

**ORDINANCE NO. 2023- 09**

**AN ORDINANCE OF THE CITY OF SAGINAW, TEXAS, AMENDING APPENDIX B, THE SAGINAW SUBDIVISION ORDINANCE, OF THE SAGINAW CITY CODE BY REPEALING AND REPLACING THE CITY CONSTRUCTION STANDARDS REFERENCED IN SECTION 7.01 B. THEREOF, IN ITS ENTIRETY; PROVIDING THAT THIS ORDINANCE SHALL BE CUMULATIVE OF ALL ORDINANCES; PROVIDING A SEVERABILITY CLAUSE; PROVIDING FOR A SAVINGS CLAUSE; PROVIDING FOR PUBLICATION IN THE OFFICIAL NEWSPAPER; AND PROVIDING AN EFFECTIVE DATE.**

**WHEREAS**, the City of Saginaw, Texas is a home rule City acting under its Charter adopted by the electorate pursuant to Article XI, Section 5 of the Texas Constitution and Chapter 9 of the Local Government Code; and

**WHEREAS**, the City Council has previously adopted the Saginaw Subdivision Ordinance, pursuant to Chapter 212 of the Texas Local Government Code; and

**WHEREAS**, the Saginaw Subdivision Ordinance incorporates by reference the adopted City Construction Standards; and

**WHEREAS**, the City Council now desires to repeal and replace the existing City Construction Standards with the revised City Construction Standards set forth in Exhibit "A," attached hereto; and

**WHEREAS**, a public hearing was conducted in accordance with Chapter 212 and the City Council finds that the amendment described herein will promote the health, safety, morals and general welfare of the City and the healthful development of the City.

**NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF SAGINAW, TEXAS, THAT:**

**SECTION 1.**

The "city construction standards" referenced in Section 7.01 B. of the Saginaw Subdivision Ordinance, and incorporated therein by reference, is hereby repealed and replaced with the revised "city construction standards" attached hereto and incorporated herein as Exhibit "A" to this Ordinance. The text of Section 7.01 B. of the Saginaw Subdivision Ordinance shall remain unmodified.

**SECTION 2.**

This ordinance shall be cumulative of all other ordinances of the City of Saginaw and shall not repeal any of the provisions of such ordinances, except in those instances where provisions of such ordinances are in direct conflict with the provisions of this ordinance.

### SECTION 3.

It is hereby declared to be the intention of the City Council that the sections, paragraphs, sentences, clauses and phrases of this ordinance are severable, and if any phrase, clause, sentence, paragraph or section of this ordinance shall be declared void, ineffective or unconstitutional by the valid judgment or decree of any court of competent jurisdiction, such voidness, ineffectiveness, or unconstitutionality shall not affect any of the remaining phrases, clauses, sentences, paragraphs or sections of this ordinance, since the same would have been enacted by the City Council without the incorporation herein of any such void, ineffective or unconstitutional phrase, clause, sentence, paragraph or section.

### SECTION 4.

All rights or remedies of the City of Saginaw, Texas, are expressly saved as to any and all violations of the City Code or any amendments thereto that have accrued at the time of the effective date of this ordinance; and as to such accrued violations, and all pending litigation, both civil or criminal, same shall not be affected by this ordinance but may be prosecuted until final disposition by the courts.

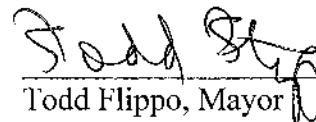
### SECTION 5

The City Secretary of the City of Saginaw is hereby directed to publish at least twice in the official newspaper of the City of Saginaw, the caption of this ordinance in accordance with Section 52.013(b) of the Local Government Code.

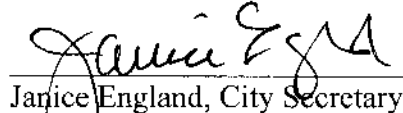
### SECTION 6.

This ordinance shall take effect immediately from and after its passage and publication in accordance with the provisions of the laws of the State of Texas.

**PASSED AND APPROVED ON** this the 21<sup>st</sup> day of February, 2023.

  
Todd Flippo, Mayor

ATTEST:

  
Janice England, City Secretary

APPROVED AS TO FORM AND LEGALITY:

  
Bryn Meredith, City Attorney



**EXHIBIT "A"**  
**CITY OF SAGINAW**  
**CONSTRUCTION STANDARDS**

# CITY OF SAGINAW CONSTRUCTION STANDARDS TABLE OF CONTENTS

## WATER

| <u>SHEET NO.</u> | <u>DESCRIPTION</u>                         |
|------------------|--------------------------------------------|
| W-01             | STANDARD WATER LINE EMBEDMENT AND BACKFILL |
| W-02             | WATER SERVICE CONNCTION                    |
| W-03             | WATER VALVE AND BOX INSTALLATION           |
| W-04             | BUTTERFLY VALVE AND INSTALLATION           |
| W-05             | FIRE HYDRANT INSTALLATION                  |
| W-06             | HORIZONTAL BLOCKING                        |
| W-07             | CONCRETE CRADLE AT VERTICAL BENDS          |
| W-08             | VERTICAL THRUST BLOCKING                   |
| W-09             | AIR RELEASE VALVE                          |
| W-10             | DOUBLE CHECK DETECTOR VAULT                |
| W-11             | LADDER AND PIPE SUPPORT                    |
| W-12             | TYPICAL RING CONNECTION                    |
| W-13             | WATER LINE BORE AND CASING                 |
| W-14             | 3 INCH AND LARGER METER VAULT              |

## WASTE WATER

| <u>SHEET NO.</u> | <u>DESCRIPTION</u>                                    |
|------------------|-------------------------------------------------------|
| WW-01            | STANDARD SANITARY SEWER EMBEDMENT AND BACKFILL        |
| WW-02            | PRECAST AND CAST-IN-PLACE SANITARY SEWER MANHOLE      |
| WW-03            | SANITARY SEWER MANHOLE DROP CONNECTIONS               |
| WW-04            | EXTENSION RING INSTALLATION FRAME AND COVER PLACEMENT |
| WW-05            | MANHOLE RING AND COVER                                |
| WW-06            | SANITARY SEWER MAIN CLEANOUT                          |
| WW-07            | CLEANOUT CAP                                          |
| WW-08            | SANITARY SEWER SERVICE                                |
| WW-09            | SANITARY SEWER LINE BORE AND CASING                   |
| WW-10            | MANHOLE ABANDONMENT                                   |
| WW-11            | CONCRETE ENCASEMENT                                   |

**NOTE:**

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



**City of Saginaw**  
**Construction Standards**

TABLE OF CONTENTS  
SHEET 1 OF 3

REVISED  
FEB 2023

TOC

# CITY OF SAGINAW CONSTRUCTION STANDARDS TABLE OF CONTENTS

## ROADWAY

| <u>SHEET NO.</u> | <u>DESCRIPTION</u>                                          |
|------------------|-------------------------------------------------------------|
| RD-01            | CONCRETE PAVING                                             |
| RD-02            | CONCRETE PAVING JOINT DETAILS                               |
| RD-03            | CONCRETE PAVING JOINT SEALANTS                              |
| RD-04            | PAVEMENT INTERSECTION JOINT SPACING                         |
| RD-05            | STANDARD 6-INCH CURB AND 18-INCH GUTTER                     |
| RD-06            | REINFORCED CONCRETE PAVEMENT SIX LANE DIVIDED THOROUGHFARE  |
| RD-07            | REINFORCED CONCRETE PAVEMENT FOUR LANE DIVIDED THOROUGHFARE |
| RD-08            | MONOLITHIC MEDIAN NOSE - TYPE 1                             |
| RD-09            | MONOLITHIC MEDIAN NOSE - TYPE 2                             |
| RD-10            | STAMPED CONCRETE                                            |
| RD-11            | RESIDENTIAL DRIVEWAY                                        |
| RD-12            | COMMERCIAL-INDUSTRIAL DRIVEWAY                              |
| RD-13            | CONCRETE SIDEWALK                                           |
| RD-14            | CONCRETE SIDEWALK WITH WALL                                 |
| RD-15            | BARRIER FREE RAMP                                           |
| RD-16            | WOOD SCREENING DETAIL                                       |
| RD-17            | MASONRY SCREENING DETAIL                                    |
| RD-18            | STREET SIGN                                                 |
| RD-19A           | SIGN POST - INSTILLATION                                    |
| RD-19B           | SIGN POST - SQUARE TUBING                                   |
| RD-20            | CONCRETE VALLEY GUTTER                                      |
| RD-21            | CONCRETE STREET HEADER                                      |

**NOTE:**

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



**City of Saginaw**  
Construction Standards

TABLE OF CONTENTS  
SHEET 2 OF 3

REVISED  
FEB 2023

TOC

**CITY OF SAGINAW  
CONSTRUCTION STANDARDS  
TABLE OF CONTENTS**

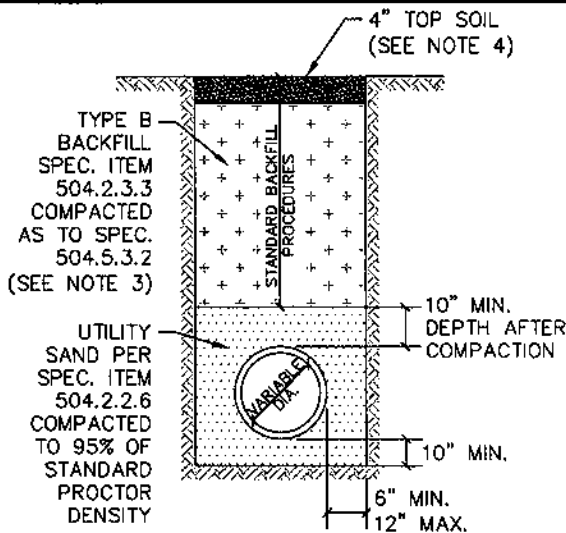
**STORM DRAIN**

| <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           |
| SD-06            | MANHOLE COVER RIVER LOGO                             |
| SD-07            | REINFORCED CONCRETE COLLAR AND MISCELLANEOUS DETAILS |
| SD-08A           | STANDARD STORM DRAIN EMBEDMENT AND BACKFILL          |
| SD-08B           | STANDARD STORM DRAIN EMBEDMENT AND BACKFILL          |
| SD-08C           | STANDARD STORM DRAIN EMBEDMENT AND BACKFILL          |
| SD-08D           | HP STORM EMBEDMENT                                   |

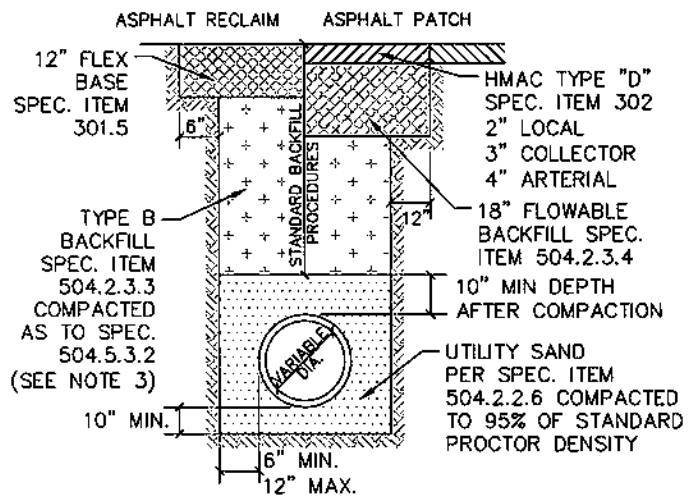
**NOTE:**

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



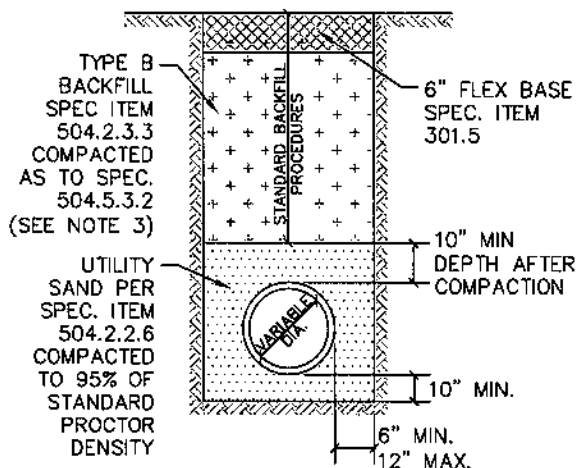


UNPAVED AREA

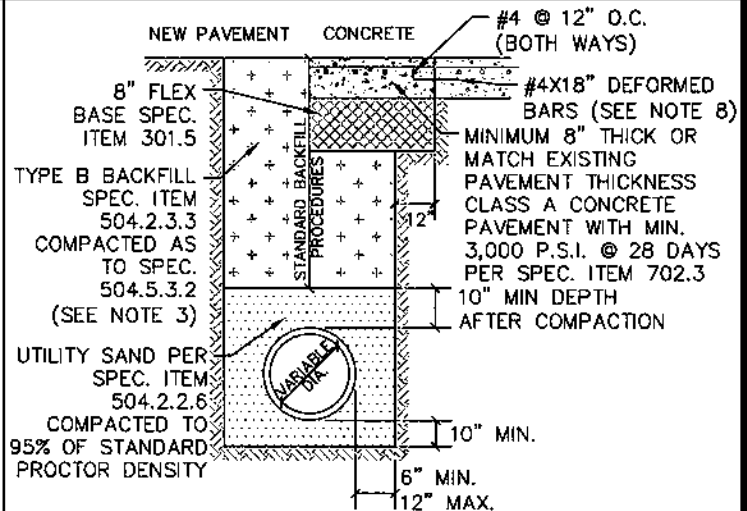


NOTE: FOR NEW STREETS, BACKFILL MAY BE EXTENDED TO THE TOP OF THE TRENCH

ASPHALT PAVEMENT



GRAVEL SURFACE



CONCRETE PAVEMENT

**NOTES:**

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF 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.

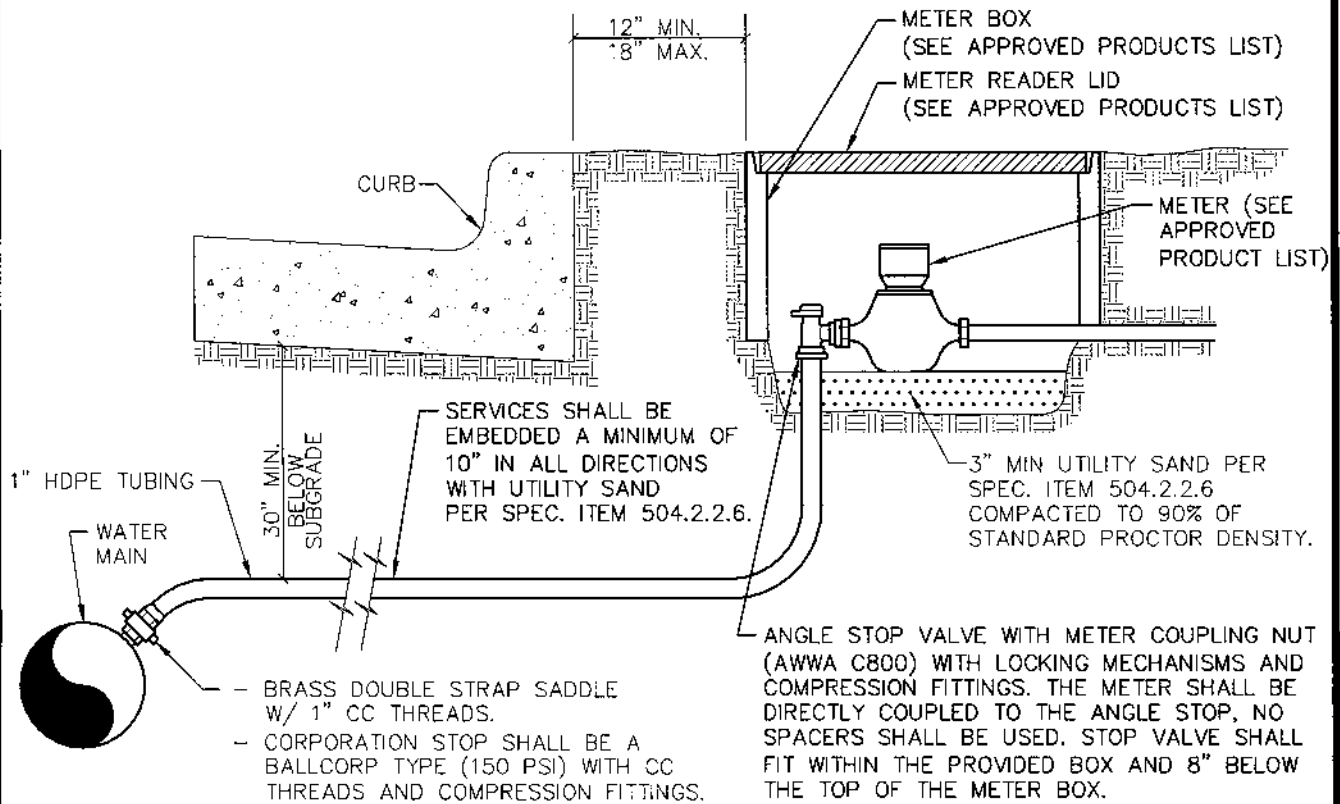


**City of Saginaw**  
Construction Standards

STANDARD WATER LINE  
EMBEDMENT AND BACKFILL

REVISED  
FEB 2023

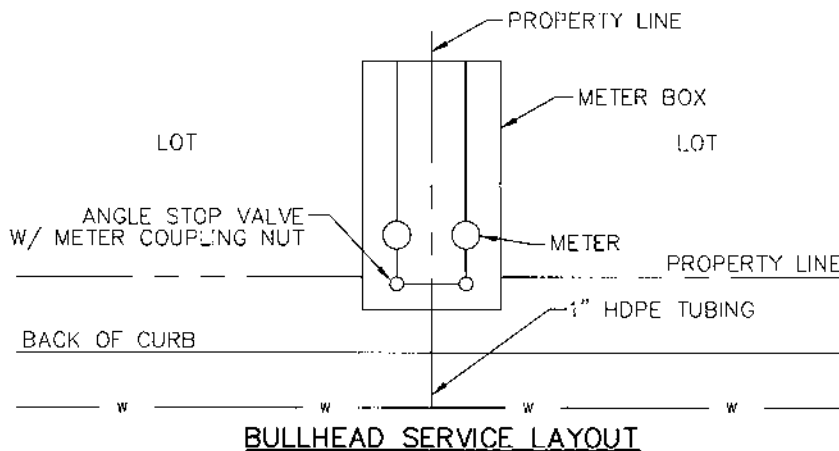
W-01



### 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.

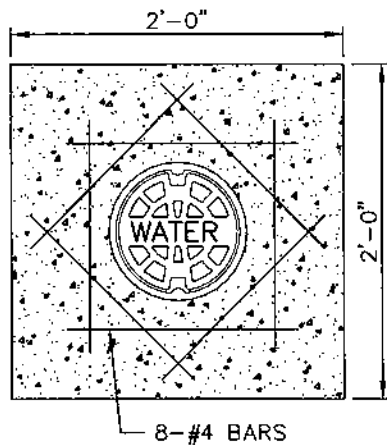


**City of Saginaw**  
Construction Standards

WATER SERVICE CONNCTION

REVISED  
FEB 2023

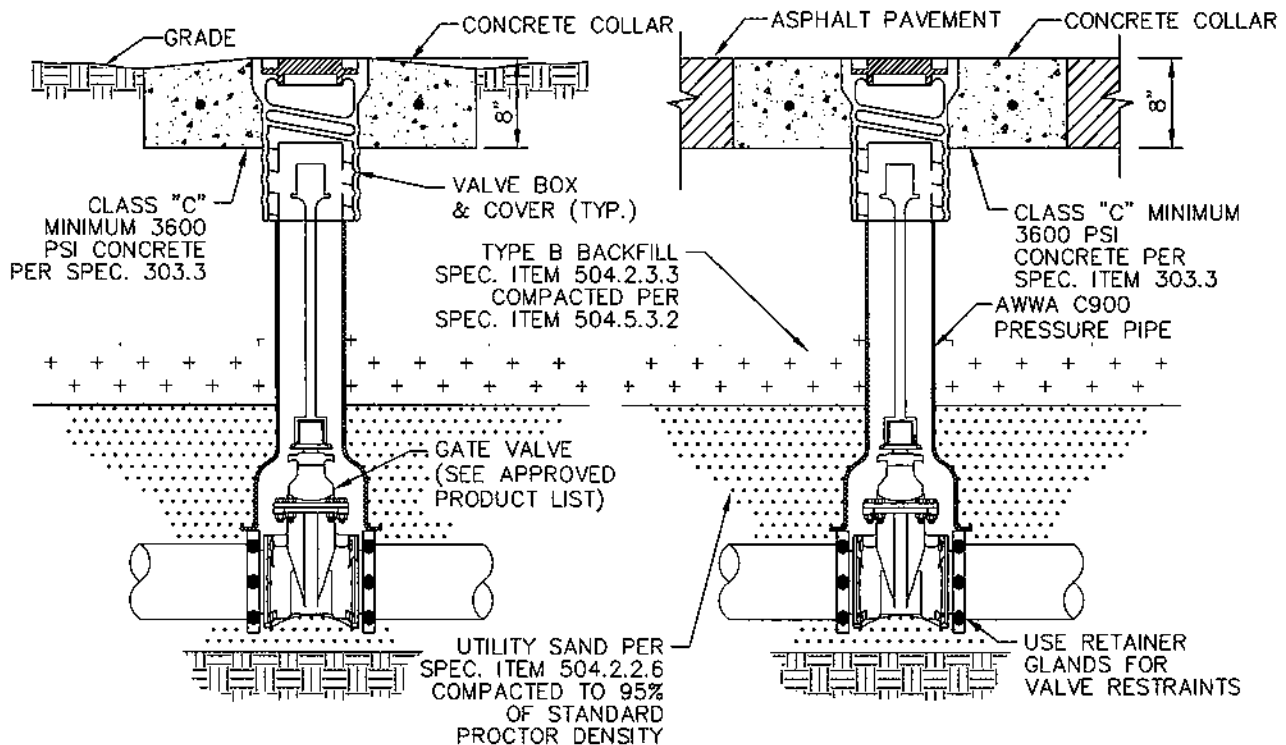
W-02



CONCRETE COLLAR

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.



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

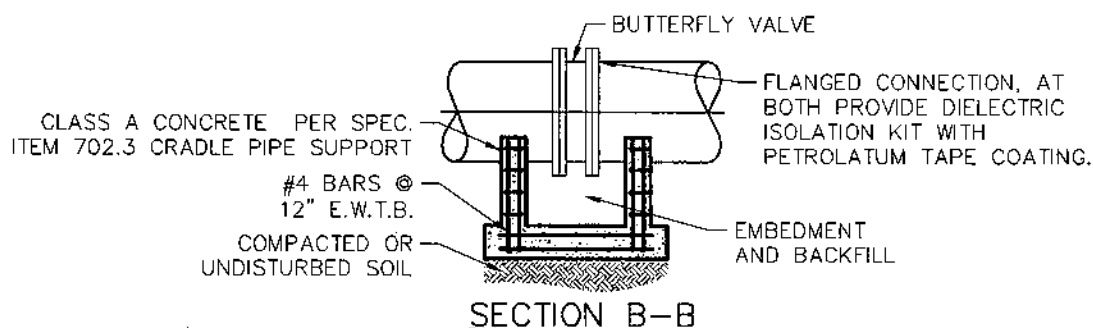
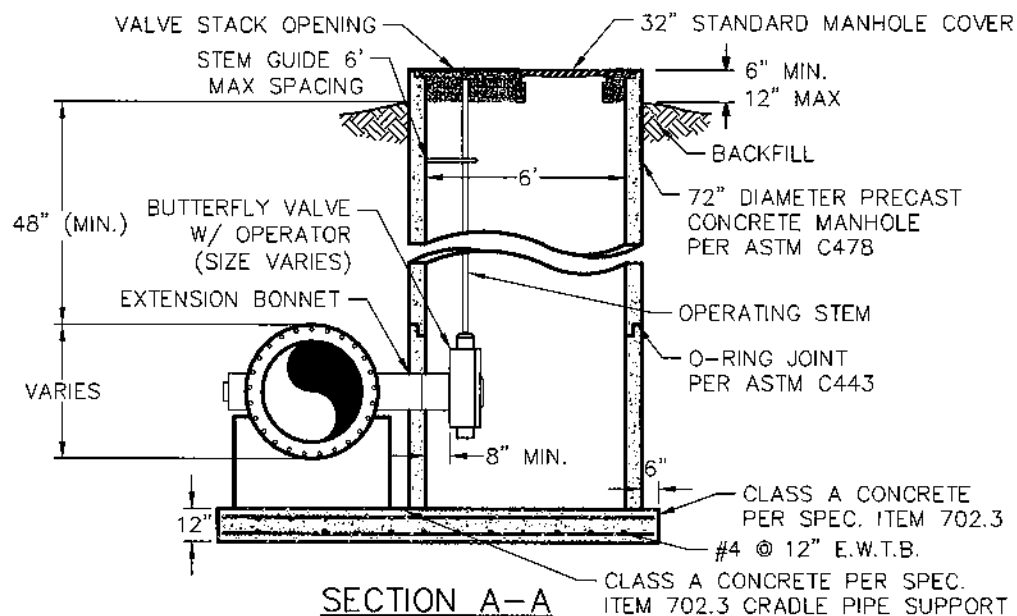
REVISED  
FEB 2023

W-03

Technical drawing of a manhole assembly, showing a side elevation and a top view. The side elevation on the left shows a vertical pipe with a total height of 17 feet. The pipe has three sections of 3 feet, 4 feet, and 4 feet. A butterfly valve is located in the middle section. The top view on the right shows a square concrete base with a side length of 8 feet. A 32-inch standard manhole cover is centered on the base. A 72-inch diameter precast concrete manhole is shown, with a flanged connection at the top. The flanged connection is labeled with 'A' and 'B' and is described as providing dielectric isolation with a petrolatum tape coating. The concrete base is labeled 'CONCRETE BASE'.

Labels and dimensions:

- 17'
- 3'
- 4'
- 4'
- 3'
- BUTTERFLY VALVE
- 32" STANDARD MANHOLE COVER
- 8'
- CONCRETE BASE
- 72" DIAMETER PRECAST CONCRETE MANHOLE PER ASTM C478
- FLANGED CONNECTION, AT BOTH PROVIDE DIELECTRIC ISOLATION KIT WITH PETROLATUM TAPE COATING.
- A
- B



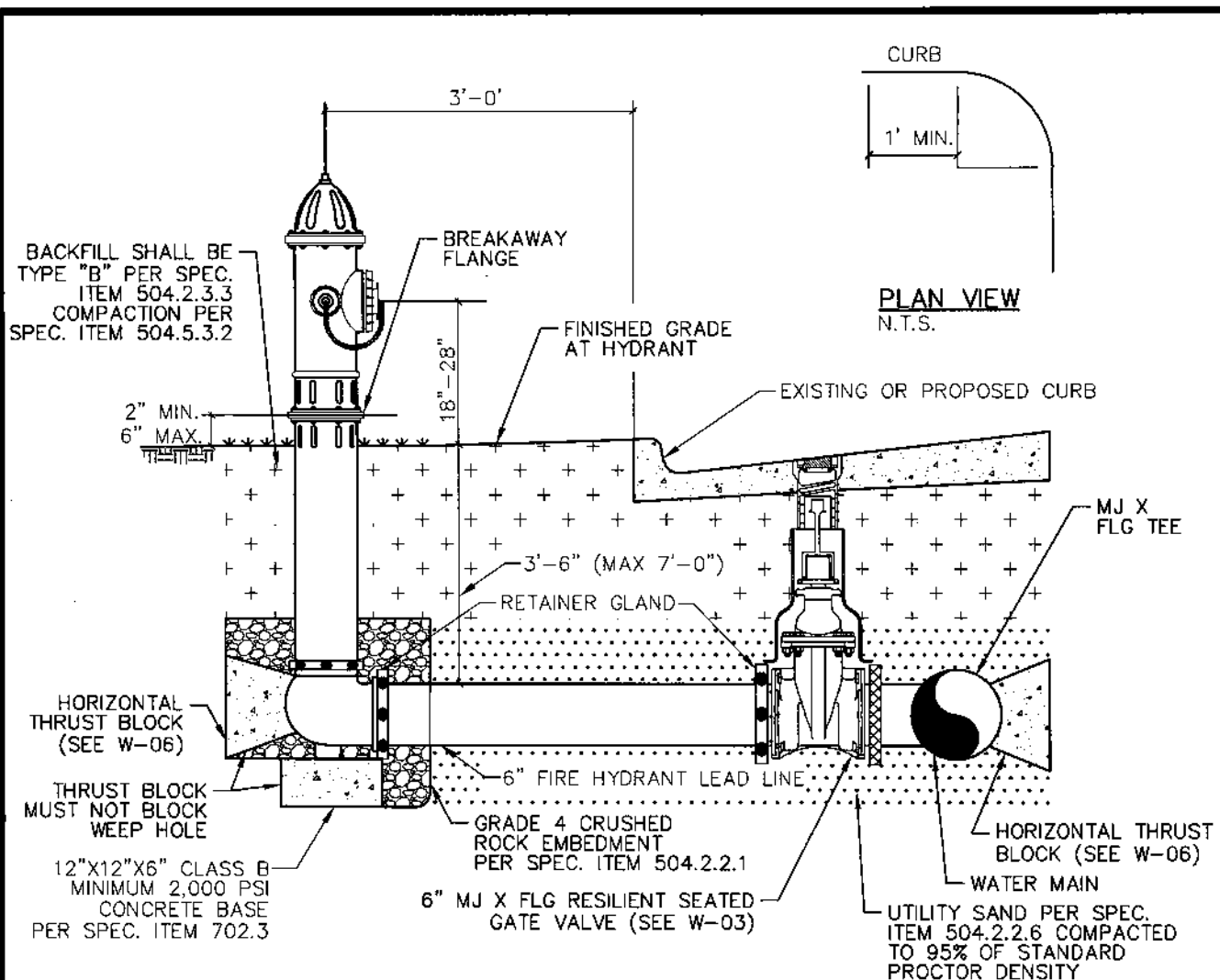
# City of Saginaw

## Construction Standards

## BUTTERFLY VALVE AND INSTALLATION

REVISÉ  
FEB 2023

W-04



#### NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. ALL FIRE HYDRANTS SHALL CONFORM TO AWWA C502. FIRE HYDRANTS SHALL HAVE A 5 1/4" MIN VALVE OPENING AND AN INSIDE BARREL DIAMETER OF APPROXIMATELY 7". ALL HYDRANTS SHALL BE EQUIPPED WITH A BREAKAWAY FLANGE.
3. ALL BELOW GROUND IRON ASSEMBLES SHALL BE WRAPPED IN POLYETHYLENE ACCORDING TO AWWA C105.
4. RESILIENT SEATED GATE VALVE SHALL CONFORM TO AWWA C509.
5. FIRE HYDRANT LEADS GREATER THAN A SINGLE PIPE JOINT REQUIRE JOINT THRUST RETAINERS.
6. FIRE HYDRANT SHALL BE PLACED ON THE EXTENDED LOT LINE WHEN POSSIBLE.
7. FIRE HYDRANT SHALL BE LOCATED A MINIMUM 1 FT. OUTSIDE OF THE AREA BETWEEN THE P.C.'S OF THE CORNER TURNING RADIS AT THE INTERSECTIONS. (SEE PLAN VIEW)
8. FIRE HYDRANT NO CLOSER THAN 12" TO EXISTING OR PROPOSED SIDEWALKS.
9. ALL FIRE HYDRANTS SHALL BE AT LEAST 42 INCHES FROM ANY ABOVE GROUND OBSTRUCTIONS, SUCH AS GUARDRAILS, RETAINING WALLS, BOLLARDS, ETC.
10. SEE APPROVED PRODUCTS LIST FOR ACCEPTABLE FIRE HYDRANT MANUFACTURERS.
11. FIRE HYDRANT SHALL BE PAINTED SAFETY RED. PAINT MUST BE BRUSHED ON, IT MAY NOT BE SPRAYED. SEE APPROVED PRODUCTS LIST.
12. FIRE HYDRANT SHALL BE OPEN LEFT, COUNTER-CLOCKWISE.
13. 4" BLUE RAISED PAVEMENT MARKER SHALL BE PROVIDED AND INSTALLED AT THE STREET CENTERLINE ADJACENT TO THE FIRE HYDRANT.

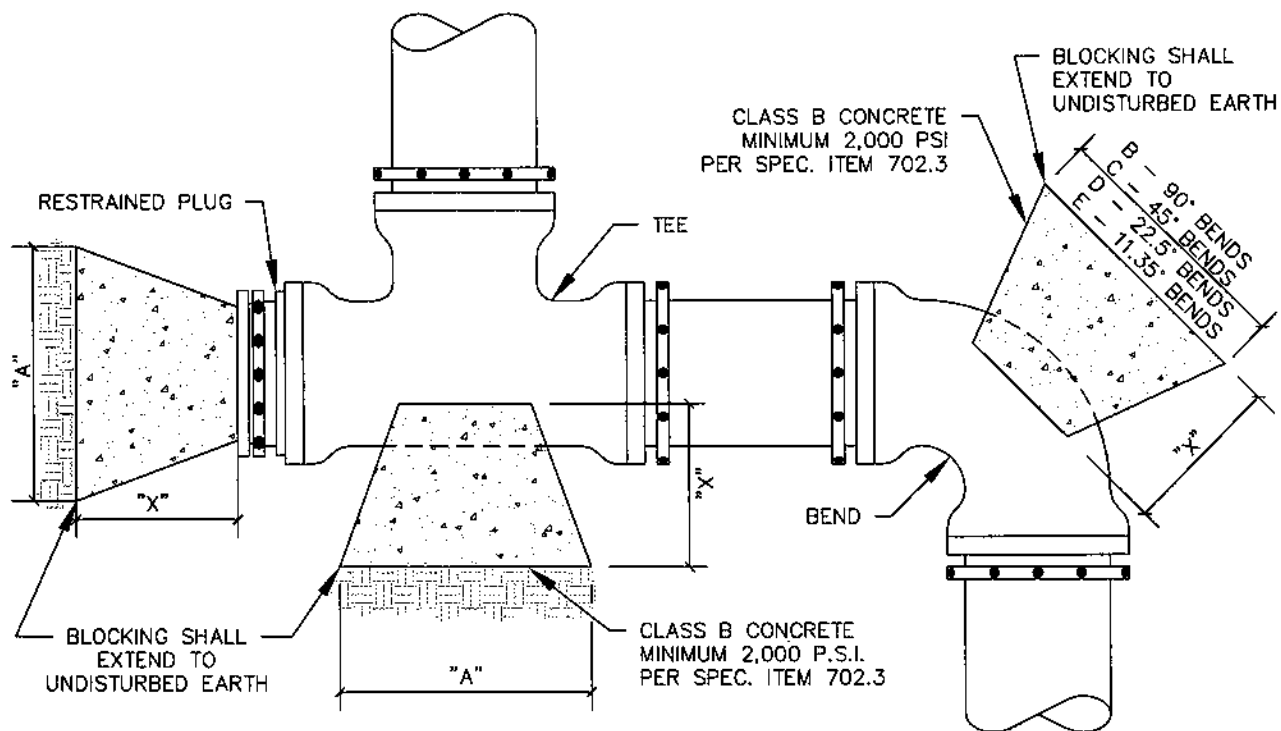


**City of Saginaw**  
Construction Standards

#### FIRE HYDRANT INSTALLATION

REVISED  
FEB 2023

W-05



**HORIZONTAL BLOCKING TABLE**

| PIPE<br>SIZE | "X"<br>DIM. | PLUGS & TEES |                      | 90° BENDS |                      | 45° BENDS |                      | 22.50° BENDS |                      | 11.25° BENDS |                      |
|--------------|-------------|--------------|----------------------|-----------|----------------------|-----------|----------------------|--------------|----------------------|--------------|----------------------|
|              |             | "A"          | MIN.<br>AREA<br>(sf) | "B"       | MIN.<br>AREA<br>(sf) | "C"       | MIN.<br>AREA<br>(sf) | "D"          | MIN.<br>AREA<br>(sf) | "E"          | MIN.<br>AREA<br>(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:**

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.
6. BLOCKING FOR LINES LARGER THAN 16" SHALL BE DESIGNED FOR THE SPECIFIC LOCATION AND SHOWN ON THE DRAWINGS.



**City of Saginaw**  
Construction Standards

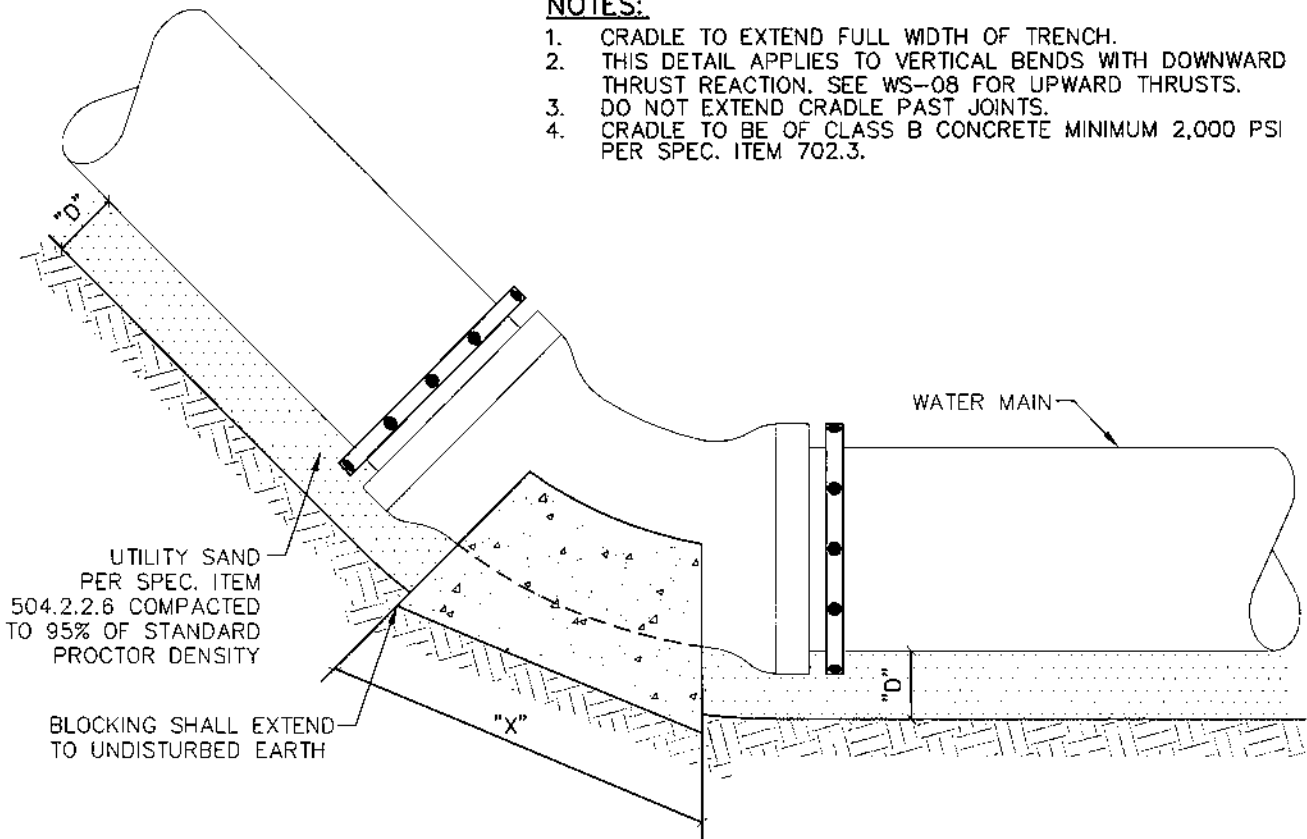
HORIZONTAL BLOCKING

REVISED  
FEB 2023

W-06

# **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.



"D" = 6" MINIMUM OR TO UNDISTURBED SOIL

**CONCRETE CRADLE TABLE**

| 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.

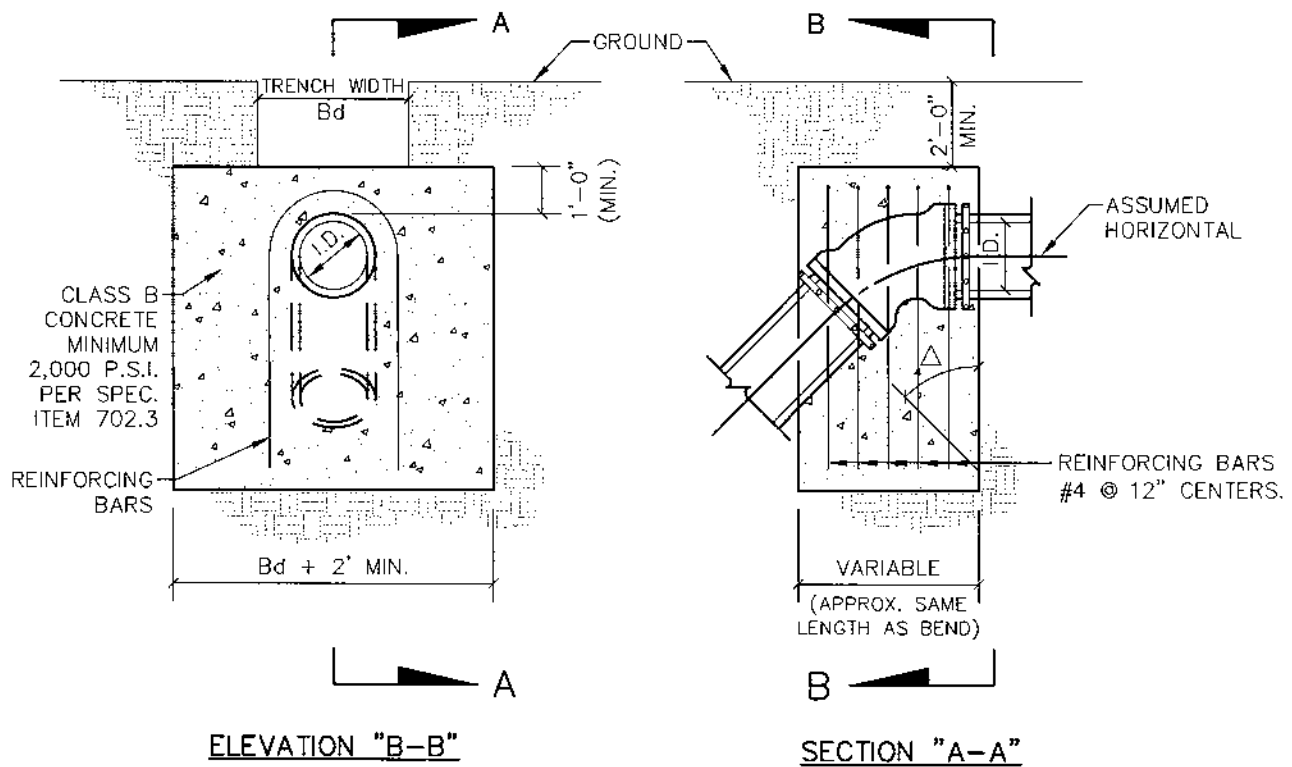


**City of Saginaw**  
Construction Standards

CONCRETE CRADLE AT VERTICAL  
BENDS

REVISED  
FEB 2023

W-07



**VERTICAL THRUST BLOCK TABLE**

| Δ →           | 11.25'         |                | 22.50'         |                | 45.00'         |                | 90.00'         |                |
|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| I.D.<br>(IN.) | MIN #4<br>BARS | VOL.<br>(C.Y.) | MIN #4<br>BARS | VOL.<br>(C.Y.) | MIN #4<br>BARS | VOL.<br>(C.Y.) | MIN #4<br>BARS | VOL.<br>(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.



**City of Saginaw**  
Construction Standards

VERTICAL THRUST BLOCKING

REVISED  
FEB 2023

W-08



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

PRE-CAST  
CONCRETE  
STRUCTURE

LADDER (SEE W-11)

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.



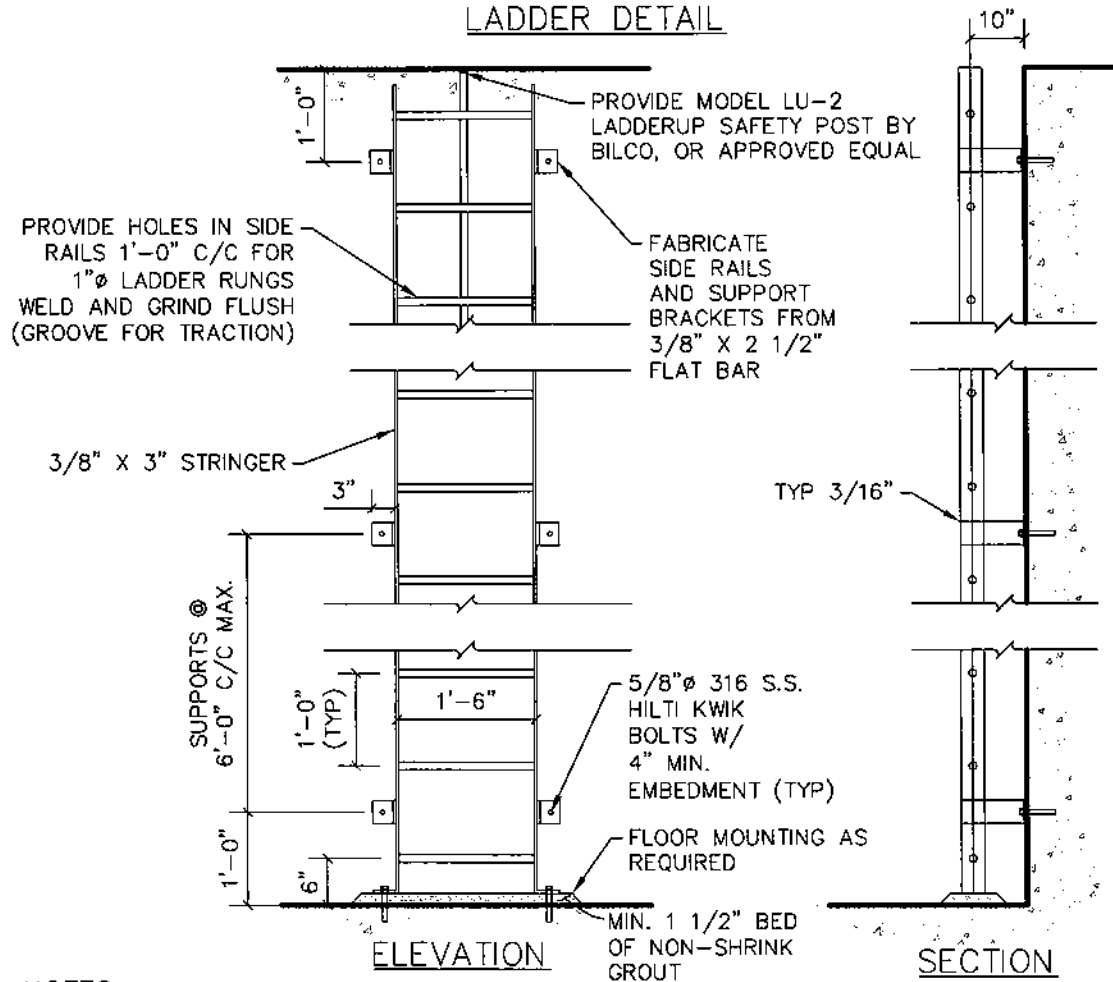
**City of Saginaw**  
Construction Standards

DOUBLE CHECK DETECTOR VAULT

REVISED  
FEB 2023

W-10

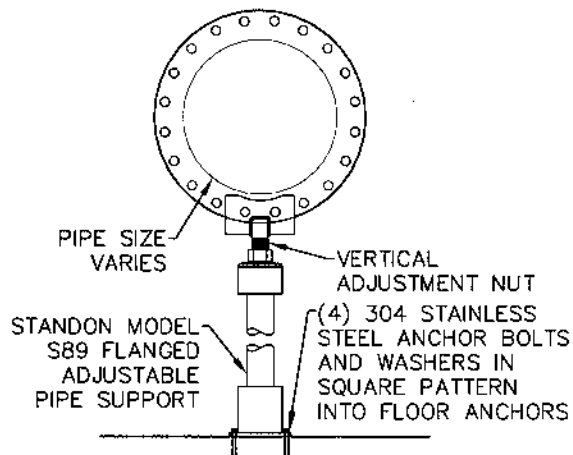
## LADDER DETAIL



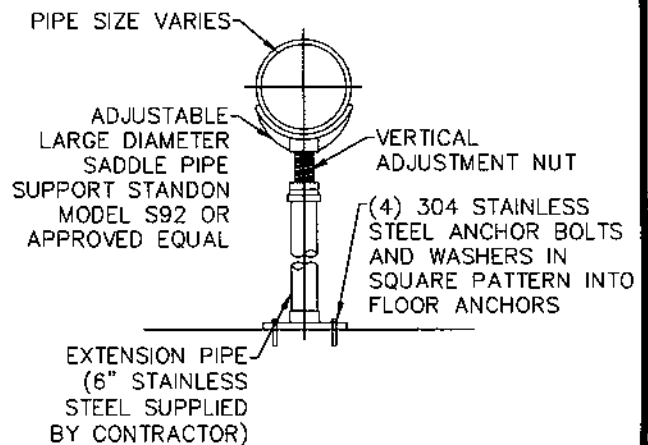
### NOTES:

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

### ADJUSTABLE FLANGE PIPE SUPPORT DETAIL



### ADJUSTABLE SADDLE PIPE SUPPORT DETAIL

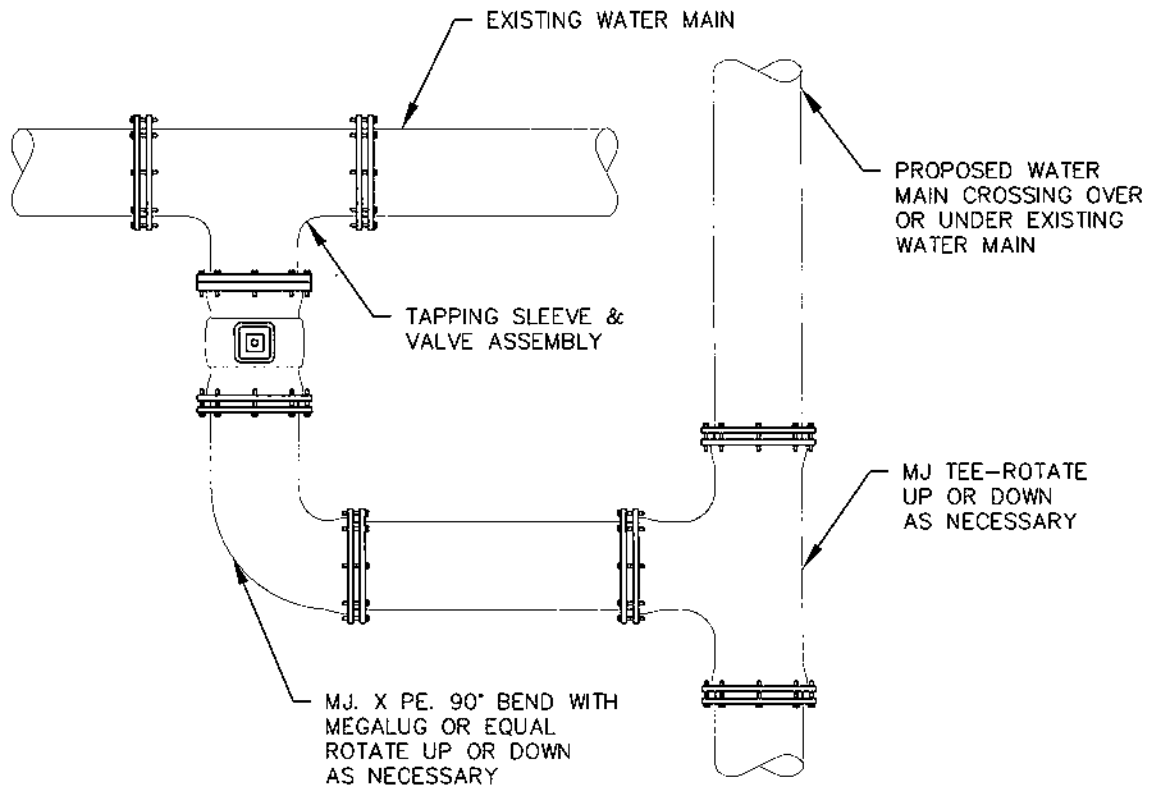


**City of Saginaw**  
Construction Standards

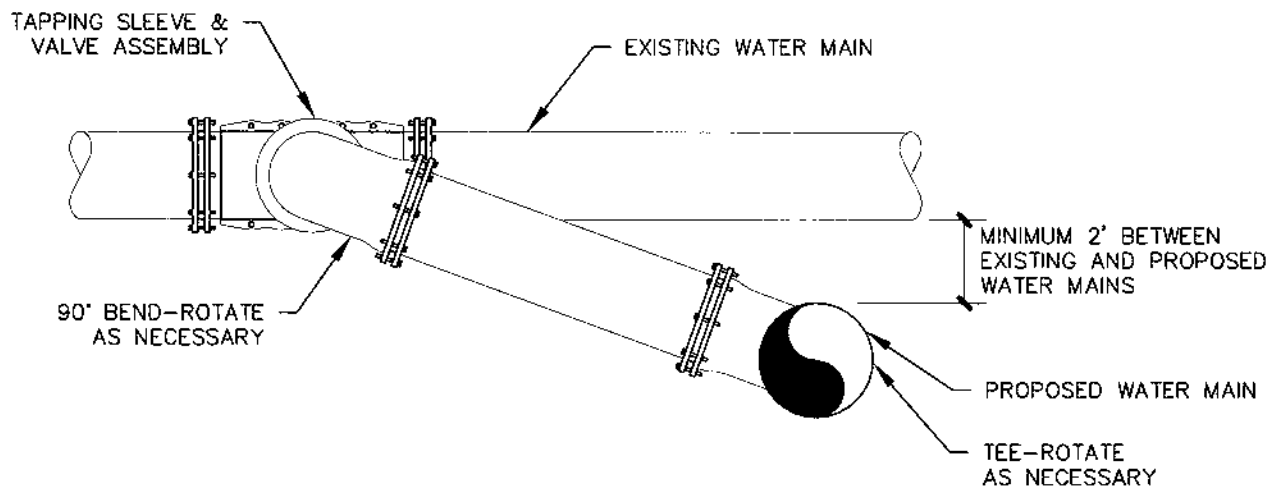
LADDER AND PIPE SUPPORT

REVISED  
FEB 2023

W-11



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.

