

CITY OF SAGINAW CONSTRUCTION STANDARDS TABLE OF CONTENTS

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NOTE:

ALL SPEC ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.



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CONSTRUCTION STANDARDS
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ROADWAY

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
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RD-19B	SIGN POST - SQUARE TUBING
RD-20	CONCRETE VALLEY GUTTER
RD-21	CONCRETE STREET HEADER

NOTE:

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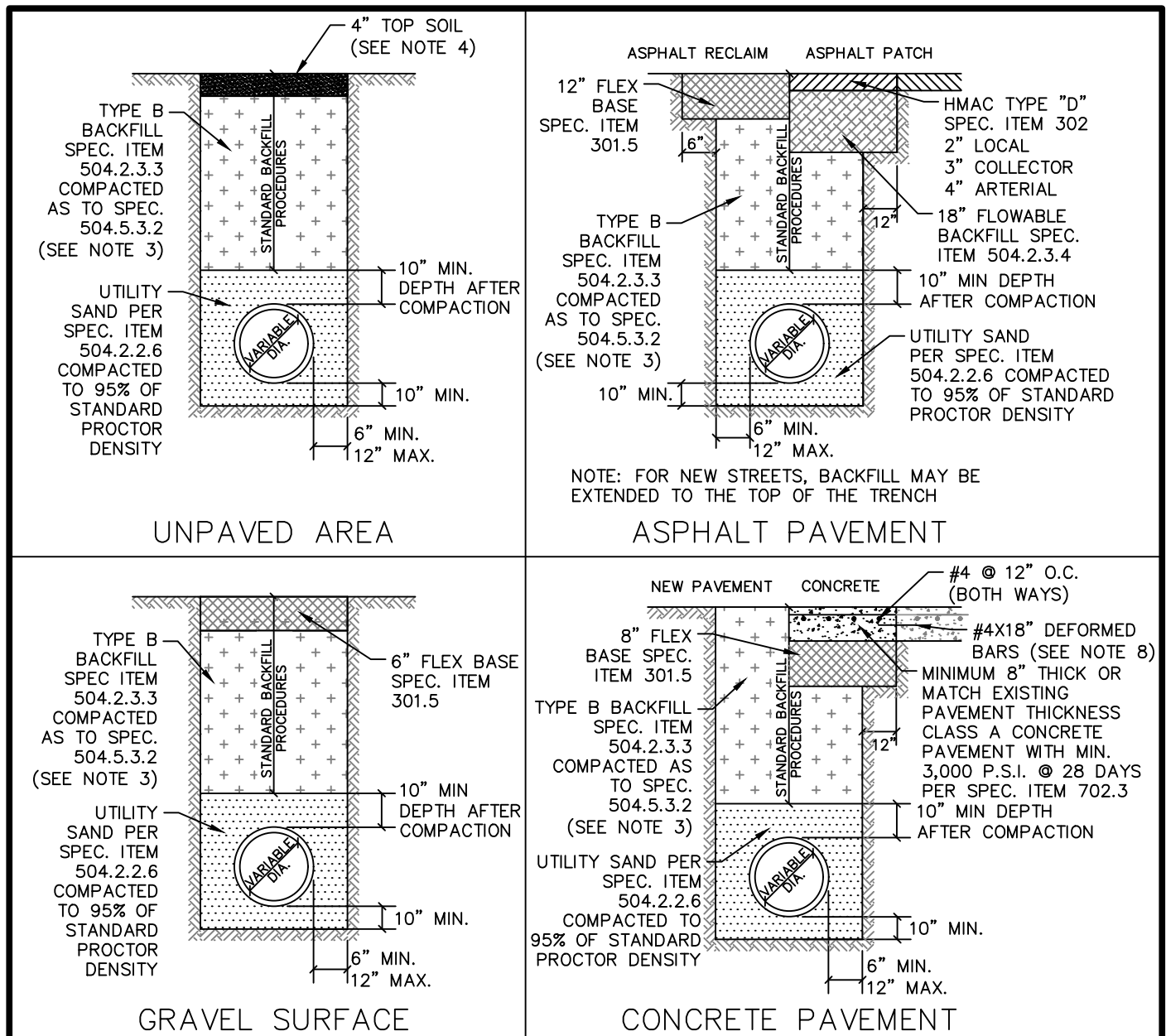
STORM DRAIN

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
SD-01A	STANDARD STORM DRAIN CURB INLET
SD-01B	STANDARD CURB INLET THROAT
SD-02A	RECESSED CURB INLET
SD-02B	RECESSED CURB INLET THROAT
SD-03	CENTER SUPPORT BEAM FOR INLETS
SD-04	STANDARD DROP INLET
SD-05	STANDARD 4-FOOT SQUARE STORM DRAIN MANHOLE
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SD-07	REINFORCED CONCRETE COLLAR AND MISCELLANEOUS DETAILS
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SD-08C	STANDARD STORM DRAIN EMBEDMENT AND BACKFILL
SD-08D	HP STORM EMBEDMENT

NOTE:

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NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. AT THE END OF EACH WORK DAY ALL SPOILS SHALL BE REMOVED FROM THE CITY R.O.W. UNLESS PRIOR WRITTEN PERMISSION IS OBTAINED FROM THE CITY TO STORE SPOILS IN DESIGNATED SPOIL STORAGE AREAS THAT DO NOT OBSTRUCT AUTOMOBILE OR PEDESTRIAN TRAFFIC.
3. ROCKS GREATER THAN 4" IN DIAMETER SHALL BE REMOVED FROM ANY NATIVE MATERIAL USED AS BACKFILL.
4. TOPSOIL SHALL BE 4" IN DEPTH AND SHALL BE LOOSE AND FREE OF ROCKS OR CLODS GREATER THAN 1/4" IN DIAMETER. ALL TOPSOIL SHALL BE APPROVED BY THE CITY PRIOR TO INSTALLATION.
5. ALL PAVEMENT SHALL BE REMOVED ALONG NEAT SAW CUT LINES PER SPEC. ITEM 402.3.
6. BLUE UNDERGROUND WATER LINE WARNING TAPE OF MIN 4" WIDTH SHALL BE INSTALLED ABOVE THE EMBEDMENT MATERIAL.
7. A MAXIMUM OF 50 FT OF OPEN TRENCH WILL BE ALLOWED AT ANY TIME, UNLESS APPROVED BY THE CITY.
8. DEFORMED BARS DOWELED AND EPOXYED MIN. 6" INTO EXISTING PAVEMENT @ 12" O.C. (TYP).
9. IN ACCORDANCE TO NCTCOG 506.7.3, ALL NEW WATER LINES SHALL BE PURGED (PIGGED AND/OR FLUSHED) AS DIRECTED BY THE INSPECTOR.

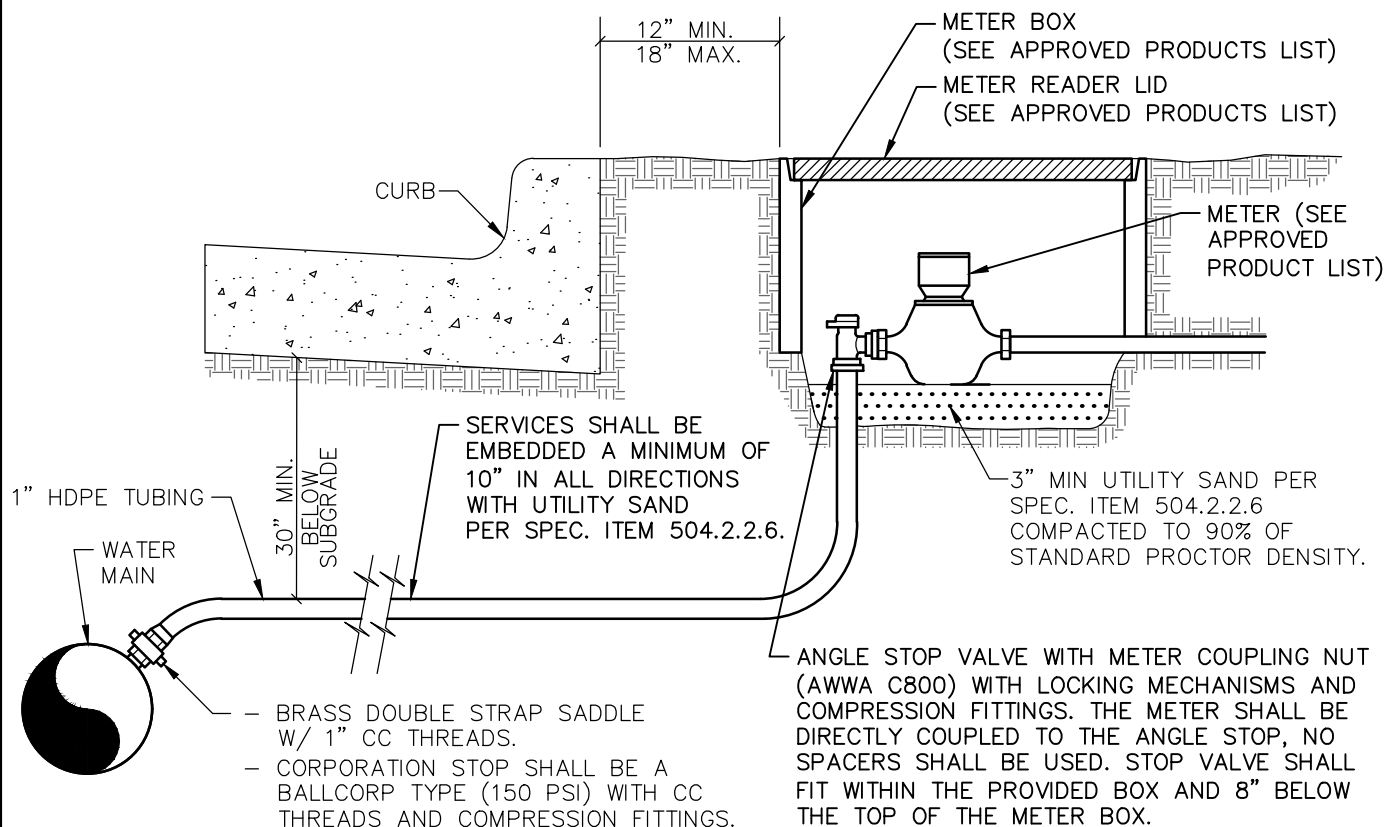


City of Saginaw
Construction Standards

STANDARD WATER LINE
EMBEDMENT AND BACKFILL

REVISED
FEB 2023

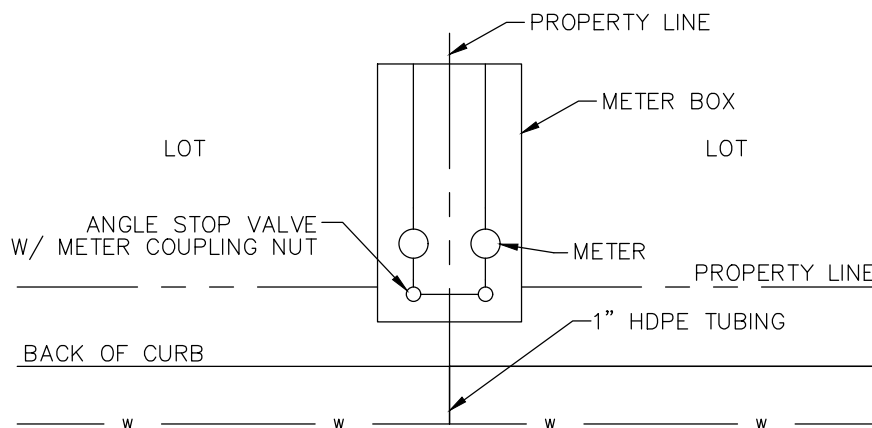
W-01



SINGLE METER SERVICE LAYOUT

NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. 1-1/2" METERS SHALL NOT BE ACCEPTED.
3. ALL RESIDENTIAL SERVICES SHALL BE 3/4" BULLHEAD ASSEMBLY SET ON PROPERTY LINE.
4. NO FLARED FITTINGS ALLOWED.
5. DO NOT USE PIPE DOPE OR GLUE.
6. INDICATE LOCATION OF WATER SERVICE WITH A 3" TALL "W" INSCRIBED IN THE FACE OF THE CURB.
7. BULLHEAD CONNECTIONS SHALL BE APPROVED BY THE CITY PRIOR TO INSTALLATION.
8. METER BOX SHALL BE H-20 RATED IF IN DRIVEWAY.



BULLHEAD SERVICE LAYOUT



City of Saginaw
Construction Standards

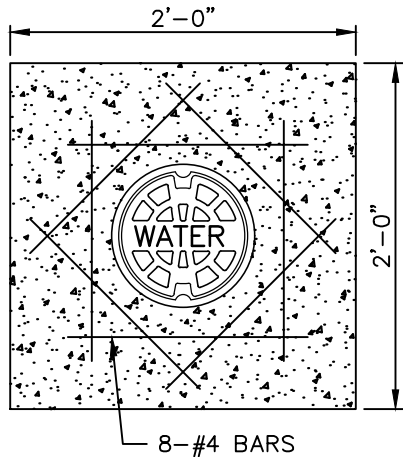
WATER SERVICE CONNCTION

REVISED
FEB 2023

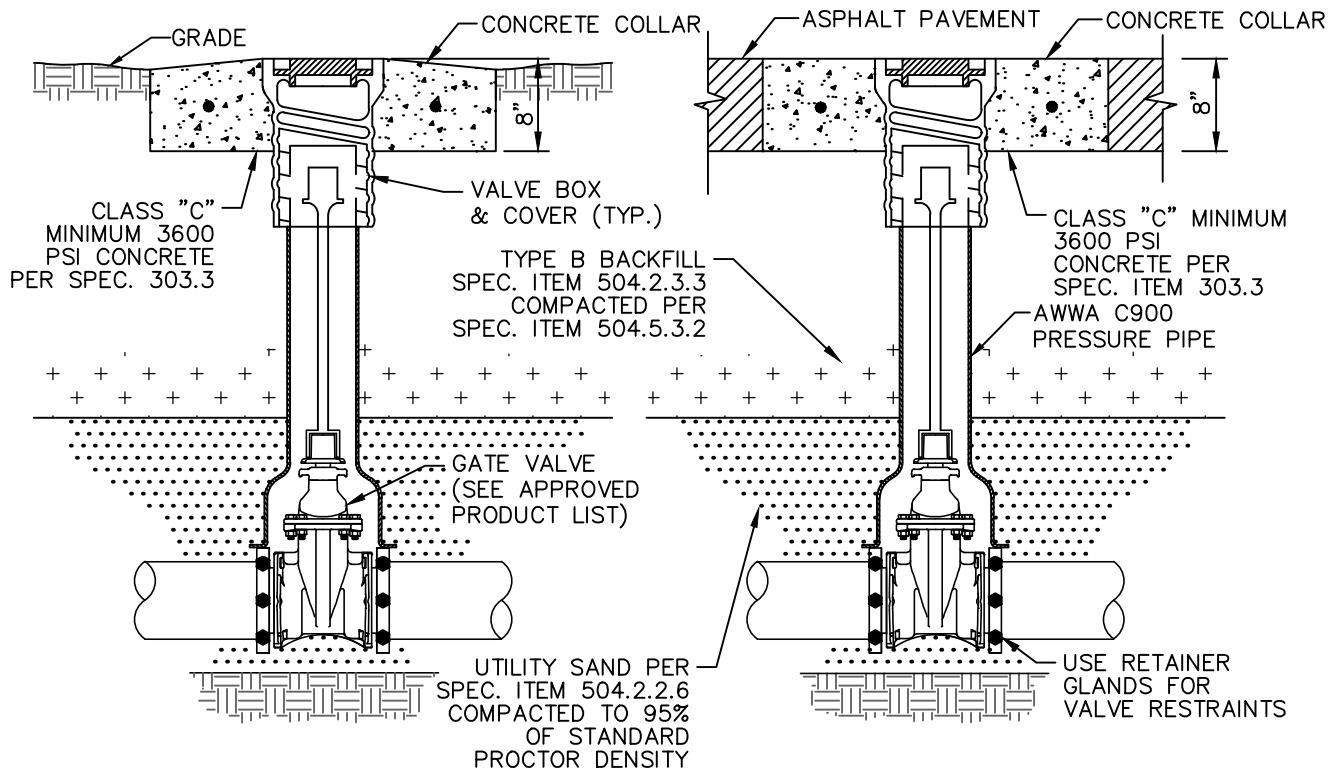
W-02

NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. GATE VALVE SHALL BE RESILIENT SEAT TYPE WITH A NON RISING STEM, A 2-INCH SQUARE OPERATOR, AND A FULLY ENCAPSULATED WEDGE. RESILIENT SEAT GATE VALVE SHALL CONFORM TO AWWA C509.
3. THE VALVE AND JOINT ASSEMBLIES SHALL BE WRAPPED IN POLYETHYLENE ACCORDING TO AWWA C105.
4. THE JOINT TYPE SHALL BE MECHANICAL JOINT UNLESS OTHERWISE SPECIFIED IN THE PLANS.
5. STEM EXTENSIONS ARE REQUIRED WHEN THE DEPTH TO THE TOP OF THE OPERATING NUT EQUALS OR EXCEEDS 3 FEET.
6. BOX TOP INSETS ARE REQUIRED IN ALL BOX INSTALLATIONS.
7. 16" AND LARGER GATE VALVES REQUIRE CONCRETE BLOCK UNDER THE VALVE BODY. CONCRETE BLOCK SHALL BE 12"X12"X6" CLASS B MINIMUM 2,000 P.S.I. CONCRETE BASE PER SPEC. ITEM 702.3.
8. MARK LINE SIZE AND DIRECTION IN BASE BLOCK WITH LETTERS A MINIMUM OF 1-INCH IN HEIGHT.
9. GATE VALVE SHALL BE OPEN LEFT, COUNTER-CLOCKWISE.
10. CONCRETE COLLARS ARE NOT REQUIRED IN CONCRETE PAVEMENT.
11. WATER VALVE LOCATIONS SHALL BE MARKED ON THE FACE OF CURB WITH A "V" CUT.
12. WATER VALVE BOX LIDS SHALL BE DOMESTIC ONLY.



CONCRETE COLLAR



VALVES IN YARDS OR OTHER AREAS NOT SUBJECT TO TRAFFIC

VALVES WITHIN ROADWAYS OR OTHER PAVED OR SURFACED AREAS



City of Saginaw
Construction Standards

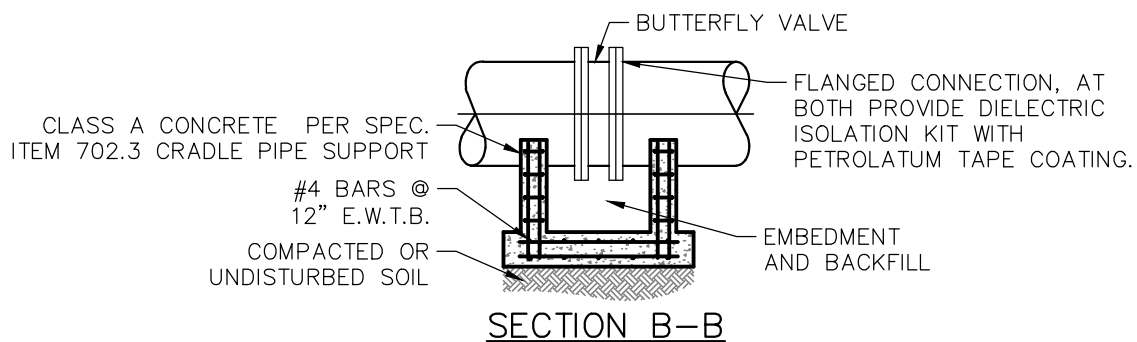
WATER VALVE AND BOX
INSTALLATION

REVISED
FEB 2023

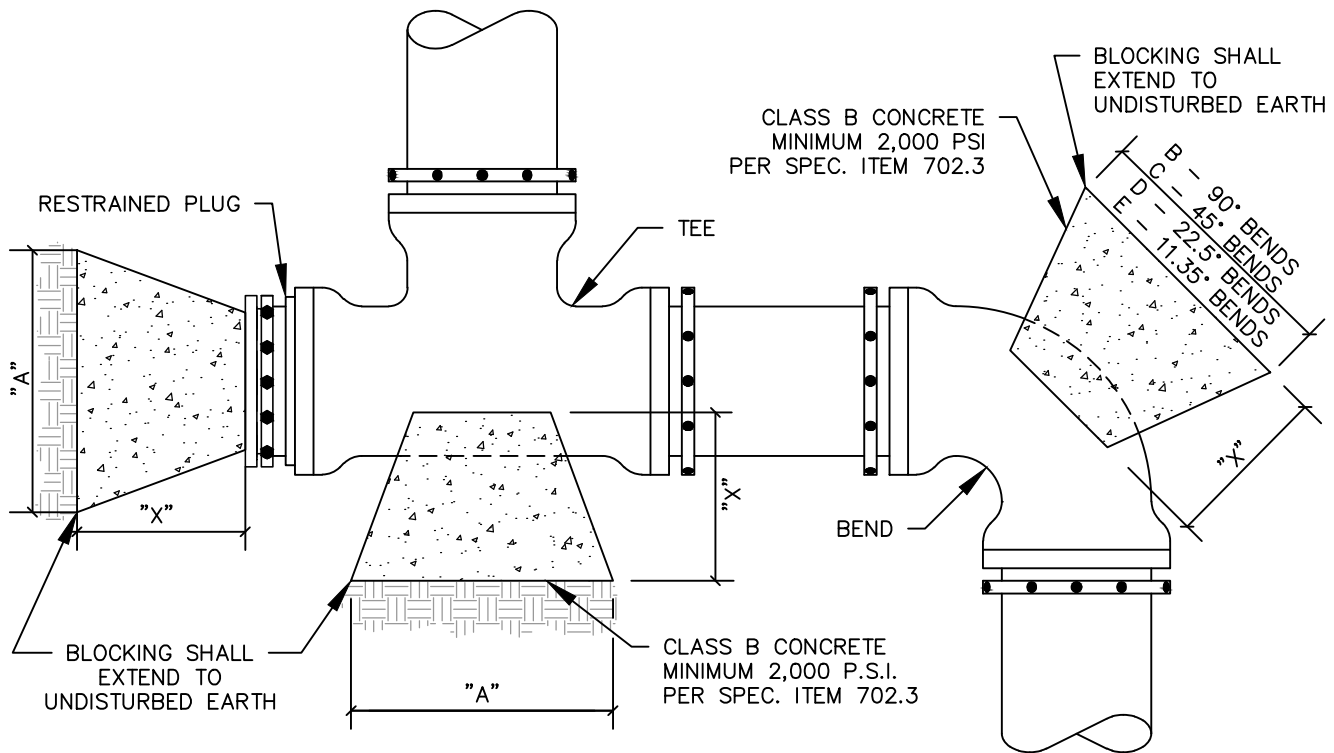
W-03

Technical drawing illustrating the assembly of a manhole structure, showing dimensions and components:

- Dimensions:**
 - Overall height: 17'
 - Top section height: 3'
 - Section below top: 4'
 - Section below that: 4'
 - Bottom section height: 3'
 - Manhole cover width: 8'
- Components and Labels:**
 - BUTTERFLY VALVE
 - 32" STANDARD MANHOLE COVER
 - CONCRETE BASE
 - 72" DIAMETER PRECAST CONCRETE MANHOLE PER ASTM C478
 - FLANGED CONNECTION, AT BOTH PROVIDE DIELECTRIC ISOLATION KIT WITH PETROLATUM TAPE COATING.
- Other Labels:** A, B



W-04



HORIZONTAL BLOCKING TABLE

PIPE SIZE	"X" DIM.	PLUGS & TEES		90° BENDS		45° BENDS		22.50° BENDS		11.25° BENDS	
		"A"	MIN. AREA (sf)	"B"	MIN. AREA (sf)	"C"	MIN. AREA (sf)	"D"	MIN. AREA (sf)	"E"	MIN. AREA (sf)
6"	1'-6"	1'-9"	3.18	2'-1"	4.50	1'-7"	2.43	1'-1"	1.24	1'-0"	1.00
8"	1'-6"	2'-5"	5.65	2'-10"	8.00	2'-1"	4.33	1'-6"	2.21	1'-1"	1.11
10"	1'-6"	3'-0"	8.84	3'-6"	12.50	2'-7"	6.76	1'-10"	3.45	1'-4"	1.73
12"	1'-6"	3'-7"	12.72	4'-3"	17.99	3'-1"	9.74	2'-3"	4.96	1'-7"	2.49
16"	2'-0"	4'-9"	22.62	5'-8"	31.99	4'-2"	17.31	2'-12"	8.83	2'-1"	4.43

DIMENSION "X" TO BE A MINIMUM OF 1'-6", BUT IS TO BE INCREASED WHERE NECESSARY TO PROVIDE BEARING AGAINST UNDISTURBED TRENCH WALL.

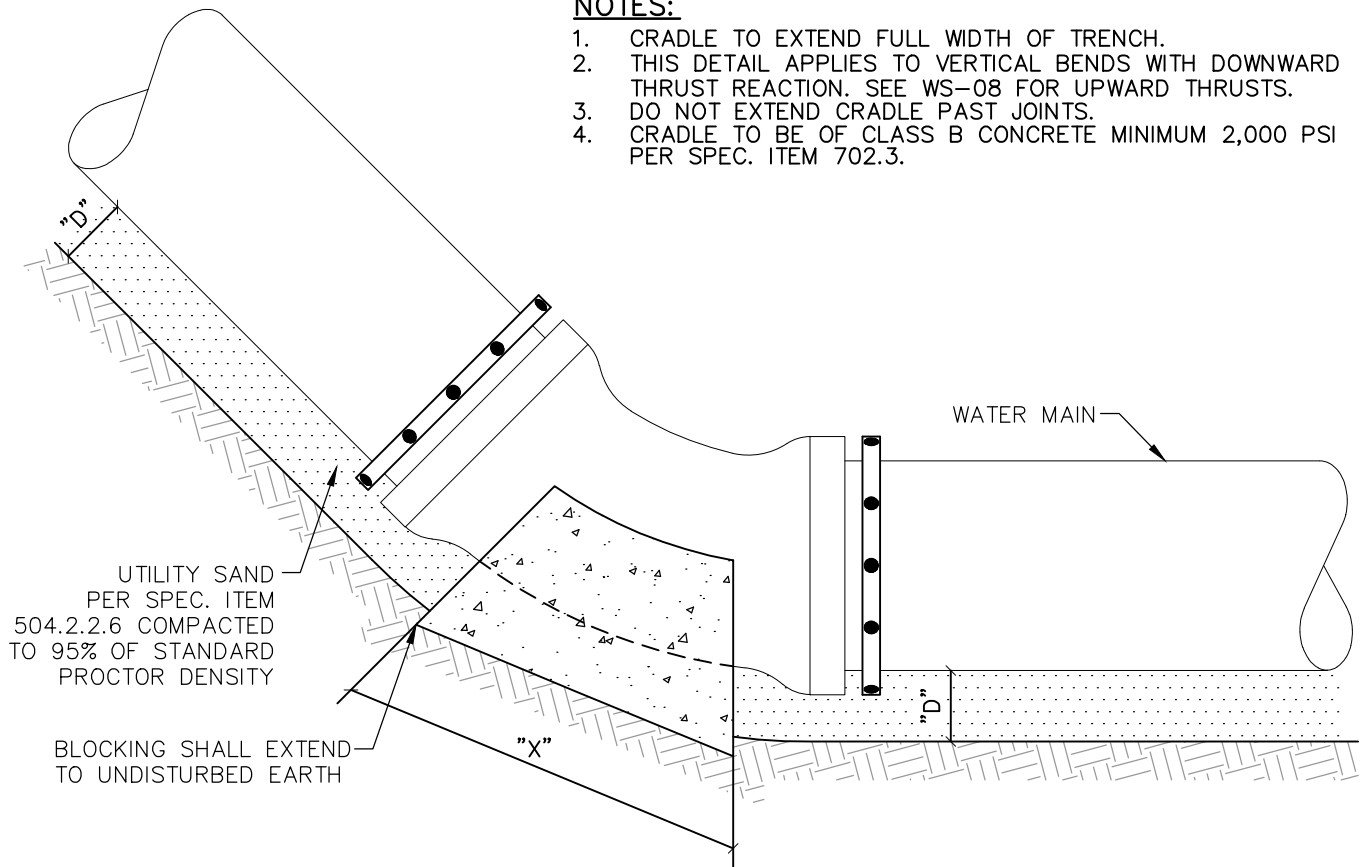
NOTES:

- ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
- BEARING AREAS SHOWN ARE BASED ON 225 PSI TEST PRESSURE, 3,000 PSF ALLOWABLE SOIL BEARING PRESSURE, AND 1.5 SAFETY FACTOR.
- THE ENGINEER SHALL PROVIDE A SEPARATE BLOCKING TABLE WHEN THE CONDITIONS DO NOT MEET THE ABOVE ASSUMPTIONS.
- WRAP ALL BELOW GROUND IRON ASSEMBLIES IN POLYETHYLENE ACCORDING TO AWWA C105.
- ALL TEES, BENDS, PLUGS, ETC. SHALL BE MECHANICALLY RESTRAINED.
- BLOCKING FOR LINES LARGER THAN 16" SHALL BE DESIGNED FOR THE SPECIFIC LOCATION AND SHOWN ON THE DRAWINGS.



NOTES:

1. CRADLE TO EXTEND FULL WIDTH OF TRENCH.
2. THIS DETAIL APPLIES TO VERTICAL BENDS WITH DOWNWARD THRUST REACTION. SEE WS-08 FOR UPWARD THRUSTS.
3. DO NOT EXTEND CRADLE PAST JOINTS.
4. CRADLE TO BE OF CLASS B CONCRETE MINIMUM 2,000 PSI PER SPEC. ITEM 702.3.



CONCRETE CRADLE TABLE

"D" = 6" MINIMUM OR TO UNDISTURBED SOIL

PIPE SIZE	90° BENDS		45° BENDS		22.50° BENDS		11.25° BENDS	
	"X"	MIN. AREA (sf)	"X"	MIN. AREA (sf)	"X"	MIN. AREA (sf)	"X"	MIN. AREA (sf)
6"	2'-1"	4.50	1'-7"	2.43	1'-1"	1.24	1'-0"	1.00
8"	2'-10"	8.00	2'-1"	4.33	1'-6"	2.21	1'-1"	1.11
10"	3'-6"	12.50	2'-7"	6.76	1'-10"	3.45	1'-4"	1.73
12"	4'-3"	17.99	3'-1"	9.74	2'-3"	4.96	1'-7"	2.49
16"	5'-8"	31.99	4'-2"	17.31	3'-0"	8.83	2'-2"	4.43

NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. BEARING AREAS SHOWN ARE BASED ON 225 PSI TEST PRESSURE, 3,000 PSF ALLOWABLE SOIL BEARING PRESSURE, AND 1.5 SAFETY FACTOR.
3. THE ENGINEER SHALL PROVIDE A SEPARATE BLOCKING TABLE WHEN THE CONDITIONS DO NOT MEET THE ABOVE ASSUMPTIONS.
4. WRAP ALL BELOW GROUND IRON ASSEMBLIES IN POLYETHYLENE ACCORDING TO AWWA C105.
5. ALL TEES, BENDS, PLUGS, ETC. SHALL BE MECHANICALLY RESTRAINED BY MEGALUG OR APPROVED EQUAL.
6. BLOCKING FOR LINES LARGER THAN 16" SHALL BE DESIGNED FOR THE SPECIFIC LOCATION AND SHOWN ON THE DRAWINGS.

