

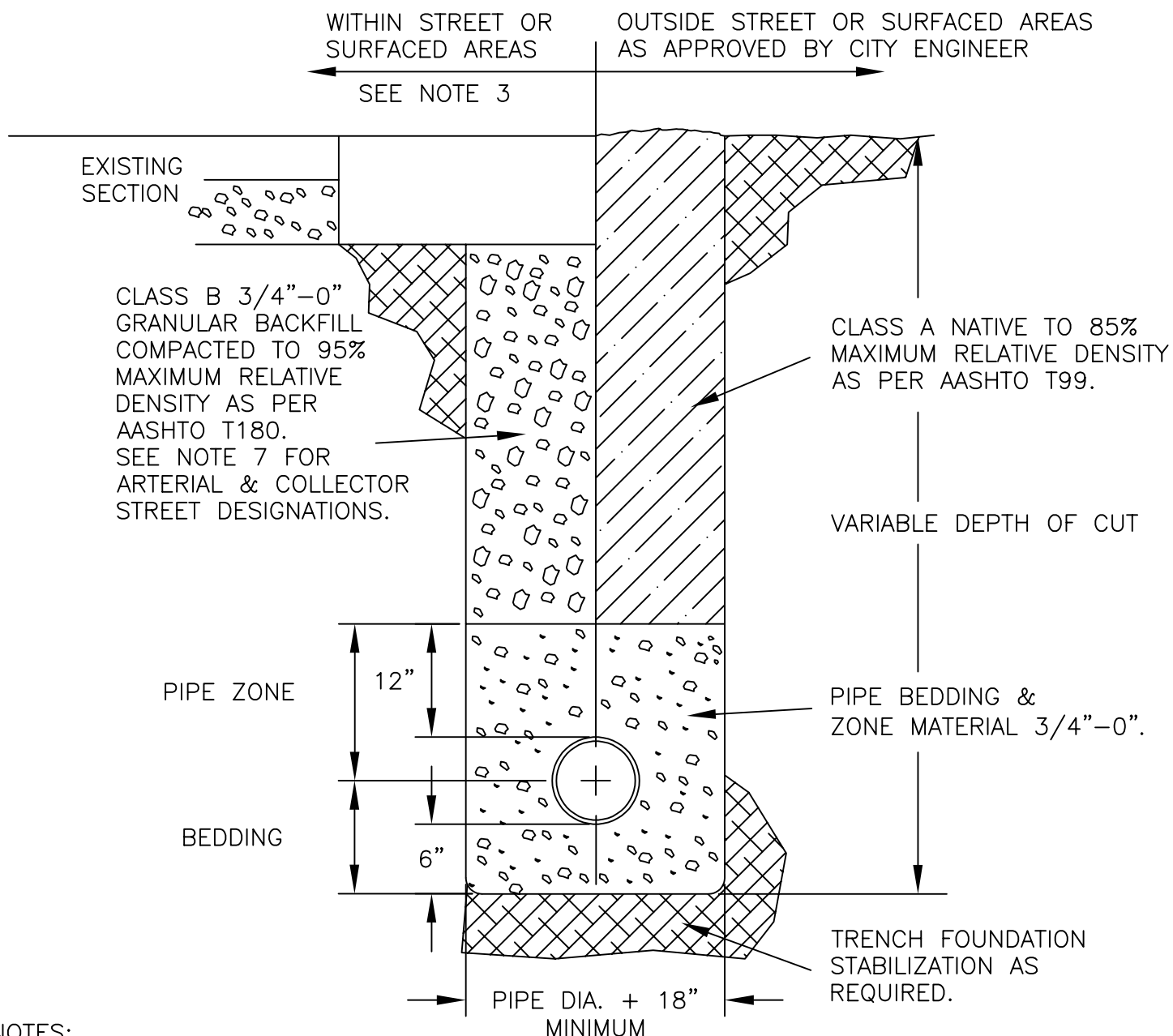
# STORMWATER DRAWINGS

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**NOTES:**

1. ALL CUTS IN PAVEMENT SHALL BE SAW CUT.
2. ALL PAVEMENT PATCH JOINTS AND ALL CUT EDGES SHALL BE SAND SEALED PER ODOT SPECS AND OREGON CITY SPECIAL PROVISIONS SEC-00744.51.
3. REFER TO OREGON CITY PAVEMENT CUT STANDARDS AND STANDARD DETAIL DRAWINGS 532, 533 & 534.
4. THIS TRENCH BACKFILL REQUIREMENT APPLIES TO ALL UNDERGROUND CONDUITS.
5. CLASS "B" BACKFILL SHALL EXTEND 3 FEET BEYOND EDGE OF STREET OR SURFACED AREA.
6. BACKFILL SHALL BE PLACED AND COMPACTED IN A MAX. OF 24-INCH LIFTS. COMPACTION TESTING REQUIRED AT A FREQUENCY OF 1 TEST EVERY 100 FEET OF TRENCH MINIMUM.
7. EXISTING ARTERIAL & COLLECTOR STREET DESIGNATIONS REQUIRE CLSM (aka CDF) PER ODOT STANDARDS, SEC-00442 FOR ALL TRENCH TRANSVERSE OR PERPENDICULAR CROSSINGS OF VEHICLE TRAVEL LANES.



**Public Works Standard Drawings**

**PIPE BEDDING AND TRENCH BACKFILL -  
STORM & SANITARY SEWER & WATER PIPE**

SCALE	NTS
DATE JAN '23	REV.
ENGR. DW	DRAWN KAE
DRAWING NO.	313



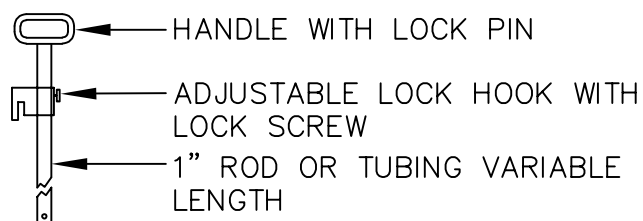
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**SECTION A-A**  
**FLOW CONTROL MANHOLE**

SCALE	NTS	
DATE	JAN '23	REV.
ENGR.	DW	DRAWN KAE
DRAWING NO. 601-1		

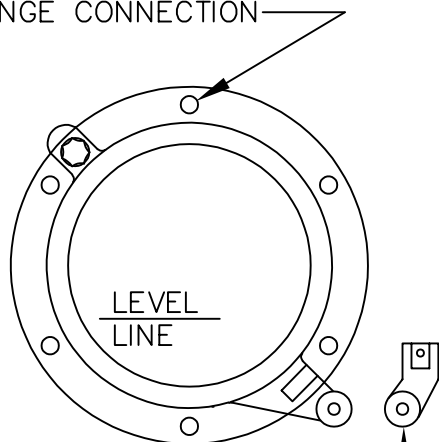


ALTERNATES ARE ACCEPTABLE  
PROVIDED MATERIAL  
SPECIFICATIONS ARE MET AND  
FLANGE BOLT PATTERN MATCHES.



### LIFT HANDLE

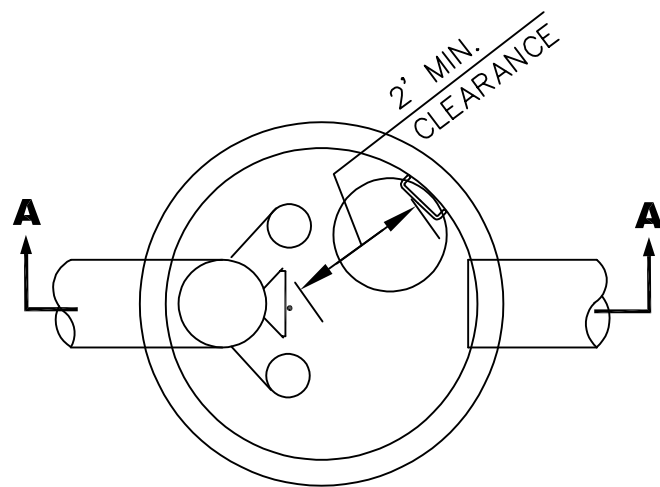
SIX EVENLY SPACED HOLES ON 10  
3/8" BOLT CIRCLE FOR BOLTING  
TO FLANGE CONNECTION



### FRONT

LIFT HANDLE SHALL BE ATTACHED  
PER MANUFACTURER'S  
RECOMMENDATIONS

### CLEANOUT/SHEAR GATE



### PLAN VIEW

REMOVABLE WATERTIGHT  
COUPLING

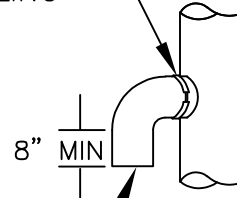
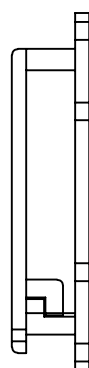
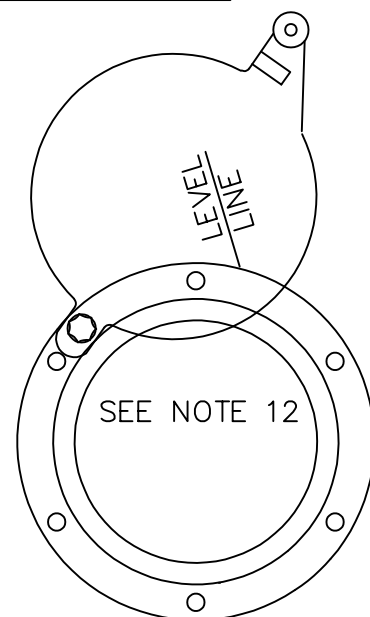


PLATE WITH  
ORIFICE AS SPECIFIED  
BY ENGINEER

### ELBOW DETAIL



### SIDE



### MAXIMUM OPENING OF GATE



Public Works Standard Drawings

FLOW CONTROL MANHOLE -  
STORMWATER DETENTION TEE RISER TYPE

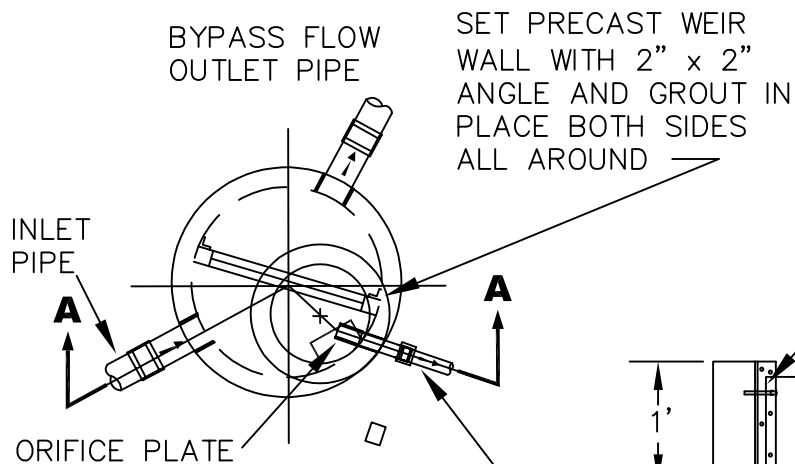
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DATE JAN '23 REV.

ENGR. DW DRAWN KAE

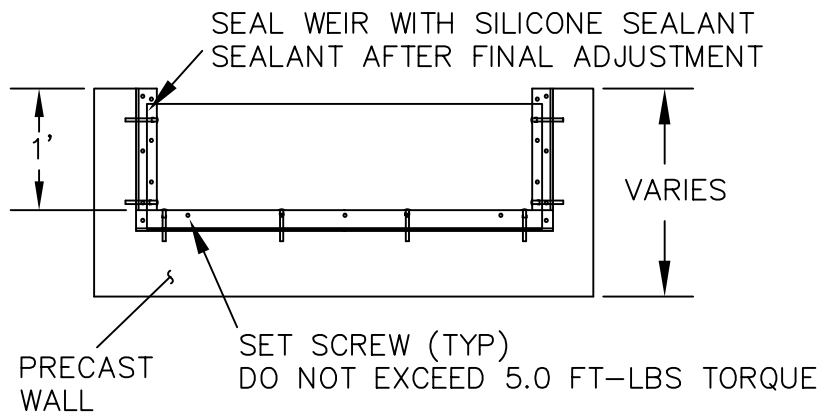
DRAWING NO. 601-2





LOW FLOW OUTLET PIPE  
 – 10" MIN DIAMETER IF TO A  
 STORMWATER QUANTITY CONTROL  
 FACILITY  
 – 8" MIN DIAMETER IF TO A  
 STORMWATER QUALITY CONTROL  
 FACILITY

### **HIGH FLOW BYPASS PLAN VIEW**

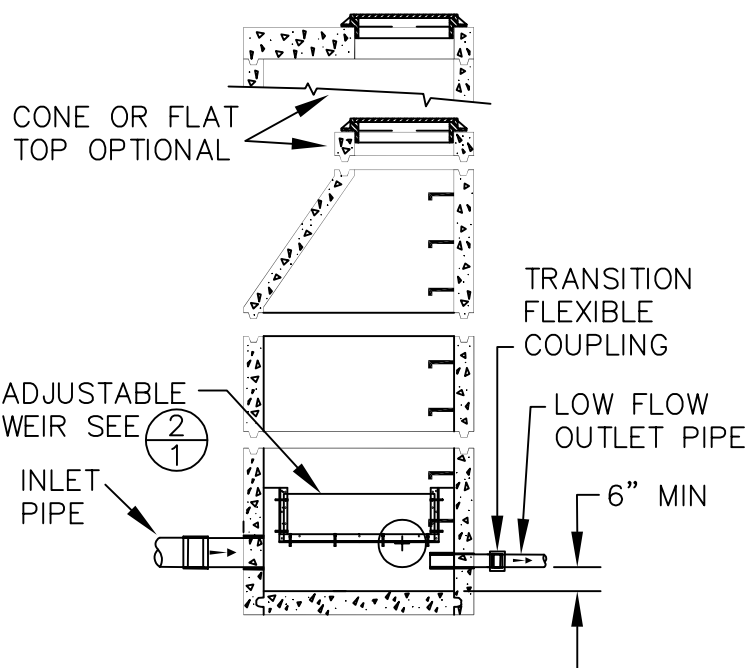


### **HIGH FLOW BYPASS WEIR DETAIL**

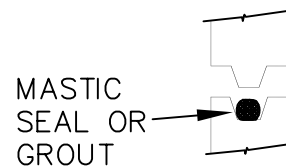
#### **TOP UNIT**

STANDARD CAST IRON FRAME  
 AND COVERS ARE AVAILABLE  
 IN A 3" SUBURBAN AND 7"  
 STANDARD.

FLAT TOP SLABS COME WITH  
 OPENINGS OFFSET TO ONE  
 SIDE OR CENTERED IN SLAB.  
 HS-20 LOADING CAPABLE.



### **HIGH FLOW BYPASS SECTION VIEW**



### **KEYLOCK JOINT**

#### **NOTE:.**

1. MANHOLE MATERIAL AND  
 INSTALLATION PER DRAWING 301.



Public Works Standard Drawings

HIGH FLOW BYPASS MANHOLE

SCALE NTS

DATE JAN '23 REV.

ENGR. DW DRAWN KAE

DRAWING NO. 602-1



## SPECIFICATIONS

### PART 1 SUBMITTALS

PRECASTER TO SUBMIT SHOP DRAWING TO CONTRACTOR FOR ENGINEER'S APPROVAL.

### PART 2 PRODUCTS

#### 2.1 FLOW KIT COMPONENTS

- A. PVC PIPING: ALL INTERNAL PVC PIPING AND FITTINGS SHALL MEET ASTM D1785.
- B. SLIDE GATE VALVE: SHALL BE CONSTRUCTED OF PVC WITH STAINLESS STEEL SHAFT AND ALUMINUM HANDLE.
- C. THE WEIR: SHALL BE CONSTRUCTED OF PVC, FRP, PLASTIC AND STAINLESS STEEL.
- D. STEEL REINFORCED POLYPROPYLENE STEPS ARE INSTALLED AS REQUIRED.
- E. ORIFICE PLATE: SHALL BE CONSTRUCTED OF PVC OR STAINLESS STEEL.
- F. FLOW KIT COMPONENTS ARE AVAILABLE FROM LOCAL SUPPLIERS.

#### 2.2 PRE-CAST CONCRETE STRUCTURE COMPONENTS

- A. PRECAST CONCRETE: SHALL BE PROVIDED ACCORDING TO DRAWING 301.
- B. JOINT SEALANT: SHALL BE CONSEAL CS-101 OR ENGINEER APPROVED EQUIVALENT.

#### 2.3 CONTRACTOR PROVIDED COMPONENTS

- A. CONCRETE (FOR CONCRETE NOT COVERED BY PRE-CAST SPECIFICATION ABOVE): SHALL BE 3000 PSI, 28 DAY STRENGTH, 3/4 INCH ROUND ROCK, 4 INCH SLUMP MAXIMUM, PLACED WITHIN 90 MINUTES OF INITIAL MIXING.
- B. SILICONE SEALANT: SHALL BE PURE RTV SILICONE CONFORMING TO FEDERAL SPECIFICATION NUMBER TT S001543A TT S0023C OR ENGINEER APPROVED.
- C. GROUT: SHALL BE NON-SHRINK GROUT MEETING THE REQUIREMENTS OF CORPS OF ENGINEERS CRD-C588. SPECIMENS MOLDED, CURED AND TESTED IN ACCORDANCE WITH ASTM C-109 SHALL HAVE MINIMUM COMPRESSIVE STRENGTH OF 6,200 PSI. GROUT SHALL NOT EXHIBIT VISIBLE BLEEDING.
- D. SUB-BASE: SHALL BE SIX (6) INCH MINIMUM OF 3/4 INCH MINUS ROCK, 95% COMPACTION. COMPACT UNDISTURBED SUB-GRADE MATERIALS TO 95% OF MAXIMUM DENSITY AT +/- 2% OF OPTIMUM MOISTURE. UNSUITABLE MATERIAL BELOW SUB-GRADE SHALL BE REPLACED TO SITE ENGINEER'S APPROVAL.
- E. BACKFILL: SHALL BE 3/4 INCH MINUS ROCK (95% COMPACTION), OR AS OTHERWISE SPECIFIED IN THE PROJECTS GENERAL TECHNICAL SPECIFICATIONS.

### PART 3 EXECUTION

#### 3.1 PRECAST CONCRETE MANHOLE - PER DRAWING 301

- A. CONTRACTOR TO GROUT ALL INLET AND OUTLET PIPES FLUSH WITH INTERIOR WALL. CONTRACTOR TO GROUT INTERIOR WALLS.
- B. BOOTS: FOR NEW MANHOLES, USE KOR-N-SEAL BOOTS (OR EQUAL). CONNECTIONS TO EXISTING MANHOLES SHALL USE SANDED PVC COLLAR WITH GASKETED JOINT. FLEXIBLE JOINT SHALL BE NO GREATER THAN 18" FROM EXTERIOR MANHOLE WALL.

#### 3.2 WEIRS

AT PROJECT COMPLETION, WEIRS SHALL BE SET TO SPECIFIED ELEVATION, LEVEL AND SEALED AT ALL JOINTS WITH SILICONE SEALANT. SEALANT SHALL BE WORKED INTO JOINT FROM BOTH SIDES.

#### 3.3 CLEANUP

REMOVE ALL EXCESS MATERIALS, ROCKS, ROOTS, OR FOREIGN MATERIAL, LEAVING THE SITE IN A CLEAN, COMPLETE CONDITION APPROVED BY THE ENGINEER. ALL PVC AND FIBERGLASS FILTER COMPONENTS SHALL BE FREE OF ANY FOREIGN MATERIALS, INCLUDING CONCRETE AND EXCESS SEALANT.

#### 3.4 PVC PIPING

SHALL BE JOINED IN ACCORDANCE WITH ASTM D2564.

