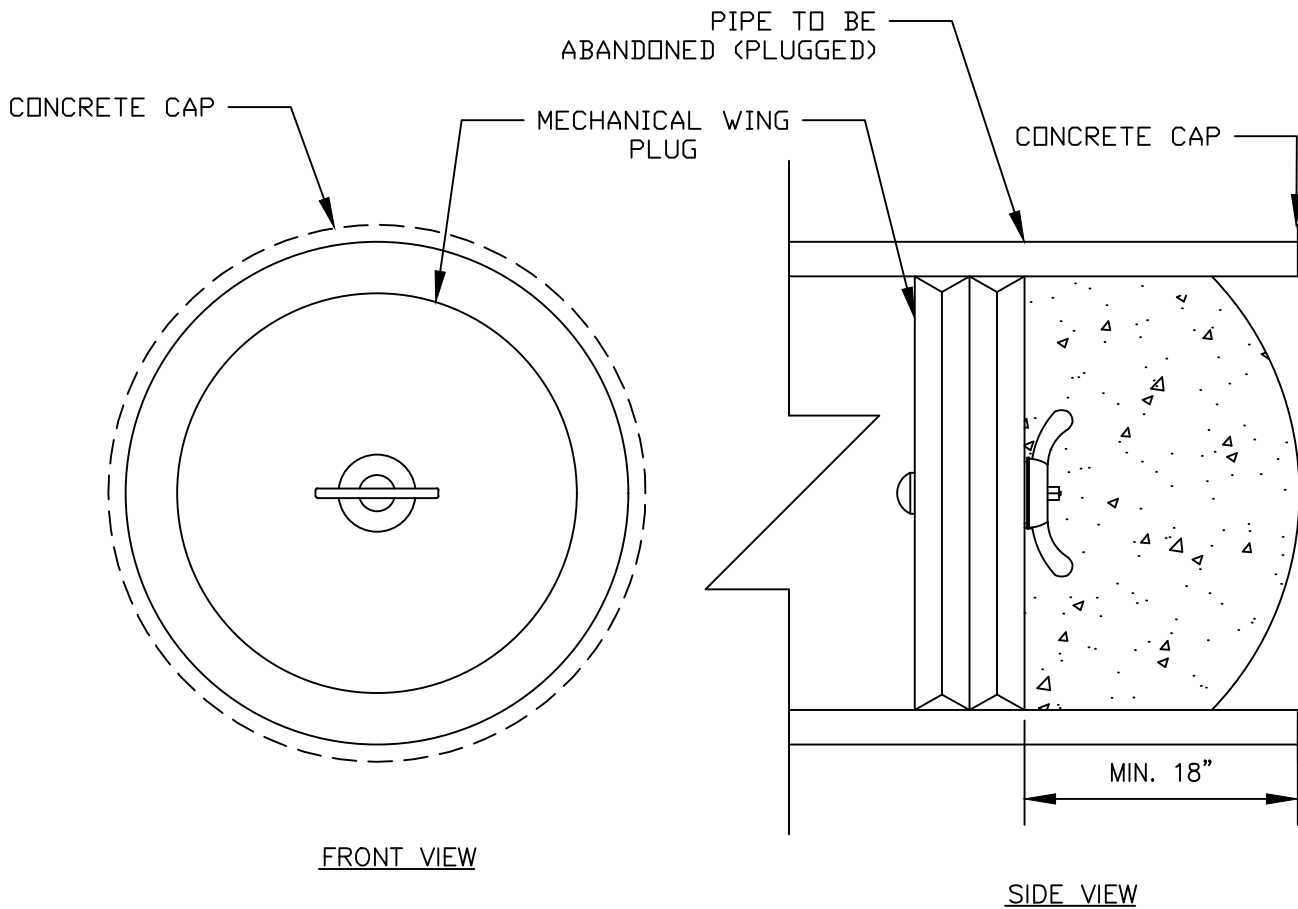
NOT TO SCALE

CITY OF JOLIET, ILLINOIS

NEW SANITARY MANHOLE ON
EXISTING SANITARY MAIN
DETAIL

SAN-17

DATE: NOVEMBER 2022



NOTE:

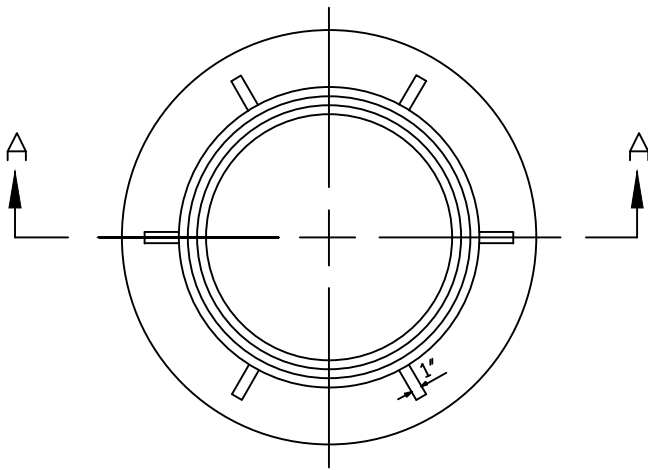
1. PIPES TO BE PLUGGED AND ABANDONED ARE TO BE CLEARED OF ANY DEBRIS PRIOR TO ABANDONMENT.
2. MECHANICAL WING PLUG TO BE INSERTED A MIN. OF 18 INCHES OR THE DIAMETER OF THE PIPE, WHICHEVER IS GREATER.
3. A CONCRETE CAP IS TO BE PLACED ON THE ABANDONED PIPE AFTER THE MECHANICAL WING PLUG HAS BEEN PROPERLY INSTALLED.
4. THE MECHANICAL WING PLUG MUST BE PRESSURE RATED GREATER THAN THE HEAD PRESSURE OF THE DEPTH OF THE PIPE.
5. BRICK AND MORTAR PLUGS WILL NOT BE ACCEPTABLE IN LIEU OF CONCRETE.

NOT TO SCALE

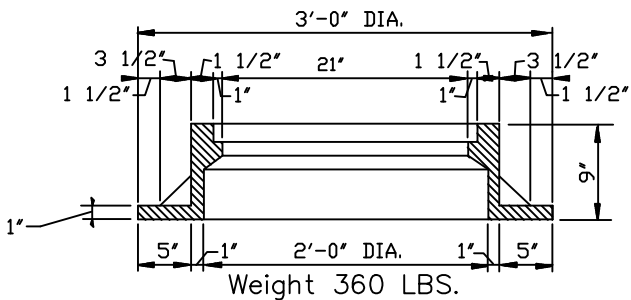
CITY OF JOLIET, ILLINOIS

PLUG PIPE DETAIL
SAN-18

DATE: NOVEMBER 2022

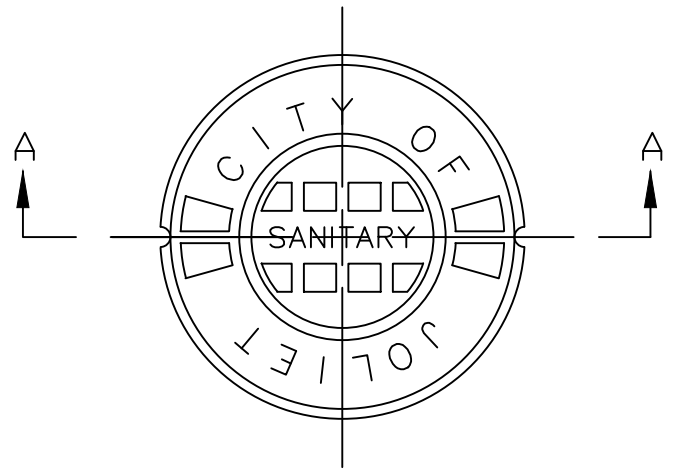


PLAN

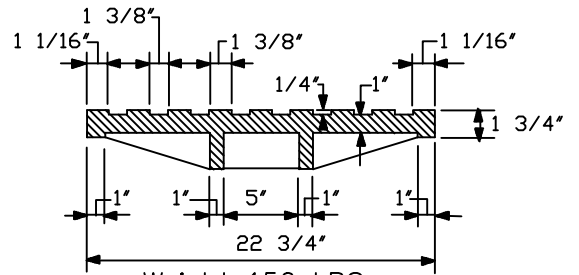


Weight 360 LBS.

Section A-A
Plan - Manhole
No Scale



PLAN



Weight 150 LBS.