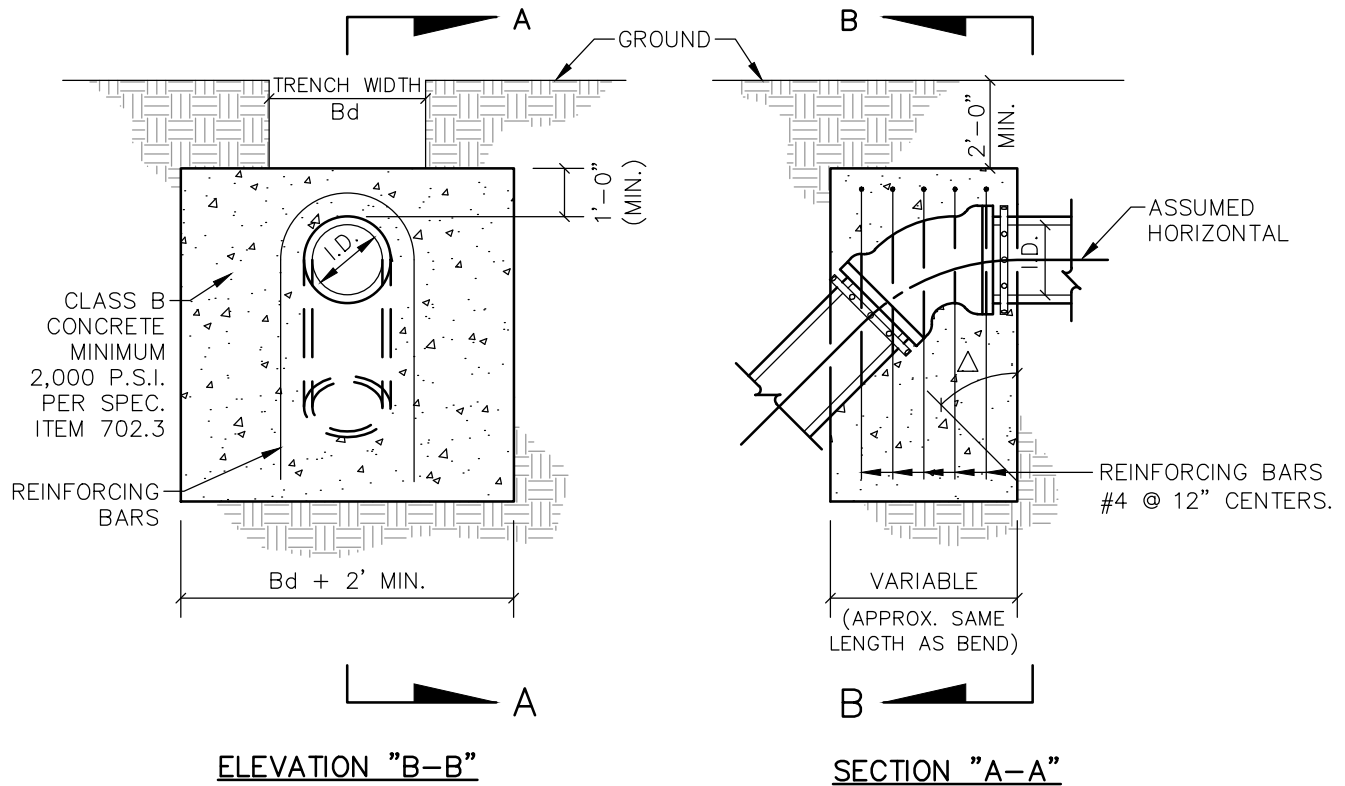


City of Saginaw
Construction Standards

CONCRETE CRADLE AT VERTICAL
BENDS

REVISED
FEB 2023

W-07



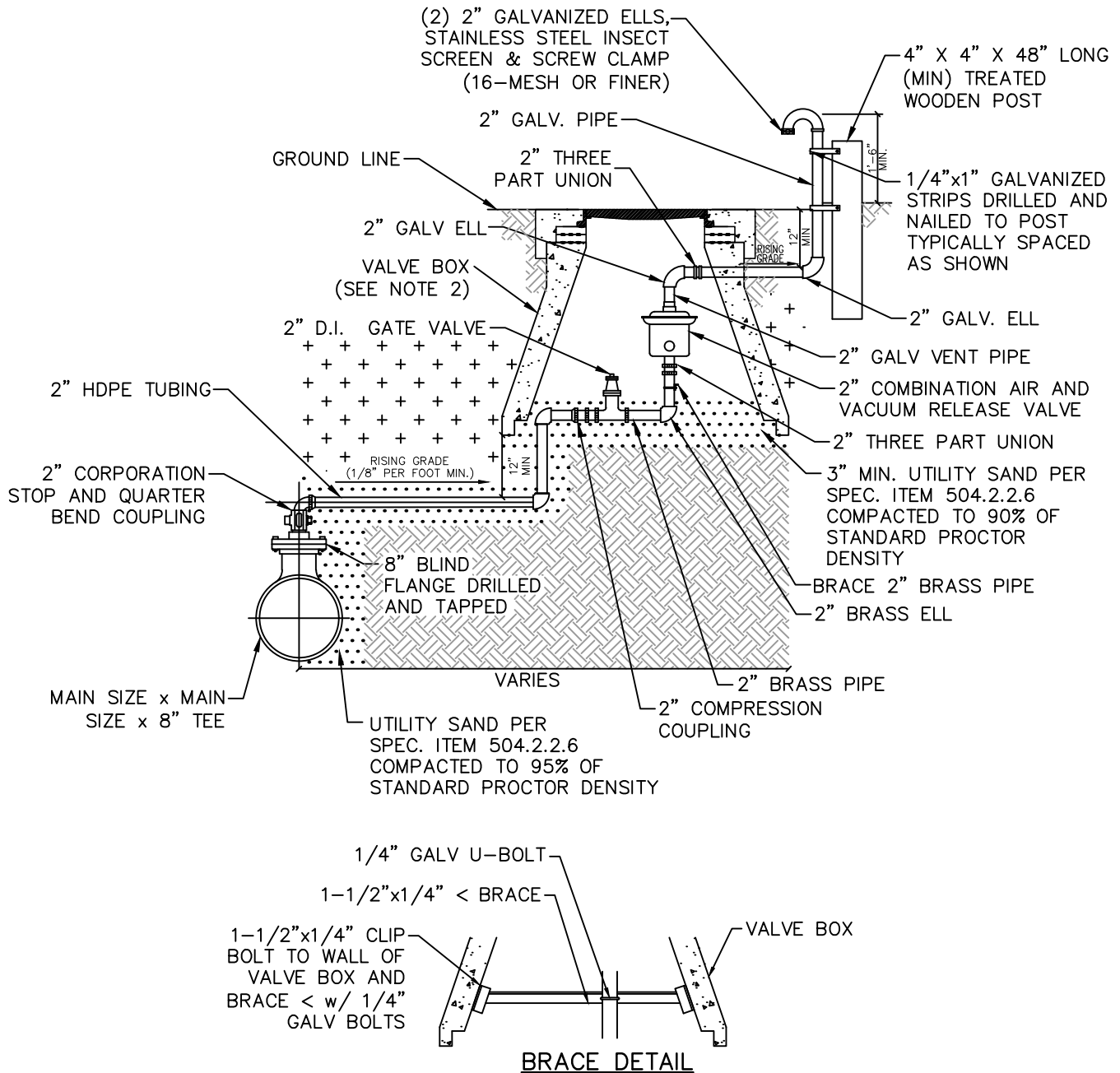
VERTICAL THRUST BLOCK TABLE

△ →	11.25°		22.50°		45.00°		90.00°	
I.D. (IN.)	MIN #4 BARS	VOL. (C.Y.)	MIN #4 BARS	VOL. (C.Y.)	MIN #4 BARS	VOL. (C.Y.)	MIN #4 BARS	VOL. (C.Y.)
6	1	0.5	1	1.0	1	1.8	2	2.5
8	1	0.5	1	1.0	2	1.8	3	2.5
10	1	1.1	2	2.2	3	4.0	5	5.7
12	1	1.1	2	2.2	4	4.0	7	5.7
16	1	2.5	4	4.9	7	9.0	12	12.7

NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. CONCRETE VOLUMES SHOWN ARE BASED ON 225 PSI TEST PRESSURE, 3,000 PSF ALLOWABLE SOIL BEARING PRESSURE, AND 1.5 SAFETY FACTOR.
3. BAR QUANTITIES ARE BASED ON 30 KSI #4 STEEL REINFORCEMENT BAR AND A SAFETY FACTOR OF 1.5.
4. THE ENGINEER SHALL PROVIDE A SEPARATE BLOCKING TABLE WHEN THE CONDITIONS DO NOT MEET THE ABOVE ASSUMPTIONS.
5. WRAP ALL BELOW GROUND IRON ASSEMBLIES IN POLYETHYLENE ACCORDING TO AWWA C105.
6. ALL TEES, BENDS, PLUGS, ETC. SHALL BE MECHANICALLY RESTRAINED.
7. BLOCKING FOR LINES LARGER THAN 16" SHALL BE DESIGNED FOR THE SPECIFIC LOCATION AND SHOWN ON THE DRAWINGS.





NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. VALVE BOX SHALL BE 48" ASTM-C478 CONCENTRIC MANHOLE CONE WITH RING AND COVER.
3. AIR RELEASE VALVES SHALL BE IN ACCORDANCE WITH AWWA C512 AND AWWA M51.
4. SEE APPROVED PRODUCT LIST FOR ACCEPTABLE AIR RELEASE VALVE MANUFACTURERS.



City of Saginaw
Construction Standards

AIR RELEASE VALVE

REVISED
FEB 2023

W-09

36" X 36" BILCO ALUMINUM DIAMOND PLATE DOOR
OR APPROVED EQUAL CAST INTO CONCRETE LID

LADDER (SEE W-11)

PRE-CAST
CONCRETE
STRUCTURE

OS&Y GATE
VALVE
(TYP-2)

DIMENSIONS		
SIZE	L1	W1
3"	6'-6"	4'-2"
4"	6'-6"	4'-2"
6"	8'-0"	6'-0"
8"	9'-0"	6'-0"

3/4" DETECTOR METER W/ 2 SHUT-OFFS
VALVES AND BACKFLOW PREVENTER

PLAN VIEW

FIRE DEPARTMENT
CONNECTION (FOR 6' AND
LARGER CONNECTIONS ONLY)

36" X 36" BILCO ALUMINUM DIAMOND PLATE DOOR
OR APPROVED EQUAL CAST INTO CONCRETE LID

FLEXIBLE COUPLING
WITH RESTRAINT
HARNES

LINK-SEAL WALL
PENETRATION

DOUBLE CHECK
DETECTOR
BACKFLOW
PREVENTER

MIN.
42"

GRADE 4
CRUSHED
ROCK
EMBEDMENT
PER SPEC.
ITEM 504.2.2.1

PIPE SUPPORT
(SEE W-11)

ELEVATION

12" SQUARE SUMP WITH
CAST IRON GRATE AND DRAIN

PIPE SADDLE
SUPPORT
(SEE W-11)

NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. NOTIFY THE CITY PRIOR TO CONSTRUCTION OF METER VAULT OR BY-PASS ASSEMBLY.
3. THE VAULT SHALL NOT BE INSTALLED IN ANY DRIVING OR PARKING AREAS AND MUST BE LOCATED IN A UTILITY EASEMENT DEDICATED TO THE CITY OF SAGINAW.
4. THE CONTRACTOR MAY HAVE THE WALL CORED BEFORE INSTALLATION OF VAULT AND PIPING. BREAKING OF THE WALL WITH A JACKHAMMER IS NOT PERMITTED.
5. ALL PIPING SHALL BE DUCTILE IRON. ALL PIPING AND EQUIPMENT IN VAULT SHALL BE COATED PER MANUFACTURER FOR THE INTENDED USE.



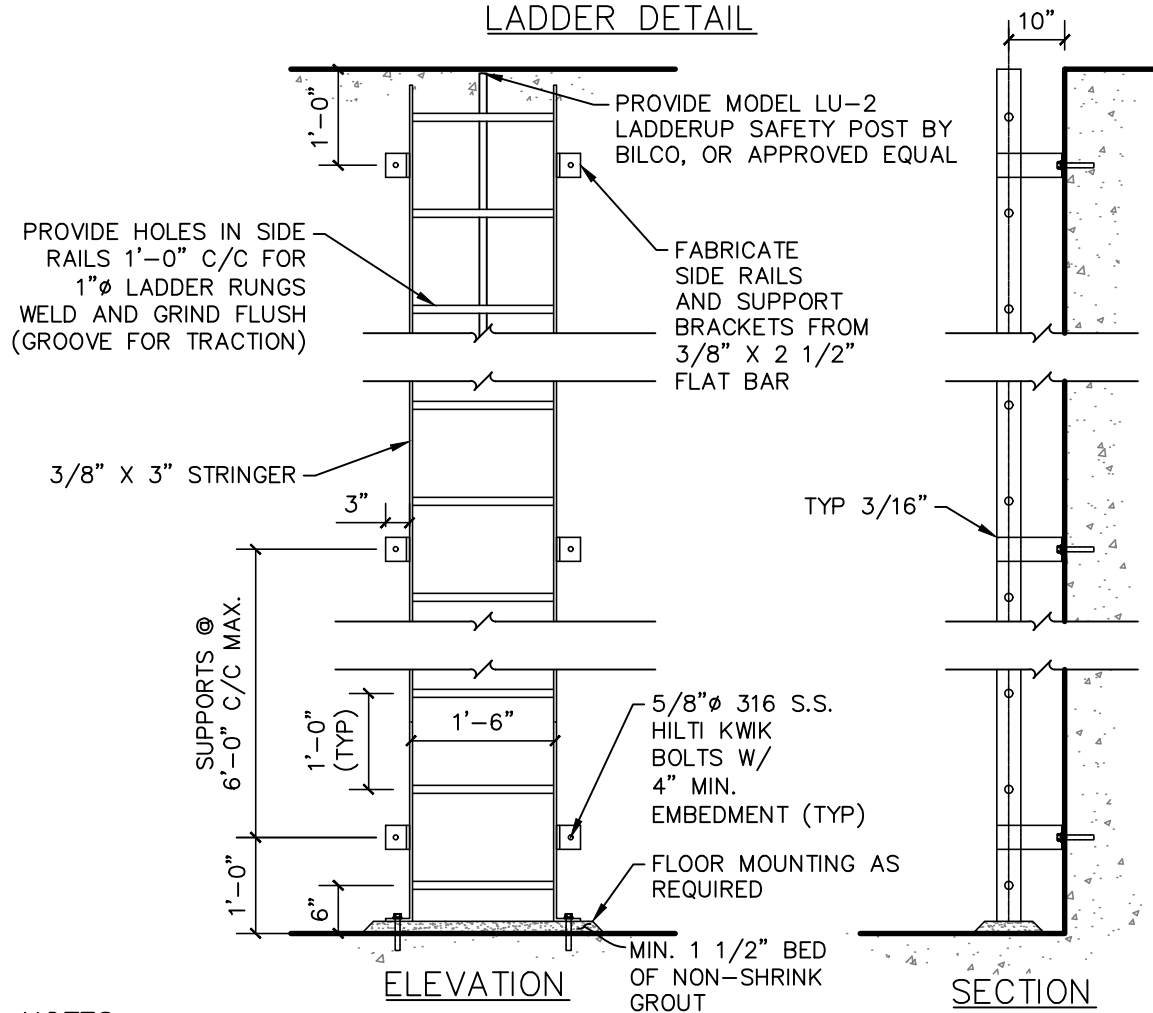
City of Saginaw
Construction Standards

DOUBLE CHECK DETECTOR VAULT

REVISED
FEB 2023

W-10

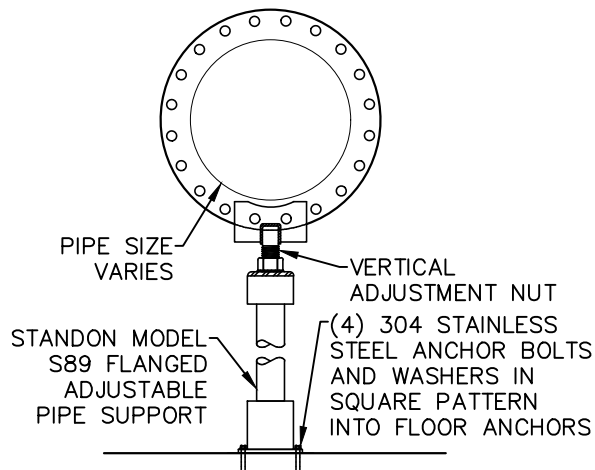
LADDER DETAIL



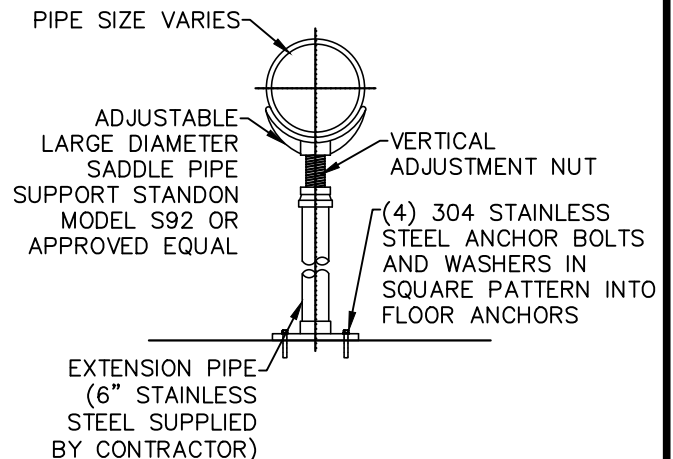
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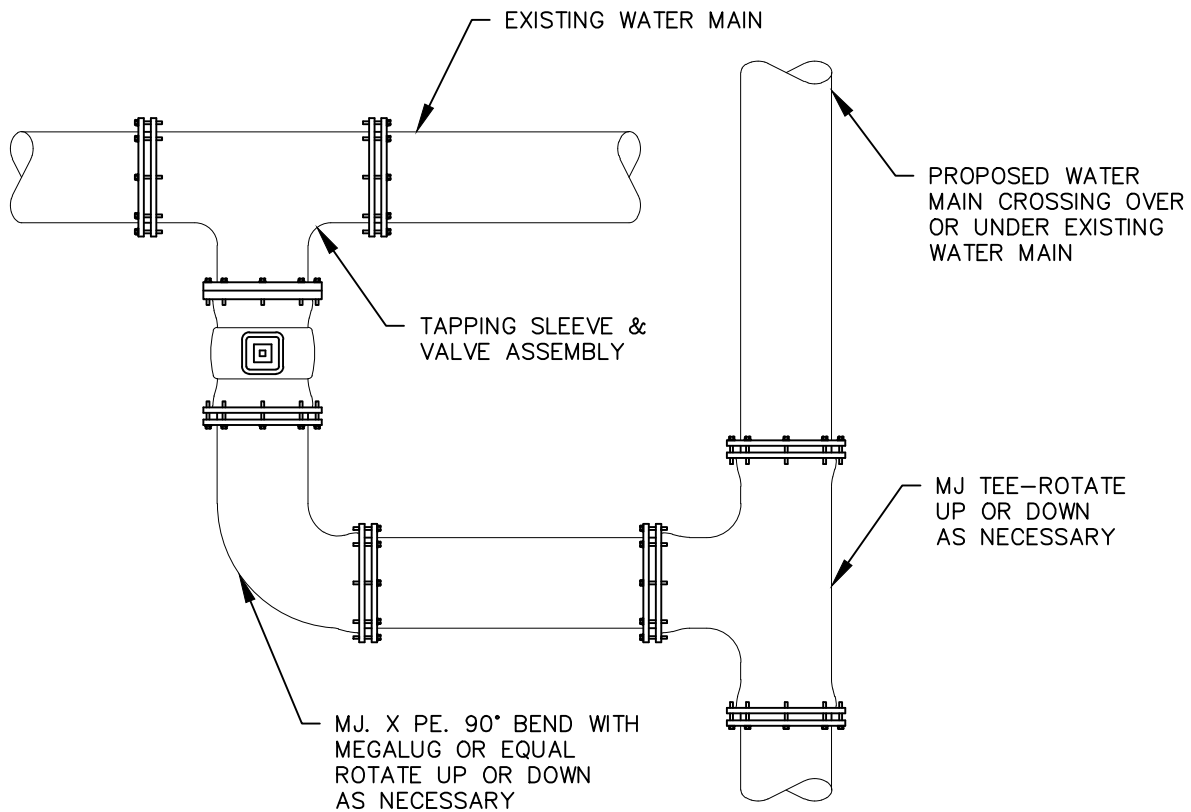
1. ALL STEEL MEMBERS SHALL BE GALVANIZED UNLESS OTHERWISE NOTED.

ADJUSTABLE FLANGE PIPE SUPPORT DETAIL

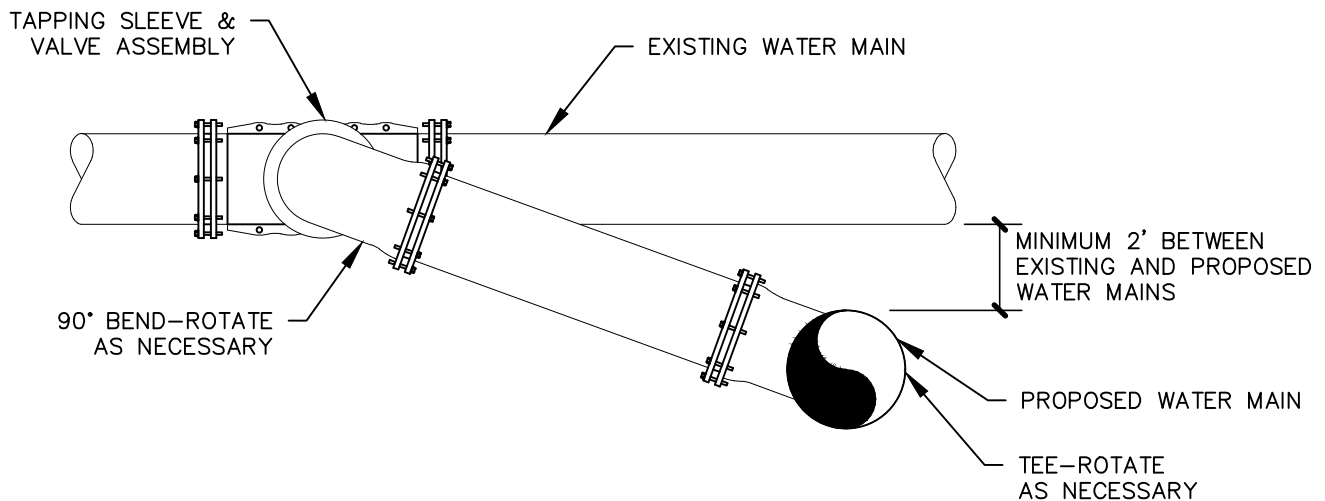


ADJUSTABLE SADDLE PIPE SUPPORT DETAIL





PLAN



SECTION

NOTES:

1. WRAP ALL BELOW GROUND ASSEMBLIES IN POLYETHYLENE ACCORDING TO AWWA C105.
2. THE DIAMETER OF THE CONNECTING PIPE BETWEEN THE PROPOSED AND EXISTING WATER MAINS SHALL HAVE A DIAMETER EQUAL TO THE SMALLER OF THE TWO MAINS TO BE CONNECTED THROUGH THE PROPOSED RING CONNECTION.

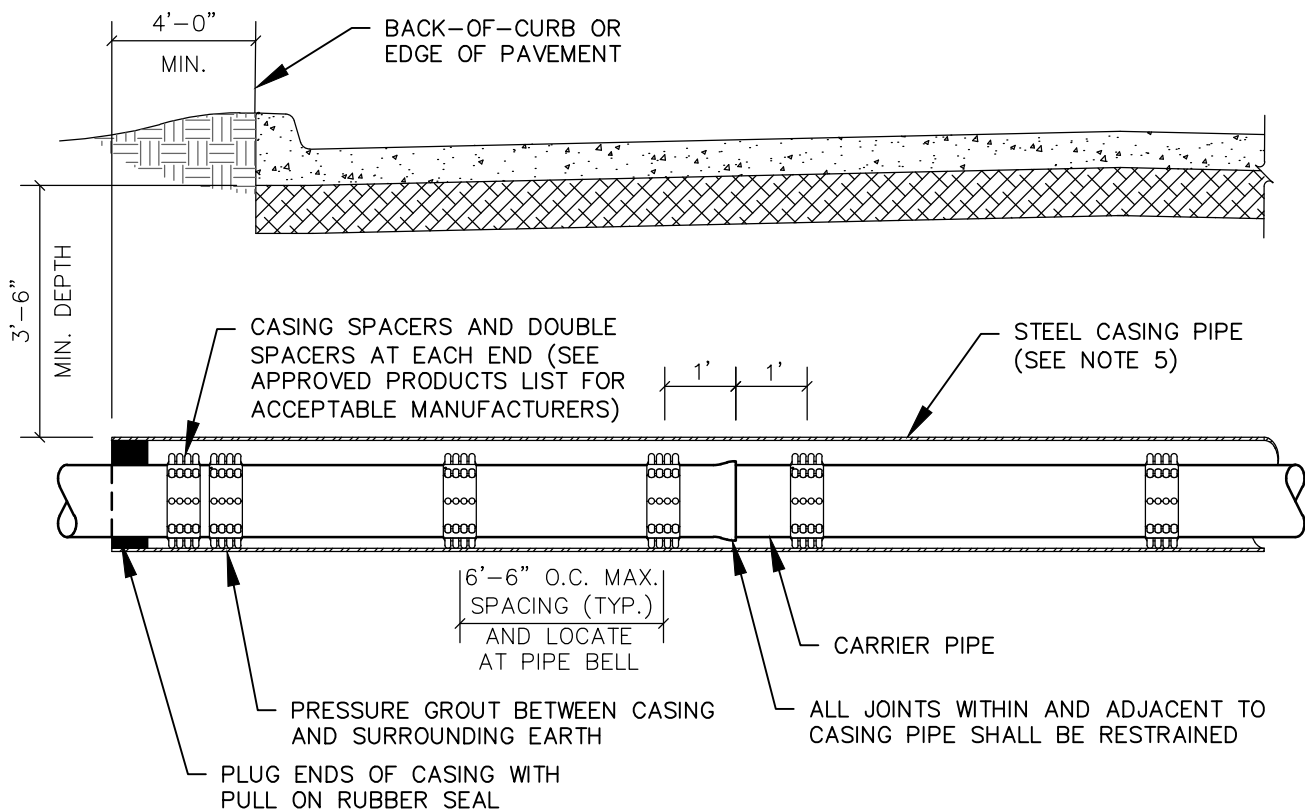


City of Saginaw
Construction Standards

TYPICAL RING CONNECTION

REVISED
FEB 2023

W-12



CASING DIAMETER	MIN. WALL THICKNESS
LESS THAN 12"	0.25"
14" - 18"	0.3125
20" - 24"	0.375"
26" - 32"	0.50"
34" - 42"	0.625"
GREATER THAN 42"	DESIGN BY ENGINEER

NOTES:

- ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
- BORE PIT SHALL MEET OSHA AND STATE REQUIREMENTS.
- WHERE A BORE IS TO BE PARTIALLY OR COMPLETELY ABANDONED, SAID BORE SHALL BE COMPLETELY FILLED WITH HYDRAULICALLY PLACED CEMENT GROUT.
- THE EDGE OF BORE PIT SHALL BE A MINIMUM OF 4' BEHIND THE BACK OF CURB OR EDGE OF PAVEMENT.
- STEEL CASING PIPE SHALL BE MINIMUM 35 KSI ASTM A139, GRADE B CARBON STEEL, AND SHALL HAVE A TAR-COAL EXPOXY COATING IN ACCORDANCE WITH AWWA C210.
- CASING PIPE SHALL BE PLACED AT THE SAME SLOPE AS THE CARRIER PIPE TO ENSURE THAT THE CARRIER PIPE IS PLACED ALONG THE SPECIFIED GRADE. IF THE PROPER SLOPE CANNOT BE MAINTAINED, THE CASING SPACERS SHALL BE ADJUSTED SO THAT THE CARRIER PIPE IS PLACED AT THE SPECIFIED GRADE.

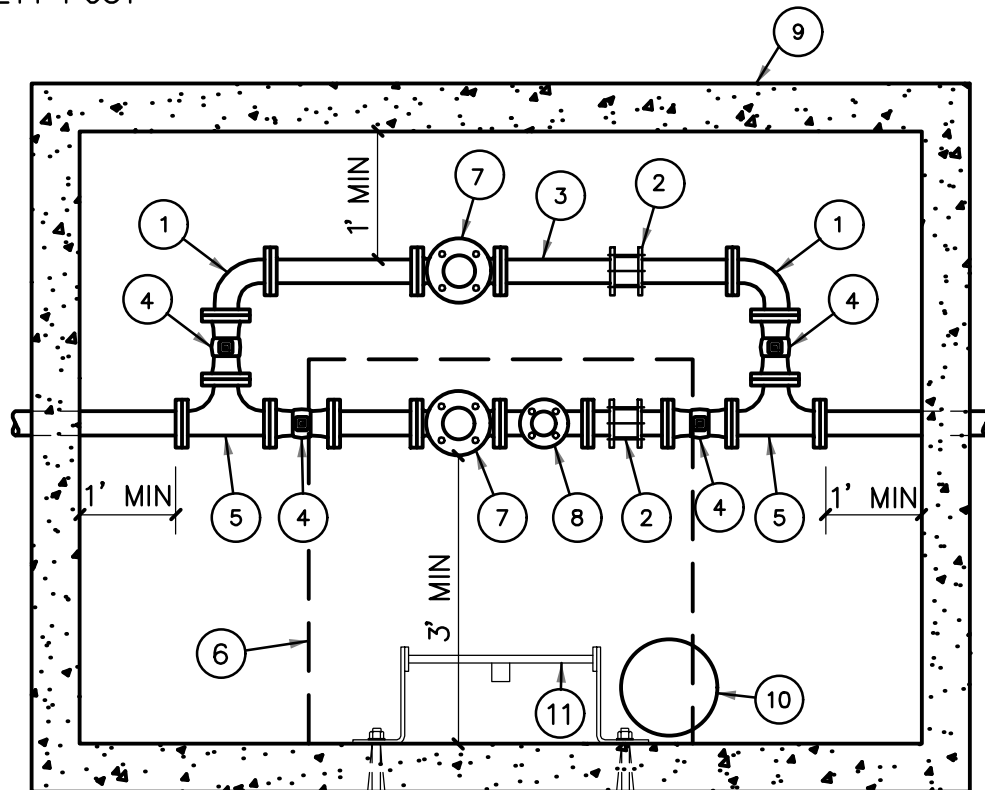


MATERIALS LIST:

- 1 – D.I. 90° BEND FLG. x FLG.
- 2 – RESTRAINED COUPLING OR EXPANSION JOINT
- 3 – BYPASS LINE
- 4 – GATE VALVE OS&Y W/ CHAIN & LOCK FLG. X FLG.
- 5 – D.I. TEE FLG. X FLG.
- 6 – ACCESS DOOR
- 7 – ULTRASONIC METER – SEE NOTE 7
- 8 – TESTING TEE FLG. X FLG. WITH 2" GATE VALVE AND FLG. X THREADED END DISCHARGE PIPE
- 9 – PRECAST METEER VAULT
- 10 – 12" SUMP x 24" DEEP (12" R.C.P. OR EQUAL)
- 11 – GALVANIZED STEEL LADDER WITH BILCO LADDERUP SAFETY POST

MINIMUM VAULT SIZE

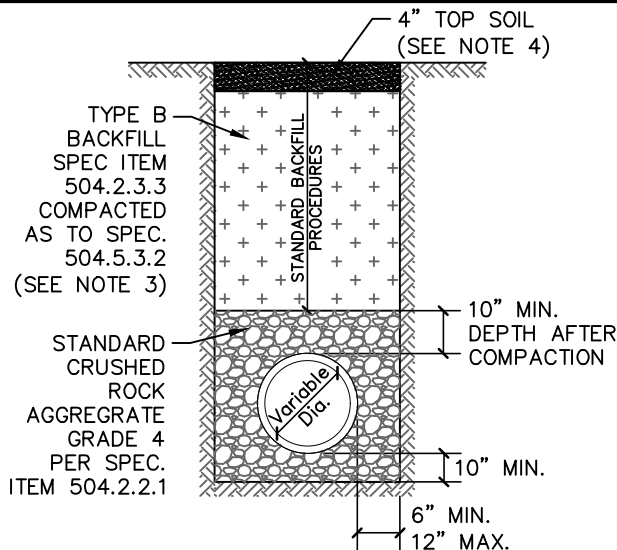
METER	VAULT
3 INCH	6'X8'
4 INCH	6'X8'
6 INCH	8'X10'



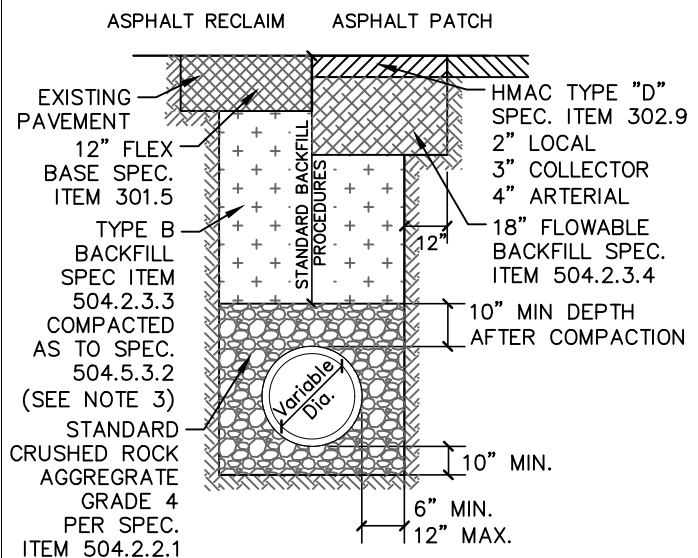
NOTES

1. UTILIZE A JD-2AL BILCO DOOR (4'X4') FOR METER VAULTS OR APPROVED EQUAL. DOOR SHALL BE DESIGNED FOR AASHTO H-20 WHERE APPLICABLE.
2. ALL VAULTS SHALL BE BROOKS, AMERICAN OR APPROVED EQUAL AND DESIGNED FOR AASHTO H-20 OR H-20-44 LIVE LOADS.
3. DOOR DRAIN SHALL BE PLUMBED TO OUTSIDE OF VAULT.
4. ALL WALL PENETRATIONS SHALL BE SEALED WITH LINK SEAL OR APPROVED EQUAL.
5. PIPE AND FITTINGS SHALL BE CONSTRUCTED A MIN. OF 1' ABOVE THE VAULT FLOOR. A CONCRETE PEDESTAL SHALL BE INSTALLED AT THE MID POINT OF BOTH THE MAIN LINE AND BYPASS PIPING ASSEMBLY FOR HORIZONTAL SUPPORT.
6. BYPASS LINE SHALL BE SAME SIZE AS MAIN LINE.
7. METERS SHALL BE BADGER E-SERIES OR APPROVED EQUAL.



