

# City of Gladstone

## Public Works Standard Drawings

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|      |  |
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## **STREETS**

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|------|---|
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| 503A | Residential Driveway with Sidewalk Away from Curb           |
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| 510  | Pedestrian Path or Bikeway                                  |
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| 516A | Permanent Closure Street Barricade Type III                 |
| 516B | Street Barricade Type I                                     |
| 517  | Intentionally Left Blank                                    |
| 518  | Intentionally Left Blank                                    |

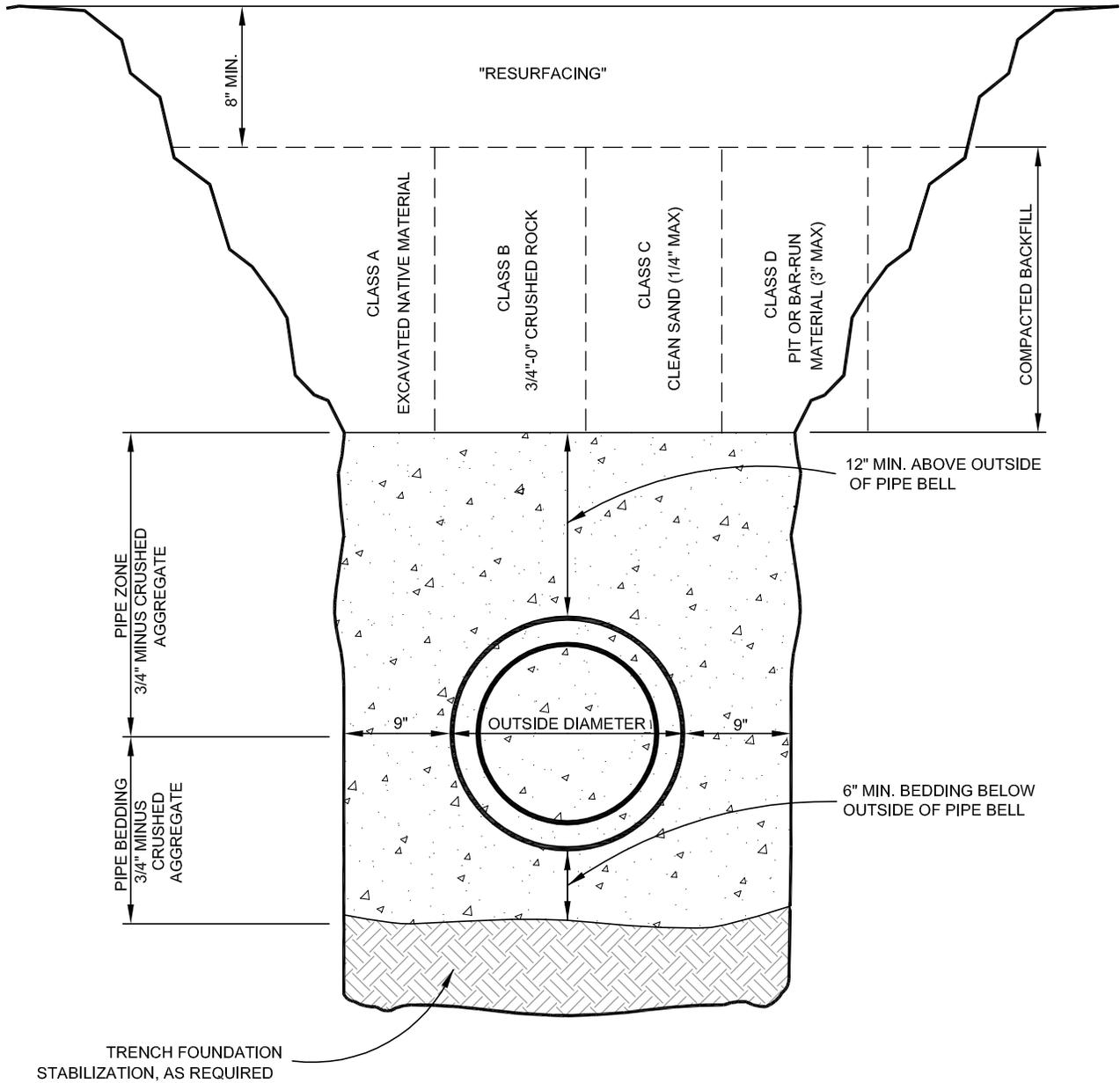
## **STORM**

|      |   |
|------|---|
| 600  | Gutter Inlet 2 1/2 A  |
| 601  | Combination Curb Inlet  |
| 602A | Type G1 Catch Basin with Sump                                     |
| 602B | Frame and Grate for Gutter and Curb Inlet                         |
| 603  | Standard Ditch Inlet  |
| 604  | Inside Drop Manhole Connection for Storm Drainage Private Service |
| 605  | Manhole Frame and Cover   |
| 606  | Private Storm Drain Infiltration Chamber System                   |
| 607A | Pollution / Flow Control Manhole                                  |
| 607B | Cleanout /Shear Gate  |
| 608  | Intentionally Left Blank  |
| 609  | Intentionally Left Blank  |

|      |   |
|------|---|
| 610  | Standard Detention Pond Outlet  |
| 611  | Plate and Guide   |
| 612A | Standard Inlet and Outlet Headwall Structure (For outlets of 36 inch diameter or greater) |
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| 621  | Section View Swale  |
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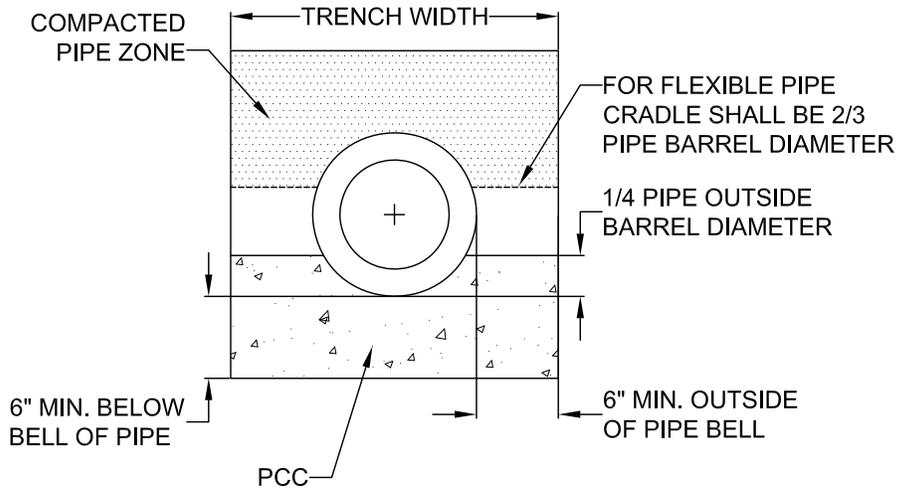
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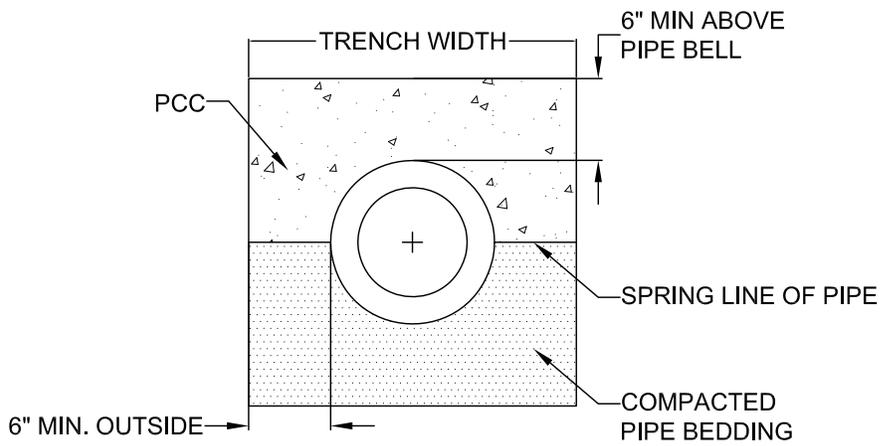
|  |                    |
|--|--------------------|
| <b>TRENCH BACKFILL<br/>BEDDING AND<br/>PIPE ZONE</b> |                    |
| <b>CITY OF<br/>GLADSTONE</b>                         | DATE:<br>2017      |
|  | DRAWING NO.<br>200 |
|  | FILE NO.           |

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**CRADLE DETAIL**



**CAP DETAIL**

NOTE:  
THE CONCRETE SHALL BE 3000 PSI MINIMUM.

## CONCRETE CRADLE AND CAP DETAILS

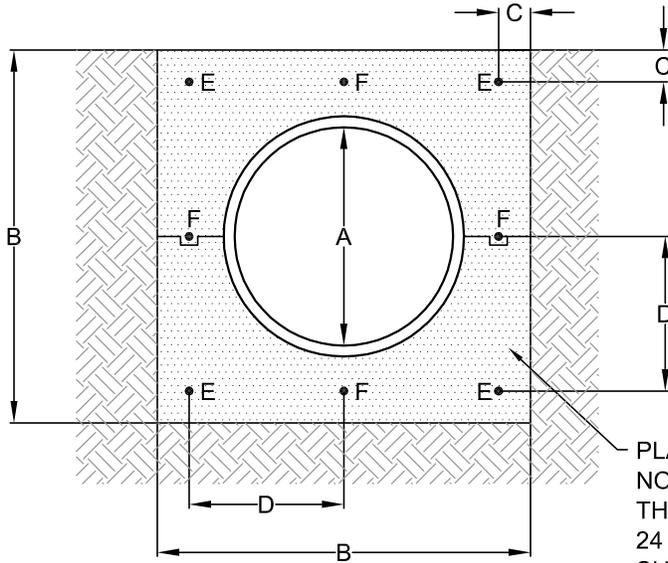
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GLADSTONE

DATE:  
2017

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201

FILE NO.

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NOTE:  
 CONCRETE SHALL BE 3000 PSI  
 2" TO 4" SLUMP

ALL REINFORCING STEEL SHALL BE  
 NO. 5 DEFORMED BARS WITH 18"  
 LAP SPLICES AND 3" CLEAR COVER.

PLACE CONCRETE IN TWO LIFTS. DO NOT PLACE THE TOP SECTION UNTIL THE BOTTOM SECTION HAS SET FOR 24 HOURS. PROVIDE THE KEY AS SHOWN.

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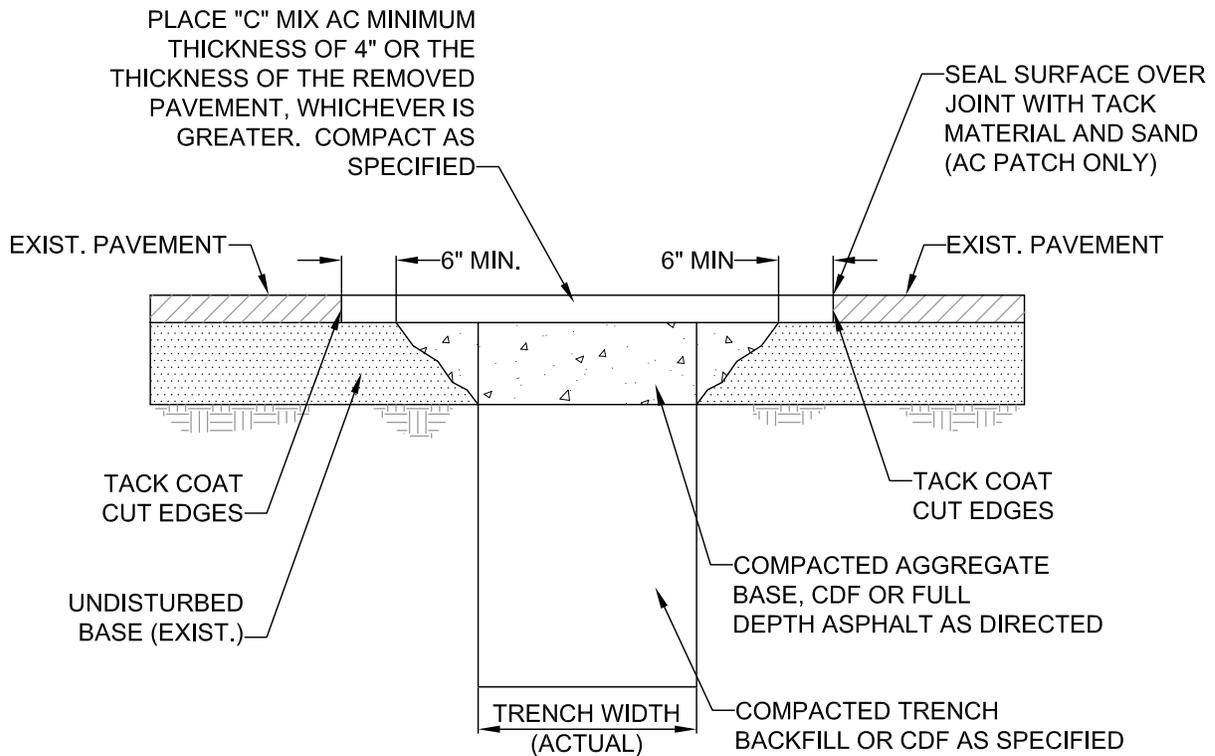
|  | DIMENSION (INCHES) |        |       |        | BARS REQ'D | C.Y. CONC. PER LIN. FT. | LBS. STEEL PER LIN. FT. |
|--|--------------------|--------|-------|--------|------------|-------------------------|-------------------------|
|  | A                  | B      | C     | D      |            |                         |                         |
| BELL & SPIGOT AND TONGUE & GROOVE<br>STD. STRENGTH | 6                  | 16     | 3-1/2 | -      | E          | 0.055                   | 4.17                    |
|  | 8                  | 18     | 3-1/2 | -      | E          | 0.070                   | 4.17                    |
|  | 10                 | 20     | 3-1/2 | -      | E          | 0.080                   | 4.17                    |
|  | 12                 | 22-1/2 | 3-1/2 | -      | E          | 0.090                   | 4.17                    |
|  | 15                 | 26     | 3-1/2 | -      | E          | 0.100                   | 4.17                    |
|  | 18                 | 30     | 3-1/2 | -      | E          | 0.140                   | 4.17                    |
| BELL & SPIGOT<br>STD. STRENGTH                     | 21                 | 38     | 3-1/2 | 15-1/2 | E, F       | 0.250                   | 8.34                    |
|  | 24                 | 42     | 3-1/2 | 17-1/2 | E, F       | 0.260                   | 8.34                    |
|  | 27                 | 50     | 3-1/2 | 21-1/2 | E, F       | 0.400                   | 8.34                    |
| TONGUE & GROOVE<br>STD. STRENGTH                   | 21                 | 36     | 3-1/2 | 14-1/2 | E, F       | 0.190                   | 8.34                    |
|  | 24                 | 41     | 3-1/2 | 17-1/2 | E, F       | 0.250                   | 8.34                    |
|  | 27                 | 46     | 3-1/2 | 19-1/2 | E, F       | 0.320                   | 8.34                    |

## STANDARD PIPE ENCASEMENT

|                              |                    |
|------------------------------|--------------------|
| <b>CITY OF<br/>GLADSTONE</b> | DATE:<br>2017      |
|                              | DRAWING NO.<br>202 |
|                              | FILE NO.           |

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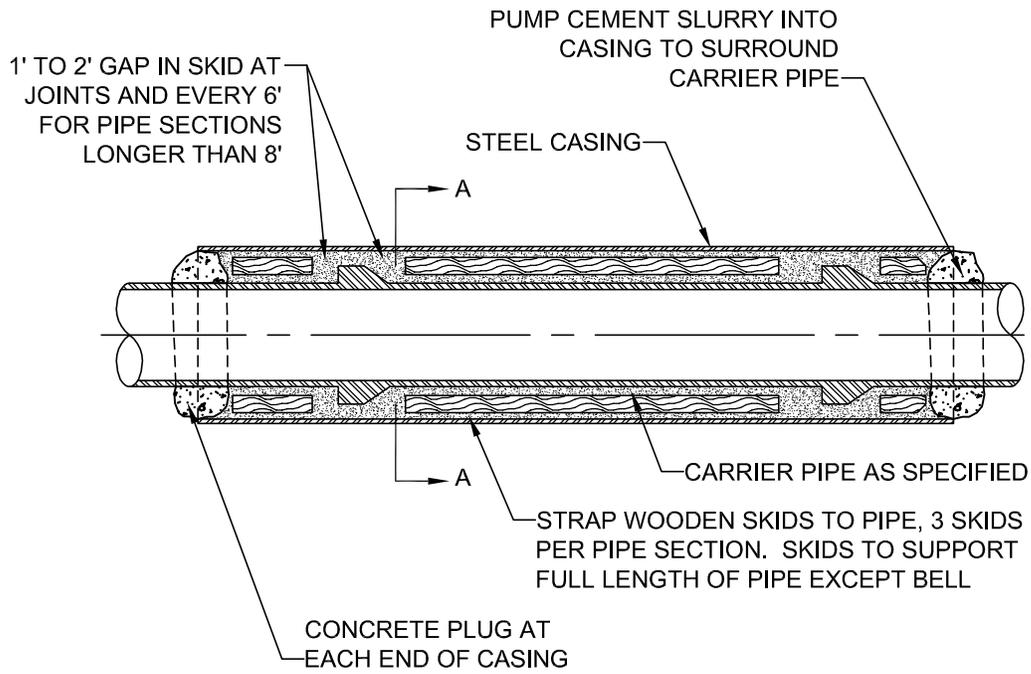
**NOTE:**

1. ALL EXISTING AC OR PCC PAVEMENT SHALL BE SAWCUT TO NEAT, STRAIGHT LINES PRIOR TO REPAVING.
2. CONCRETE PAVEMENT SHALL BE REPLACED WITH CONCRETE TO A MINIMUM THICKNESS OF REMOVED PAVEMENT, WHICHEVER IS GREATER.
3. IF EXISTING BASE MATERIAL IS CTB OR ATB, THEN REPLACEMENT BASE MATERIAL SHALL MATCH EXISTING.
4. ALL UTILITIES SHALL HAVE A MINIMUM COVER OF 36".
5. ALL TRENCH BACKFILL SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY PER AASHTO T-180 OR AS SPECIFIED IN THE CONTRACT DOCUMENTS.
6. ALL TRENCH BACKFILL AND PATCHING SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE CITY OF GLADSTONE.
7. APPROVED CDF SHALL BE USED OR 3/4 - 0" GRAVEL BACKFILL SHALL BE PLACED AND COMPACTED IN 12" MAXIMUM LIFTS. IF 3/4-0" GRAVEL BACKFILL IS USED, COMPACTION TESTING BY A CERTIFIED TESTING COMPANY IS REQUIRED AT DEPTH INTERVALS AS SPECIFIED BY THE P.W. DIRECTOR.
8. T-CUT MAY BE ENLARGED AT THE DISCRETION OF THE PUBLIC WORKS DIRECTOR OR CITY INSPECTOR DUE TO SITE CONDITIONS OR PROJECT REQUIREMENTS.
9. ALL CUT EDGES SHALL BE SAND SEALED.
10. COMPACTED BACKFILL OR CDF MUST EXTEND 2 FEET OUTSIDE OF PAVEMENT SURFACE.

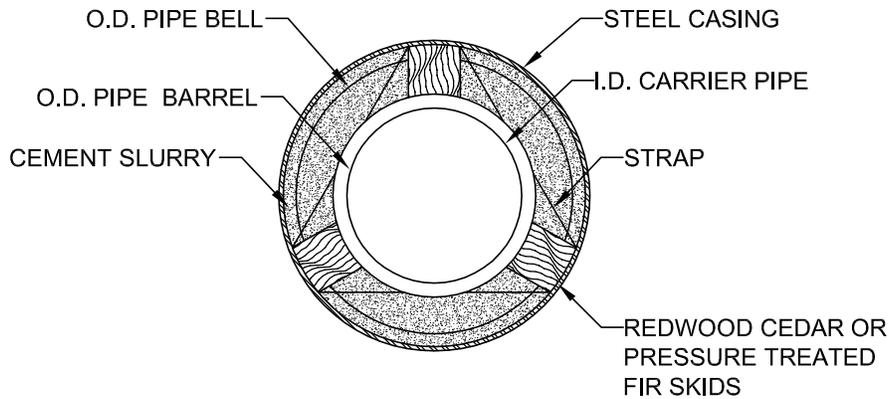
|  |                 |
|--|-----------------|
| <h2 style="margin: 0;">STREET T-CUT</h2> |                 |
| <b>CITY OF<br/>GLADSTONE</b>             | DATE: 2017      |
|  | DRAWING NO. 203 |
|  | FILE NO.        |

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**PLAN**



**SECTION A-A**

NOTE:  
PLUG ENDS OF CASING WITH CONCRETE.

## BORE CASING DETAIL

**CITY OF  
GLADSTONE**

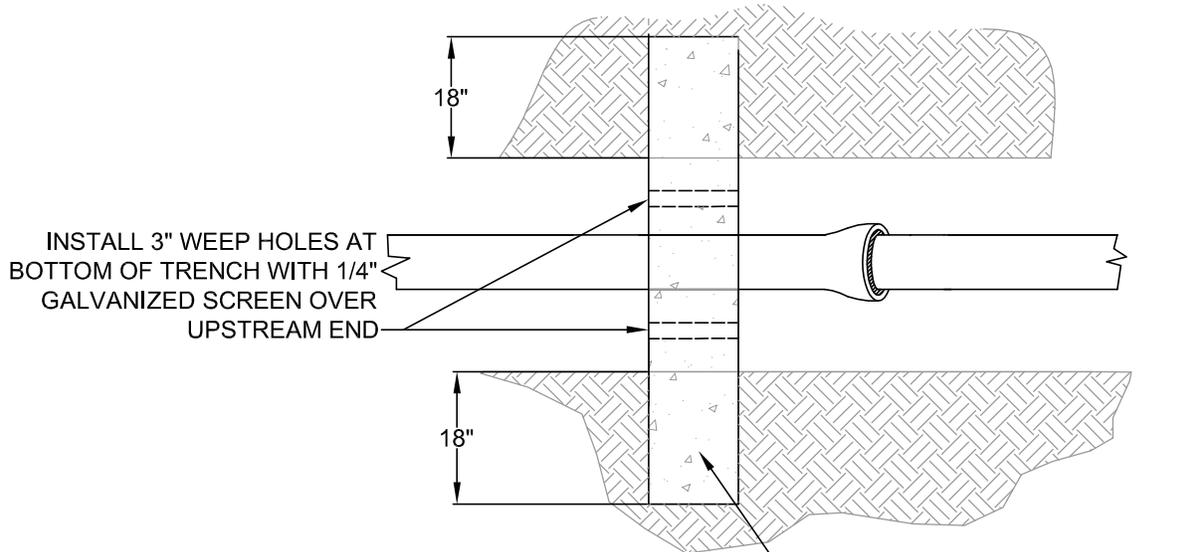
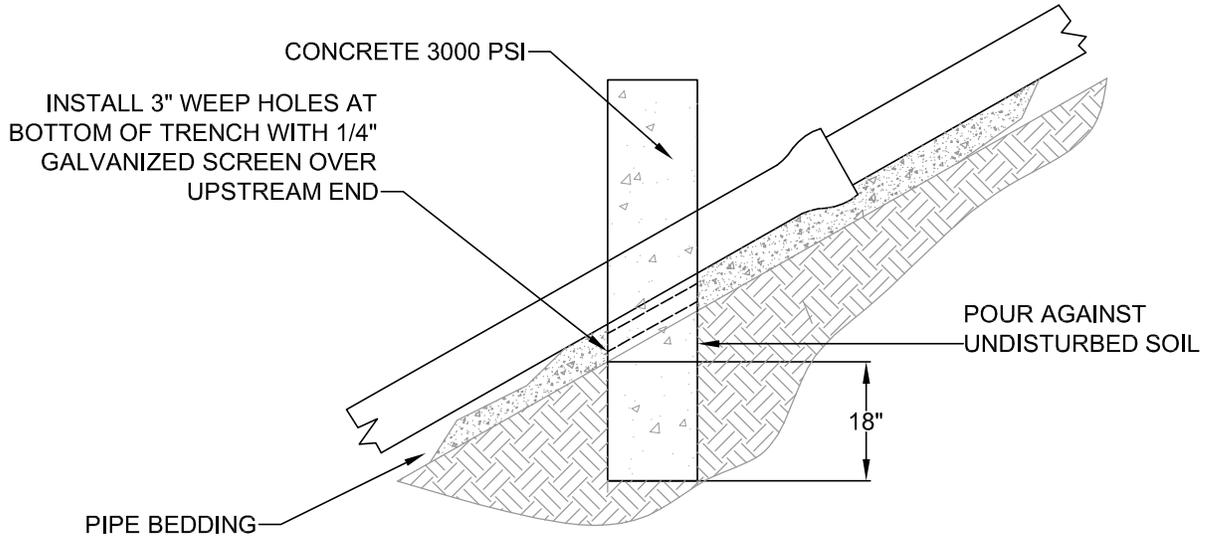
DATE:  
2017

DRAWING NO.  
204

FILE NO.

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**NOTE:**

1. CONCRETE ANCHOR WALLS (3000 PSI) SHALL BE CONSTRUCTED USING FORMS WHEN SLOPES ARE 20% OR GREATER.
2. REMOVE FORMS PRIOR TO BACKFILLING TRENCH.

POUR BOTH SIDES AGAINST UNDISTURBED SOIL

| SLOPE       | MIN. ANCHOR SPACING<br>CENTER TO CENTER |
|-------------|---|
| 0.20 - 0.34 | 35'                                     |
| 0.35 - 0.50 | 25'                                     |
| 0.51+       | CONC. 15' OR ENCASEMENT                 |

## ANCHOR WALL

**CITY OF  
GLADSTONE**

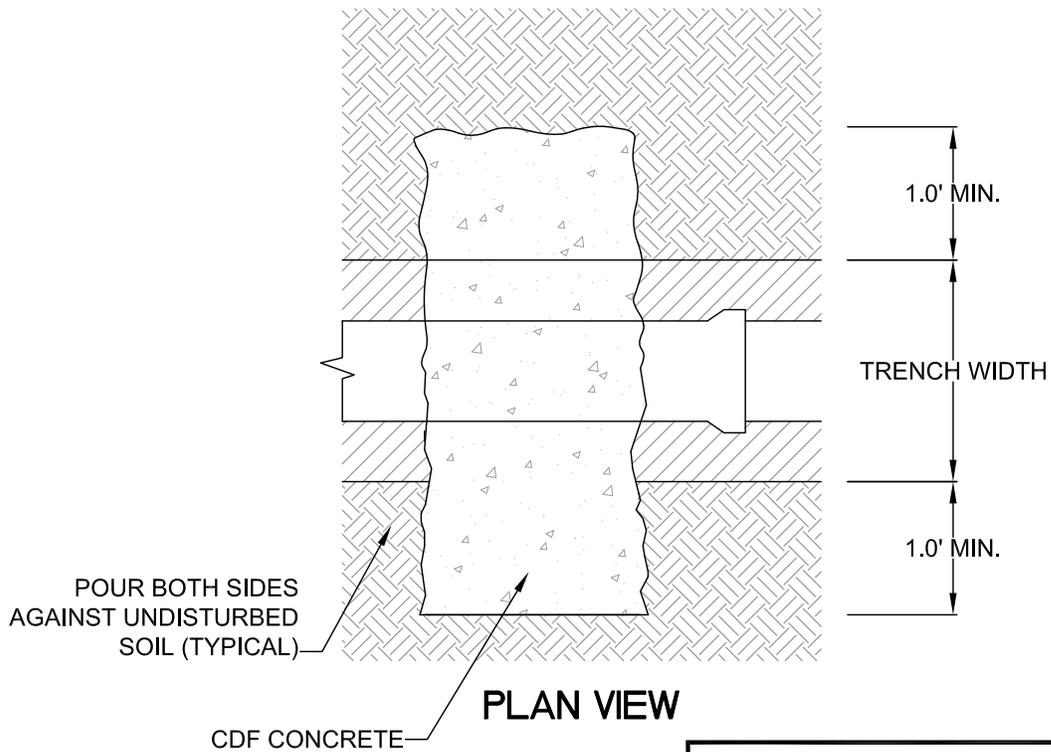
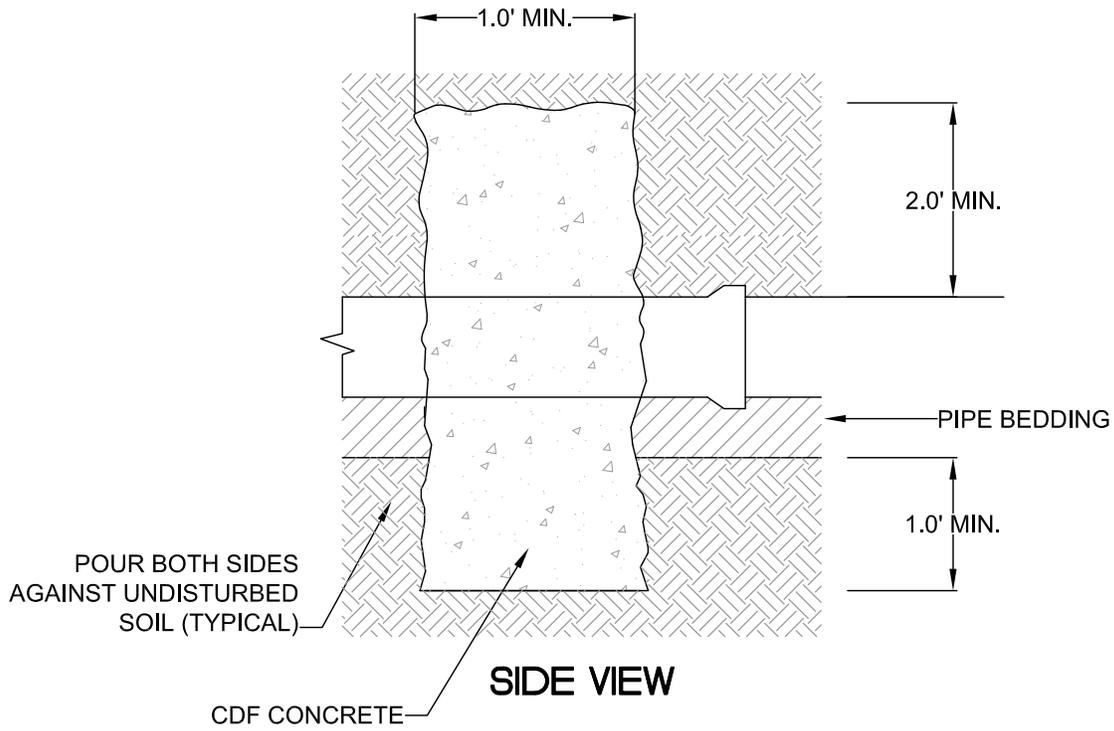
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205A

FILE NO.

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## ANTI-SEEPAGE COLLAR

**CITY OF  
GLADSTONE**

DATE: 2017

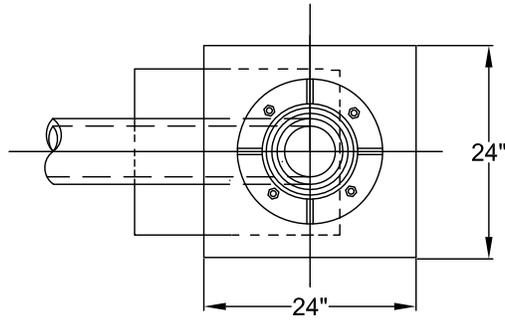
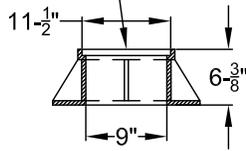
DRAWING NO. 205B

FILE NO.

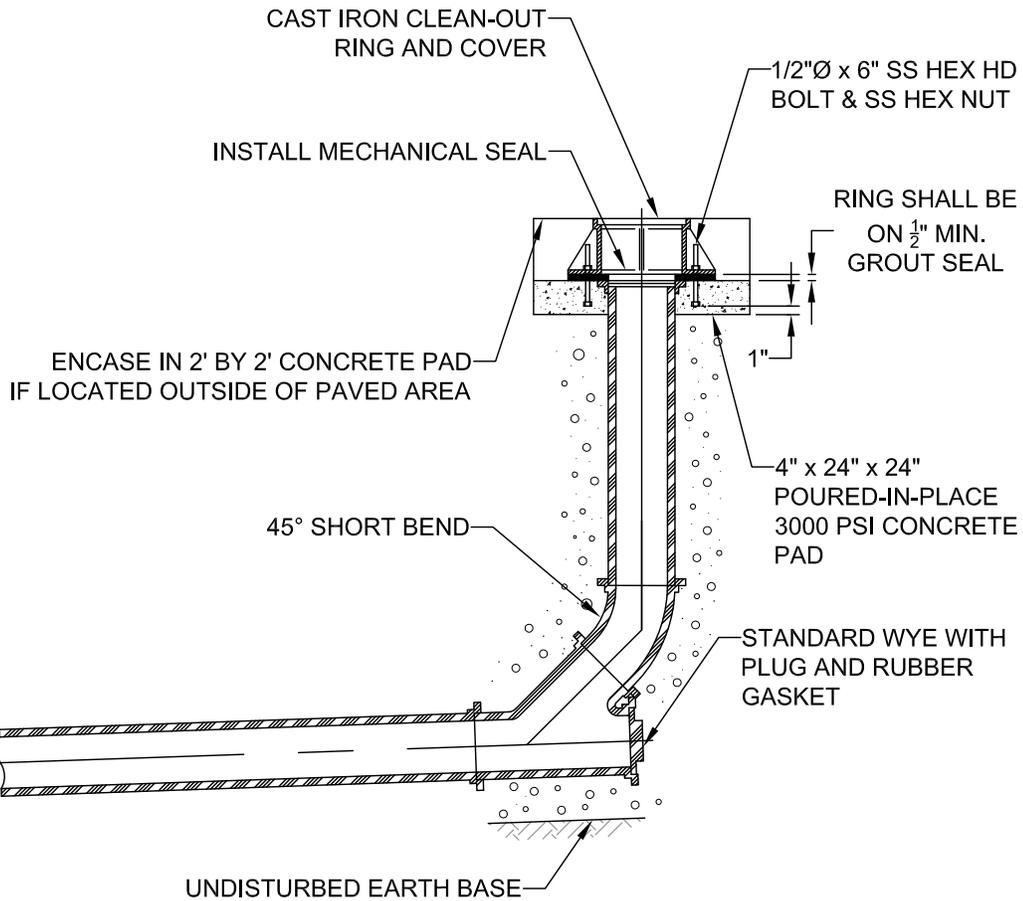
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COVER TO HAVE  
EMBOSSSED "C.O."



PLAN



ELEVATION

# STANDARD CLEAN OUT

**CITY OF  
GLADSTONE**

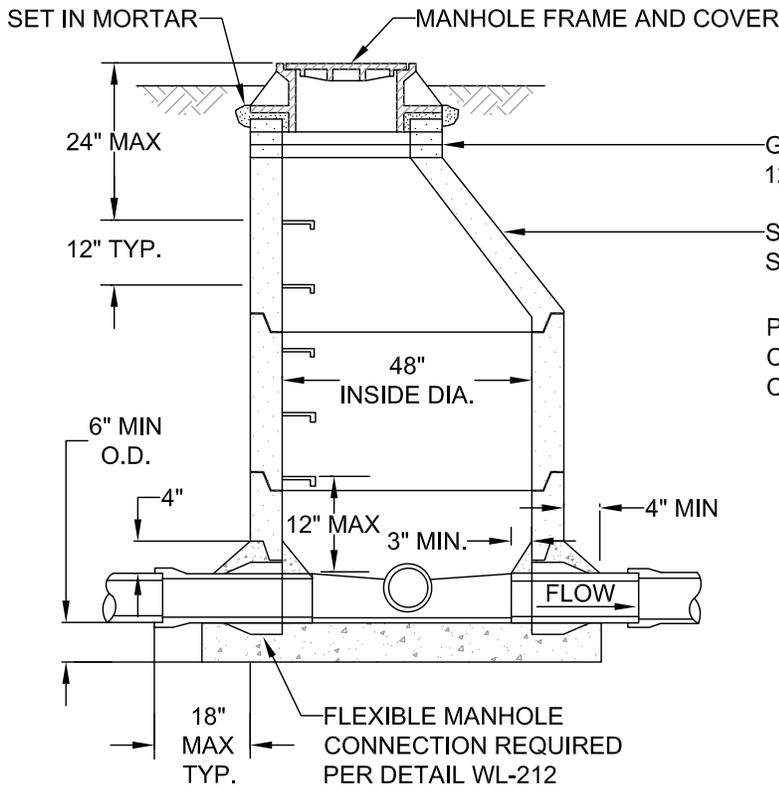
DATE: 2017

DRAWING NO. 206

FILE NO.

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

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**NOTE:**

MANHOLE LID TO BE 1' ABOVE FINISH GRADE IN UNPAVED EASEMENTS.

GRADE RINGS - VARIABLE, MAX. 3 LAYERS, 12" MAX

SLOPE OF PRECAST ECCENTRIC CONE SHALL FACE DOWN GRADE

PRECAST SECTIONS AND POURED CONCRETE BASES SHALL CONFORM TO CITY STANDARD SPECIFICATIONS.

ALL JOINTS SHALL BE SEALED WITH WITH PREFORMED PLASTIC OR RUBBER RING TO FORM A WATER TIGHT SEAL.

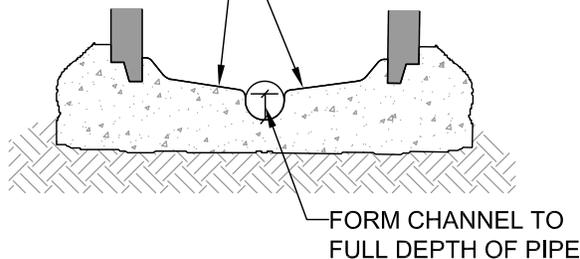
LOCATE STEPS ON UPSTREAM SIDE OF MANHOLE.

**NOTE:**

POLYETHYLENE STEPS/IRON REINFORCEMENT 8" x 12" WIDE, 2" DROP, EMBEDDED 3", ON 12" CENTERS (TYPICAL)

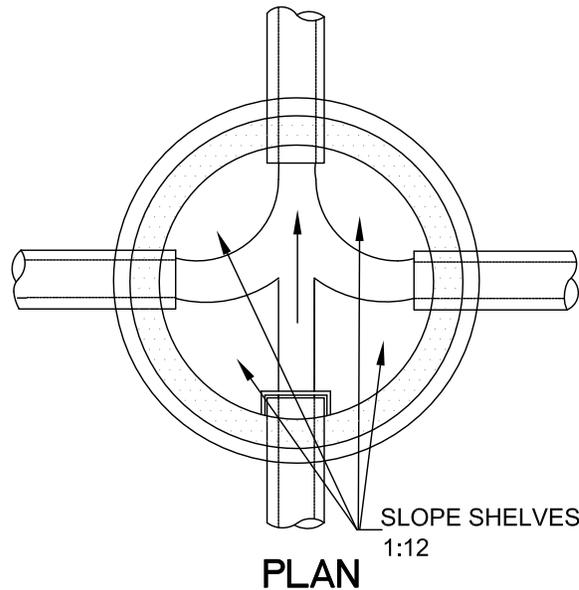
MANHOLES SHALL HAVE A 12" MIN. 24" MAX. BOTTOM RISER, TO BE BEDDED IN THE CONCRETE AS THE BASE TAKES ITS INITIAL SET.

SLOPE SHELVES 1:12



**NOTE:**

CHANNELS MUST BE ABLE TO PASS A 7"X30" CYLINDER INTO PIPES. SHELF SHALL NOT BE BELOW THE TOP OF THE PIPE.



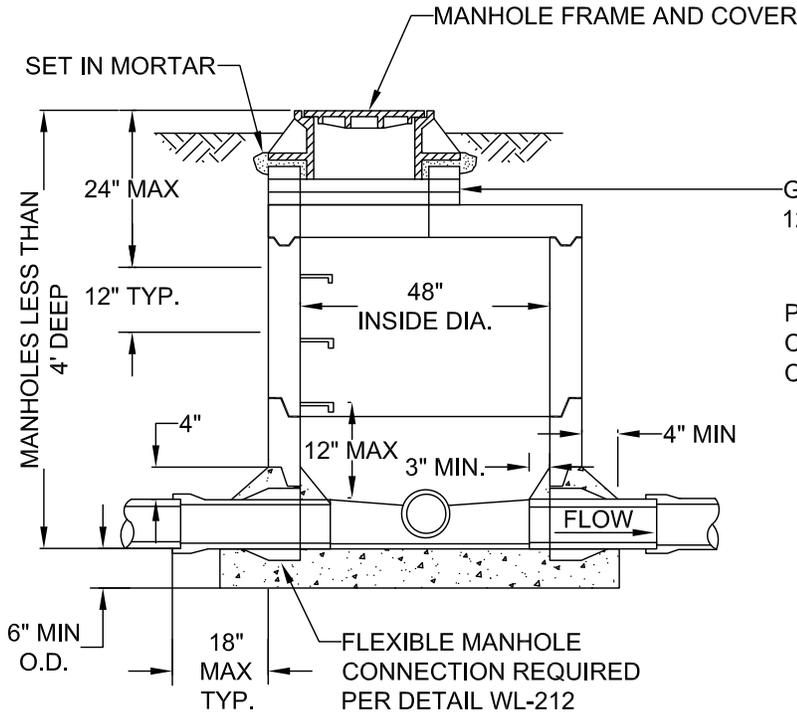
**STANDARD MANHOLE FOR LESS THAN 36" PIPE**

|                          |                 |
|--------------------------|-----------------|
| <b>CITY OF GLADSTONE</b> | DATE: 2017      |
|                          | DRAWING NO. 207 |
|                          | FILE NO.        |

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NOTE:  
 MANHOLE LID TO BE 1'  
 ABOVE FINISH GRADE  
 IN UNPAVED EASEMENTS.



GRADE RINGS - VARIABLE, MAX. 3 LAYERS,  
 12" MAX

PRECAST SECTIONS AND POURED  
 CONCRETE BASES SHALL CONFORM TO  
 CITY STANDARD SPECIFICATIONS.

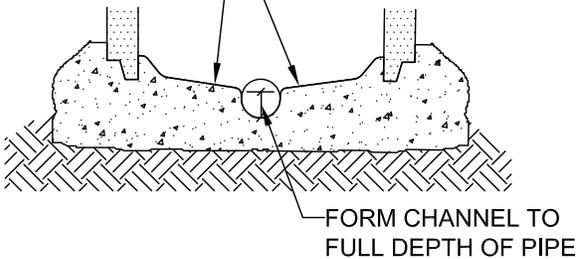
ALL JOINTS SHALL BE SEALED  
 WITH PREFORMED PLASTIC OR  
 RUBBER RING TO FORM A WATER  
 TIGHT SEAL.

LOCATE STEPS ON UPSTREAM  
 SIDE OF MANHOLE.

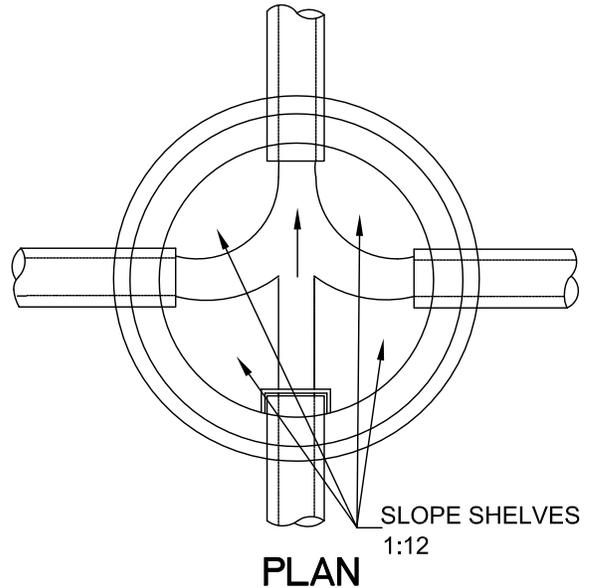
NOTE:  
 POLYETHYLENE STEPS/IRON REINFORCEMENT  
 8" x 12" WIDE, 2" DROP, EMBEDDED 3", ON 12"  
 CENTERS (TYPICAL)

MANHOLES SHALL HAVE A 12" MIN.  
 24" MAX. BOTTOM RISER, TO BE BEDDED  
 IN THE CONCRETE AS THE BASE TAKES  
 ITS INITIAL SET.

SLOPE SHELVES 1:12



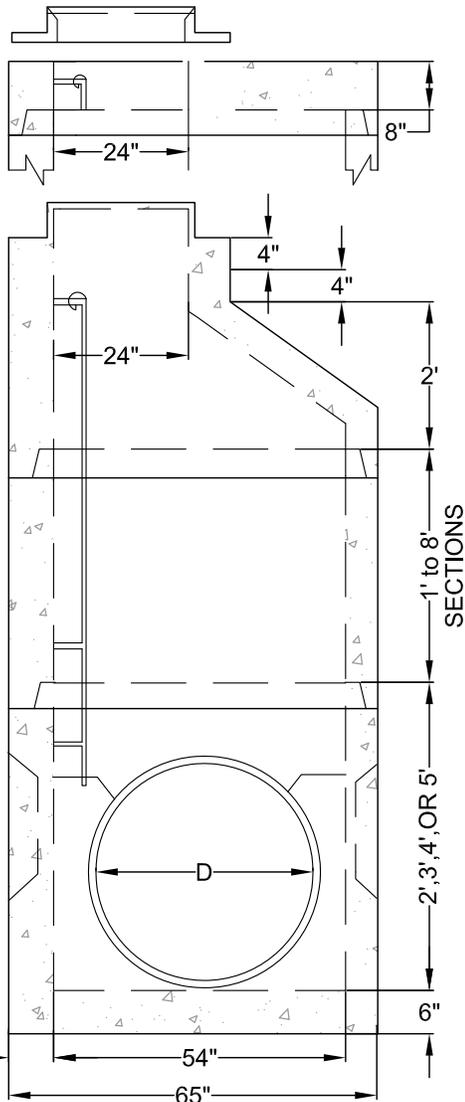
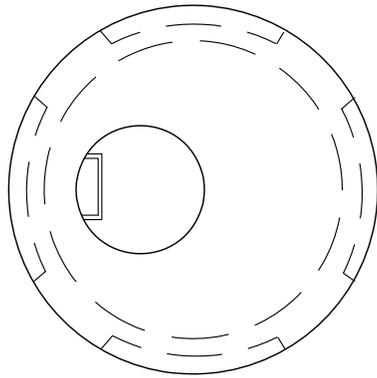
NOTE:  
 CHANNELS MUST BE ABLE TO PASS A 7"X30"  
 CYLINDER INTO PIPES. SHELF SHALL NOT BE  
 BELOW THE TOP OF THE PIPE.



|   |                 |
|---|-----------------|
| <b>SHALLOW MANHOLE<br/>FOR LESS THAN<br/>36" PIPE</b> |                 |
| <b>CITY OF<br/>GLADSTONE</b>                          | DATE: 2017      |
|   | DRAWING NO. 208 |
|   | FILE NO.        |

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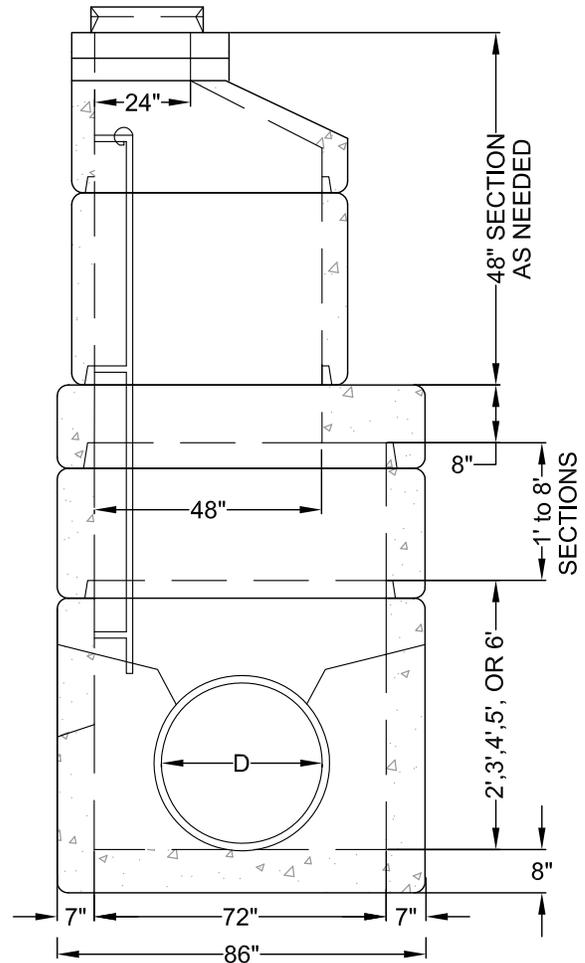
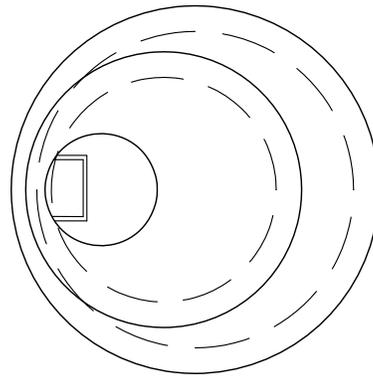


**54" MANHOLE**

FOR 36" DIAMETER OR SMALLER PIPE

NOTE:

STANDARD MANHOLE STEPS OR  
LADDERS SHALL BE INSTALLED



**72" MANHOLE**

FOR 42" DIAMETER OR SMALLER PIPE

**OVERSIZE MANHOLE**

**CITY OF  
GLADSTONE**

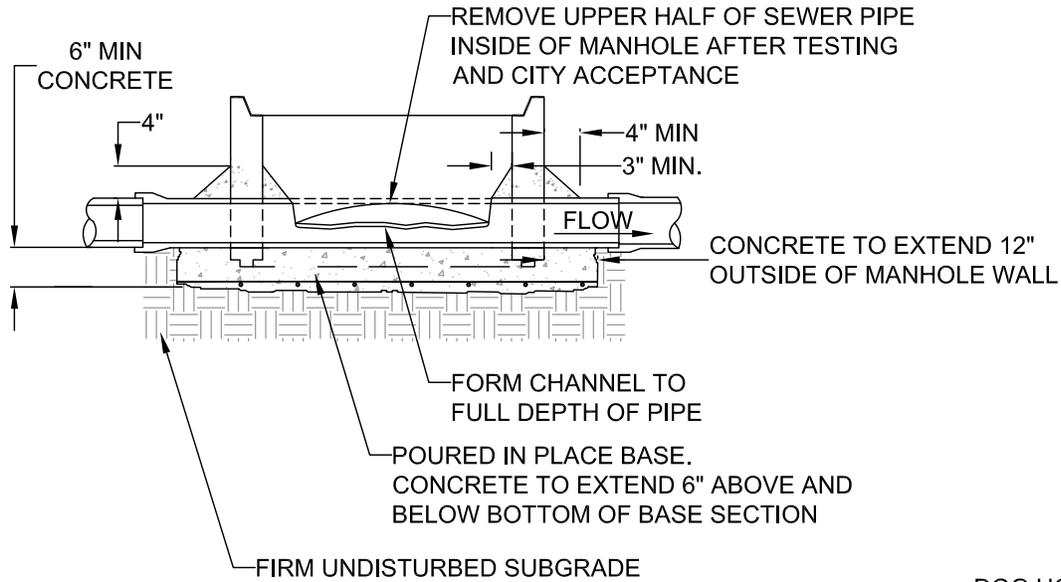
DATE:  
2017

DRAWING NO.  
209

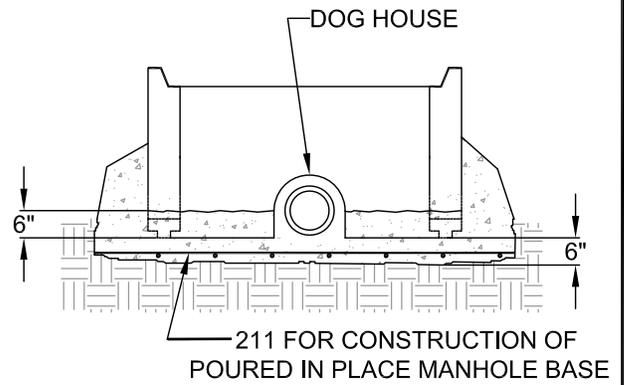
FILE NO.

