

**NOTES:**

- REFER TO VOLUME 2 HYDROLOGY STANDARDS OF THE CITY/COUNTY DRAINAGE MANUAL FOR ASSUMPTIONS MADE IN DERIVING THIS FIGURE.

DATE: 09/22/2007		NOT TO SCALE	
REVISION	BY	APPROVED	DATE

CITY OF ELK GROVE - PUBLIC WORKS

**10-YEAR PEAK FLOW  
SACRAMENTO METHOD  
RAINFALL ZONE 2, <80 ACRES**

APPROVED BY:

*Paul Murock*

CITY ENGINEER

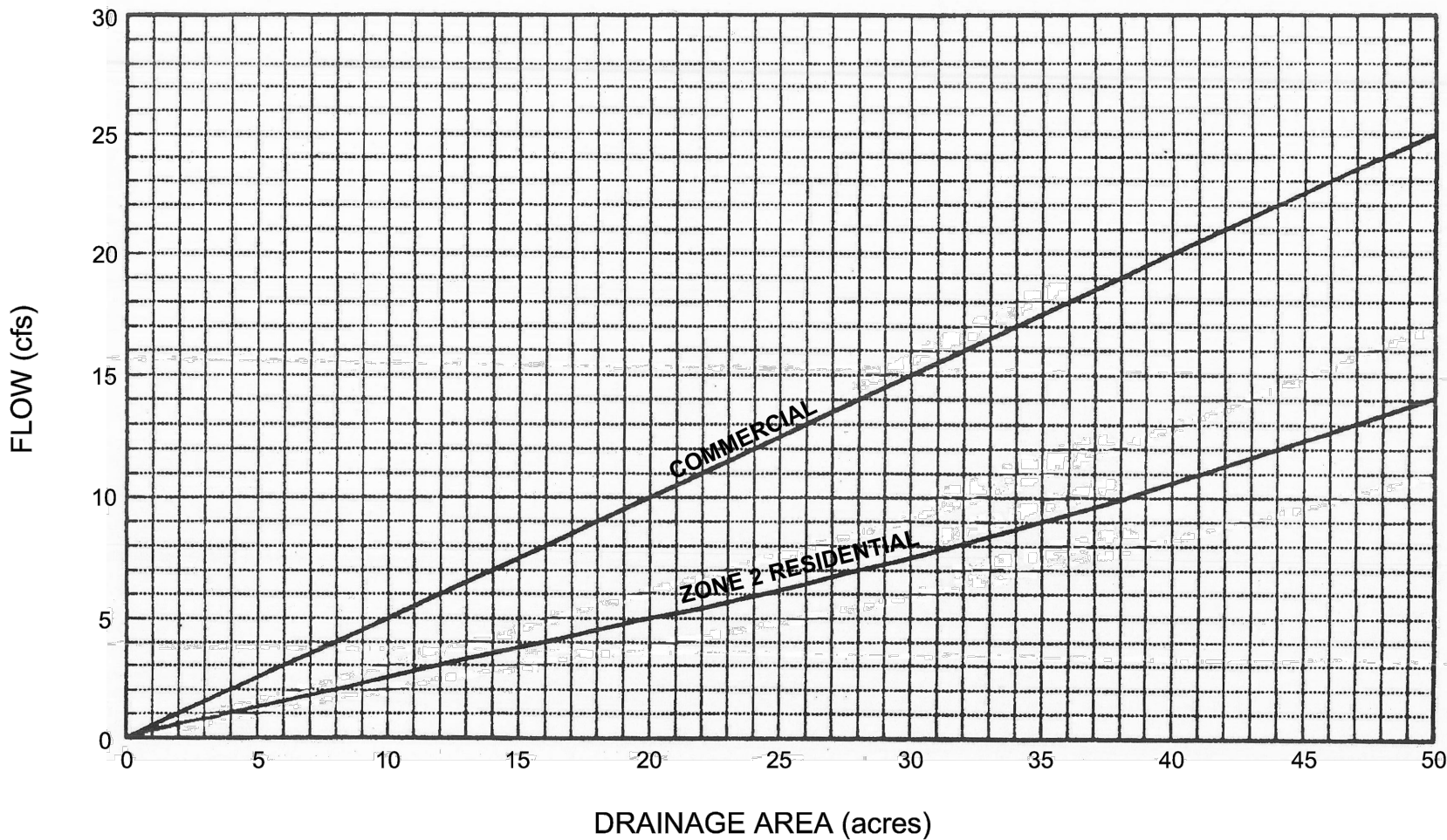
10/24/2018

DATE



DRAWING NUMBER

**SD - 1**



**NOTES:**

- Design runoff for multiple family development shall be based on the following formula:

$$Q_m = Q_r + (Q_c - Q_r)(I - 50) / 40$$

Where:

- RD-7 I = 60
- RD-10 I = 70
- RD-20 I = 80
- RD-30 I = 90

Source: County of Sacramento Master Drainage Plan, Part 1, County-wide Hydrology, Nolte and Assoc.

DATE: 09/22/2007		NOT TO SCALE	
REVISION	BY	APPROVED	DATE

CITY OF ELK GROVE - PUBLIC WORKS

**DESIGN RUNOFF  
NOLTE METHOD  
DRAINAGE AREAS, <50 ACRES**

APPROVED BY:

*Paul Murock*

CITY ENGINEER

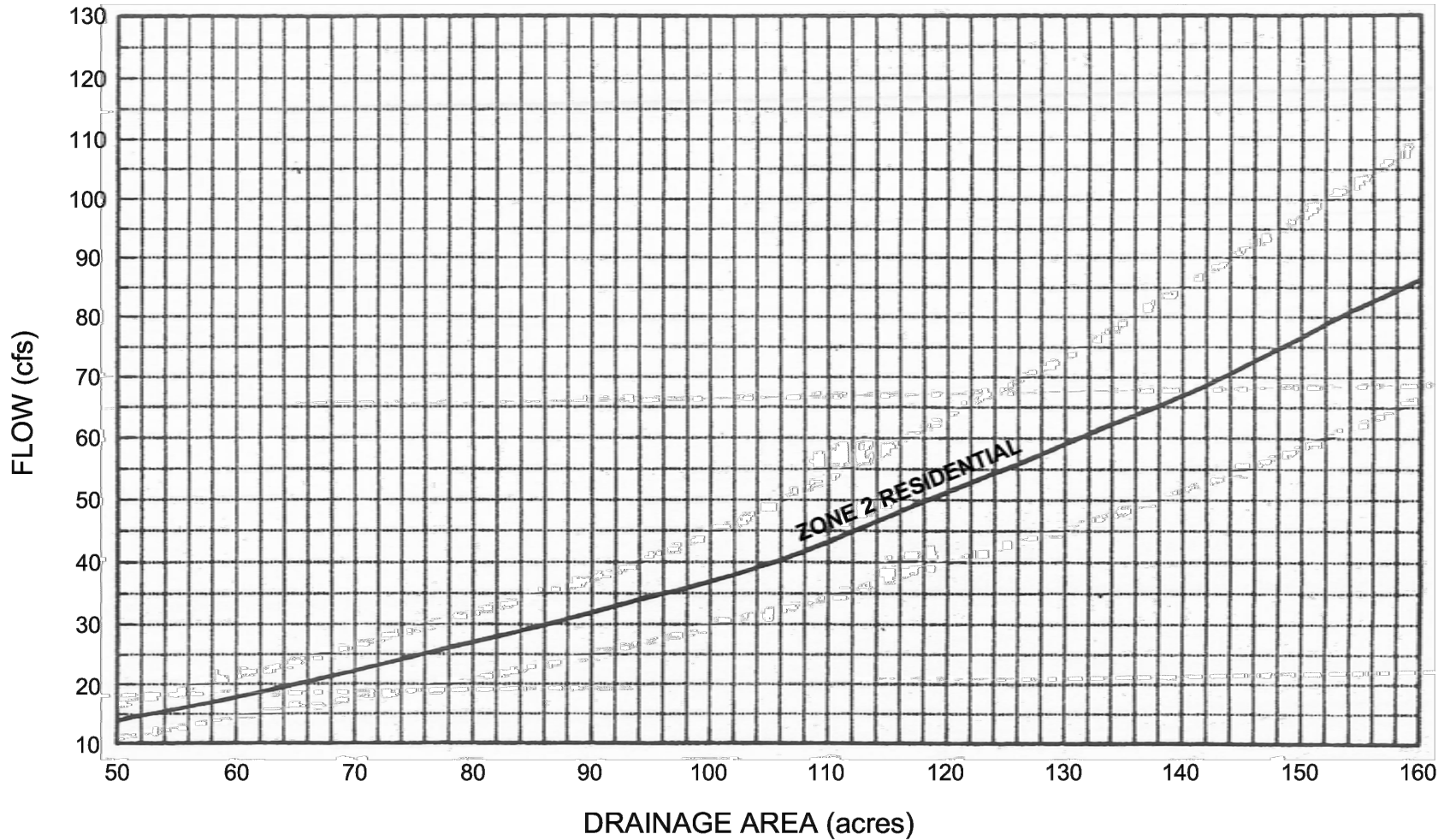
10/24/2018

DATE



DRAWING NUMBER

**SD - 1A**



**NOTES:**

- Design runoff for multiple family development shall be based on the following formula:

$$Q_m = Q_r + (Q_c - Q_r)(I - 50)/40$$

Where:

- RD-7 I = 60
- RD-10 I = 70
- RD-20 I = 80
- RD-30 I = 90

Source: County of Sacramento Master Drainage Plan, Part 1, County-wide Hydrology, Nolte and Assoc.

DATE: 09/22/2007		NOT TO SCALE	
REVISION	BY	APPROVED	DATE

CITY OF ELK GROVE - PUBLIC WORKS

**DESIGN RUNOFF  
NOLTE METHOD  
RESIDENTIAL AREAS, 50-160 ACRES**

APPROVED BY:

*Paul Murock*

CITY ENGINEER

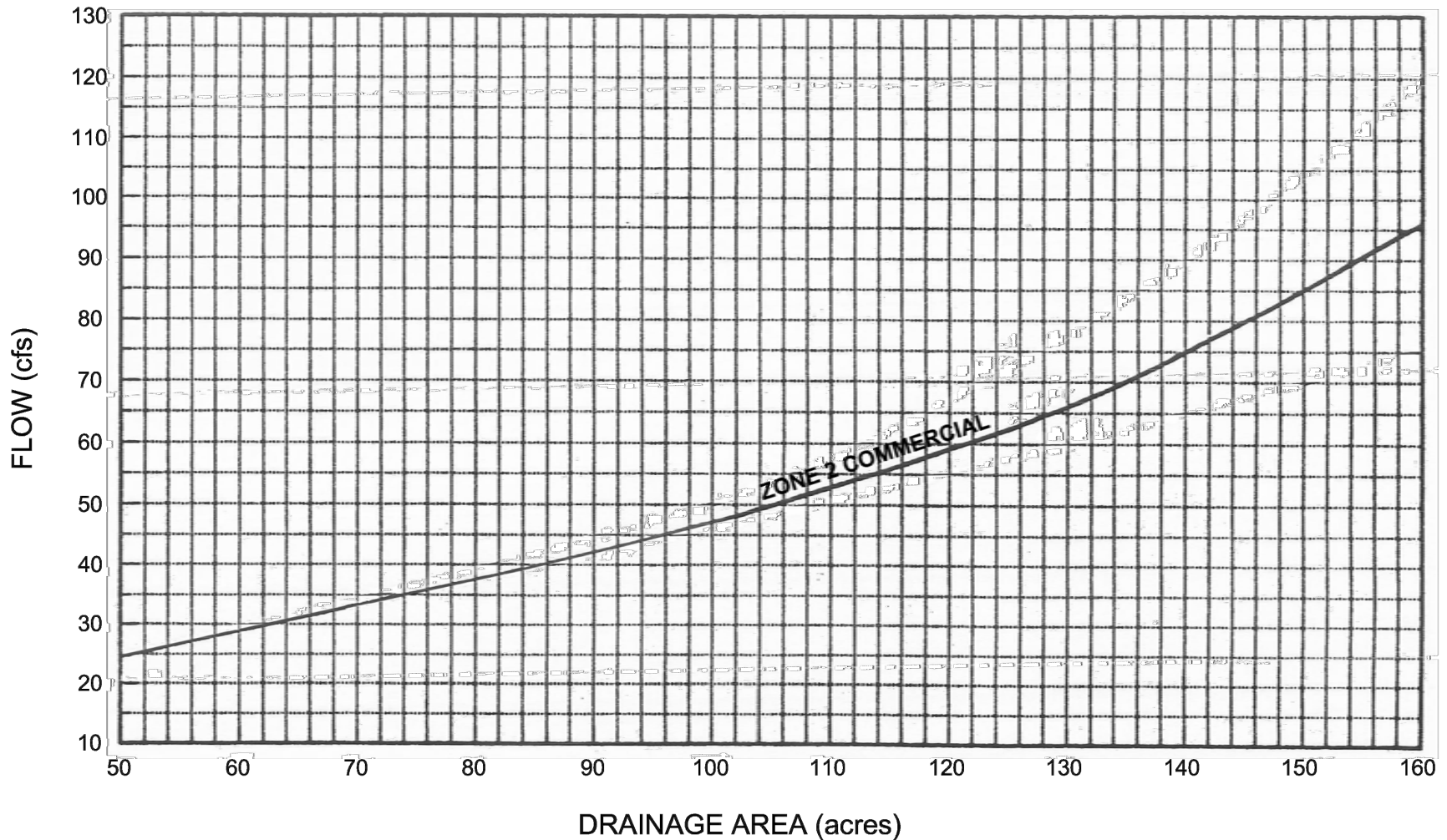
10/24/2018

DATE



DRAWING NUMBER

**SD - 1B**



Source: County of Sacramento Master Drainage Plan, Part 1, County-wide Hydrology, Nolte and Assoc.

DATE: 09/22/2007		NOT TO SCALE	
REVISION	BY	APPROVED	DATE


CITY OF ELK GROVE - PUBLIC WORKS

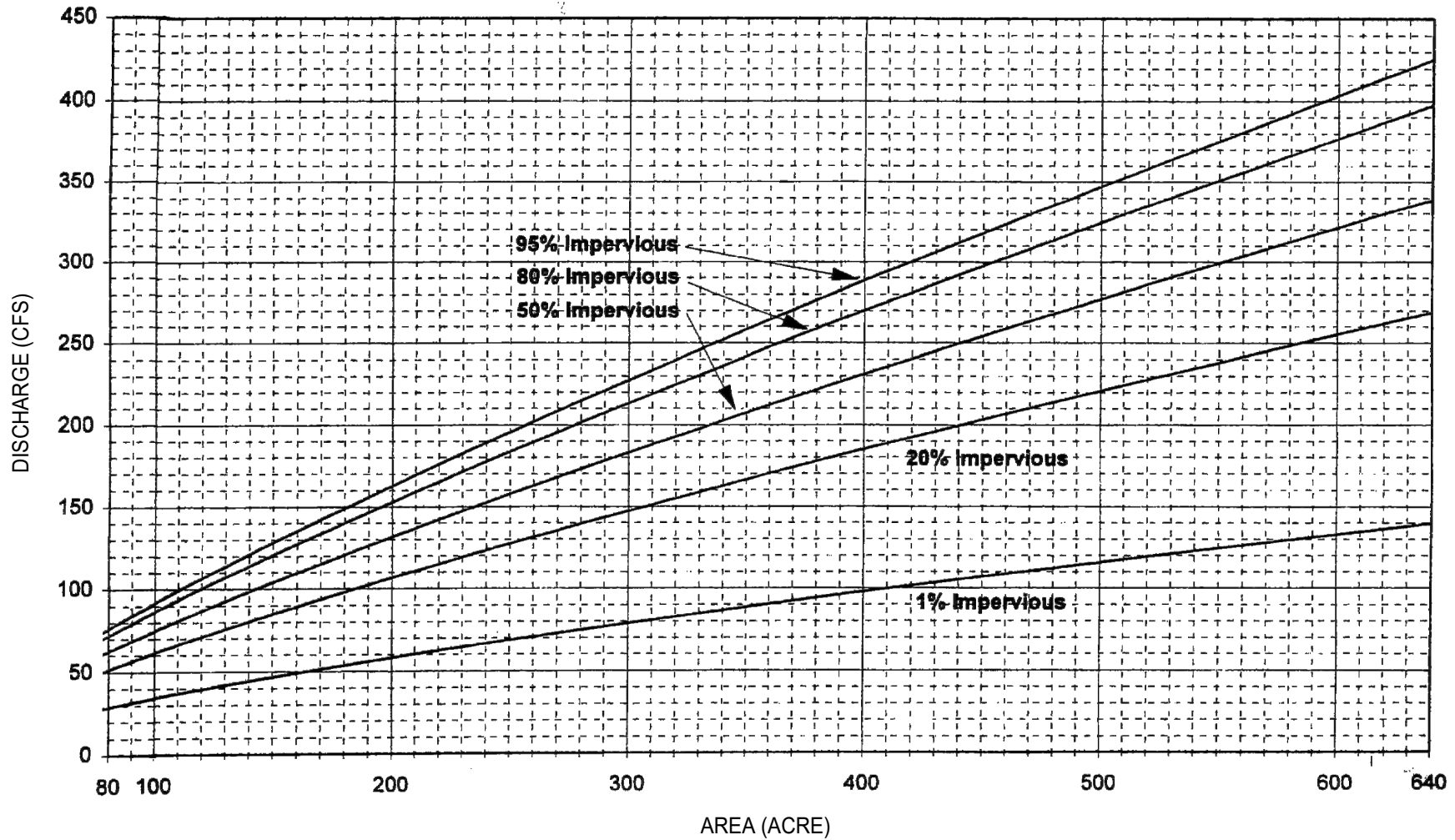
**DESIGN RUNOFF  
NOLTE METHOD  
COMMERCIAL AREAS, 50-160 ACRES**

APPROVED BY:  
*Paul Muddoch*  
CITY ENGINEER

10/24/2018  
DATE

DRAWING NUMBER  
**SD - 1C**





**NOTES:**

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REVISION	BY	APPROVED	DATE

CITY OF ELK GROVE - PUBLIC WORKS

**10-YEAR PEAK FLOW  
SACRAMENTO METHOD  
RAINFALL ZONE 2, 80-640 ACRES**

APPROVED BY:

*Paul Murock*

CITY ENGINEER

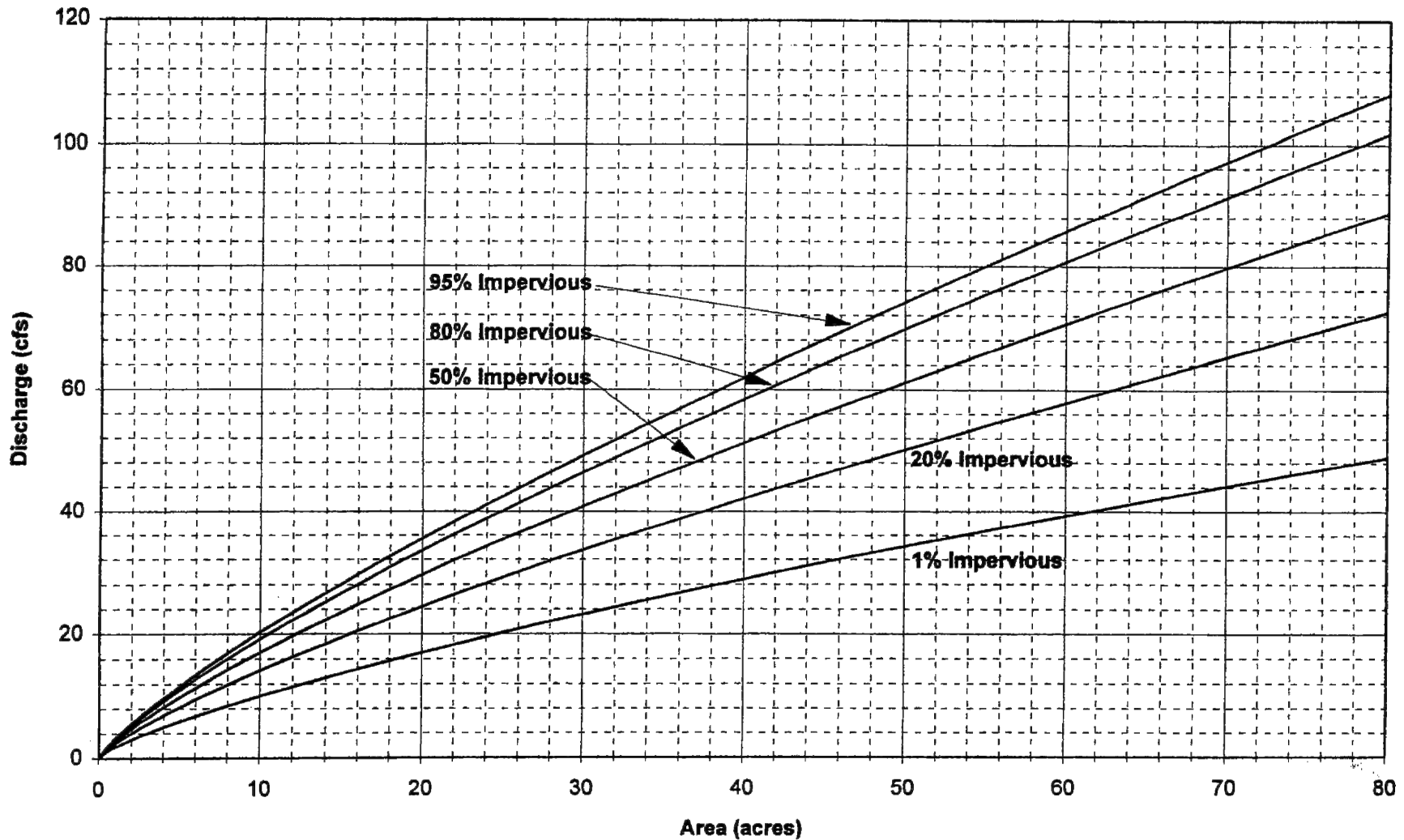
10/24/2018

DATE



DRAWING NUMBER

**SD - 2**



**NOTES:**

- REFER TO VOLUME 2 HYDROLOGY STANDARDS OF THE CITY/COUNTY DRAINAGE MANUAL FOR ASSUMPTIONS MADE IN DERIVING THIS FIGURE.

DATE: 09/22/2007		NOT TO SCALE	
REVISION	BY	APPROVED	DATE

CITY OF ELK GROVE - PUBLIC WORKS

**100-YEAR PEAK FLOW  
SACRAMENTO METHOD  
RAINFALL ZONE 2, <80 ACRES**

APPROVED BY:

*Paul Murock*

CITY ENGINEER

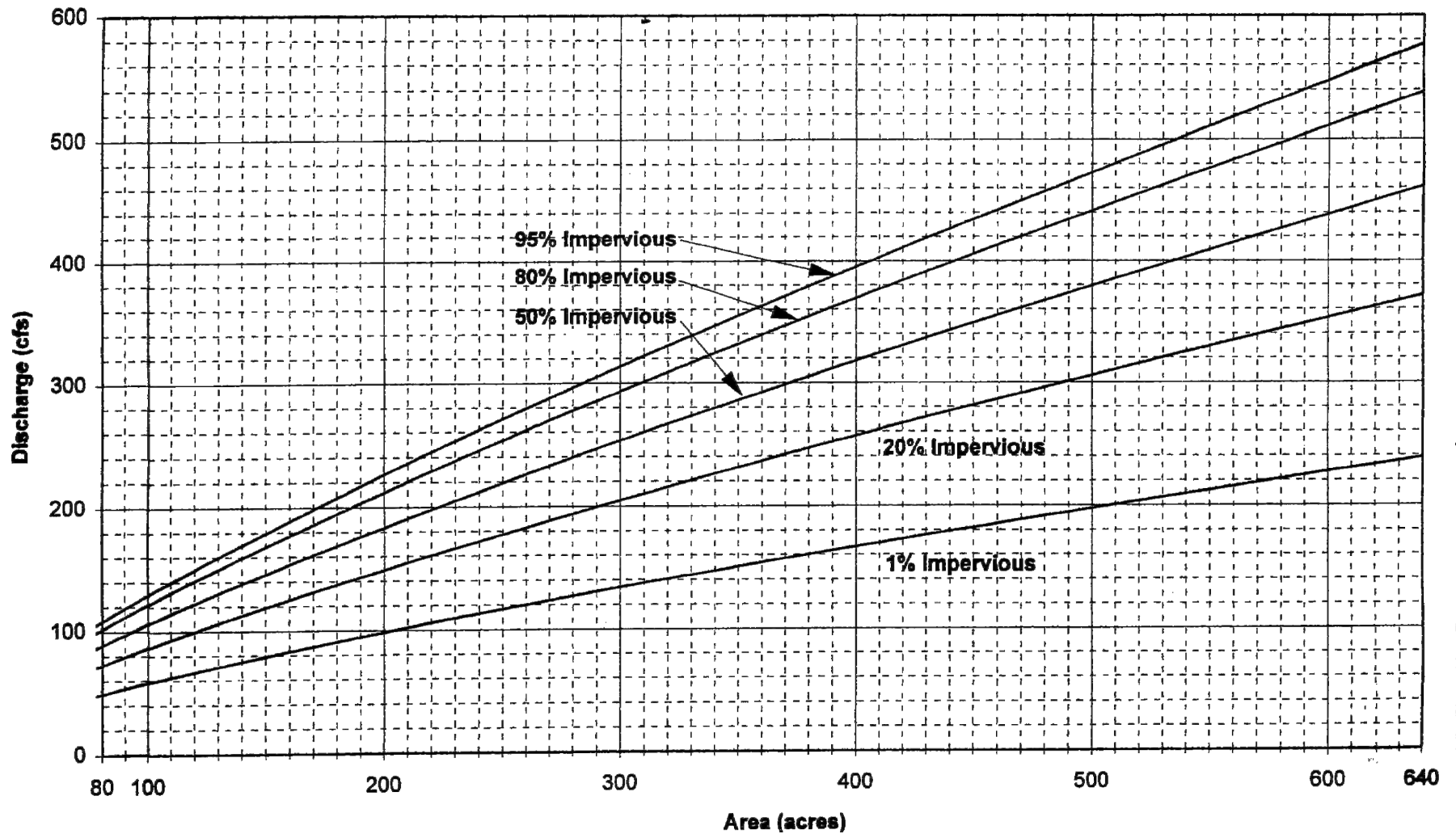
10/24/2018

DATE



DRAWING NUMBER

**SD - 3**



**NOTES:**

- REFER TO VOLUME 2 HYDROLOGY STANDARDS OF THE CITY/COUNTY DRAINAGE MANUAL FOR ASSUMPTIONS MADE IN DERIVING THIS FIGURE.

