


General Notes:

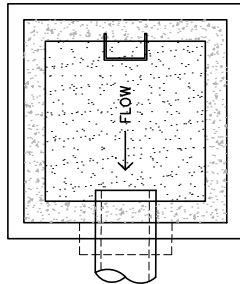
1. All work shall be done in accordance with current City of Colorado Springs Engineering Division (the City) Standard Specifications.
2. The contractor shall obtain all required permits. For city permits contractors shall use the ACCELA on-line permit system. Once city permits are approved and paid, then appropriate scheduling and notifications shall be in ACCELA.
3. Curb face assembly shall be painted safety yellow. One coat of shop primer and two coats of industrial enamel paint shall be used.
4. Concrete used for inlets and connections shall be a City-approved structural concrete mix design.
5. A minimum of 6-inches thick of granular bedding material shall be provided below all inlets.
6. Reinforcing bars shall be ASTM A615, Grade 60 deformed steel marked with bar designation, grade and mill marking.
7. Reinforcing shall have a minimum 2-inch clearance, except as noted.
8. Pipe entries into inlets are variable; the dimensions and reinforcing details shown are typical.
9. Inlet floors shall be channelized and finished with a City-approved concrete mix to a smooth surface that slopes towards the outlet (2% min. for inlets). Floor slope shall either be poured monolithic with the base or after floor and pipe openings are constructed. Epoxy between pipe and invert if there is a cold joint.
10. Curb inlet depth and length may vary. Curb inlet length shall be 5-feet, 10-feet, or 15-feet; not to exceed 15-feet unless approved by Stormwater Enterprise. Where curb inlets with lengths greater than 10-feet are approved, provide maintenance access at both ends; ensure inlet and outlet pipes are near to these access points.
11. Curb inlet top deck slab shall be sloped toward the street (0.5% min.; 2% max.).
12. The opening and top deck slab of curb inlets shall match the running slope of the street grade and/or the designed curb line profile at each location. Curb inlets shall not create unnecessary dips or bumps in the roadway cross section which adversely affect drivability of the pavement surface.
13. Stub-outs shall extend a minimum of 2-foot beyond outside wall surface of inlets and shall be plugged as approved by the Inspector.
14. No formwork shall remain inside inlets after completion.
15. Concrete walls shall be formed on both sides. Casting of sidewalls against earth is not permitted.
16. Exposed concrete corners shall be chamfered 3/4-inch. Curb and gutter corners shall be finished to match the existing curb and gutter beyond the transition for curb inlets.
17. A minimum of one vertical support bar is required. Curb inlets greater than 5-feet wide shall have support bars installed at maximum 3-foot intervals evenly spaced across the opening.
18. Grates for area inlets shall be installed during construction of the box, with the grate bolted to the frame.
19. Steps shall be installed for inlets with internal height greater than 30-inches at 16-inches spacing with the top step located 16 to 18-inches below the lid. Steps shall conform to AASHTO M-199. Steps shall align vertically and shall not interfere with pipe openings.
20. Outer wall of pipe shall be a minimum of 6-inches from interior side walls and top of inlets.

21. All reinforcement dimensions are on-center (O.C.) unless otherwise noted.
22. Precast inlets may be used upon annual City acceptance of shop drawings and concrete mix design. Contractor shall provide proof of acceptance prior to installation.
23. Precast base slab shall be poured monolithically with bottom riser section.
24. Precast base shall fit the conditions and locations for which they are intended without any field modifications. Bases which require field cutting or modification in order to fit the location intended will be rejected by the Inspector and removed and replaced by the contractor at no additional cost.
25. Storm sewers shall have tracer wire installed per the tracer wire detail prior to acceptance.
26. Cast-in-place inlets greater than 10-feet in depth shall be designed by a structural engineer per section 636 for the City Specifications and structural calculations shall be submitted with the drainage plan and profile drawings for review. If field conditions change and modifications to the cast-in-place inlet are required, modifications to the inlet will be designed by a structural engineer and calculation and drawing submitted to development review for acceptance.
27. Precast inlets shall have shop drawings submitted to the inspector at the time of installation and meet the requirements of ASTM C-789 and C-850. If field conditions change and modifications to the inlet are required, modifications to the inlet will be designed and complete by the precast manufacturer. A letter will be provided to the inspector stating the modifications do not alter the structural integrity of the inlet.

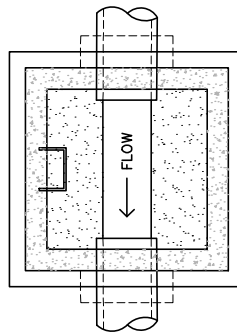
Inlet Type	Maximum Pipe Size (I.D.)			
	Straight Side	Angled (Max. 45°)		
		Side	Back & Front (5')	Back & Front (10')
Curb Inlet Type 1	24"	15"	24"	60"
Curb Inlet Type 2	18"	<12"	24"	60"
Curb Inlet Type 3 (Single)	18"	12"	18"	-
Curb Inlet Type 3 (Double)	18"	12"	-	42"
Curb Inlet Type 4	15"	-	24"	60"
Area Inlet Type 1 (Single)	21"	12"	-	-
Area Inlet Type 1 (Double)	21"	18"	-	30"
Area Inlet Type 2	30"	18"	18"	-

Alternate sizing and angles are listed in the Drainage Criteria Manual

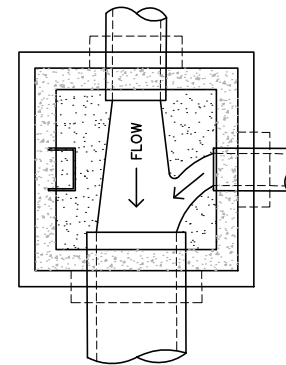
	STORM DRAIN INLET GENERAL NOTES	
	APPROVED: <i>Jayle Sturdivant</i> CITY ENGINEER	
	ISSUED: 7/8/24	REVISED:
		DRAWING NO. D-9A



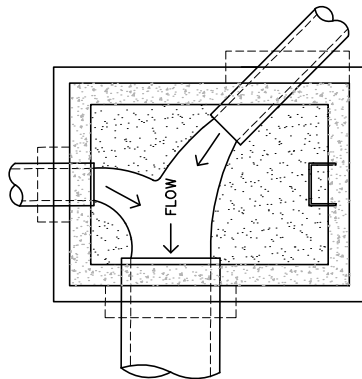
PLAN VIEW
(SQUARE BASE)



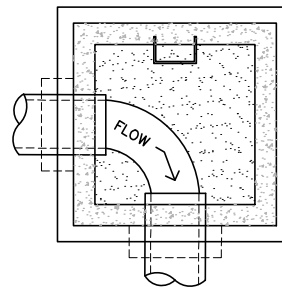
PLAN VIEW
PIPE THROUGH
(SQUARE BASE)



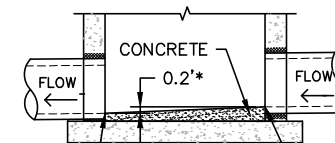
PLAN VIEW
THROUGH PIPE ONE LATERAL
(SQUARE BASE)



PLAN VIEW
ANGLED LATERALS
(SQUARE BASE)



PLAN VIEW
SHARP ANGLE
(SQUARE BASE)



INVERT ELEVATIONS
SHOWN IN PROFILE

*IF OUTLET PIPE IS LARGER
MATCH PIPE CROWNS

PRECAST SLAB BASE
(PROFILE)



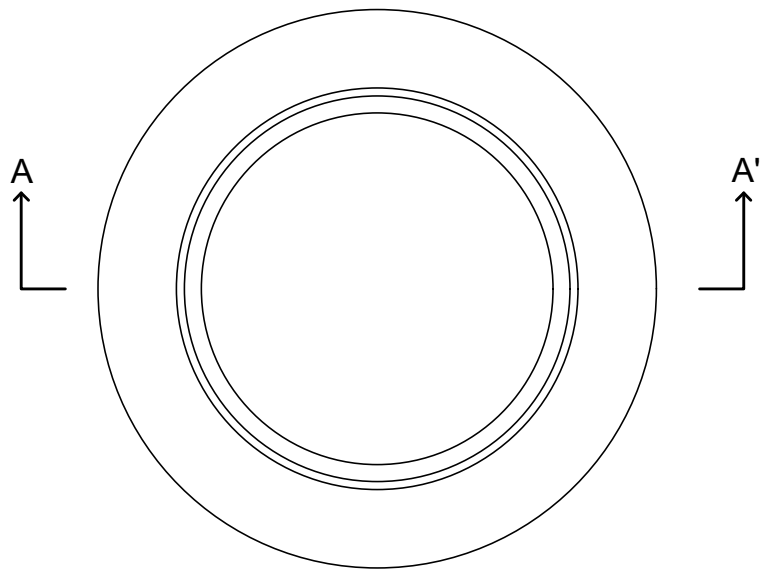
STORM DRAIN
TYPICAL INLET CHANNELIZATION

APPROVED: *Jayle Sturdivant*
CITY ENGINEER

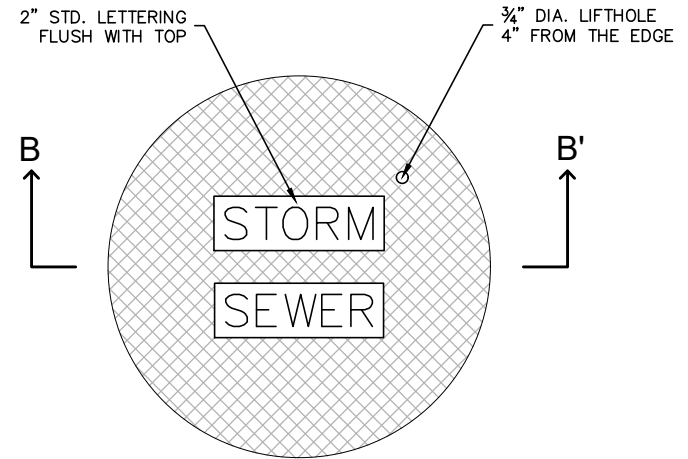
ISSUED:
7/8/24

REVISED:

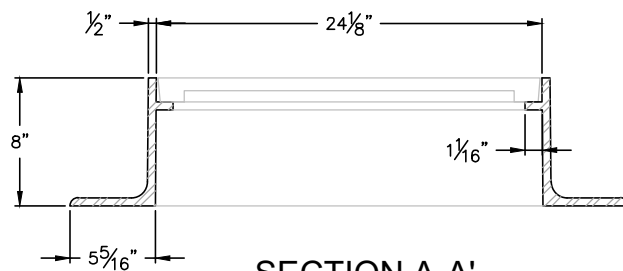
DRAWING NO.
D-9C



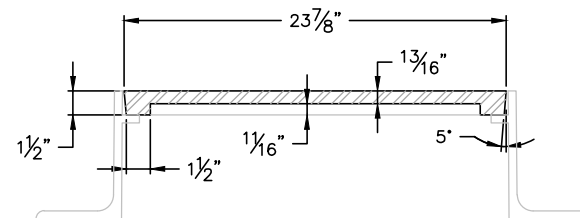
PLAN VIEW - RING



PLAN VIEW - COVER




SECTION A-A'

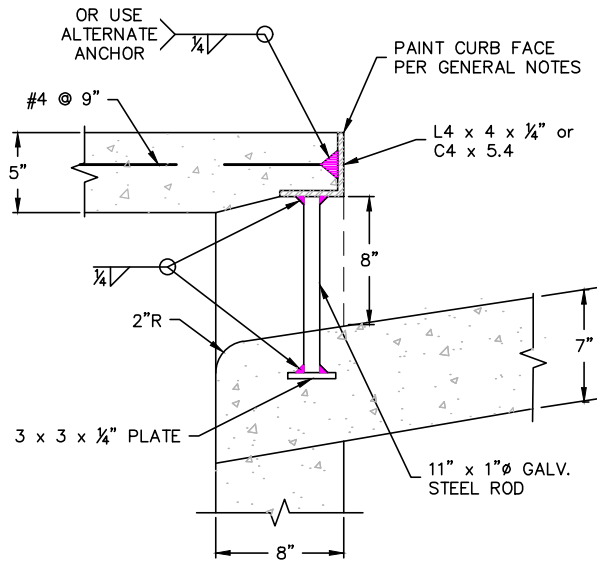


SECTION B-B'

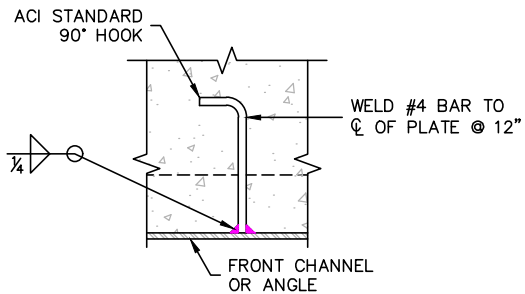
NOTES:

1. DECORATIVE LIDS MAY BE USED WITH PRE-APPROVAL.
2. DECORATIVE LIDS SHALL NOT BE USED WHERE LIDS WILL BE IN THE SIDEWALK.