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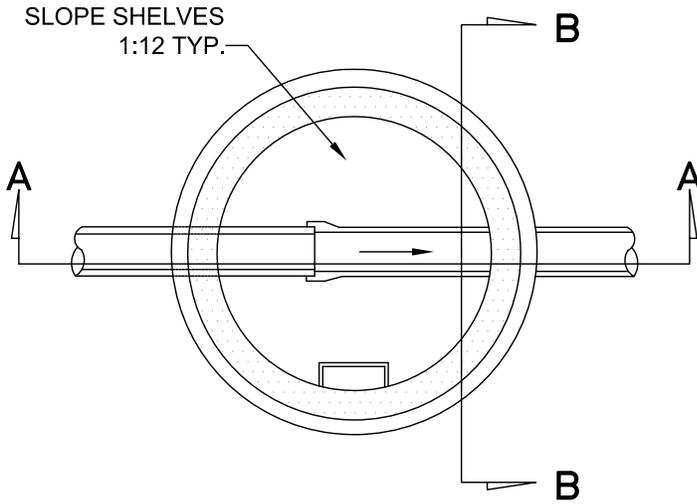
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**SECTION A-A**



**SECTION B-B**



**PLAN VIEW**

**NOTE:**

1. BOTTOM RISER TO BE BEDDED IN THE CAST-IN-PLACE AS THE BASE TAKES IT'S INITIAL SET. SET FOR 24 HOUR MIN. OR UNTIL CONCRETE HAS CURED SUFFICIENTLY BEFORE ADDING ADDITIONAL RISERS.
2. 3" TO 6" CLEARANCE BETWEEN BOTTOM RISER SECTION AND TOP OF PIPE. RISER SECTION MUST BE CAST TO ACCOMODATE PIPE (DOG HOUSE) NO SAWING OR OR BREAKING OF RISER WILL BE ALLOWED.
3. REMOVE TOP OF PIPE ONLY AFTER TESTING AND ACCEPTED BY CITY.

**NEW MANHOLE TO EXISTING  
PVC SEWER LINE  
CONNECTION**

**CITY OF  
GLADSTONE**

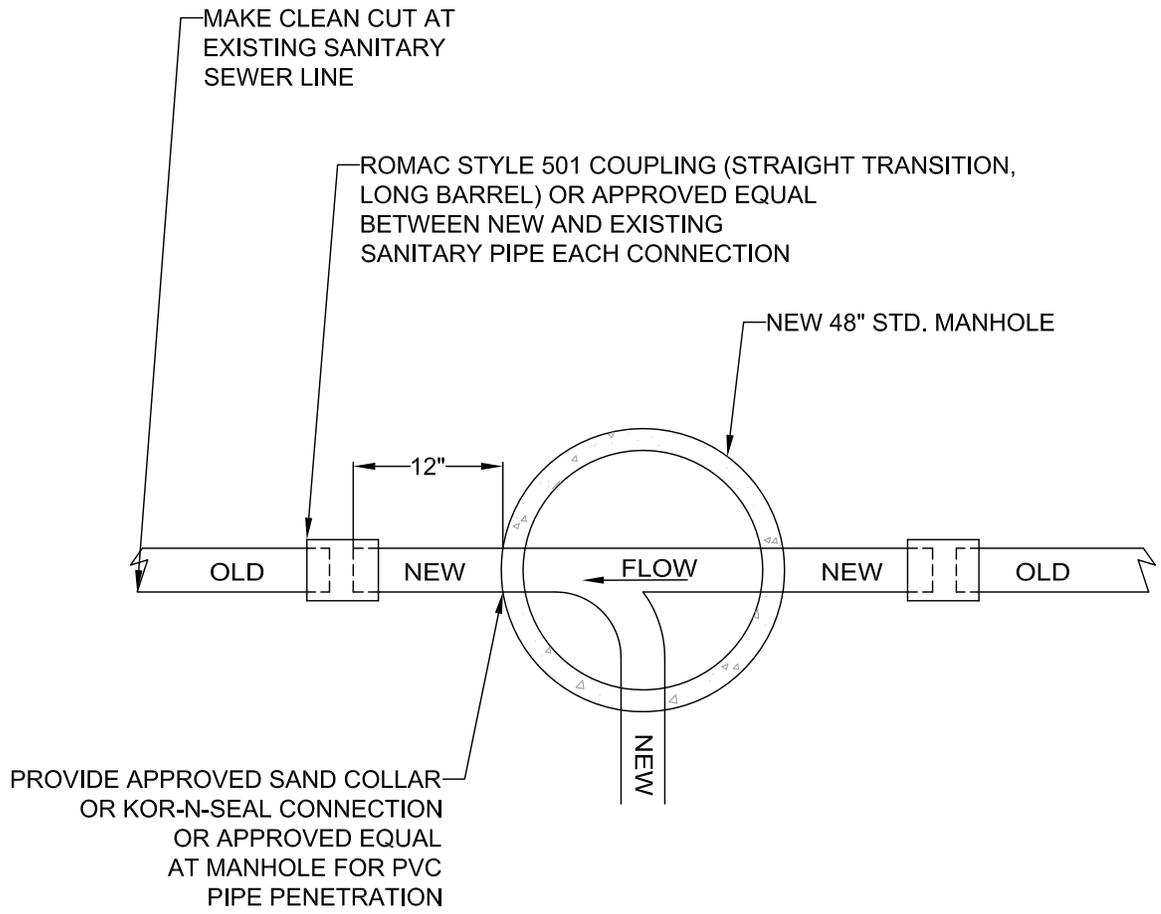
DATE:  
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DRAWING NO.  
210A

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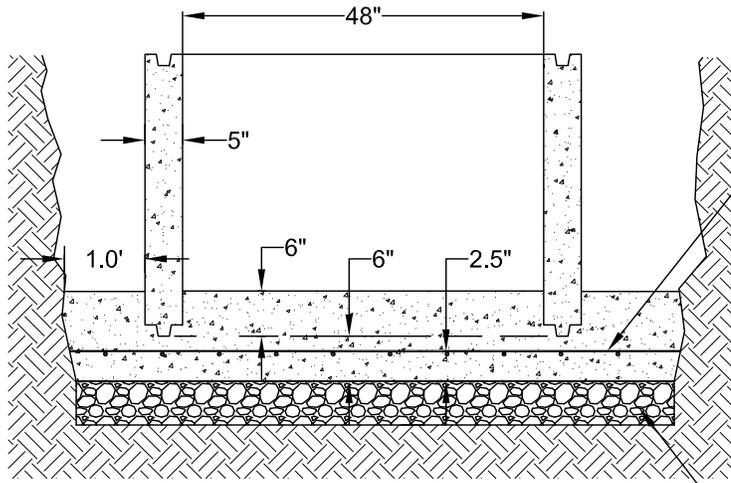
PROVIDE APPROVED SAND COLLAR OR KOR-N-SEAL CONNECTION OR APPROVED EQUAL AT MANHOLE FOR PVC PIPE PENETRATION

NOTE:  
 NEW PVC (ASTM D3034, SDR 35) PIPE  
 PIPE MATCHING EXISTING SANITARY SEWER LINE SIZE  
 (TYPICAL CONNECTION, MULTIPLE CONNECTIONS MAY EXIST)

|  |                  |
|--|------------------|
| <b>NEW MANHOLE TO EXISTING<br/>NON-PVC SEWER LINE<br/>CONNECTION</b> |                  |
| <b>CITY OF<br/>GLADSTONE</b>   | DATE: 2017       |
|  | DRAWING NO. 210B |
|  | FILE NO.         |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



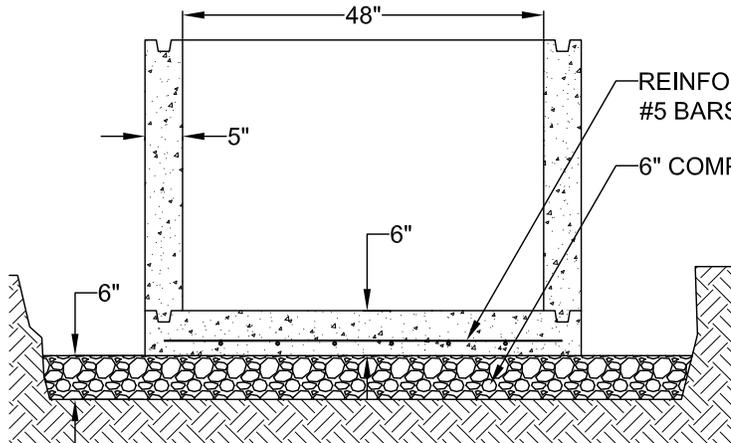
**POURED IN PLACE MANHOLE BASE**

NOTE:  
PIPE CONNECTIONS MUST  
HAVE FLEXIBLE CONNECTIONS

REINFORCING SHALL BE  
#5 BARS @ 12" O.C. E.W.  
REINFORCING TO EXTEND 1'-0"  
BEYOND VERTICAL MANHOLE  
WALLS

NOTE:  
CONCRETE TO EXTEND 12"  
OUTSIDE OF MANHOLE WALL  
AND 6" ABOVE THE BOTTOM  
OF THE BASE SECTION

6" COMPACTED CRUSHED  
ROCK BASE



**PRECAST MANHOLE BASE**

REINFORCING SHALL BE  
#5 BARS @ 12" O.C.E.W.

6" COMPACTED CRUSHED ROCK

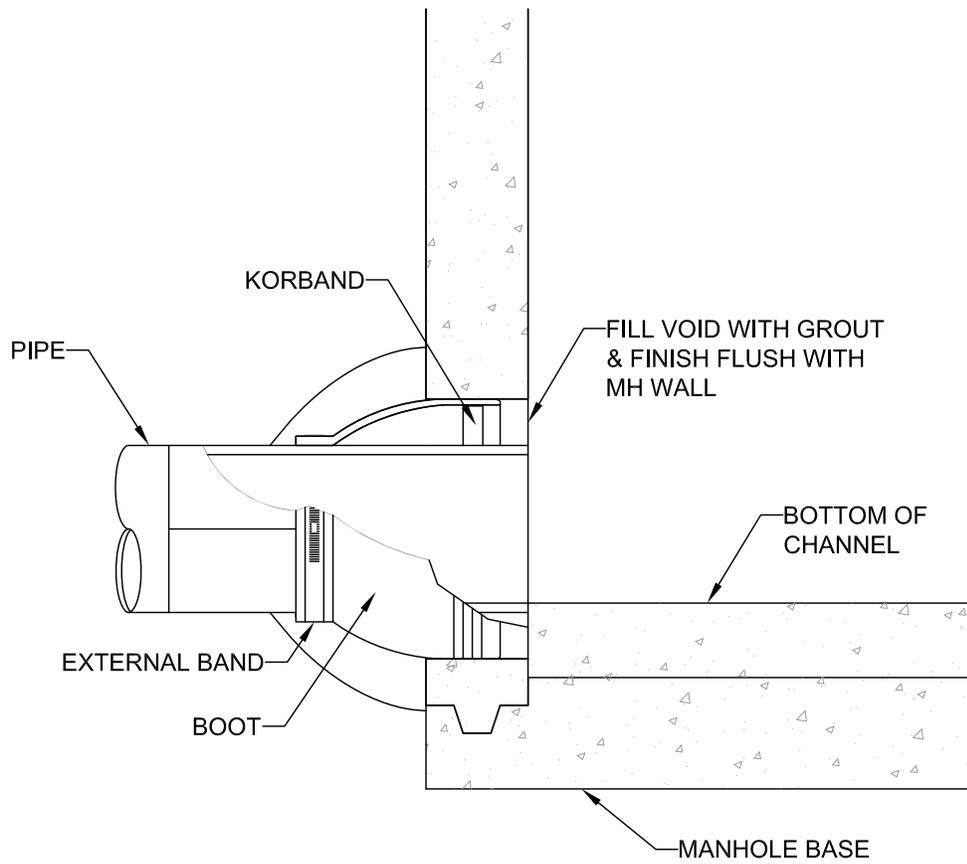
NOTE:  
USE 3300 PSI CONCRETE FOR EITHER  
MANHOLE BASE.  
CONCRETE SHALL CONFORM TO SECTION  
205. PRECAST MANHOLES SHALL  
CONFORM TO ASTM C478.

# MANHOLE BASE

|                              |                    |
|------------------------------|--------------------|
| <b>CITY OF<br/>GLADSTONE</b> | DATE:<br>2017      |
|                              | DRAWING NO.<br>211 |
|                              | FILE NO.           |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY

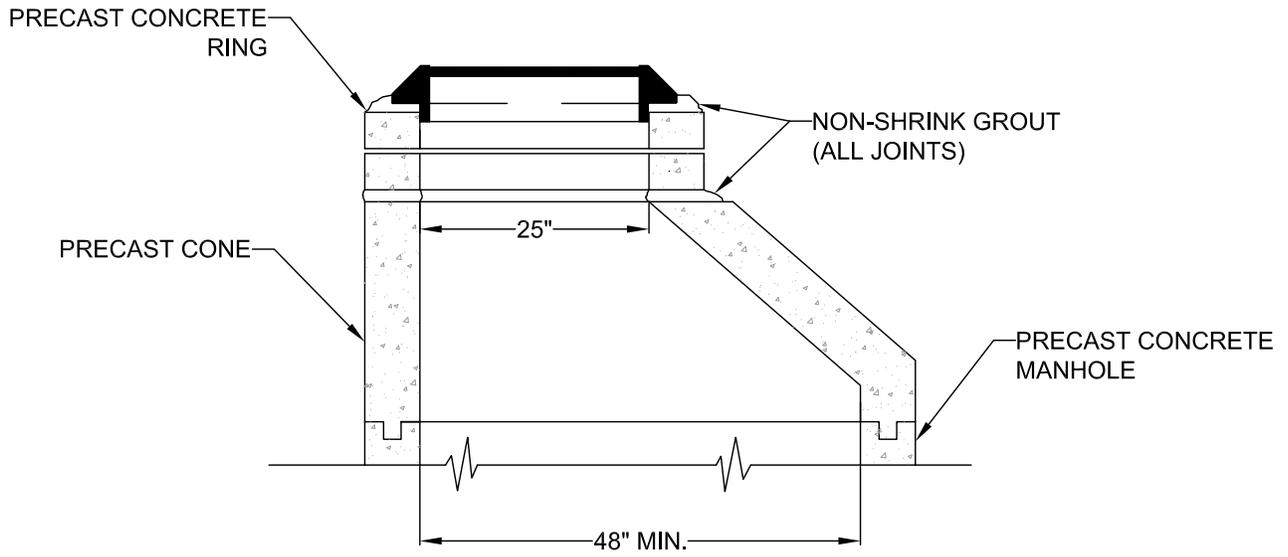


**FLEXIBLE MANHOLE CONNECTION  
(KOR-N-SEAL OR APPROVED EQUAL)**

|                                    |                 |
|------------------------------------|-----------------|
| <b>FLEXIBLE MANHOLE CONNECTION</b> |                 |
| <b>CITY OF<br/>GLADSTONE</b>       | DATE: 2017      |
|                                    | DRAWING NO. 212 |
|                                    | FILE NO.        |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

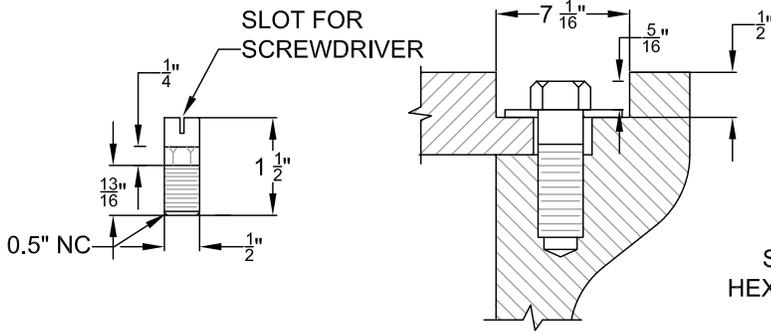
THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



### PRECAST RING EXTENSION FOR TYPICAL MANHOLE

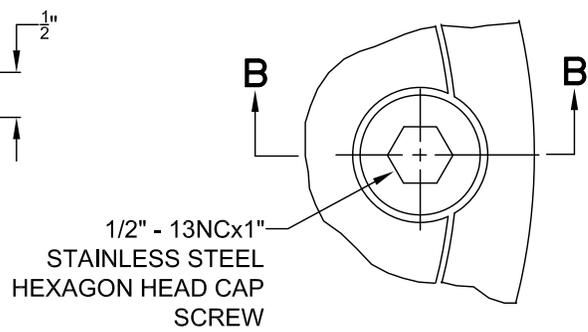
|                                   |                 |
|-----------------------------------|-----------------|
| <b>PRECAST RING<br/>EXTENSION</b> |                 |
| <b>CITY OF<br/>GLADSTONE</b>      | DATE: 2017      |
|                                   | DRAWING NO. 213 |
|                                   | FILE NO.        |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

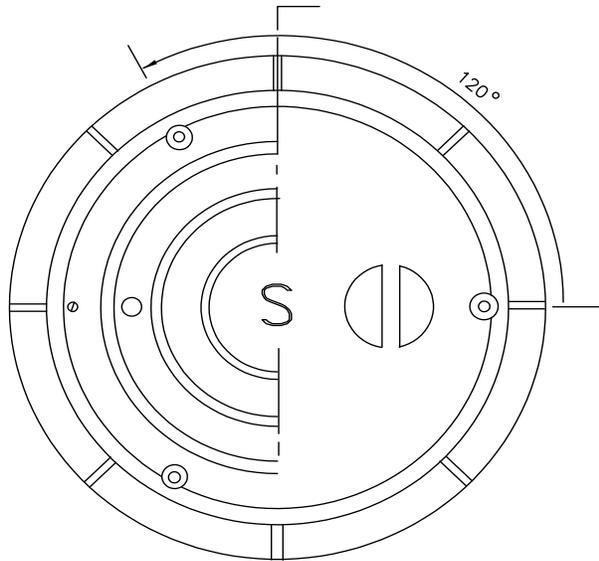


**LOCATING STUD**  
ONE REQUIRED PER COVER

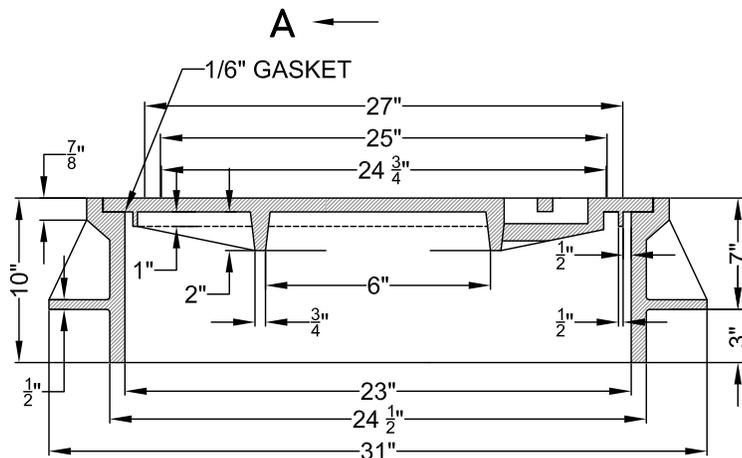
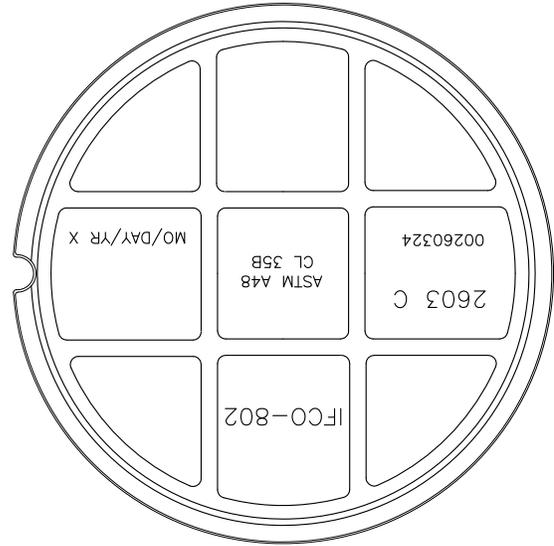
**SECTION B-B**



**1/2" - 13NCx1"  
STAINLESS STEEL  
HEXAGON HEAD CAP  
SCREW**



**TAMPER PROOF WATER PROOF**



**SECTION A-A**

**NOTE:**

1. COVER AND FRAME TO BE MACHINED TO A TRUE BEARING ALL AROUND
2. MATERIAL SHALL BE OF GRAY CAST IRON A.S.T.M. A-48 CLASS 30

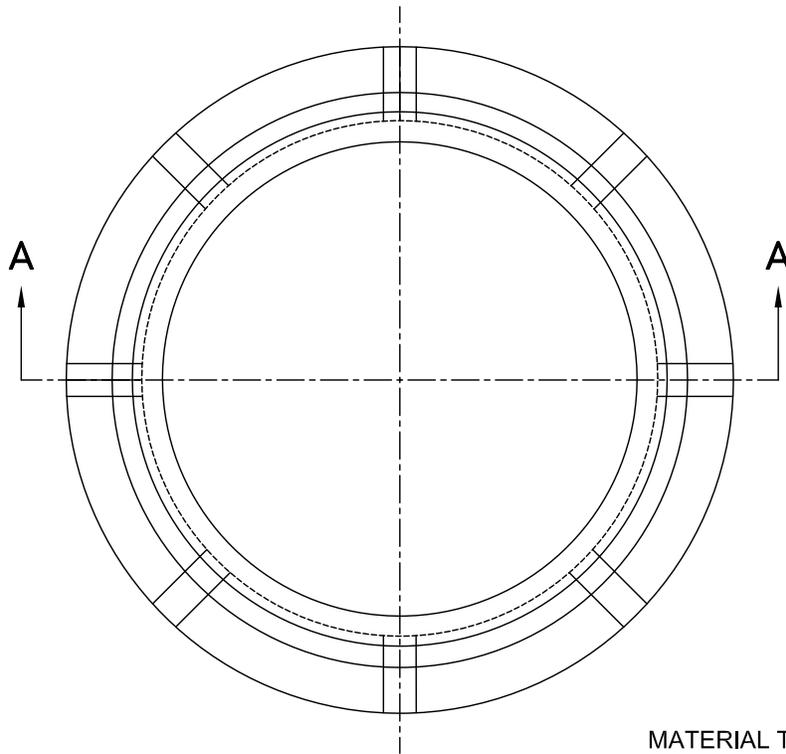
**WATERPROOF AND  
TAMPERPROOF MANHOLE  
FRAME AND COVER**

|                              |                    |
|------------------------------|--------------------|
| <b>CITY OF<br/>GLADSTONE</b> | DATE:<br>2017      |
|                              | DRAWING NO.<br>214 |
|                              | FILE NO.           |

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY

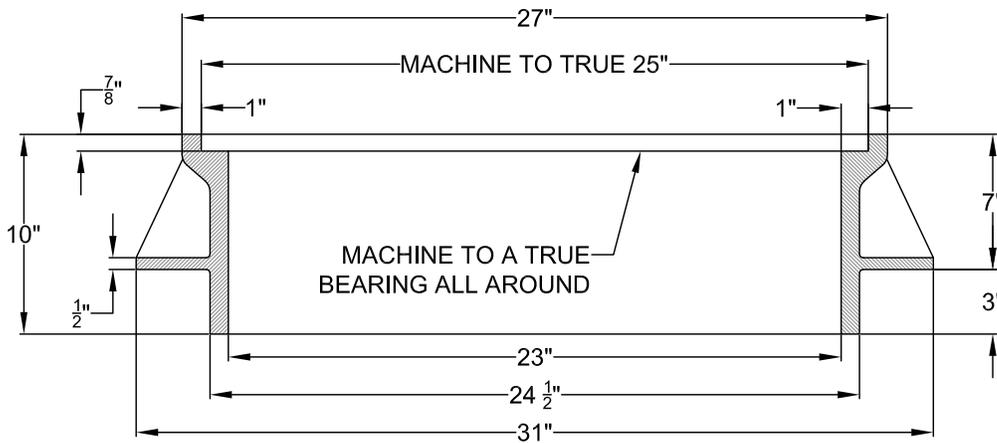
IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



**TOP VIEW**

MATERIAL TO BE GRAY  
CAST IRON ASTM A-48  
CLASS 30, WEIGHT 237 LBS



**SECTION A-A**

**INDUSTRIAL MANHOLE  
FRAME 3" DEPTH**

**CITY OF  
GLADSTONE**

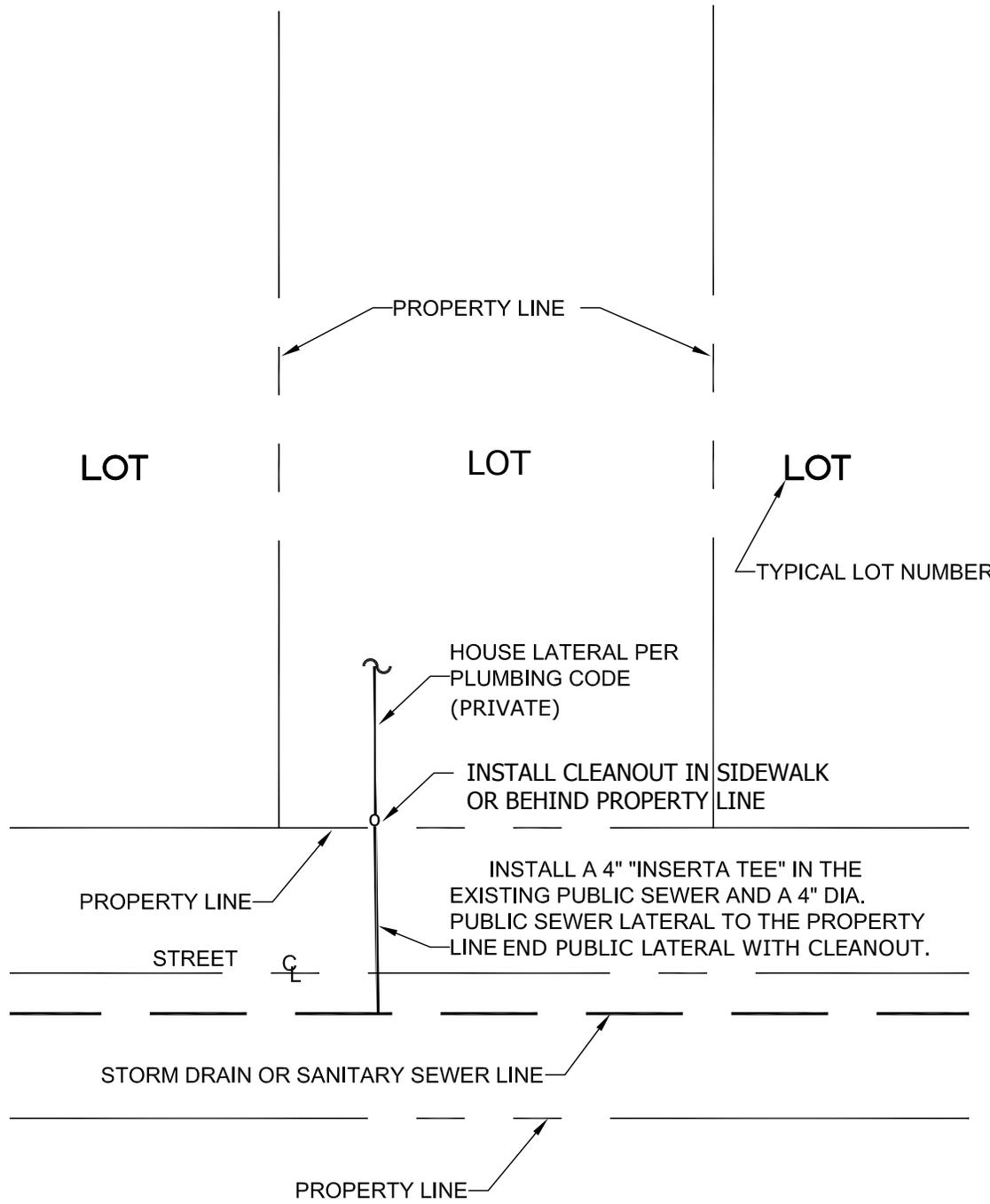
DATE: 2017

DRAWING NO. 215

FILE NO.

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



TYPICAL CONNECTION FOR SINGLE FAMILY RESIDENCE.

|  |                 |
|--|-----------------|
| <b>SEWER CONNECTION<br/>SINGLE FAMILY<br/>EXISTING LOT</b> |                 |
| <b>CITY OF<br/>GLADSTONE</b>                               | DATE: 2017      |
|  | DRAWING NO. 216 |
|  | FILE NO.        |

**APPROVED FOR CONSTRUCTION BY CITY OF GLADSTONE:**

THIS APPROVAL IS ONLY FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND GENERAL COMPLIANCE WITH APPLICABLE CODES AND REQUIREMENTS AND SHALL NOT BE CONSTRUED AS RELIEVING THE DESIGN ENGINEER OF FULL RESPONSIBILITY FOR ACCURACY AND COMPLETENESS OF THE DRAWINGS. THIS PLAN REVIEW DOES NOT PREVENT THE CITY FROM REQUIRING FURTHER CODE CORRECTIONS IN THE FIELD.

WITH CHANGES NOTED ON PAGE(S): \_\_\_\_\_

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
PUBLIC WORKS DIRECTOR: \_\_\_\_\_  
REVIEWING ENGINEER: \_\_\_\_\_

NOTE:  
1. THIS APPROVAL BOX SHALL BE PLACED ON THE COVER SHEET OF EVERY PLAN SET.

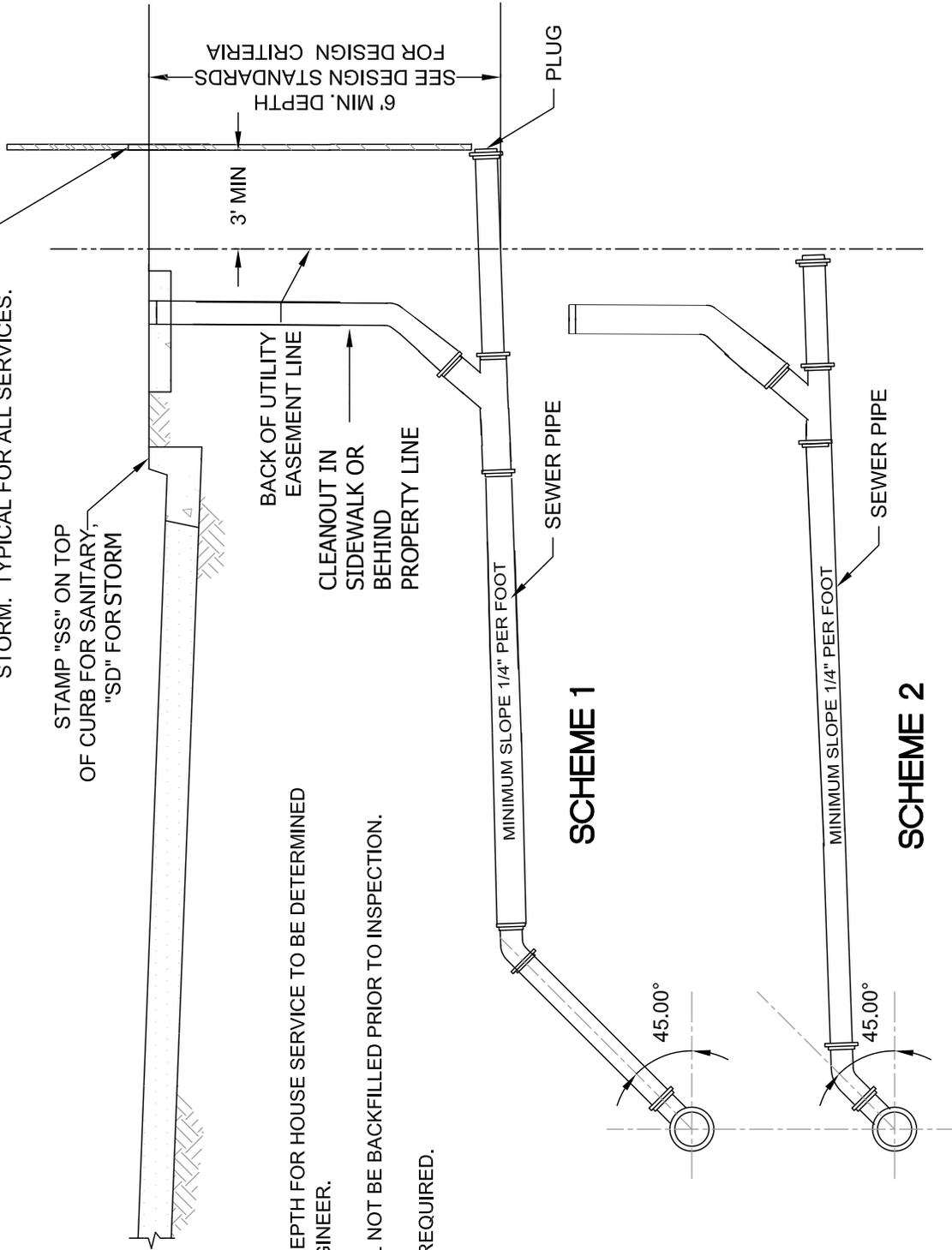
|                          |                        |
|--------------------------|------------------------|
| <b>APPROVAL BOX</b>      |                        |
| <b>CITY OF GLADSTONE</b> | DATE: 2017             |
|                          | DRAWING NO. <b>217</b> |
|                          | FILE NO.               |

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY . IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

2" x 4" STAKE FROM INVERT TO 4' ABOVE FINISH GRADE. STAKE SHALL BE CONTINUOUS AND REMAIN VERTICAL AFTER BACKFILLING. END SHALL BE PAINTED GREEN FOR SANITARY AND WHITE FOR STORM. TYPICAL FOR ALL SERVICES.

STAMP "SS" ON TOP OF CURB FOR SANITARY, "SD" FOR STORM

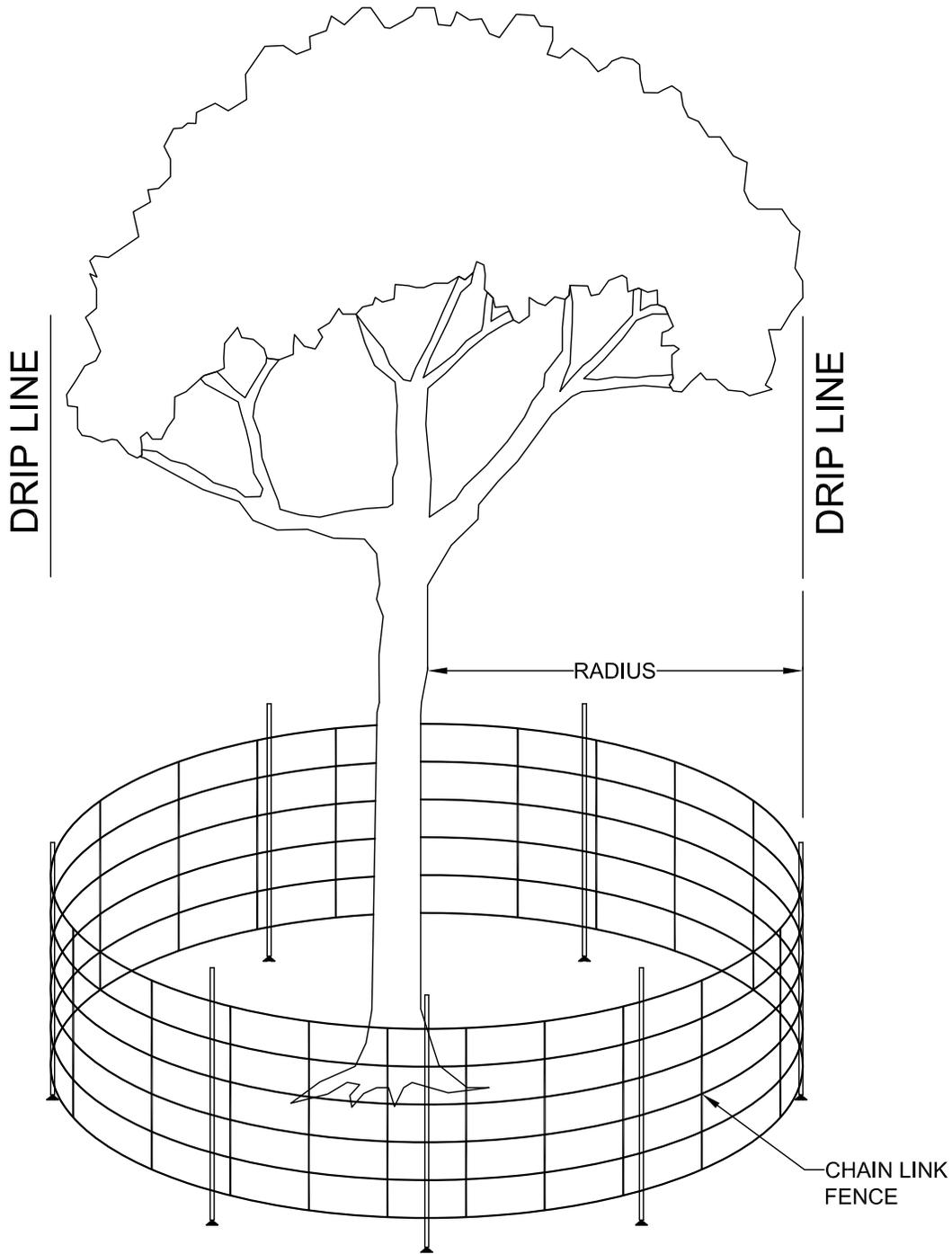
- NOTE:
1. SCHEME AND DEPTH FOR HOUSE SERVICE TO BE DETERMINED BY DESIGN ENGINEER.
  2. SERVICE SHALL NOT BE BACKFILLED PRIOR TO INSPECTION.
  3. TRACER WIRE REQUIRED.



|                              |                 |
|------------------------------|-----------------|
| <b>SERVICE BRANCH</b>        |                 |
| <b>CITY OF<br/>GLADSTONE</b> | DATE: 2017      |
|                              | DRAWING NO. 218 |
|                              | FILE NO.        |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



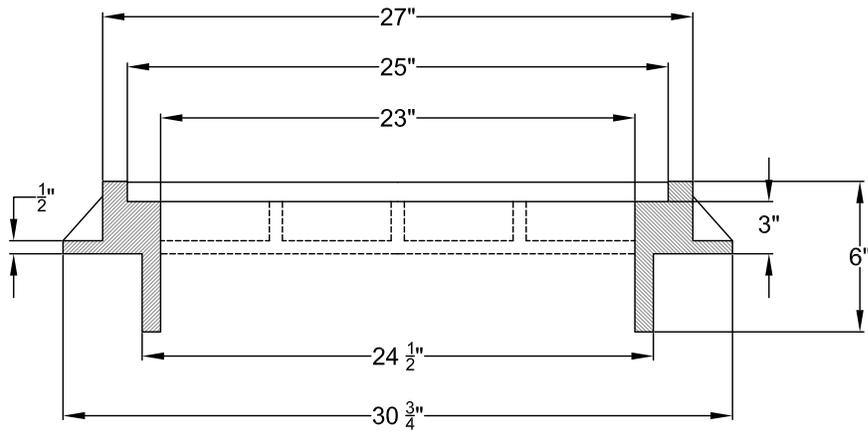
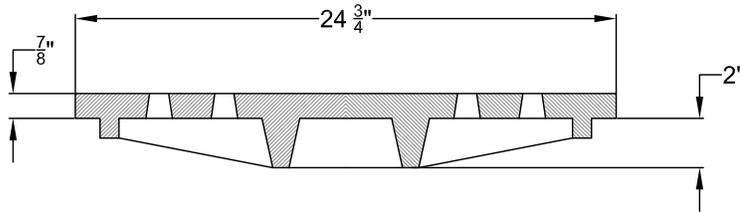
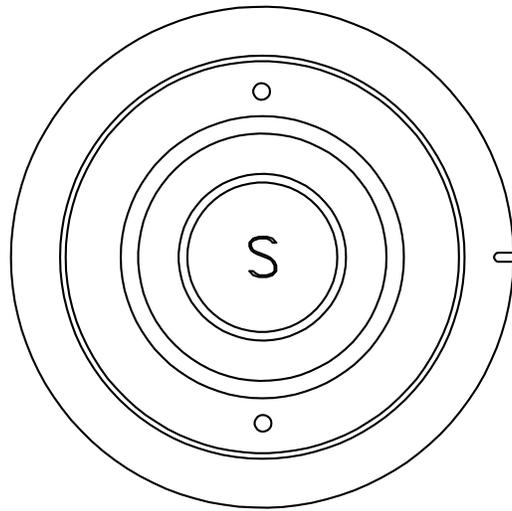
**NOTE:**

1. 6' CHAIN LINK ON 2" POST AT 10' SPACING, DRIVEN 2' INTO GROUND  
RADIUS IS EITHER 1/2' PER CALIPER INCH OR
2. 10' OUTSIDE OF DRIPLINE - SEE PLANS

|                                  |                    |
|----------------------------------|--------------------|
| <b>TREE PROTECTION<br/>FENCE</b> |                    |
| <b>CITY OF<br/>GLADSTONE</b>     | DATE:<br>2017      |
|                                  | DRAWING NO.<br>219 |
|                                  | FILE NO.           |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



NOTE:

1. COVER AND FRAME TO BE MACHINED FOR TRUE BEARING
2. MATERIAL SHALL BE GRAY CAST IRON  
A.S.T.M. A-48 CLASS 30
3. 2 HOLE LID FOR SANITARY SEWER

**SUBURBAN MANHOLE  
FRAME AND COVER  
3" DEPTH**

**CITY OF  
GLADSTONE**

DATE: 2017

DRAWING NO. 300

FILE NO.

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

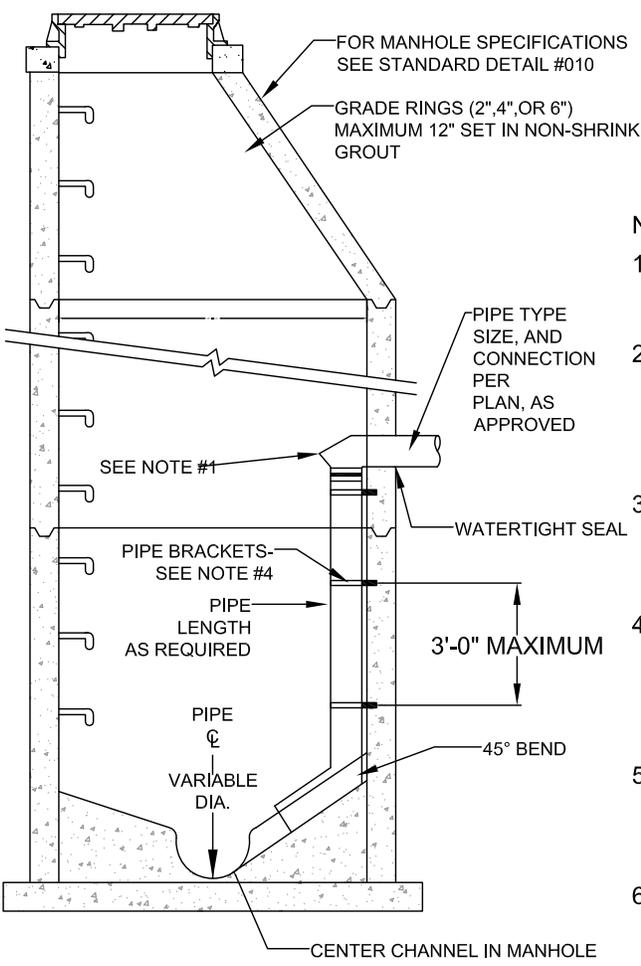
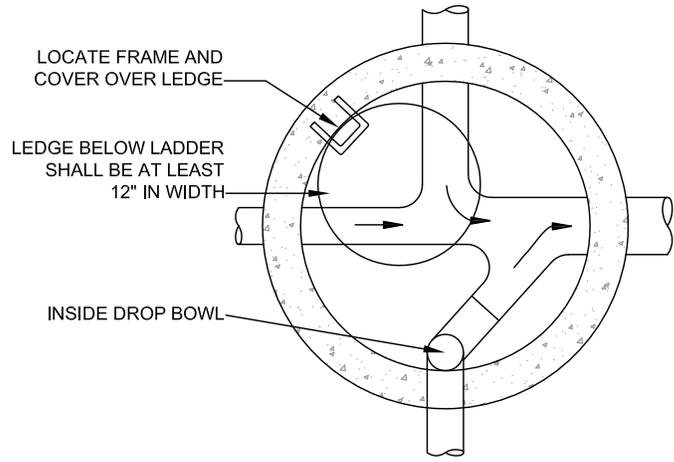
THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY

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|------------------------------|--------------------|
|                              |                    |
| <b>CITY OF<br/>GLADSTONE</b> | DATE:<br>2017      |
|                              | DRAWING NO.<br>301 |
|                              | FILE NO.           |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



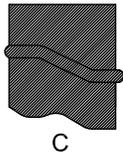
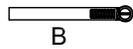
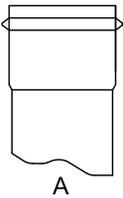
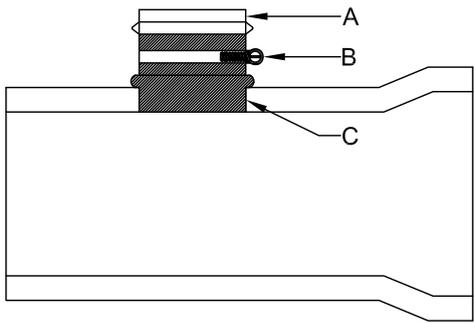
**NOTE:**

1. DROP BOWL AS MANUFACTURED BY RELINER-DURAN INC. OR APPROVED EQUAL.
2. DROP BOWL TO BE SIZED PER MANUFACTURER'S RECOMMENDATIONS ( INFORMATION AVAILABLE @ RELINER.COM) OR AS REQUIRED BY CITY.
3. PIPE AND FITTING FOR DROP ASSEMBLY SHALL BE: DUCTILE IRON, AWWA C-900 OR PVC ASTM D-3034 SDR 35.
4. STAINLESS ADJUSTABLE PIPE BRACKETS AS MANUFACTURED BY RELINER-DURAN INC. OR APPROVED EQUAL. (INFORMATION AVAILABLE @ RELINER.COM).
5. NO MORE THAN ONE DROP BOWL PER MANHOLE WITHOUT WRITTEN APPROVAL BY CITY
6. WRITTEN APPROVAL BY CITY REQUIRED FOR DROP BOWL INSTALATION ON PIPELINES WITH A SLOPE OF 5% OR GREATER.

|  |                 |
|--|-----------------|
| <b>INSIDE DROP MANHOLE<br/>CONNECTION FOR SANITARY<br/>SEWER PRIVATE SERVICE</b> |                 |
| <b>CITY OF<br/>GLADSTONE</b>   | DATE: 2017      |
|  | DRAWING NO. 302 |
|  | FILE NO.        |

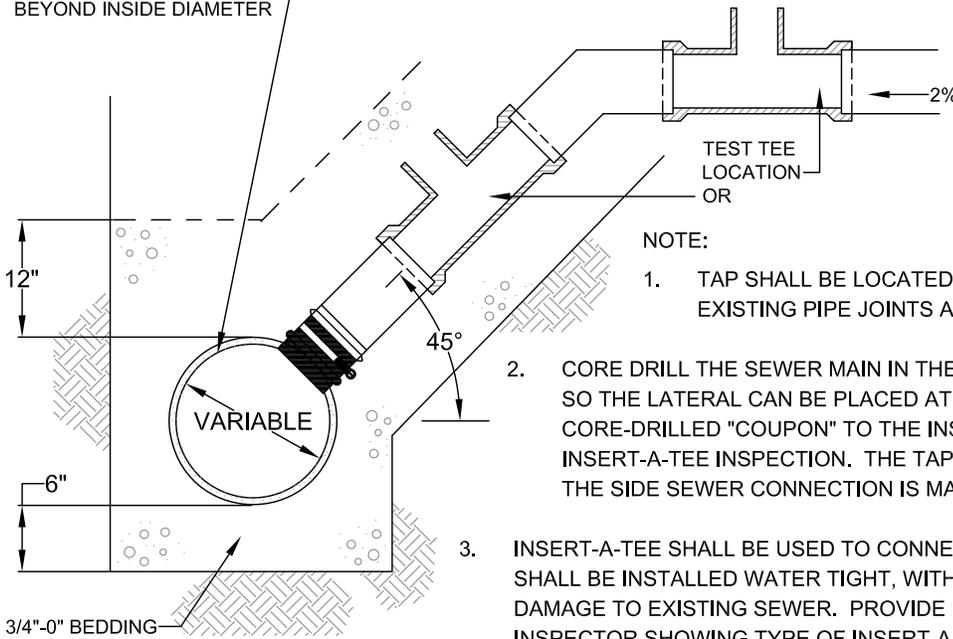
IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



- A. PVC HUB SHALL CONFORM TO ASTM D-3034, SDR 35 DRIVE INTO CENTER OF RUBBER SLEEVE AFTER SLEEVE IS PLACED IN HOLE.
- B. STAINLESS STEEL BAND SECURES UPPER HALF OF RUBBER SLEEVE TO THE PVC HUB. STAINLESS STEEL BAND SHALL BE 300 SERIES, 9/16" BAND WIDTH, CADMIUM PLATED CARBON STEEL, AND ATTACHED WITH HEX HEAD SLOTTED SCREW.
- C. COMPLETE RUBBER SLEEVE INCLUDES A MOLDED SEGMENT THAT HOLDS IT IN PLACE.