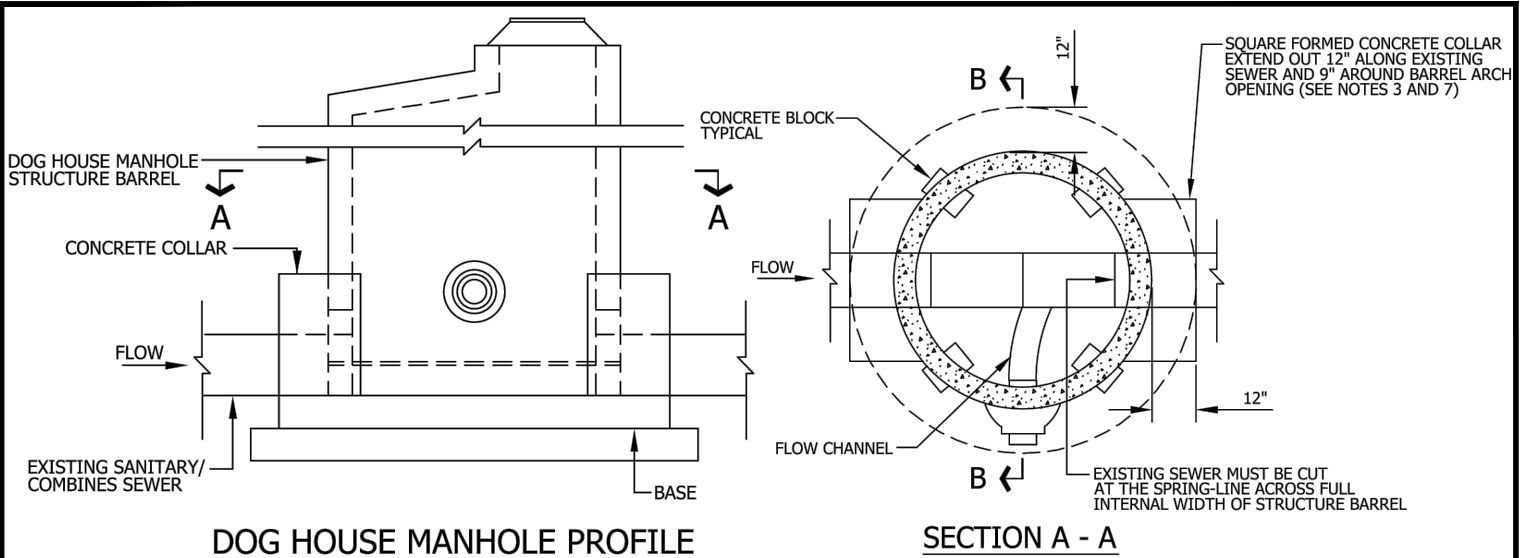
Section A-A
Standard Closed Lid
No Scale

Sanitary Sewer:
East Jordan 1020 AGS cover and
1050Z1 frame W/Watertight Lid

NOT TO SCALE

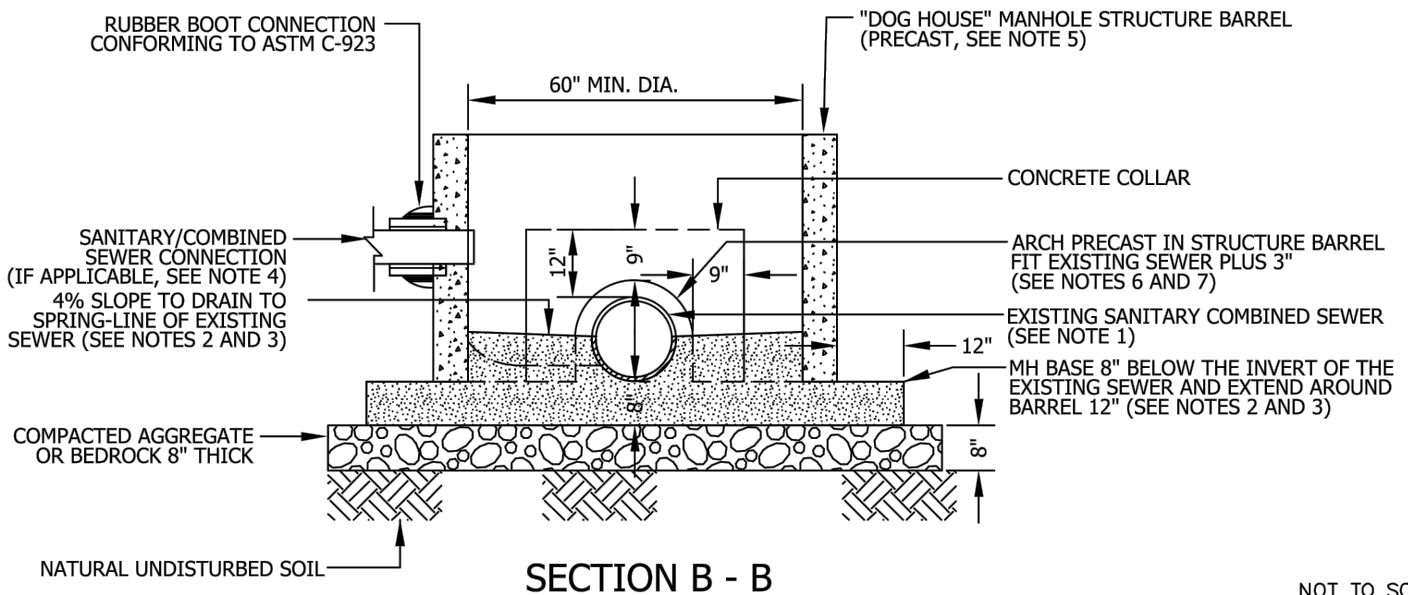
CITY OF JOLIET, ILLINOIS
FRAME AND COVER CASTING
SAN-19

DATE: NOVEMBER 2022



DOG HOUSE MANHOLE PROFILE

SECTION A - A



SECTION B - B

NOT TO SCALE

NOTES:

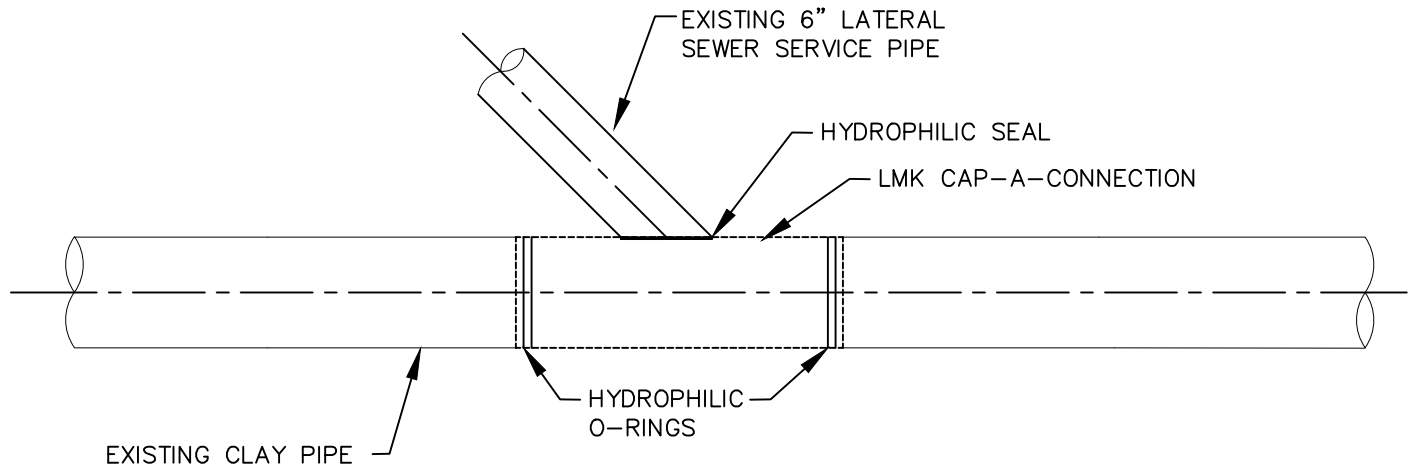
1. DOGHOUSE MANHOLES SHALL ONLY BE USED WHEN DIRECTED BY THE ENGINEER, TYPICALLY WHEN BYPASS OPERATIONS COULD CREATE RISK OF POSSIBLE BASEMENT BACKUPS.
2. EXISTING SANITARY SEWER MUST BE 15" DIAMETER OR LARGER FOR "DOGHOUSE" MANHOLE USE.
3. INTEGRAL POUR FOR BASE AND BENCH. (NO PRECAST BASE)
4. ALL POURED-IN-PLACE CONCRETE MUST BE 4000 PSI NON-SHRINK MIX.
5. EXTERNAL DROP CONNECTION MUST BE PROVIDED IF INVERT OF CONNECTING SEWER IS 24" OR MORE ABOVE THE INVERT OF THE OUTLET.
6. MANHOLE DIAMETER MINIMUM 60"-INCREASES BASED ON THE EXISTING SEWER DIAMETER.
7. CONCRETE BONDING AGENT MUST BE APPLIED TO ALL INTERFACES OF PRECAST CONCRETE SURFACES WITH POURED-IN-PLACE CONCRETE.
8. A CURVED INTERNAL ARCH FORM MUST BE USED DURING COLLAR CONCRETE FILL. NO BRICK, MORTAR, OR DEBRIS IS TO BE USED IN PLACE OF CONSOLIDATED CONCRETE.
9. DEBRIS MUST NOT BE ALLOWED TO ENTER THE SEWER SYSTEM AT ANY TIME DURING CONSTRUCTION.
10. ALL DIMENSIONS NOTED ARE MINIMUM ALLOWED.
11. THE STRUCTURE MUST NOT BE BACKFILLED FOR A MINIMUM OF 24 HOURS AFTER CONSTRUCTION.