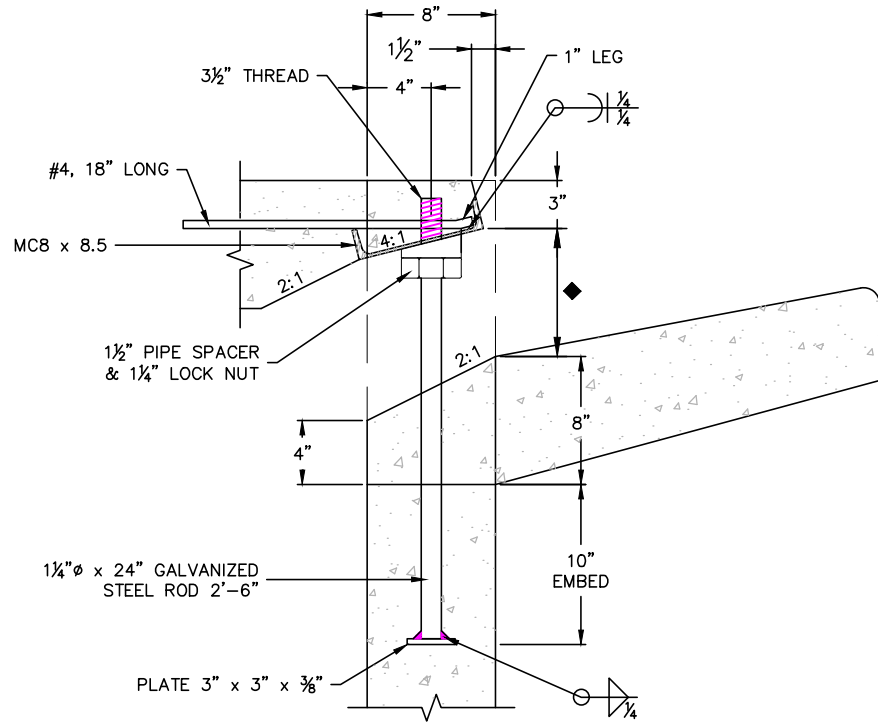
 <p>COLORADO SPRINGS</p>	STORM DRAIN STORM SEWER FRAME AND COVER	
	APPROVED: <i>Gayle Sturdivant</i> <small>CITY ENGINEER</small>	
	ISSUED: 7/8/24	REVISED:



**INLET TYPE 1
OPENING DETAIL**




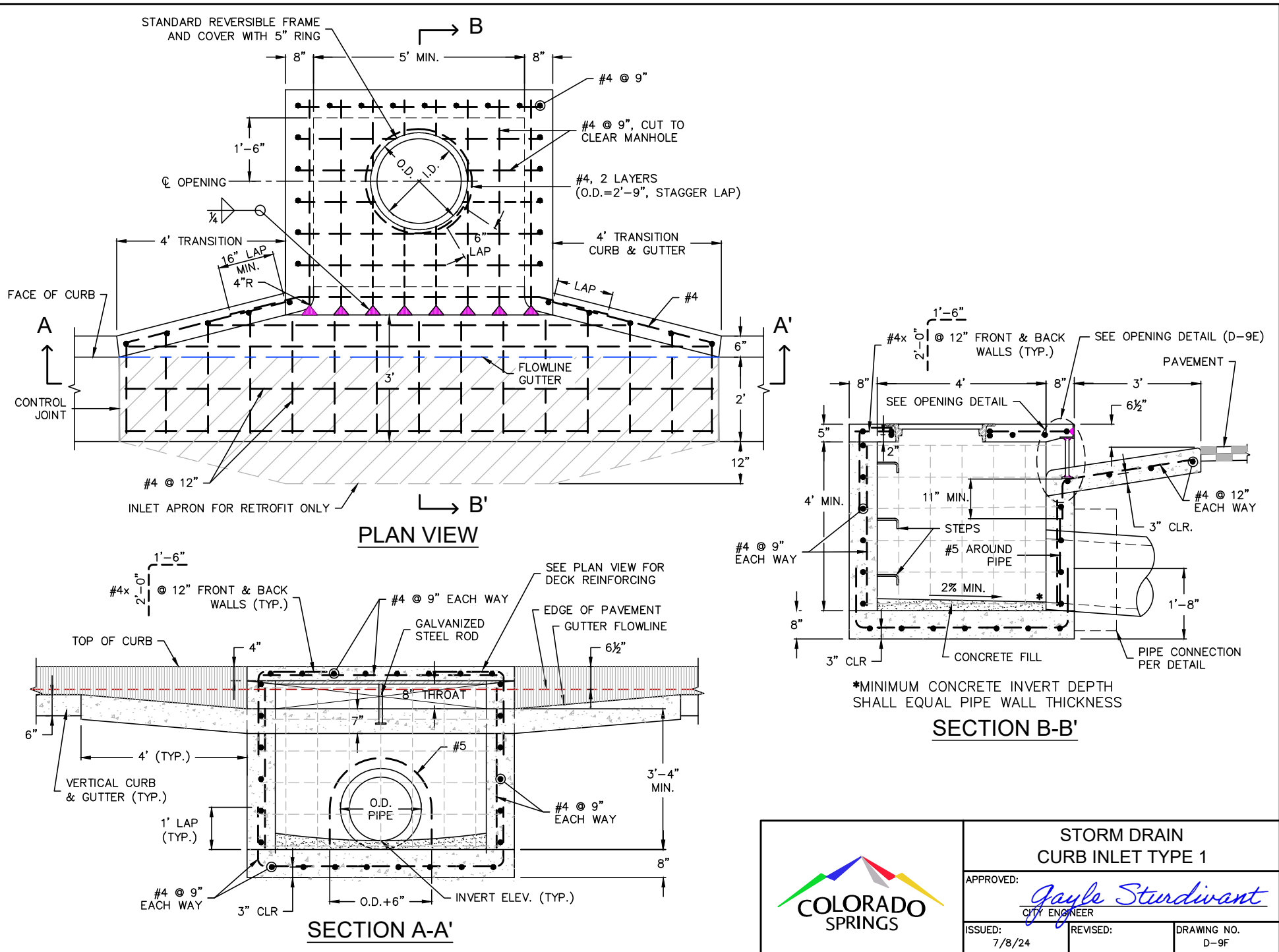
ALTERNATE ANCHOR




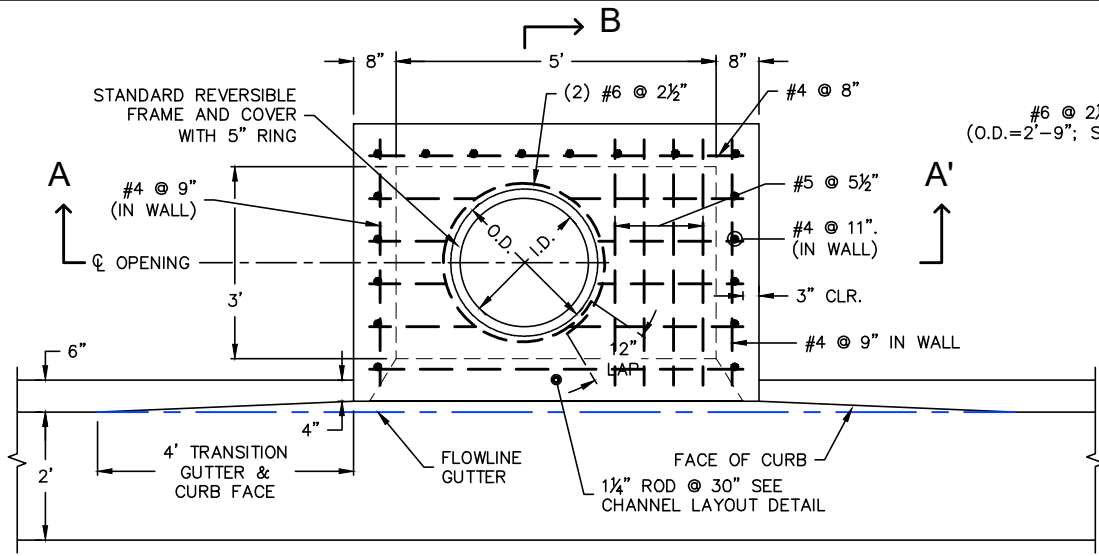
**INLET TYPE 2
OPENING DETAIL**

NOTE: PLACE ENTIRE ASSEMBLY PRIOR TO POURING CONCRETE

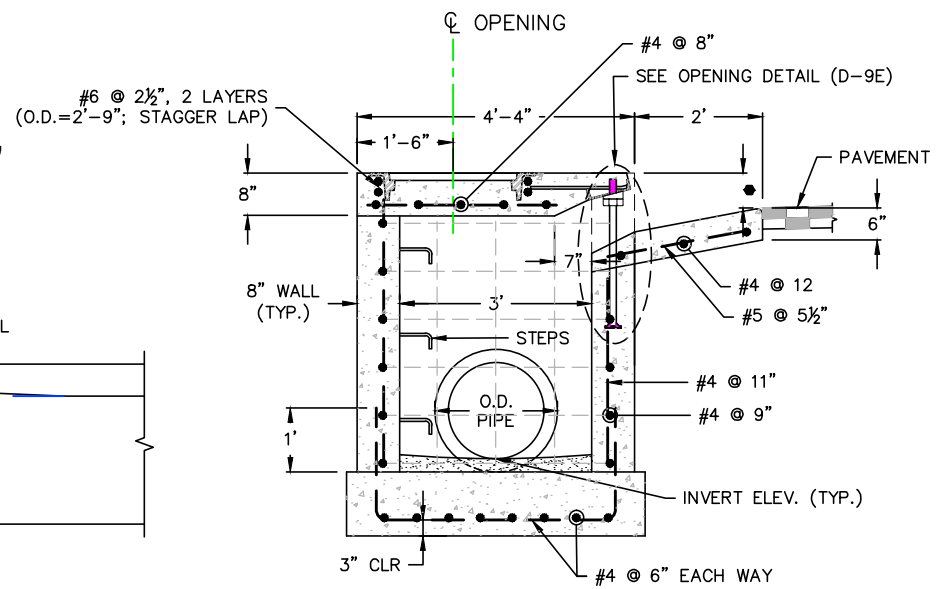
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	APPROVED: <i>Gayle Sturdivant</i> <small>CITY ENGINEER</small>	
	ISSUED: 7/8/24	REVISED:



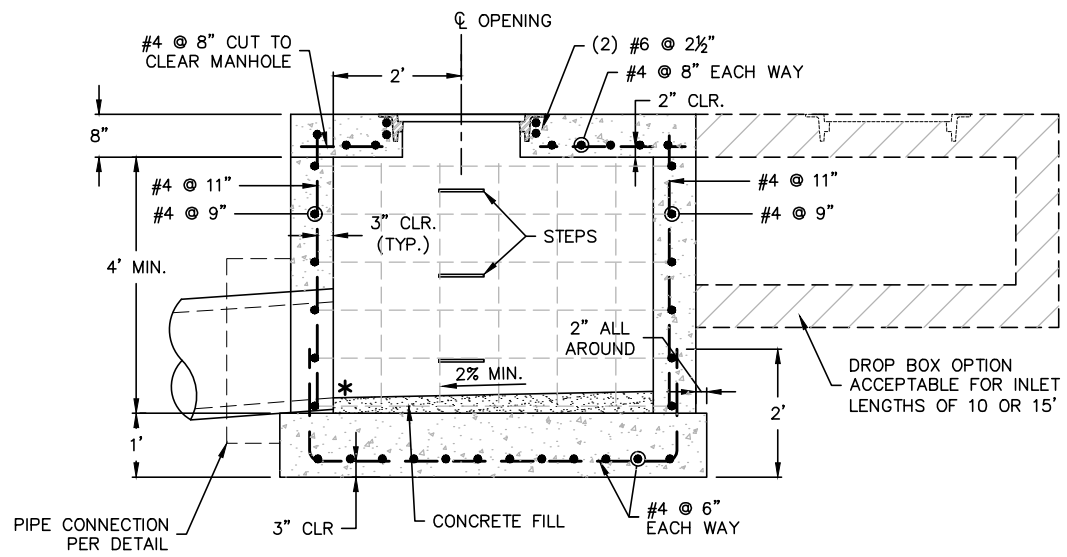
	STORM DRAIN CURB INLET TYPE 1	
	APPROVED: <i>Gayle Sturdivant</i> <small>CITY ENGINEER</small>	
	ISSUED: 7/8/24	REVISED:



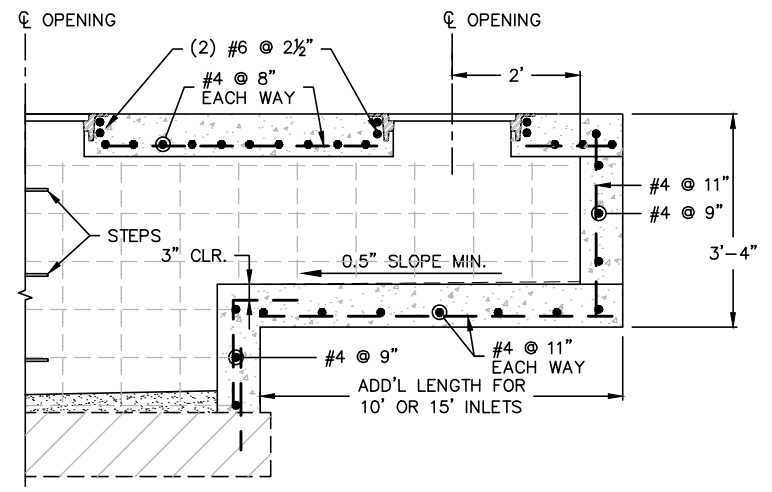
PLAN VIEW




SECTION B-B'

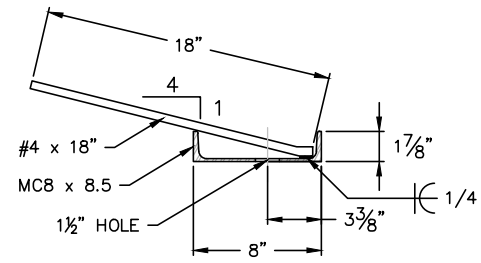
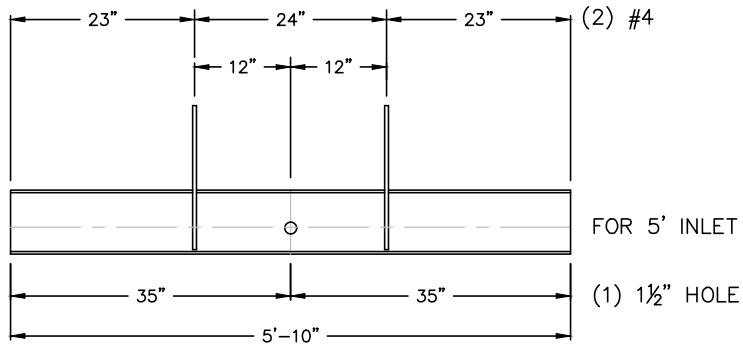


SECTION A-A'

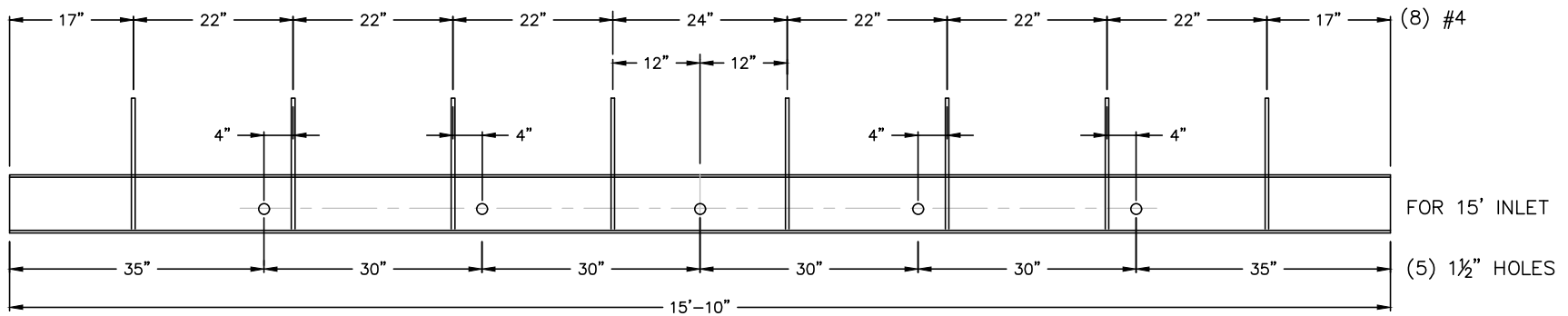
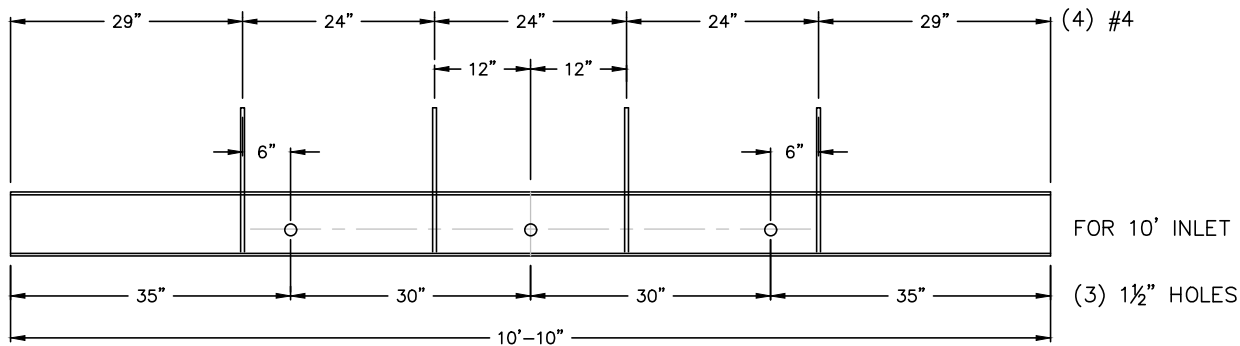
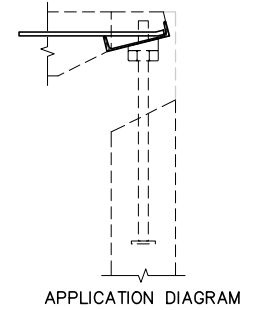


*MINIMUM CONCRETE INVERT DEPTH SHALL EQUAL PIPE WALL THICKNESS

	STORM DRAIN CURB INLET TYPE 2	
	APPROVED: <i>Gayle Sturdivant</i> CITY ENGINEER	
ISSUED: 7/8/24	REVISED:	DRAWING NO. D-9G



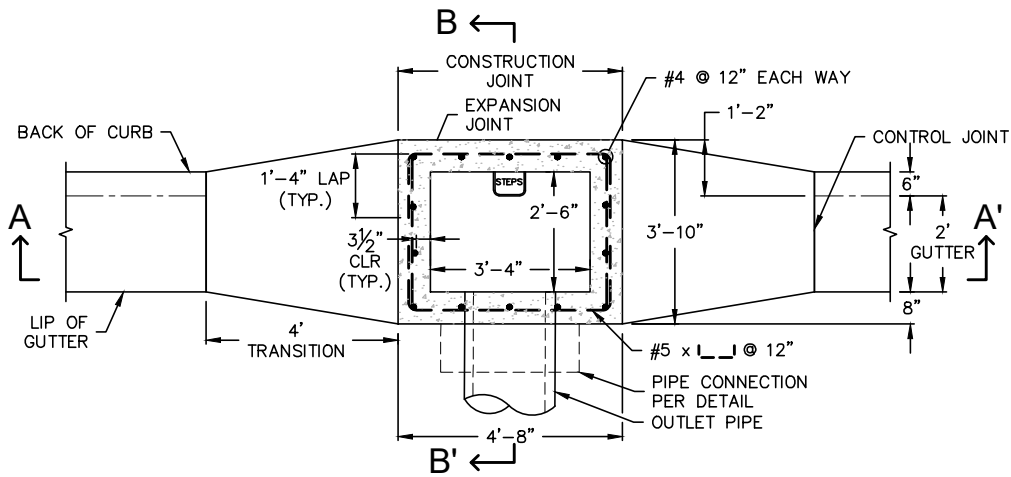
**SECTION AT HOLE
(TYPICAL)**



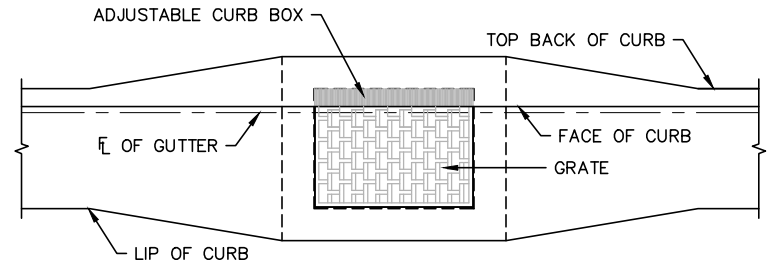
CHANNEL LAYOUT DETAILS



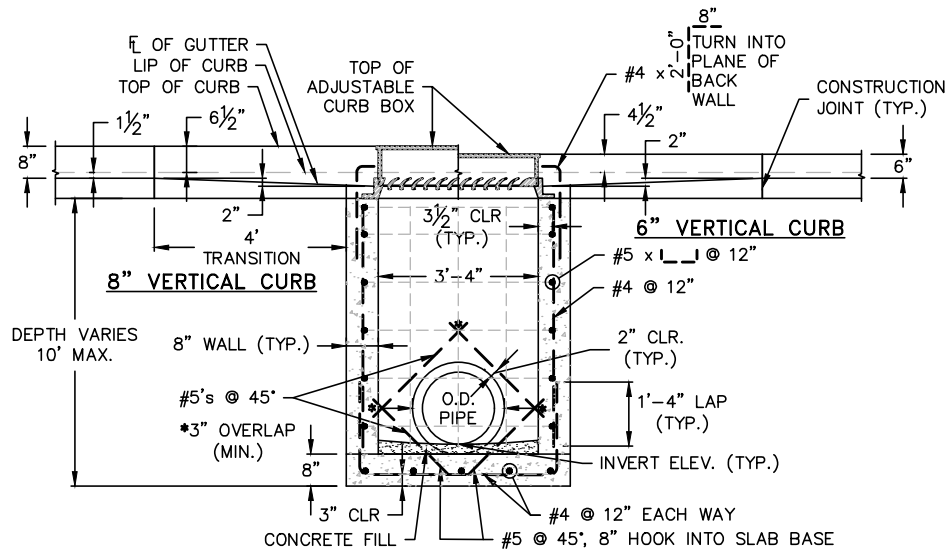
STORM DRAIN CURB INLET TYPE 2		
APPROVED: <i>Gayle Sturdivant</i> CITY ENGINEER		
ISSUED: 7/8/24	REVISED:	DRAWING NO. D-9H