DATE: 09/22/2007		NOT TO SCALE	
REVISION	BY	APPROVED	DATE

CITY OF ELK GROVE - PUBLIC WORKS

**100-YEAR PEAK FLOW  
SACRAMENTO METHOD  
RAINFALL ZONE 2, 80-640 ACRES**

APPROVED BY:

*Paul Murock*

CITY ENGINEER

10/24/2018

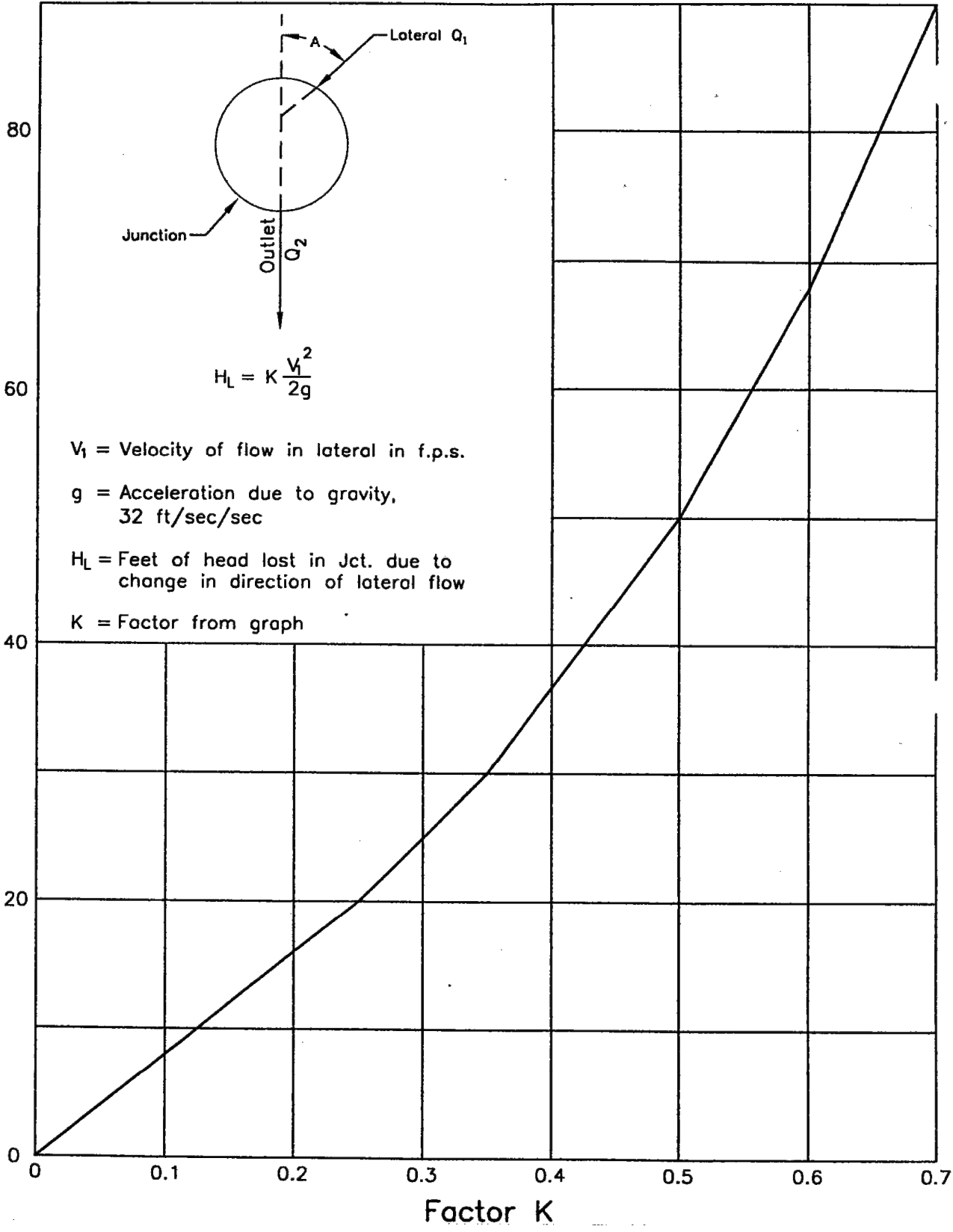
DATE



DRAWING NUMBER

**SD - 4**

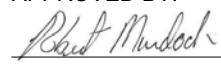
Degree of Angle "A" Between Lateral & Outlet




DATE: 09/22/2017		NOT TO SCALE	
REVISION	BY	APPROVED	DATE

CITY OF ELK GROVE - PUBLIC WORKS

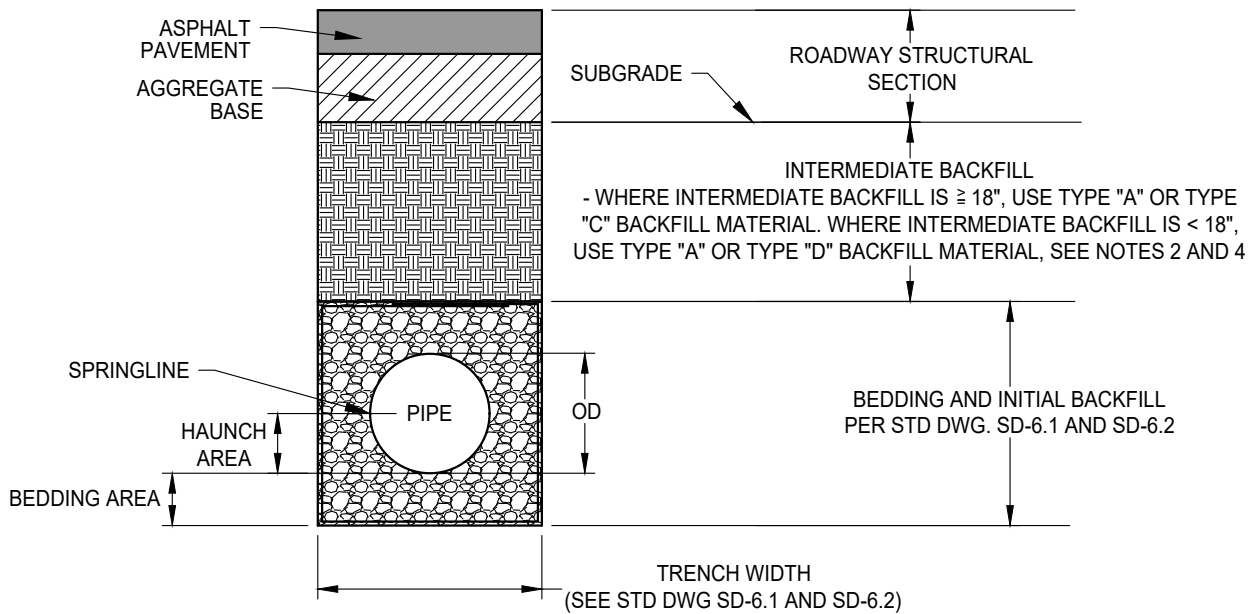
**LOSS IN JUNCTION DUE TO CHANGE  
IN DIRECTION OF FLOW IN LATERAL**

APPROVED BY:  
  
 CITY ENGINEER      10/24/2018  
 DATE

DRAWING NUMBER  
**SD - 5**



**STORM DRAIN  
TRENCH DETAIL**



**BACKFILL MATERIALS**

TYPE "A" BACKFILL MATERIAL: 3/4" CLASS II AB AS PER SECTION 50 OF THE CITY STANDARD CONSTRUCTION SPECIFICATIONS.

TYPE "B" BACKFILL MATERIAL: 3/4" CLEAN CRUSHED ROCK AS PER SECTION 50 OF THE CITY STANDARD CONSTRUCTION SPECIFICATIONS.

TYPE "C" BACKFILL MATERIAL: JOB EXCAVATED NATIVE MATERIAL FREE OF ORGANIC OR UNSUITABLE MATERIALS THAT CAN CAUSE VOIDS OR DEPRESSIONS TO DEVELOP DURING OR AFTER PLACEMENT OF THE BACKFILL. ROCKS, STONES, AND SOLID EARTH CHUNKS EXCEEDING 3-INCHES IN GREATEST DIMENSION ARE NOT ALLOWED.

TYPE "D" BACKFILL MATERIAL: CONTROLLED DENSITY FILL AS PER SECTION 50 OF THE CITY STANDARD CONSTRUCTION SPECIFICATIONS.

TYPE "E" BACKFILL MATERIAL: CLASS "C" CONCRETE AS PER SECTION 50 OF THE CITY STANDARD CONSTRUCTION SPECIFICATIONS.

**NOTES:**

1. GEOTEXTILE SHALL BE INSTALLED AS PER STD DWG SD-6.1, SD-6.2, AND AS PER SECTION 50 OF THE CITY STANDARD CONSTRUCTION SPECIFICATIONS.
2. INTERMEDIATE BACKFILL TO BE PLACED IN 8" MAXIMUM LOOSE LIFTS AS PER SECTION 19 OF THE CITY STANDARD CONSTRUCTION SPECIFICATIONS.
3. CUTOFF COLLARS TO BE INSTALLED EVERY MANHOLE RUN AS PER STD DWG SD-6.3 AND AS PER SECTION 19 OF THE CITY STANDARD CONSTRUCTION SPECIFICATIONS.
4. IF ROADWAY SUBGRADE IS WITHIN 24" OF TOP OF PIPE, RCP PIPE IS REQUIRED & BEDDING AND INITIAL BACKFILL SHALL CONFORM TO SHALLOW PIPE DETAILS AS PER STD DWG SD-6.1.

DATE 02-16-2022		NOT TO SCALE	
REVISION	BY	APPROVED	DATE
01	STN	SA	02-16-2022

**CITY OF ELK GROVE - PUBLIC WORKS**


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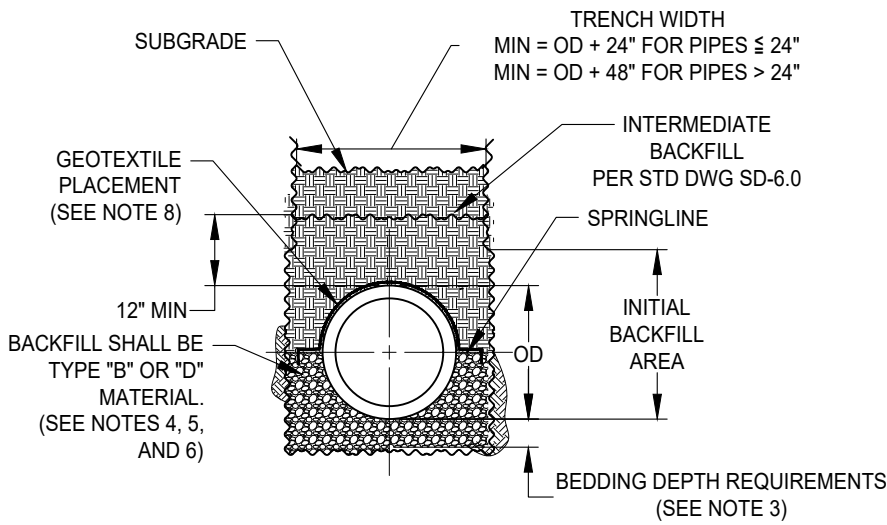
**STORM DRAIN TRENCH DETAIL**

APPROVED BY:  
*Jeffrey B. Wan* 04-29-2024  
CITY ENGINEER DATE

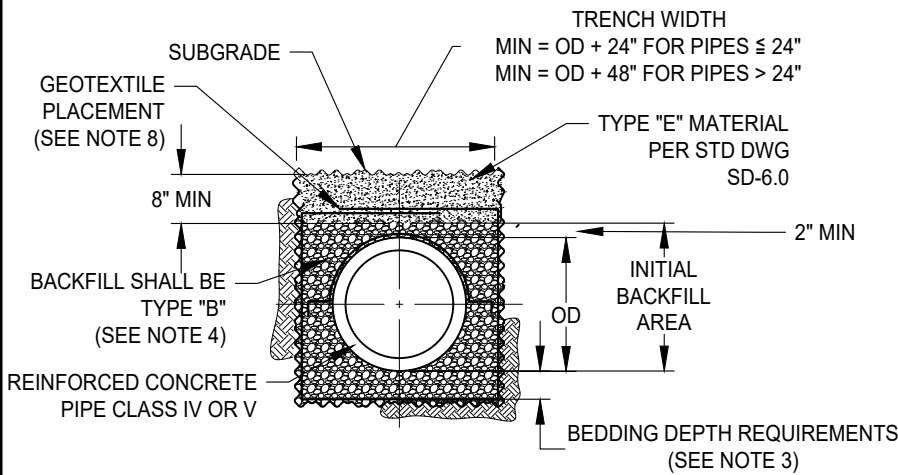
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DRAWING NUMBER  
**SD - 6.0**

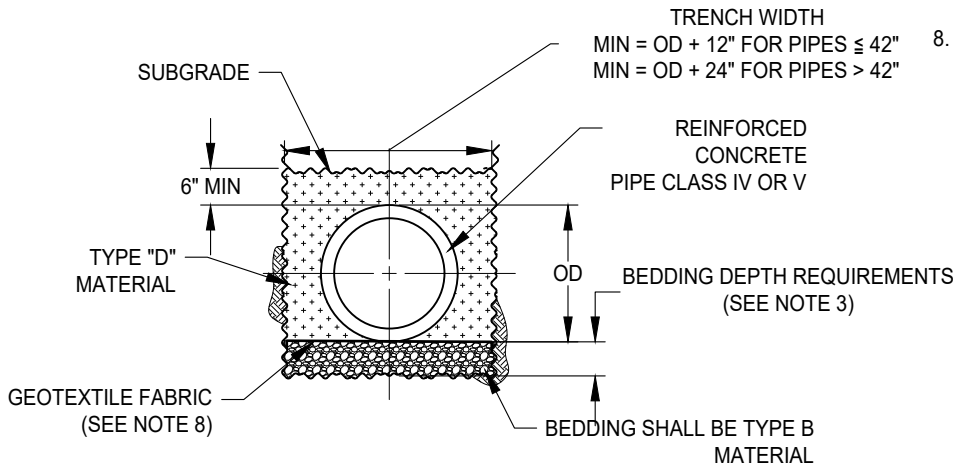




**BACKFILL REQUIREMENTS**



**BACKFILL REQUIREMENTS FOR SHALLOW PIPE -  
OPTION 1**



**BACKFILL REQUIREMENTS FOR SHALLOW PIPE -  
OPTION 2**

**NOTES:**

1. INITIAL BACKFILL MATERIAL SHALL BE THOROUGHLY COMPACTED AROUND PIPE AS PER SECTION 19 OF THE CITY STANDARD CONSTRUCTION SPECIFICATIONS.
2. "TRENCH EXCAVATION, BEDDING AND BACKFILL" AS PER SECTION 19 OF THE CITY STANDARD CONSTRUCTION SPECIFICATIONS.
3. MINIMUM DEPTH OF BEDDING SHALL BE THE GREATER OF:  
 4" MIN FOR PIPES WITH ID ≤ 48"  
 6" MIN FOR PIPES WITH ID > 48"  
 OR  
 THE DIFFERENCE BETWEEN THE OD OF THE PIPE BARREL AND THE BELL PLUS 1.5".

FOR ROCKY OR UNSUITABLE BEDDING CONDITIONS, SEE SECTION 19 OF THE CITY STANDARD CONSTRUCTION SPECIFICATIONS FOR TYP. BEDDING REQUIREMENTS.

4. IF MINIMUM TRENCH WIDTH CANNOT BE ACHIEVED, TYPE "D" MATERIAL SHALL BE USED IN LIEU OF TYPE "B" MATERIAL AT NO EXTRA COST.
5. IF BOTTOM OF ROADWAY STRUCTURAL SECTION (SUBGRADE) IS WITHIN 12" OF TOP OF PIPE, BEDDING AND INITIAL BACKFILL SHALL BE PER ONE OF THE TWO SHALLOW PIPE DETAILS ON THIS SHEET.
6. FOR ADDITIONAL INITIAL BACKFILL MATERIAL OPTIONS FOR 48" AND LARGER RCP, SEE SECTION 19 OF THE CITY STANDARD CONSTRUCTION SPECIFICATIONS.
7. SEE STD DWG SD-6.0 AND SECTION 19 OF THE CITY STANDARD CONSTRUCTION SPECIFICATIONS FOR BACKFILL MATERIAL DEFINITIONS AND ADDITIONAL REQUIREMENTS.
8. GEOTEXTILE FABRIC SHALL BE INSTALLED AS FOLLOWS FOR RCP & PLASTIC PIPE:

- PER SECTION 19 OF CITY STANDARD CONSTRUCTION SPECIFICATIONS.
- FOR DRY TRENCH CONDITIONS - PLACE ON TOP OF THE TYPE B MATERIAL. EXTENDING A 2" EDGE FACING DOWN ON THE TRENCH SIDES.
- FOR SATURATED TRENCH CONDITIONS - WRAP TYPE B MATERIALS WITH GEOTEXTILE FABRIC. OVERLAP THE FABRIC EDGES AT LEAST TWO FEET (2') ON TOP.


DATE 02-16-2022		NOT TO SCALE	
REVISION	BY	APPROVED	DATE
1	STN	SA	02-16-2022
2	SJB	SMA	03-12-2025

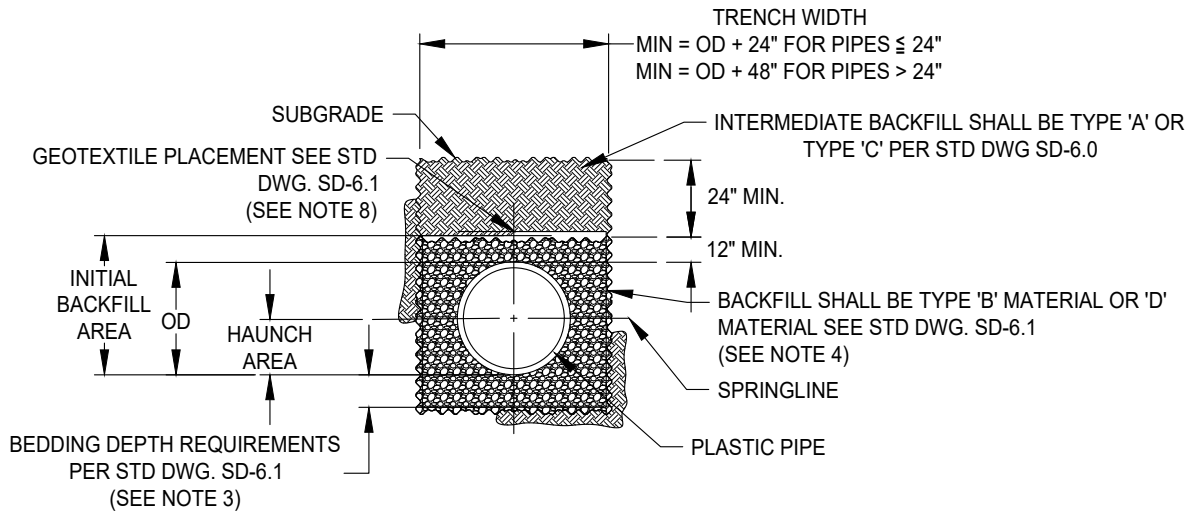
CITY OF ELK GROVE - PUBLIC WORKS

**STORM DRAIN REINFORCED  
CONCRETE PIPE BEDDING AND  
INITIAL BACKFILL**

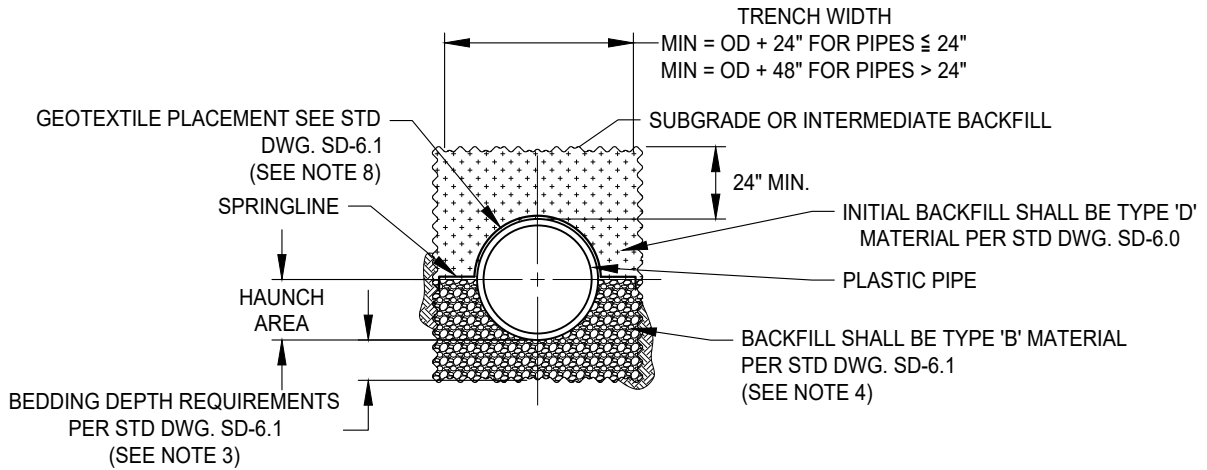
APPROVED BY: \_\_\_\_\_  
03-24-2025  
 CITY ENGINEER DATE