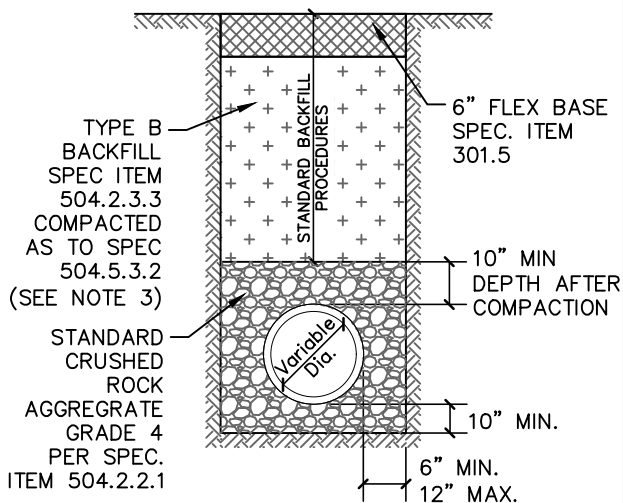


UNPAVED AREA

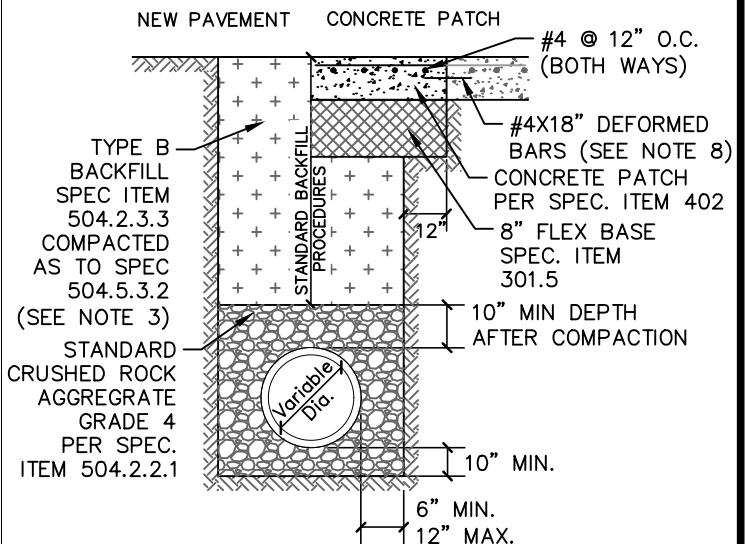


NOTE: FOR NEW STREETS, BACKFILL MAY BE EXTENDED TO THE TOP OF THE TRENCH

ASPHALT PAVEMENT



GRAVEL SURFACE



CONCRETE PAVEMENT

NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. AT THE END OF EACH WORK DAY ALL SPOILS SHALL BE REMOVED FROM THE CITY R.O.W. UNLESS PRIOR WRITTEN PERMISSION IS OBTAINED FROM THE CITY TO STORE SPOILS IN DESIGNATED SPOIL STORAGE AREAS THAT DO NOT OBSTRUCT AUTOMOBILE OR PEDESTRIAN TRAFFIC.
3. ROCKS GREATER THAN 4" IN DIAMETER SHALL BE REMOVED FROM ANY NATIVE MATERIAL USED AS BACKFILL.
4. TOPSOIL SHALL BE 4" IN DEPTH AND SHALL BE LOOSE AND FREE OF ROCKS OR CLOUDS GREATER THAN 1/4" IN DIAMETER. ALL TOPSOIL SHALL BE APPROVED BY THE CITY PRIOR TO INSTALLATION.
5. ALL PAVEMENT SHALL BE REMOVED ALONG NEAT SAW CUT LINES PER SPEC. ITEM 402.3.
6. SEWER LINE WARNING TAPE OF MIN 4" WIDTH SHALL BE INSTALLED ABOVE THE EMBEDMENT MATERIAL.
7. A MAXIMUM OF 50 FT OF OPEN TRENCH WILL BE ALLOWED AT ANY TIME, UNLESS APPROVED BY THE CITY.
8. DEFORMED BARS DOWELED AND EPOXYED MIN. 6" INTO EXISTING PAVEMENT @ 12" O.C. (TYP).

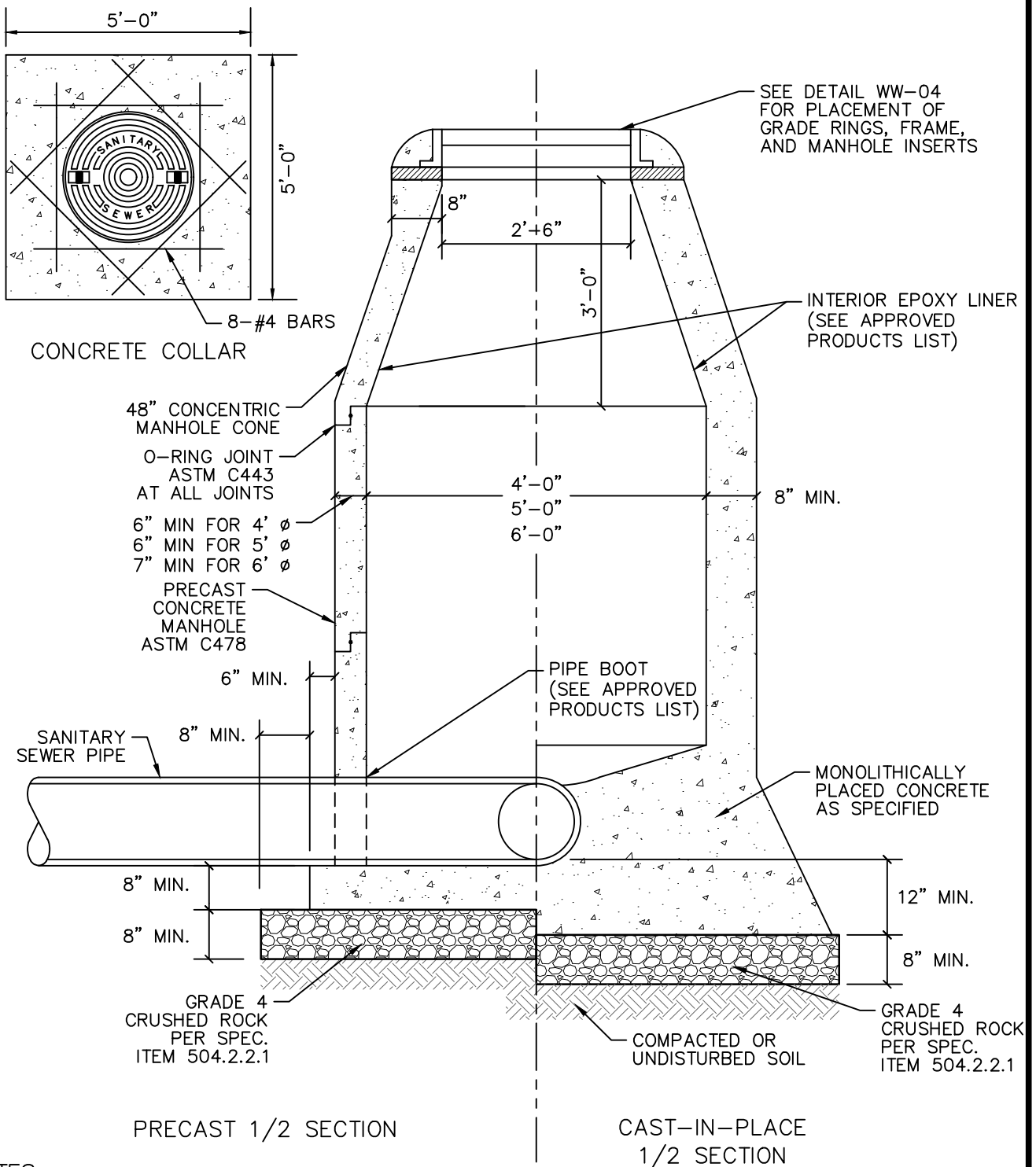


City of Saginaw
Construction Standards

STANDARD SANITARY SEWER
EMBEDMENT AND BACKFILL

REVISED
FEB 2023

WW-01



NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. MANHOLES SHALL BE CONCENTRIC UNLESS OTHERWISE APPROVED BY THE CITY.
3. 5'x5' CONCRETE COLLAR OF 6" 3600 PSI CLASS "C" CONCRETE SHALL BE PROVIDED FOR MANHOLE LIDS LOCATED IN ASPHALT PAVING OR OUTSIDE OF PAVING LIMITS.
4. INVERTS SHALL BE EQUAL TO OR GREATER THAN THE PIPE DIAMETER.
5. REQUEST PRE APPROVED EPOXY LINER PRODUCT LIST FROM CITY.

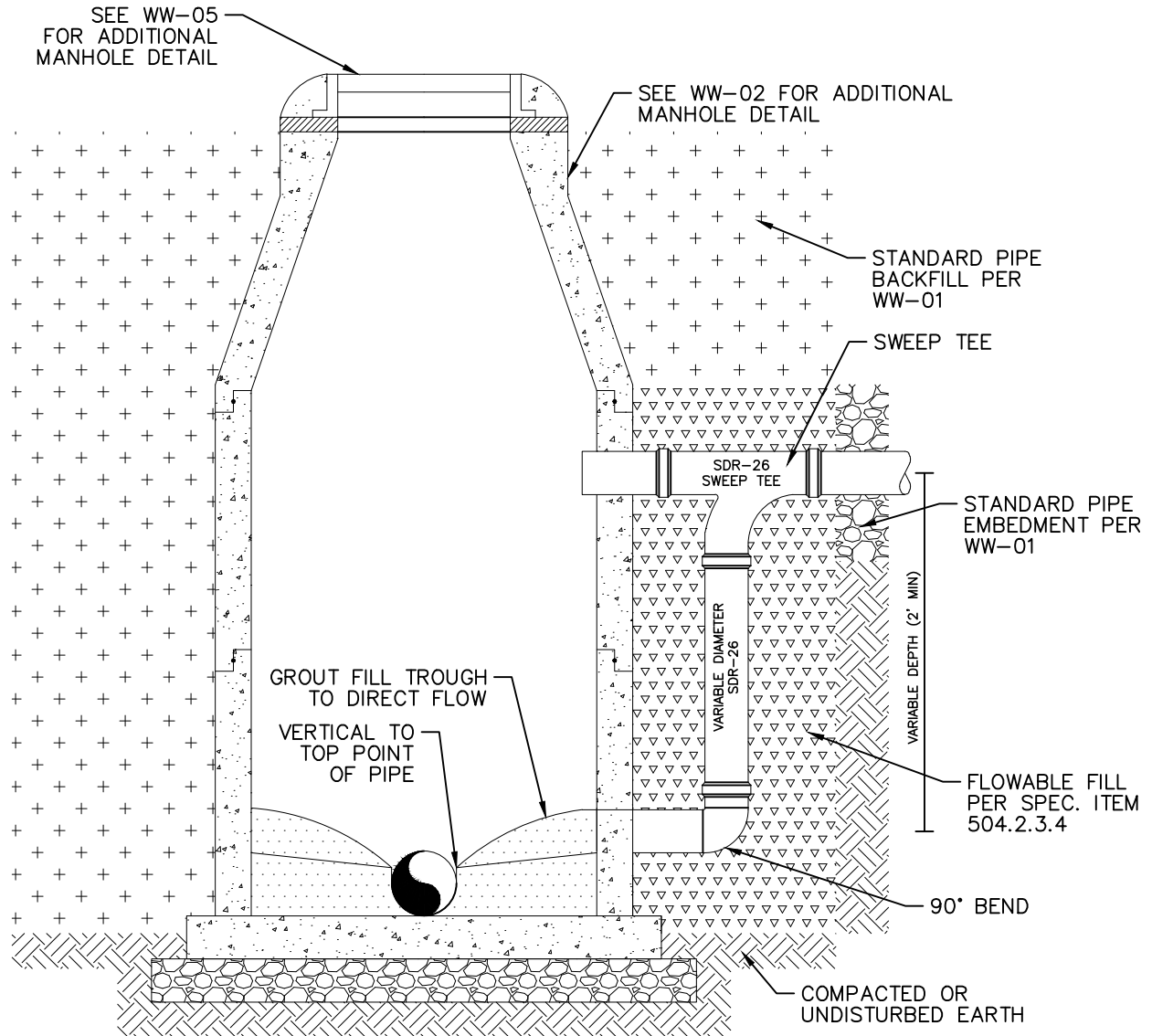


City of Saginaw
Construction Standards

PRECAST AND CAST-IN-PLACE
SANITARY SEWER MANHOLE

REVISED
FEB 2023

WW-02



ELEVATION A

NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. FLOWABLE FILL AROUND DROP PIPING SHALL BE A MINIMUM OF 24" IN ALL DIRECTIONS.
3. LOCATE FLOWLINE OF DROP LINE AT TOP OF EXISTING WASTEWATER LINE UNLESS NOTED OTHERWISE ON PLANS.

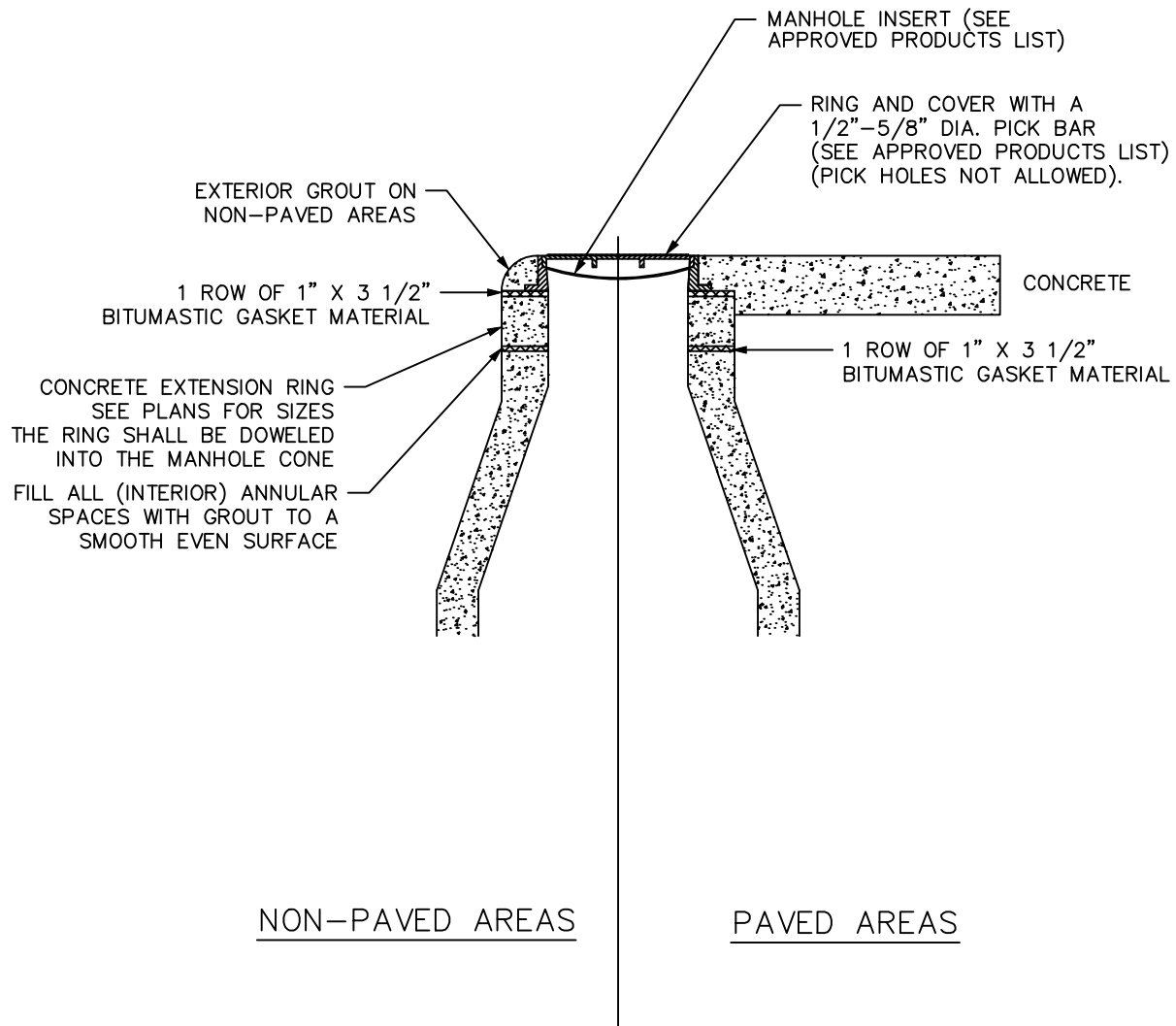


City of Saginaw
Construction Standards

SANITARY SEWER MANHOLE DROP
CONNECTIONS

REVISED
FEB 2023

WW-03



NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. NO GAPS WILL BE ALLOWED IN BITUMASTIC GASKET.
3. MANHOLE OPENING SHALL BE A MINIMUM OF 30".
4. THERE SHALL BE A SMOOTH TRANSITION BETWEEN THE FRAME AND CONE OR GRADE RING, OR THE GRADE RING AND THE CONE.
5. MANHOLE INSERTS SHALL BE MADE OF HIGH-DENSITY POLYETHYLENE THAT MEETS ASTM D-1248, CLASS A, CATEGORY 5, TYPE 111 STANDARDS AND IS A UNIFORM THICKNESS OF 1/8" OR GREATER. AN ENVELOPE-STYLE GASKET, RIBBED ON ONE SIDE TO ENSURE A POSITIVE SEAL AND DESIGNATED NOT TO SEPARATE FROM THE INSERT DURING INSTALLATION AND REMOVAL, SHALL BE FURNISHED. INSERTS SHOULD PROVIDE A GAS RELEASE HOLE (1.8") HAVING A WATER LEAKAGE RATE NOT TO EXCEED 1.2 GPH TWO 1" WIDE NYLON LIFT STRAPS ATTACHED TO THE INSERT WITH TWO HIGH GRADE STAINLESS STEEL RIVETS WITH WASHERS ARE REQUIRED.

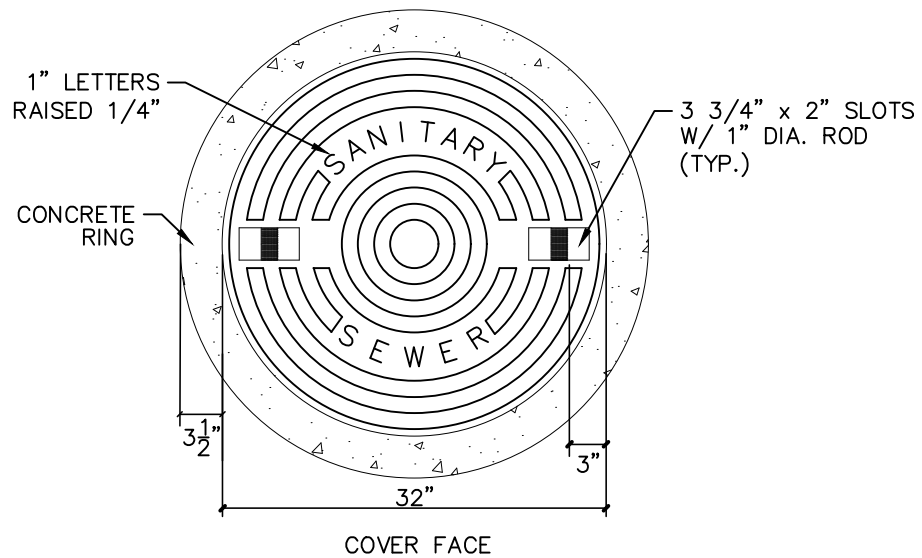
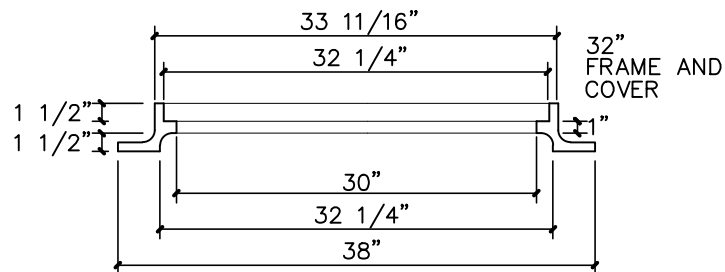


City of Saginaw
Construction Standards

EXTENSION RING INSTALLATION
FRAME AND COVER PLACEMENT

REVISED
FEB 2023

WW-04



CLEANOUT CASTING OPENING TO BE INSTALLED
CENTERED OVER THE CENTERLINE OF THE
CLEANOUT STACK EXTENDED TO GROUND LEVEL

CLEANOUT CASTING

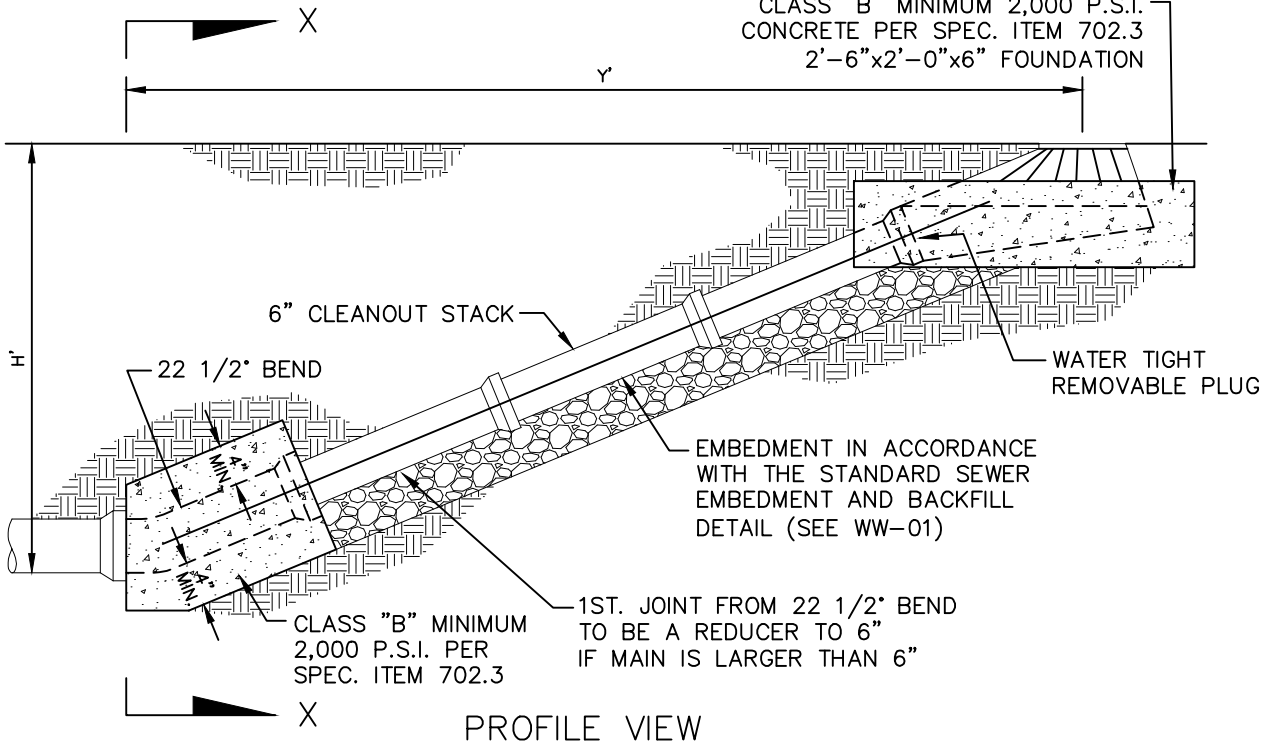
WATER TIGHT
REMOVABLE PLUG

CLASS "B" MINIMUM
2,000 P.S.I. PER
SPEC. ITEM 702.3

CLASS "B" MINIMUM
2,000 P.S.I. CONCRETE
PER SPEC. ITEM 702.3

SECTION "X-X"

CLASS "B" MINIMUM 2,000 P.S.I.
CONCRETE PER SPEC. ITEM 702.3
2'-6"x2'-0"x6" FOUNDATION



H'	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	H'
Y'	10	12	14	17	19	22	24	27	29	31	34	36	39	41	43	46	48	Y'

NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. IF CLEAN OUT IS PLACE IN ADVANCE OF PLACEMENT PLACE SAND AROUND CLEANOUT CASTING IN LIEU OF CLASS "B" CONCRETE PER ITEM 702.3.

