

General Notes:

- All work shall be done in accordance with current City of Colorado Springs Engineering Division (the City) Standard Specifications.
- 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.
- Curb face assembly shall be painted safety yellow. One coat of shop primer and two coats of industrial enamel paint shall be used.
- Concrete used for inlets and connections shall be a City-approved structural concrete mix design.
- A minimum of 6-inches thick of granular bedding material shall be provided below all inlets.
- Reinforcing bars shall be ASTM A615, Grade 60 deformed steel marked with bar designation, grade and mill marking.
- Reinforcing shall have a minimum 2-inch clearance, except as noted.
- Pipe entries into inlets are variable; the dimensions and reinforcing details shown are typical.
- Inlet floors shall be 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.
- 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 Enterprises. Where curb inlets with lengths greater than 10-feet are approved, provide maintenance access at both ends of the inlet.
- Curb inlet top deck slab shall be sloped toward the street (0.5% min., 2% max.).
- 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.
- Stub-outs shall extend a minimum of 2-foot beyond outside wall surface of inlets and shall be plugged as approved by the Inspector.
- No formwork shall remain inside inlets after completion.
- Concrete walls shall be formed on both sides. Casting of sidewalls against earth is not permitted.
- 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.
- A minimum of one vertical support bar is required. Curb inlets greater than 5-foot wide shall have support bars installed at maximum 3-foot intervals evenly spaced across the opening.
- Grates for area inlets shall be installed during construction of the box, with the grate bolted to the frame.
- Steps shall be installed for inlets with internal height greater than 30-inches at 16-inches spacing with the top step located 6-inches below the inside cover. Steps shall conform to AASHTO M-199.
- Outer wall of pipe shall be a minimum of 6-inches from interior side walls and top of inlets.

- All reinforcement dimensions are on-center (O.C.) unless otherwise noted.
- 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.
- Precast base slab shall be poured monolithically with bottom riser section.
- 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.
- Storm sewers shall have tracer wire installed per the tracer wire detail prior to acceptance.
- All inlets shall be channelized.
- Inlets greater than 10-feet in depth shall be designed by a structural engineer.
- A 4-inch diameter stainless steel medallion with "NO DUMPING DRAINS TO CREEK" or similar message shall be firmly attached to the top of the inlet surface with a permanent fastener. The medallion will have a fish symbol and blue color background. Alternately, this message may be cast with 1-inch height letters into the top of the inlet's concrete surface or surrounding concrete apron. The 'No Dumping' message shall be eliminated for inlets located within the shoulder of controlled access freeways when specified in the plans.

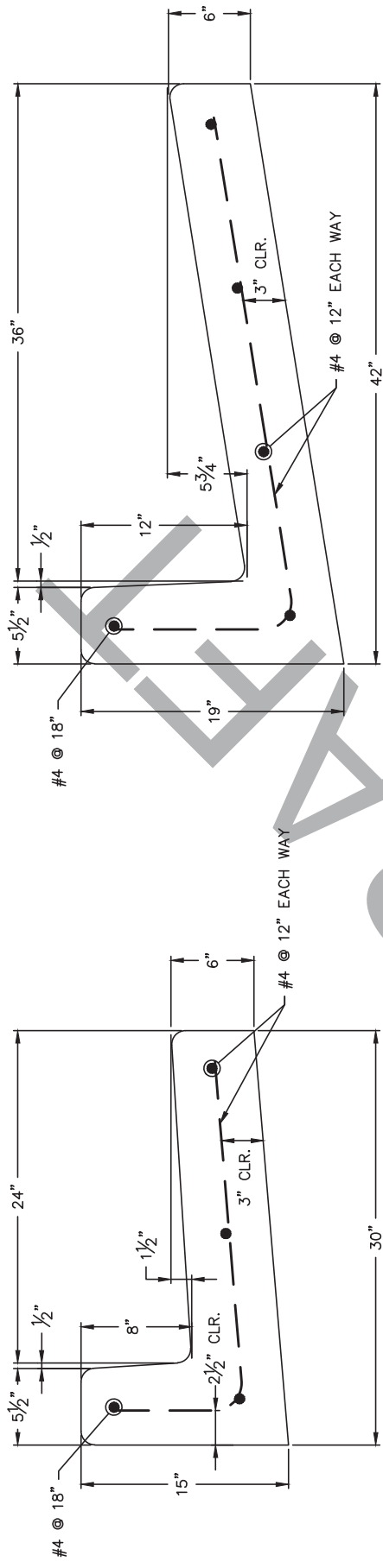
Inlet Type	Maximum Pipe Size (I.D.)		
	Straight	Angled (Max. 45°)	Back & Front (10')
Curb Inlet Type 1	24"	15"	24"
Curb Inlet Type 2	15"	<12"	24"
Curb Inlet Type 3 (Single)	18"	12"	18"
Curb Inlet Type 3 (Double)	18"	12"	—
Curb Inlet Type 4	15"	—	24"
Area Inlet Type 1 (Single)	21"	12"	—
Area Inlet Type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

Alternate sizing and angles are listed in the Drainage Criteria Manual



**STORM DRAIN
INLET GENERAL NOTES**

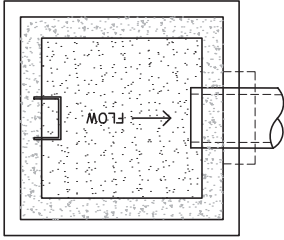
APPROVED: _____
 CITY ENGINEER
 ISSUED: 6/19/20
 REVISED: _____
 DRAWING NO. D-9A



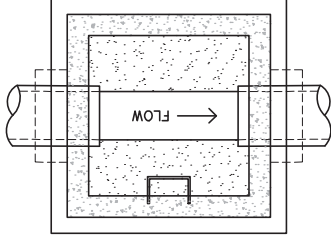
CURB AND GUTTER TRANSITION



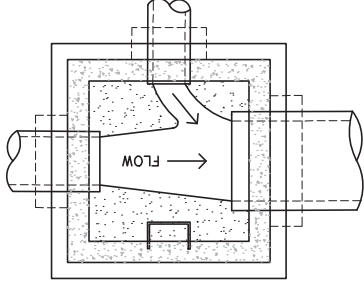
STORM DRAIN CURB & GUTTER TRANSITION	
APPROVED: _____	
CITY ENGINEER _____	
ISSUED: 6/19/20	REVISED: _____
DRAWING NO. D-9B	



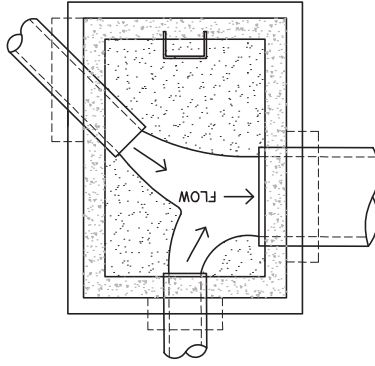
PLAN VIEW
(SQUARE BASE)



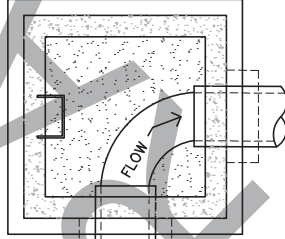
PLAN VIEW
PIPE THROUGH
(SQUARE BASE)



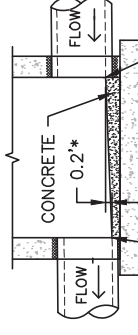
PLAN VIEW
THROUGH PIPE ONE LATERAL
(SQUARE BASE)



PLAN VIEW
ANGLED LATERALS
(SQUARE BASE)



PLAN VIEW
SHARP ANGLE
(SQUARE BASE)

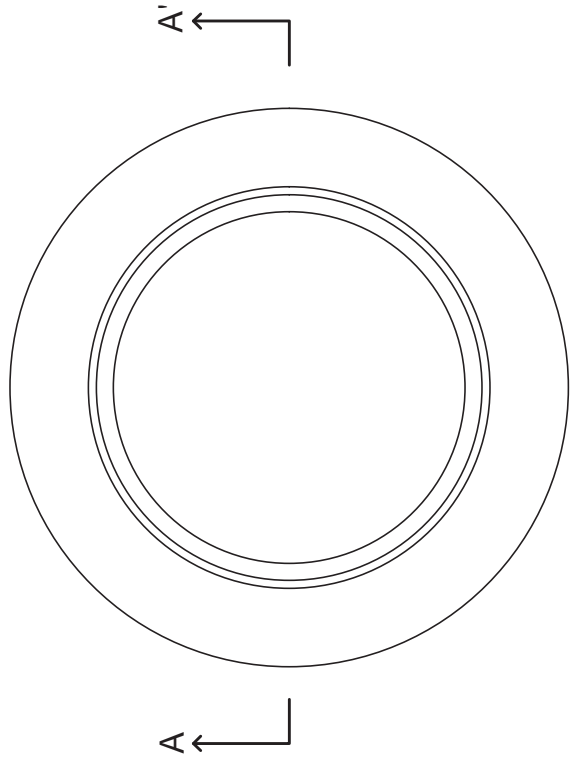


CONCRETE
0.2"
INVERT ELEVATIONS
SHOWN IN PROFILE
*IF OUTLET PIPE IS LARGER
MATCH PIPE CROWNS

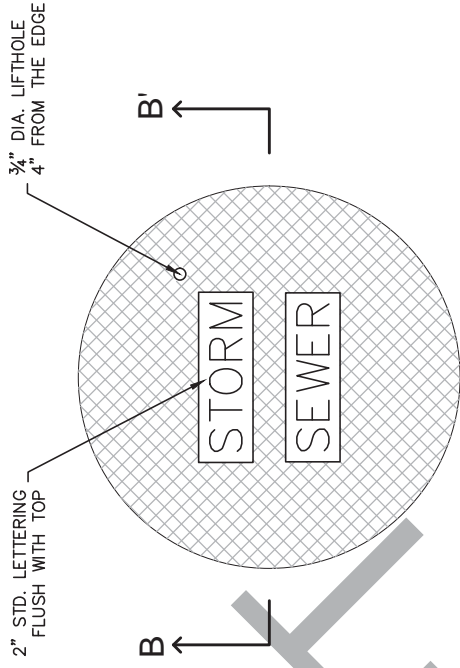
PRECAST SLAB BASE
(PROFILE)