INSERT NOT TO PROTRUDE BEYOND INSIDE DIAMETER



NOTE:

1. TAP SHALL BE LOCATED A MINIMUM OF 12" FROM EXISTING PIPE JOINTS AND 12" FROM OTHER TAPS.
2. CORE DRILL THE SEWER MAIN IN THE UPPER QUARANT OF THE PIPE SO THE LATERAL CAN BE PLACED AT A 45° ANGLE AND PRESENT THE CORE-DRILLED "COUPON" TO THE INSPECTOR AT TIME OF THE INSERT-A-TEE INSPECTION. THE TAP SHALL BE INSPECTED BEFORE THE SIDE SEWER CONNECTION IS MADE.
3. INSERT-A-TEE SHALL BE USED TO CONNECT LATERAL TO MAIN. TAP SHALL BE INSTALLED WATER TIGHT, WITHOUT PROTRUSION INTO OR DAMAGE TO EXISTING SEWER. PROVIDE INSERT-A-TEE PACKAGING TO INSPECTOR SHOWING TYPE OF INSERT-A-TEE INSTALLED.
4. LATERAL SHALL BE 4" (FOR STANDARD SINGLE FAMILY HOMES) GREEN ASTM D3034 PVC AND PLACED AT A MINIMUM 2% SLOPE TO THE PROPERTY LINE. PLACE A TEST TEE WITHIN 3 FEET OF THE TAP.
5. PLACE GREEN TRACER WIRE OVER CENTERLINE OF SERVICE LATERAL.
6. COMPACT 6" OF 3/4-0" ROCK UNDER THE PIPE. HAUNCH WELL UNDER LATERAL.
7. ONCE APPROVED BY CITY INSPECTOR, PLACE 12" OF 3/4"-ROCK ABOVE THE TOP OF THE PIPE.
8. BACKFILL ABOVE THE PIPE ZONE SHALL BE 3/4-0" GRAVEL BACKFILL. COMPACTION TESTING BY A CERTIFIED TESTING AGENCY MUST OCCUR IN LIFTS AS SPECIFIED BY THE CITY INSPECTOR (DELIVER THE RESULTS THE THE PUBLIC WORKS). CITY RESERVES THE RIGHT TO FURTHER SPECIFY BACKFILL BASED ON SITE CONDITIONS.
9. T.V. INSPECTION OF THE LATERAL AND/OR MAIN MAY BE REQUIRED FOLLOWING BACKFILL, PRIOR TO FINAL APPROVAL.
10. 4" MAXIMUM TAP FOR 8" MAIN (CUT IN TEE TO BE USED FOR 6" LATERAL ON 8" MAIN).
11. ALL CONNECTIONS SHALL BE MADE WITH HARD FITTINGS, INCLUDING TRANSITIONS BETWEEN DISSIMILAR MATERIALS.

## SEWER SERVICE TAP TO EXISTING SEWER FOR HOUSE LATERALS

**CITY OF GLADSTONE**

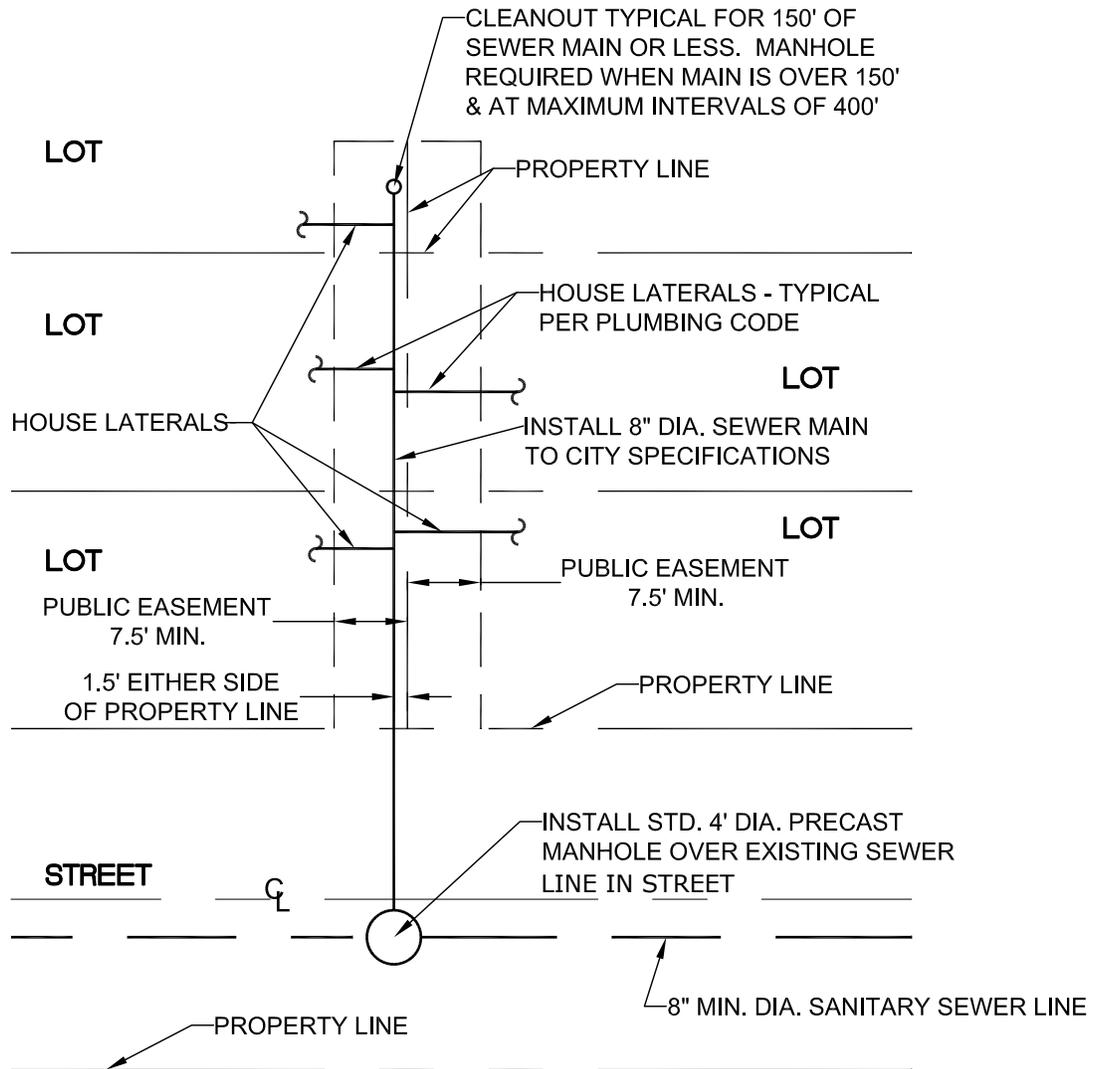
DATE: 2017

DRAWING NO. 303

FILE NO.

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

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TYPICAL CONNECTION PLAN FOR 2 OR MORE LOTS.  
PUBLIC EASEMENT ARRANGEMENT SHOWN TO BE USED ONLY WHEN  
PUBLIC ROAD RIGHT-OF-WAY ALIGNMENT CANNOT BE USED.

**SANITARY SEWER CONNECTION  
MULTIPLE LOTS  
IN PUBLIC EASEMENT**

**CITY OF  
GLADSTONE**

DATE: 2017

DRAWING NO. 304

FILE NO.

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

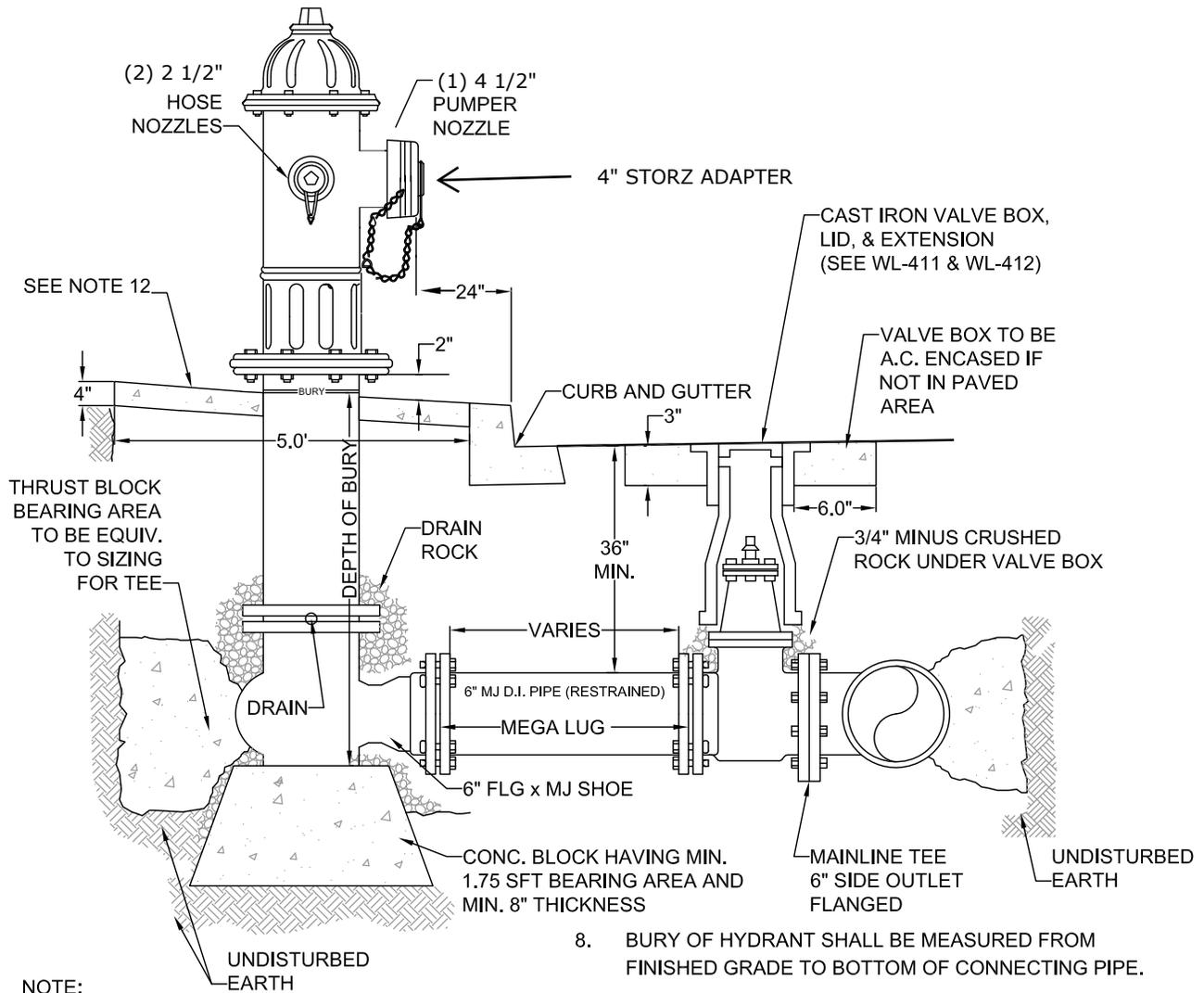
THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY

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|                              |                    |
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|                              |                    |
| <b>CITY OF<br/>GLADSTONE</b> | DATE:<br>2017      |
|                              | DRAWING NO.<br>400 |
|                              | FILE NO.           |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

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**NOTE:**

1. KENNEDY GUARDIAN IS THE PREFERRED HYDRANT. OTHER APPROVED MODELS ARE MUELLER CENTURION MDL A-423 WITH 1 1/2" OPER. NUTS, CLOW MEDALLION F-2545, AND M&H 929.
2. HYDRANT BARREL TO BE RODDA SAFETY ORANGE. LEAVE BONNET TO BE PAINTED BY FIRE DEPARTMENT.
3. JOINTS TO BE RESTRAINED BY 3/4" DIA. GALVANIZED STEEL RODS AND THRUST BLOCKS OR MEGALUGS AND THRUST BLOCKS.
4. ALL FITTINGS IN CONTACT W/CONCRETE SHALL BE WRAPPED IN PLASTIC, HYDRANT DRAIN HOLES TO REMAIN OPEN TO DRAIN ROCK AND OPERATIONAL.
5. MIN. 4 CFT OF 1 1/2" - 3/4" CLEAN DRAIN ROCK SHALL BE PLACED AROUND SHOE UP TO A MIN. OF 6" ABOVE DRAIN OUTLETS.
6. WHERE PLANTER STRIP EXISTS, HYDRANT SHALL BE PLACED SO THE FRONT PORT IS A MINIMUM OF 24" BEHIND THE FACE OF THE CURB.
7. WHERE INTEGRAL S/W & CURB EXISTS, HYDRANT SHALL BE PLACED AT BACK OF THE SIDEWALK, OR AS DIRECTED BY PUBLIC WORKS DIRECTOR
8. BURY OF HYDRANT SHALL BE MEASURED FROM FINISHED GRADE TO BOTTOM OF CONNECTING PIPE.
9. THRUST BLOCK AT FIRE HYDRANT TEE SHALL BE EQUIVALENT TO TEE PIPE SIZING (SEE DGW-406)
10. HYDRANT VALVE SHALL BE MUELLER RESILIENT WEDGE GATE VALVE #A-2360-16 ONLY.
11. NO EXTENSIONS ALLOWED
12. HYDRANT SHALL HAVE A 5' x5' x 4" THICK CONCRETE APRON. THERE SHALL BE 2" OF CLEARANCE BETWEEN THE TOP OF THE APRON AND THE BOTTOM OF THE FLANGED BOLT PATTERN OF THE HYDRANT.
13. CONCRETE SHALL BE COMMERCIAL MIXED WITH A BREAKING STRENGTH OF NOT LESS THAN 3000 PSI.

## STANDARD FIRE HYDRANT ASSEMBLY

**CITY OF  
GLADSTONE**

DATE:  
2017

DRAWING NO.  
401

FILE NO.

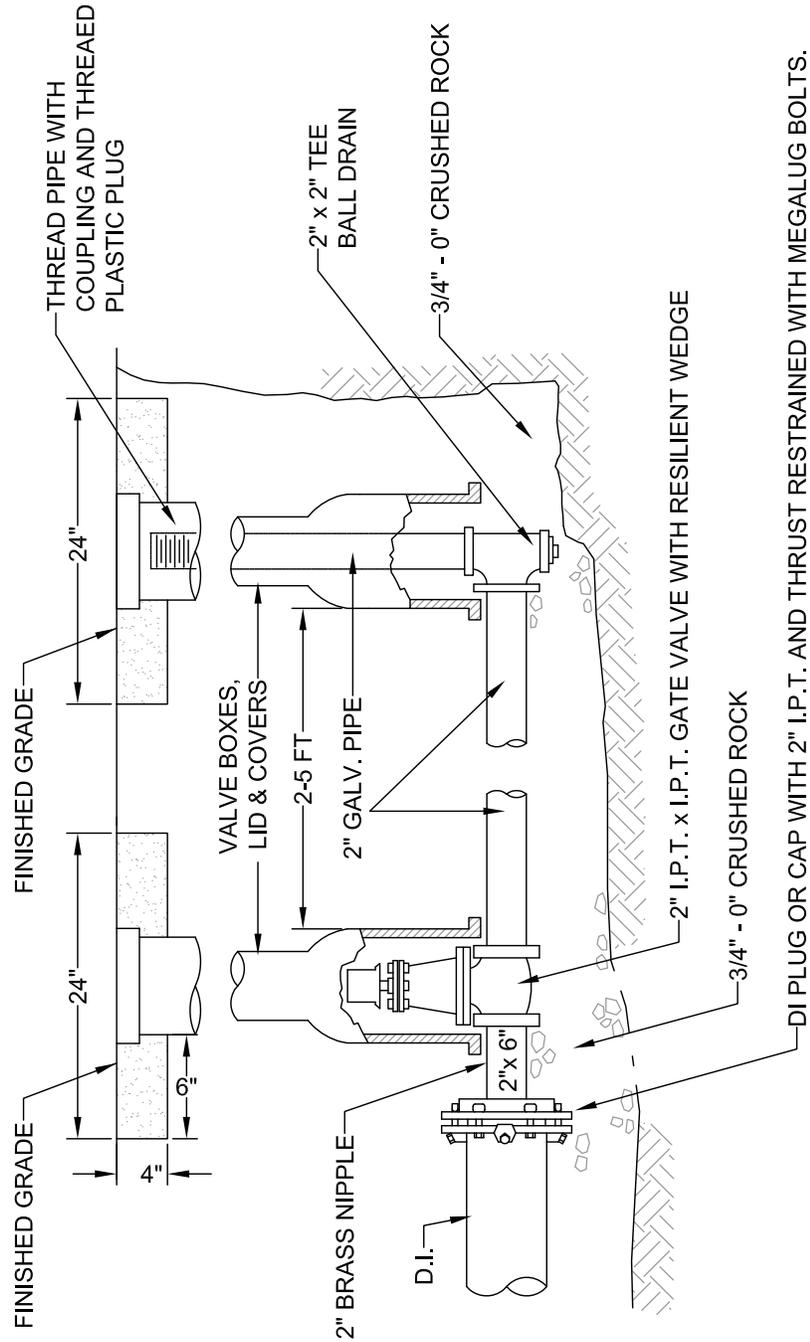




**NOTE:**

1. VALVE BOX SHALL BE PER STANDARD DETAIL 411
2. VALVE BOX TO BE CONCRETE ENCASED AS SHOWN, IF NOT IN PAVED AREA.
3. BLOW-OFF UNIT SHALL BE BACKFILLED WITH 3/4"-0" CRUSHED ROCK AND COMPACTED TO 95% OF MAXIMUM DENSITY DETERMINED BY AASHTO T-180.
4. PLACE BLOW-OFF STANDPIPE 3 FT. INSIDE R.O.W. LINE AT END OF STREET (2 FT FROM BARRICADE).

| BLOW-OFF SIZES REQUIRED |               |
|-------------------------|---------------|
| MAIN SIZE               | BLOW-OFF SIZE |
| 4" TO 6"                | 2"            |



|  |                     |
|--|---------------------|
| <b>STANDARD 2"<br/>BLOW-OFF ASSEMBLY</b> |                     |
| <b>CITY OF<br/>GLADSTONE</b>             | DATE:<br>2017       |
|  | DRAWING NO.<br>404A |
|  | FILE NO.            |

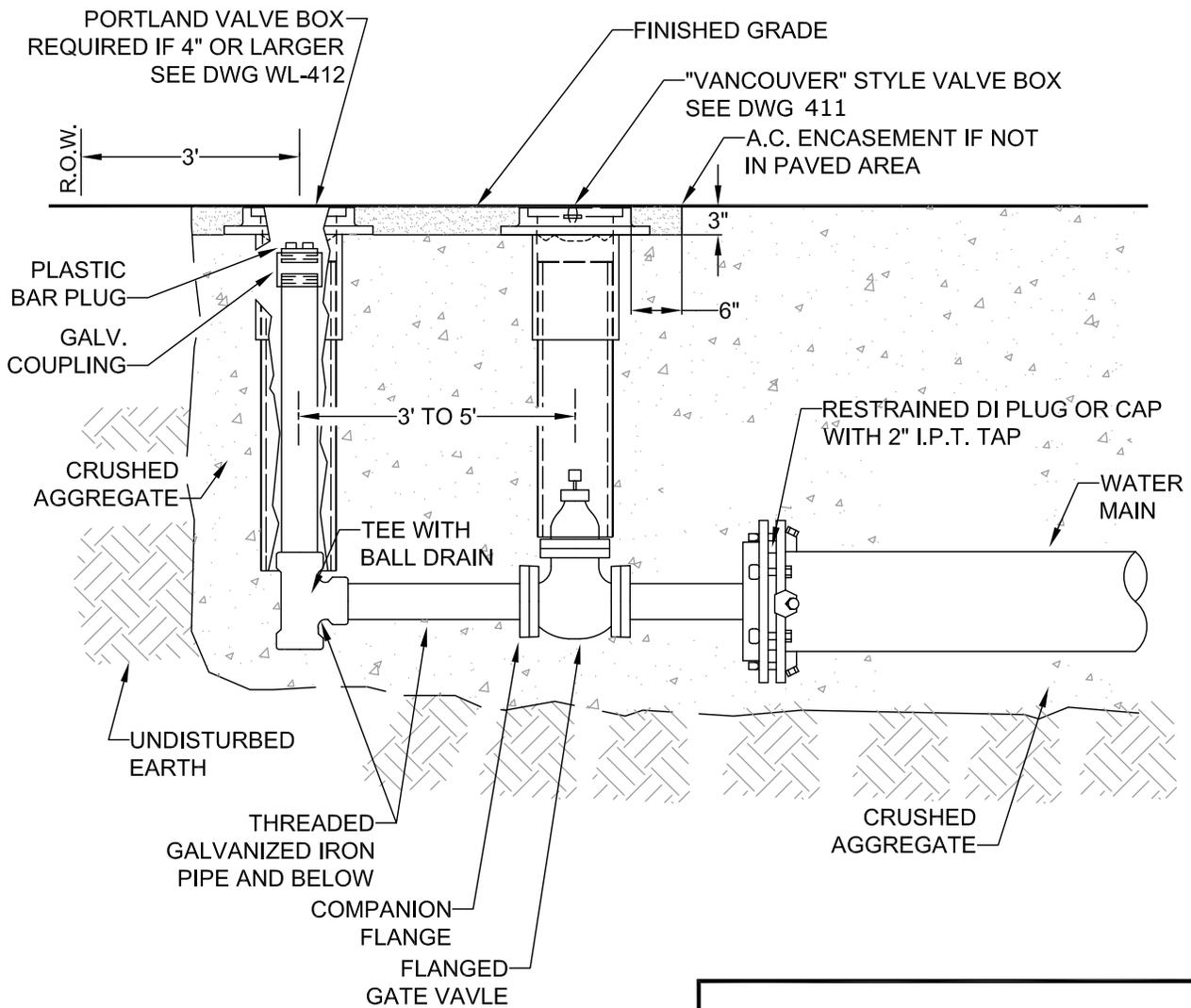
IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY

| BLOW-OFF SIZES REQUIRED |               |
|-------------------------|---------------|
| MAIN SIZE               | BLOW-OFF SIZE |
| 4" TO 6"                | 2"            |
| 8" TO 12"               | 4"            |
| 14" TO 18"              | 6"            |
| 20" & UP                | PER ENGR.     |

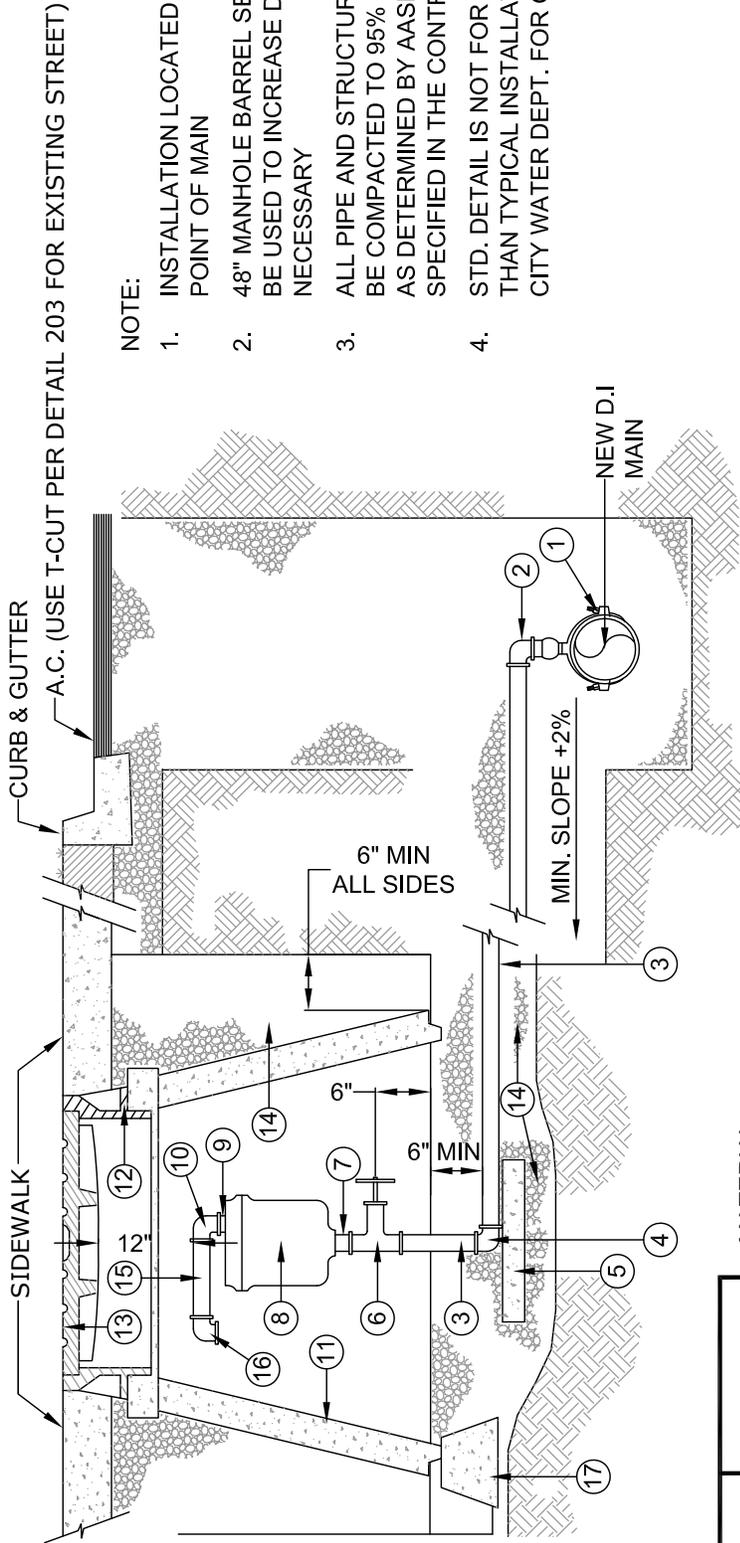
**NOTE:**

1. BACKFILL WITH SELECT CRUSHED AGGREGATE A MINIMUM OF 6" ON ALL SIDES. COMPACTED TO 95% OF MAX DENSITY AS DETERMINED BY AASHTO T180.
2. ON TEMPORARY BLOW-OFFS ONLY, AN MJ CAP TAPPED 4" OR 6" MAY BE SUBSTITUTED FOR REDUCER.
3. TEMPORARY BLOW-OFF IS ONE REMOVED AT THE END OF PROJECT CONSTRUCTION. A PERMANENT BLOW-OFF REMAINS ON THE PROJECT AFTER ACCEPTANCE.
4. PLACE BLOW-OFF STANDPIPE 3 FT. INSIDE R.O.W. LINE AT END OF STREET (2 FT FROM BARRICADE).



**PERMANENT OR TEMPORARY  
4" AND 6" BLOW-OFF**

|                              |                  |
|------------------------------|------------------|
| <b>CITY OF<br/>GLADSTONE</b> | DATE: 2017       |
|                              | DRAWING NO. 404B |
|                              | FILE NO.         |



**NOTE:**

1. INSTALLATION LOCATED AT HIGH POINT OF MAIN
2. 48" MANHOLE BARREL SECTIONS SHALL BE USED TO INCREASE DEPTH IF NECESSARY
3. ALL PIPE AND STRUCTURE ZONES SHALL BE COMPACTED TO 95% OF MAX. DENSITY AS DETERMINED BY AASHTO T-180 OR AS SPECIFIED IN THE CONTRACT DOCUMENTS
4. STD. DETAIL IS NOT FOR SHALLOWER THAN TYPICAL INSTALLATIONS. CONTACT CITY WATER DEPT. FOR OPTIONS

**MATERIAL:**

1. ROCKWELL NO. 317 SERVICE SADDLE WITH STAINLESS STRAPS
2. MUELLER NO. H15045 2" CORPORATION STOP WITH 1/4 BEND ADAPT (I.P.T. MUELLER 110 CTS)
3. 2" X VARIABLE LENGTH BRASS I.P.T. NIPPLE
4. 2" BRASS 90 DEGREE ELL (MUELLER 110 CTS)
5. 12" X 12" X 4" CONCRETE BLOCK
6. NIBCO NO. 113 2" BRASS GATE VALVE
7. 2" X 3" BRASS I.P.T. NIPPLE
8. 2" AIR RELEASE VALVE (VAL-MATIC #38 OR APCO #205 FOR TYPICAL INSTALLATIONS. IN SOME INSTANCES THE CITY MAY REQUIRE COMBINATION AIR RELEASE & VACUUM UNIT.) INSTALL WALL BRACKETS TO SUPPORT VALVE AS NECESSARY
9. 1/2" X 1 1/2" OR 2" X 1 1/2" BRASS I.P.T. NIPPLE
10. 1/2" OR 2" BRASS 90 DEGREE ELL (F.M. I.P.T. X F.M. I.P.T.)
11. STD. 48" CONCRETE MANHOLE CONE
12. FRAME PER STD. DWG. 214.
13. TAMPERPROOF MANHOLE COVER PER STD. DWG. 214.
14. 3/4" MINUS CRUSHED AGG.
15. 1/2" X 6" OR 2" X 6" BRASS NIPPLE, I.P.T.
16. 1/2" OR 2" BRASS 90 DEGREE ELL WITH SCREEN ON OUTLET
17. 3 EA. 12" CONCRETE PIER BLOCKS

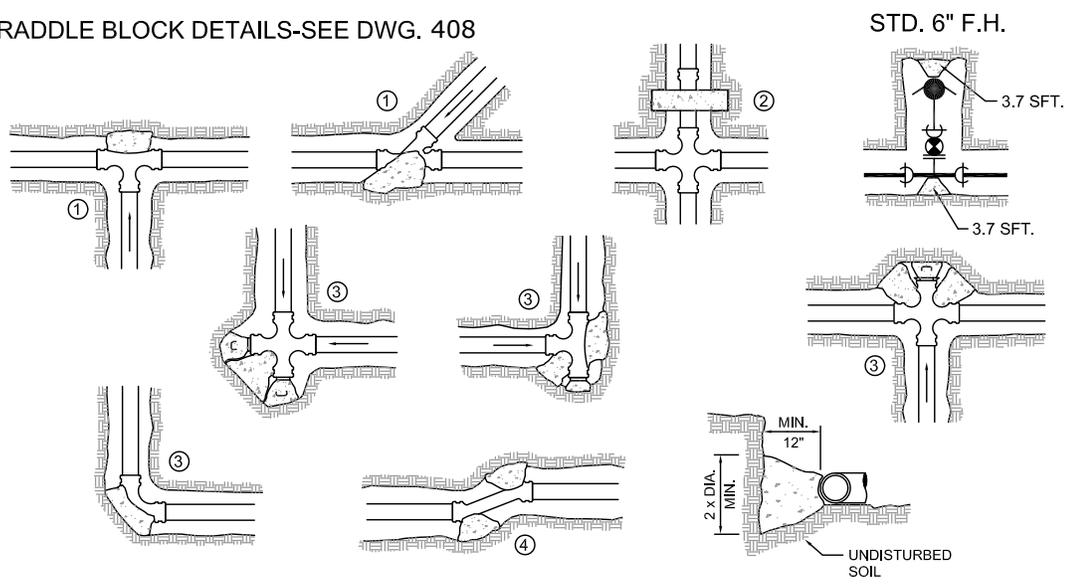
|  |                    |
|--|--------------------|
| <b>STANDARD AIR RELEASE VALVE UNIT</b> |                    |
| <b>CITY OF<br/>GLADSTONE</b>           | DATE:<br>2017      |
|  | DRAWING NO.<br>405 |
|  | FILE NO.           |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

| FITTING SIZE (Inches) | TEE, WYE, & ① HYDRANTS | STRADDLE BLOCK ② | 90° BEND ③<br>PLUGGED CROSS<br>TEE PLUGGED-RUNS | 45° BEND ④ | 22 1/2° BEND ④ | 11 1/2° BEND ④ |
|-----------------------|------------------------|------------------|---|------------|----------------|----------------|
| 2                     | *                      | *                | *   | *          | *              | *              |
| 4                     | 1.7                    | 2.1              | 2.4   | 1.3        | *              | *              |
| 6                     | 3.7                    | 4.9              | 5.3   | 2.9        | 1.5            | *              |
| 8                     | 6.7                    | 8.7              | 9.5   | 5.1        | 2.7            | 1.3            |
| 10                    | 10.5                   | 13.6             | 14.8  | 8          | 4.1            | 2              |
| 12                    | 15.1                   | 19.6             | 21.3  | 11.6       | 5.9            | 2.9            |
| 14                    |                        |                  |   |            |                |                |
| 16                    | 26.8                   | 34.8             | 37.9  | 20.5       | 10.4           | 5.2            |
| 18                    | 33.9                   | 44               | 47.9  | 25.9       | 12.8           | 6.7            |
| LARGER                | * *                    | * *              | * *   | * *        | * *            | * *            |

BEARING AREA OF THRUST BLOCKS (sq. ft.)

- ALL VALUES ARE BASED ON THE FOLLOWING ASSUMPTIONS:  
AVG. PRESSURE = 100 PSI X 2 (safety factor); 1500 PSF SOIL BEARING CAPACITY; NORMAL DISTRIBUTION DESIGN VELOCITY NOT TO EXCEED 5 F/S.
- ALL FITTINGS SHALL BE WRAPPED IN 8 MM PLASTIC PRIOR TO PLACEMENT OF CONCRETE.
- BEARING SURFACE OF THRUST BLOCKING SHALL BE AGAINST UNDISTURBED SOIL
- ALL CONCRETE MIX SHALL HAVE A MIN. 28 DAY STRENGTH OF 3000 PSI.
- ALL PIPE ZONES SHALL BE GRAVEL FILLED AND COMPACTED.
- THRUST BLOCKS FOR PLUGGED CROSS AND PLUGGED TEE SHALL HAVE #4 REBAR LIFTING LOOPS INSTALLED AS SHOWN.
- VERTICAL THRUST DETAILS-SEE DWG. 407
- STRADDLE BLOCK DETAILS-SEE DWG. 408



\* BLOCK TO UNDISTURBED TRENCH WALLS.

\*\* THRUST BLOCKS FOR PIPES LARGER THAN 18" WILL BE INDIVIDUALLY DESIGNED BY THE ENGINEER.

## HORIZONTAL THRUST BLOCKING

|                          |                 |
|--------------------------|-----------------|
| <b>CITY OF GLADSTONE</b> | DATE: 2017      |
|                          | DRAWING NO. 406 |
|                          | FILE NO.        |

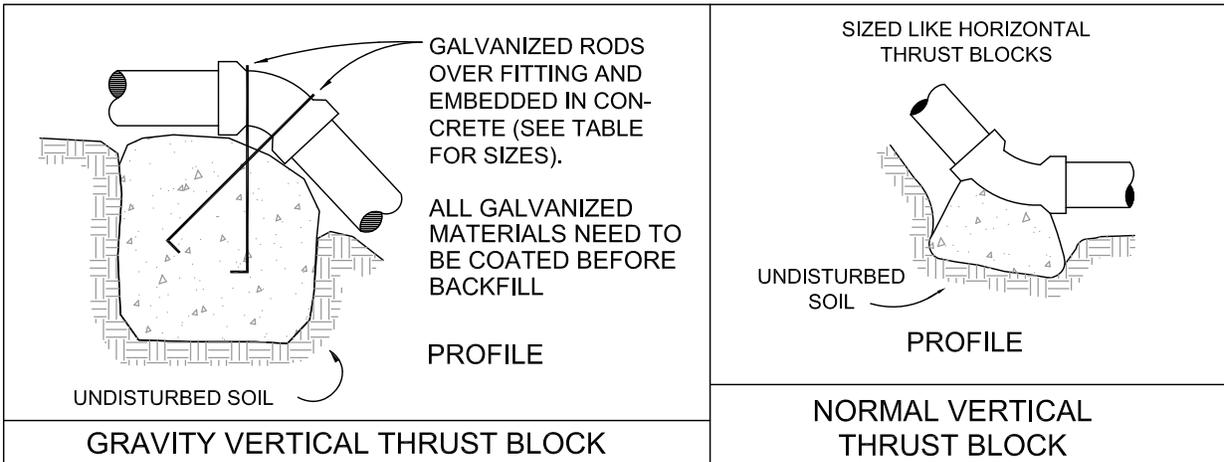
THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY

**NOTE:**

1. GRAVITY VERTICAL THRUST BLOCKS SHALL BE DESIGNED BY THE ENGINEER.
2. KEEP CONCRETE CLEAR OF JOINT AND JOINT ACCESSORIES. FITTINGS SHALL BE WRAPPED IN 8MM PLASTIC PRIOR TO PLACEMENT OF CONCRETE.
3. CONCRETE THRUST BLOCKING SHALL BE POURED AGAINST UNDISTURBED EARTH.
4. CONCRETE MIX SHALL HAVE A MIN. 28 DAY STRENGTH OF 3300 P.S.I.
5. THRUST BLOCK VOLUMES FOR VERTICAL BENDS HAVING UPWARD RESULTANT THRUSTS SHALL BE BASED ON TEST PRESSURE OF 180 PSI AND THE WEIGHT OF CONCRETE = 4050 LBS./CU.YD.
6. VERTICAL BENDS THAT REQUIRE A THRUST BLOCK VOLUME EXCEEDING 5 CUBIC YARDS REQUIRE SPECIAL BLOCKING DETAILS. SEE PLANS FOR VOLUMES SHOWN INSIDE HEAVY LINE IN TABLE BELOW.
7. PAYMENT SHALL BE THE SAME AS FOR HORIZONTAL THRUST BLOCKS.
8. ALL REBAR SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM-123 (MIN. 3.4 MIL). REBAR SHALL BE BENT BEFORE GALVANIZATION, AND LAST 4" OF BAR SHALL BE BENT 90 DEGREES WITH A 1/2" RADIUS BEND. REBAR SHALL BE TIGHTLY FIT TO RESTRAINED FITTING.
9. FOR HORIZONTAL THRUST BLOCK DETAILS SEE DWG NO. 406.

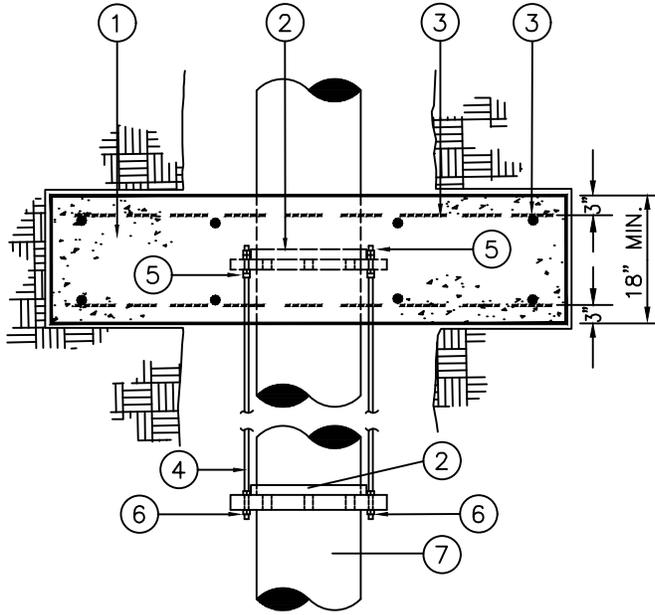


| VOLUME OF THRUST BLOCK<br>IN CUBIC YARDS<br>(VERTICAL BENDS) |            |          |          |
|--|------------|----------|----------|
| FITTING<br>SIZE  | BEND ANGLE |          |          |
|  | 45 °       | 22 1/2 ° | 11 1/4 ° |
| 4  | 1.1        | 0.4      | 0.2      |
| 6  | 2.7        | 1.0      | 0.4      |
| 8  | 4.0        | 1.5      | 0.6      |
| 10   | 6.0        | 2.3      | 0.9      |
| 12   | 8.5        | 3.2      | 1.3      |
| 14   | 11.5       | 4.3      | 1.8      |
| 16   | 14.8       | 5.6      | 2.3      |

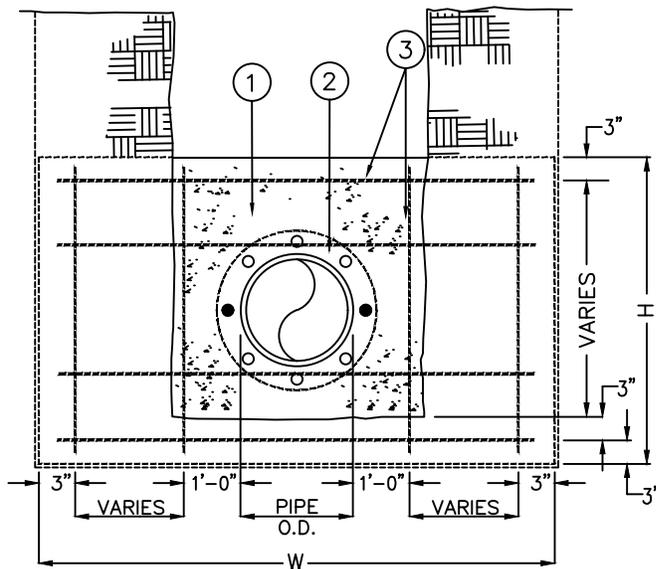
| FITTING<br>SIZE | ROD<br>SIZE | EMBED-<br>MENT |
|-----------------|-------------|----------------|
| 12" AND LESS    | #6          | 30"            |
| 14" - 16"       | #8          | 36"            |

VERTICAL  
THRUST BLOCKING

|                      |                    |
|----------------------|--------------------|
| CITY OF<br>GLADSTONE | DATE:<br>2017      |
|                      | DRAWING NO.<br>407 |
|                      | FILE NO.           |



TOP VIEW



FRONT VIEW

MATERIALS:

1. CONCRETE STRADDLE BLOCK.
2. UNI-FLANGE, SERIES 400C, CLASS 125
3. #4 REBAR EACH WAY, 12" O/C.
4. 3/4" ALL THREAD GALVANIZED STEEL TIE RODS, QUANTITY PER ENGINEER.
5. 3/4" GALVANIZED NUTS, 2-EACH SIDE
6. 3/4" GALVANIZED NUTS, 1-EACH SIDE
7. FLANGED FITTING

NOTES:

1. STRADDLE BLOCKS SHALL BE DESIGNED INDIVIDUALLY BY THE ENGINEER AND SHALL BE BASED ON THE FOLLOWING:
  - a.) 200 PSI WATER PRESSURE
  - b.) SOIL BRG. CAPACITY, STEEL SIZE AND SPACING BY THE ENGINEER.
2. BEARING AREA OF BLOCK SHALL BE AGAINST UNDISTURBED SOIL.
3. STRADDLE BLOCK SHALL HAVE A MINIMUM OF 18" COVER.
4. CONCRETE SHALL HAVE A MIN. 28-DAY STRENGTH OF 3300 PSI
5. ALL FITTINGS WITHIN THE CONC. SHALL BE WRAPPED IN PLASTIC OR BE COATED W/ KOPPER'S #50.
6. STRADDLE BLOCK HEIGHT(H) & WIDTH(W) SHALL BE DETERMINED BY THE ENGINEER.

**STANDARD  
STRADDLE BLOCK**

**CITY OF  
GLADSTONE**

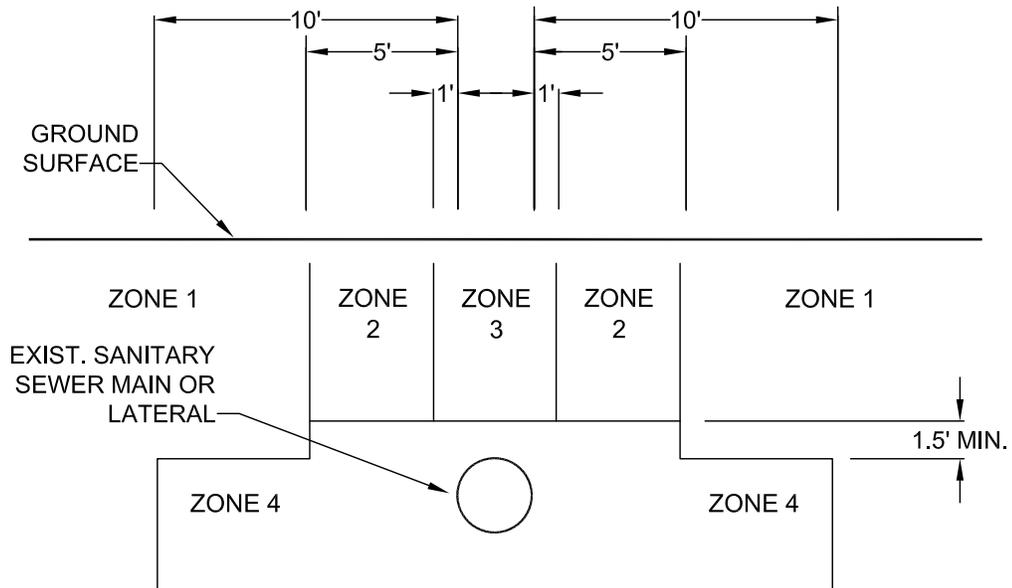
DATE: 2017

DRAWING NO. 408

FILE NO.

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THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



- ZONE 1: ONLY CROSSING RESTRICTIONS APPLY
- ZONE 2: CASE-BY-CASE DETERMINATION
- ZONE 3: PARALLEL WATERLINE PROHIBITED
- ZONE 4: PARALLEL WATERLINE PROHIBITED

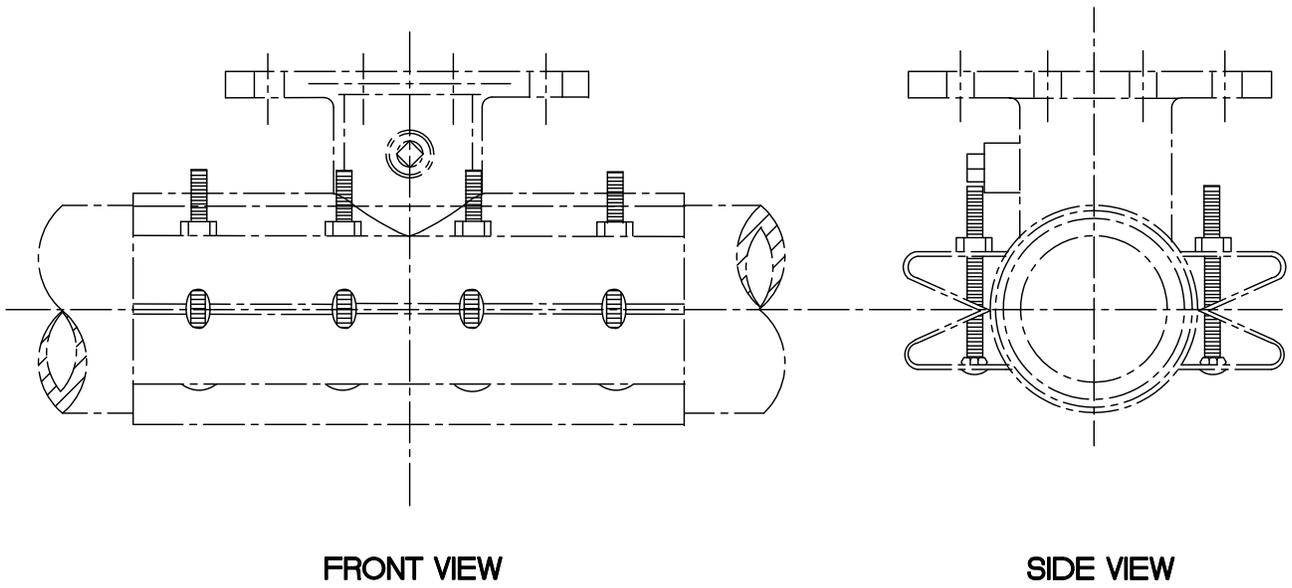
**NOTE:**

1. WHERE THE PROPOSED WATERLINE WILL BE INSTALLED PARALLEL TO AN EXISTING GRAVITY SANITARY SEWER MAIN OR LATERAL LINE, THE SEPARATION BETWEEN THE TWO SHALL BE AS INDICATED ABOVE.
2. CROSSINGS:
  - A. WHEREVER POSSIBLE, THE BOTTOM OF THE WATERLINE SHALL BE 1.5 FEET ABOVE THE TOP OF THE SEWER LINE, AND ONE FULL LENGTH OF WATERLINE SHALL BE CENTERED AT THE CROSSING.
  - B. WHERE IT IS NOT POSSIBLE FOR THE WATER LINE TO BE 1.5 FEET ABOVE THE SEWER LINE, OR THE WATERLINE PASSES UNDER THE SEWER LINE, THE EXISTING SEWER LINE SHALL BE EXPOSED FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE CROSSING, AND SHALL BE REPLACED WITH C-900 PVC WITH STRUCTURAL REQUIREMENT OF DR18 OR DR 25 OR CLASS 50 DUCTILE IRON PIPE AS APPROVED BY THE PUBLIC WORKS DIRECTOR , AND A LENGTH OF WATER PIPE SHALL BE CENTERED AT THE CROSSING, OR AS APPROVED BY THE PUBLIC WORKS DIRECTOR

|   |                           |
|---|---------------------------|
| <b>STANDARD<br/>SANITARY SEWER<br/>CROSSING</b> |                           |
| <b>CITY OF<br/>GLADSTONE</b>                    | DATE:<br><b>2017</b>      |
|   | DRAWING NO.<br><b>409</b> |
|   | FILE NO.                  |

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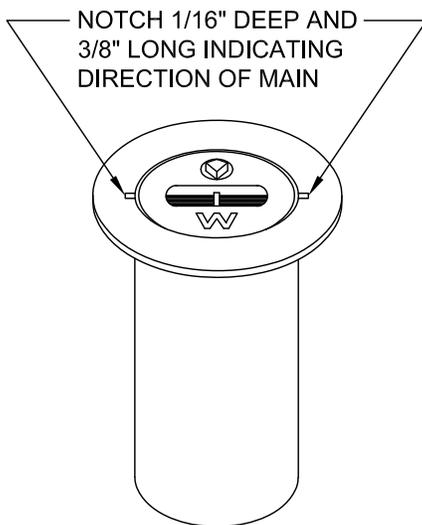
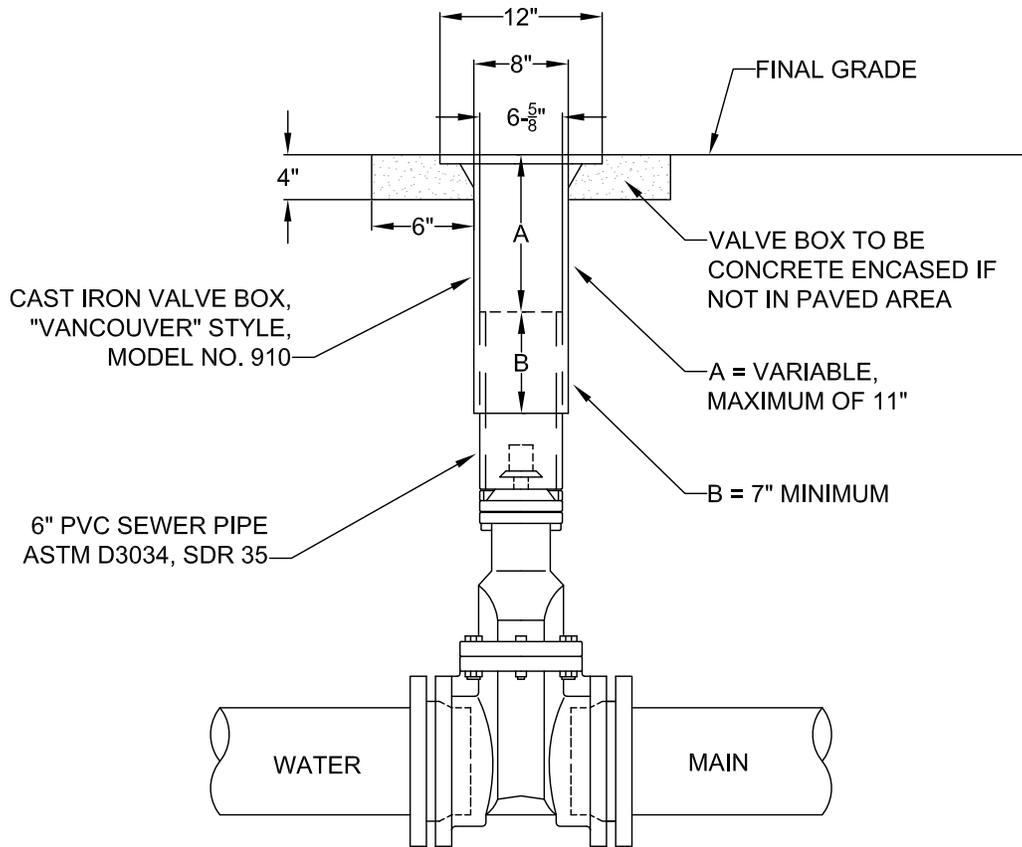
**NOTE:**

1. WATER MAIN SHALL BE CLEANED BEFORE ATTACHING SLEEVE.
2. SLEEVE AND VALVE SHALL BE PRESSURE TESTED BEFORE MAKING TAP.
3. PRESSURE TEST AND TAP SHALL BE MADE IN THE PRESENCE OF AN AUTHORIZED CITY REPRESENTATIVE.
4. PROPER TAPPING MACHINE SHALL BE USED TO MAKE TAP.
5. THRUST BLOCKING REQUIREMENTS SHALL BE DETERMINED BY THE ENGINEER OR PER DWG. 406.
6. TAP SHALL BE MADE NO CLOSER THAN 18 INCHES FROM THE NEAREST JOINT OR TAP.
7. SLEEVE AND VALVE SHALL BE WRAPPED WITH 8 MIL PLASTIC.
8. SLEEVES TO BE USED ARE JCM OR MUELLER STAINLESS STEEL TAPPING SLEEVES. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.
9. SLEEVE SHALL BE AS LEVEL AS POSSIBLE.
10. ALL BOLTS SHALL HAVE NEVER SIEZE ON THREADS.

|                              |                    |
|------------------------------|--------------------|
| <b>STANDARD WET TAP</b>      |                    |
| <b>CITY OF<br/>GLADSTONE</b> | DATE:<br>2017      |
|                              | DRAWING NO.<br>410 |
|                              | FILE NO.           |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

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"VANCOUVER"  
18" TALL VALVE BOX

**NOTE:**

1. VALVE BOXES SHALL BE CENTERED DIRECTLY OVER THE VALVE NUT IN A VERTICAL POSITION.
2. VALVE BOX TOP SHALL BE ADJUSTED TO MEET FINISHED GRADE.
3. PVC SHALL BE ONE CONTINUOUS PIECE-NO BELLS OR COUPLERS.
4. ON VALVES 8" AND LARGER, PVC SHALL BE NOTCHED OVER VALVE PACKING BOLTS SO PVC SITS ON BONNET.