NOT TO SCALE

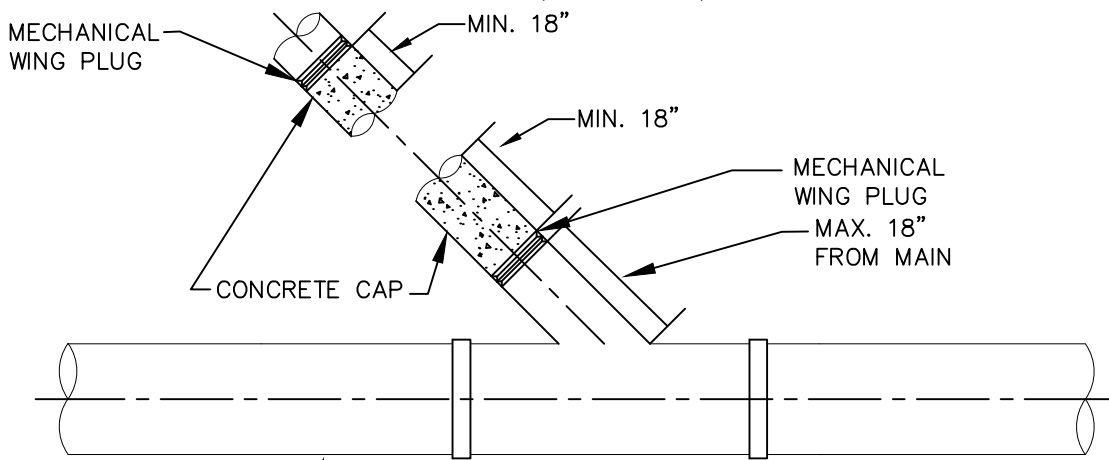
CITY OF JOLIET, ILLINOIS

DOGHOUSE MANHOLE
SAN-20

DATE: NOVEMBER 2022



CAP-A-CONNECTION
LATERAL ABANDONMENT
(TRENCHLESS)



MECHANICAL PLUG
LATERAL ABANDONMENT
(NON-TRENCHLESS)

NOTE:

1. TRENCHLESS ABANDONMENT OF SANITARY LATERALS SHALL TAKE PRIORITY OVER NON-TRENCHLESS ABANDONMENT UNLESS AS DIRECTED BY THE ENGINEER.
2. ABANDONMENT OF THE SERVICE MUST OCCUR AT THE SANITARY MAIN UNLESS OTHERWISE APPROVED BY THE ENGINEER

NOT TO SCALE

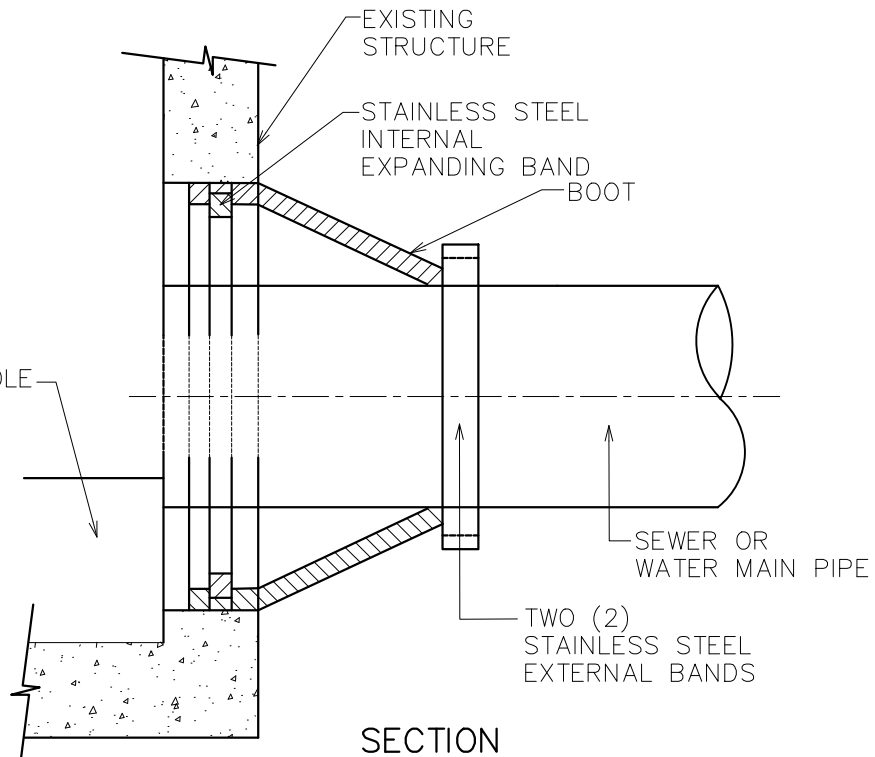
CITY OF JOLIET, ILLINOIS

ABANDON SERVICE
CONNECTION – TRENCHLESS
& NON-TRENCHLESS
SAN-21
DATE: NOVEMBER 2022

PVC PIPE CORING SIZES

PIPE Ø (IN.)	CORE Ø (IN.)
8"	12"
10"	14"
12"	16"
15"	18"
18"	22"

MODIFY BENCHING,
IF NECESSARY,
BEFORE DRILLING HOLE



NOTES:

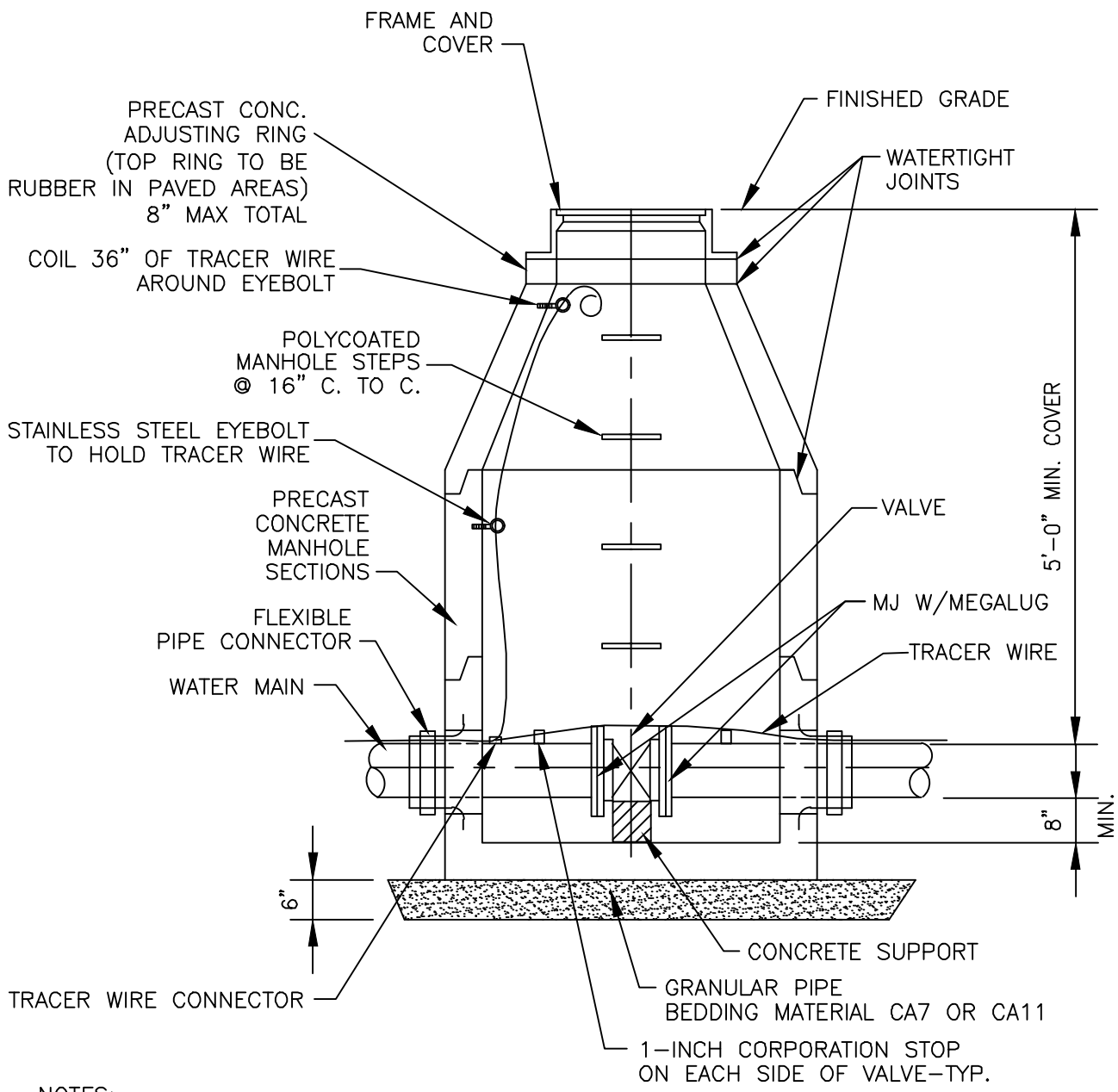
1. CORE-DRILL CIRCULAR OPENING IN STRUCTURE WALL OF DIAMETER TO FIT THE REQUIRED BOOT SIZE.
2. A-LOC OR KOR-N SEAL FLEXIBLE RUBBER BOOT SHALL BE USED FOR CONNECTIONS TO MANHOLES OR AS APPROVED BY CITY ENGINEERING SHALL BE USED FOR WATERTIGHT CONNECTION.
3. CUT, SHAPE AND SLOPE NEW INVERT CHANNEL IN THE EXISTING CONCRETE BENCH FOR SMOOTH FLOW FROM NEW CONNECTION.
4. CLEAN EXISTING STRUCTURE AND SEWER PIPE OF ANY DIRT, CONCRETE OR DEBRIS WHICH MAY ACCUMULATE DURING THE CONSTRUCTION PROCESS.
5. CONNECTION SHALL CONFORM TO ASTM C-923.