DRAWING NUMBER  
**SD - 6.1**

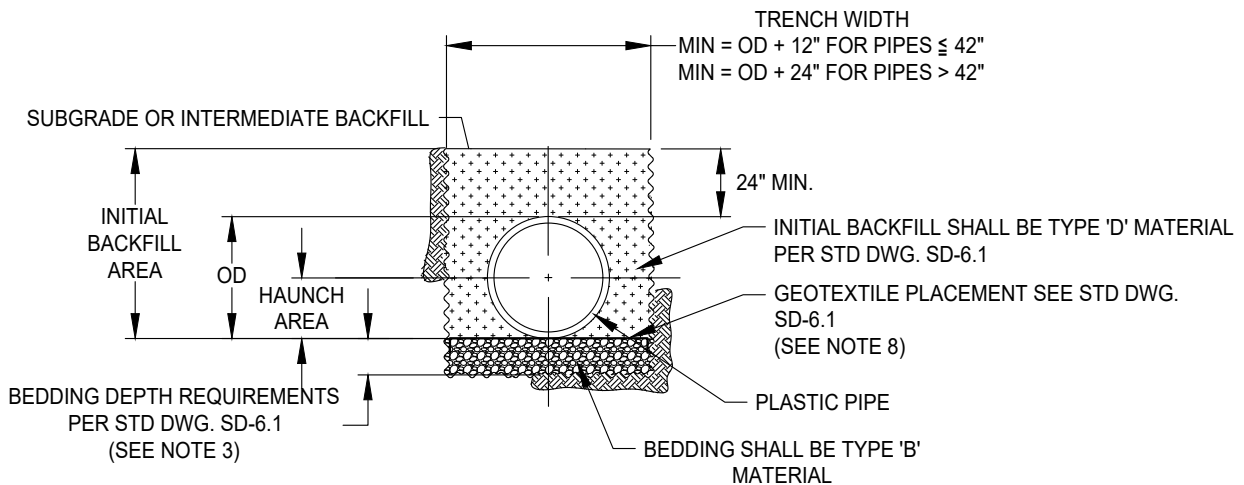




**BACKFILL REQUIREMENTS FOR PLASTIC PIPE 12" TO 42" DIAMETER ONLY**



**INITIAL BACKFILL REQUIREMENTS FOR PLASTIC PIPE (12" TO 60" DIAMETER) - OPTION 1**




**INITIAL BACKFILL REQUIREMENTS FOR PLASTIC PIPE (12" TO 60" DIAMETER) - OPTION 2**

DATE 02-16-2022		NOT TO SCALE	
REVISION	BY	APPROVED	DATE
1	STN	SA	02-16-2022
2	SJB	SMA	03-12-2025


CITY OF ELK GROVE - PUBLIC WORKS

**STORM DRAIN PLASTIC PIPE  
BEDDING AND INITIAL BACKFILL**

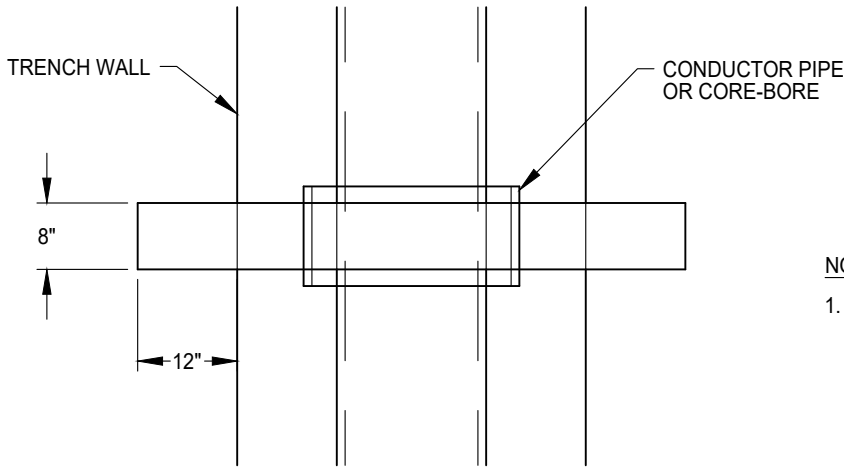
APPROVED BY:  03-24-2025

CITY ENGINEER DATE

DRAWING NUMBER  
**SD - 6.2**

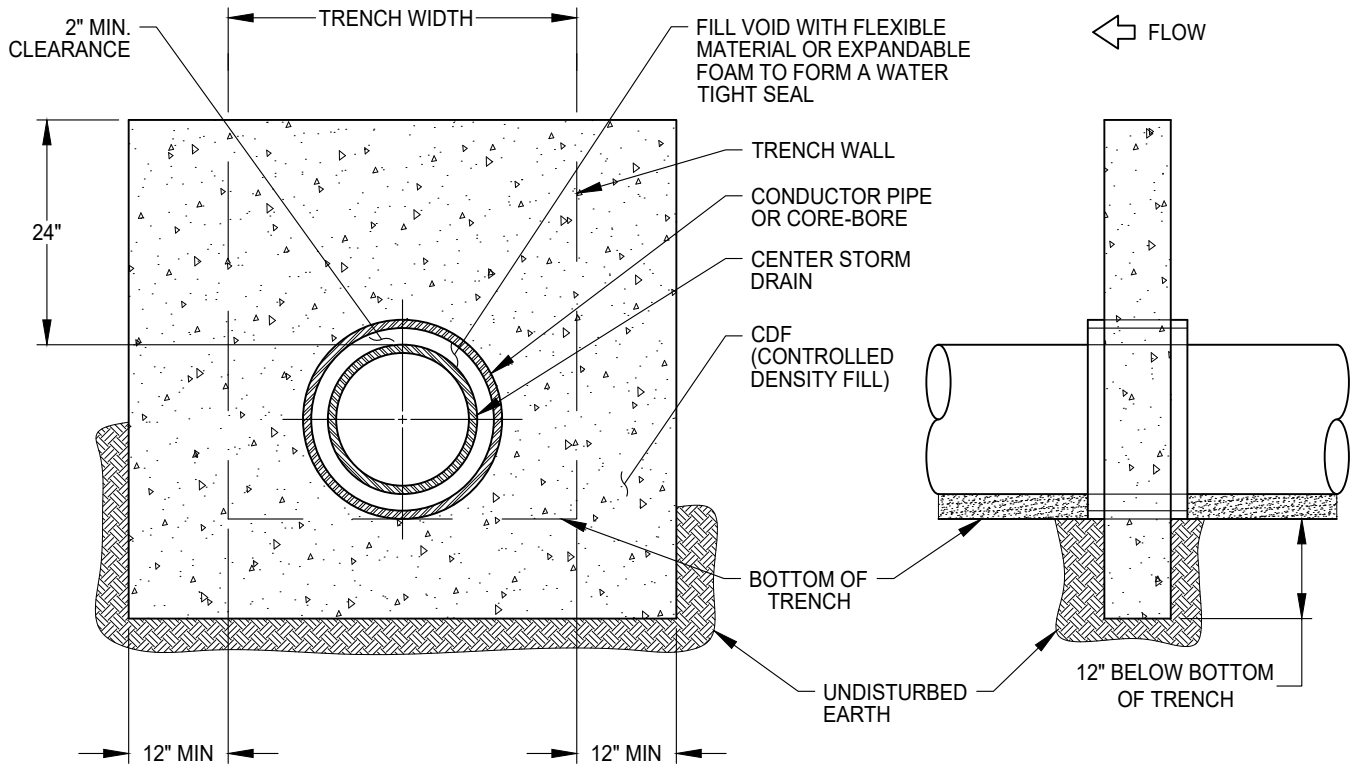


FLOW  
↓



**NOTES:**

1. TOP OF COLLAR TO EXTEND INTO INTERMEDIATE BACKFILL 12" MINIMUM OR TOP OF GROUND WATER HGL.



DATE 02-16-2022		NOT TO SCALE	
REVISION	BY	APPROVED	DATE
01	STN	SA	02-16-2022

CITY OF ELK GROVE - PUBLIC WORKS

APPROVED BY:  
*Jeffrey B. Wan* 04-29-2024  
CITY ENGINEER DATE

**CUTOFF COLLAR**



DRAWING NUMBER

**SD - 6.3**

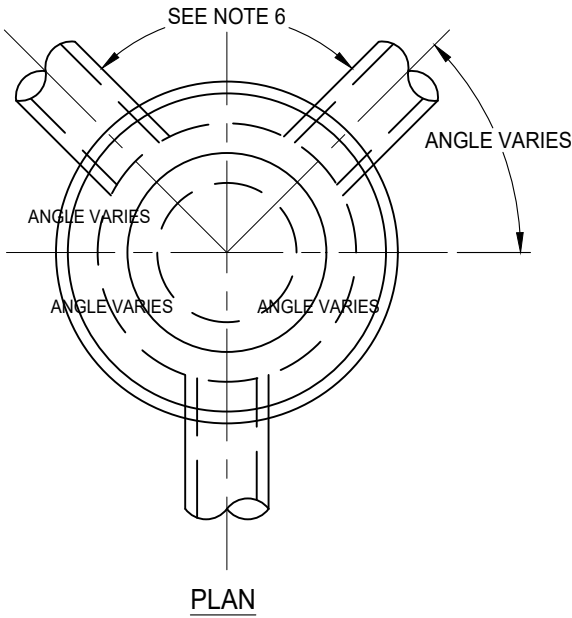
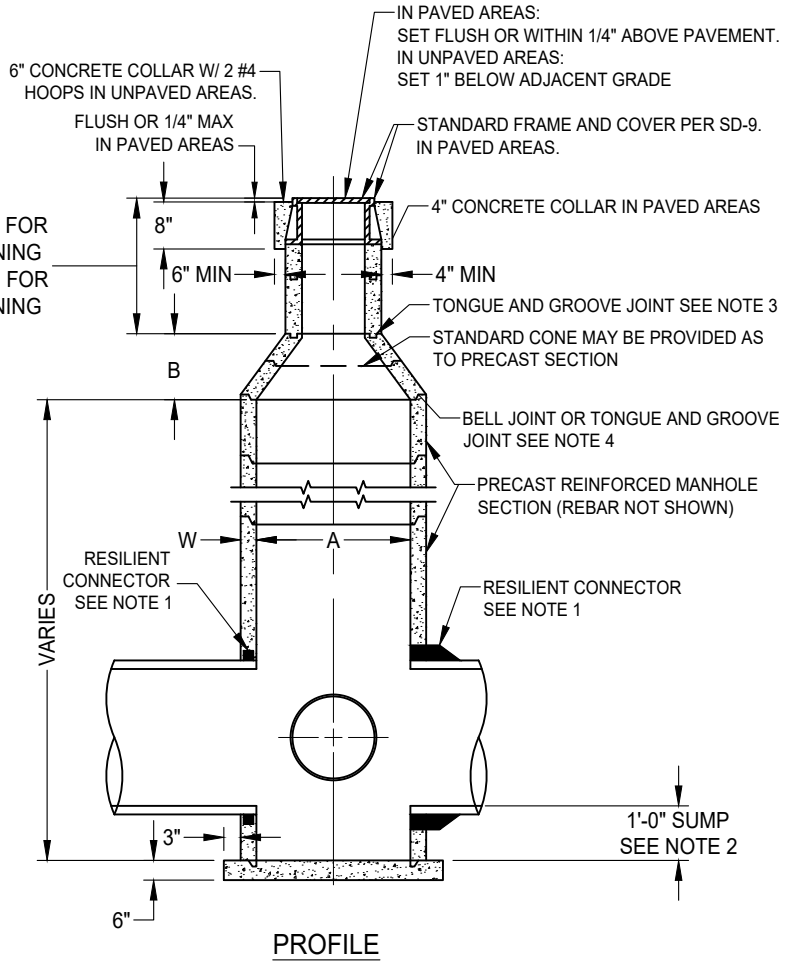


TABLE OF MINIMUM DIMENSIONS

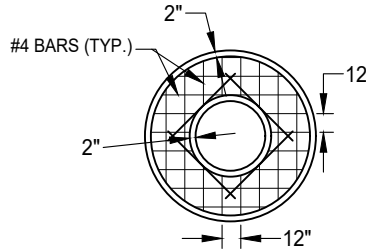
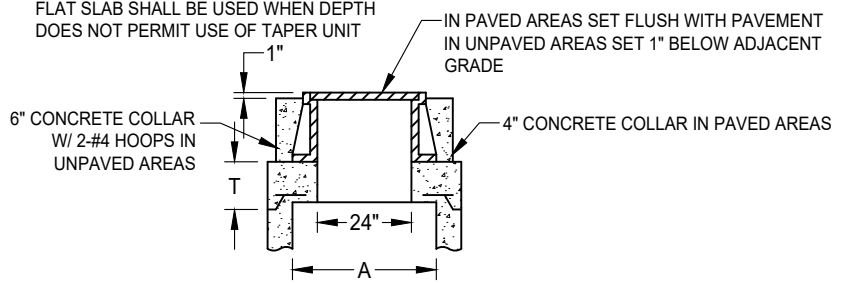
M.H.	A	B	T*	W
48"	48"	18"	8"	4'
60"	60"	28"	9"	6'
72"	72"	SEE NOTE 8	10"	7'



NOTES:

- ON ALL PIPES UP TO 30" I.D. USE FLEXIBLE COMPRESSION GASKET OR BOOT CONNECTOR CONFORMING TO ASTM C-923. CONNECTION SHALL BE WATER AND SOIL TIGHT. FOR PIPES GREATER THAN 30" I.D., BASE MAY BE CAST-IN-PLACE (SEE SD 7.1) AND A WATER STOP CONFORMING TO ASTM C-923 SHALL BE USED.
- SUMP SHALL BE 1'-0" DEEP, MEASURED FROM INVERT OF OUTFALL PIPE. SUMP NOT REQUIRED IF OUTFALL PIPE IS 24" I.D. OR LARGER.
- RISER SECTIONS, CONES, AND ADJUSTING RINGS SHALL CONFORM TO ASTM C-478.
- ALL JOINTS SHALL BE MADE WITH PREFORMED PLASTIC JOINT SEALING COMPOUND. FOLLOWING INSTALLATION GROUT ALL INTERIOR AND EXTERIOR JOINTS.
- CONCENTRIC COMPONENTS SHALL BE USED UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- PRECAST MANHOLES SHALL BE SIZED TO PROVIDE THE FOLLOWING: THE ANNULAR SPACE ON THE INSIDE OF THE MANHOLE BARREL BETWEEN CORED PIPE CONNECTION HOLES SHALL BE A MINIMUM OF 10 INCHES, IF THE CONNECTION HOLE IS CAST MONOLITHICALLY WITH THE MANHOLE BARREL THE MEASUREMENT SHALL BE TAKEN FORM THE FINISHED CONCRETE CONNECTION.
- SEE SECTION 39, CONSTRUCTION SPECIFICATIONS, "MANHOLES"
- CONE FOR MANHOLES GREATER THAN 60" DIAMETER SHALL BE INDIVIDUALLY DESIGNED.

FLAT SLAB SHALL BE USED WHEN DEPTH DOES NOT PERMIT USE OF TAPER UNIT

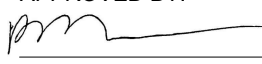


FLAT SLAB TOP


DATE: 09/22/2017		NOT TO SCALE	
REVISION	BY	APPROVED	DATE
1	SJB	SMA	04-12-2024
2	SJB	SMA	02-27-2025

CITY OF ELK GROVE - PUBLIC WORKS

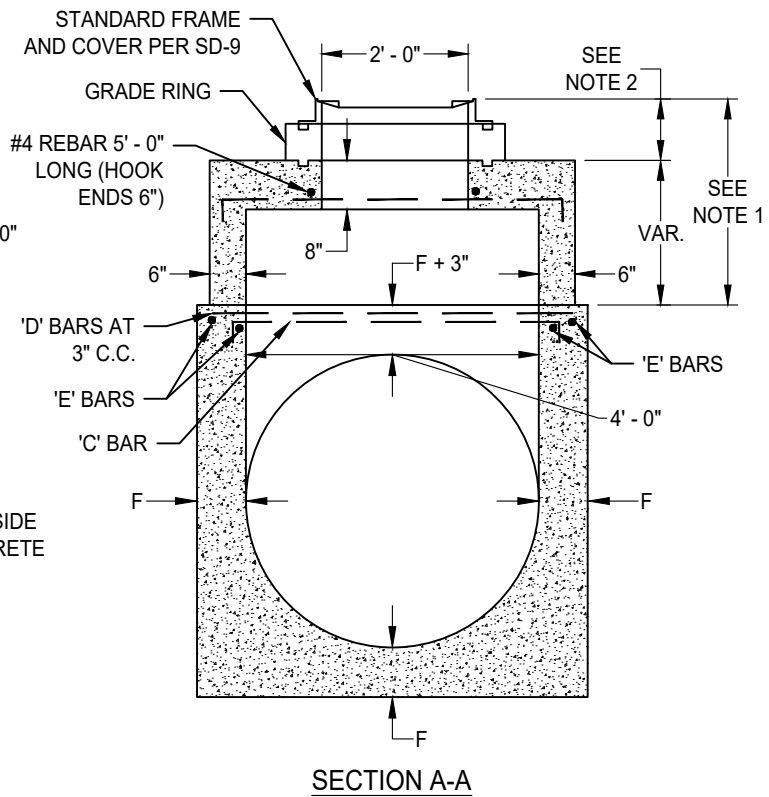
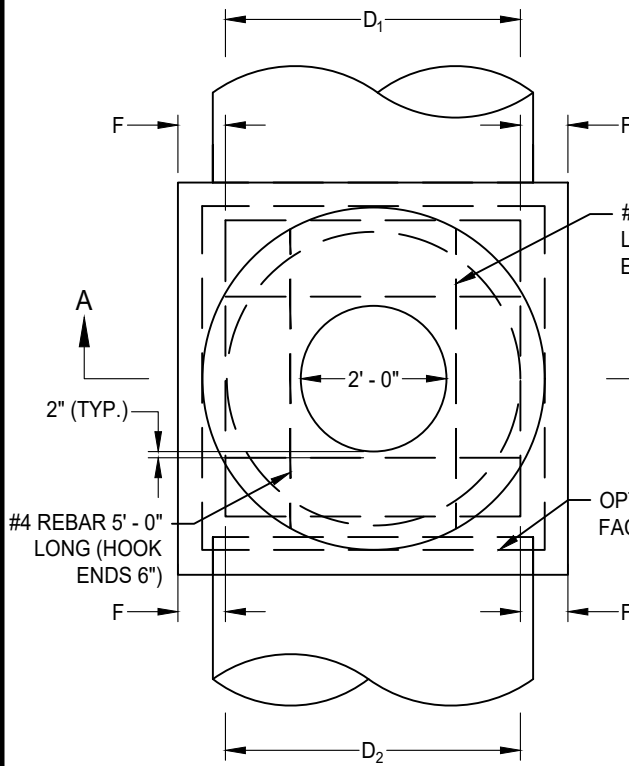
**STANDARD PRECAST CONCRETE DRAINAGE MANHOLE**

APPROVED BY:  03-12-2025  
 CITY ENGINEER DATE

DRAWING NUMBER  
**SD - 7.0**







PLAN

SECTION A-A

REINFORCING STEEL FOR M.H. BOX

D <sub>2</sub>	'C' BAR $45^{\circ}/45^{\circ}$ HOOK ENDS 6"			'D' BAR			'E' BAR		
	DIA.	NO.REQ'D	SIZE	LENGTH	NO.REQ'D	SIZE	LENGTH	NO.REQ'D	SIZE
36"	2	# 4	6'-4"	4	# 4	4'-6"	2	# 4	5'-2"
39"	2	# 4	6'-4"	4	# 4	4'-7"	2	# 4	5'-2"
42"	2	# 4	6'-4"	4	# 5	4'-7 $\frac{1}{2}$ "	2	# 4	5'-2"
45"	2	# 4	6'-4"	4	# 5	4'-8 $\frac{1}{2}$ "	2	# 4	5'-2"
48"	2	# 4	6'-4"	4	# 5	5'-0"	4	# 4	5'-2"
51"	2	# 4	6'-4"	4	# 5	5'-4"	4	# 4	5'-2"
54"	2	# 4	6'-4"	4	# 5	5'-8"	4	# 4	5'-2"
57"	2	# 4	6'-4"	4	# 5	5'-11 $\frac{1}{2}$ "	4	# 4	5'-2"
60"	2	# 4	6'-4"	4	# 5	6'-3"	4	# 4	5'-2"
63"	2	# 4	6'-4"	4	# 5	6'-7"	4	# 4	5'-2"
66"	2	# 4	6'-4"	4	# 5	6'-10 $\frac{1}{2}$ "	4	# 4	5'-2"
69"	2	# 4	6'-4"	4	# 5	7'-2 $\frac{1}{2}$ "	4	# 4	5'-2"
72"	2	# 4	6'-4"	4	# 5	7'-6"	4	# 4	5'-2"
78"	2	# 4	6'-4"	4	# 5	8'-1 $\frac{1}{2}$ "	4	# 4	5'-2"
84"	2	# 4	6'-4"	4	# 5	8'-9"	4	# 4	5'-2"
90"	2	# 4	6'-4"	4	# 6	9'-4 $\frac{1}{2}$ "	4	# 4	5'-2"
96"	2	# 4	6'-4"	4	# 6	10'-0"	4	# 4	5'-2"

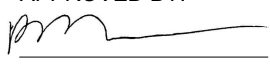
NOTES:

1. WHEN DEPTH OF MANHOLE FROM STREET G RADE TO TOP OF BOX IS LESS THAN 2' - 10.5", CONSTRUCT MONOLITHIC SHAFT AS SHOWN. THE CONTRACTOR SHALL HAVE THE OPTION OF CONSTRUCTING SHAFT AS SHOWN FOR ANY DEPTH OF MANHOLE.
2. PER SECTION A - A , MAXIMUM HEIGHT SHALL BE 10.5" AND MINIMUM HEIGHT 7.5".

DATE 03/12/2025		NOT TO SCALE	
REVISION	BY	APPROVED	DATE


CITY OF ELK GROVE - PUBLIC WORKS

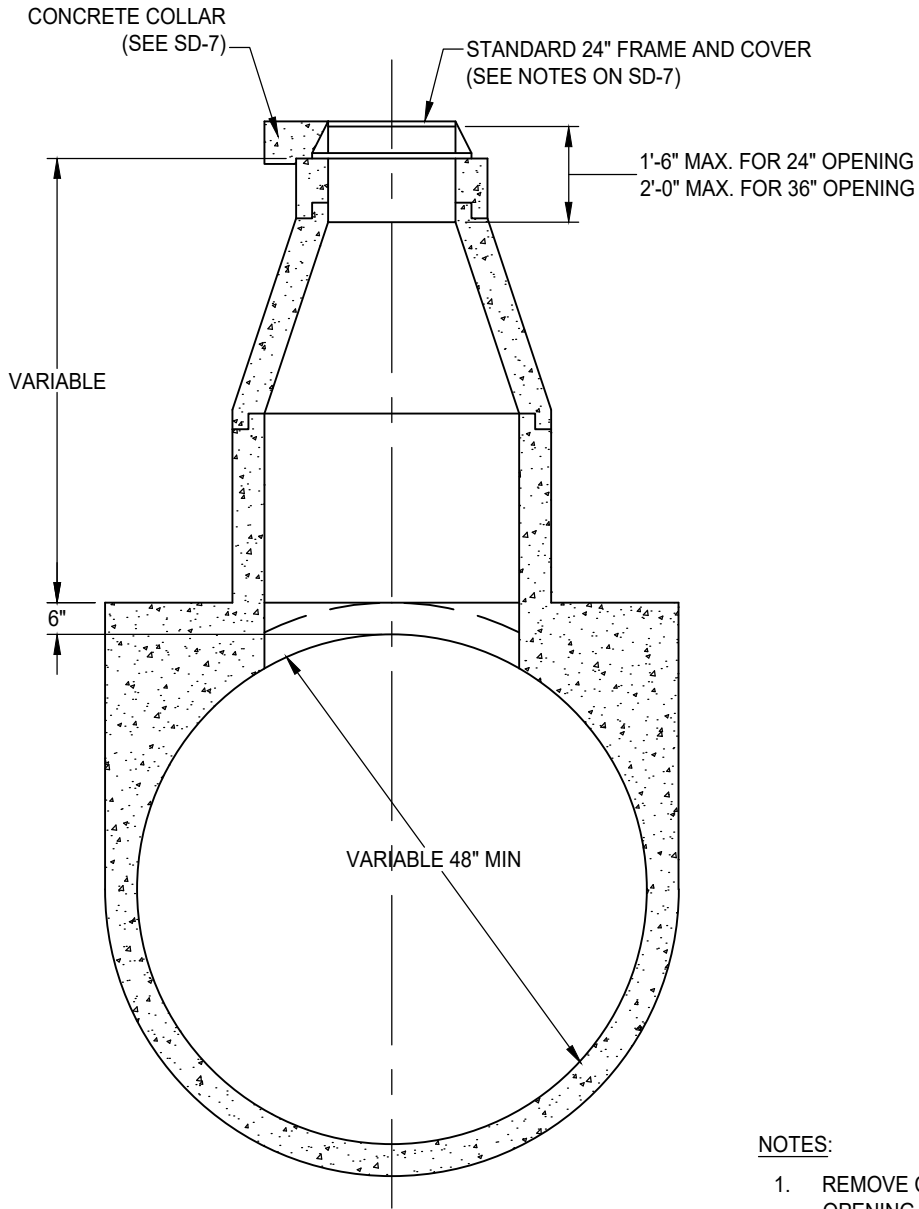
**CAST-IN-PLACE CONCRETE DRAINAGE MANHOLE**

APPROVED BY:  03-12-2025  
DATE

CITY ENGINEER

DRAWING NUMBER  
**SD - 7.2**





**TYPE A**  
CAST-IN-PLACE PIPE ONLY

**NOTES:**

1. REMOVE CONCRETE IN MANHOLE OPENING AND CONSTRUCT RISER BASE WHILE CONCRETE IS STILL WORKABLE.
2. PLACE RISER SECTION AFTER CONCRETE HAS SET.
3. SEE SECTION 39, "MANHOLES," AND SECTION 36, CAST-IN-PLACE CONCRETE PIPE.