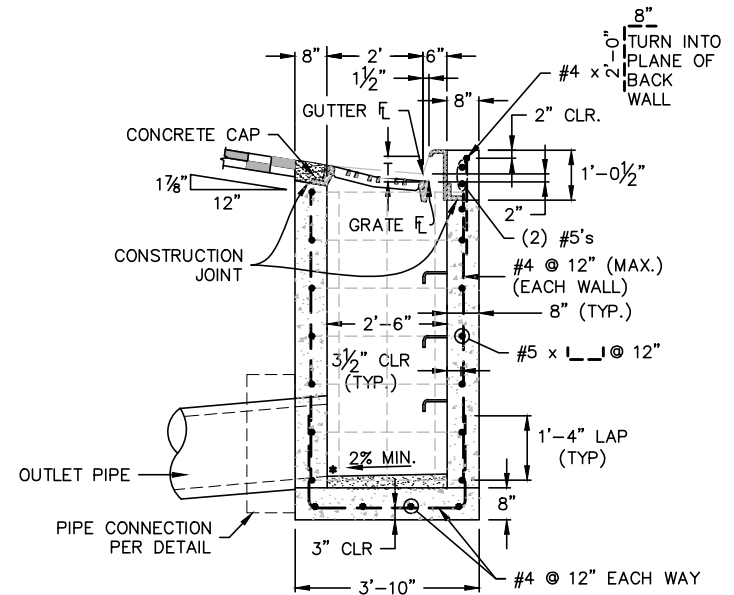
PLAN VIEW



CONCEPTUAL PLAN VIEW



SECTION A-A'



SECTION B-B'

*MIN. CONCRETE INVERT DEPTH SHALL EQUAL PIPE WALL THICKNESS

NOTE:
FOR INLETS GREATER THAN 10-FT IN DEPTH, SHOP DRAWINGS AND DESIGN ANALYSIS SHALL BE SUBMITTED FOR APPROVAL.

T = THROAT OPENING
 • 6" FOR 6" VERT. CURB & GUTTER
 • 8" FOR 8" VERT. CURB & GUTTER
 DROP FROM GUTTER FLOWLINE ELEVATION TO GRATE FLOWLINE ELEVATION (TRANSITION) IS 2"



**STORM DRAIN
CURB INLET TYPE 3**

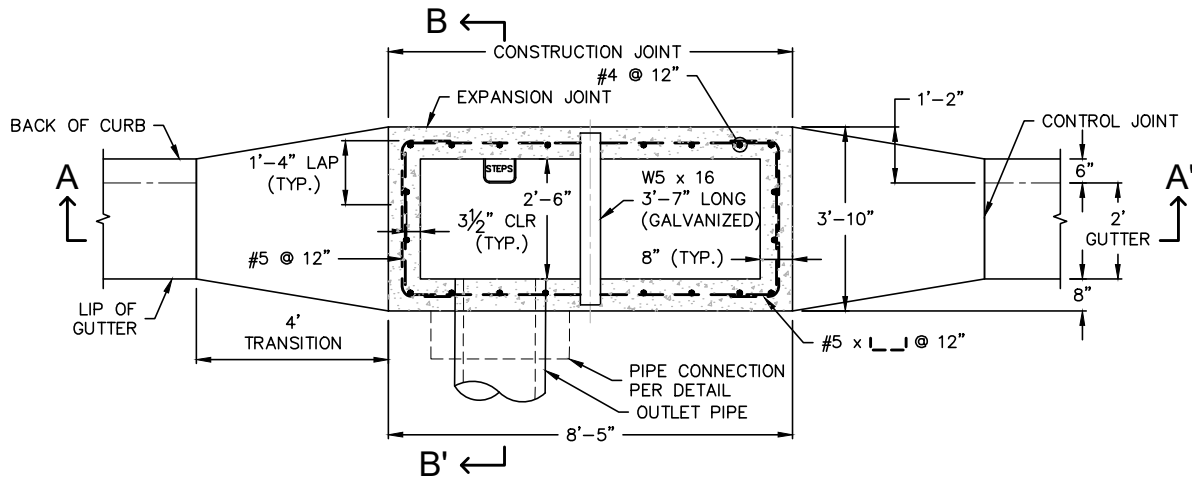
APPROVED:

Jayle Sturdivant
CITY ENGINEER

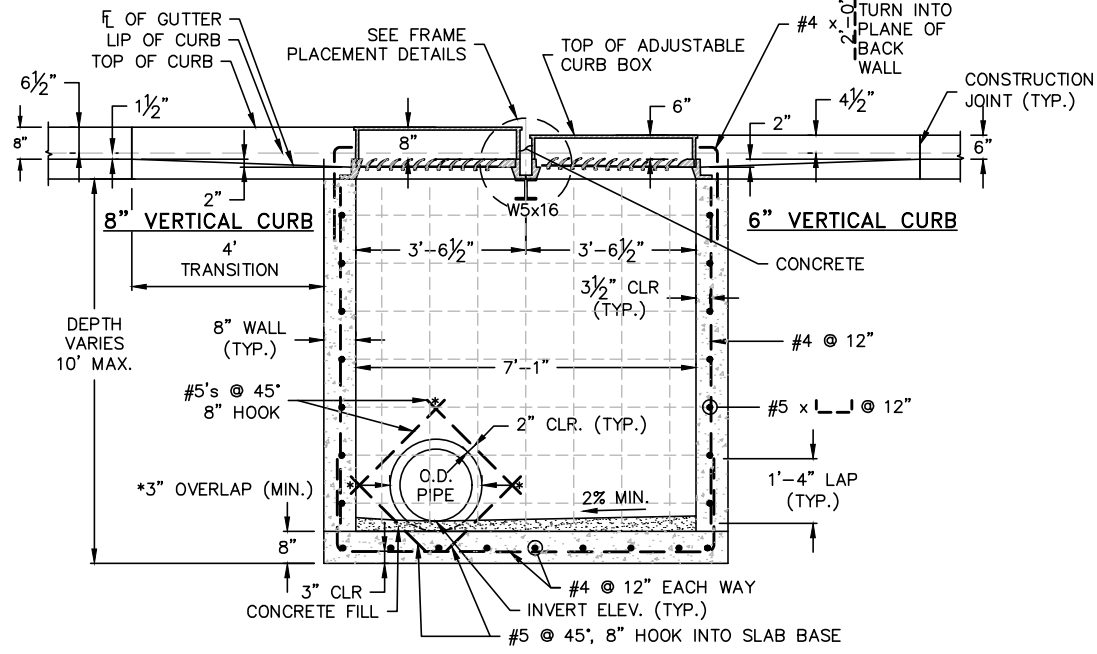
ISSUED:
7/8/24

REVISED:

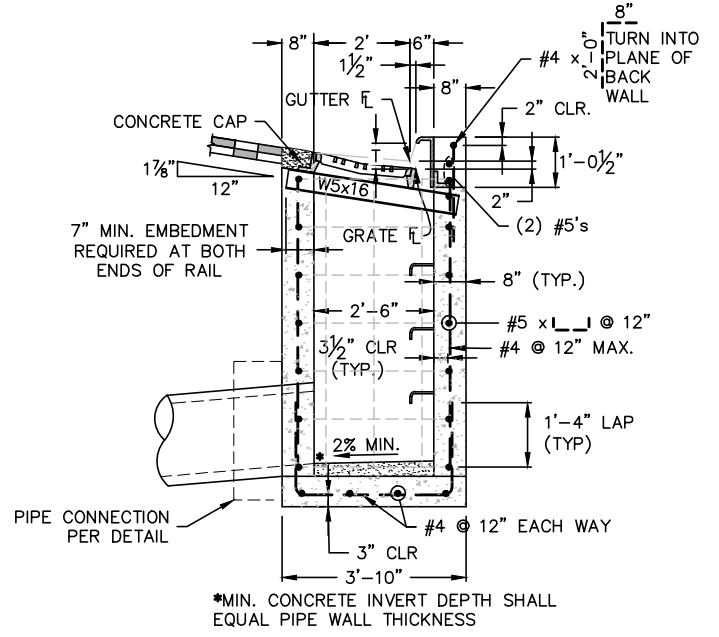
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D-91



PLAN VIEW




SECTION A-A'

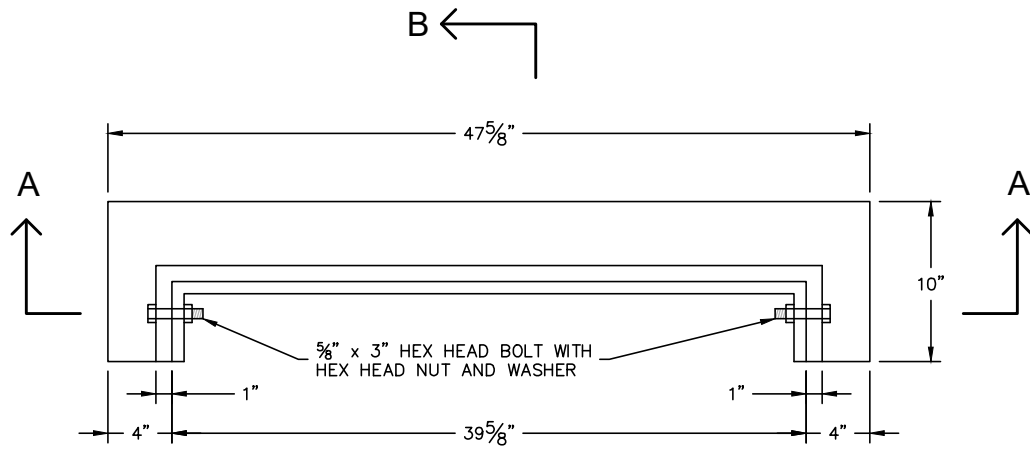


SECTION B-B'

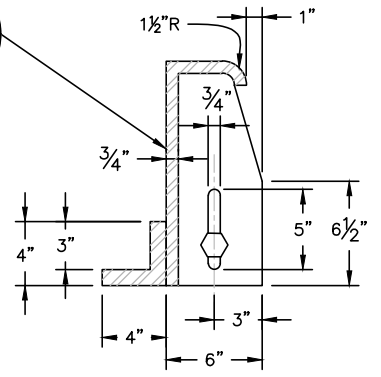
NOTE:
 FOR INLETS GREATER THAN 10-FT IN DEPTH, SHOP DRAWINGS AND DESIGN ANALYSIS SHALL BE SUBMITTED FOR APPROVAL.