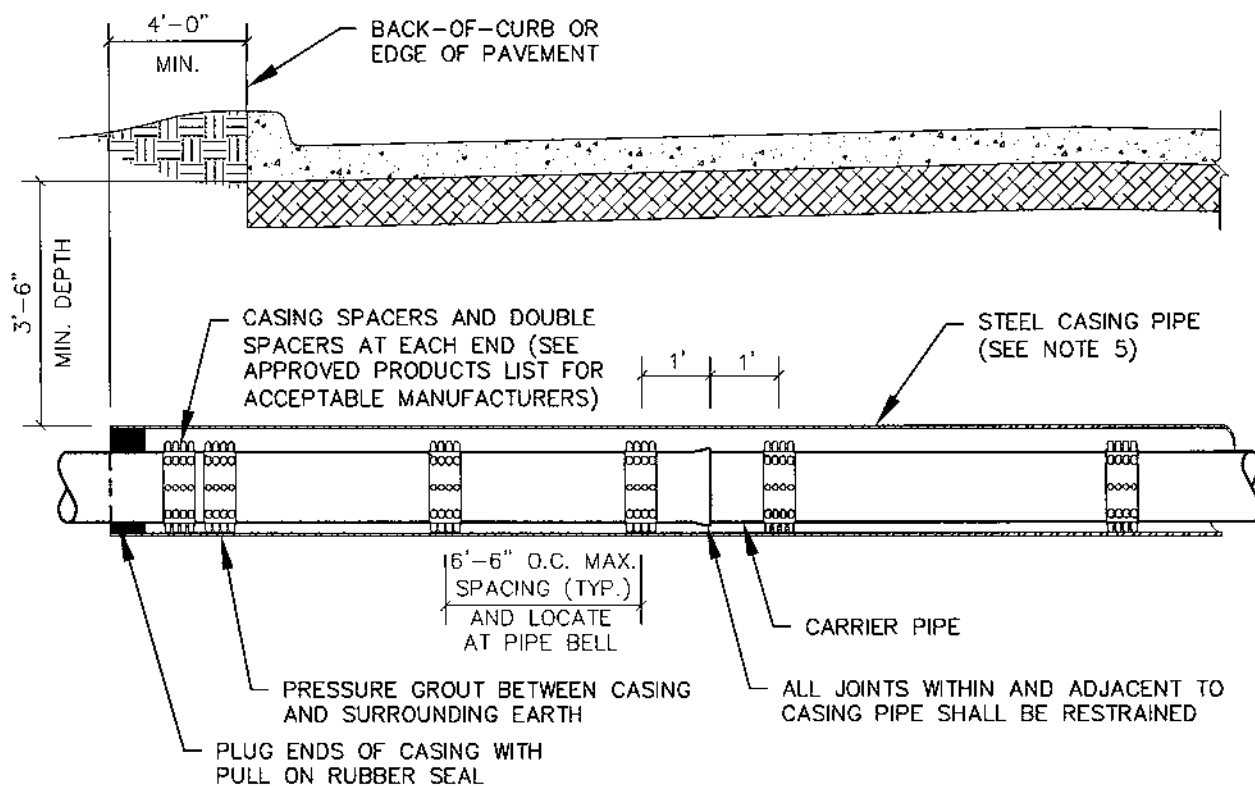


**City of Saginaw**  
Construction Standards

TYPICAL RING CONNECTION

REVISED  
FEB 2023

W-12



| CASING<br>DIAMETER                  | MIN. WALL<br>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:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. BORE PIT SHALL MEET OSHA AND STATE REQUIREMENTS.
3. WHERE A BORE IS TO BE PARTIALLY OR COMPLETELY ABANDONED, SAID BORE SHALL BE COMPLETELY FILLED WITH HYDRAULICALLY PLACED CEMENT GROUT.
4. THE EDGE OF BORE PIT SHALL BE A MINIMUM OF 4' BEHIND THE BACK OF CURB OR EDGE OF PAVEMENT.
5. 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.
6. 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

WATER LINE BORE AND CASING

REVISED  
FEB 2023

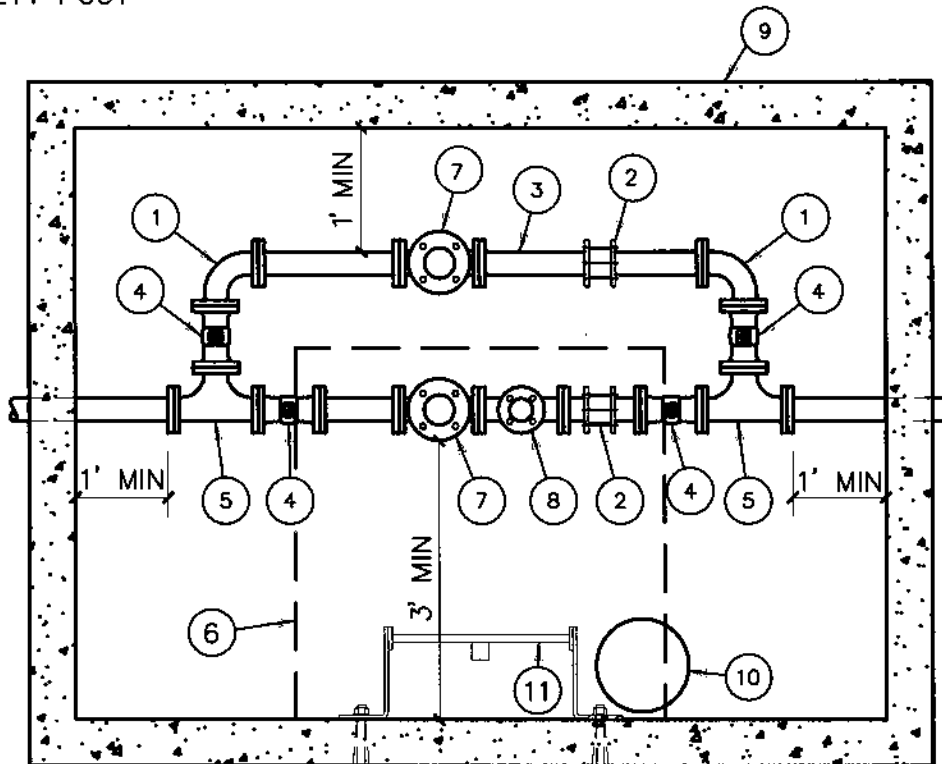
W-13

## 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 METER 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.

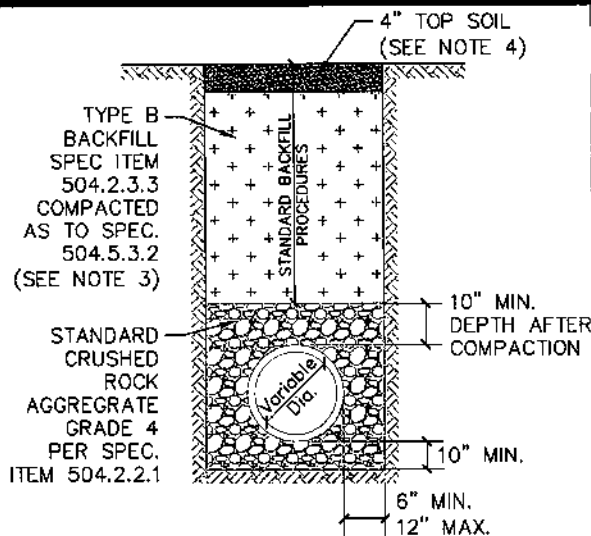


**City of Saginaw**  
Construction Standards

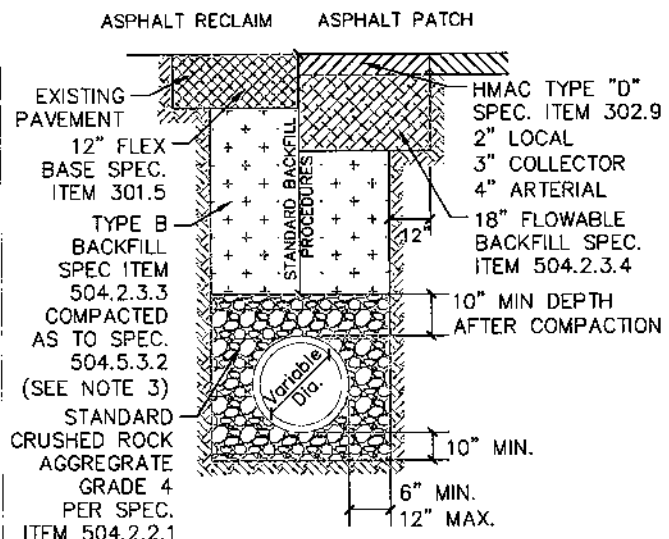
3 INCH AND LARGER METER VAULT

REVISED  
FEB 2023

W-14

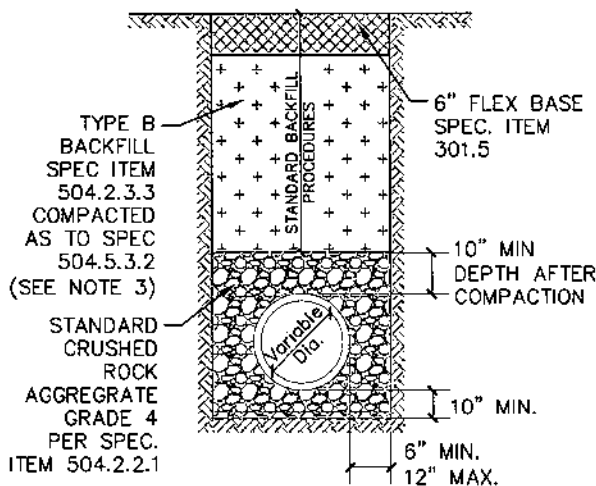


UNPAVED AREA

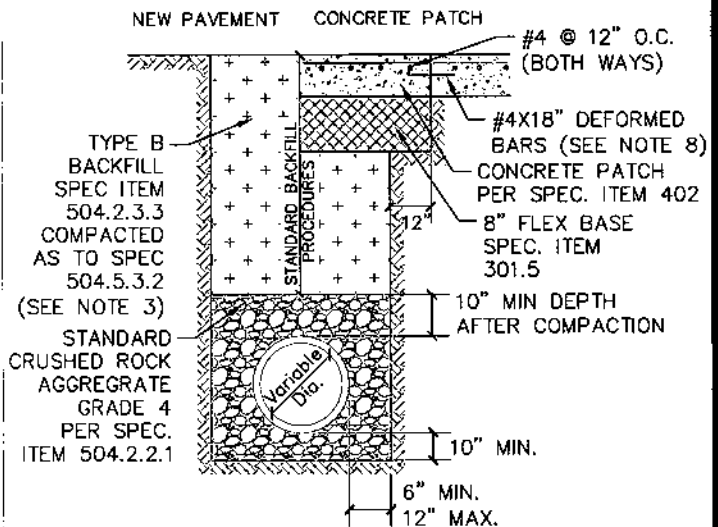


NOTE: FOR NEW STREETS, BACKFILL MAY BE EXTENDED TO THE TOP OF THE TRENCH

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 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. DEFORMED BARS DOWELED AND EPOXYED MIN. 6" INTO EXISTING PAVEMENT @ 12" O.C. (TYP).

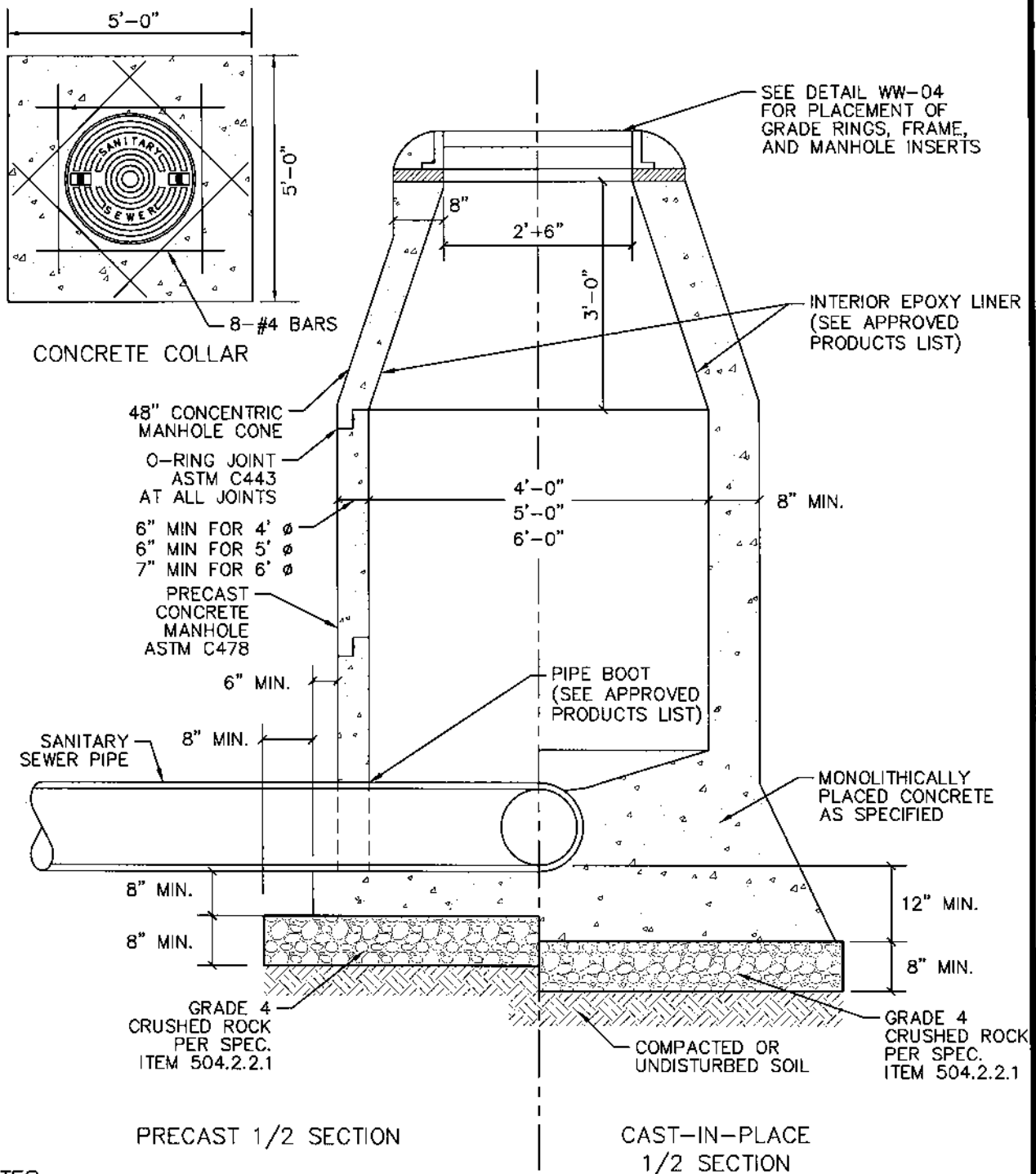


**City of Saginaw**  
Construction Standards

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.

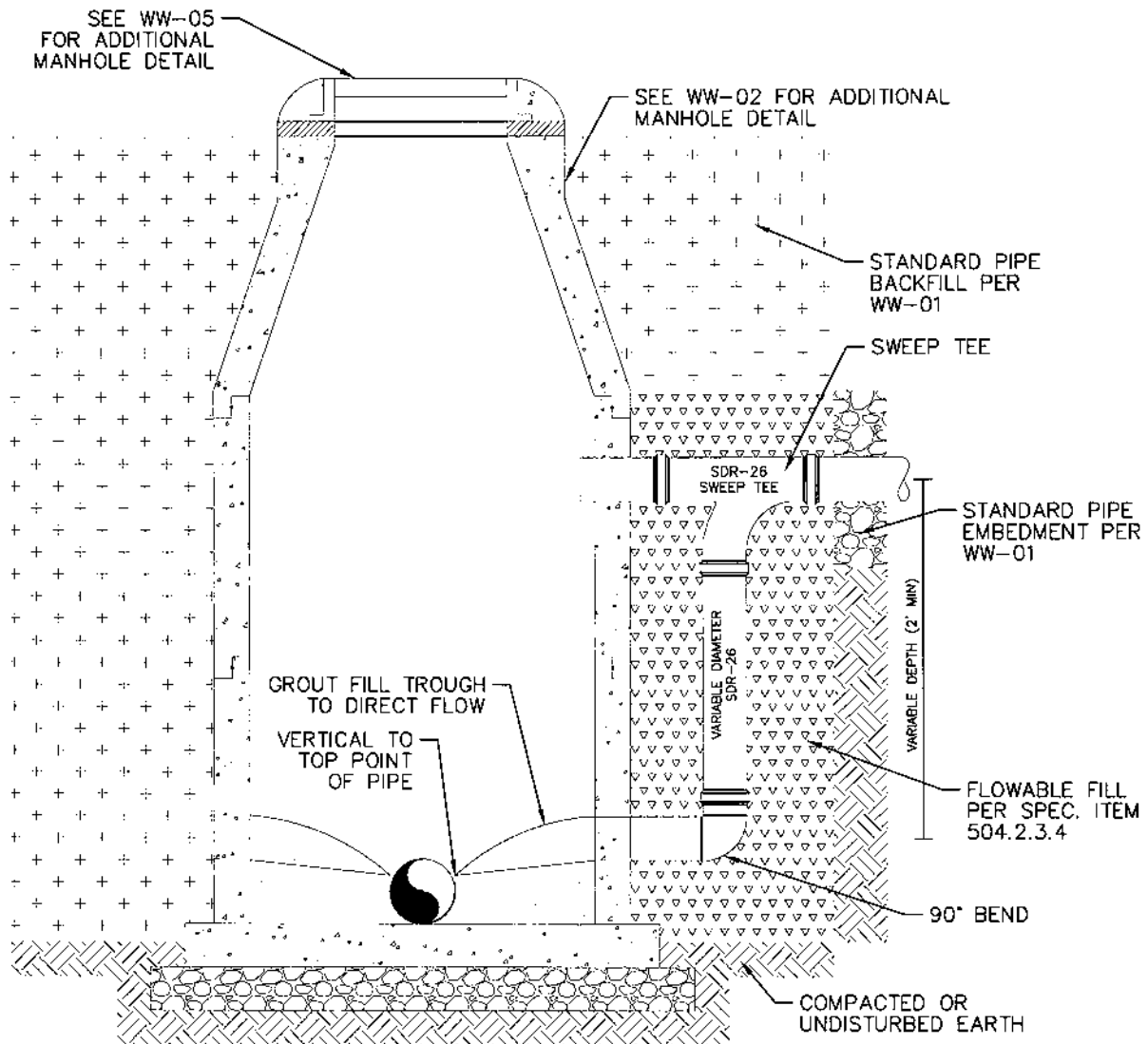


**City of Saginaw**  
Construction Standards

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.

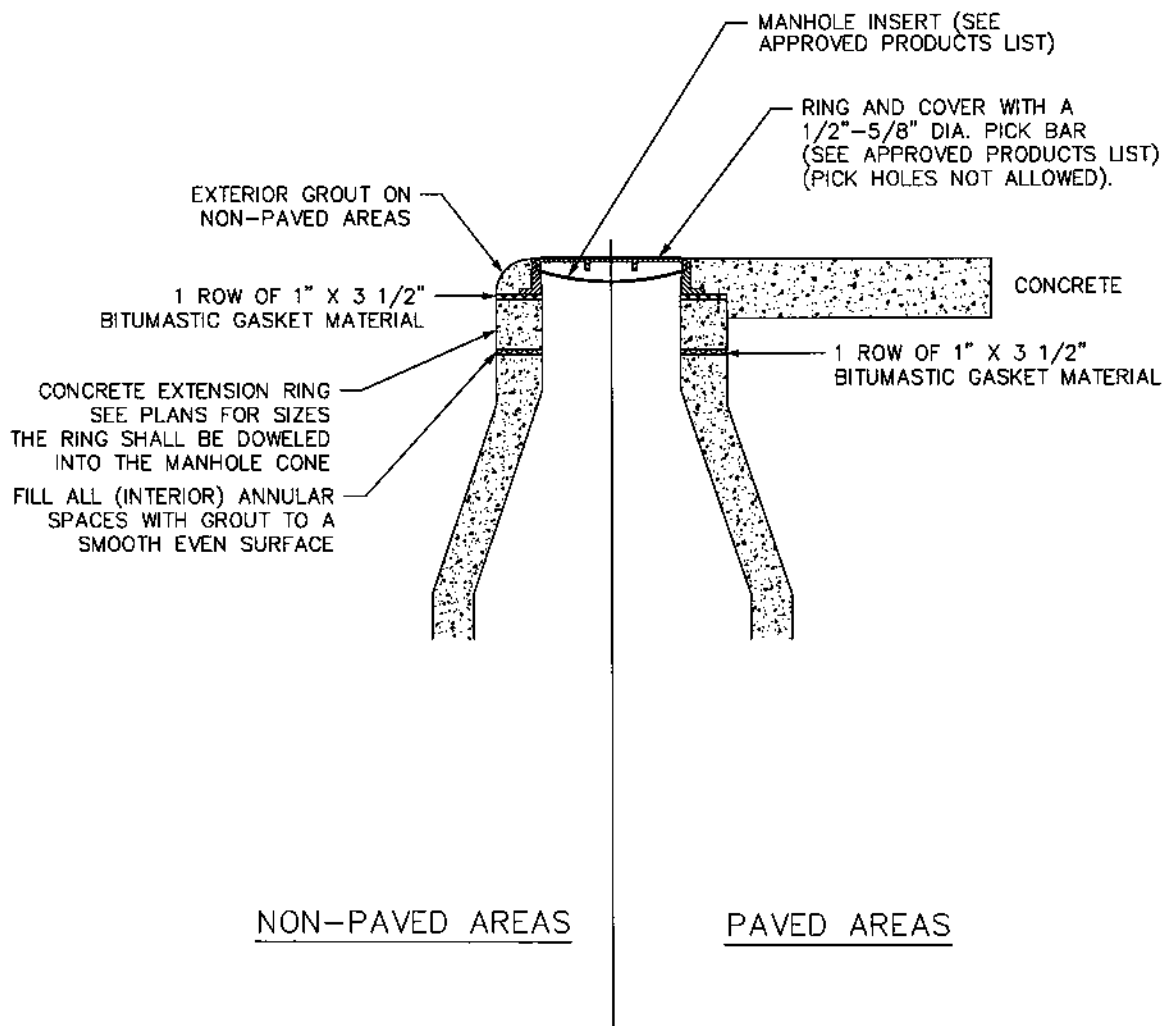


**City of Saginaw**  
Construction Standards

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.

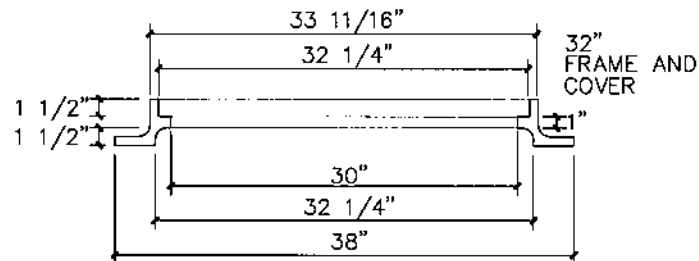
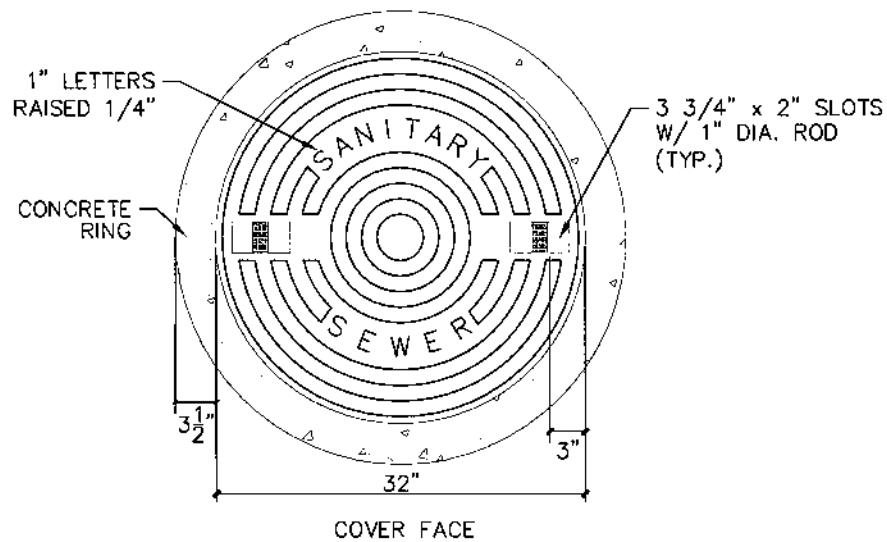


**City of Saginaw**  
Construction Standards

EXTENSION RING INSTALLATION  
FRAME AND COVER PLACEMENT

REVISED  
FEB 2023

WW-04



**City of Saginaw**  
Construction Standards

MANHOLE RING AND COVER

REVISED  
FEB 2023

WW-05

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

CLEANOUT CASTING

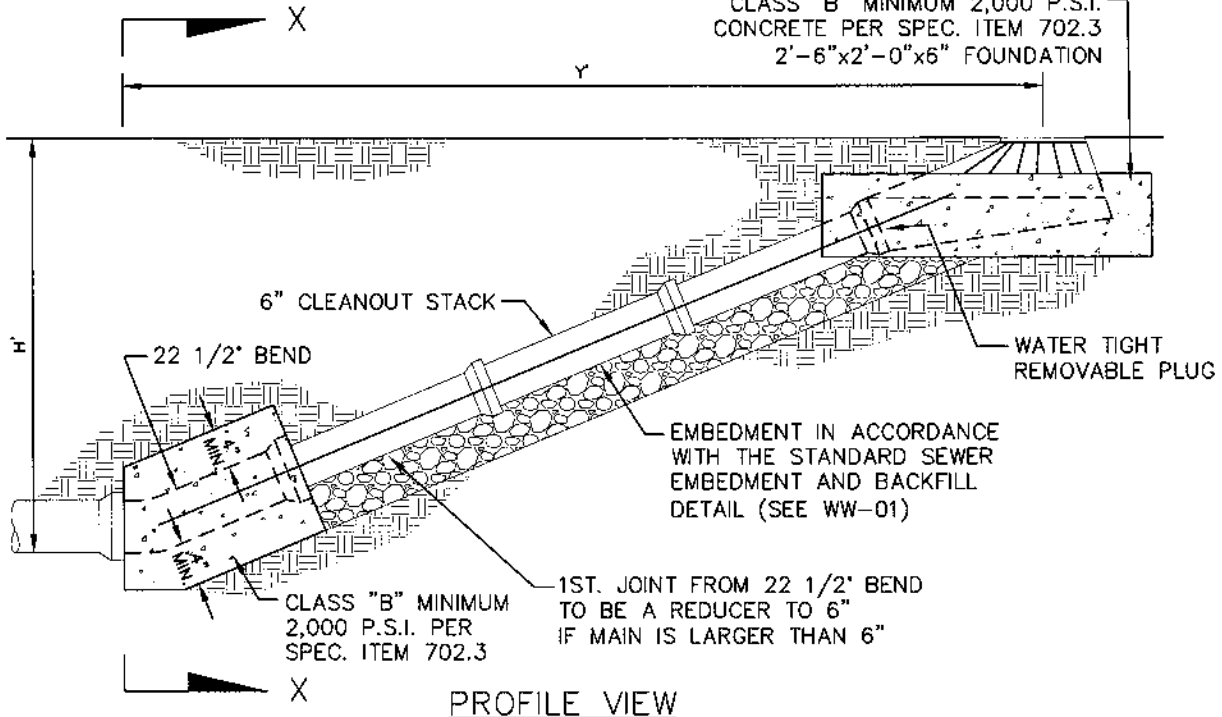
WATER TIGHT  
REMOVABLE PLUG

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.

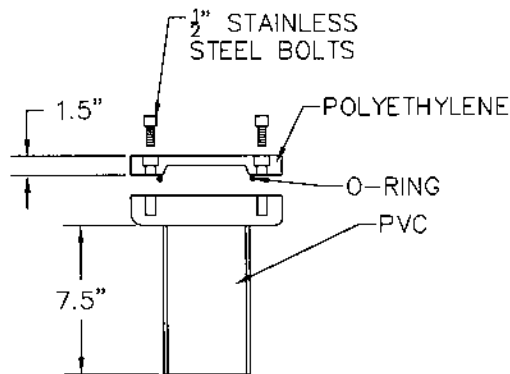


**City of Saginaw**  
Construction Standards

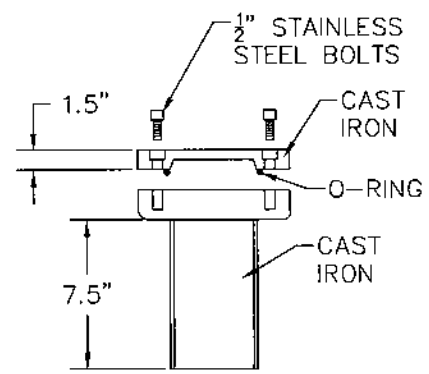
SANITARY SEWER MAIN CLEANOUT

REVISED  
FEB 2023

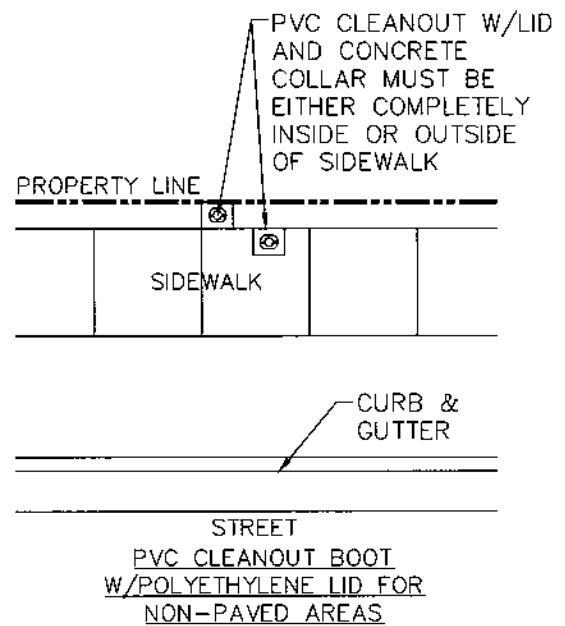
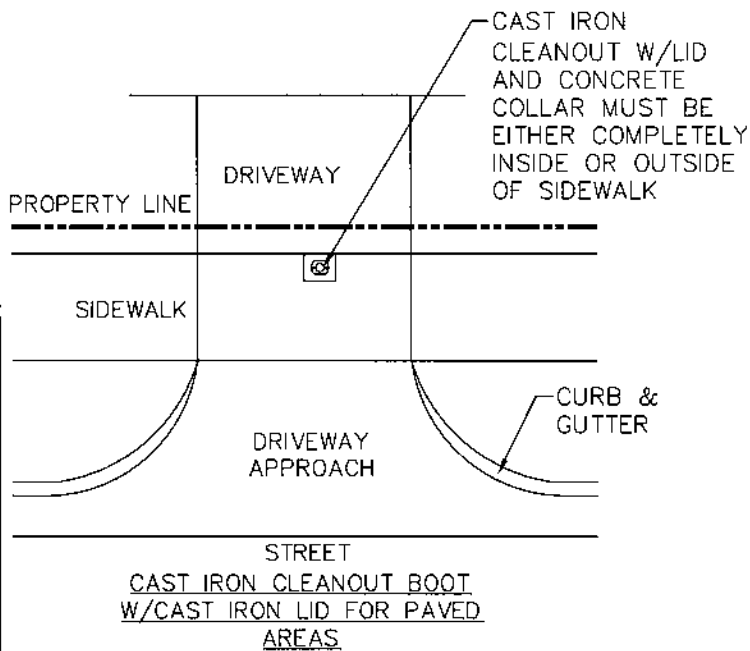
WW-06



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

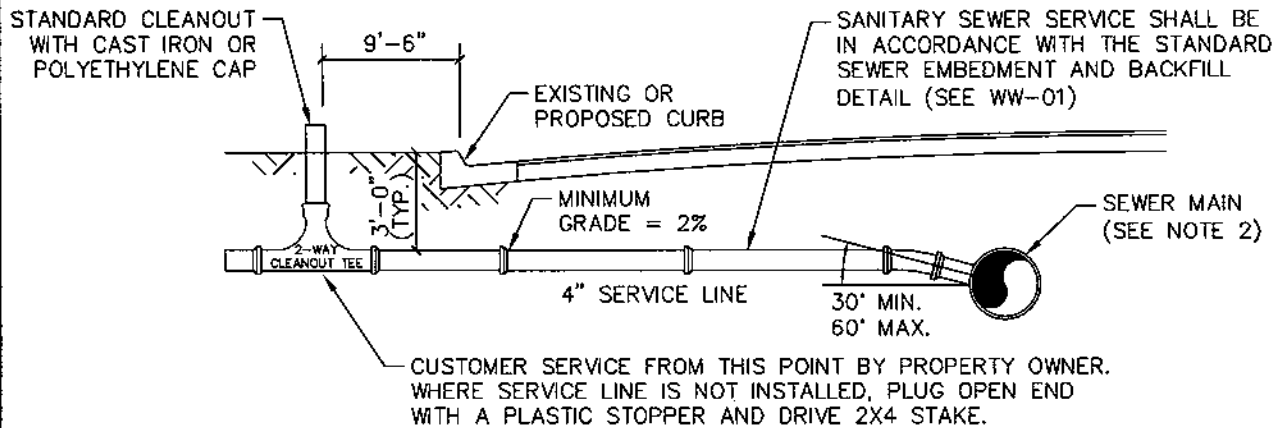


**City of Saginaw**  
Construction Standards

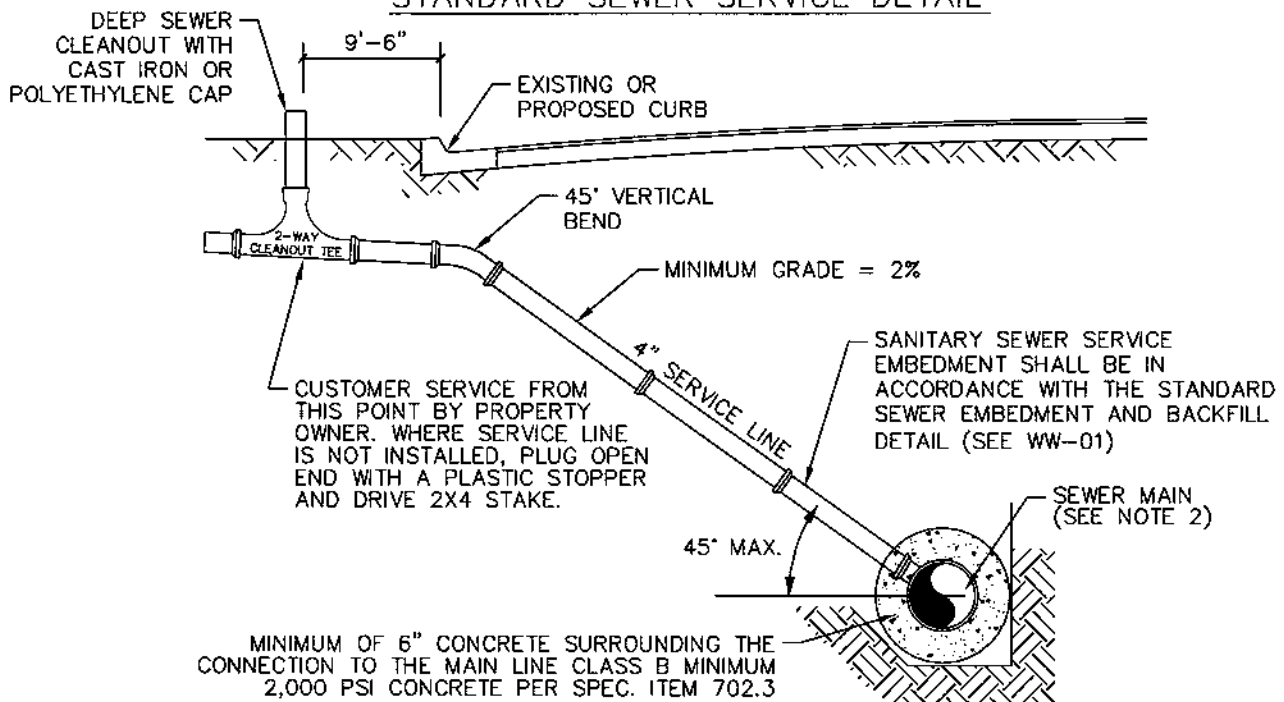
CLEANOUT CAP

REVISED  
FEB 2023

WW-07



### 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.

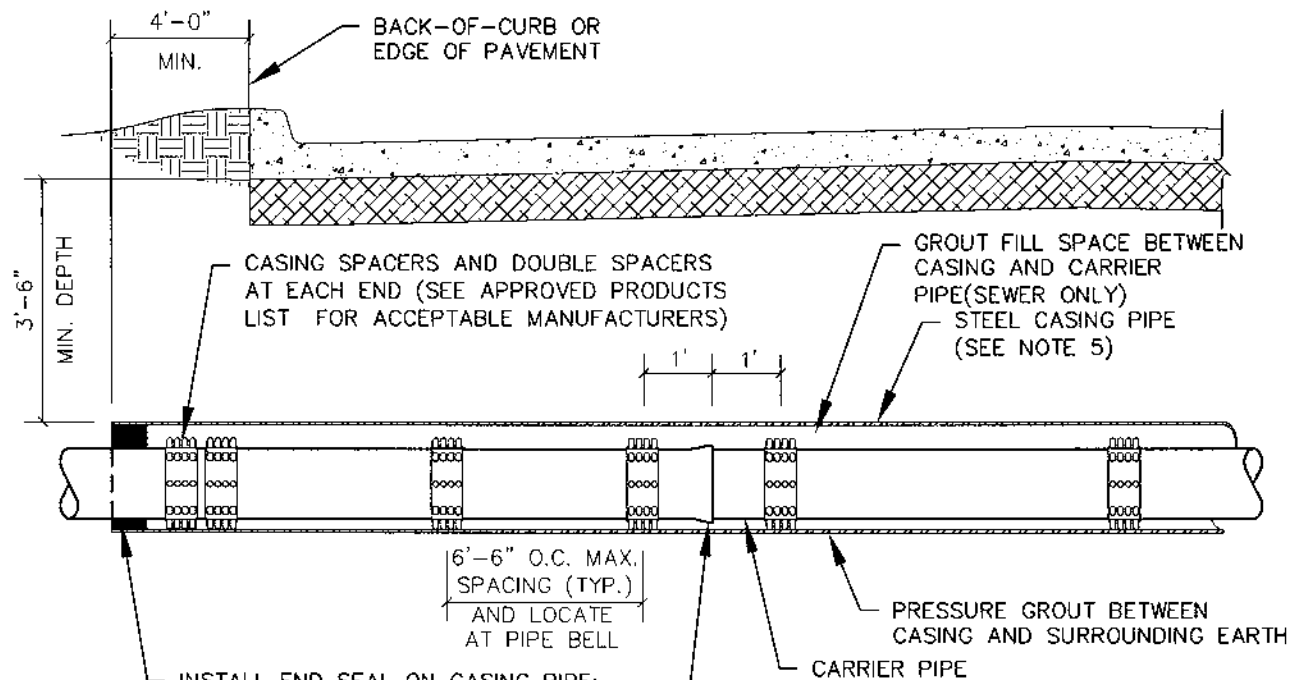


**City of Saginaw**  
Construction Standards

SANITARY SEWER SERVICE

REVISED  
FEB 2023

WW-08



FOR WATER LINES AND FORCE MAINS  
PROVIDE MORTARED BRICK WITH  
NON-SHRINK GROUT OR LINK SEAL.

GRAVITY SANITARY SEWER PIPING  
REQUIRE GROUTING OF THE ANNULAR  
SPACE BETWEEN THE CASING AND  
CARRIER PIPE, END SEAL IS NOT  
REQUIRED.

ALL JOINTS WITHIN AND ADJACENT TO  
CASING PIPE SHALL BE RESTRAINED

| CASING<br>DIAMETER                  | MIN. WALL<br>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.

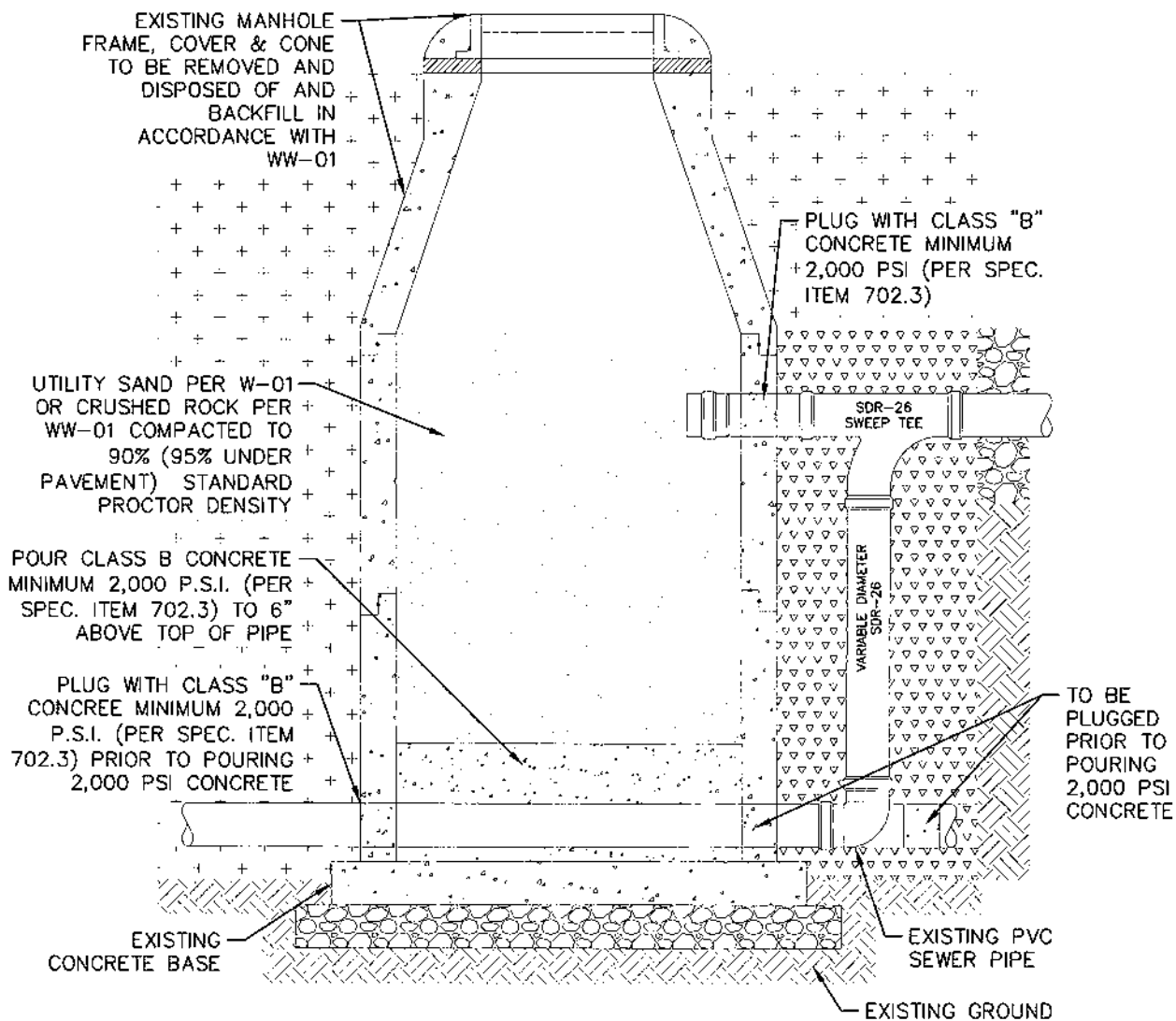


**City of Saginaw**  
Construction Standards

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.

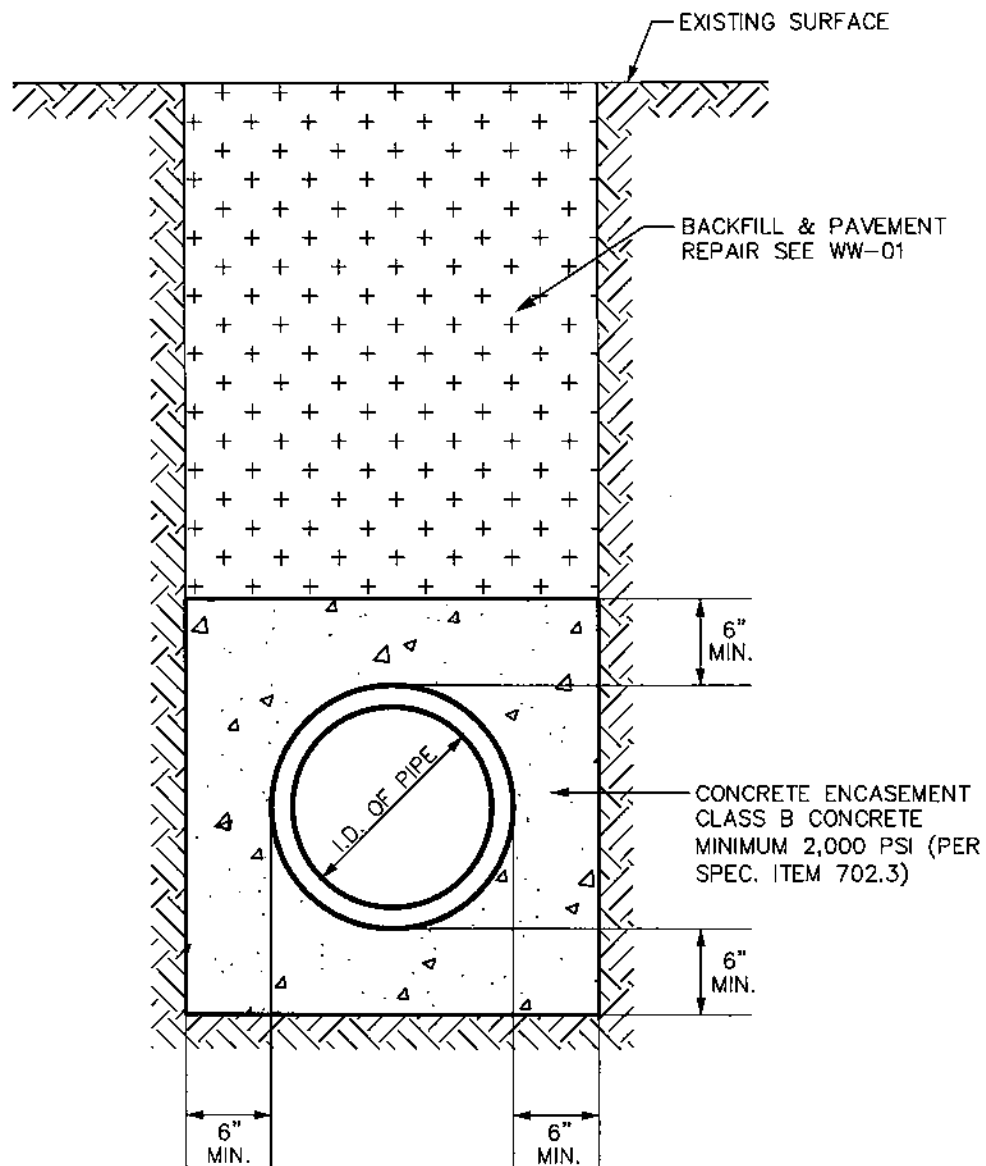


**City of Saginaw**  
Construction Standards

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.