DATE: 09/22/2017		NOT TO SCALE	
REVISION	BY	APPROVED	DATE

CITY OF ELK GROVE - PUBLIC WORKS

APPROVED BY:  
*Paul Murock*  
 10/24/2018  
 CITY ENGINEER DATE

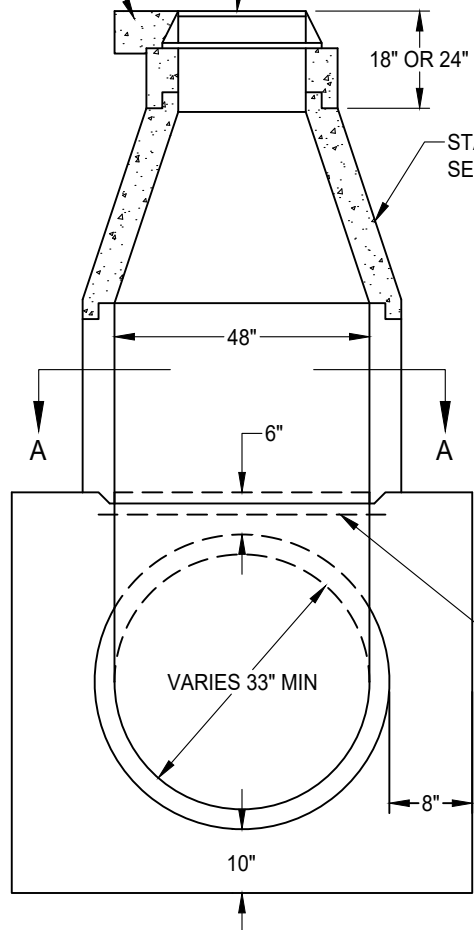
**TYPE A**  
**SADDLE MANHOLE**



DRAWING NUMBER  
**SD - 8A**

CONCRETE COLLAR  
(SEE STD DWG SD-7)

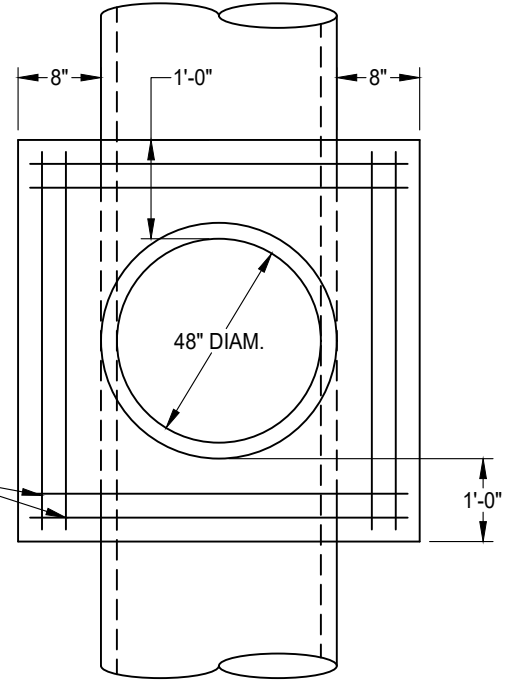
STANDARD 24" FRAME AND COVER  
(SEE NOTES ON STD DWG SD-7)



STANDARD MANHOLE SECTION

VARIES 33" MIN

2 #5 BARS EACH WAY



TYPE B

SECTION A-A

NOTES:

1. CONCRETE SHALL BE CLASS "A" IN CONFORMANCE WITH ARTICLE 50-5 "PORTLAND CEMENT CONCRETE."
2. SEE SECTION 39, "MANHOLES."


DATE: 09/22/2017		NOT TO SCALE	
REVISION	BY	APPROVED	DATE
1	SJB	SMA	04-12-2024

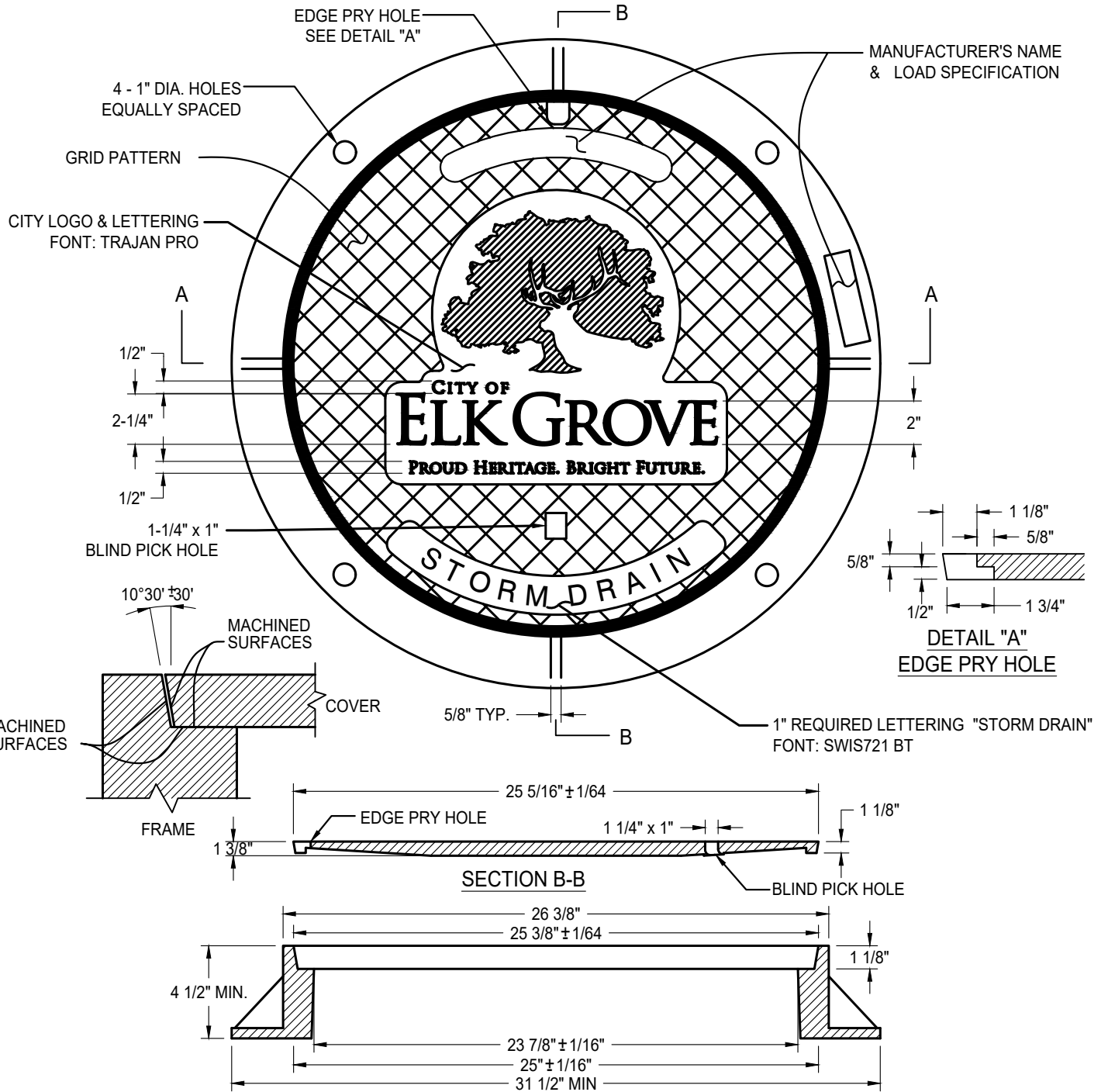
CITY OF ELK GROVE - PUBLIC WORKS

**TYPE B  
SADDLE MANHOLE**

APPROVED BY:  
*[Signature]* 05-28-2024  
CITY ENGINEER DATE

DRAWING NUMBER  
**SD - 8B**





**NOTES:**

1. ALL CASTINGS TO CONFORM TO ASTM A48, CLASS 35B. CONTACT CITY OF ELK GROVE FOR IMAGE FILE.
2. FRAME AND COVER TO MEET AASHTO M-306-10 LOAD SPECIFICATIONS & MANUFACTURER'S PERFORMANCE REQUIREMENTS FOR POSITION & FIT.
3. FRAME AND COVER SHALL HAVE A COATING OF BLACK BITUMINOUS MATERIAL.
4. A TAMPER RESISTANT BOLTED TYPE FRAME & COVER SHALL BE USED IN EASEMENT AREAS UNLESS OTHERWISE APPROVED.

APPROX. SET WEIGHT	
FRAME	163 LBS
COVER	135 LBS
<b>TOTAL</b>	<b>298 LBS</b>


DATE 12/26/2018		NOT TO SCALE	
REVISION	BY	APPROVED	DATE
01	STN	JRW	02/16/2021

CITY OF ELK GROVE - PUBLIC WORKS

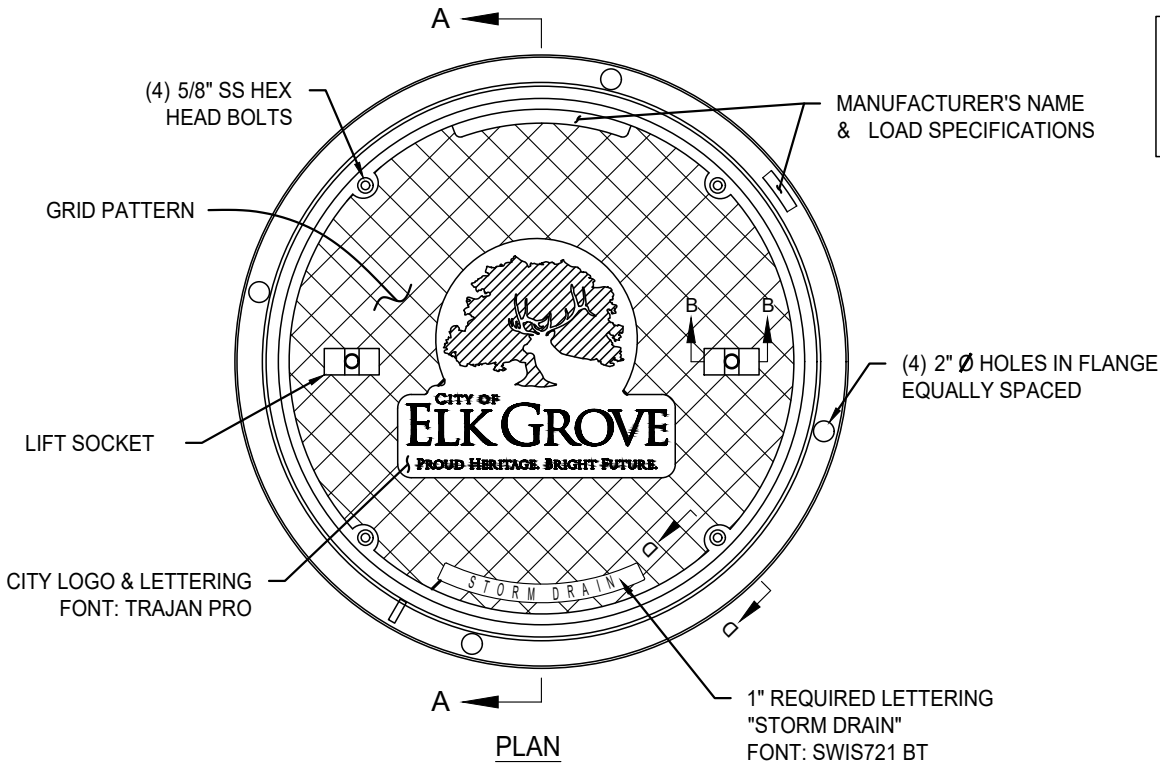
**GREY CAST IRON  
STANDARD 24" MANHOLE  
FRAME & COVER WITH CITY LOGO**

APPROVED BY:  
*Paul Muddock* 02/26/2021  
CITY ENGINEER DATE

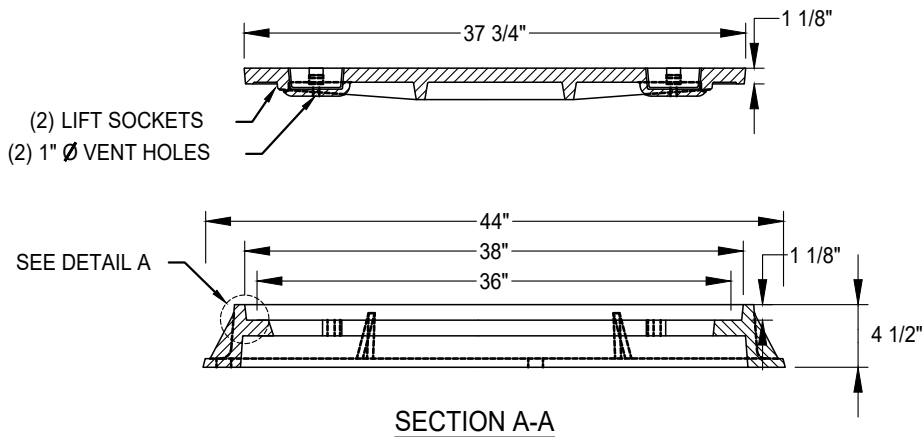
DRAWING NUMBER  
**SD - 9**



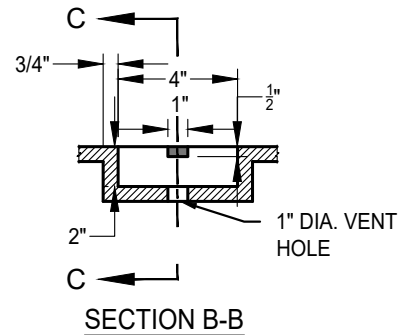
SET WEIGHT	
FRAME	334 LBS
COVER	197 LBS
TOTAL	531 LBS



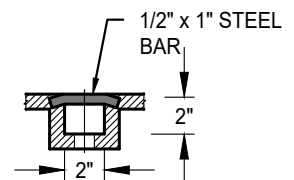
PLAN



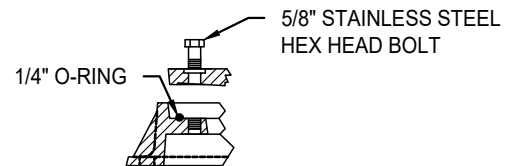
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

NOTES:

1. ALL CASTINGS TO CONFORM TO ASTM A48, CLASS 35B.
2. FRAME AND COVER TO MEET H-20 LOAD SPECIFICATIONS.
3. MACHINED HORIZONTAL AND VERTICAL BEARING SURFACES NOT TO EXCEED 1/64" TOLERANCE.
4. FRAME AND COVER SHALL HAVE A COATING OF BLACK BITUMINOUS PAINT.
5. LOCKING COVER TYPE FRAME AND COVERS SHALL BE USED WHEN SPECIFIED IN CONTRACT DOCUMENTS.
6. H20 RATED SLOTTED GRATE OR GRATE TYPE MANHOLE COVER MAY BE SUBSTITUTE FOR COVER WHEN SPECIFIED IN CONTRACT DOCUMENTS OR UPON APPROVAL OF DIRECTOR.
7. COVER SHALL BE "STORM DRAIN" STAMPED.

DATE XXXX		NOT TO SCALE	
REVISION	BY	APPROVED	DATE
01	STN	SA	3/27/24

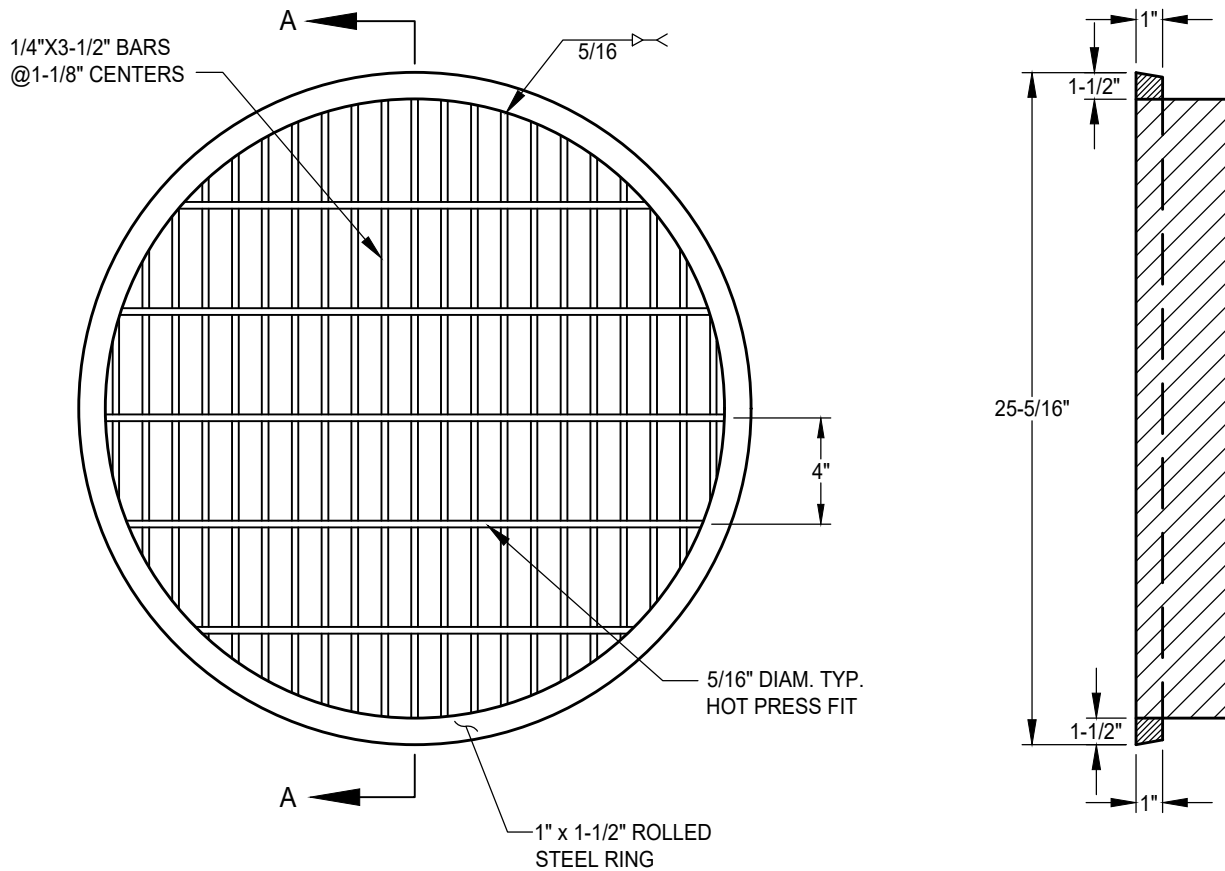
CITY OF ELK GROVE - PUBLIC WORKS

**GREY CAST IRON  
STANDARD 36" MANHOLE  
FRAME & COVER**

APPROVED BY:  
*Jeffrey B. Wan* 04-19-2024  
CITY ENGINEER DATE



DRAWING NUMBER  
**SD - 10**



**SECTION A-A**

**NOTES:**

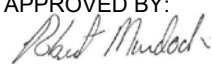
1. MANHOLE COVER SHALL FIT FRAME SHOWN ON STANDARD DRAWING SD-9.
2. SEATING SURFACES SHALL BE MACHINED AS SHOWN IN DETAIL ON STANDARD DRAWING SD-9.
3. THIS COVER MAY BE USED ONLY WITH APPROVAL OF THE CITY ENGINEER.
4. GALVANIZE AFTER FABRICATION.

DATE: 09/22/2017		NOT TO SCALE	
REVISION	BY	APPROVED	DATE


CITY OF ELK GROVE - PUBLIC WORKS

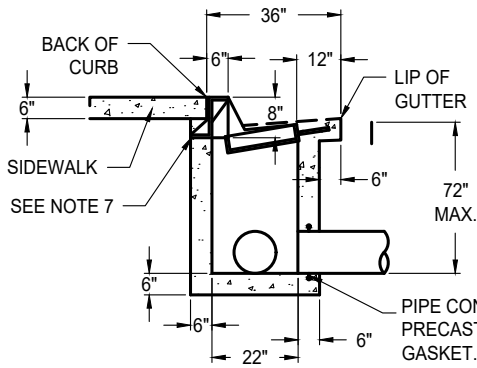
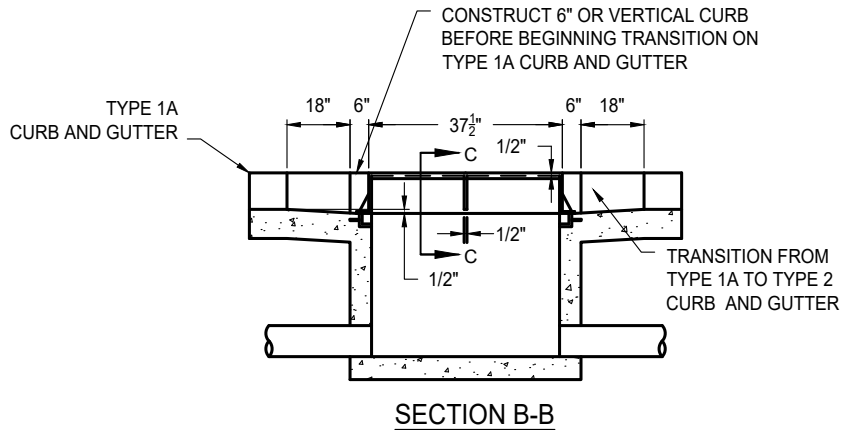
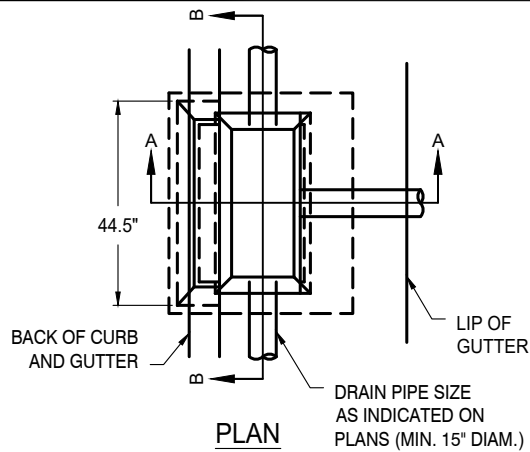
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**GRATE TYPE MANHOLE COVER**

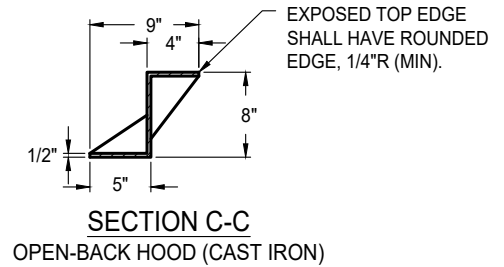
APPROVED BY:  
  
 10/24/2018  
 CITY ENGINEER DATE

DRAWING NUMBER  
**SD - 11**



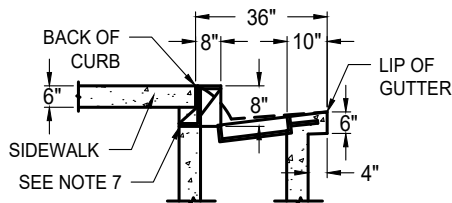


**SECTION A-A**  
TYPE 2 - VERTICAL CURB AND GUTTER

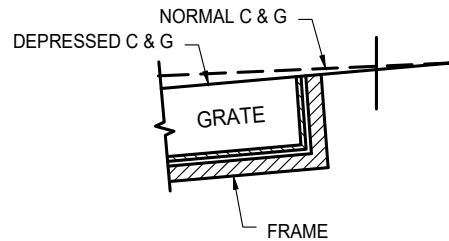


**SECTION C-C**  
OPEN-BACK HOOD (CAST IRON)

PIPE CONNECTIONS SHALL CONFORM TO ASTM C-923. PRECAST UNITS SHALL BE BOOT TYPE OR COMPRESSION GASKET. CAST-IN-PLACE UNITS SHALL INCLUDE A WATER STOP.



**SECTION A-A**  
TYPE 1A - ROLLED CURB AND GUTTER



**CURB AND GUTTER WITH FRAME**

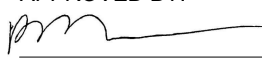
**NOTES:**

1. STANDARD DEPRESSION FOR INLET IS 1-1/2" AND LIP OF GUTTER MUST BE SET BACK 3" FROM GUTTER FLOW LINE.
2. FRAME AND GRATE SHALL CONFORM TO STANDARD DRAWINGS SD-14 AND SD-15.
3. OPEN-BACK CAST IRON HOOD SHALL BE H-20 RATED, 1/2" THICK, AND REQUIRES NO GALVANIZING.
4. EXPOSED EDGES SHALL HAVE A 1/8" R (MINIMUM).
5. AN EDGING TOOL SHALL BE USED ON ALL EDGES WHERE THE CONCRETE SIDEWALK AND CURB MEET THE TOP OF THE HOOD.
6. EXPOSED SURFACES OF THE GRATES, FRAMES AND HOODS WITH THE PARTS ASSEMBLED AND DISASSEMBLED SHALL BE PAINTED WITH COMMERCIAL QUALITY ASPHALTUM PAINT AFTER TESTING AND ASSEMBLY.
7. SEE SD-12.1 FOR INSTALLATION OF INLETS AT DETACHED SIDEWALKS.
8. WHEN MORE THAN ONE GRATE IS PROPOSED, STD DWG SD-16 FOR SUPPORT ASSEMBLY.