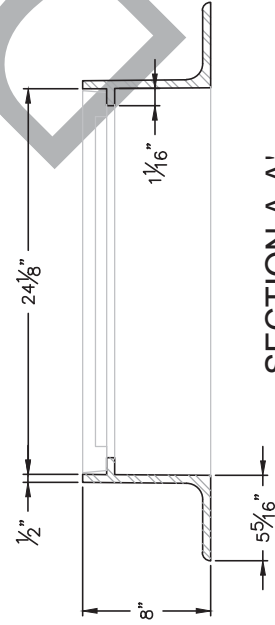
STORM DRAIN	
TYPICAL INLET CHANNELIZATION	
APPROVED: _____	
ISSUED: 6/19/20	REVISD: _____
CITY ENGINEER	DRAWING NO. D-9C



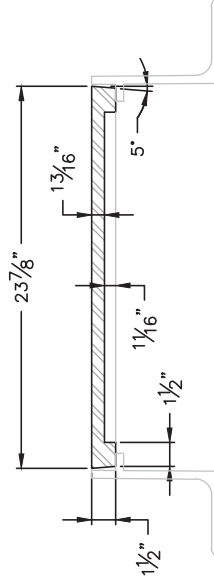
PLAN VIEW - RING



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.



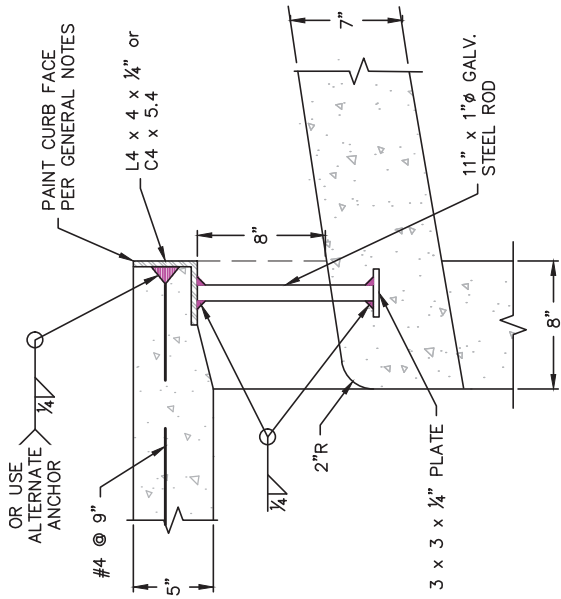
STORM DRAIN
STORM SEWER
FRAME AND COVER

APPROVED:

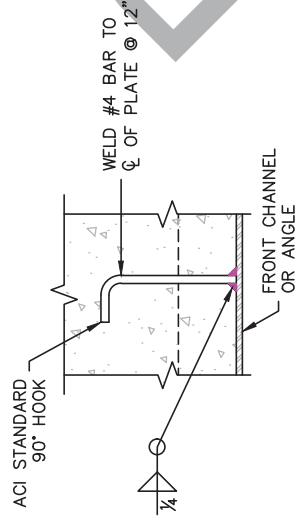
CITY ENGINEER

ISSUED: 6/19/20

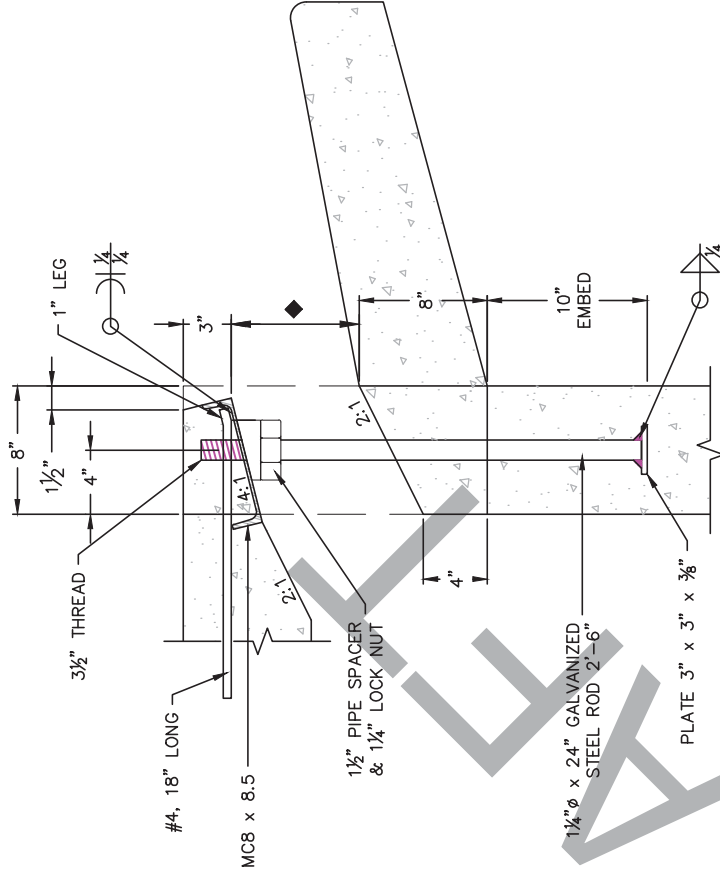
REVISIONS:
DRAWING NO.
D-9D



INLET TYPE 1
OPENING DETAIL



ALTERNATE ANCHOR



◆ 8" FOR 8" CURB HEAD
◆ 6" FOR 6" CURB HEAD

INLET TYPE 2
OPENING DETAIL

NOTE: PLACE ENTIRE ASSEMBLY PRIOR TO POURING CONCRETE



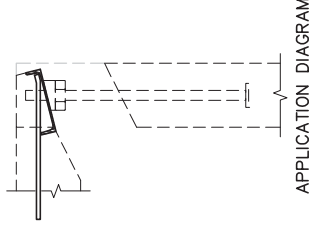
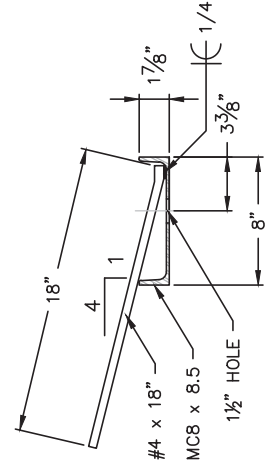
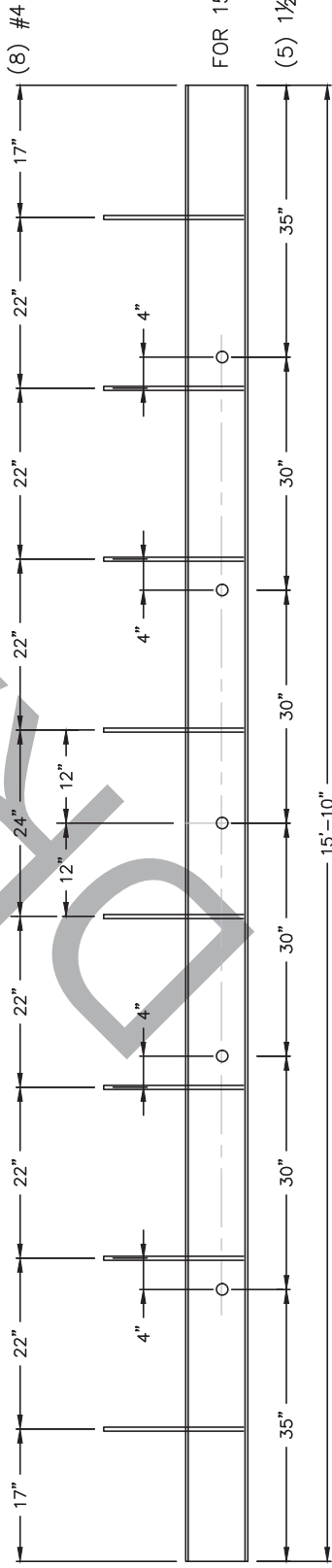
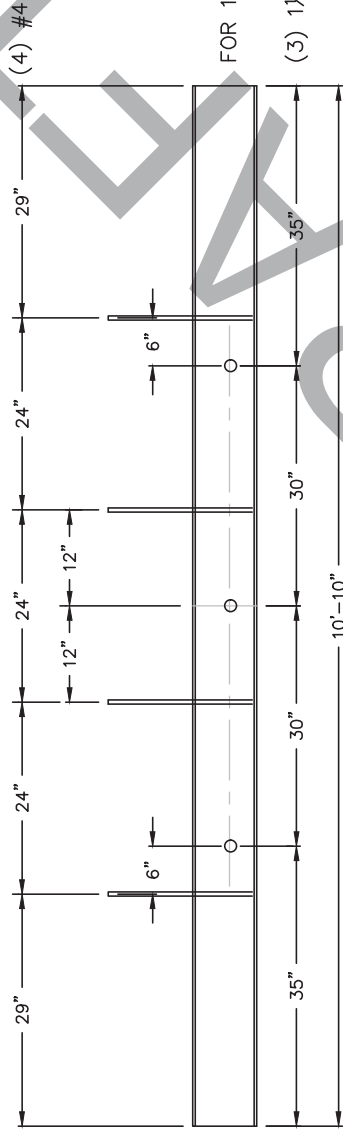
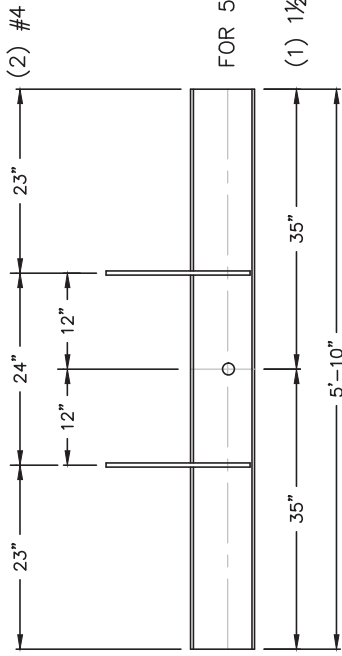
STORM DRAIN
CURB INLET OPENINGS