### BASIC OPERATIONS MAINTENANCE GUIDELINES

- A. MINIMUM ANNUAL MAINTENANCE INCLUDES INSPECTION OF COMPONENTS AND REMOVAL OF SEDIMENTS.
- B. INSPECT SYSTEM CONDITION IN THE EVENT OF A 5 YEAR STORM OR GREATER.

NOTE: FOLLOW ALL LOCAL, STATE, & FEDERAL SAFETY GUIDELINES.

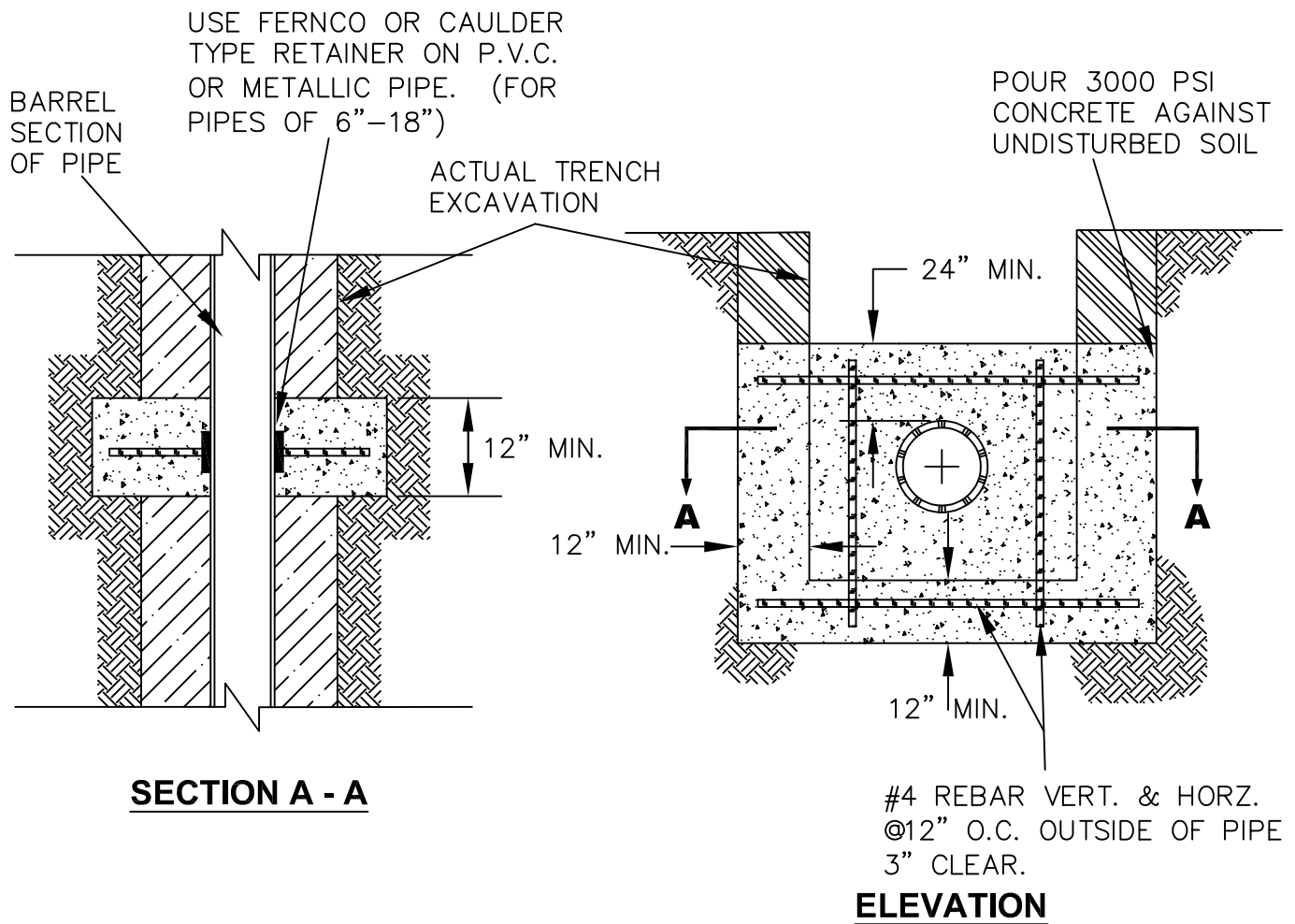


Public Works Standard Drawings

HIGH FLOW BYPASS MANHOLE

SCALE	NTS	
DATE	JAN '23	REV.
ENGR.	DW	DRAWN KAE
DRAWING NO. 602-2		





CONCRETE ANCHOR WALLS (CLASS 3000) SHALL BE CONSTRUCTED USING FORMS WHEN SEWERS, STORM DRAINS, AND OTHER PIPELINES ARE CONSTRUCTED WITH SLOPES 20 PERCENT OR GREATER. REMOVE FORMS PRIOR TO BACKFILLING TRENCH.

MIN. SPACING OF ANCHOR WALLS:

<u>SLOPE:</u> 20–35%	<u>SPACING:</u> 35 FEET
35–50%	25 FEET
>50%	15 FEET OR SPECIAL DESIGN



Public Works Standard Drawings

PIPE ANCHOR WALL

SCALE	NTS
DATE JAN '23	REV.
ENGR. DW	DRAWN KAE
DRAWING NO.	605



SEAL THE AREA BETWEEN THE END OF THE CASING AND PIPE BY FORCING GROUT INTO THE SPACE AROUND THE PERIPHERY OF THE PIPE FOR THE DIMENSIONS SHOWN.

FERNCO COUPLING OR  
APPROVED ALTERNATE

18" MAX. 24" MIN.

SMOOTH  
STEEL  
PIPE  
CASING

STORMWATER  
PIPE

FILL SPACE WITH LEAN  
GROUT, PEA GRAVEL, OR  
SAND. BEGIN AT THE FAR END  
AND FILL BACK  
TOWARD THE INSERTION HOLE

FILL BORE PIT WITH 3/4"-0  
COMP. BACKFILL MATERIAL.

### PIPE SEAL DETAIL

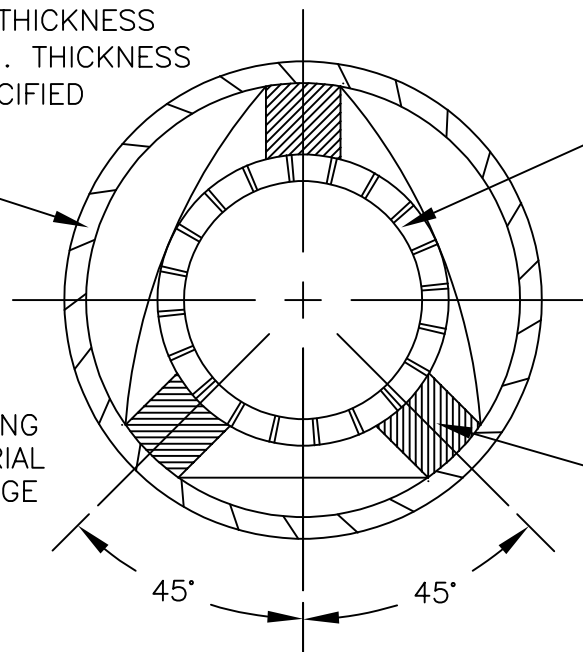
CASING PIPE:

6"-12" DIA. - 1/4" MIN. THICKNESS

15"-24" DIA. - 5/16" MIN. THICKNESS

LARGER THAN 24", AS SPECIFIED  
BY ENGINEER

NOTCH BLOCKING AT BANDING  
LOCATIONS. BANDING MATERIAL  
SHALL BE MIN. OF 20 GAUGE  
STAINLESS STEEL, 1" WIDE.



PIPE AS SPECIFIED

4"x4" WESTERN RED  
CEDAR OR PRESSURE  
TREATED FIR BLOCKS  
CONTINUOUS EXCEPT AT  
JOINTS. PROVIDE 1' TO 2'  
GAP IN SKIDS AT JOINTS  
AND EVERY 6' FOR PIPE  
SECTIONS LONGER THAN  
8'. BAND TO PIPE AT 5'  
MAX. CENTERS WITH MIN.  
OF 2 BANDS PER PIPE  
SECTION.

### CASING SECTION

Public Works Standard Drawings

BORE CASING

SCALE NTS

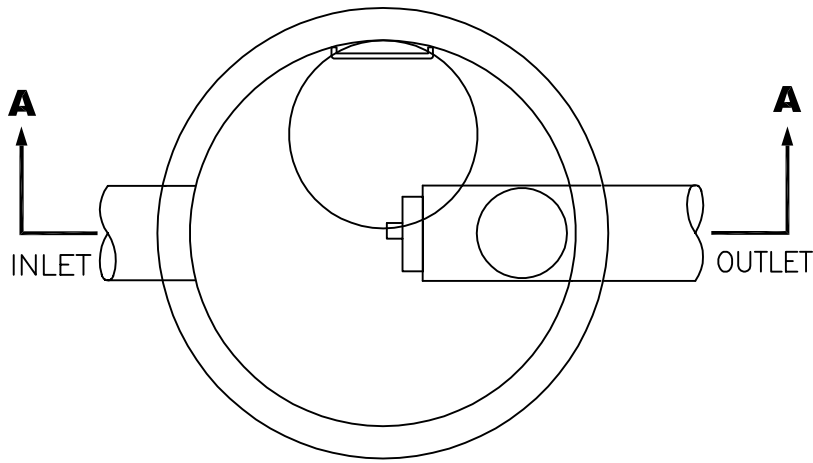
DATE JAN '23 REV.

ENGR. DW DRAWN KAE

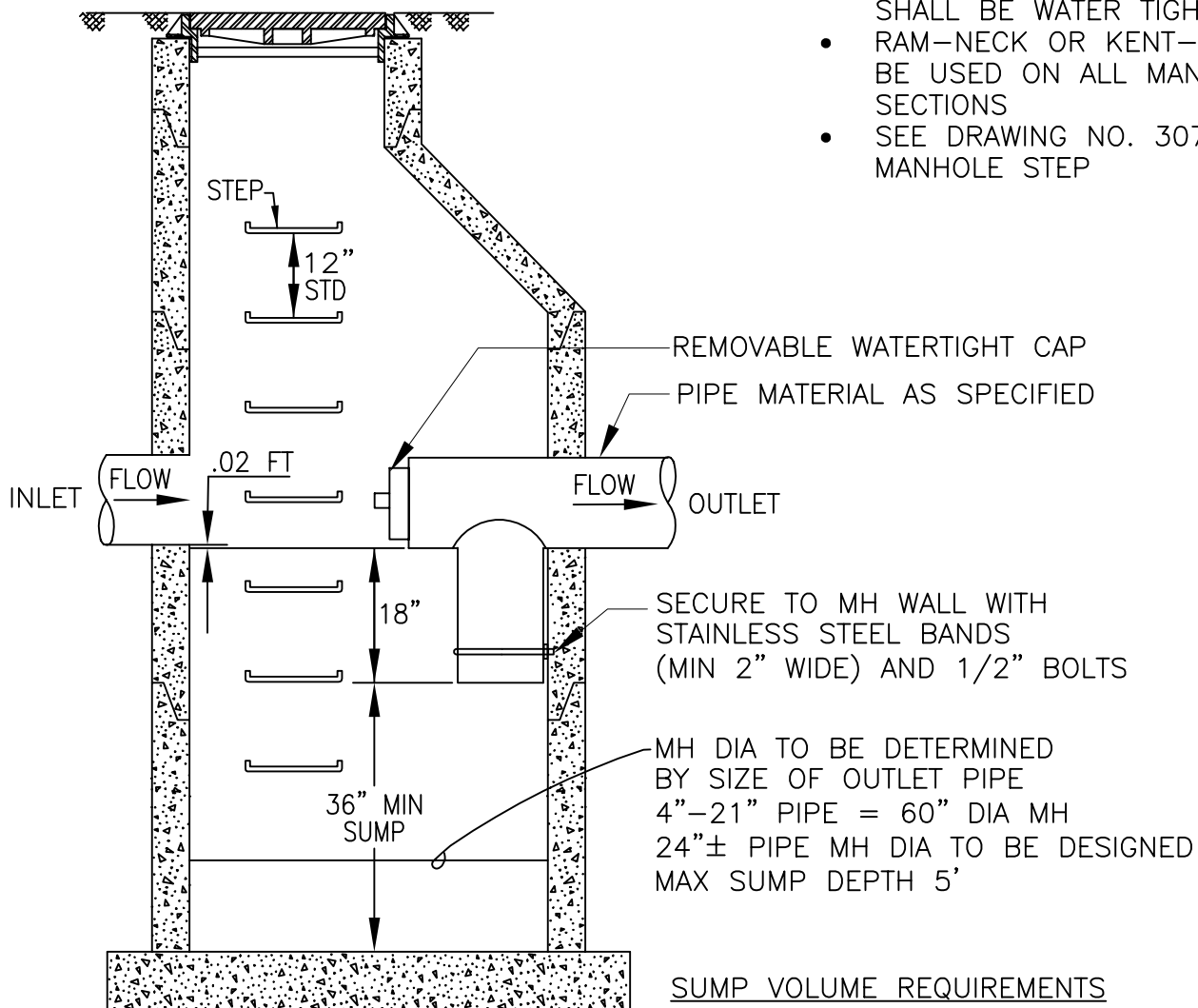
DRAWING NO. 606







**PLAN**



**SECTION A-A**

NOTES:

- MANHOLE TO CONFORM WITH DRAWING NO. 301
- MANHOLE PIPE CONNECTIONS PER DRAWING 301
- MANHOLE FRAME AND COVER AS SPECIFIED SEE DRAWING 305
- ALL PIPES ENTERING OR EXITING SHALL BE WATER TIGHT
- RAM-NECK OR KENT- SEAL TO BE USED ON ALL MANHOLE SECTIONS
- SEE DRAWING NO. 307 MANHOLE STEP

SUMP VOLUME REQUIREMENTS

SINGLE FAMILY RESIDENTIAL	3.5 CF/ACRE
MULTI FAMILY RESIDENTIAL	22.0 CF/ACRE
COMMERCIAL/INDUSTRIAL	94.0 CF/ACRE



Public Works Standard Drawings

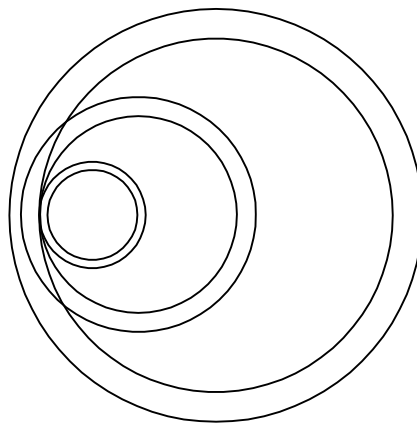
POLLUTION CONTROL MANHOLE

SCALE	NTS
DATE JAN '23	REV.
ENGR. DW	DRAWN KAE
DRAWING NO.	607

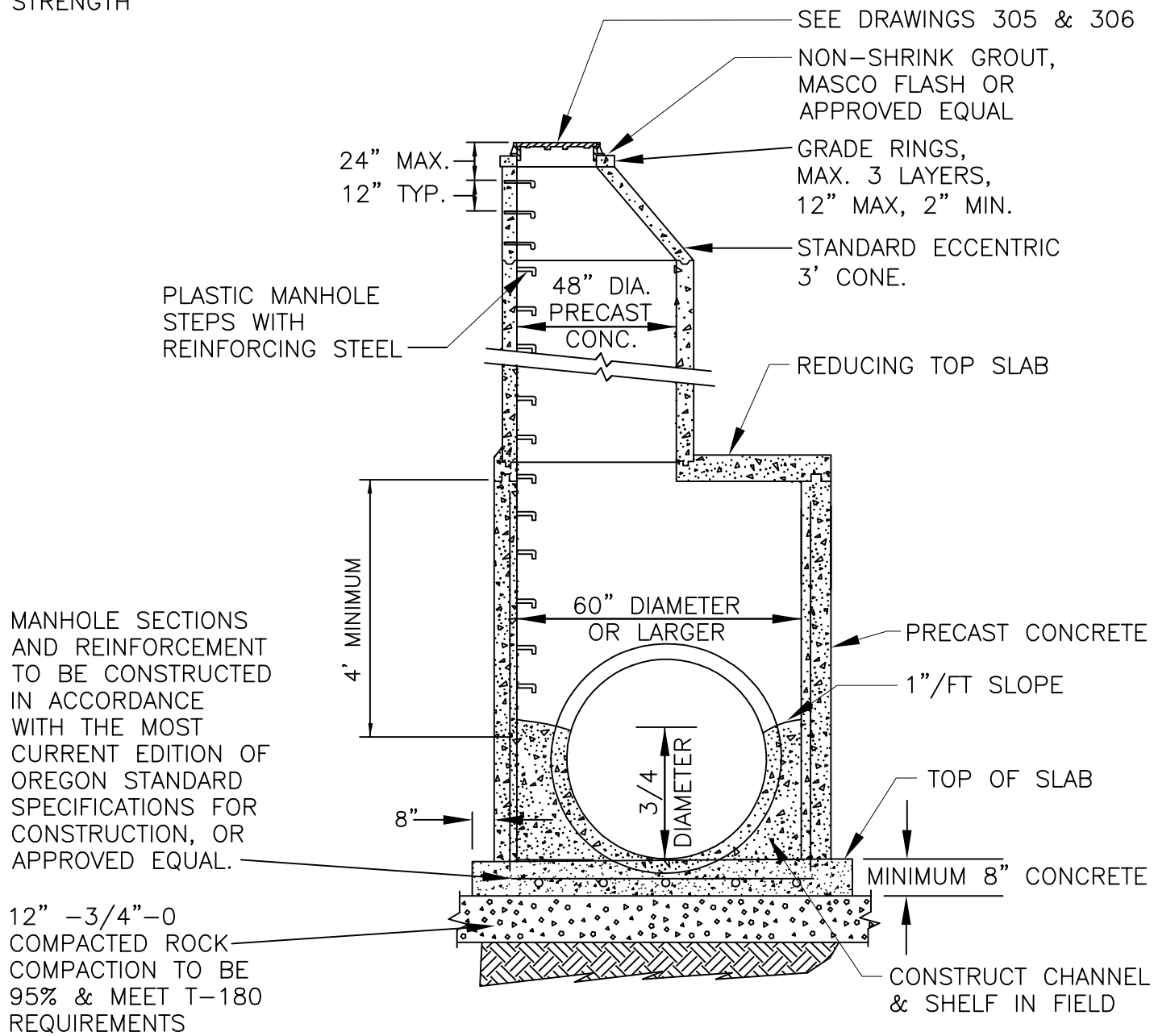


**NOTES:**

1. MANHOLE FRAME AND COVER AS SPECIFIED. SEE DRAWINGS 305 AND 306.
2. ALL PIPES ENTERING OR EXITING SHALL BE WATER TIGHT
3. CHANNELS TO BE  $\frac{3}{4}$  VERTICAL HEIGHT OF PIPE—SMOOTH FINISH
4. INSIDE DROP MAXIMUM 2' VERTICAL DISTANCE INVERT TO INVERT
5. ALL CONCRETE TO BE MINIMUM 4000 PSI COMPRESSIVE STRENGTH