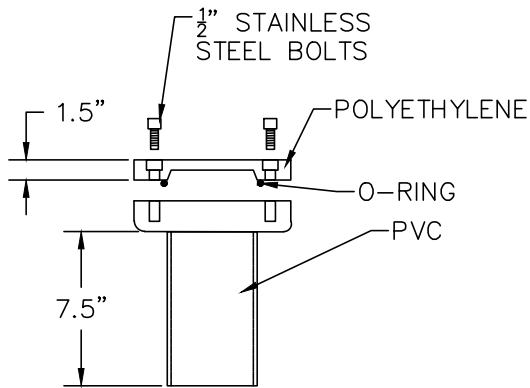


City of Saginaw
Construction Standards

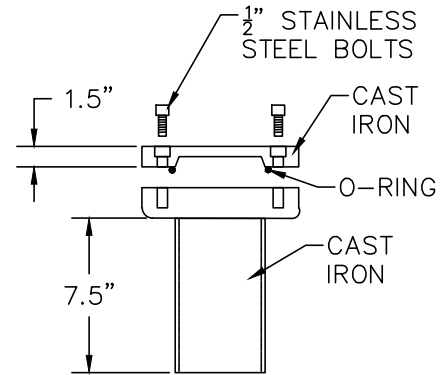
SANITARY SEWER MAIN CLEANOUT

REVISED
FEB 2023

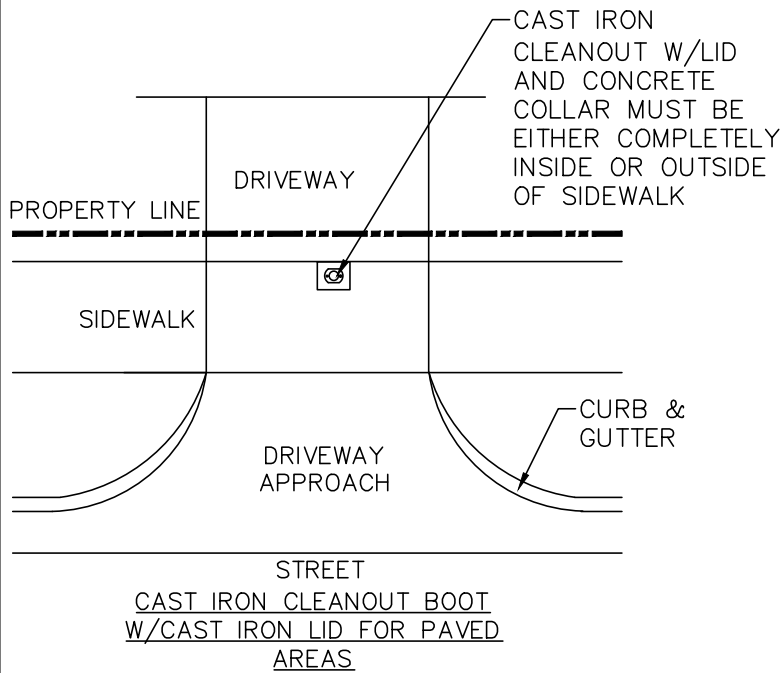
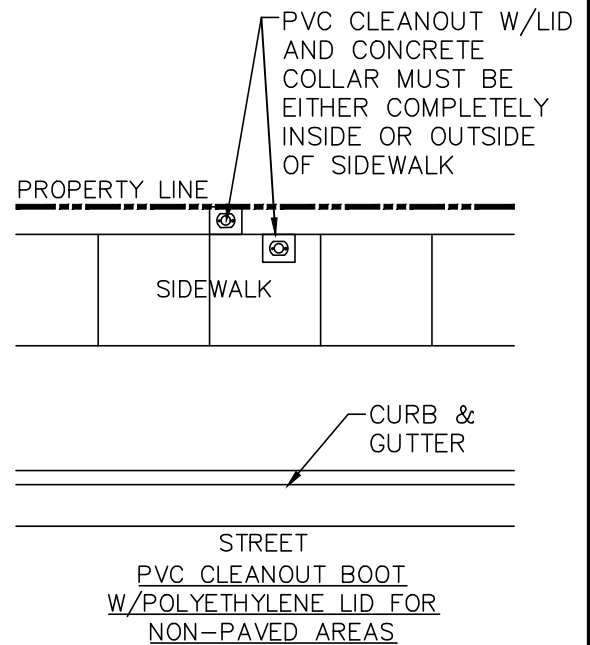
WW-06

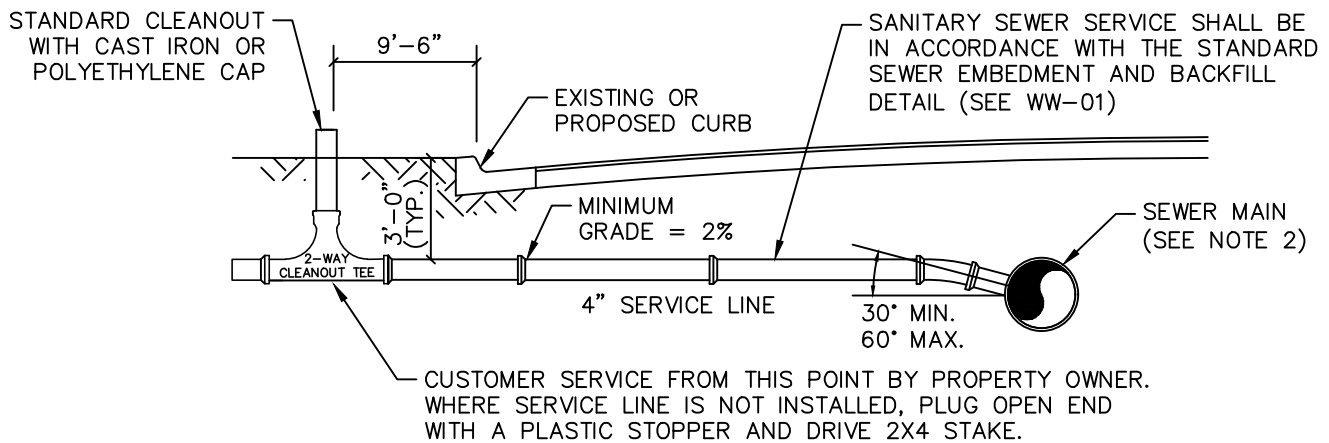


PVC CLEANOUT W/S.S. BOLTS
AND POLYETHYLENE LID
FOR UN-PAVED AREAS

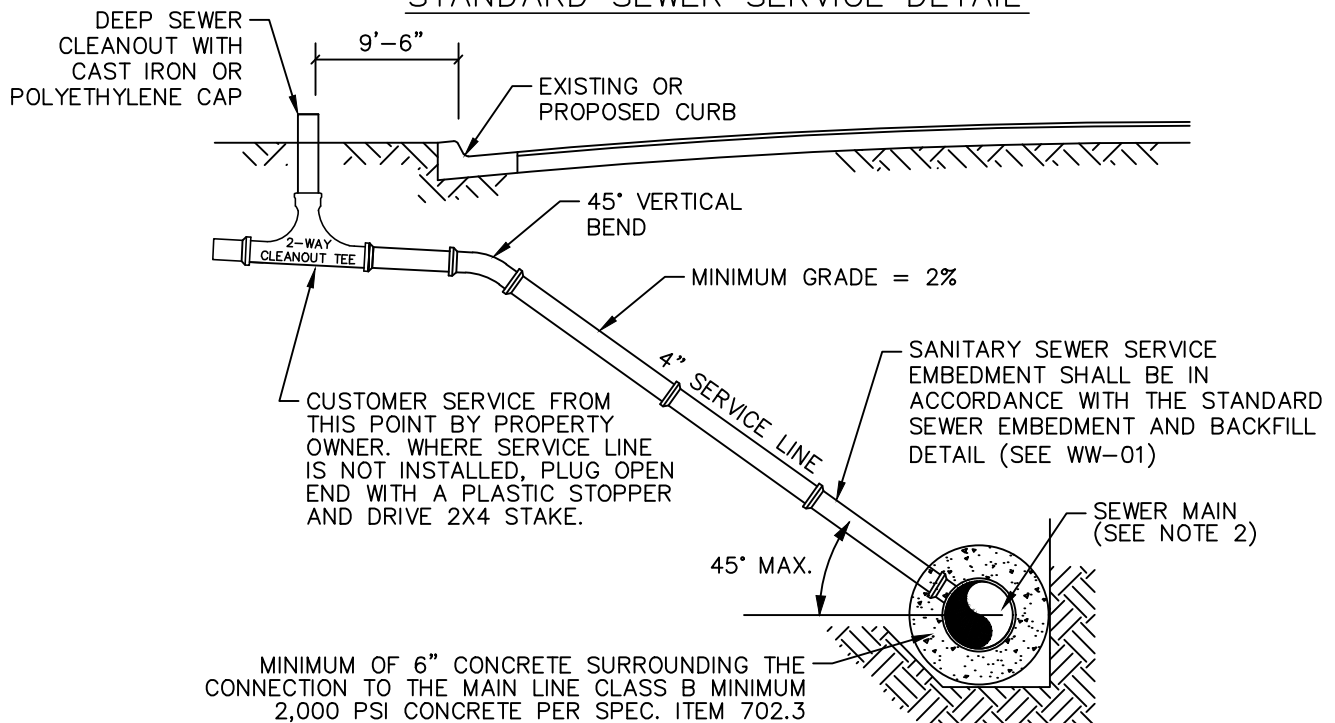


CAST IRON CLEANOUT W/S.S.
BOLTS AND C.I. LID
FOR PAVED AREAS





STANDARD SEWER SERVICE DETAIL

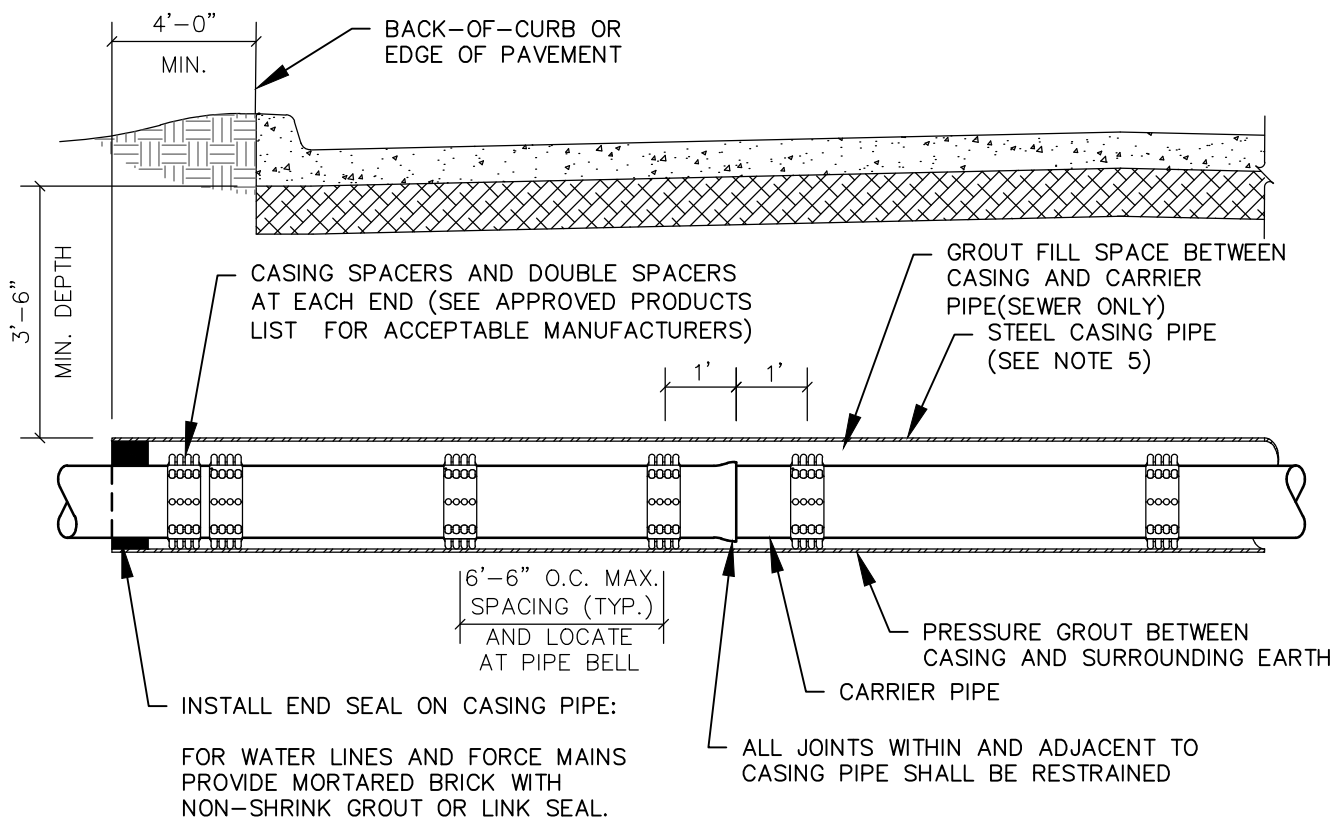


DEEP SEWER SERVICE DETAIL

NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. EITHER A WYE FITTING OR A TEE WYE FITTING MAY BE USED FOR CONNECTION TO SEWER MAIN. NO TEES OR WYE SADDLES WILL BE ALLOWED. ALL CONNECTIONS TO BE MADE AT THE TWO O'CLOCK OR TEN O'CLOCK POSITION.
3. CONNECTIONS TO SEWER MAINS FROM 0' TO 7' DEEP SHALL CONFORM TO THE STANDARD SEWER CONNECTION DETAIL. CONNECTIONS TO SEWER MAINS DEEPER THAN 7' SHALL CONFORM TO THE DEEP SEWER CONNECTION DETAILS.
4. MARK SEWER SERVICE LINE LOCATION WITH RED VINYL TAPE AT LEAST 3" WIDE AND 10 MIL THICK. ATTACH TAPE TO THE END OF THE SERVICE AND EXTEND THROUGH THE BACKFILL AT THE POINT OF THE HOUSE SERVICE CONNECTION BEHIND THE CURB.
5. SANITARY SEWER SERVICE LOCATIONS SHALL BE MARKED ON THE FACE OF CURB WITH AN "S" CUT.





CASING DIAMETER	MIN. WALL THICKNESS
LESS THAN 12"	0.25"
14" - 18"	0.3125
20" - 24"	0.375"
26" - 32"	0.50"
34" - 42"	0.625"

GREATER THAN 42" DESIGN BY ENGINEER

NOTES:

- ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
- BORE PIT SHALL MEET OSHA AND STATE REQUIREMENTS.
- WHERE A BORE IS TO BE PARTIALLY OR COMPLETELY ABANDONED, SAID BORE SHALL BE COMPLETELY FILLED WITH HYDRAULICALLY PLACED CEMENT GROUT.
- THE EDGE OF BORE PIT SHALL BE A MINIMUM OF 4' BEHIND THE BACK OF CURB OR EDGE OF PAVEMENT.
- STEEL CASING PIPE SHALL BE MINIMUM 35 KSI ASTM A139, GRADE B CARBON STEEL, AND SHALL HAVE A COAL-TAR EXPOXY COATING IN ACCORDANCE WITH AWWA C210.
- CASING PIPE SHALL BE PLACED AT THE SAME SLOPE AS THE CARRIER PIPE, TO ENSURE THAT THE CARRIER PIPE IS PLACED ALONG THE SPECIFIED GRADE. IF THE PROPER SLOPE CANNOT BE MAINTAINED, THE CASING SPACERS SHALL BE ADJUSTED SO THAT THE CARRIER PIPE IS PLACED AT THE SPECIFIED GRADE.

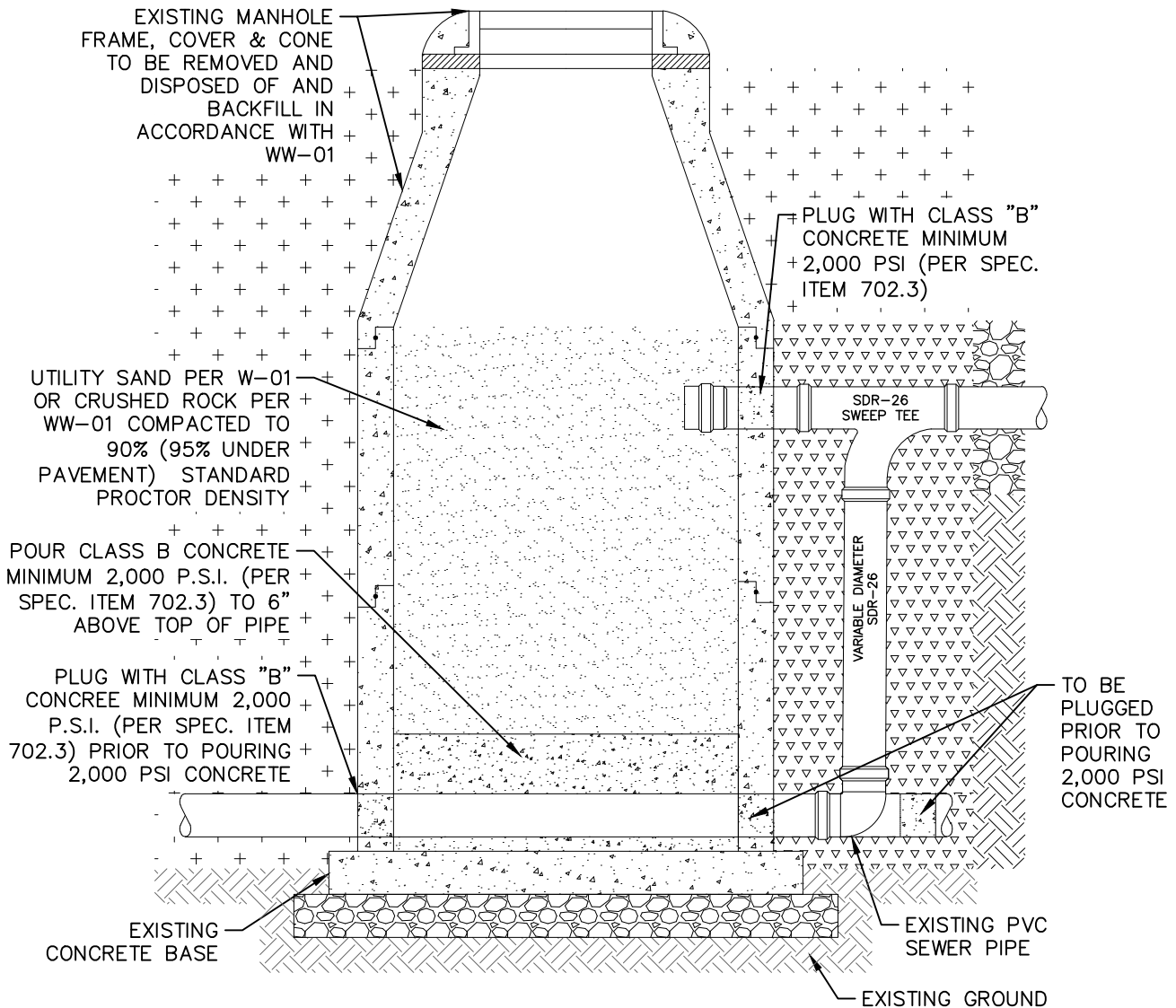


City of Saginaw
Construction Standards

SANITARY SEWER LINE BORE AND
CASING

REVISED
FEB 2023

WW-09



NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATION FOR PUBLIC WORKS CONSTRUCTION.

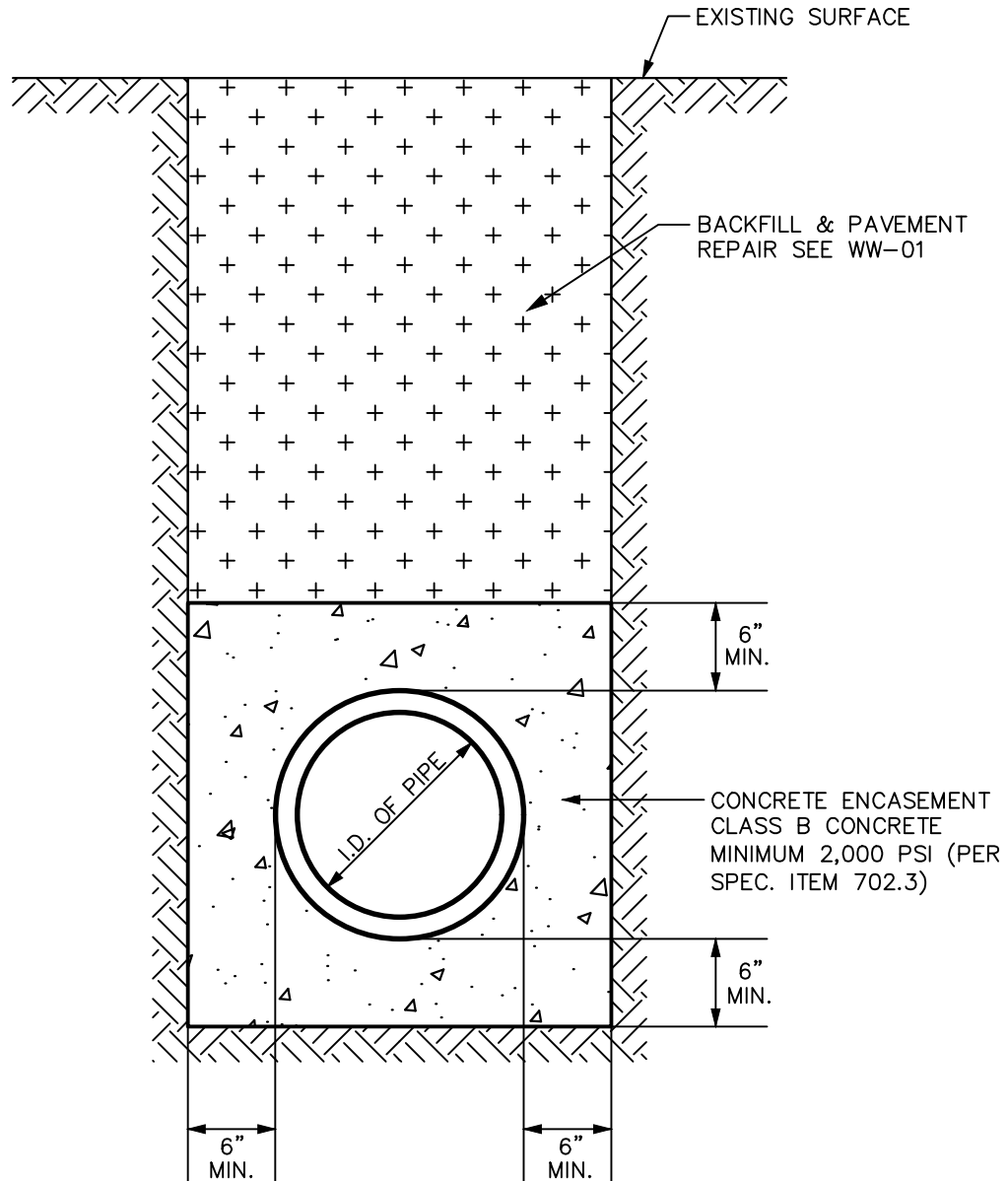


City of Saginaw
Construction Standards

MANHOLE ABANDONMENT

REVISED
FEB 2023

WW-10



NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATION FOR PUBLIC WORKS CONSTRUCTION.

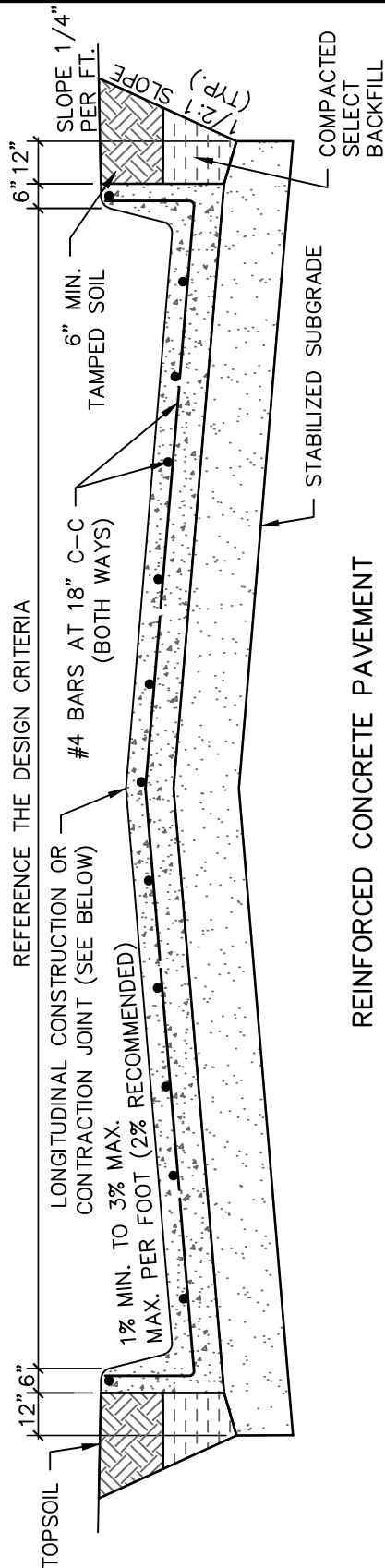


City of Saginaw
Construction Standards

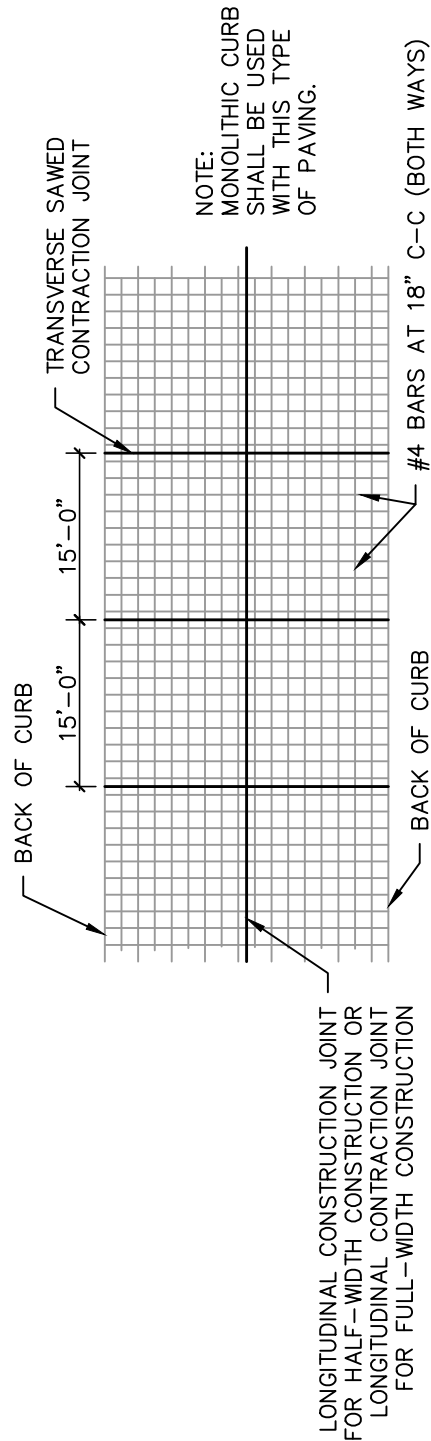
CONCRETE ENCASEMENT

REVISED
FEB 2023

WW-11



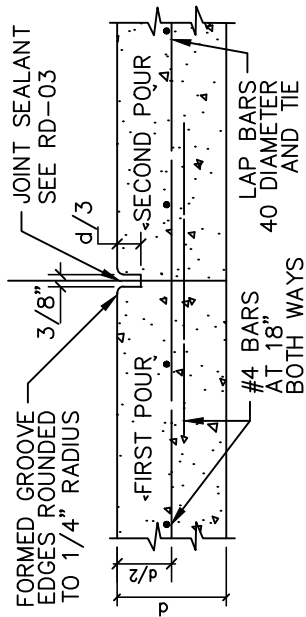
REINFORCED CONCRETE PAVEMENT



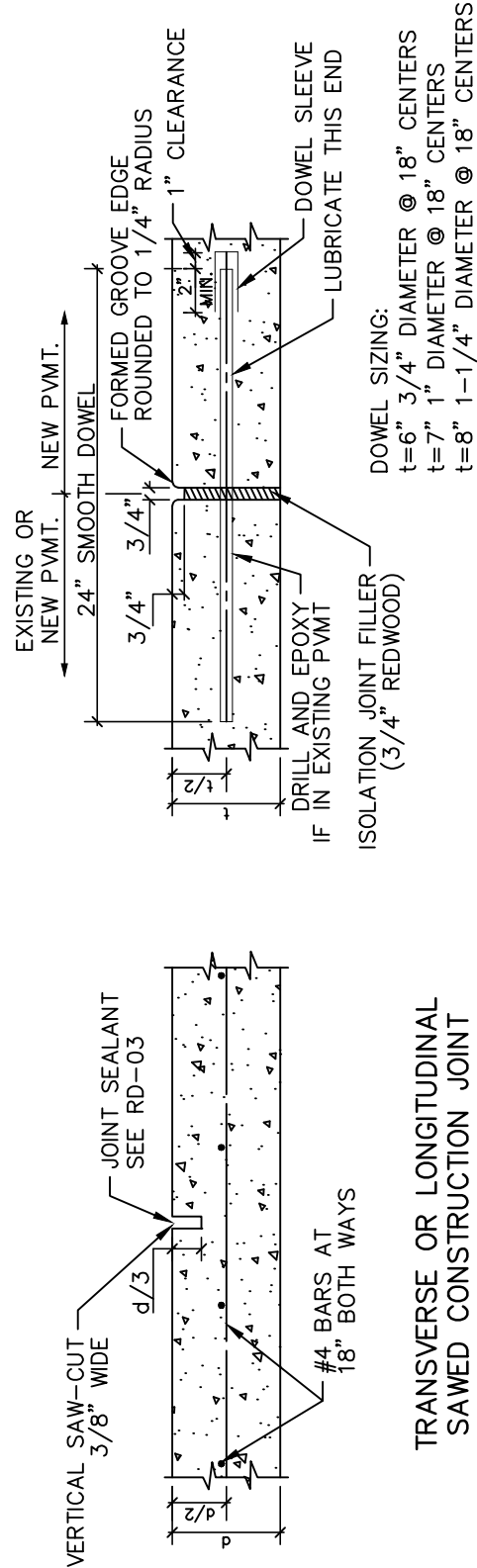
STEEL LAYOUT PLAN

NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. MINIMUM PAVEMENT DEPTH SHALL BE 8".
3. ALL CONCRETE PAVEMENT SHALL BE CLASS "P1", 4000 PSI (MACHINE POURED) OR CLASS "P2", 4500 PSI (HAND POURED) (PER ITEM 303.3) OR AS SPECIFIED BY THE OWNER.
4. A GEOTECHNICAL REPORT SEALED BY A LICENSED PROFESSIONAL ENGINEER IS REQUIRED TO PROVIDE RECOMMENDATIONS FOR LIME OR CEMENT CONTENT AND SUBGRADE THICKNESS.
5. MONOLITHIC CURB SHALL BE USED WITH THIS TYPE OF PAVING.



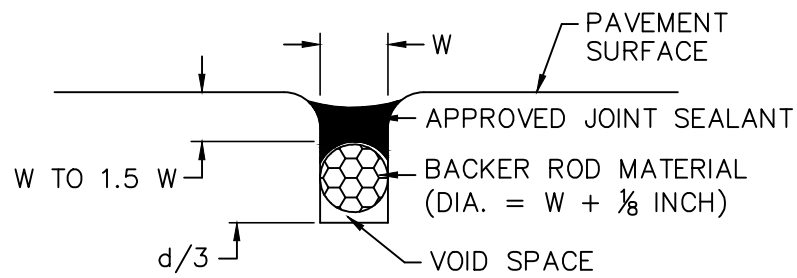
TRANSVERSE OR LONGITUDINAL
CONSTRUCTION JOINT



EXPANSION JOINT

NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. ALL ISOLATION JOINTS SHALL EXTEND THROUGH THE CURB SECTION.
3. THE SAW-CUT OF ALL TRANSVERSE CONTRACTION JOINTS SHALL EXTEND THROUGH THE CURB SECTION.
4. AT ALL TRANSVERSE CONSTRUCTION JOINTS THE CURB SECTION SHALL BE SAW-CUT.
5. APPROVED DOWEL SUPPORT BASKET SHALL BE PROVIDED TO ENSURE SPECIFIED DEPTH AND ORIENTATION FOR EXPANSION JOINTS.
6. EXPANSION JOINTS SHALL BE SPACED AT 600' MAX.



NOTES:

1. d = THICKNESS OF PAVEMENT
2. METHODS AND MATERIALS FOR JOINT CLEANING AND SEALING TO FOLLOW TXDOT ITEM SPECIFICATION 713.
3. TXDOT CLASS 8 JOINT SEALANT TO BE USED PER TXDOT DMS-6310.

SILICONE JOINT SEALANT (COLD POUR)

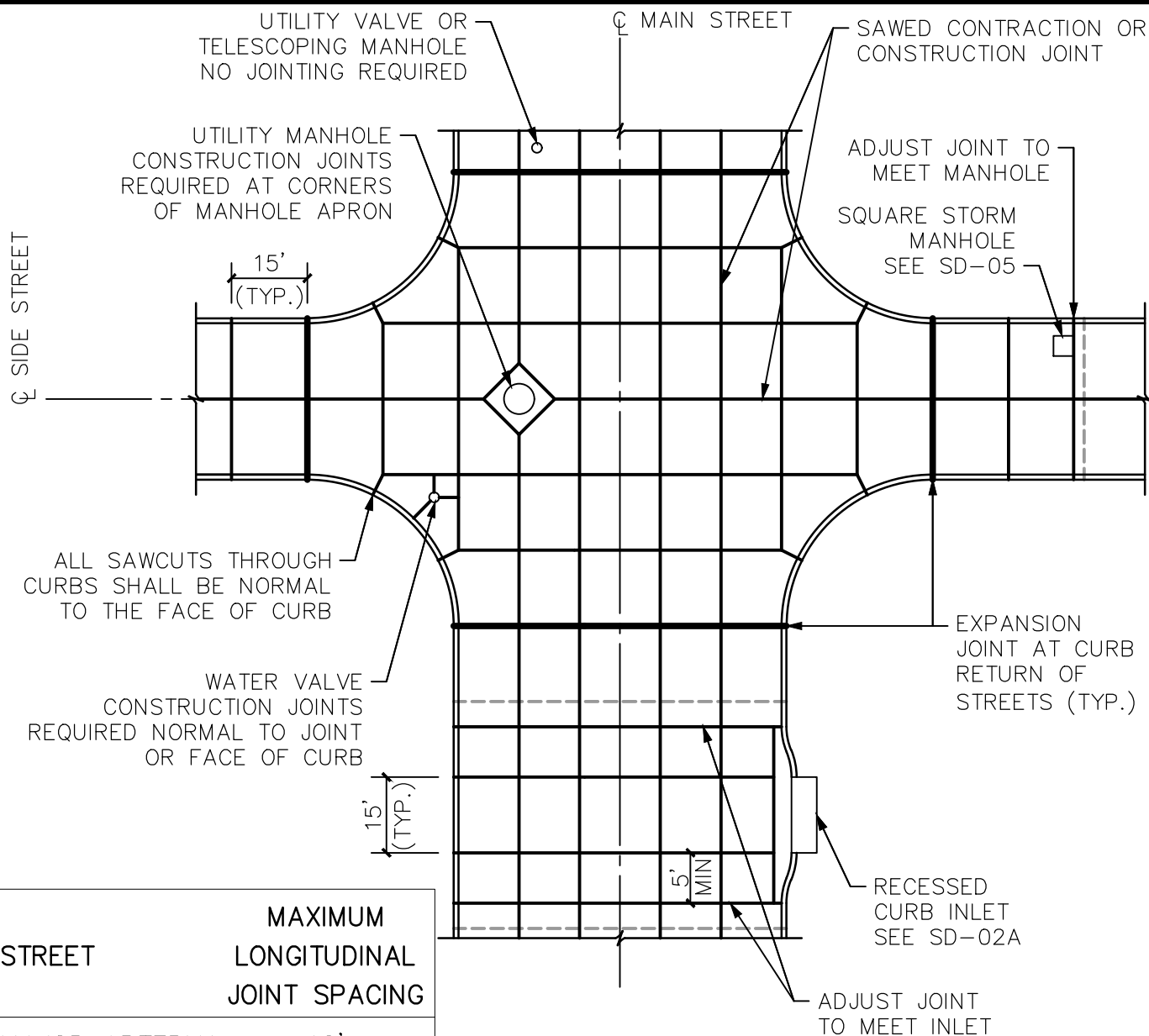


City of Saginaw
Construction Standards

CONCRETE PAVING
JOINT SEALANTS

REVISED
FEB 2023

RD-03



STREET	MAXIMUM LONGITUDINAL JOINT SPACING
MAJOR ARTERIAL	12'
DIVIDED/COLLECTOR	13'
LOCAL	15'

NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. REFER TO RD-01 AND NCTCOG ITEM 303.3 FOR CONCRETE PAVEMENT.
3. MAXIMUM TRANSVERSE JOINT SPACING IS 15'.
4. LONGITUDINAL JOINT SPACING SHALL MATCH LANE LINES UNLESS NOTED OTHERWISE.
5. ALL PAVEMENT JOINTS SHALL BE SEALED IN ACCORDANCE WITH RD-03.
6. MINIMUM 5' JOINT SPACING.
7. EXPANSION JOINTS SHALL BE SPACED AT 600' MAX.