APPROVED:

CITY ENGINEER

ISSUED: 6/19/20
REVISED:

DRAWING NO.
D-9E



CHANNEL LAYOUT DETAILS



STORM DRAIN
CURB INLET TYPE 2

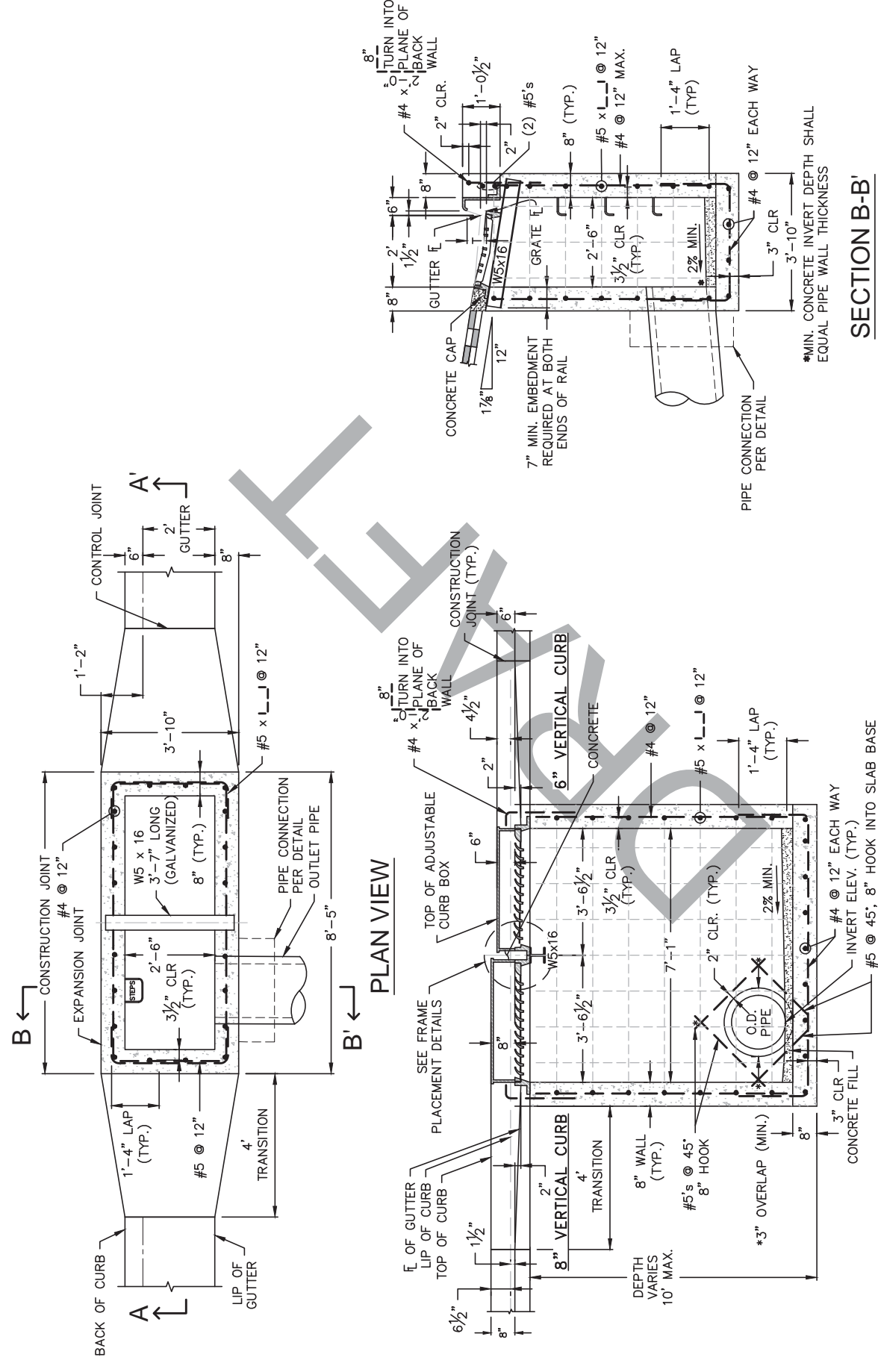
APPROVED:	CITY ENGINEER	DRAWING NO.
ISSUED:	REVISED:	D-9H
6/19/20		



STORM DRAIN	
CURB INLET TYPE 3 DOUBLE	
APPROVED:	CITY ENGINEER
ISSUED:	REVISD:
6/19/20	
DRAWING NO. D-9J	

SECTION A-A'	
<p>T = THROAT OPENING</p> <ul style="list-style-type: none"> •6" FOR 6" VERT. CURB & GUTTER •8" FOR 8" VERT. CURB & GUTTER <p>DROP FROM GUTTER FLOWLINE ELEVATION TO GRATE FLOWLINE ELEVATION (TRANSITION) IS 2"</p>	

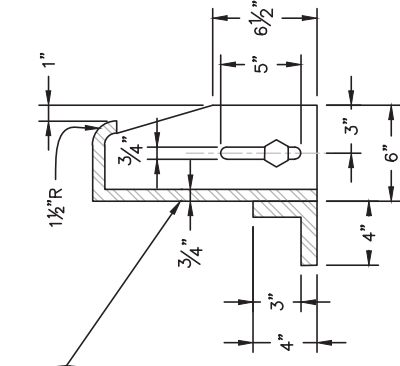
NOTE:
FOR INLETS GREATER THAN 6-FT IN DEPTH, SHOP DRAWINGS AND DESIGN ANALYSIS SHALL BE SUBMITTED FOR APPROVAL.



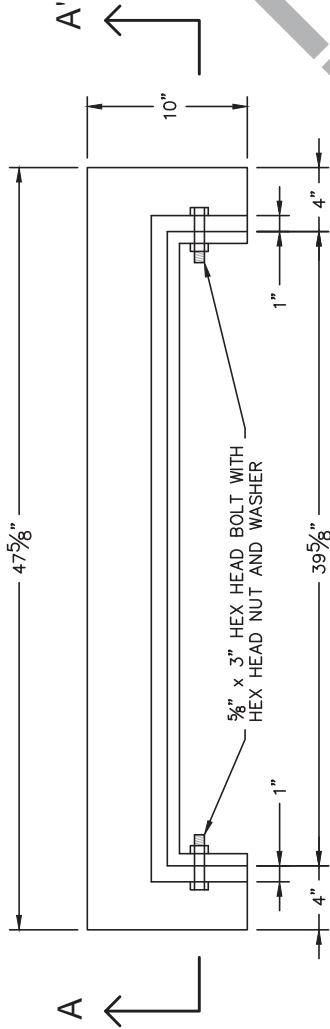
SECTION B-B'

*MIN. CONCRETE INVERT DEPTH SHALL EQUAL PIPE WALL THICKNESS

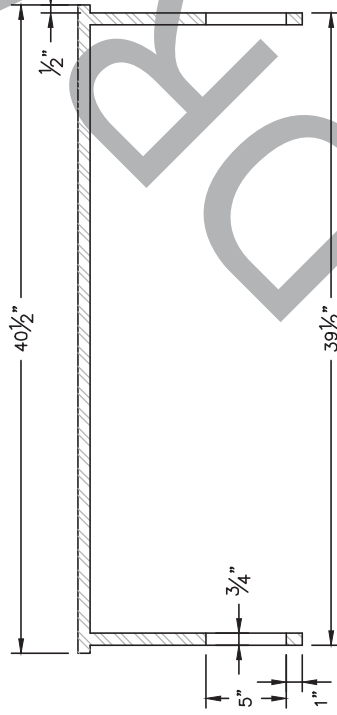
FOR INLETS GREATER THAN 6-FT IN DEPTH, SHOP DRAWINGS AND DESIGN ANALYSIS SHALL BE SUBMITTED FOR APPROVAL.