NOT TO SCALE

CITY OF JOLIET, ILLINOIS

CORE AND CONNECTION TO
EXISTING MANHOLE
SAN-22

DATE: NOVEMBER 2022



NOTES:

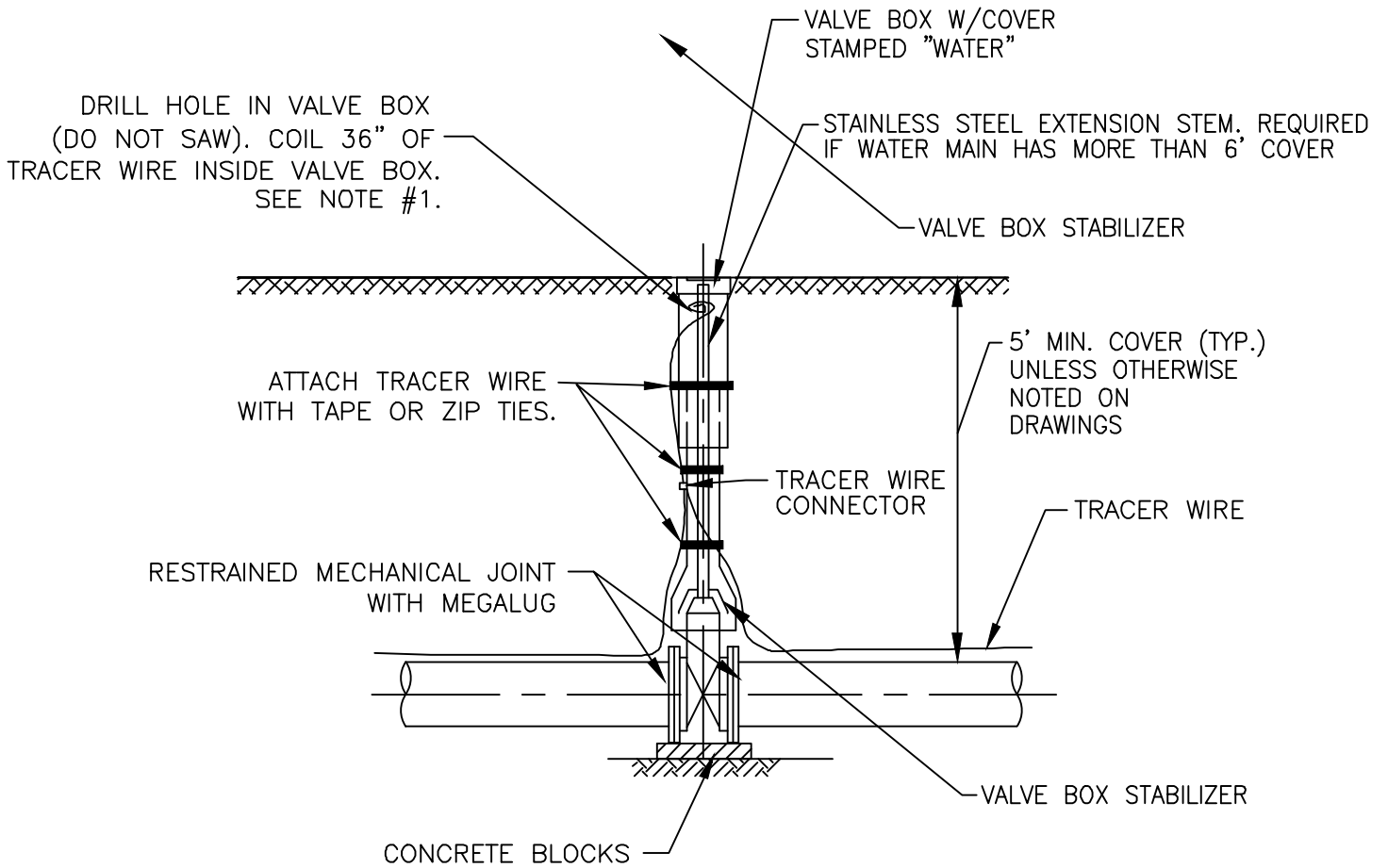
1. CONCENTRIC CONE REQUIRED FOR GATE VALVES, ECCENTRIC CONE REQUIRED FOR BUTTERFLY VALVES.
2. USE 4'-0" DIAMETER FOR WATER MAIN SIZES 4" THRU 10", 5'-0" FOR SIZES 12" OR GREATER
3. PROVIDE CAST IRON FRAME AND COVER WITH HEAVY DUTY LID, STAMPED WITH "CITY OF JOLIET" AND "WATER". EJ 1050Z1 OR NEENAH R170
4. ATTACH TRACER WIRE TO MAINTAIN MIN. 24" AWAY FROM STEPS

NOT TO SCALE

CITY OF JOLIET, ILLINOIS

WATER VALVE VAULT
DETAIL
WTR-01

DATE: NOVEMBER. 2022



NOTES:

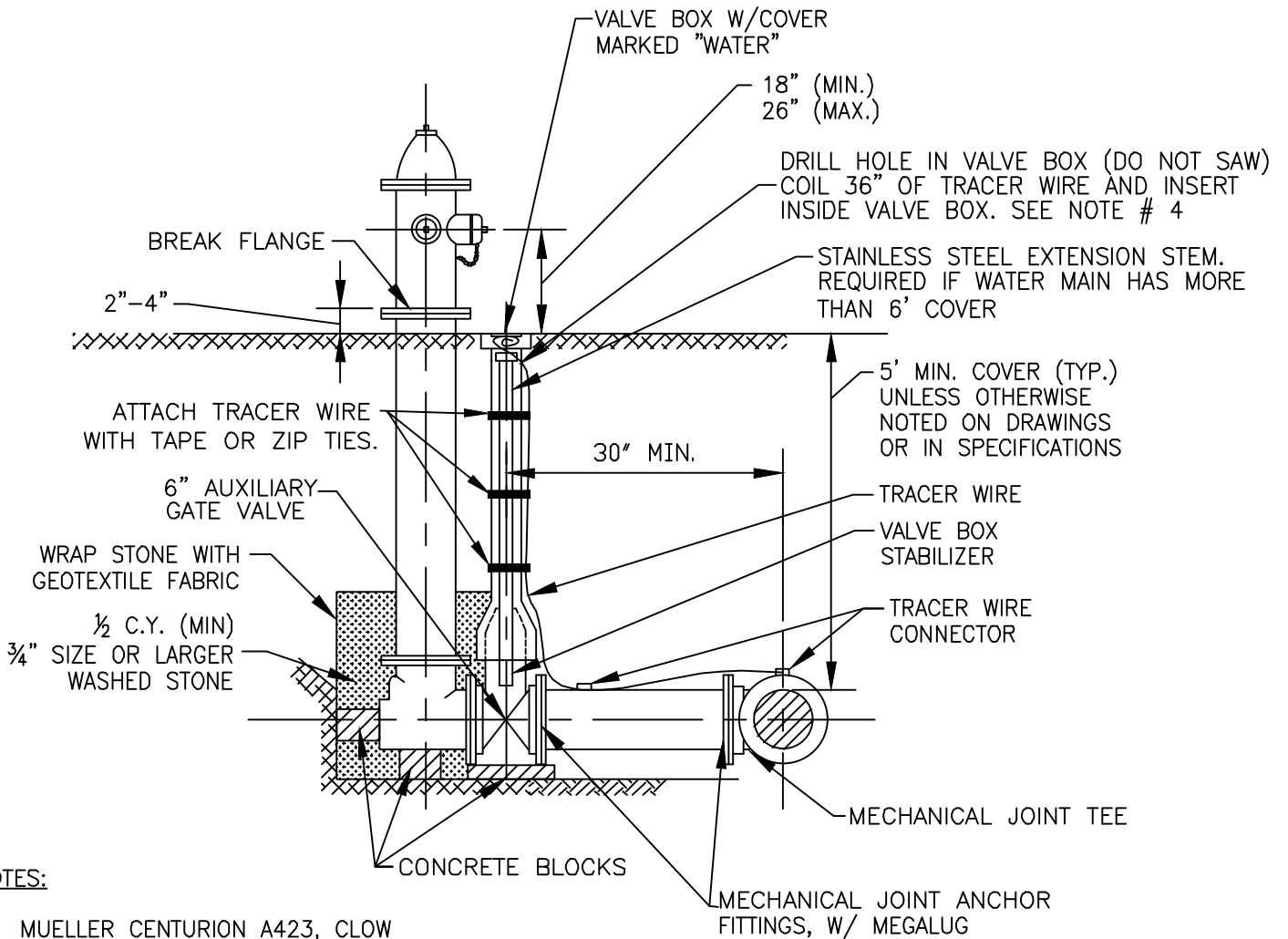
1. ATTACH TRACER WIRE TO OUTSIDE OF VALVE BOX USING TAPE OR ZIP TIES. DRILL $\frac{5}{8}$ " DIA. HOLE IN VALVE BOX 6" FROM TOP OF VALVE BOX.

NOT TO SCALE

CITY OF JOLIET, ILLINOIS

WATER VALVE BOX
DETAIL
WTR-02

DATE: NOVEMBER 2022



NOTES:

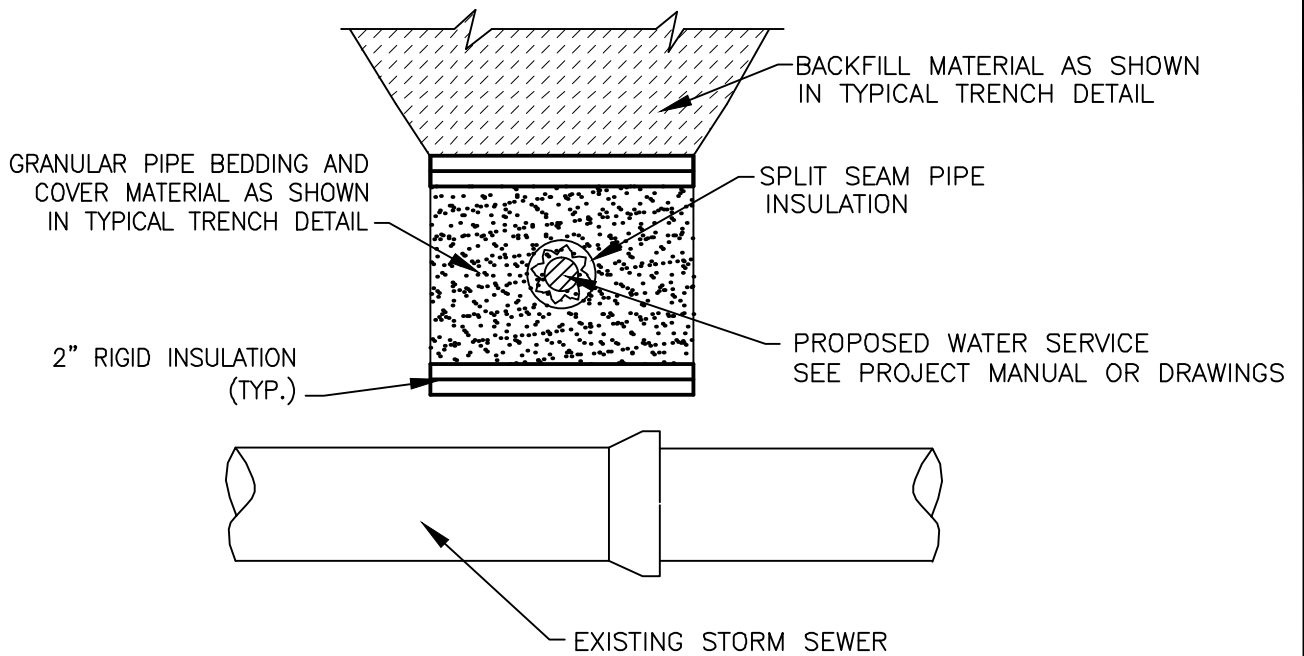
1. MUELLER CENTURION A423, CLOW MEDALLION OR E.J. 5BR250 (RED FOR MUNICIPAL TREATED WATER, GREEN FOR RAW WATER, YELLOW FOR PRIVATE HYDRANTS)
2. HYDRANTS SHALL BE LOCATED A MINIMUM OF 2 FEET BEHIND THE BACK OF CURB IN LOCATIONS SHOWN ON THE DRAWINGS
3. USE SWIVEL TEE AS CALLED OUT ON PLANS. 30" MINIMUM SEPARATION DOES NOT APPLY WHEN USING SWIVEL TEES.
4. ATTACH TRACER WIRE TO OUTSIDE OF VALVE BOX USING TAPE OR ZIP TIES. DRILL $\frac{5}{8}$ " DIA. HOLE IN VALVE BOX 6" FROM TOP OF VALVE BOX.