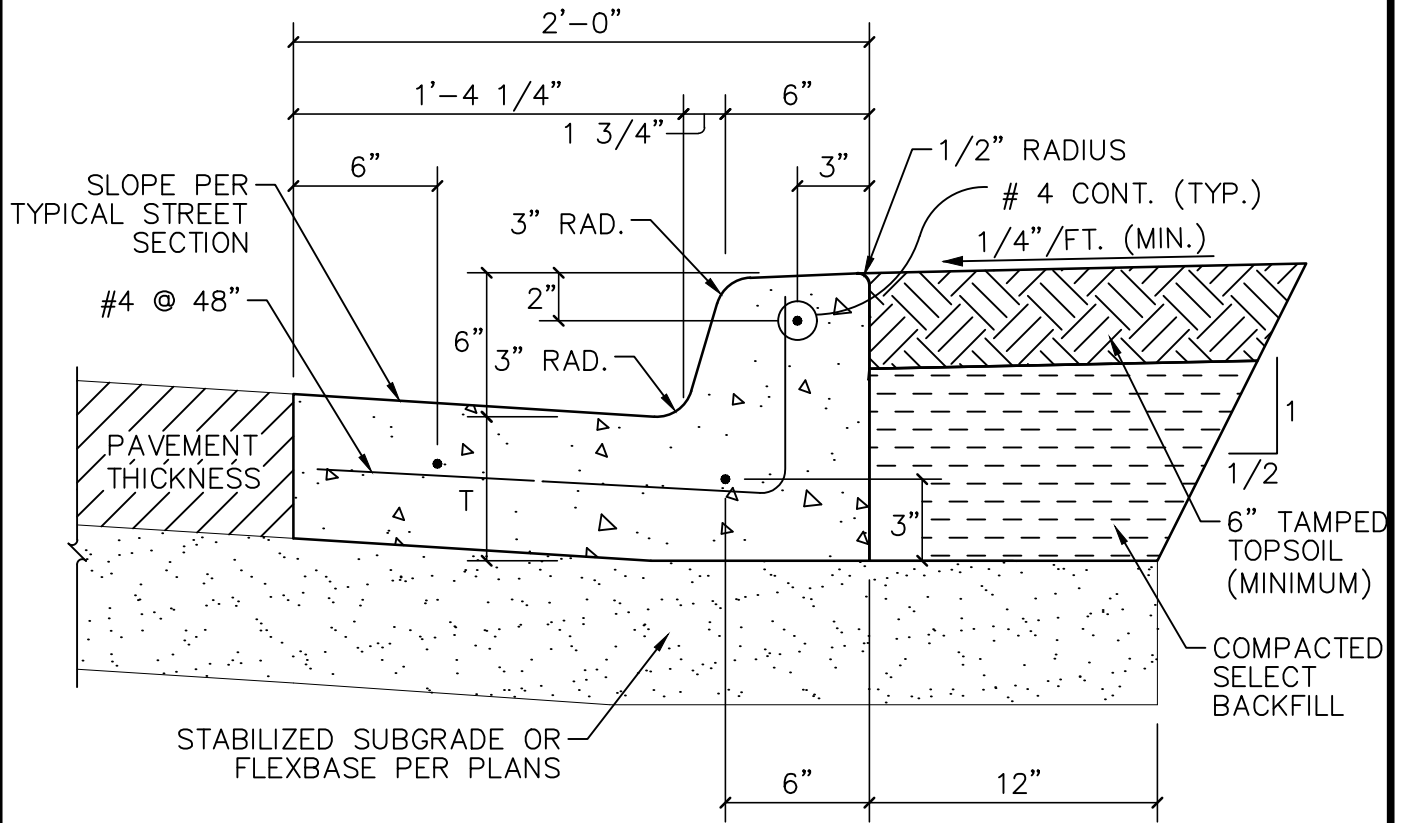


City of Saginaw
Construction Standards

PAVEMENT INTERSECTION JOINT
SPACING

REVISED
FEB 2023

RD-04



NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. ROCKS GREATER THAN 4" IN DIAMETER SHALL BE REMOVED FROM ANY NATIVE MATERIAL USED AS BACKFILL.



City of Saginaw
Construction Standards

STANDARD 6-INCH CURB AND
18-INCH GUTTER

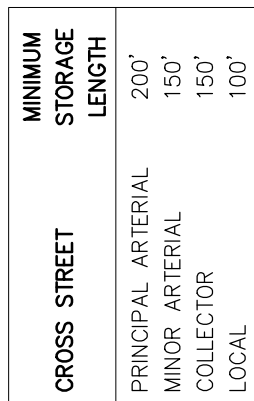
REVISED
FEB 2023

RD-05



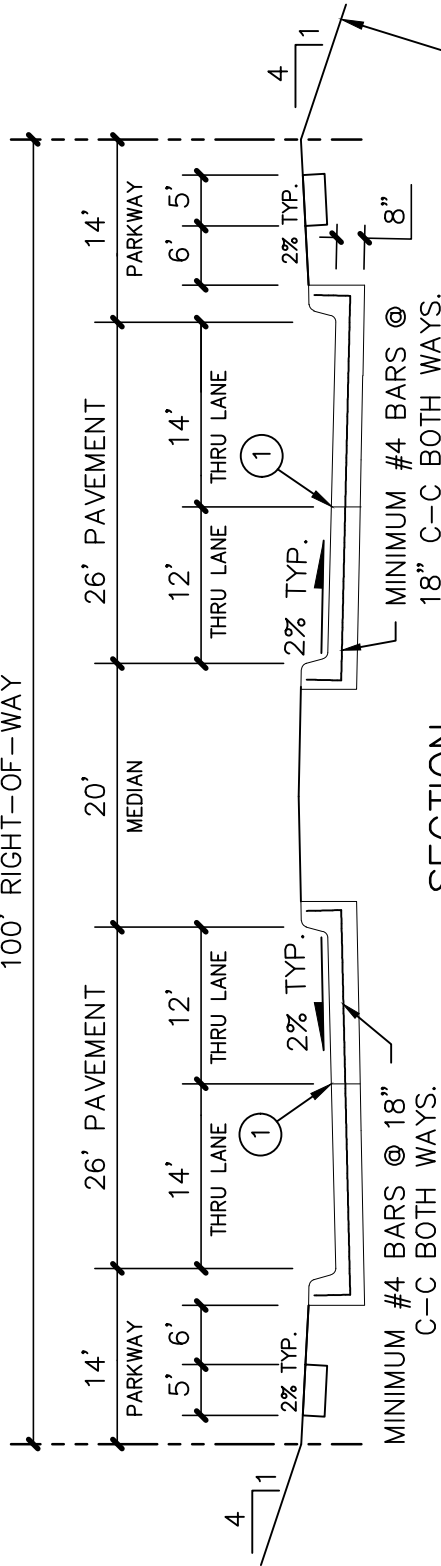
REVISED
FEB 2023

RD-06



- NOTES:**
1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
 2. REFER TO RD-01 AND NCTCOG ITEM 303.3 FOR CONCRETE PAVEMENT.
 3. MIN. CURB HEIGHT AND WIDTH SHALL BE 6" OR AS SPECIFIED BY OWNER.

100' RIGHT-OF-WAY



SECTION

FILL SECTION ONLY. ALTERNATE REVERSE SLOPE ACCEPTABLE NOT TO EXCEED 4:1

① LONGITUDINAL CONSTRUCTION JOINT

CROSS STREET	MINIMUM STORAGE LENGTH
PRINCIPAL ARTERIAL	200'
MINOR ARTERIAL	150'
COLLECTOR	150'
LOCAL	100'

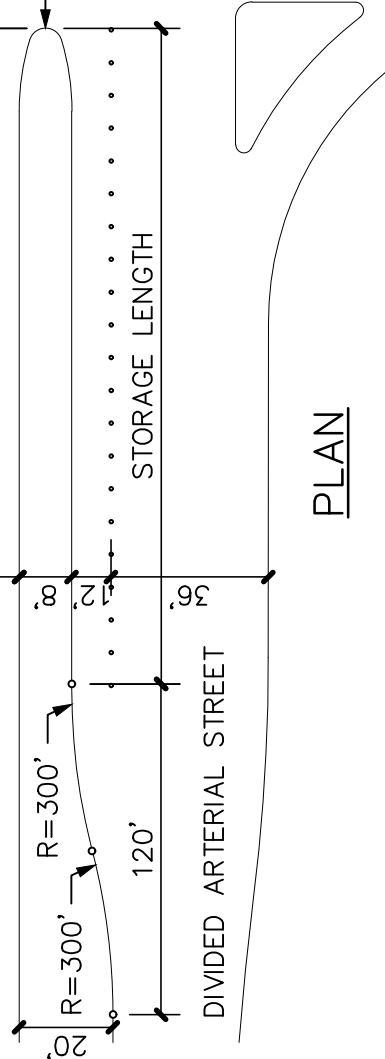
CROSS STREET

10' MIN.

MONOLITHIC MEDIAN NOSE
SEE RD-08 AND RD-09

STORAGE LENGTH

PLAN



NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. REFER TO RD-01 AND NCTCOG ITEM 303.3 FOR CONCRETE PAVEMENT.
3. MIN. CURB HEIGHT AND WIDTH SHALL BE 6" OR AS SPECIFIED BY OWNER.



City of Saginaw
Construction Standards

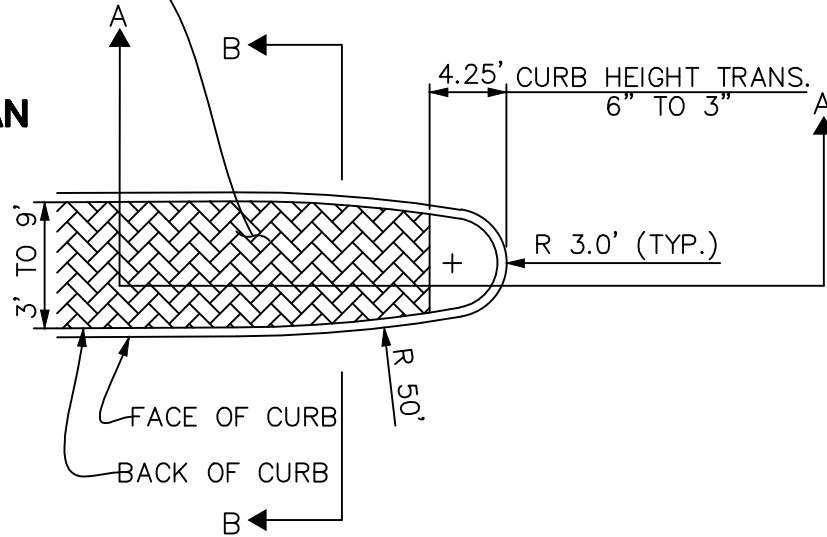
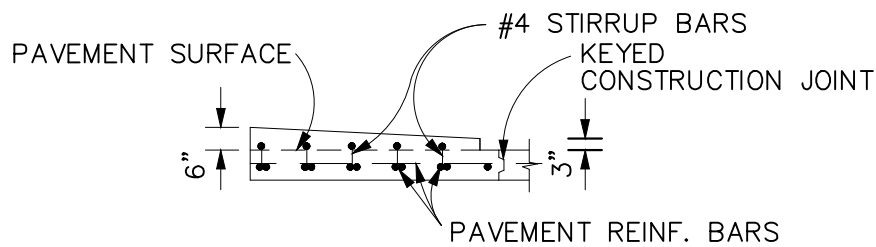
REINFORCED CONCRETE PAVEMENT
FOUR LANE DIVIDED
THOROUGHFARE

REVISED
FEB 2023

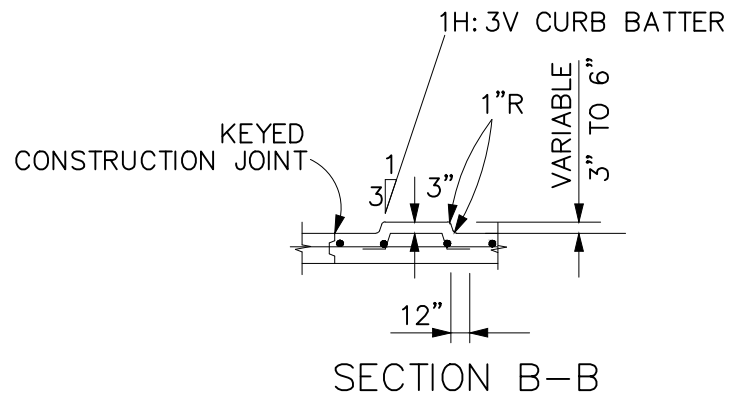
RD-07

4" STAMPED CONC.
SEE RD-10

PLAN



SECTION A-A



SECTION B-B



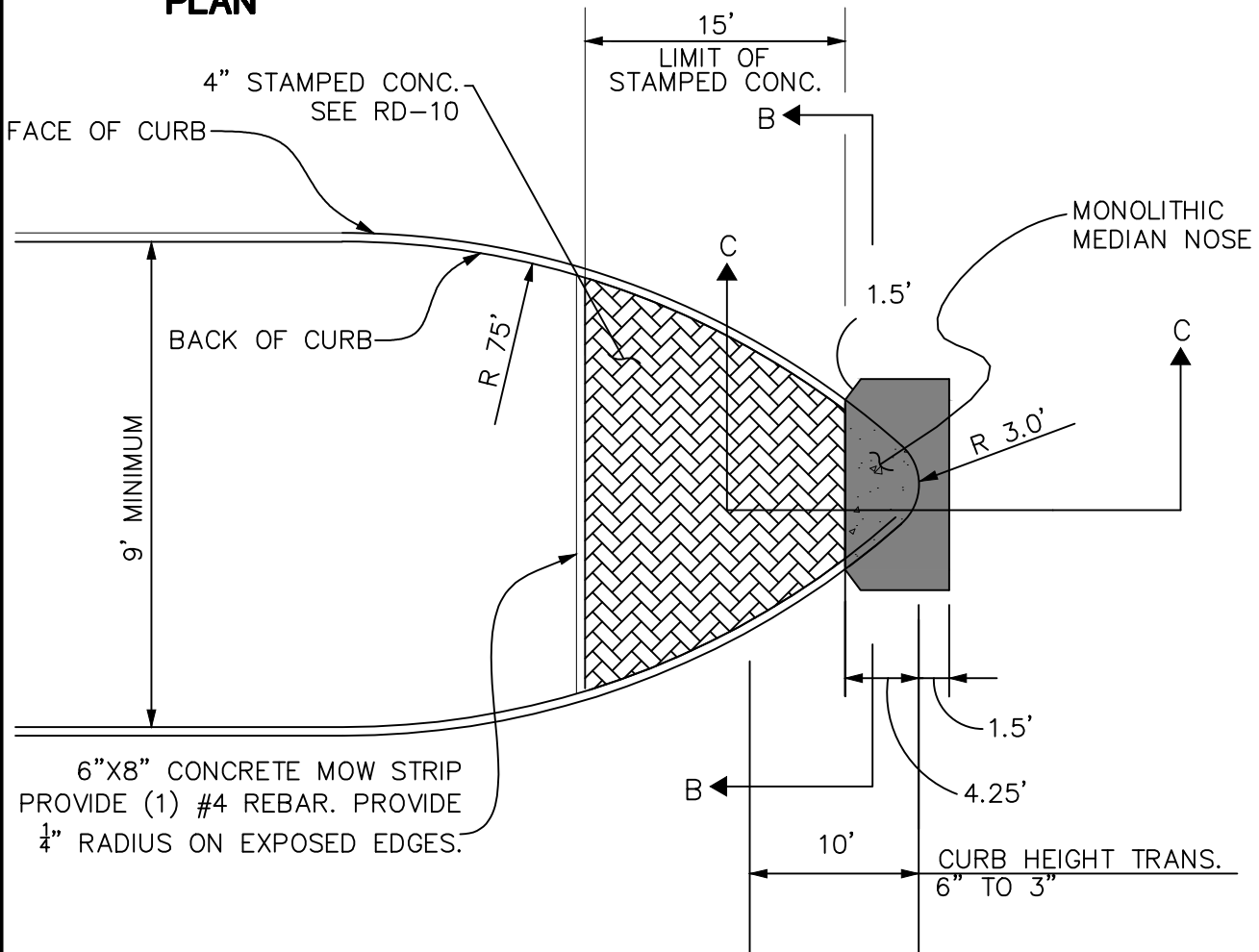
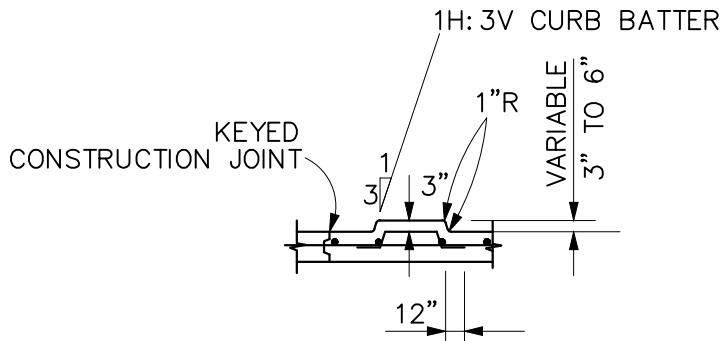
City of Saginaw
Construction Standards

MONOLITHIC MEDIAN NOSE
TYPE 1

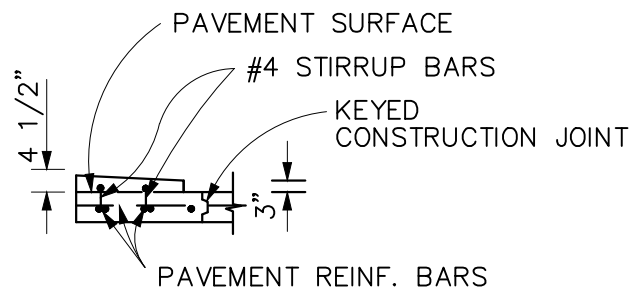
REVISED
FEB 2023

RD-08

PLAN



SECTION B-B



SECTION C-C

NOTES:

1. NO SEPARATE PAY FOR MONOLITHIC MEDIAN NOSE OR CONCRETE MOW STRIP. COST SHALL BE SUBSIDIARY TO CONCRETE PAVEMENT OR CURB AND GUTTER.
2. STAMPED CONCRETE SHALL BE PAID SEPARATELY.

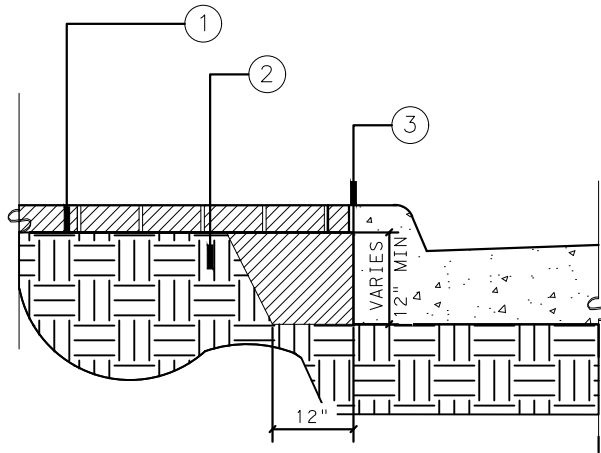


City of Saginaw
Construction Standards

MONOLITHIC MEDIAN NOSE
TYPE 2

REVISED
FEB 2023

RD-09



- ① 4" CLASS "P2", 4500 PSI CONCRETE PAVEMENT REINFORCED WITH #4 BARS @ 18" SPACING
- ② IN SITU MATERIAL COMPACTED TO 95% PROCTOR DENSITY
- ③ EXPANSION JOINT (SEE RD-02) WITH JOINT SEALER (SEE RD-03)

COLORED TEXTURED CONCRETE

PLACE COLORED TEXTURED CONCRETE USING STAMPS.

PATTERN ONLY THE CONCRETE ISLANDS, REFERENCE THIS SHEET AND CITY OF SAGINAW STANDARD MONOLITHIC MEDIAN NOSE DETAIL. DIMENSIONS SHOWN ARE NOMINAL. BASE ACTUAL DIMENSIONS ON TEXTURE MODULES.

TEXTURED SURFACES SHALL HAVE AN ANTIQUE FINISH ATTAINED BY APPLICATION OF CONCRETE COLORS OF TEXAS LLC INTEGRAL COLOR AND ANTIQUING RELEASE*.

BASE COLOR SHALL BE ATTAINED WITH CONCRETE COLORS OF TEXAS LLC INTEGRAL COLOR, SEE DETAIL FOR COLOR. ANTIQUE BY APPLYING ANTIQUING RELEASE, SEE DETAIL FOR COLOR. SEAL ALL COLORED TEXTURED CONCRETE WITH A CLEAR SEALER APPROVED BY THE COLOR HARDENER MANUFACTURER.

- FOR CONTRACTORS INFORMATION ONLY.
- * OR APPROVED EQUAL.

INTEGRAL COLORED AND TEXTURED COLOR PALETTE

TRUCK APRON
HELIX COLOR SYSTEMS*: DECATUR RED
RELEASE: N/A
SCOFIELD CURESEAL-W SEMIGLOSS*

OTHER SPLITTER ISLANDS
HELIX COLOR SYSTEMS*: DECATUR RED
RELEASE*: BASALT GRAY RL
SCOFIELD CURESEAL-W SEMIGLOSS*

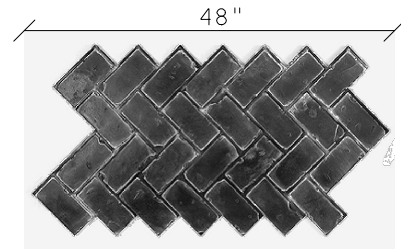
SPLITTER ISLANDS AT ROUNDABOUT
CONCRETE COLORS OF TEXAS LLC INTEGRAL COLOR*: 201 - 1 DOESKIN
CONCRETE COLORS OF TEXAS LLC ANTIQUING RELEASE*: 108 - B PORTEBELLO
SCOFIELD CURESEAL-W SEMIGLOSS*

- FOR CONTRACTORS INFORMATION ONLY.
- * OR APPROVED EQUAL.

INTEGRAL COLORED AND TEXTURED CONCRETE STAMP TOOL

OTHER SPLITTER ISLANDS

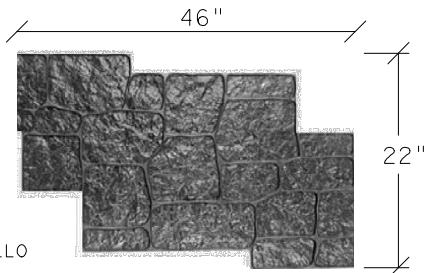
Scofield LITHOTEX Pavecrafters Skins
Used Brick Herringbone Pattern - 2570*



SPLITTER ISLANDS AT ROUNDABOUT

European Field Stone
Scofield LITHOTEX Pavecrafters Skins
Stone Random Interlocking - 447A*

- FOR CONTRACTORS INFORMATION ONLY.
- * OR APPROVED EQUAL.

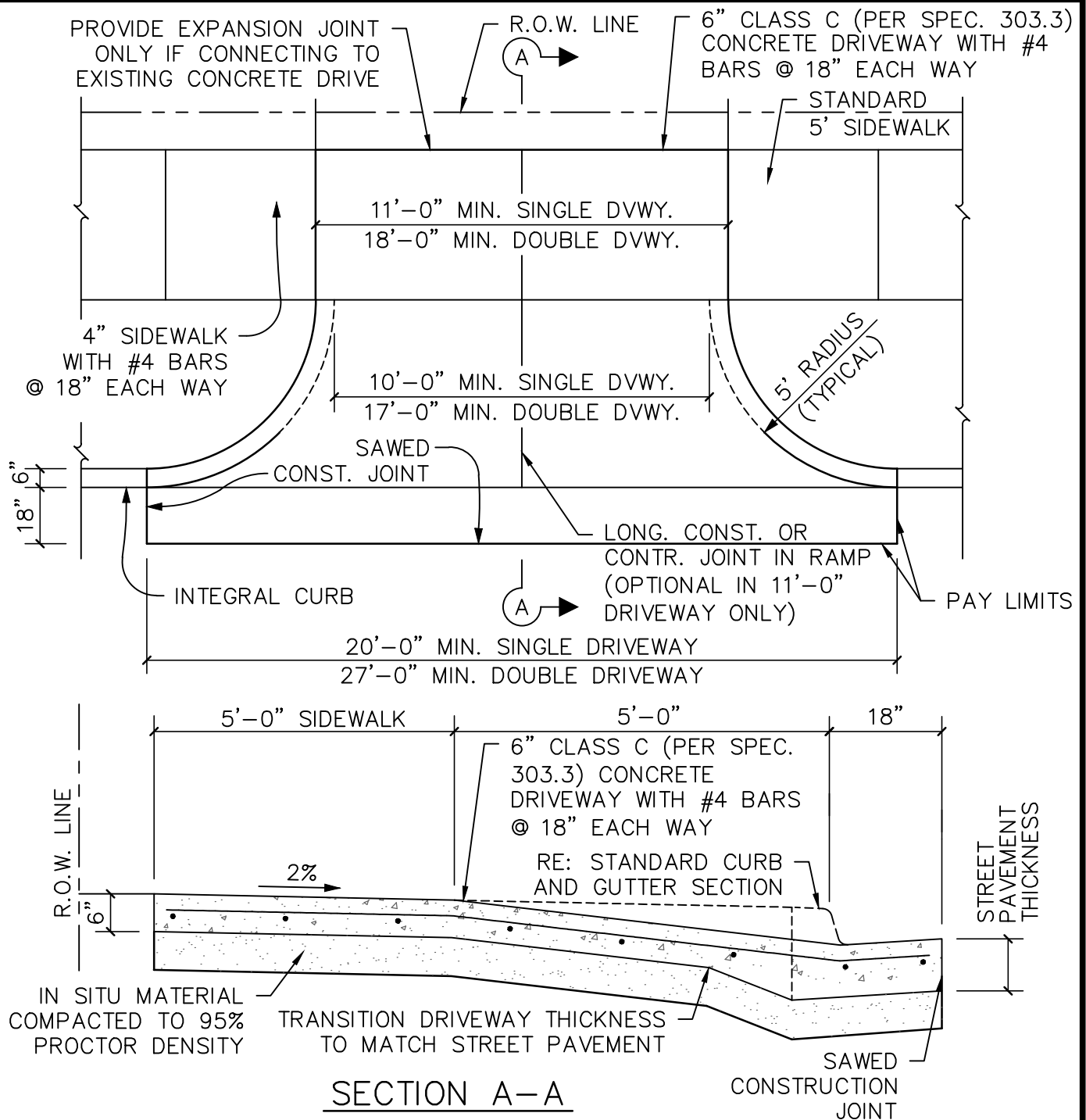


City of Saginaw
Construction Standards

STAMPED CONCRETE

REVISED
FEB 2023

RD-10



NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. SIDEWALK SECTION THROUGH DRIVEWAY SHALL BE POURED SAME THICKNESS AS DRIVEWAY APPROACH (EXISTING SIDEWALK, IF ANY, SHALL BE REMOVED AND REPLACED).
3. EXISTING CURB AND GUTTER SHALL BE VERTICALLY SAWCUT. HORIZONTAL SAWCUTTING OF CURB NOT ALLOWED.

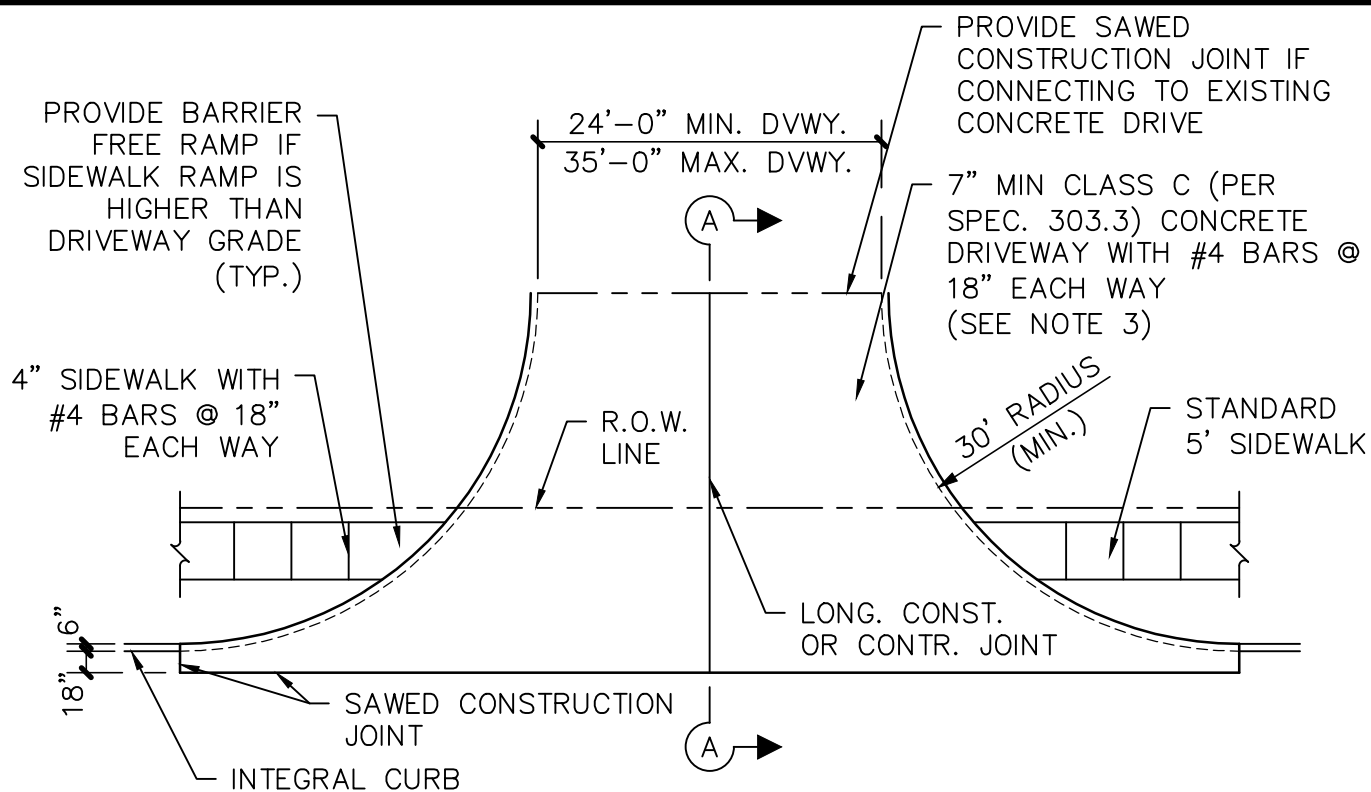
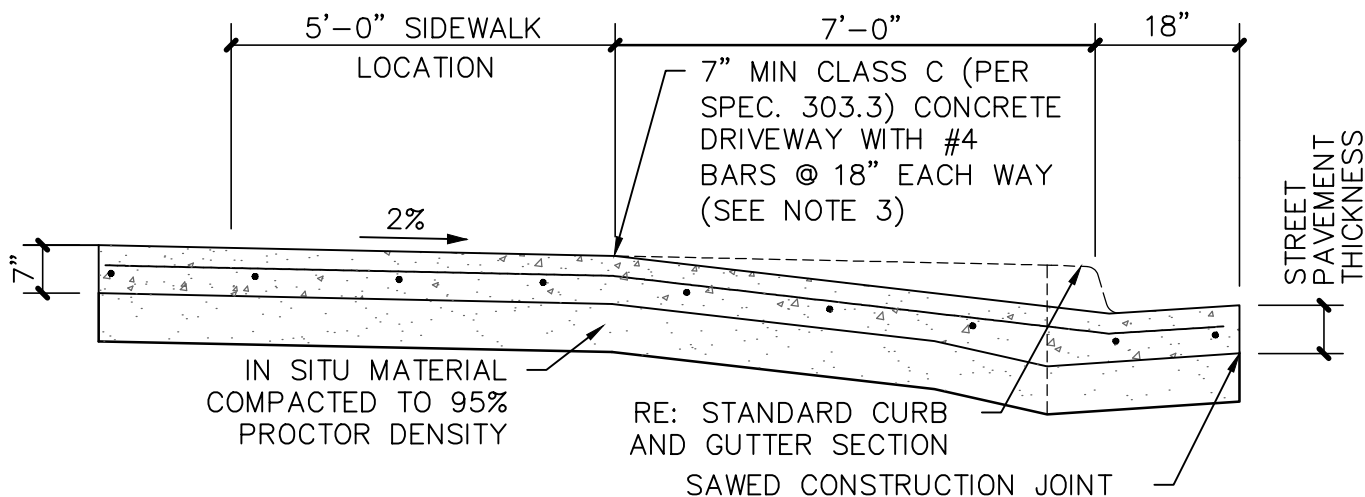


City of Saginaw
Construction Standards

RESIDENTIAL DRIVEWAY

REVISED
FEB 2023

RD-11



SECTION A-A

NOTES:

1. EXISTING CURB AND GUTTER SHALL BE VERTICALLY SAWCUT. HORIZONTAL SAWCUTTING OF CURB NOT ALLOWED
2. SIDEWALK SECTION THROUGH DRIVEWAY SHALL BE POURED SAME THICKNESS AS DRIVEWAY APPROACH (EXISTING SIDEWALK, IF ANY, SHALL BE REMOVED AND REPLACED).
3. MATCH EXISTING DRIVEWAY THICKNESS OR AS DICTATED BY GEOTECHNICAL REPORT IF EITHER IS GREATER THAN 7".