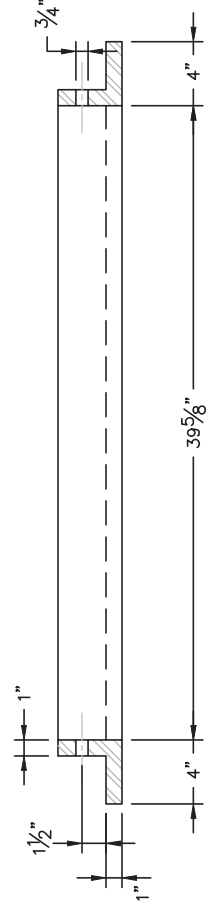
SECTION B-B'



PLAN VIEW



SECTION A-A'

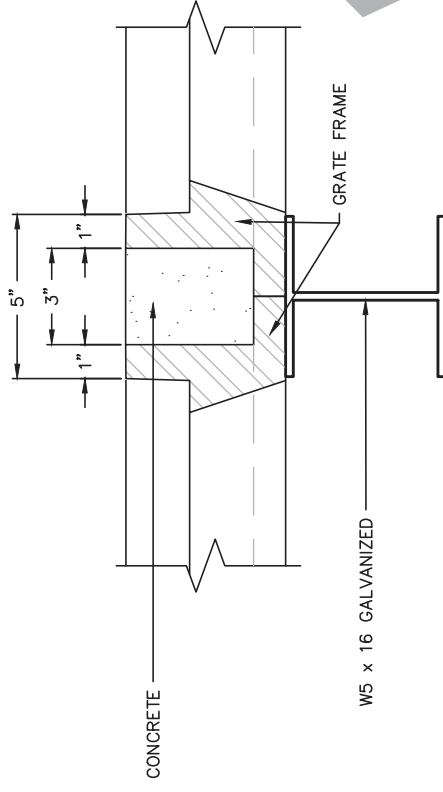


NOTES:

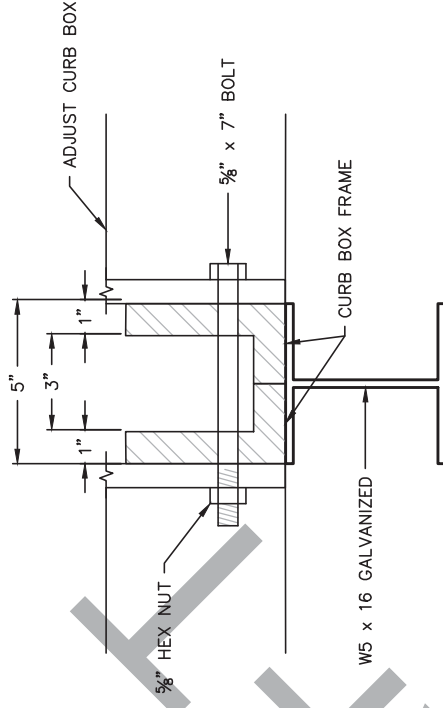
1. CAST IRON SHALL CONFORM TO ASTM A48 (CLASS 35B).
2. CASTING SHALL COMPLY WITH FEDERAL SPECIFICATION RR-F-5210 FOR CASTING PROOF LOADING (HEAVY DUTY).
3. ALL CASTING REQUIRE INDIVIDUAL APPROVAL/CERTIFICATION.
4. CASTING SHALL BE DIPPED PRIOR TO FINAL INSPECTION, ONCE INDIVIDUAL CASTING ARE CHECKED.



STORM DRAIN CURB INLET TYPE 3 ADJUSTABLE CURB BOX	
APPROVED:	CITY ENGINEER
ISSUED:	REVISED:
6/19/20	
DRAWING NO. D-9K	



FRAME PLACEMENT
SUPPORT RAIL DETAIL



PLACEMENT OF ADJUSTED CURB
BOX ON SUPPORT RAIL DETAIL



STORM DRAIN
CURB INLET TYPE 3 DOUBLE
SUPPORT RAIL DETAILS

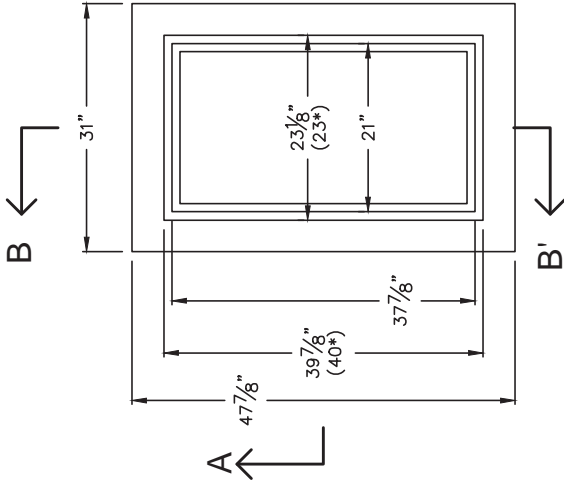
APPROVED:

CITY ENGINEER

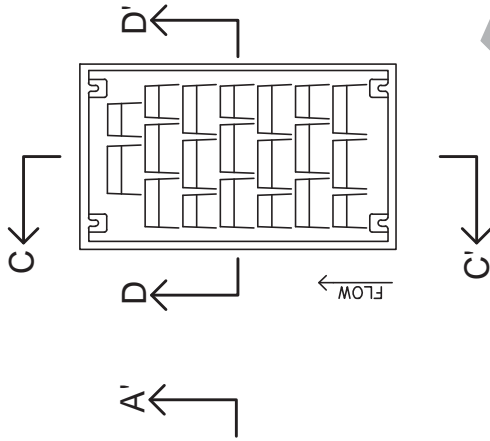
ISSUED: 6/19/20

REVISED:

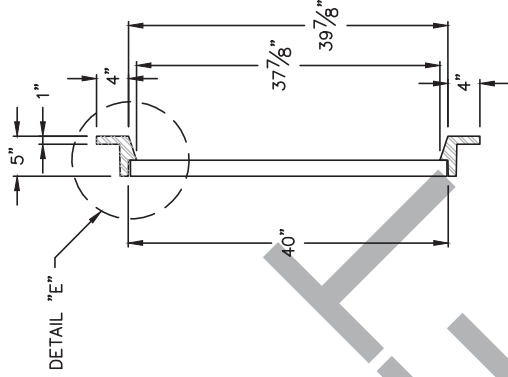
DRAWING NO.
D-9L



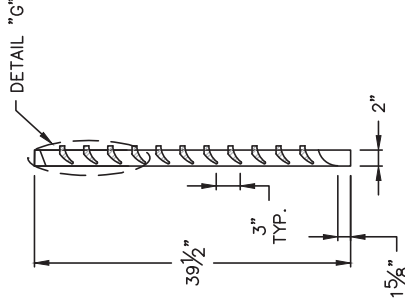
PLAN - FRAME



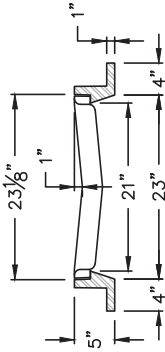
PLAN - GRATE



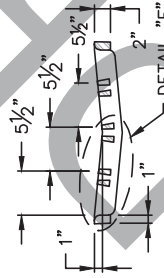
SECTION B-B'



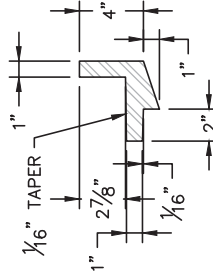
SECTION C-C'



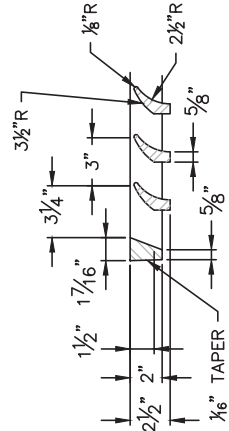
SECTION A-A'



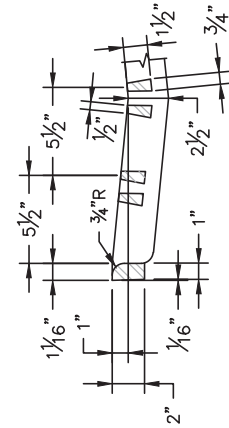
SECTION D-D'



DETAIL E



DETAIL G



DETAIL F

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.