## STANDARD VALVE BOX DETAIL

**CITY OF  
GLADSTONE**

DATE: 2017

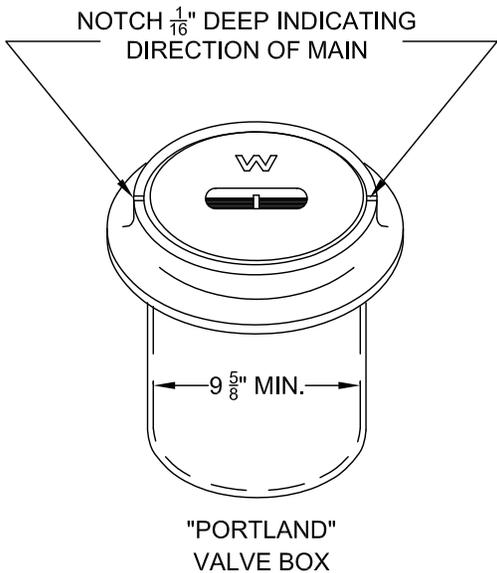
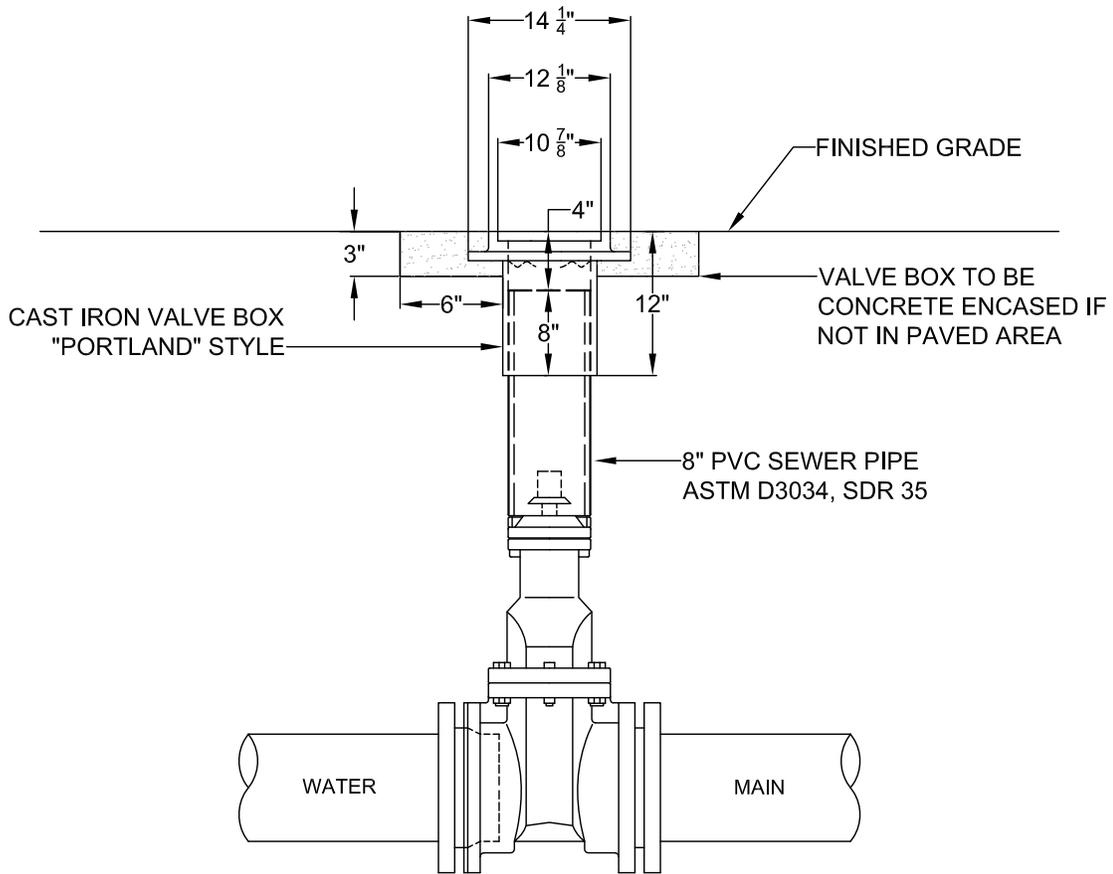
DRAWING NO.

411

FILE NO.

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



**NOTE:**

1. VALVE BOXES SHALL BE CENTERED DIRECTLY OVER THE VALVE NUT IN A VERTICAL POSITION.
2. VALVE BOX TOP SHALL BE ADJUSTED TO MEET FINISHED GRADE.
3. PVC SHALL BE ONE CONTINUOUS PIECE- NO BELLS OR COUPLERS.

**STANDARD VALVE BOX  
DETAIL FOR  
4" OR LARGER BLOW-OFF**

**CITY OF  
GLADSTONE**

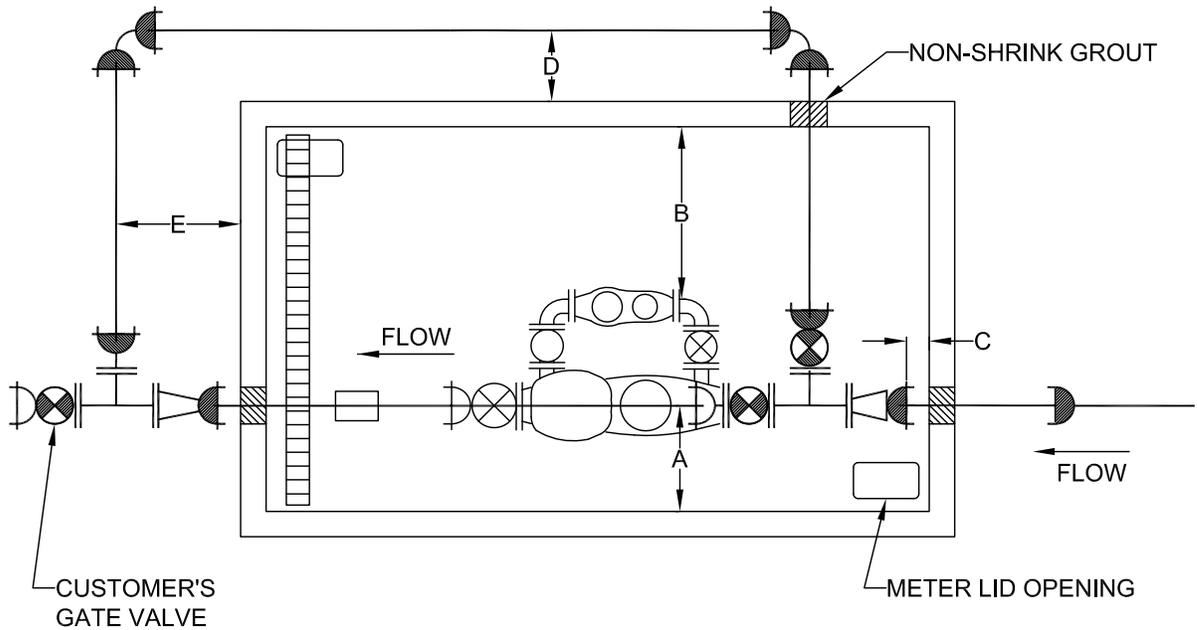
DATE:  
2017

DRAWING NO.  
412

FILE NO.

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



| METER              | 4 x 2  | 6 x 3  | 8 x 4  | 3" COMPOUND |
|--------------------|--------|--------|--------|-------------|
| INCOMING LINE SIZE | 6"     | 8"     | 10"    | 4"          |
| BY-PASS LINE SIZE  | 4"     | 4"     | 6"     | 2" CU       |
| UTILITY VAULT NO.  | 810-LA | 712-LA | 814-LA | 687-LA      |
| A                  | 24"    | 18"    | 18"    | 24"         |
| B                  | 36"    | 36"    | 36"    | 24"         |
| C                  | 12"    | 12"    | 12"    | 12"         |
| D                  | 24"    | 24"    | 26"    | 24"         |
| E                  | 24"    | 28"    | 30"    | 24"         |

- MECHANICAL JOINT WITH MEGALUG RETAINER GLAND (1100 SERIES)
- PIPE BELL WITH MEGALUG HARNESS (1100HD SERIES)

**STANDARD HERSEY  
MFM-MCT COMPOUND  
METER INSTALLATIONS  
4x2, 6x3, 8x4, 3"**

|                              |                  |
|------------------------------|------------------|
| <b>CITY OF<br/>GLADSTONE</b> | DATE: 2017       |
|                              | DRAWING NO. 413A |
|                              | FILE NO.         |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY

NOTE:

1. METER TO BE INSTALLED BY THE CITY AFTER PIPING IN VAULT HAS PASSED ALL TESTS.
2. ALL VAULT WALL OPENINGS SHALL BE SEALED WITH NON-SHRINK GROUT.
3. TOP OF VAULT SHALL BE A MINIMUM OF 12" ABOVE PROPOSED GRADE.
4. INSTALL 4" DRAIN FROM VAULT TO DAYLIGHT OR STORM DRAIN WITH A BACKWATER CHECK VALVE ACCESSIBLE FROM VAULT. COORDINATE DRAINAGE SYSTEM WITH BACKFLOW DEVICE VAULT INSTALLATION.
5. VAULT SHALL BE CLEAN AND FREE OF DEBRIS PRIOR TO METER INSTALLATION.
6. ALL MECHANICAL JOINTS SHALL HAVE MEGALUG RESTRAINER GLANDS AS SHOWN.
7. SERVICE LINE INTO VAULT SHALL HAVE A MINIMUM OF 40 FEET OF RESTRAINED JOINT PIPE BETWEEN DISTRIBUTION WATERLINE AND VAULT.
8. SERVICE LINE INTO VAULT SHALL BE COMPLETELY BACKFILLED WITH SELECT BACKFILL BETWEEN DISTRIBUTION LINE AND VAULT.
9. INSTALL A MINIMUM OF 3 PIPE SUPPORTS IN VAULT, GRINNELL NO. 264 OR ELCEN NO. 50.
10. PIPE TO BE A MINIMUM OF 12" AND A MAXIMUM OF 48" ABOVE THE FLOOR OF THE VAULT.
11. ONLY APPROVED RESILIENT SEAT GATE VALVES ARE ALLOWED.
12. ALL VAULT DOORS TO BE UTILITY VAULT NO. 3-332P WITH 2 METER LID OPENINGS.
13. VAULT SHALL BE EQUIPPED WITH AN APPROVED LADDER. IF VAULT DEPTH IS GREATER THAN 6 FT., AN APPROVED EXTENSION LADDER SHALL BE INSTALLED.
14. PIPE BETWEEN THE TWO TEES SHALL BE ONE CONTINUOUS PIECE - NO JOINTS.
15. ALL SERVICE PIPING WILL BE CHLORINATED AND TESTED TO CITY SPECIFICATIONS.

**STANDARD HERSEY  
MFM-MCT COMPOUND  
METER INSTALLATIONS  
4x2, 6x3, 8x4, 3"**

**CITY OF  
GLADSTONE**

DATE:  
2017

DRAWING NO.  
413B

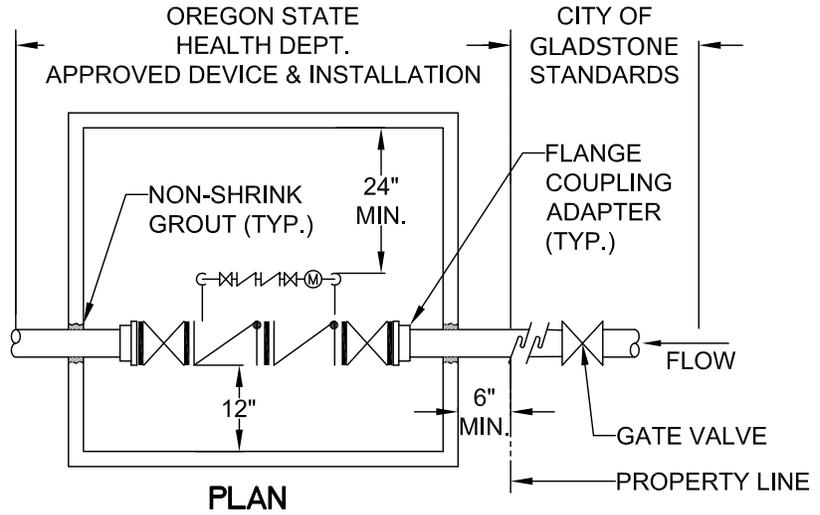
FILE NO.

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

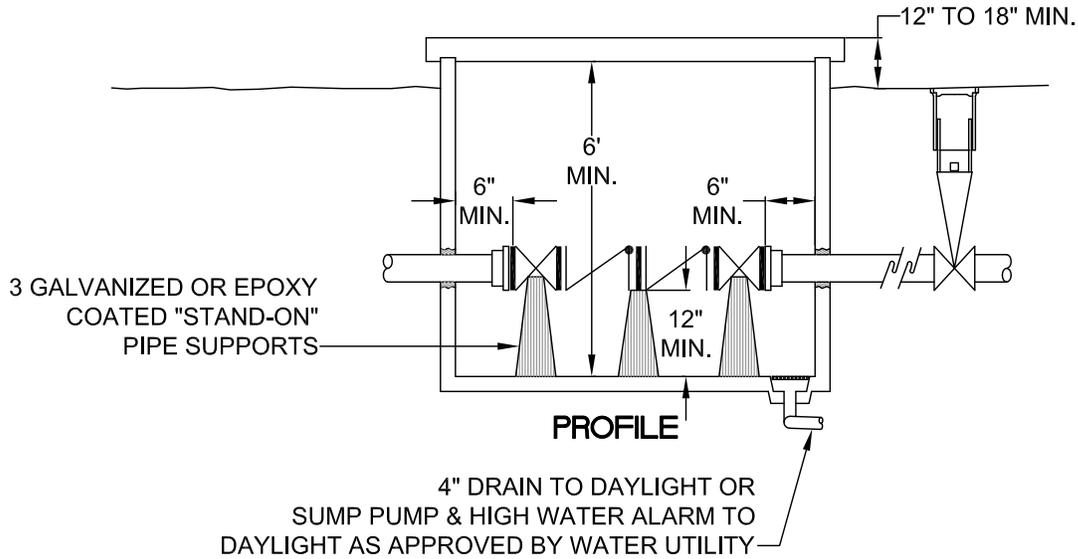
THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY

NO OTHER DEVICES SHALL BE INSTALLED IN D.D.C. VAULT.

LOCAL FIRE DEPT. AND PLUMBING CODE REQUIREMENTS APPLY TO ALL WATER FACILITIES PAST THE BACKFLOW VAULT.



**PLAN**



**PROFILE**

| D.D.C. SIZE | UTILITY VAULT for DOUBLE DETECTOR CHECK DEVICE |                   |
|-------------|--|-------------------|
|             | VAULT  | LID               |
| 3"          | 577-LA   | LID 577-TL2-332P  |
| 4"          | 577-LA   | LID 577-TL2-332P  |
| 6"          | 676-LA   | LID 676-TL2-332P  |
| 8"          | 687-LA   | LID 687-TL2-332P  |
| 10"         | 5106-LA  | LID 5106-TL3-332P |

## DOUBLE DETECTOR CHECK VAULT

|                              |                  |
|------------------------------|------------------|
| <b>CITY OF<br/>GLADSTONE</b> | DATE: 2017       |
|                              | DRAWING NO. 414A |
|                              | FILE NO.         |

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CITY OF GLADSTONE  
REQUIREMENTS FOR BACKFLOW PREVENTION DEVICE ASSEMBLY  
INSTALLATIONS ON 1 1/2" AND LARGER DOMESTIC SERVICES,  
IRRIGATION SERVICES AND FIRELINE SERVICES

An approved backflow prevention device assembly is required on all 1 1/2" and larger domestic meter size services, all irrigation and most fireline systems. A device assembly will be approved by the City of Gladstone only if the State of Oregon Health Division has approved its use as a backflow device assembly. The device shall be installed at the property line. When it is not possible to locate the device at the property line, the proposed location must be approved by the Public Works Director. A water service shall not be turned on until all required backflow prevention devices are installed, inspected, tested and registered with the City of Gladstone. Costs of all installations, including all costs of initial inspection and testing fees, shall be the responsibility of the customer. The customer will be responsible for all maintenance and testing of the device and vault when used.

CONSTRUCTION AND DESIGN STANDARDS FOR WATER FACILITIES

1. All pipe shall be installed to the City of Gladstone Public Works Standards.
2. The City of Gladstone will be furnished with three sets of plans and specifications. The plans shall be drawn at a scale of 1"=20' for plan check. One set of revised plans shall be returned to the engineer for revisions.
3. The contractor shall keep one set of approved plans at the construction site
4. The engineer shall furnish the City of Gladstone 48-hours notice prior to construction.
5. Water facilities shall be installed in the presence of the City of Gladstone Inspector. The inspector shall have access to the construction site at all times.
6. New mains shall be pressure tested and disinfected by the contractor and proven to be bacteriologically safe prior to placing new mains in service and prior to connection to City facilities.
7. Upon completion of the water facility, the engineer shall notify the City of Gladstone 48 hours in advance of desired, final inspection.

**BACKFLOW PREVENTION  
DEVICES**

**CITY OF  
GLADSTONE**

DATE:  
2017

DRAWING NO.  
414B

FILE NO.

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

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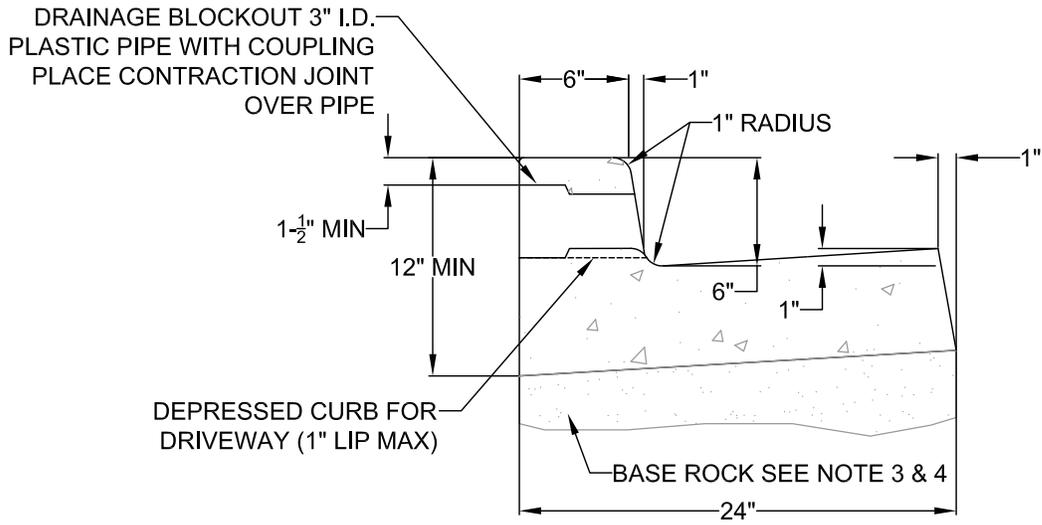
To ensure proper operation and accessibility of all backflow prevention device assemblies, the following requirements shall apply to installation of these devices, unless specifically approved by the Public Works Director

1. No part of the backflow prevention device shall be submerged in water or installed in a location subject to flooding. If installed in a vault or chamber, adequate drainage shall be provided by either drainage to daylight or by sump pump with high water alarm system. Test cocks shall be plugged. The plugs shall not be of dissimilar metals.
2. The device assembly must be protected from freezing and other severe weather conditions.
3. Only devices approved for vertical installation may be installed vertically.
4. The device assembly shall be readily accessible with adequate room for maintenance and testing. Devices 2 inches and smaller shall have at least a 12-inch clearance below and on both sides of the device assembly; and if located in a vault, the top of the device assembly shall be between 12 and 24 inches below grade.
5. All device assemblies larger than 2 inches shall have a 12-inch clearance on the backside, a 24-inch clearance on the test-cock side, and 12 inches below the device assemblies. Adequate clearance (3 inches minimum) must be maintained above O.S. & Y. gate-valve stem. Headroom of 6' 0" is required in vaults. Access to the device and to any vault or chamber shall remain clear at all times. An OR/OSHA approved chamber ladder that extends 3 ft. above surface of vault shall be installed.
6. No indicating valves are allowed on Double Check Device assemblies.
7. Only approved Double Check Detector Check Valve Assemblies are to be used for system containment on fire line services in the City of Gladstone. The meter on bypass assembly shall read in cubic feet.
8. If a Fire Line Flow, or Tamper Switch is installed, it must be connected to a monitored Fire Detection System approved by the Fire Marshal. No installation will modify the backflow device assembly or interfere with its operation or maintenance.
9. All backflow devices shall be installed at the service connection to the premises per Oregon Administrative Rules 333-061-070, Cross Connection Control Requirements, unless specifically approved by the Public Works Director (service connection - a location where the public water facilities end at or near the property line)
10. All pipe between main and device shall be restrained. Use Mega-Lug retainer glands on mj fittings and Field-Lok gaskets on bell joints. Uni-Flange adapters may be used in vaults.

|  |                  |
|--|------------------|
| <b>BACKFLOW PREVENTION<br/>DEVICES</b> |                  |
| <b>CITY OF<br/>GLADSTONE</b>           | DATE: 2017       |
|  | DRAWING NO. 414C |
|  | FILE NO.         |



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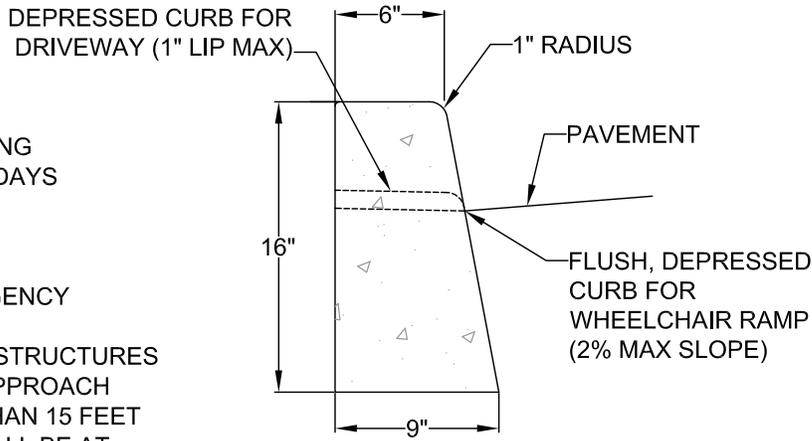


FLUSH, DEPRESSED CURB FOR WHEELCHAIR RAMP 2% MAX SLOPE

**TYPICAL CURB AND GUTTER**

**NOTE:**

1. CONCRETE SHALL HAVE A BREAKING STRENGTH OF 3300 PSI AFTER 28 DAYS
2. CONTRACTION JOINTS:
  - A) TO BE PROVIDED:
    - AT EACH POINT OF TANGENCY
    - AT EACH COLD JOINT
    - AT EACH SIDE OF INLET STRUCTURES
    - AT BOTH SIDES OF AN APPROACH
  - B) SPACING TO BE NOT MORE THAN 15 FEET
  - C) THE DEPTH OF THE JOINT SHALL BE AT LEAST 1/3 OF THE THICKNESS OF CONCRETE
  - D) EXPANSION JOINTS SHALL NOT BE USED
3. BASE ROCK - 1-1/2"-0", 95% COMPACTION PER AASHTO T-180  
ROCK SHALL BE TO SUBGRADE OF THE STREET SECTION OR 4" IN DEPTH, WHICHEVER IS GREATER
4. FULL DEPTH PREPARED ROCK SECTION SHALL EXTEND 1' HORIZONTALLY BEYOND BOTH SIDES OF CURB AND GUTTER
5. DRAINAGE BLOCK - 3" DIA. PLASTIC PIPE
  - A) DRAINAGE ACCESS THROUGH EXISTING CURBS SHALL BE DONE BY:
    - CORE DRILLING
    - VERTICAL SAWCUT OF CURB 24" EACH SIDE OF DRAIN AND RE-POURED TO FULL DEPTH OF CURB
6. STAMP TOP OF CURB WITH "W" AT WATER SERVICE CROSSING AND "S" AT SANITARY LATERAL CROSSING



**TYPICAL STRAIGHT CURB**

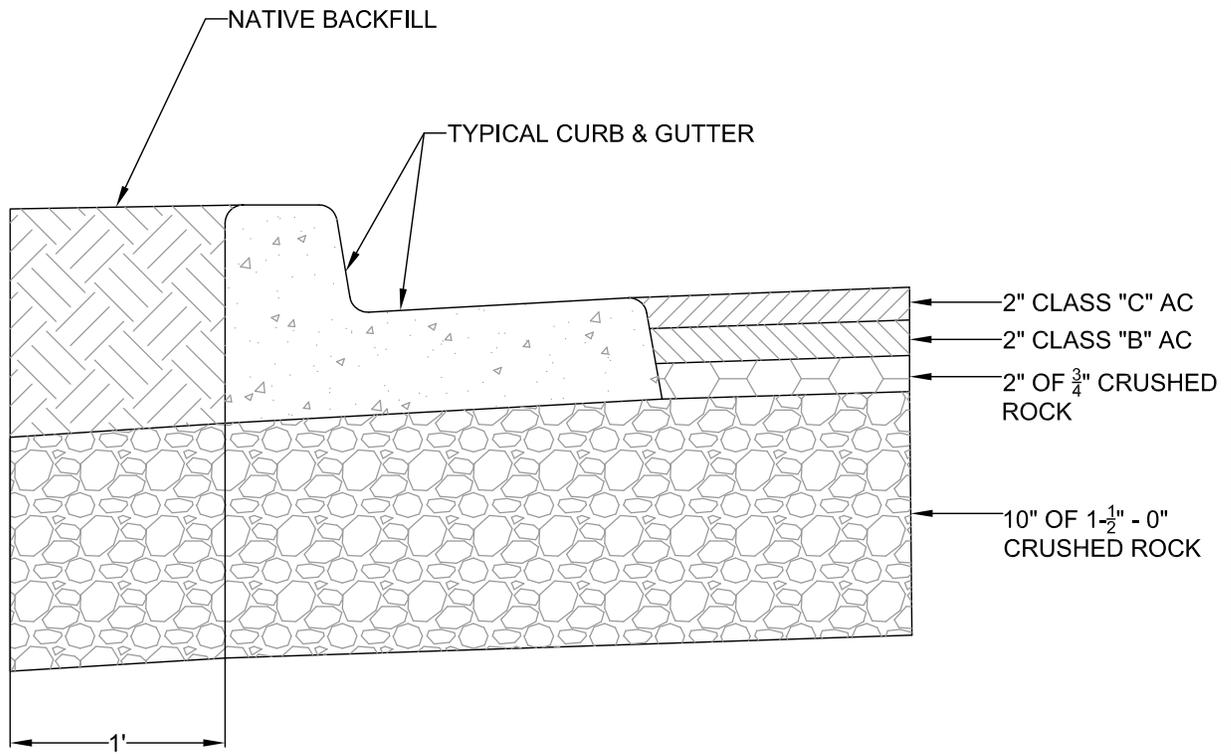
**TYPICAL CURBS**

|                              |                 |
|------------------------------|-----------------|
| <b>CITY OF<br/>GLADSTONE</b> | DATE: 2017      |
|                              | DRAWING NO. 501 |
|                              | FILE NO.        |

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



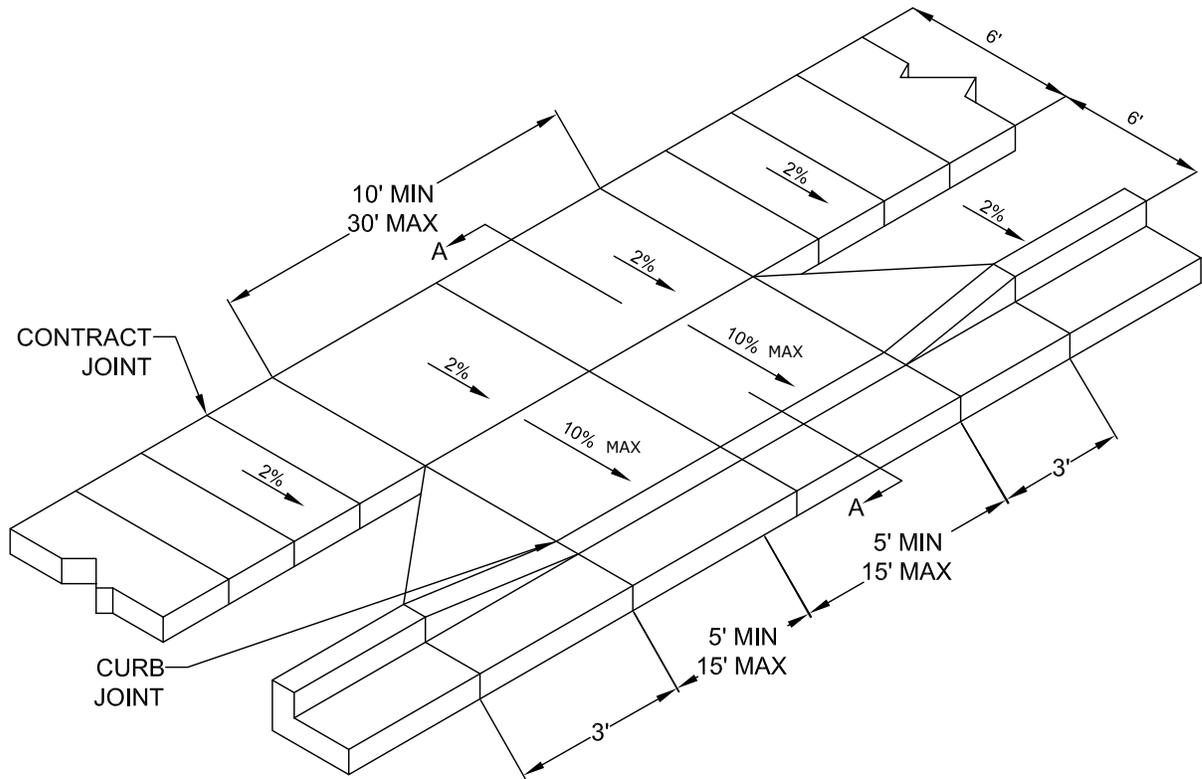
**NOTE:**

1. UNLESS OTHERWISE APPROVED BY THE PUBLIC WORKS DIRECTOR, STREETS SHALL BE PAVED TO FINAL GRADE USING 2 OR MORE LIFTS. FINAL LIFT SHALL BE PLACED ONLY AFTER ACCEPTANCE OF THE FIRST LIFT AT A TIME AS DIRECTED OR APPROVED BY THE PUBLIC WORKS DIRECTOR
2. BASE SHALL BE PREPARED 1 FOOT BEHIND CURB
3. SEE SECTION 5.0030 PAVEMENT DESIGN FOR ALL ROADWAYS CLASSIFIED COLLECTOR OR HIGHER

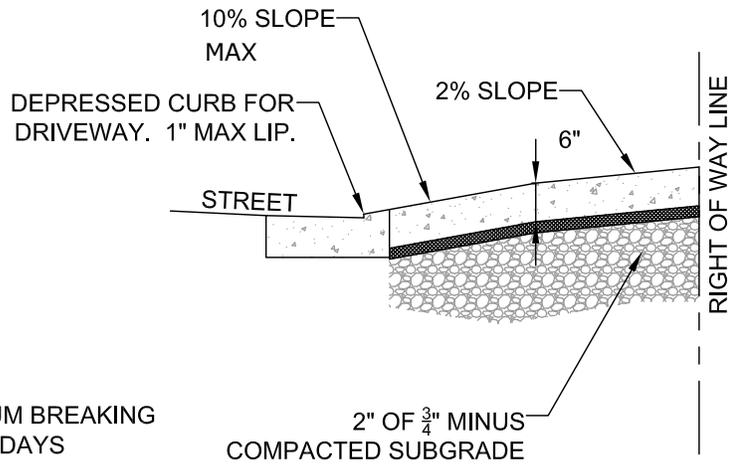
|   |                    |
|---|--------------------|
| <b>ALLEY, LOCAL AND<br/>NEIGHBORHOOD ROAD<br/>STRUCTURAL SECTIONS</b> |                    |
| <b>CITY OF<br/>GLADSTONE</b>  | DATE:<br>2017      |
|   | DRAWING NO.<br>502 |
|   | FILE NO.           |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



**SIDEWALK AWAY FROM CURB**



**SECTION A-A**

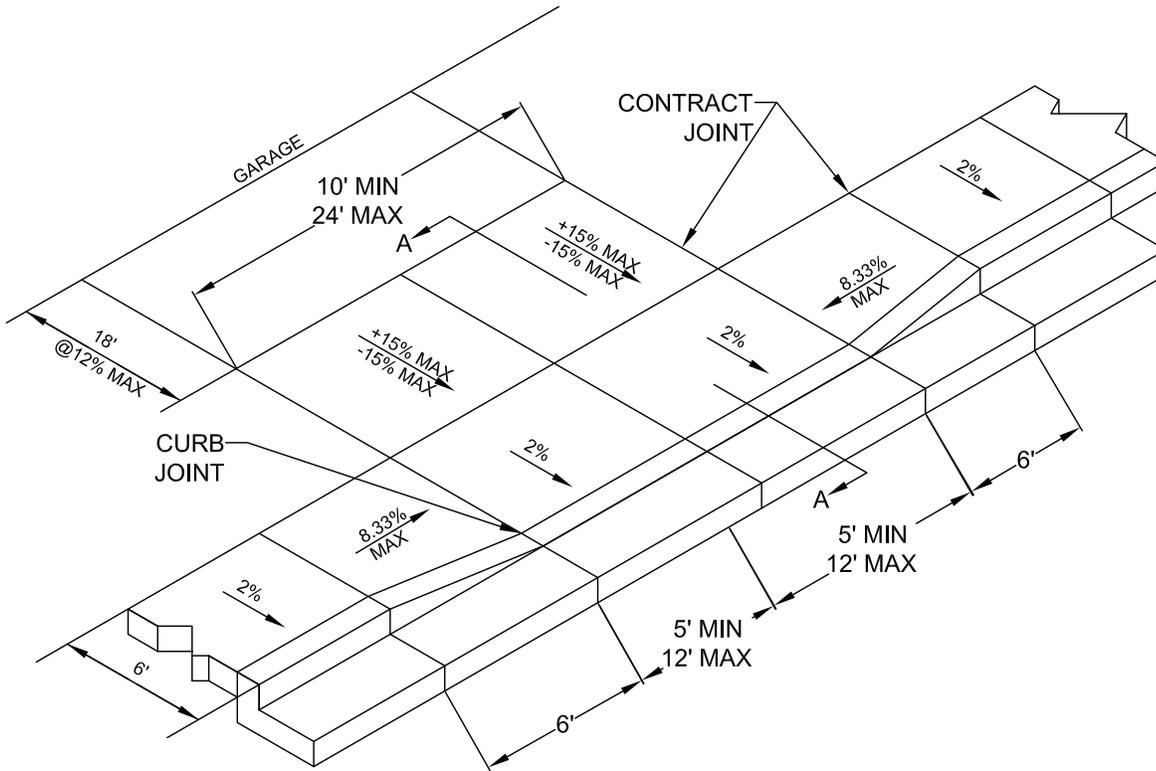
**NOTE:**

1. CONCRETE SHALL HAVE A MINIMUM BREAKING STRENGTH OF 3300 PSI AFTER 28 DAYS  
6 SACK MIX
2. CURB SHALL BE TROWELED JOINT WITH MIN. 1/2" RADIUS ALONG BACK OF CURB
3. DRIVEWAY SHALL BE A MINIMUM 6" THICK
4. DRIVEWAY CURB CUT SHALL COMPLY WITH THE CONDITIONS OF 5.0070, "WIDTH AND LOCATION OF CURB CUTS"
5. FOR REPLACEMENT OF EXISITNG APPROACH:
  - A. MUST MEET CURRENT ADA REQUIREMENTS TO GREATEST DEGREE POSSIBLE.
  - B. DAMAGED ROADWAY MUST BE SAWCUT AND REPAVED WITH CLASS C HOT MIX ASPHALT

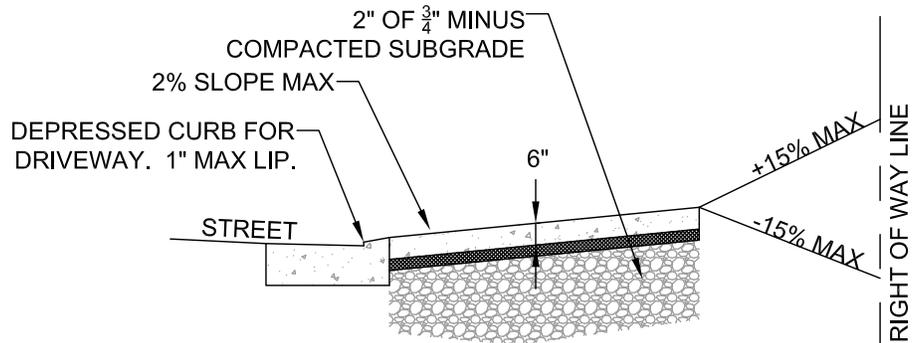
|  |                  |
|--|------------------|
| <b>RESIDENTIAL DRIVEWAY<br/>WITH<br/>SIDEWALK AWAY FROM CURB</b> |                  |
| <b>CITY OF<br/>GLADSTONE</b>                                     | DATE: 2017       |
|  | DRAWING NO. 503A |
|  | FILE NO.         |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



**SIDEWALK ADJACENT TO CURB**



**SECTION A-A**

**NOTE:**

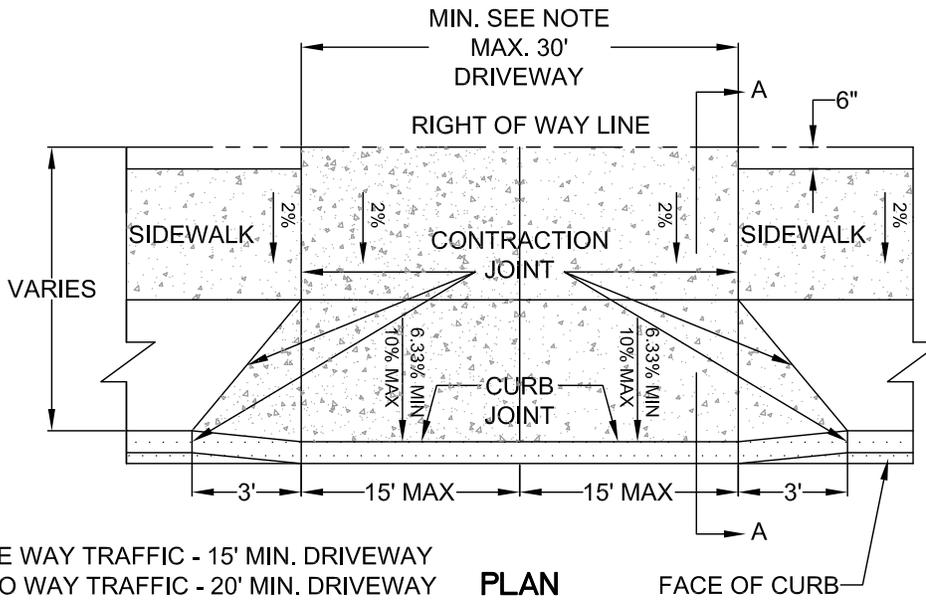
1. CONCRETE SHALL HAVE A MINIMUM BREAKING STRENGTH OF 3300 PSI AFTER 28 DAYS  
6 SACK MIX
2. CURB SHALL BE TROWELED JOINT WITH MIN. 1/2" RADIUS ALONG BACK OF CURB
3. DRIVEWAY SHALL BE A MINIMUM 6" THICK
4. DRIVEWAY CURB CUT SHALL COMPLY WITH THE CONDITIONS OF 5.0070, "WIDTH AND LOCATION OF CURB CUTS"
5. FOR REPLACEMENT OF EXISITNG APPROACH:

- A. MUST MEET CURRENT ADA REQUIREMENTS TO GREATEST DEGREE POSSIBLE
- B. DAMAGED ROADWAY MUST BE SAWCUT AND REPAVED WITH CLASS C HOT MIX ASPHALT

|  |                  |
|--|------------------|
| <b>RESIDENTIAL DRIVEWAY<br/>WITH<br/>SIDEWALK ADJACENT TO CURB</b> |                  |
| <b>CITY OF<br/>GLADSTONE</b>                                       | DATE: 2017       |
|  | DRAWING NO. 503B |
|  | FILE NO.         |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

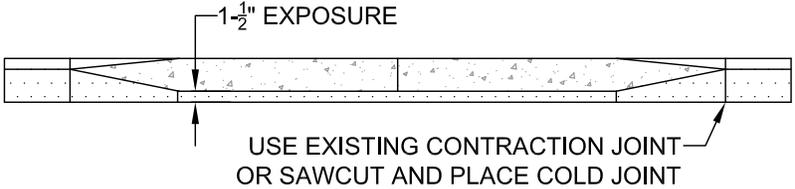
THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



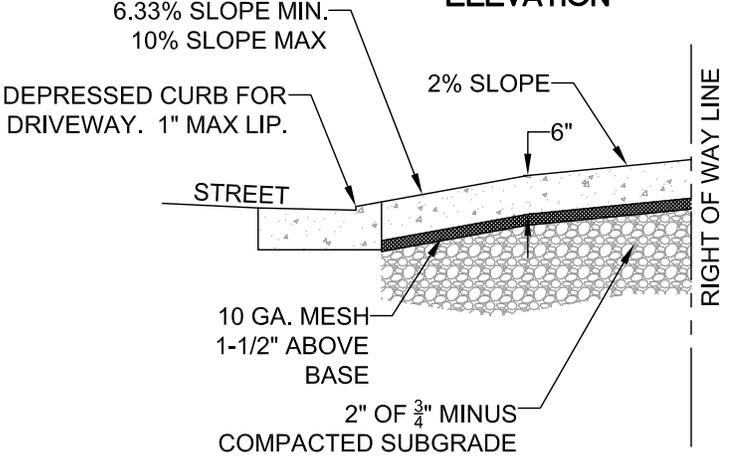
**NOTES:**

- ONE WAY TRAFFIC - 15' MIN. DRIVEWAY
- TWO WAY TRAFFIC - 20' MIN. DRIVEWAY

**PLAN**



**ELEVATION**



**SECTION A-A**

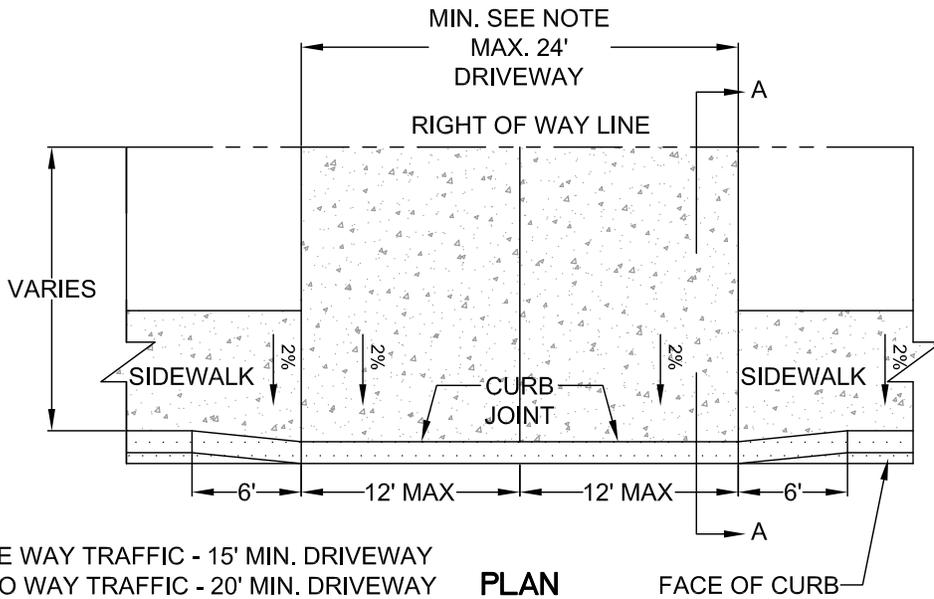
**NOTE:**

1. CONCRETE SHALL HAVE A MINIMUM BREAKING STRENGTH OF 4000 PSI AFTER 28 DAYS, 6 SACK MIX
2. CURB JOINT SHALL BE A TROWELED JOINT WITH A MIN. 1/2" RADIUS ALONG BACK OF CURB
3. DRIVEWAY SHALL BE A MINIMUM 6" THICK
4. DRIVEWAY CURB CUT SHALL COMPLY WITH THE CONDITIONS OF 5.0070, "WIDTH AND LOCATION OF CURB CUTS"

|   |                  |
|---|------------------|
| <b>COMMERCIAL DRIVEWAY<br/>WITH<br/>SIDEWALK AWAY FROM CURB</b> |                  |
| <b>CITY OF<br/>GLADSTONE</b>                                    | DATE: 2017       |
|   | DRAWING NO. 504A |
|   | FILE NO.         |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

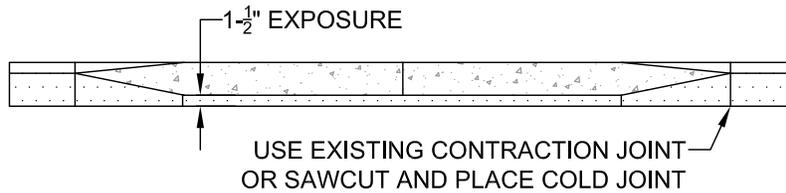
THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



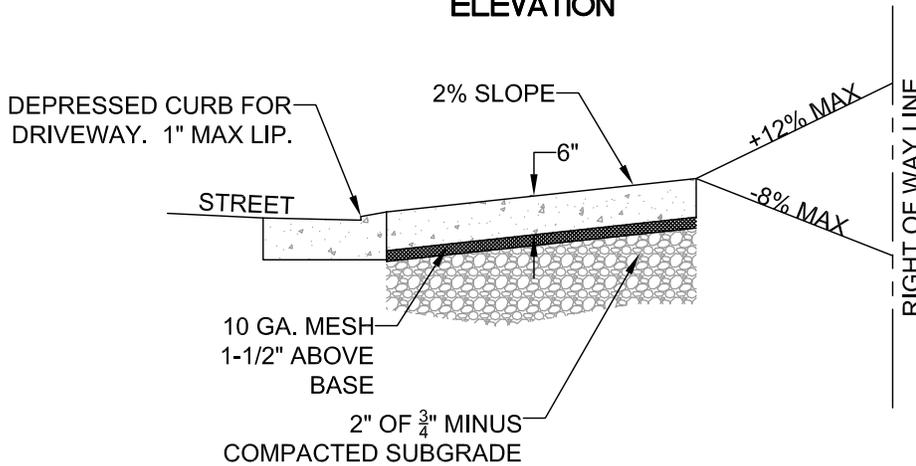
NOTE:

ONE WAY TRAFFIC - 15' MIN. DRIVEWAY  
 TWO WAY TRAFFIC - 20' MIN. DRIVEWAY

**PLAN**



**ELEVATION**

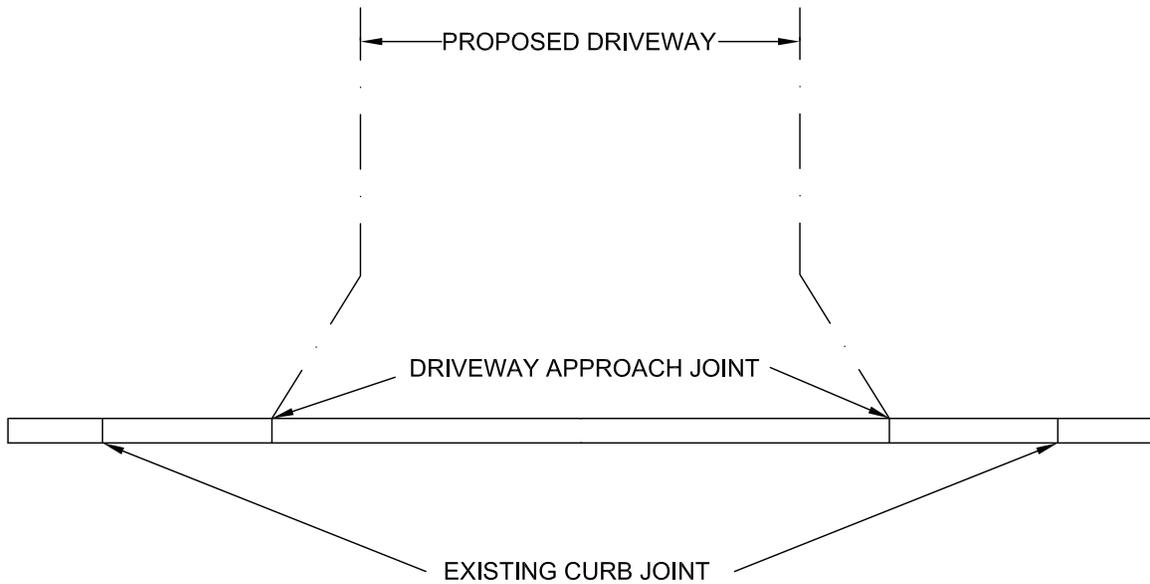


**SECTION A-A**

NOTE:

1. CONCRETE SHALL HAVE A MINIMUM BREAKING STRENGTH OF 4000 PSI AFTER 28 DAYS, 6 SACK MIX
2. CURB JOINT SHALL BE A TROWELED JOINT WITH A MIN. 1/2" RADIUS ALONG BACK OF CURB
3. DRIVEWAY SHALL BE A MINIMUM 6" THICK
4. DRIVEWAY CURB CUT SHALL COMPLY WITH THE CONDITIONS OF 5.0070, "WIDTH AND LOCATION OF CURB CUTS"

|   |                     |
|---|---------------------|
| <b>COMMERCIAL DRIVEWAY<br/>WITH<br/>SIDEWALK ADJACENT TO CURB</b> |                     |
| <b>CITY OF<br/>GLADSTONE</b>                                      | DATE:<br>2017       |
|   | DRAWING NO.<br>504B |
|   | FILE NO.            |



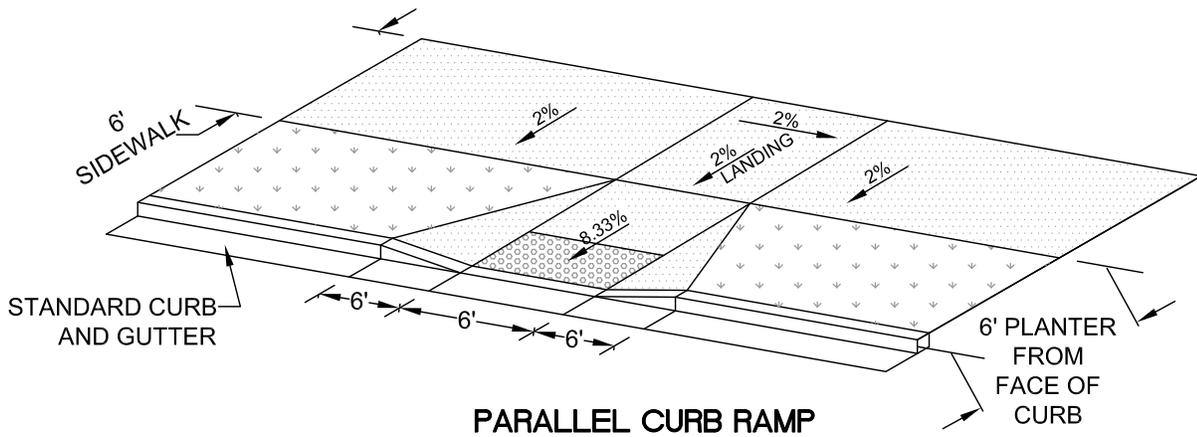
**NOTE:**

1. FOR THE INSTALLATION OF A DRIVEWAY APPROACH, THE REMOVAL OF CURB SHALL ADHERE TO THE FOLLOWING:
  - A. FOR STANDARD CURB, IF THE EXISTING CURB JOINT IS 8 FEET OR LESS FROM THE DRIVEWAY APPROACH JOINT, REMOVAL SHALL BE TO THE EXISTING CURB JOINT.
  - B. IF THE EXISTING CURB JOINT IS MORE THAN 8 FEET FROM THE DRIVEWAY APPROACH JOINT, OR IF THE AREA IS CURB & GUTTER, THEN THE TOP AND FACE OF THE CURB SHALL BE SAW-CUT TO A MINIMUM DEPTH OF 2" PRIOR TO REMOVAL.
  - C. THE REMOVAL OF CURB TO THE EXISTING CURB JOINT MAY BE ADJUSTED UPON THE CITY'S APPROVAL.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACEMENT OF CURB DAMAGED DUE TO CONSTRUCTION. AN INSPECTION OF THE CURBS SHALL BE PERFORMED PRIOR TO FINAL APPROVAL FOR OCCUPANCY. REMOVED SECTIONS CANNOT BE SMALLER THAN 4'.
3. IF CONTRACTOR ELECTS TO REMOVE ONLY THE CURB FACE OF CURB AND GUTTER INSTALLATIONS, REBAR DOWELING WILL BE REQUIRED. DOWELS SHALL BE PLACED AT 18"-24" ON CENTER PERPENDICULAR TO THE CURB ( AND BENT UP VERTICALLY INTO THE FUTURE FACE OF CURB) WITH AT LEAST ONE REBAR RUNNING PARALLEL TO THE CURB.