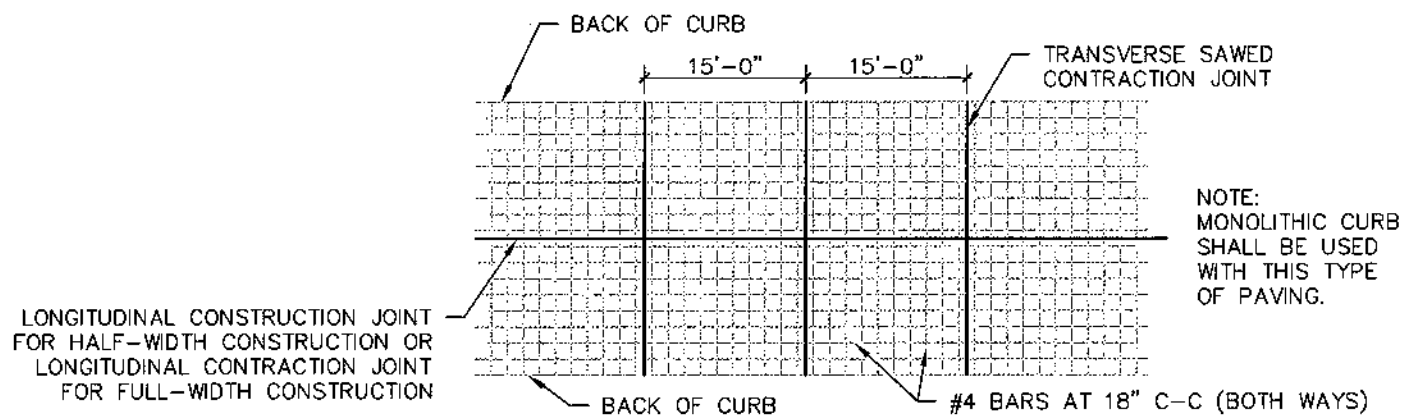
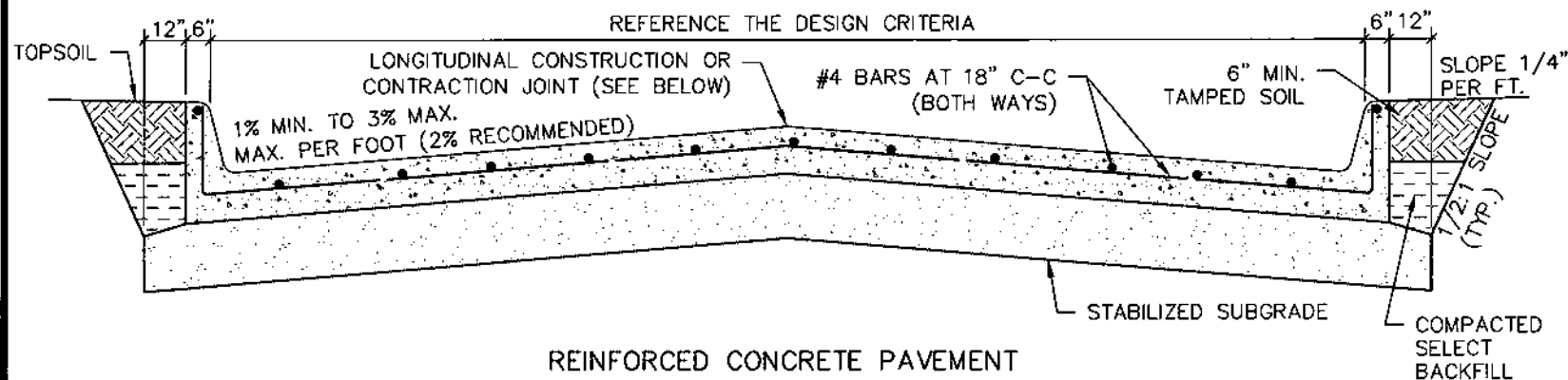


**City of Saginaw**  
Construction Standards

CONCRETE ENCASEMENT

REVISED  
FEB 2023

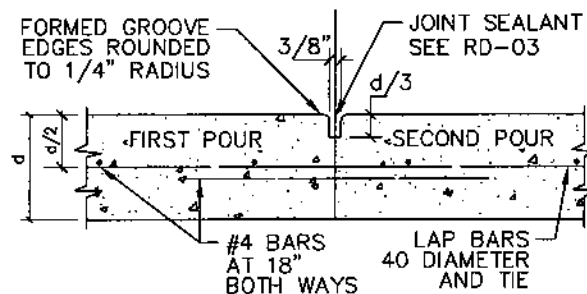
WW-11



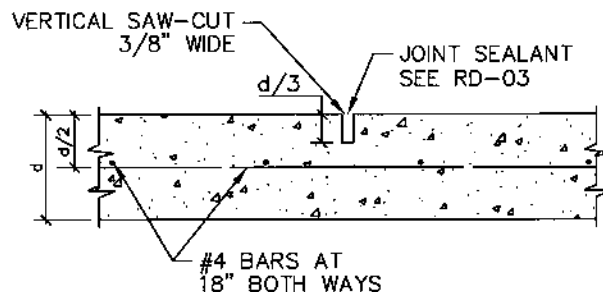
STEEL LAYOUT PLAN

**NOTES:**

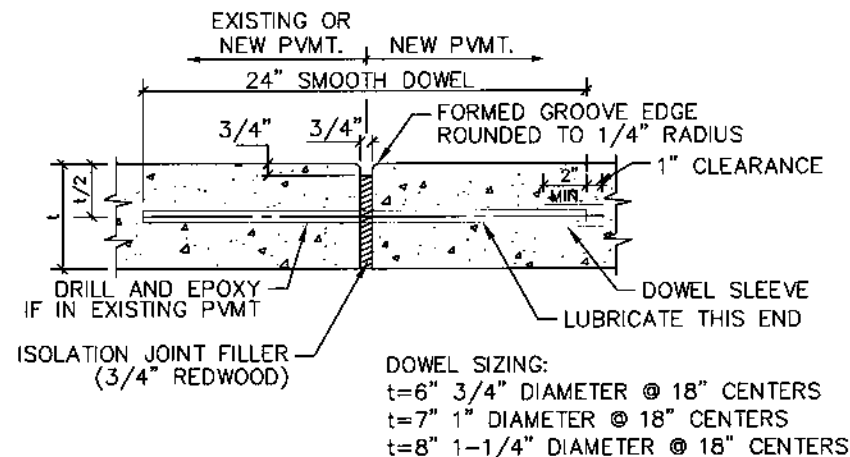
1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. MINIMUM PAVEMENT DEPTH SHALL BE 8".
3. ALL CONCRETE PAVEMENT SHALL BE CLASS "P1", 4000 PSI (MACHINE POURED) OR CLASS "P2", 4500 PSI (HAND POURED) (PER ITEM 303.3) 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



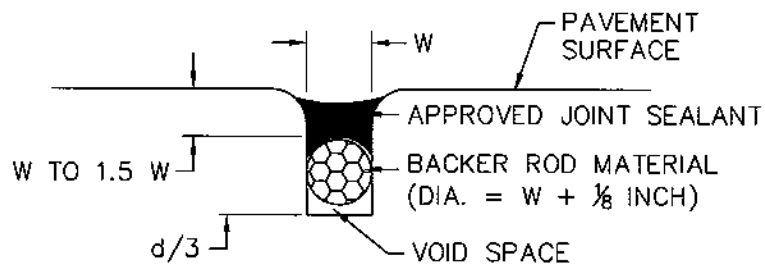
TRANSVERSE OR LONGITUDINAL  
SAWED CONSTRUCTION JOINT



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)

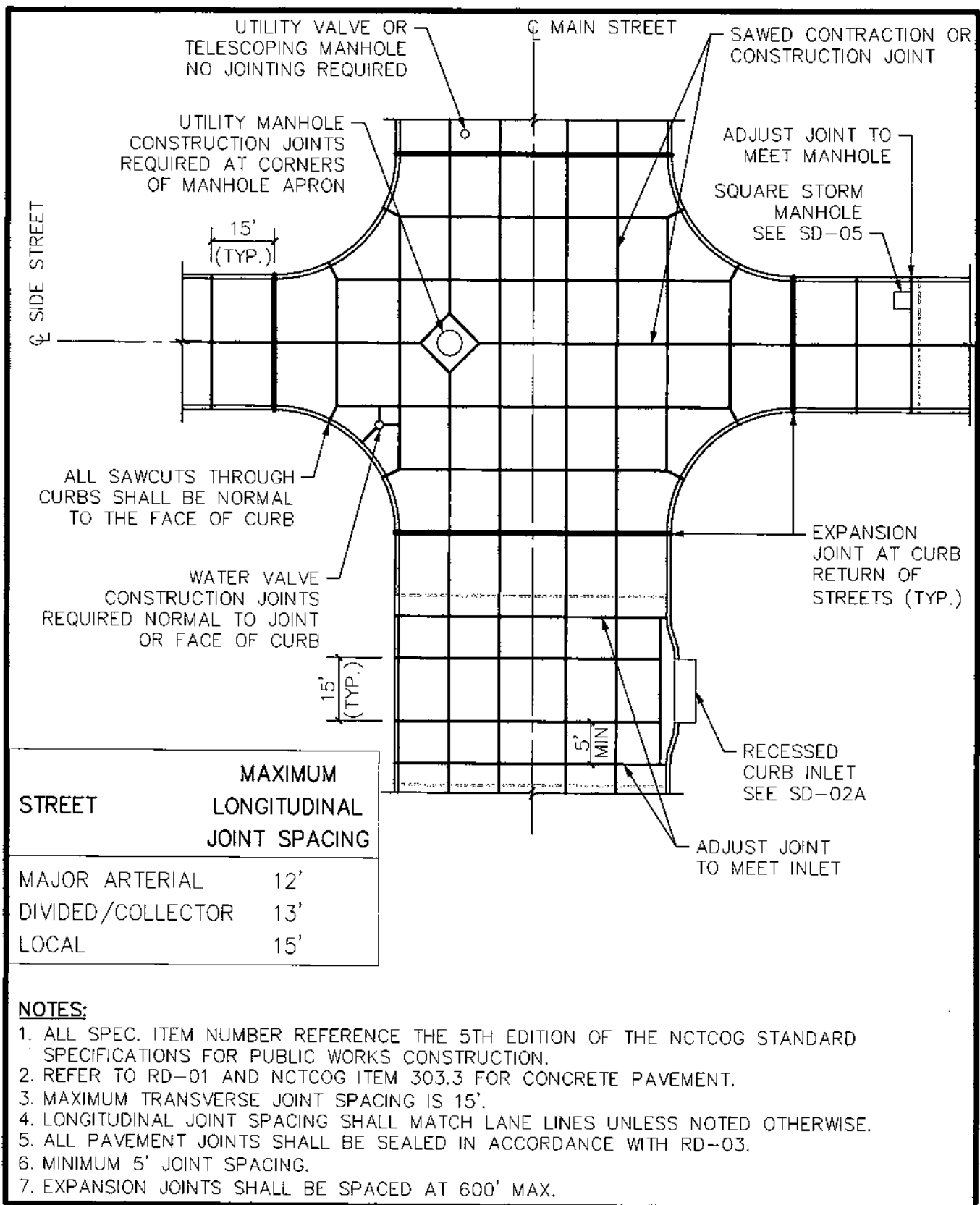


**City of Saginaw**  
Construction Standards

CONCRETE PAVING  
JOINT SEALANTS

REVISED  
FEB 2023

RD-03

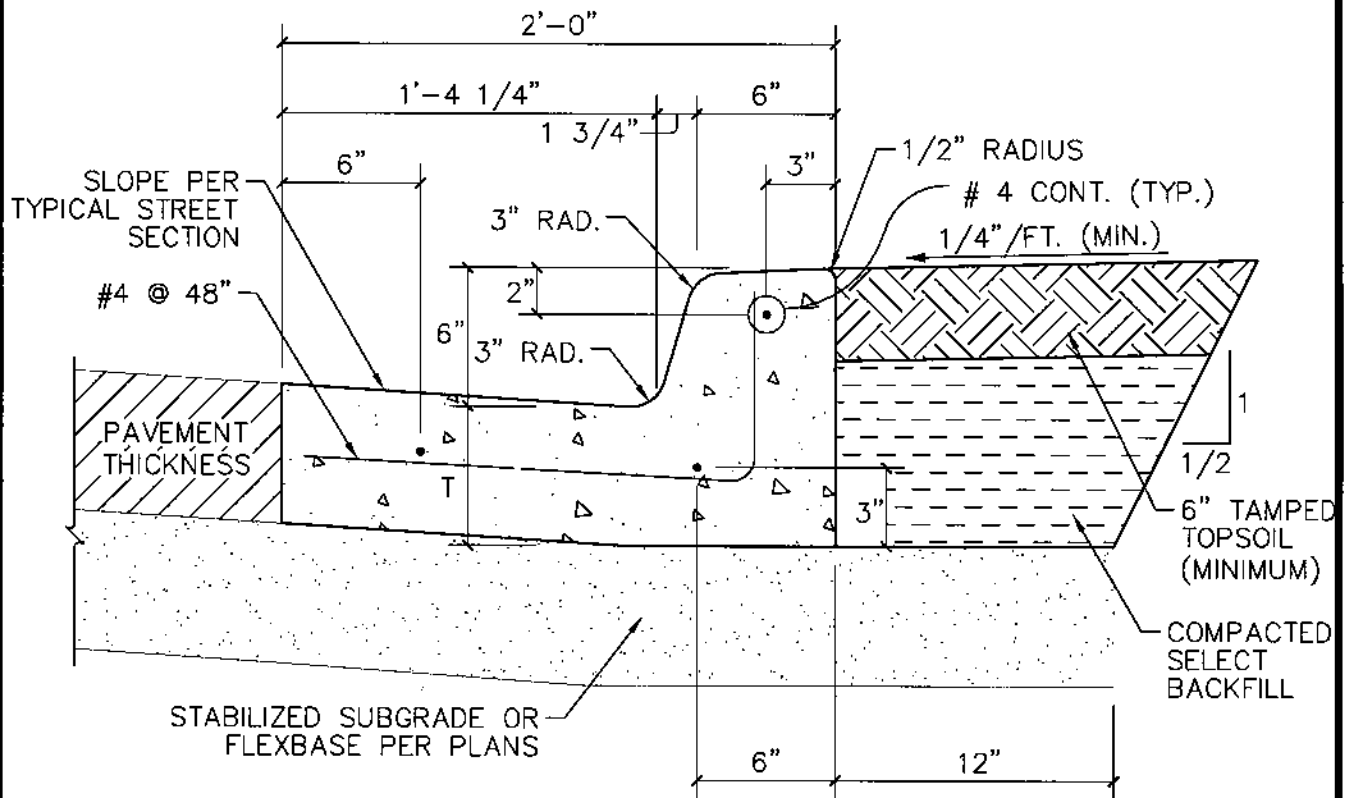


**City of Saginaw**  
Construction Standards

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

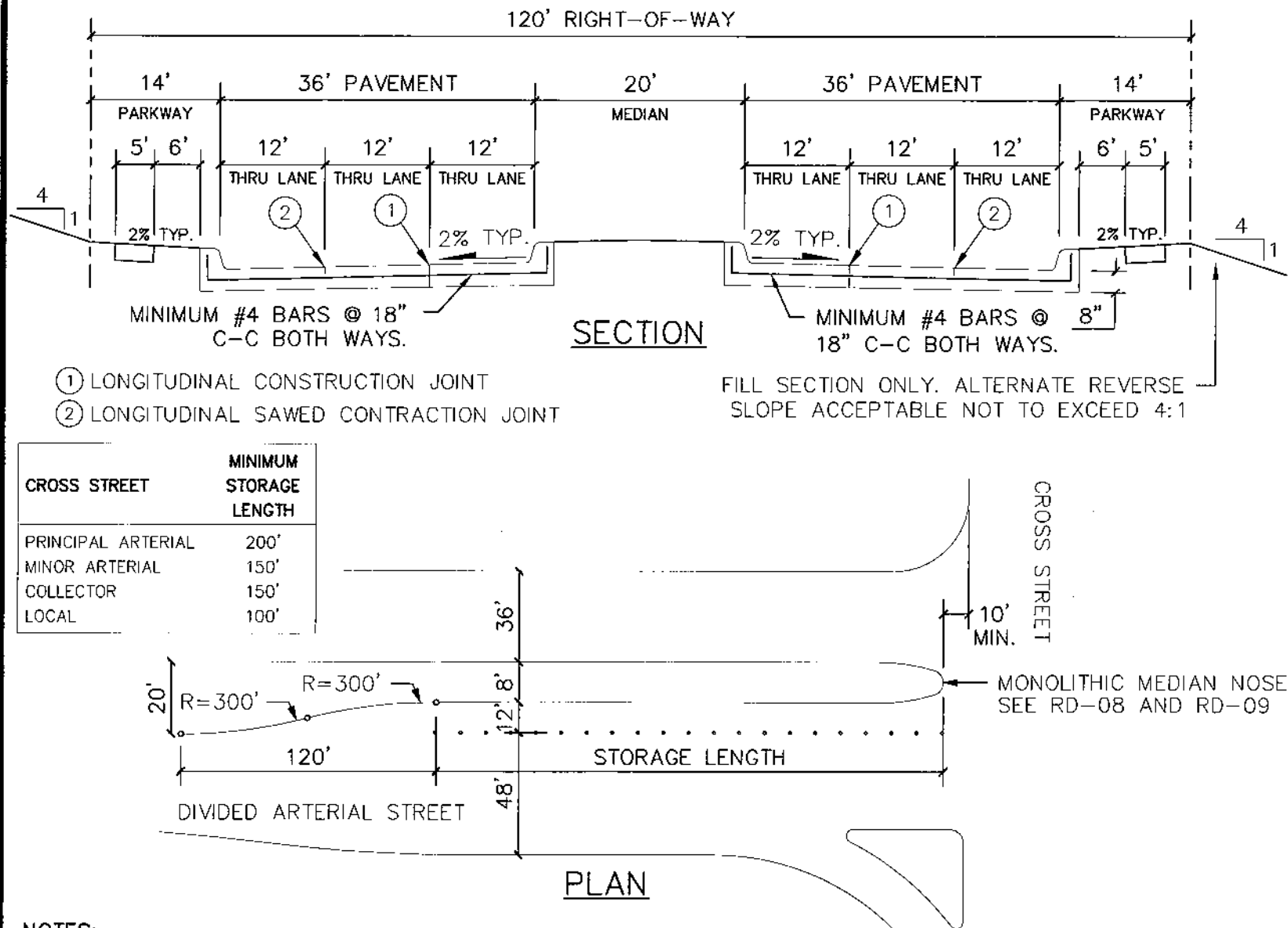


# City of Saginaw Construction Standards

## REINFORCED CONCRETE PAVEMENT SIX LANE DIVIDED THOROUGHFARE

RD-06

REVISED  
FEB 2023



### NOTES:

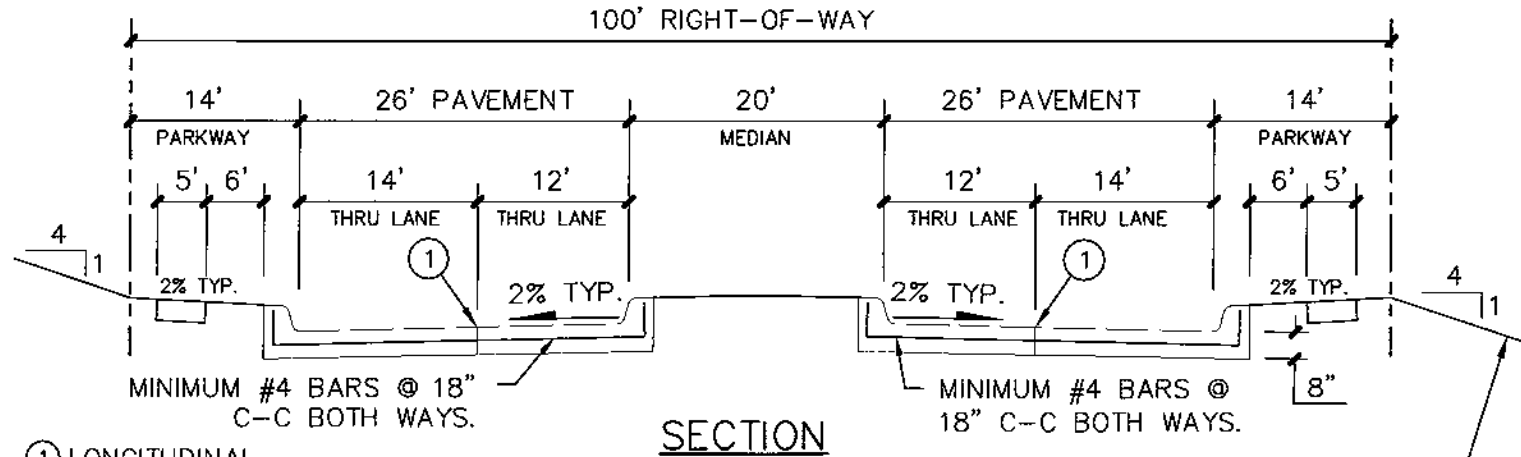
1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. REFER TO RD-01 AND NCTCOG ITEM 303.3 FOR CONCRETE PAVEMENT.
3. MIN. CURB HEIGHT AND WIDTH SHALL BE 6" OR AS SPECIFIED BY OWNER.



# City of Saginaw Construction Standards

## REINFORCED CONCRETE PAVEMENT FOUR LANE DIVIDED THOROUGHFARE

REVISED  
FEB 2023  
RD-07

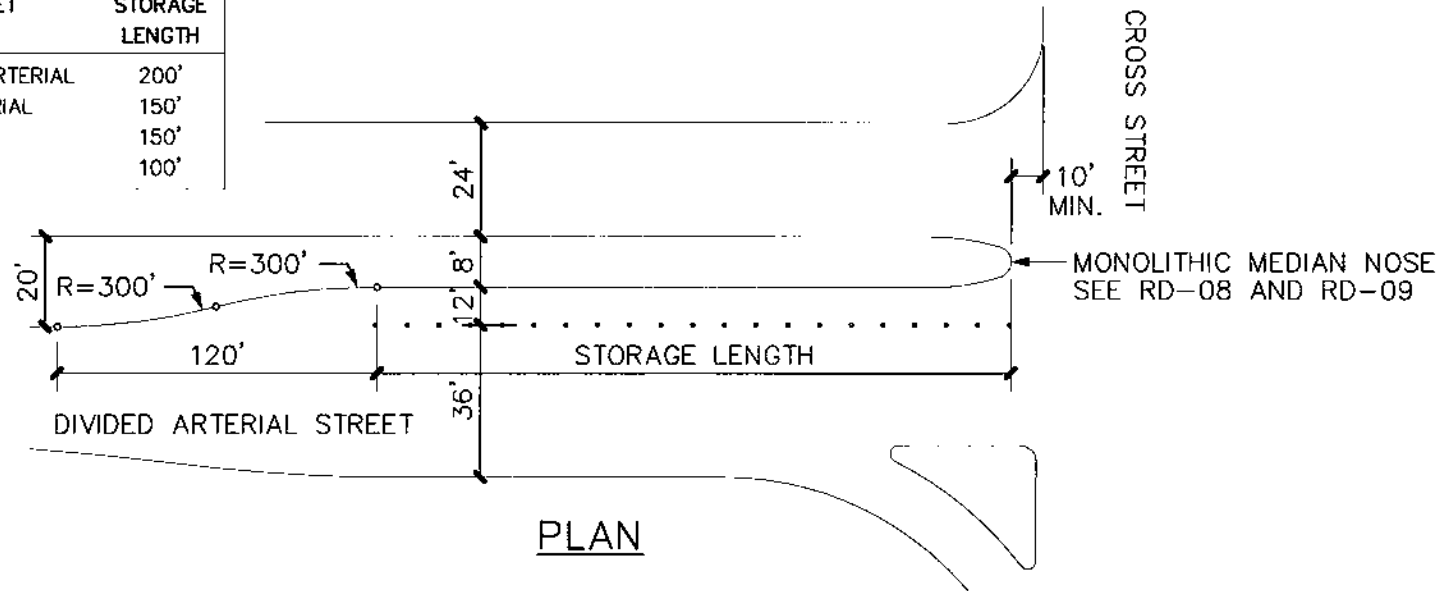


① LONGITUDINAL  
CONSTRUCTION JOINT

### SECTION

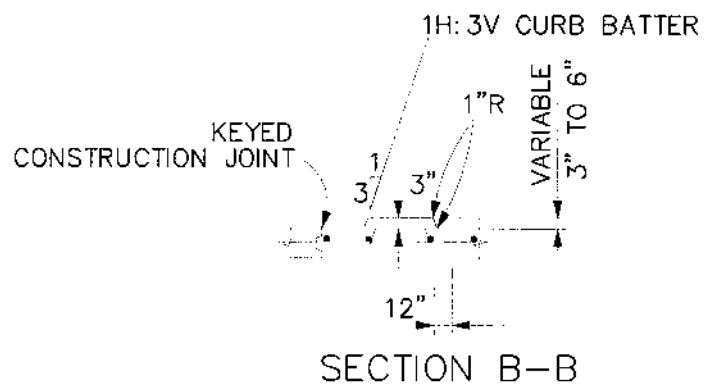
FILL SECTION ONLY. ALTERNATE REVERSE  
SLOPE ACCEPTABLE NOT TO EXCEED 4:1

| CROSS STREET       | MINIMUM<br>STORAGE<br>LENGTH |
|--------------------|------------------------------|
| PRINCIPAL ARTERIAL | 200'                         |
| MINOR ARTERIAL     | 150'                         |
| COLLECTOR          | 150'                         |
| LOCAL              | 100'                         |

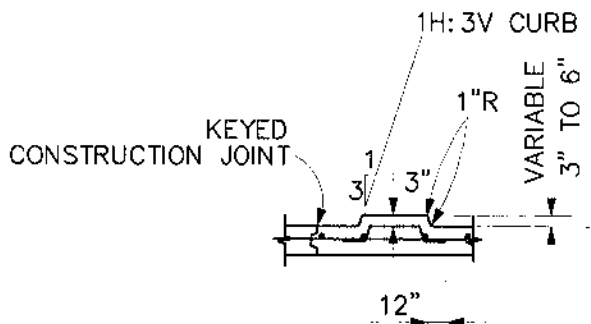
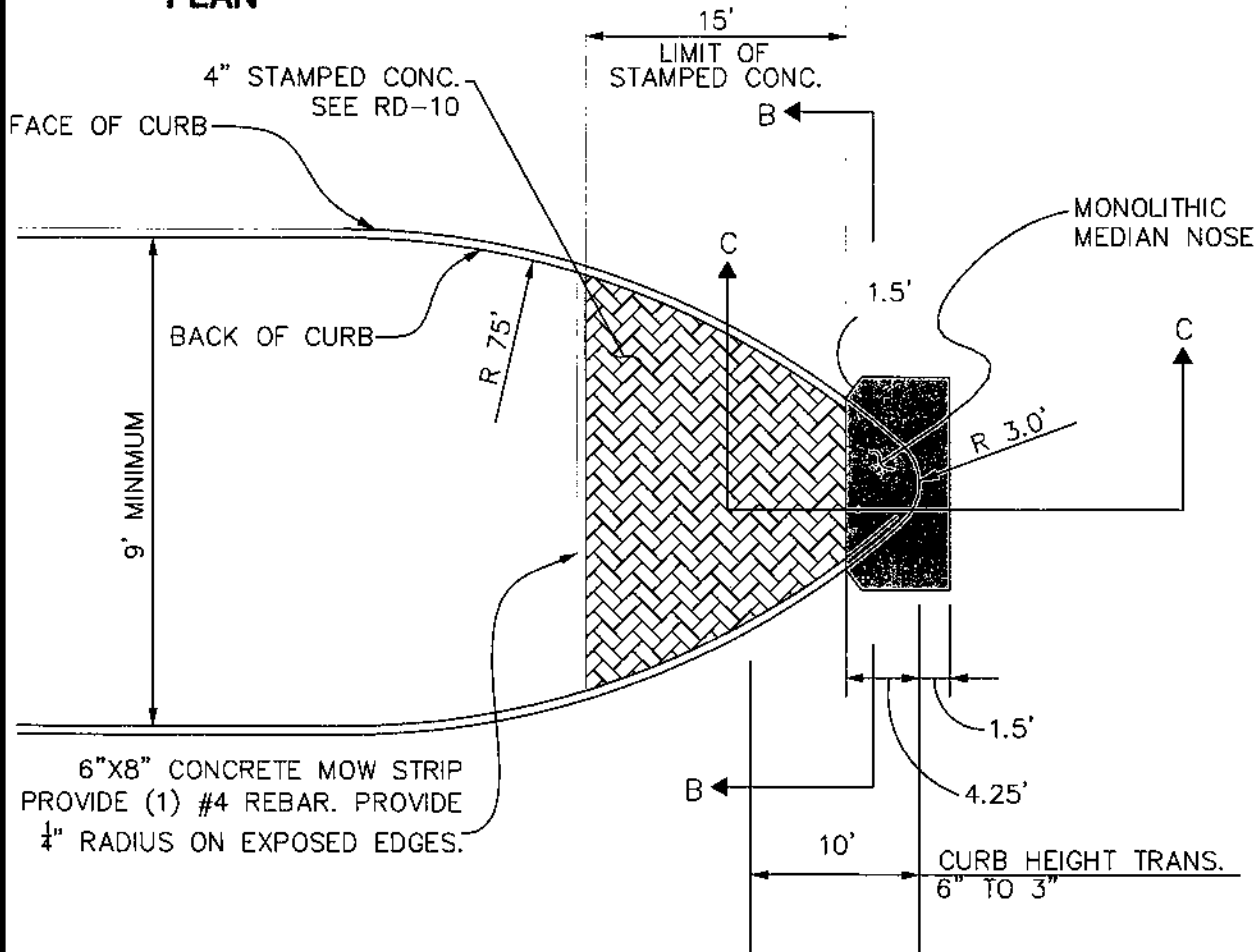


### NOTES:

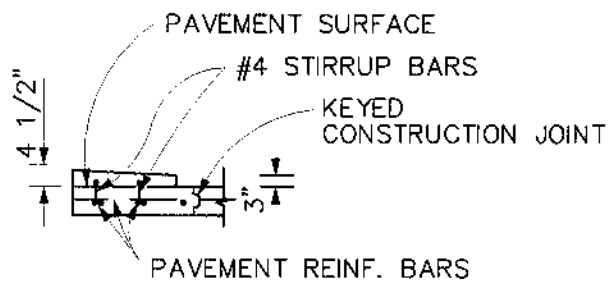
1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. REFER TO RD-01 AND NCTCOG ITEM 303.3 FOR CONCRETE PAVEMENT.
3. MIN. CURB HEIGHT AND WIDTH SHALL BE 6" OR AS SPECIFIED BY OWNER.



# 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.

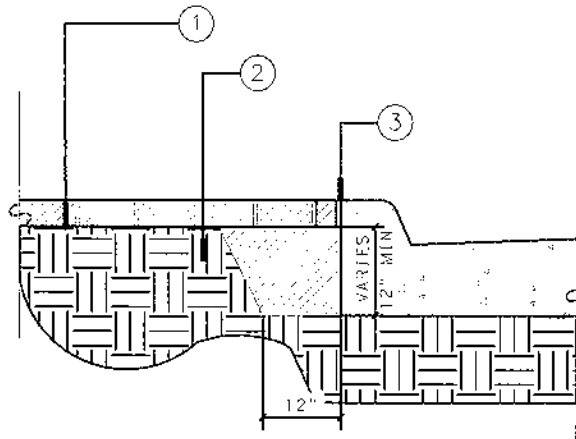


**City of Saginaw**  
Construction Standards

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\*

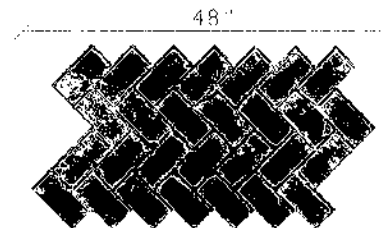
**SPLITTER ISLANDS AT ROUNDABOUT**  
 CONCRETE COLORS OF TEXAS LLC INTEGRAL COLOR\*:  
 CONCRETE COLORS OF TEXAS LLC ANTIQUING RELEASE\*:  
 SCOFIELD CURESEAL-W SEMIGLOSS\*

201 - 1 DORSKIN  
 108 - B PORTERELLO

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

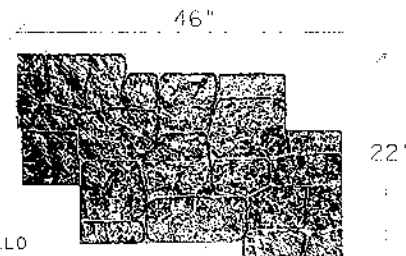
### INTEGRAL COLORED AND TEXTURED CONCRETE STAMP TOOL

**QT-FB 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.

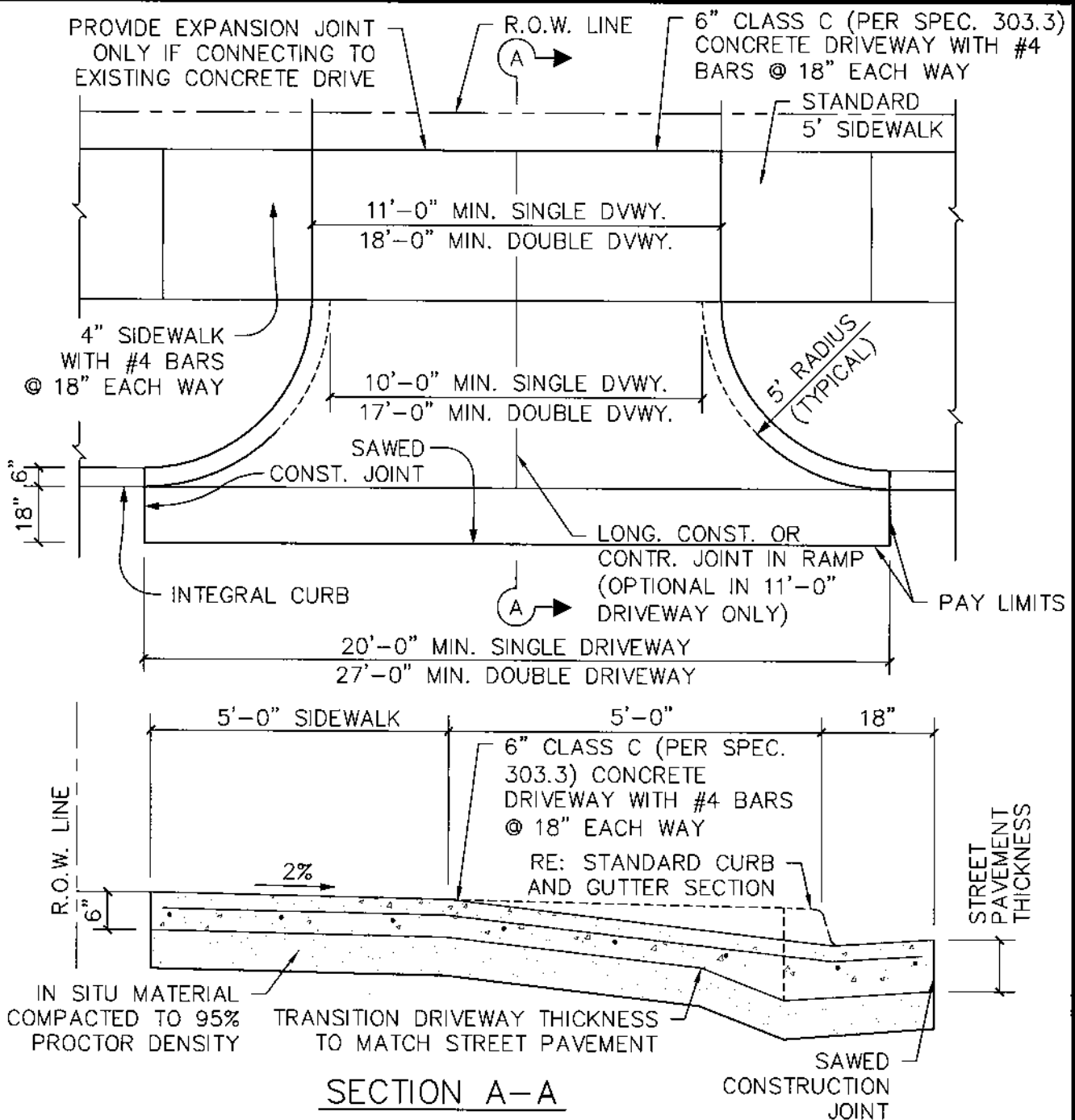


**City of Saginaw**  
**Construction Standards**

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.

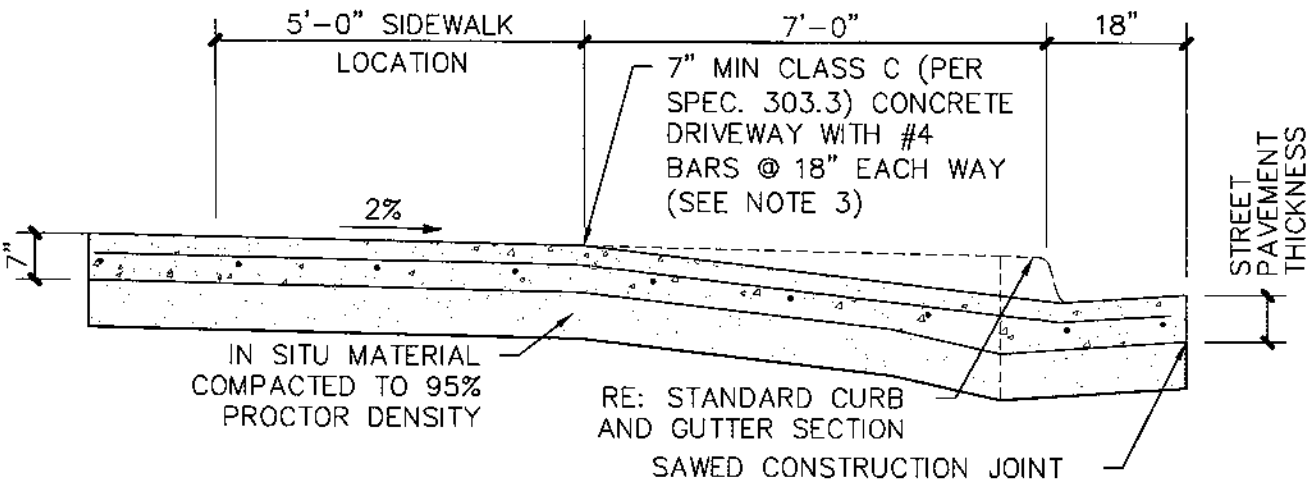


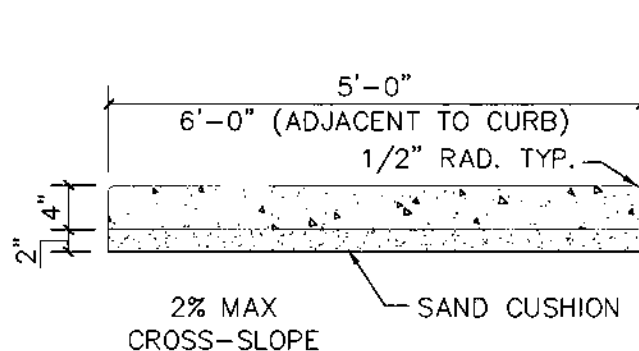
**City of Saginaw**  
Construction Standards

RESIDENTIAL DRIVEWAY

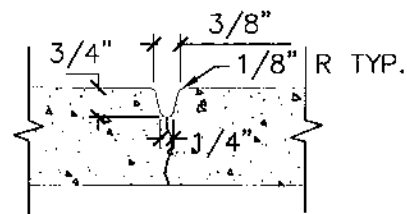
REVISED  
FEB 2023

RD-11

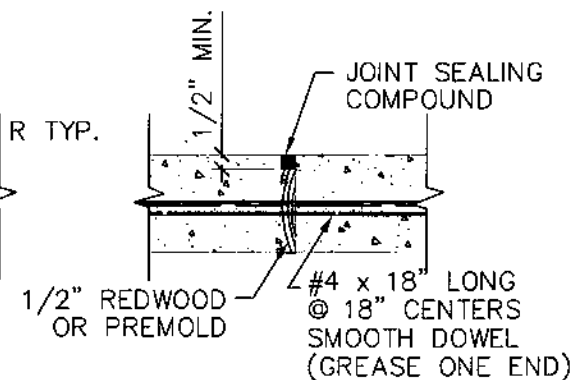




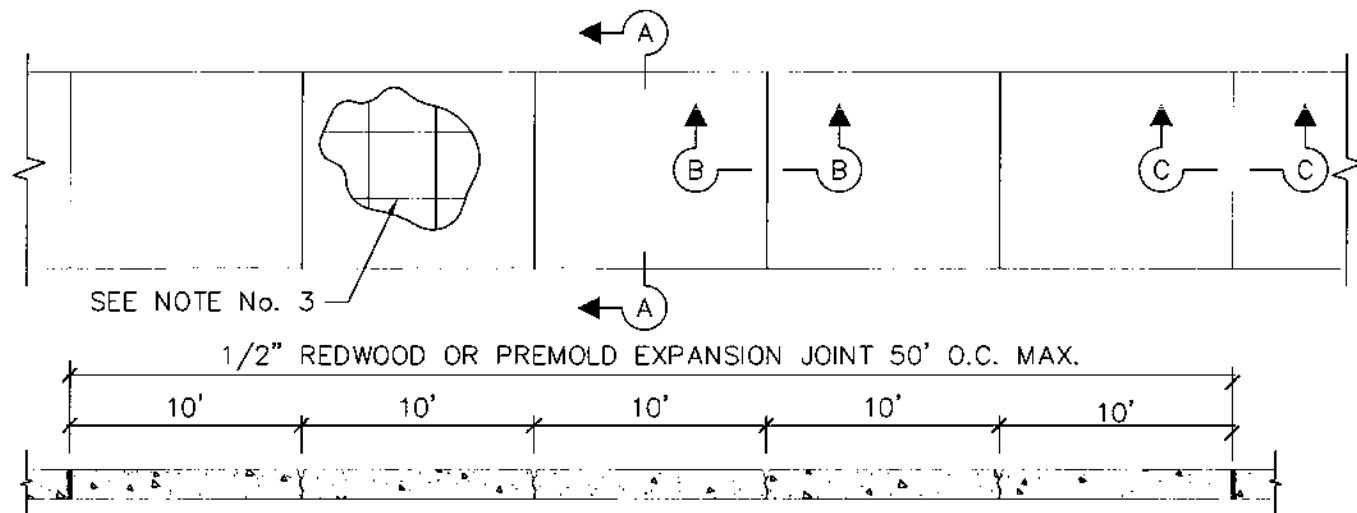
SECTION A-A



SECTION B-B

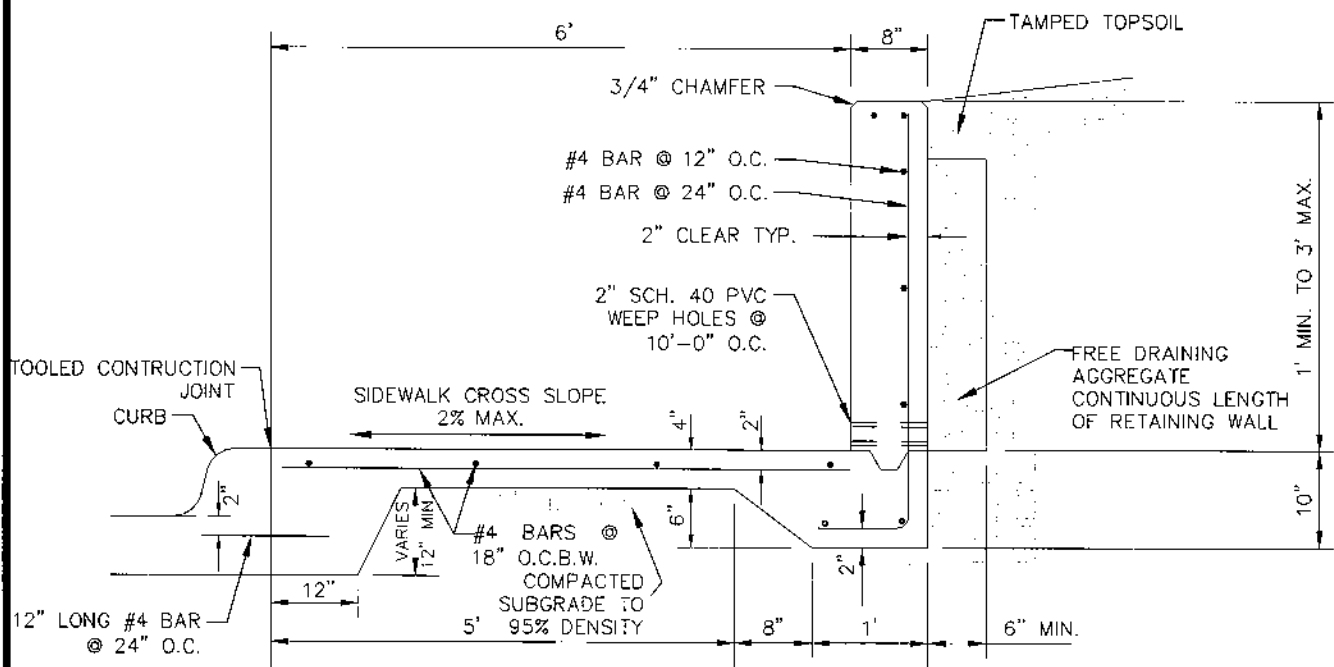


SECTION C-C



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.



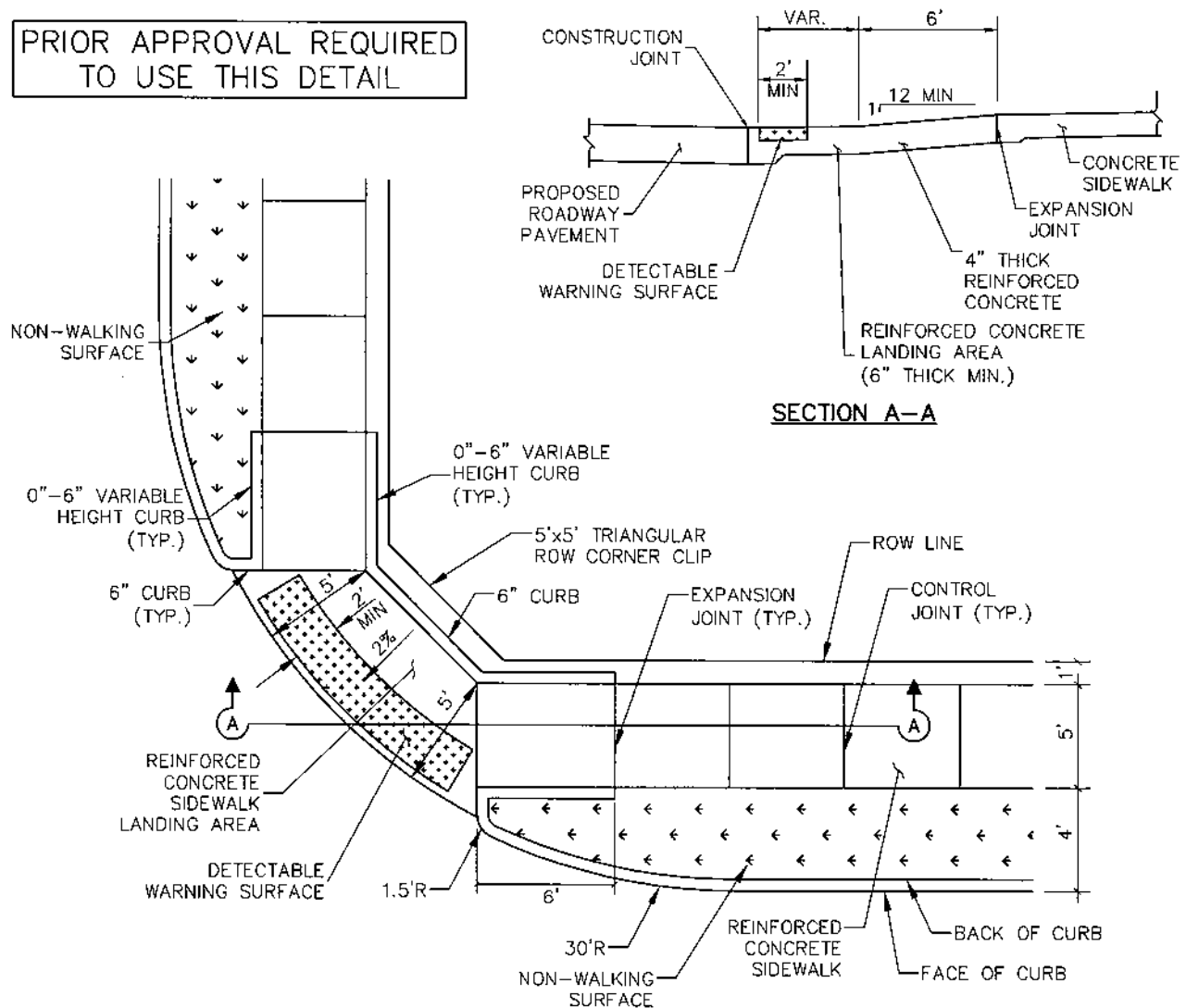
**City of Saginaw**  
Construction Standards

CONCRETE SIDEWALK WITH WALL

REVISED  
FEB 2023

RD-14

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.

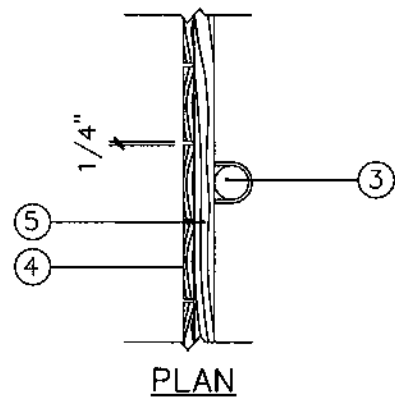
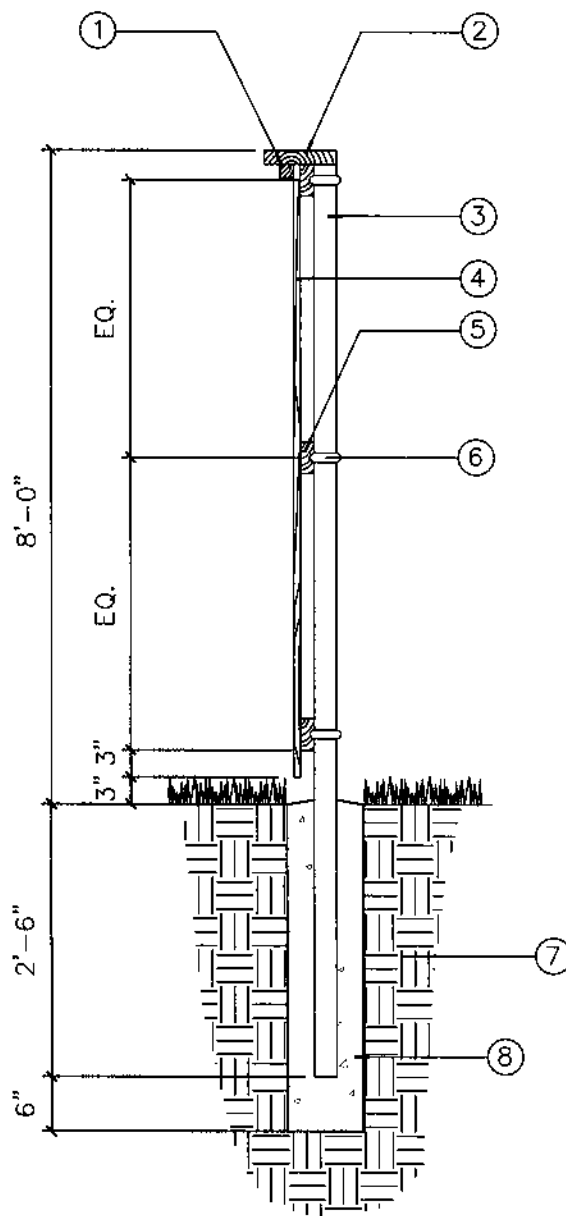


**City of Saginaw**  
Construction Standards

BARRIER FREE RAMP

REVISED  
FEB 2023

RD-15



- ① 2"x2" TRIM
- ② 2"x8" CAP (TOP OF FENCE TO BE LEVEL)
- ③ 2" DIA. GALV. STEEL POST. POST SHALL BE FLUSH WITH BOTTOM OF 2"x8" CAP.
- ④ 1"x6" PICKET  
NOTE: TO BE 3" ABOVE FINISH GRADE (TYP.)
- ⑤ (3) 2"x4" RAILS
- ⑥ (3) WACKER CLAMPS WITH COUNTER-SINK NUTS
- ⑦ COMPACTED SOIL
- ⑧ 12" DIA. CLASS A (PER SPEC. 702.3) CONCRETE FOOTING

#### NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. WOOD FENCE MATERIAL AS SPECIFIED IN ZONING ORDINANCE 2002-04.
3. GALVANIZED STEEL POSTS SHALL BE SPACED AT 8' ON CENTER MAX.
4. HARDWARE TO BE HOT DIPPED GALV.
5. FENCE STAIN TO BE DETERMINED.

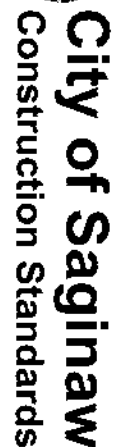


**City of Saginaw**  
Construction Standards

WOOD SCREENING DETAIL

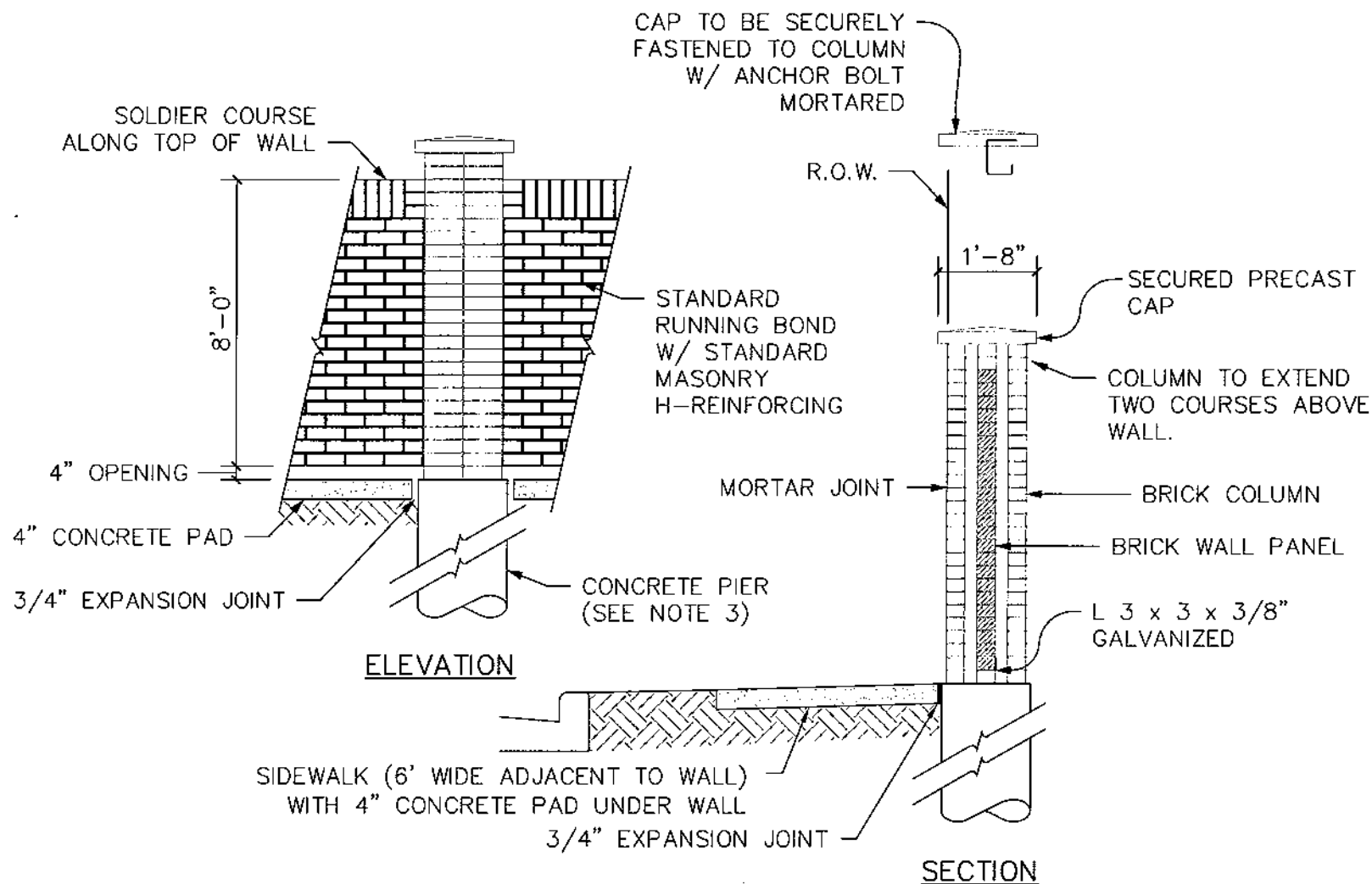
REVISED  
FEB 2023

RD-16



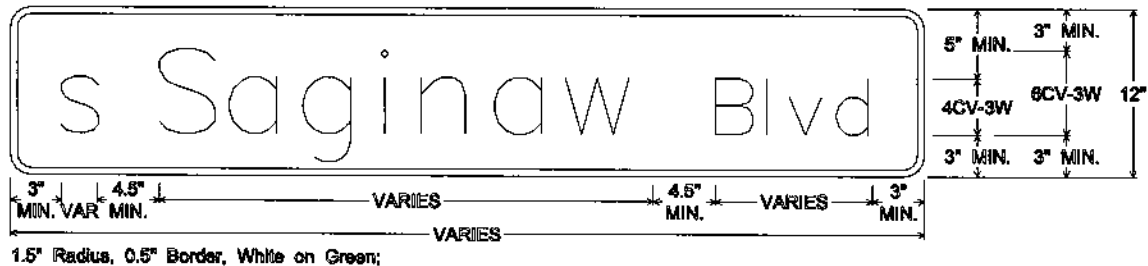
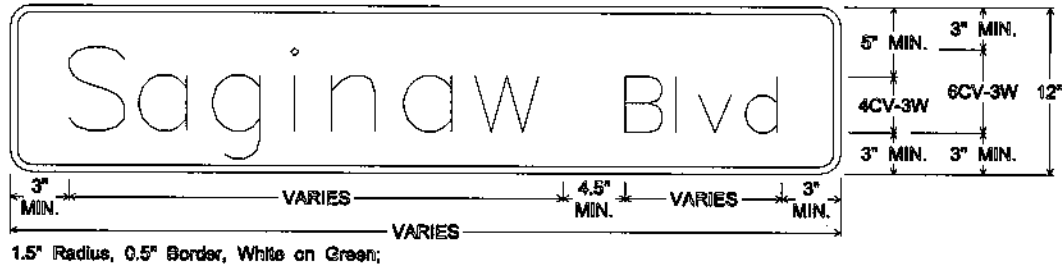
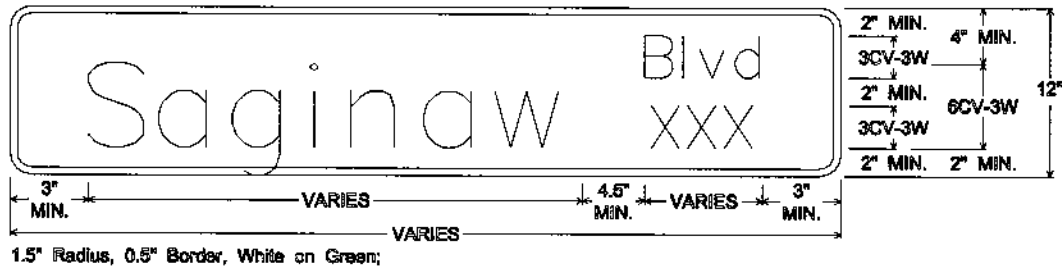
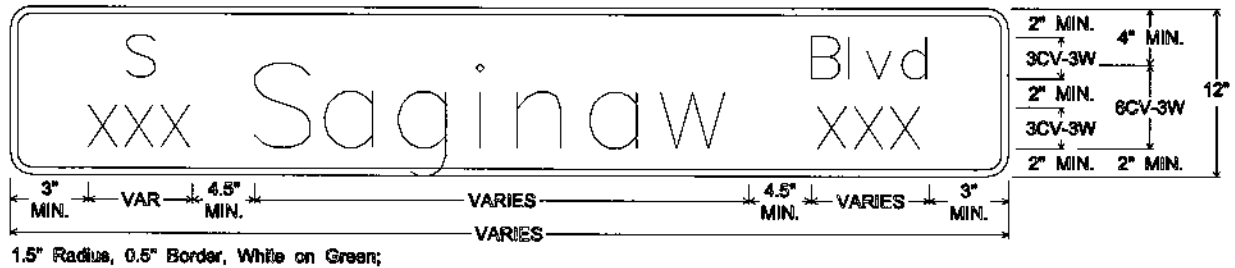
## MASONRY SCREENING DETAIL

RD-17

REVISÉD  
FEB 2023

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. 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.