**REDUCING TOP SLAB**



Public Works Standard Drawings

**MANHOLE FOR LARGE DIAMETER PIPE  
(PIPE 27" AND LARGER)**

SCALE NTS

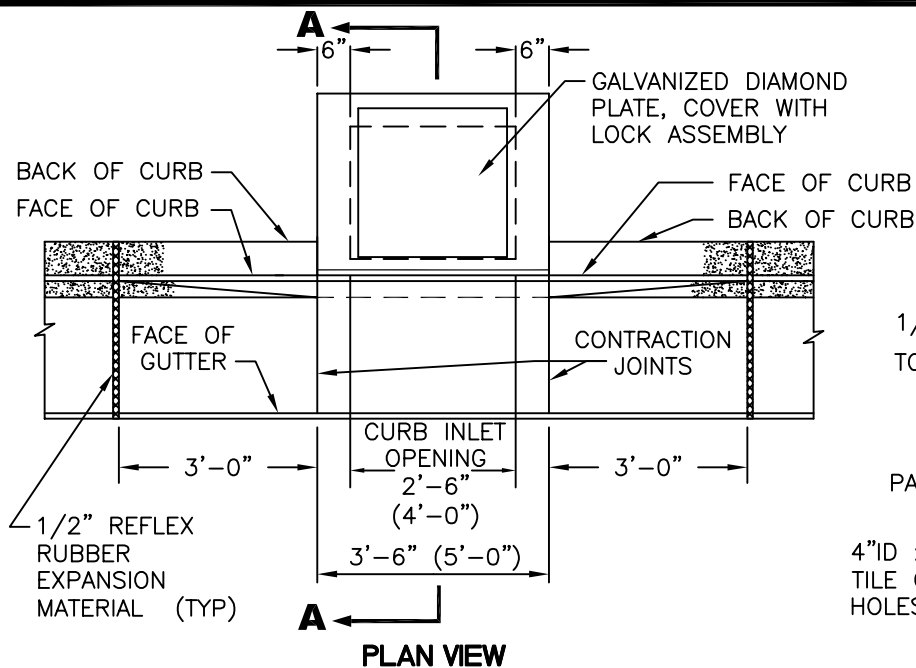
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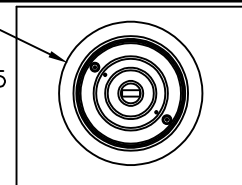
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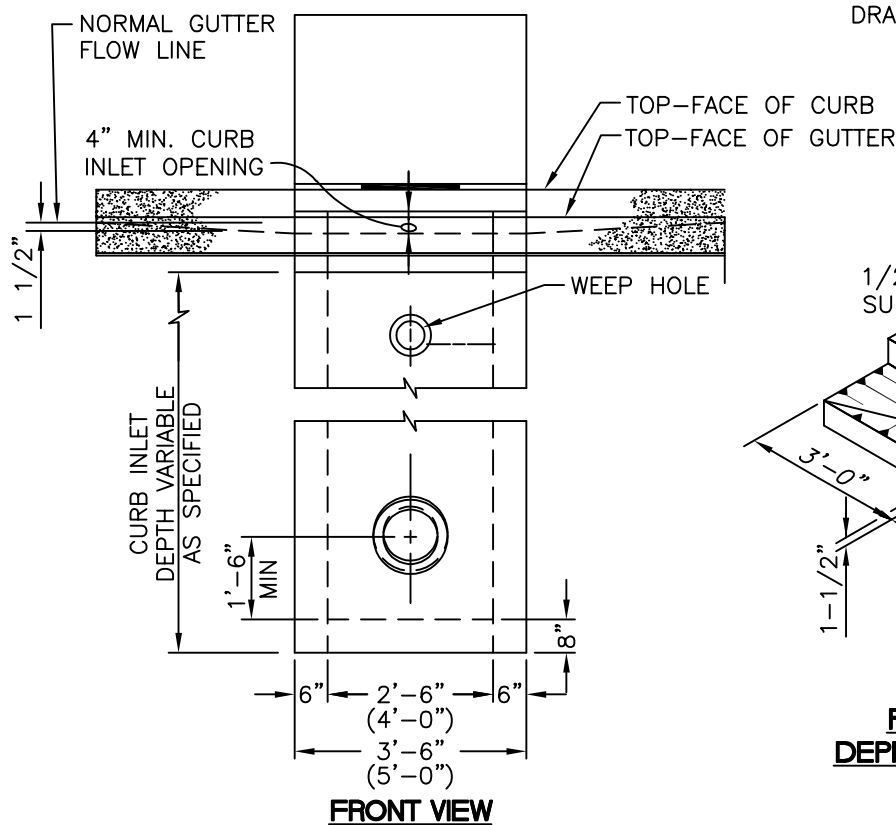
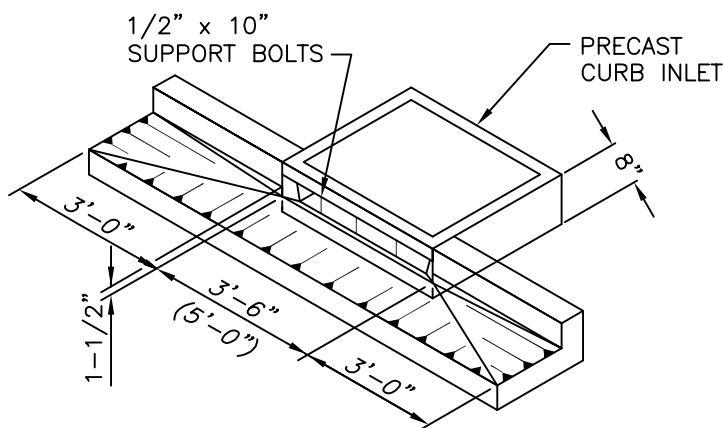
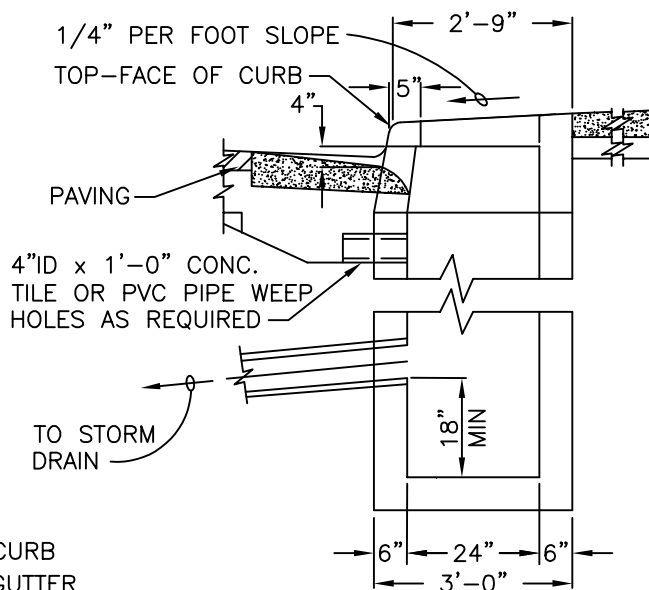




MANHOLE RING AND COVER  
SEE DRAWING 305



**OPTIONAL COVER**



**NOTES:**

1. CURB INLET TOP AND BASE SHALL MEET H-20 LOADING
2. CONCRETE STRENGTH SHALL BE 3000 PSI.
3. ALL FABRICATED METAL PARTS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION.
4. FOR STEEP GRADES USE STD. PRECAST INLET WITH 4'-0" OPENING OR TWO 2'-6" OPENING INLETS.
5. CURB INLET BASE MAY BE PRECAST OR CAST-IN-PLACE.
6. DIMENSIONS SHOWN ABOVE IN PARENTHESES ARE FOR 4A INLETS. A 1 1/2 A INLET SHALL HAVE A CURB INLET OPENING WIDTH OF 1'-6" AND AN OUTSIDE WIDTH OF 2'-6"; ALL OTHER DIMENSIONS AND DETAILS SHALL BE AS SHOWN.

Public Works Standard Drawings

**PRECAST CURB INLET**  
1 1/2 A, 2 21/2 A, 4 A

SCALE NTS

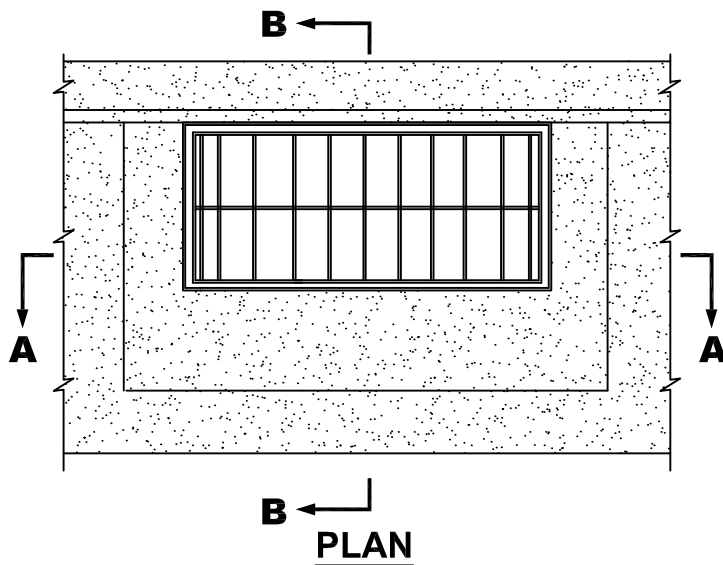
DATE JAN '23 REV.

ENGR. DW DRAWN KAE

DRAWING NO. 609

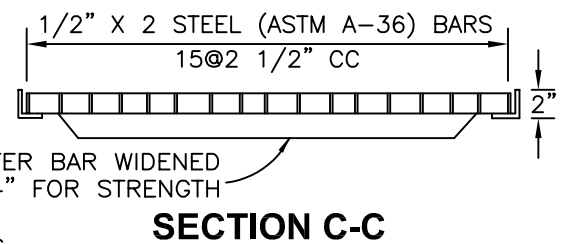
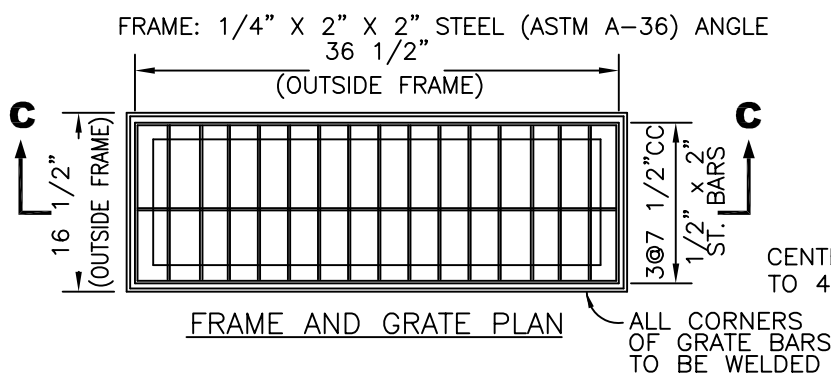
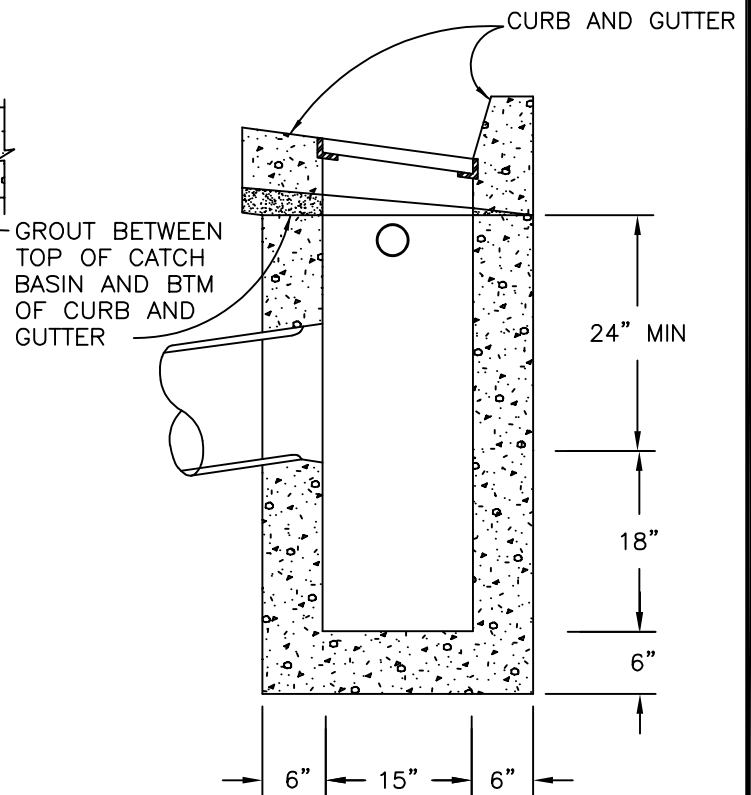
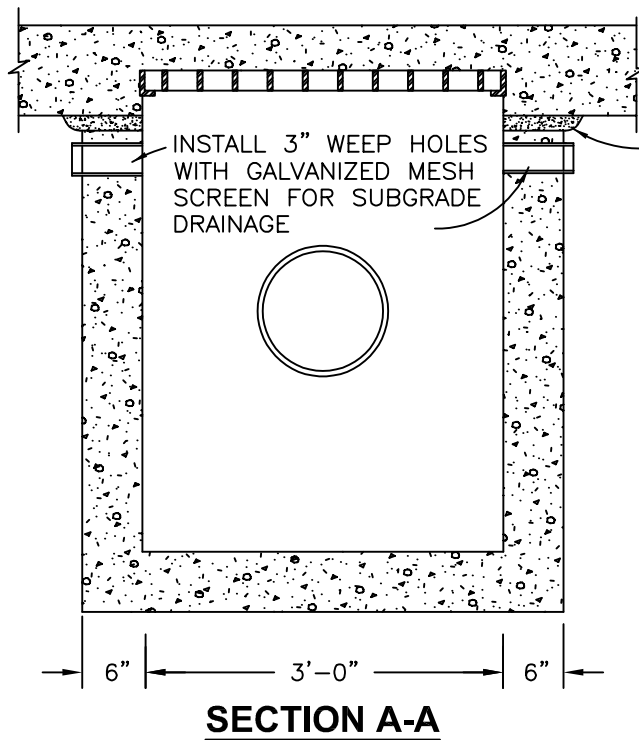






**NOTES:**

1. PRECAST BASE WALLS MAY BE A MINIMUM OF 4" THICK.
2. CONCRETE SHALL BE CLASS 3000.
3. APPROVED CAST IRON FRAMES AND GRATES MAY BE ACCEPTED.

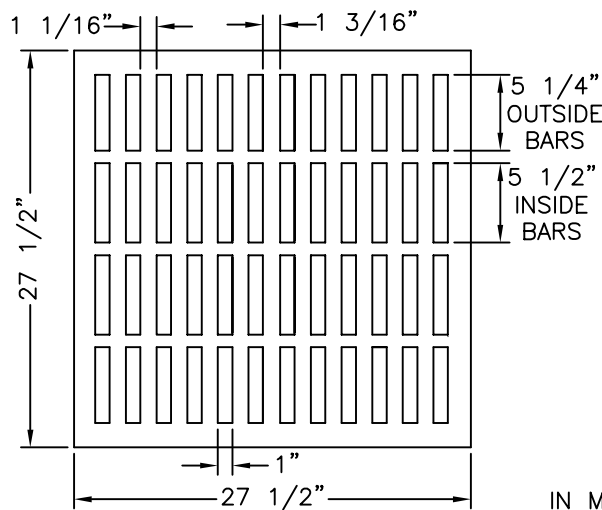


Public Works Standard Drawings

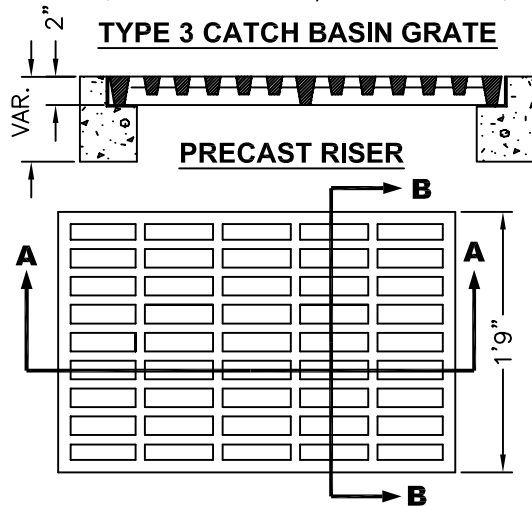
CATCH BASIN

SCALE	NTS
DATE JAN '23	REV.
ENGR. DW	DRAWN KAE
DRAWING NO.	610-1

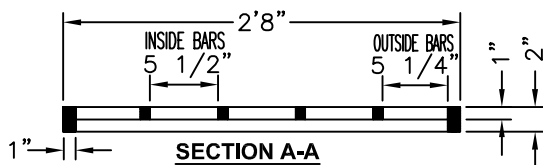




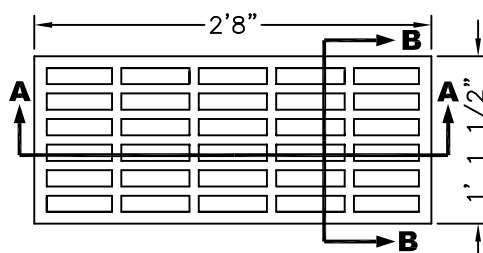
**TYPE 3 CATCH BASIN GRATE**



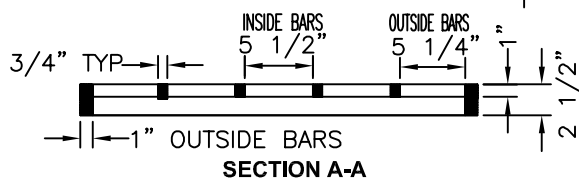
**PRECAST RISER**



**G-1 CATCH BASIN - 1 EACH/UNIT**

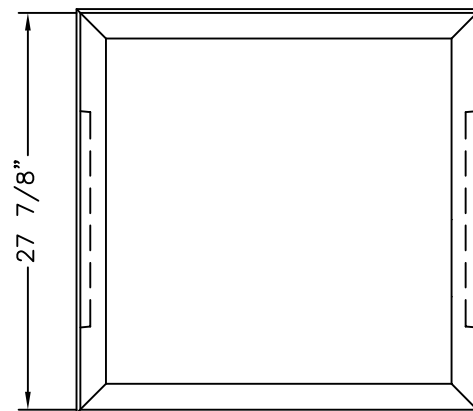


**G-2 CATCH BASIN 2 EACH/UNIT  
CAST IRON GRATES**

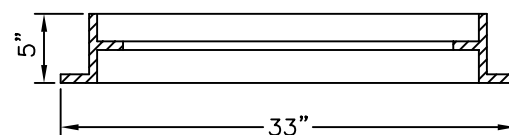


**SECTION A-A**

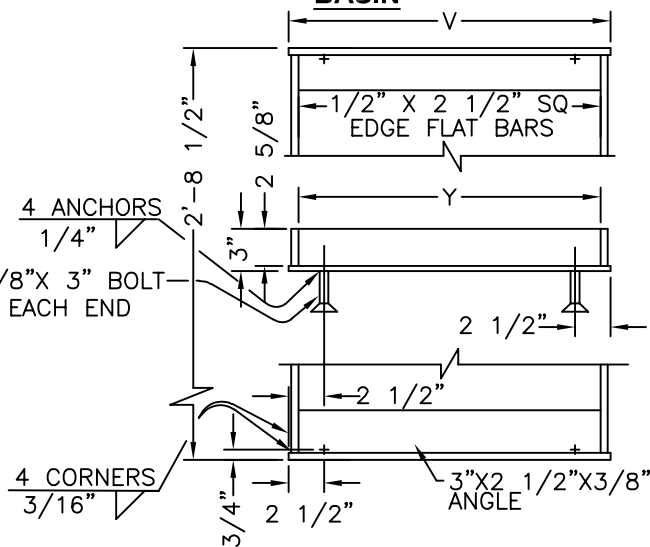
1/4"x2"x2" ANGLE  
1/4"x1 1/4"x12" IN MIDDLE OF 2 SIDES



**TYPE 3 FRAME - STEEL**



**OPTIONAL CAST IRON FRAME  
FOR A MORTAR-ON TYPE 3 CATCH  
BASIN**



**G-1 AND G-2 FRAME**

INLET TYPE	V	Y
G-1, CG-1	1'-10 3/4"	1'-9 3/8"
G-2, CG-2	2'-4 3/4"	2'-3 3/8"

**NOTES:**

CATCH BASIN, FRAME AND GRATES SHALL MEET H2O LOADING

Public Works Standard Drawings

**FRAMES AND GRATES  
G-1, G-2, TYPE 3**

SCALE NTS

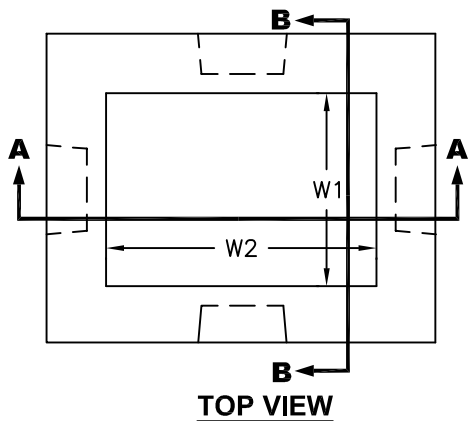
DATE JAN '23 REV.