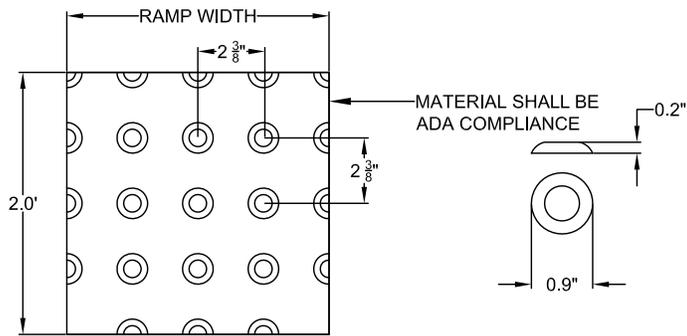
|   |                    |
|---|--------------------|
| <b>CURB REMOVAL AND<br/>DAMAGE INSPECTION</b> |                    |
| <b>CITY OF<br/>GLADSTONE</b>                  | DATE:<br>2017      |
|   | DRAWING NO.<br>505 |
|   | FILE NO.           |

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**PARALLEL CURB RAMP**



**RAMP TEXTURE PATTERN  
DETAIL**

**TRUNCATED DOME  
DETAIL**

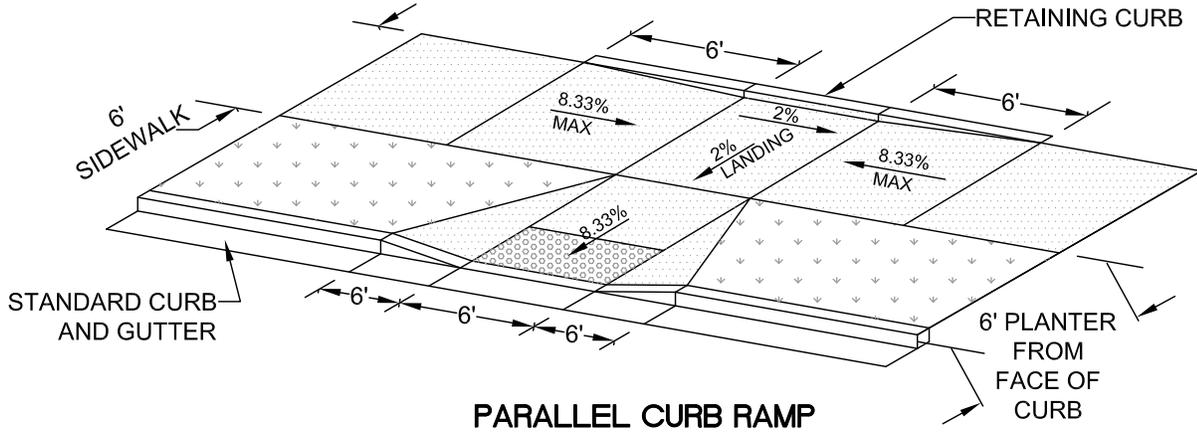
**NOTE:**

1. LANDING AT TOP OF RAMP SHALL NOT EXCEED 2% IN ANY DIRECTION AND SHALL BE A MINIMUM OF 60" x 60".
2. RAMP CROSS SLOPE SHALL NOT EXCEED 2% (AS MEASURED PERPENDICULAR TO PEDESTRIAN TRAFFIC FLOW).
3. TRUNCATED DOME MUST EXTEND THE FULL WIDTH OF THE RAMP AND COVER THE FIRST 2 FEET OF THE RAMP CLOSEST TO THE STREET.
4. TRANSITIONS FROM THE RAMP TO THE WALKWAY, GUTTER, AND STREET MUST BE FLUSH (LEVEL) AND FREE OF ABRUPT LEVEL CHANGES.
5. THE GUTTER OR ADJACENT ROADWAY MUST HAVE A SLOPE OF NO MORE THAN 5 PERCENT (1:20) TOWARD THE RAMP.
6. FLARED SIDES ("WING") OF THE CURB RAMP SHALL NOT EXCEED 10% IN SLOPE (8.33% IF PEDESTRIAN TRAVEL IS REQUIRED OVER THEM PER ADA STANDARDS - I.E. IF MINIMUM 48" x 48" (FOR EXISTING SITES ONLY) LANDING IS NOT PROVIDED AT TOP OF RAMP).
7. CONCRETE STRENGTH SHALL BE 3300 PSI.
8. PLACE CONTRACTION JOINTS AS SHOWN ABOVE.
9. NO ABOVE GROUND UTILITIES ARE PERMITTED WITHIN RAMP AREA.

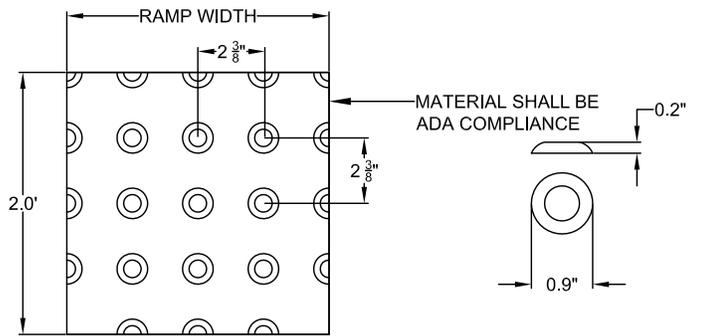
|                              |                     |
|------------------------------|---------------------|
| <b>PARALLEL CURB RAMP</b>    |                     |
| <b>CITY OF<br/>GLADSTONE</b> | DATE:<br>2017       |
|                              | DRAWING NO.<br>506A |
|                              | FILE NO.            |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

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**PARALLEL CURB RAMP**



**RAMP TEXTURE PATTERN  
DETAIL**

**TRUNCATED DOME  
DETAIL**

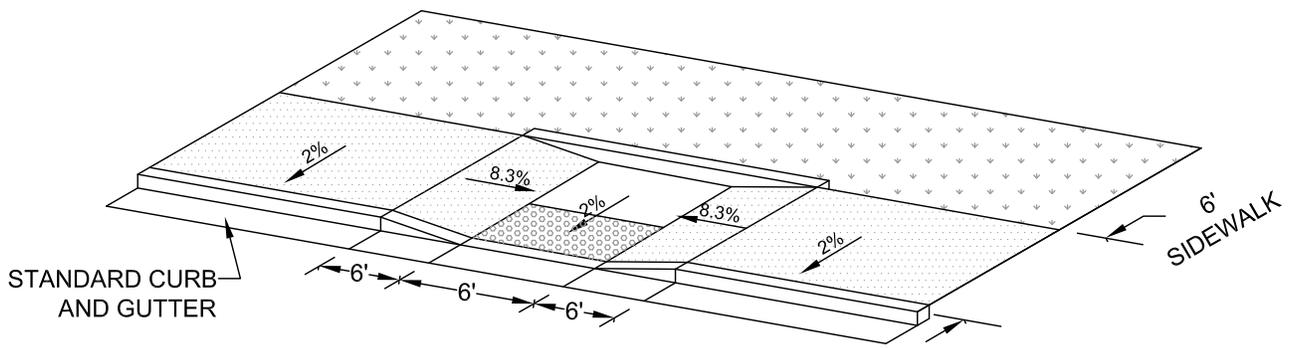
**NOTE:**

1. LANDING AT TOP OF RAMP SHALL NOT EXCEED 2% IN ANY DIRECTION AND SHALL BE A MINIMUM OF 60" x 60".
2. RAMP CROSS SLOPE SHALL NOT EXCEED 2% (AS MEASURED PERPENDICULAR TO PEDESTRIAN TRAFFIC FLOW).
3. TRUNCATED DOME MUST EXTEND THE FULL WIDTH OF THE RAMP AND COVER THE FIRST 2 FEET OF THE RAMP CLOSEST TO THE STREET.
4. TRANSITIONS FROM THE RAMP TO THE WALKWAY, GUTTER, AND STREET MUST BE FLUSH (LEVEL) AND FREE OF ABRUPT LEVEL CHANGES.
5. THE GUTTER OR ADJACENT ROADWAY MUST HAVE A SLOPE OF NO MORE THAN 5 PERCENT (1:20) TOWARD THE RAMP.
6. FLARED SIDES ("WING") OF THE CURB RAMP SHALL NOT EXCEED 10% IN SLOPE (8.33% IF PEDESTRIAN TRAVEL IS REQUIRED OVER THEM PER ADA STANDARDS - I.E. IF MINIMUM 48" x 48" (FOR EXISTING SITES ONLY) LANDING IS NOT PROVIDED AT TOP OF RAMP).
7. CONCRETE STRENGTH SHALL BE 3300 PSI.
8. PLACE CONTRACTION JOINTS AS SHOWN ABOVE.
9. NO ABOVE GROUND UTILITIES ARE PERMITTED WITHIN RAMP AREA.

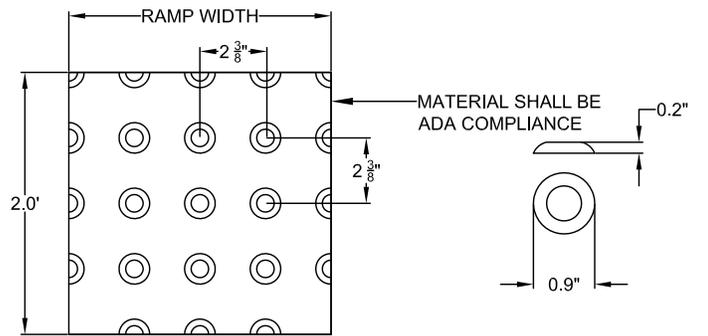
|   |                            |
|---|----------------------------|
| <b>PARALLEL CURB RAMP<br/>WITH<br/>RETAINING CURB</b> |                            |
| <b>CITY OF<br/>GLADSTONE</b>                          | DATE: 2017                 |
|   | DRAWING NO.<br><b>506B</b> |
|   | FILE NO.                   |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

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**PARALLEL CURB RAMP**



**RAMP TEXTURE PATTERN  
DETAIL**

**TRUNCATED DOME  
DETAIL**

**NOTE:**

1. LANDING AT TOP OF RAMP SHALL NOT EXCEED 2% IN ANY DIRECTION AND SHALL BE A MINIMUM OF 60" x 60".
2. RAMP CROSS SLOPE SHALL NOT EXCEED 2% (AS MEASURED PERPENDICULAR TO PEDESTRIAN TRAFFIC FLOW).
3. TRUNCATED DOME MUST EXTEND THE FULL WIDTH OF THE RAMP AND COVER THE FIRST 2 FEET OF THE RAMP CLOSEST TO THE STREET.
4. TRANSITIONS FROM THE RAMP TO THE WALKWAY, GUTTER, AND STREET MUST BE FLUSH (LEVEL) AND FREE OF ABRUPT LEVEL CHANGES.
5. THE GUTTER OR ADJACENT ROADWAY MUST HAVE A SLOPE OF NO MORE THAN 5 PERCENT (1:20) TOWARD THE RAMP.
6. FLARED SIDES ("WING") OF THE CURB RAMP SHALL NOT EXCEED 10% IN SLOPE (8.33% IF PEDESTRIAN TRAVEL IS REQUIRED OVER THEM PER ADA STANDARDS - I.E. IF MINIMUM 48" x 48" (FOR EXISTING SITES ONLY) LANDING IS NOT PROVIDED AT TOP OF RAMP).
7. CONCRETE STRENGTH SHALL BE 3300 PSI.
8. PLACE CONTRACTION JOINTS AS SHOWN ABOVE.
9. NO ABOVE GROUND UTILITIES ARE PERMITTED WITHIN RAMP AREA.

**PARALLEL CURB RAMP**

**CURB TIGHT**

**CITY OF  
GLADSTONE**

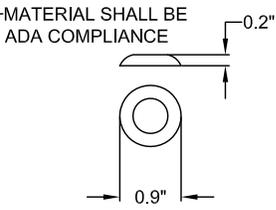
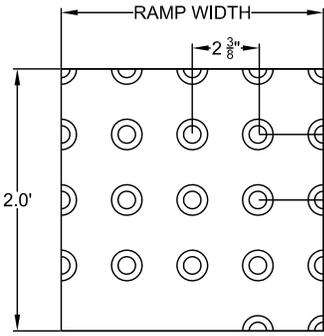
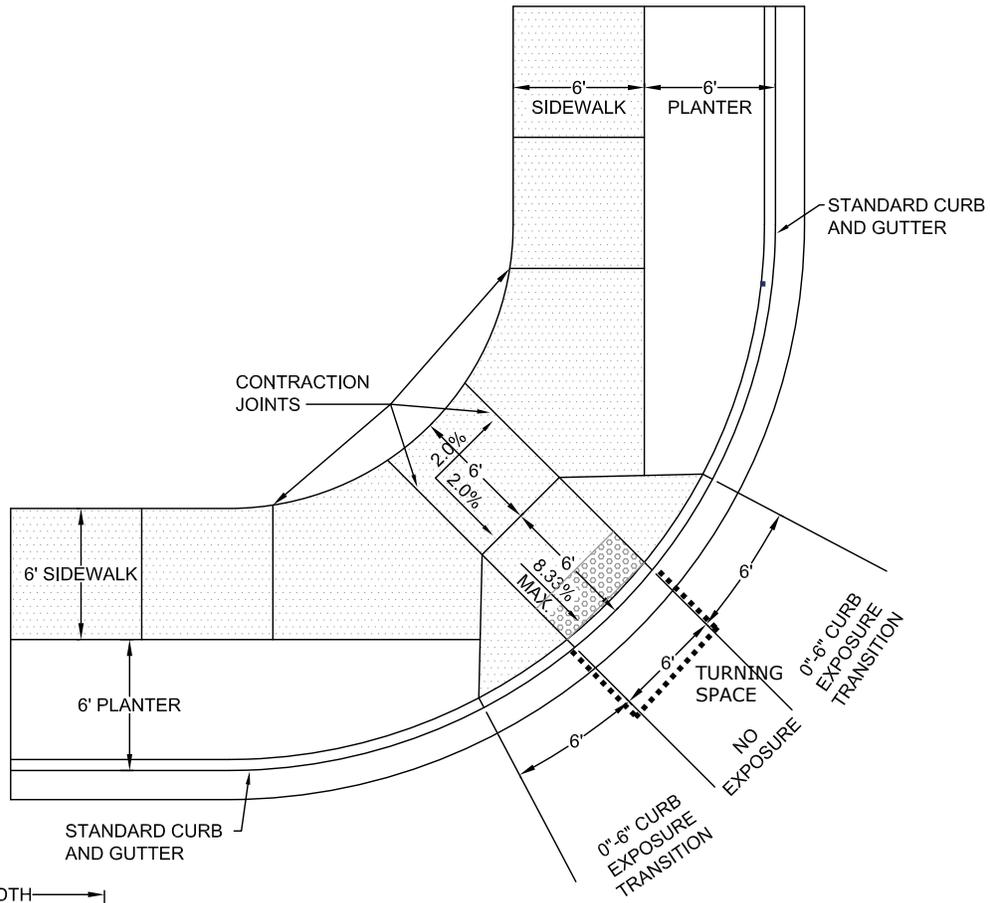
DATE:  
2017

DRAWING NO.  
506C

FILE NO.

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



**RAMP TEXTURE PATTERN**      **TRUNCATED DOME**  
**DETAIL**                                      **DETAIL**

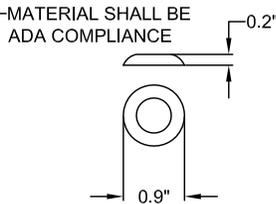
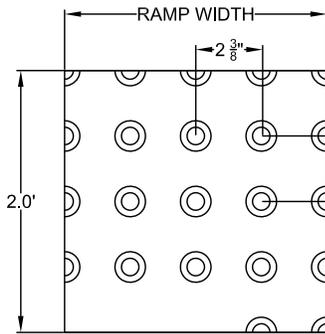
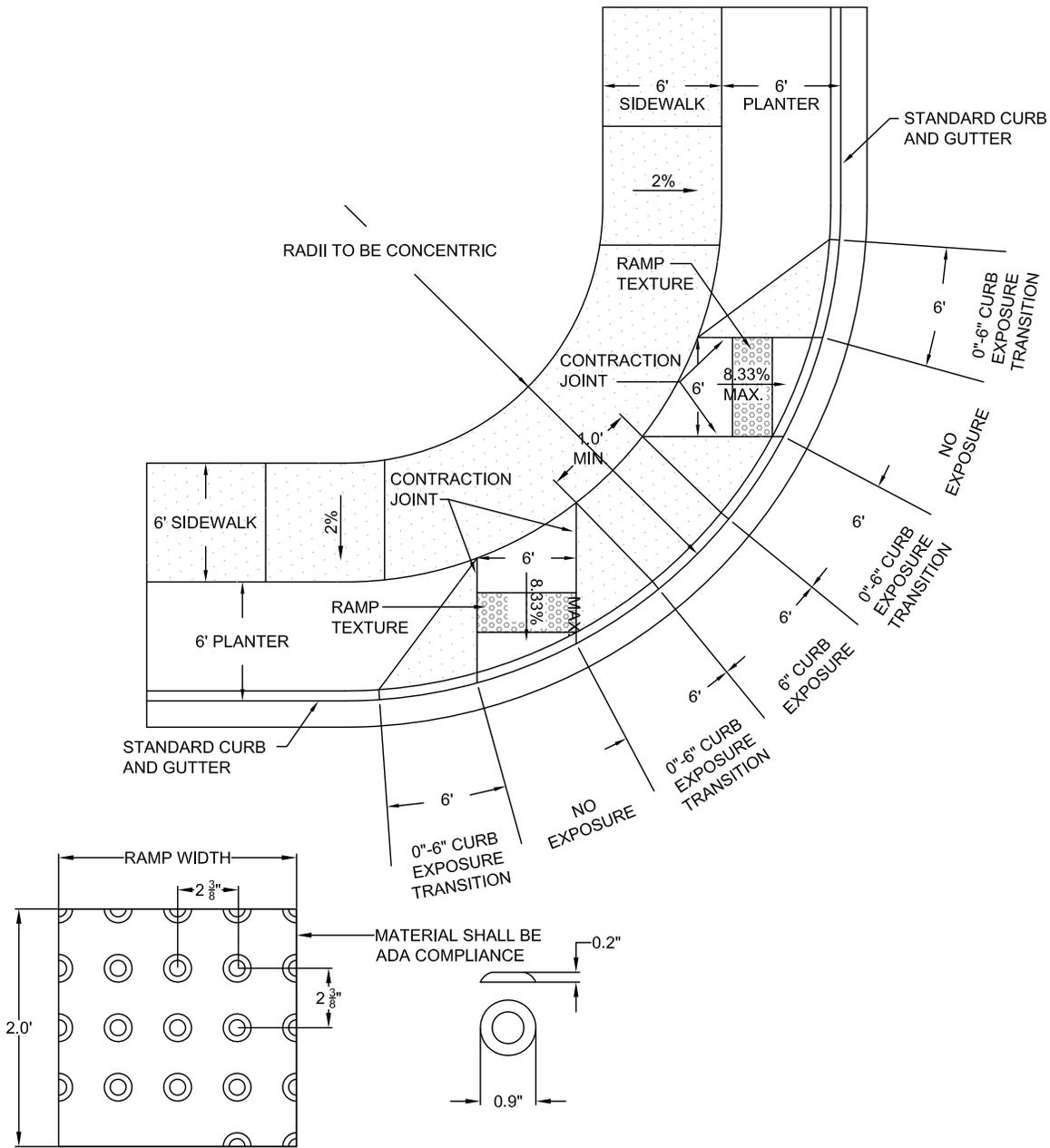
**NOTE:**

1. LANDING AT TOP OF RAMP SHALL NOT EXCEED 2% IN ANY DIRECTION AND SHALL BE A MINIMUM OF 60" x 60".
2. RAMP CROSS SLOPE SHALL NOT EXCEED 2% (AS MEASURED PERPENDICULAR TO PEDESTRIAN TRAFFIC FLOW).
3. TRUNCATED DOME MUST EXTEND THE FULL WIDTH OF THE RAMP AND COVER THE FIRST 2 FEET OF THE RAMP CLOSEST TO THE STREET.
4. TRANSITIONS FROM THE RAMP TO THE WALKWAY, GUTTER, AND STREET MUST BE FLUSH (LEVEL) AND FREE OF ABRUPT LEVEL CHANGES.
5. THE GUTTER OR ADJACENT ROADWAY MUST HAVE A SLOPE OF NO MORE THAN 2 PERCENT (1:50) TOWARD THE RAMP, TURNING SPACE
6. FLARED SIDES ("WING") OF THE CURB RAMP SHALL NOT EXCEED 10% IN SLOPE (8.33% IF PEDESTRIAN TRAVEL IS REQUIRED OVER THEM PER ADA STANDARDS - I.E. IF MINIMUM 48" x 48" (FOR EXISTING SITES ONLY) LANDING IS NOT PROVIDED AT TOP OF RAMP).
7. CONCRETE STRENGTH SHALL BE 3300 PSI.
8. PLACE CONTRACTION JOINTS AS SHOWN ABOVE.
9. NO ABOVE GROUND UTILITIES ARE PERMITTED WITHIN RAMP AREA.
10. WHEN EITHER OPPOSING CURB RAMP HAS AN EXISTING TWIN RAMP, USE DETAIL WL-507B.

|   |                     |
|---|---------------------|
| <b>SINGLE CURB RAMP<br/>(ALLOWED WITH CITY<br/>APPROVAL ONLY)</b> |                     |
| <b>CITY OF<br/>GLADSTONE</b>                                      | DATE:<br>2017       |
|   | DRAWING NO.<br>507A |
|   | FILE NO.            |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

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**RAMP TEXTURE PATTERN  
DETAIL**

**TRUNCATED DOME  
DETAIL**

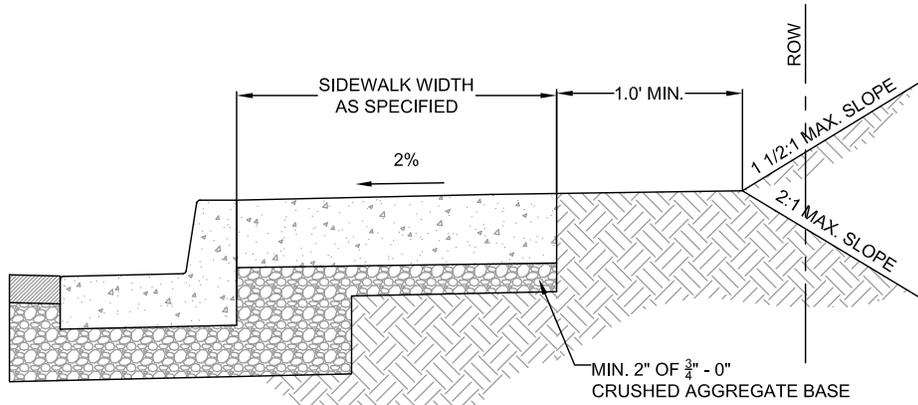
**NOTE:**

1. LANDING AT TOP OF RAMP SHALL NOT EXCEED 2% IN ANY DIRECTION AND SHALL BE A MINIMUM OF 60" x 60".
2. RAMP CROSS SLOPE SHALL NOT EXCEED 2% (AS MEASURED PERPENDICULAR TO PEDESTRIAN TRAFFIC FLOW).
3. TRUNCATED DOME MUST EXTEND THE FULL WIDTH OF THE RAMP AND COVER THE FIRST 2 FEET OF THE RAMP CLOSEST TO THE STREET.
4. TRANSITIONS FROM THE RAMP TO THE WALKWAY, GUTTER, AND STREET MUST BE FLUSH (LEVEL) AND FREE OF ABRUPT LEVEL CHANGES.
5. THE GUTTER OR ADJACENT ROADWAY MUST HAVE A SLOPE OF NO MORE THAN 5 PERCENT (1:20) TOWARD THE RAMP.
6. FLARED SIDES ("WING") OF THE CURB RAMP SHALL NOT EXCEED 10% IN SLOPE (8.33% IF PEDESTRIAN TRAVEL IS REQUIRED OVER THEM PER ADA STANDARDS - I.E. IF MINIMUM 48" x 48" (FOR EXISTING SITES ONLY) LANDING IS NOT PROVIDED AT TOP OF RAMP).
7. CONCRETE STRENGTH SHALL BE 3300 PSI.
8. PLACE CONTRACTION JOINTS AS SHOWN ABOVE.
9. NO ABOVE GROUND UTILITIES ARE PERMITTED WITHIN RAMP AREA.
10. WHEN EITHER OPPOSING CURB RAMP HAS AN EXISTING TWIN RAMP, USE DETAIL 507B.

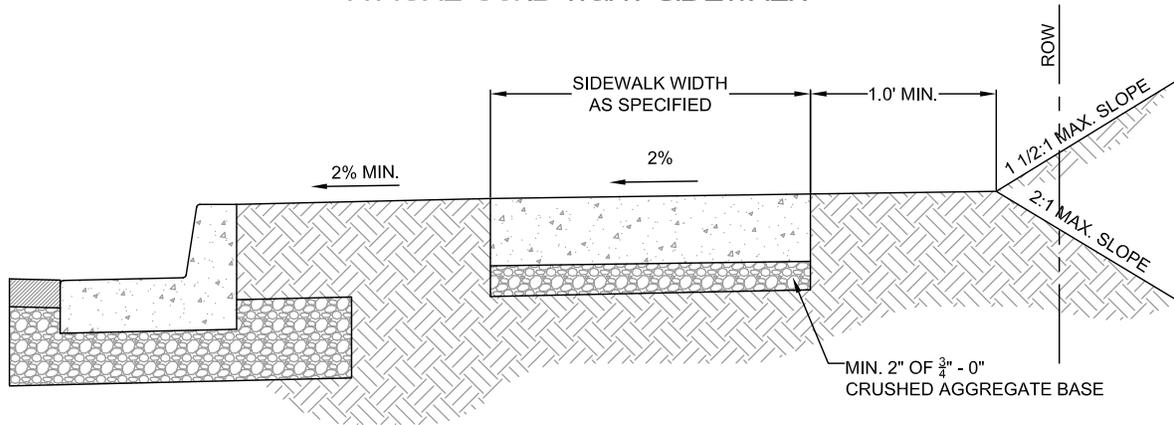
|                                |                     |
|--------------------------------|---------------------|
| <h2>TWIN CURB RAMP</h2>        |                     |
| <h3>CITY OF<br/>GLADSTONE</h3> | DATE:<br>2017       |
|                                | DRAWING NO.<br>507B |
|                                | FILE NO.            |

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**TYPICAL CURB TIGHT SIDEWALK**



**SIDEWALK AWAY FROM CURB**

**NOTE:**

1. CONCRETE SHALL BE 3300 PSI AT 28 DAYS.
2. PANEL LENGTHS SHALL BE EQUAL TO THE SIDEWALK WIDTH, BUT MAY BE ADJUSTED WITH THE PUBLIC WORKS DIRECTORS APPROVAL.
3. CONTRACTION JOINTS (1/3RD OF THE THICKNESS OF CONCRETE) SHALL BE PLACED EVERY THIRD PANEL, WITH A MAX. SPACING OF 15 FEET. JOINTS SHALL ALSO BE PLACED AT THE SIDES OF DRIVEWAY APPROACHES, UTILITY VAULTS, AND WHEELCHAIR RAMPS.
4. A CURING COMPOUND SHALL BE USED. WHITE REFLECTIVE SHEETING SHALL BE USED IN CASE OF RAIN.
5. FOR SIDEWALKS ADJACENT TO THE CURB AND POURED AT THE SAME TIME AS THE CURB, THE JOINT BETWEEN THEM SHALL BE A TROWELED JOINT WITH A MIN. 1/2" RADIUS.
6. THE SIDEWALK SHALL HAVE A MIN. THICKNESS OF 6" IF THE SIDEWALK IS INTENDED AS A PORTION OF THE DRIVEWAY. OTHERWISE, THE SIDEWALK SHALL HAVE A MIN. THICKNESS OF 4".
7. DRAIN BLOCKOUTS IN THE CURB SHALL BE EXTENDED TO THE BACK OF THE SIDEWALK WITH A 3" DIAMETER PLASTIC PIPE AT A 2% SLOPE. A CONTRACTION JOINT SHALL BE PLACED OVER THE PIPE.

**CONCRETE SIDEWALK CROSS SECTION**

**CITY OF  
GLADSTONE**

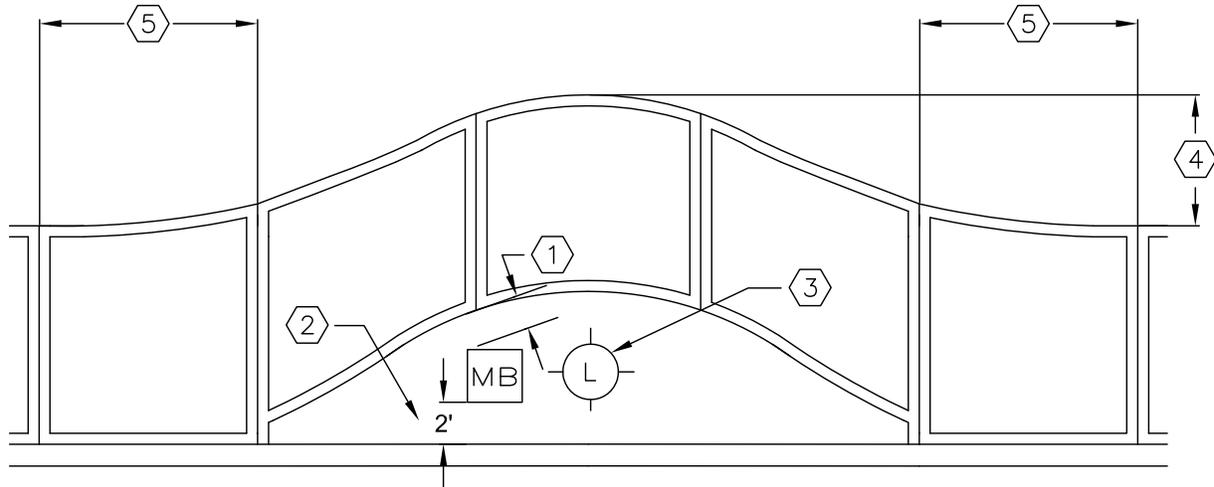
DATE:  
2017

DRAWING NO.  
508

FILE NO.

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



**SPECIFICATIONS:**

- ① MIN. 3" CLEARANCE BETWEEN FACE OF SIDEWALK & CLOSEST POINT ON BACK OF MAILBOX.
- ② CENTER OF MAILBOX SHALL BE 2' FROM FACE OF CURB.
- ③ LIGHT POLES & FIRE HYDRANTS ARE TO BE CENTERED IN ISLAND.
- ④ 2' FOR FIRE HYDRANTS & LIGHTPOLES  
3' FOR MAILBOXES
- ⑤ THE REVERSE CURVE SHALL EXTEND 5' BEYOND THE RE-ROUTED AREA.

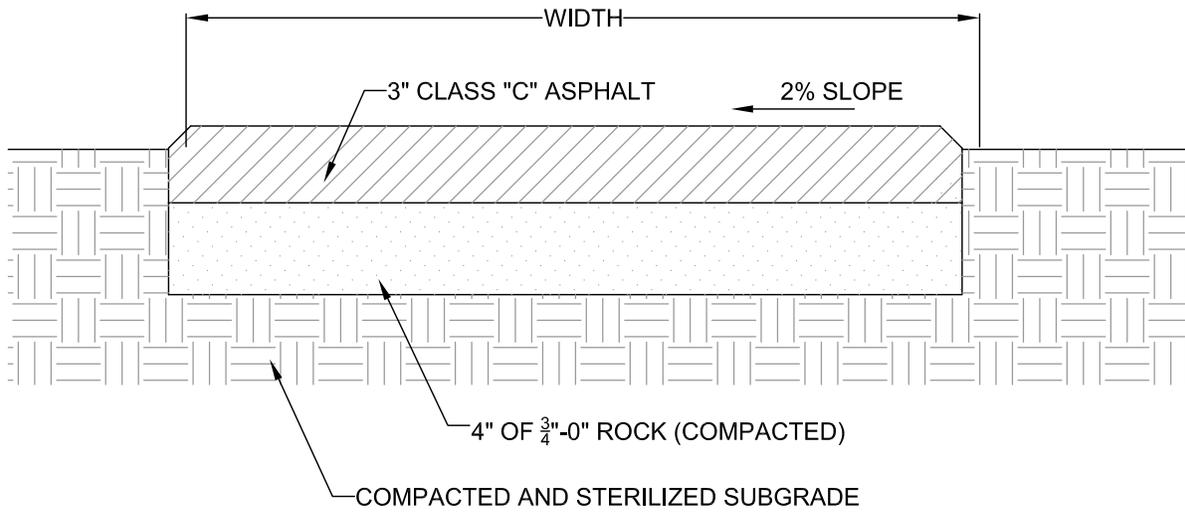
**NOTE:**

- 1. SIDEWALKS TO BE RE-ROUTED AROUND ALL LIGHT POLES, MAILBOXES, & FIRE HYDRANTS THAT EXIST IN THE SIDEWALK AREA.
- 2. MAILBOXES SHALL NOT BE INSTALLED ADJACENT TO FIRE HYDRANTS.
- 3. SIDEWALKS SHALL NOT BE RE-ROUTED IF EXISTING METER BOXES, UTILITY POLES, ETC., WILL BE IN RE-ROUTED SIDEWALK. A MINIMUM UNOBSTRUCTED SIDEWALK WIDTH MUST BE MAINTAINED PER ADA STANDARDS.
- 4. IF THE SIDEWALK IS IN PLACE PRIOR TO THE INSTALLATION OF THE LIGHT POLE, MAILBOX, OR FIRE HYDRANT, THEN THE SIDEWALK SHALL BE REMOVED AND RE-ROUTED.

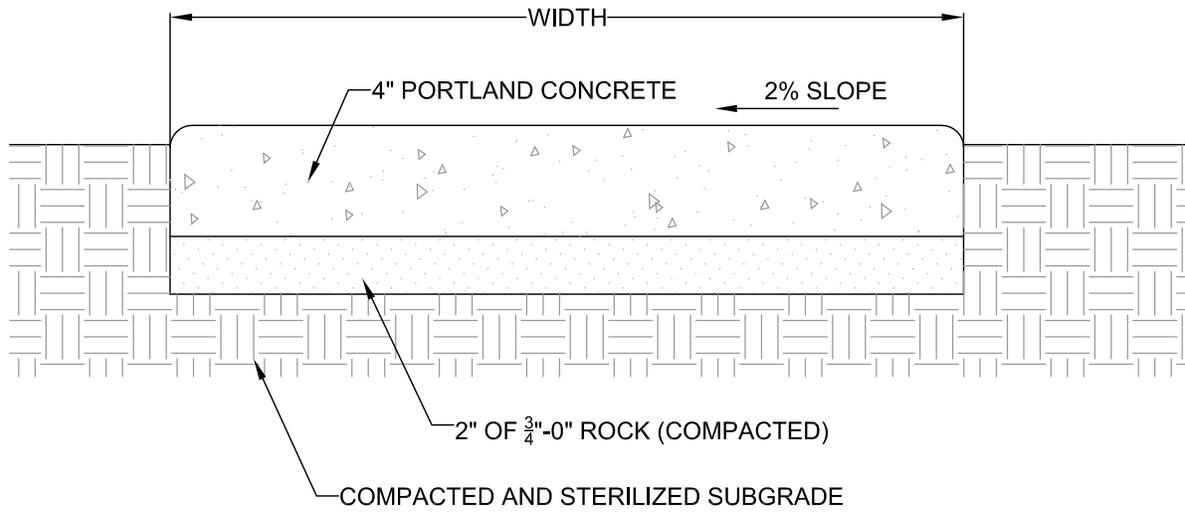
|  |                 |
|--|-----------------|
| <b>CONCRETE SIDEWALK CLEARANCES FOR CURB TIGHT SIDEWALKS</b> |                 |
| <b>CITY OF GLADSTONE</b>                                     | DATE: 2017      |
|  | DRAWING NO. 509 |
|  | FILE NO.        |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

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-OR-



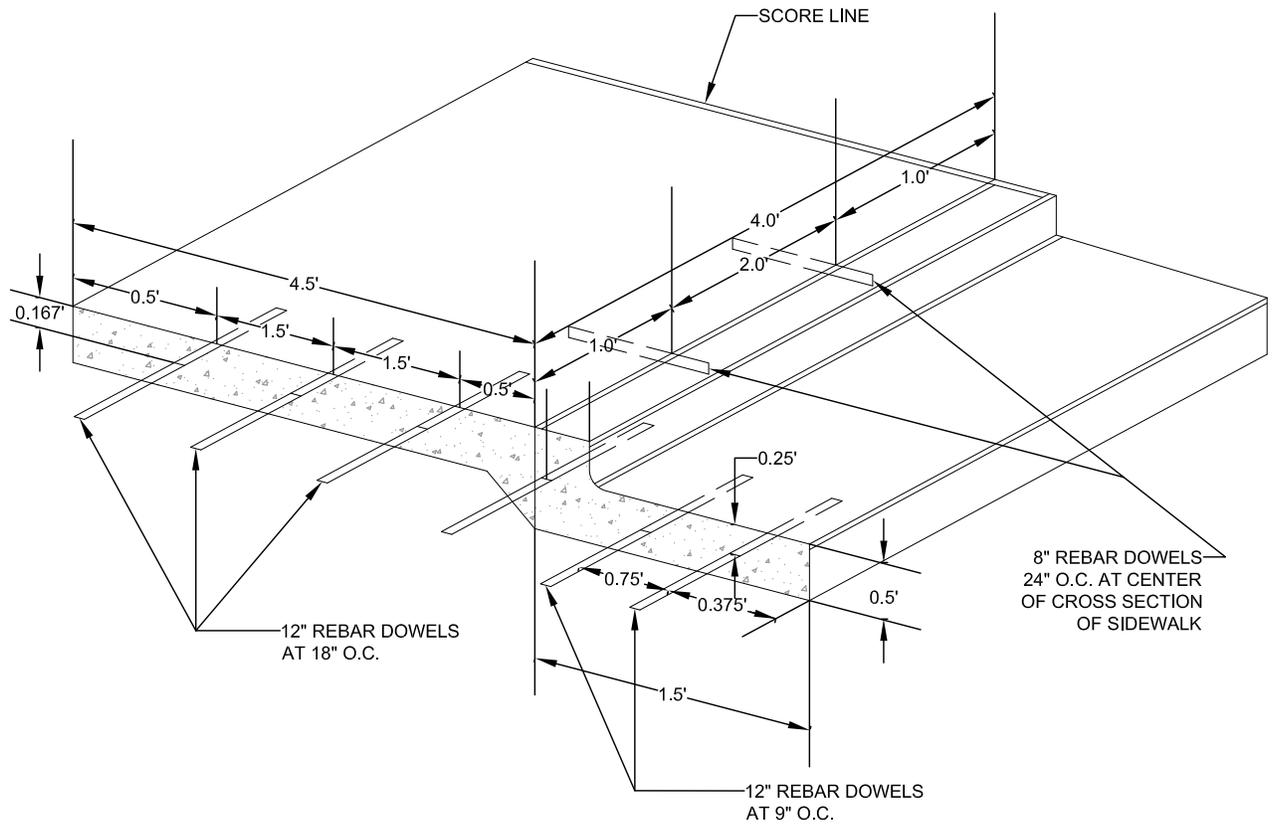
NOTE:

1. CONCRETE SHALL BE 3300 PSI AT 28 DAYS.
2. SIDEWALK PANELS SHALL BE SQUARE, 3/4" DEEP SCRIBES AT JOINTS, (NO SHINE) AND HAVE A LIGHT BROOM FINISH.
3. PEDESTRIAN PATH OR BIKEWAY SHALL HAVE A MINIMUM WIDTH OF 6 FEET.

|                                   |                 |
|-----------------------------------|-----------------|
| <b>PEDESTRIAN PATH OR BIKEWAY</b> |                 |
| <b>CITY OF GLADSTONE</b>          | DATE: 2017      |
|                                   | DRAWING NO. 510 |
|                                   | FILE NO.        |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY

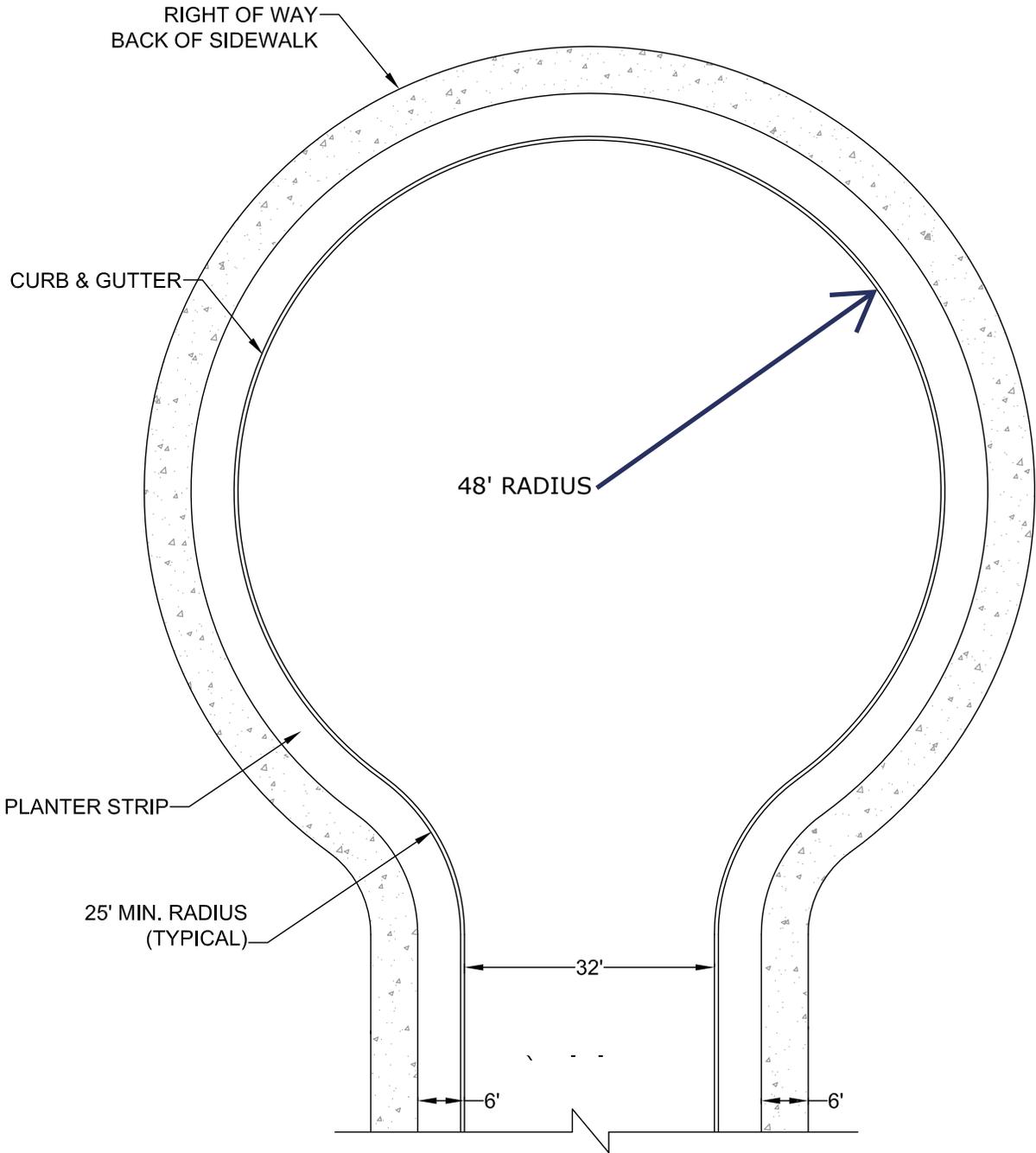


### CURB, GUTTER AND SIDEWALK DOWELING DETAIL

|                              |                 |
|------------------------------|-----------------|
| <b>CITY OF<br/>GLADSTONE</b> | DATE: 2017      |
|                              | DRAWING NO. 511 |
|                              | FILE NO.        |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

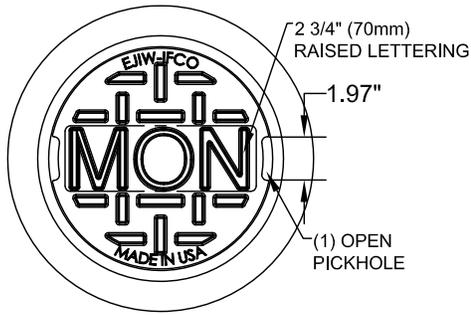
THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



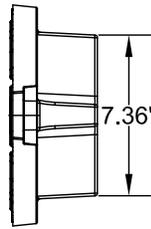
|                              |                    |
|------------------------------|--------------------|
| <b>STANDARD CUL-DE-SAC</b>   |                    |
| <b>CITY OF<br/>GLADSTONE</b> | DATE:<br>2017      |
|                              | DRAWING NO.<br>512 |
|                              | FILE NO.           |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

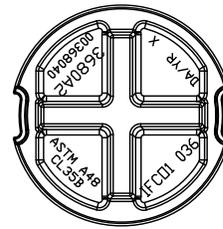
THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



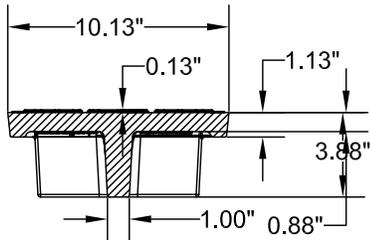
PLAN VIEW



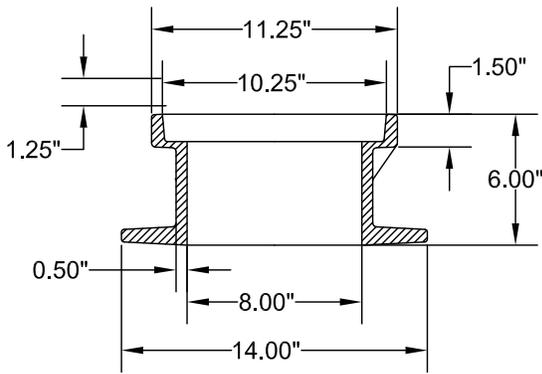
SIDE VIEW



BOTTOM VIEW



SECTION VIEW



SECTION VIEW

**STANDARD 8" MONUMENT WELL  
USED BY CLACKAMAS COUNTY SURVEY DEPARTMENT  
WHERE SPEEDS ARE ABOVE 35 MPH**

**EAST JORDAN  
IRON WORKS, INC.**  
P.O. BOX 439  
EAST JORDAN, MI. 49727  
1-800-874-4100  
FAX: 231-536-4458

Anders Jorgenson  
Oregon Sales Representative  
East Jordan Iron Works  
(503) 774-4144  
Fax (503) 775-3263  
Cell (503) 367-7925  
ajorgenson@ejw.com

**8" MONUMENT BOX  
FRAME AND COVER**

**CITY OF  
GLADSTONE**

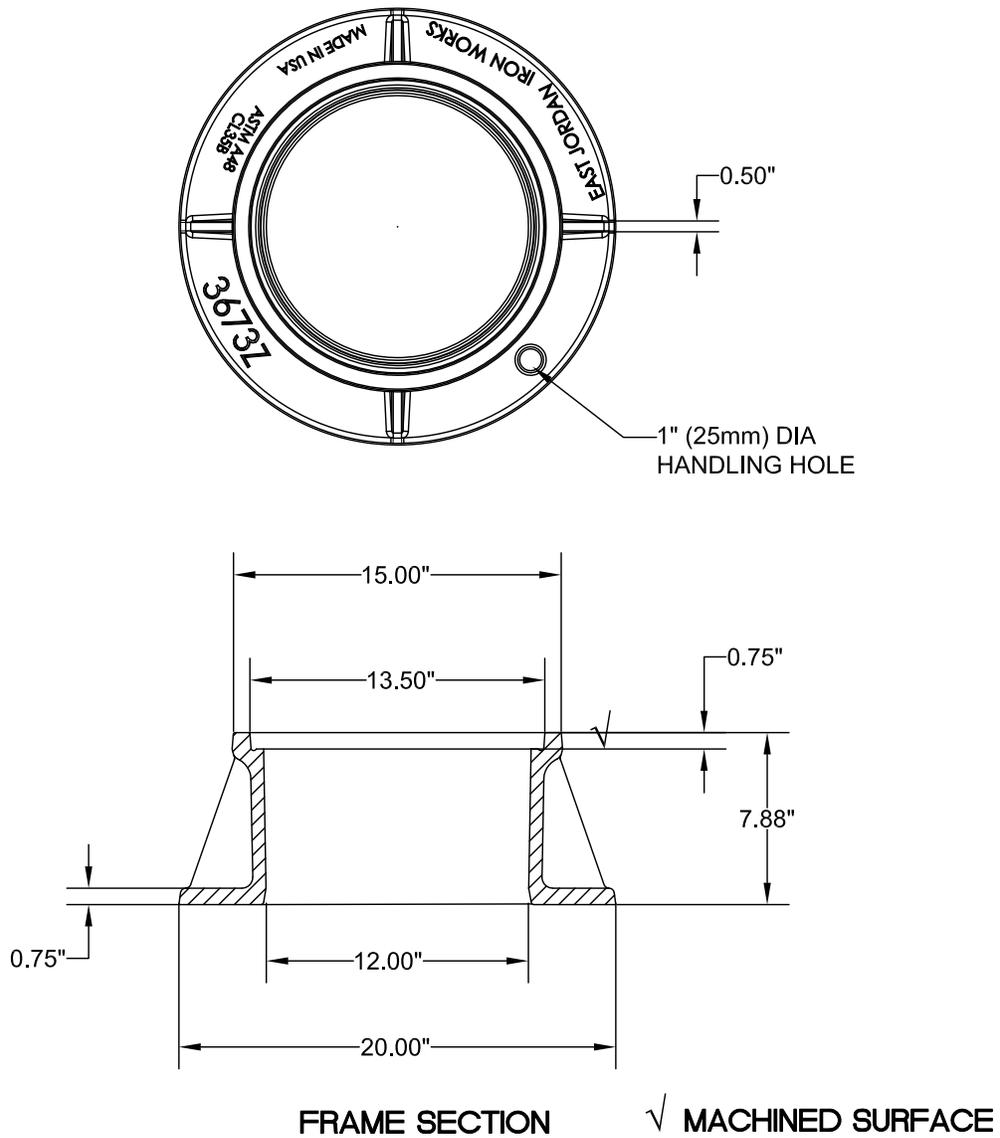
DATE:  
2017

DRAWING NO.  
513A

FILE NO.