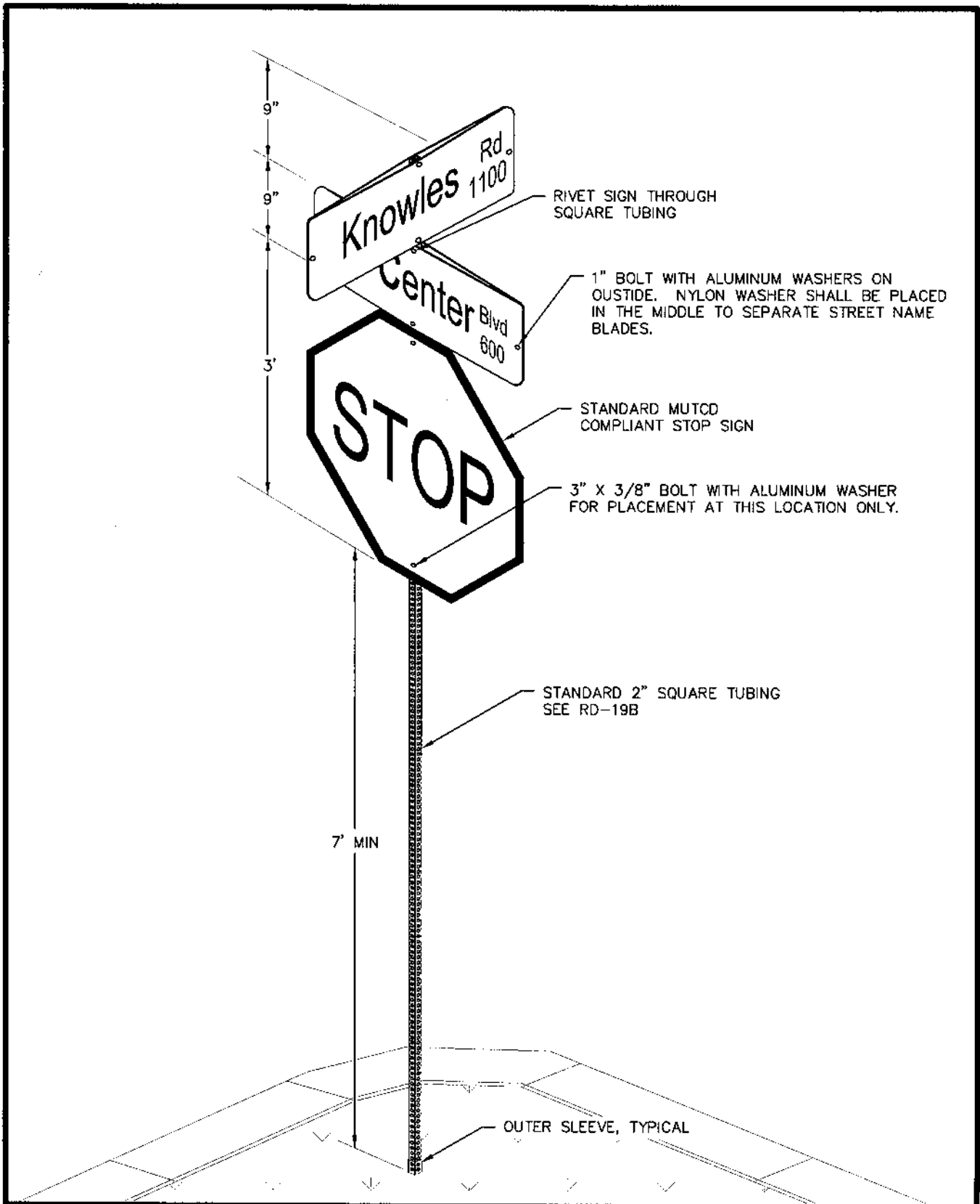


**City of Saginaw**  
Construction Standards

STREET SIGN

REVISED  
FEB 2023

RD-18

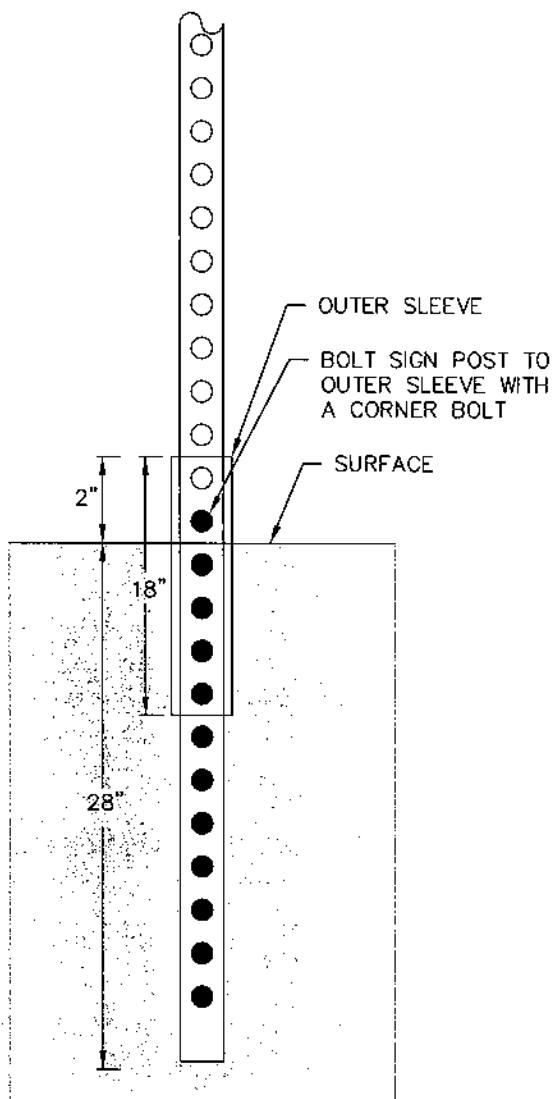


**City of Saginaw**  
Construction Standards

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.

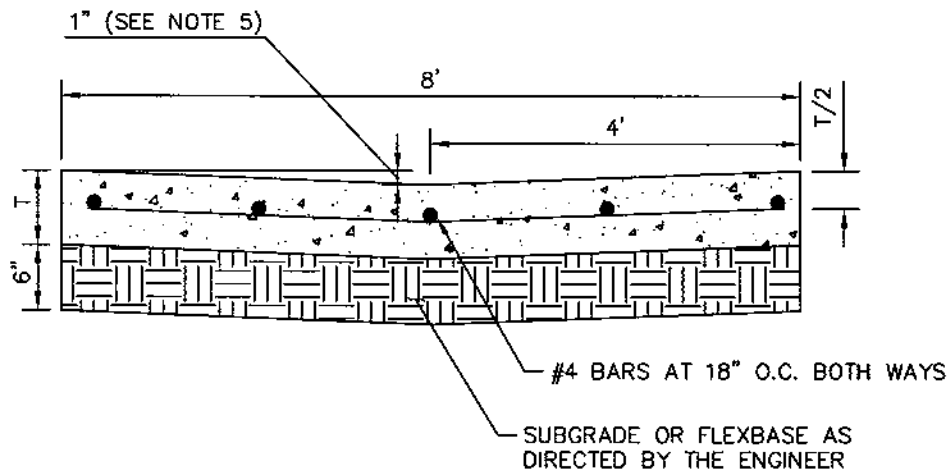
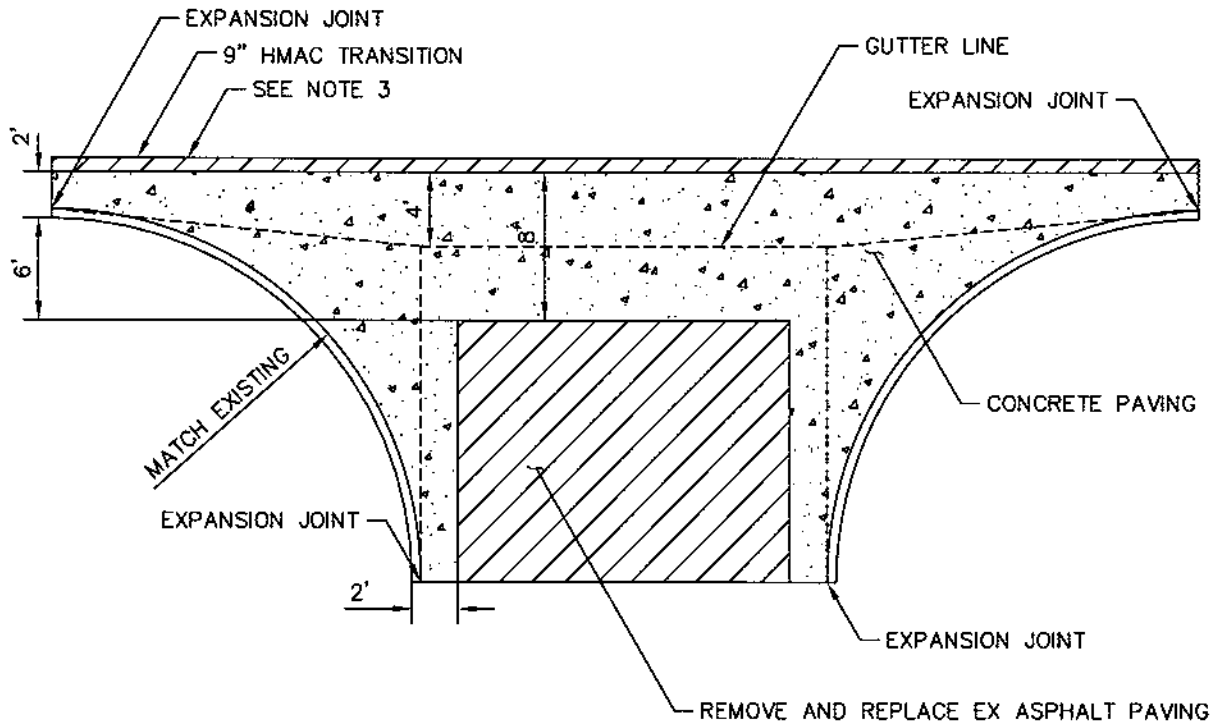


**City of Saginaw**  
Construction Standards

SIGN POST  
SQUARE TUBING

REVISED  
FEB 2023

RD-19B



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.



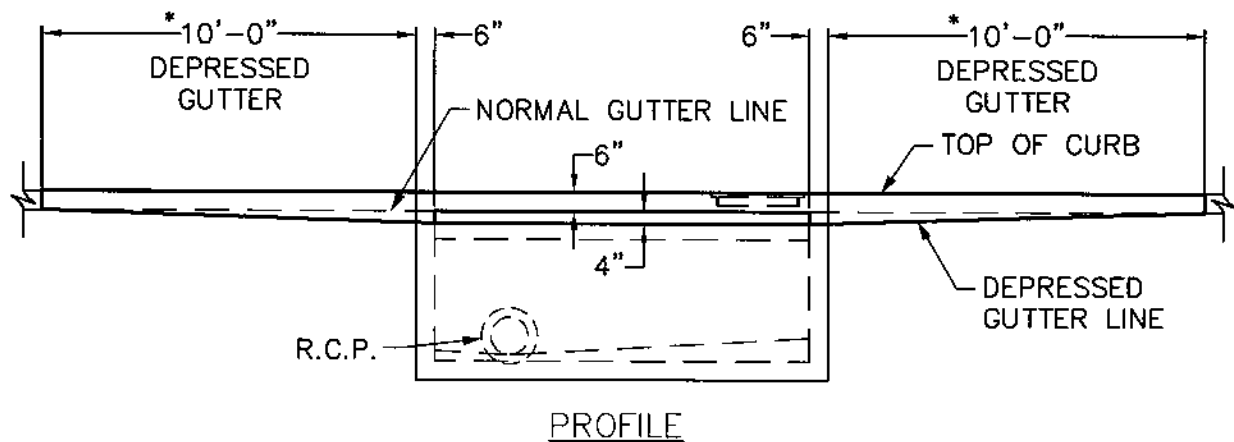
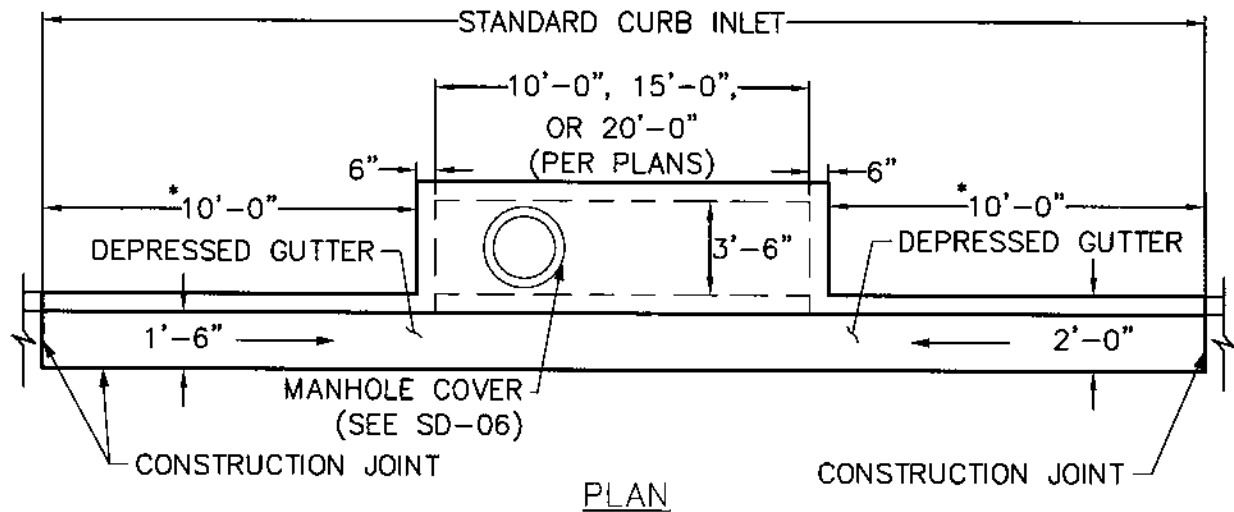
**City of Saginaw**  
Construction Standards

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.

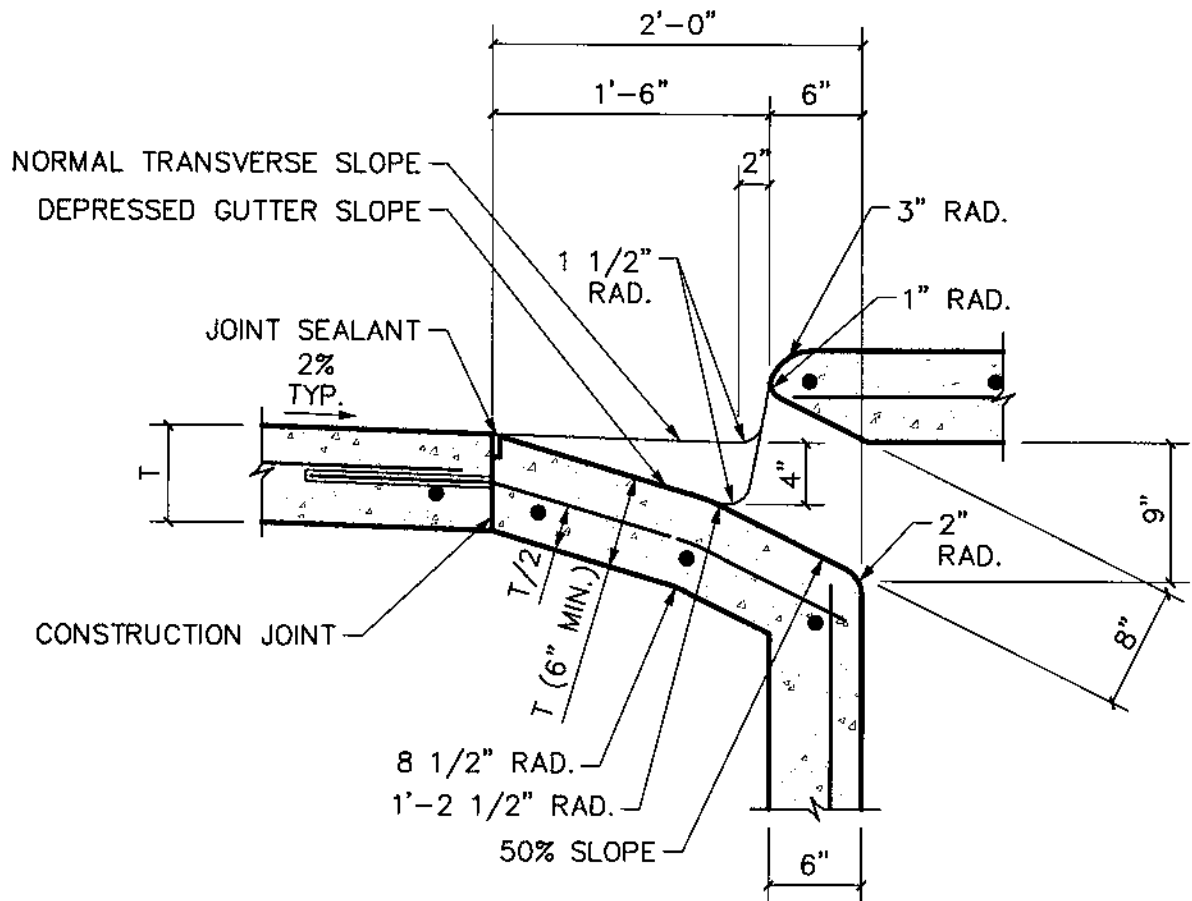


**City of Saginaw**  
Construction Standards

STANDARD STORM DRAIN CURB  
INLET

REVISED  
FEB 2023

SD-01A

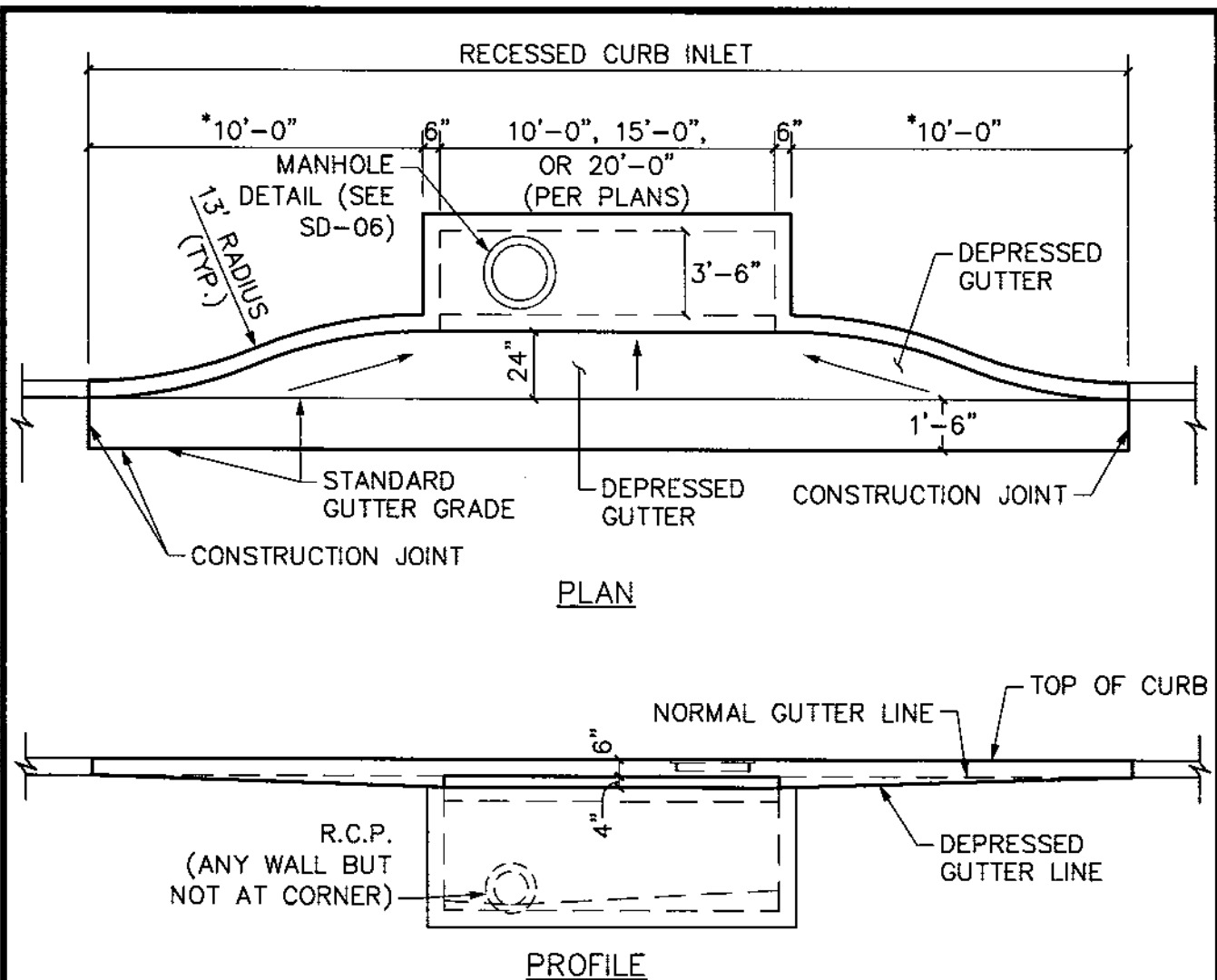


**City of Saginaw**  
Construction Standards

STANDARD CURB INLET THROAT

REVISED  
FEB 2023

SD-01B



#### 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.

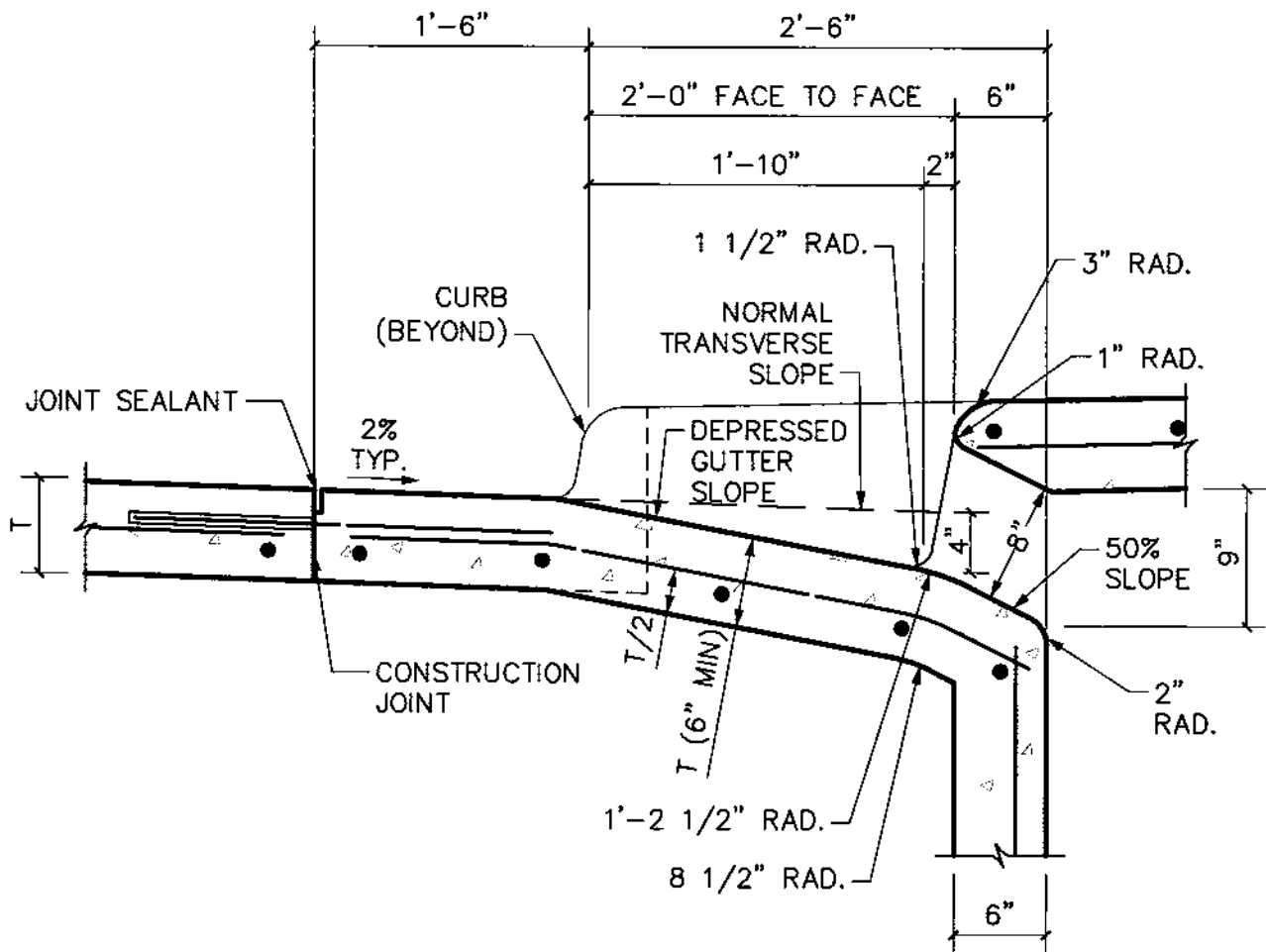


**City of Saginaw**  
Construction Standards

RECESSED CURB INLET

REVISED  
FEB 2023

SD-02A

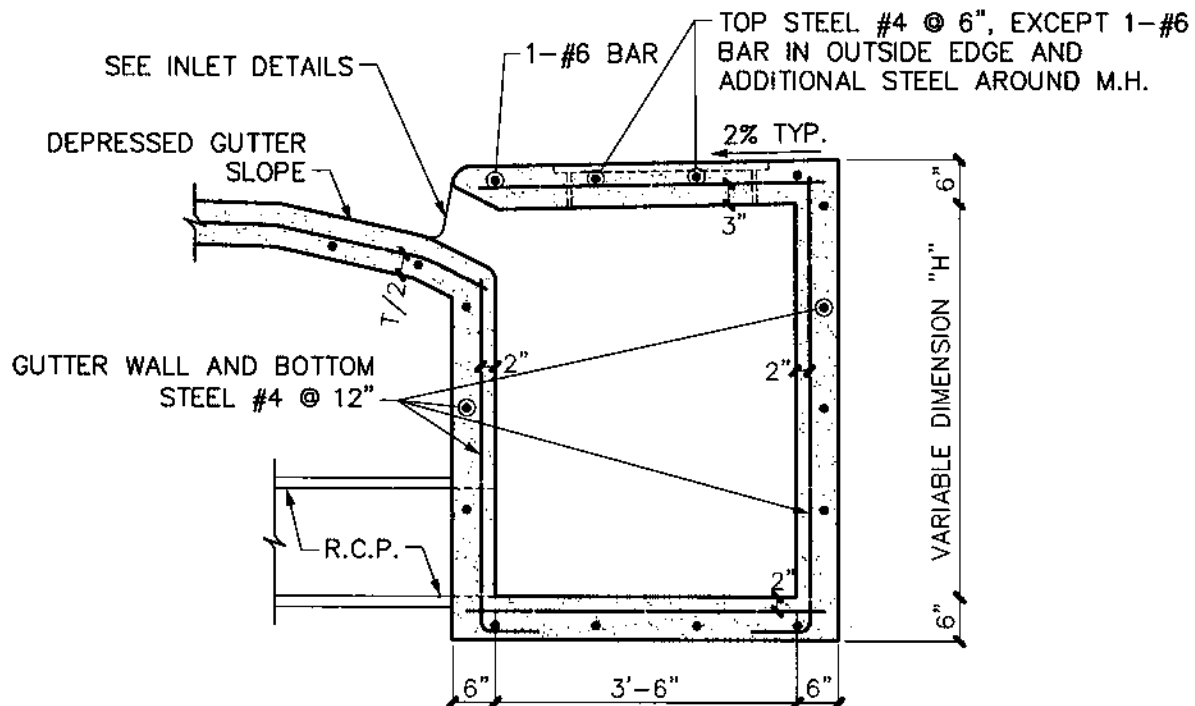


**City of Saginaw**  
Construction Standards

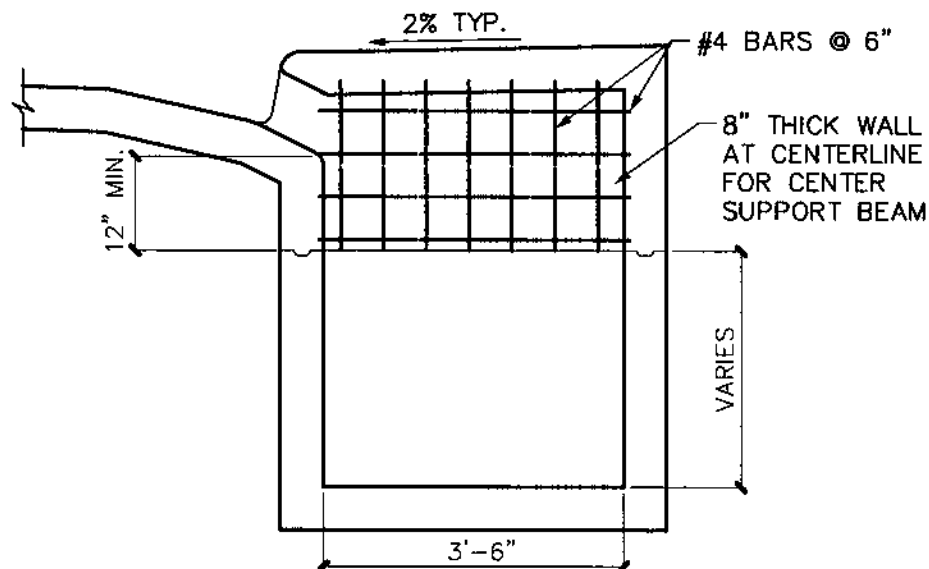
RECESSED CURB INLET THROAT

REVISED  
FEB 2023

SD-02B



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.

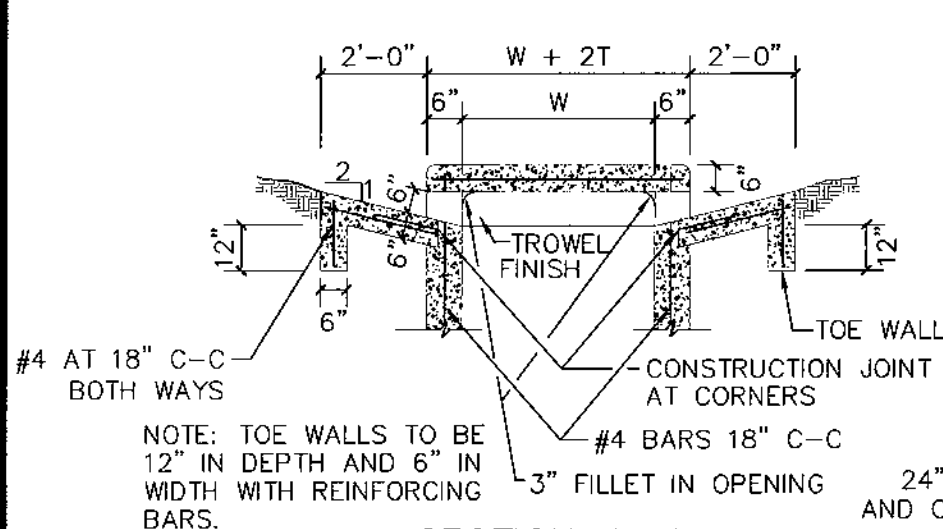


**City of Saginaw**  
Construction Standards

CENTER SUPPORT BEAM  
FOR INLETS

REVISED  
FEB 2023

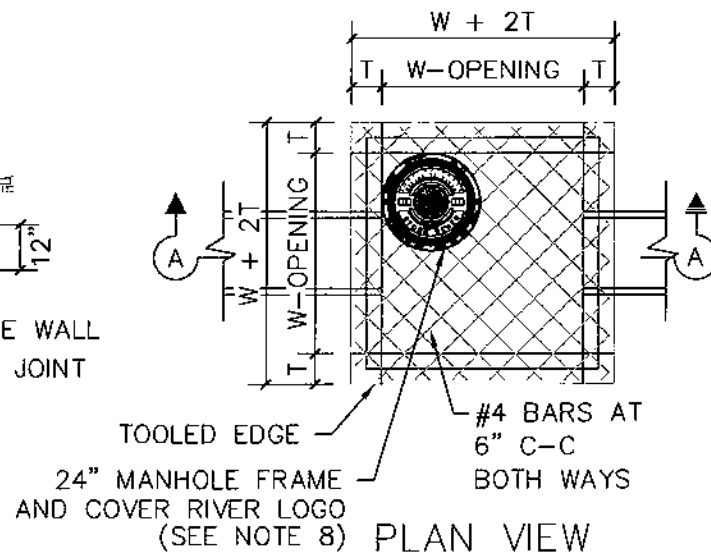
SD-03



SECTION A-A

**NOTES:**

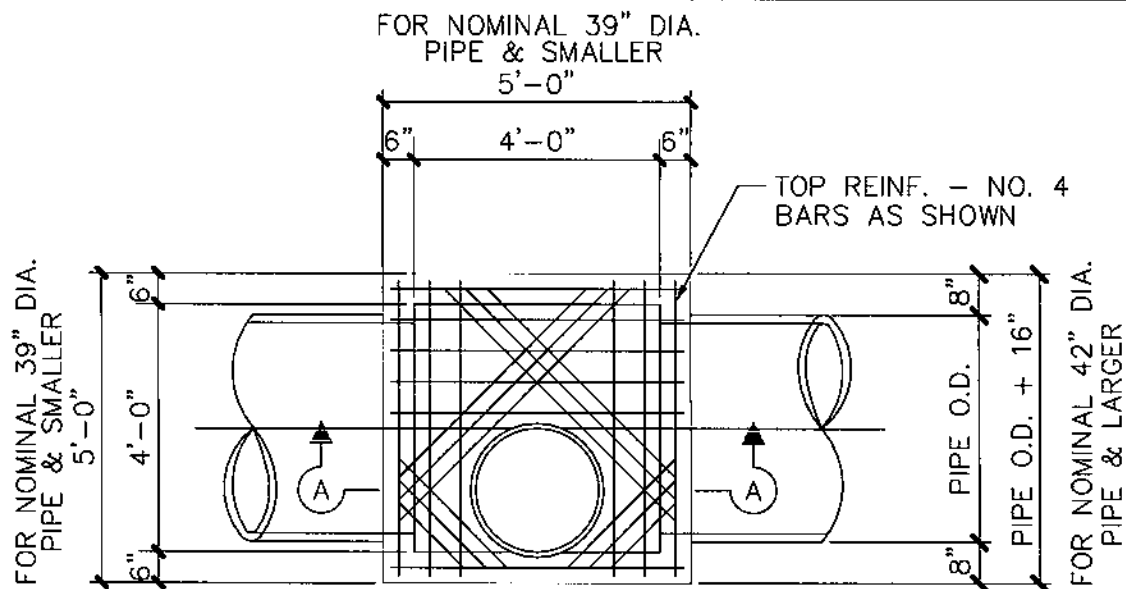
1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. CONCRETE FOR DROP INLETS SHALL BE CLASS F (PER SPEC. ITEM 702.3).
3. LAYERS OF REINFORCING STEEL NEAREST THE INTERIOR AND EXTERIOR SURFACES SHALL HAVE A COVER OF 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.



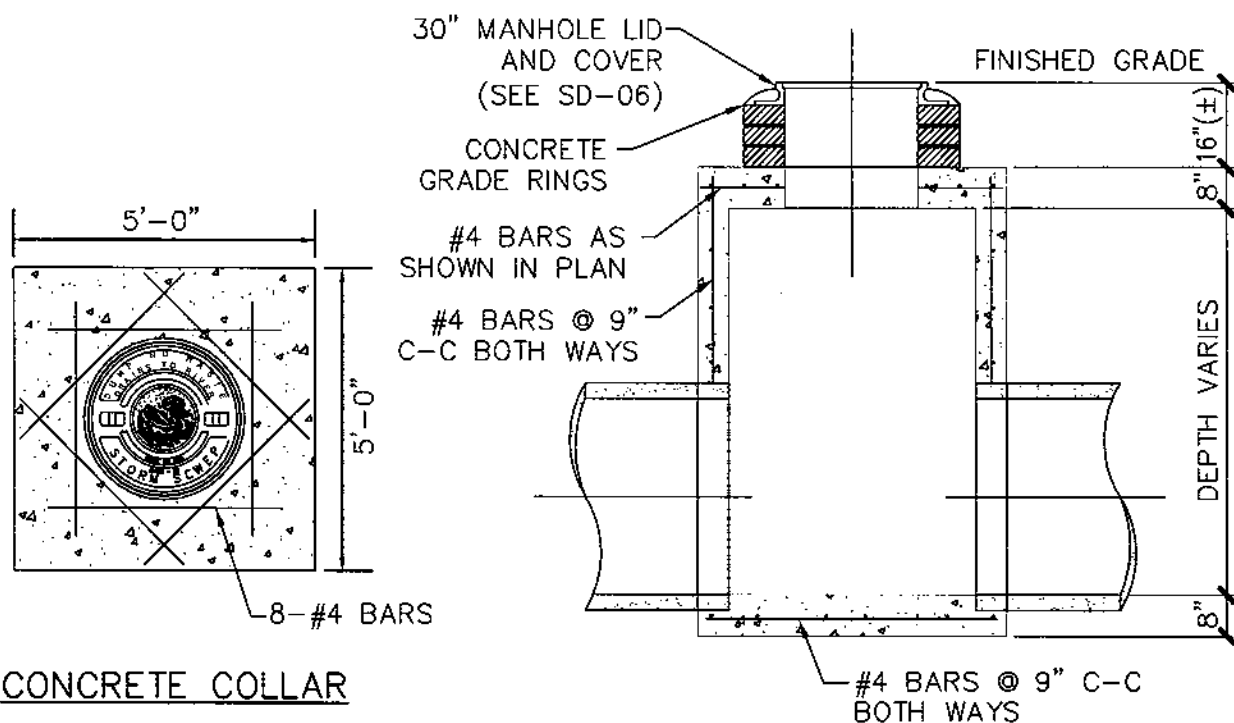
PLAN VIEW

| 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**



**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

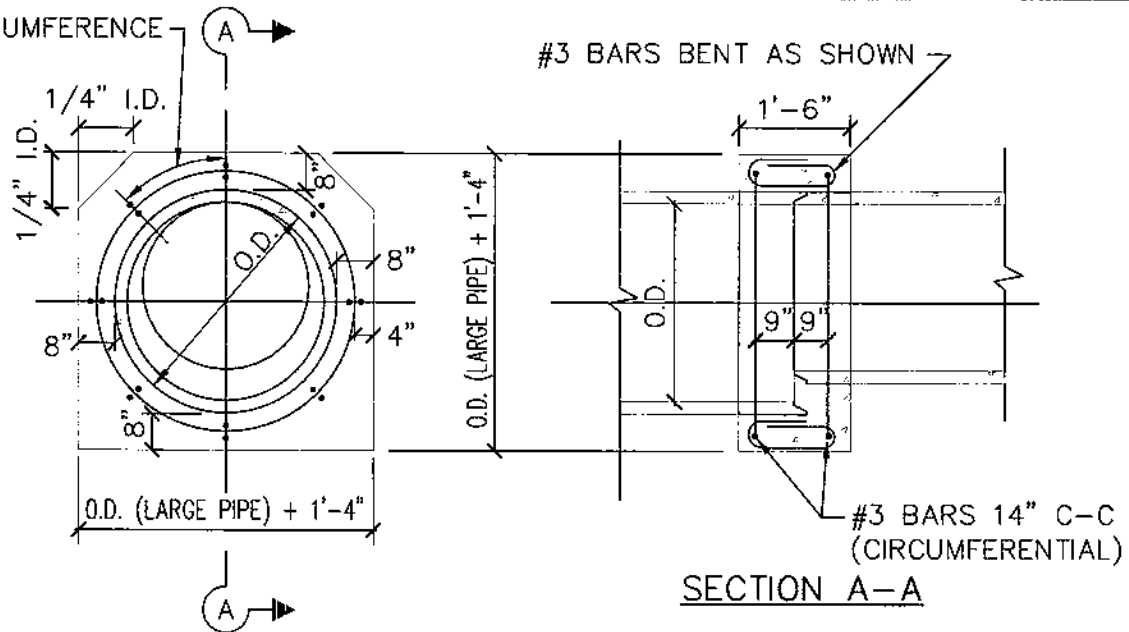
STANDARD 4-FOOT SQUARE STORM  
DRAIN MANHOLE

REVISED  
FEB 2023

SD-05

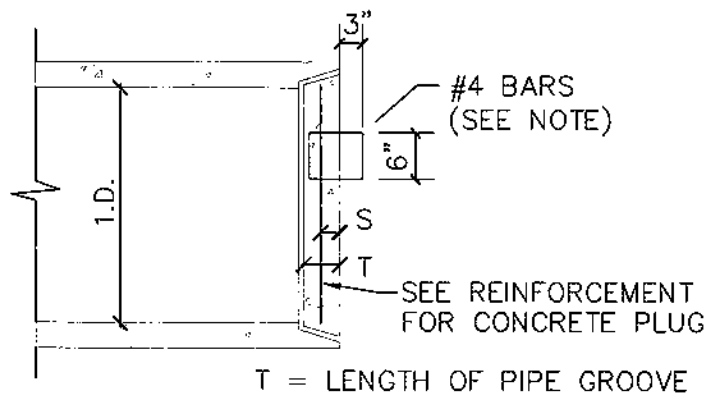


1/8 CIRCUMFERENCE



### 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.

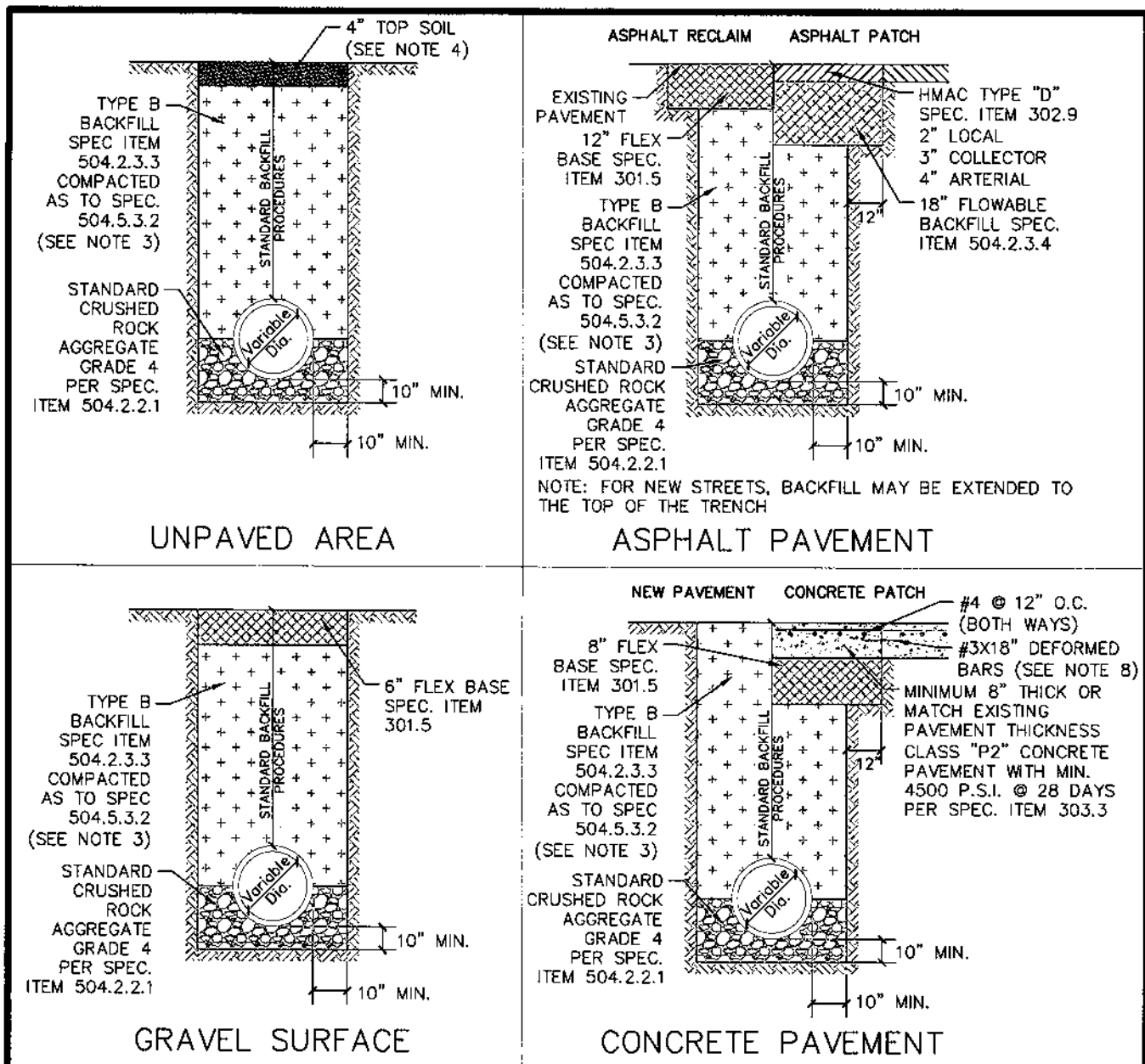


**City of Saginaw**  
Construction Standards

REINFORCED CONCRETE COLLAR  
AND MISCELLANEOUS DETAILS

REVISED  
FEB 2023

SD-07



#### NOTES:

- ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
- 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.
- ROCKS GREATER THAN 3" IN DIAMETER SHALL BE REMOVED FROM ANY NATIVE MATERIAL USED AS BACKFILL.
- 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.
- ALL PAVEMENT SHALL BE REMOVED ALONG NEAT SAW CUT LINES PER SPEC. ITEM 402.3.
- STORM LINE WARNING TAPE OF MIN 4" WIDTH SHALL BE INSTALLED ABOVE THE EMBEDMENT MATERIAL.
- A MAXIMUM OF 50 FT OF OPEN TRENCH WILL BE ALLOWED AT ANY TIME, UNLESS APPROVED BY THE CITY.
- DEFORMED BARS DOWELED AND EPOXYED MIN. 6" INTO EXISTING PAVEMENT @ 12" O.C. (TYP).
- CONTRACTOR TO FILL STANDARD CRUSHED ROCK AGGREGATE TO TOP OF PIPE IF MINIMUM TRENCH WIDTH IS NOT MET DURING THE INSTALLATION OF RCP.

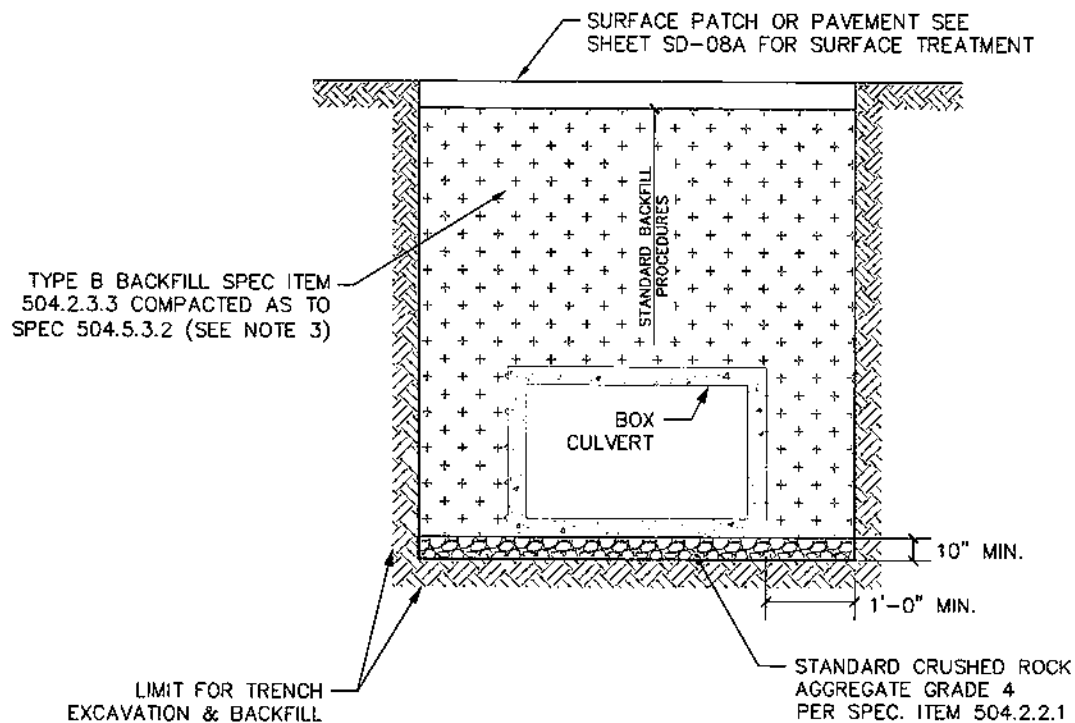


**City of Saginaw**  
Construction Standards

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.

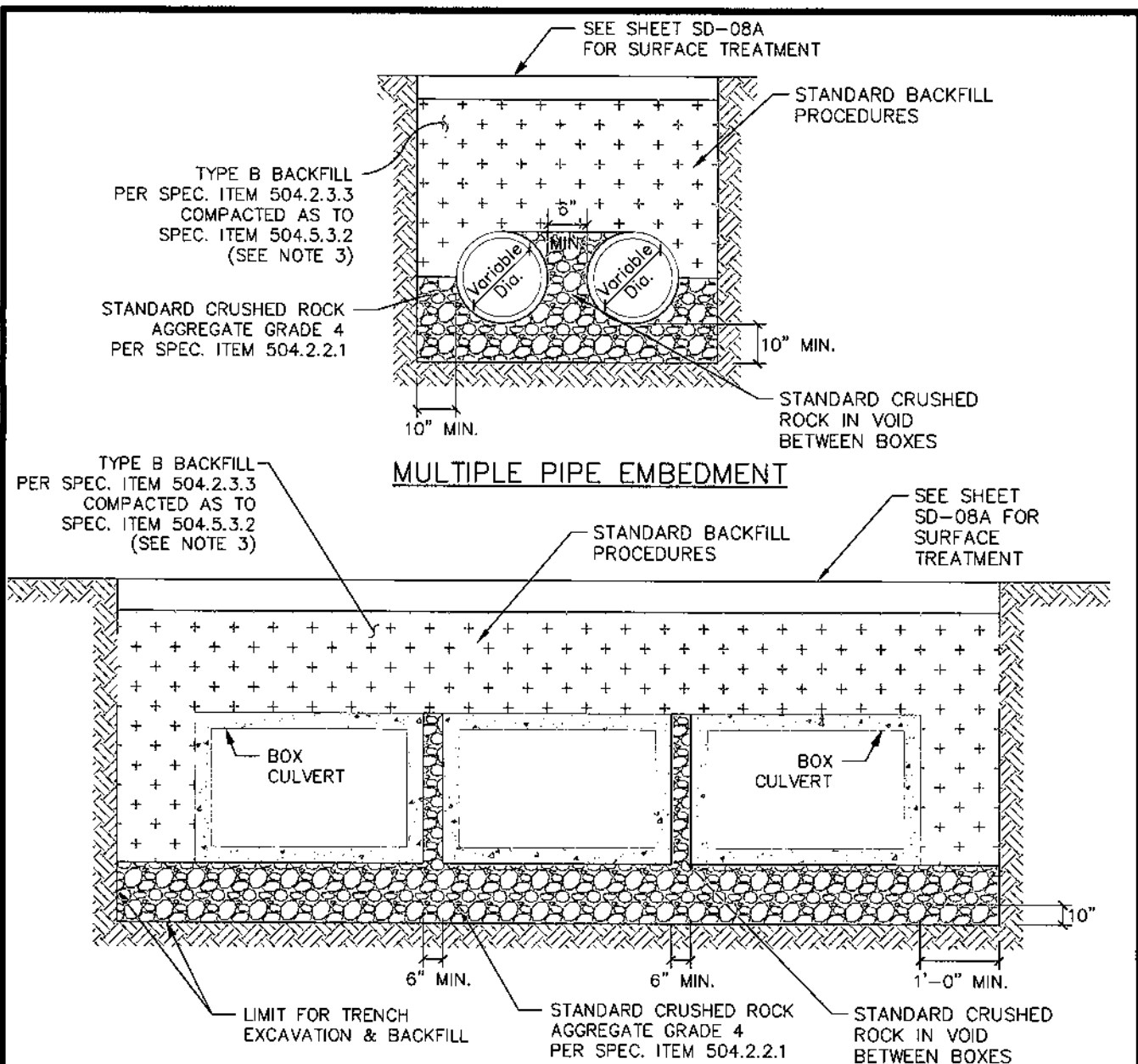


**City of Saginaw**  
Construction Standards

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.