NOT TO SCALE

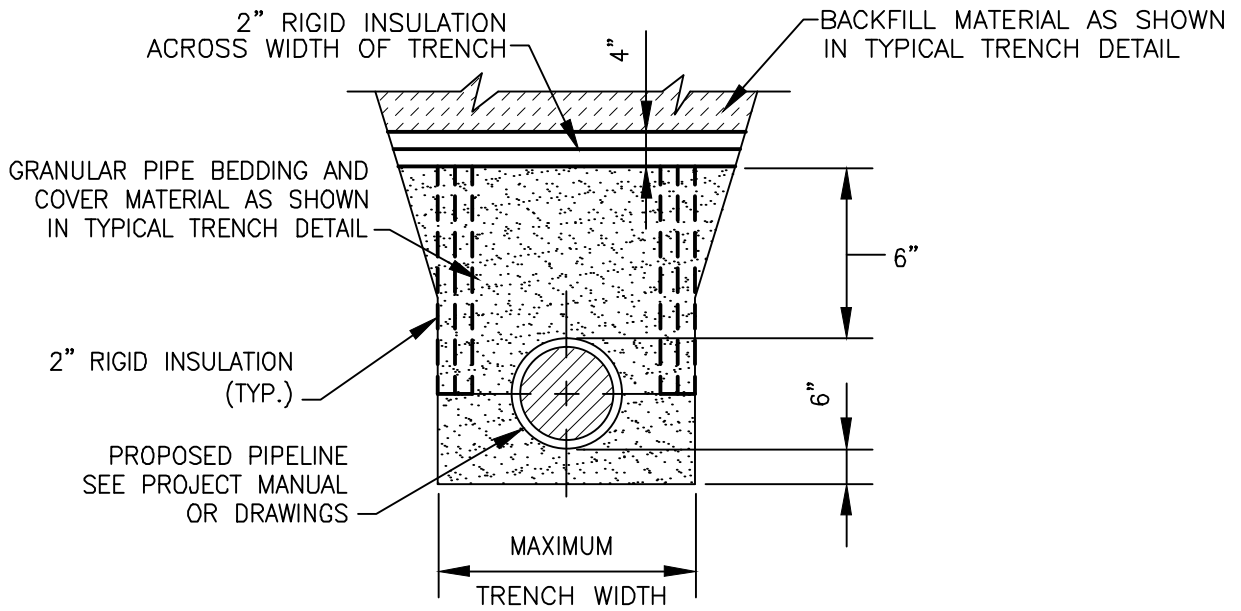
CITY OF JOLIET, ILLINOIS

FIRE HYDRANT
DETAIL
WTR-03

DATE: NOVEMBER 2022



WATER SERVICE



WATER MAIN

NOTES:

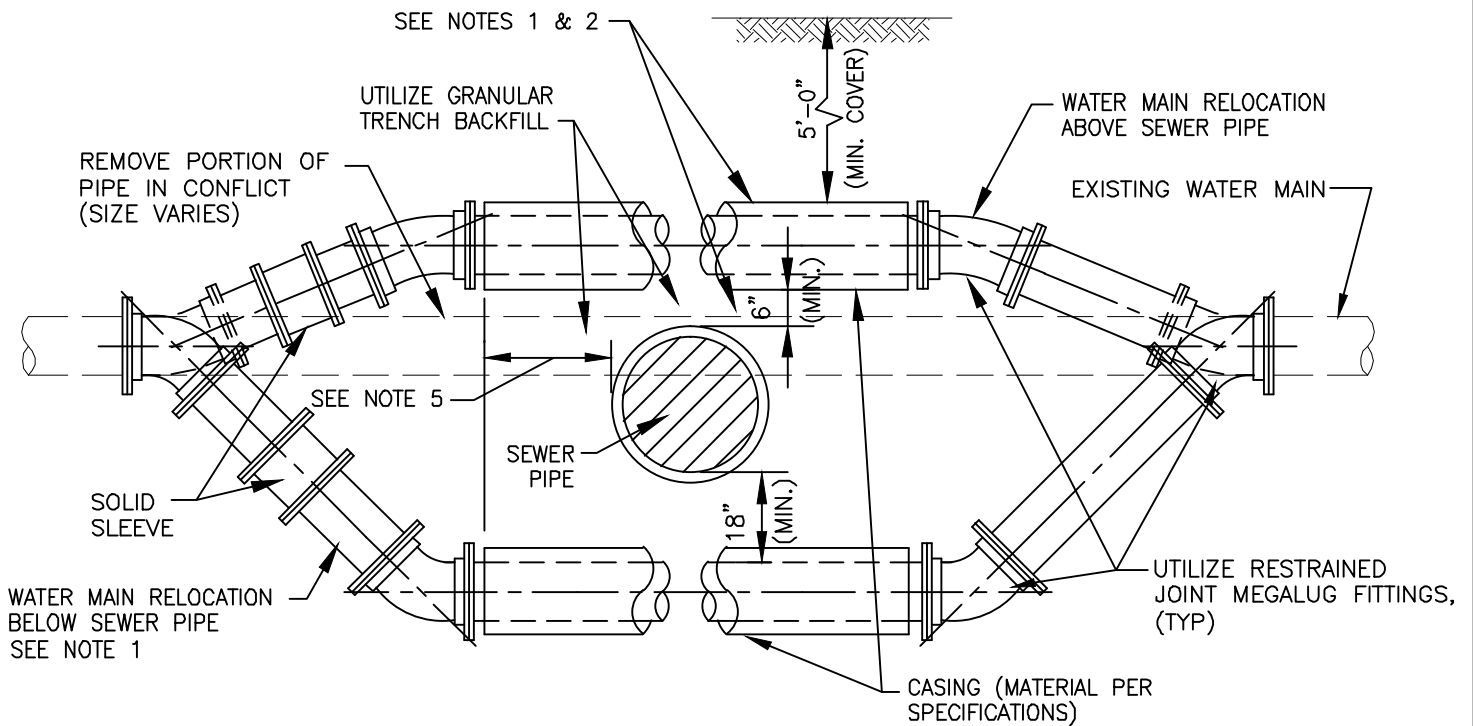
1. TO BE USED WHEN WATER MAIN AND / OR WATER SERVICE BURY DEPTH IS < 4' OR WHEN WATER SERVICE CROSSES ABOVE STORM SEWER.