ENGR. DW DRAWN KAE

DRAWING NO. 610-3



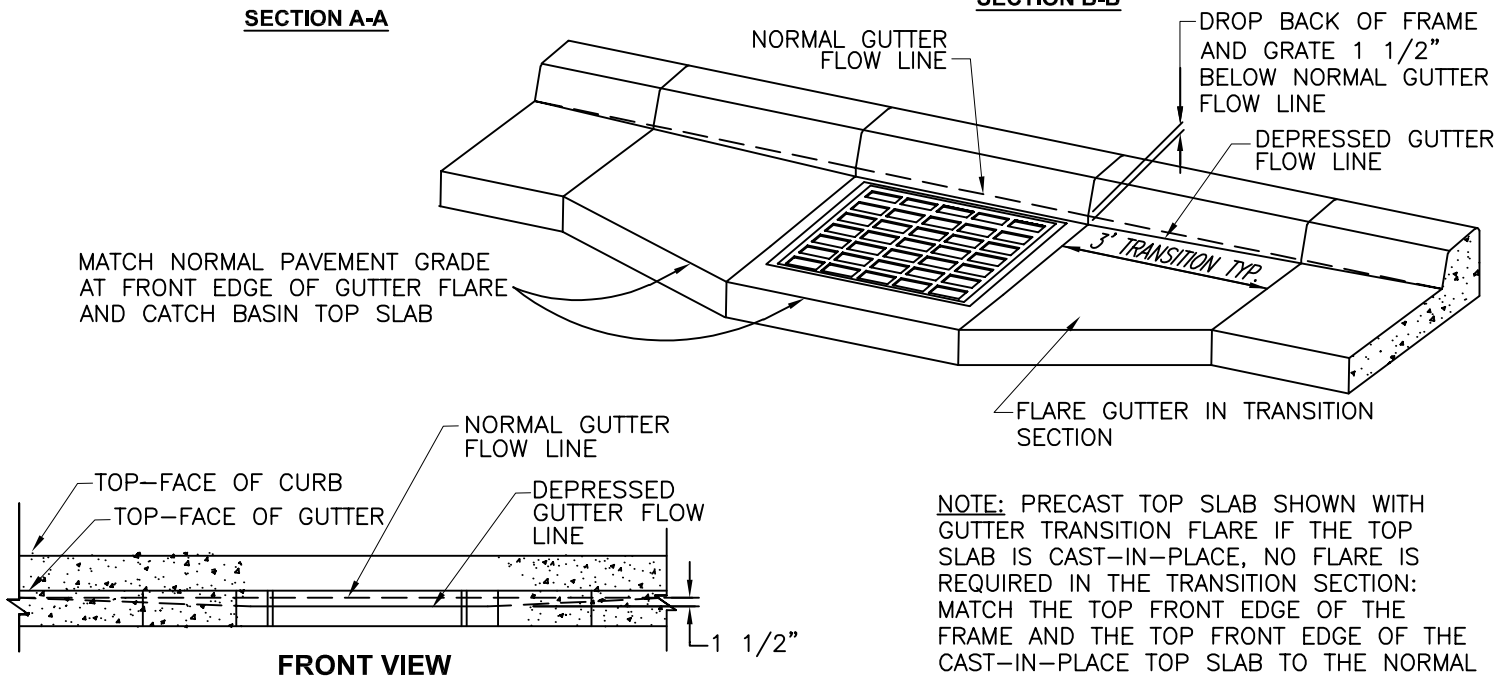
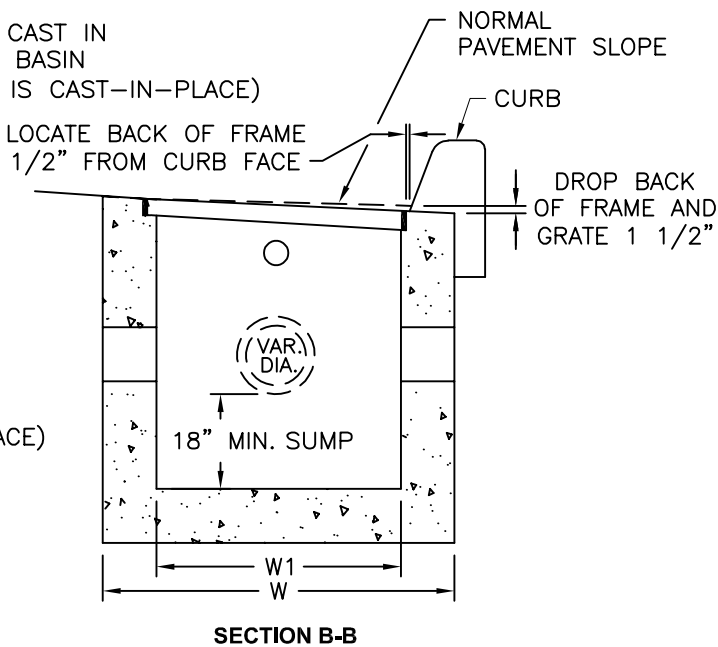
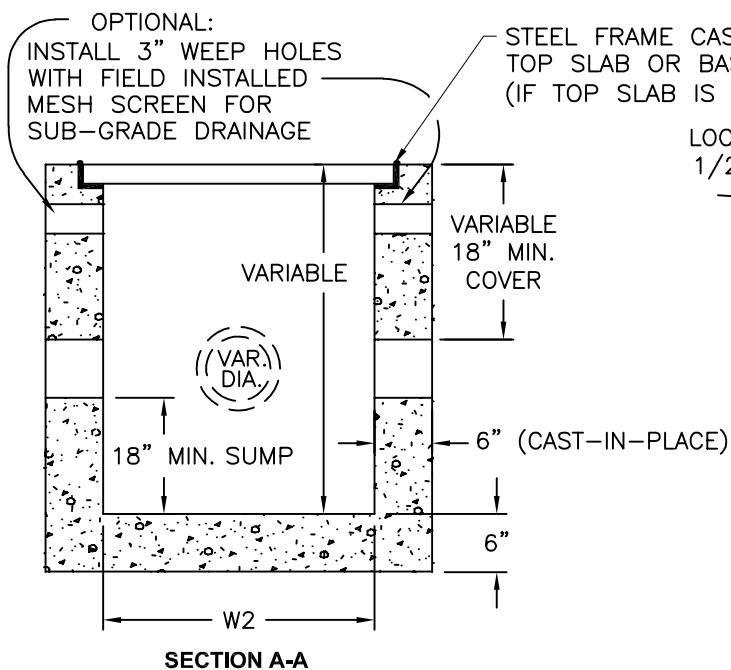




INLET TYPE	W	W <sub>1</sub>	W <sub>2</sub>
G-1	2'-8 7/8"	1'-8 7/8"	2'-4 1/4"
G-2	3'-3 3/8"	2' 3 3/8"	2'-4 1/4"
TYPE-3	2'-8"	2'-0"	2'-0"

**NOTES:**

1. CONCRETE STRENGTH SHALL BE 3000 PSI.
2. PRECAST BASE WALLS SHALL BE A MINIMUM 4" THICK. CAST-IN-PLACE BASE WALLS SHALL BE 6" THICK.
3. "X" DIMENSION ASSUMES A 24" GUTTER. ADD 6" FOR AN 18" GUTTER.
4. CATCH BASIN AND GRATE SHALL MEET H-20 LOADING.
5. FOR FRAME AND GRATES SEE DRAWING 610-3.



**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.

Public Works Standard Drawings

TYPE G-1, G-2, TYPE 3 CATCH BASIN WITH SUMP

SCALE NTS

DATE JAN '23 REV.

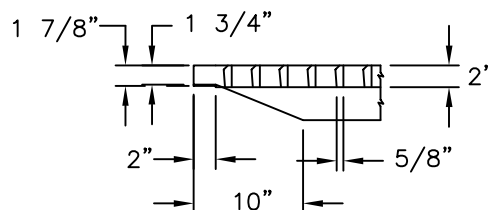
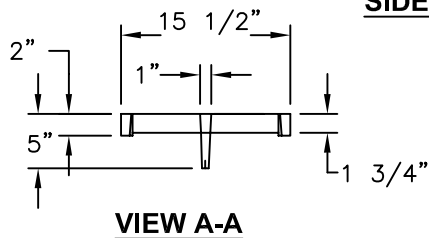
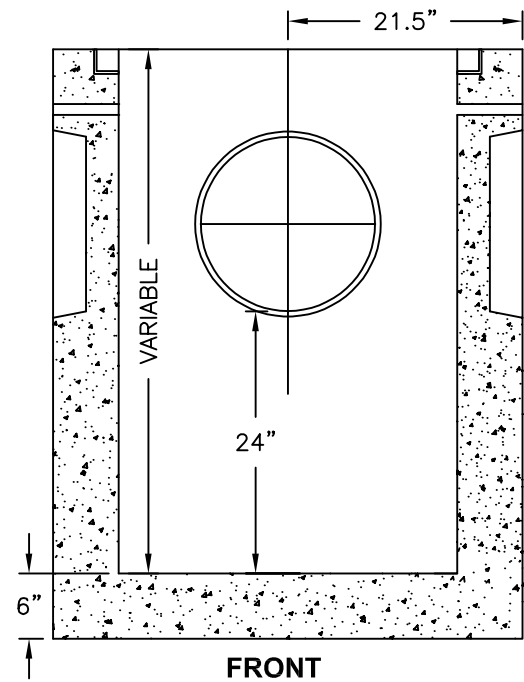
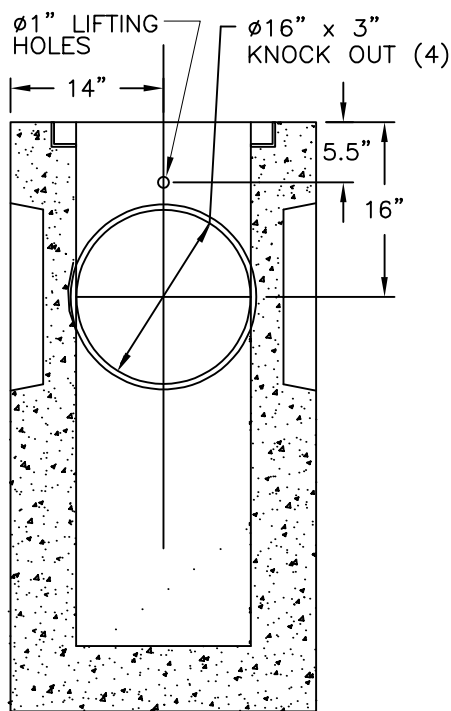
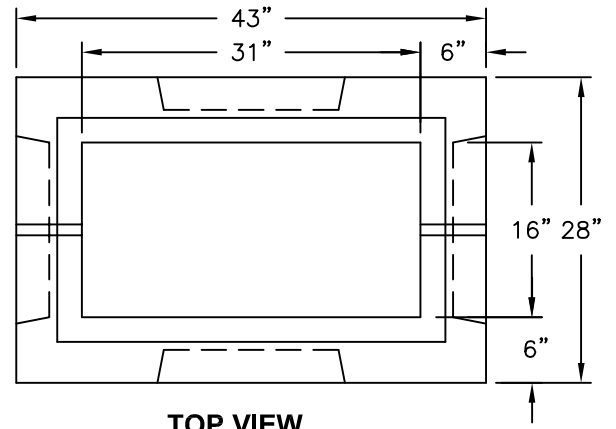
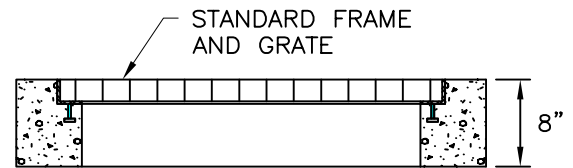
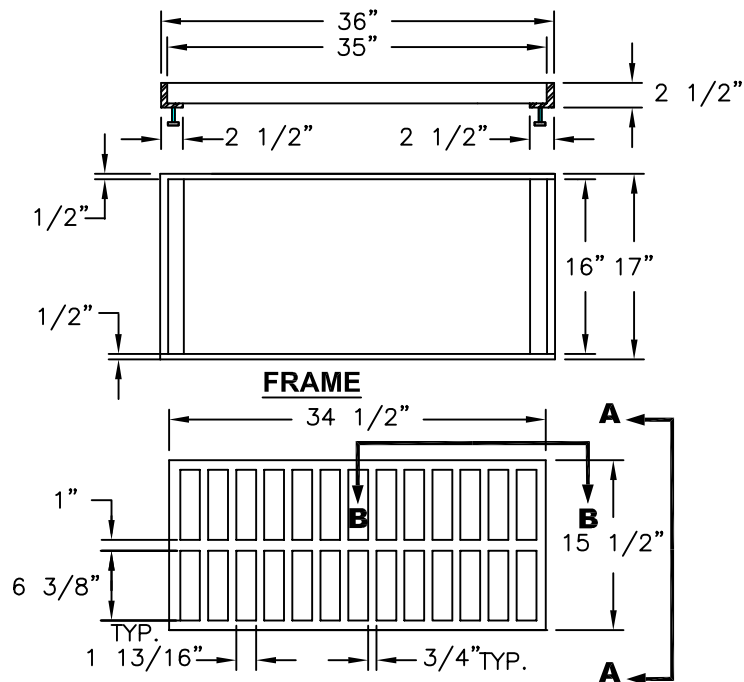
ENGR. DW DRAWN KAE

DRAWING NO. 610-4





USE ASTM A-36 STEEL  
AND AWS E-7024  
WELDING ELECTRODES



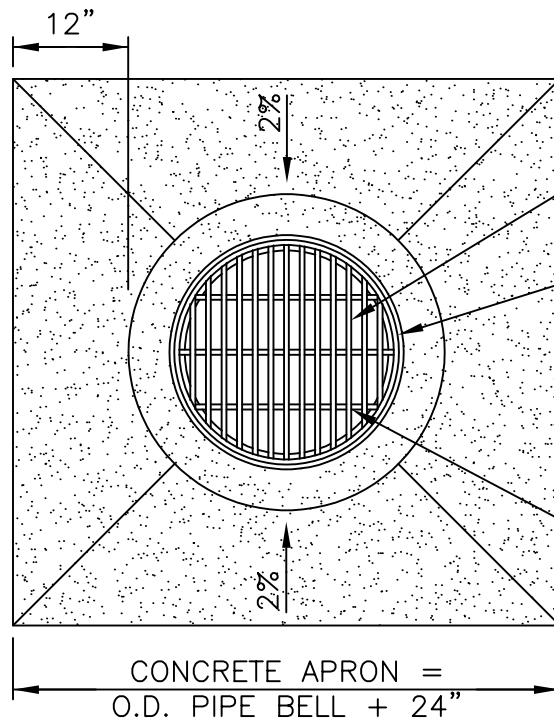
Public Works Standard Drawings

TYPE 4  
CATCH BASIN DETAIL

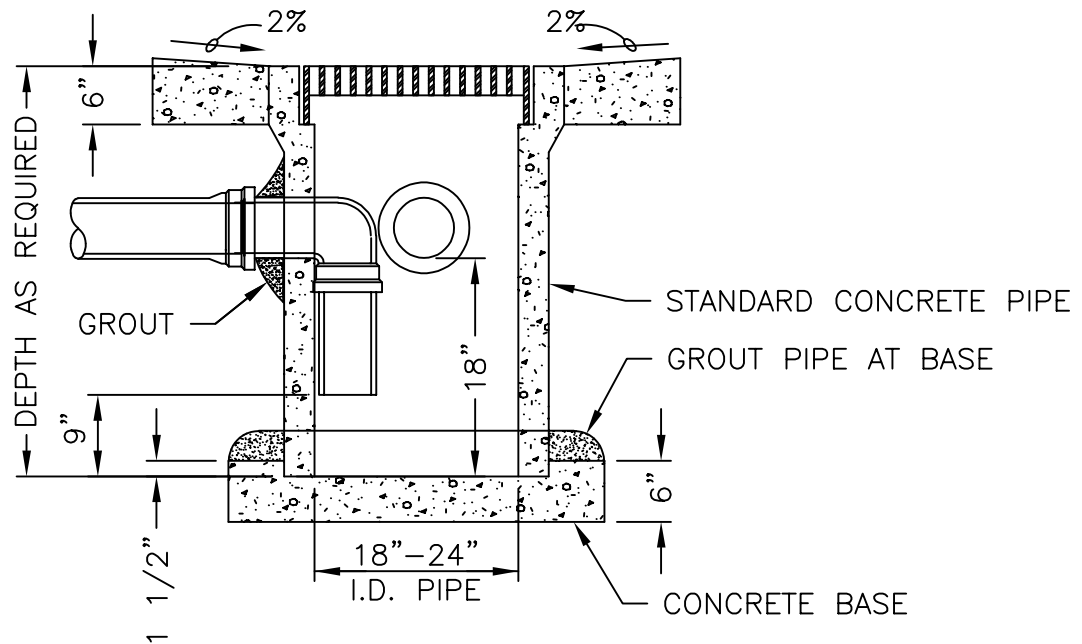
SCALE	NTS
DATE	JAN '23
ENGR.	DW
DRAWN	KAE
DRAWING NO.	610-5







**PLAN**



**SECTION A-A**

**NOTES:**

1. GRATES SHALL BE CONSTRUCTED FOR BICYCLE SAFETY.
2. PRECAST CONCRETE CATCH BASINS MAY BE USED WHEN SPECIFIED OR APPROVED.
3. NOT FOR USE IN VEHICULAR TRAFFIC AREAS.

Public Works Standard Drawings

AREA DRAINAGE BASIN OR FIELD INLET

SCALE NTS

DATE JAN '23 REV.