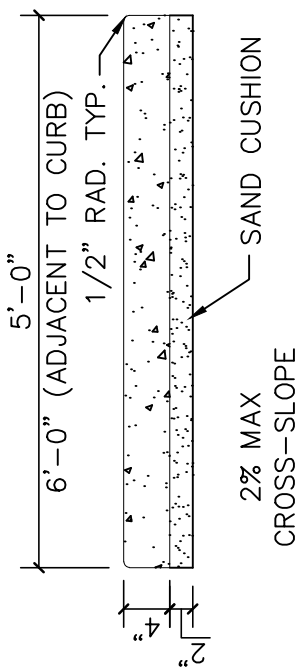
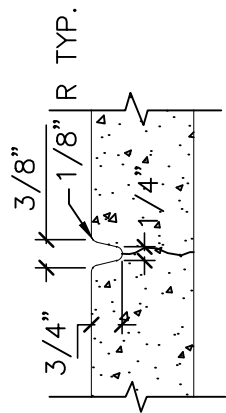
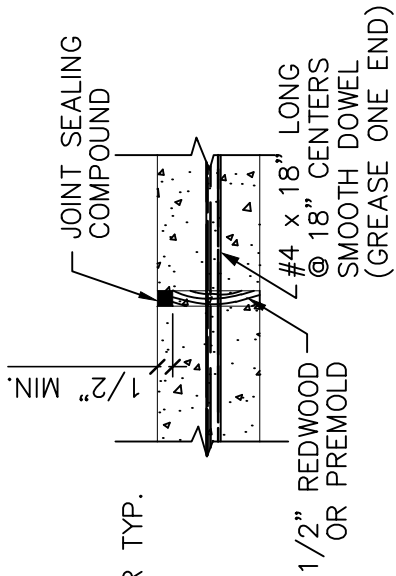


City of Saginaw
Construction Standards

COMMERCIAL-INDUSTRIAL
DRIVEWAY

REVISED
FEB 2023

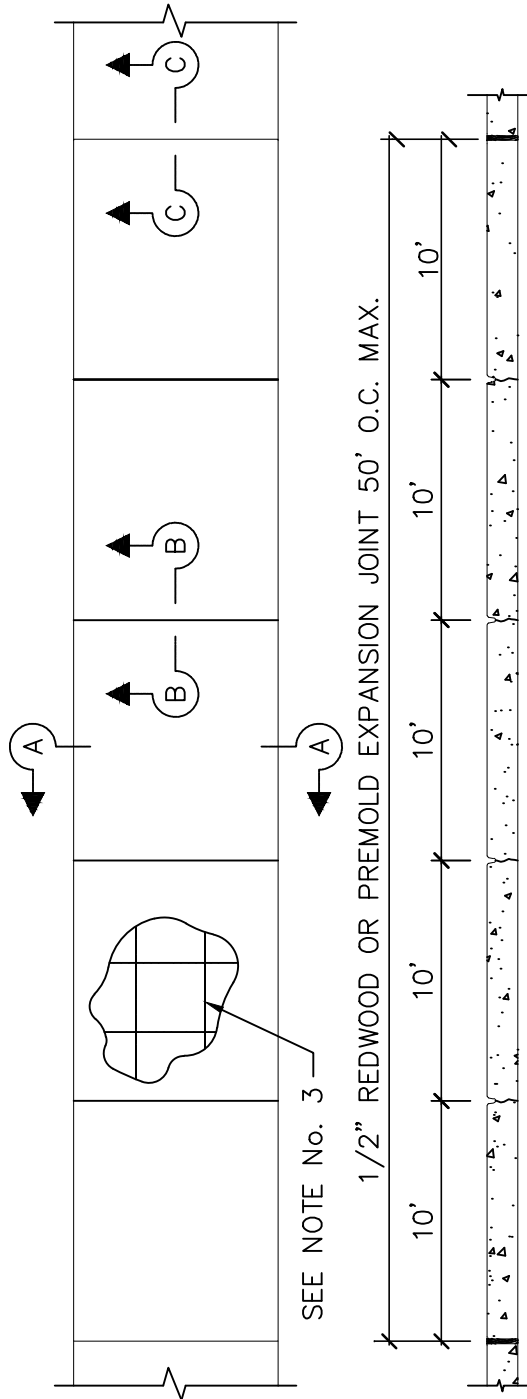
RD-12



SECTION A-A

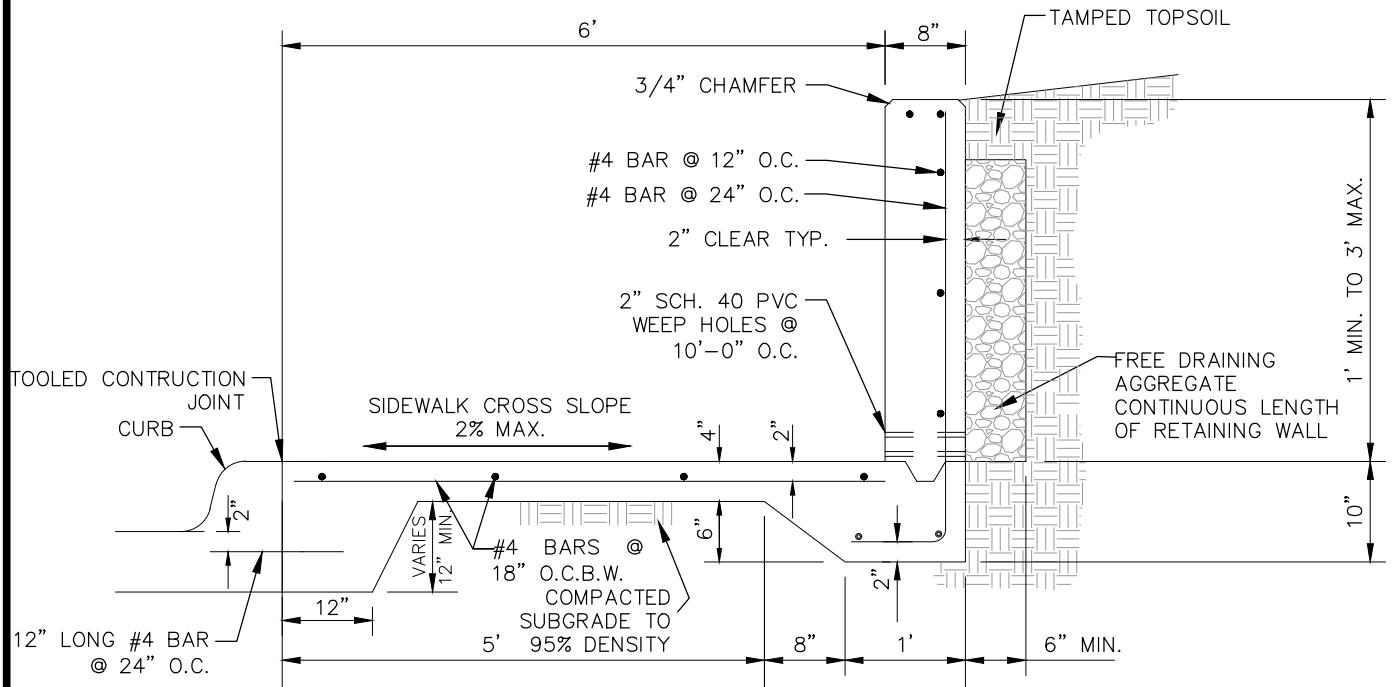
SECTION B-B

SECTION C-C



NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. CONCRETE SHALL BE CLASS "A", 3000 PSI PER ITEM 303.3.
3. REINFORCEMENT SHALL BE #4 BARS @ 18" EACH WAY.
4. PROVIDE EXPANSION JOINTS ALSO WHEN CONNECTING TO EXISTING SIDEWALKS, DRIVEWAYS, CURBS, AND GUTTER.



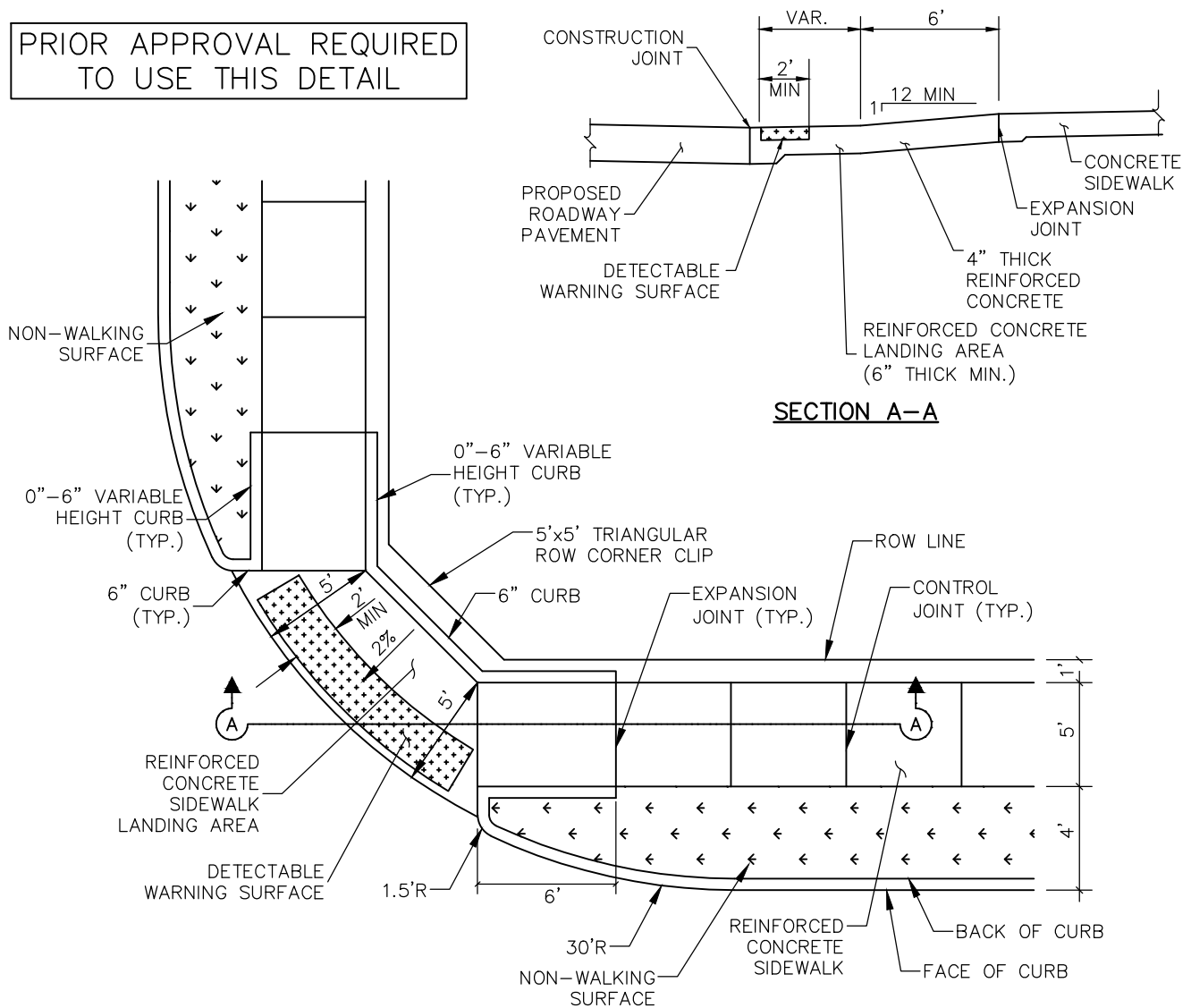
SECTION VIEW
SIDEWALK ADJACENT TO CURB WITH RETAINING WALL

NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. SIDEWALK PAID PER SQUARE FOOTAGE OF WALKWAY.
3. RETAINING WALL PAID PER SQUARE FOOTAGE OF WALL FACE.
4. THICKENED EDGE UNDER SIDEWALK AND RETAINING WALL IS SUBSIDIARY TO SIDEWALK AND WALL, RESPECTIVELY.
5. CONCRETE SHALL BE CLASS "A", 3000 PSI PER ITEM 303.3.



PRIOR APPROVAL REQUIRED
TO USE THIS DETAIL



NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. CURB RAMPS MUST CONTAIN A DETECTABLE WARNING SURFACE THAT CONSISTS OF RAISED TRUNCATED DOMES COMPLYING WITH SECTION 705 OF THE TAS.

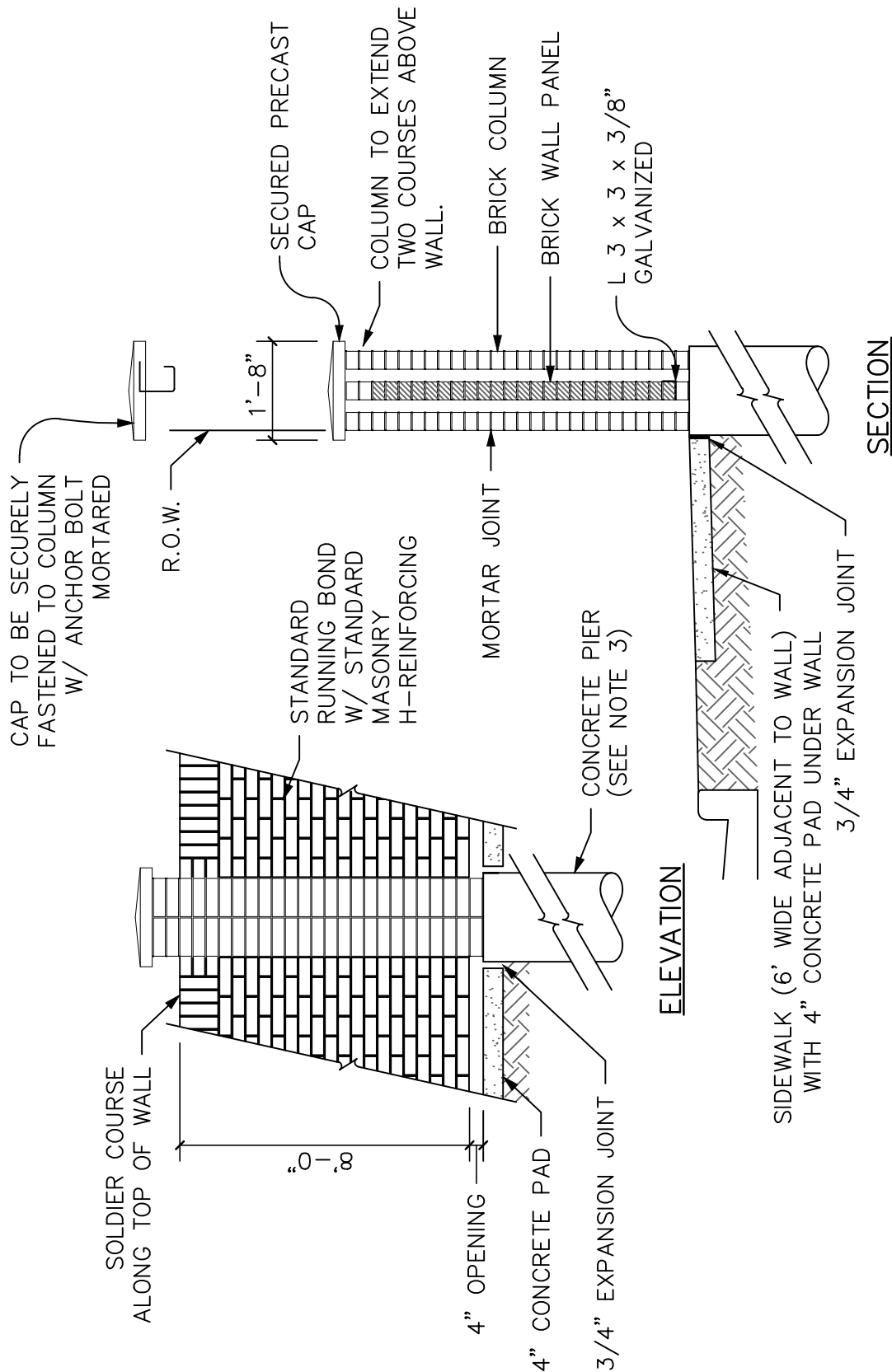


City of Saginaw
Construction Standards

BARRIER FREE RAMP

REVISED
FEB 2023

RD-15



NOTES:

1. MASONRY SCREENING FENCE PER ZONING ORDINANCE 2002-04.
2. TYPICAL GRADE ADJUSTMENT TO BE 3", 6", 9" OR 12" INCREMENTS ONLY. CONTRACTOR TO VERIFY GRADE ADJACENT TO WALL LOCATION AND DETERMINE GRADE ADJUSTMENT INCREMENTS PRIOR TO CONSTRUCTION.
3. SCREENING WALL AND CONCRETE PIER DESIGN SHALL BE DESIGNED BY A LICENSED ENGINEER AND SUBMITTED TO THE CITY FOR REVIEW AND APPROVAL.



1.5" Radius, 0.5" Border, White on Green;



1.5" Radius, 0.5" Border, White on Green;



1.5" Radius, 0.5" Border, White on Green;



1.5" Radius, 0.5" Border, White on Green;

1. SIGN BLANK FOR 2 INCH POST INSTALL: 0.08 FEDERAL SPEC. ALUM. (LP/SP INSTALL 0.125 UNDRILLED)
2. FONT: HIGHWAY GOTHIC 'C' OR 'B' (DEPENDING ON LENGTH OF NAME)
3. STREET NAME SIGN SHEETING SHALL BE WHITE 3M DIAMOND GRADE CUBED (DG3) WITH GREEN ELECTRO-CUT (EC) TRANSPARENT FILM AS AN OVERLAY OR AN APPROVED EQUAL.
4. REFER TO DETAIL D3-1G OF THE TEXAS STANDARD HIGHWAY SIGN DESIGN MANUAL FOR ADDITIONAL SPACING REQUIREMENTS.

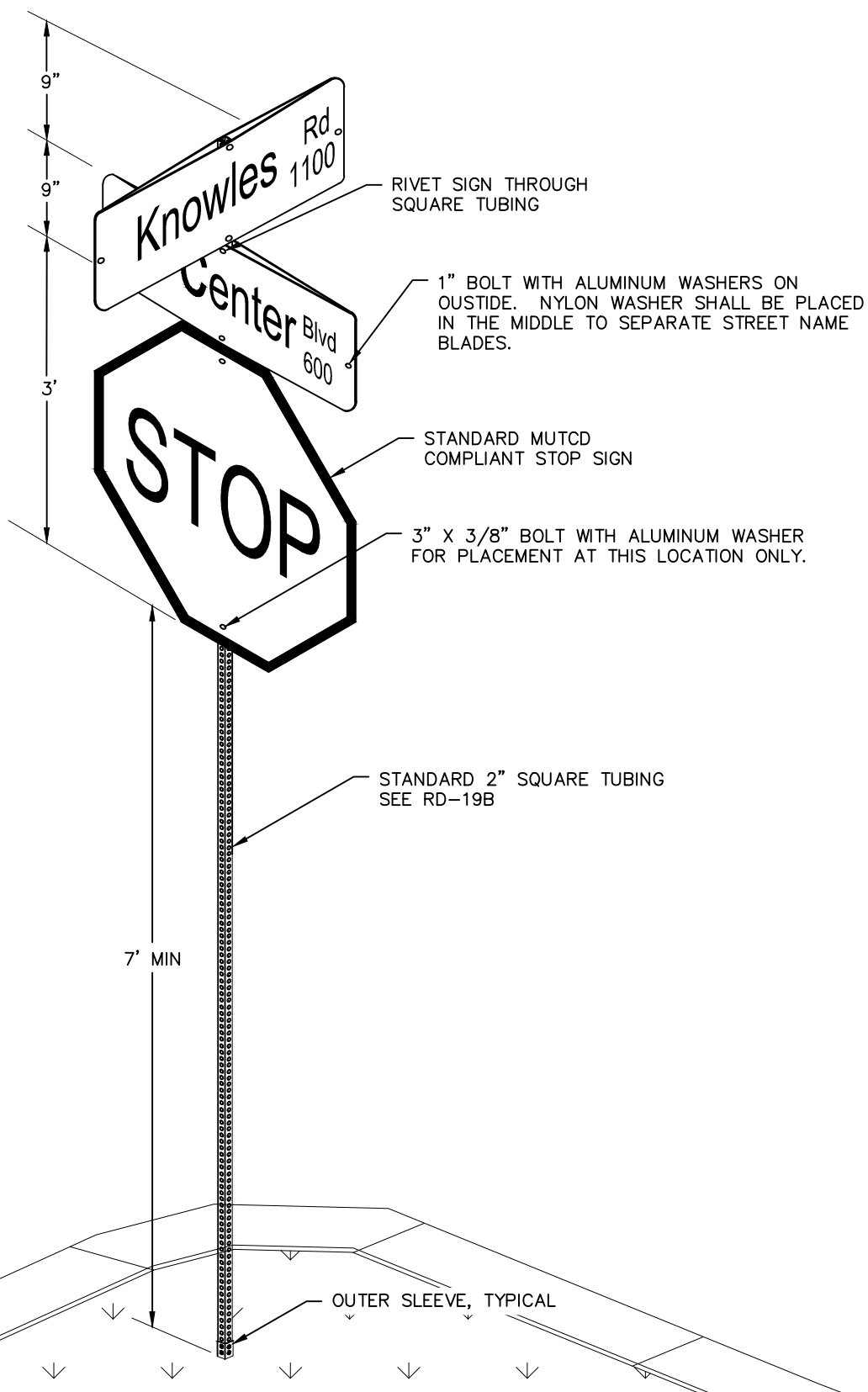


City of Saginaw
Construction Standards

STREET SIGN

REVISED
FEB 2023

RD-18



City of Saginaw
Construction Standards

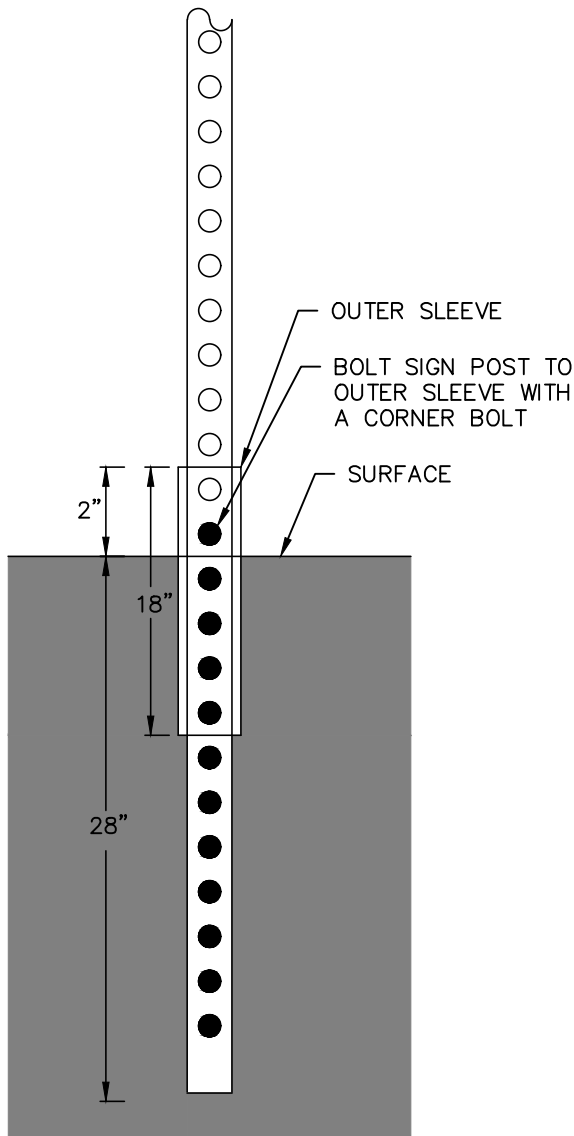
SIGN POST
INSTALLATION

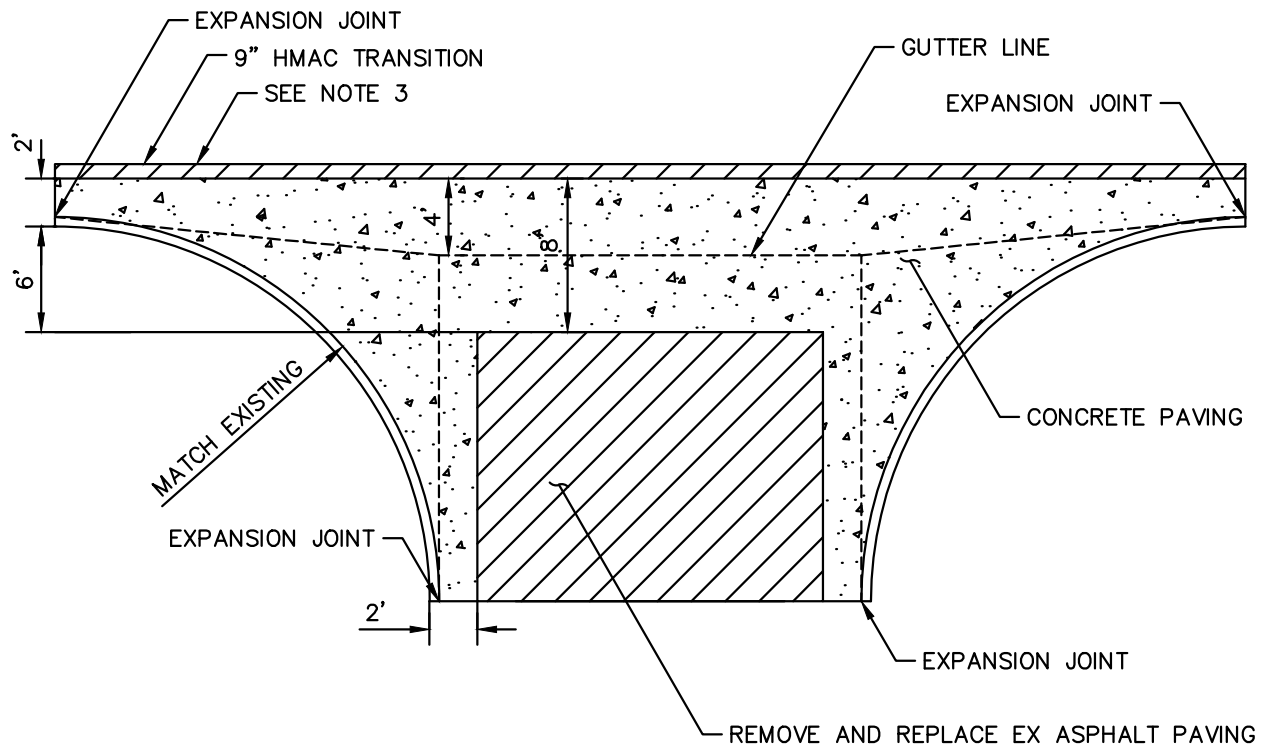
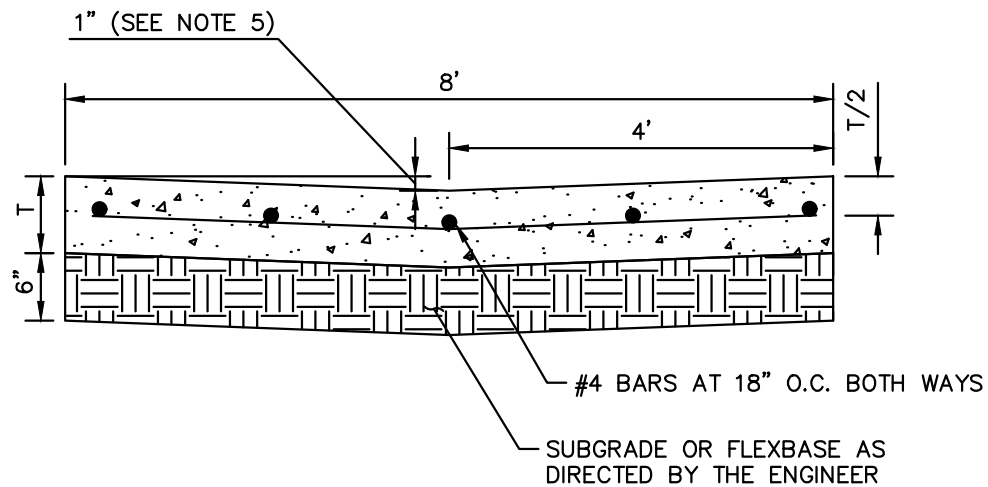
REVISED
FEB 2023

RD-19A

NOTES:

1. ALL POSTS AND ANCHORS SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR HOT ROLLED CARBON SHEET STEEL, STRUCTURAL QUALITY ASTM DESIGNATION A570-79.
2. ALL POSTS AND ANCHORS SHALL CARRY MINIMUM CERTIFIABLE 60,000 PSI YIELD STRENGTH.
3. ALL POSTS AND ANCHORS SHALL BE MANUFACTURED FROM RAW STEEL, FORMED AND WELDED ON THE CORNER PRIOR TO RECEIVING A TRIPLE COAT PROTECTION OF INLINE HOT-DIPPED, GALVANIZED ZINC PER AASHTO M-120 (0.8 OZ. PER SQUARE FOOT) FOLLOWED BY A CHROMATE CONVERSION COATING AND A CROSS-LINKED POLYURETHANE ACRYLIC EXTERIOR COATING. THE INTERIOR SHALL RECEIVE A DOUBLE COAT OF ZINC BASED ORGANIC COATING, TESTED IN ACCORDANCE WITH ASTM B-117.
4. ALL TOP POSTS MUST BE CAPABLE OF FRACTURING AT THE POINT OF CONNECTION WITH A SINGLE ANCHOR, WHEN IMPACTED, IN SUCH A MANNER THAT THE PIECE INSIDE OF THE ANCHOR CAN BE REMOVED SO AS TO ALLOW TO RECEIVE A NEW TOP POST.
5. THE SHAPE OF ALL POSTS AND ANCHORS SHALL BE SQUARE AND STRAIGHT WITH SMOOTH TUBING WELDED IN ONE CORNER WITH A TOLERANCE THAT PERMITS TELESOPING OF THE NEXT LARGER OR SMALL SIZE, IN $\frac{1}{4}$ " INCREMENTS.
6. ALL ANCHORS SHALL BE 12 GAUGE WITH HOLES THAT ARE FULLY PERFORATED $\frac{7}{16}$ " DIAMETER ON 1" CENTERS FOR AT LEAST THE TOP 4" OF THE ANCHOR WHILE BEING TRULY ALIGNED IN THE CENTER OF THE SECTION.
7. ALL TOP POSTS SHALL BE 14 GAUGE WITH HOLES THAT ARE PRE PUNCHED ON 1" CENTERS FOR THE ENTIRE LENGTH OF THE POST AND TRULY ALIGNED IN THE CENTER OF SECTION.
8. STANDARD OUTSIDE CORNER RADII SHALL BE $\frac{5}{32}$ " PLUS OR MINUS $\frac{1}{32}$ ".
9. SIGNS TO BE ATTACHED TO POST AT THE DESIRED HEIGHT WITH BOLTS.