STORM DRAIN
CURB INLET TYPE 3
GRATE and FRAME

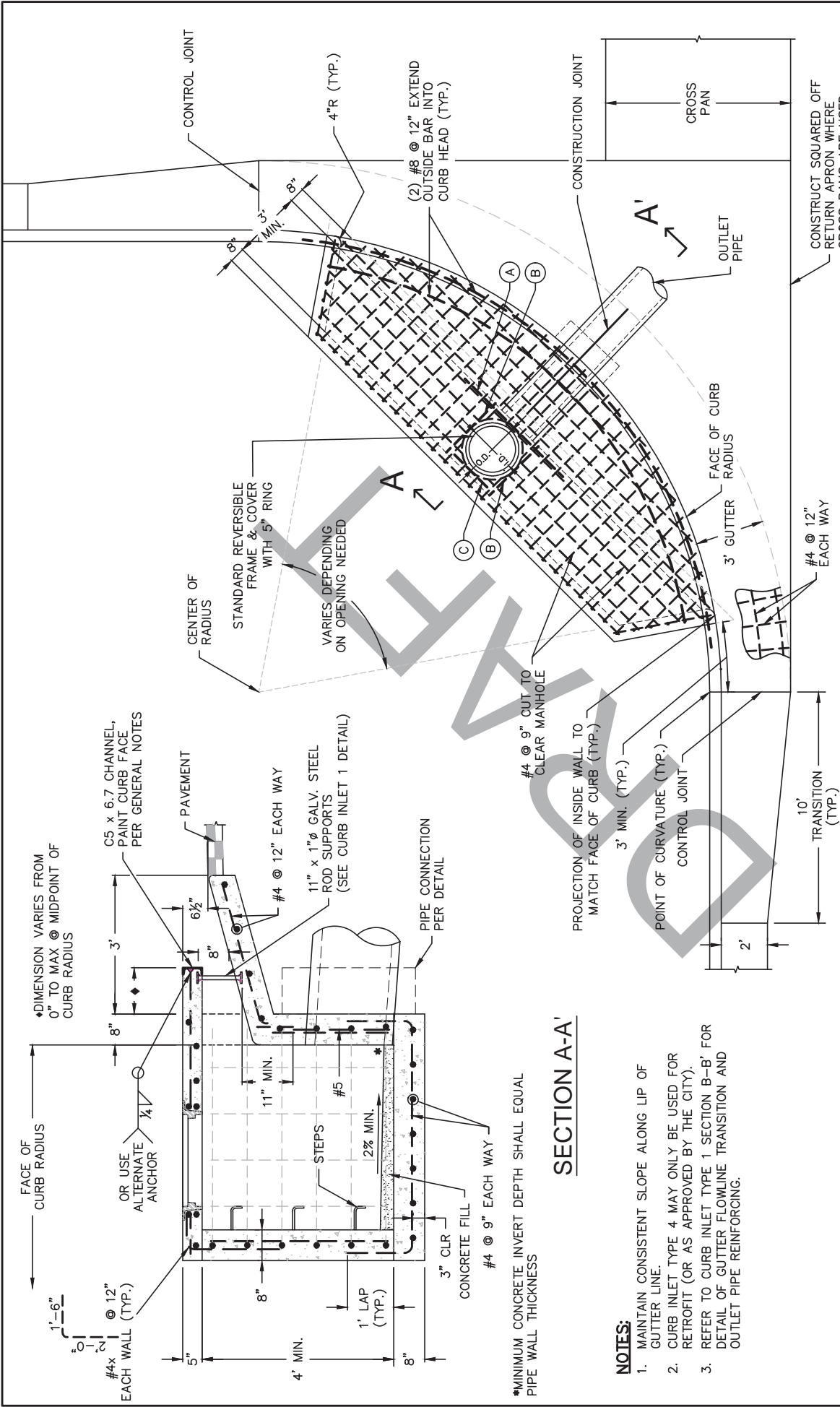
APPROVED:

CITY ENGINEER

REVISED:

ISSUED: 6/19/20


DRAWING NO.
D-9M



PLAN VIEW

- #4 BARS AT MANHOLE OPENING - 2-INCH CLEARANCE
- Ⓐ 6'-0" LENGTH
- Ⓑ 3'-0" LENGTH
- Ⓒ 2'-0" LENGTH

- NOTES:**
1. MAINTAIN CONSISTENT SLOPE ALONG LIP OF GUTTER LINE.
 2. CURB INLET TYPE 4 MAY ONLY BE USED FOR RETROFIT (OR AS APPROVED BY THE CITY).
 3. REFER TO CURB INLET TYPE 1 SECTION B-B' FOR DETAIL OF GUTTER FLOWLINE TRANSITION AND OUTLET PIPE REINFORCING.



COLORADO SPRINGS

APPROVED: _____

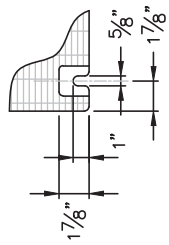
CITY ENGINEER

ISSUED: 6/19/20

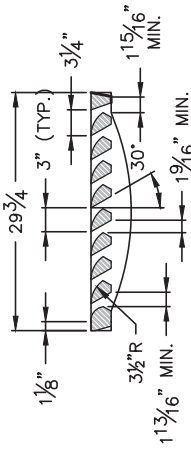
REVISED: _____

DRAWING NO. D-9N

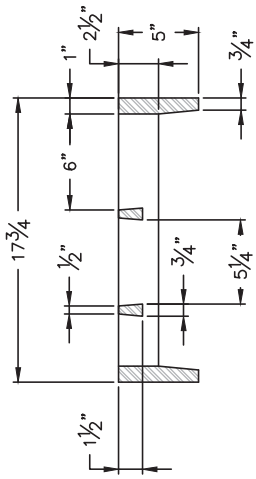
STORM DRAIN CURB INLET TYPE 4 (RETROFIT ONLY)



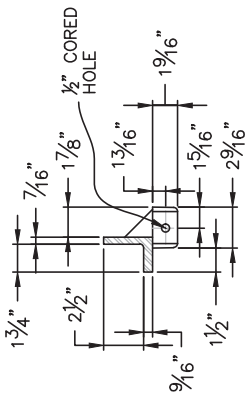
DETAIL A
BOLT SLOT AT
CORNER (TYP.)



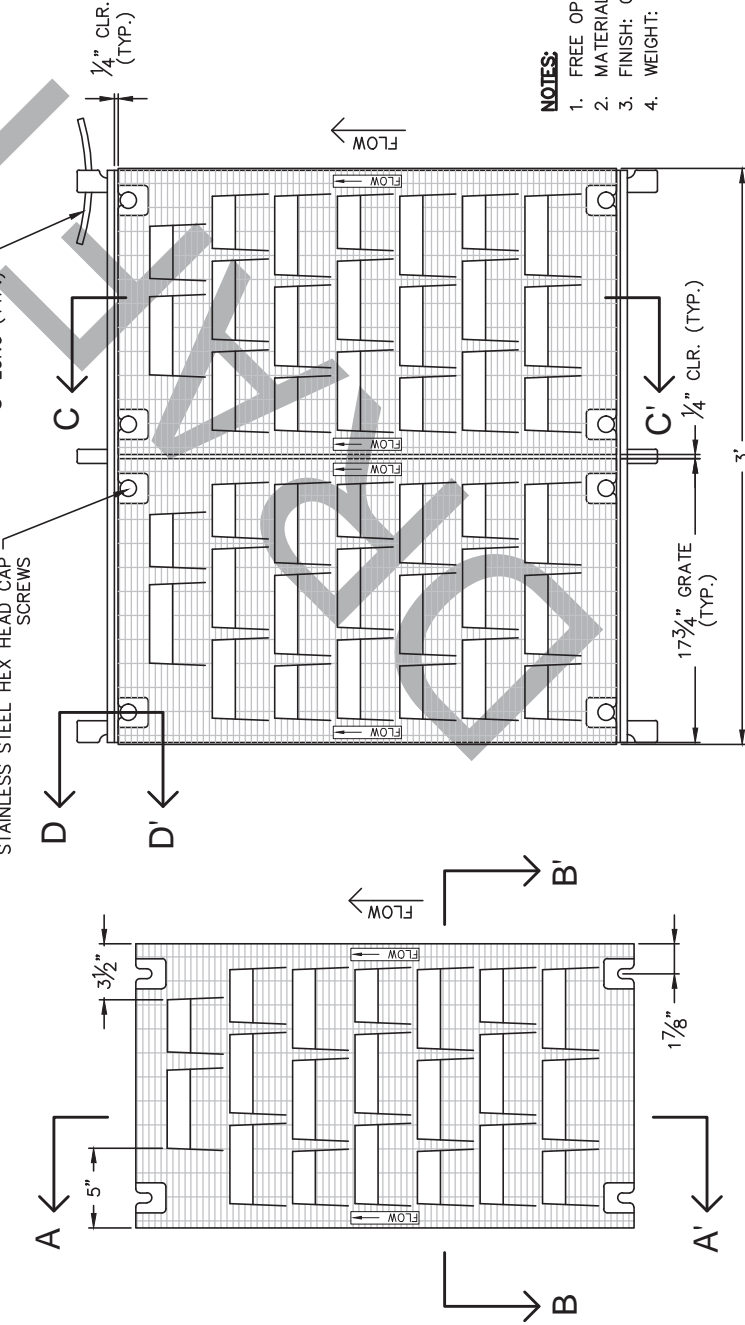
SECTION A-A'



SECTION B-B'



DETAIL B



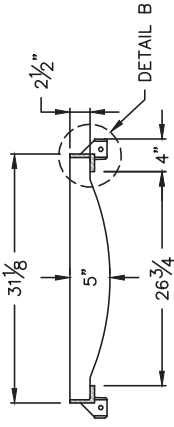
GRATE PLAN

STAINLESS STEEL HEX HEAD CAP SCREWS

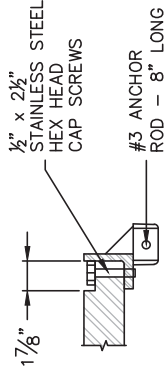
#3 ANCHOR ROD
8" LONG (TYP.)

1/4" CLR.
(TYP.)