ENGR. DW DRAWN KAE

DRAWING NO. 611-1







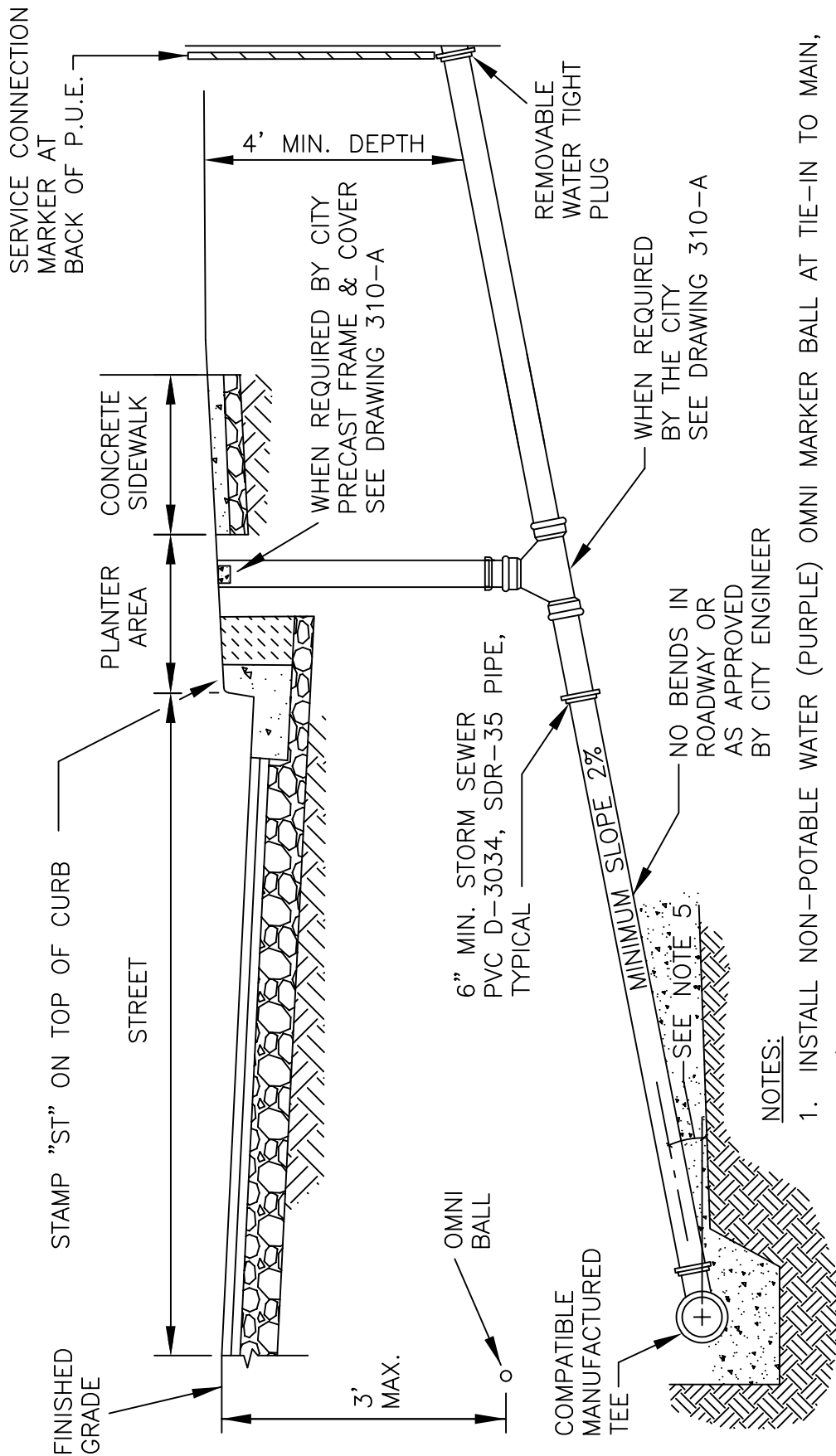
1. CONCRETE STRENGTH SHALL BE 3000 PSI.
2. G-2 GRATES MAY BE USED IF APPROVED BY THE ENGINEER.
3. CATCH BASIN, FRAME, AND GRATES SHALL MEET H2O LOADING.
4. INSIDE FRAME DIMENSIONS: 2'-3 3/8", 2'-8 1/2."

**NOTE:** 3/8" CROSS BARS SHALL BE FLUSH WITH THE GRATE SURFACE AND MAY BE FILLET WELDED, RESISTANCE WELDED OR ELECTROFORGED TO BEARING BARS.

INLET TYPE	V	Y	Y <sub>1</sub>	NO. OF BARS	TYPE
D	2'-4 3/4"	2'-3 3/8"	2'-3"	9	1







#### NOTES:

1. INSTALL NON-POTABLE WATER (PURPLE) OMNI MARKER BALL AT TIE-IN TO MAIN, 3' BELOW FINISHED GRADE. TEST OMNI BALL BEFORE INSTALLATION AND AGAIN AFTER FINISHED GRADE IS PLACED. OMNI BALL-NON-POTABLE WATER-PURPLE, FREQUENCY 66.35 KHz, MODEL 168, UPC 11050.
2. WHEN REQUIRED BY THE CITY, INSTALL 2-WAY CLEANOUT PER STANDARD DRAWING 310-A.
3. VIDEO INSPECT LATERAL BETWEEN MAINLINE AND CLEANOUT PER APPLICABLE APWA/ODOT STANDARDS.
4. 2" x 4" TREATED STAKE FROM INVERT TO 1' ABOVE FINISH GRADE. SERVICE MARKER SHALL BE CONTINUOUS AND REMAIN VERTICAL AFTER BACKFILLING. END SHALL BE PAINTED WHITE WITH "STM" MARKED ON POST. (TYPICAL AT ALL SERVICES.)
5. CENTERLINE OF SERVICE OUTLET ON TEE SHALL BE ABOVE SPRINGLINE.
6. STORM SEWER SERVICE LINES SHALL BE 90° PERPENDICULAR TO STORM SEWER MAIN.

Public Works Standard Drawings

STORM SEWER SERVICE

SCALE NTS

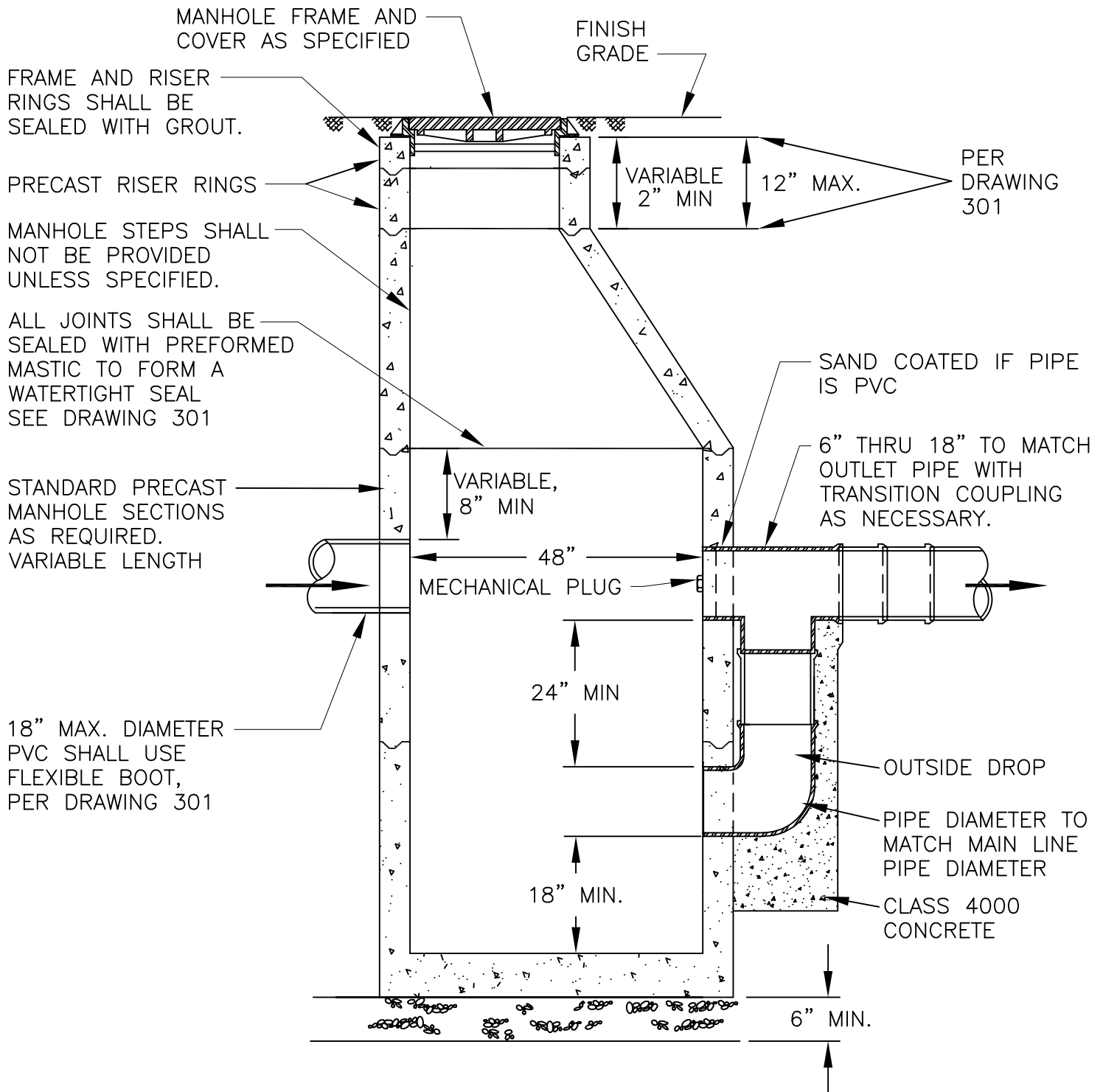
DATE JAN '23 REV.

ENGR. DW DRAWN KAE

DRAWING NO. 612







**NOTE:**

1. ALL PRECAST SECTIONS SHALL CONFORM TO REQUIREMENTS OUTLINED IN DRAWING 301.
2. ALL CONNECTING PIPE SHALL HAVE A FLEXIBLE JOINT WITHIN 18" OF MANHOLE WALL. FOR NEW MANHOLES, USE KOR-N-SEAL BOOTS (OR EQUAL). CONNECTIONS TO EXISTING MANHOLES SHALL USE SANDED PVC COLLAR WITH GASKETED JOINT. FLEXIBLE JOINT SHALL BE NO GREATER THAN 18" FROM EXTERIOR MANHOLE WALL. SEE DRAWING 301.
3. CONSTRUCT OUTSIDE DROP PER THE DETAIL FOR 'OUTSIDE DROP CONNECTION FOR MANHOLES. SEE DRAWING 303.

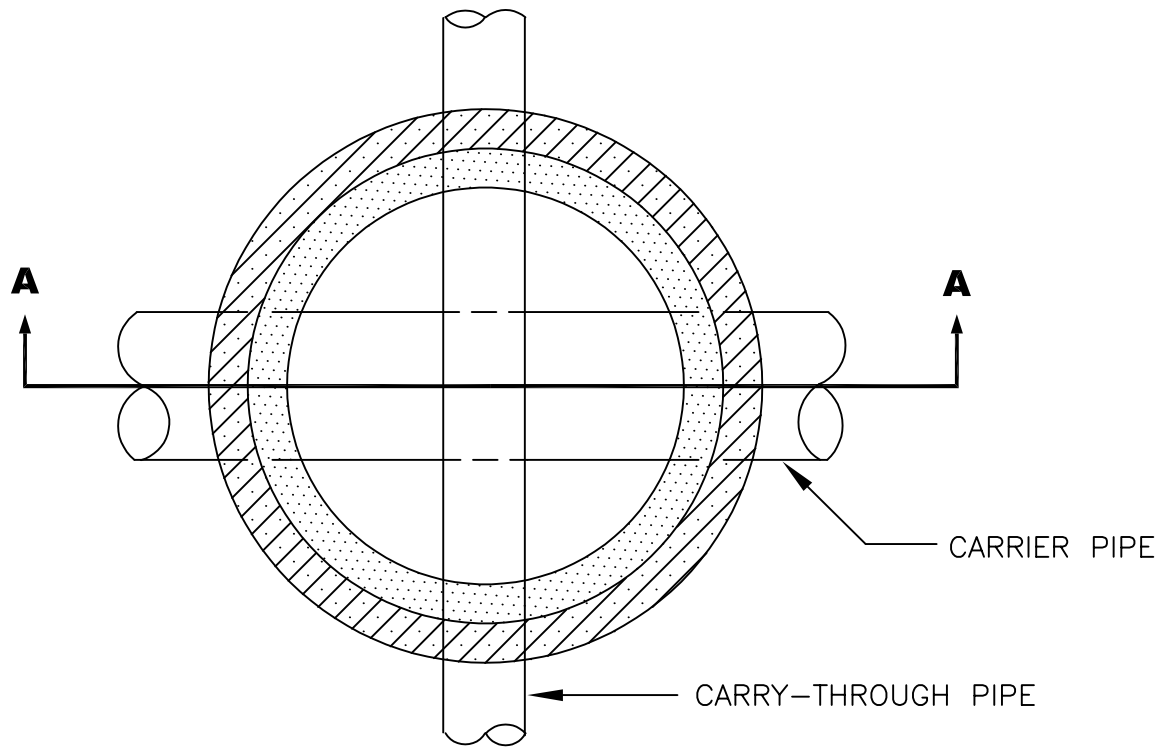


Public Works Standard Drawings

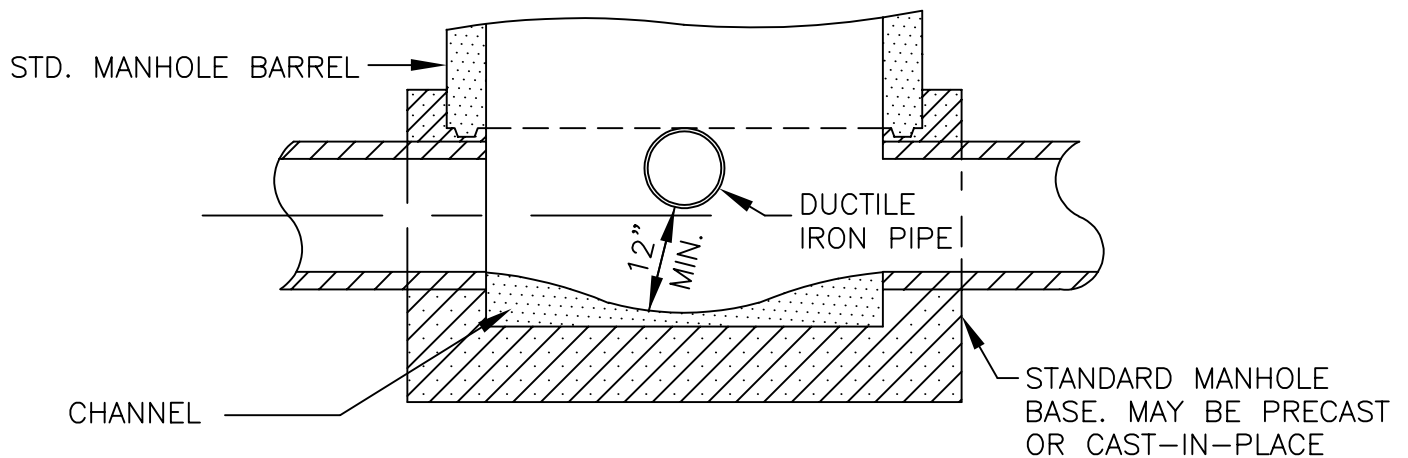
**POLLUTION CONTROL MANHOLE  
WITH OUTSIDE DROP**

SCALE	NTS
DATE JAN '23	REV.
ENGR. DW	DRAWN KAE
DRAWING NO. 613-2	





**PLAN VIEW**



**SECTION A-A**

**NOTES:**

1. CARRY-THROUGH PIPE SHALL BE DUCTILE IRON.
2. THIS MANHOLE DESIGN SHALL BE USED ONLY AS DIRECTED BY THE ENGINEER TO MITIGATE UNAVOIDABLE GRADE CONFLICTS.

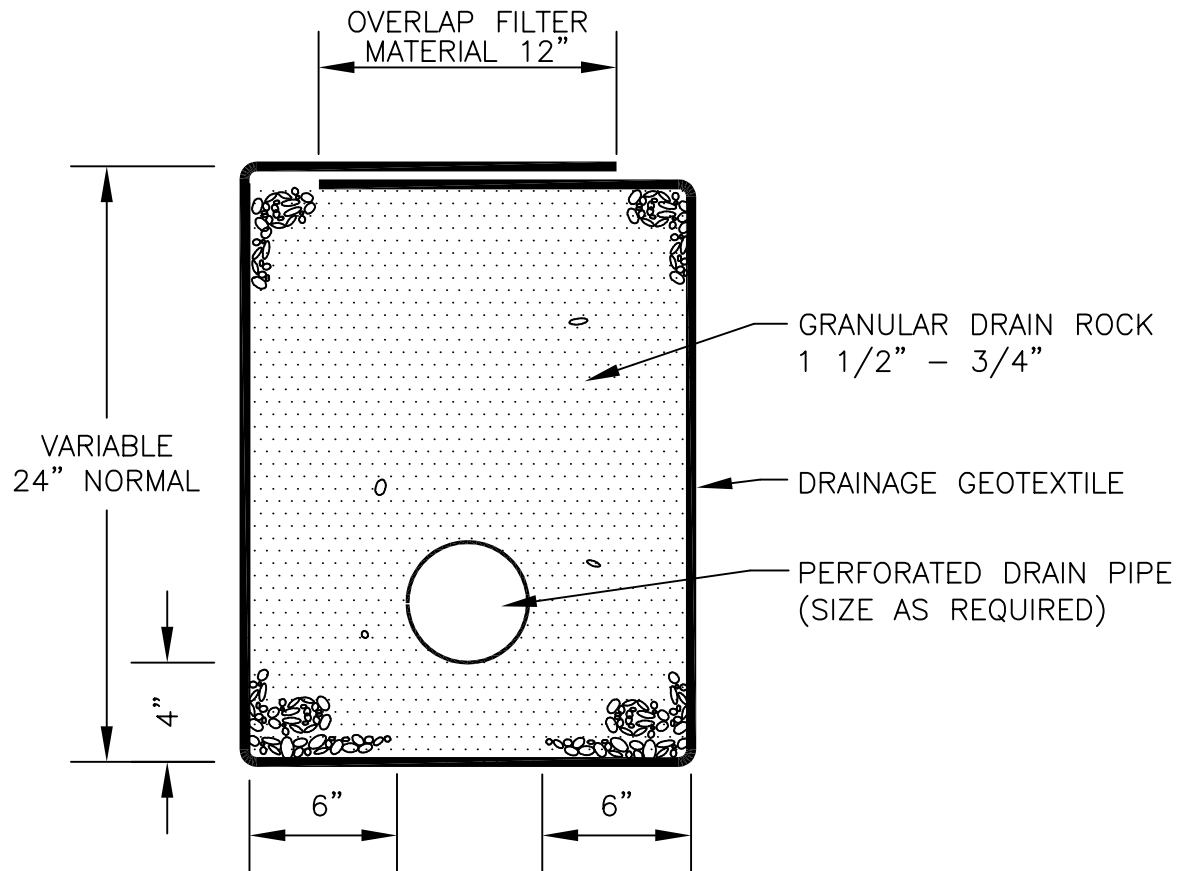


Public Works Standard Drawings

**CARRY THROUGH  
MANHOLE - STORM**

SCALE	NTS
DATE JAN '23	REV.
ENGR. DW	DRAWN KAE
DRAWING NO.	614





NOTES:

1. GRANULAR DRAIN ROCK PER ODOT STANDARD 00430-11.
2. DRAINAGE GEOTEXTILE PER ODOT STANDARD TABLE 02320-1.
3. PERFORATED DRAIN PIPE PER ODOT STANDARD 02415.00.