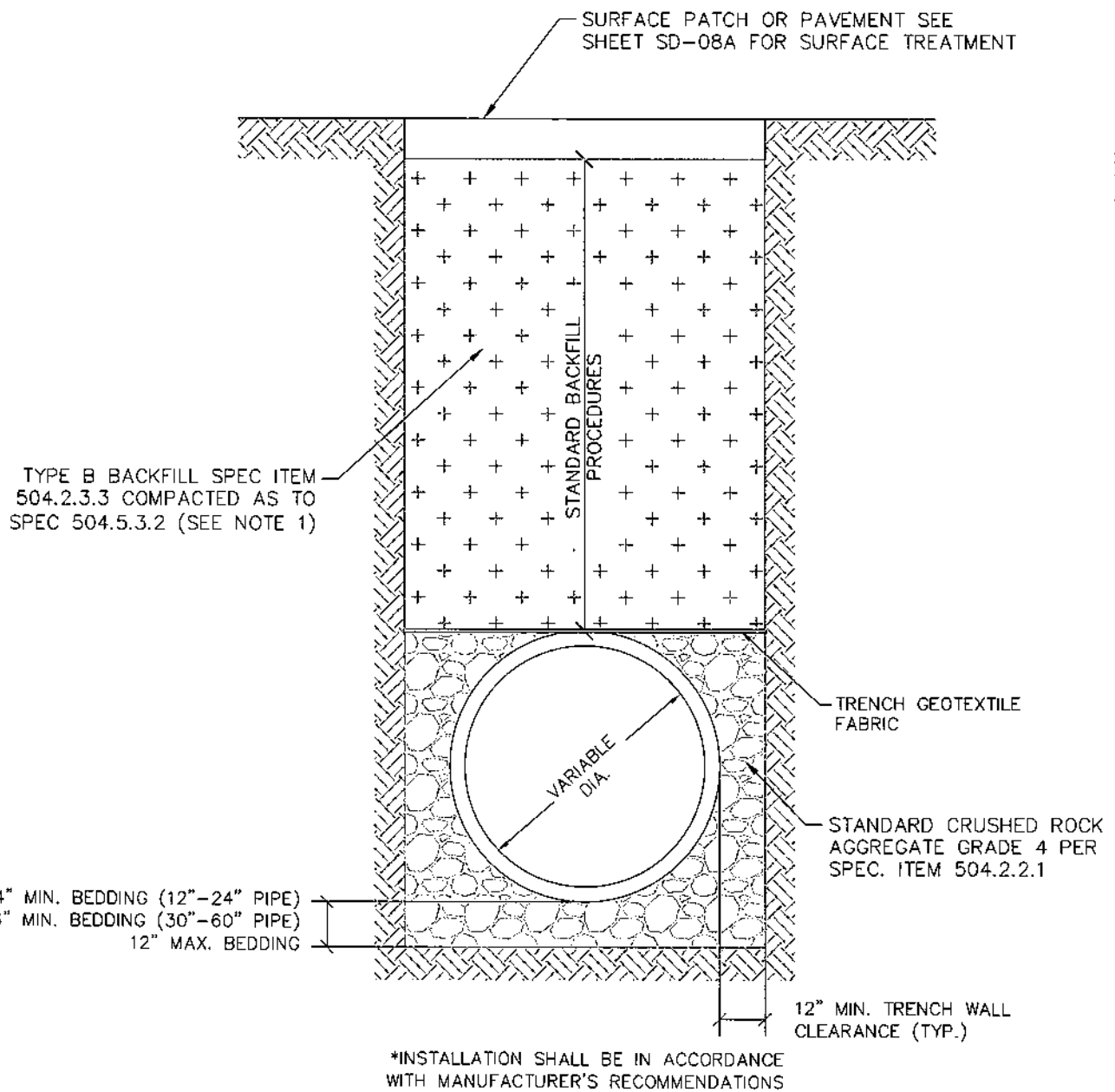


**City of Saginaw**  
Construction Standards

STANDARD STORM DRAIN  
EMBEDMENT AND BACKFILL

REVISED  
FEB 2023

SD-08C



**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

# CITY OF SAGINAW CONSTRUCTION STANDARDS TABLE OF CONTENTS

## WATER

| <u>SHEET NO.</u> | <u>DESCRIPTION</u>                         |
|------------------|--------------------------------------------|
| W-01             | STANDARD WATER LINE EMBEDMENT AND BACKFILL |
| W-02             | WATER SERVICE CONNCTION                    |
| W-03             | WATER VALVE AND BOX INSTALLATION           |
| W-04             | BUTTERFLY VALVE AND INSTALLATION           |
| W-05             | FIRE HYDRANT INSTALLATION                  |
| W-06             | HORIZONTAL BLOCKING                        |
| W-07             | CONCRETE CRADLE AT VERTICAL BENDS          |
| W-08             | VERTICAL THRUST BLOCKING                   |
| W-09             | AIR RELEASE VALVE                          |
| W-10             | DOUBLE CHECK DETECTOR VAULT                |
| W-11             | LADDER AND PIPE SUPPORT                    |
| W-12             | TYPICAL RING CONNECTION                    |
| W-13             | WATER LINE BORE AND CASING                 |
| W-14             | 3 INCH AND LARGER METER VAULT              |

## WASTE WATER

| <u>SHEET NO.</u> | <u>DESCRIPTION</u>                                    |
|------------------|-------------------------------------------------------|
| WW-01            | STANDARD SANITARY SEWER EMBEDMENT AND BACKFILL        |
| WW-02            | PRECAST AND CAST-IN-PLACE SANITARY SEWER MANHOLE      |
| WW-03            | SANITARY SEWER MANHOLE DROP CONNECTIONS               |
| WW-04            | EXTENSION RING INSTALLATION FRAME AND COVER PLACEMENT |
| WW-05            | MANHOLE RING AND COVER                                |
| WW-06            | SANITARY SEWER MAIN CLEANOUT                          |
| WW-07            | CLEANOUT CAP                                          |
| WW-08            | SANITARY SEWER SERVICE                                |
| WW-09            | SANITARY SEWER LINE BORE AND CASING                   |
| WW-10            | MANHOLE ABANDONMENT                                   |
| WW-11            | CONCRETE ENCASEMENT                                   |

**NOTE:**

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



**City of Saginaw**  
Construction Standards

TABLE OF CONTENTS  
SHEET 1 OF 3

REVISED  
FEB 2023

TOC

# CITY OF SAGINAW CONSTRUCTION STANDARDS TABLE OF CONTENTS

## ROADWAY

| <u>SHEET NO.</u> | <u>DESCRIPTION</u>                                          |
|------------------|-------------------------------------------------------------|
| RD-01            | CONCRETE PAVING                                             |
| RD-02            | CONCRETE PAVING JOINT DETAILS                               |
| RD-03            | CONCRETE PAVING JOINT SEALANTS                              |
| RD-04            | PAVEMENT INTERSECTION JOINT SPACING                         |
| RD-05            | STANDARD 6-INCH CURB AND 18-INCH GUTTER                     |
| RD-06            | REINFORCED CONCRETE PAVEMENT SIX LANE DIVIDED THOROUGHFARE  |
| RD-07            | REINFORCED CONCRETE PAVEMENT FOUR LANE DIVIDED THOROUGHFARE |
| RD-08            | MONOLITHIC MEDIAN NOSE - TYPE 1                             |
| RD-09            | MONOLITHIC MEDIAN NOSE - TYPE 2                             |
| RD-10            | STAMPED CONCRETE                                            |
| RD-11            | RESIDENTIAL DRIVEWAY                                        |
| RD-12            | COMMERCIAL-INDUSTRIAL DRIVEWAY                              |
| RD-13            | CONCRETE SIDEWALK                                           |
| RD-14            | CONCRETE SIDEWALK WITH WALL                                 |
| RD-15            | BARRIER FREE RAMP                                           |
| RD-16            | WOOD SCREENING DETAIL                                       |
| RD-17            | MASONRY SCREENING DETAIL                                    |
| RD-18            | STREET SIGN                                                 |
| RD-19A           | SIGN POST - INSTILLATION                                    |
| RD-19B           | SIGN POST - SQUARE TUBING                                   |
| RD-20            | CONCRETE VALLEY GUTTER                                      |
| RD-21            | CONCRETE STREET HEADER                                      |

**NOTE:**

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



**City of Saginaw**  
Construction Standards

TABLE OF CONTENTS  
SHEET 2 OF 3

REVISED  
FEB 2023

TOC

**CITY OF SAGINAW  
CONSTRUCTION STANDARDS  
TABLE OF CONTENTS**

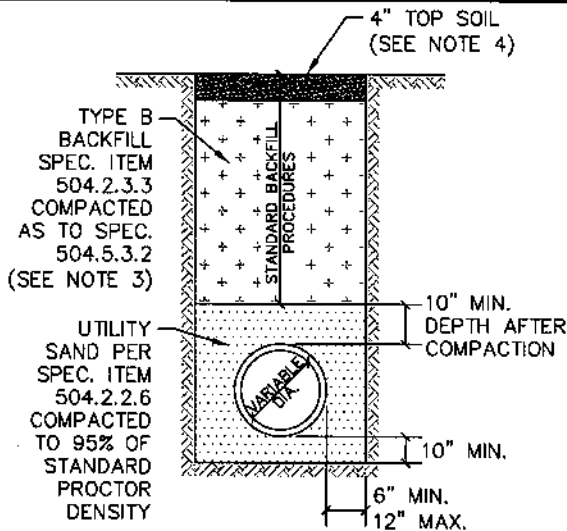
**STORM DRAIN**

| <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           |
| SD-06            | MANHOLE COVER RIVER LOGO                             |
| SD-07            | REINFORCED CONCRETE COLLAR AND MISCELLANEOUS DETAILS |
| SD-08A           | STANDARD STORM DRAIN EMBEDMENT AND BACKFILL          |
| SD-08B           | STANDARD STORM DRAIN EMBEDMENT AND BACKFILL          |
| SD-08C           | STANDARD STORM DRAIN EMBEDMENT AND BACKFILL          |
| SD-08D           | HP STORM EMBEDMENT                                   |

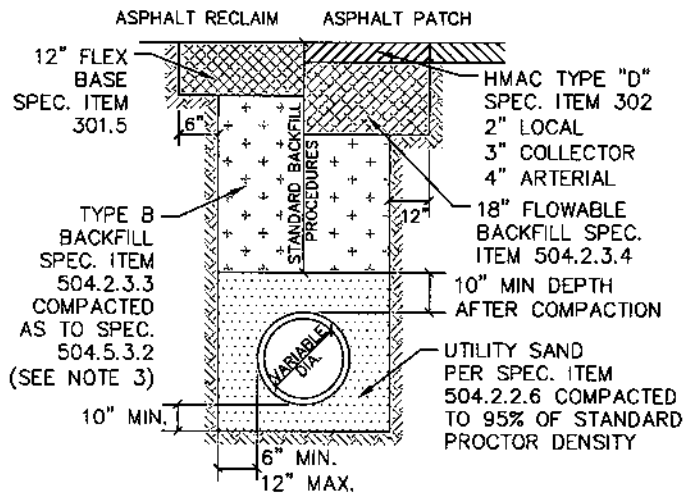
**NOTE:**

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



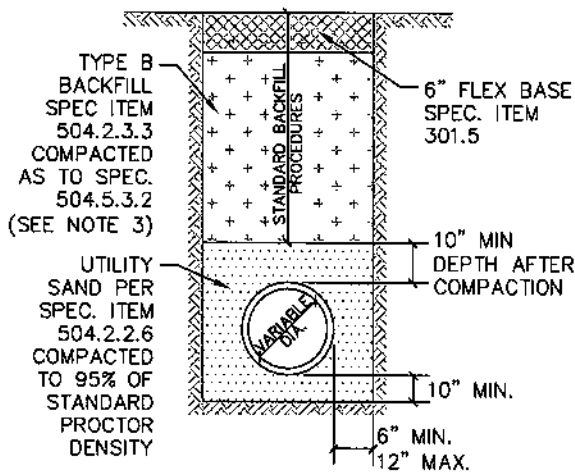


UNPAVED AREA

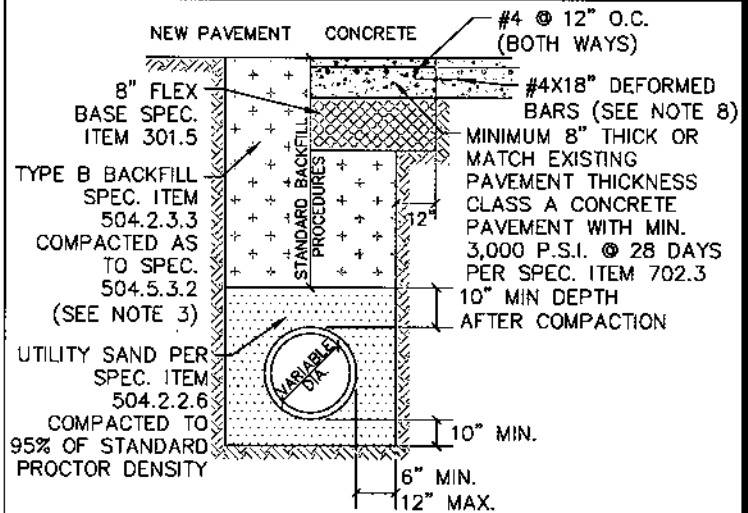


NOTE: FOR NEW STREETS, BACKFILL MAY BE  
EXTENDED TO THE TOP OF THE TRENCH

ASPHALT PAVEMENT



GRAVEL SURFACE



CONCRETE PAVEMENT

**NOTES:**

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF 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.

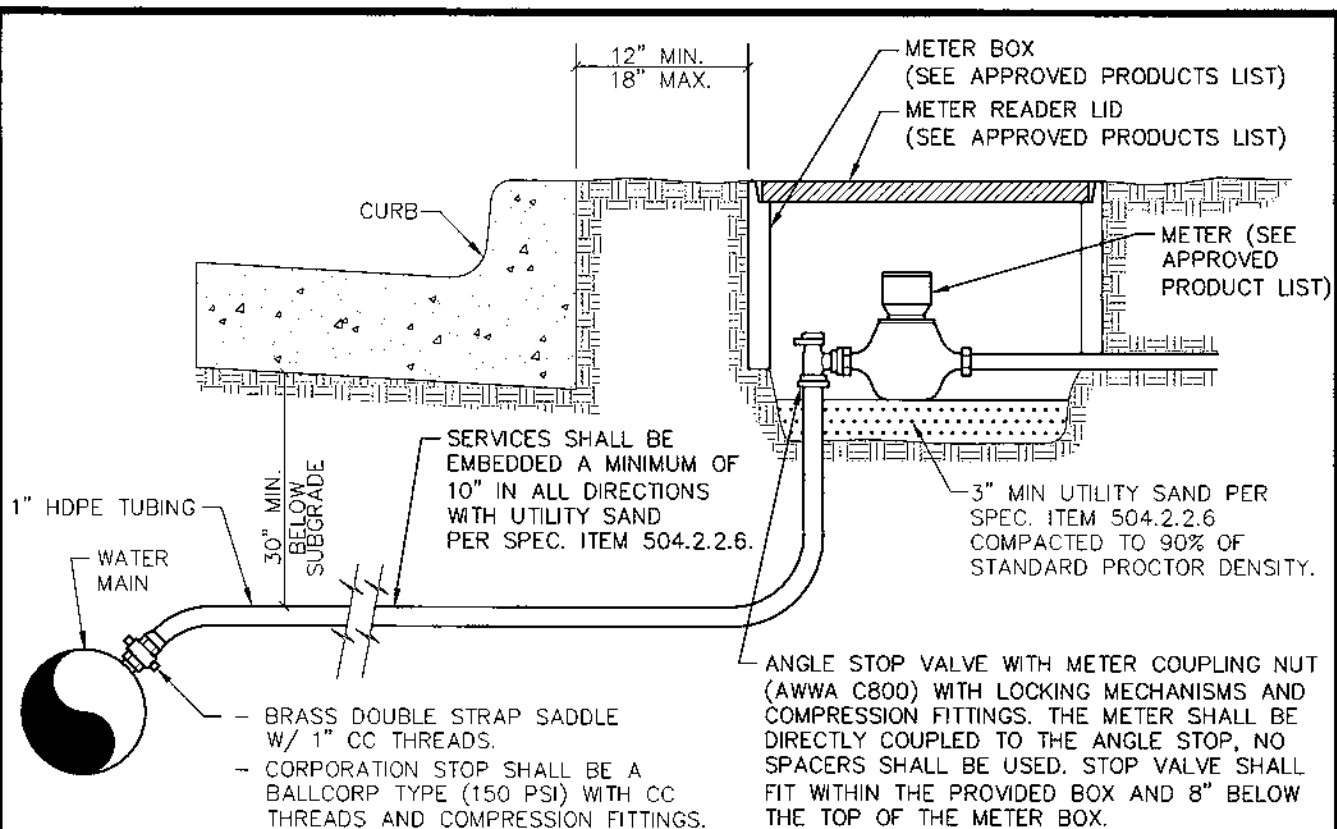


**City of Saginaw**  
Construction Standards

STANDARD WATER LINE  
EMBEDMENT AND BACKFILL

REVISED  
FEB 2023

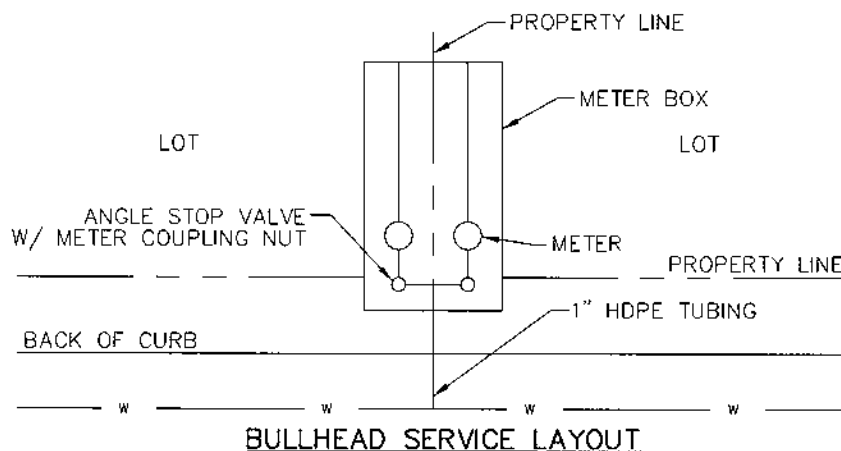
W-01



### 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.

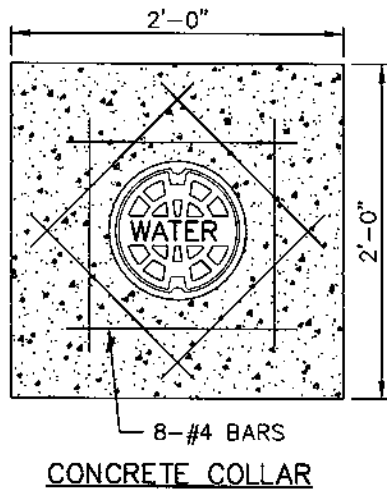


**City of Saginaw**  
Construction Standards

WATER SERVICE CONNCTION

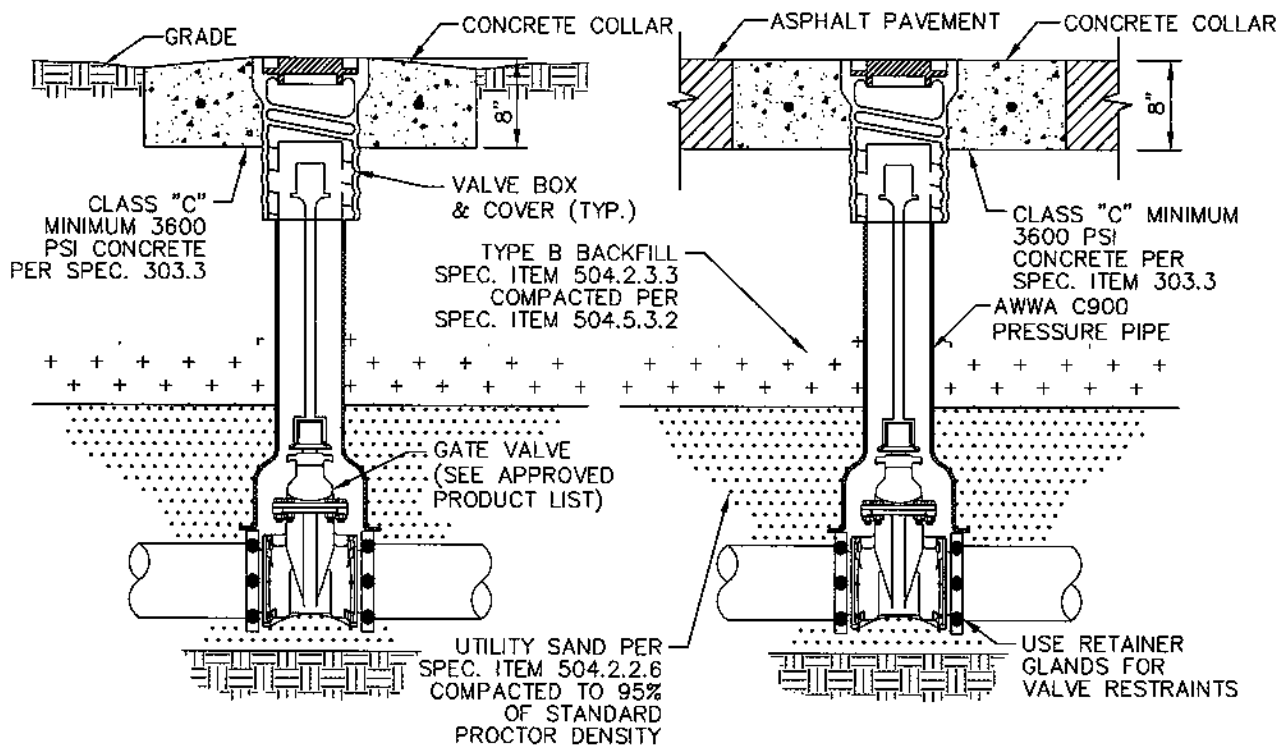
REVISED  
FEB 2023

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.



VALVES IN YARDS OR OTHER  
AREAS NOT SUBJECT TO TRAFFIC

VALVES WITHIN ROADWAYS OR  
OTHER PAVED OR SURFACED AREAS



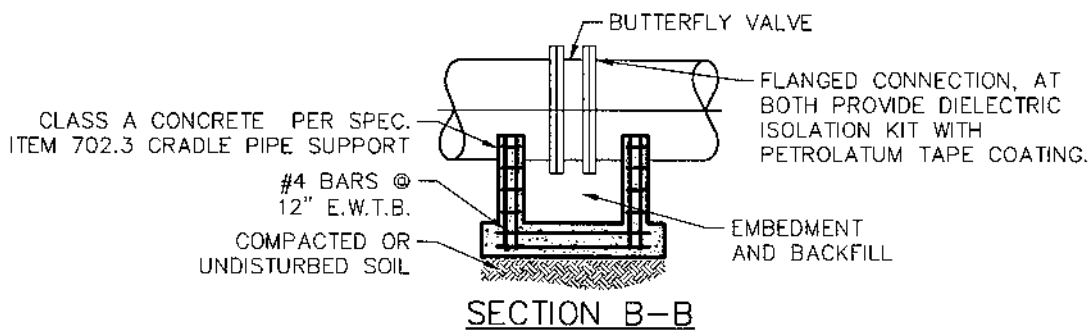
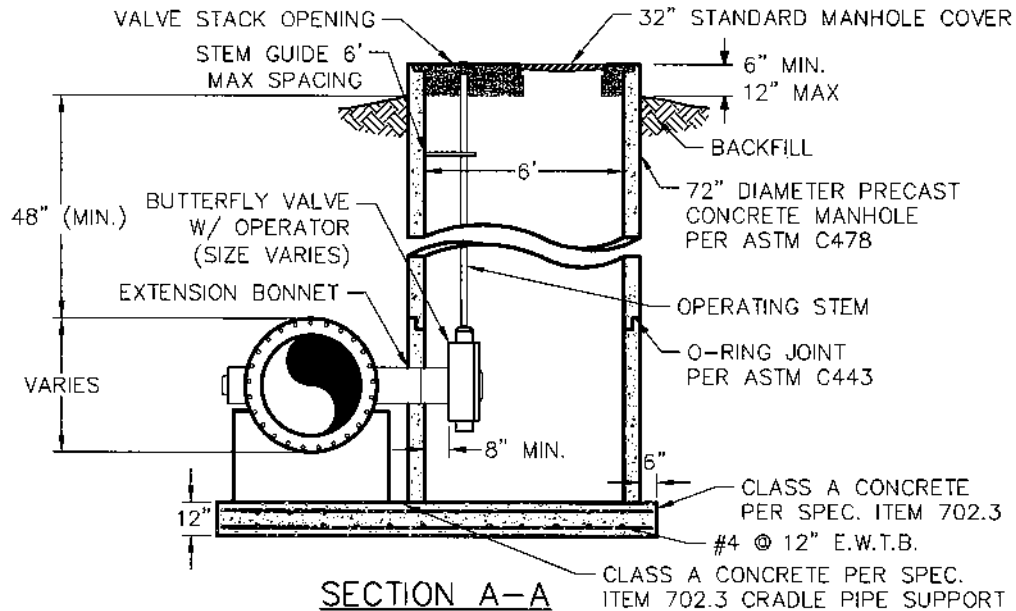
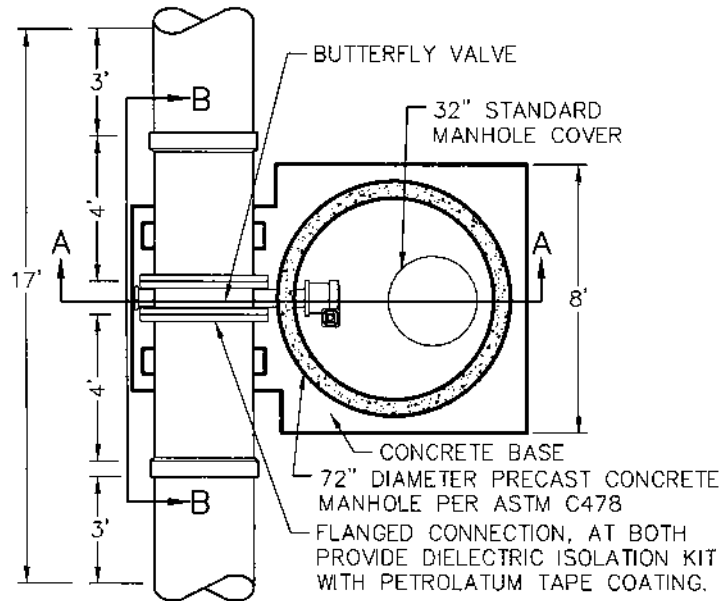
**City of Saginaw**  
Construction Standards

WATER VALVE AND BOX  
INSTALLATION

REVISED  
FEB 2023

W-03

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

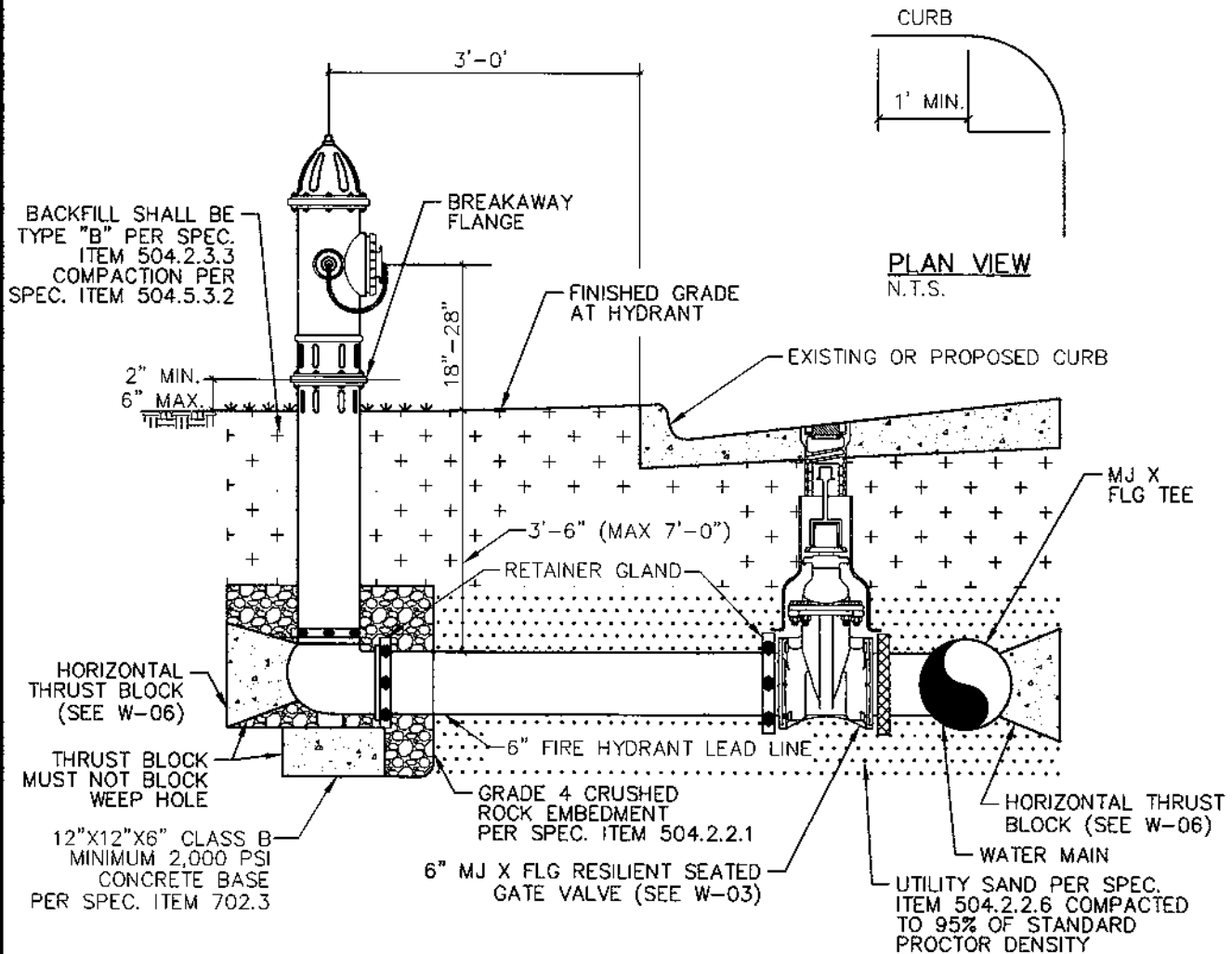


**City of Saginaw**  
Construction Standards

BUTTERFLY VALVE AND  
INSTALLATION

REVISED  
FEB 2023

W-04



#### NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. ALL FIRE HYDRANTS SHALL CONFORM TO AWWA C502. FIRE HYDRANTS SHALL HAVE A 5 1/4" MIN VALVE OPENING AND AN INSIDE BARREL DIAMETER OF APPROXIMATELY 7". ALL HYDRANTS SHALL BE EQUIPPED WITH A BREAKAWAY FLANGE.
3. ALL BELOW GROUND IRON ASSEMBLIES SHALL BE WRAPPED IN POLYETHYLENE ACCORDING TO AWWA C105.
4. RESILIENT SEATED GATE VALVE SHALL CONFORM TO AWWA C509.
5. FIRE HYDRANT LEADS GREATER THAN A SINGLE PIPE JOINT REQUIRE JOINT THRUST RETAINERS.
6. FIRE HYDRANT SHALL BE PLACED ON THE EXTENDED LOT LINE WHEN POSSIBLE.
7. FIRE HYDRANT SHALL BE LOCATED A MINIMUM 1 FT. OUTSIDE OF THE AREA BETWEEN THE P.C.'S OF THE CORNER TURNING RADIS AT THE INTERSECTIONS. (SEE PLAN VIEW)
8. FIRE HYDRANT NO CLOSER THAN 12" TO EXISTING OR PROPOSED SIDEWALKS.
9. ALL FIRE HYDRANTS SHALL BE AT LEAST 42 INCHES FROM ANY ABOVE GROUND OBSTRUCTIONS, SUCH AS GUARDRAILS, RETAINING WALLS, BOLLARDS, ETC.
10. SEE APPROVED PRODUCTS LIST FOR ACCEPTABLE FIRE HYDRANT MANUFACTURERS.
11. FIRE HYDRANT SHALL BE PAINTED SAFETY RED. PAINT MUST BE BRUSHED ON, IT MAY NOT BE SPRAYED. SEE APPROVED PRODUCTS LIST.
12. FIRE HYDRANT SHALL BE OPEN LEFT, COUNTER-CLOCKWISE.
13. 4" BLUE RAISED PAVEMENT MARKER SHALL BE PROVIDED AND INSTALLED AT THE STREET CENTERLINE ADJACENT TO THE FIRE HYDRANT.

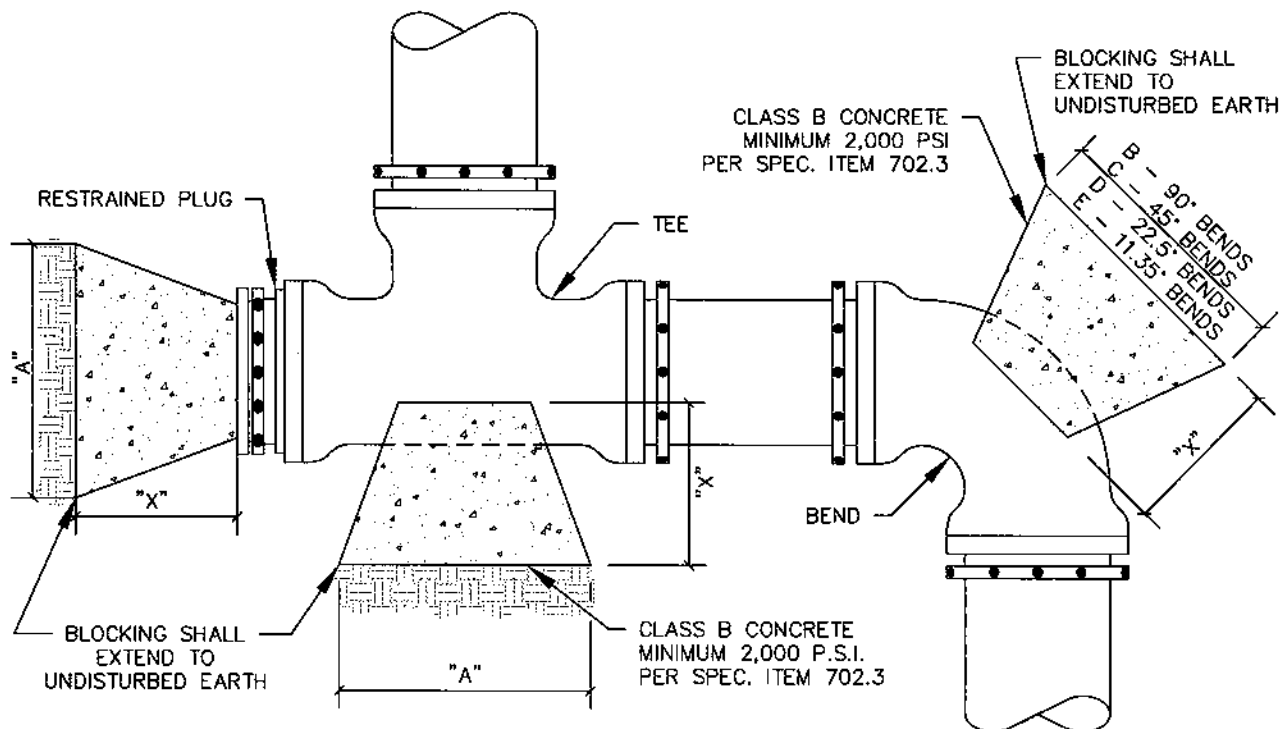


**City of Saginaw**  
Construction Standards

#### FIRE HYDRANT INSTALLATION

REVISED  
FEB 2023

W-05



**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.

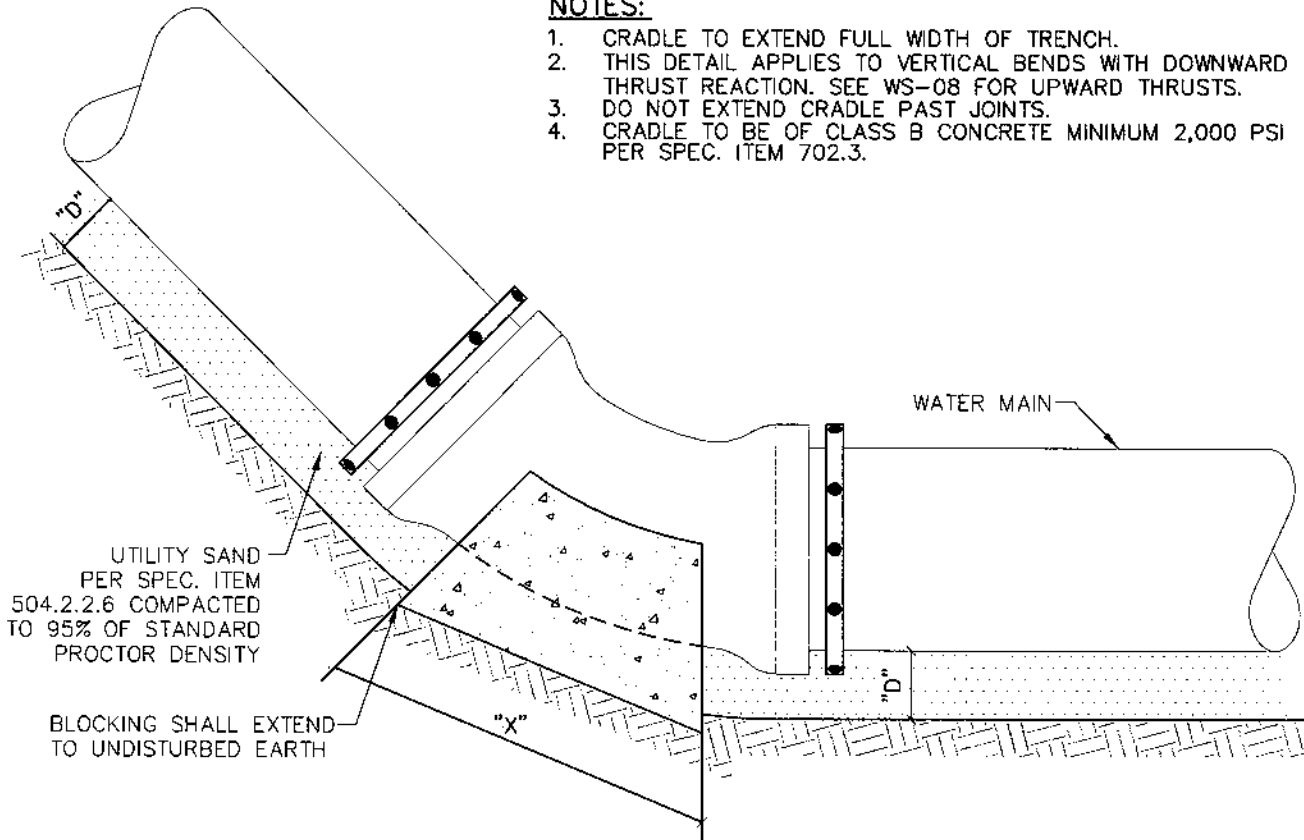
**NOTES:**

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.
6. 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<br>SIZE | 90° BENDS |                      | 45° BENDS |                      | 22.50° BENDS |                      | 11.25° BENDS |                      |
|--------------|-----------|----------------------|-----------|----------------------|--------------|----------------------|--------------|----------------------|
|              | "X"       | MIN.<br>AREA<br>(sf) | "X"       | MIN.<br>AREA<br>(sf) | "X"          | MIN.<br>AREA<br>(sf) | "X"          | MIN.<br>AREA<br>(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.

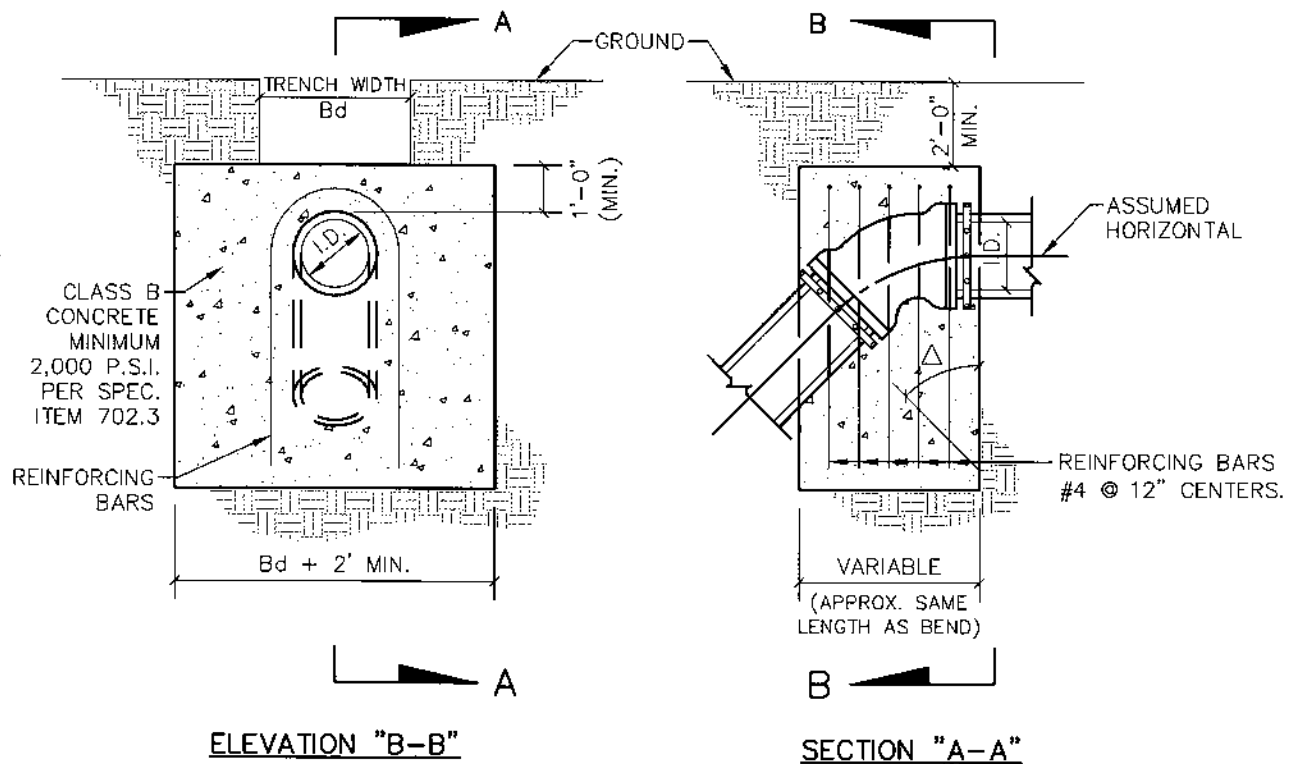


**City of Saginaw**  
Construction Standards

CONCRETE CRADLE AT VERTICAL  
BENDS

REVISED  
FEB 2023

W-07



**VERTICAL THRUST BLOCK TABLE**

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





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  
HARNESS

LINK-SEAL WALL  
PENETRATION

DOUBLE CHECK  
DETECTOR  
BACKFLOW  
PREVENTER

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.



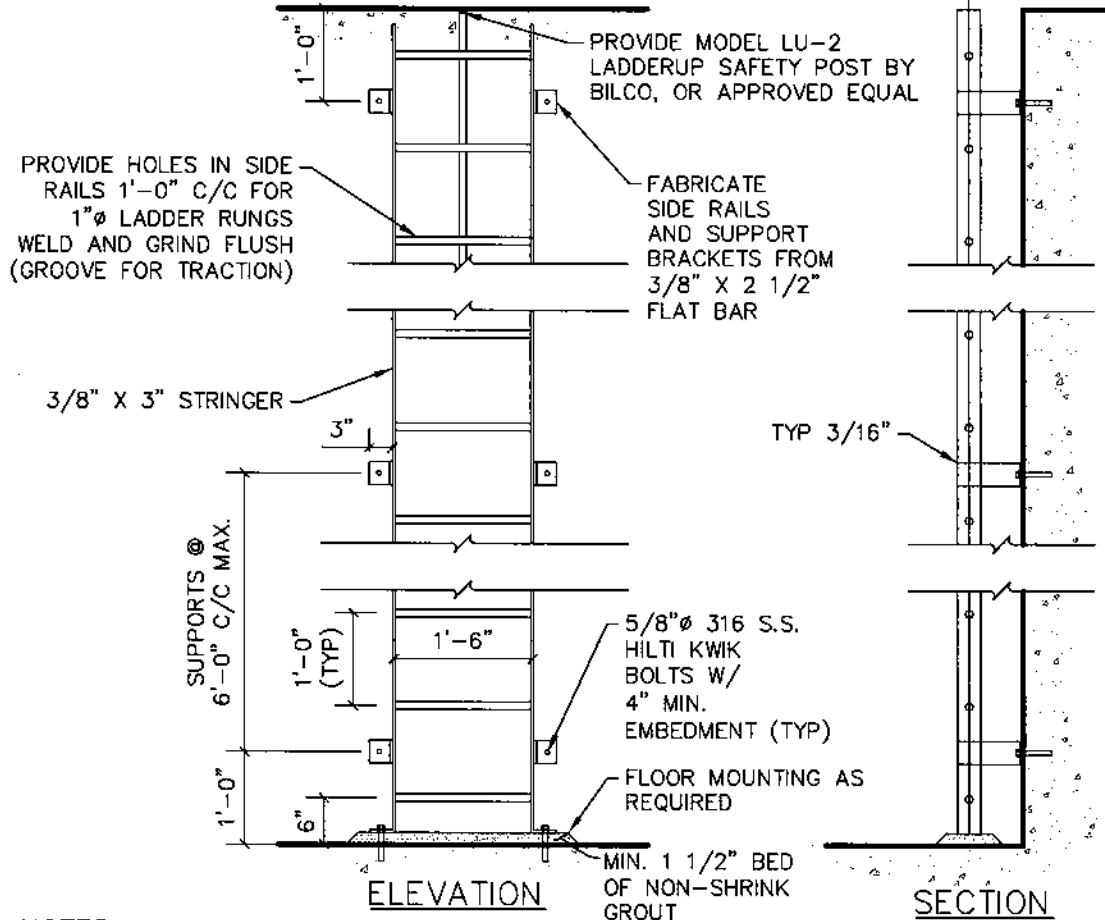
**City of Saginaw**  
Construction Standards

DOUBLE CHECK DETECTOR VAULT

REVISED  
FEB 2023

W-10

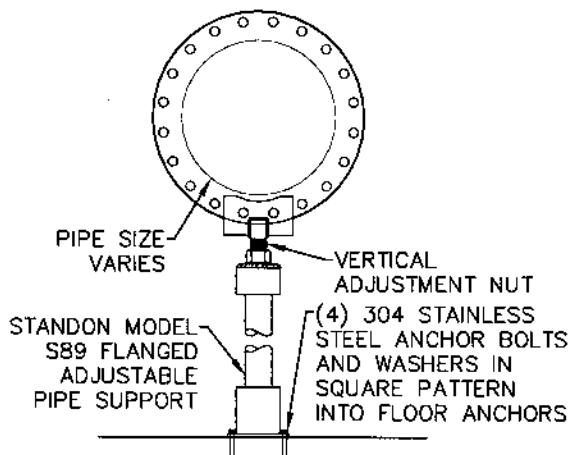
## LADDER DETAIL



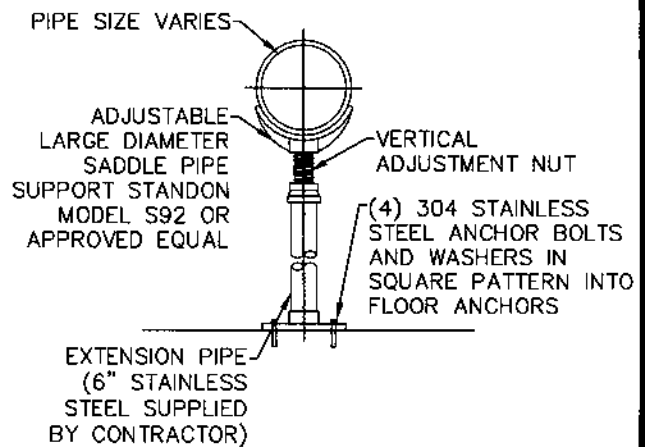
### NOTES:

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

### ADJUSTABLE FLANGE PIPE SUPPORT DETAIL



### ADJUSTABLE SADDLE PIPE SUPPORT DETAIL

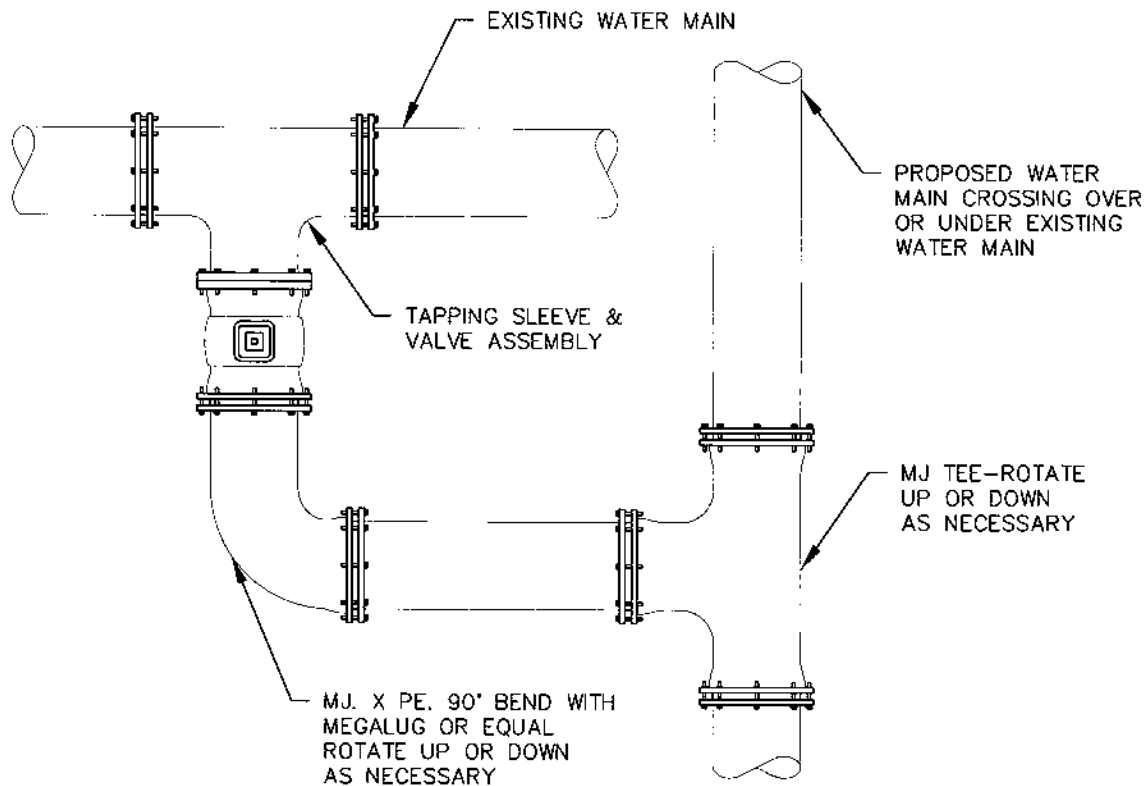


**City of Saginaw**  
Construction Standards

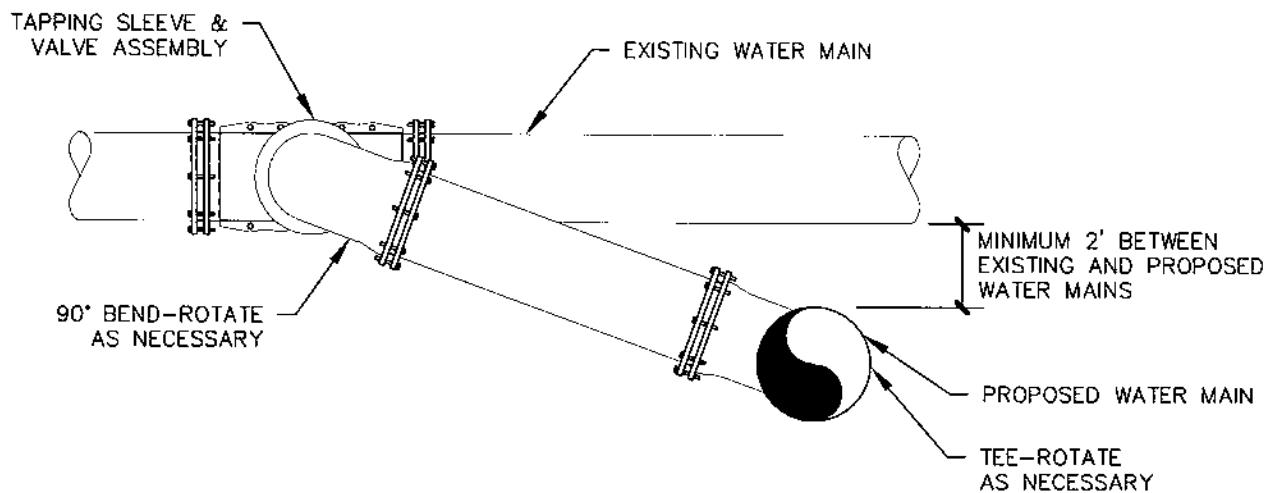
LADDER AND PIPE SUPPORT

REVISED  
FEB 2023

W-11



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.

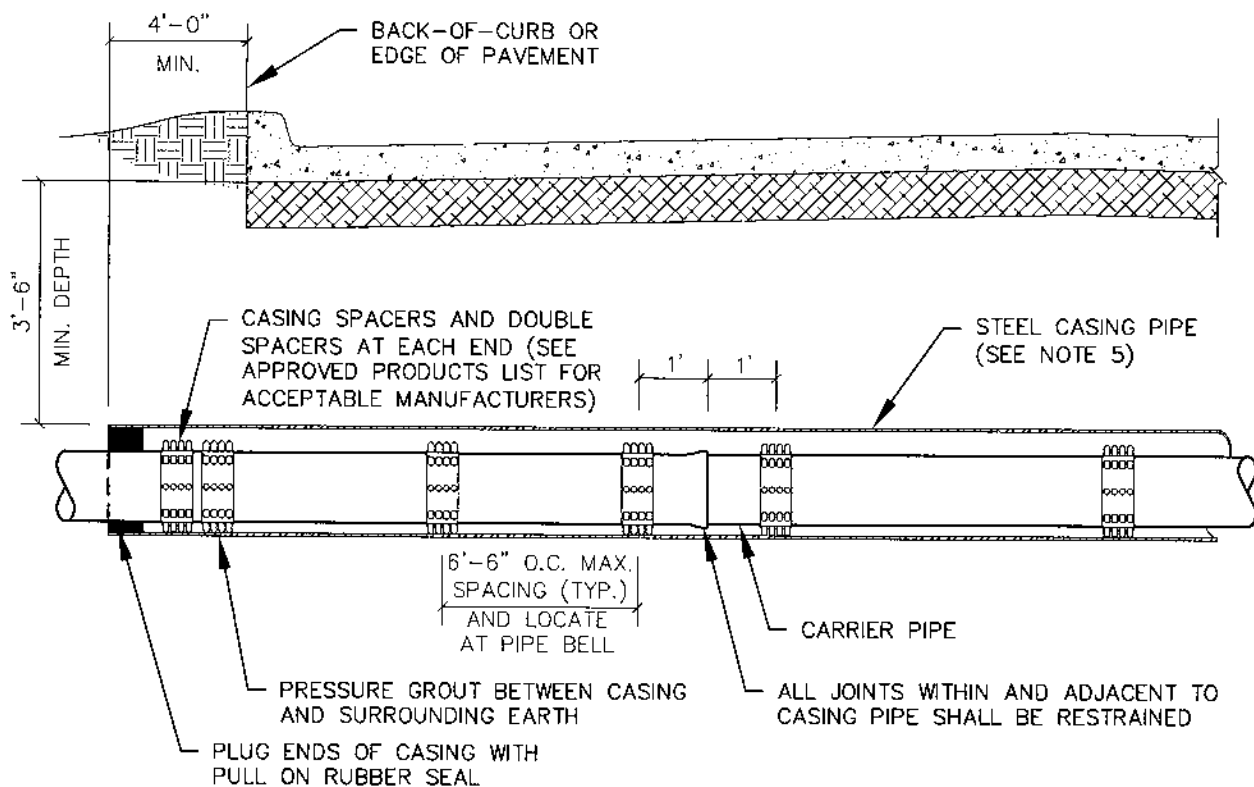


**City of Saginaw**  
Construction Standards

TYPICAL RING CONNECTION

REVISED  
FEB 2023

W-12



| CASING<br>DIAMETER | MIN. WALL<br>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.