SECTION C-C'



DETAIL B



SECTION D-D'

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

MULTIPLE GRATE
WITH FRAME PLAN

STORM DRAIN
AREA INLET TYPE 1
FRAME AND GRATE



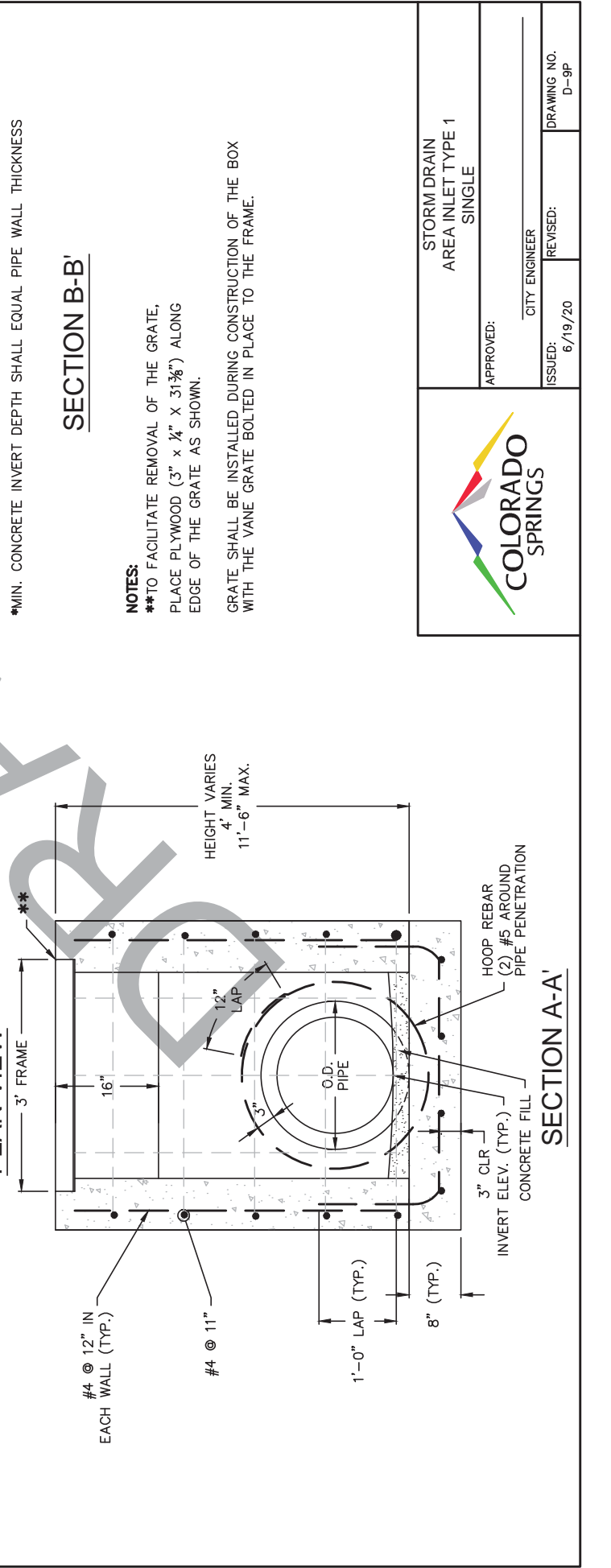
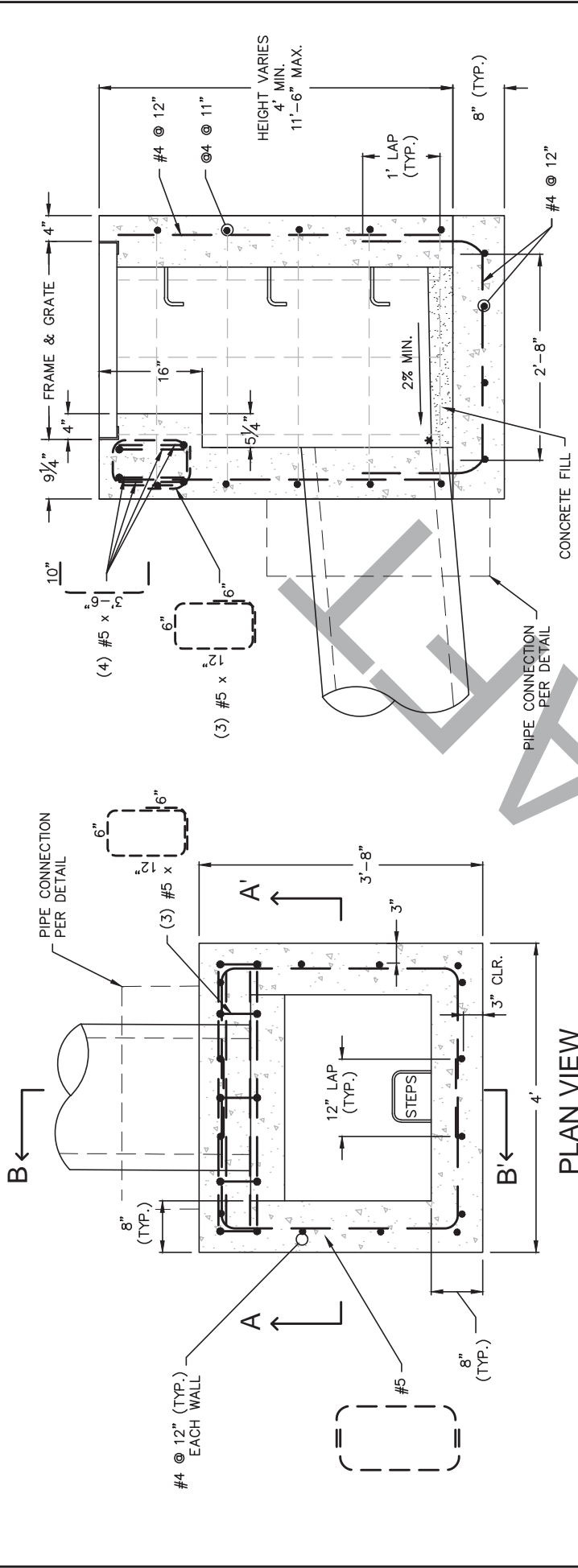
APPROVED:

CITY ENGINEER

ISSUED: 6/19/20


REVISED:

DRAWING NO.
D-90



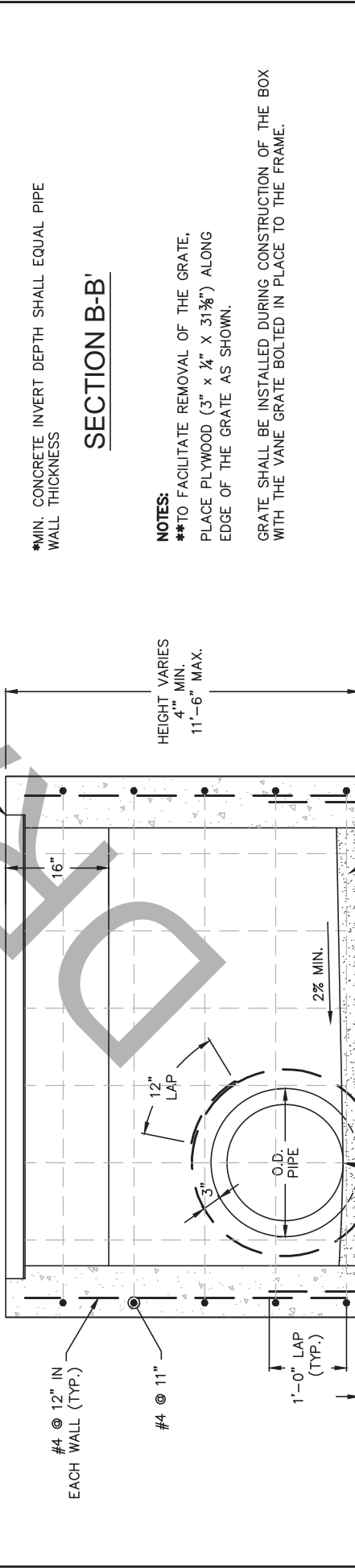
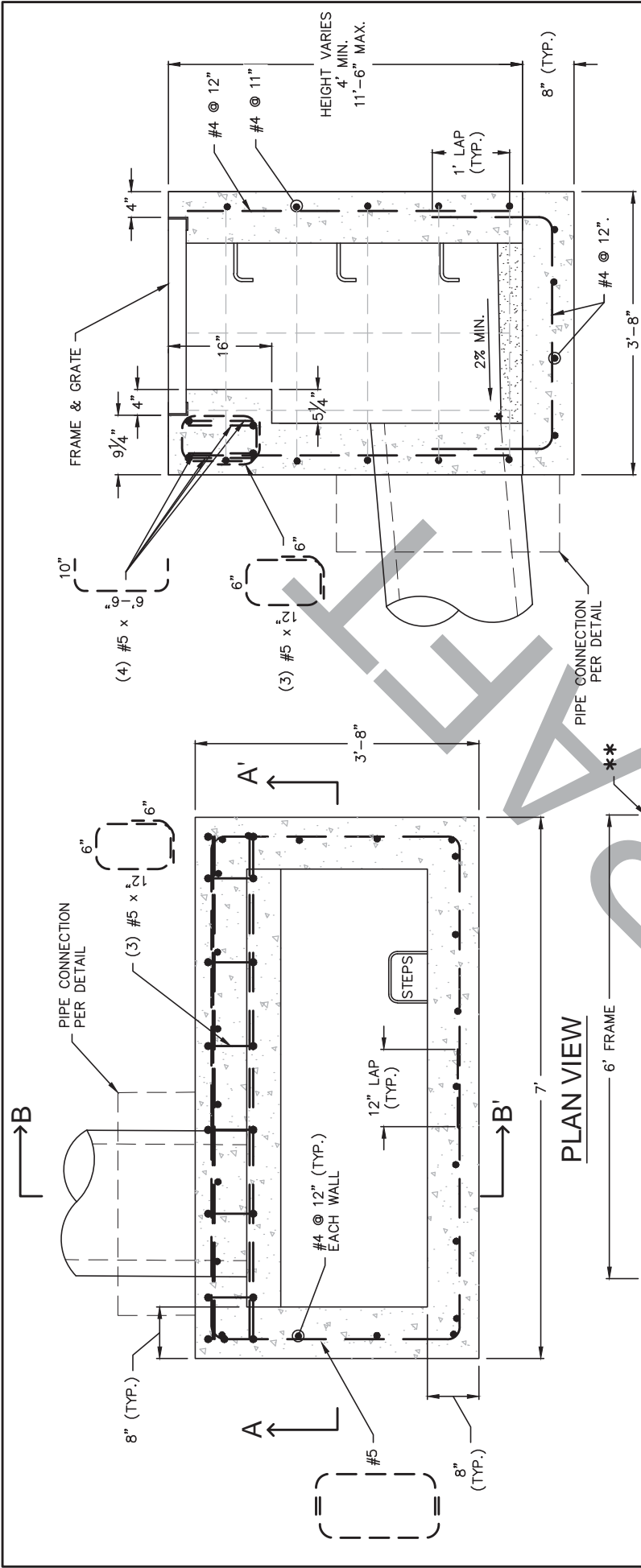
SECTION B-B'