Public Works Standard Drawings

SUBSURFACE DRAIN DETAIL

SCALE NTS

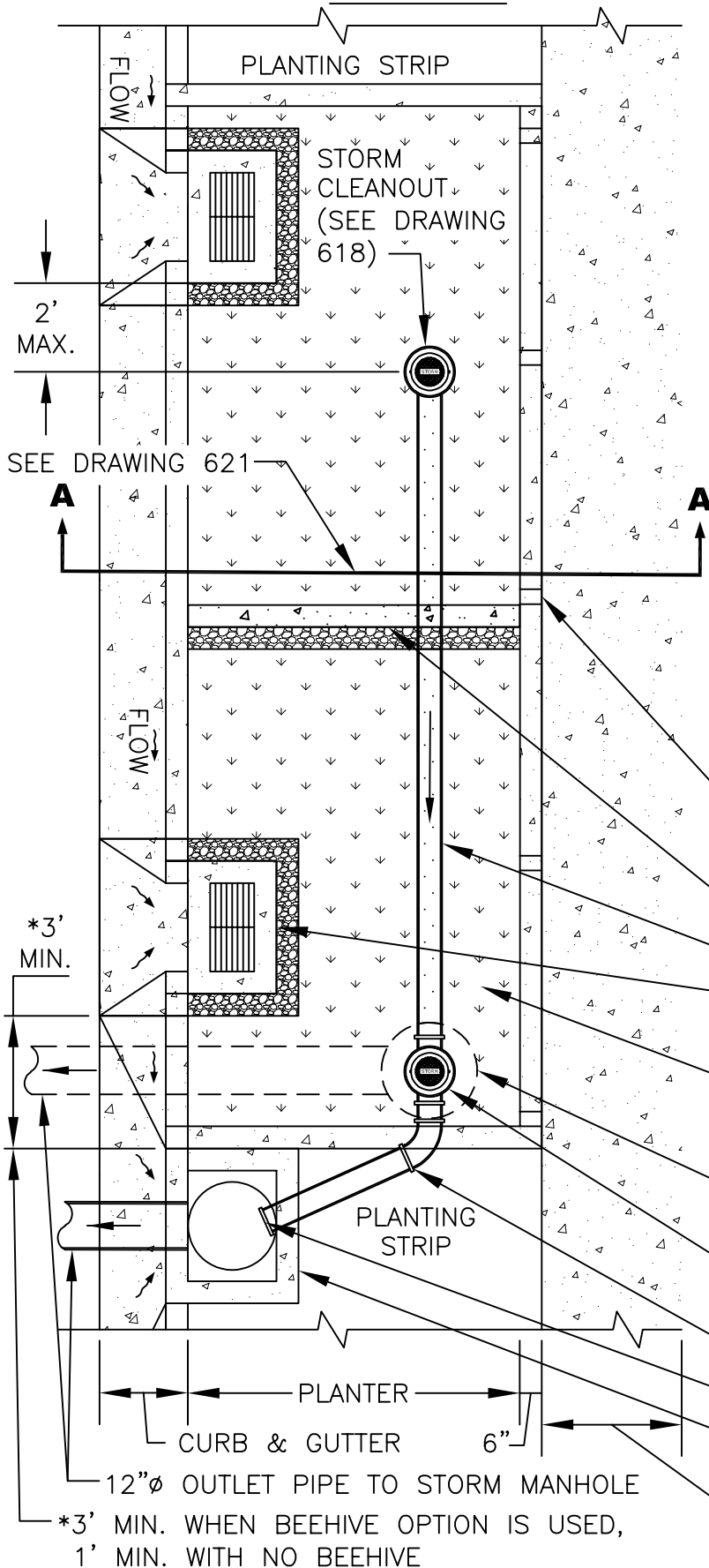
DATE JAN '23 REV.

ENGR. DW DRAWN KAE

DRAWING NO. 616



# PLAN VIEW



## NOTES:

1. THIS PLAN VIEW IS ONLY AN EXAMPLE, TO GUIDE ENGINEERED DESIGN.
2. PROVIDE BEGINNING AND ENDING STATIONS FOR EACH FACILITY. PROVIDE STATIONING AND/OR DIMENSIONS AND ELEVATIONS AT EACH INLET, OUTLET, CHECK DAM, PLANTER CORNER.
3. SIDEWALK ELEVATION MUST BE SET ABOVE CHECK DAM AND INLET ELEVATIONS TO ALLOW OVERFLOW TO DRAIN TO STREET BEFORE SIDEWALK.
4. PROPOSED UTILITY LINES TO BE LOCATED OUT OF FACILITY.
5. 4" WIDE NOTCH AT LOW POINT(S) OF SIDEWALK AND/OR EVERY 6FT.
6. BEEHIVE STRUCTURE TO BE UTILIZED WHEN OVERFLOW CANNOT BE CONVEYED TO AN APPROVED STORM INLET STRUCTURE IN LIEU OF DRAIN PIPE CONNECTING TO AN APPROVED STORM INLET STRUCTURE. BEEHIVE STRUCTURE TO HAVE 12"Ø OUTLET PIPE CONNECTING TO AN APPROVED OUTLET STRUCTURE SUCH AS A STORM MANHOLE, SEE DRAWING 626.
7. STORMWATER FACILITY GROWING MEDIUM SHALL MEET REQUIREMENTS OF APPENDIX A OF CITY STORMWATER MANUAL.
8. SEE DRAWING 620 FOR ROADSIDE STORMWATER PLANTER ELEVATION.

4" NOTCH FOR SIDEWALK DRAINAGE WHEN SIDEWALK IS ADJACENT (SEE NOTE 5 & DRAWING 621)

CHECK DAM (SEE DRAWING 624)

6"Ø PERFORATED DRAIN PIPE

SCUPPER AND SEDIMENT BASIN (SEE NOTE 2 & DRAWING 623)

GROWING MEDIUM (SEE NOTE 7 & DRAWING 630 FOR PLANTING REQUIREMENTS)

BEEHIVE OVERFLOW STRUCTURE \*(OPTIONAL, SEE NOTE 6)

2-WAY STORM CLEAN-OUT (SEE DRAWING 627)

6"Ø SOLID PIPE WITH 45° MAX. BEND

REMOVABLE CAP WITH ORIFICE

PRECAST CURB INLET (SEE NOTE 2 & DRAWING 609)

SIDEWALK PER CITY STANDARD

Public Works Standard Drawings

## ROADSIDE STORMWATER PLANTER PLAN VIEW

SCALE NTS

DATE JAN '23 REV.

ENGR. DW DRAWN KAE

DRAWING NO. 619





TOP OF WATERTIGHT LINER  
(1" BELOW GROW MEDIUM ELEVATION)  
(SEE DRAWING 625)

PLANTER FACILITY  
ONE WAY CLEANOUT  
(SEE DRAWING 618)

CURB CUT  
(SEE DRAWING 623)

18" MIN.  
24" MAX.

GUTTER  
FLOW

6" PERFORATED  
DRAIN PIPE (1%  
SLOPE MINIMUM)

PLANTER WALL TYP.

6" SOLID OR  
PERFORATED PIPE  
WRAPPED WITH FILTER  
(1% SLOPE MINIMUM)

ROOT  
BARRIER

GROWING  
MEDIUM

SCUPPER SPACING  
60' MAX.

DEEPENED SECTION FOR  
TREE (SEE DRAWING 631)

6" SOLID PIPE  
REMOVABLE CAP WITH ORIFICE

12"Ø OUTLET PIPE TO STORM MANHOLE

PRECAST CURB INLET  
WITH 18" SUMP MIN.  
(SEE DRAWING 609)

OVERFLOW ELEVATION  
(3" MIN. BELOW  
SIDEWALK ELEVATION)

STREET TREE IN PLANTER  
(SEE DRAWING 631)

2-WAY CLEANOUT  
(SEE DRAWING 627)

SEE NOTE 6

EXISTING  
SUBGRADE

6" OF 3/4"-0"  
OPEN CRUSHED  
AGGREGATE

#### NOTES:

1. PROVIDE PROTECTION FROM ALL VEHICLE TRAFFIC, EQUIPMENT STAGING, AND FOOT TRAFFIC PRIOR TO, DURING AND AFTER CONSTRUCTION.
2. SCUPPERS SHALL BE SPACED NO MORE THAN 60 FEET APART AND ONE AT EACH END OF A PLANTER.
3. SLOPE OF PLANTER TO NOT EXCEED 0.5%.
4. PIPE SHALL BE PVC D3034 SDR 35, 6" MINIMUM DIAMETER. PIPING MUST HAVE 1% SLOPE MINIMUM, BOTTOM OF PIPE SHALL BE SET AT 9" ABOVE EXISTING SUBGRADE.
5. ALL PIPE TO HAVE GASKET JOINTS AND GASKETED JOINT FITTINGS.
6. OVERFLOW
  - MUST FLOW TO APPROVED OUTLET STRUCTURE PER OREGON CITY STORMWATER MANUAL.
  - BEEHIVE STRUCTURE TO BE UTILIZED WHEN OVERFLOW CANNOT BE CONVEYED TO CURB INLET OR AN APPROVED STORM INLET STRUCTURE. SEE DRAWING 619 AND 626.
7. THIS ELEVATION VIEW IS ONLY AN EXAMPLE, TO GUIDE ENGINEERED DESIGN.



Public Works Standard Drawings

## ROADSIDE STORMWATER PLANTER ELEVATION

SCALE NTS

DATE JAN '23 REV.

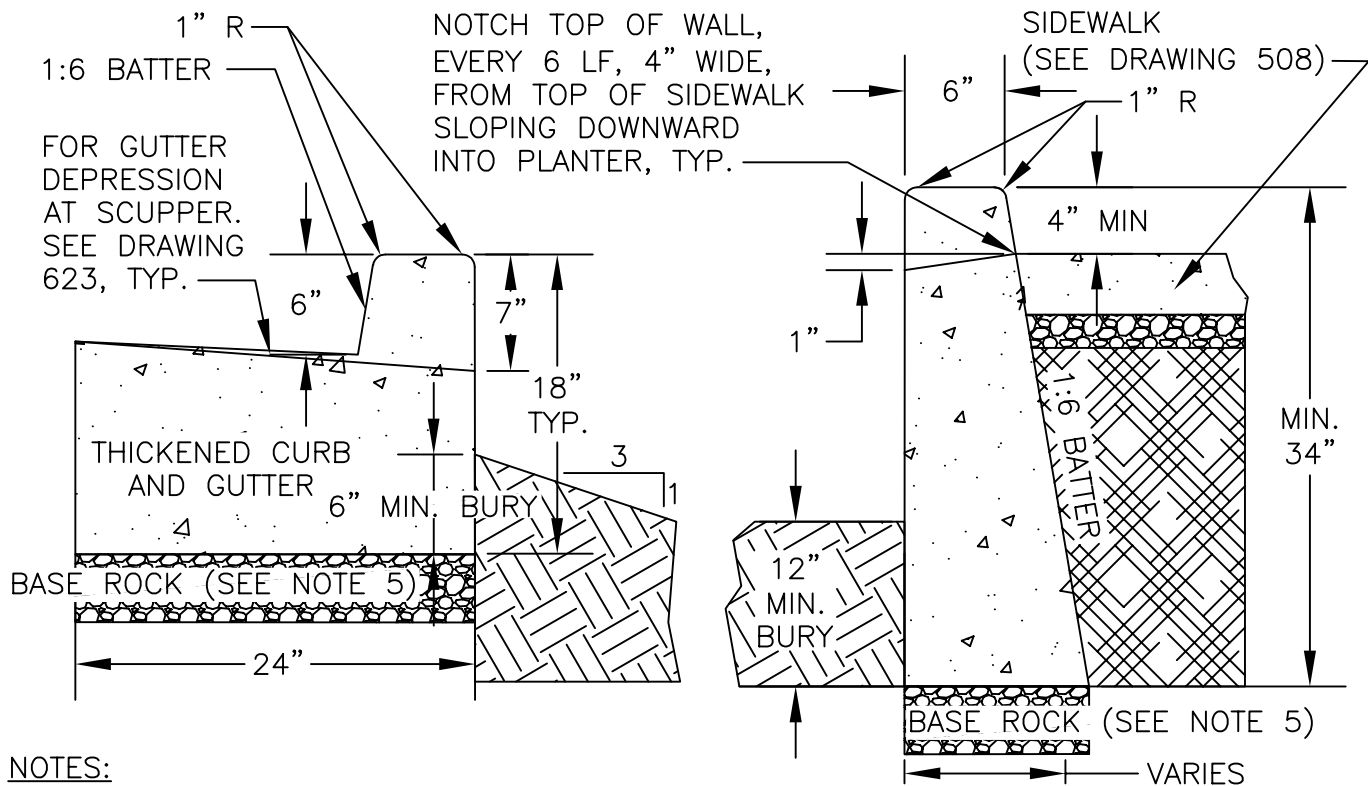
ENGR. DW DRAWN KAE

DRAWING NO. 620









**NOTES:**

1. CONCRETE SHALL BE AIR-ENTRAINED MINIMUM 4.0% AND HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AFTER 28 DAYS.
2. ALL CONCRETE SURFACES SHALL BE SMOOTH AND FREE FROM DEFECTS AND SHALL HAVE A LIGHT BROOM TEXTURED FINISH.
3. EXPANSION JOINTS (CURB AND SIDEWALK ONLY):
  - A. TO BE PROVIDED:
    - 1) AT EACH COLD JOINT.
    - 2) AT EACH END OF DRIVEWAYS.
    - 3) AT EACH POINT OF TANGENCY OF THE CURB.
    - 4) AT LOCATIONS NECESSARY TO LIMIT SPACING TO 45 FEET.
  - B. MATERIAL TO BE USED IS "REFLEX RUBBER JOINT EXPANSION" JOINT MATERIAL, OR CITY APPROVED EQUAL, WITH A THICKNESS OF 1/2 INCH.
4. CONTRACTION JOINTS (CURB AND SIDEWALK ONLY):
  - A. SPACING TO BE NOT MORE THAN 10 FEET REGARDLESS OF LOCATION OF DRAINAGE NOTCH
  - B. THE DEPTH OF THE JOINT SHALL BE AT LEAST 1-1/2 INCHES WITH 1/2-INCH MAXIMUM RADIUS TROWEL JOINT.
  - C. PLACE JOINT ON EACH SIDE OF SCUPPER INLET (SEE DRAWING 623)
5. BASE ROCK TO BE 3/4"-0", 95% COMPACTION PER AASHTO T 180. BASE ROCK SHALL BE 6" MINIMUM IN DEPTH.
6. SIDEWALK CONTRACTION JOINTS SHALL BE PLACED IN LINE WITH ONE OF THE DRAINAGE NOTCH CORNERS.
7. SIDEWALK ELEVATION MUST BE SET ABOVE STREET INLET/OULET ELEVATIONS TO ALLOW OVERFLOW TO DRAIN TO STREET OR PIPED OVERFLOW SYSTEM AS APPLICABLE.
8. CHECK DAMS:
  - REINFORCED CONCRETE CHECK DAMS SHALL BE PLACED EVERY 30 FEET STARTING FROM UPPER END WALL
  - CHECK DAMS SPACING MAY BE DECREASED TO KEEP LONGITUDINAL SLOPE OF PLANTER FROM EXCEEDING .05%
9. THICKENED CURB AND GUTTER SHALL BE POURED MONOLITHICALLY.

Public Works Standard Drawings

ROADSIDE STORMWATER PLANTER WALL  
DETAIL

SCALE NTS

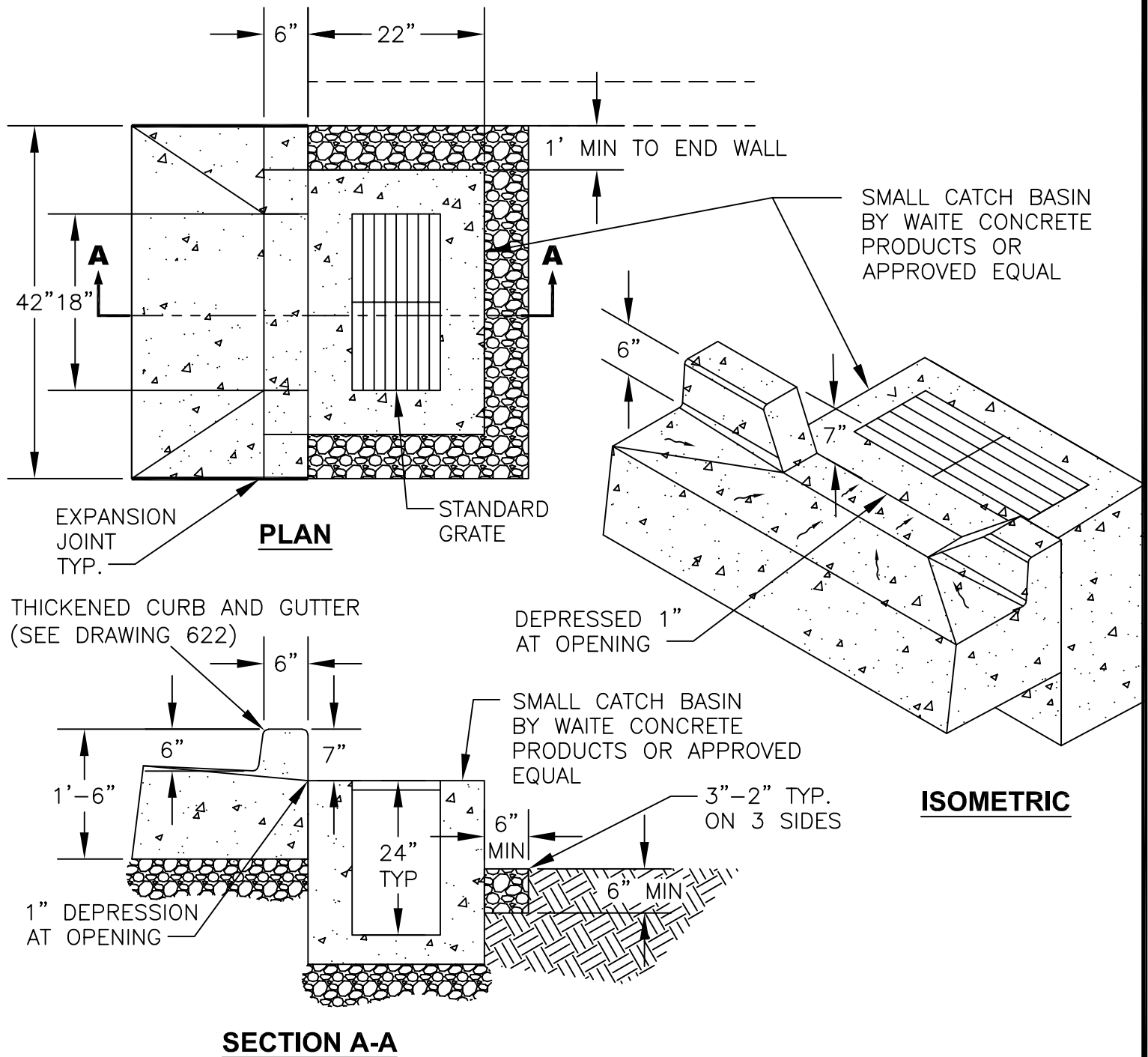
DATE JUL '25 REV. 2

ENGR. DW DRAWN KAE

DRAWING NO. 622







NOTES:

1. MATCH GUTTER PAN OF ADJACENT CURB AND GUTTER.
2. CATCH BASIN RIM SHALL BE LEVEL WITH DEPRESSED GUTTER ELEVATION.
3. CATCH BASIN SHALL BE PRECAST CONCRETE, INCLUDING BOTTOM.