**City of Saginaw**  
Construction Standards

WATER LINE BORE AND CASING

REVISED  
FEB 2023

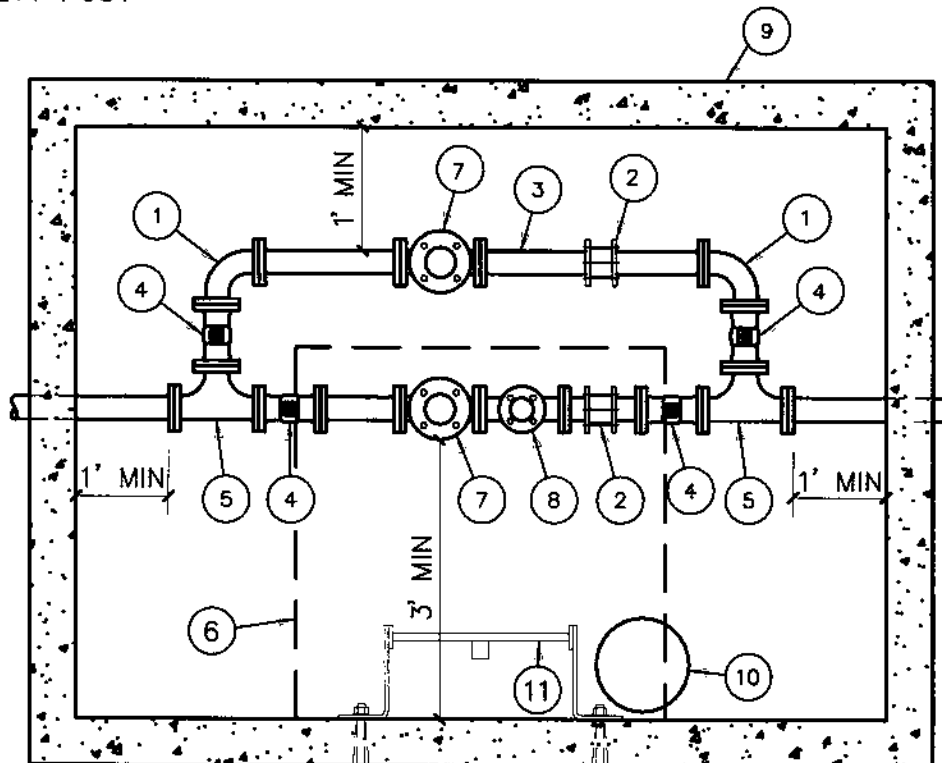
W-13

## 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 METER 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.

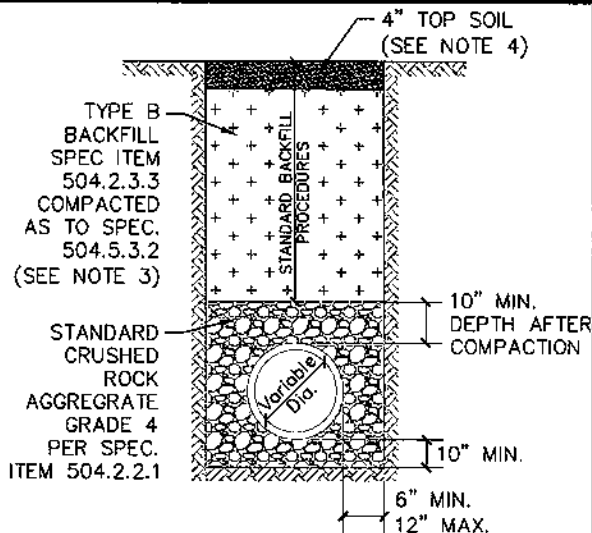


**City of Saginaw**  
Construction Standards

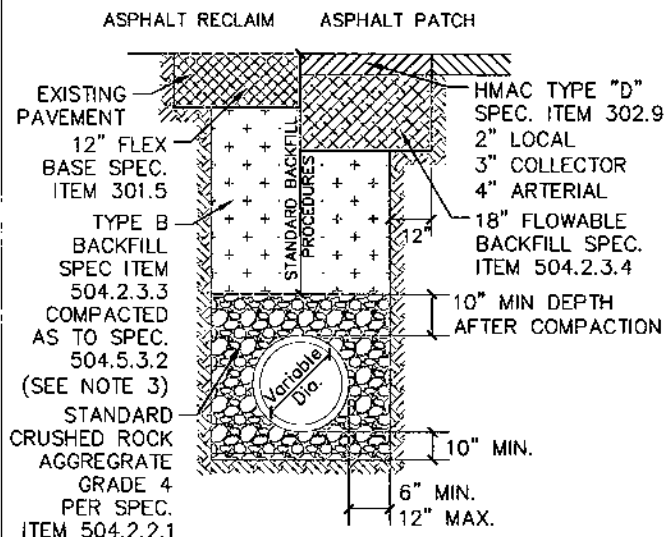
3 INCH AND LARGER METER VAULT

REVISED  
FEB 2023

W-14

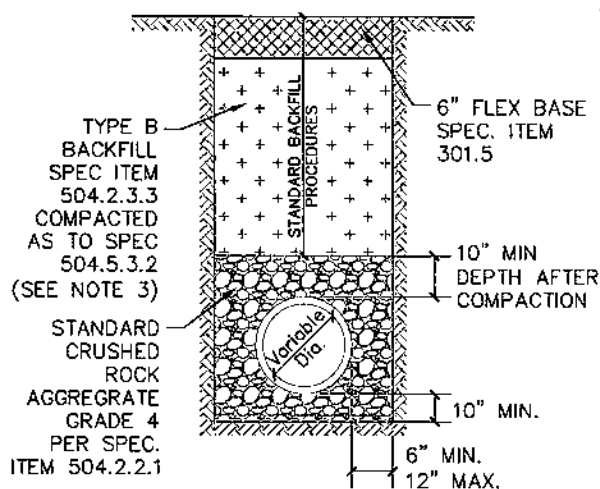


UNPAVED AREA

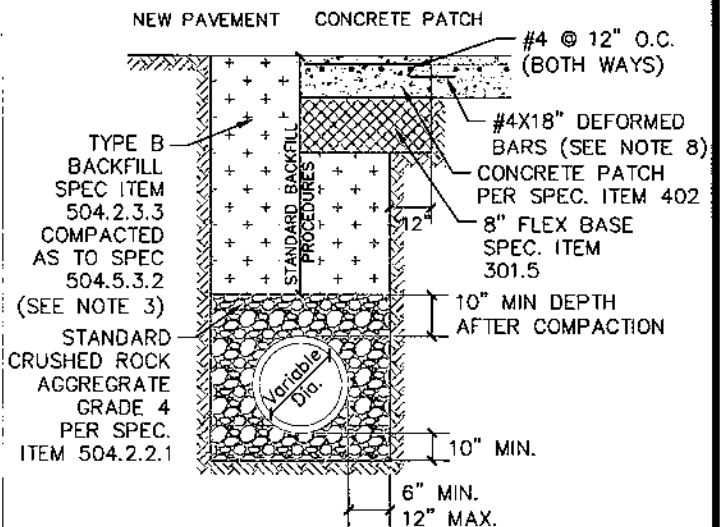


NOTE: FOR NEW STREETS, BACKFILL MAY BE EXTENDED TO THE TOP OF THE TRENCH

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 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. DEFORMED BARS DOWELED AND EPOXYED MIN. 6" INTO EXISTING PAVEMENT @ 12" O.C. (TYP).

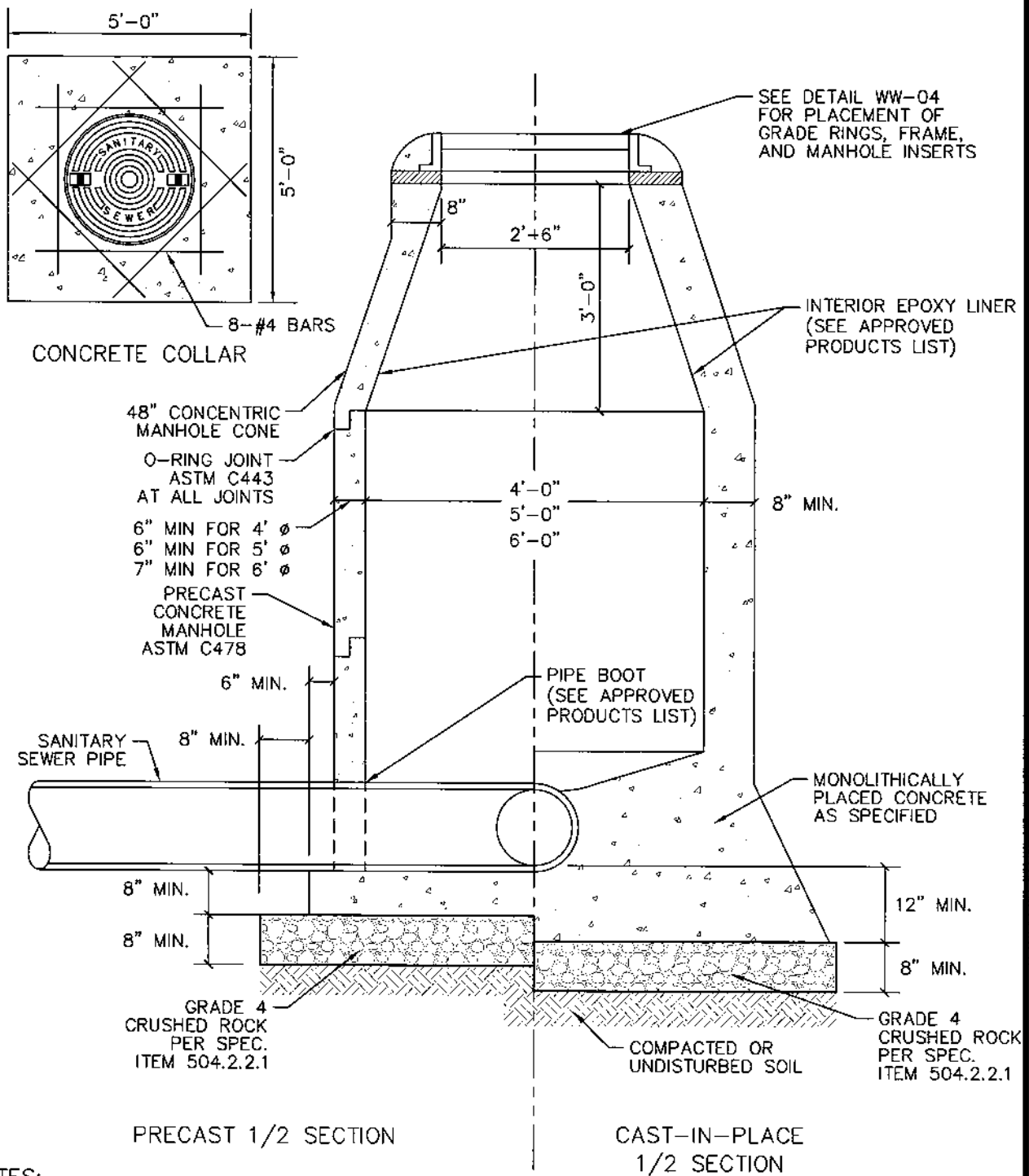


**City of Saginaw**  
Construction Standards

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.

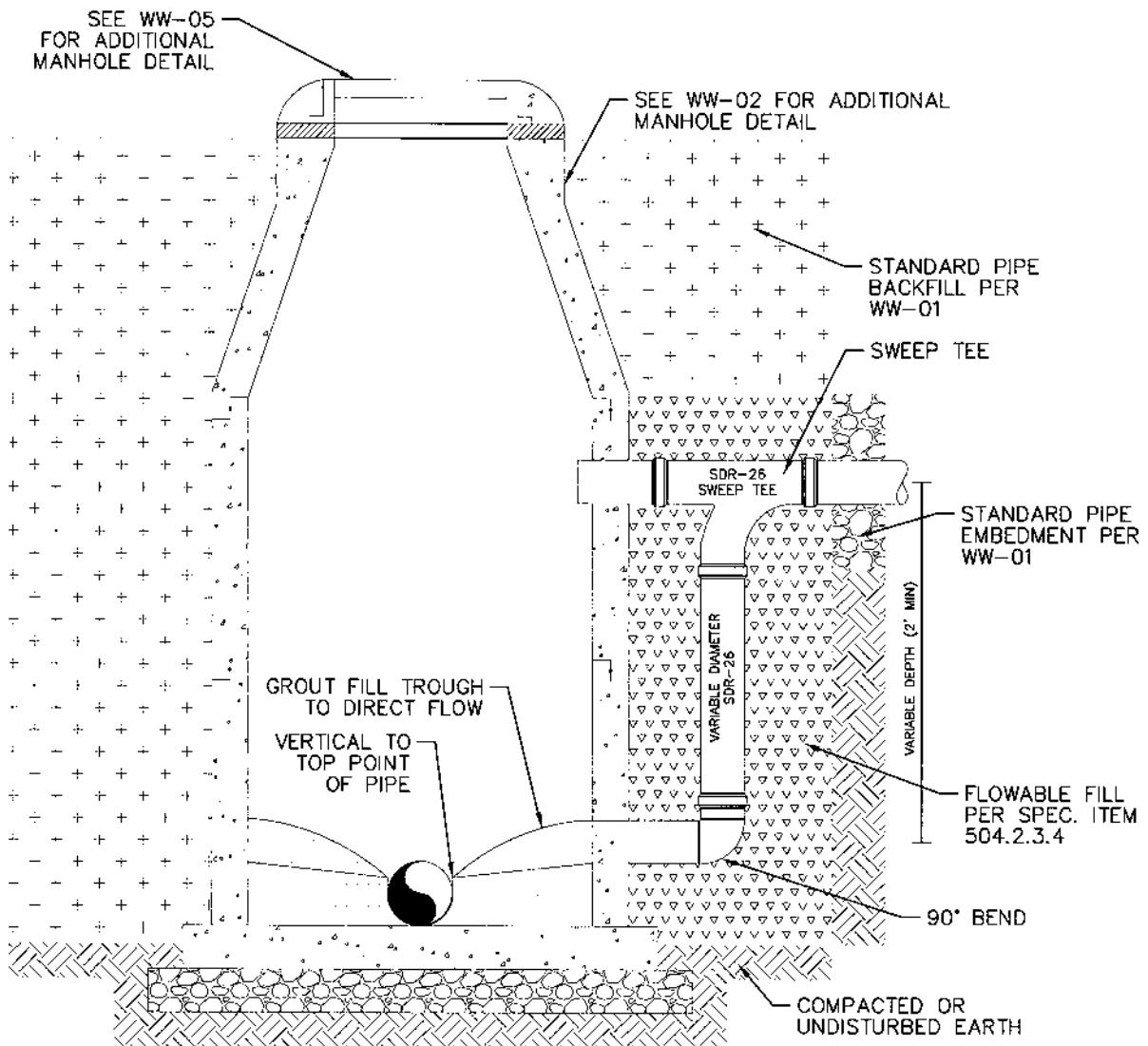


**City of Saginaw**  
Construction Standards

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.

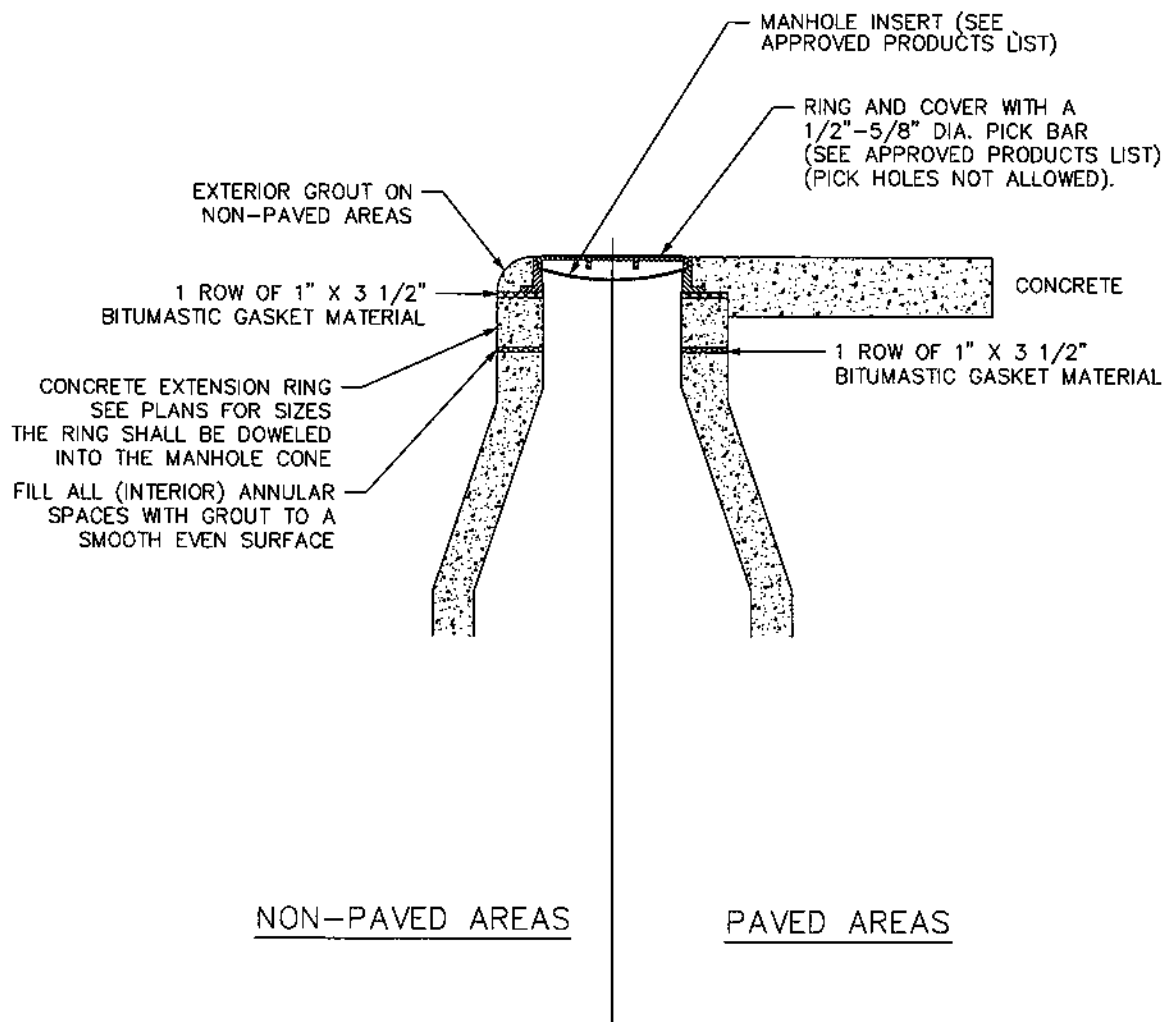


**City of Saginaw**  
Construction Standards

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.

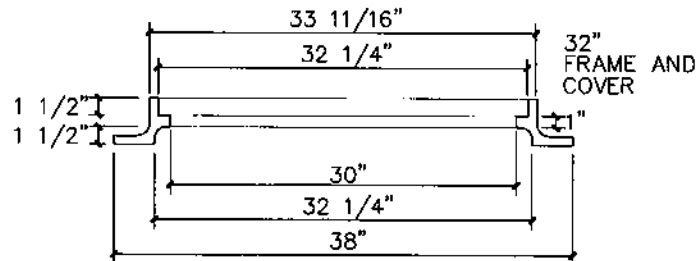
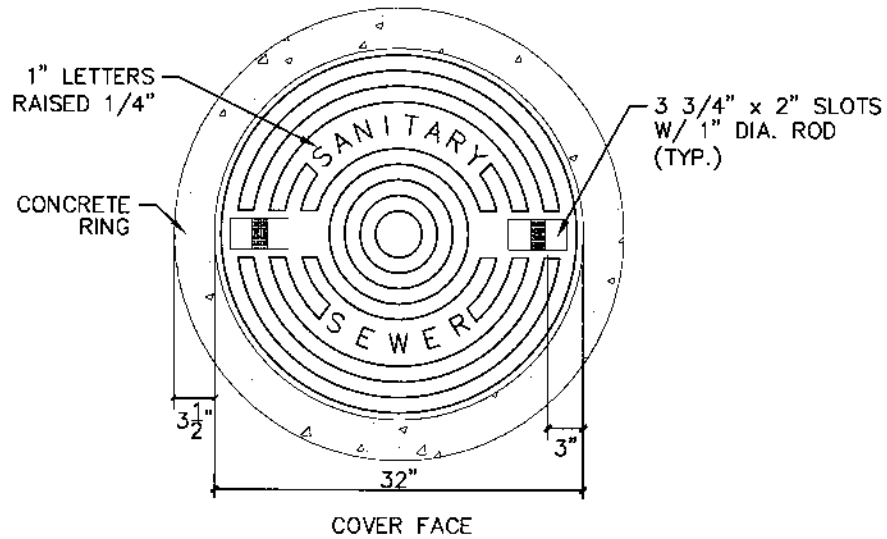


**City of Saginaw**  
Construction Standards

EXTENSION RING INSTALLATION  
FRAME AND COVER PLACEMENT

REVISED  
FEB 2023

WW-04



**City of Saginaw**  
Construction Standards

MANHOLE RING AND COVER

REVISED  
FEB 2023

WW-05

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

CLEANOUT CASTING

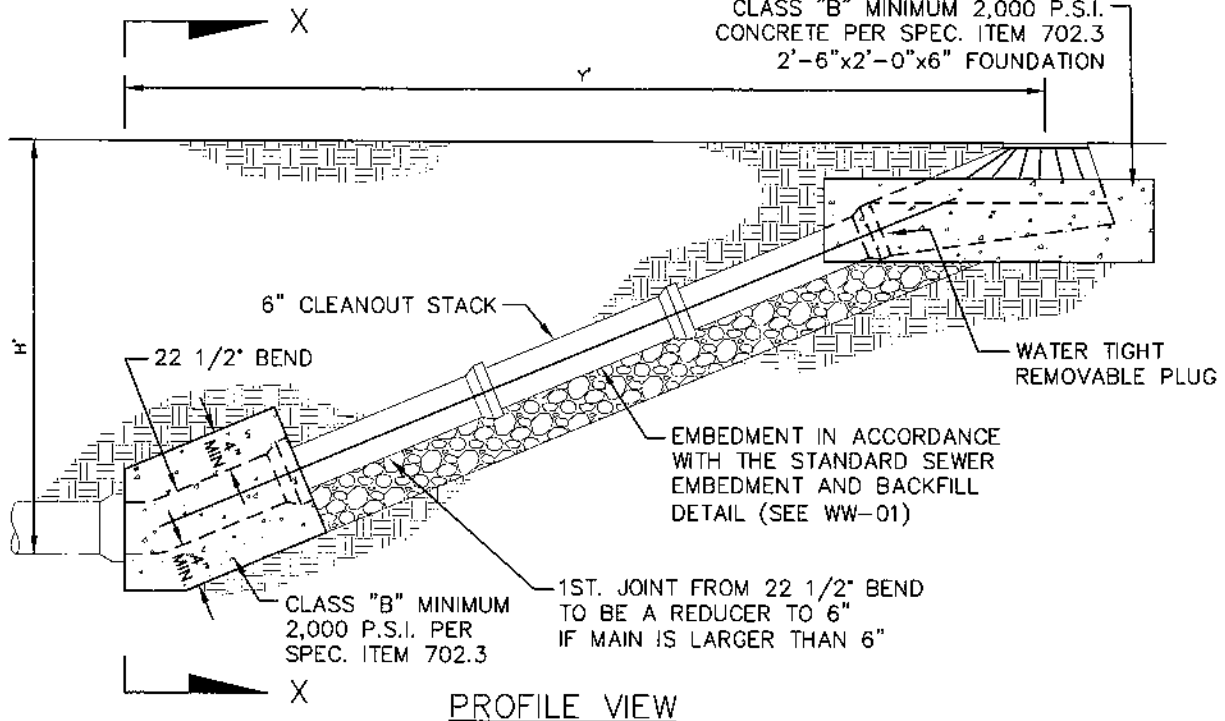
WATER TIGHT  
REMOVABLE PLUG

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.

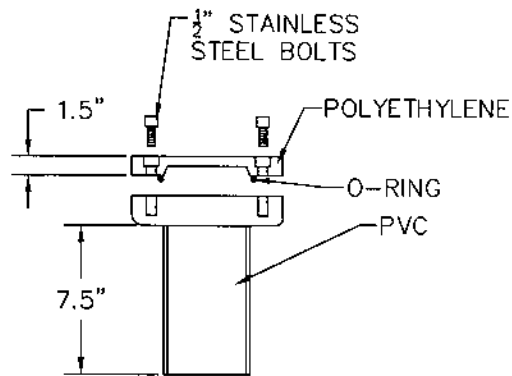


**City of Saginaw**  
Construction Standards

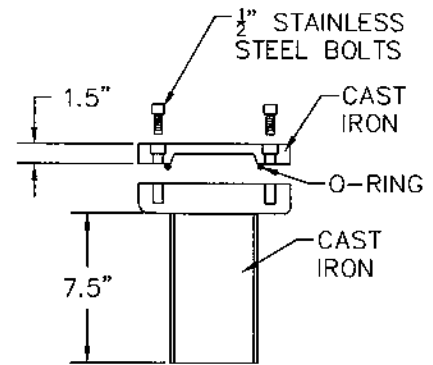
SANITARY SEWER MAIN CLEANOUT

REVISED  
FEB 2023

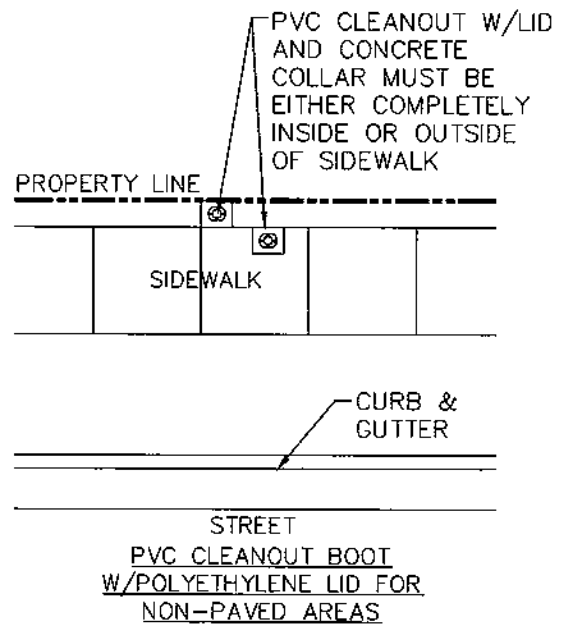
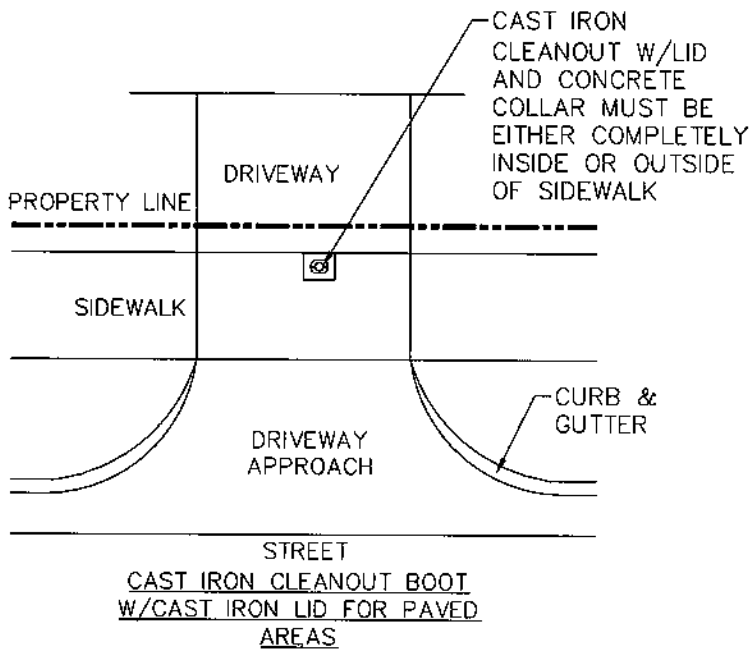
WW-06

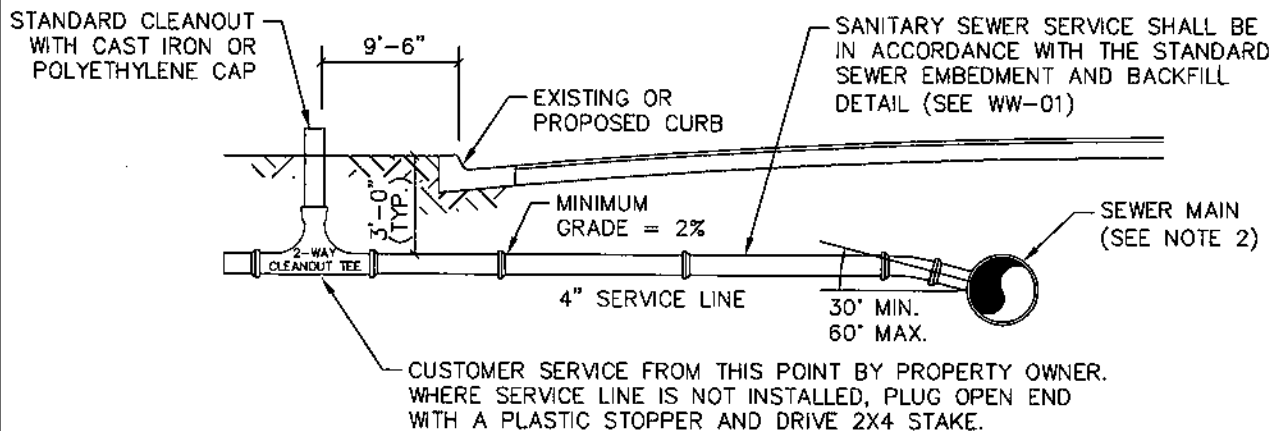


PVC CLEANOUT W/S.S. BOLTS  
AND POLYETHYLENE LID  
FOR UN-PAVED AREAS

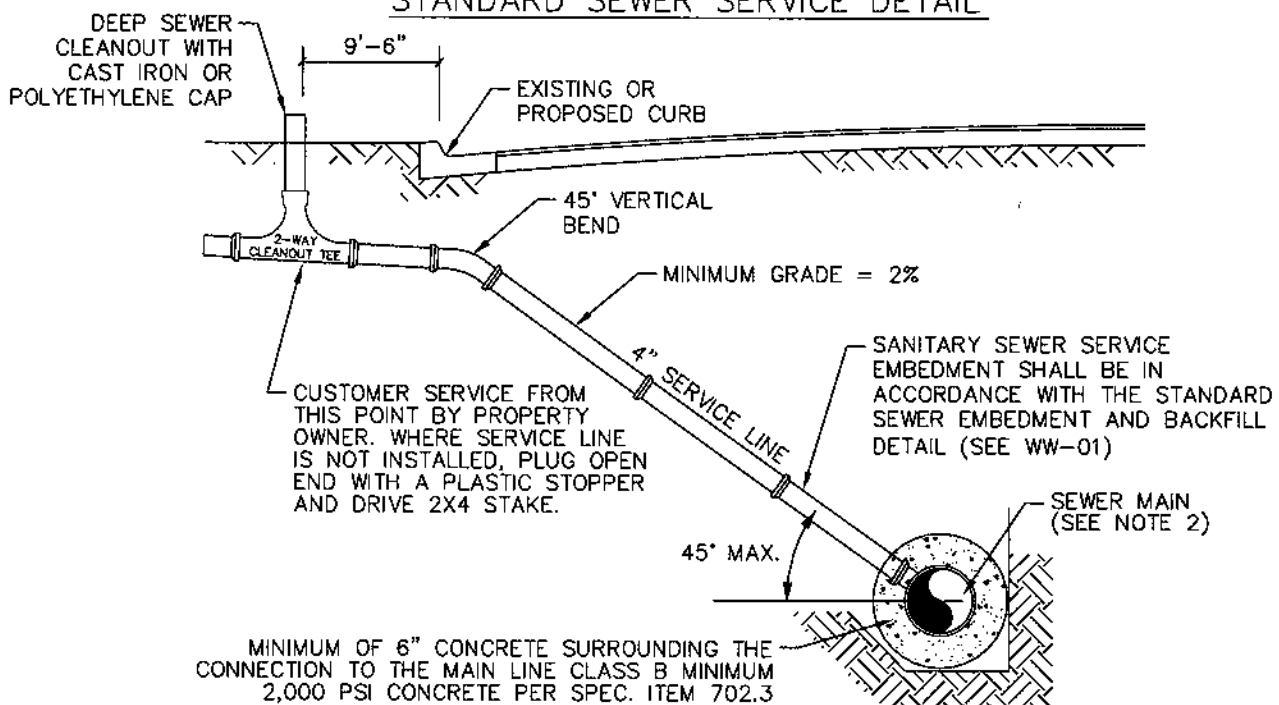


CAST IRON CLEANOUT W/S.S.  
BOLTS AND C.I. LID  
FOR PAVED AREAS





### 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.

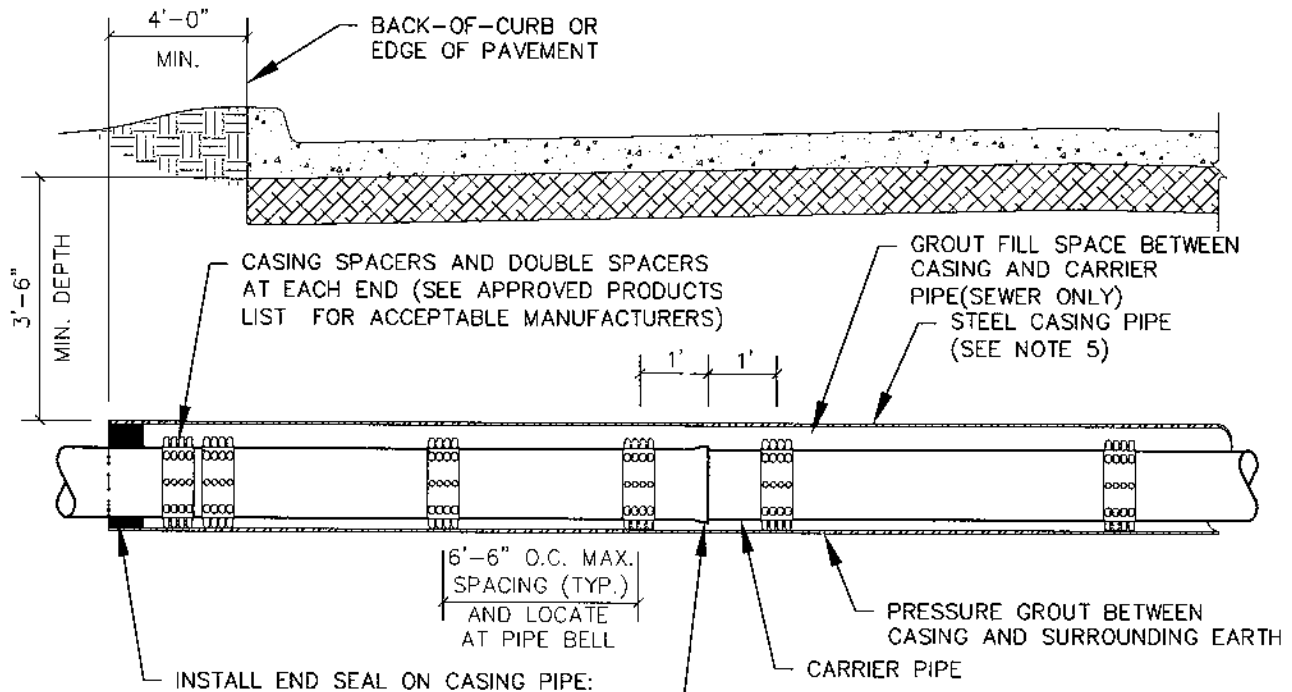


**City of Saginaw**  
Construction Standards

SANITARY SEWER SERVICE

REVISED  
FEB 2023

WW-08



INSTALL END SEAL ON CASING PIPE:

FOR WATER LINES AND FORCE MAINS PROVIDE MORTARED BRICK WITH NON-SHRINK GROUT OR LINK SEAL.

GRAVITY SANITARY SEWER PIPING REQUIRE GROUTING OF THE ANNULAR SPACE BETWEEN THE CASING AND CARRIER PIPE, END SEAL IS NOT REQUIRED.

#### 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:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. BORE PIT SHALL MEET OSHA AND STATE REQUIREMENTS.
3. WHERE A BORE IS TO BE PARTIALLY OR COMPLETELY ABANDONED, SAID BORE SHALL BE COMPLETELY FILLED WITH HYDRAULICALLY PLACED CEMENT GROUT.
4. THE EDGE OF BORE PIT SHALL BE A MINIMUM OF 4' BEHIND THE BACK OF CURB OR EDGE OF PAVEMENT.
5. 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.
6. 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.

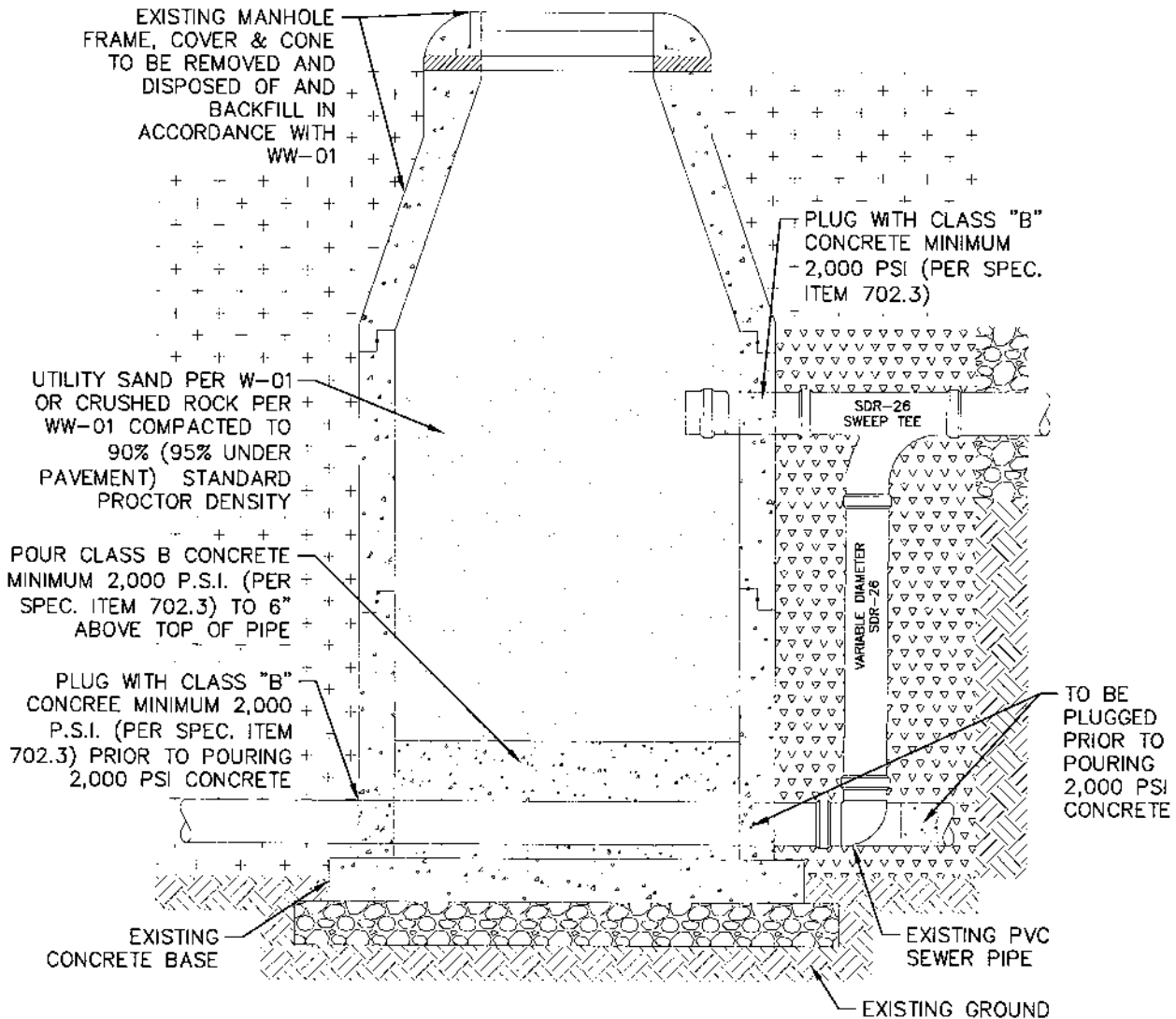


**City of Saginaw**  
Construction Standards

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 NCHRP STANDARD SPECIFICATION FOR PUBLIC WORKS CONSTRUCTION

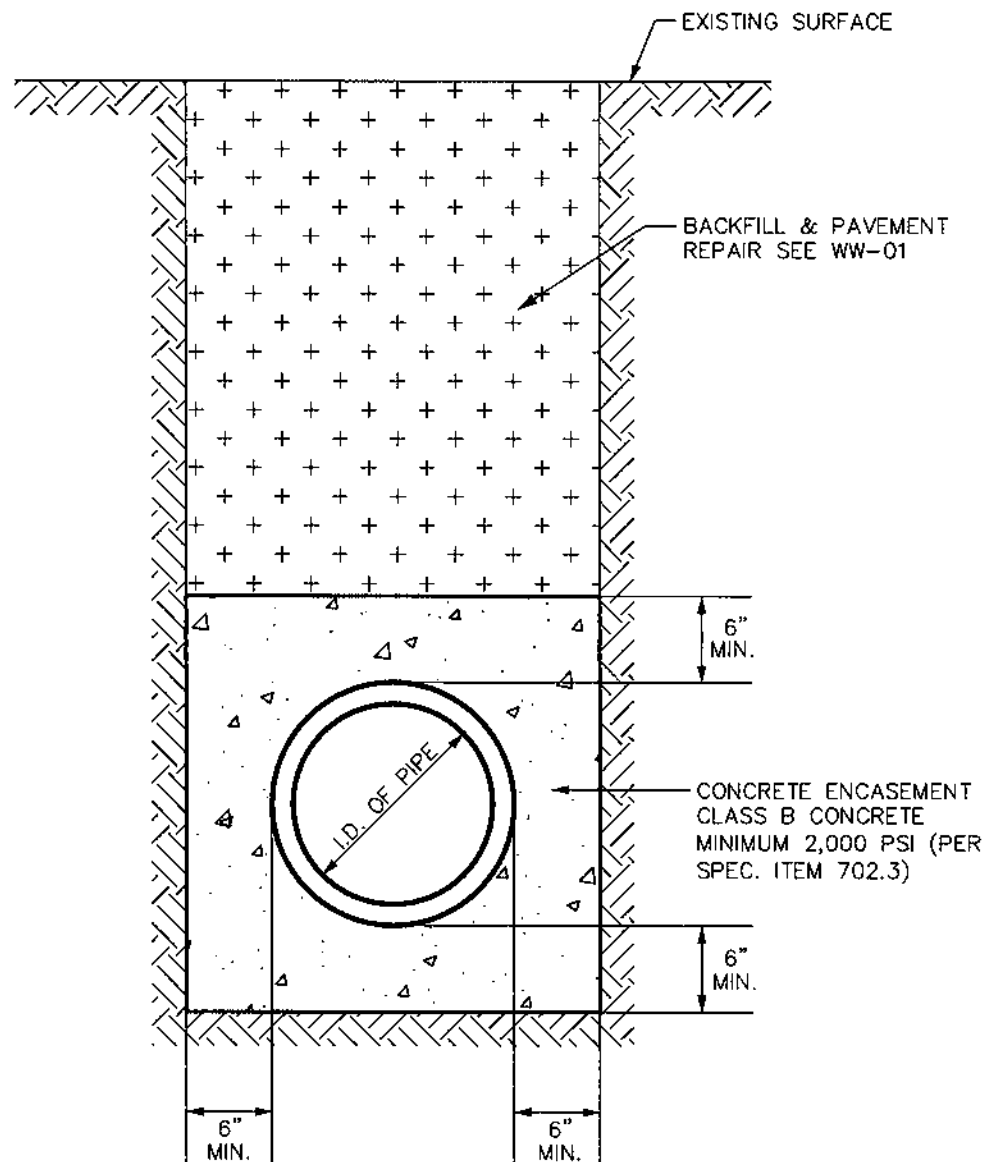


**City of Saginaw**  
Construction Standards

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.

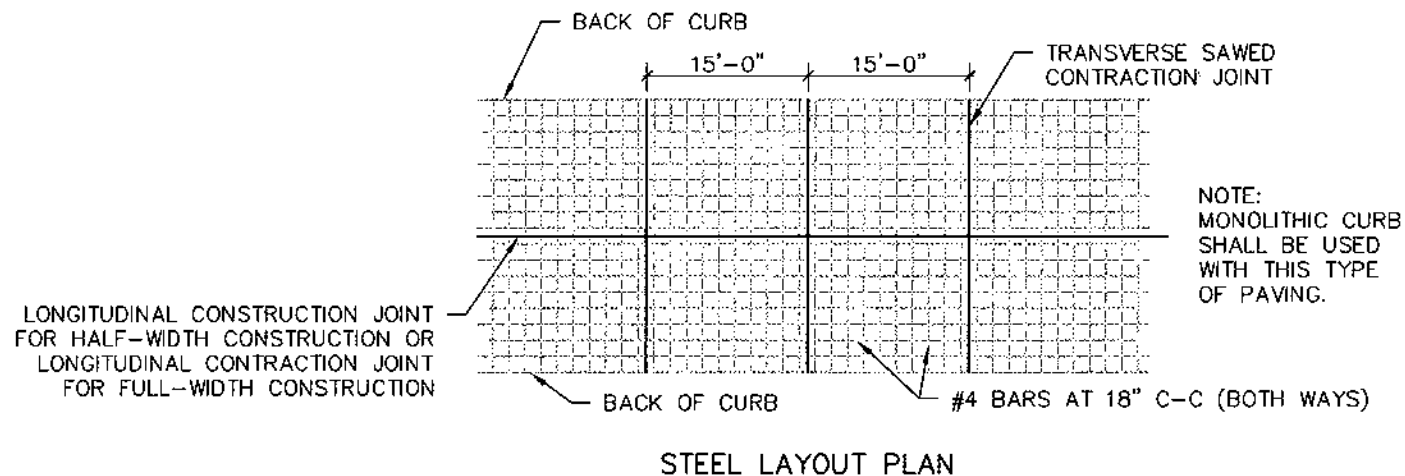
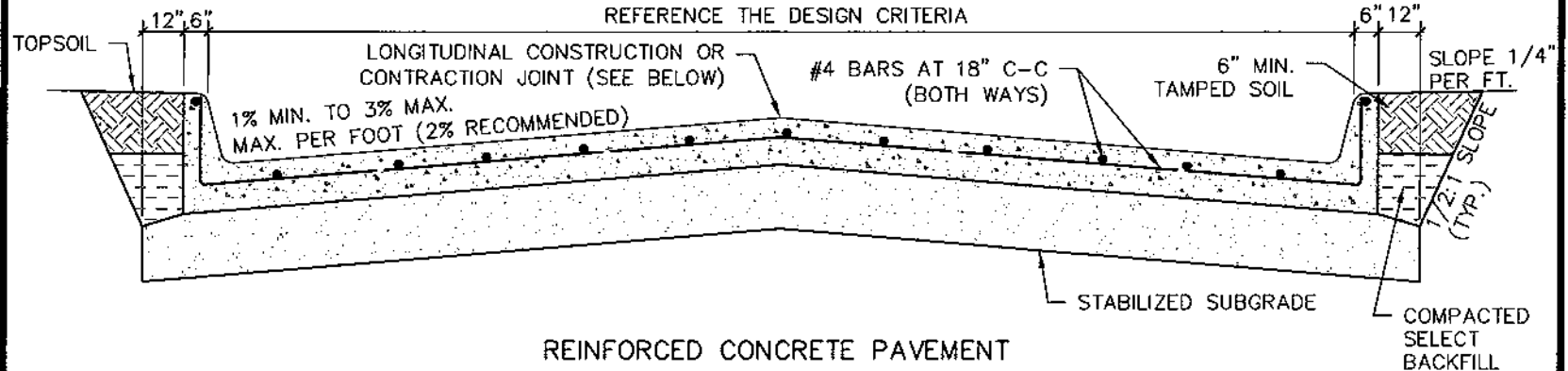


**City of Saginaw**  
Construction Standards

CONCRETE ENCASEMENT

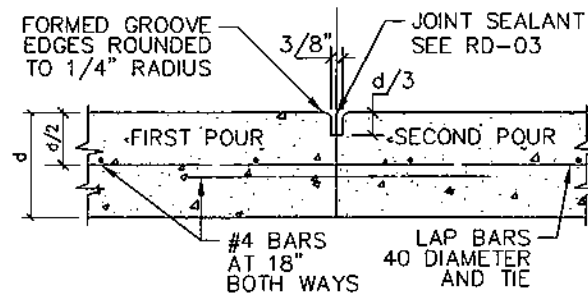
REVISED  
FEB 2023

WW-11

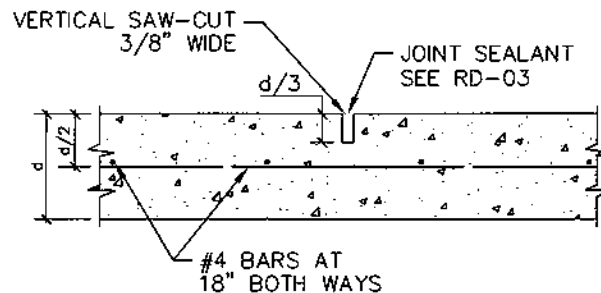


**NOTES:**

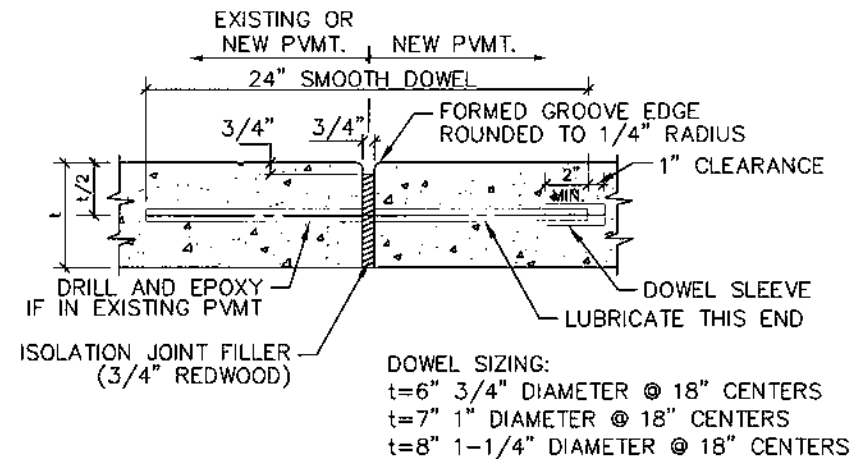
1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. MINIMUM PAVEMENT DEPTH SHALL BE 8".
3. ALL CONCRETE PAVEMENT SHALL BE CLASS "P1", 4000 PSI (MACHINE POURED) OR CLASS "P2", 4500 PSI (HAND POURED) (PER ITEM 303.3) 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



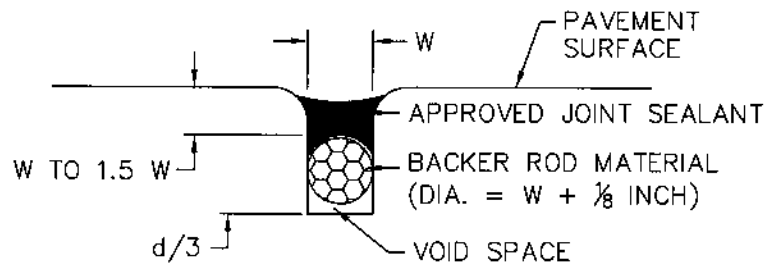
TRANSVERSE OR LONGITUDINAL  
SAWED CONSTRUCTION JOINT



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)

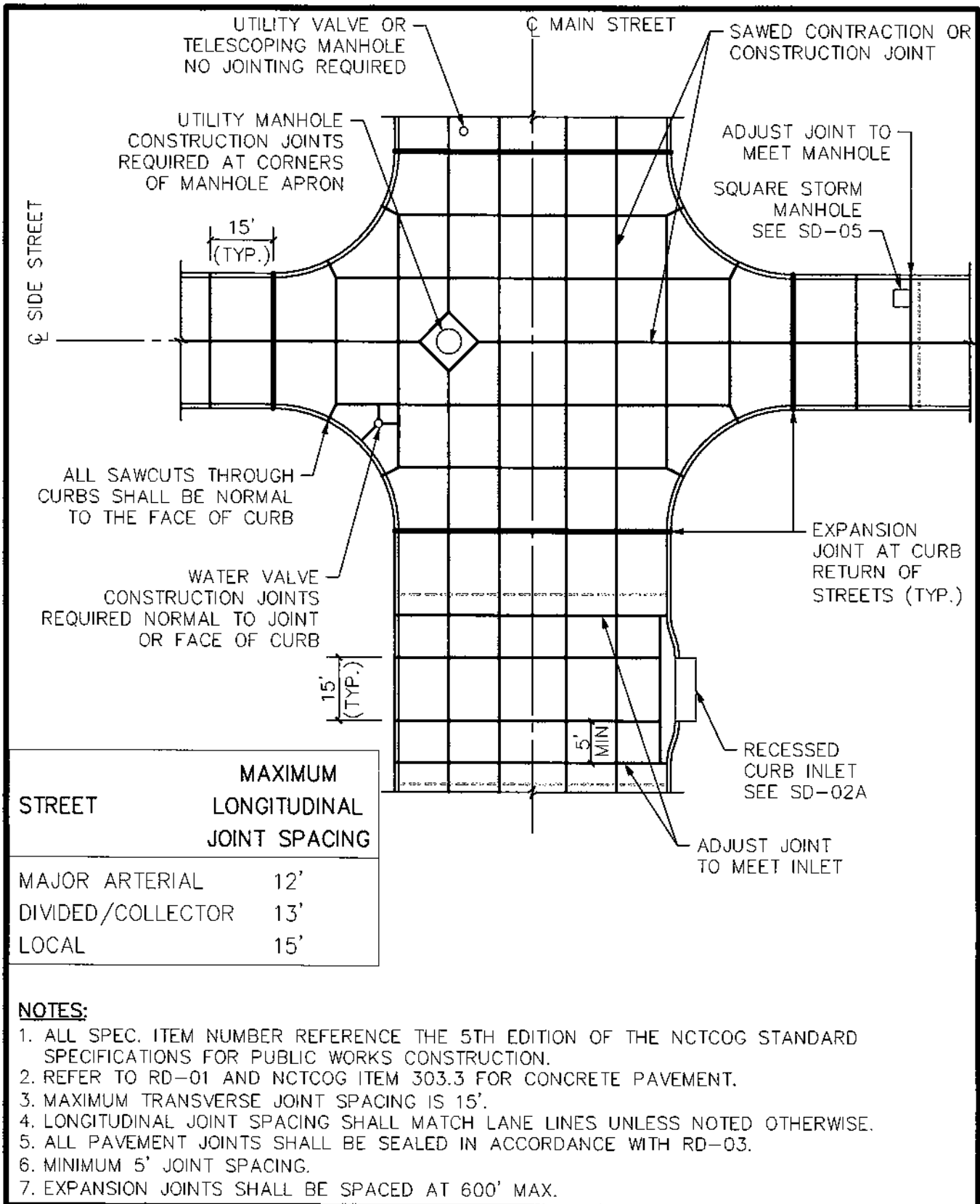


**City of Saginaw**  
Construction Standards

CONCRETE PAVING  
JOINT SEALANTS

REVISED  
FEB 2023

RD-03

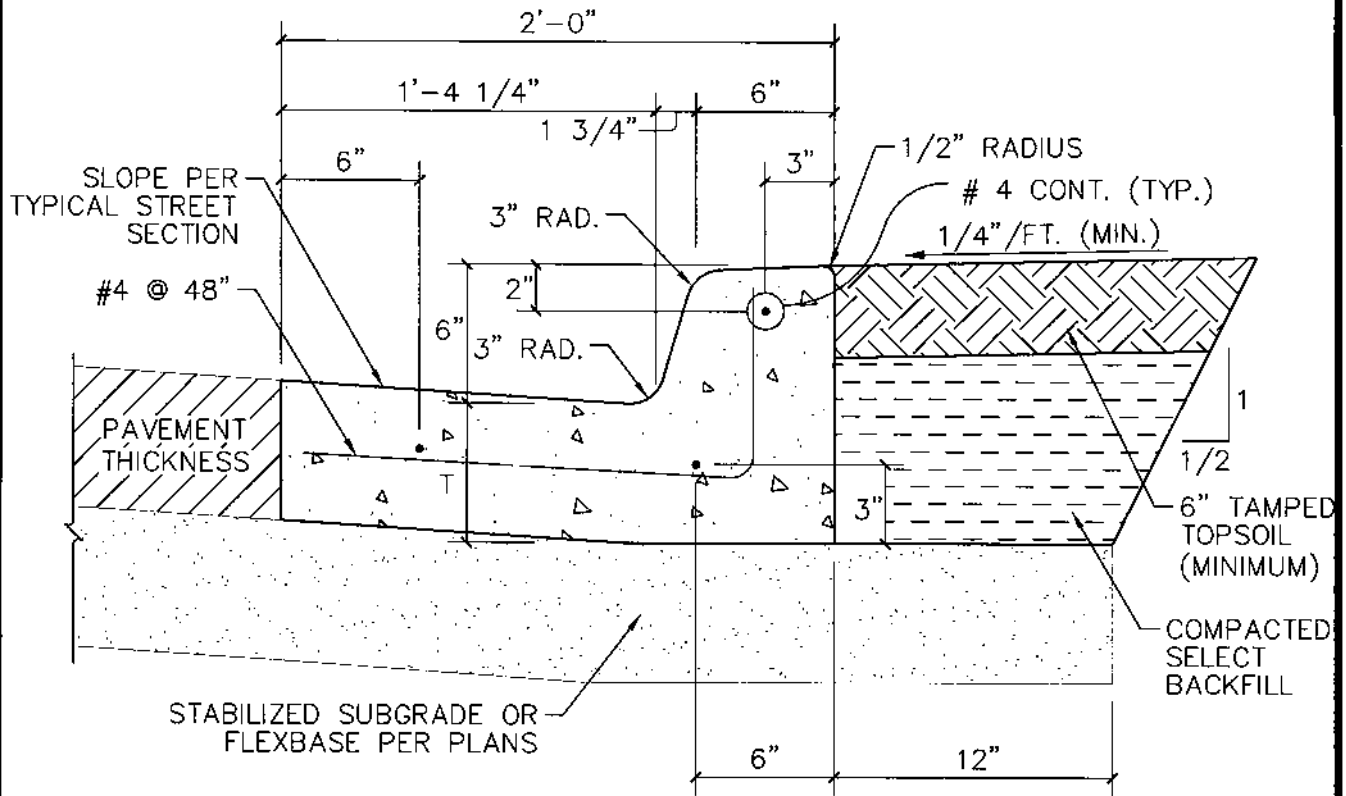


**City of Saginaw**  
Construction Standards

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.