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.



COLORADO SPRINGS

STORM DRAIN AREA INLET TYPE 1 SINGLE	
APPROVED:	
CITY ENGINEER	REVISION:
ISSUED: 6/19/20	DRAWING NO. D-9P



NOTES:

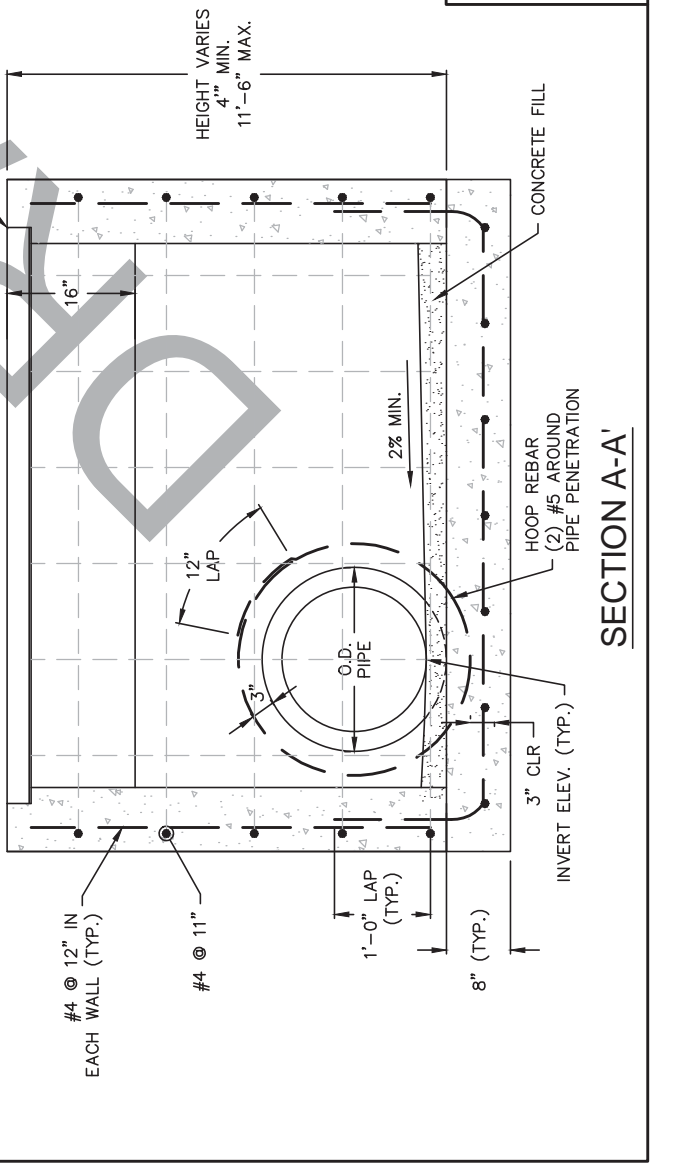
- **TO FACILITATE REMOVAL OF THE GRATE, PLACE PLYWOOD (3" x 1/4" x 31 3/8") ALONG EDGE OF THE GRATE AS SHOWN.
- GRATE SHALL BE INSTALLED DURING CONSTRUCTION OF THE BOX WITH THE VANE GRATE BOLTED IN PLACE TO THE FRAME.

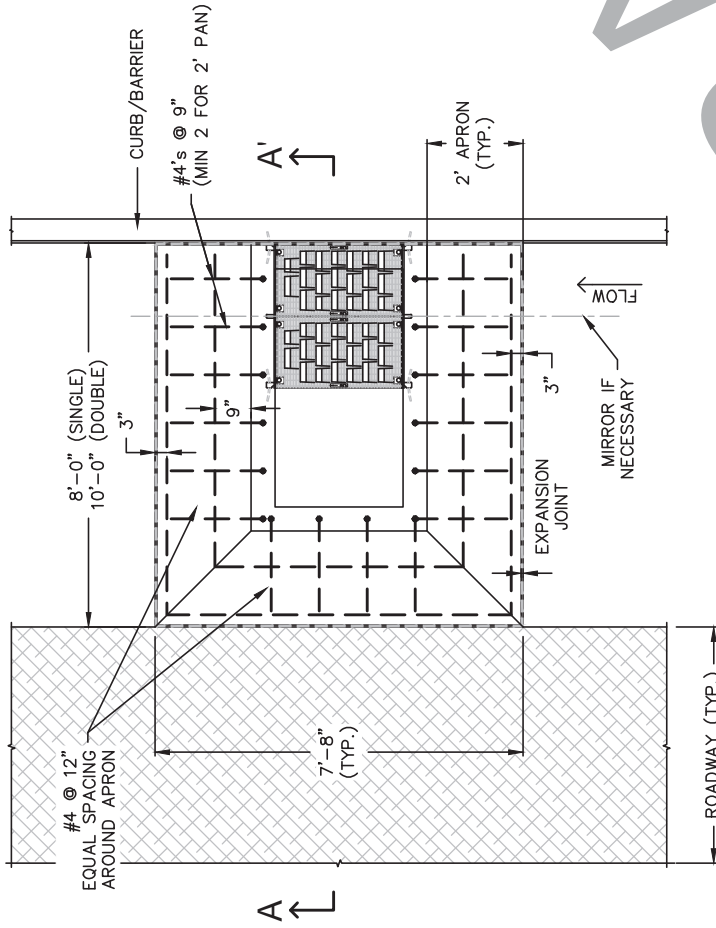
*MIN. CONCRETE INVERT DEPTH SHALL EQUAL PIPE WALL THICKNESS

STORM DRAIN AREA INLET TYPE 1 DOUBLE

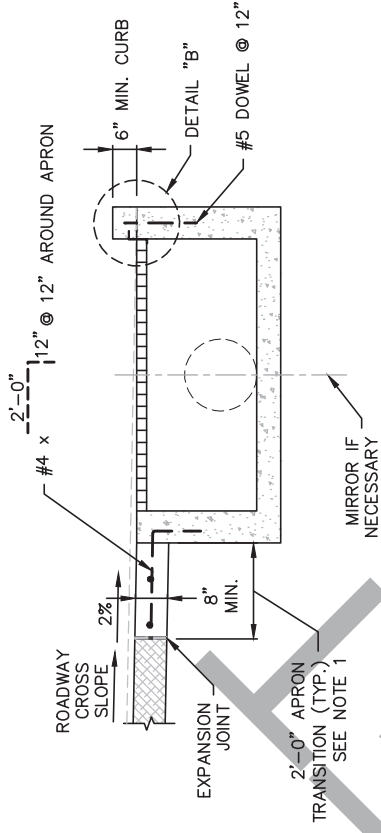
APPROVED: _____
CITY ENGINEER

ISSUED: 6/19/20 REVISD: _____
DRAWING NO. D-9q





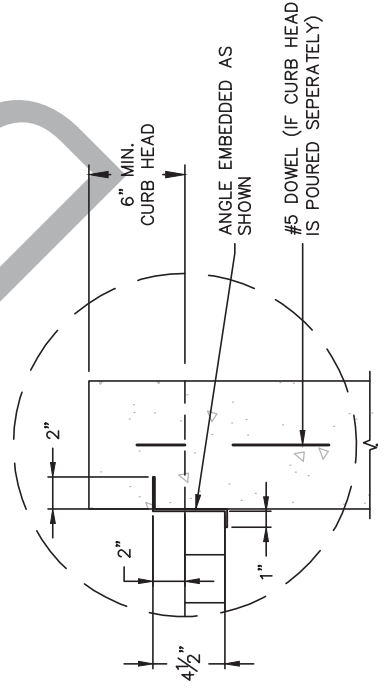
PLAN VIEW



SECTION A-A'