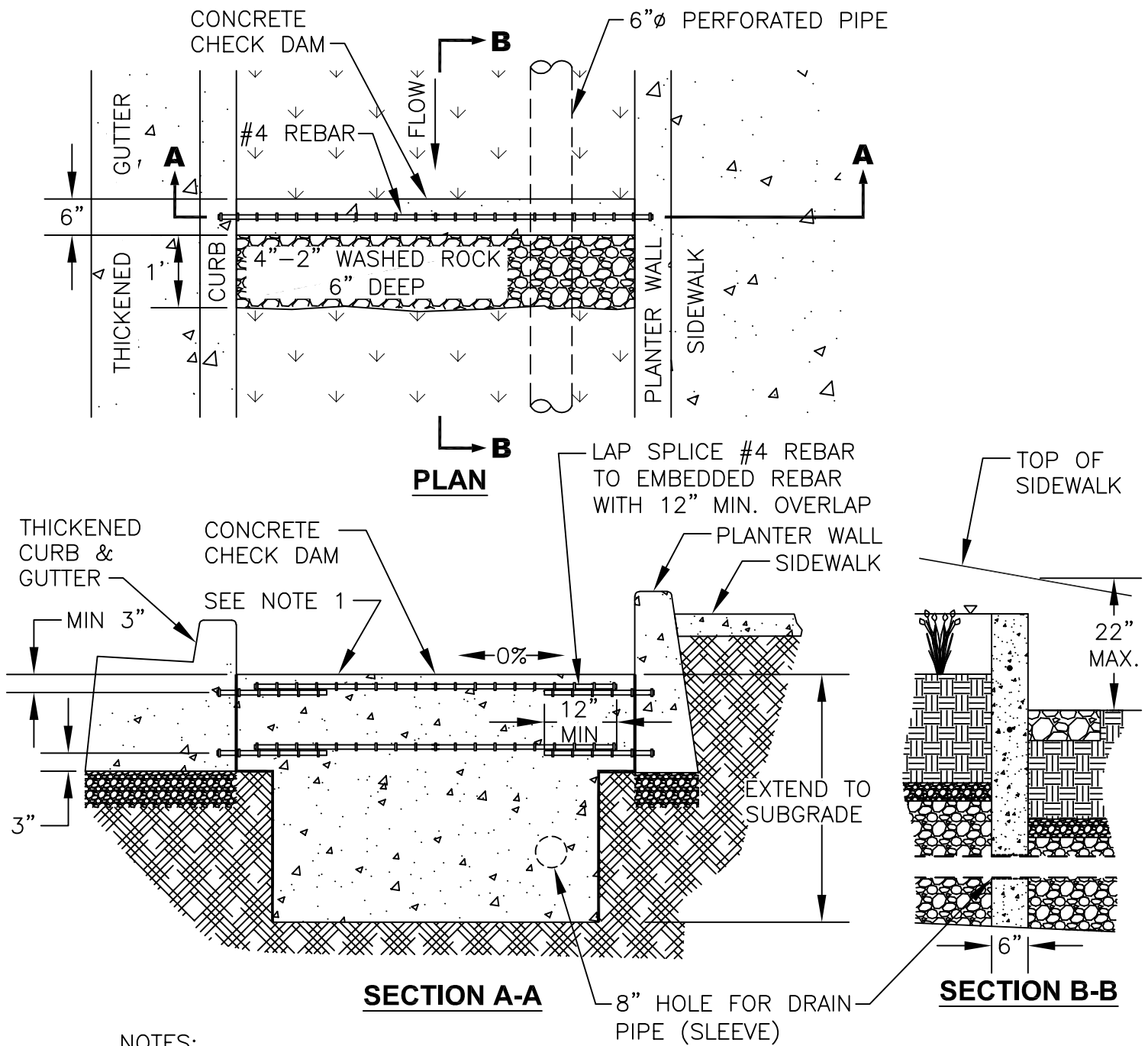


Public Works Standard Drawings

CURB CUT SCUPPER AND SEDIMENT CATCH BASIN

SCALE	NTS
DATE JAN '23	REV.
ENGR. DW	DRAWN KAE
DRAWING NO. 623	





Public Works Standard Drawings

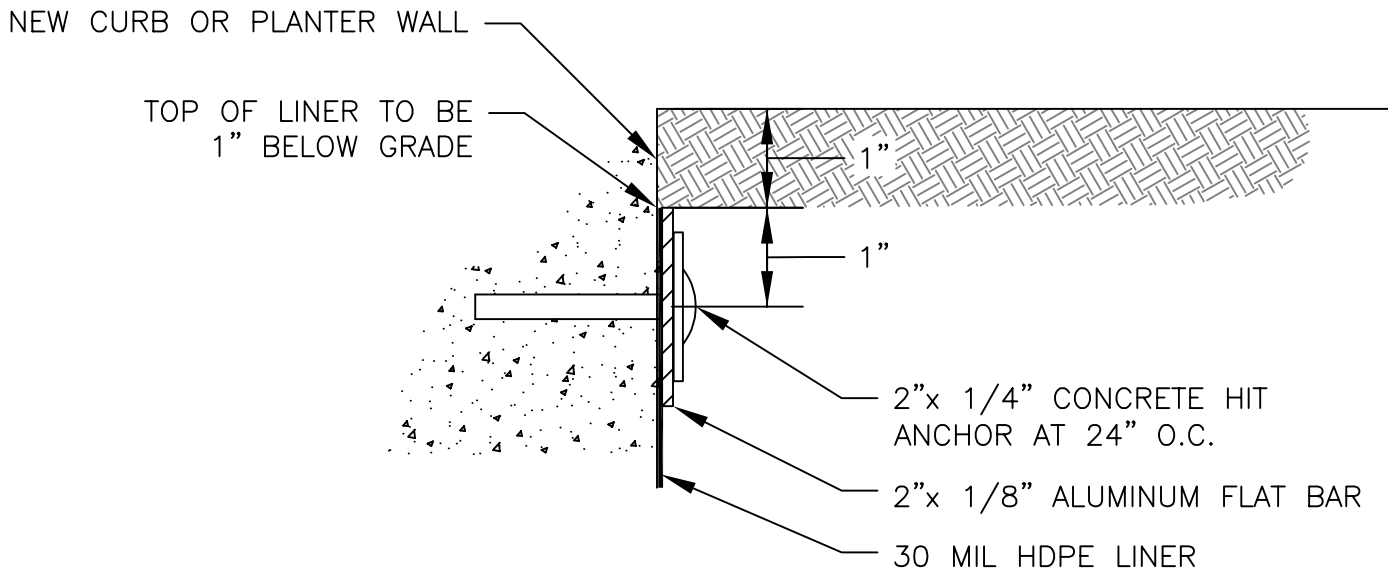
# ROADSIDE STORMWATER PLANTER CONCRETE CHECK DAM

SCALE	NTS
DATE JUL '23	REV. 1
ENGR. DW	DRAWN KAE
DRAWING NO. 624	



## CONSTRUCTION NOTES

1. ADHERE LINER TO CONCRETE W/SEALANT IF RECOMMENDED BY LINER MANUFACTURE.
2. SECURE LINER TO CONCRETE WITH 2" ALUMINUM FLAT BAR, PLACED AS DIRECTED.
3. ATTACH FLAT BAR WITH CONCRETE HIT ANCHORS, 24" O.C.
4. TRIM EXCESS LINER TO THE TOP OF THE FLAT BAR.
5. ATTACHING LINER TO MINIMIZE WRINKLES, CORNERS SHOULD BE CUT TO FIT WITHOUT WRINKLES.
6. LINER TO BEGIN 1" BELOW GRADE AND EXTEND DOWN TO SUBGRADE AND MINIMUM 1' INTO BOTTOM OF PLANTER.



## LINER ATTACHMENT

### NOTES:

1. LINER MATERIALS TO BE HDPE LINER TO EXTEND FROM TOP OF 2" FLAT BAR TO SUBGRADE.
2. IN AREAS WITH CONTAMINATED SOILS THE FACILITY MUST BE COMPLETELY LINED WITH A 30 MIL LINER UNLESS FACILITY'S BOTTOM AND SIDES ARE MONOLITHIC CONCRETE.
3. PIPE BOOT: USE SEALANT OR STAINLESS STEEL BANDS TO ADHERE LINER TO PIPING, OR OTHER METHOD AS APPROVED BY THE CITY ENGINEER.



Public Works Standard Drawings

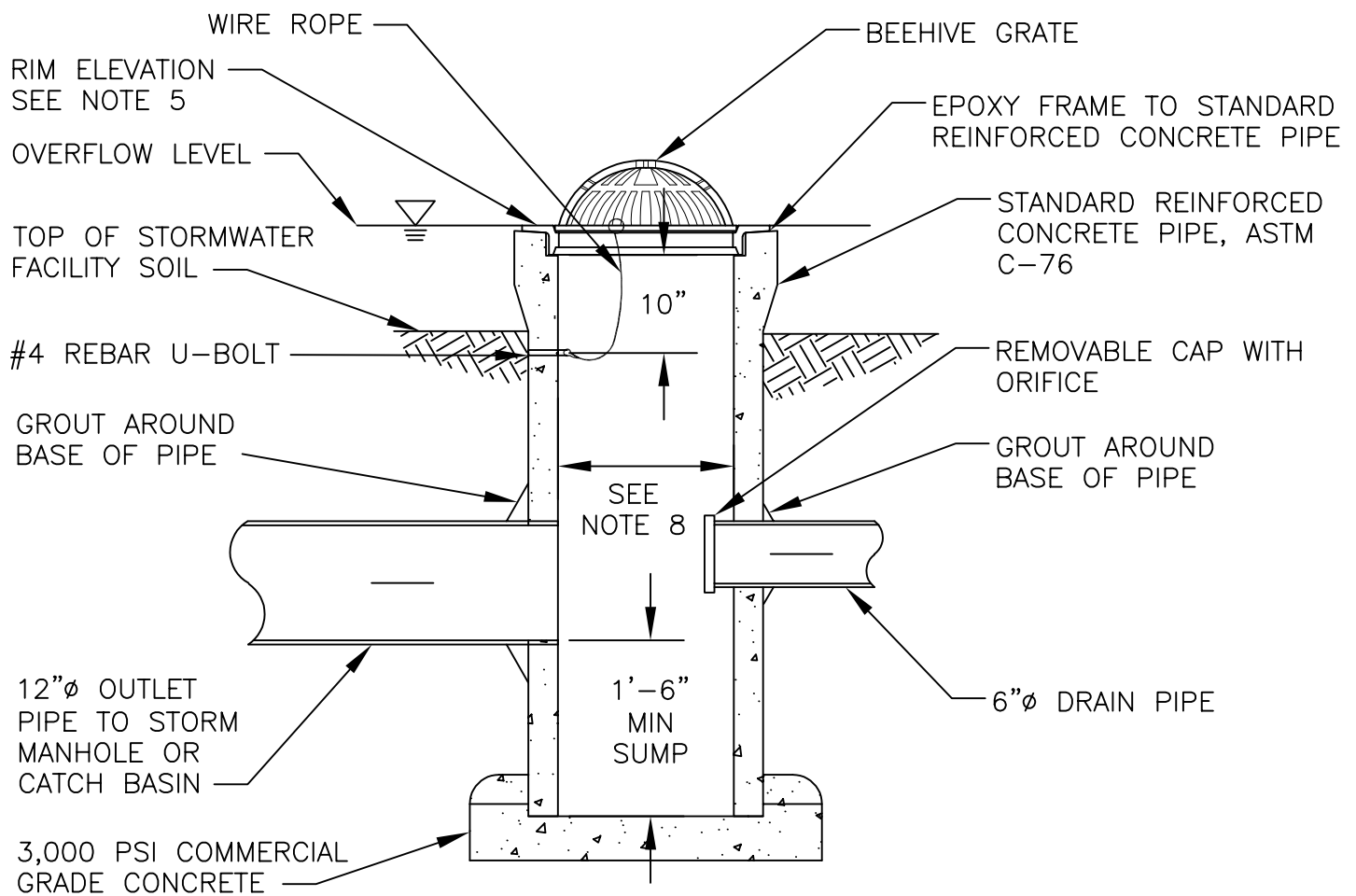
## WATERPROOF LINER ATTACHMENT AND PIPE BOOT

SCALE NTS

DATE JUL '23	REV. 1
ENGR. DW	DRAWN KAE

DRAWING NO. 625





#### NOTES

1. THIS CROSS-SECTIONAL VIEW IS ONLY AN EXAMPLE, ORIENTATION OF INLET AND OUTLET PIPES DEPENDS ON ENGINEERED DESIGN.
2. SECURE GRATE IN PLACE WITH 54" OF WIRE ROPE. LOOP ENDS OF WIRE ROPE AROUND U-BOLT AND GRATE. CRIMP EACH END OF WIRE ROPE WITH 3" OVERLAP.
3. DRILL 2" DEEP HOLES INTO PIPE AND EPOXY #4 REBAR U-BOLT (2"X 4") IN HOLES.
4. GRATE TO BE CAST IRON, ASTM A48 CL30.
5. BEEHIVE RIM ELEVATION MUST BE MINIMUM 1" BELOW NEAREST SCUPPER, MINIMUM 4" BELOW ADJACENT TOP OF CURB, AND 12" ABOVE GROW MEDIUM.
6. WIRE ROPE BETWEEN 1/8"—3/16" DIAMETER, STAINLESS STEEL, 7 STRANDS OF 19 WIRES.
7. INVERT ELEVATION OF INLET PIPE MUST BE NO LOWER THAN INVERT ELEVATION OF OUTLET PIPE.
8. MINIMUM 18" I.D., MAXIMUM 24" I.D.



Public Works Standard Drawings

### BEEHIVE OVERFLOW STRUCTURE

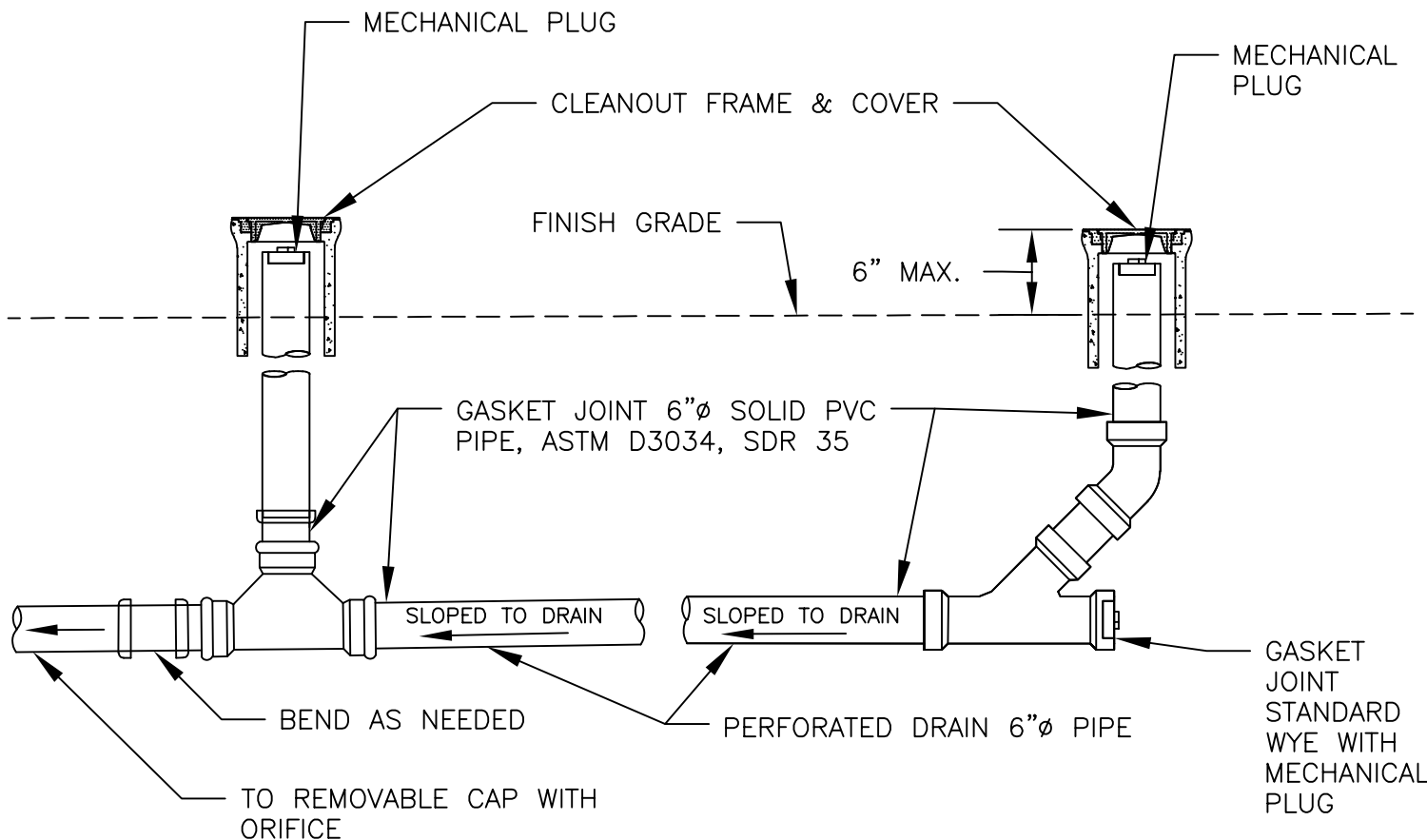
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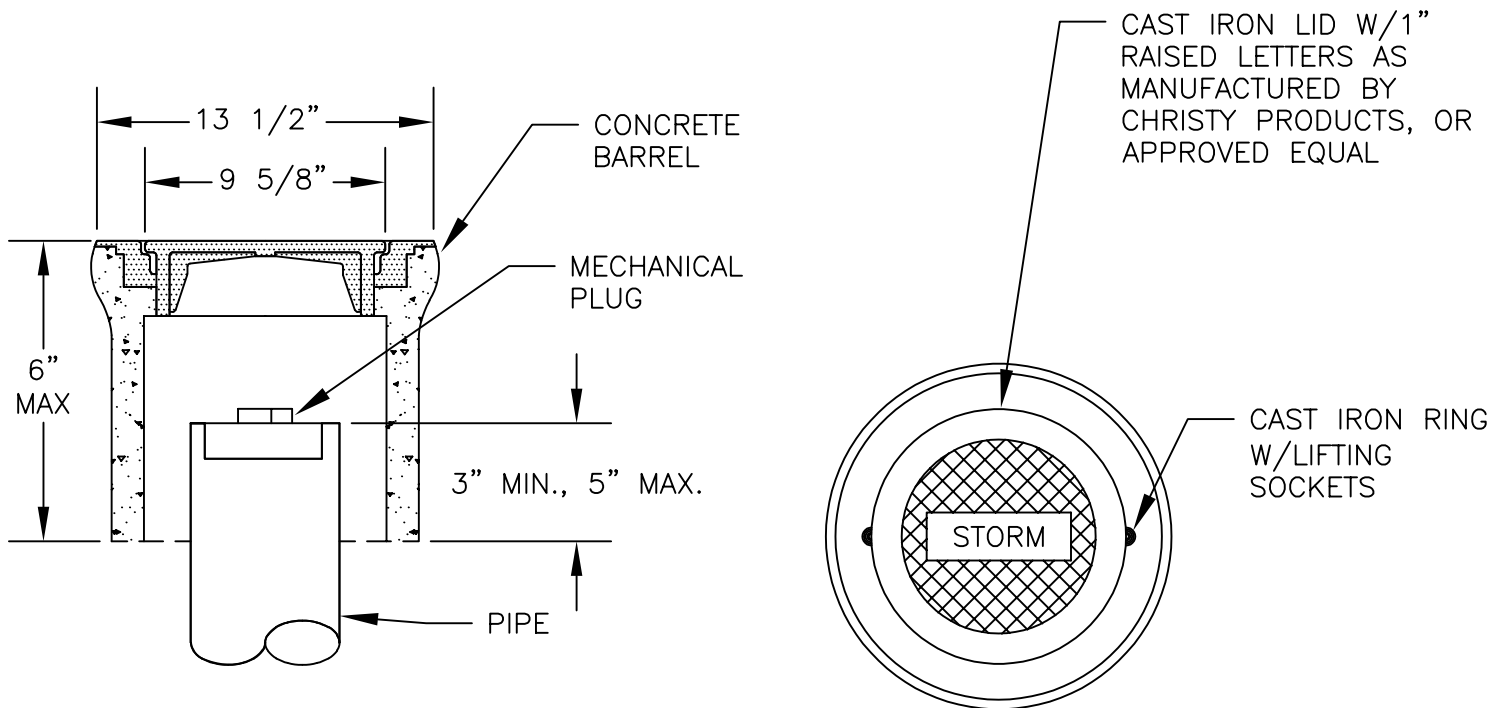
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DRAWING NO. 626