NOT TO SCALE

CITY OF JOLIET, ILLINOIS

PIPE INSULATION
DETAIL
WTR-04

DATE: OCT. 2017



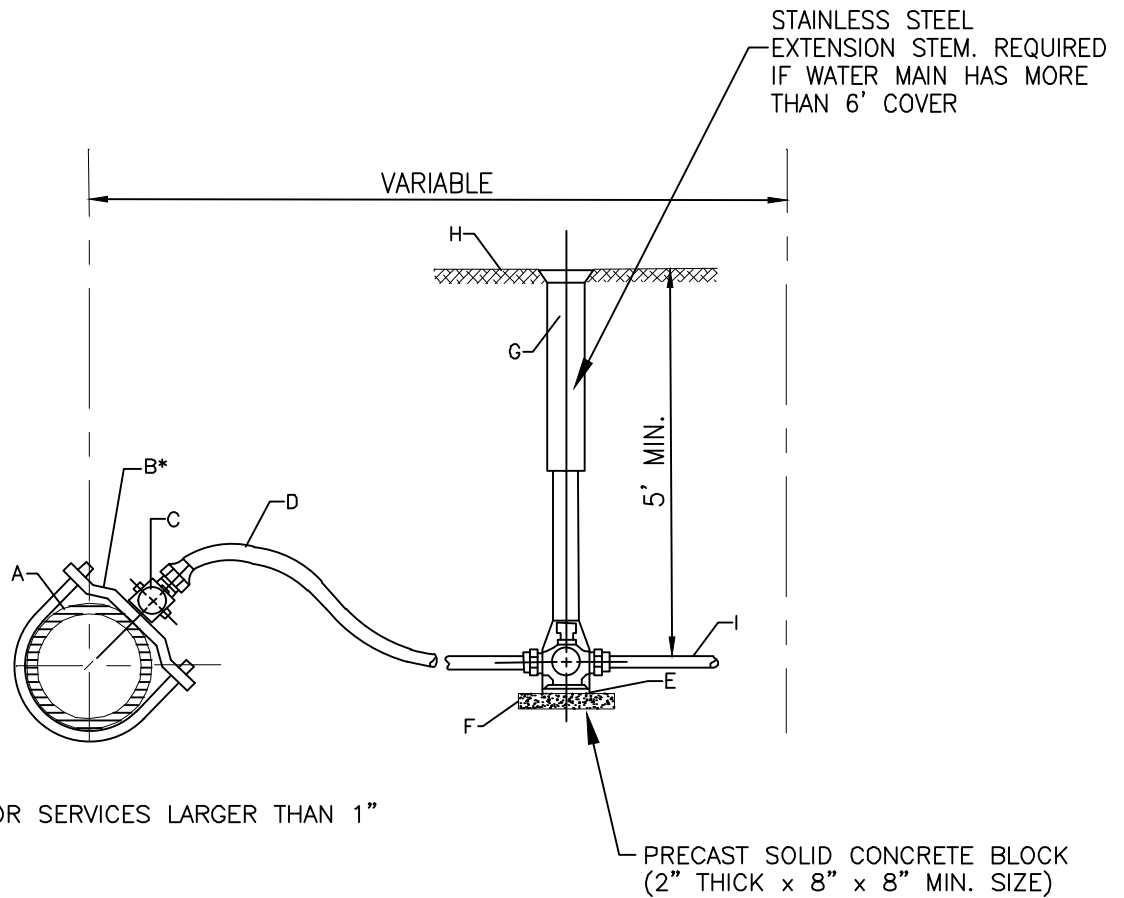
- NOTES:
1. ONLY TO BE USED IF WATER MAIN CANNOT CROSS ABOVE PROPOSED SEWER AND MAINTAIN THE REQUIRED 18" OF SEPARATION AS SHOWN ON DRAWING, OR APPROVED BY ENGINEER IN FIELD.
 2. WHEN WATER MAIN CROSSES ABOVE SEWER AND MAINTAINS THE REQUIRED 18" OF SEPARATION, THE CASING PIPE IS NOT REQUIRED.
 3. WATER MAIN RELOCATIONS ARE SUBJECT TO INSPECTION AT NORMAL SYSTEM PRESSURE BEFORE BURIAL.
 4. USE ONLY 45 DEGREE BENDS UNLESS OTHERWISE PERMITTED BY THE ENGINEER.
 5. CASING MUST EXTEND A MINIMUM OF 10 FEET BEYOND OUTSIDE EDGE OF SEWER PIPE – ON BOTH SIDES OF SEWER.

NOT TO SCALE

CITY OF JOLIET, ILLINOIS

WATER MAIN RELOCATION
DETAIL
WTR-05

DATE: OCT. 2017



CONSTRUCTION NOTES

- A. WATER MAIN
- B. DUCTILE IRON, EPOXY COATED BODIES WITH DOUBLE ALLOY STEEL STRAPS AND DOUBLE BOLTS (FOUR BOLTS TOTAL). MUELLER DR2A SERIES OR EQUAL
- C. CORPORATION STOP, A.Y. MCDONALD 74701 BQ
- D. SERVICE PIPE, SEAMLESS SOFT TEMPERED COPPER TYPE – TYPE "K" 1" OR LARGER
- E. CURB STOP, A.Y. MCDONALD 76104Q
- F. CONCRETE BRICK SUPPORT
- G. TYLER 6500 WITH BBAF VALVE BOX STABILIZER OR APPROVED EQUAL
- H. FINISHED GRADE
- I. CONNECT TO EXISTING SERVICE, PROVIDE ADAPTERS AS REQUIRED

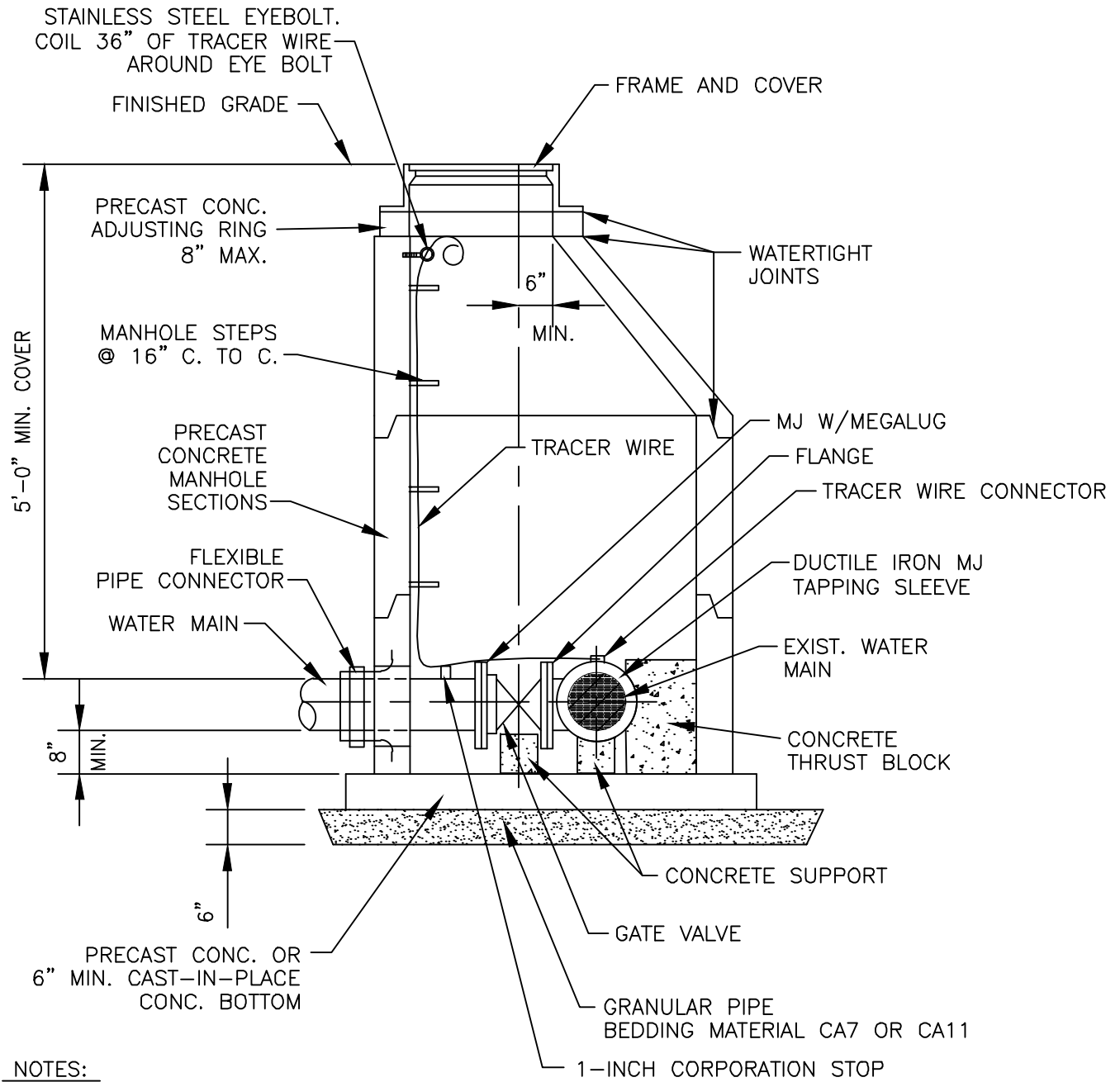
NOTE: FOR 1 1/2" OR 2" SERVICE, ADD ENLARGED BASE FOR SERVICE BOX.

NOT TO SCALE

CITY OF JOLIET, ILLINOIS

WATER SERVICE
CONNECTION DETAIL
WTR-06

DATE: OCT. 2017



NOTES:

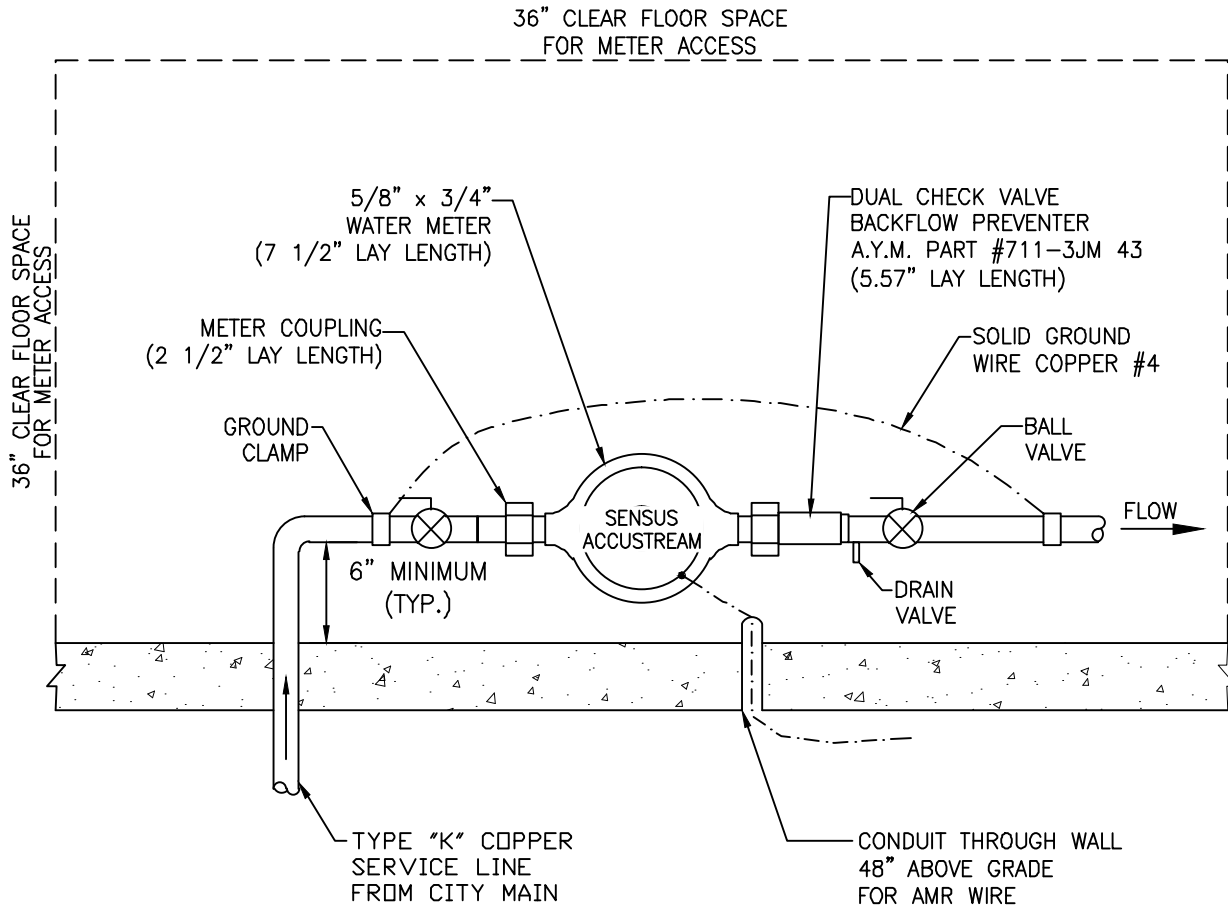
1. ECCENTRIC CONE REQUIRED
2. USE 4'-0" DIAMETER FOR WATER MAIN SIZES 4" THRU 8", USE 5'-0" DIAMETER FOR WATER MAIN SIZES 10" THRU 14", USE 6'-0" DIAMETER (OR LARGER PER DESIGNER) FOR WATER MAIN SIZES 16" OR GREATER.
3. PROVIDE CAST IRON FRAME AND COVER WITH HEAVY DUTY LID, STAMPED WITH "CITY OF JOLIET" AND "WATER". EJ 1050Z1
4. ATTACH TRACER WIRE TO MAINTAIN MIN. 24" AWAY FROM STEPS.