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

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STANDARD 12" MONUMENT WELL  
 USED BY CLACKAMAS COUNTY SURVEY DEPARTMENT  
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 IRON WORKS, INC.**  
 P.O. BOX 439  
 EAST JORDAN, MI. 49727  
 1-800-874-4100  
 FAX: 231-536-4458

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 Oregon Sales Representative  
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 (503) 774-4144  
 Fax (503) 775-3263  
 Cell (503) 367-7925  
 ajorgenson@ejiw.com

**12" MONUMENT BOX  
 FRAME**

**CITY OF  
 GLADSTONE**

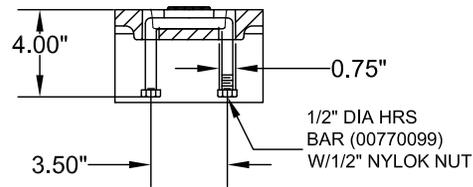
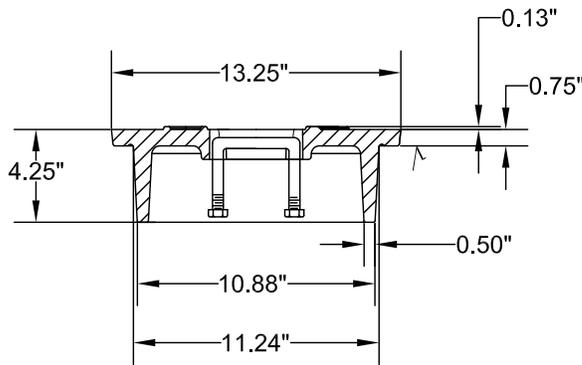
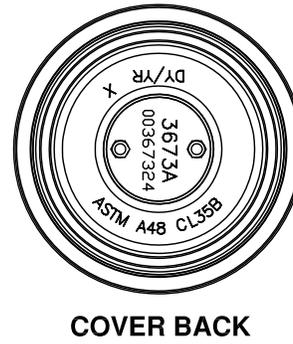
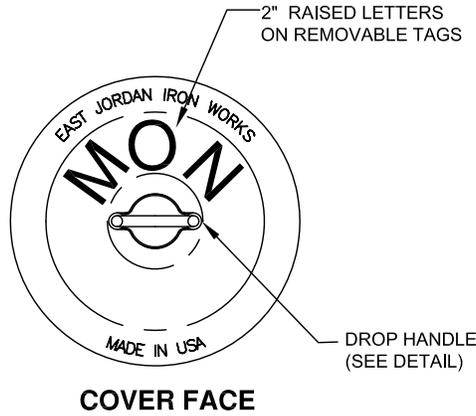
DATE: 2017

DRAWING NO. 513B

FILE NO.

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

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**STANDARD 12" MONUMENT COVER  
USED BY CLACKAMAS COUNTY SURVEY DEPARTMENT  
WHERE SPEEDS ARE ABOVE 35 MPH**

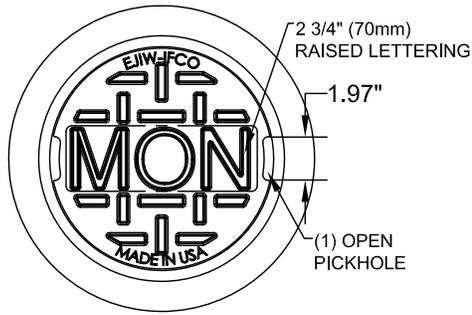
**EAST JORDAN  
IRON WORKS, INC.**  
P.O. BOX 439  
EAST JORDAN, MI. 49727  
1-800-874-4100  
FAX: 231-536-4458

Anders Jorgenson  
Oregon Sales Representative  
East Jordan Iron Works  
(503) 774-4144  
Fax (503) 775-3263  
Cell (503) 367-7925  
ajorgenson@ejiw.com

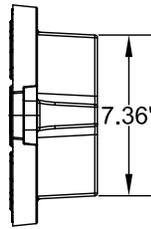
|                                   |                  |
|-----------------------------------|------------------|
| <b>12" MONUMENT BOX<br/>COVER</b> |                  |
| <b>CITY OF<br/>GLADSTONE</b>      | DATE: 2017       |
|                                   | DRAWING NO. 513C |
|                                   | FILE NO.         |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

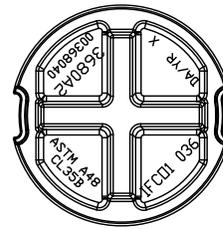
THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



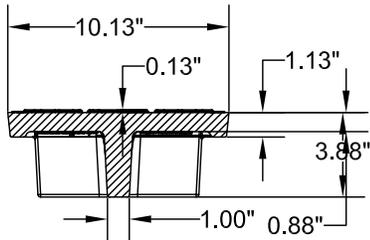
PLAN VIEW



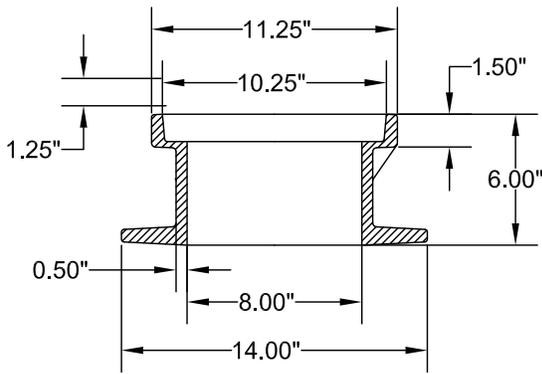
SIDE VIEW



BOTTOM VIEW



SECTION VIEW



SECTION VIEW

**STANDARD 8" MONUMENT WELL  
USED BY CLACKAMAS COUNTY SURVEY DEPARTMENT  
WHERE SPEEDS ARE ABOVE 35 MPH**

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IRON WORKS, INC.**  
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ajorgenson@ejw.com

**8" MONUMENT BOX  
FRAME AND COVER**

**CITY OF  
GLADSTONE**

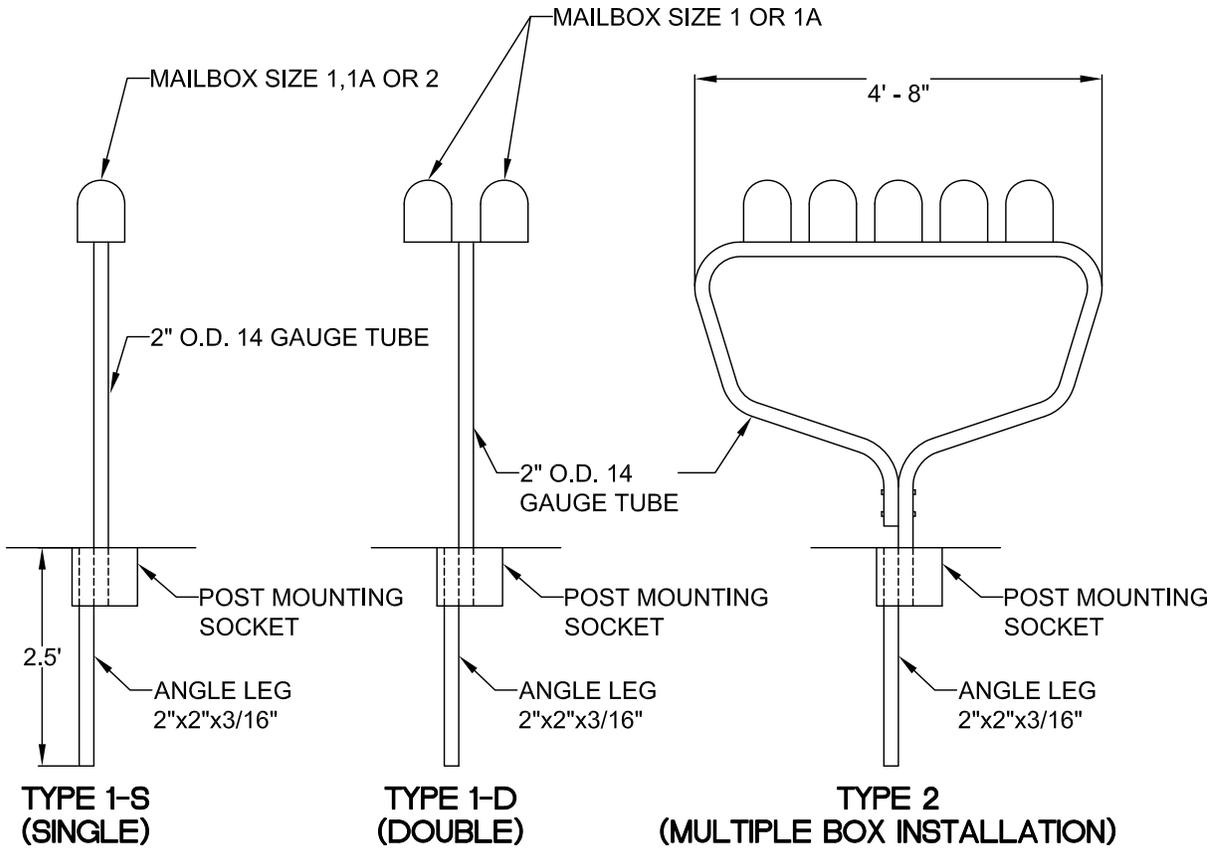
DATE: 2017

DRAWING NO. 513A

FILE NO.

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THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



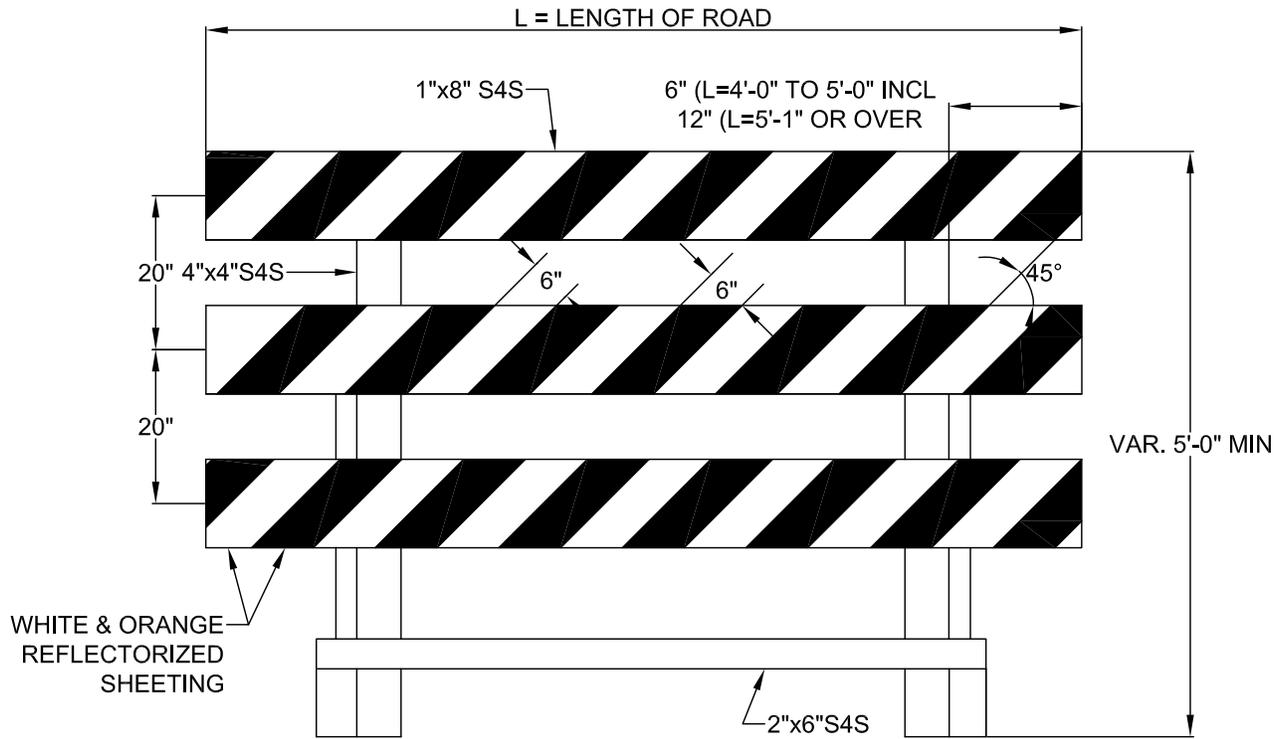
NOTE:

1. MAILBOX INSTALLATION EQUIPMENT COULD BE ORDERED FROM  
 TRAFFIC SAFETY SUPPLY CO.  
 2324 SE UMATILLA ST.  
 PORTLAND, OR 97202  
 (503) 235-8531  
 WWW.TSSCO.COM
2. RELOCATED MAILBOX INSTALLATION DETAIL NOT TO BE USED FOR NEW CONSTRUCTION.
3. FOR MORE DETAILS OF MAILBOX INSTALLATION, SEE O.D.O.T. STANDARD MAILBOX INSTALLATION DETAIL, DRG NO. 2136, PAGE 2-18.1.
4. ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT STATE OF OREGON STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

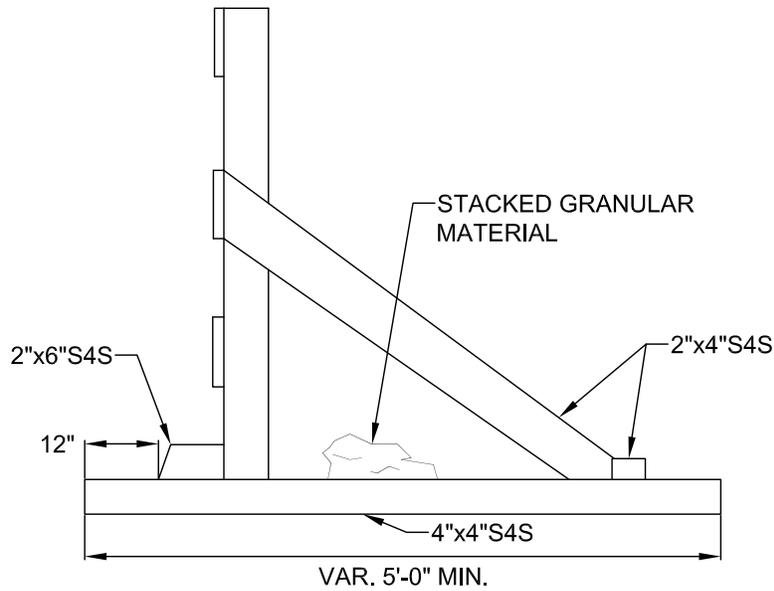
|                                       |                 |
|---------------------------------------|-----------------|
| <b>RELOCATED MAILBOX INSTALLATION</b> |                 |
| <b>CITY OF GLADSTONE</b>              | DATE: 2017      |
|                                       | DRAWING NO. 514 |
|                                       | FILE NO.        |

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WHITE & ORANGE REFLECTORIZED SHEETING



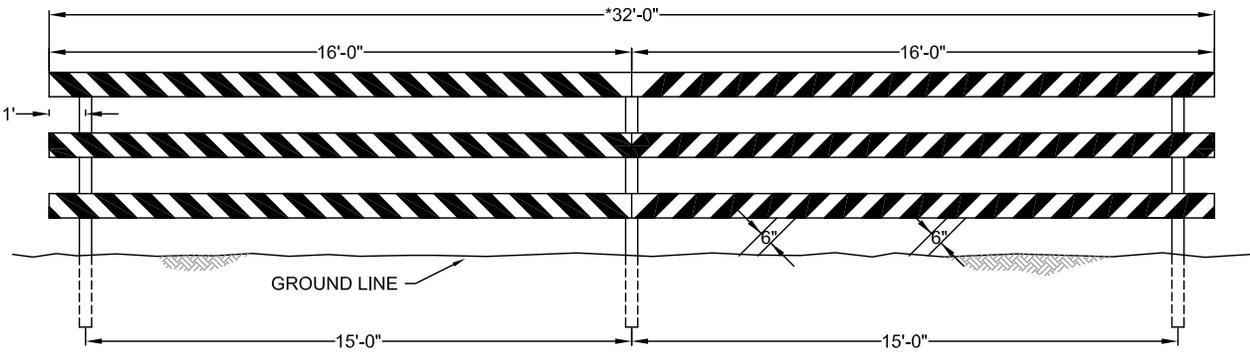
**NOTE:**

1. ALL NON-REFLECTORIZED SURFACES SHALL BE PAINTED WHITE.
2. ALTERNATE METHODS AND MATERIALS FOR THE SUPPORTS PERMITTED WITH APPROVAL OF THE ENGINEER.
3. FOR RAILS LESS THAN 3' LONG 4" WIDE STRIPS SHALL BE USED.
4. BARRICADES USED FOR PERMANENT CLOSURES SHALL HAVE RED AND WHITE REFLECTORIZED SHEETING.

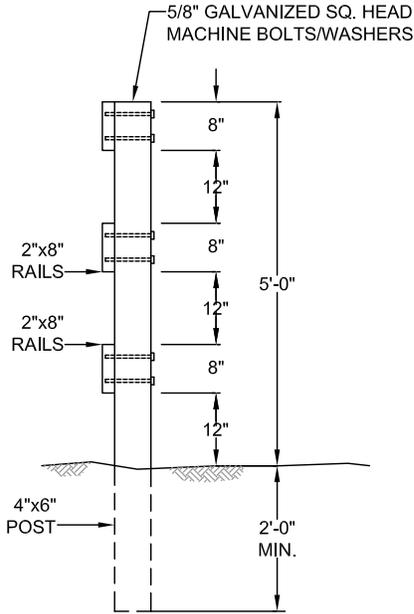
|   |                 |
|---|-----------------|
| <b>TEMPORARY CLOSURE<br/>STREET BARRICADES<br/>TYPE III</b> |                 |
| <b>CITY OF<br/>GLADSTONE</b>                                | DATE: 2017      |
|   | DRAWING NO. 515 |
|   | FILE NO.        |

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**ELEVATION**



**END VIEW**

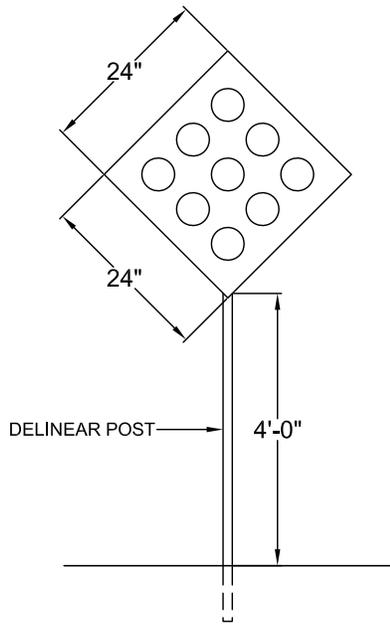
**NOTE:**

1. RAILS TO BE PAINTED RED WITH WHITE STRIPES. THE WHITE STRIPES SHALL BE REFLECTORIZED. FOR WIDER APPLICATIONS, MULTIPLE SECTIONS AS SHOWN SHALL BE USED.
2. SEE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS AND THE OREGON SUPPLEMENT.  
  
3F-1 BARRICADES  
6C-8 BARRICADE DESIGN  
6C-9 BARRICADE APPLICATION
3. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT STATE OF OREGON DEPARTMENT OF TRANSPORTATION STANDARDS.

SEE 516B FOR ALTERNATE DESIGN THAT MAY BE USED WHERE END OF STREET IS AGAINST EMBANKMENT.

|  |                            |
|--|----------------------------|
| <b>PERMAMENT CLOSURE<br/>STREET BARRICADE<br/>TYPE III</b> |                            |
| <b>CITY OF<br/>GLADSTONE</b>                               | DATE: 2017                 |
|  | DRAWING NO.<br><b>516A</b> |
|  | FILE NO.                   |

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY ENGINEER. IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.



DESIGN THAT MAY BE USED WHERE END OF STREET IS AGAINST EMBANKMENT:

TYPE 1, OM4-1

24"x24" RED SIGN WITH 3" RED REFLECTIVE BUTTONS

4' ABOVE GROUND

ALTERNATE DESIGN, INCLUDING NUMBER (MINIMUM OF TWO) AND PLACEMENT OF SIGNS, MUST SPECIFICALLY BE APPROVED BY PUBLIC WORKS DIRECTOR FOR EACH INDIVIDUAL APPLICATION.

**STREET BARRICADE  
TYPE I**

**CITY OF  
GLADSTONE**

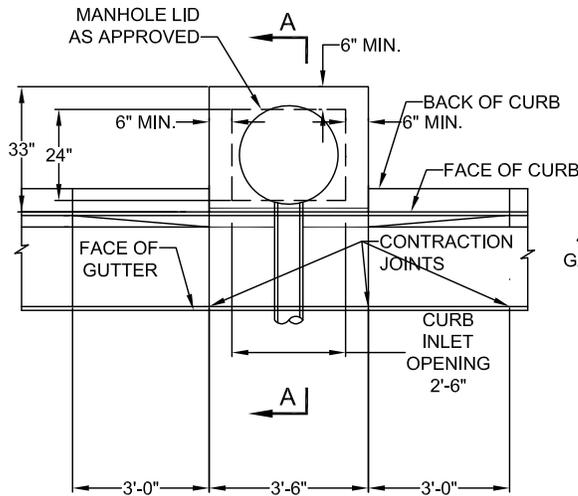
DATE:  
2017

DRAWING NO.  
516B

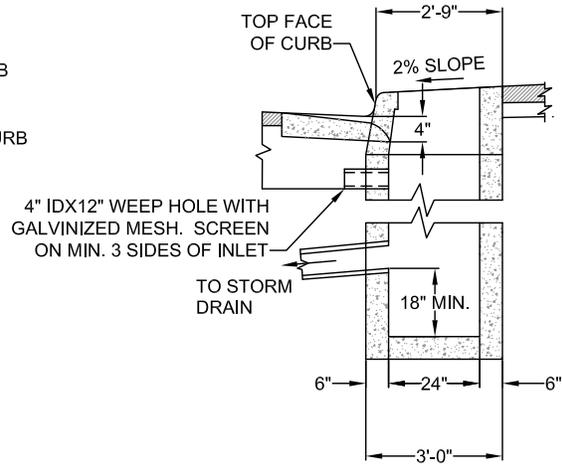
FILE NO.

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

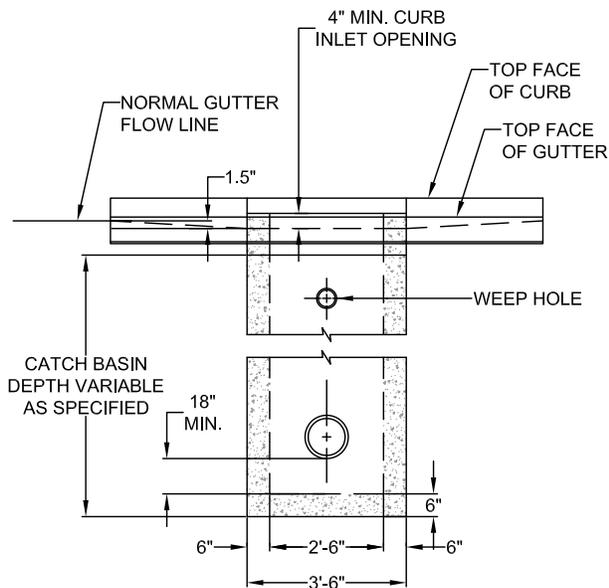
THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



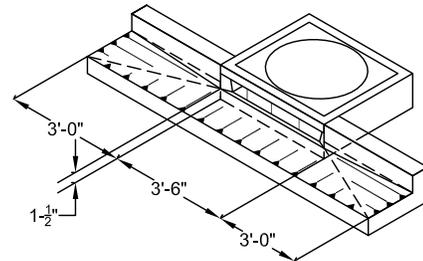
**PLAN VIEW**



**SECTION A-A**



**FRONT VIEW**



**PERSPECTIVE VIEW SHOWING DEPRESSED GUTTER AT CURB INLET**

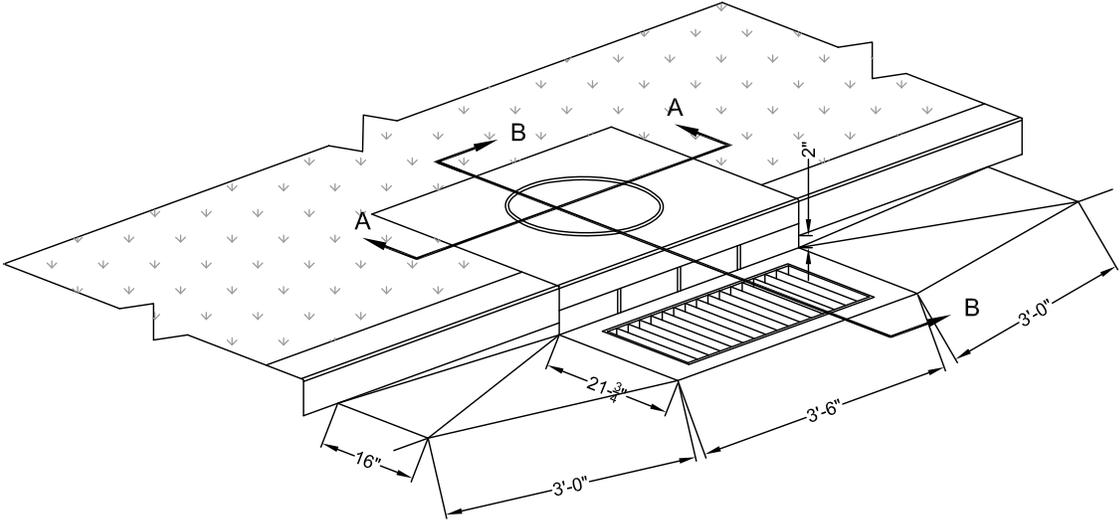
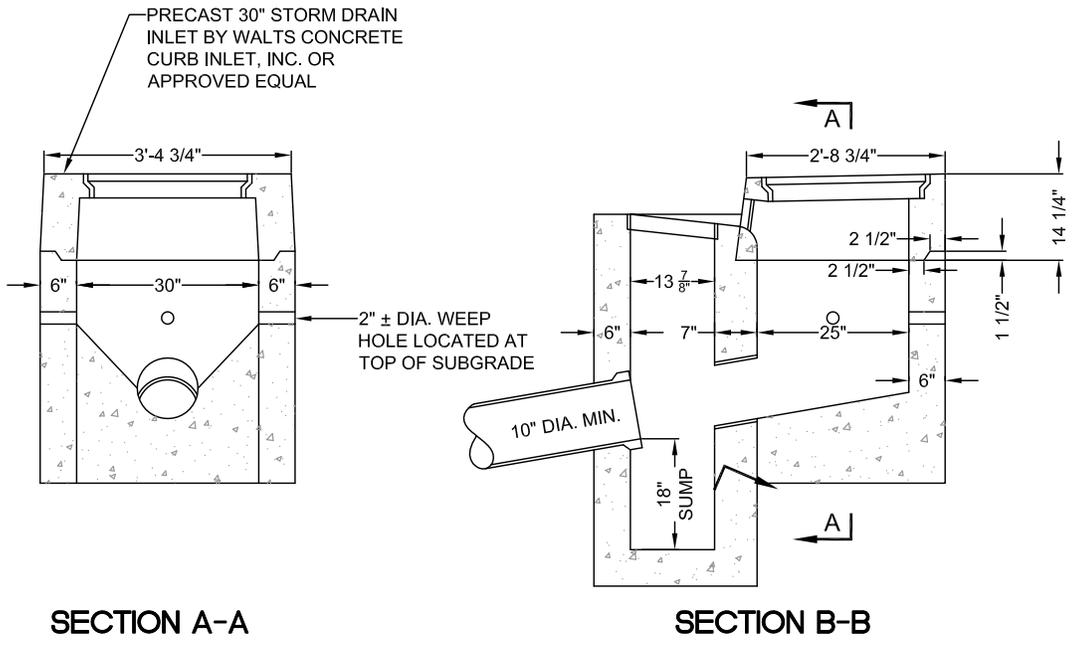
**NOTE:**

1. ALL FABRICATED METAL PARTS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
2. CONCRETE STRENGTH SHALL BE 3300 PSI AT 28 DAYS.
3. CURB INLET BASE MAY BE PRECAST OR CAST-IN-PLACE.
4. FOR SLOPES OF 5% OR GREATER, USE DWG. WL-601.

|                                 |                 |
|---------------------------------|-----------------|
| <b>GUTTER INLET<br/>2 1/2 A</b> |                 |
| <b>CITY OF<br/>GLADSTONE</b>    | DATE: 2017      |
|                                 | DRAWING NO. 600 |
|                                 | FILE NO.        |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



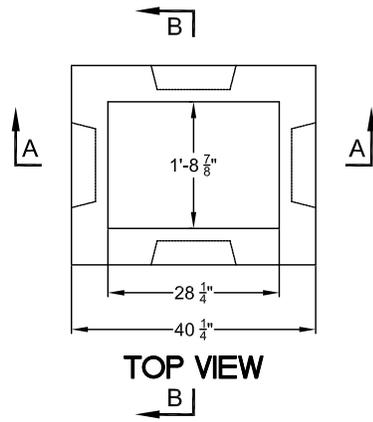
**NOTE:**

1. CAST IN PLACE CONCRETE TO BE 3300 PSI AND WEEP HOLE WITH GALVINIZED MESH. SCREEN ON MIN. 3 SIDES OF INLET.
2. MANHOLE RIMS AND COVERS AS MANUFACTURED BY HERN IRON WORKS, COEUR D' ALENE, IDAHO. COVER PATTERN NO. 2312, RIM PATTERN NO. 2311 OR APPROVED EQUAL.

|                               |                 |
|-------------------------------|-----------------|
| <b>COMBINATION CURB INLET</b> |                 |
| <b>CITY OF<br/>GLADSTONE</b>  | DATE: 2017      |
|                               | DRAWING NO. 601 |
|                               | FILE NO.        |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



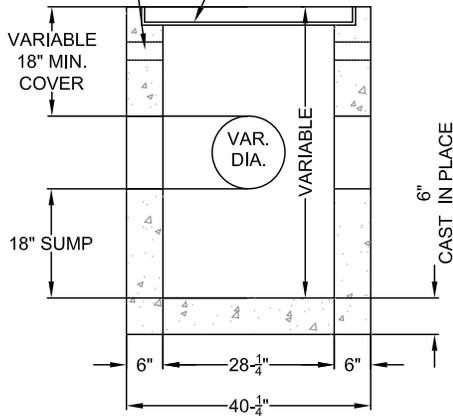
**TOP VIEW**

**NOTE:**

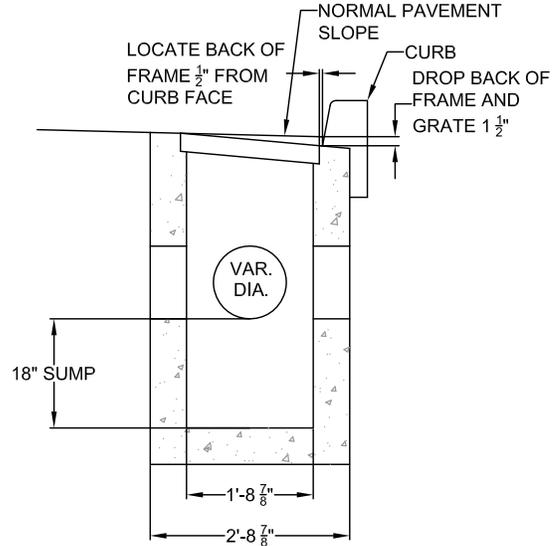
1. CONCRETE STRENGTH SHALL BE 3300 PSI.
2. PRECAST BASE WALLS SHALL BE A MINIMUM 4" THICK. CAST-IN-PLACE BASE WALLS SHALL BE 6" THICK.

INSTALL 3" WEEP HOLES WITH GALVANIZED MESH. SCREEN ON MIN. 3 SIDES OF CATCH BASIN

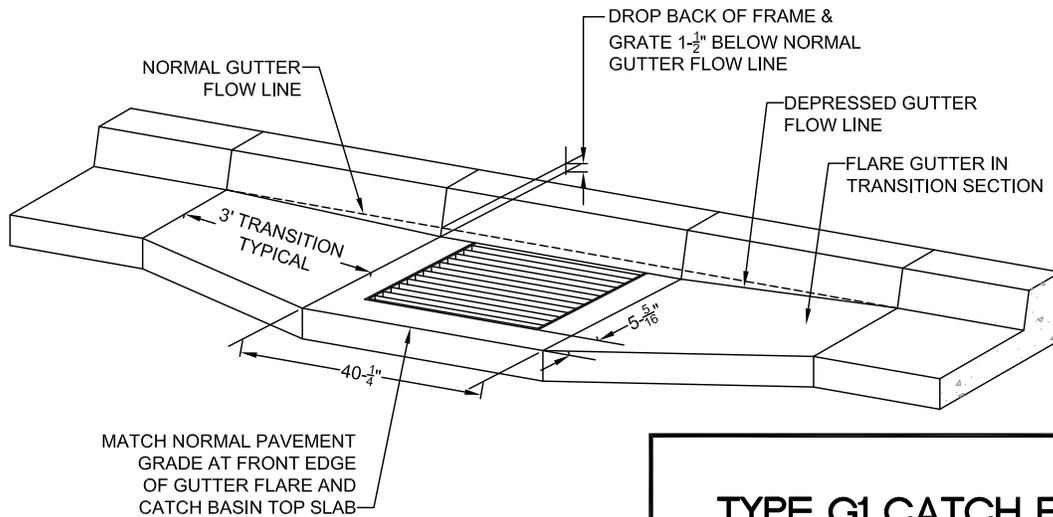
STEEL FRAME CAST IN TOP SLAB OR BASIN (IF TOP SLAB IS CAST-IN-PLACE)



**SECTION A-A**



**SECTION B-B**



**NOTE:**

PRECAST TOP SLAB SHOWN WITH GUTTER TRANSITION FLARE IF THE TOP SLAB IS CAST-IN-PLACE, NO FLARE IS REQUIRED IN THE TRANSITION SECTION: MATCH THE TOP FRONT EDGE OF THE FRAME AND THE TOP FRONT EDGE OF THE CAST-IN-PLACE TOP SLAB TO THE NORMAL PAVEMENT GRADE.

**TYPE G1 CATCH BASIN WITH SUMP**

**CITY OF GLADSTONE**

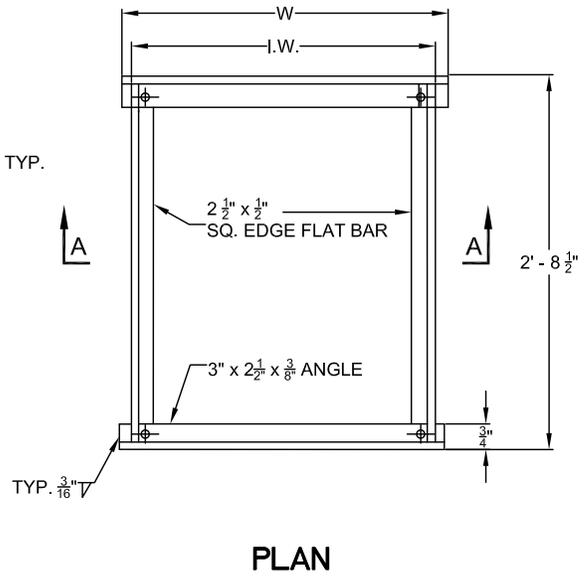
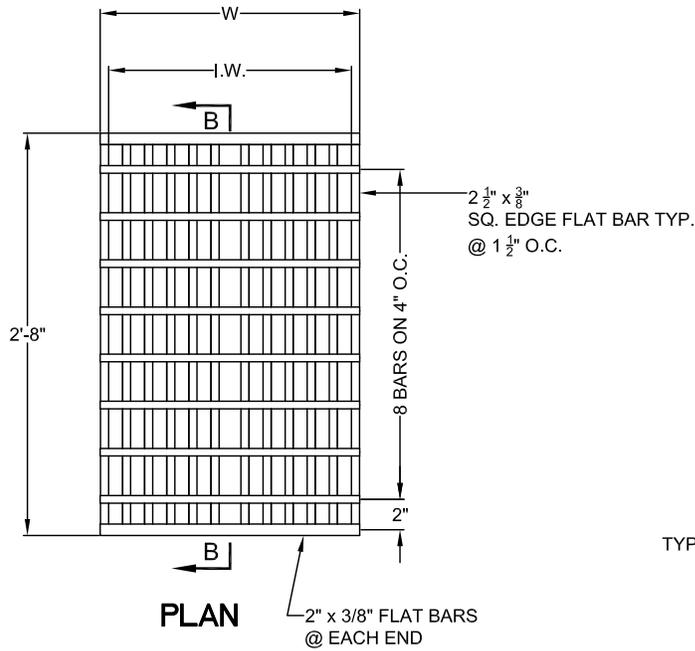
DATE: 2017

DRAWING NO. 602A

FILE NO.

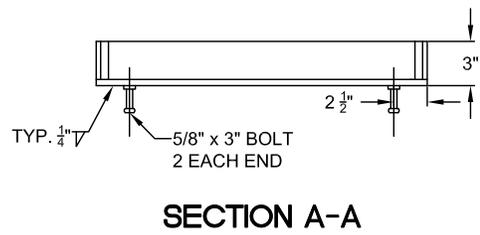
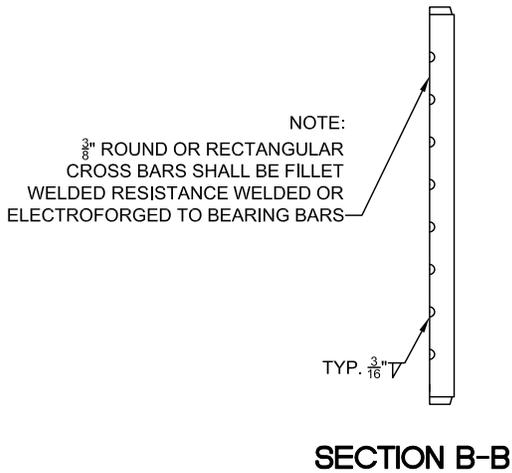
IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



| TYPE     | W     | I.W.      |
|----------|-------|-----------|
| STANDARD | 1'-9" | 1'-8 1/4" |

| TYPE     | DIA. PIPE | W          | I.W.      |
|----------|-----------|------------|-----------|
| STANDARD | 10"-12"   | 1'-10 3/4" | 1'-9 3/8" |



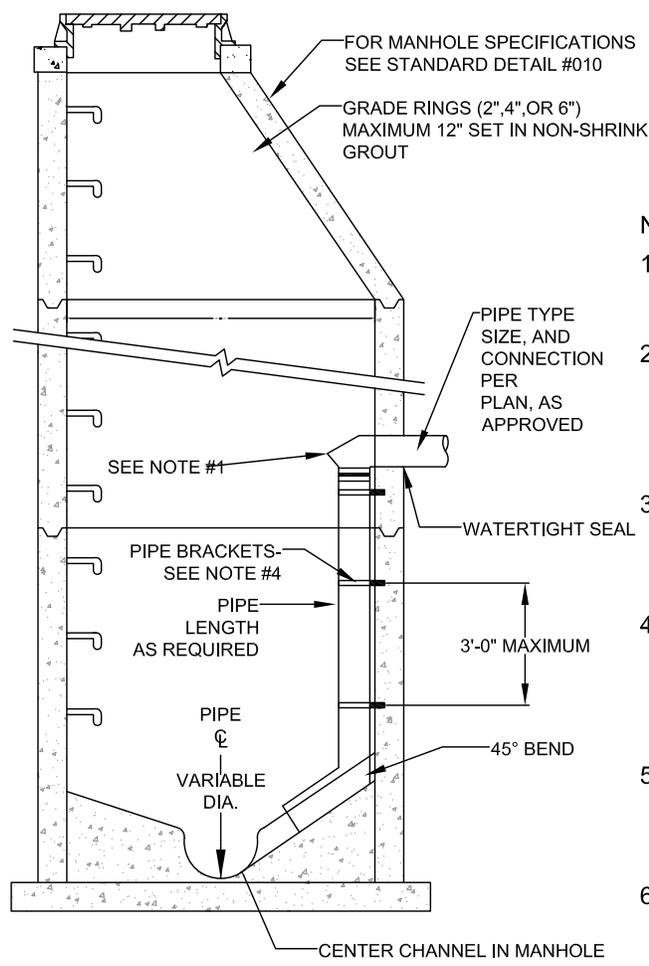
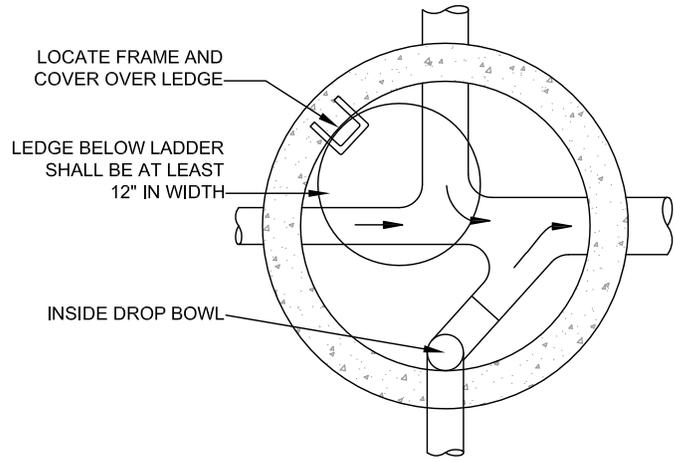
NOTE:  
USE VERTICAL BEADS IN CORNERS,  
FILLET WELD JOINT ON BOTTOM OF  
FRAME. GRATE MUST REST FLAT ON  
FRAME SURFACE.

|  |                     |
|--|---------------------|
| <b>FRAME AND GRATE<br/>FOR GUTTER AND CURB INLET</b> |                     |
| <b>CITY OF<br/>GLADSTONE</b>                         | DATE:<br>2017       |
|  | DRAWING NO.<br>602B |
|  | FILE NO.            |



IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



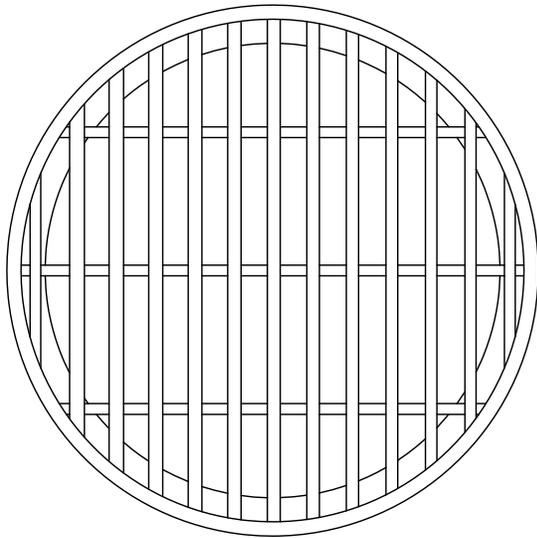
**NOTE:**

1. DROP BOWL AS MANUFACTURED BY RELINER-DURAN INC. OR APPROVED EQUAL.
2. DROP BOWL TO BE SIZED PER MANUFACTURER'S RECOMMENDATIONS ( INFORMATION AVAILABLE @ RELINER.COM) OR AS REQUIRED BY CITY.
3. PIPE AND FITTING FOR DROP ASSEMBLY SHALL BE: DUCTILE IRON, AWWA C-900 OR PVC ASTM D-3034 SDR 35.
4. STAINLESS ADJUSTABLE PIPE BRACKETS AS MANUFACTURED BY RELINER-DURAN INC. OR APPROVED EQUAL. (INFORMATION AVAILABLE @ RELINER.COM).
5. NO MORE THAN ONE DROP BOWL PER MANHOLE WITHOUT WRITTEN APPROVAL BY CITY.
6. WRITTEN APPROVAL BY CITY IS REQUIRED FOR DROP BOWL INSTALATION ON PIPELINES WITH A SLOPE OF 5% OR GREATER.

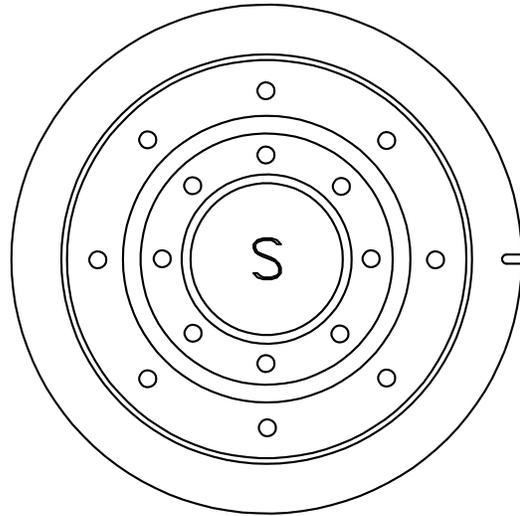
|  |                 |
|--|-----------------|
| <b>INSIDE DROP MANHOLE<br/>CONNECTION FOR STORM<br/>DRAINAGE PRIVATE SERVICE</b> |                 |
| <b>CITY OF<br/>GLADSTONE</b>   | DATE: 2017      |
|  | DRAWING NO. 604 |
|  | FILE NO.        |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

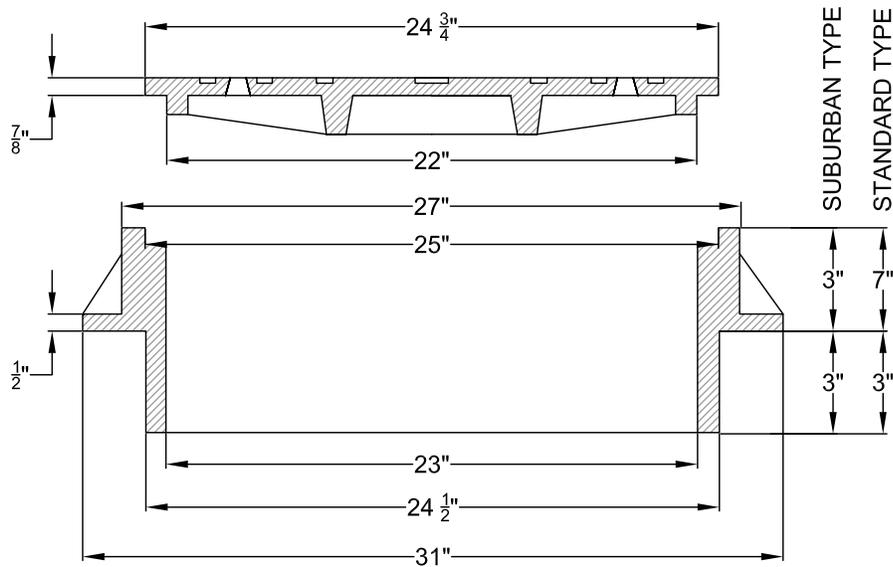
THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



**GRATE**



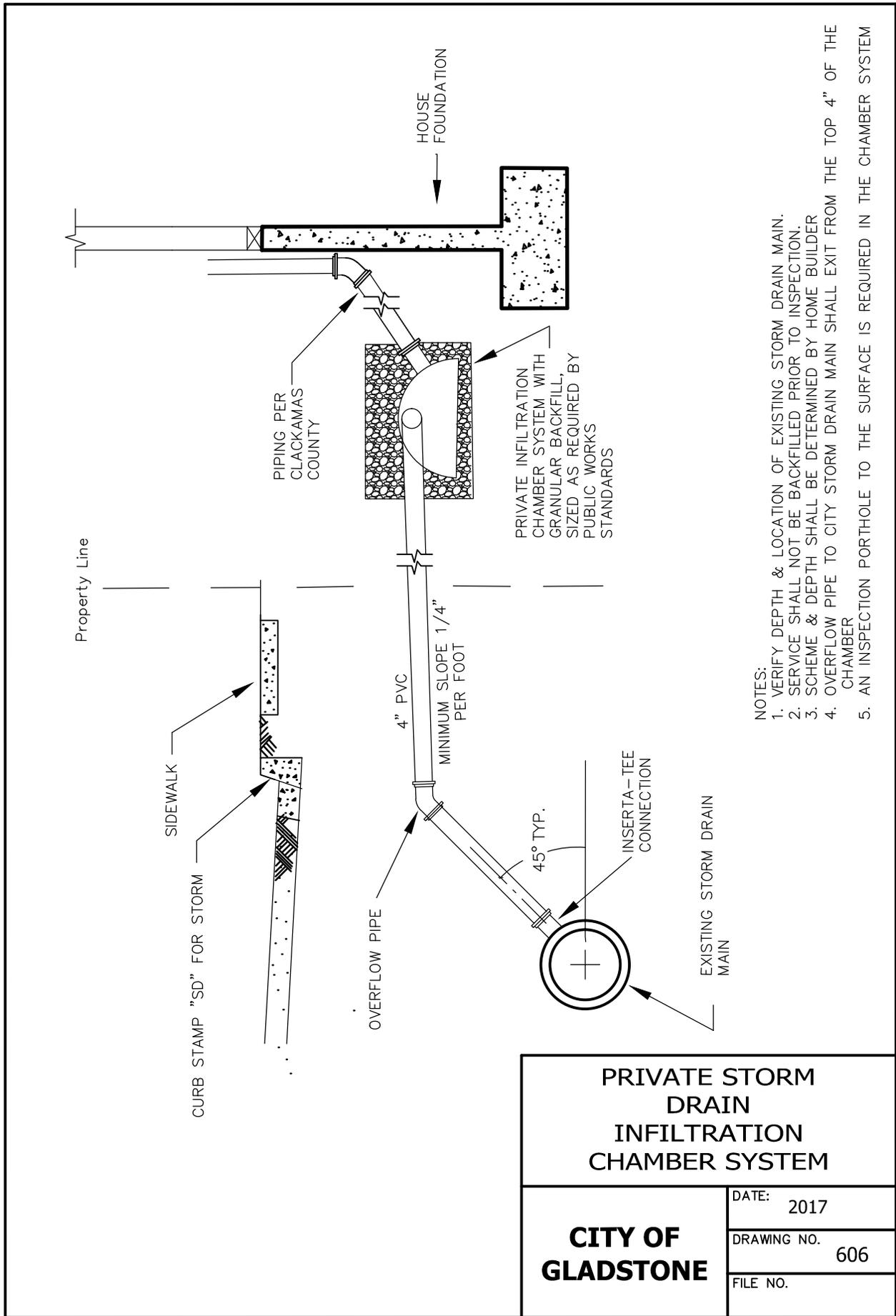
**STORM**



**NOTE:**

1. USE SUBURBAN TYPE ONLY IN NON-TRAFFIC AREAS, AND ONLY WITH APPROVAL BY THE CITY.
2. COVER AND FRAME SHALL BE GRAY CAST IRON ASTM A-48 CLASS 30.
3. COVER AND FRAME TO BE MACHINED TO A TRUE BEARING ALL AROUND.
4. NOTCH LID FOR LIFTING HOOK.
5. OPEN GRATES REQUIRE APPROVAL BY CITY, AND MUST BE BICYCLE SAFE IF USED IN TRAFFIC AREAS.
6. 16 HOLE LID FOR STORM SEWER.