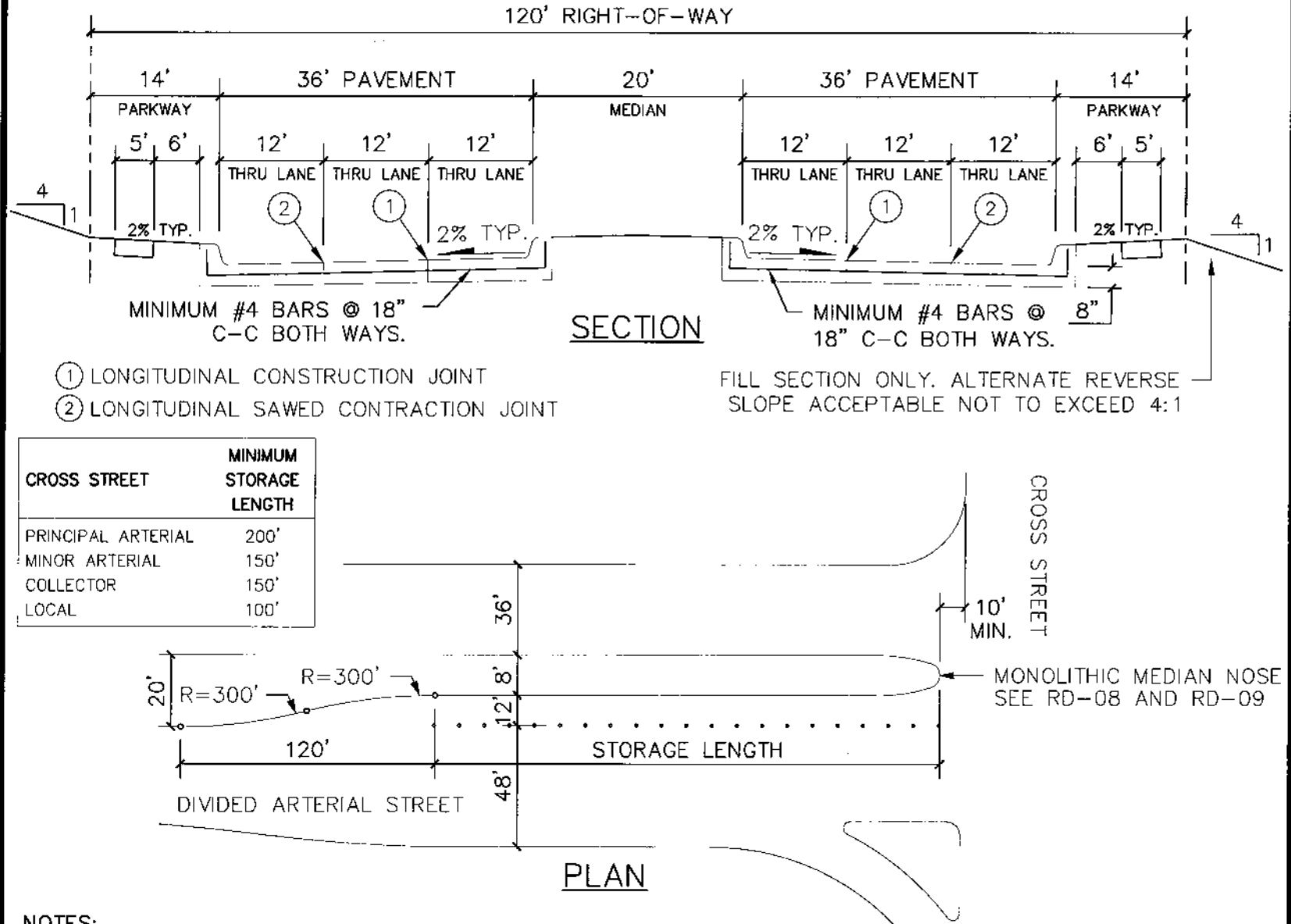


**City of Saginaw**  
Construction Standards

STANDARD 6-INCH CURB AND  
18-INCH GUTTER

REVISED  
FEB 2023

RD-05



**NOTES:**

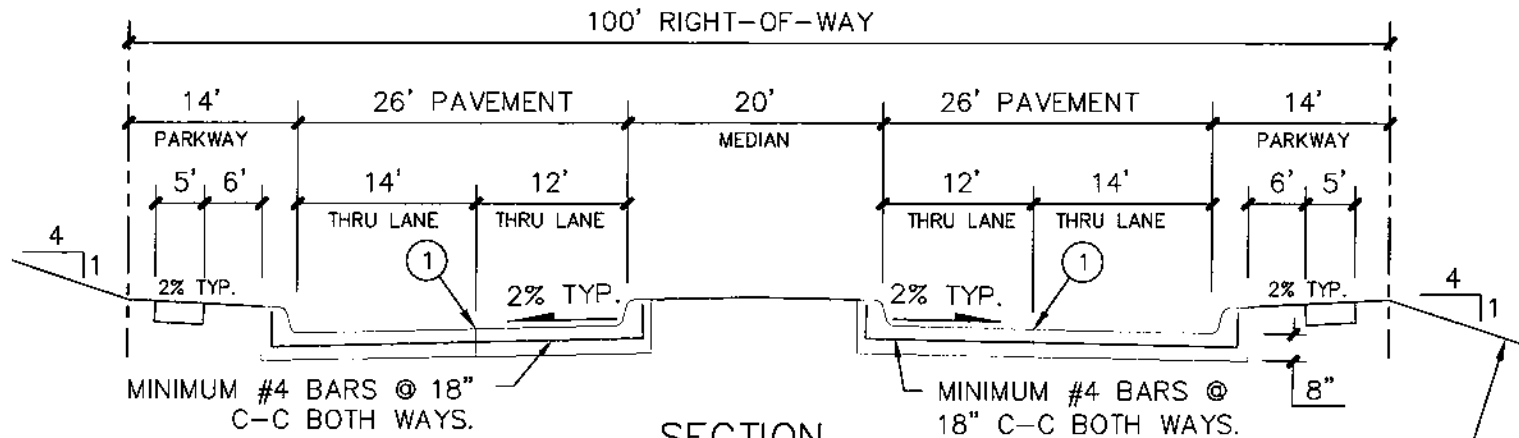
1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. REFER TO RD-01 AND NCTCOG ITEM 303.3 FOR CONCRETE PAVEMENT.
3. MIN. CURB HEIGHT AND WIDTH SHALL BE 6" OR AS SPECIFIED BY OWNER.



# City of Saginaw Construction Standards

## REINFORCED CONCRETE PAVEMENT FOUR LANE DIVIDED THOROUGHFARE

RD-07  
REVISED  
FEB 2023

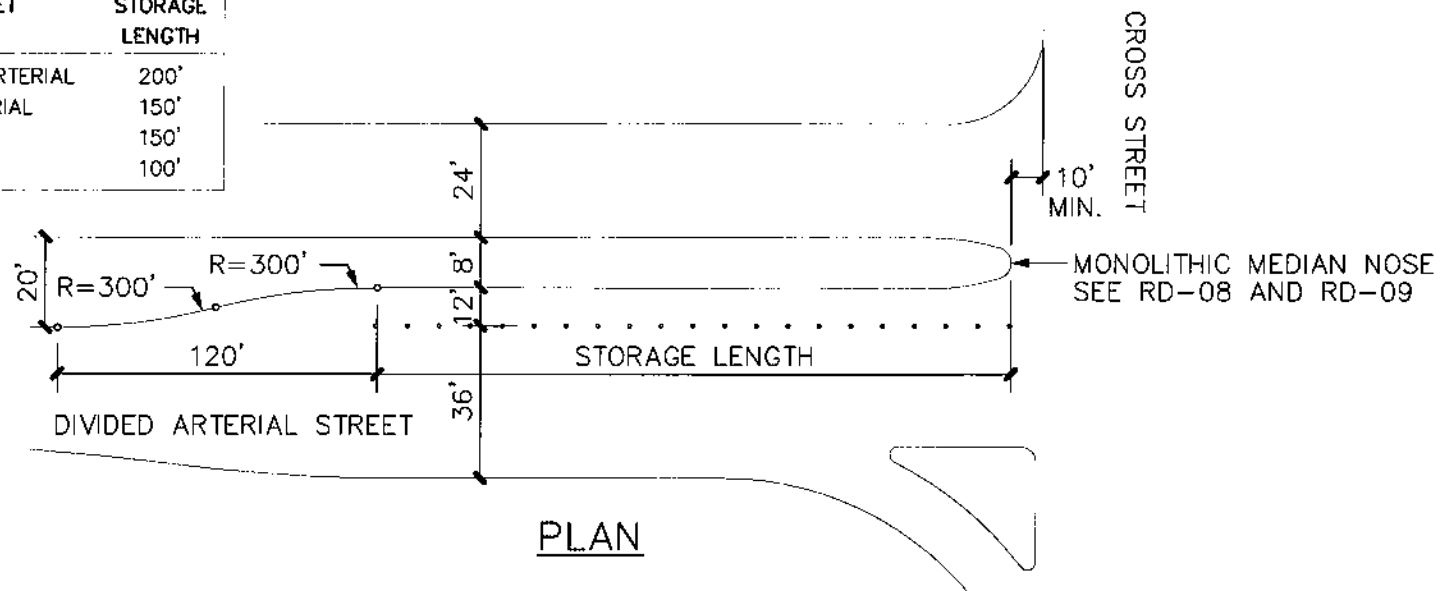


① LONGITUDINAL  
CONSTRUCTION JOINT

### SECTION

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

| CROSS STREET       | MINIMUM<br>STORAGE<br>LENGTH |
|--------------------|------------------------------|
| PRINCIPAL ARTERIAL | 200'                         |
| MINOR ARTERIAL     | 150'                         |
| COLLECTOR          | 150'                         |
| LOCAL              | 100'                         |

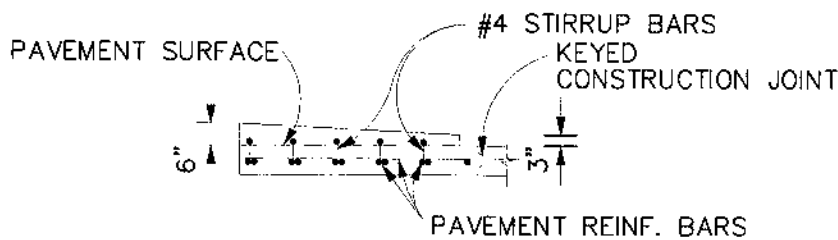
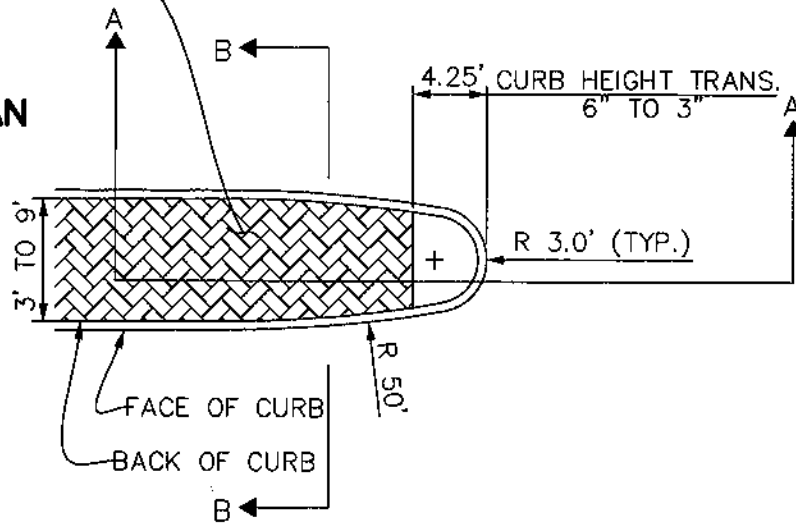


### NOTES:

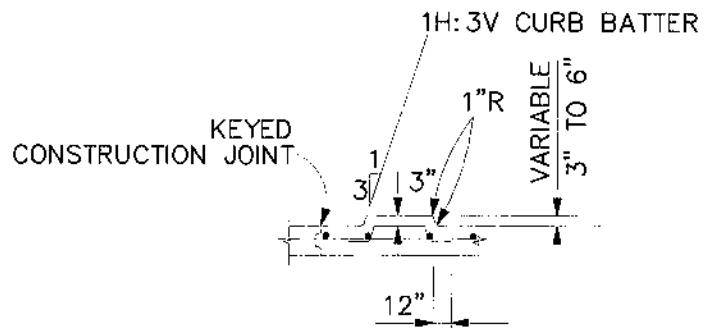
1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. REFER TO RD-01 AND NCTCOG ITEM 303.3 FOR CONCRETE PAVEMENT.
3. MIN. CURB HEIGHT AND WIDTH SHALL BE 6" OR AS SPECIFIED BY OWNER.

4" STAMPED CONC.  
SEE RD-10

# PLAN



## SECTION A-A



## SECTION B-B



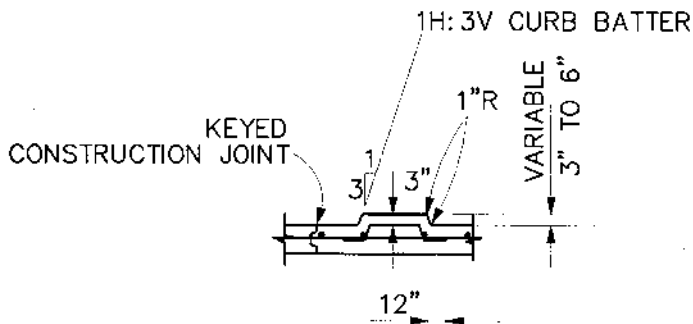
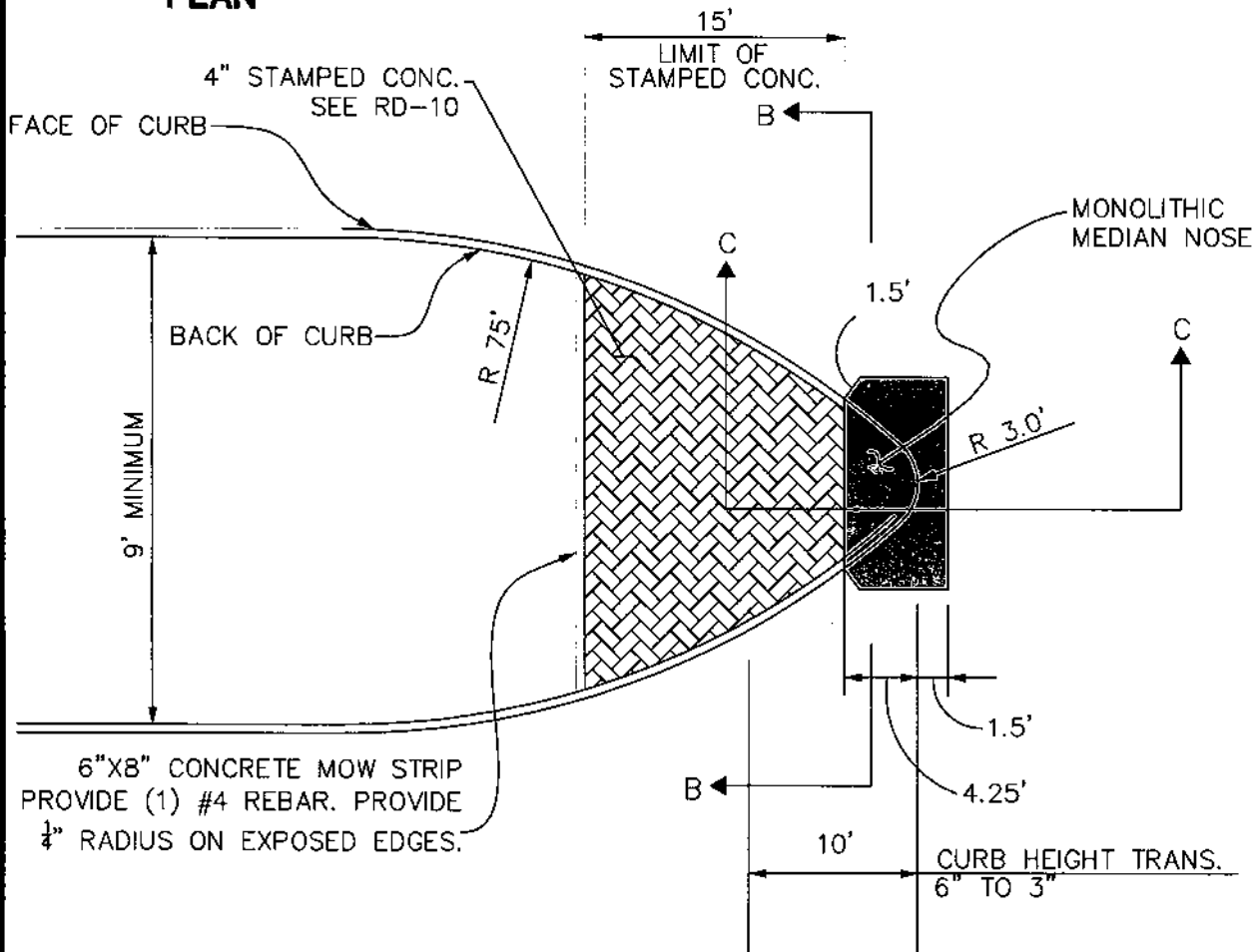
**City of Saginaw**  
Construction Standards

MONOLITHIC MEDIAN NOSE  
TYPE 1

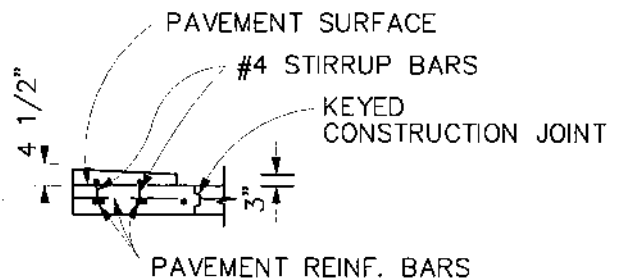
REVISED  
FEB 2023

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.

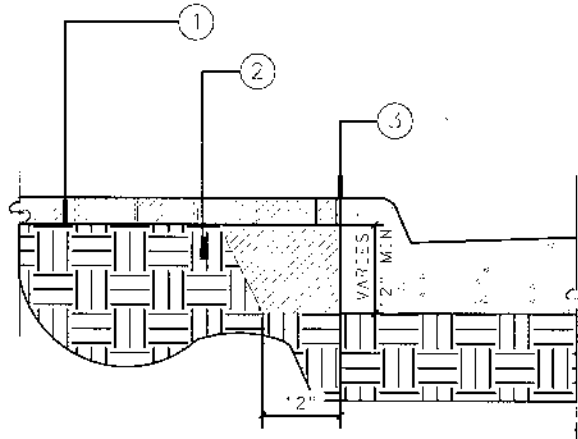


**City of Saginaw**  
Construction Standards

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-05)

### COLORS 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 L.L.C INTEGRAL COLOR AND ANTIQUING RELEASE\*.

BASE COLOR SHALL BE ATTAINED WITH CONCRETE COLORS OF TEXAS L.L.C 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\*

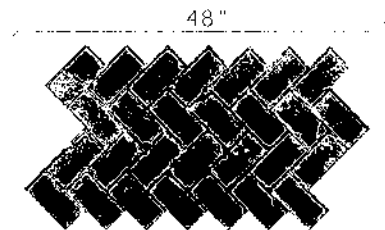
SPLITTER ISLANDS AT ROUNDABOUT  
CONCRETE COLORS OF TEXAS L.L.C INTEGRAL COLOR\*:  
CONCRETE COLORS OF TEXAS L.L.C ANTIQUING RELEASE\*:  
SCOFIELD CURESEAL W SEMIGLOSS\*

201 - 1 DOESKIN  
108 - 5 PORTABELLO

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

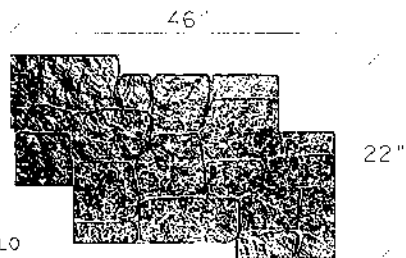
### INTEGRAL COLORED AND TEXTURED CONCRETE STAMP TOOL

OTHER SPLITTER ISLANDS  
Scotfield LITHOTEX Pavecrafters Skins  
Used Brick Herringbone Pattern - 2570x



SPLITTER ISLANDS AT ROUNDABOUT  
European Field Stone  
Scotfield LITHOTEX Pavecrafters Skins  
Stone Random Interlocking - 44/A\*

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

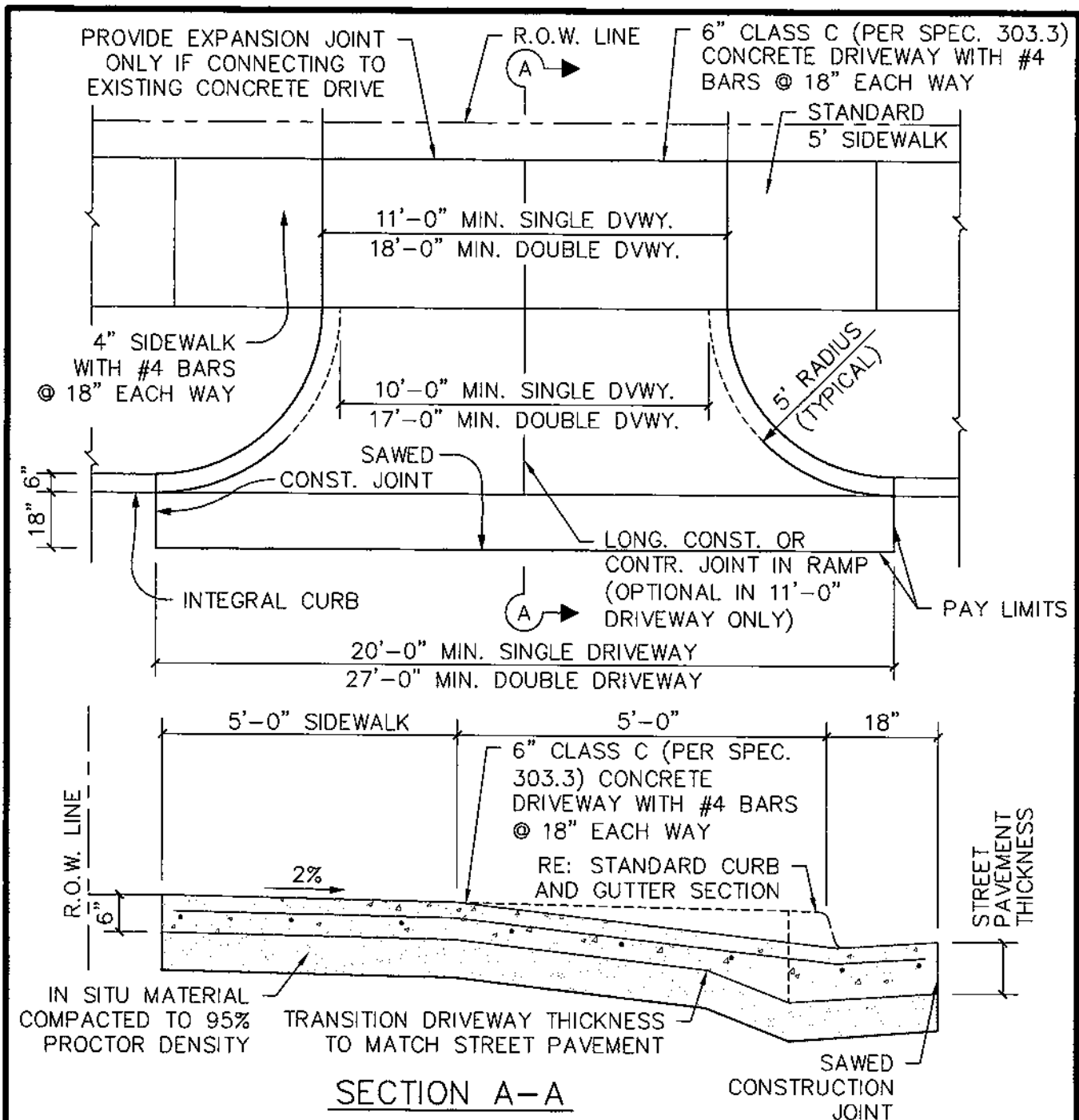


**City of Saginaw**  
Construction Standards

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.

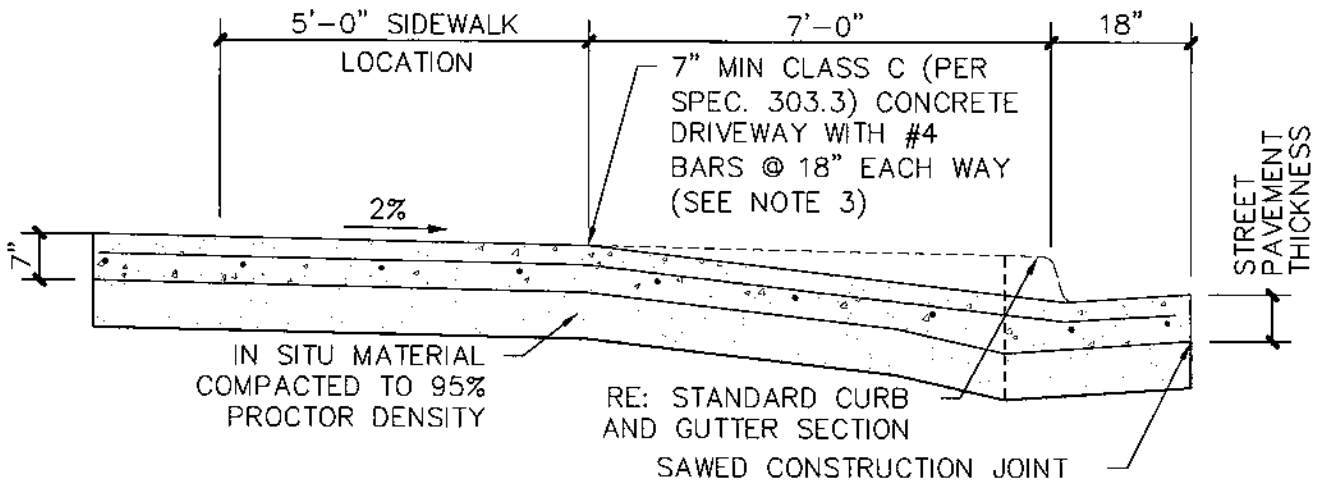
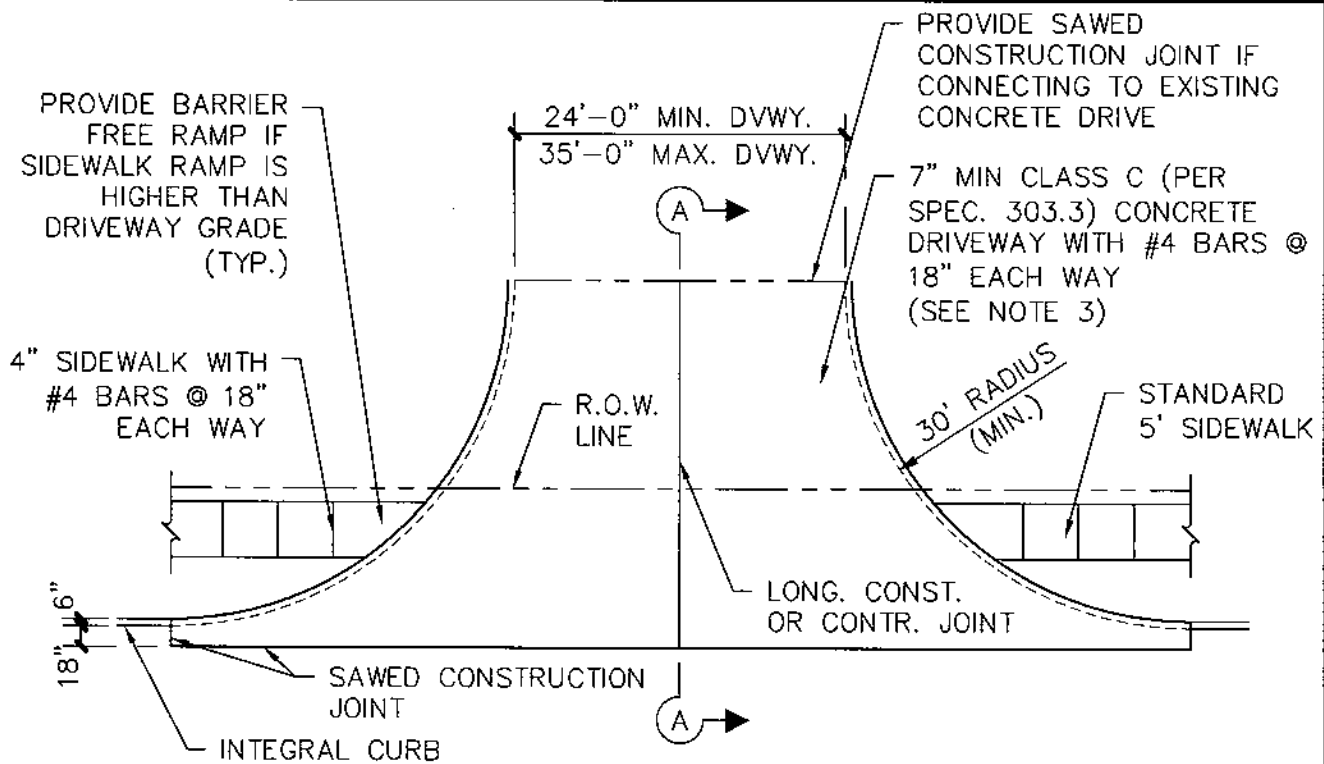


**City of Saginaw**  
Construction Standards

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".

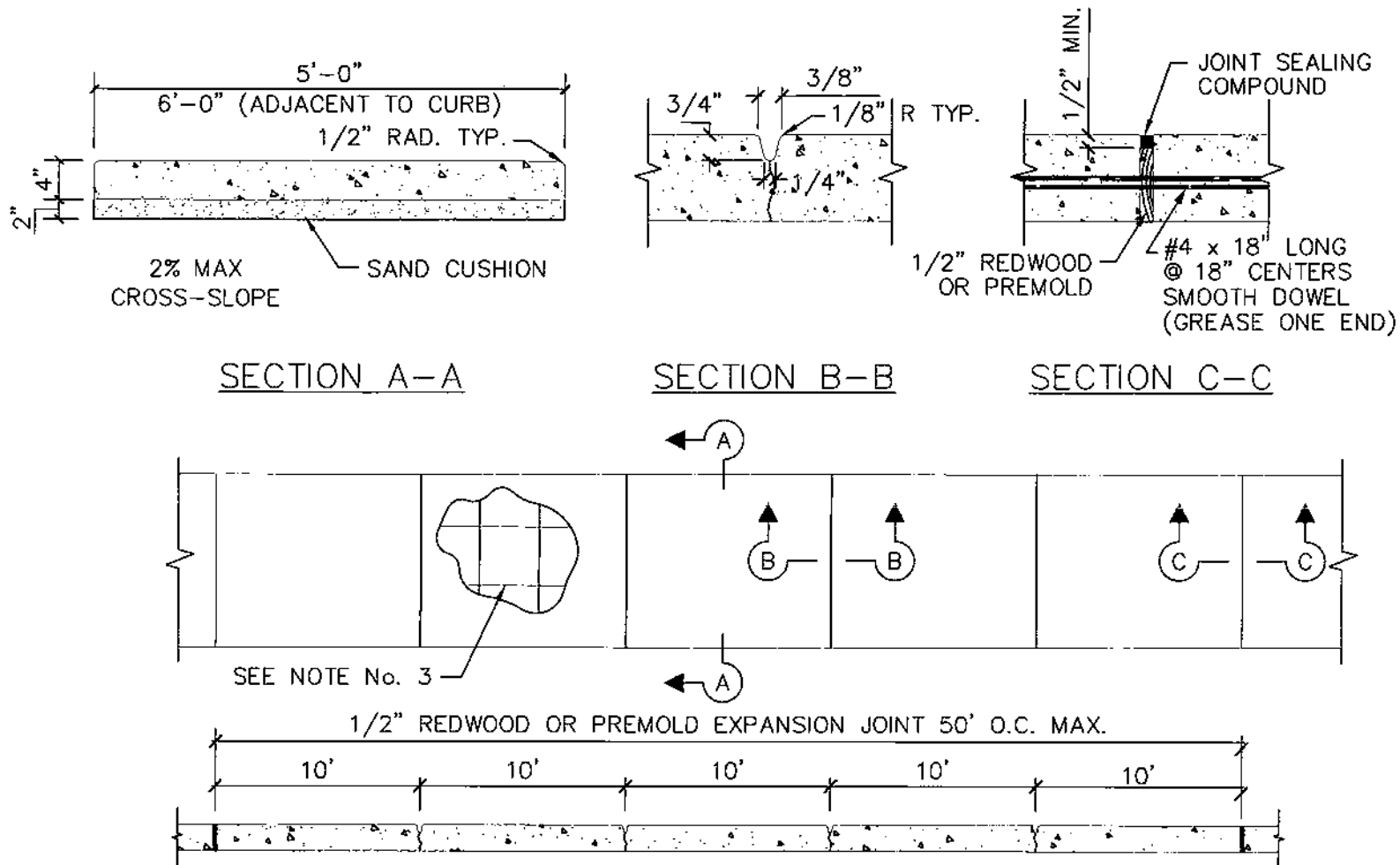


**City of Saginaw**  
Construction Standards

COMMERCIAL-INDUSTRIAL  
DRIVEWAY

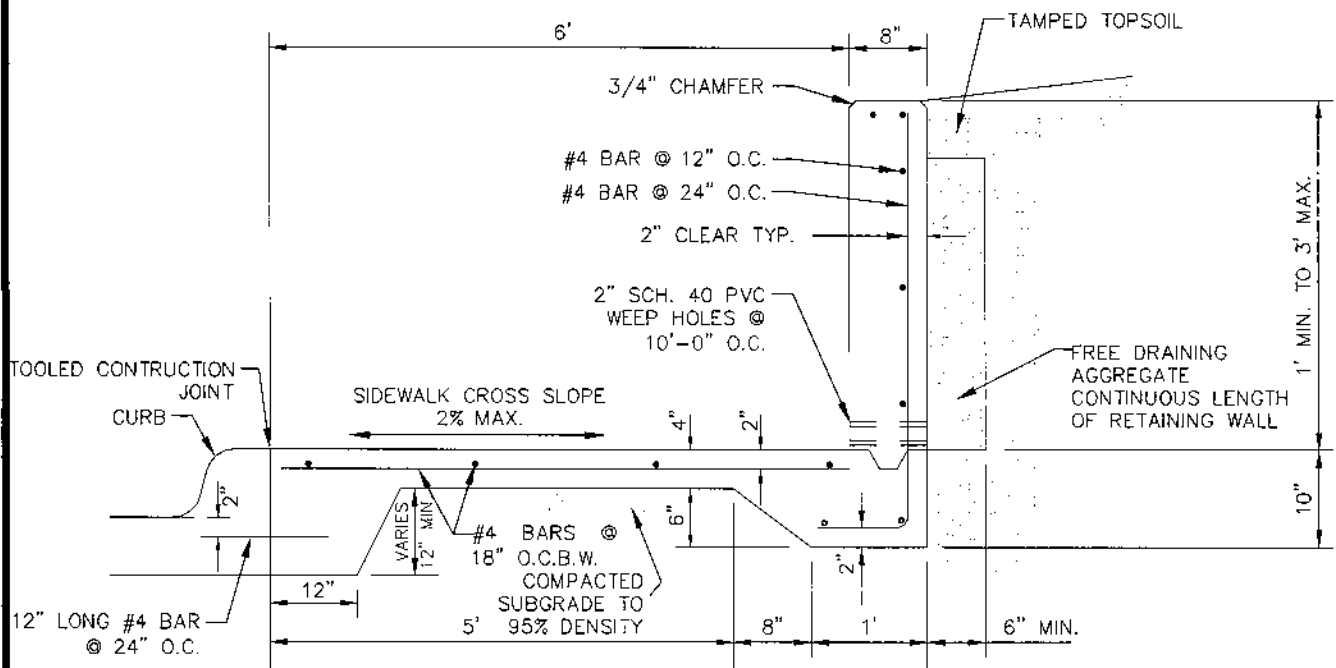
REVISED  
FEB 2023

RD-12



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.



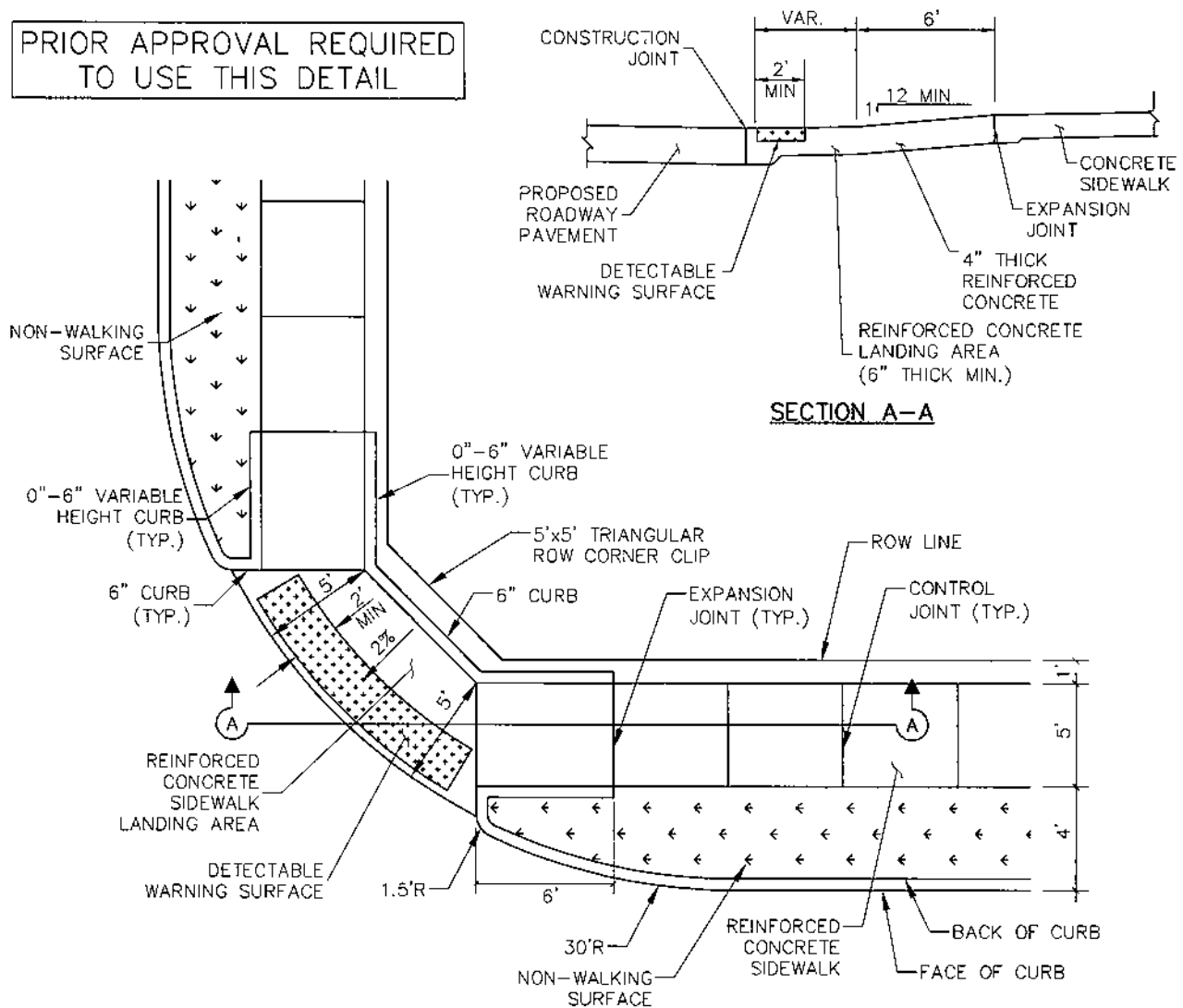
**City of Saginaw**  
Construction Standards

CONCRETE SIDEWALK WITH WALL

REVISED  
FEB 2023

RD-14

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.

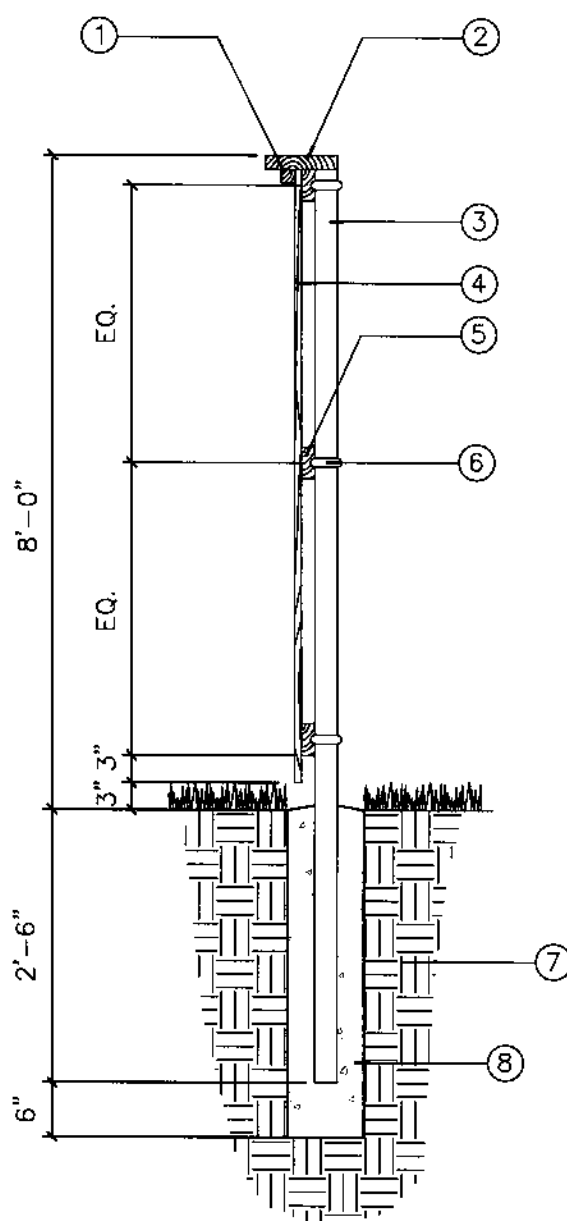


**City of Saginaw**  
Construction Standards

BARRIER FREE RAMP

REVISED  
FEB 2023

RD-15



- ① 2"x2" TRIM  
 ② 2"x8" CAP (TOP OF FENCE TO BE LEVEL)  
 ③ 2" DIA. GALV. STEEL POST. POST SHALL BE FLUSH WITH BOTTOM OF 2"x8" CAP.  
 ④ 1"x6" PICKET  
 NOTE: TO BE 3" ABOVE FINISH GRADE (TYP.)  
 ⑤ (3) 2"x4" RAILS  
 ⑥ (3) WACKER CLAMPS WITH COUNTER-SINK NUTS  
 ⑦ COMPACTED SOIL  
 ⑧ 12" DIA. CLASS A (PER SPEC. 702.3) CONCRETE FOOTING

#### NOTES:

1. ALL SPEC. ITEM NUMBER REFERENCES SHALL REFERENCE THE 5TH EDITION OF THE NCTCOG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
2. WOOD FENCE MATERIAL AS SPECIFIED IN ZONING ORDINANCE 2002-04.
3. GALVANIZED STEEL POSTS SHALL BE SPACED AT 8' ON CENTER MAX.
4. HARDWARE TO BE HOT DIPPED GALV.
5. FENCE STAIN TO BE DETERMINED.

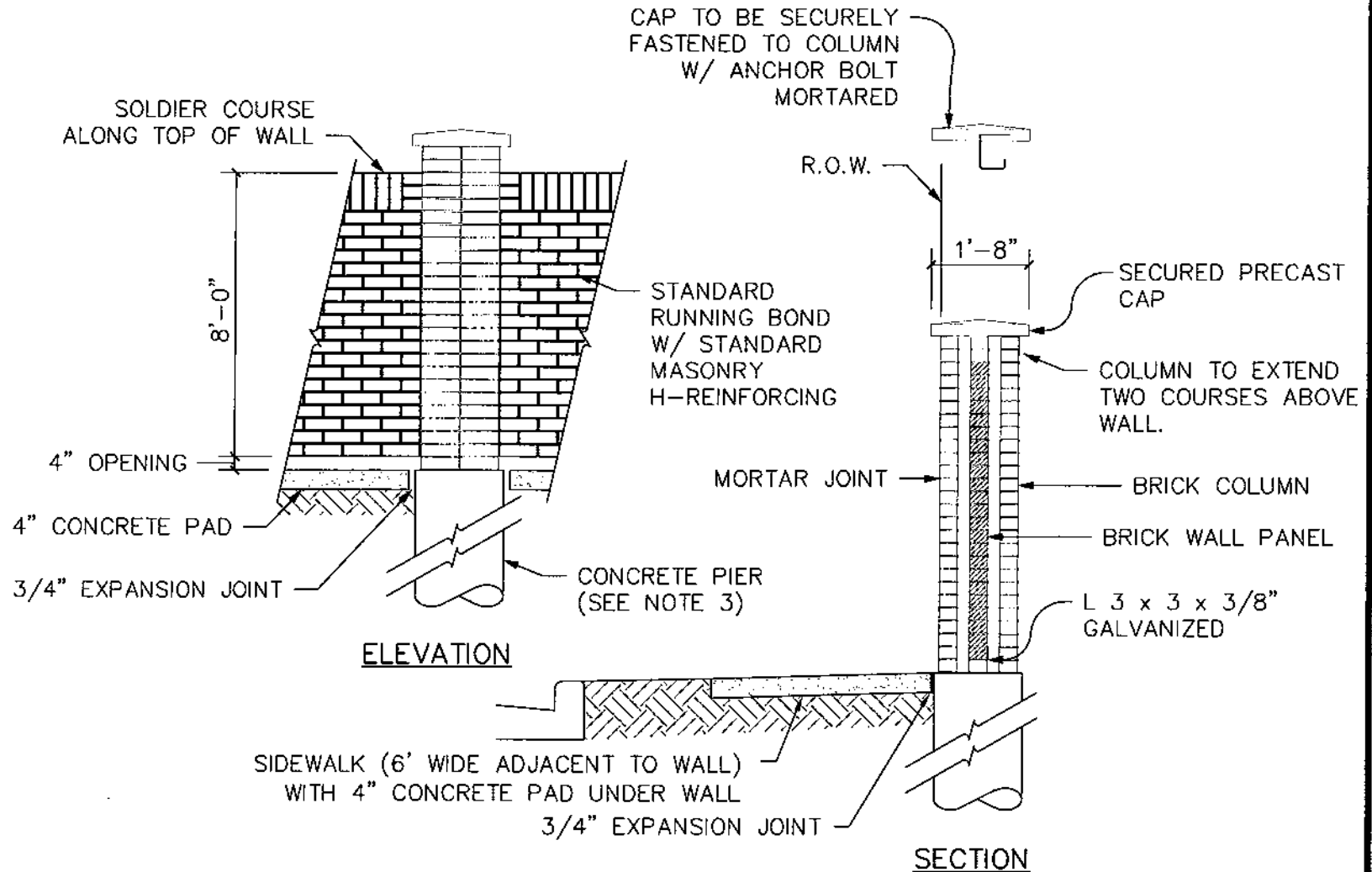


**City of Saginaw**  
 Construction Standards

WOOD SCREENING DETAIL

REVISED  
 FEB 2023

RD-16

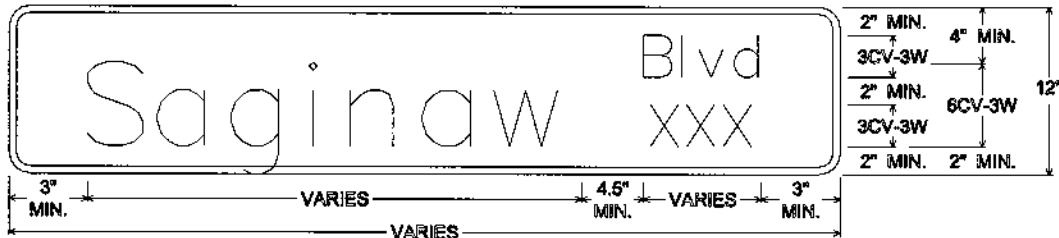


**NOTES:**

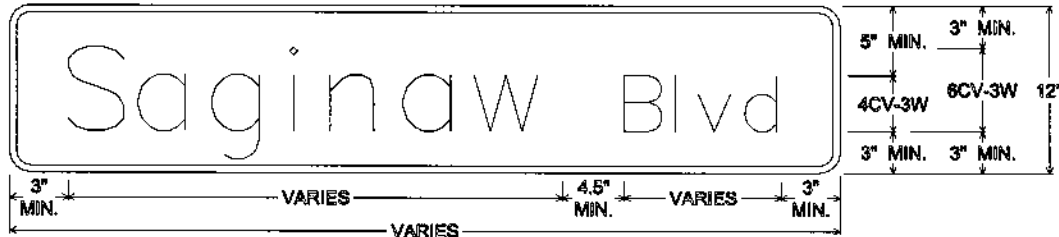
1. MASONRY SCREENING FENCE PER ZONING ORDINANCE 2002-04.
2. TYPICAL GRADE ADJUSTMENT TO BE 3", 6", 9" OR 12" INCREMENTS ONLY. CONTRACTOR TO VERIFY GRADE ADJACENT TO WALL LOCATION AND DETERMINE GRADE ADJUSTMENT INCREMENTS PRIOR TO CONSTRUCTION.
3. SCREENING WALL AND CONCRETE PIER DESIGN SHALL BE DESIGNED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



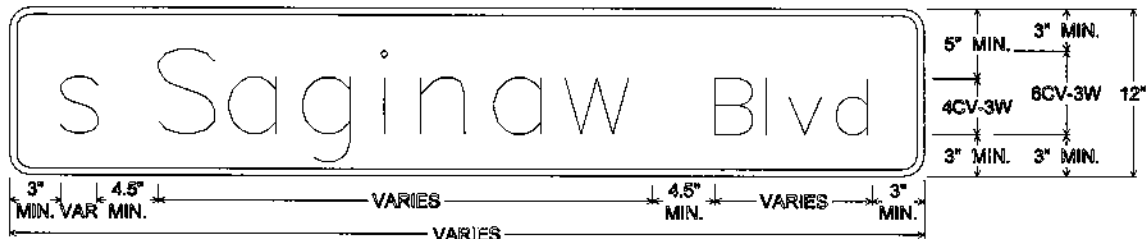
1.5" Radius, 0.5" Border, White on Green;



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.