NOT TO SCALE

CITY OF JOLIET, ILLINOIS

PRESSURE CONNECTION
DETAIL
WTR-07

DATE: NOVEMBER 2022



WATER METER
PLAN VIEW
N.T.S.

1. CENTER LINE OF PIPE AT METER TO BE 18" TO 48" ABOVE FLOOR.
2. AMR CONDUIT TO BE 48" ABOVE GROUND LEVEL. LEAVE MINIMUM OF 12" WIRE OUTSIDE HOLE.
3. EXPANSION TANK REQUIRED AFTER DUAL CHECK VALVE BETWEEN SHUT OFF VALVE TO HOT WATER HEATER AND HOT WATER HEATER.
4. FOR NEW CONSTRUCTION, METER COUPLING, DUAL CHECK, AND AMR WIRE PURCHASED FROM CITY.
5. PLUMBER TO INSTALL COPPER PIPING THROUGH ENTIRE METER/VALVE AREA BEFORE CUTTING OUT SECTION FOR METER AND CHECK VALVE.
6. TO BE USED FOR NEW CONSTRUCTION OR AS INSTRUCTED.

NOT TO SCALE

CITY OF JOLIET, ILLINOIS

WATER METER DETAIL
5/8" X 3/4"

WTR-08
DATE: OCT. 2017

DUCTILE IRON-RESTRAINT JOINT TYPE PIPE LENGTH (FEET)

FITTING TYPE	DIAMETER (IN)					
	4"	6"	8"	10"	12"	16"
HORIZONTAL BEND						
11.25°	5	5	5	5	5	5
22.5°	5	5	5	5	10	10
45°	5	10	10	10	15	15
90°	15	20	20	25	30	40
VERTICAL BEND						
45°	20	25	35	40	45	60
TEE	5	5	5	5	5	5
VALVE (OPERATING PRESSURE)	20	30	35	45	50	65
VALVE (TESTING PRESSURE)	40	60	75	90	105	135
REDUCER						
6" NOMINAL PIPE	30	-	-	-	-	-
8" NOMINAL PIPE	55	35	-	-	-	-
10" NOMINAL PIPE	75	55	30	-	-	-
12" NOMINAL PIPE	90	80	55	35	-	-
16" NOMINAL PIPE	125	115	100	80	60	-

NOTE:
 RJT LENGTHS MAY VARY DEPENDING ON
 SITE CONDITIONS. LENGTHS SHOWN ARE
 MINIMUM PER 5' BURRY DEPTH OF WATER
 MAIN AND, AGGREGATE PIPE BACKFILL.

NOT TO SCALE

CITY OF JOLIET, ILLINOIS

POLYWRAPPED DI RJT
 DETAIL

WTR-09

DATE: NOVEMBER 2022

PVC-RESTRAINT JOINT TYPE PIPE LENGTH (FEET)

FITTING TYPE	DIAMETER (IN)					
	4"	6"	8"	10"	12"	16"
HORIZONTAL BEND						
11.25'	5	5	5	5	5	5
22.5'	5	5	5	5	5	10
45'	5	10	10	10	15	15
90'	10	15	15	20	25	35
VERTICAL BEND						
45'	15	15	20	25	30	40
TEE	5	5	5	5	5	5
VALVE (OPERATING PRESSURE)	15	20	25	30	35	45
VALVE (TESTING PRESSURE)	30	40	50	60	70	90
REDUCER						
6" NOMINAL PIPE	20	-	-	-	-	-
8" NOMINAL PIPE	35	20	-	-	-	-
10" NOMINAL PIPE	50	35	20	-	-	-
12" NOMINAL PIPE	60	50	40	20	-	-
16" NOMINAL PIPE	80	75	65	55	40	-

NOTE:

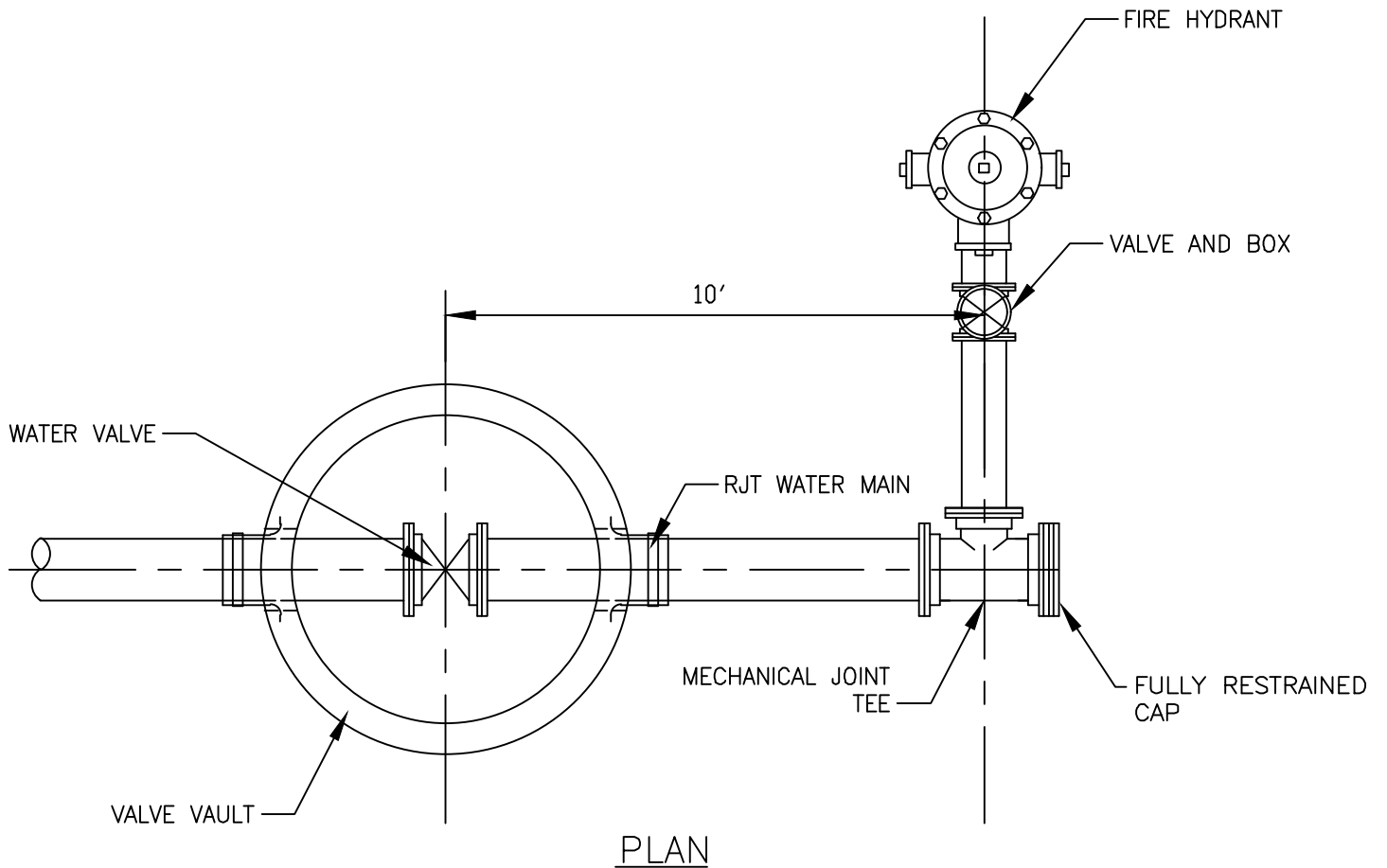
RJT LENGTHS MAY VARY DEPENDING ON SITE CONDITIONS. LENGTHS SHOWN ARE MINIMUM PER 5' BURRY DEPTH OF WATER MAIN AND, AGGREGATE PIPE BACKFILL.