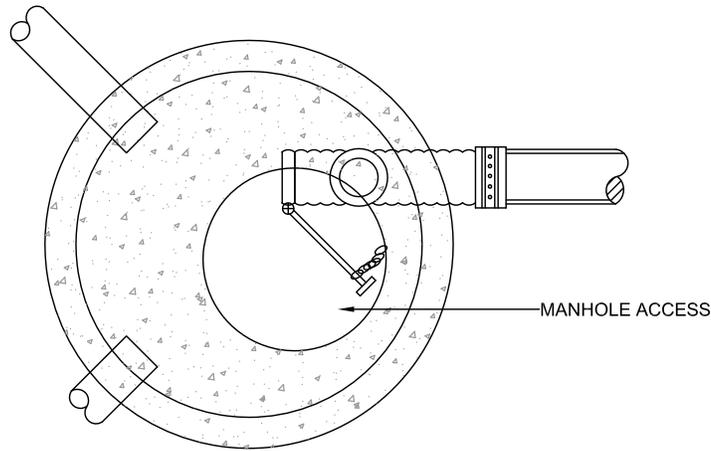
|                                    |                        |
|------------------------------------|------------------------|
| <b>MANHOLE<br/>FRAME AND COVER</b> |                        |
| <b>CITY OF<br/>GLADSTONE</b>       | DATE: 2017             |
|                                    | DRAWING NO. <b>605</b> |
|                                    | FILE NO.               |



- NOTES:
1. VERIFY DEPTH & LOCATION OF EXISTING STORM DRAIN MAIN.
  2. SERVICE SHALL NOT BE BACKFILLED PRIOR TO INSPECTION.
  3. SCHEME & DEPTH SHALL BE DETERMINED BY HOME BUILDER
  4. OVERFLOW PIPE TO CITY STORM DRAIN MAIN SHALL EXIT FROM THE TOP 4" OF THE CHAMBER
  5. AN INSPECTION PORTHOLE TO THE SURFACE IS REQUIRED IN THE CHAMBER SYSTEM

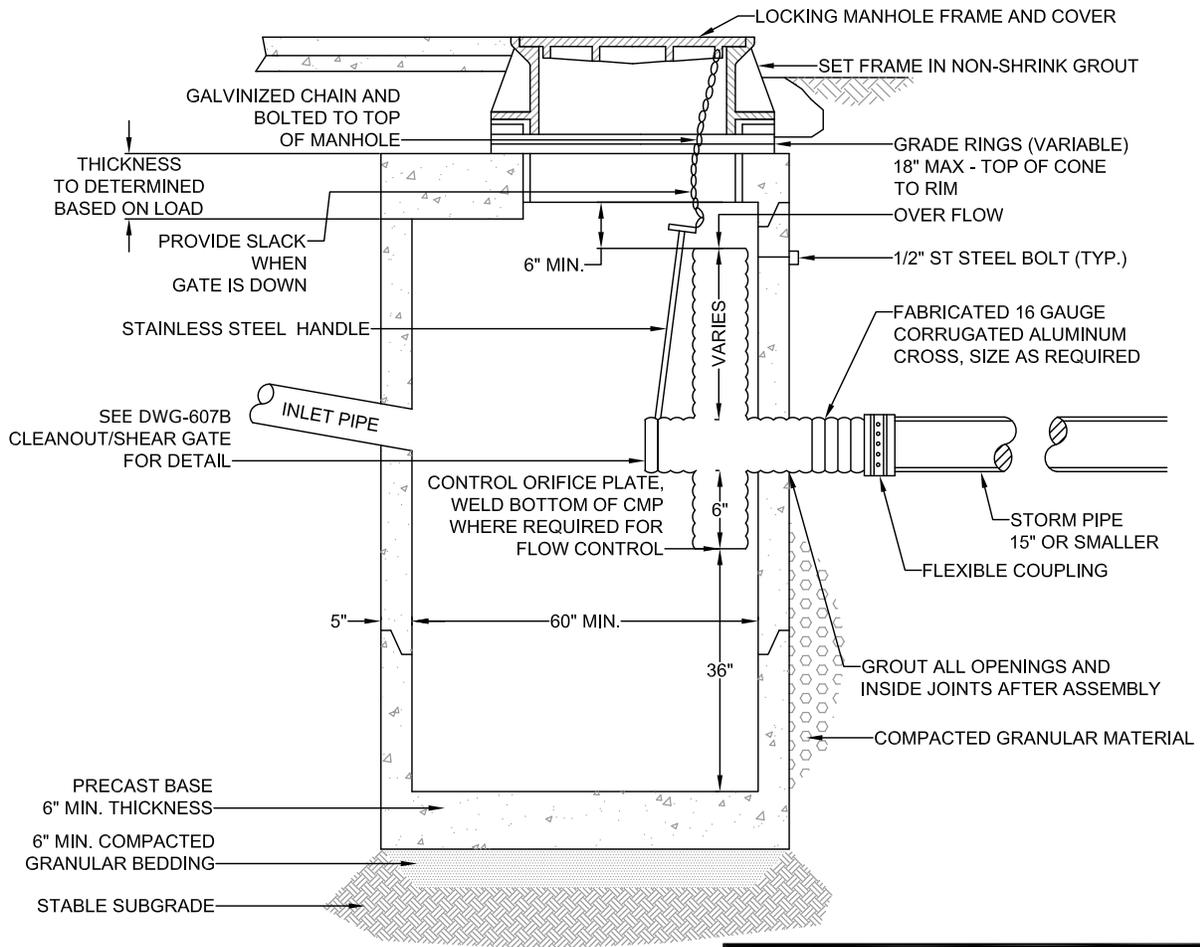
|  |                 |
|--|-----------------|
| <b>PRIVATE STORM DRAIN INFILTRATION CHAMBER SYSTEM</b> |                 |
| <b>CITY OF GLADSTONE</b>                               | DATE: 2017      |
|  | DRAWING NO. 606 |
|  | FILE NO.        |

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY ENGINEER. IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.



**PAVED SURFACE**

**UNPAVED SURFACE**



**NOTE:**

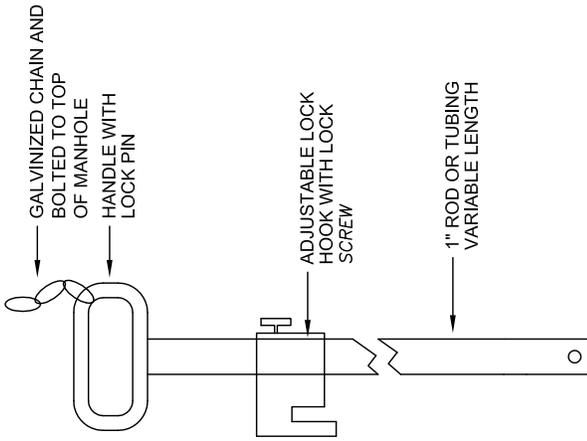
1. ALL PRECAST SECTIONS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-478.
2. DISTANCE FROM TOP OF OVERFLOW TO MH RIM SHALL BE BASED ON OVERFLOW CAPACITY CALC'S BY DESIGN ENGINEER. ASSUME ORIFICE CONTROL.
3. 72" MINIMUM DIA. MANHOLE REQUIRED FOR OUTLET OR INLET > 21".
4. NO STEPS REQUIRED.

**POLLUTION/FLOW CONTROL  
MANHOLE**

|                              |                  |
|------------------------------|------------------|
| <b>CITY OF<br/>GLADSTONE</b> | DATE. 2017       |
|                              | DRAWING NO. 607A |
|                              | FILE NO.         |

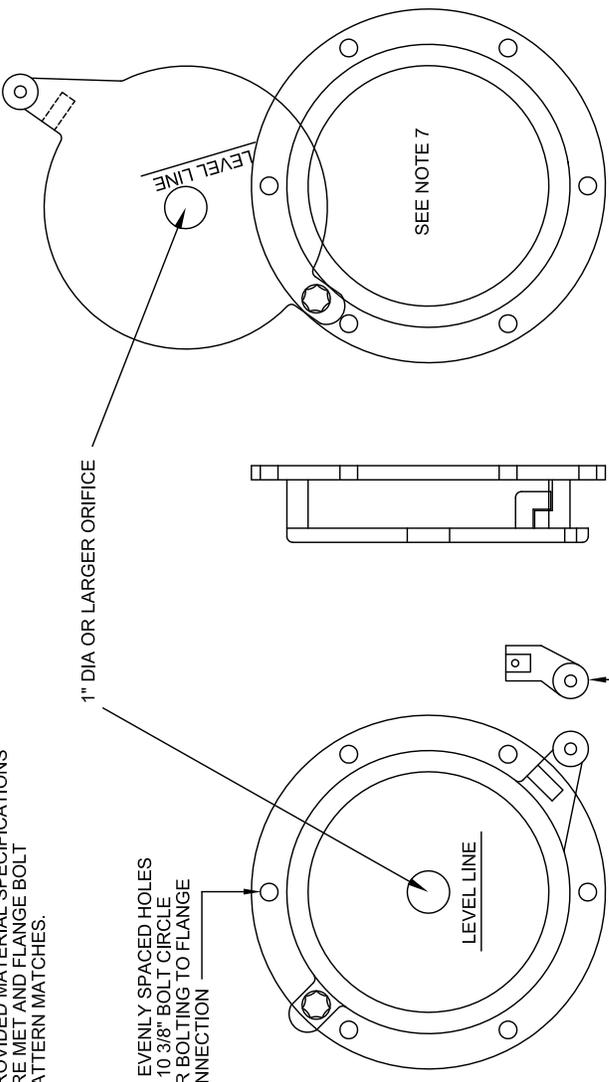
THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.



**LIFT HANDLE**  
SCALE: NTS

ALTERNATES ARE ACCEPTABLE PROVIDED MATERIAL SPECIFICATIONS ARE MET AND FLANGE BOLT PATTERN MATCHES.



**FRONT**

**SIDE**

**MAXIMUM OPENING OF GATE**

**CLEANOUT/SHEAR GATE**  
SCALE: NTS

**CLEANOUT/SHEAR GATE**

**CITY OF GLADSTONE**

DATE: 2017

DRAWING NO. 607B

FILE NO.

**NOTE:**

- CLEANOUT/SHEAR GATE AND LIFT HANDLE SHALL BE ALUMINUM ALLOY PER ASTM B-26-ZG-32a.
- LIFT HANDLE EITHER SOLID OR TUBING WITH ADJUSTABLE HOOK AS REQUIRED.
- NEOPRENE RUBBER GASKET REQUIRED BETWEEN RISER MOUNTING FLANGE AND GATE FLANGE.
- MATING SURFACES OF LID AND BODY TO BE MACHINED FOR PROPER FIT.
- FLANGE MOUNTING BOLTS SHALL BE 3/8" DIAMETER STAINLESS STEEL.
- ALTERNATE CLEANOUT/SHEAR GATES TO THE DESIGN SHOWN ARE ACCEPTABLE, PROVIDED THEY MEET THE MATERIAL SPECIFICATIONS ABOVE AND HAVE A SIX BOLT, 10 3/8" BOLT CIRCLE FOR BOLTING THE FLANGE CONNECTION.
- GATE SHALL NOT OPEN BEYOND THE CLEAR OPENING BY LIMITED HINGE MOVEMENT, STOP TAB, OR SOME OTHER DEVICE.

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THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY

INTENTIONALLY LEFT BLANK

|                              |                 |
|------------------------------|-----------------|
|                              |                 |
| <b>CITY OF<br/>GLADSTONE</b> | DATE: 2017      |
|                              | DRAWING NO. 608 |
|                              | FILE NO.        |

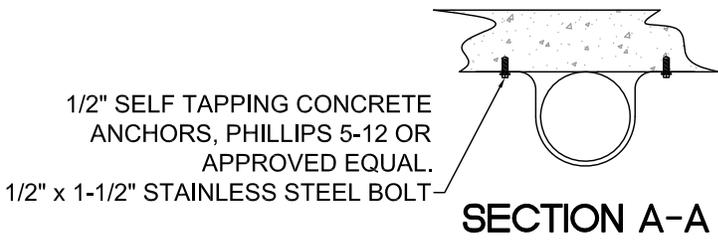
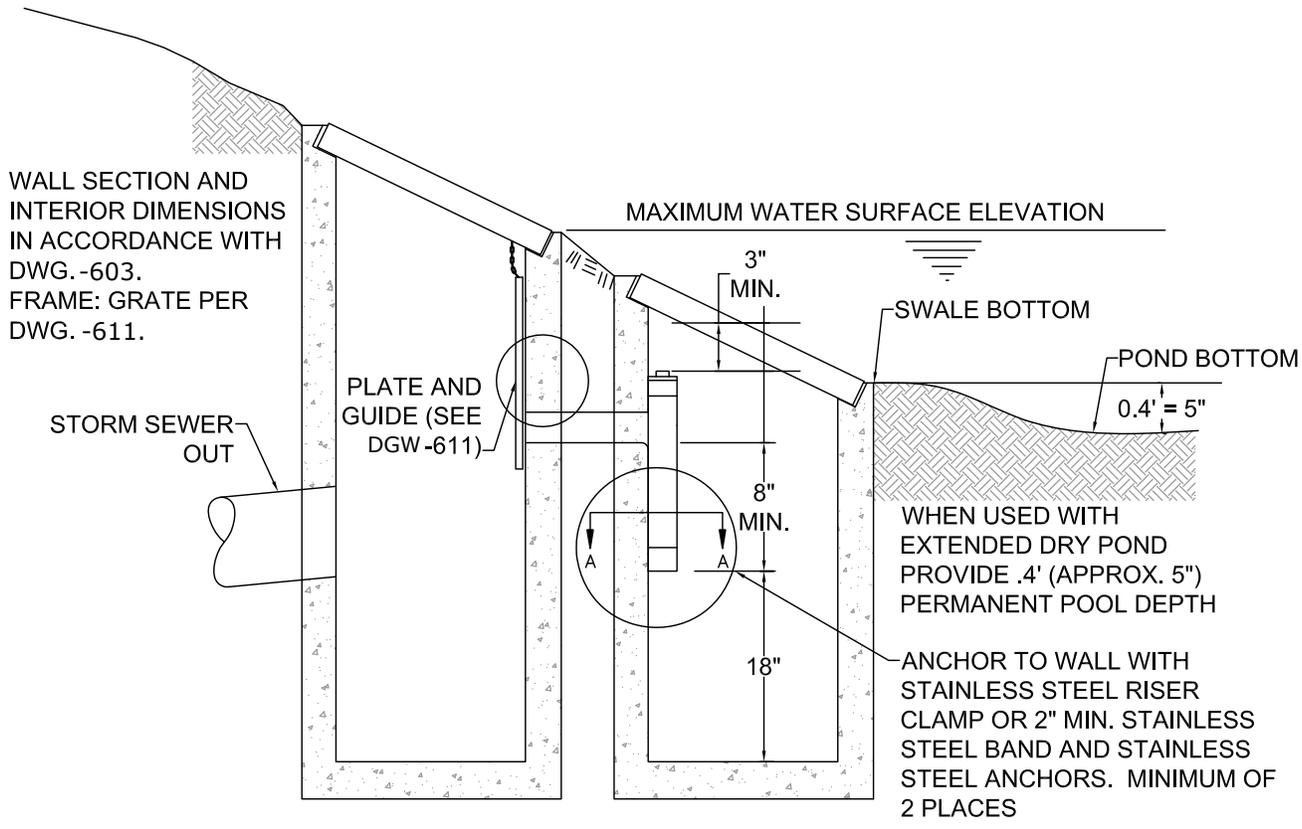
IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY

INTENTIONALLY LEFT BLANK

|                              |                 |
|------------------------------|-----------------|
|                              |                 |
| <b>CITY OF<br/>GLADSTONE</b> | DATE: 2017      |
|                              | DRAWING NO. 609 |
|                              | FILE NO.        |

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY ENGINEER. IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.



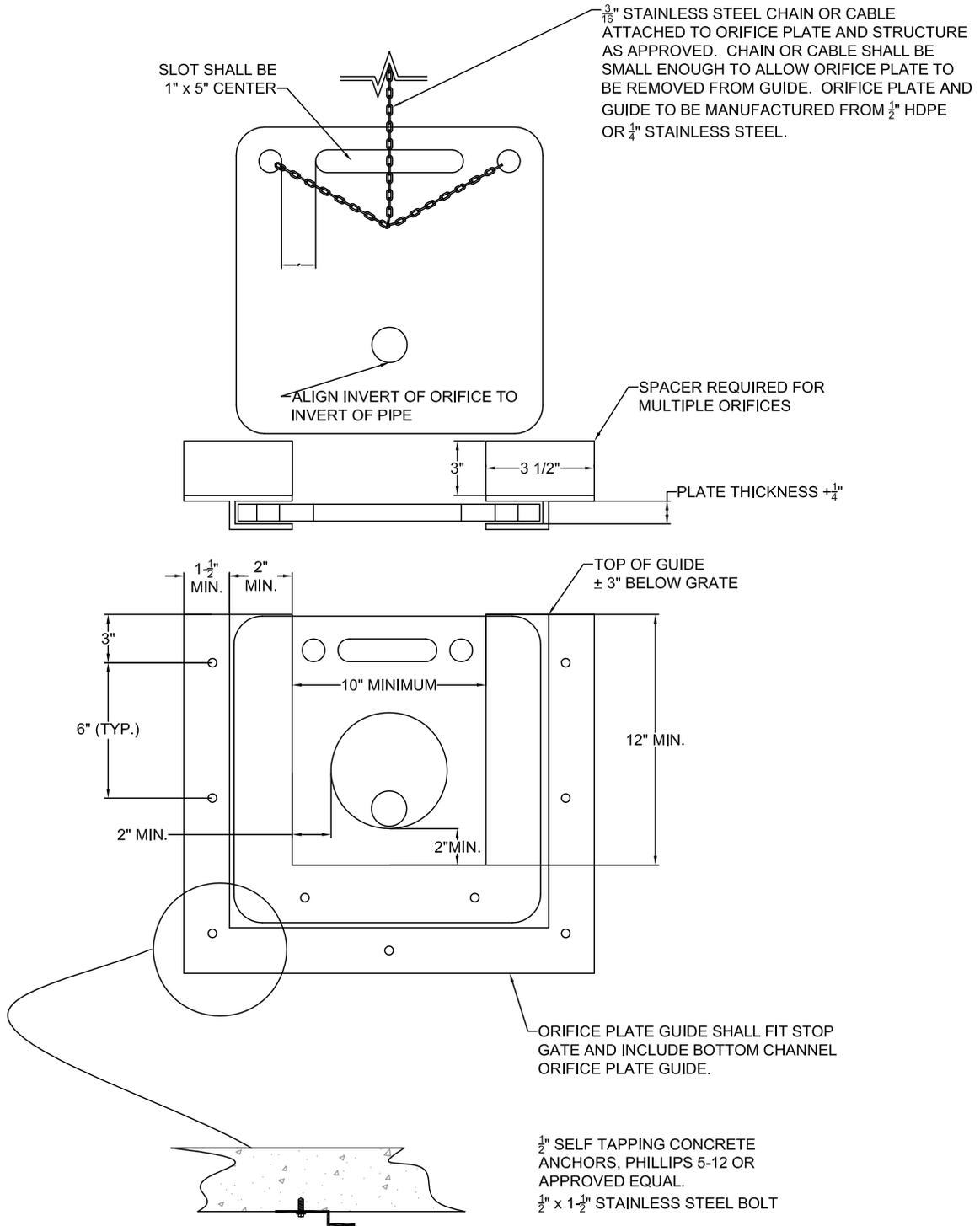
**NOTE:**

1. CONNECTING PIPE AND TEE SHALL BE 4", 6", OR 8" AWWA C-900 OR ASTM 3034 PVC, AND ONE SIZE LARGER THAN THE ORIFICE OPENING.
2. MAXIMUM ORIFICE OPENING SHALL BE 6" DIAMETER.
3. STRUCTURES SHALL CONFORM TO STANDARD DRAWING NO. 390 DITCH INLET.
4. FRAME AND GRATE SHALL CONFORM TO STANDARD DRAWING NO. 603, DITCH INLET FRAME AND GRATE.
5. PLATE AND GUIDE SHALL BE SECURED FLUSH AGAINST WALL OF STRUCTURE AS APPROVED.
6. MAINTAINANCE ACCESS REQUIRED TO WITHIN 10' OF CENTER OF BOTH STRUCTURES.

|                                       |                 |
|---------------------------------------|-----------------|
| <b>STANDARD DETENTION POND OUTLET</b> |                 |
| <b>CITY OF GLADSTONE</b>              | DATE: 2017      |
|                                       | DRAWING NO. 610 |
|                                       | FILE NO.        |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY

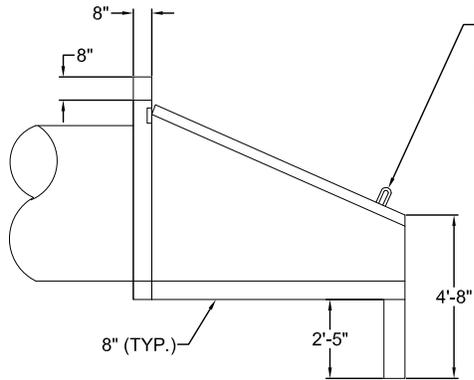
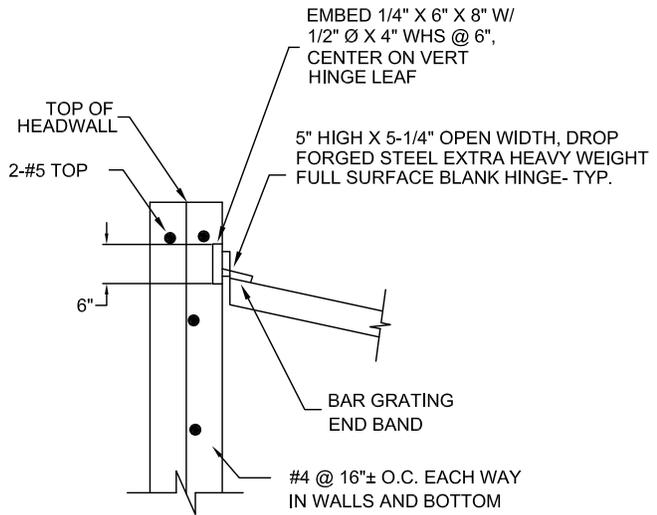
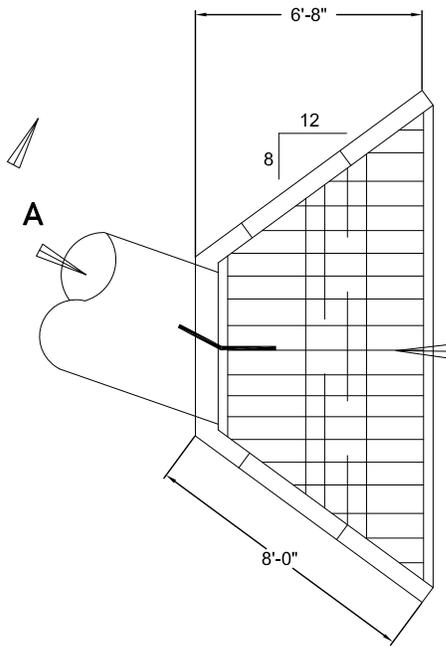


NOTE:  
 FOR MULTIPLE ORIFICE APPLICATION, A 3" MIN. SPACER IS REQUIRED AS SHOWN. SPACER TO MATCH PLATE GUIDE DIMENSIONS, WIDTH, MATERIAL WITH A WATER TIGHT SEAL.

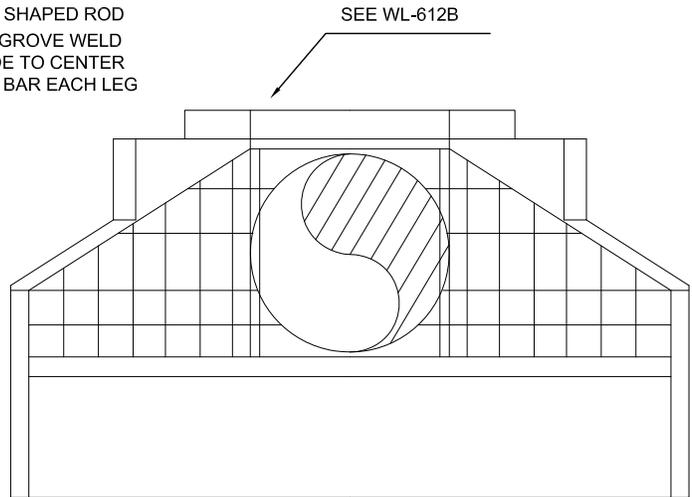
|                              |                 |
|------------------------------|-----------------|
| <b>PLATE AND GUIDE</b>       |                 |
| <b>CITY OF<br/>GLADSTONE</b> | DATE: 2017      |
|                              | DRAWING NO. 611 |
|                              | FILE NO.        |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

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**SECTION A-A**



**NOTE:**

1. FOLLOW ODOT DETAIL 5-7.3 "ALTERNATIVE "A" INLET DETAILS - 2:1 FILL SLOPE". FOR REINFORCEMENT DETAIL USE 5'-0" BARREL HEIGHT. FORM WALL AROUND 54" PIPE.
2. ALL WALL THICKNESS ON THIS PAGE ARE 8" UNLESS OTHERWISE NOTED.

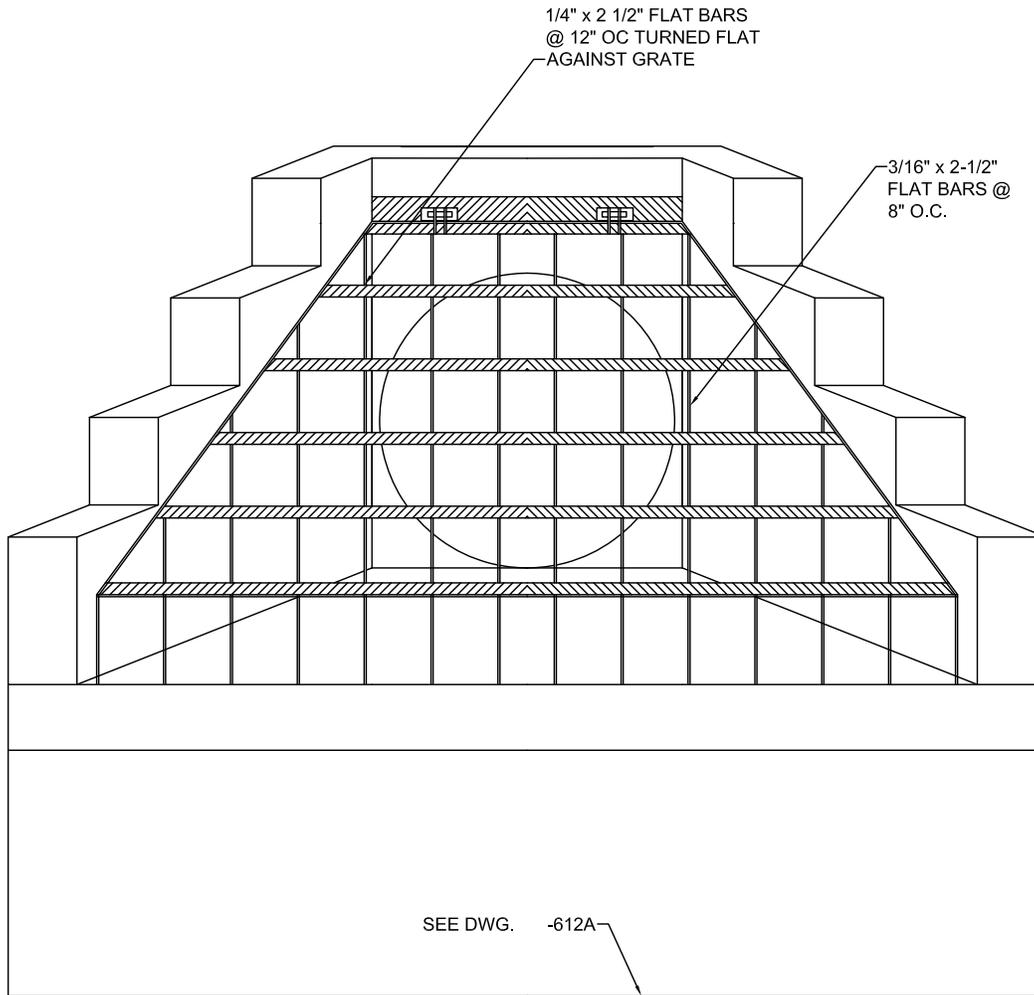
**STEEL NOTES:**

- A. CODES SPECIFICATIONS: STEEL CONSTRUCTION SHALL CONFORM TO THE SPECIFICATIONS AND STANDARDS AS CONTAINED IN THE 9TH EDITION OF THE AISC MANUAL OF STEEL CONSTRUCTION.
- B. MATERIAL: STRUCTURAL SHAPES, BARS, PLATES, AND SHEETS INDICATED ON THE DRAWINGS SHALL BE STEEL MEETING ASTM A36 SPECIFICATIONS. BOLTS SHALL CONFORM TO ASTM A307.
- C. WELDING: WELDING SHALL CONFORM TO AWS D1.1 CODE FOR ARC AND GAS WELDING IN BUILDING CONSTRUCTION. ELECTRODE SHALL BE E70XX LOW HYDROGEN GROUP. WELDING SHALL BE CONDUCTED BY WELDERS CERTIFIED BY THE AWS. ALL WELDS SHALL BE MIN 3/16" FILLET UNLESS OTHERWISE NOTED.
- D. HOT DIP GALVANIZING: UNLESS OTHERWISE NOTED, ALL STEEL FABRICATIONS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.

|   |                         |
|---|-------------------------|
| <p><b>STANDARD INLET AND OUTLET<br/>HEADWALL STRUCTURE<br/>(FOR OUTLETS OF<br/>36" DIA. OR GREATER)</b></p> |                         |
| <p><b>CITY OF<br/>GLADSTONE</b></p>   | <p>DATE: 2017</p>       |
|   | <p>DRAWING NO. 612A</p> |
|   | <p>FILE NO.</p>         |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

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NOTE:

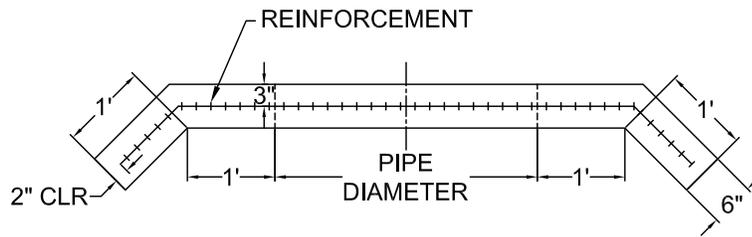
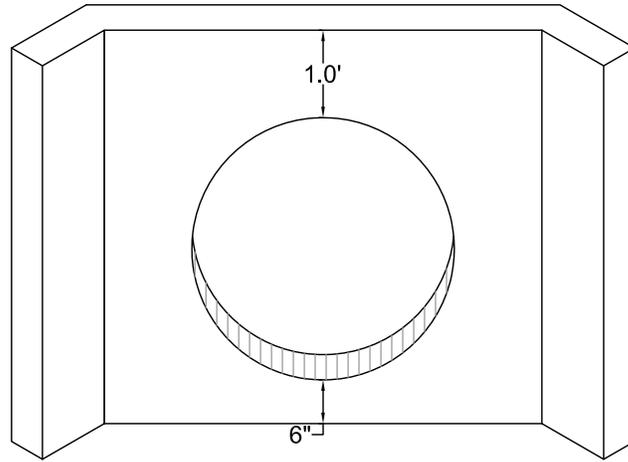
1. FOLLOW ODOT DETAIL 5-7.3 "ALTERNATIVE "A" INLET DETAILS - 2:1 FILL SLOPE". FOR REINFORCEMENT DETAIL USE 5'-0" BARREL HEIGHT. FORM WALL AROUND 54" PIPE.
2. ALL WALL THICKNESS ON THIS PAGE ARE 8" UNLESS OTHERWISE NOTED.

STEEL NOTES:

- A. CODES SPECIFICATIONS: STEEL CONSTRUCTION SHALL CONFORM TO THE SPECIFICATIONS AND STANDARDS AS CONTAINED IN THE 9TH EDITION OF THE AISC MANUAL OF STEEL CONSTRUCTION.
- B. MATERIAL: STRUCTURAL SHAPES, BARS, PLATES, AND SHEETS INDICATED ON THE DRAWINGS SHALL BE STEEL MEETING ASTM A36 SPECIFICATIONS. BOLTS SHALL CONFORM TO ASTM A307.
- C. WELDING: WELDING SHALL CONFORM TO AWS D1.1 CODE FOR ARC AND GAS WELDING IN BUILDING CONSTRUCTION. ELECTRODE SHALL BE E70XX LOW HYDROGEN GROUP. WELDING SHALL BE CONDUCTED BY WELDERS CERTIFIED BY THE AWS. ALL WELDS SHALL BE MIN 3/16" FILLET UNLESS OTHERWISE NOTED.
- D. HOT DIP GALVANIZING: UNLESS OTHERWISE NOTED, ALL STEEL FABRICATIONS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.

|  |                  |
|--|------------------|
| <b>STANDARD INLET AND OUTLET<br/>HEADWALL STRUCTURE<br/>(FOR OUTLETS OF<br/>36" DIA. OR GREATER)</b> |                  |
| <b>CITY OF<br/>GLADSTONE</b>   | DATE: 2017       |
|  | DRAWING NO. 612B |
|  | FILE NO.         |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.



NOTE:

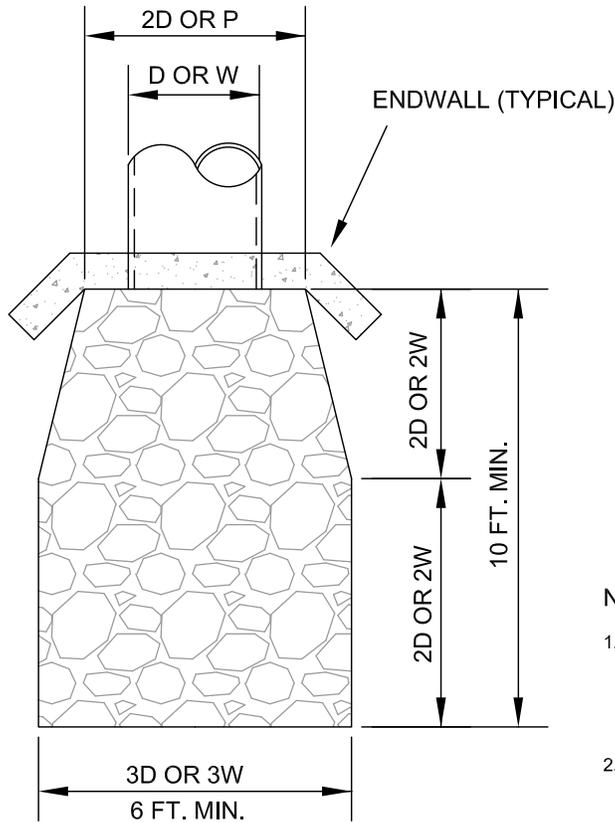
1. USE CONCRETE HAVING A 28 DAY DESIGN STRENGTH OF 3300 PSI.
2. OUTLET WING WALL SHALL BE USED FOR ALL OUTFALL PIPES FROM 10" TO 36".
3. THIS DETAIL REPRESENTS THE MINIMUM REQUIREMENT. THE NEED FOR ADDITIONAL STEEL, A FOOTING AND DRAINAGE BEHIND THE WALL SHALL BE INVESTIGATED BY THE DESIGN ENGINEER.
4. FOR PIPES LARGER THAN 33" OR MULTIPLE PIPE OUTLETS, USE DWG-612.
5. CONCRETE REINFORCEMENT SHALL CONSIST OF:
  - A) ADDING A POLY-FIBER MESH TO THE CONCRETE MIX OR
  - B) USE (2) #4 BARS ABOVE AND BELOW PIPE AND #4 BARS AT 6" O.C. VERTICALLY.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY

|   |                 |
|---|-----------------|
| <b>OUTLET HEADWALL<br/>(FOR OUTLET PIPES OF<br/>10" TO 33")</b> |                 |
| <b>CITY OF<br/>GLADSTONE</b>                                    | DATE: 2017      |
|   | DRAWING NO. 613 |
|   | FILE NO.        |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



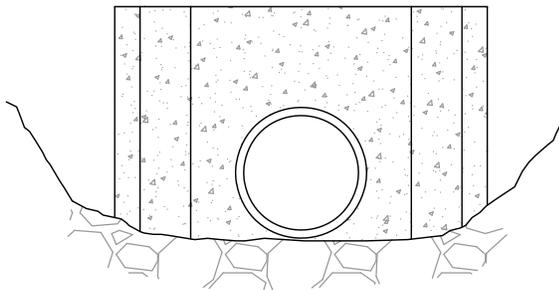
D = PIPE DIAMETER  
 W = BOTTOM WIDTH OF CHANNEL  
 P = WETTED PERIMETER OF CHANNEL

| DESIGN VELOCITY FT./SEC | ROCK CLASSIFICATION BY WEIGHT |
|-------------------------|-------------------------------|
| 6 - 10                  | 200 LBS.                      |
| 10 - 12                 | 1/4 TON                       |
| 12 - 14                 | 1/2 TON                       |
| 14 - 16                 | 1 TON                         |
| 16 - 18                 | 2 TON                         |

SELECTION OF RIP RAP  
 (SEE NOTE 1)

**NOTE:**

1. DIMENSIONS FOR RIP RAP APPLY TO FLOWS
  - < 2 CFS RIP RAP FOR FLOWS
  - > 2 CFS MUST BE DESIGNED BY AN ENGINEER
  - FLOWS > 20 FPS SHALL USE ENERGY DISSIPATOR
2. TYPE OF RIP RAP
  - A. REGULAR QUARRY STONE CLASS 50-200
  - B. COBBLESTONE
  - C. CONCRETE (ONLY ALLOWED UPON APPROVAL OF THE CITY)
3. PLACEMENT
  - A. MINIMUM DEPTH = 1 1/2 TIMES AVERAGE STONE SIZE.
  - B. ROCKS SHALL BE PLACED TO PROVIDE A MINIMUM OF VOIDS.
  - C. SURFACE ROCKS OR CONCRETE SHALL PROTRUDE AT LEAST 1/2 THEIR VERTICAL DIMENSION.
  - D. RIP RAP IS TO BE PLACED OVER A NATURAL BEDDING, OR IT MAY BE GROUTED OR PLACED OVER A GRAVEL BEDDING AS REQUIRED BY THE CITY.



**STORM SEWER OUTFALL**

**CITY OF  
 GLADSTONE**

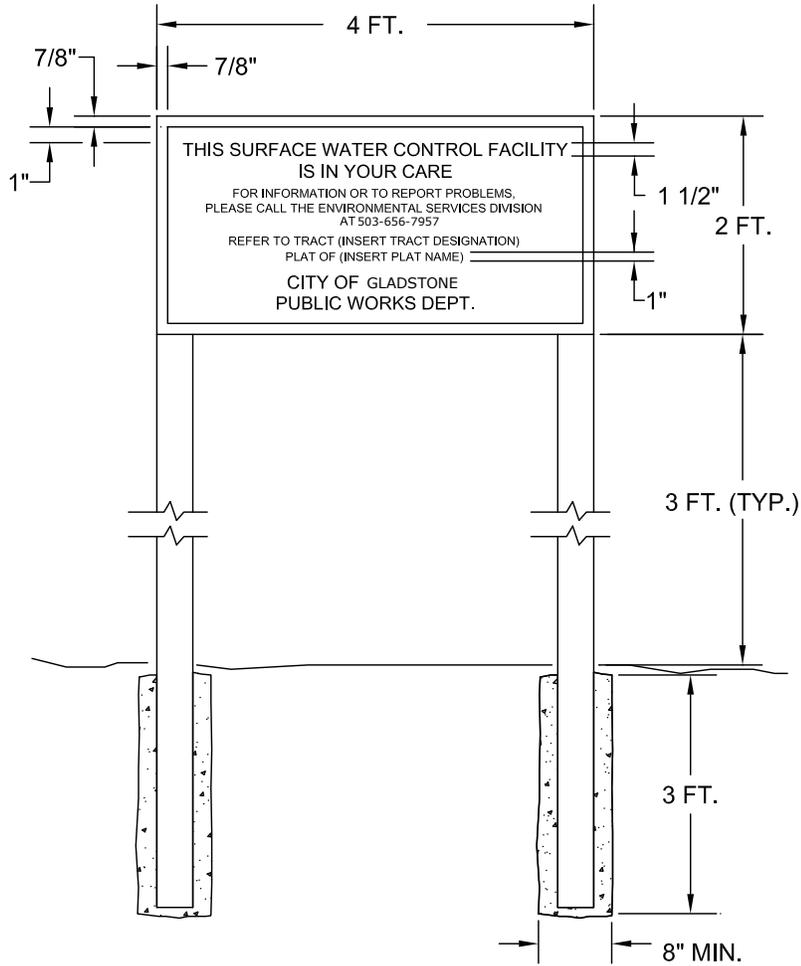
DATE:  
 2017

DRAWING NO.  
 614

FILE NO.

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



**SPECIFICATIONS:**

**SIZE:** 48" x 24"

**MATERIAL:** ALUMINUM (.080" THICKNESS)

**PAINT:** FACE - 3 COATS OUTDOOR ENAMEL (SPRAYED)  
 BACK - 1 COAT OUTDOOR ENAMEL (SPRAYED)

**LETTERING:** SILK SCREEN ENAMEL WHERE POSSIBLE, OR HAND PAINTED ENAMELS

**COLOR:** BLACK AND WHITE. WHITE BACKGROUND, LETTERING AND BORDER IN BLACK

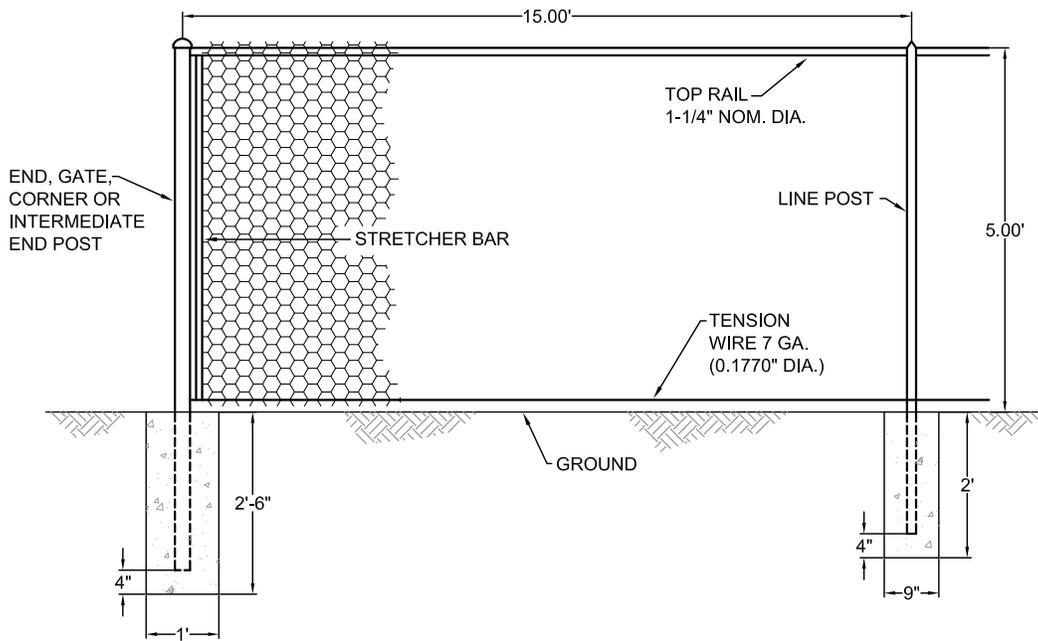
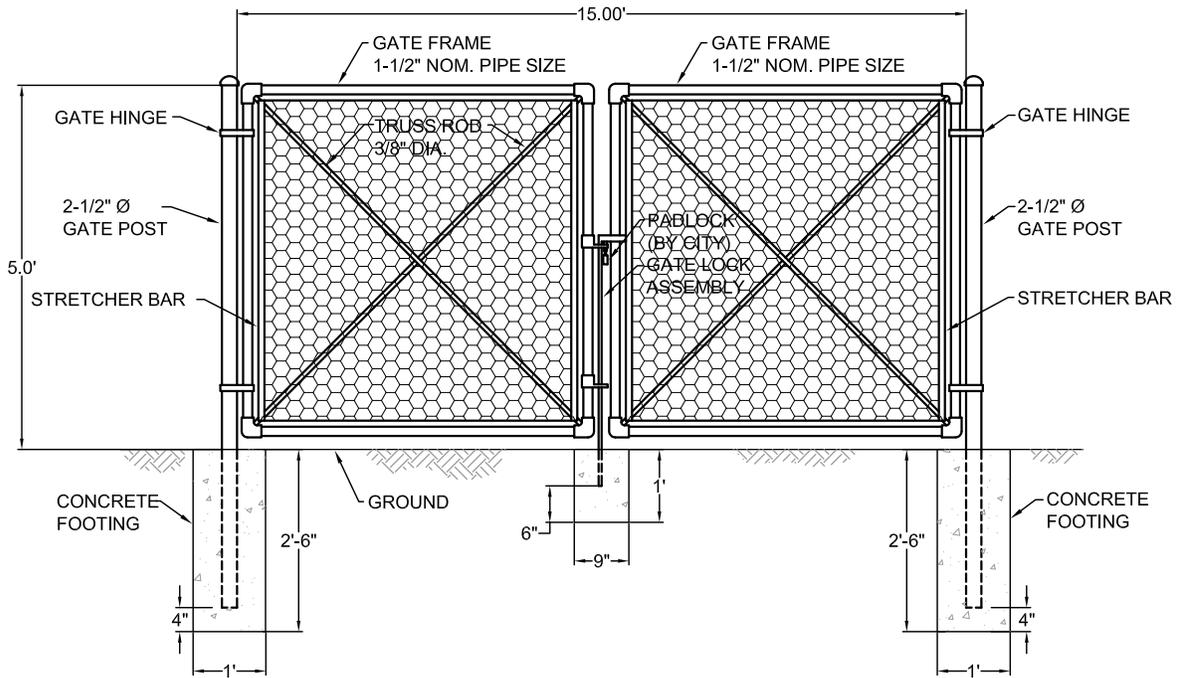
**TYPE FACE:** HELVETICA. SEE DIMENSIONS SHOWN ABOVE. OUTER BORDER 1/2" WIDTH BLACK

**INSTALLATION:** INSTALL ON TWO 8 FT. LONG 4" x 4" POSTS, PRESSURE TREATED, INSTALLED IN 3 FT. DEEP CONCRETE FILLED POST HOLES (8" MIN. DIA.)

|  |                 |
|--|-----------------|
| <b>SURFACE WATER FACILITY<br/>SIGN</b> |                 |
| <b>CITY OF<br/>GLADSTONE</b>           | DATE: 2017      |
|  | DRAWING NO. 615 |
|  | FILE NO.        |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

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**NOTE:**

1. BLACK POWDER COATING ON ALL HARDWARE AND ACCESSORIES IS REQUIRED.
2. ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT STATE OF OREGON STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

**SURFACE WATER FACILITY  
FENCE**

**CITY OF  
GLADSTONE**

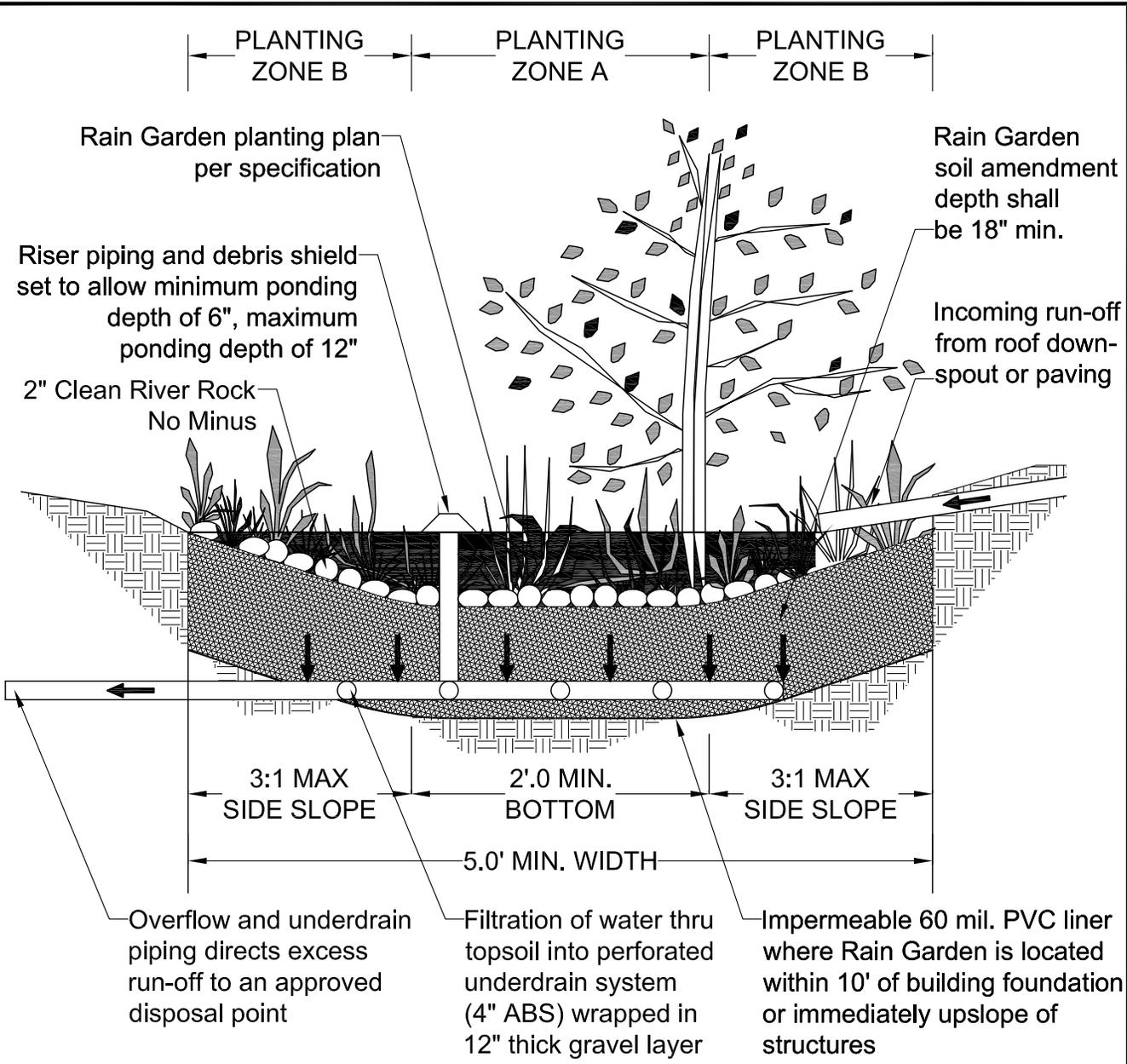
DATE:  
2017

DRAWING NO.  
616

FILE NO.