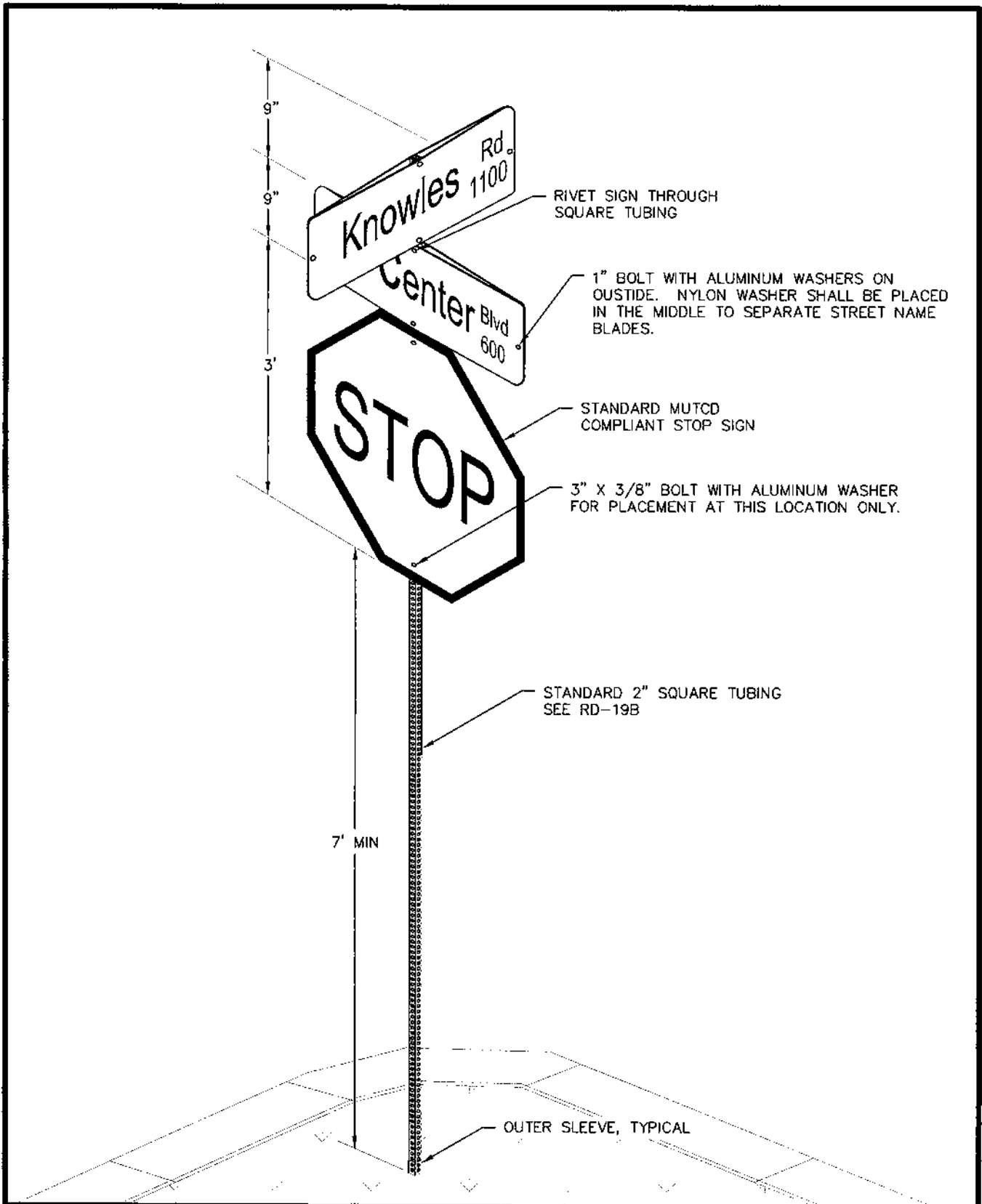


**City of Saginaw**  
Construction Standards

STREET SIGN

REVISED  
FEB 2023

RD-18

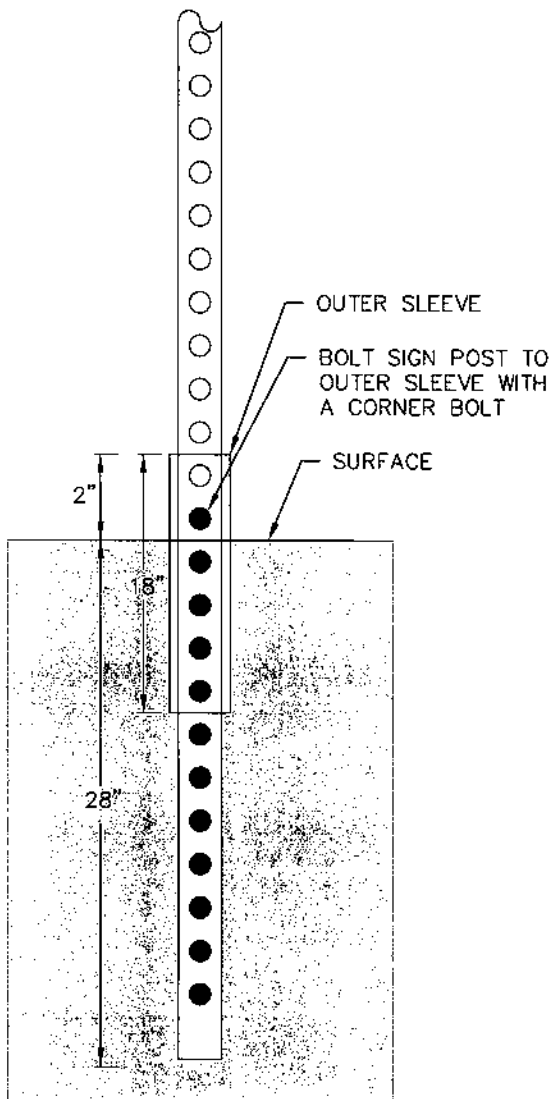


**City of Saginaw**  
Construction Standards

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 TELESCOPING 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  $\frac{7}{8}$ " 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.

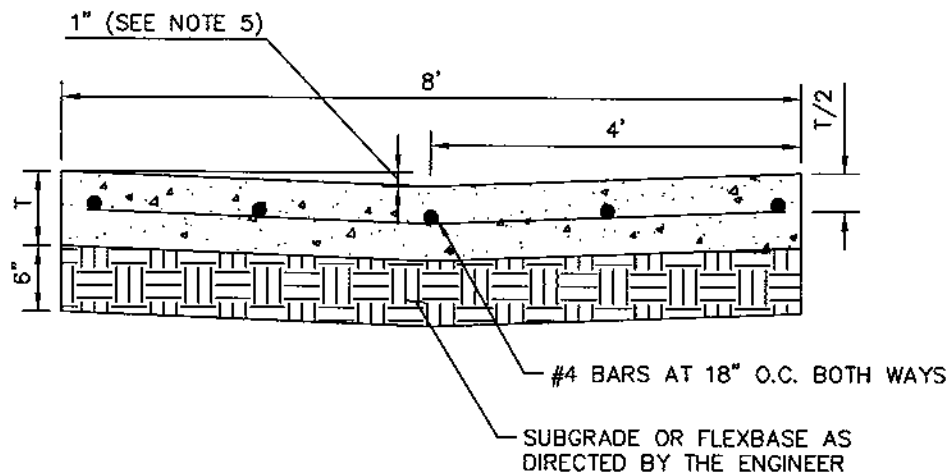
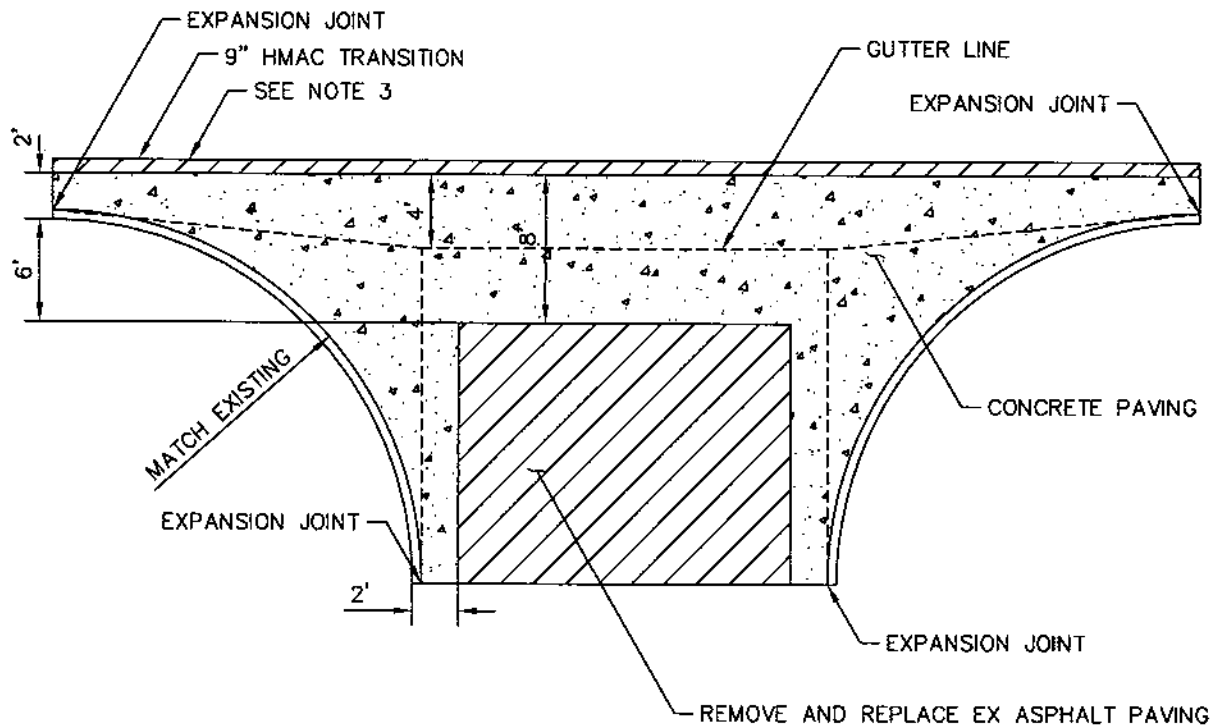


**City of Saginaw**  
Construction Standards

SIGN POST  
SQUARE TUBING

REVISED  
FEB 2023

RD-19B



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.

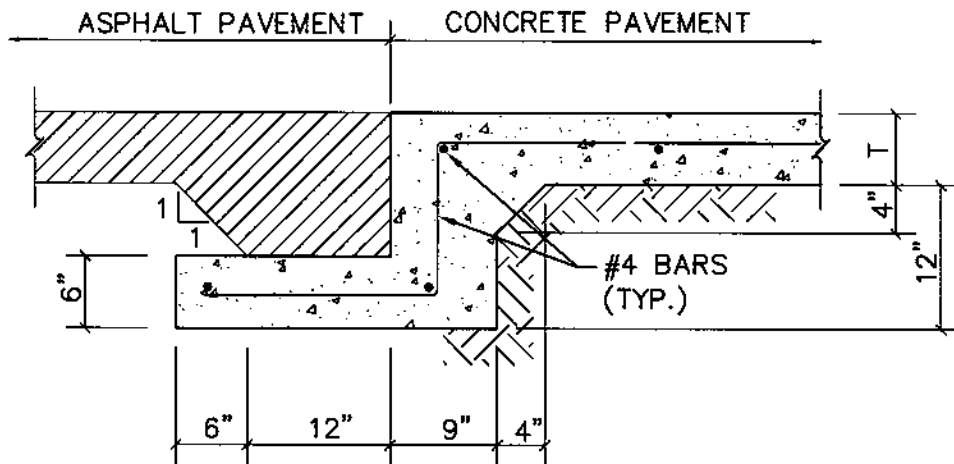


**City of Saginaw**  
Construction Standards

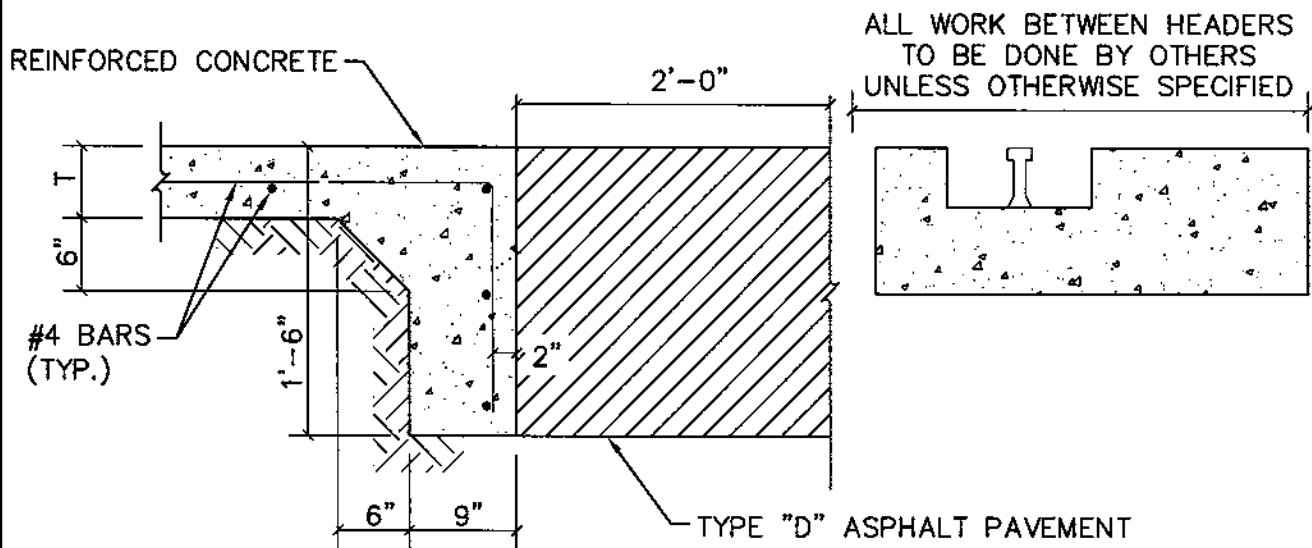
CONCRETE VALLEY GUTTER

REVISED  
FEB 2023

RD-20



ASPHALT TO CONCRETE HEADER



STREET HEADER AT RAILROAD

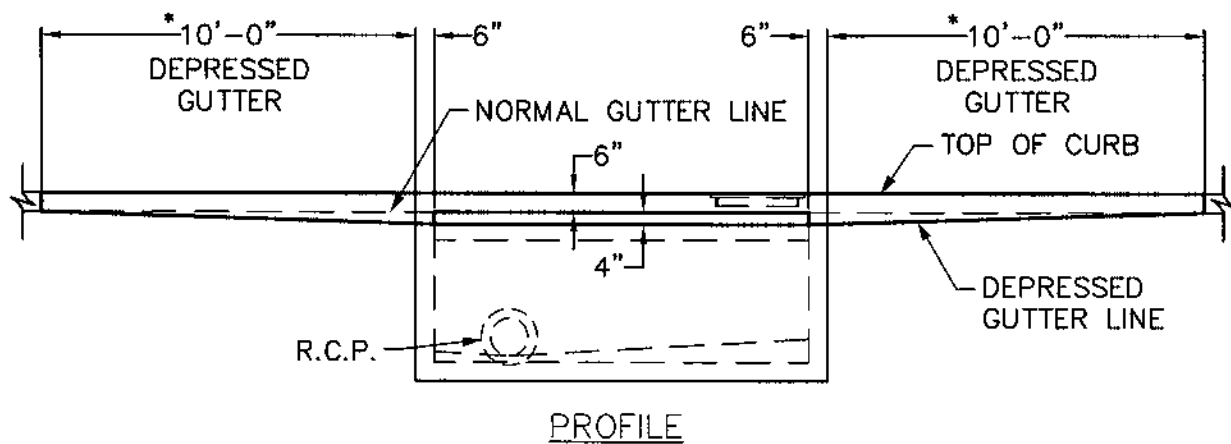
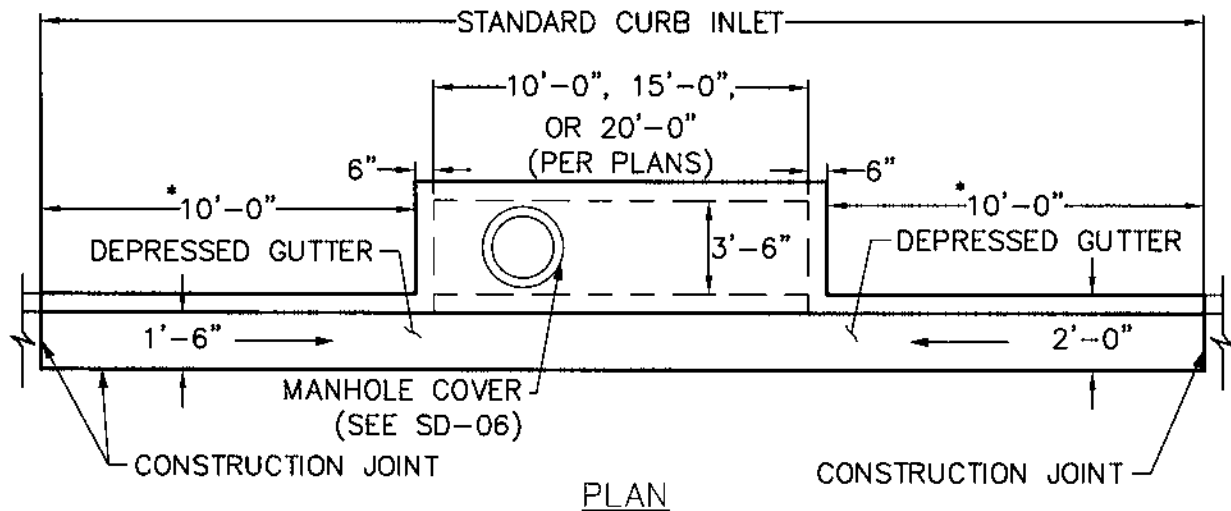


**City of Saginaw**  
Construction Standards

CONCRETE STREET HEADER

REVISED  
FEB 2023

RD-21



#### 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.

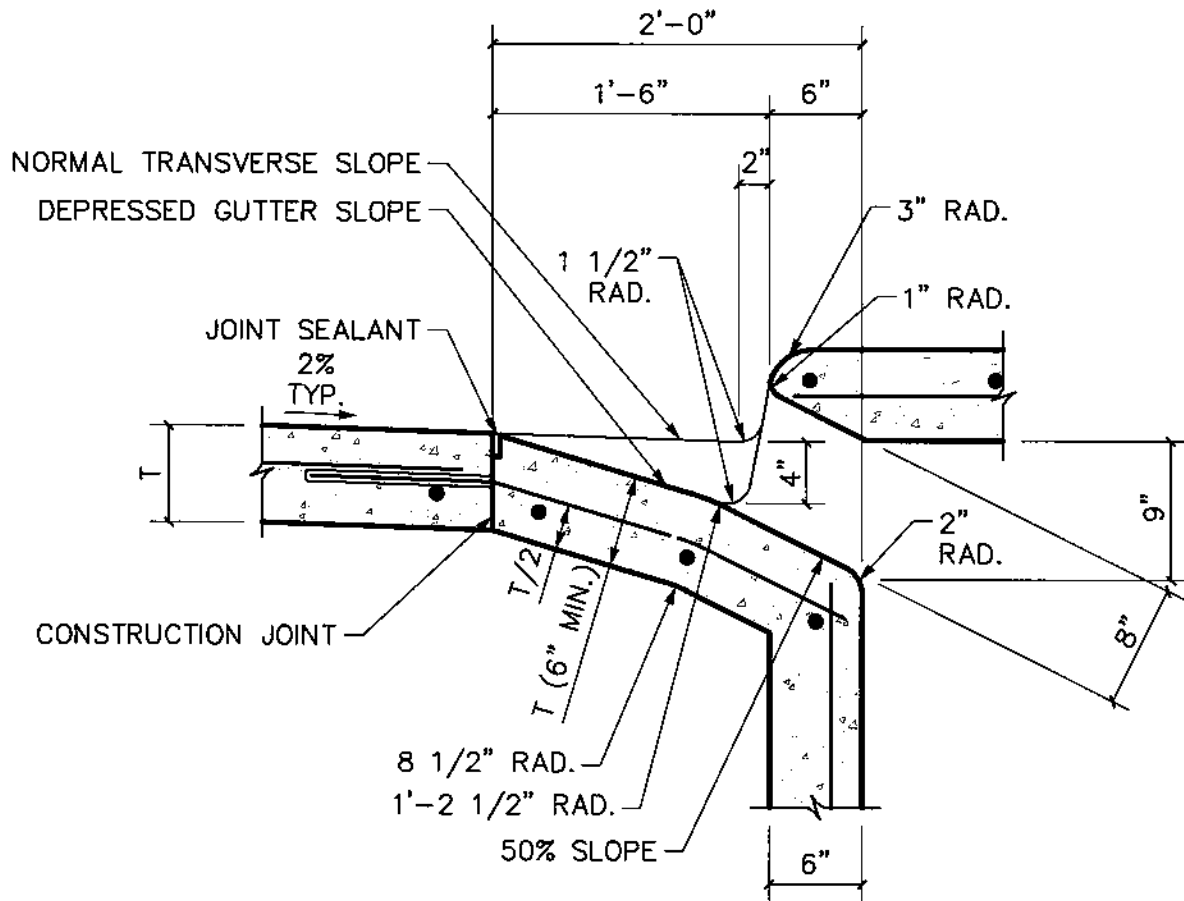


**City of Saginaw**  
Construction Standards

STANDARD STORM DRAIN CURB  
INLET

REVISED  
FEB 2023

SD-01A



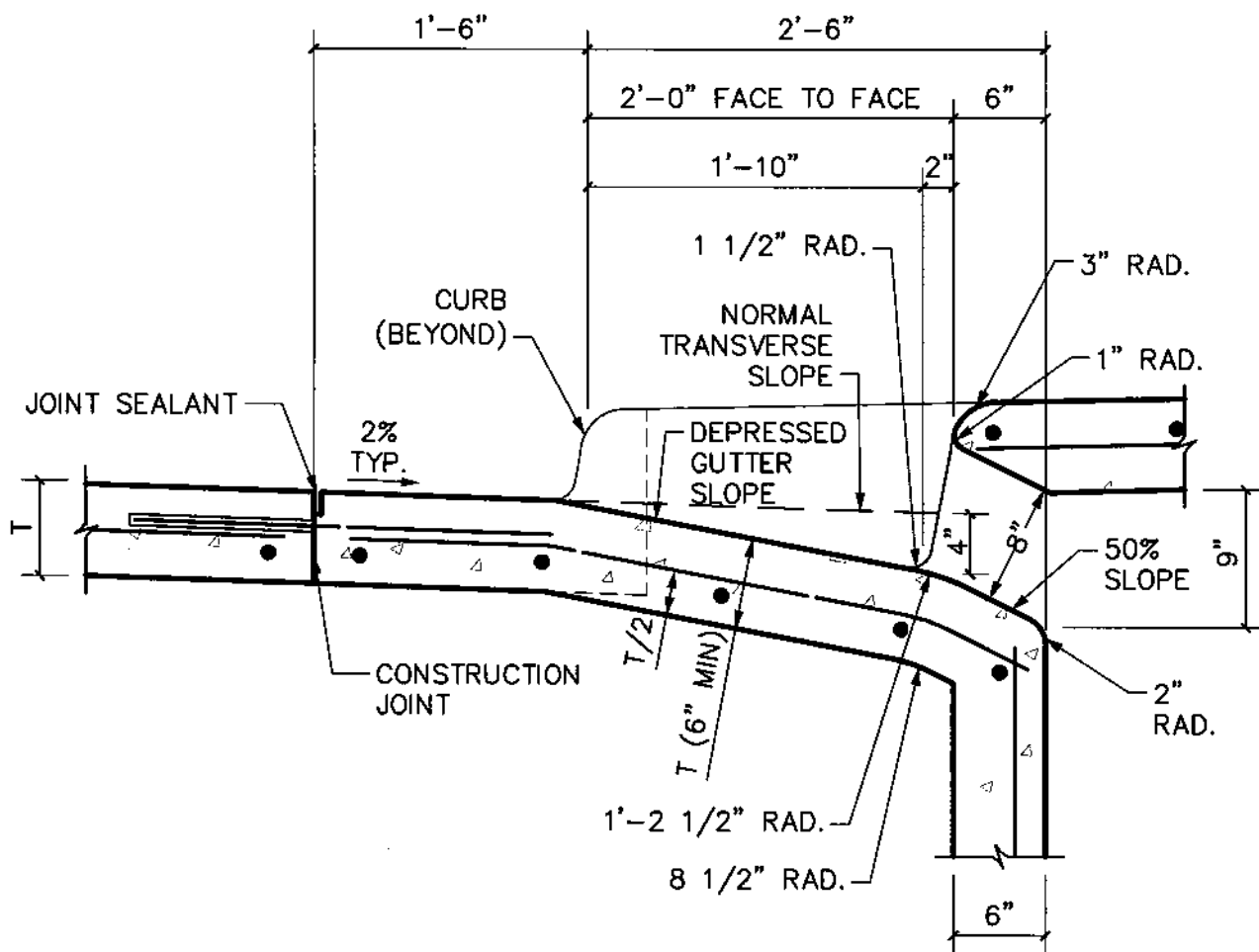
**City of Saginaw**  
Construction Standards

STANDARD CURB INLET THROAT

REVISED  
FEB 2023

SD-01B



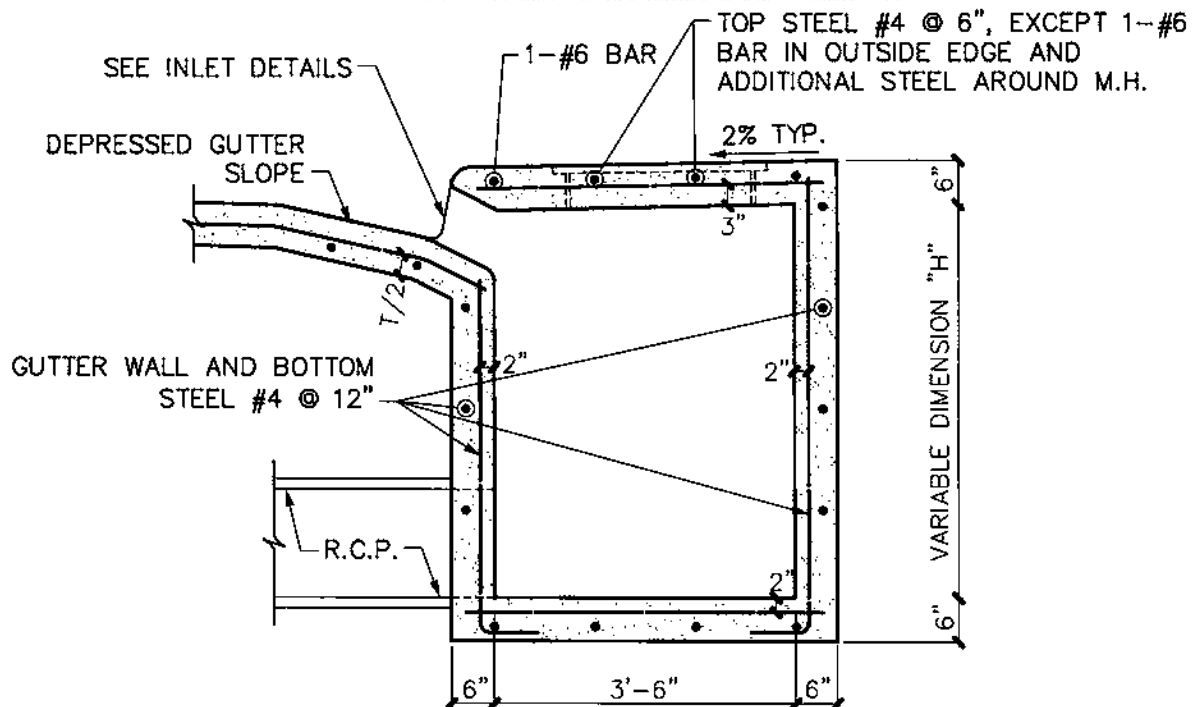


**City of Saginaw**  
Construction Standards

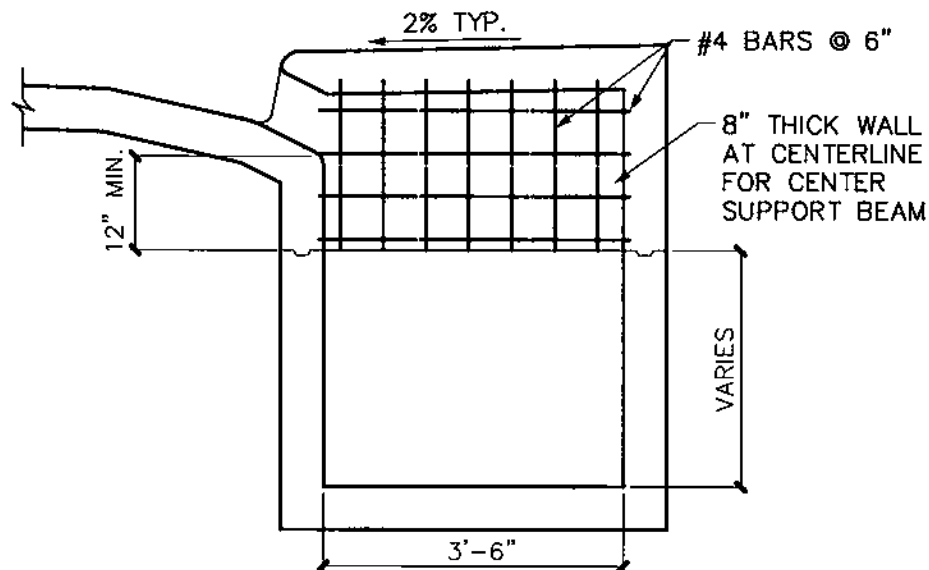
RECESSED CURB INLET THROAT

REVISED  
FEB 2023

SD-02B



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.

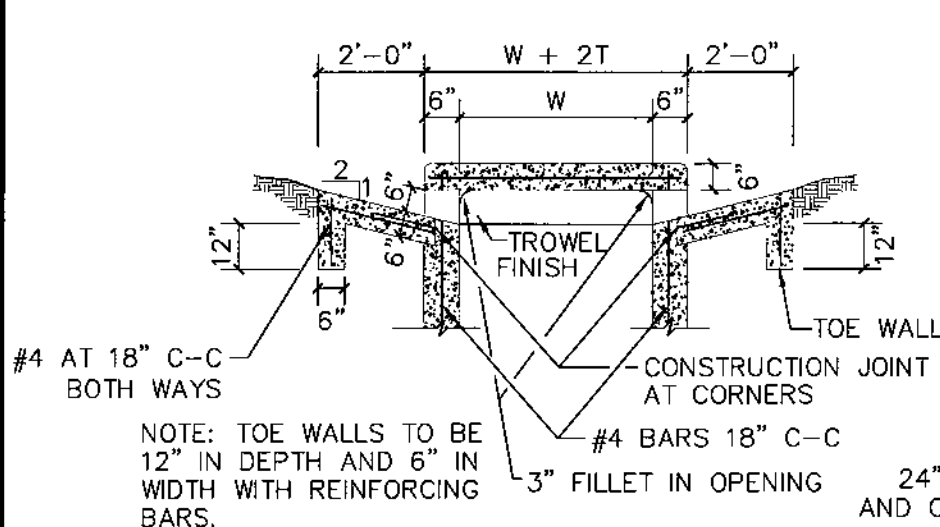


**City of Saginaw**  
Construction Standards

CENTER SUPPORT BEAM  
FOR INLETS

REVISED  
FEB 2023

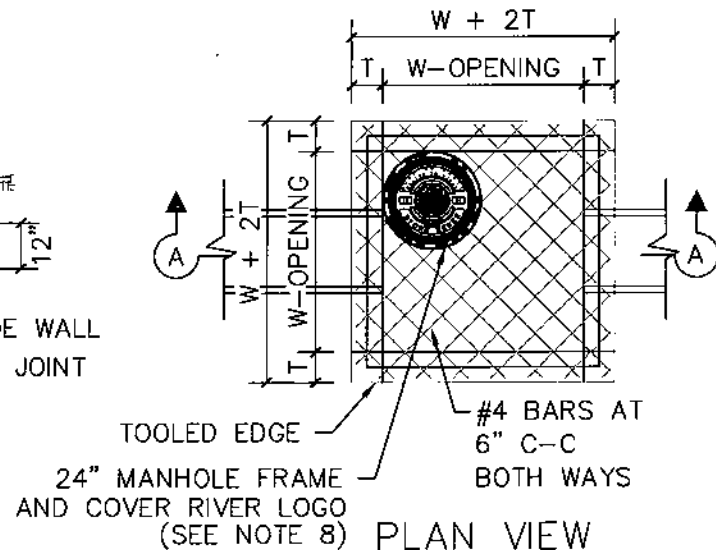
SD-03



SECTION A-A

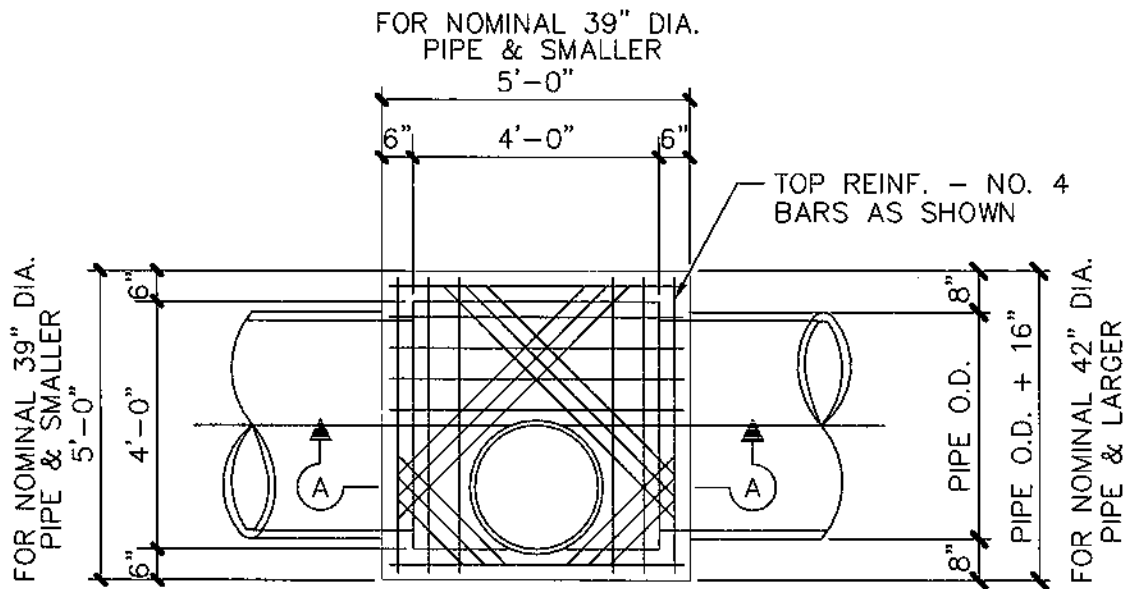
**NOTES:**

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

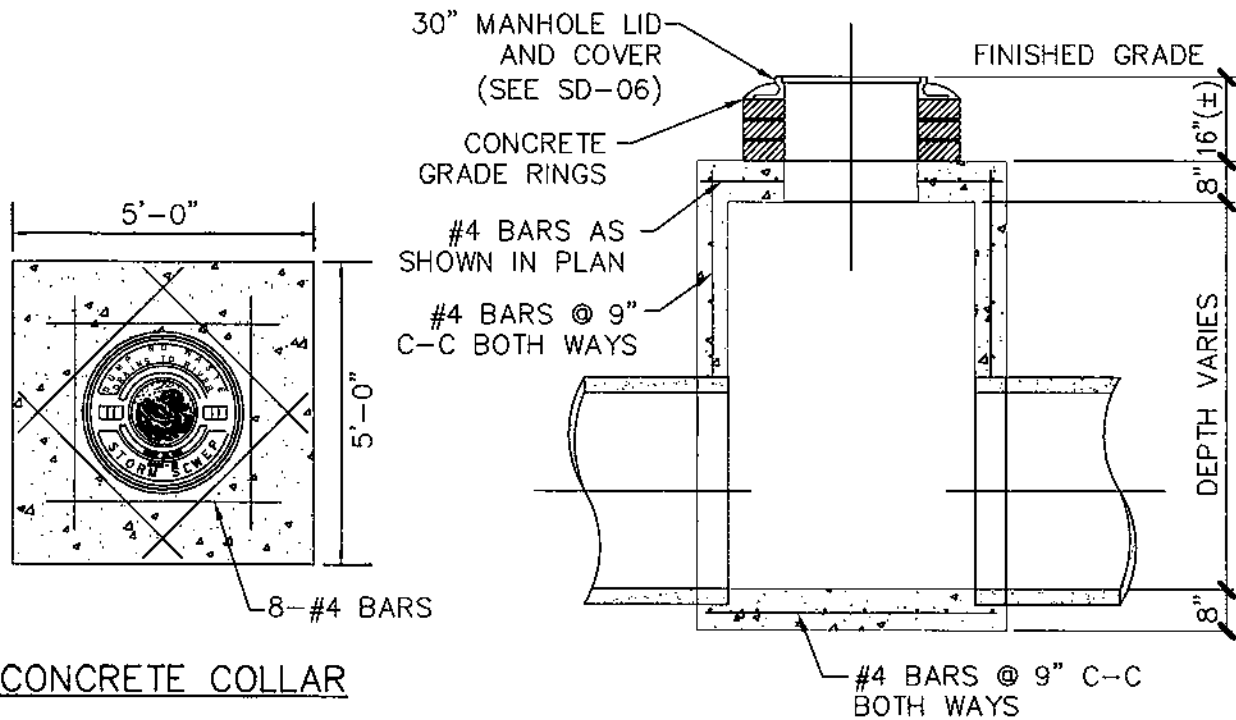


| INLET SIZE | T  | W     |
|------------|----|-------|
| 2' SQUARE  | 7" | 2'-0" |
| 4' SQUARE  | 7" | 4'-0" |
| 5' SQUARE  | 8" | 5'-0" |
| 6' SQUARE  | 9" | 6'-0" |
| 7' SQUARE  | 9" | 7'-0" |
| 8' SQUARE  | 9" | 8'-0" |

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

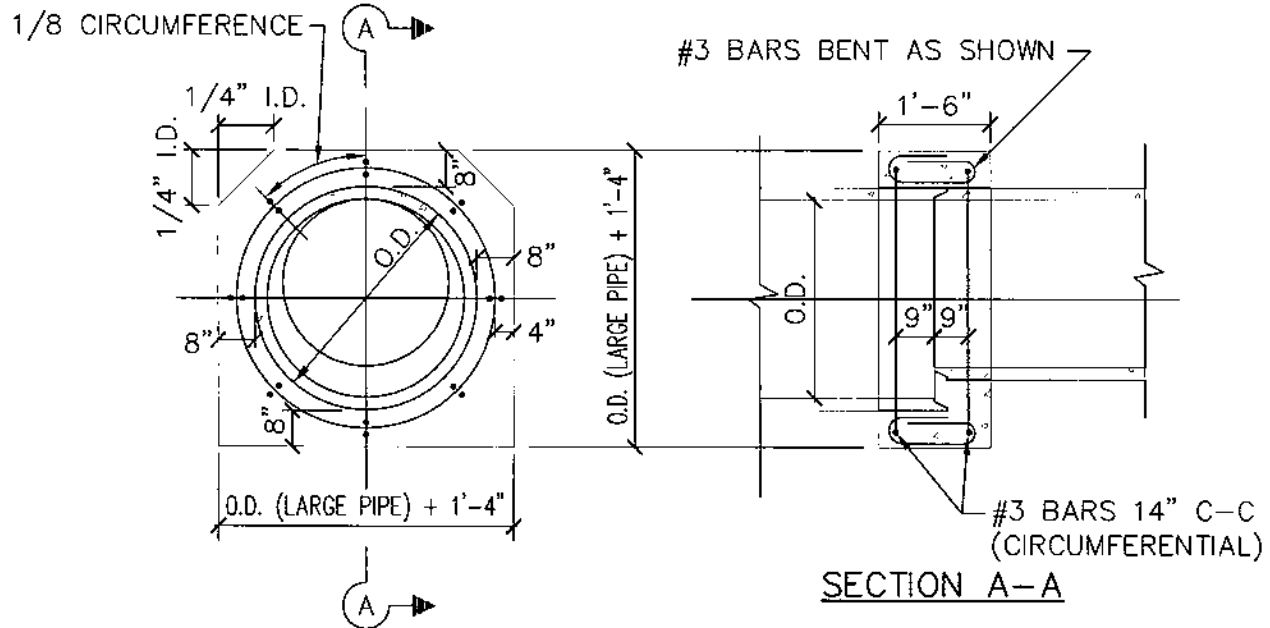
SD-05



- TOP VIEW

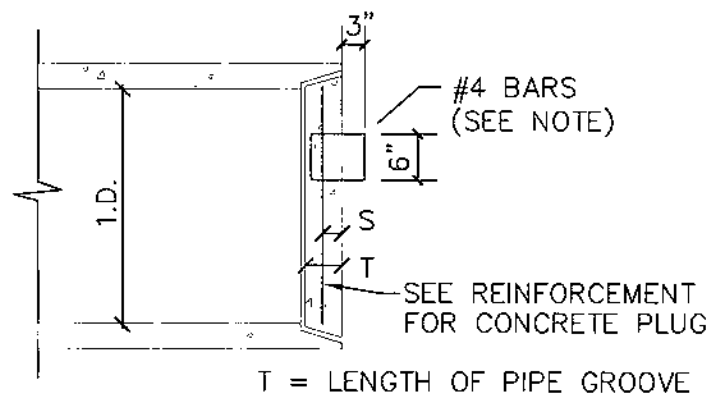


SD-06



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.

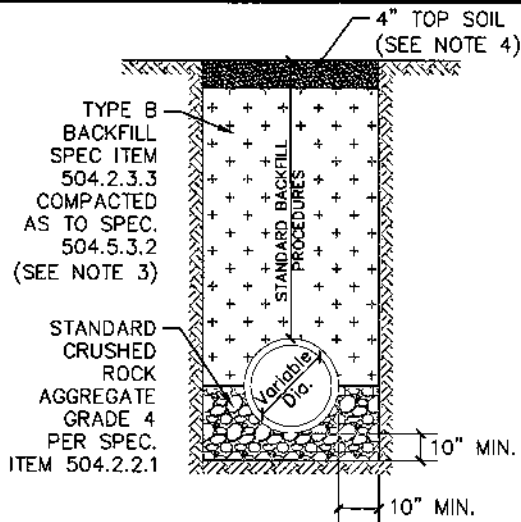


**City of Saginaw**  
Construction Standards

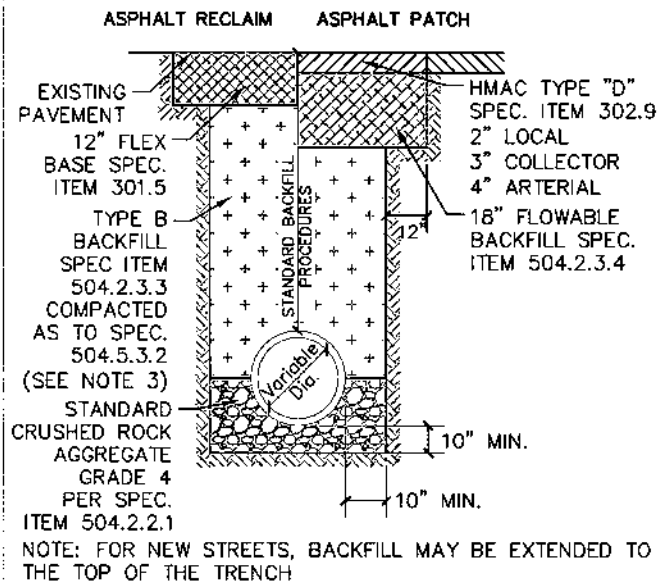
REINFORCED CONCRETE COLLAR  
AND MISCELLANEOUS DETAILS

REVISED  
FEB 2023

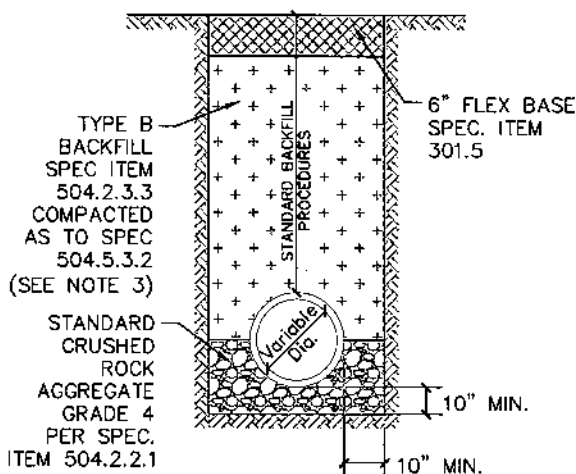
SD-07



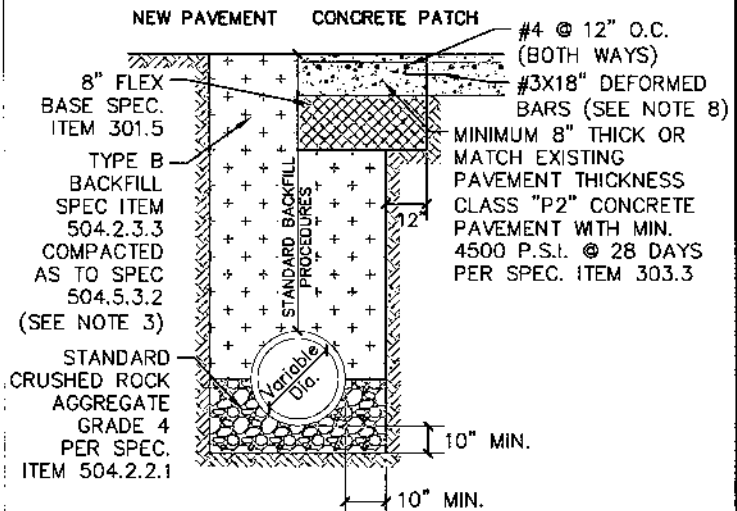
UNPAVED AREA



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.

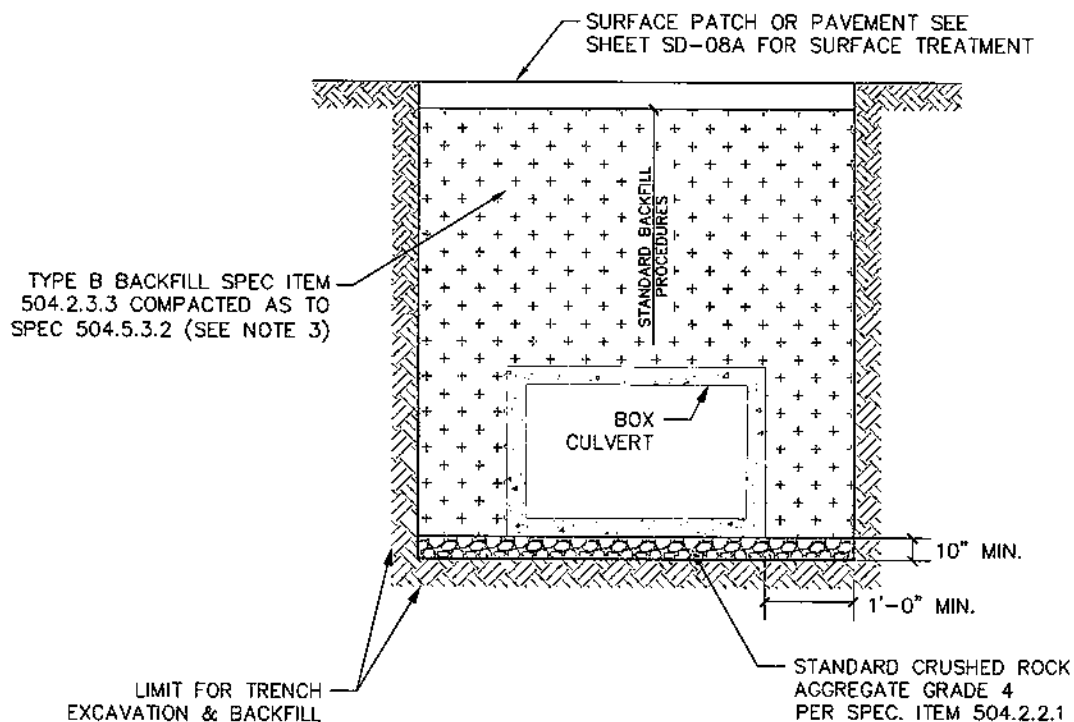


**City of Saginaw**  
Construction Standards

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.

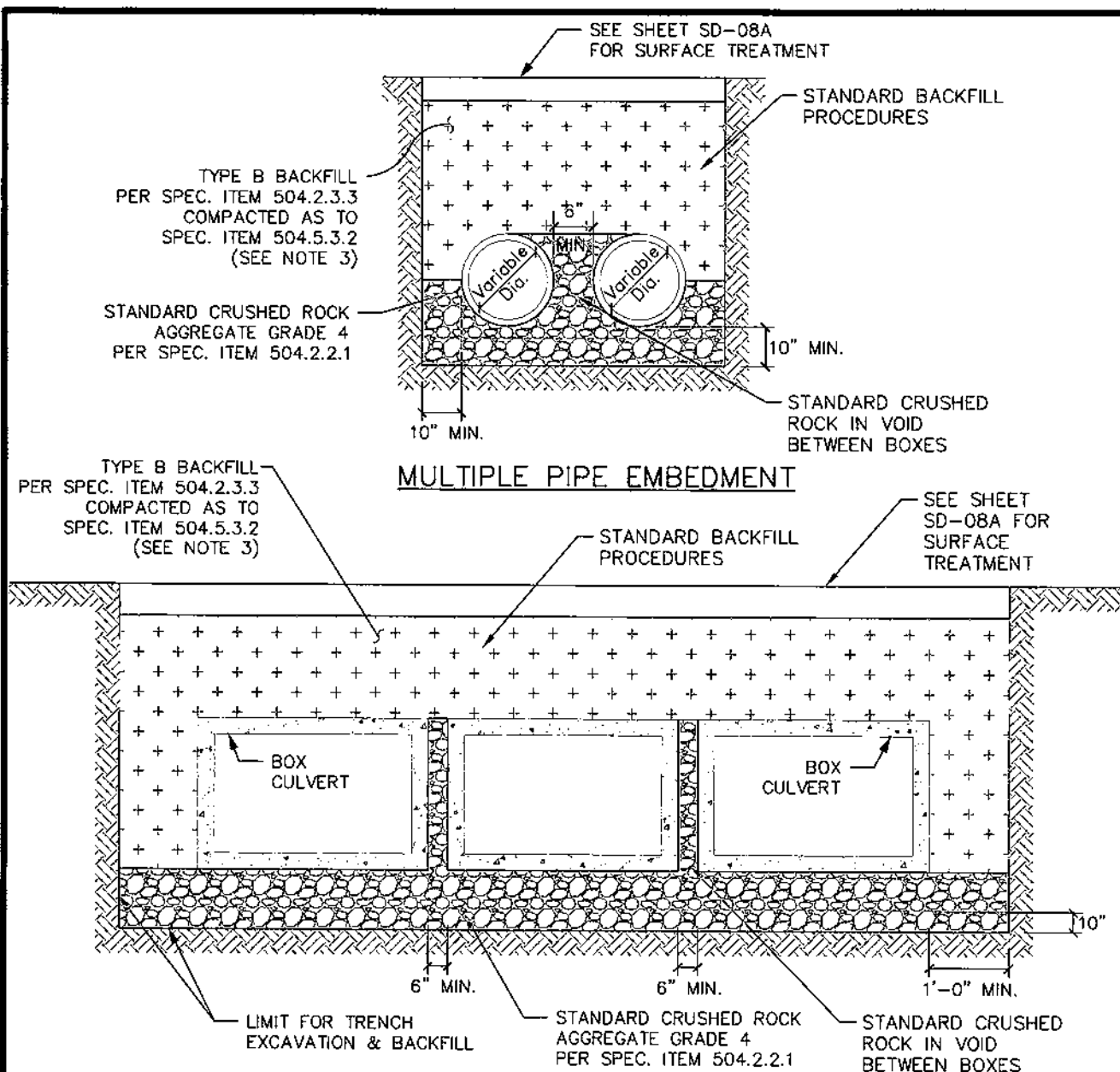


**City of Saginaw**  
Construction Standards

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.

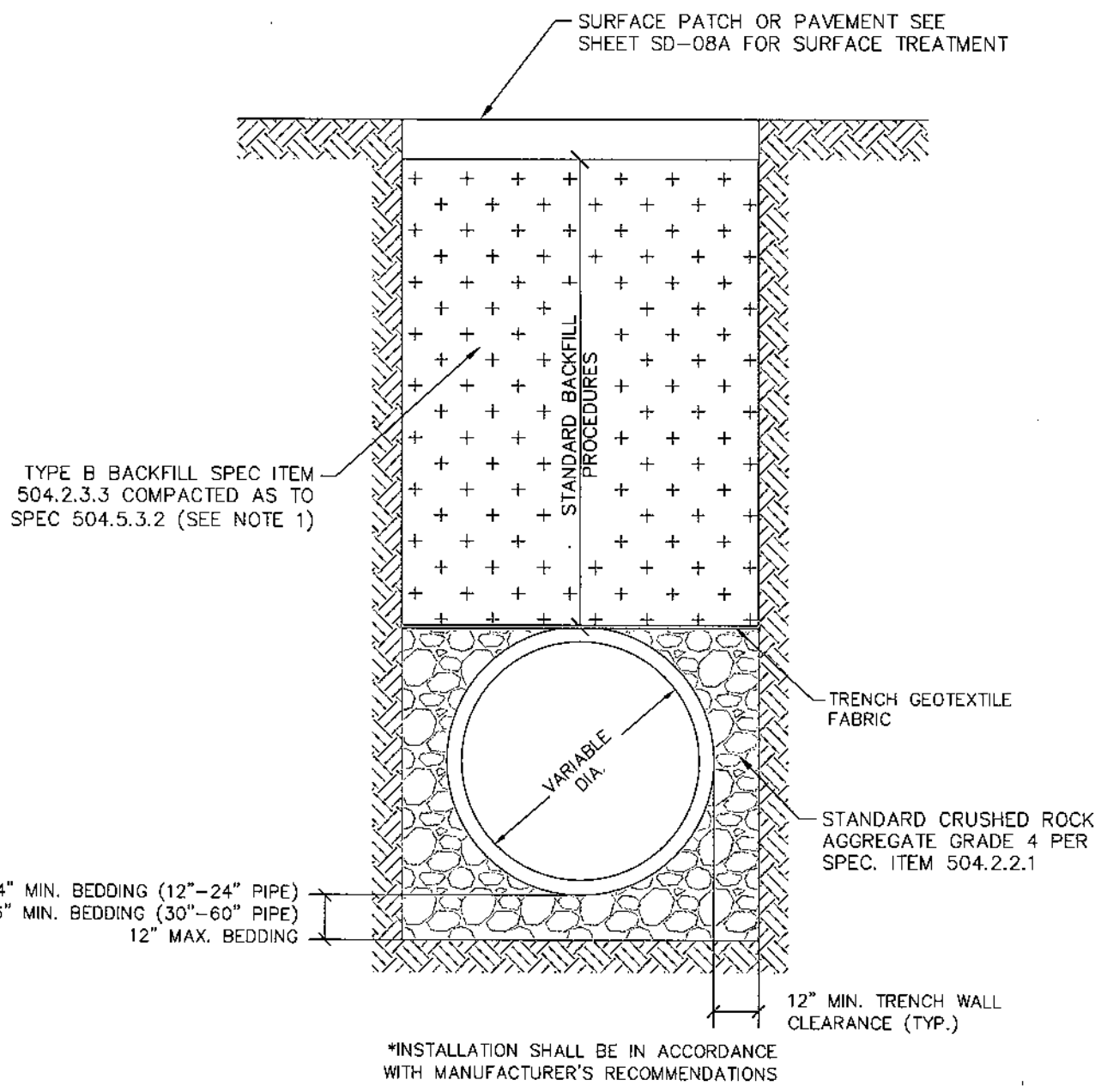


**City of Saginaw**  
Construction Standards

STANDARD STORM DRAIN  
EMBEDMENT AND BACKFILL

REVISED  
FEB 2023

SD-08C



**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