NOTES:

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



DETAIL B



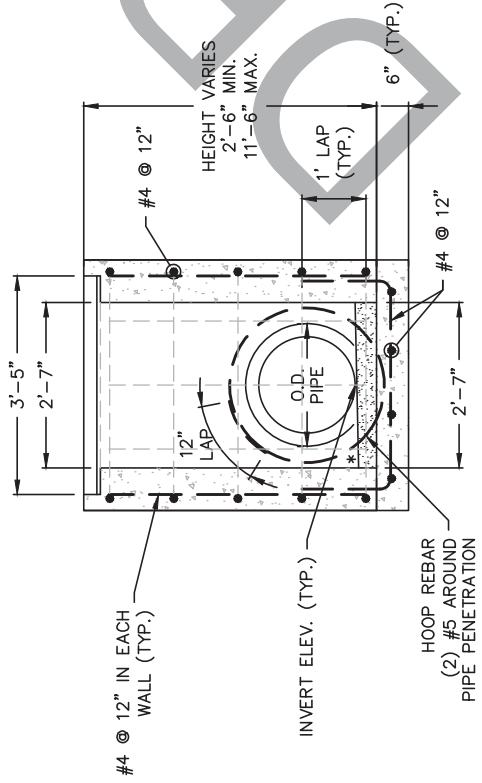
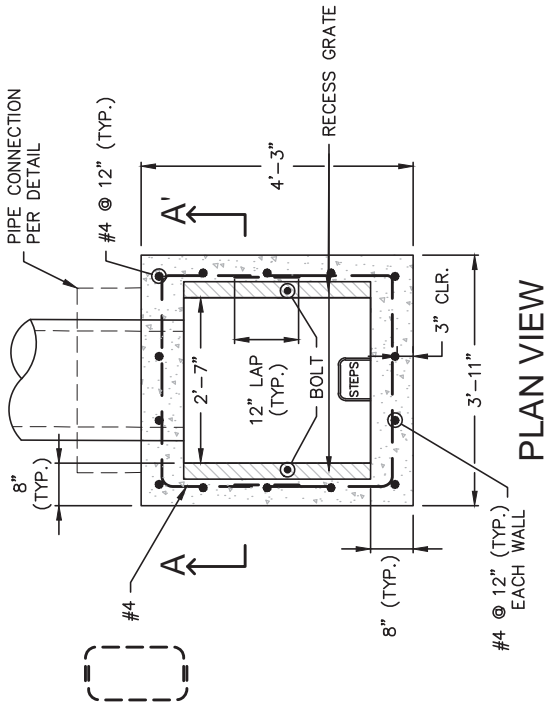
STORM DRAIN
AREA INLET TYPE 1
CONCRETE APRON

APPROVED:

CITY ENGINEER

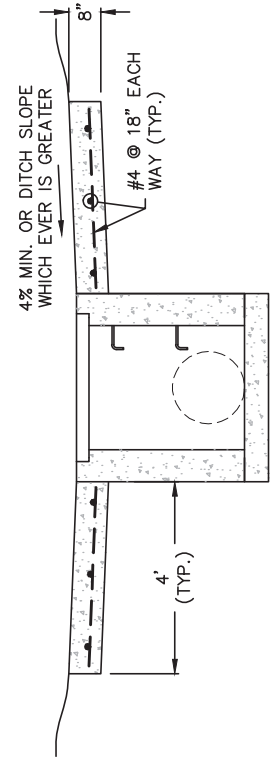
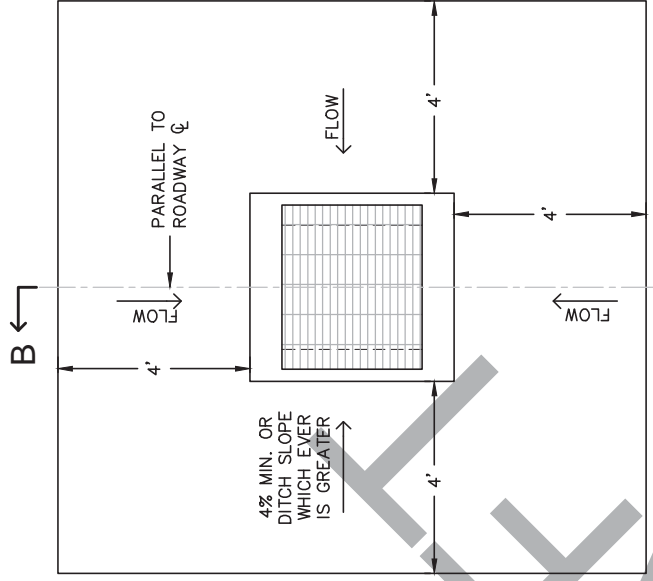
ISSUED: 6/19/20 REVISED:

DRAWING NO.
D-9R



*MIN. CONCRETE INVERT DEPTH SHALL EQUAL PIPE WALL THICKNESS

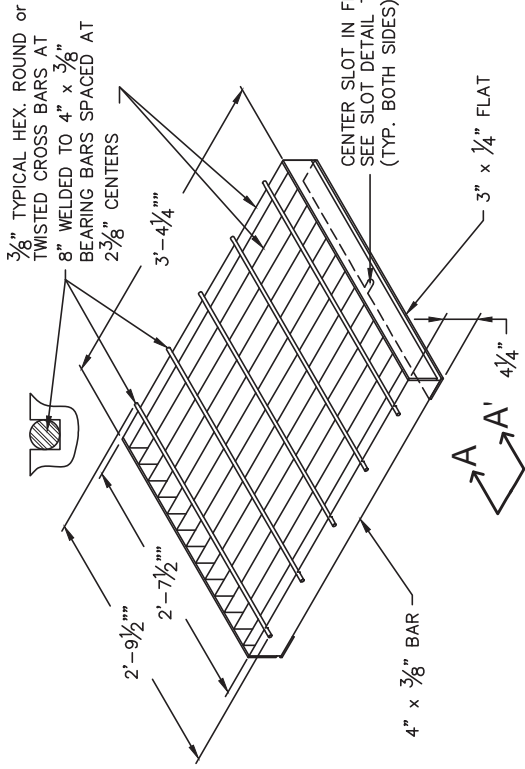
- NOTES:**
1. AREA INLET TYPE 2 IS NOT HS-20 RATED AND SHALL NOT BE PLACED IN ROADWAYS OR PARKING AREAS
 2. AREA INLET TYPE 2 GRATE IS NOT ADA COMPLIANT OR BICYCLE FRIENDLY AND SHALL NOT BE PLACED DIRECTLY IN SIDEWALKS, CROSSWALKS OR BIKE PATH.



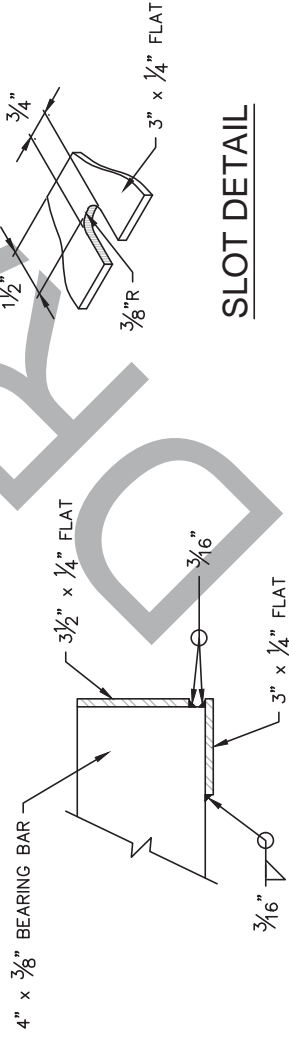
STORM DRAIN
AREA INLET TYPE 2

APPROVED:	CITY ENGINEER	ISSUED:	6/19/20	REVISD:		DRAWING NO.	D-9S
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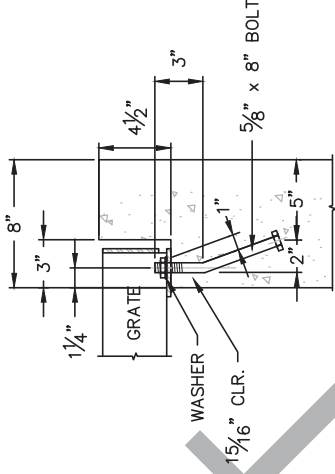




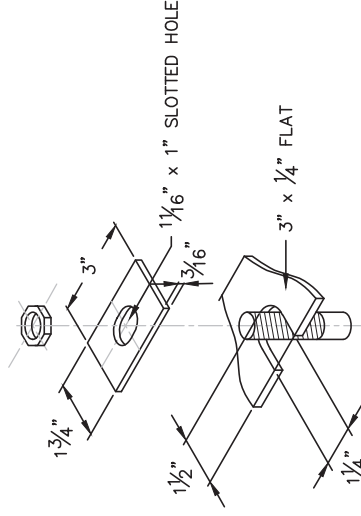
CLOSE MESH GRATE



SLOT DETAIL



GRATE INSTALLATION DETAIL



ALTERNATE SLOT AND HOLD DOWN PLATE DETAIL



STORM DRAIN AREA INLET TYPE 2 GRATE	
APPROVED: _____	
CITY ENGINEER	_____
ISSUED: 6/19/20	REVISED: _____
DRAWING NO. D-9T	