T = THROAT OPENING
 • 6" FOR 6" VERT. CURB & GUTTER
 • 8" FOR 8" VERT. CURB & GUTTER
 DROP FROM GUTTER FLOWLINE ELEVATION TO GRATE FLOWLINE ELEVATION (TRANSITION) IS 2"

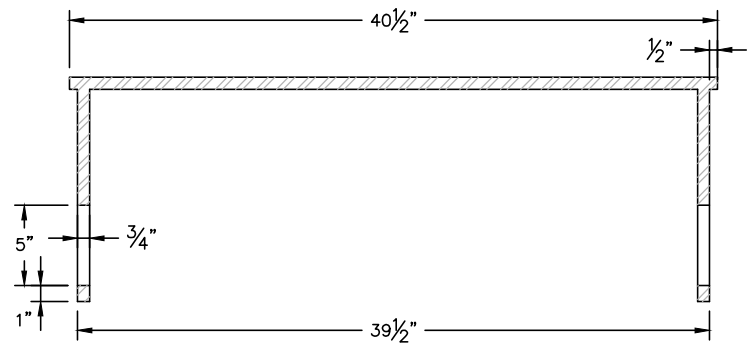
	STORM DRAIN CURB INLET TYPE 3 DOUBLE	
	APPROVED: <i>Gayle Sturdivant</i> CITY ENGINEER	
ISSUED: 7/8/24	REVISED:	DRAWING NO. D-9J



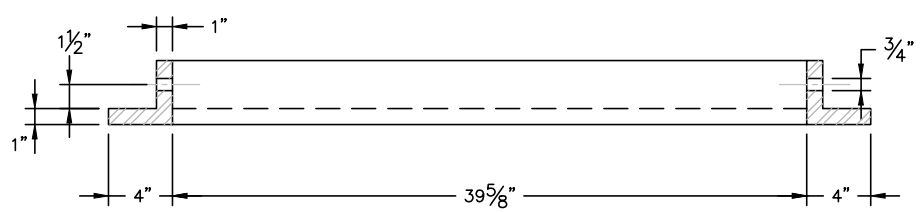
PLAN VIEW



SECTION B-B'

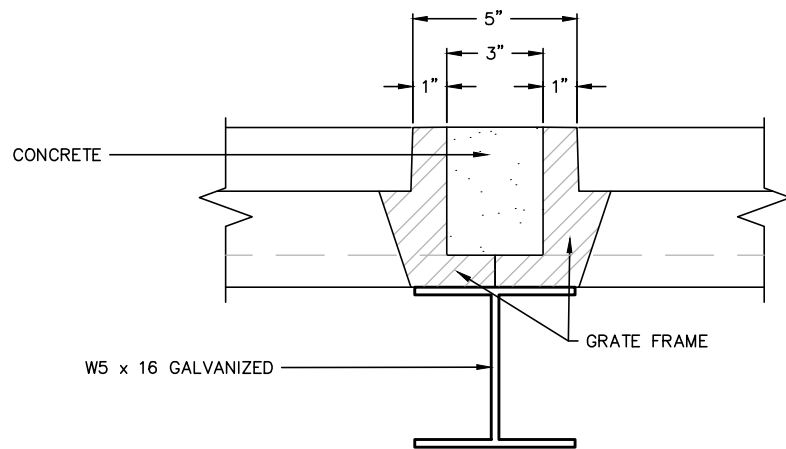


- NOTES:**
1. CAST IRON SHALL CONFORM TO ASTM A48 (CLASS 35B).
 2. CASTING SHALL COMPLY WITH FEDERAL SPECIFICATION RR-F-5210 FOR CASTING PROOF LOADING (HEAVY DUTY).
 3. ALL CASTING REQUIRE INDIVIDUAL APPROVAL/CERTIFICATION.
 4. CASTING SHALL BE DIPPED PRIOR TO FINAL INSPECTION, ONCE INDIVIDUAL CASTING ARE CHECKED.

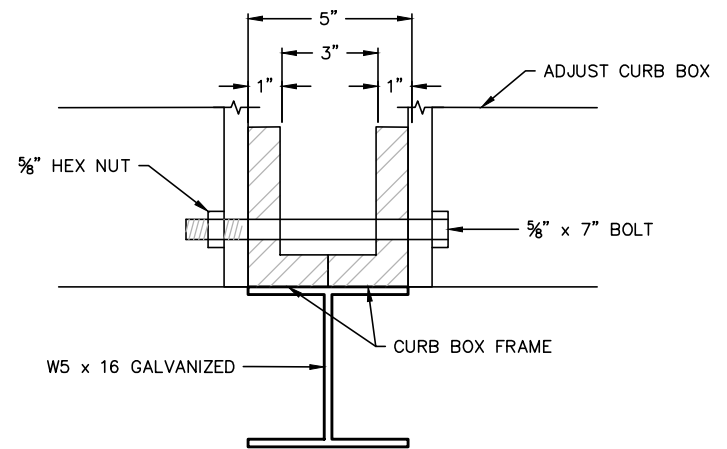


SECTION A-A'

	STORM DRAIN CURB INLET TYPE 3 ADJUSTABLE CURB BOX	
	APPROVED: <i>Gayle Sturdivant</i> <small>CITY ENGINEER</small>	
	ISSUED: 7/8/24	REVISED:



FRAME PLACEMENT
SUPPORT RAIL DETAIL



PLACEMENT OF ADJUSTED CURB
BOX ON SUPPORT RAIL DETAIL



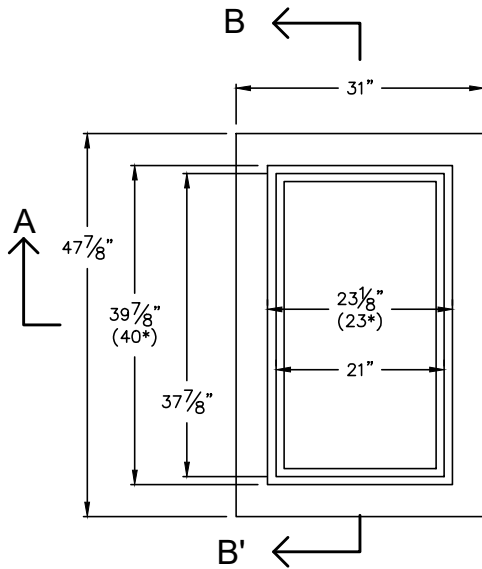
STORM DRAIN
CURB INLET TYPE 3 DOUBLE
SUPPORT RAIL DETAILS

APPROVED: *Gayle Sturdivant*
CITY ENGINEER

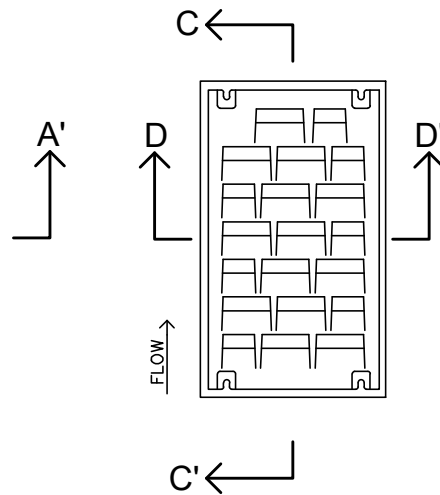
ISSUED:
7/8/24

REVISED:

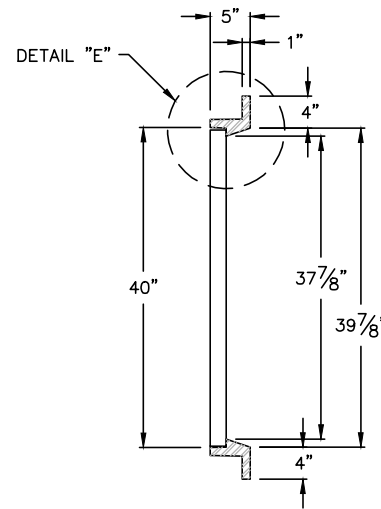
DRAWING NO.
D-9L



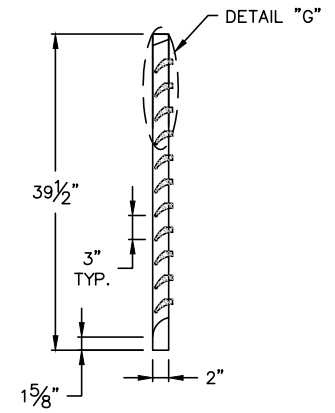
PLAN - FRAME



PLAN - GRATE



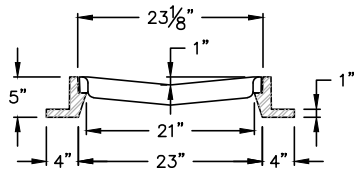
SECTION B-B'



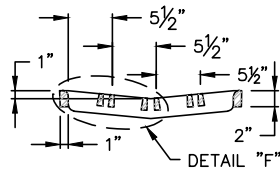
SECTION C-C'

NOTES:

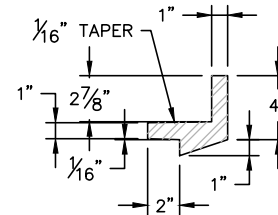
1. CAST IRON SHALL CONFORM TO ASTM A48 (CLASS 35B).
2. CASTING SHALL COMPLY WITH FEDERAL SPECIFICATION RR-F-5210 FOR CASTING PROOF LOADING (HEAVY DUTY).
3. ALL CASTING REQUIRE INDIVIDUAL APPROVAL/CERTIFICATION.
4. CASTING SHALL BE DIPPED OR PAINTED PRIOR TO FINAL INSPECTION, ONCE INDIVIDUAL CASTING ARE CHECKED.



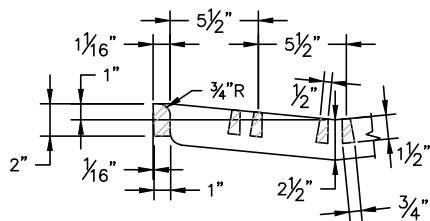
SECTION A-A'



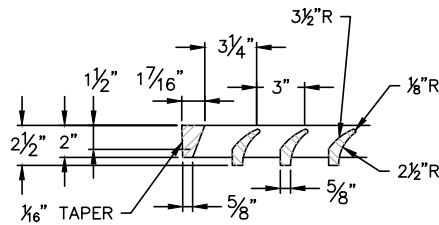
SECTION D-D'