NOTES:

1. MINIMUM PAVEMENT DEPTH SHALL BE 8".
2. REFER TO RD-01 AND NCTCOG ITEM 303.3 FOR CONCRETE PAVEMENT.
3. 9" AND 24" HMAC TRANSITION SUBSIDIARY TO CONCRETE VALLEY GUTTER.
4. GUTTER TO BE SHAPED TO CONFORM WITH CONCRETE VALLEY (OR PAVEMENT).
5. IF VALLEY GUTTER IS ADJACENT TO BARRIER FREE RAMPS, CROSS SLOPE SHALL BE ADA COMPLIANT.



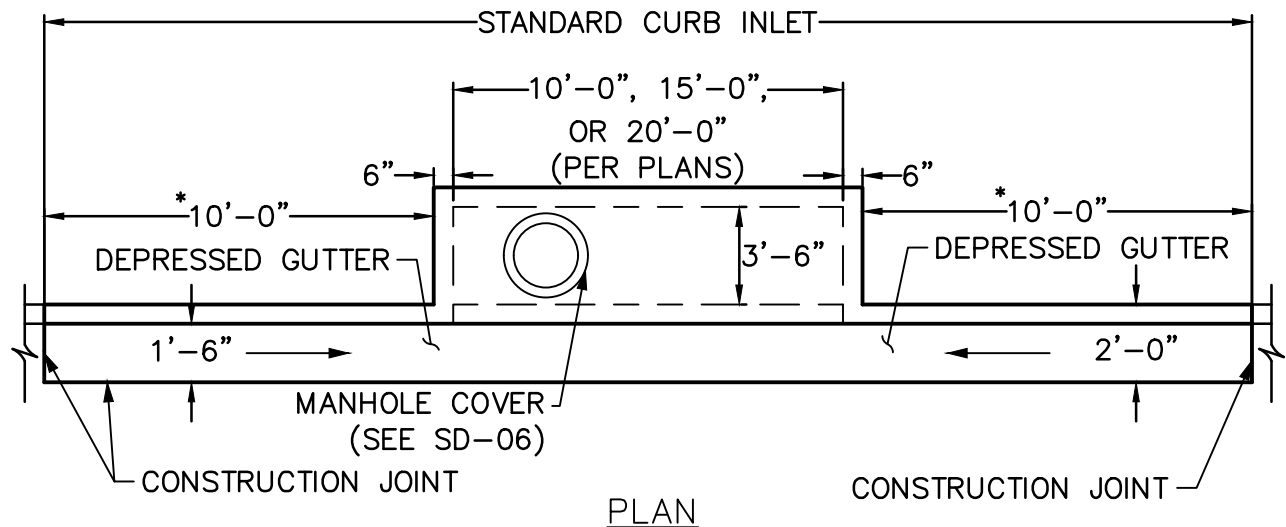
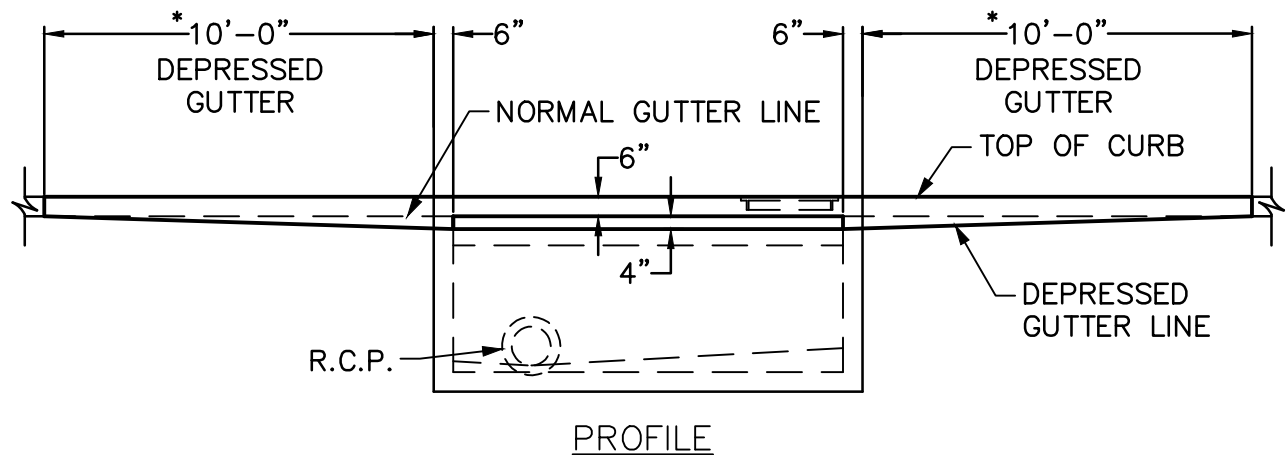
City of Saginaw
Construction Standards

CONCRETE VALLEY GUTTER

REVISED
FEB 2023

RD-20





NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. CONCRETE SHALL BE 4,200 PSI, CLASS F (PER SPEC. 702.3).
3. TOP OF INLET TO SLOPE 2% TOWARDS STREET OR PER PLAN.
4. CENTER SUPPORT BEAM REQUIRED FOR 15' AND 20' STANDARD CURB INLETS.
5. ADDITIONAL REINFORCING STEEL TO BE PLACED AROUND MANHOLE OPENING.
6. WING LENGTH MAY BE DECREASED BASED UPON SITE SPECIFIC CONDITIONS. CITY MUST APPROVE SHORTER LENGTH.
7. PIPE SHALL BE PLACED AT DOWNSTREAM END INLET. MANHOLE SHALL BE PLACED AT UPSTREAM END AT INLET.
8. MANHOLE COVERS INSIDE OPENING SHALL BE 30". INLET TOP WILL NEED TO BE CAST IN PLACE IN ORDER TO ACCOMMODATE 30" OPENING/COVER.
9. TWO MANHOLES ARE REQUIRED ON 15' AND 20' INLETS.

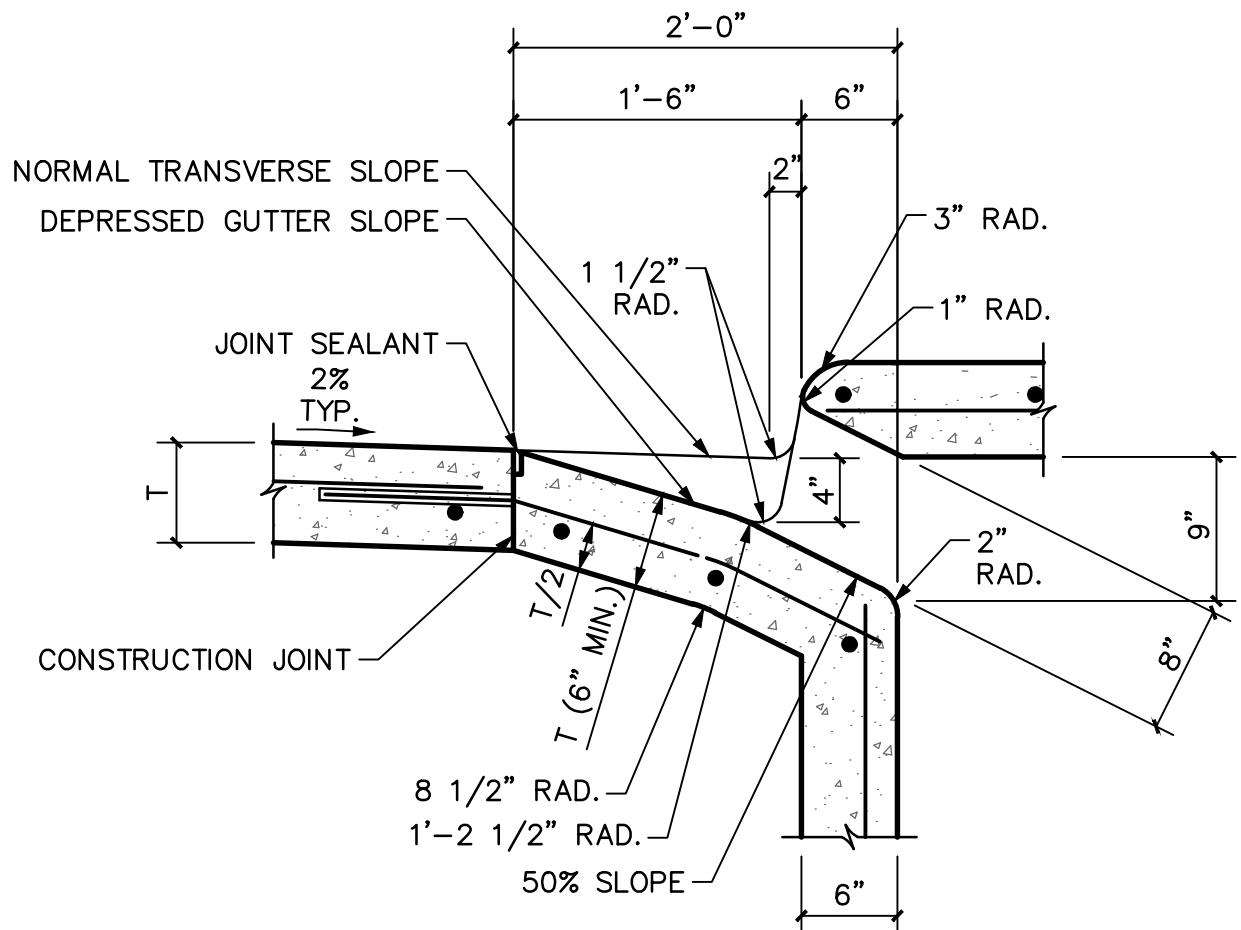


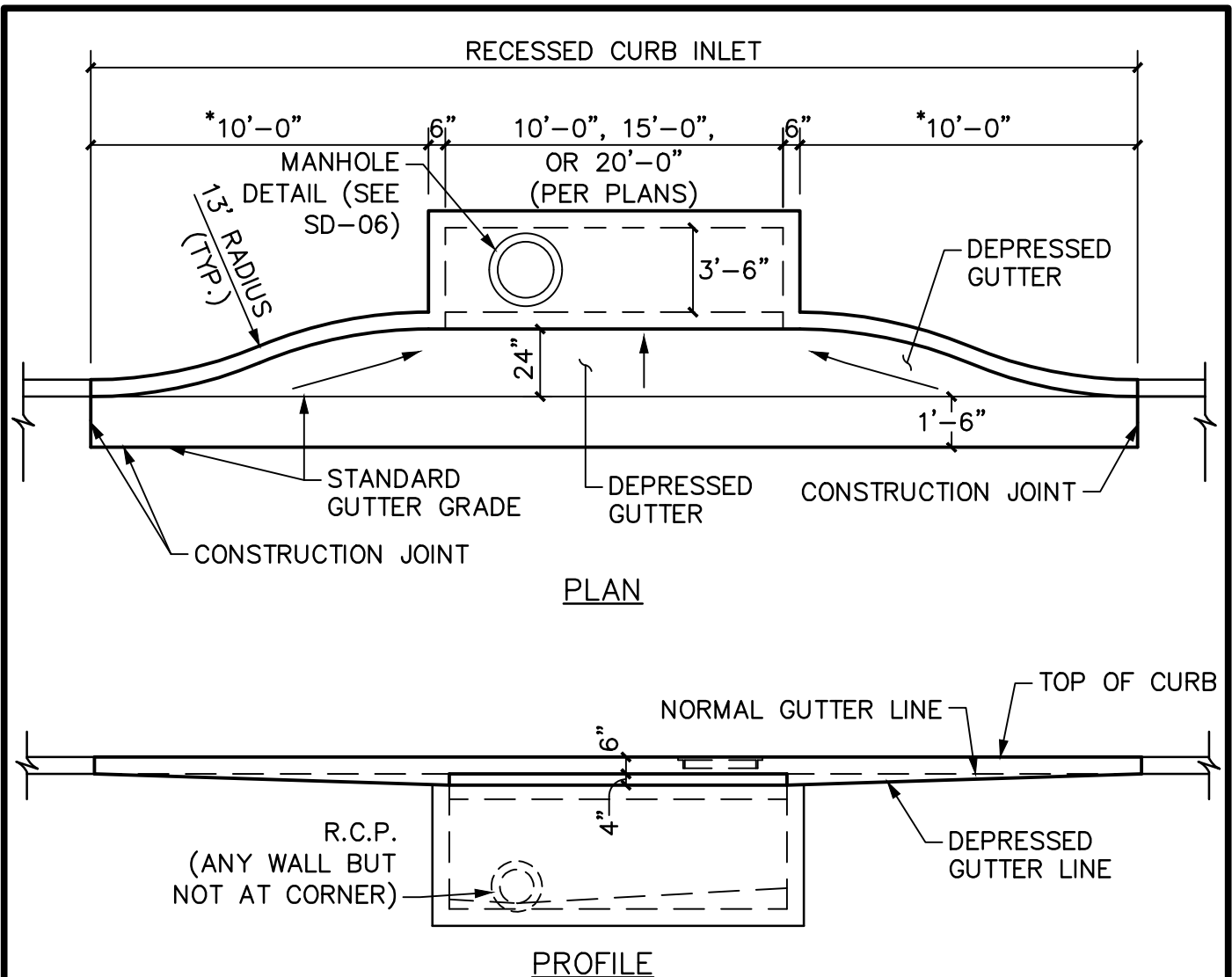
City of Saginaw
Construction Standards

STANDARD STORM DRAIN CURB
INLET

REVISED
FEB 2023

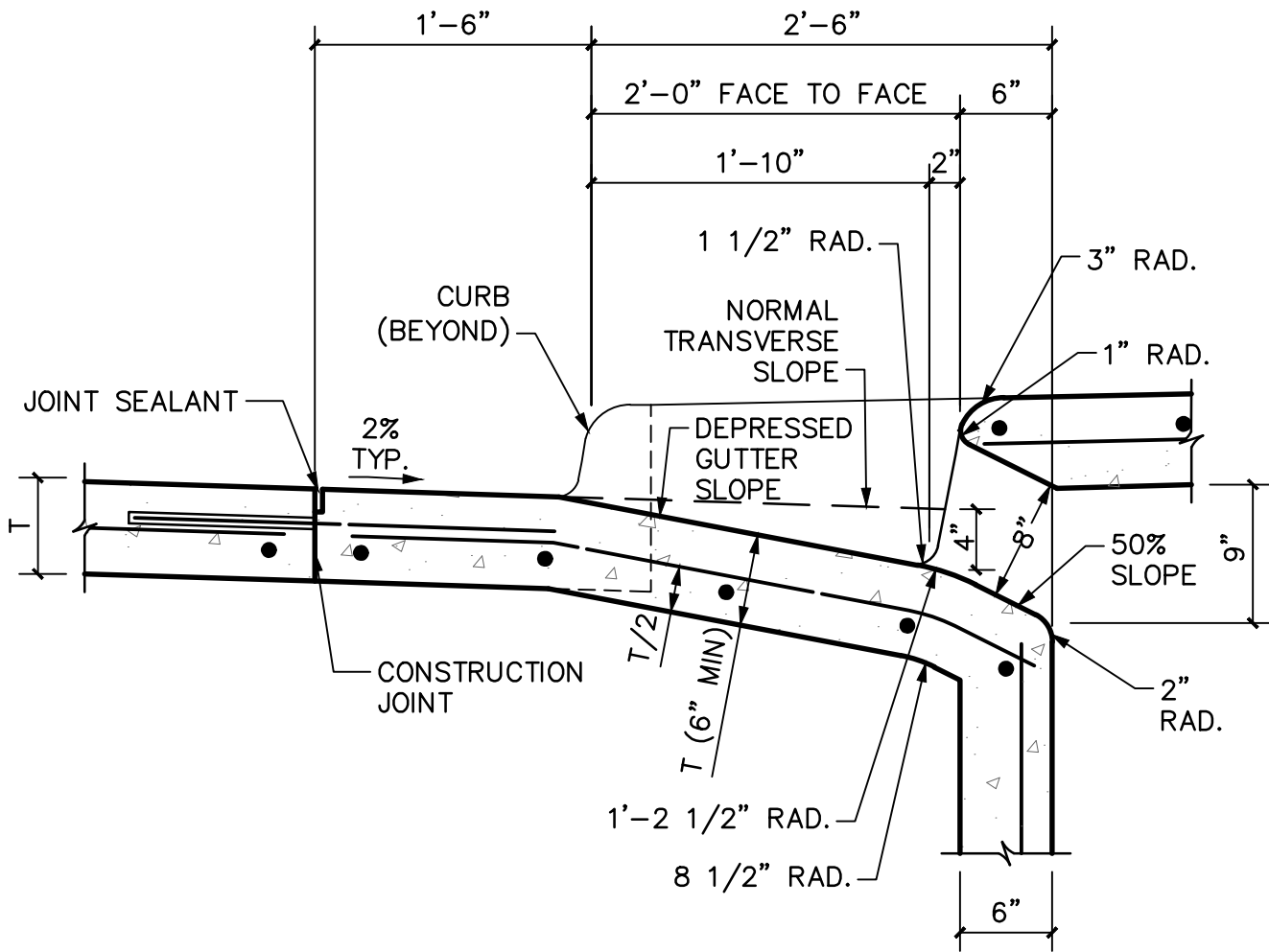
SD-01A

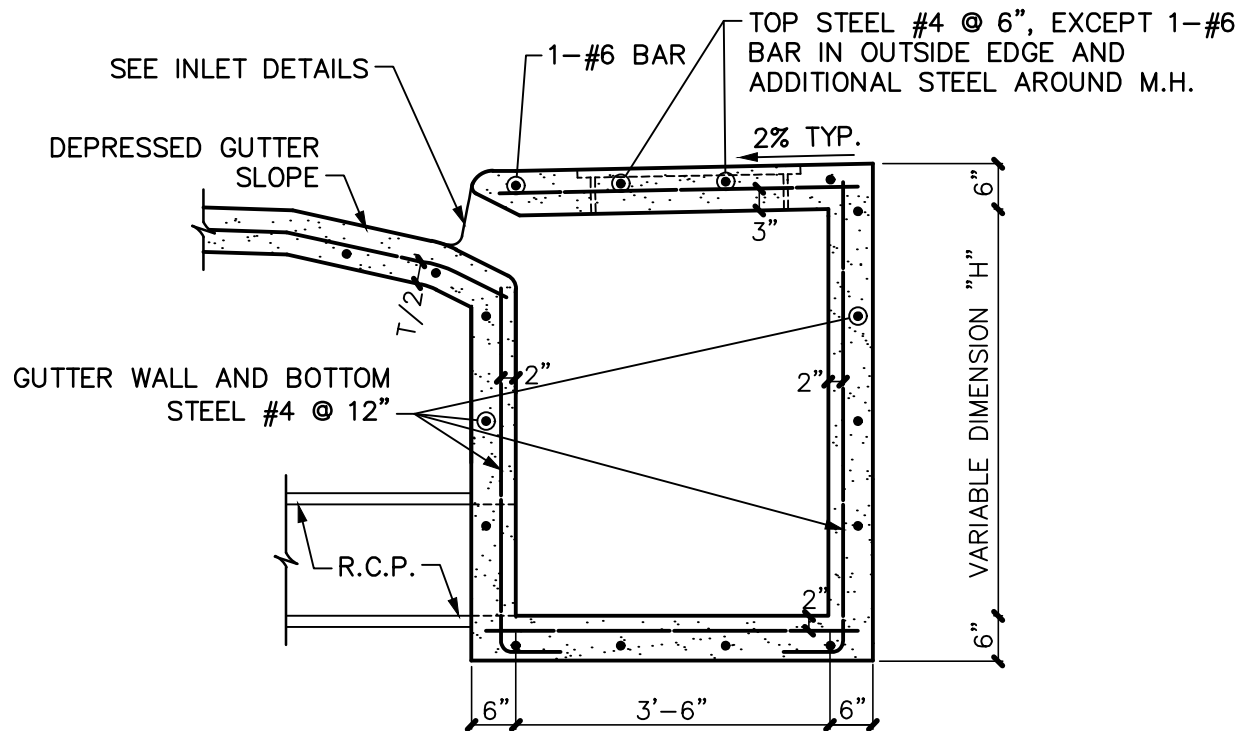




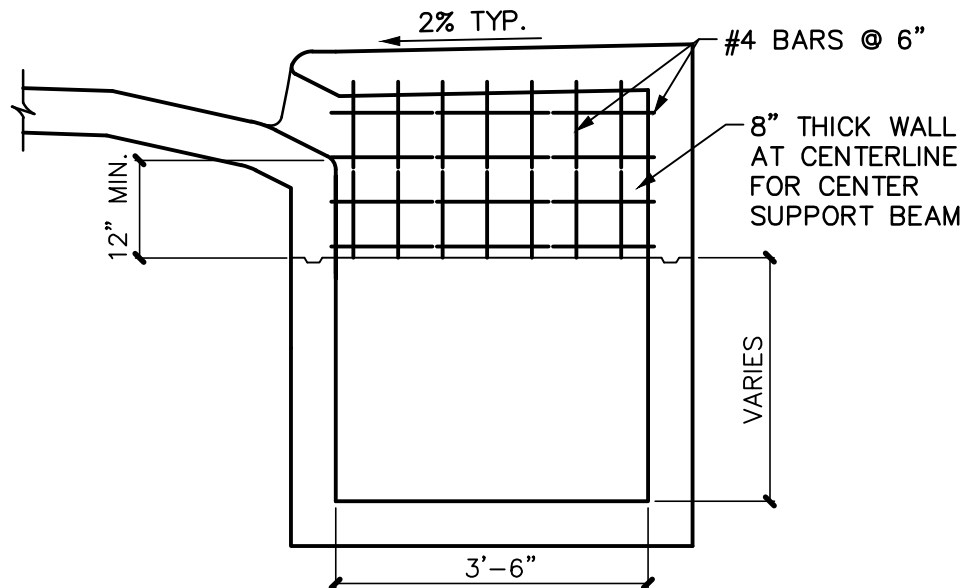
NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. CONCRETE SHALL BE 4,200 PSI, CLASS F (PER SPEC. 702.3).
3. TOP OF INLET TO SLOPE 2% TOWARDS STREET OR PER PLAN.
4. CENTER SUPPORT BEAM REQUIRED FOR 15' AND 20' STANDARD CURB INLETS.
5. ADDITIONAL REINFORCING STEEL TO BE PLACED AROUND MANHOLE OPENING.
6. WING LENGTH MAY BE DECREASED BASED UPON SITE SPECIFIC CONDITIONS. CITY MUST APPROVE SHORTER LENGTH.
7. MANHOLE COVERS INSIDE OPENING SHALL BE 30". INLET TOP WILL NEED TO BE CAST IN PLACE IN ORDER TO ACCOMMODATE 30" OPENING/COVER.
8. TWO MANHOLES ARE REQUIRED ON 15' AND 20' INLETS.





INLET SECTION FOR RECESSED AND STANDARD INLETS



CENTER SUPPORT BEAM FOR 15' AND 20' RECESSED AND STANDARD INLETS

NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. CONCRETE SHALL BE 4,200 PSI, CLASS F (PER SPEC. 702.3).
3. TOP OF INLET TO SLOPE 2% TOWARDS STREET OR PER PLAN.
4. REINFORCING STEEL LAYOUT APPLICABLE TO BOTH RECESSED AND ON-GRADE CURB INLETS.

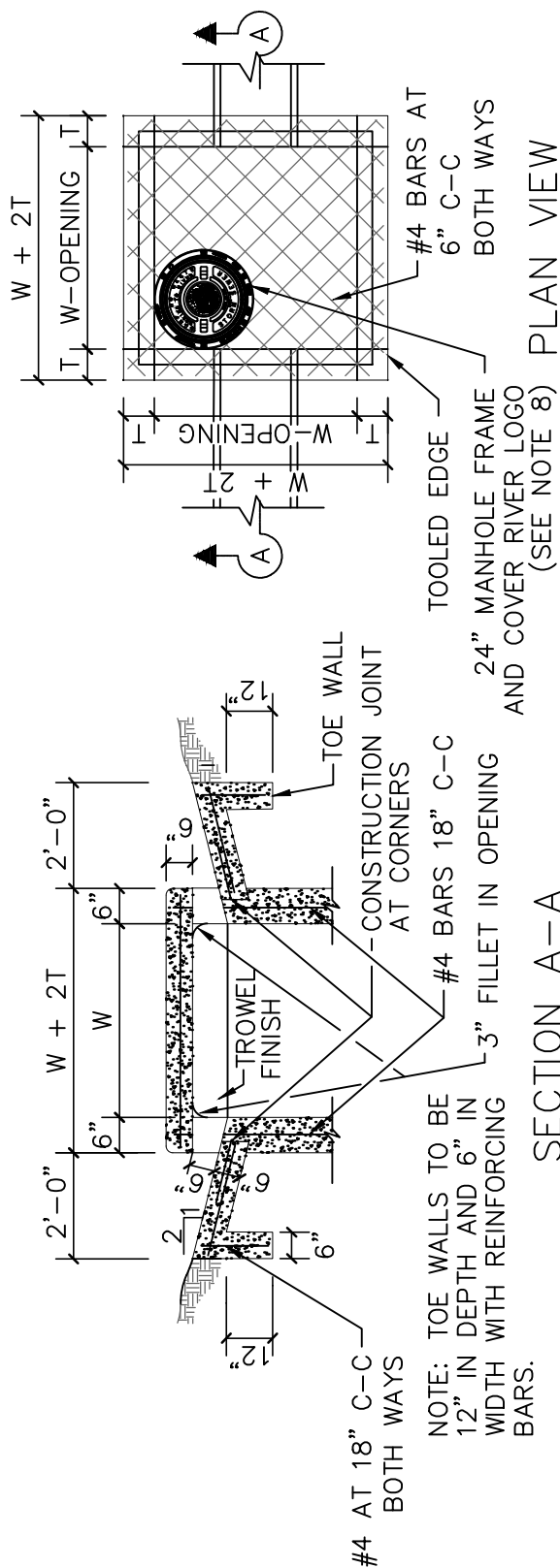


City of Saginaw
Construction Standards

CENTER SUPPORT BEAM
FOR INLETS

REVISED
FEB 2023

SD-03

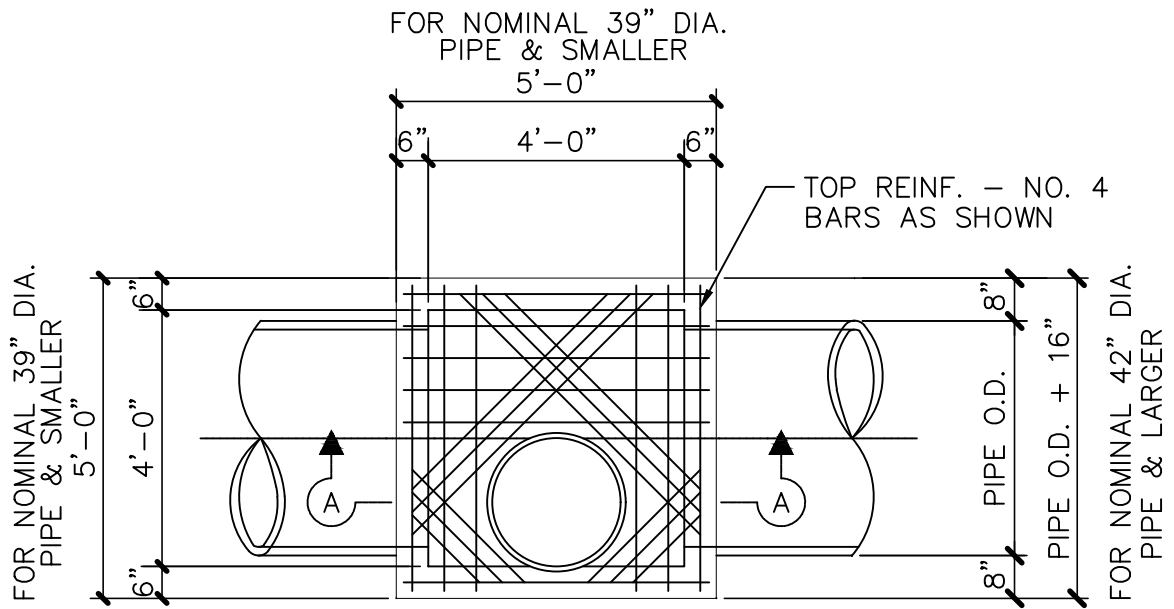


NOTES:

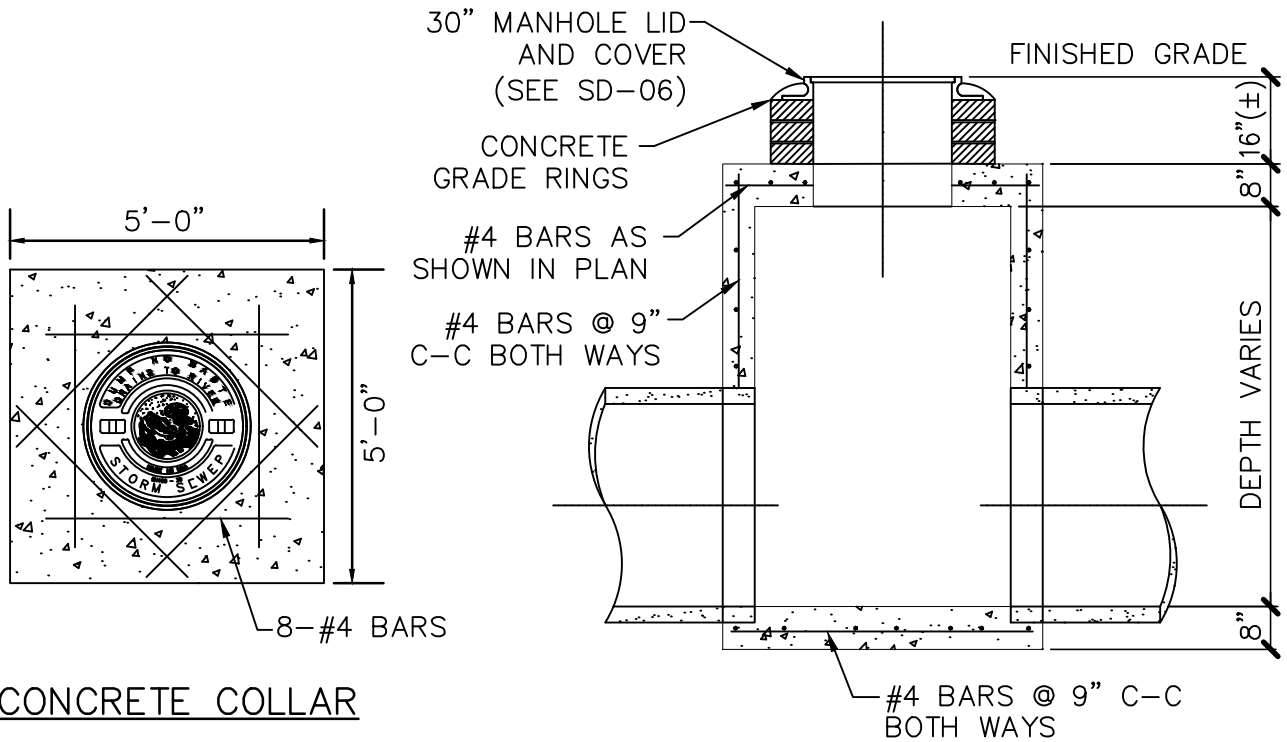
1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. CONCRETE FOR DROP INLETS SHALL BE CLASS F (PER SPEC. ITEM 702.3).
3. LAYERS OF REINFORCING STEEL NEAREST THE INTERIOR AND EXTERIOR SURFACES SHALL HAVE A COVER OF 2" TO THE CENTER OF BARS, UNLESS OTHERWISE NOTED.
4. FOR DETAILS OF REINFORCING TO LOWER PORTIONS OF INLET, SEE APPROPRIATE SQUARE MANHOLE DETAILS.
5. DEPTH OF DROP INLET FROM FINISHED GRADE TO FLOW LINE OF INLET IS VARIABLE. APPROXIMATE DEPTH SHALL BE SHOWN ON PLANS AT LOCATION OF INLET.
6. ALL STANDARD DROP INLETS SHALL HAVE ONE OPENING ON EACH SIDE UNLESS SHOWN ON PLANS.
7. DECK MAY BE REINFORCED THE SAME AS STANDARD SQUARE STORM DRAIN MANHOLE.
8. STORM DRAIN LID AND RING TO BE BASS AND HAYS FOUNDRY, INC 400-24-LID C21 AND 400-24-RING OR APPROVED EQUAL BY CITY.