DATE: 09/22/2017		NOT TO SCALE	
REVISION	BY	APPROVED	DATE
01	SJB	SMA	04/4/2025

CITY OF ELK GROVE - PUBLIC WORKS

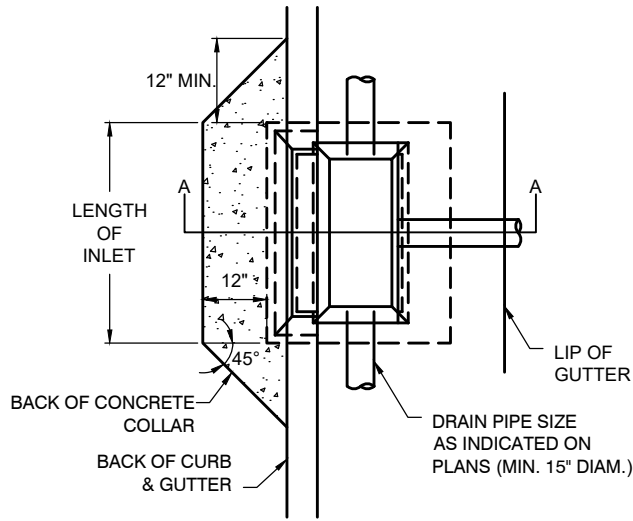
**DROP INLET  
TYPE B**

APPROVED BY:  
  
CITY ENGINEER  
5-27-2025  
DATE

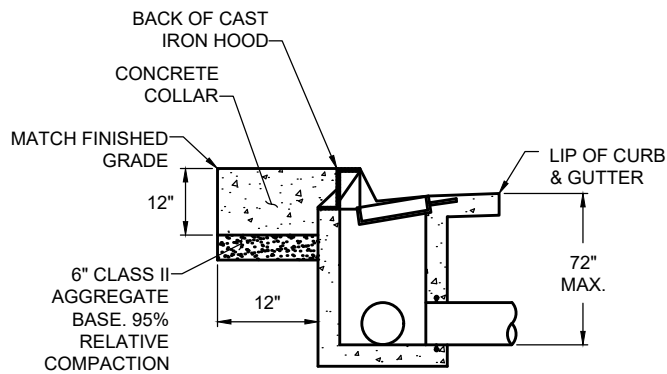


DRAWING NUMBER

**SD - 12**



PLAN



SECTION A-A

**NOTES:**

1. TO BE USED ON TYPE 1A AND TYPE 2 CURB AND GUTTER WHERE INLETS ARE AT DETACHED SIDEWALKS.

DATE: 09/22/2017		NOT TO SCALE	
REVISION	BY	APPROVED	DATE

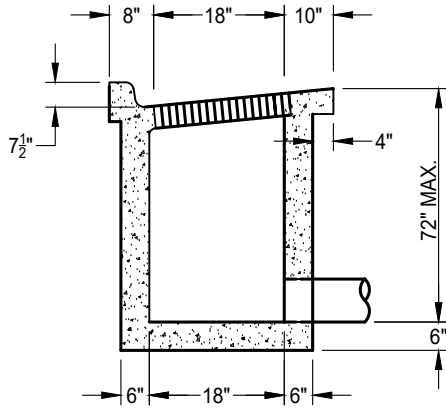
CITY OF ELK GROVE - PUBLIC WORKS

**DROP INLET  
TYPE B  
AT DETACHED SIDEWALK**

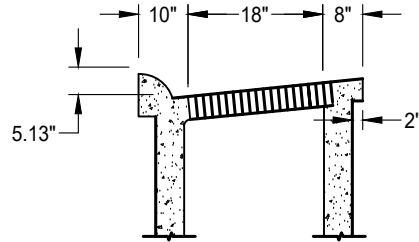
APPROVED BY:  
*Paul Murbach*  
CITY ENGINEER      10/24/2018  
DATE



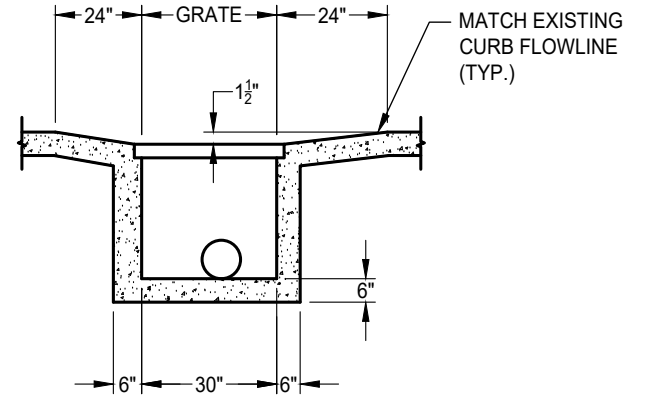
DRAWING NUMBER  
**SD - 12.1**



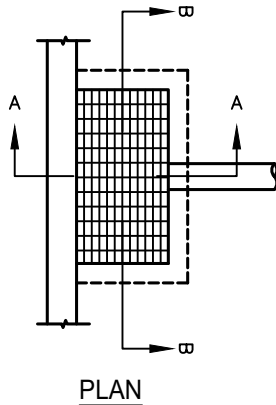
**SECTION A-A**  
TYPE 2 - VERTICAL CURB AND GUTTER



**SECTION A-A**  
TYPE 1A - ROLLED CURB AND GUTTER



**SECTION B-B**  
STANDARD DEPRESSION



**PLAN**

**NOTES:**

1. STANDARD DEPRESSION FOR INLET IS 1-1/2".
2. FRAME AND GRATE SHALL CONFORM TO STANDARD DRAWINGS SD-14 AND SD-15.
3. ALL EXPOSED EDGES SHALL HAVE A 1/8" R (MINIMUM).
4. AN EDGING TOOL SHALL BE USED ON ALL EDGES WHERE THE CONCRETE SIDEWALK AND CURB MEET THE TOP OF THE HOOD.
5. EXPOSED SURFACES OF THE GRATES, FRAMES, AND HOODS WITH THE PARTS ASSEMBLED AND DISASSEMBLED SHALL BE PAINTED WITH COMMERCIAL QUALITY ASPHALTUM PAINT AFTER TESTING AND ASSEMBLY.

DATE 09/22/2007		NOT TO SCALE	
REVISION	BY	APPROVED	DATE
01	BT	JRW	02/16/2021
02	SJB	SMA	04/04/2025

CITY OF ELK GROVE - PUBLIC WORKS

**DROP INLET  
TYPE C**

APPROVED BY:

*[Signature]* 5-27-2025

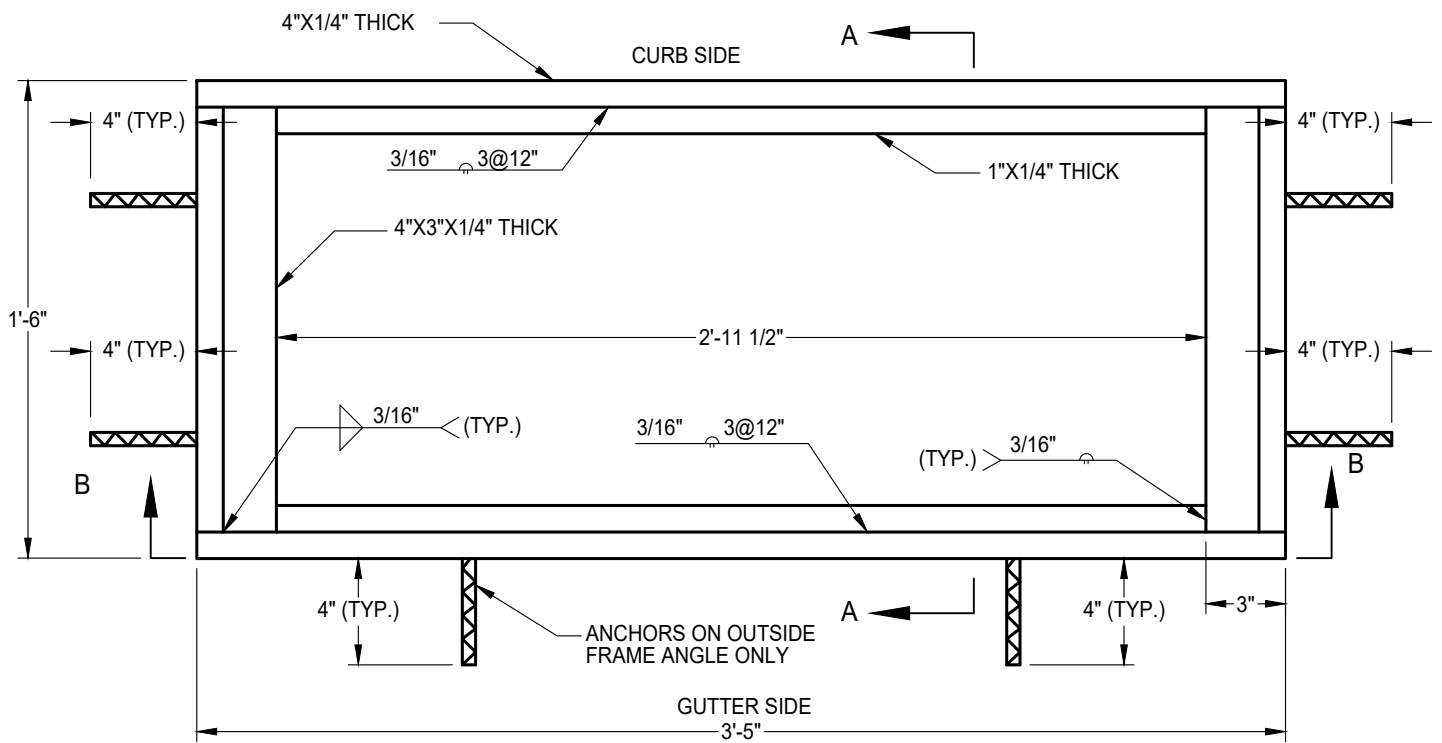
CITY ENGINEER

DATE

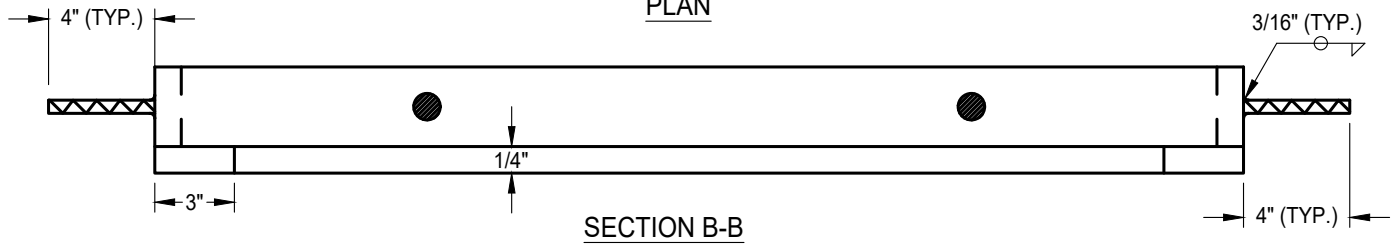


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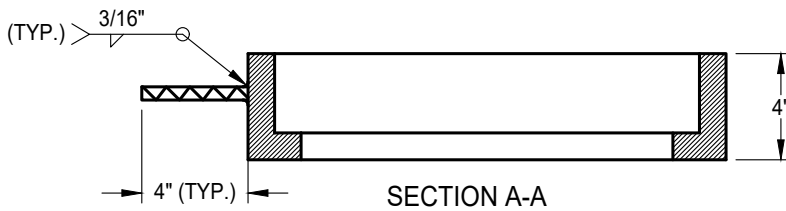
**SD - 13**



PLAN



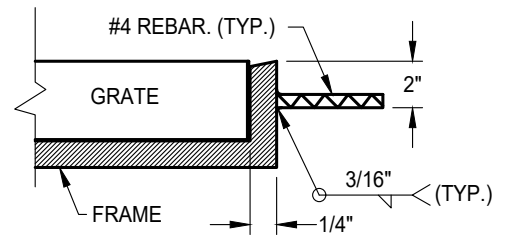
SECTION B-B



SECTION A-A

NOTES:

1. OMIT 1/2" FRAME ANCHORS OVER CENTER SUPPORT ASSEMBLY WHEN MULTIPLE FRAMES ARE USED.
2. MATERIAL: ASTM A36 MILD STEEL
3. SEE ARTICLE 50-31, "SEWER AND STORM DRAIN CASTINGS," OF SECTION 50.
4. ALL EXPOSED PARTS TO BE HOT DIP GALVANIZED PER ASTM A123, AFTER FABRICATION.



FRAME ANCHOR DETAIL

DATE: 09/22/2017		NOT TO SCALE	
REVISION	BY	APPROVED	DATE

CITY OF ELK GROVE - PUBLIC WORKS

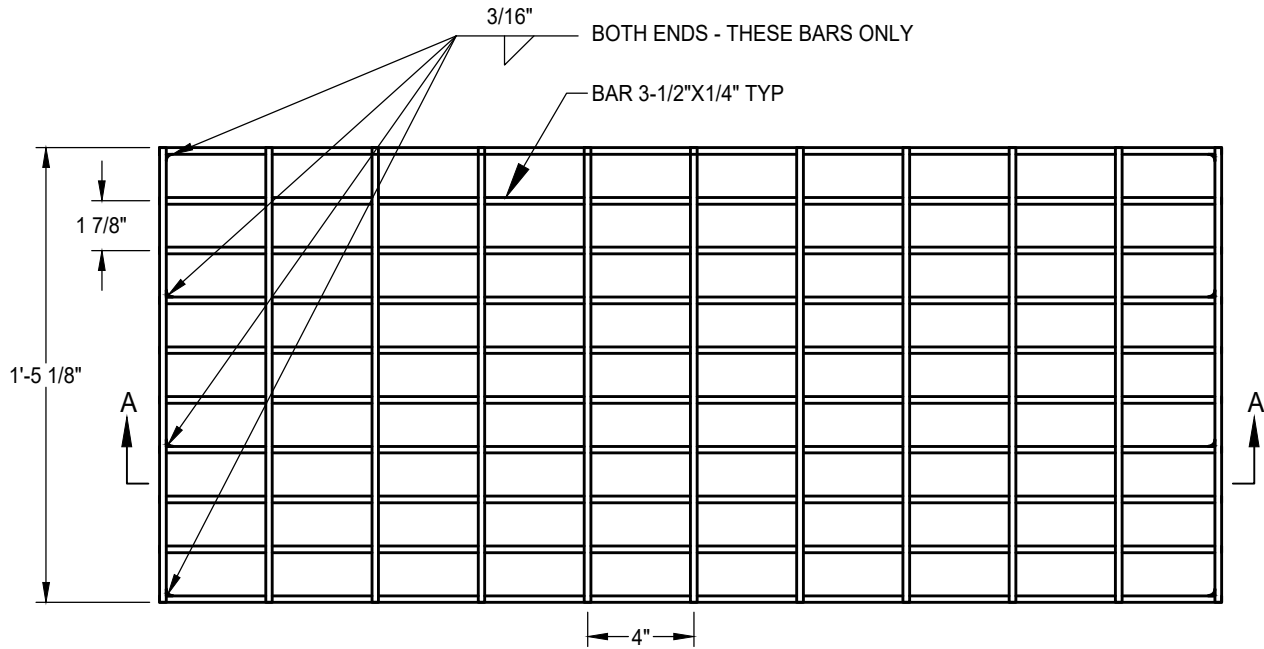
APPROVED BY:  
*Paul Murbach*  
CITY ENGINEER  
10/24/2018  
DATE

WELDED STEEL GRATE FRAME

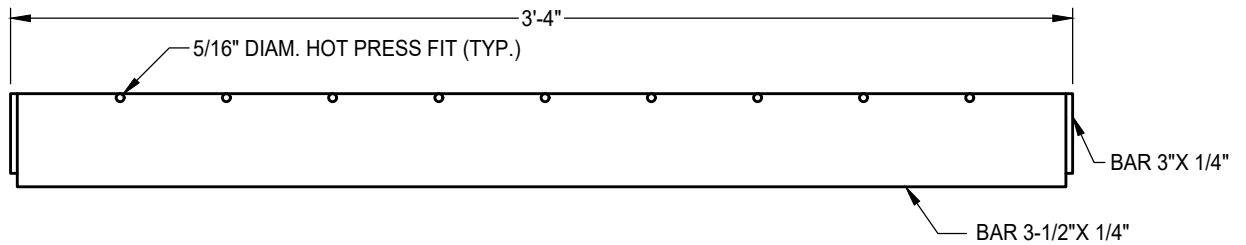


DRAWING NUMBER

SD - 14



PLAN



SECTION A-A

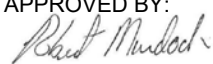
NOTES:

1. DIMENSIONS TO CENTERLINE OF BARS UNLESS OTHERWISE NOTED.
2. ALL EXPOSED PARTS TO BE HOT DIP GALVANIZED PER ASTM A123, AFTER FABRICATION.

DATE: 09/22/2017		NOT TO SCALE	
REVISION	BY	APPROVED	DATE

CITY OF ELK GROVE - PUBLIC WORKS

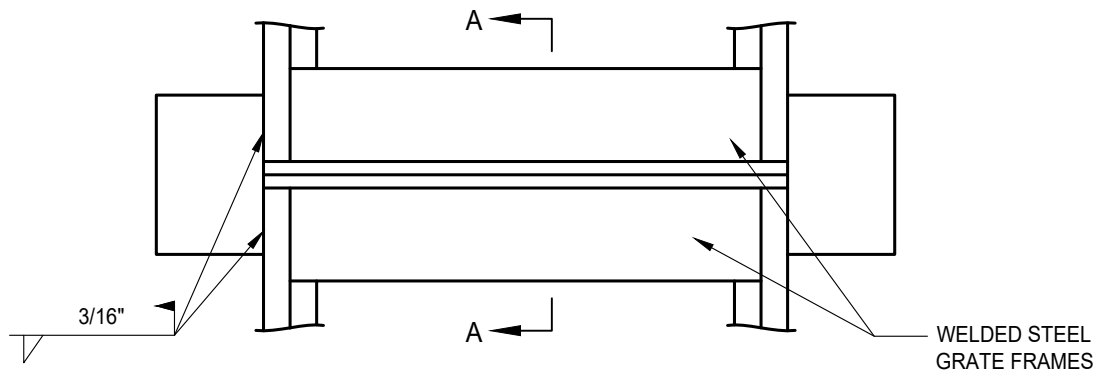
**WELDED STEEL GRATE**

APPROVED BY:  
  
 10/24/2018  
 CITY ENGINEER DATE

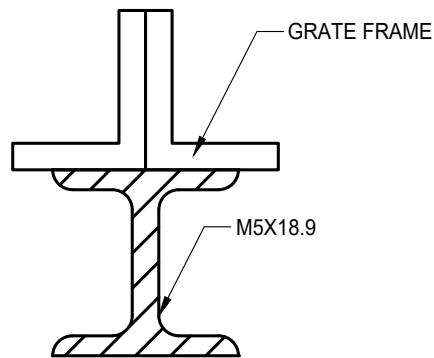


DRAWING NUMBER

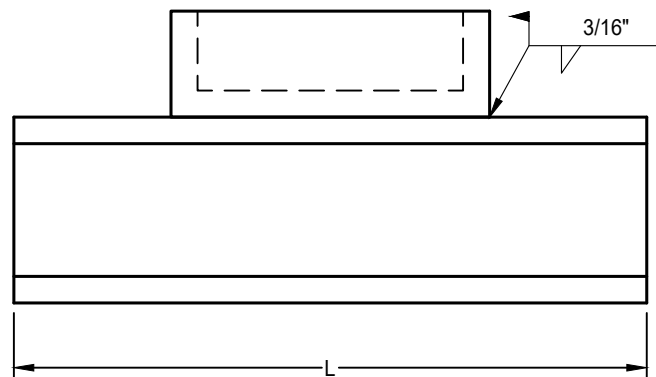
**SD - 15**



PLAN



SECTION A-A



ELEVATION

NOTES:

1. OMIT 1/2" FRAME ANCHORS OVER CENTER SUPPORT.
2. L=57 INCHES FOR CURB OPENING CATCH BASIN WITH GRATING(S) AND DEBRIS SKIMMER.
3. ALL EXPOSED PARTS TO BE HOT DIP GALVANIZED PER ASTM A123, AFTER FABRICATION.

DATE 09/22/2017		NOT TO SCALE	
REVISION	BY	APPROVED	DATE
01	STN	JRW	02/16/2021

CITY OF ELK GROVE - PUBLIC WORKS

**CENTER SUPPORT ASSEMBLY  
FOR MULTIPLE GRATES**

APPROVED BY:

*Paul Murook*

CITY ENGINEER

02/17/2021

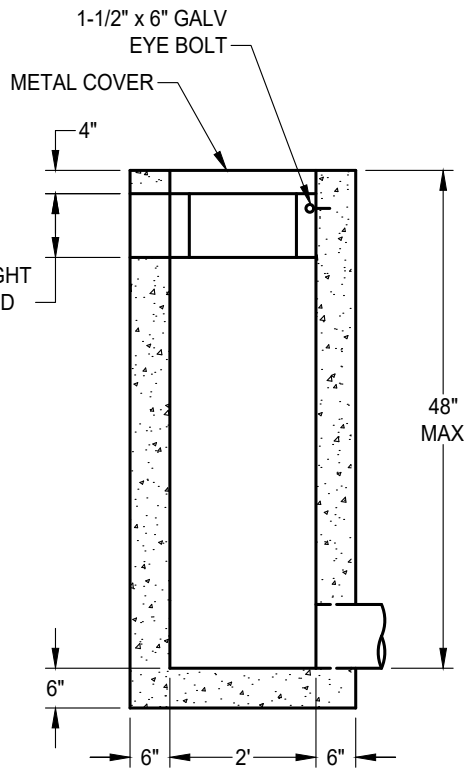
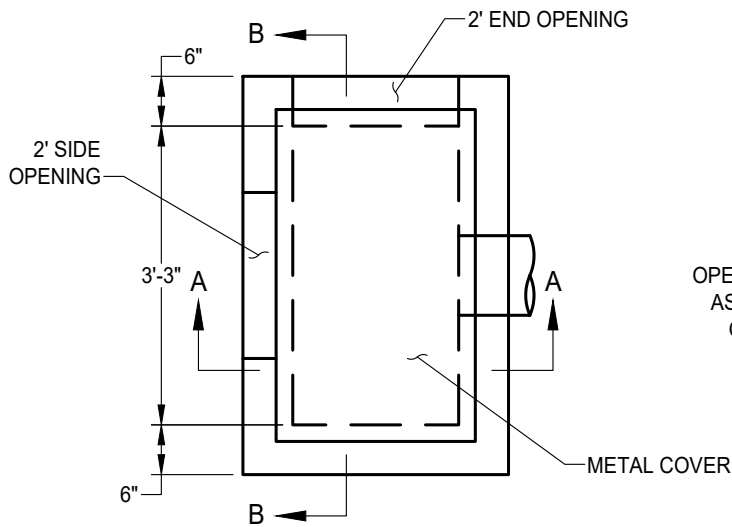
DATE



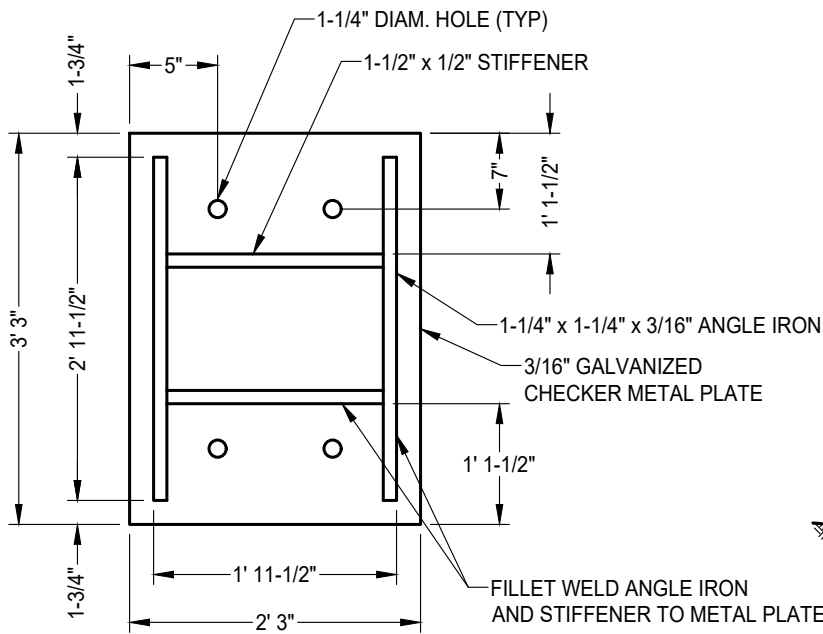
DRAWING NUMBER

**SD - 16**



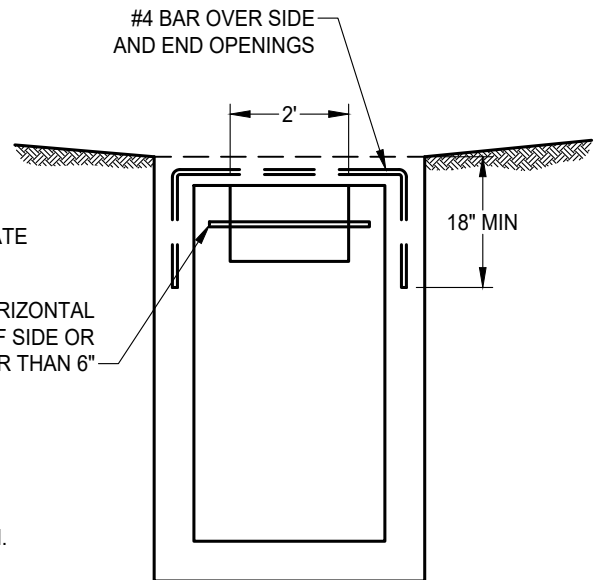


SECTION A-A



METAL COVER (UNDERSIDE)

PLACE 1/2" DIAM. HORIZONTAL BAR IN CENTER OF SIDE OR END OPENING GREATER THAN 6"



SECTION B-B

NOTES:

1. PROVIDE 1/4" x 18" GALVANIZED CHAIN WELD TO COVER AND EYE BOLT.
2. PROVIDE END OR SIDE OPENINGS AS SHOWN ON PLANS OR CROSS SECTION.
3. TOP OF WALLS TO BE FINISHED TO A FLAT PLANE TO PROVIDE EVEN BEARING FOR PLATE COVER.
4. ALL METALS SHALL BE HOT DIP GALVANIZED PER ASTM A123.