DETAIL E

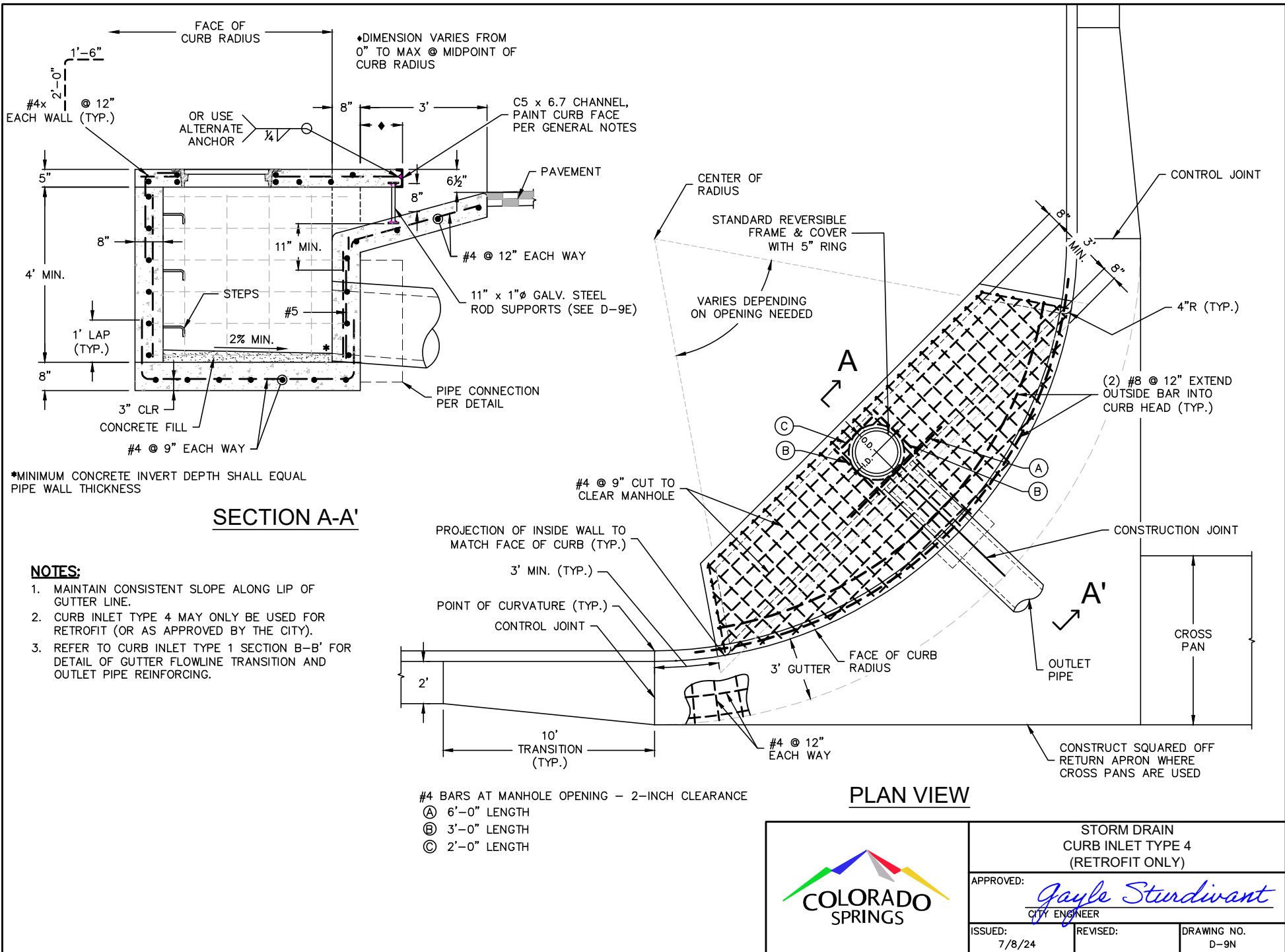



DETAIL F

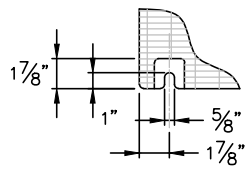


DETAIL G

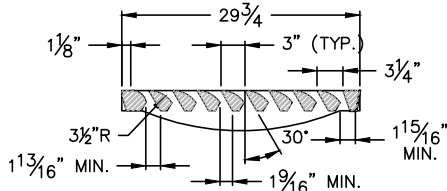
	STORM DRAIN CURB INLET TYPE 3 GRATE and FRAME	
	APPROVED: <i>Jayle Sturdivant</i> CITY ENGINEER	
	ISSUED: 7/8/24	REVISED:



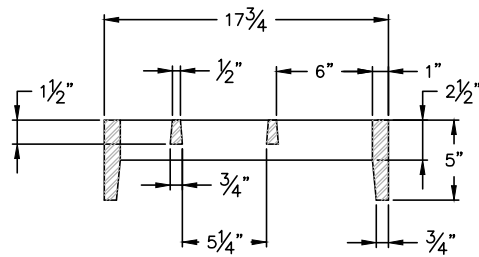
	STORM DRAIN CURB INLET TYPE 4 (RETROFIT ONLY)	
	APPROVED: <i>Gayle Sturdivant</i> CITY ENGINEER	
	ISSUED: 7/8/24	REVISED:



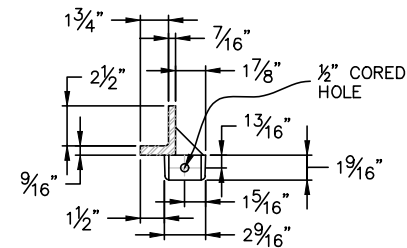
DETAIL A
BOLT SLOT AT
CORNER (TYP.)



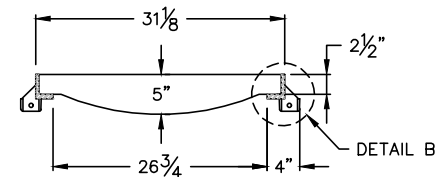
SECTION A-A'



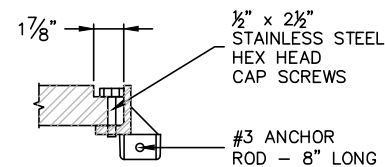
SECTION B-B'



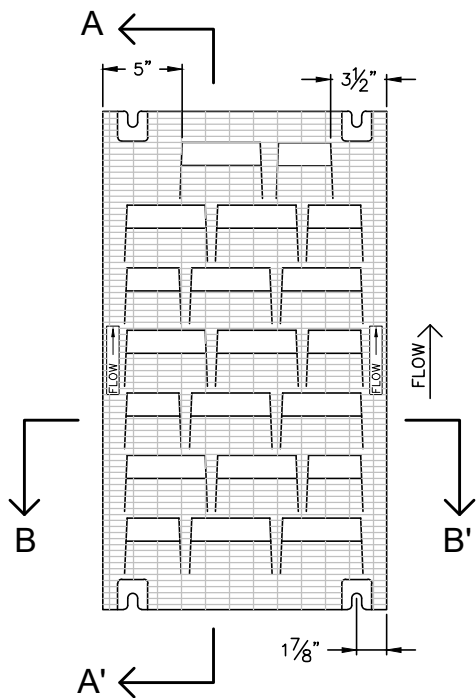
DETAIL B



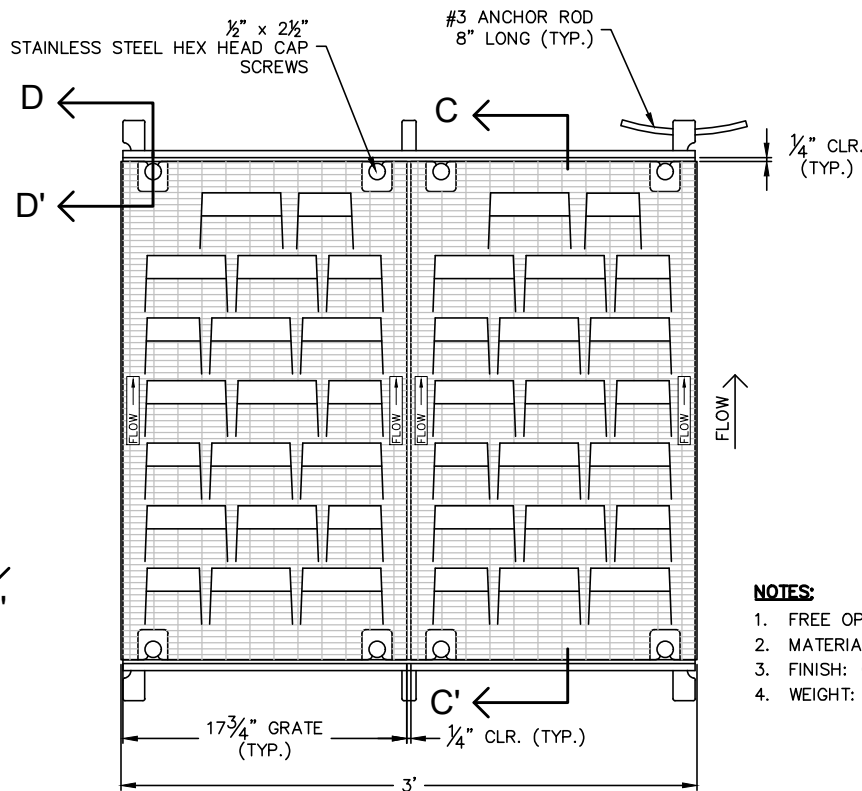
SECTION C-C'



SECTION D-D'



GRATE PLAN



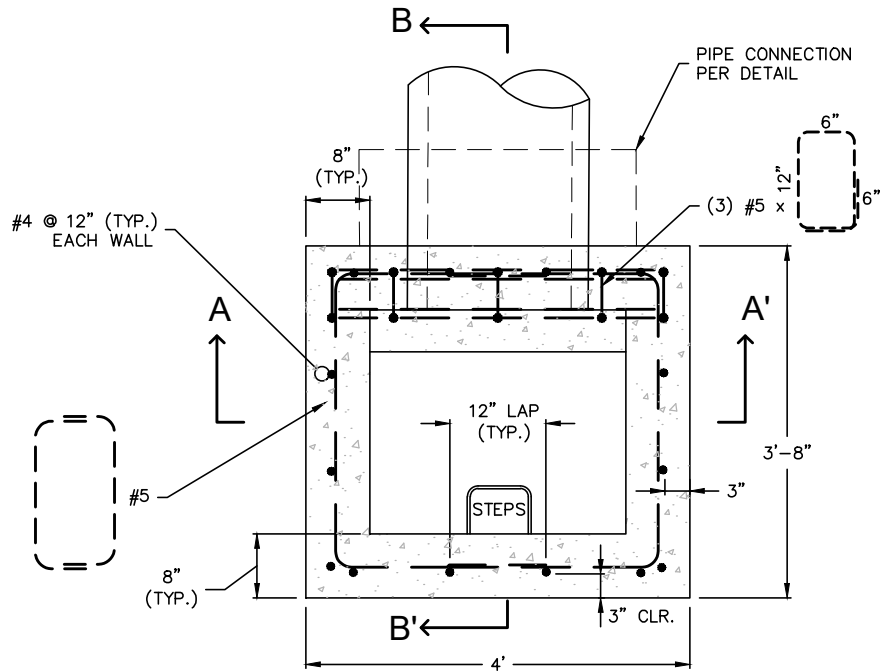
MULTIPLE GRATE
WITH FRAME PLAN

NOTES:

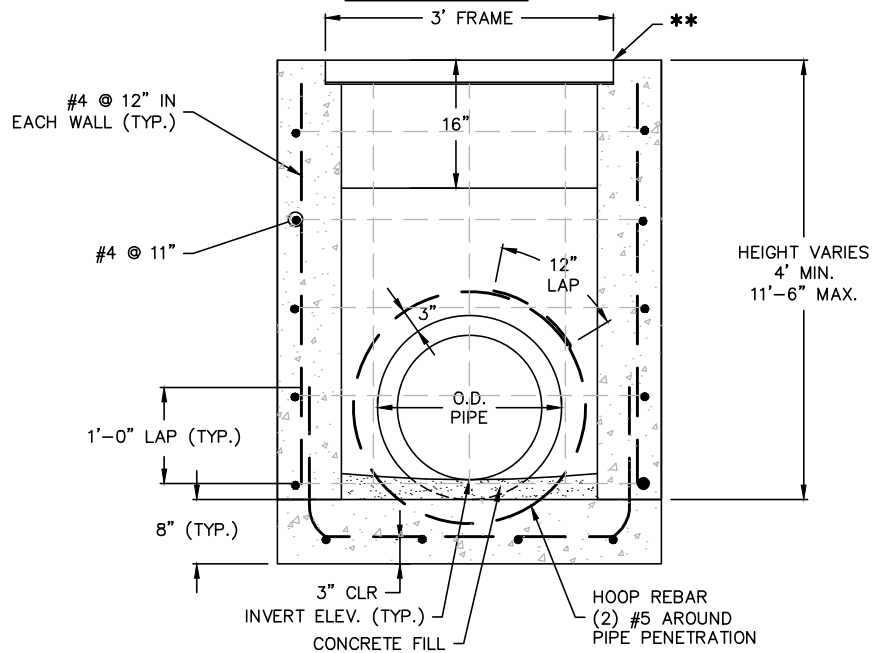
1. FREE OPEN AREA: 190-SQUARE INCHES/GRATE
2. MATERIAL: CAST IRON ASTM A-48 CLASS 35b.
3. FINISH: GALVANIZED (HOT DIP)
4. WEIGHT: 170-LBS. EACH; FRAME 29-LBS. EACH