### SECTION VIEW



Public Works Standard Drawings

STORMWATER PLANTER FACILITY  
CLEANOUTS

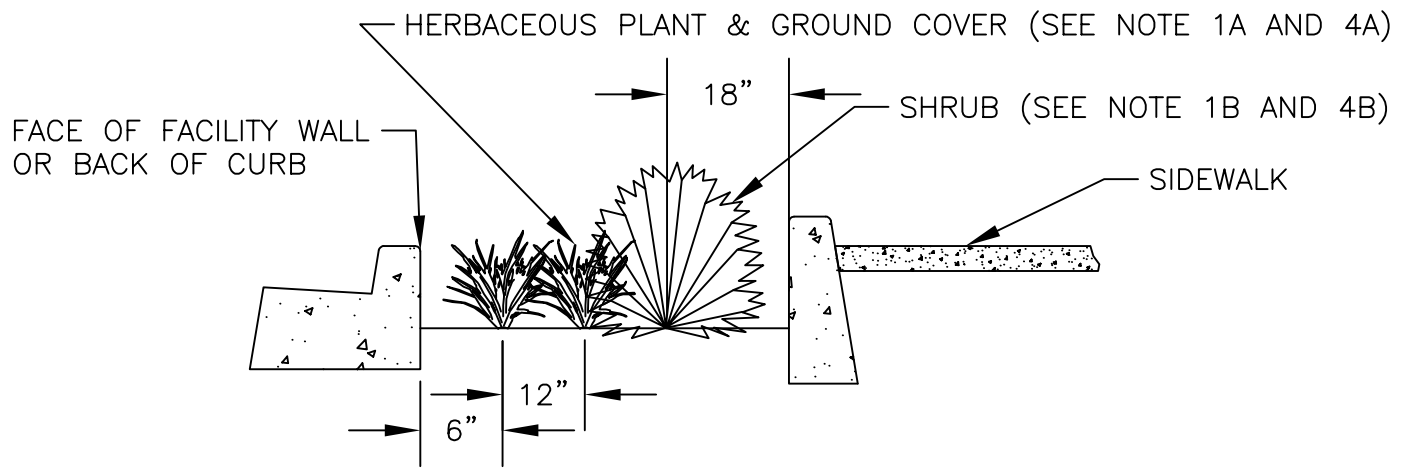
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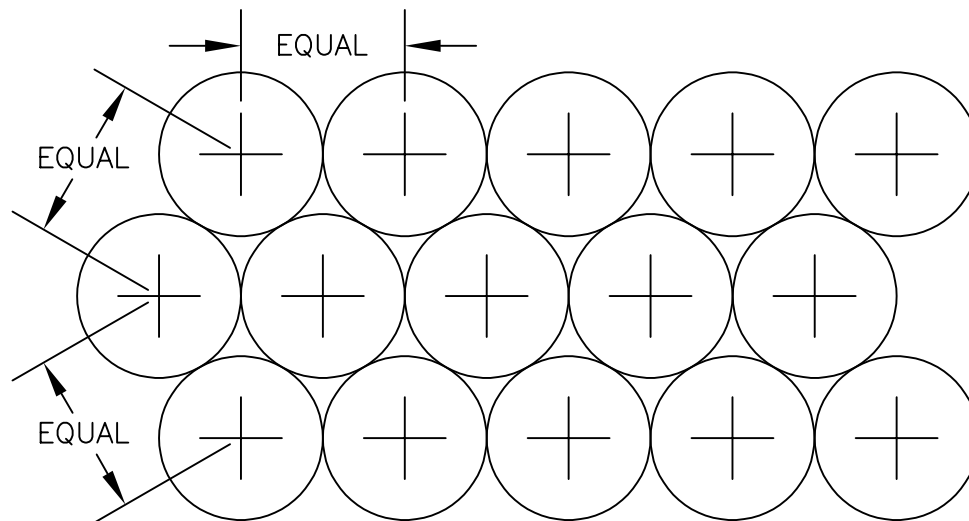
ENGR. DW DRAWN SP

DRAWING NO. 627





**FACILITY ELEVATION VIEW**



**PLAN VIEW**  
**SPACING**

**NOTES:**

1. REFER TO PLANTING REQUIREMENTS IN APPENDIX A OF STORMWATER MANUAL.
  - A. HERBACEOUS PLANTS AND GROUNDCOVERS THAT REQUIRE MORE THAN 12" ON CENTER (O.C.) SPACING ARE PROHIBITED.
  - B. ONLY SMALL SHRUBS (NO MORE THAN 3' POTENTIAL HEIGHT) THAT REQUIRE NO MORE THAN 24" O.C. SPACING SHALL BE ALLOWED.
2. ALL PLANTS SHALL BE PLANTED AT EQUAL TRIANGULAR SPACING ON CENTER. INTERIOR PLANT SPACING MAY BE SLIGHTLY ADJUSTED TO ACHIEVE DESIRED EDGE SETBACKS.
3. PLANTING DENSITY SHALL AVERAGE NO LESS THAN 90 TO 115 PLANTS FOR EVERY 100 SQUARE FEET, DEPENDING ON PLANTING DIVERSITY.
4. PLANTS SHALL BE LOCATED SET BACK FROM FACILITY EDGES AS FOLLOWS:
  - A. HERBACEOUS PLANTS AND GROUNDCOVERS: 6" FROM CENTER OF PLANT TO FACE OF FACILITY WALL, BACK OF CURB OR SIDEWALK EDGE.
  - B. SHRUBS: 18" FROM CENTER OF PLANT TO FACE OF FACILITY WALL, BACK OF CURB OR SIDEWALK EDGE AND 24" O.C. FROM SHRUB TO SHRUB.



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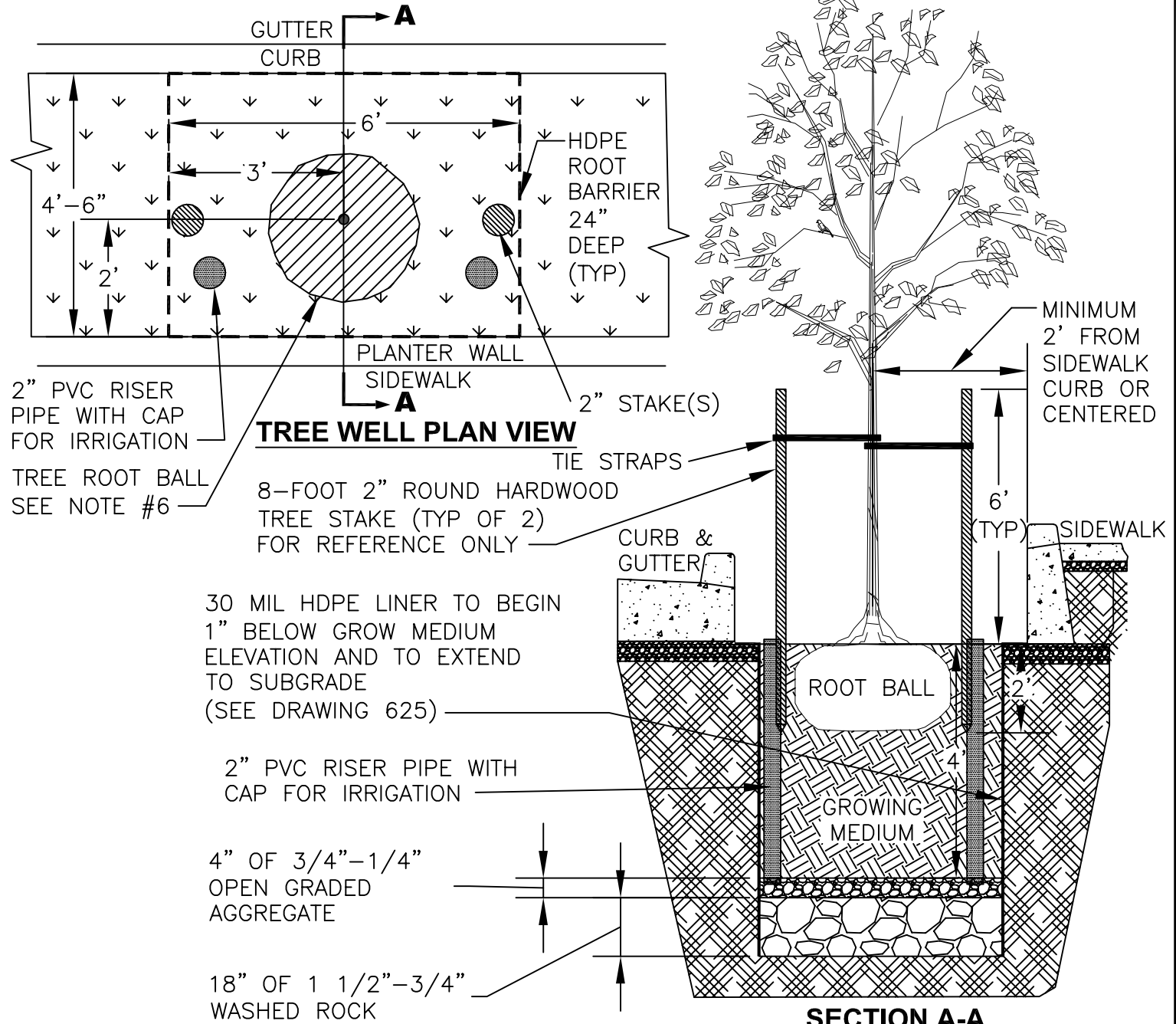
**ROADSIDE STORMWATER PLANTER  
PLANT SPACING**

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DRAWING NO. 630	



# NOTES:

1. DISTANCE BETWEEN TREES VARIES, TYPICALLY ONE STREET TREE SHALL BE PLANTED FOR EVERY THIRTY-FIVE FEET OF PROPERTY FRONTAGE. THE TREE SPACING SHALL BE EVENLY DISTRIBUTED THROUGHOUT THE TOTAL DEVELOPMENT FRONTAGE.
2. STORMWATER FACILITY GROWING MEDIUM SHALL MEET REQUIREMENTS OF APPENDIX A OF CITY STORMWATER MANUAL.
3. ALL PROPOSED TREE SPECIES MUST MEET REQUIREMENTS IN APPENDIX A OF STORMWATER MANUAL.
4. TREES SHALL BE CENTERED IN THE PLANTING ZONE/TREE WELL.
5. SET TRUNK FLARE TWO INCHES ABOVE SOIL SURFACE.
6. REMOVE ALL TWINE, WIRE, ROOT BAGS, BURLAP, AND ALL OTHER NURSERY MATERIALS FROM TREE PRIOR TO BACKFILLING.
7. DRIVE TREE STAKE INTO SOIL OUTSIDE OF ROOT BALL.
8. DEEPROOT UB 24-2 TREE ROOT BARRIER OR APPROVED EQUAL.



Public Works Standard Drawings

TREE WELL IN STORMWATER PLANTER

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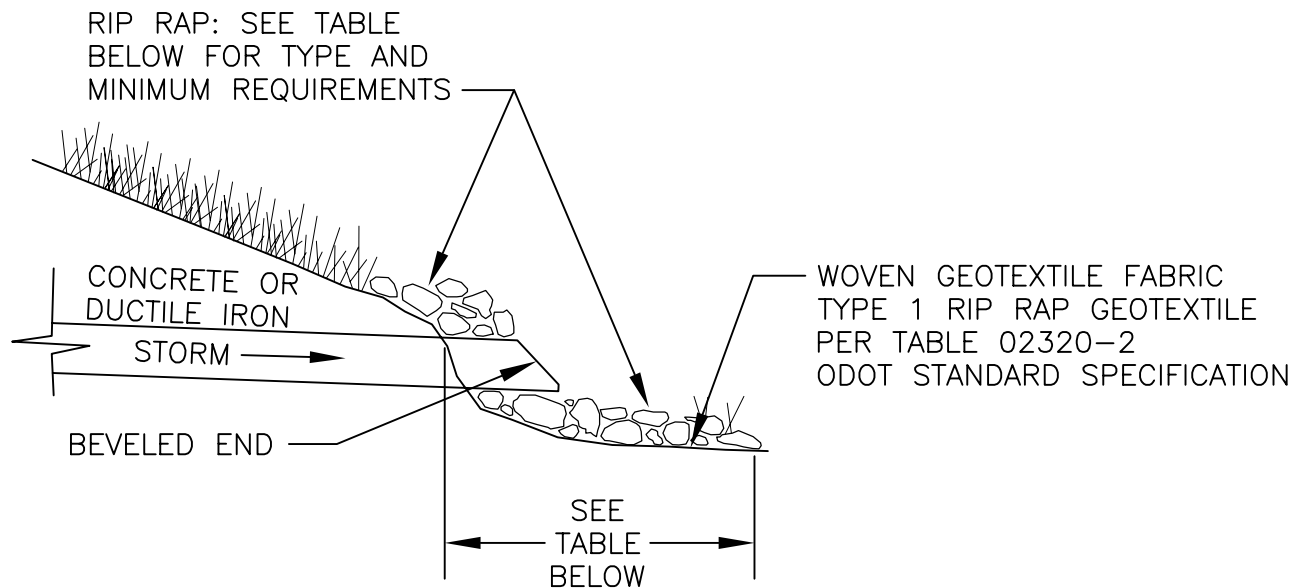
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ENGR. DW DRAWN KAE

DRAWING NO. 631







### **STORM OUTFALL DETAIL**

N.T.S.

DISCHARGE VELOCITY AT DESIGN FLOW (fps)		MINIMUM REQUIRED PROTECTION DIMENSIONS				
GREATER THAN	LESS THAN OR EQUAL	TYPE	THICKNESS (ft)	WIDTH	LENGTH (USE GREATER OF)	HEIGHT OVER CROWN
0	5	ODOT CLASS 50 RIP RAP*	1.5	PIPE DIAMETER + 6 FT	8 FT OR 4 X PIPE DIAMETER	1 FT
5	10	ODOT CLASS 200 RIP RAP	2.5	GREATER OF: PIPE DIAMETER + 6 FT	12 FT OR 4 X PIPE DIAMETER	1 FT
10		ENGINEERED ENERGY DISSIPATER REQUIRED				

\* THE CITY MAY REQUIRE ODOT CLASS 100 RIP RAP IN AREAS WITH A LIKELIHOOD OF VANDALISM.

#### **NOTE:**

1. PIPE HEADWALLS SHALL BE REQUIRED WHERE PIPE MATERIAL OTHER THAN CONCRETE OR DUCTILE IRON IS EXPOSED IN THE DESIGN OF AN OUTLET OR INLET PIPE OR WHERE REQUIRED TO STABILIZE SLOPE. DETAILS OF ALL HEADWALLS AND END PROTECTION SHALL BE INCLUDED IN THE CONSTRUCTION DRAWINGS.



Public Works Standard Drawings

**STORM OUTFALL**

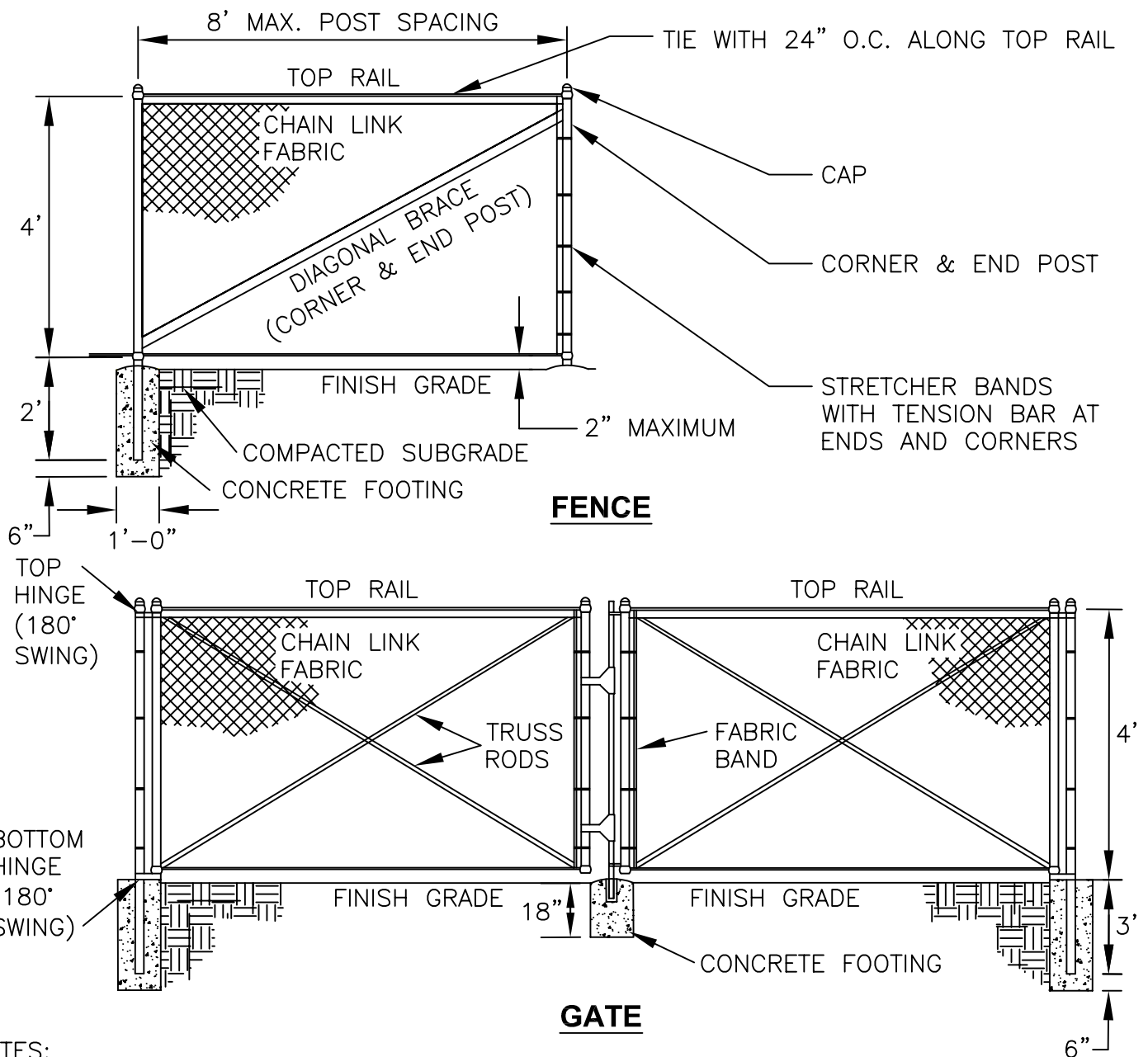
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DRAWING NO. 632





**NOTES:**

1. GATE AND FENCE SHALL BE DESIGNED TO CITY OF OREGON CITY CONSTRUCTION STANDARDS.
2. FENCE MATERIAL SHALL BE NO. 11 GAUGE GALVANIZED STEEL FABRIC WITH BONDED VINYL COATING (BLACK).
3. POSTS SHALL BE GALVANIZED STEEL, WITH TOP CAPS.
4. CROSS BARS SHALL CONNECT ADJACENT FENCE POSTS WITH DIAGONAL BRACES AT CORNERS AND ENDS.
5. SEE PLAN FOR LOCATION OF GATE AND FENCE.
6. ALL GATE AND FENCE MATERIALS (INCLUDING CHAIN LINK, FABRIC, POSTS, RAILS, ETC.) SHALL BE COVERED WITH BLACK-COLORED VINYL COATING. THE COLOR SHOULD BE THE SAME FOR ALL GATE AND FENCE MATERIALS.
7. CONCRETE FOOTING SHALL BE AS FOLLOWS:
  - \* FENCE - 12" MINIMUM DIAMETER X 30" DEEP, 3,000 PSI CONCRETE.
  - \* GATE - 12" MINIMUM DIAMETER X 42" DEEP, 3,000 PSI CONCRETE.



Public Works Standard Drawings

CHAIN LINK FENCE AND GATE

SCALE	NTS
DATE JAN '23	REV.
ENGR. DW	DRAWN KAE
DRAWING NO. 633	