DATE: 09/22/2017		NOT TO SCALE	
REVISION	BY	APPROVED	DATE

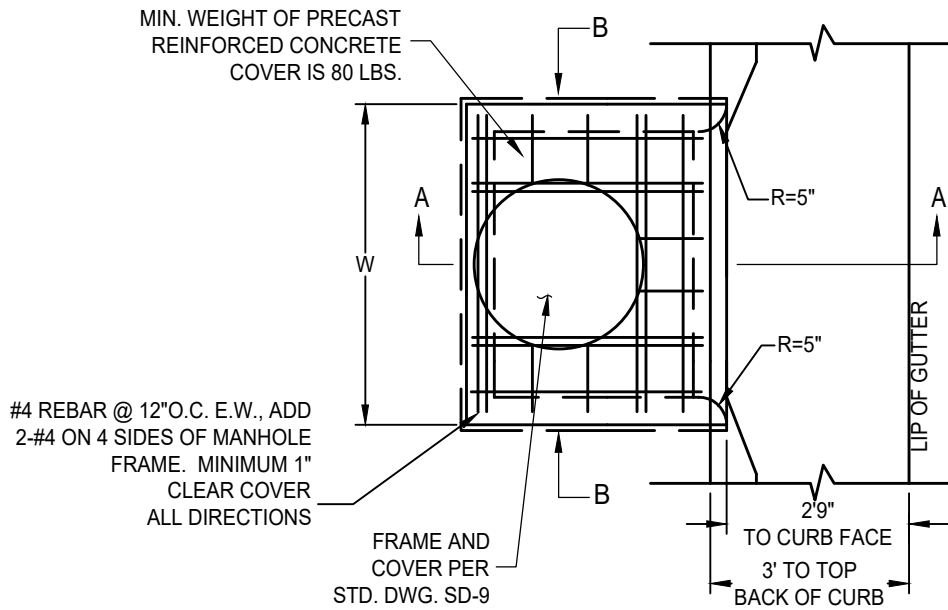
CITY OF ELK GROVE - PUBLIC WORKS

APPROVED BY:  
*Paul Murbach*  
CITY ENGINEER  
10/24/2018  
DATE

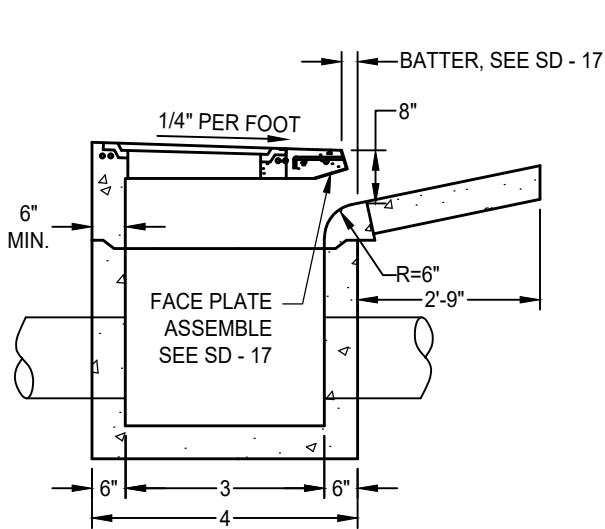
**DROP INLET  
TYPE F**



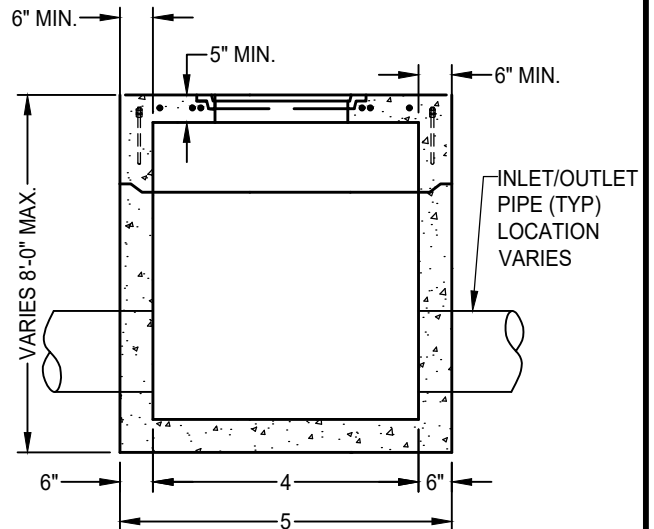
DRAWING NUMBER  
**SD - 18**



**PLAN**



**SECTION A-A**



**SECTION B-B**

**NOTES:**

1. CURB INLET ASSEMBLY MAY BE PRECAST CONCRETE OR FORMED AND CAST-IN-PLACE P.C.C.
2. ALL METAL SHALL BE HOT DIP GALVANIZED PER ASTM A123.
3. SEE STANDARD DRAWING SD - 17 FOR FACE PLATE ASSEMBLY.

DATE: 09/22/2017		NOT TO SCALE	
REVISION	BY	APPROVED	DATE

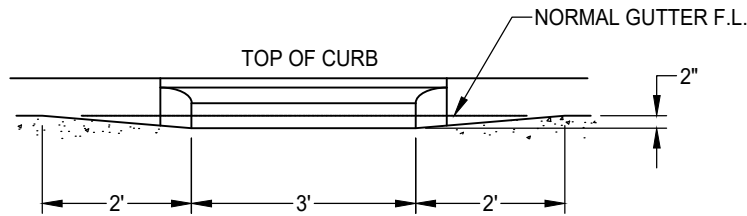
CITY OF ELK GROVE - PUBLIC WORKS

**DROP INLET TYPE G  
TYPE 2 C&G ONLY  
(PG 1 OF 2)**

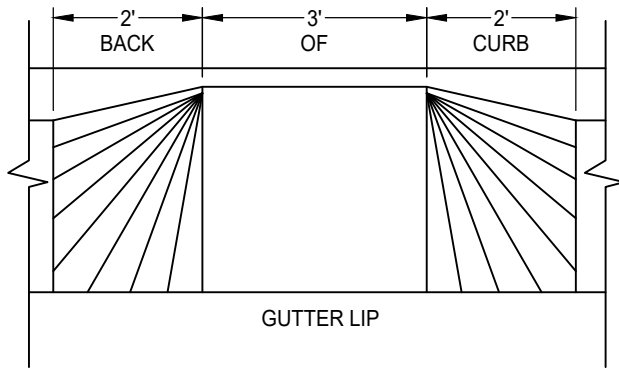
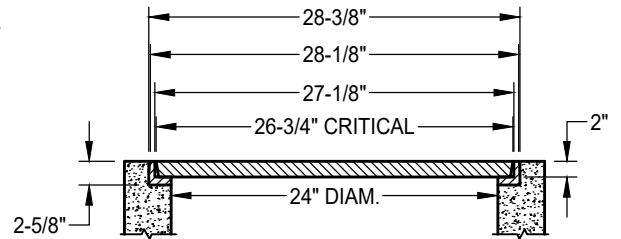
APPROVED BY:  
*Paul Murock*  
10/24/2018  
CITY ENGINEER DATE



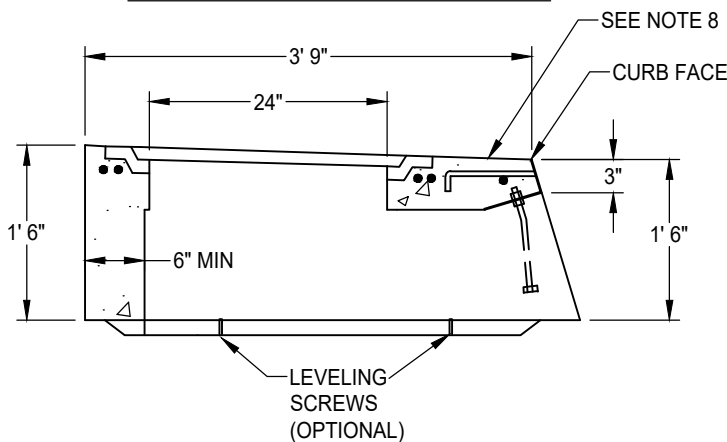
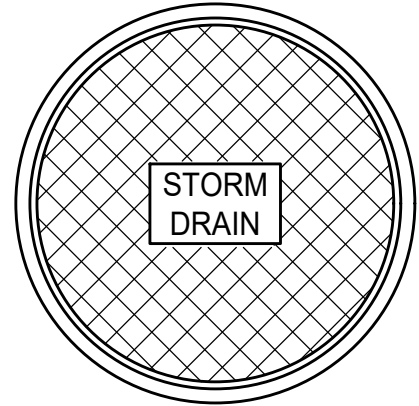
DRAWING NUMBER  
**SD - 19.1**



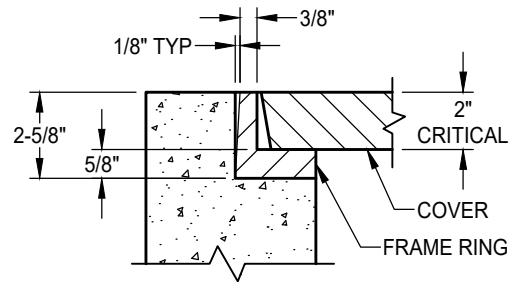
**GUTTER TRANSITION ELEVATION**



**GUTTER TRANSITION PLAN**



**CURB INLET DETAIL**



**FRAME AND LID DETAIL**

WEIGHT	
CAST IRON COVER	91 LBS
CAST IRON FRAME RING	52 LBS

**NOTES:**

1. CURB INLET ASSEMBLY MAY BE PRECAST CONCRETE, OR FORMED AND CAST-IN-PLACE P.C.C.
2. ALL METAL SHALL BE HOT DIPPED GALVANIZED ASTM A123.
3. ALL CASTINGS TO CONFORM TO ASTM A48, CLASS 35B
4. FRAME AND COVER TO MEET H-20 LOAD SPECIFICATIONS.
5. BEARING SURFACES ARE MACHINE BEVELED TO ASSURE A CLOSE, NON ROCKING SURFACE.
6. FRAME AND COVER SHALL HAVE A COATING OF BLACK BITUMINOUS MATERIAL CONFORMING TO ASTM 48-30.
7. SEE ARTICLE 50-31 "SEWER AND STORM DRAIN CASTINGS" OF SECTION 50, CONSTRUCTION SPECIFICATIONS.
8. INSTALL "NO DUMPING, DRAINS TO CREEK" PLACARD ON TOP OF CURB.

DATE: 09/22/2017		NOT TO SCALE	
REVISION	BY	APPROVED	DATE

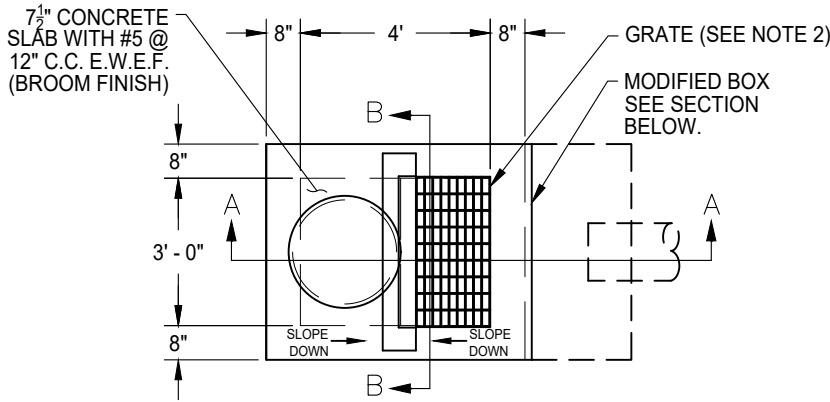
CITY OF ELK GROVE - PUBLIC WORKS

**DROP INLET TYPE G  
TYPE 2 C&G ONLY  
(SHEET 2 OF 2)**

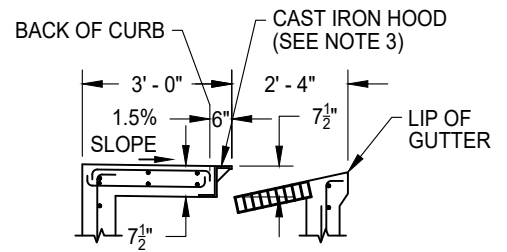
APPROVED BY:  
*Paul Murock*  
CITY ENGINEER  
10/24/2018  
DATE



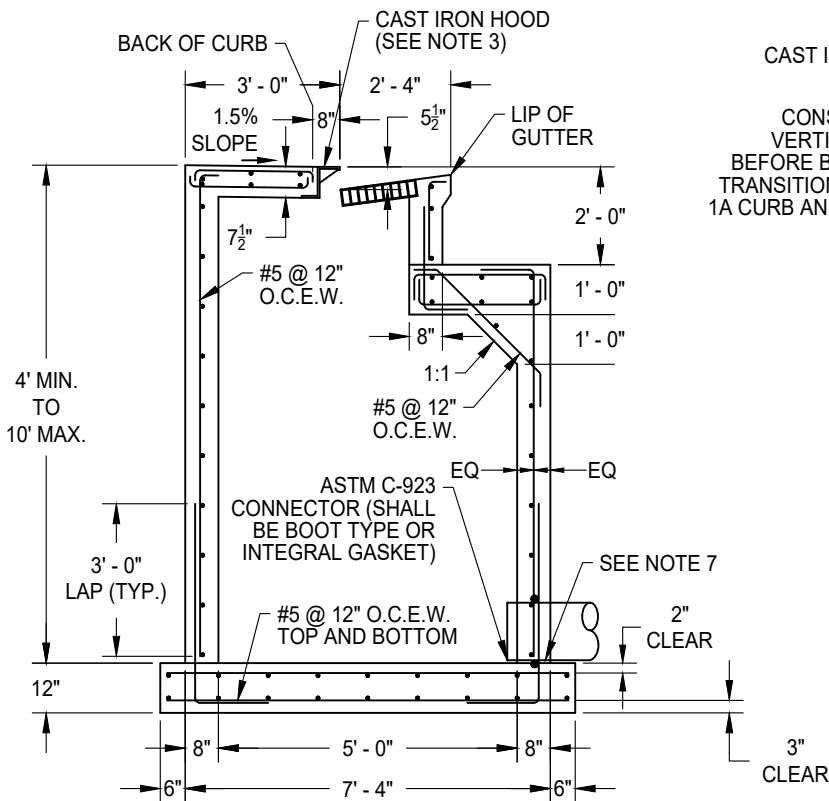
DRAWING NUMBER  
**SD - 19.2**



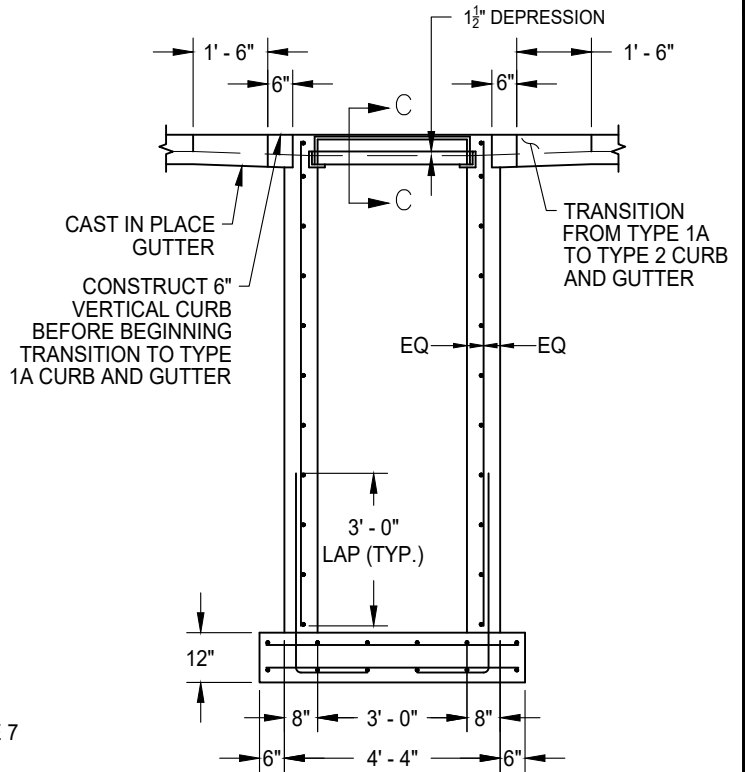
PLAN VIEW



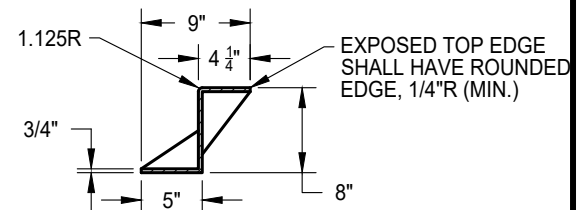
SECTION A-A  
TYPE 2 - VERTICAL CURB AND GUTTER  
(FOR INFORMATION NOT SHOWN OR NOTED REFER TO SECTION A-A TYPE 1A CURB AND GUTTER)



SECTION A-A  
TYPE 1A - ROLLED CURB AND GUTTER



SECTION B-B



SECTION C-C  
OPEN-BACK HOOD (CAST IRON)

- NOTES:**
- STANDARD DEPRESSION FOR INLET IS 1-1/2".
  - FRAME AND GRATE SHALL CONFORM TO STANDARD DRAWINGS SD-14 AND SD-15.
  - OPEN BACK CAST IRON HOOD SHALL BE H-20 RATED, 3/4" THICK, AND REQUIRES NO GALVANIZING.
  - ALL EXPOSED EDGES SHALL HAVE A 1/8" RADIUS (MINIMUM).
  - AN EDGING TOOL SHALL BE USED ON ALL EDGES WHERE THE CONCRETE SIDEWALK AND CURB MEET THE TOP OF THE HOOD.
  - EXPOSED SURFACES OF THE GRATES, FRAMES, AND HOODS WITH THE PARTS ASSEMBLED DISASSEMBLED SHALL BE PAINTED WITH COMMERCIAL QUALITY ASPHALTUM PAINT AFTER TESTING AND ASSEMBLY.
  - THE MINIMUM PIPE SIZE IS 12". IF THE INLET DEPTH IS GREATER THAN 4', THE MINIMUM PIPE SIZE SHALL BE 15".
  - THE MANHOLE FRAME AND COVER SHALL BE PER STANDARD DRAWING SD-9.


DATE: 09/22/2017		NOT TO SCALE	
REVISION	BY	APPROVED	DATE
01	SJB	SMA	04/04/2025

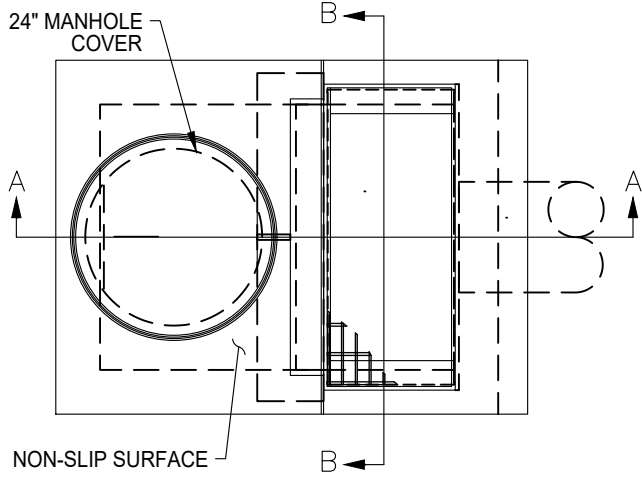
**CITY OF ELK GROVE - PUBLIC WORKS**

**MODIFIED TYPE J INLET**

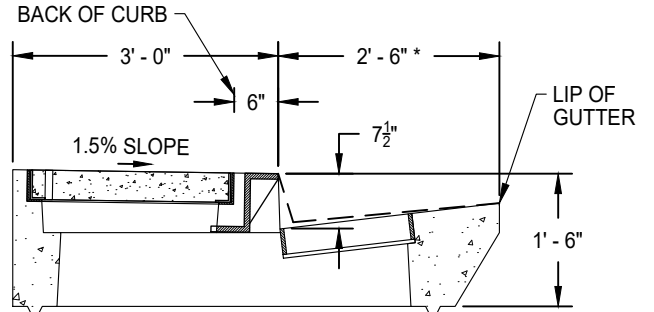
APPROVED BY: \_\_\_\_\_  
05-27-2025  
CITY ENGINEER DATE

DRAWING NUMBER  
**SD - 19.3**

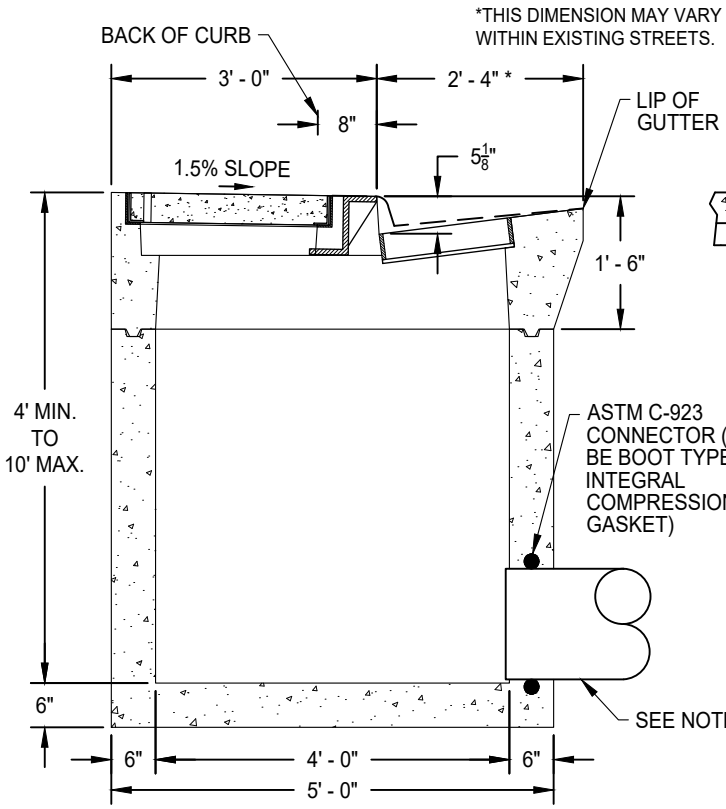




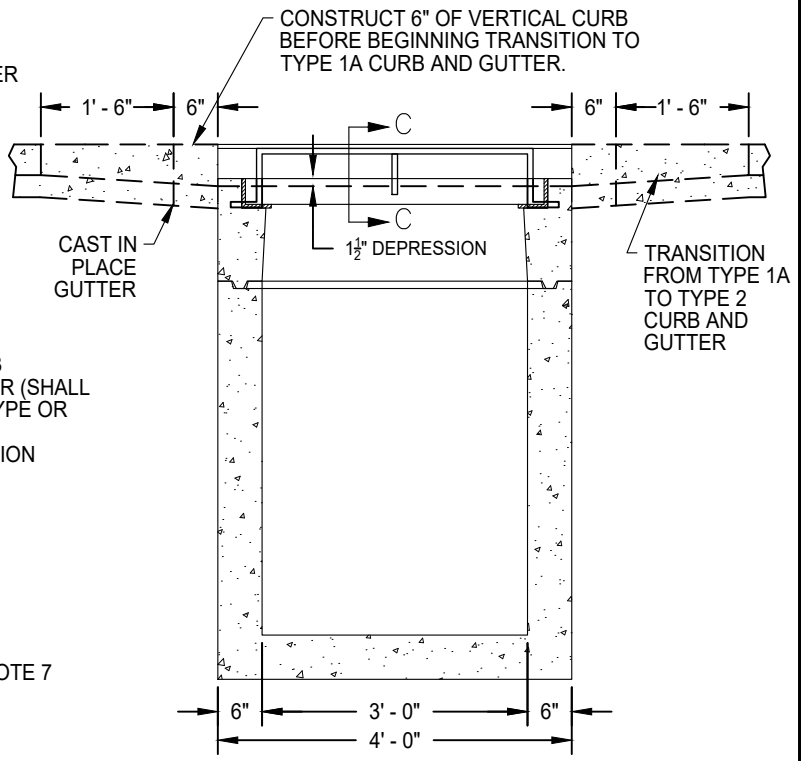
PLAN VIEW



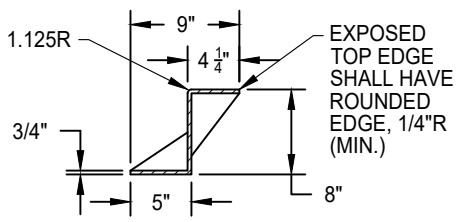
SECTION A-A  
TYPE 2 CURB AND GUTTER  
(FOR INFORMATION NOT SHOWN OR NOTED REFER TO SECTION A-A TYPE 1A CURB AND GUTTER)



SECTION A-A  
TYPE 1A CURB AND GUTTER



SECTION B-B



SECTION C-C  
OPEN-BACK HOOD (CAST IRON)

NOTES:

- STANDARD DEPRESSION FOR INLET IS 1-1/2".
- FRAME AND GRATE SHALL CONFORM TO STANDARD DRAWINGS SD-14 AND SD-15.
- OPEN BACK CAST IRON HOOD SHALL BE H-20 RATED, 3/4" THICK, AND REQUIRES NO GALVANIZING.
- ALL EXPOSED EDGES SHALL HAVE A 1/8" RADIUS (MINIMUM).
- AN EDGING TOOL SHALL BE USED ON ALL EDGES WHERE THE CONCRETE SIDEWALK AND CURB MEET THE TOP OF THE HOOD.
- EXPOSED SURFACES OF THE GRATE, FRAMES AND HOOD WITH THE PARTS ASSEMBLED AND DISASSEMBLED SHALL BE PAINTED WITH COMMERCIAL QUALITY ASPHALTUM PAINT AFTER TESTING AND ASSEMBLY OR GALVANIZED.
- THE MINIMUM PIPE SIZE IS 12". IF THE INLET DEPTH IS GREATER THAN 4', THE MINIMUM PIPE SIZE SHALL BE 15".
- THE MANHOLE FRAME AND COVER SHALL BE PER STANDARD DRAWING SD-9.