INLET SIZE	T	W
2' SQUARE	7"	2'-0"
4' SQUARE	7"	4'-0"
5' SQUARE	8"	5'-0"
6' SQUARE	9"	6'-0"
7' SQUARE	9"	7'-0"
8' SQUARE	9"	8'-0"

FOR LOWER PORTION OF 2' SQUARE DROP INLET USE REINF. STEEL DETAILS OF 4' SQUARE MANHOLE AND ELIMINATE INLET RING AND COVER.



PLAN VIEW



CONCRETE COLLAR

SECTION A-A

NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. CONCRETE SHALL BE CLASS F (PER SPEC. ITEM 702.3).
3. 5'X5' CONCRETE COLLAR OF 6" 3600 PSI CLASS "C" CONCRETE SHALL BE PROVIDED FOR MANHOLE LIDS LOCATED IN ASPHALT PAVING OR OUTSIDE OF PAVING LIMITS.

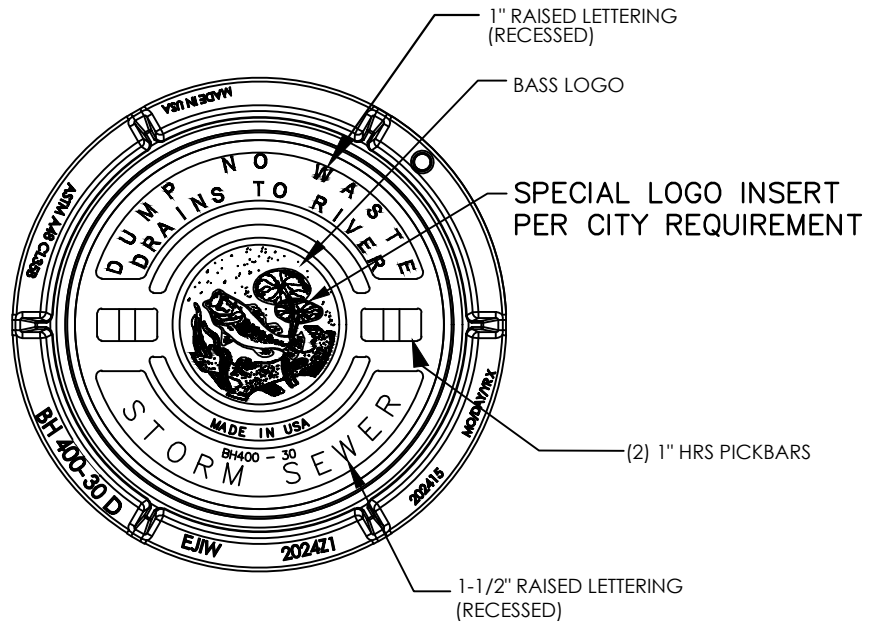


City of Saginaw
Construction Standards

STANDARD 4-FOOT SQUARE STORM
DRAIN MANHOLE

REVISED
FEB 2023

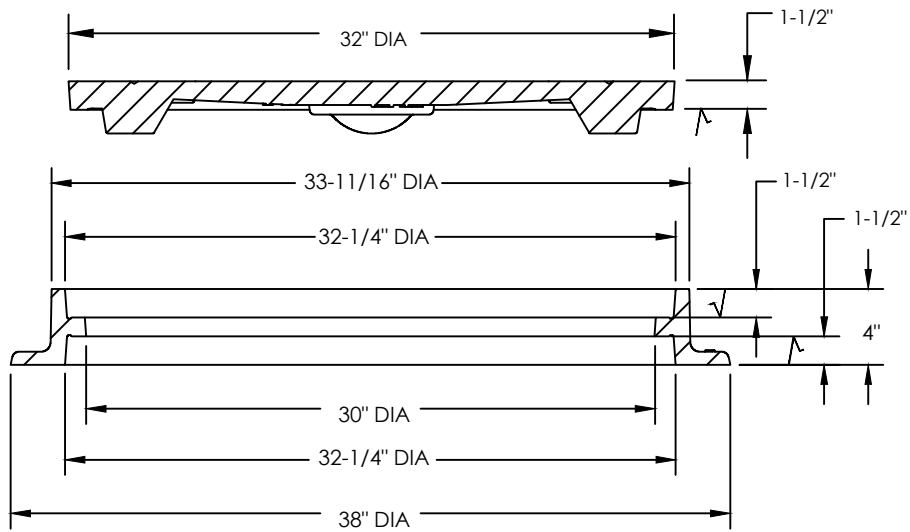
SD-05



NOTES:

1. STORM DRAIN LID AND RING TO BE BASS AND HAYS FOUNDRY, INC. VRM30-LID 25 AND VRM30-RING OR APPROVED EQUAL BY CITY.

TOP VIEW



SECTION VIEW



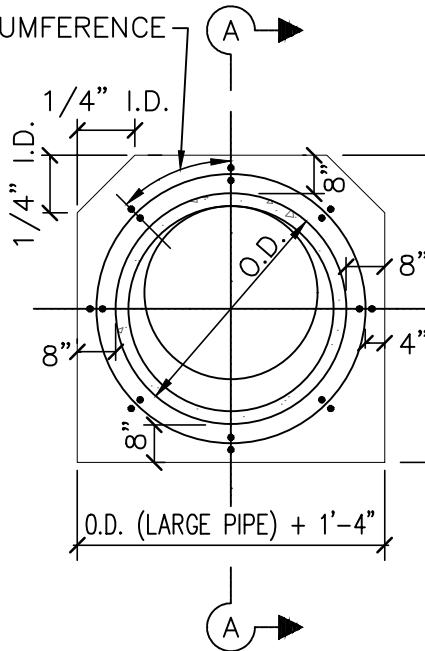
City of Saginaw
Construction Standards

MANHOLE COVER RIVER LOGO

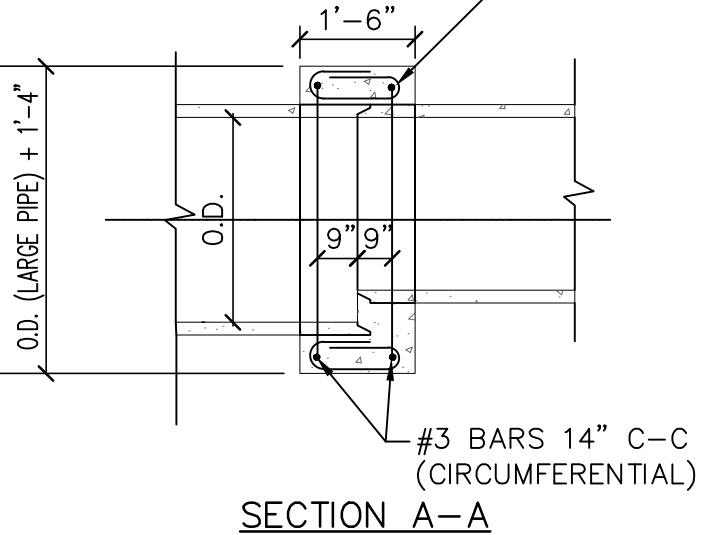
REVISED
FEB 2023

SD-06

1/8 CIRCUMFERENCE

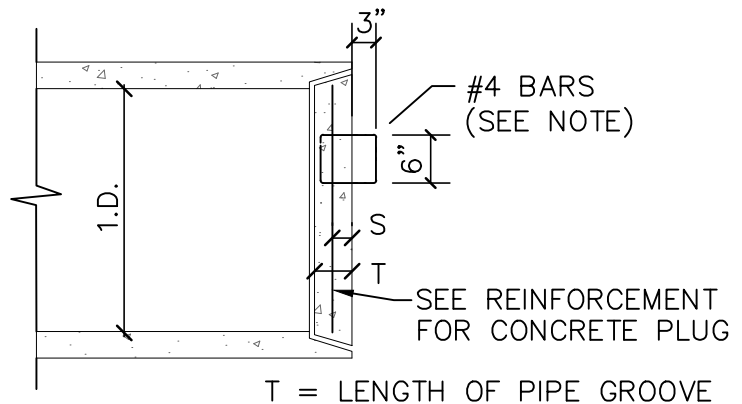


#3 BARS BENT AS SHOWN



REINFORCED CONCRETE COLLAR

PIPE SIZE	REINF. BAR	DISTANCE C-C BOTH WAYS	S
18\"-33"	# 3	12"	1/2 T
36\"-54"	# 3	12"	1/3 T
60\"-84"	# 4	12"	1/4 T



REINFORCED CONCRETE PIPE PLUG

NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. CONCRETE SHALL BE CLASS A (PER SPEC. ITEM 702.3).
3. STEEL HANDLE FOR REINFORCED CONCRETE PIPE PLUG SHALL BE LOCATED 1/4 I.D. ABOVE CENTER POINT OF PLUG. TWO (2) STEEL HANDLES WILL BE REQUIRED ON PLUGS OF 36\" DIA. PIPES OR LARGER AND SHALL BE PLACED 1/4 I.D. APART AND 1/4 I.D. ABOVE CENTER OF PLUG.
4. COLLARS MAY ONLY BE USED TO REDUCE THE DIAMETER ONE PIPE SIZE. A JUNCTION BOX IS REQUIRED FOR REDUCING MORE THAN ONE PIPE SIZE.

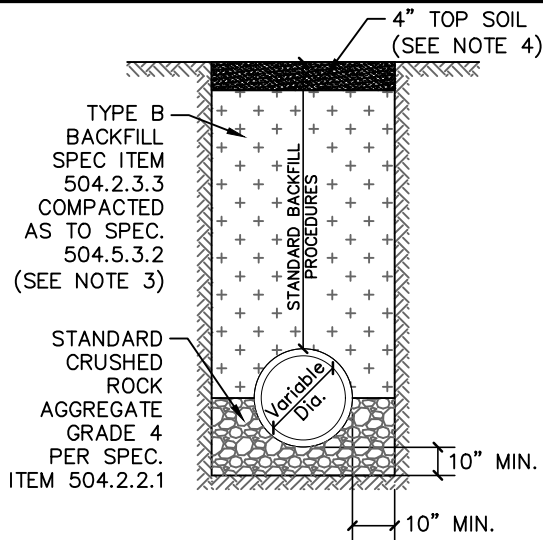


City of Saginaw
Construction Standards

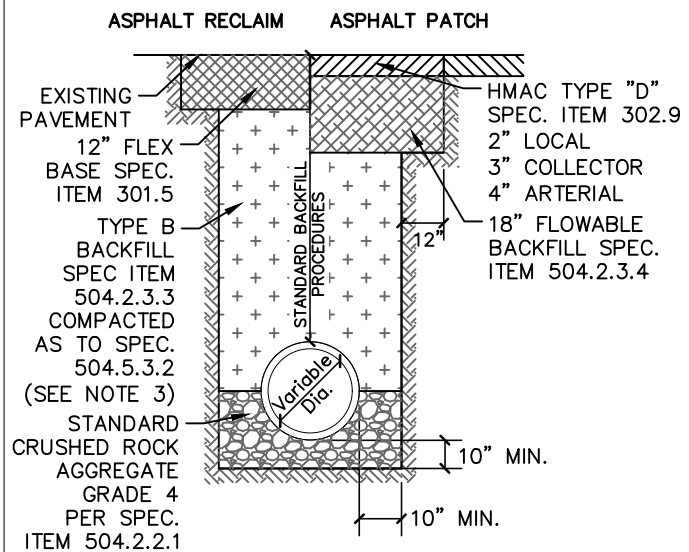
REINFORCED CONCRETE COLLAR
AND MISCELLANEOUS DETAILS

REVISED
FEB 2023

SD-07

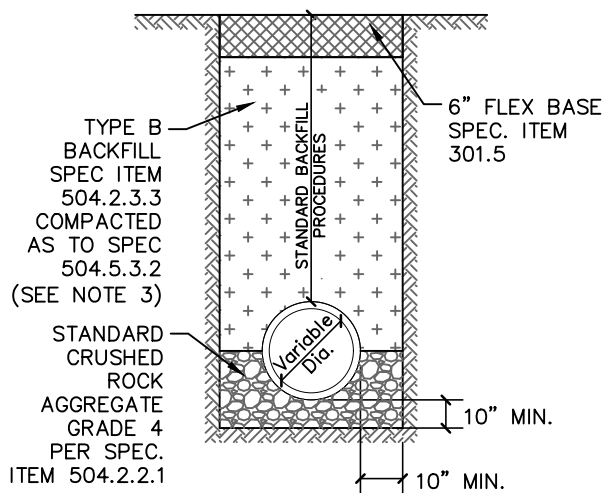


UNPAVED AREA

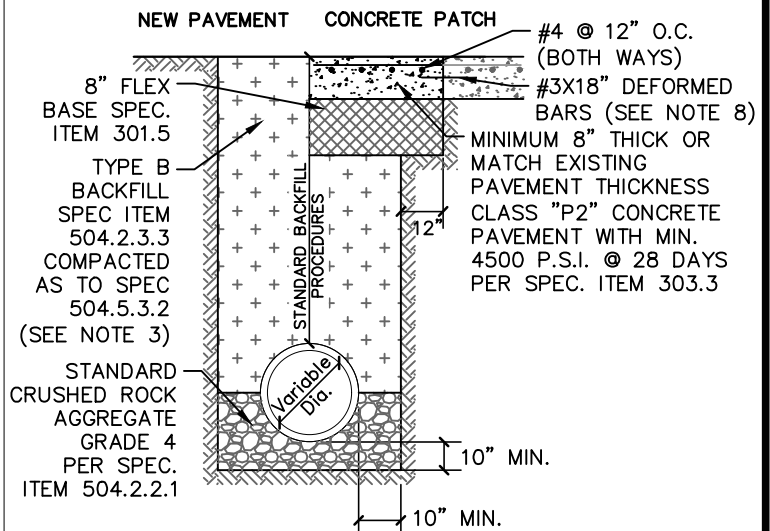


NOTE: FOR NEW STREETS, BACKFILL MAY BE EXTENDED TO THE TOP OF THE TRENCH

ASPHALT PAVEMENT



GRAVEL SURFACE



CONCRETE PAVEMENT

NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. AT THE END OF EACH WORK DAY ALL SPOILS SHALL BE REMOVED FROM THE CITY R.O.W. UNLESS PRIOR WRITTEN PERMISSION IS OBTAINED FROM THE CITY TO STORE SPOILS IN DESIGNATED SPOIL STORAGE AREAS THAT DO NOT OBSTRUCT AUTOMOBILE OR PEDESTRIAN TRAFFIC.
3. ROCKS GREATER THAN 3" IN DIAMETER SHALL BE REMOVED FROM ANY NATIVE MATERIAL USED AS BACKFILL.
4. TOPSOIL SHALL BE 4" IN DEPTH AND SHALL BE LOOSE AND FREE OF ROCKS OR CLODS GREATER THAN 1/4" IN DIAMETER. ALL TOPSOIL SHALL BE APPROVED BY THE CITY PRIOR TO INSTALLATION.
5. ALL PAVEMENT SHALL BE REMOVED ALONG NEAT SAW CUT LINES PER SPEC. ITEM 402.3.
6. STORM LINE WARNING TAPE OF MIN 4" WIDTH SHALL BE INSTALLED ABOVE THE EMBEDMENT MATERIAL.
7. A MAXIMUM OF 50 FT OF OPEN TRENCH WILL BE ALLOWED AT ANY TIME, UNLESS APPROVED BY THE CITY.
8. DEFORMED BARS DOWELED AND EPOXYED MIN. 6" INTO EXISTING PAVEMENT @ 12" O.C. (TYP).
9. CONTRACTOR TO FILL STANDARD CRUSHED ROCK AGGREGATE TO TOP OF PIPE IF MINIMUM TRENCH WIDTH IS NOT MET DURING THE INSTALLATION OF RCP.

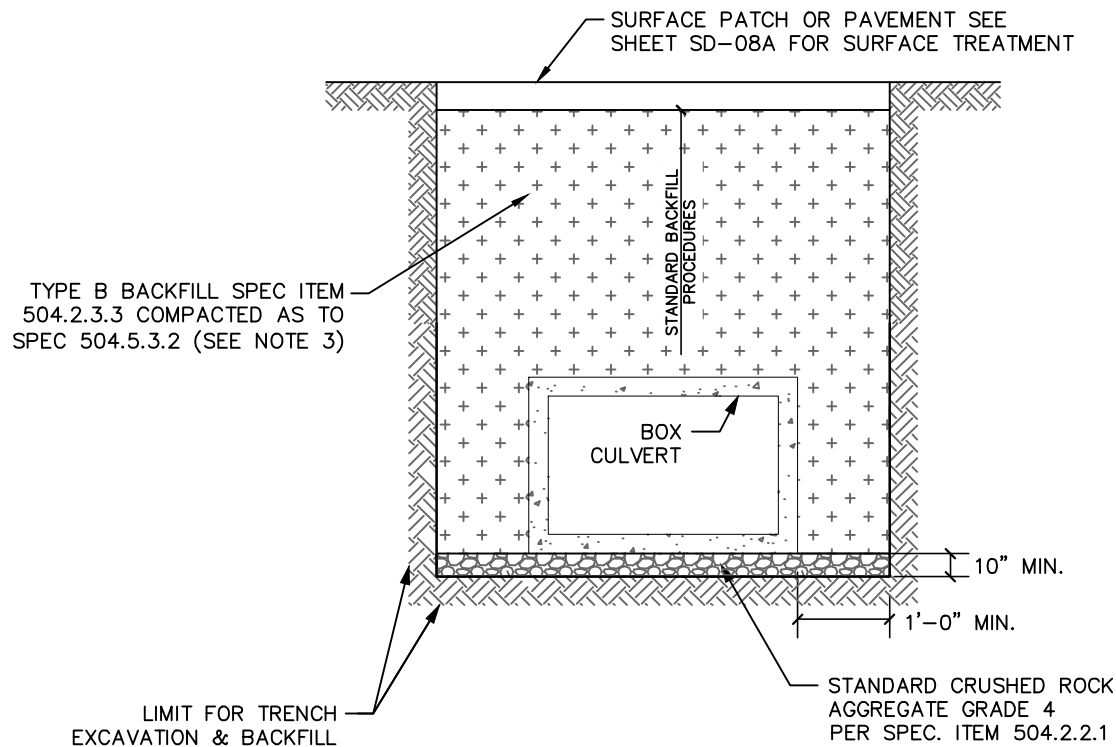


City of Saginaw
Construction Standards

STANDARD STORM DRAIN
EMBEDMENT AND BACKFILL

REVISED
FEB 2023

SD-08A



BOX EMBEDMENT

NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. AT THE END OF EACH WORK DAY ALL SPOILS SHALL BE REMOVED FROM THE CITY R.O.W. UNLESS PRIOR WRITTEN PERMISSION IS OBTAINED FROM THE CITY TO STORE SPOILS IN DESIGNATED SPOIL STORAGE AREAS THAT DO NOT OBSTRUCT AUTOMOBILE OR PEDESTRIAN TRAFFIC.
3. ROCKS GREATER THAN 3" IN DIAMETER SHALL BE REMOVED FROM ANY NATIVE MATERIAL USED AS BACKFILL.
4. TOPSOIL SHALL BE 4" IN DEPTH AND SHALL BE LOOSE AND FREE OF ROCKS OR CLODS GREATER THAN 1/4" IN DIAMETER. ALL TOPSOIL SHALL BE APPROVED BY THE CITY PRIOR TO INSTALLATION.
5. ALL PAVEMENT SHALL BE REMOVED ALONG NEAT SAW CUT LINES PER SPEC. ITEM 402.3.
6. SEWER LINE WARNING TAPE OF MIN 4" WIDTH SHALL BE INSTALLED ABOVE THE EMBEDMENT MATERIAL.
7. A MAXIMUM OF 50 FT OF OPEN TRENCH WILL BE ALLOWED AT ANY TIME, UNLESS APPROVED BY THE CITY.
8. CONTRACTOR TO FILL STANDARD CRUSHED ROCK AGGREGATE TO TOP OF BOX IF MINIMUM TRENCH WIDTH IS NOT MET DURING THE INSTALLATION OF RCB.

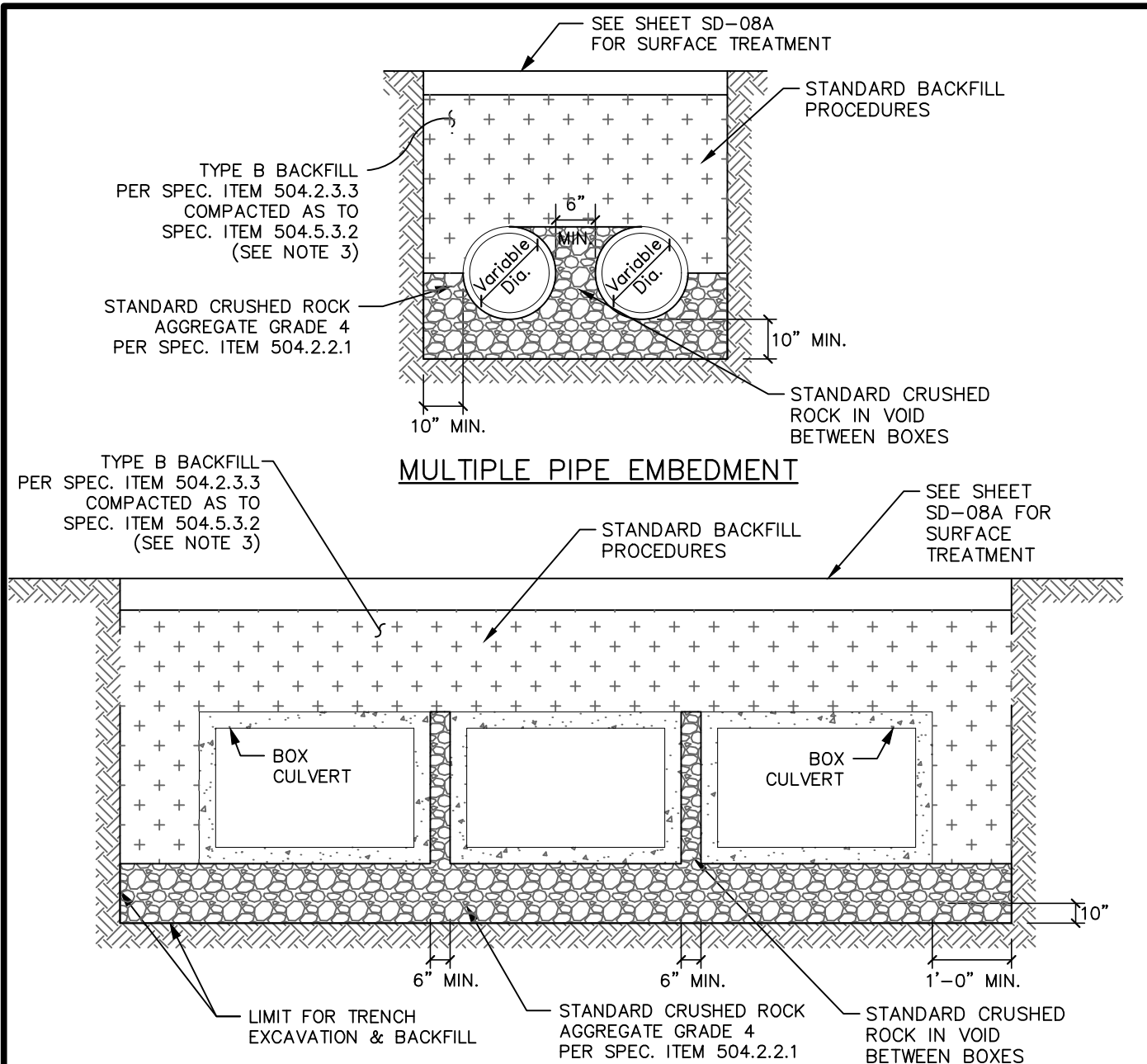


City of Saginaw
Construction Standards

STANDARD STORM DRAIN
EMBEDMENT AND BACKFILL

REVISED
FEB 2023

SD-08B



NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. AT THE END OF EACH WORK DAY ALL SPOILS SHALL BE REMOVED FROM THE CITY R.O.W. UNLESS PRIOR WRITTEN PERMISSION IS OBTAINED FROM THE CITY TO STORE SPOILS IN DESIGNATED SPOIL STORAGE AREAS THAT DO NOT OBSTRUCT AUTOMOBILE OR PEDESTRIAN TRAFFIC.
3. ROCKS GREATER THAN 3" IN DIAMETER SHALL BE REMOVED FROM ANY NATIVE MATERIAL USED AS BACKFILL.
4. TOPSOIL SHALL BE 4" IN DEPTH AND SHALL BE LOOSE AND FREE OF ROCKS OR CLODS GREATER THAN 1/4" IN DIAMETER. ALL TOPSOIL SHALL BE APPROVED BY THE CITY PRIOR TO INSTALLATION.
5. ALL PAVEMENT SHALL BE REMOVED ALONG NEAT SAW CUT LINES PER SPEC. ITEM 402.3.
6. SEWER LINE WARNING TAPE OF MIN 4" WIDTH SHALL BE INSTALLED ABOVE THE EMBEDMENT MATERIAL.
7. A MAXIMUM OF 50 FT OF OPEN TRENCH WILL BE ALLOWED AT ANY TIME, UNLESS APPROVED BY THE CITY.
8. CONTRACTOR TO FILL STANDARD CRUSHED ROCK AGGREGATE TO TOP OF PIPE / BOX IF MINIMUM TRENCH WIDTH IS NOT MET DURING THE INSTALLATION OF PIPE / BOX.

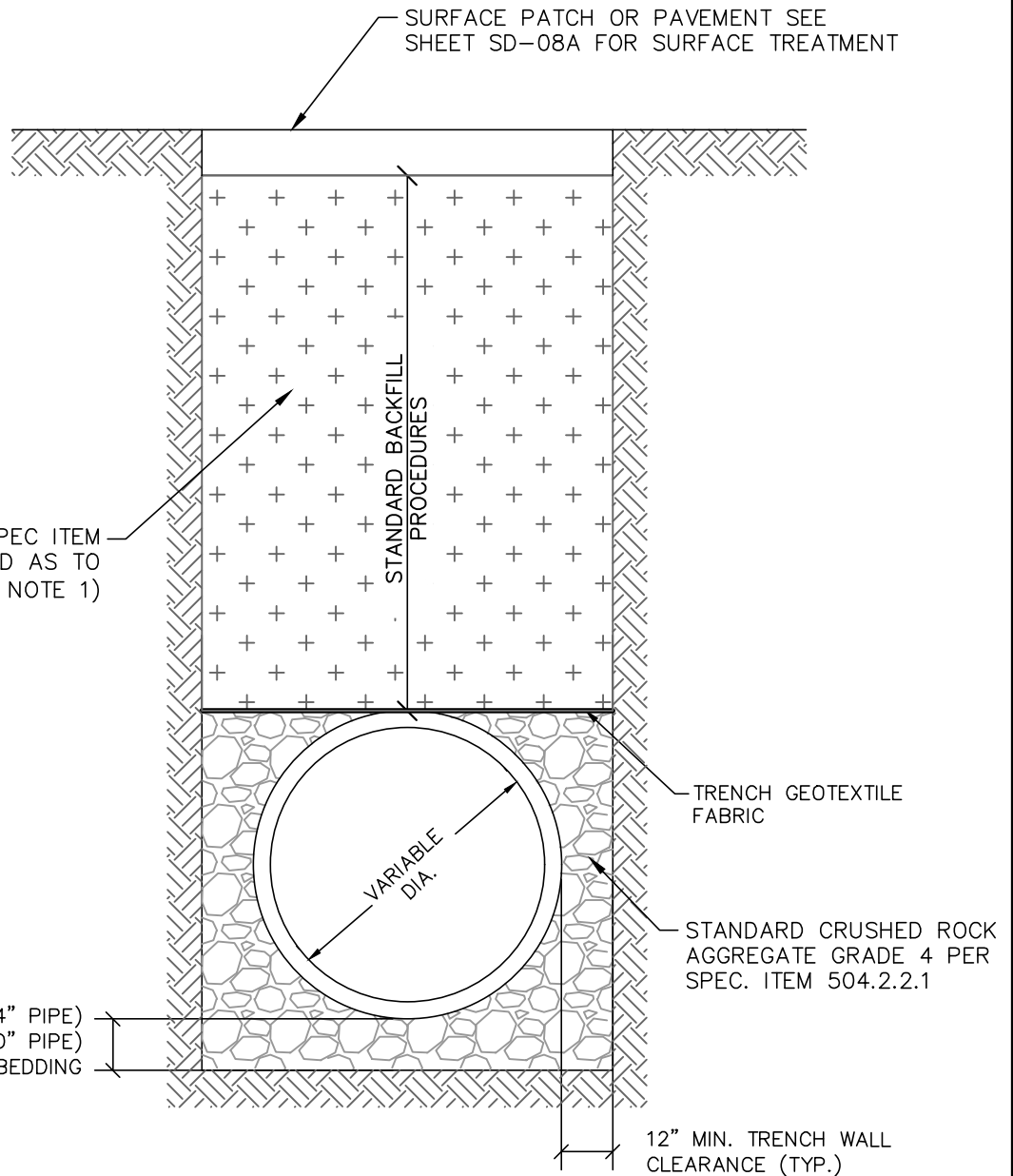


City of Saginaw
Construction Standards

STANDARD STORM DRAIN
EMBEDMENT AND BACKFILL

REVISED
FEB 2023

SD-08C



*INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS

NOTES:

1. ROCKS GREATER THAN 3" IN DIAMETER SHALL BE REMOVED FROM ANY NATIVE MATERIAL USED AS BACKFILL.



City of Saginaw
Construction Standards

HP STORM EMBEDMENT

REVISED
FEB 2023

SD-08D