NOT TO SCALE

CITY OF JOLIET, ILLINOIS

PVC RJT DETAIL
WTR-10

DATE: NOVEMBER 2022

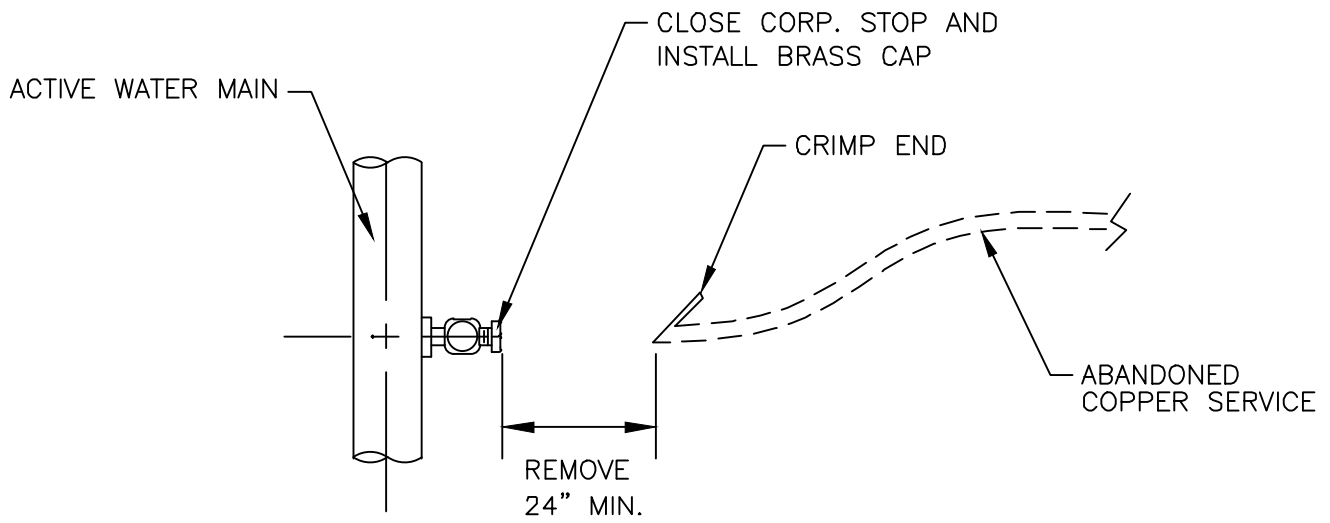


NOT TO SCALE

CITY OF JOLIET, ILLINOIS

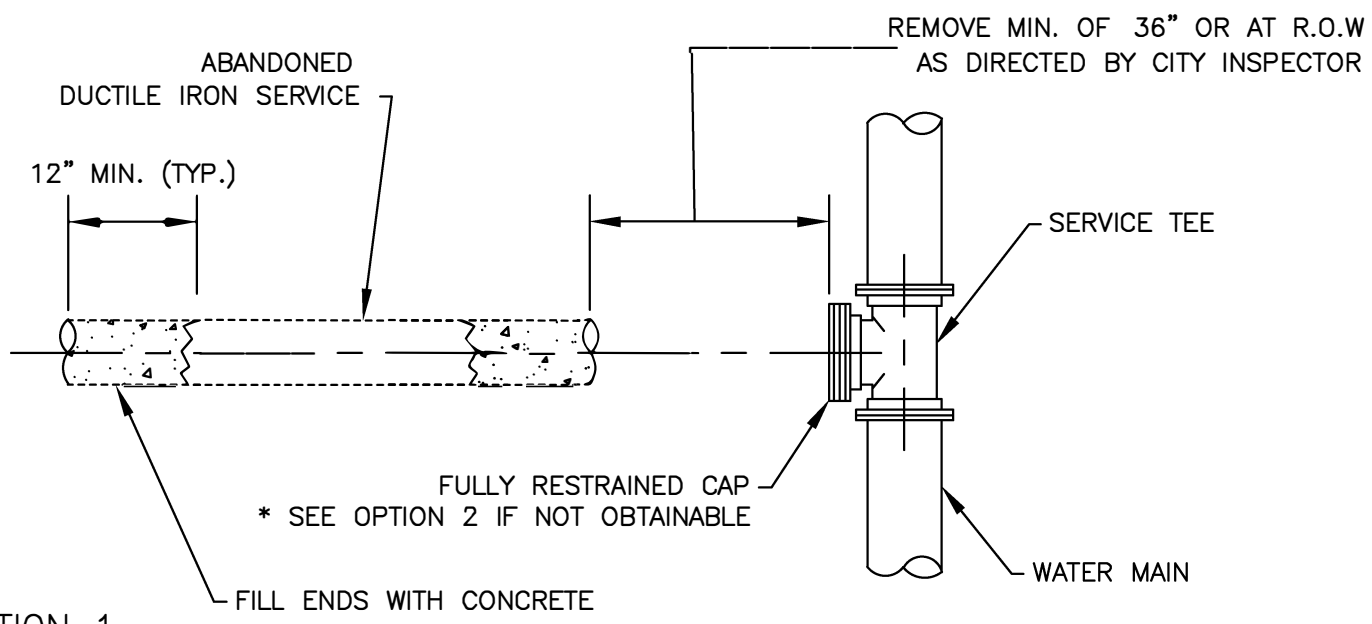
WATER MAIN TERMINATION
 DETAIL
 WTR-12

DATE: NOVEMBER 2022



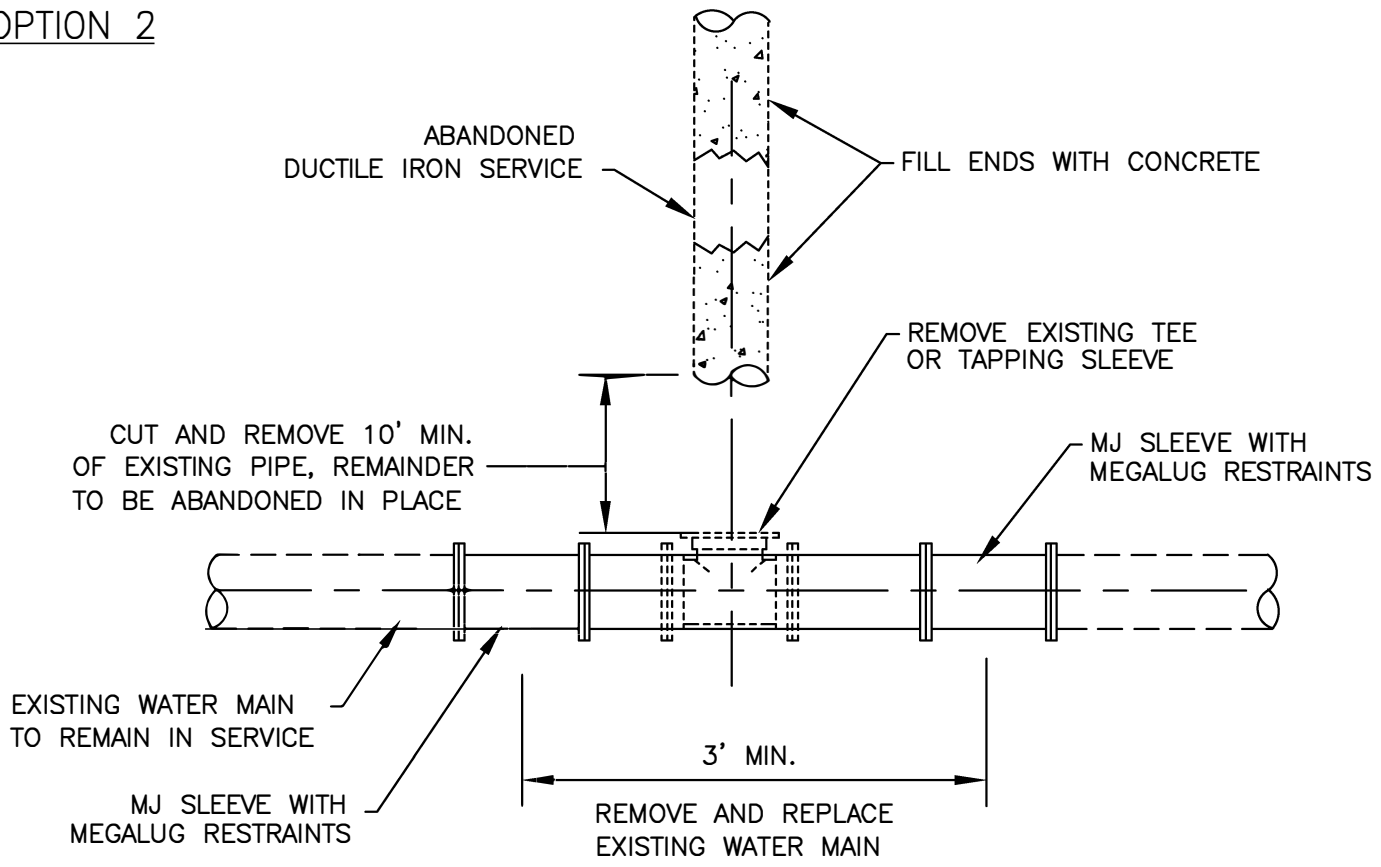
NOT TO SCALE

CITY OF JOLIET, ILLINOIS
WATER SERVICE ABANDONMENT
COPPER PIPE
DETAIL
WTR-13
DATE: NOVEMBER 2022



OPTION 1

OPTION 2



NOT TO SCALE

NOTES:

1. IF EXISTING SERVICE TEE CANNOT BE PROPERLY CAPPED AS SHOWN IN OPTION 1, TEE WILL BE REMOVED AND WATER MAIN REPLACED AS INDICATED BY OPTION 2.

CITY OF JOLIET, ILLINOIS

WATER SERVICE ABANDONMENT
DUCTILE IRON PIPE
DETAIL
WTR-14
DATE: NOVEMBER 2022