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

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| RAIN GARDEN PLANTS |                                    |                          |
|--------------------|------------------------------------|--------------------------|
| ZONE               | BOTANICAL NAME                     | COMMON NAME              |
| A                  | CAREX APERTA                       | COLUMBIA SEDGE           |
| A                  | CAREX DENSA                        | DENSE SEDGE              |
| A                  | CAREX PANSA                        | SANDDUNE SEDGE           |
| A                  | CAREX TESTACAE                     | NEW ZEALAND ORANGE SEDGE |
| A                  | CAREX TUMILICOLA                   | FOOTHILL SEDGE           |
| A                  | DESCHAMISIA CAESPITOSA             | TUFTED HAIR GRASS        |
| A                  | ELEOCHARIS PALUSTRIS               | CREEPING SPIKE RUSH      |
| A                  | JUNCUS BALTICUS                    | BALTIC RUSH              |
| A                  | JUNCUS EFFUSUS "CARMEN'S JAPANESE" | COMMON RUSH              |
| A                  | JUNCUS EFFUSUS "GOLD STRIKE"       | COMMON RUSH              |
| A                  | JUNCUS EFFUSUS "CARMAN'S GRAY"     | COMMON RUSH              |
| A                  | JUNCUS PATENS                      | SPREADING RUSH           |
| B                  | ARCTOSTAPHYLLOS UVA-URSI           | KINNIKINNICK             |
| B                  | BLECHNUM SPICANT                   | DEER FERN                |
| B                  | CORNUS SERICEA VAR. KELSEY II      | DWARF REDTWIG DOGWOOD    |
| B                  | LIRIOPE MUSCARI "BIG BLUE"         | BIG BLUE LILY TURF       |
| B                  | GAUTHERIA SHALLON                  | SALAL                    |
| B                  | MAHONIA NERVOSA                    | LOW OREGON GRAPE         |
| B                  | MAHONIA REPENS                     | CREEPING OREGON GRAPE    |

**RAIN GARDEN SURFACE AREA = TOTAL IMPERVIOUS AREA x 0.06**

NOTE:  
PLANT 1 GALLON POTS 18" O.C. IN EACH ZONE. A MINIMUM OF 3 SPECIES SHALL BE USED IN EACH ZONE.

## INFILTRATION RAIN GARDEN TYPE 1

|                              |                  |
|------------------------------|------------------|
| <b>CITY OF<br/>GLADSTONE</b> | DATE: 2017       |
|                              | DRAWING NO. 617A |
|                              | FILE NO.         |

MAINTENANCE AGREEMENT SHALL BE REQUIRED AND BE RECORDED WITH THE CITY

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY . IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THE NATIVE SOIL IN THE TOP 18 INCHES OF ALL STORM WATER PLANTERS SHALL BE AMENDED WITH A MIX OF ONE PART IMPORTED ORGANIC COMPOST AND ONE PART GRAVELLY SAND, SUCH THAT THERE ARE EQUAL PARTS COMPOST, SAND AND NATIVE SOIL. THIS WILL REQUIRE THE STORMWATER PLANTER AREA TO BE OVER EXCAVATED BY APPROXIMATELY 12 INCHES PRIOR TO ADDING SAND AND COMPOST. THE SPECIFICATIONS INCLUDED HEREIN SHALL BE USED FOR THIS PURPOSE AND INCLUDED ON THE PERMIT PLANS. THE MIX SHALL BE THOROUGHLY TILLED TOGETHER ON-SITE, AND SHALL BE CAPABLE OF INFILTRATING WATER WITHOUT PROLONGED PONDING ON THE SURFACE. IF SUCH PONDING OCCURS, ORGANIC COMPOST AND SAND MUST BE ADDED AND RE-TILLED UNTIL INFILTRATION PERFORMANCE IS ENHANCED. A 2-INCH LAYER OF SHREDDED BARK MULCH (NOT BARK DUST OR BARK CHIPS) SHALL BE USED OVER THE AMENDED SOIL AND BETWEEN THE PLANTINGS TO COMPLETELY COVER THE SOIL AND PREVENT EROSION OR WEED INTRUSION.

ORGANIC COMPOST

ORGANIC COMPOST SHALL HAVE THE FOLLOWING PROPERTIES:

- 100% SHALL PASS A 3/4 INCH SCREEN.
- pH BETWEEN 5.5 AND 7.0.
- CARBON NITROGEN RATIO BETWEEN 20:1 AND 35:1 (35:1 CN RATIO RECOMMENDED FOR NATIVE PLANTS.)
- ORGANIC MATTER CONTENT BETWEEN 40 AND 50 PERCENT.

ORGANIC COMPOST MAY CONSIST OF THE FOLLOWING:

**MUSHROOM COMPOST** - THE USED BEDDING MATERIAL FROM COMMERCIAL MUSHROOM PRODUCTION.

**COMPOSTED YARD DEBRIS** - COMMERCIALLY MANUFACTURED MATERIAL, MADE FROM DEAD PLANT MATERIAL SUCH AS GRASS CLIPPINGS, WEEDS, GREEN AND DEAD DRY LEAVES, GARDEN AND VEGETABLE MATERIAL, AND GROUND BRANCHES OF TREES AND SHRUBS. FURNISH A PRODUCT THAT IS COMPOSTED UNDER CONTROLLED AEROBIC DECOMPOSITION, WITH THE INTERNAL TEMPERATURE REACHING 57°C (135°F) FOR 15 DAYS, WITHOUT EXCEEDING 68°C (155°F). ENSURE THAT IT CONTAINS A MAXIMUM OF 10% BACTERIA AND 10% FUNGUS.

**PEAT MOSS** - HORTICULTURAL GRADE, NATURAL PEAT MOSS IN AIR-DRY CONDITION, FREE FROM WOODY SUBSTANCES, IN BALES OR BAGS LABELED FOR CONTENT AND VOLUME. ONLY PEAT MOSS USED IN COMBINATION WITH ONE OF THE ABOVE COMPOSTS IS ACCEPTABLE.

GRAVELLY SAND

GRAVELLY SAND SHALL BE FREE OF ORGANIC MATERIAL, CONTAMINANTS, AND HAZARDOUS MATERIALS, AND SHALL CONFORM TO THE FOLLOWING GRADATION:

| U.S. SIEVE SIZE | PERCENT PASSING |
|-----------------|-----------------|
| 2-INCH          | 100             |
| 3/4 -INCH       | 70-100          |
| 1/2 -INCH       | 50-80           |
| NO. 40          | 15-40           |
| NO. 200         | 0-3             |

MIXING

MIX COMPOST, SAND AND NATIVE SOIL TO A HOMOGENEOUS CONSISTENCY. DO NOT MIX COMPOST, SAND, AND NATIVE SOIL IN THE RAIN OR WET CONDITIONS.

STORAGE

STORE STOCK PILES OF ORGANIC SOIL MIX IN A MANNER THAT PREVENTS IT FROM BECOMING WET FROM RAIN, STORM WATER RUNOFF, OR OTHER SOURCES OF WATER, OR CONTAMINATED BY FINE SOIL OR OTHER UNDESIRABLE MATERIALS. ALL STOCKPILES OF MIXED SOIL MATERIAL SHALL BE PROTECTED AND COVERED.

PLACEMENT

PLACE AMENDED SOIL MIX IN RAIN GARDENS AND STORMWATER PLANTERS IN LIFTS NOT EXCEEDING 6 INCHES IN LOOSE THICKNESS. AFTER ALL LIFTS HAVE BEEN PLACED, GRADE SOIL TO FINISH GRADES AS SPECIFIED ON THE PLANS. DO NOT OVER COMPACT SOIL MIX WITH MECHANICAL EQUIPMENT AFTER PLACEMENT.

MULCH

SHREDDED BARK MULCH (NOT BARK DUST OF BARK CHIPS) SHALL BE USED IN A 2-INCH LAYER MINIMUM OVER THE AMENDED SOIL MIX AND BETWEEN THE PLANTINGS TO COMPLETELY COVER THE SOIL AND PREVENT EROSION OR WEED INTRUSION.

INFILTRATION TESTING

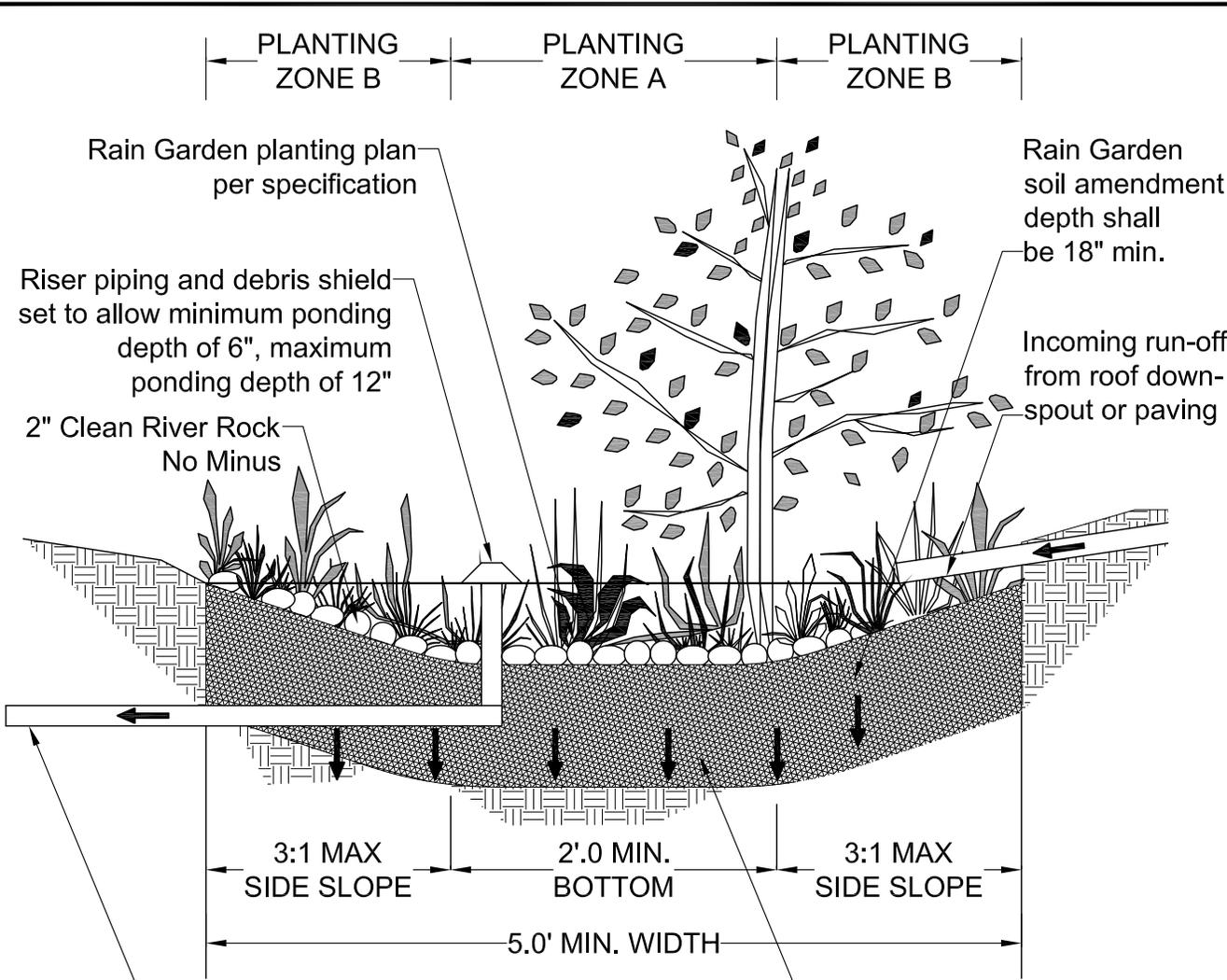
WET THE SURFACE OF THE RAIN GARDEN OR STORMWATER PLANTER WITH A SPRINKLER OR HOSE UNTIL SATURATED. SMALL RAIN GARDENS AND PLANTERS (<100 SQUARE IN SURFACE) AREA CAN BE TESTED FULL-SCALE, WHILE LARGE RAIN GARDENS AND PLANTERS CAN UTILIZE ISOLATED FALLING HEAD TEST (MINIMUM 2 PER 100 SQUARE FEET OF AREA). FILL THE TESTING AREA TO A DEPTH OF 4-INCHES AND TRACK THE TIME IT TAKES TO COMPLETELY DRAW DOWN. REPEAT TEST 3 TIMES. IF THE WATER IN ANY OF THE TEST FAILS TO DRAW DOWN IN LESS THAN AN HOUR, ADD COMPOST AND GRAVELY SAND TO THE MIX AND RE-TILL. REPEAT THIS PROCEDURE UNTIL FAVORABLE TEST RESULTS ARE ACHIEVED.

# SOIL AMENDMENT AND MULCH SPECIFICATION

|                              |                     |
|------------------------------|---------------------|
| <b>CITY OF<br/>GLADSTONE</b> | DATE:<br>2017       |
|                              | DRAWING NO.<br>617B |
|                              | FILE NO.            |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



**RAIN GARDEN SURFACE AREA = TOTAL IMPERVIOUS AREA x 0.06**

| RAIN GARDEN PLANTS |                                    |                          |
|--------------------|------------------------------------|--------------------------|
| ZONE               | BOTANICAL NAME                     | COMMON NAME              |
| A                  | CAREX APERTA                       | COLUMBIA SEDGE           |
| A                  | CAREX Densa                        | DENSE SEDGE              |
| A                  | CAREX PANSA                        | SANDDUNE SEDGE           |
| A                  | CAREX TESTACAE                     | NEW ZEALAND ORANGE SEDGE |
| A                  | CAREX TUMILICOLA                   | FOOTHILL SEDGE           |
| A                  | DESCHAMISIA CAESPITOSA             | TUFTED HAIR GRASS        |
| A                  | ELEOCHARIS PALUSTRIS               | CREEPING SPIKE RUSH      |
| A                  | JUNCUS BALTICUS                    | BALTIC RUSH              |
| A                  | JUNCUS EFFUSUS "CARMEN'S JAPANESE" | COMMON RUSH              |
| A                  | JUNCUS EFFUSUS "GOLD STRIKE"       | COMMON RUSH              |
| A                  | JUNCUS EFFUSUS "CARMAN'S GRAY"     | COMMON RUSH              |
| A                  | JUNCUS PATENS                      | SPREADING RUSH           |
| B                  | ARCTOSTAPHYLLOS UVA-URSI           | KINNIKINNICK             |
| B                  | BLECHNUM SPICANT                   | DEER FERN                |
| B                  | CORNUS SERICEA VAR. KELSEY II      | DWARF REDTWIG DOGWOOD    |
| B                  | LIRIOPE MUSCARI "BIG BLUE"         | BIG BLUE LILY TURF       |
| B                  | GAUTHERIA SHALLON                  | SALAL                    |
| B                  | MAHONIA NERVOSA                    | LOW OREGON GRAPE         |
| B                  | MAHONIA REPENS                     | CREEPING OREGON GRAPE    |

NOTE:  
PLANT 1 GALLON POTS 18" O.C. IN EACH ZONE. A MINIMUM OF 3 SPECIES SHALL BE USED IN EACH ZONE.

**INFILTRATION  
RAIN GARDEN TYPE 2**

|                              |                  |
|------------------------------|------------------|
| <b>CITY OF<br/>GLADSTONE</b> | DATE: 2017       |
|                              | DRAWING NO. 618A |
|                              | FILE NO.         |

MAINTENANCE AGREEMENT SHALL BE REQUIRED AND BE RECORDED WITH THE CITY

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL. THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY

THE NATIVE SOIL IN THE TOP 18 INCHES OF ALL STORM WATER PLANTERS SHALL BE AMENDED WITH A MIX OF ONE PART IMPORTED ORGANIC COMPOST AND ONE PART GRAVELLY SAND, SUCH THAT THERE ARE EQUAL PARTS COMPOST, SAND AND NATIVE SOIL. THIS WILL REQUIRE THE STORMWATER PLANTER AREA TO BE OVER EXCAVATED BY APPROXIMATELY 12 INCHES PRIOR TO ADDING SAND AND COMPOST. THE SPECIFICATIONS INCLUDED HEREIN SHALL BE USED FOR THIS PURPOSE AND INCLUDED ON THE PERMIT PLANS. THE MIX SHALL BE THOROUGHLY TILLED TOGETHER ON-SITE, AND SHALL BE CAPABLE OF INFILTRATING WATER WITHOUT PROLONGED PONDING ON THE SURFACE. IF SUCH PONDING OCCURS, ORGANIC COMPOST AND SAND MUST BE ADDED AND RE-TILLED UNTIL INFILTRATION PERFORMANCE IS ENHANCED. A 2-INCH LAYER OF SHREDDED BARK MULCH (NOT BARK DUST OR BARK CHIPS) SHALL BE USED OVER THE AMENDED SOIL AND BETWEEN THE PLANTINGS TO COMPLETELY COVER THE SOIL AND PREVENT EROSION OR WEED INTRUSION.

ORGANIC COMPOST

ORGANIC COMPOST SHALL HAVE THE FOLLOWING PROPERTIES:

- 100% SHALL PASS A 3/4 INCH SCREEN.
- pH BETWEEN 5.5 AND 7.0.
- CARBON NITROGEN RATIO BETWEEN 20:1 AND 35:1 (35:1 CN RATIO RECOMMENDED FOR NATIVE PLANTS.)
- ORGANIC MATTER CONTENT BETWEEN 40 AND 50 PERCENT.

ORGANIC COMPOST MAY CONSIST OF THE FOLLOWING:

**MUSHROOM COMPOST** - THE USED BEDDING MATERIAL FROM COMMERCIAL MUSHROOM PRODUCTION.

**COMPOSTED YARD DEBRIS** - COMMERCIALLY MANUFACTURED MATERIAL, MADE FROM DEAD PLANT MATERIAL SUCH AS GRASS CLIPPINGS, WEEDS, GREEN AND DEAD DRY LEAVES, GARDEN AND VEGETABLE MATERIAL, AND GROUND BRANCHES OF TREES AND SHRUBS. FURNISH A PRODUCT THAT IS COMPOSTED UNDER CONTROLLED AEROBIC DECOMPOSITION, WITH THE INTERNAL TEMPERATURE REACHING 57°C (135°F) FOR 15 DAYS, WITHOUT EXCEEDING 68°C (155°F). ENSURE THAT IT CONTAINS A MAXIMUM OF 10% BACTERIA AND 10% FUNGUS.

**PEAT MOSS** - HORTICULTURAL GRADE, NATURAL PEAT MOSS IN AIR-DRY CONDITION, FREE FROM WOODY SUBSTANCES, IN BALES OR BAGS LABELED FOR CONTENT AND VOLUME. ONLY PEAT MOSS USED IN COMBINATION WITH ONE OF THE ABOVE COMPOSTS IS ACCEPTABLE.

GRAVELLY SAND

GRAVELLY SAND SHALL BE FREE OF ORGANIC MATERIAL, CONTAMINANTS, AND HAZARDOUS MATERIALS, AND SHALL CONFORM TO THE FOLLOWING GRADATION:

| U.S. SIEVE SIZE | PERCENT PASSING |
|-----------------|-----------------|
| 2-INCH          | 100             |
| 3/4 -INCH       | 70-100          |
| 1/2 -INCH       | 50-80           |
| NO. 40          | 15-40           |
| NO. 200         | 0-3             |

MIXING

MIX COMPOST, SAND AND NATIVE SOIL TO A HOMOGENEOUS CONSISTENCY. DO NOT MIX COMPOST, SAND, AND NATIVE SOIL IN THE RAIN OR WET CONDITIONS.

STORAGE

STORE STOCK PILES OF ORGANIC SOIL MIX IN A MANNER THAT PREVENTS IT FROM BECOMING WET FROM RAIN, STORM WATER RUNOFF, OR OTHER SOURCES OF WATER, OR CONTAMINATED BY FINE SOIL OR OTHER UNDESIRABLE MATERIALS. ALL STOCKPILES OF MIXED SOIL MATERIAL SHALL BE PROTECTED AND COVERED.

PLACEMENT

PLACE AMENDED SOIL MIX IN RAIN GARDENS AND STORMWATER PLANTERS IN LIFTS NOT EXCEEDING 6 INCHES IN LOOSE THICKNESS. AFTER ALL LIFTS HAVE BEEN PLACED, GRADE SOIL TO FINISH GRADES AS SPECIFIED ON THE PLANS. DO NOT OVER COMPACT SOIL MIX WITH MECHANICAL EQUIPMENT AFTER PLACEMENT.

MULCH

SHREDDED BARK MULCH (NOT BARK DUST OF BARK CHIPS) SHALL BE USED IN A 2-INCH LAYER MINIMUM OVER THE AMENDED SOIL MIX AND BETWEEN THE PLANTINGS TO COMPLETELY COVER THE SOIL AND PREVENT EROSION OR WEED INTRUSION.

INFILTRATION TESTING

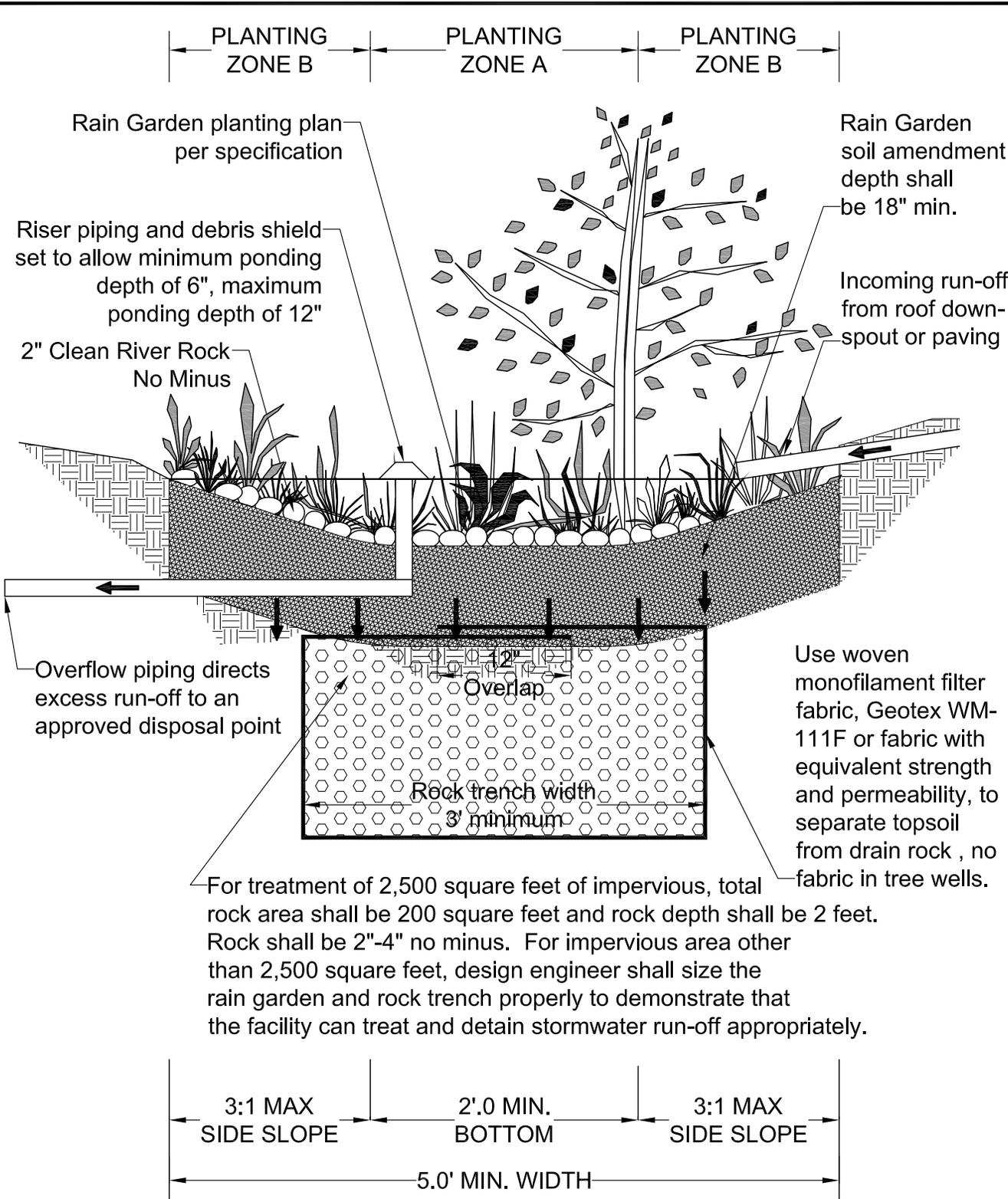
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## SOIL AMENDMENT AND MULCH SPECIFICATION

|                              |                     |
|------------------------------|---------------------|
| <b>CITY OF<br/>GLADSTONE</b> | DATE:<br>2017       |
|                              | DRAWING NO.<br>618B |
|                              | FILE NO.            |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

THIS DETAIL DRAWING SHALL NOT BE ALTERED OR CHANGED IN ANY MANNER EXCEPT BY THE CITY



For treatment of 2,500 square feet of impervious, total rock area shall be 200 square feet and rock depth shall be 2 feet. Rock shall be 2"-4" no minus. For impervious area other than 2,500 square feet, design engineer shall size the rain garden and rock trench properly to demonstrate that the facility can treat and detain stormwater run-off appropriately.

**RAIN GARDEN SURFACE AREA = TOTAL IMPERVIOUS AREA x 0.06**

NOTE:  
PLANT 1 GALLON POTS 18" O.C. IN EACH ZONE. A MINIMUM OF 3 SPECIES SHALL BE USED IN EACH ZONE.

**INFILTRATION  
RAIN GARDEN TYPE 3**

|                              |                     |
|------------------------------|---------------------|
| <b>CITY OF<br/>GLADSTONE</b> | DATE:<br>2017       |
|                              | DRAWING NO.<br>619A |
|                              | FILE NO.            |

MAINTENANCE AGREEMENT SHALL BE REQUIRED AND BE RECORDED WITH THE CITY

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| RAIN GARDEN PLANTS |                                    |                          |
|--------------------|------------------------------------|--------------------------|
| ZONE               | BOTANICAL NAME                     | COMMON NAME              |
| A                  | CAREX APERTA                       | COLUMBIA SEDGE           |
| A                  | CAREX DENSA                        | DENSE SEDGE              |
| A                  | CAREX PANSA                        | SANDDUNE SEDGE           |
| A                  | CAREX TESTACAE                     | NEW ZEALAND ORANGE SEDGE |
| A                  | CAREX TUMILICOLA                   | FOOTHILL SEDGE           |
| A                  | DESCHAMISIA CAESPITOSA             | TUFTED HAIR GRASS        |
| A                  | ELEOCHARIS PALUSTRIS               | CREEPING SPIKE RUSH      |
| A                  | JUNCUS BALTICUS                    | BALTIC RUSH              |
| A                  | JUNCUS EFFUSUS "CARMEN'S JAPANESE" | COMMON RUSH              |
| A                  | JUNCUS EFFUSUS "GOLD STRIKE"       | COMMON RUSH              |
| A                  | JUNCUS EFFUSUS "CARMAN'S GRAY"     | COMMON RUSH              |
| A                  | JUNCUS PATENS                      | SPREADING RUSH           |
| B                  | ARCTOSTAPHYLLOS UVA-URSI           | KINNIKINICK              |
| B                  | BLECHNUM SPICANT                   | DEER FERN                |
| B                  | CORNUS SERICEA VAR. KELSEY II      | DWARF REDTWIG DOGWOOD    |
| B                  | LIRIOPE MUSCARI "BIG BLUE"         | BIG BLUE LILY TURF       |
| B                  | GAUTHERIA SHALLON                  | SALAL                    |
| B                  | MAHONIA NERVOSA                    | LOW OREGON GRAPE         |
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ORGANIC COMPOST

ORGANIC COMPOST SHALL HAVE THE FOLLOWING PROPERTIES:

- 100% SHALL PASS A 1/2 INCH SCREEN.
- pH BETWEEN 5.5 AND 7.0.
- CARBON NITROGEN RATIO BETWEEN 20:1 AND 35:1 (35:1 CN RATIO RECOMMENDED FOR NATIVE PLANTS.)
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| NO. 40          | 15-40           |
| NO. 200         | 0-3             |

|   |                  |
|---|------------------|
| <b>SOIL AMENDMENT AND MULCH SPECIFICATION</b> |                  |
| <b>CITY OF GLADSTONE</b>                      | DATE: 2017       |
|   | DRAWING NO. 619B |
|   | FILE NO.         |

IT IS THE RESPONSIBILITY OF THE USER TO ACQUIRE THE MOST CURRENT VERSION OF THE DETAIL.

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INFILTRATION TESTING

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**SOIL AMENDMENT AND  
MULCH SPECIFICATION**

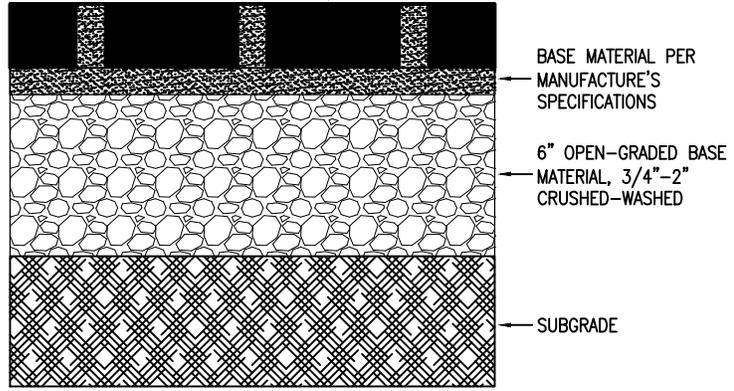
**CITY OF  
GLADSTONE**

DATE:  
2017

DRAWING NO.  
619C

FILE NO.

PAVERS WITH (1/2"-1" MAX) OPEN SURFACE SPACES

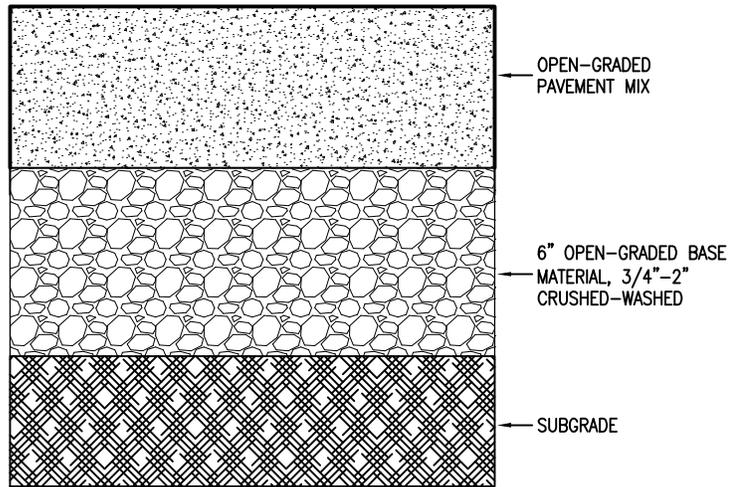


PERMEABLE CONCRETE BLOCK OR "PAVER" SYSTEMS

|                   |   |
|-------------------|---|
|                   | RESIDENTIAL DRIVEWAY OR PEDESTRIAN ONLY |
| CONCRETE          | 4"                                      |
| ASPHALT           | 2 1/2"                                  |
| PAVERS            | 2 3/8"                                  |
| ENGINEERING REQ'D | NO                                      |
| COMPACTION REQ'D  | NO                                      |

EXHIBIT 2-8

DESIGN REQUIREMENTS FOR TOP LIFT DEPTH



PERVIOUS (OPEN GRADED) CONCRETE AND ASPHALT SYSTEMS

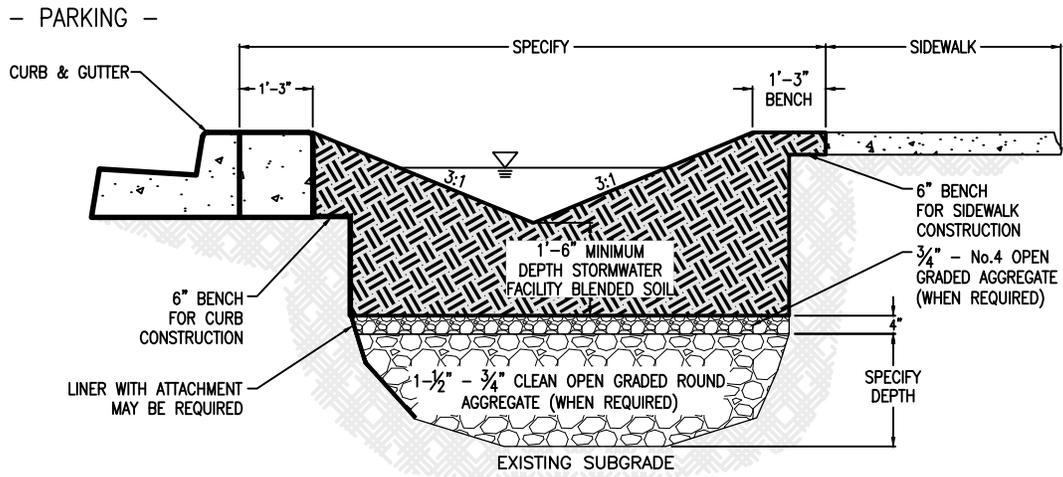
PERVIOUS PAVEMENT PEDESTRIAN AND RESIDENTIAL DRIVEWAY ONLY

CITY OF GLADSTONE

DATE: 2017

DRAWING NO. 620

FILE NO.



SECTION A-A  
SWALE

**DESIGNER INFORMATION:**

1. Show liner and perf-pipe in the Section view if they are required

**CONSTRUCTION NOTE:**

In facilities that are unlined, fracture and loosen soil to a depth of 12" below grade before installing blended soil or aggregate. Do not till.

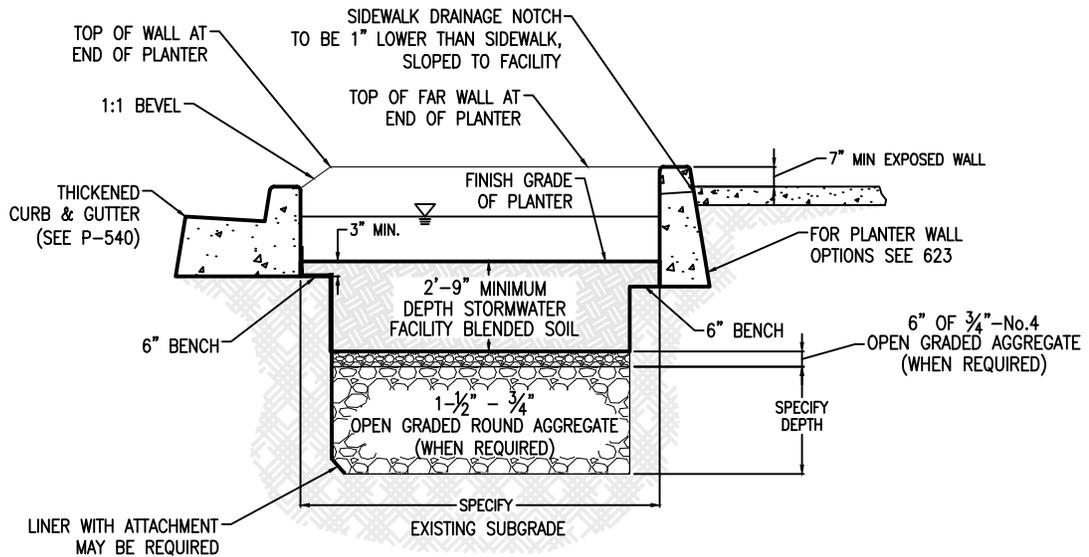
SECTION VIEW  
SWALE

**CITY  
OF  
GLADSTONE**

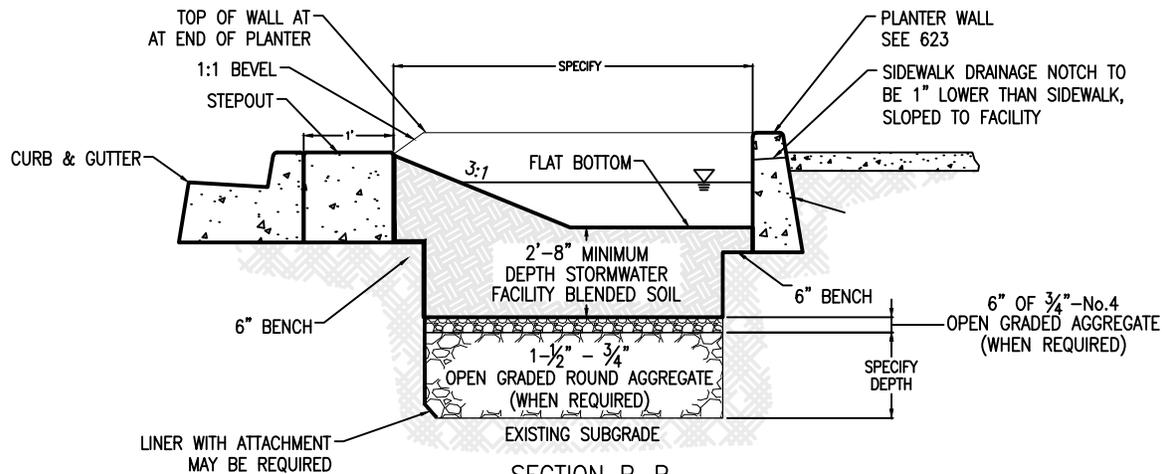
DATE: 2017

DRAWING NO. 621

FILE NO.



SECTION A-A  
PLANTER WITHOUT PARKING



SECTION B-B  
PLANTER WITH PARKING (1' Step-out)

**DESIGNER INFORMATION**

1. Show liner and perf-pipe in the Section view if they are required.
2. Maximize 9" of surface storage.
3. Minimum facility width is 30" from back of curb to face of planter wall.
4. Top of curb and top of sidewalk at approximately same elevation, unless stormwater facility retrofit.

**CONSTRUCTION NOTE**

In facilities that are unlined, fracture and loosen soil to a depth of 12" below grade before installing blended soil or aggregate. Do not till.

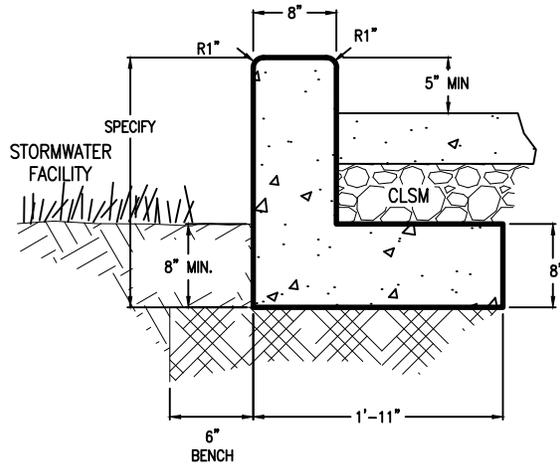
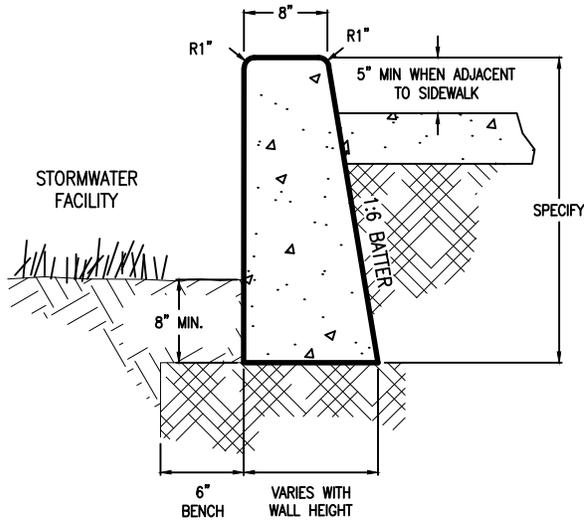
SECTION VIEWS  
PLANTERS

**CITY  
OF  
GLADSTONE**

DATE: 2017

DRAWING NO. 622

FILE NO.



**DESIGNER INFORMATION**

1. Special design considerations or structural review may be required for longer planter wall spans. Steel reinforcement or additional concrete check dams may be needed for stability.
2. Specify one of the above planter wall options based on site conditions.
3. Maintain 1:6 batter for walls and 4" minimum from top of wall to top of sidewalk.

**CONSTRUCTION NOTE**

Finish all exposed concrete surfaces. See Specs.

**PLANTER WALL  
DETAILS**

**CITY  
OF  
GLADSTONE**

DATE: 2017

DRAWING NO. 623

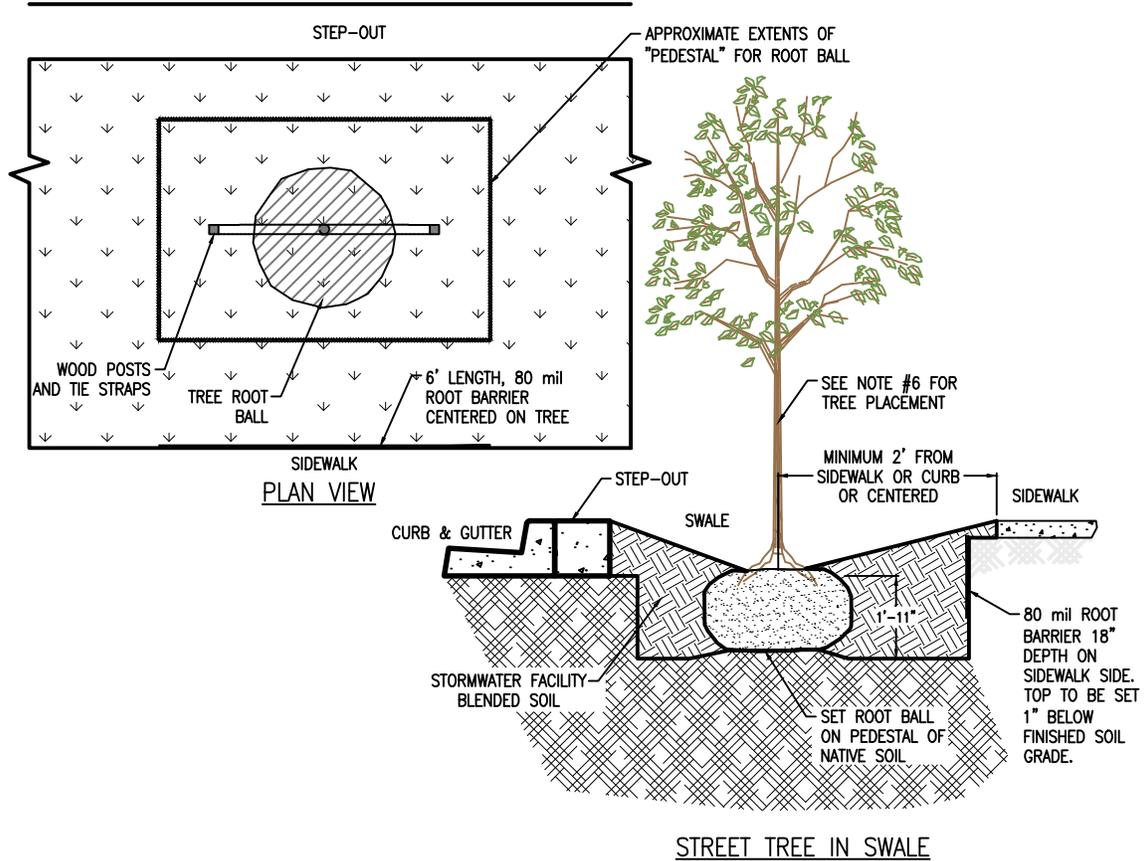
FILE NO.

**DESIGNER INFORMATION:**

1. Distance between trees varies: 20ft–30ft on center typical.
2. Stormwater facility construction and blended soil requirements.
3. All proposed tree species must be approved by Public Works Director.
4. Include Tree Well and Street Tree views on plans.
5. Include liner and call-out if used.
6. Trees shall be centered in the planting zone/tree well.
7. Planting zone/tree well shall be located to align new tree trunk with street trees in adjacent planting strip, unless otherwise shown on plan and approved.

**CONSTRUCTION NOTES:**

1. To the maximum extent possible set root ball on "pedestal" of native/undisturbed soil to avoid settling.
2. Set trunk flare two inches above the finished soil surface.
3. Remove all twine, wire, root bags, burlap, and all other nursery materials from tree prior to backfilling.



**STREET TREE IN SWALE**

**TREE WELL DETAIL  
WITHOUT ROCK  
STORAGE**

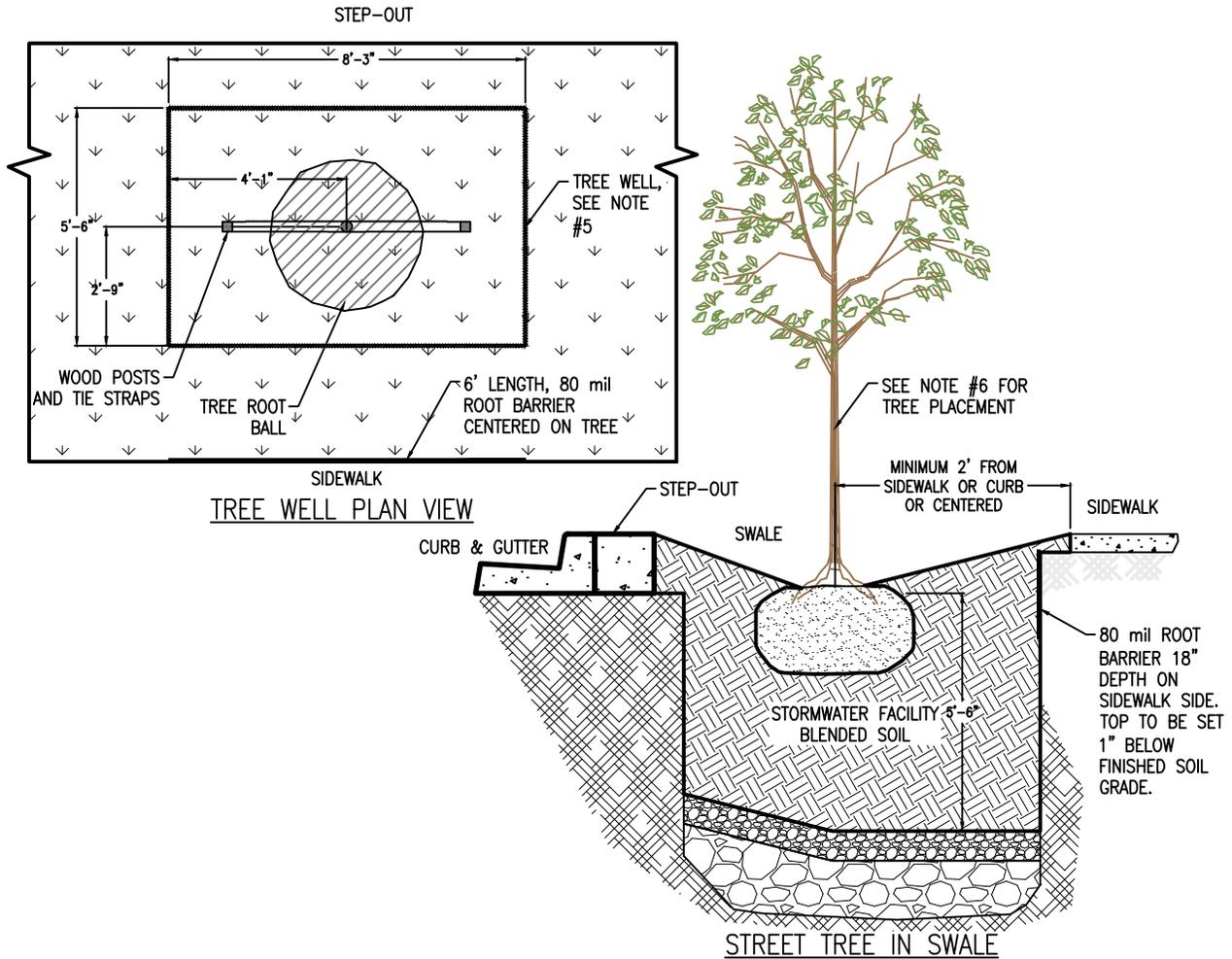
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| <b>CITY<br/>OF<br/>GLADSTONE</b> | DATE: 2017      |
|                                  | DRAWING NO. 624 |
|                                  | FILE NO.        |

**DESIGNER INFORMATION:**

1. Distance between trees varies: 20ft–30ft on center typical.
2. Stormwater facility construction and blended soil requirements.
3. All proposed tree species must be approved by Public Works Director.
4. Include Tree Well and Street Tree views on plans.
5. Include liner and call-out if used.
6. Trees shall be centered in the planting zone/tree well.
7. Planting zone/tree well shall be located to align new tree trunk with street trees in adjacent planting strip, unless otherwise shown on plan and approved.
8. Tree well required when tree is located over rock storage.

**CONSTRUCTION NOTES:**

1. To the maximum extent possible set root ball on "pedestal" of native/ undisturbed soil to avoid settling.
2. Set trunk flare two inches above soil surface.
3. Remove all twine, wire, root bags, burlap, and all other nursery materials from tree prior to backfilling.



|   |                 |
|---|-----------------|
| <b>TREE WELL DETAIL WITH ROCK STORAGE</b> |                 |
| <b>CITY OF GLADSTONE</b>                  | DATE: 2017      |
|   | DRAWING NO. 625 |
|   | FILE NO.        |