DATE: 5/27/2025		NOT TO SCALE	
REVISION	BY	APPROVED	DATE

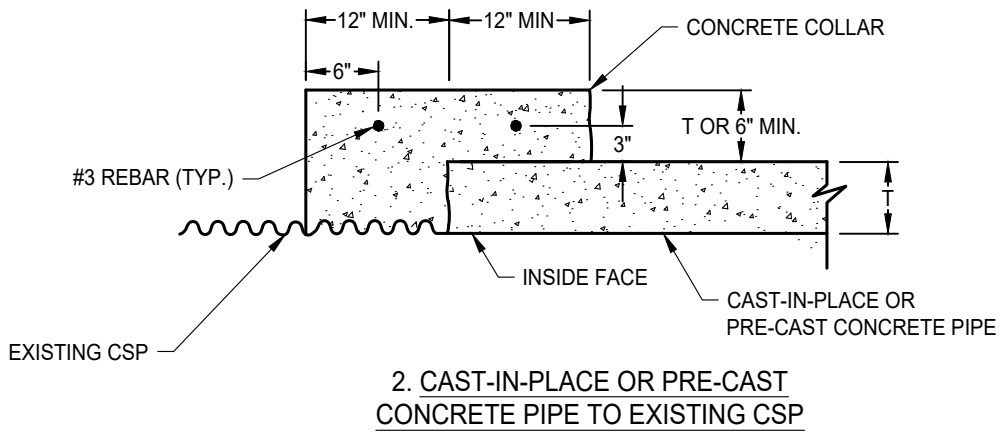
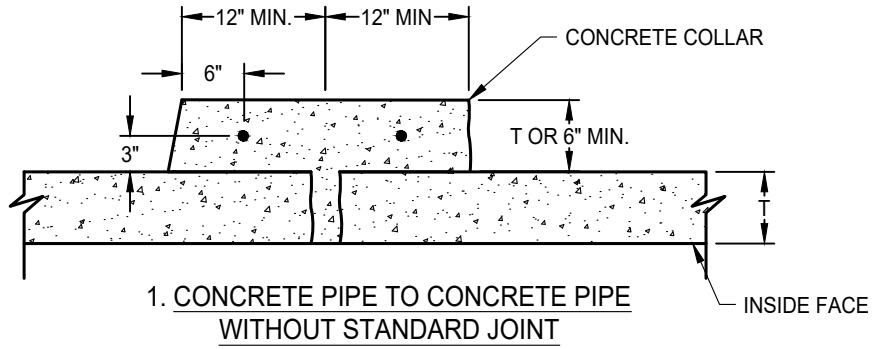
CITY OF ELK GROVE - PUBLIC WORKS

**PRECAST DROP INLET  
TYPE J**

APPROVED BY: \_\_\_\_\_  
5-27-2025  
CITY ENGINEER DATE

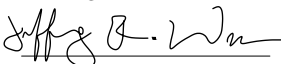
DRAWING NUMBER  
**SD - 19.4**





DATE: 09/22/2017		NOT TO SCALE	
REVISION	BY	APPROVED	DATE
1	SJB	SMA	02-28-2024

CITY OF ELK GROVE - PUBLIC WORKS

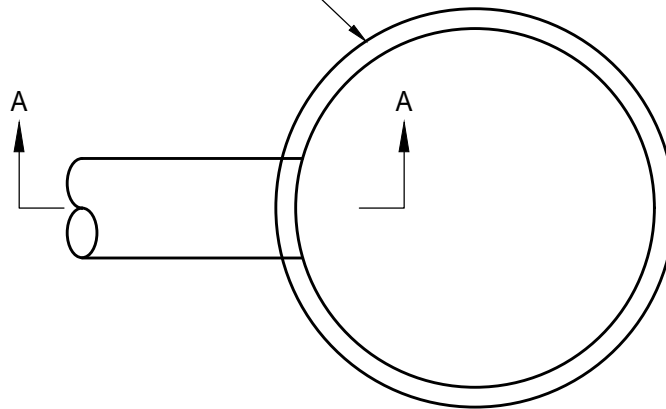
APPROVED BY:  
  
 CITY ENGINEER      DATE: 04-29-2024

**PIPE CONNECTIONS**

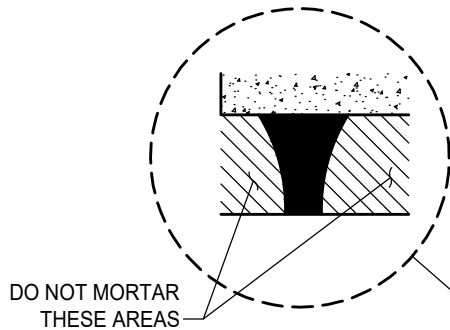


DRAWING NUMBER  
**SD - 23**

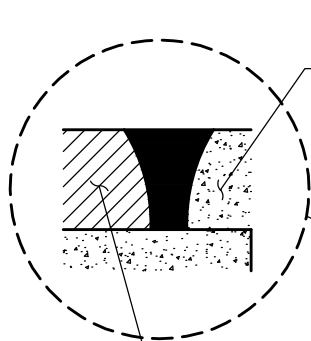
MANHOLE BASE AND BARREL SECTION. MANHOLE CONE, FRAME, AND COVER OMITTED FOR CLARITY.



PLAN



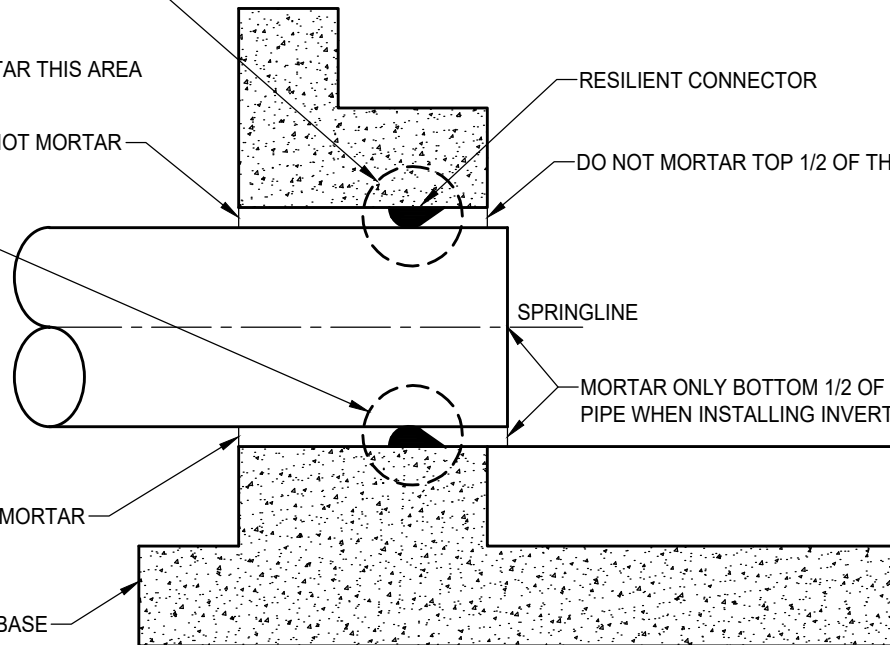
DO NOT MORTAR THESE AREAS



DO NOT MORTAR THIS AREA

MORTAR THIS AREA

DO NOT MORTAR



RESILIENT CONNECTOR

DO NOT MORTAR TOP 1/2 OF THE PIPE

SPRINGLINE

MORTAR ONLY BOTTOM 1/2 OF PIPE WHEN INSTALLING INVERT

DO NOT MORTAR

MANHOLE BASE

SECTION A-A

NOTES:

1. TO HELP CREATE A FLEXIBLE, WATERTIGHT JOINT, DO NOT PLACE MORTAR AROUND THE CONNECTOR ON THE OUTSIDE OF THE STRUCTURE OR AROUND THE TOP HALF OF THE CONNECTOR ON THE INSIDE WHEN COMPLETING THE INVERT WORK.
2. RESILIENT CONNECTORS SHALL BE A FLEXIBLE COMPRESSION GASKET OR BOOT CONNECTOR PER SECTION 39-2.01 "PRECAST CONCRETE STORM DRAIN MANHOLES" OF THE CITY OF ELK GROVE STANDARD CONSTRUCTION SPECIFICATIONS.
3. ALL CONNECTORS SHALL MEET OR EXCEED THE REQUIREMENTS OF A.S.T.M. C-923.

DATE: 09/22/2017		NOT TO SCALE	
REVISION	BY	APPROVED	DATE

CITY OF ELK GROVE - PUBLIC WORKS

**FLEXIBLE PIPE TO MANHOLE CONNECTION**

APPROVED BY:

*Paul Murock*

10/24/2018

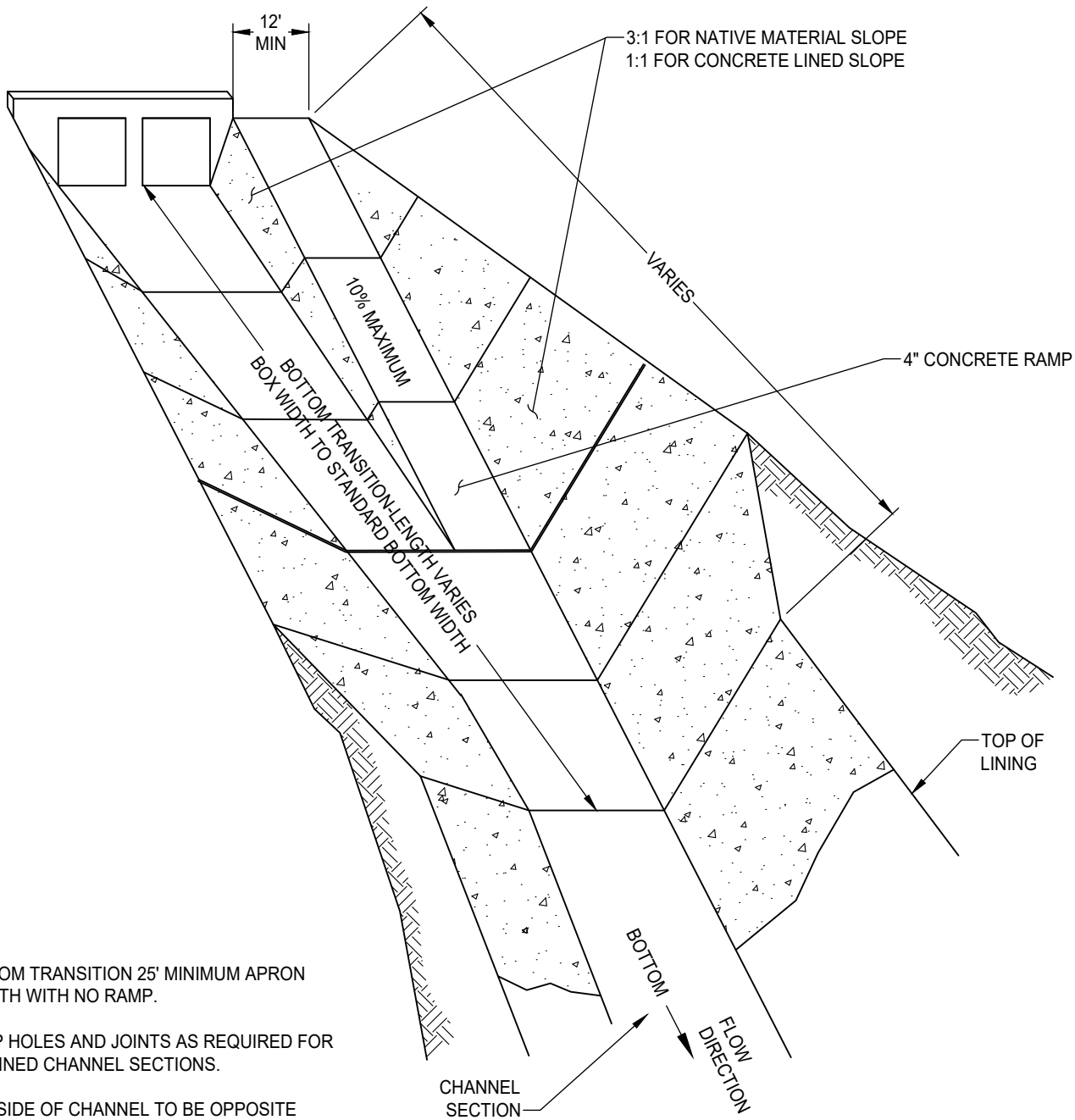
CITY ENGINEER

DATE



DRAWING NUMBER

**SD - 24**



**NOTES:**

1. BOTTOM TRANSITION 25' MINIMUM APRON LENGTH WITH NO RAMP.
2. WEEP HOLES AND JOINTS AS REQUIRED FOR ALL LINED CHANNEL SECTIONS.
3. LOW SIDE OF CHANNEL TO BE OPPOSITE RAMP.
4. SIDE SLOPE LINING MAY BE USED AT RAMP LOCATIONS TO INCREASE SLOPE TO MAXIMUM 1:1. TOP OF SLOPE GREATER THAN 3:1 MUST BE FENCED.

DATE: 09/22/2017		NOT TO SCALE	
REVISION	BY	APPROVED	DATE

CITY OF ELK GROVE - PUBLIC WORKS

**TYPICAL RAMP AND TRANSITION  
DETAIL**

APPROVED BY:

*Paul Murock*

10/24/2018

CITY ENGINEER

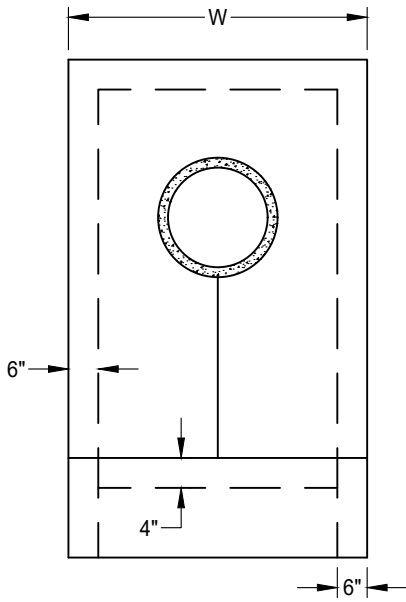
DATE



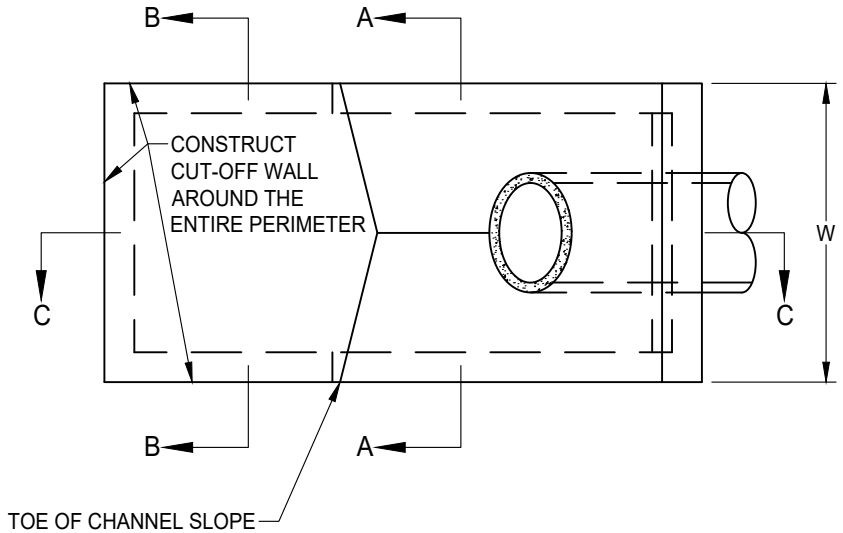
DRAWING NUMBER

**SD - 25**

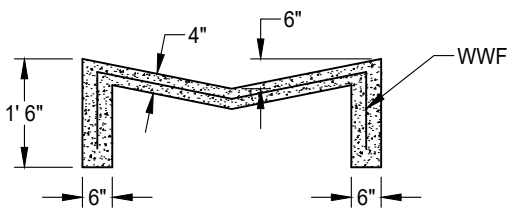
W = 6' 0" MINIMUM  
 W = 2 x PIPE DIAM. (3'+)



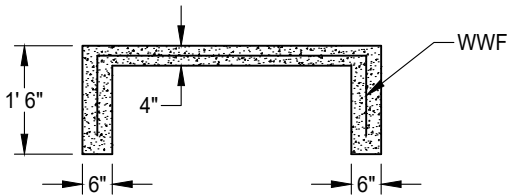
FRONT VIEW



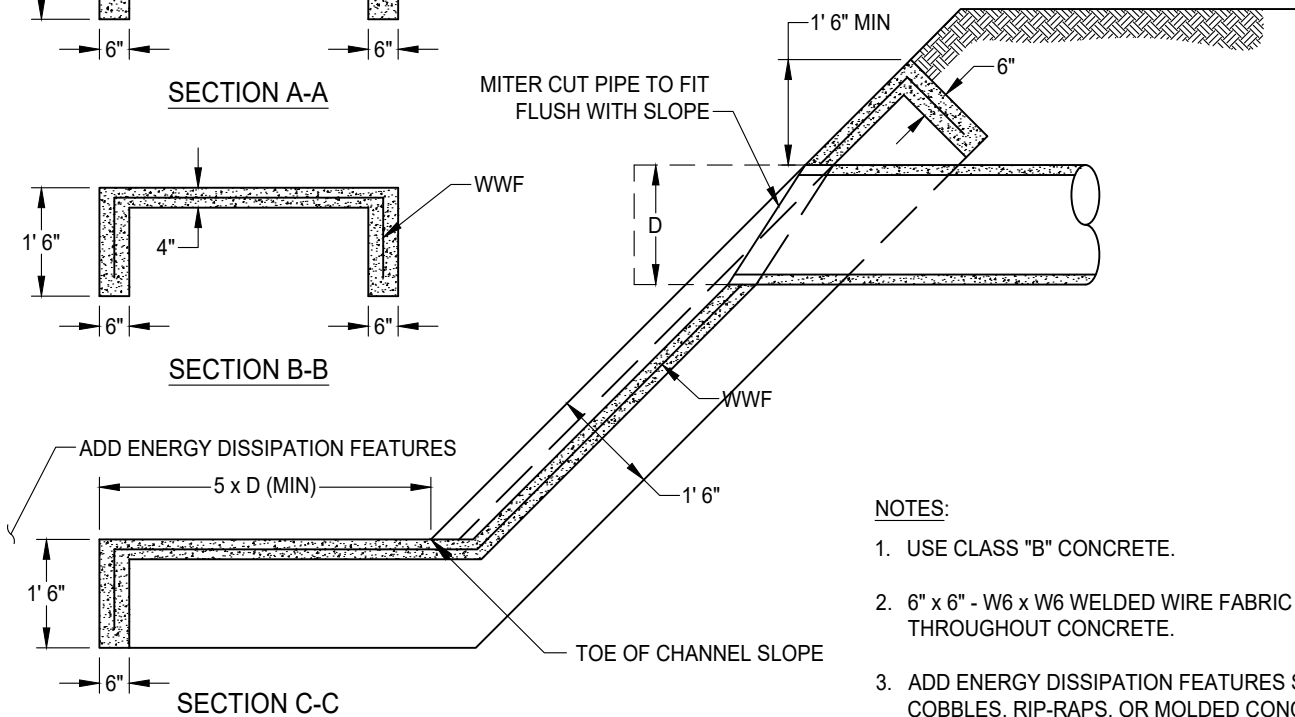
TOP VIEW



SECTION A-A



SECTION B-B



SECTION C-C

NOTES:

1. USE CLASS "B" CONCRETE.
2. 6" x 6" - W6 x W6 WELDED WIRE FABRIC (WWF) THROUGHOUT CONCRETE.
3. ADD ENERGY DISSIPATION FEATURES SUCH AS COBBLES, RIP-RAPS, OR MOLDED CONCRETE AT END OF APRON.

DATE: 09/22/2017		NOT TO SCALE	
REVISION	BY	APPROVED	DATE

CITY OF ELK GROVE - PUBLIC WORKS

**OUTLET PIPE HEADWALL AND APRON**

APPROVED BY:

*Paul Murbach*

10/24/2018

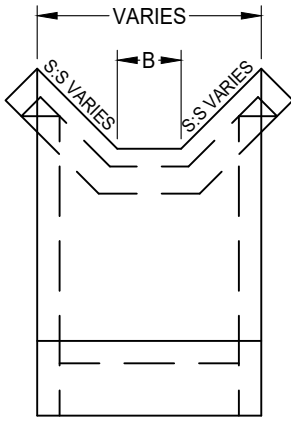
CITY ENGINEER

DATE

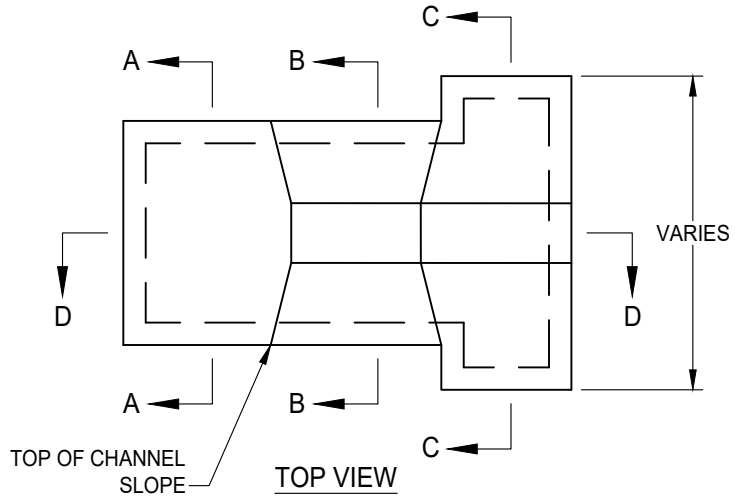


DRAWING NUMBER

**SD - 26**



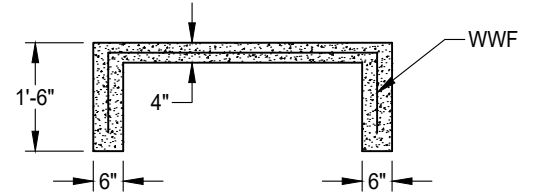
FRONT VIEW



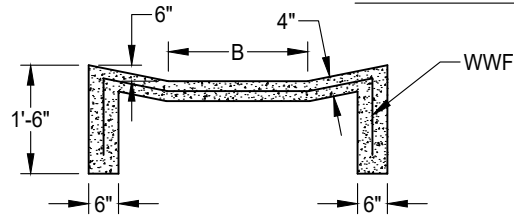
TOP VIEW

NOTES:

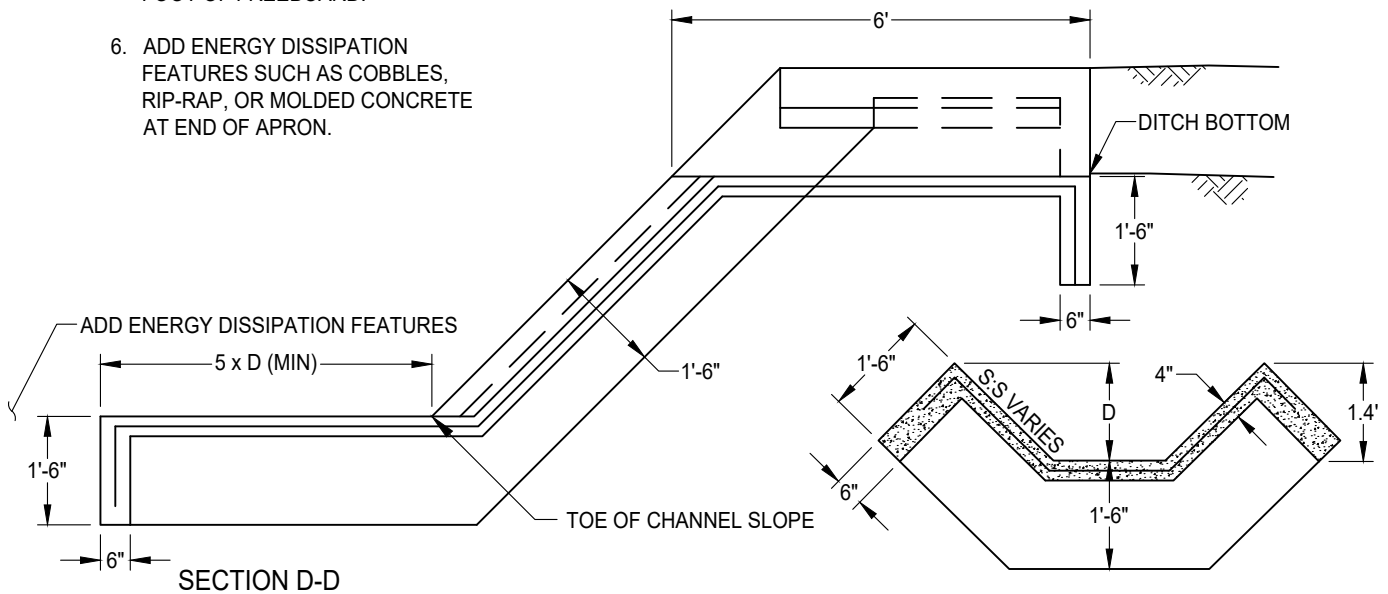
1. USE CLASS "B" CONCRETE OR GROUTED COBBLES AS SPECIFIED.
2. 6" x 6" -W6 x W6 WWF THROUGHOUT CONCRETE.
3. ON LINED CHANNELS APRON SHALL CONNECT TO SIDE LINING.
4. B = DITCH BOTTOM WIDTH OR AS SHOWN ON PLANS.
5. D = DITCH WATER DEPTH PLUS ONE FOOT OF FREEBOARD.
6. ADD ENERGY DISSIPATION FEATURES SUCH AS COBBLES, RIP-RAP, OR MOLDED CONCRETE AT END OF APRON.