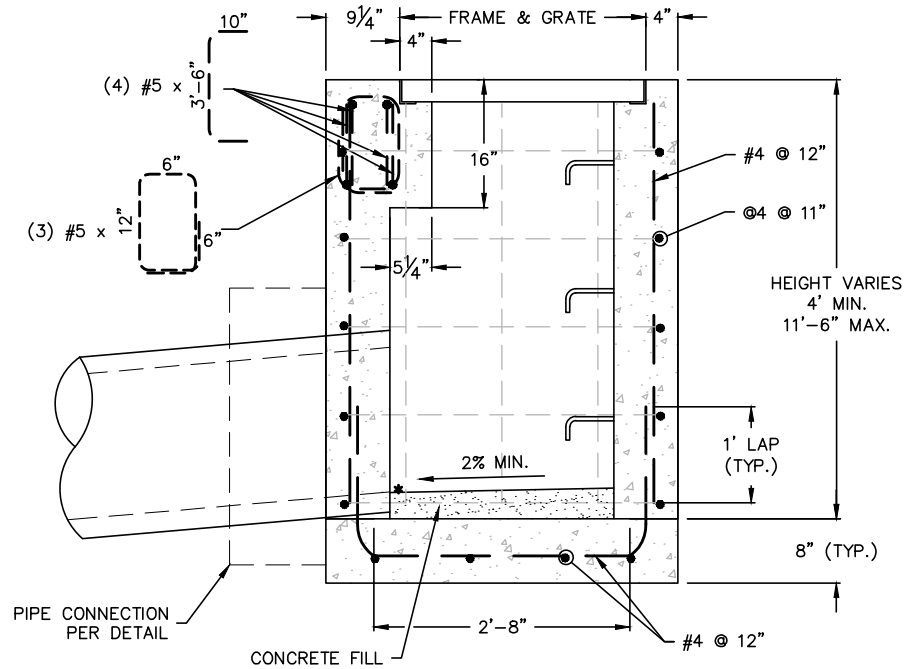
STORM DRAIN AREA INLET TYPE 1 FRAME AND GRATE		
APPROVED: <i>Jayle Sturdivant</i> CITY ENGINEER		
ISSUED: 7/8/24	REVISED:	DRAWING NO. D-90



PLAN VIEW



SECTION A-A'




SECTION B-B'

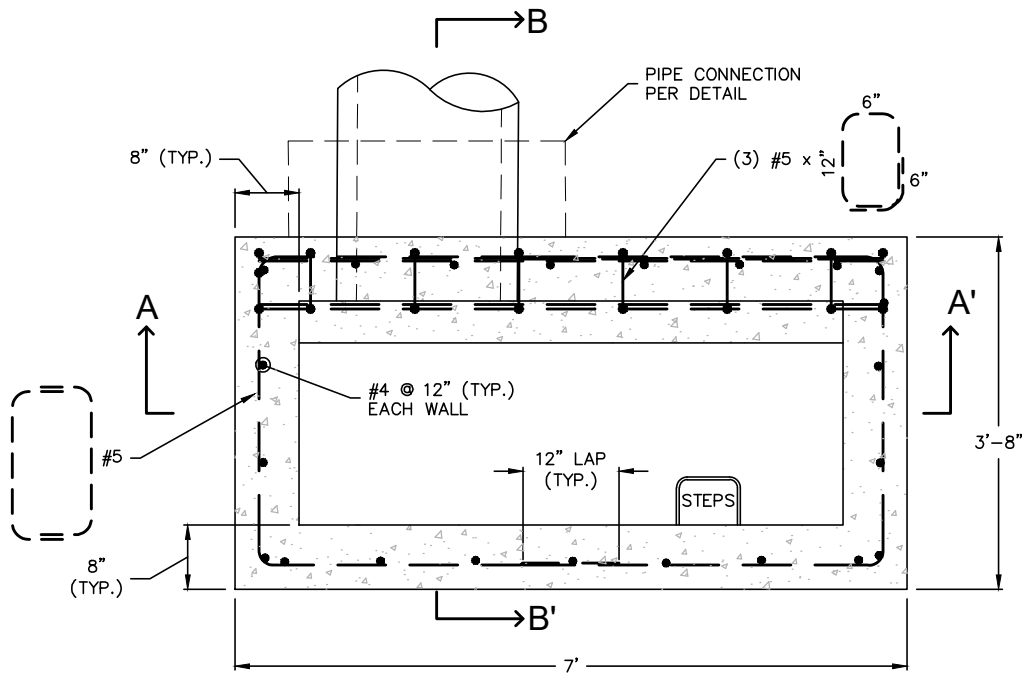
*MIN. CONCRETE INVERT DEPTH SHALL EQUAL PIPE WALL THICKNESS

NOTES:

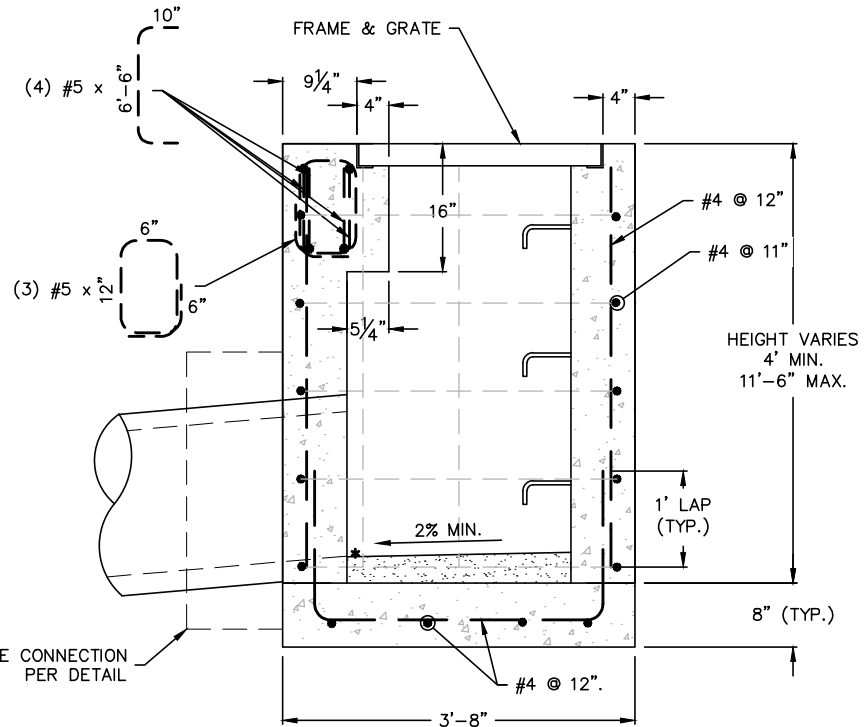
**TO FACILITATE REMOVAL OF THE GRATE, PLACE PLYWOOD (3" x 1/4" X 31 3/8") ALONG EDGE OF THE GRATE AS SHOWN.

GRATE SHALL BE INSTALLED DURING CONSTRUCTION OF THE BOX WITH THE VANE GRATE BOLTED IN PLACE TO THE FRAME.

	STORM DRAIN AREA INLET TYPE 1 SINGLE	
	APPROVED: <i>Gayle Sturdivant</i> <small>CITY ENGINEER</small>	
	ISSUED: 7/8/24	REVISED:



PLAN VIEW



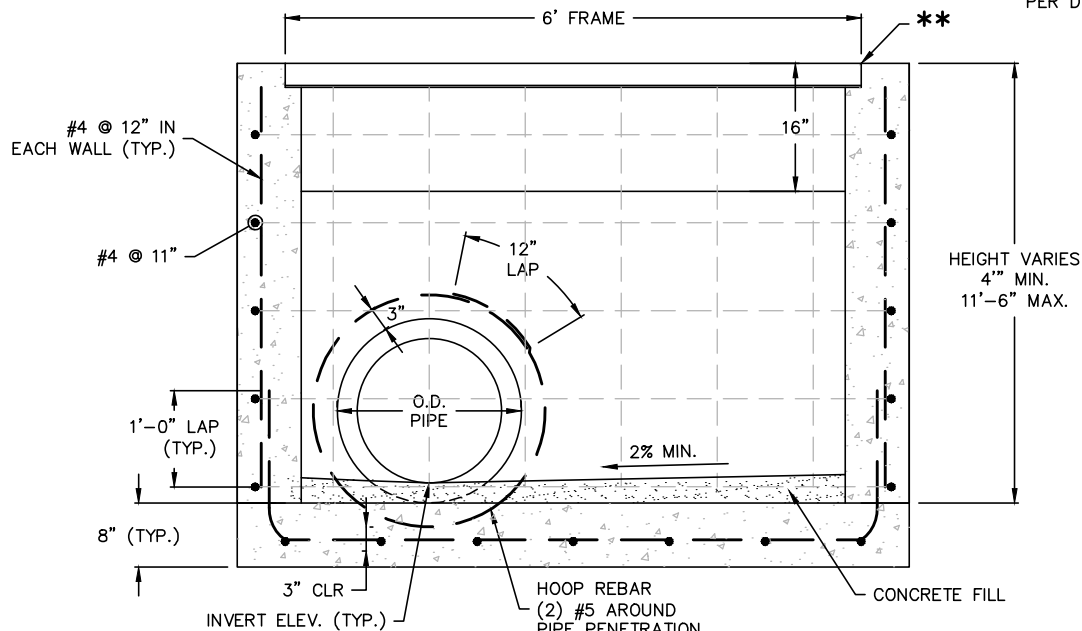
SECTION B-B'

*MIN. CONCRETE INVERT DEPTH SHALL EQUAL PIPE WALL THICKNESS

NOTES:

**TO FACILITATE REMOVAL OF THE GRATE, PLACE PLYWOOD (3" x 1/4" X 31 3/8") ALONG EDGE OF THE GRATE AS SHOWN.

GRATE SHALL BE INSTALLED DURING CONSTRUCTION OF THE BOX WITH THE VANE GRATE BOLTED IN PLACE TO THE FRAME.



SECTION A-A'



STORM DRAIN
AREA INLET TYPE 1
DOUBLE

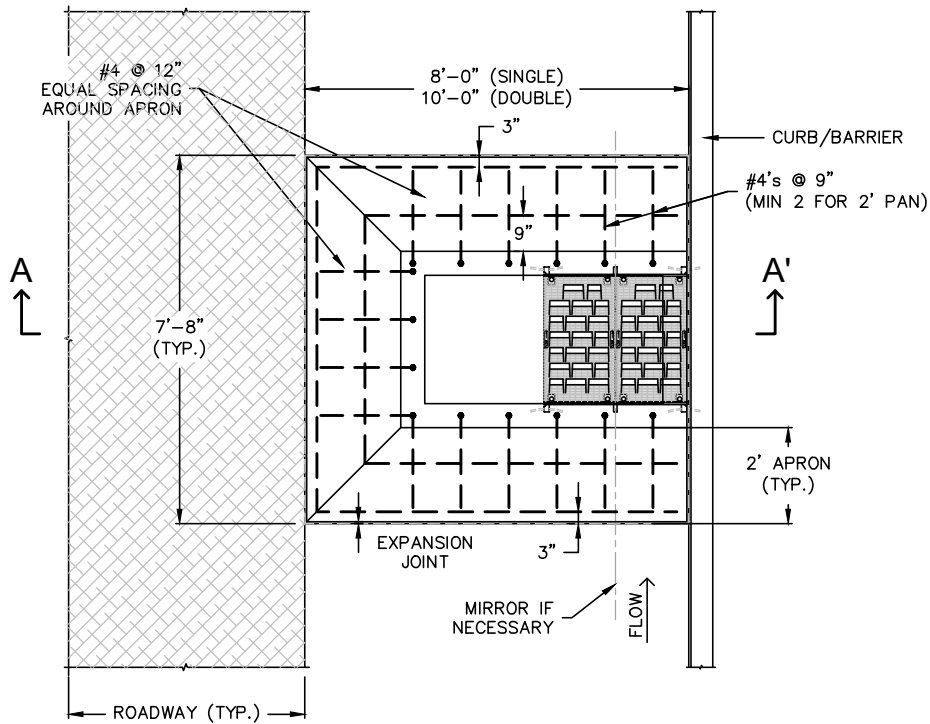
APPROVED:

Gayle Sturdivant
CITY ENGINEER

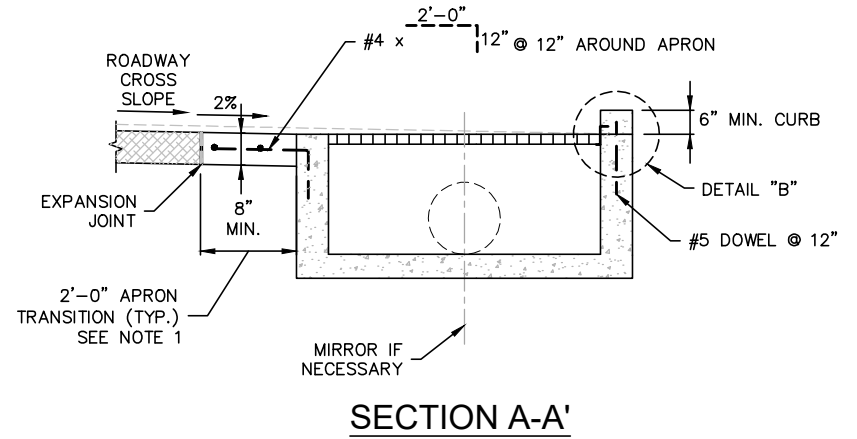
ISSUED:
7/8/24

REVISED:

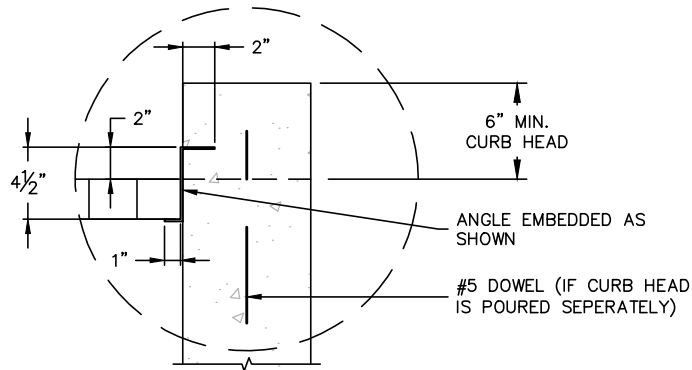
DRAWING NO.
D-9Q



PLAN VIEW



SECTION A-A'



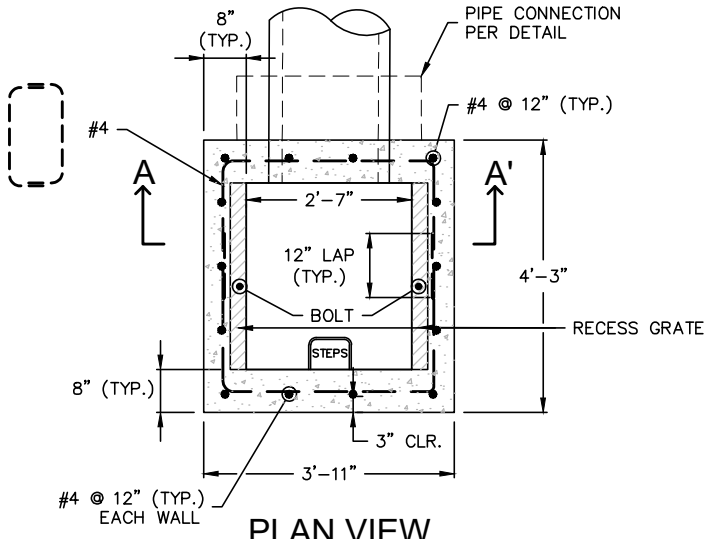
DETAIL B

NOTES:

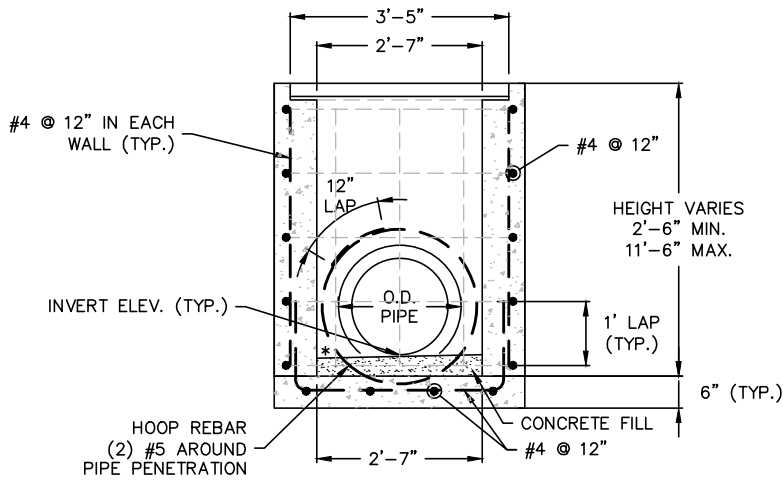
1. A 2-FOOT CONCRETE TRANSITION APRON SHALL BE CONSTRUCTED AS SHOWN AND SHALL BE KEYED INTO THE INLET.
2. CONCRETE APRON SHALL BE THE SAME THICKNESS AND TYPE AS THE SURROUNDING CONCRETE (8-INCHES MINIMUM).



STORM DRAIN AREA INLET TYPE 1 CONCRETE APRON		
APPROVED: <i>Gayle Sturdivant</i> CITY ENGINEER		
ISSUED: 7/8/24	REVISED:	DRAWING NO. D-9R



PLAN VIEW

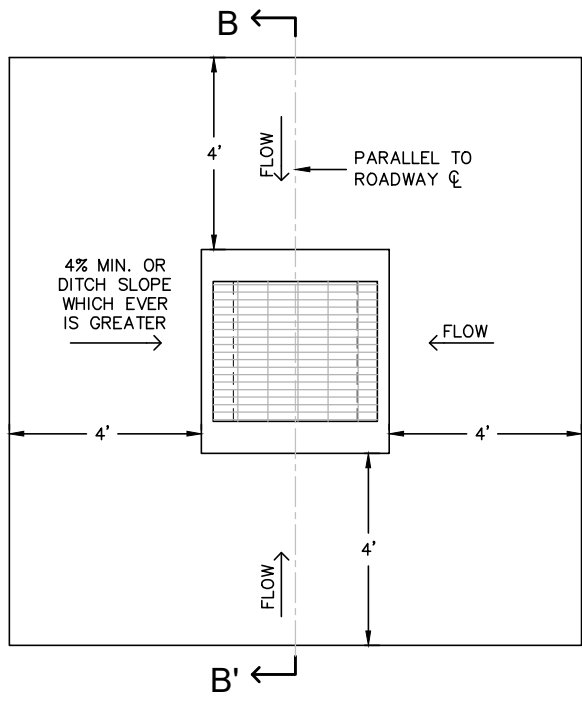


SECTION A-A'

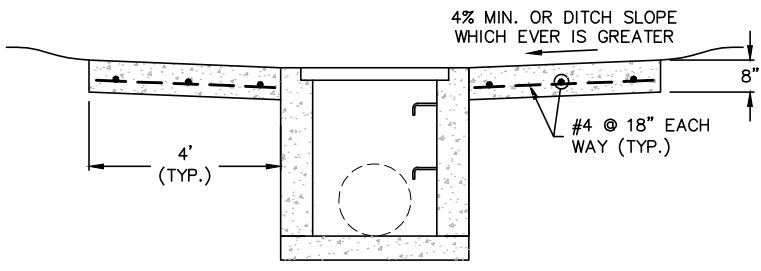
*MIN. CONCRETE INVERT DEPTH SHALL EQUAL PIPE WALL THICKNESS

NOTES:

1. AREA INLET TYPE 2 IS NOT HS-20 RATED AND SHALL NOT BE PLACED IN ROADWAYS OR PARKING AREAS
2. AREA INLET TYPE 2 GRATE IS NOT ADA COMPLIANT OR BICYCLE FRIENDLY AND SHALL NOT BE PLACED DIRECTLY IN SIDEWALKS, CROSSWALKS OR BIKE PATH.

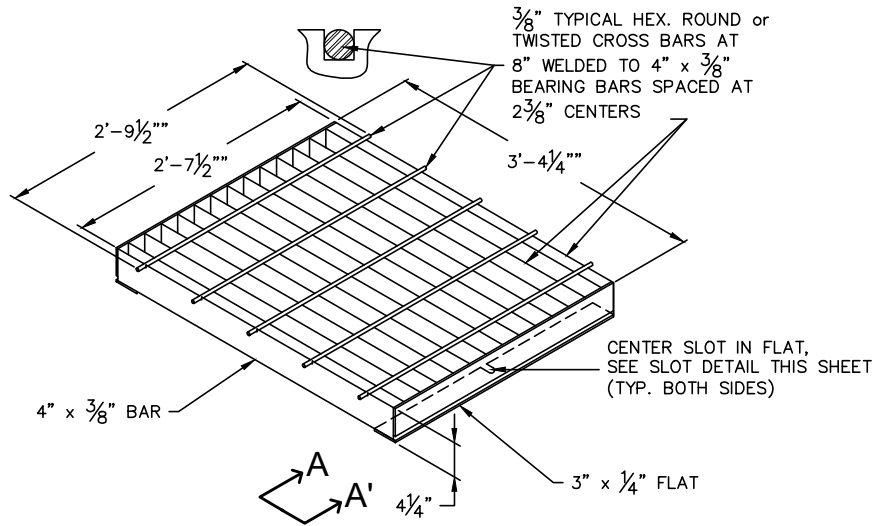


PLAN VIEW - DITCH PAVING

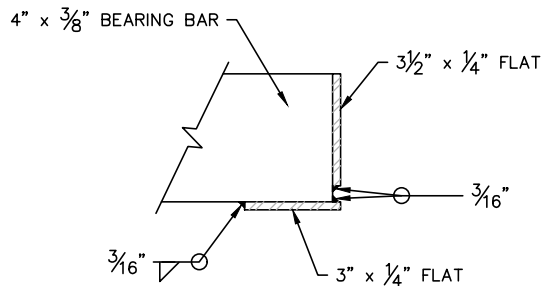


SECTION B-B'

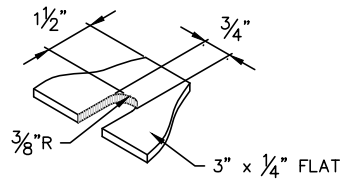
	STORM DRAIN AREA INLET TYPE 2	
	APPROVED: <i>Gayle Sturdivant</i> CITY ENGINEER	
	ISSUED: 7/8/24	REVISED:
		DRAWING NO. D-9S



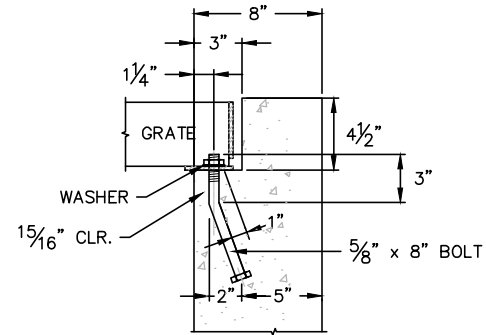
CLOSE MESH GRATE



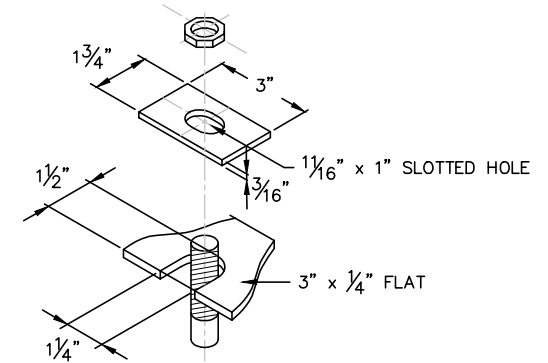
SECTION A-A'



SLOT DETAIL



GRATE INSTALLATION DETAIL



ALTERNATE SLOT AND HOLD DOWN PLATE DETAIL



STORM DRAIN
AREA INLET TYPE 2 GRATE

APPROVED:

Jayle Sturdivant
CITY ENGINEER

ISSUED:
7/8/24

REVISED:

DRAWING NO.
D-9T