SECTION A-A



SECTION B-B



SECTION D-D

SECTION C-C


DATE: 09/22/2017		NOT TO SCALE	
REVISION	BY	APPROVED	DATE
1	SJB	SMA	04-12-2024

CITY OF ELK GROVE - PUBLIC WORKS

**DITCH DISCHARGE CONTROL AND APRON**

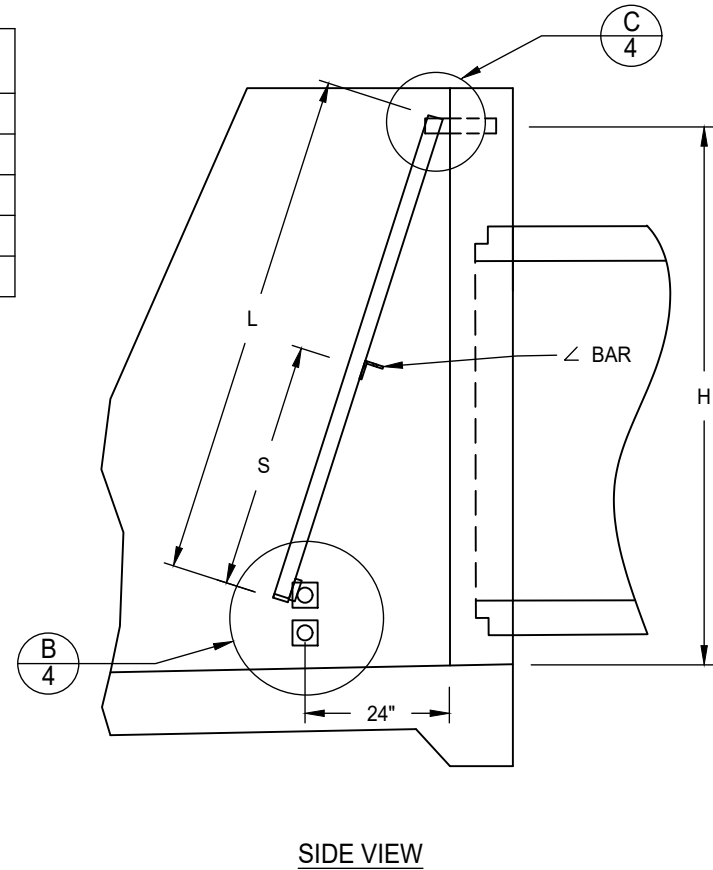
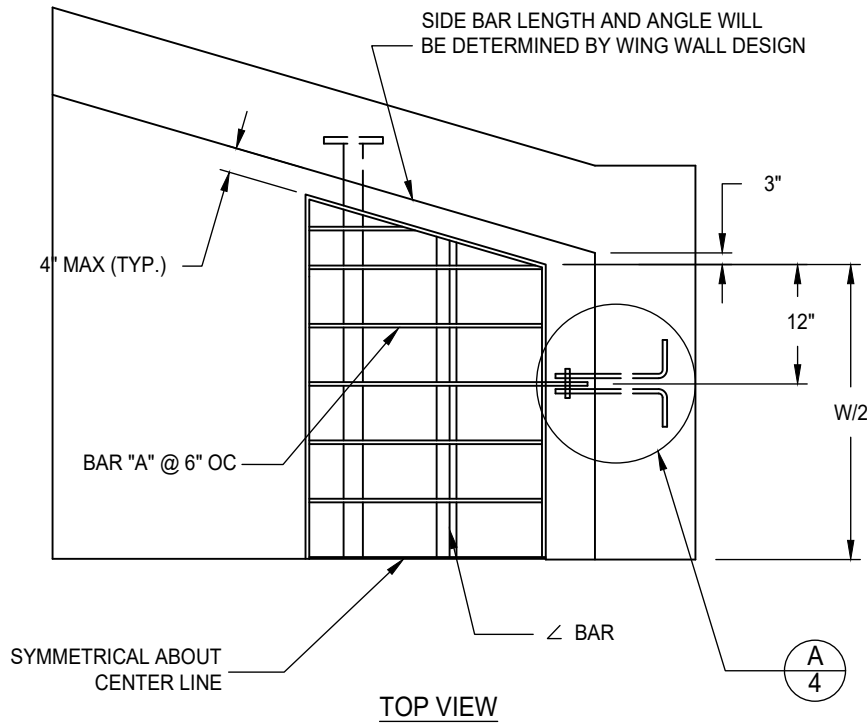
APPROVED BY: \_\_\_\_\_ 05-28-2024  
CITY ENGINEER DATE

DRAWING NUMBER  
**SD - 27**



PIPE DIA. (IN)	PIPE OD (IN)	QUANTITY* BAR "A"	BAR "A" SIZE (IN)	H (IN)	W (IN)	L (IN)	S (IN)
24	30	11	3/8x2 1/2	46	48	40	18
27	33.5	11	3/8x2 1/2	50	48	42	19
30	37	11	3/8x2 1/2	53	48	46	21
33	40.5	11	3/8x2 1/2	57	48	52	24
36	44	13	3/8x2 1/2	60	60	52	24

\*INCLUDES OUTSIDE FRAME



DATE: 09/22/2007		NOT TO SCALE	
REVISION	BY	APPROVED	DATE

CITY OF ELK GROVE - PUBLIC WORKS

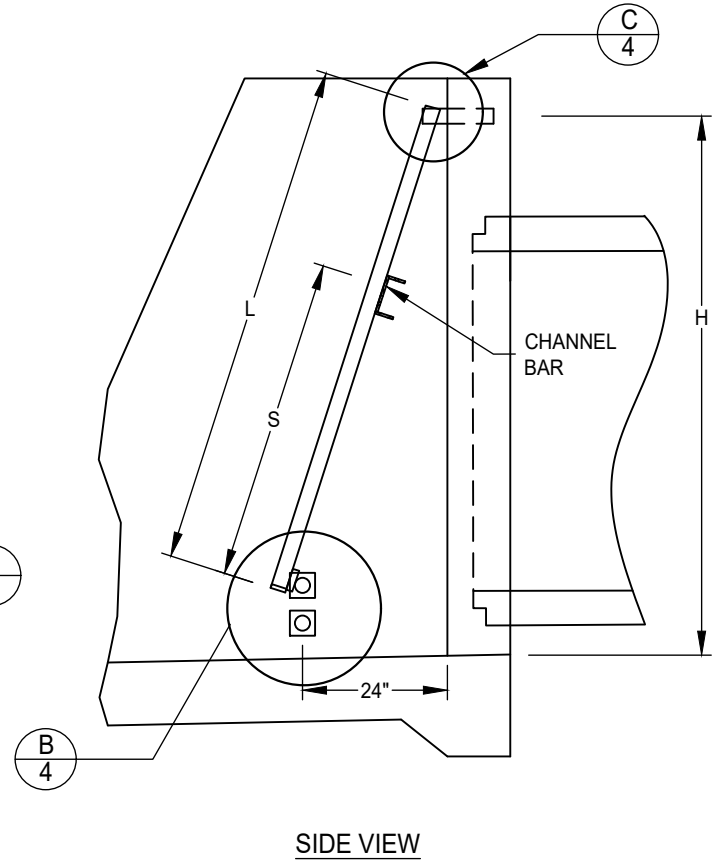
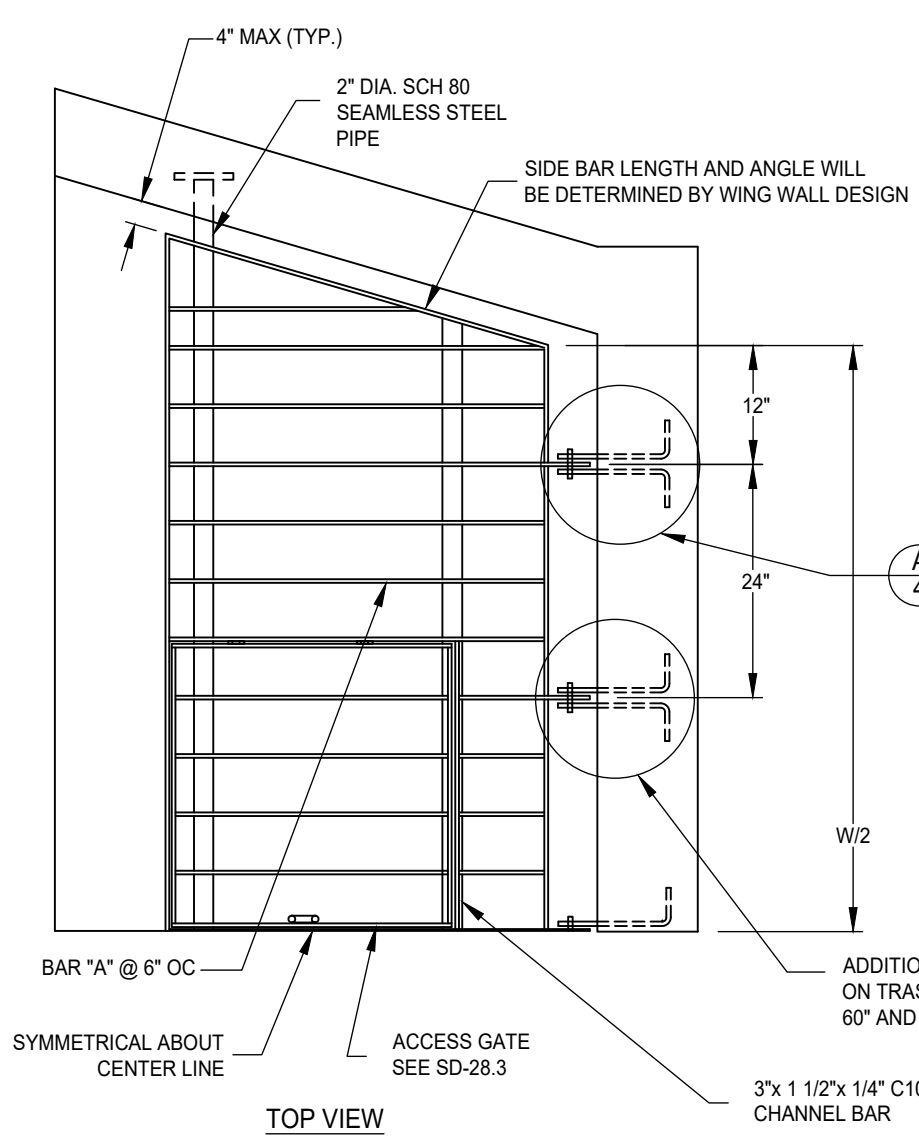
**TRASH RACK**  
**24"-36" PIPE**  
**(SHEET 1 OF 4)**

APPROVED BY:  
*Paul Murock*  
 CITY ENGINEER  
 DATE: 10/24/2018



DRAWING NUMBER

**SD - 28.1**



SIDE VIEW

NOTES:

1. SEE IMPROVEMENT STANDARDS SECTION 9-17 FOR DESIGN REQUIREMENTS

DATE: 09/22/2007		NOT TO SCALE	
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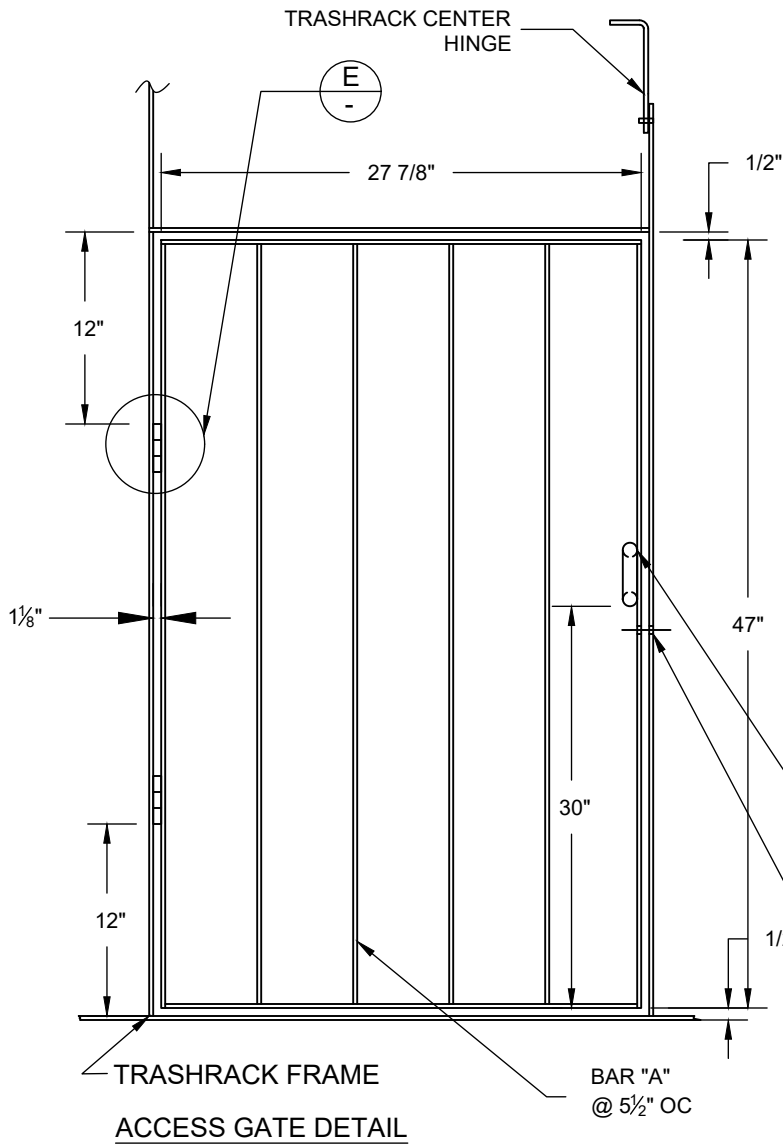
CITY OF ELK GROVE - PUBLIC WORKS

**TRASH RACK  
42" PIPE AND LARGER  
(SHEET 2 OF 4)**

APPROVED BY:  
*Paul Murock*  
CITY ENGINEER  
10/24/2018  
DATE

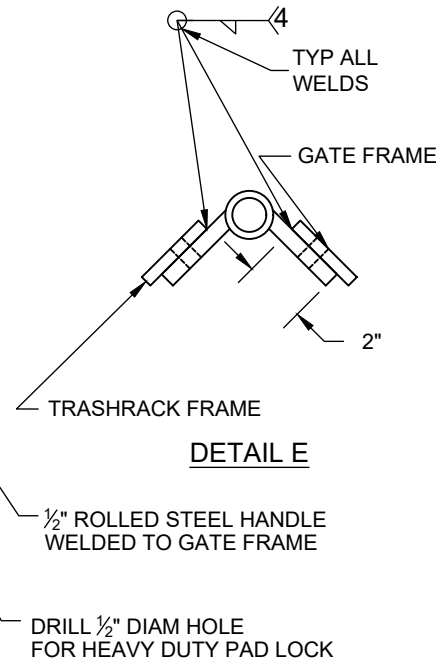


DRAWING NUMBER  
**SD - 28.2**



PIPE DIAM (IN)	PIPE OD (IN)	QUANTITY* BAR "A"	BAR "A" SIZE (IN)	H (IN)	W (IN)	L (IN)	S (IN)
42	51	15	3/8x2 1/2	67	72	60	47-3/4
48	58	17	3/8x2 1/2	74	84	70	47-3/4
54	65	21	3/8x2 1/2	81	108	72	47-3/4
60	72	23	3/8x2 1/2	88	120	80	47-3/4
72	86	27	3/8x2 1/2	102	144	96	47-3/4

\*INCLUDES OUTSIDE FRAME



**NOTES:**

1. SEE STANDARD DRAWINGS SD-29.1 AND SD-29.2 FOR PIPE HEADWALL DETAILS.
2. MATERIAL TO CONFORM TO ASTM DESIGNATION A-36. GALVANIZE ALL EXPOSED FERROUS PARTS AFTER FABRICATION.
3. ALL FILLET WELDS TO BE 3/16".
4. ALL STEEL SHALL CONFORM TO SECTION 75 OF THE STATE SPECIFICATIONS AND ASTM A36, A575 AND A576.
5. GATE HINGES TO BE COATED TO RESIST CORROSION.

DATE: 09/22/2007		NOT TO SCALE	
REVISION	BY	APPROVED	DATE

CITY OF ELK GROVE - PUBLIC WORKS

APPROVED BY:

*Paul Murock*

10/24/2018

CITY ENGINEER

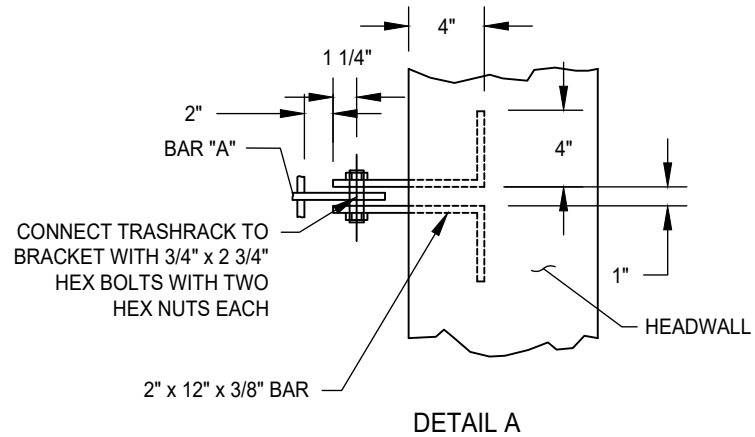
DATE

**TRASH RACK  
42" PIPE AND LARGER  
(SHEET 3 OF 4)**

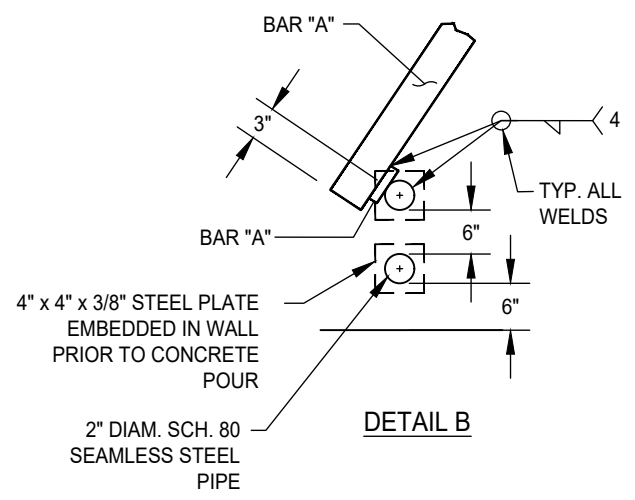
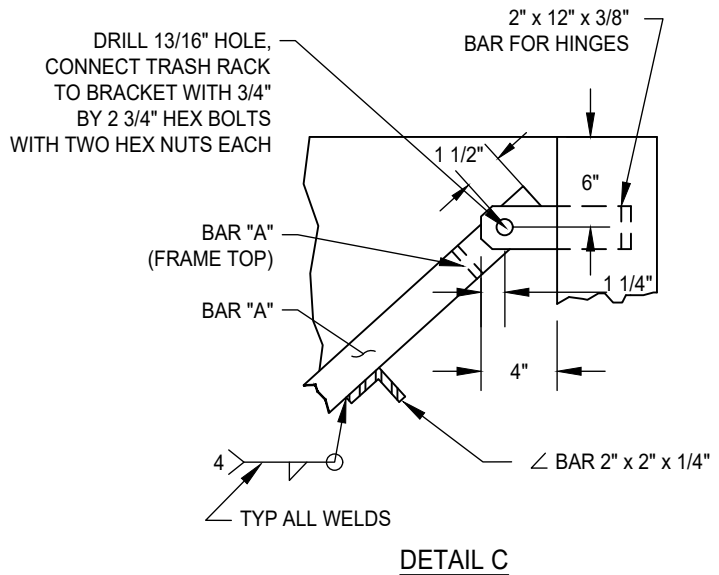


DRAWING NUMBER

**SD - 28.3**



- NOTES:**
1. SEE STANDARD DRAWINGS SD-29.1 AND SD-29.2 FOR PIPE HEADWALL DETAILS.
  2. MATERIAL TO CONFORM TO ASTM DESIGNATION A-36. GALVANIZE ALL EXPOSED FERROUS PARTS AFTER FABRICATION.
  3. ALL FILLET WELDS TO BE 3/16".
  4. ALL STEEL SHALL CONFORM TO SECTION 75 OF THE STATE SPECIFICATIONS AND ASTM A36, A575 AND A576.



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REVISION	BY	APPROVED	DATE


CITY OF ELK GROVE - PUBLIC WORKS

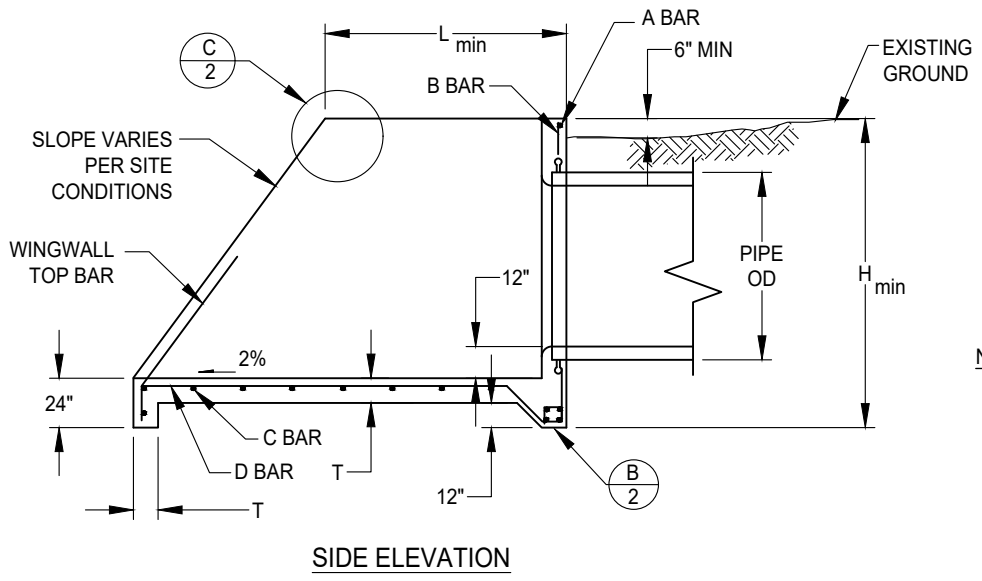
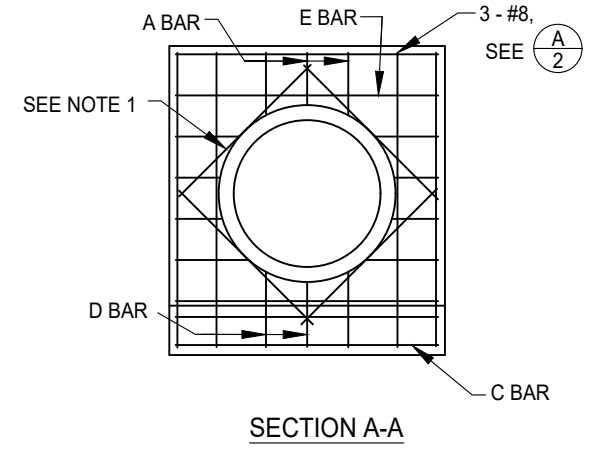
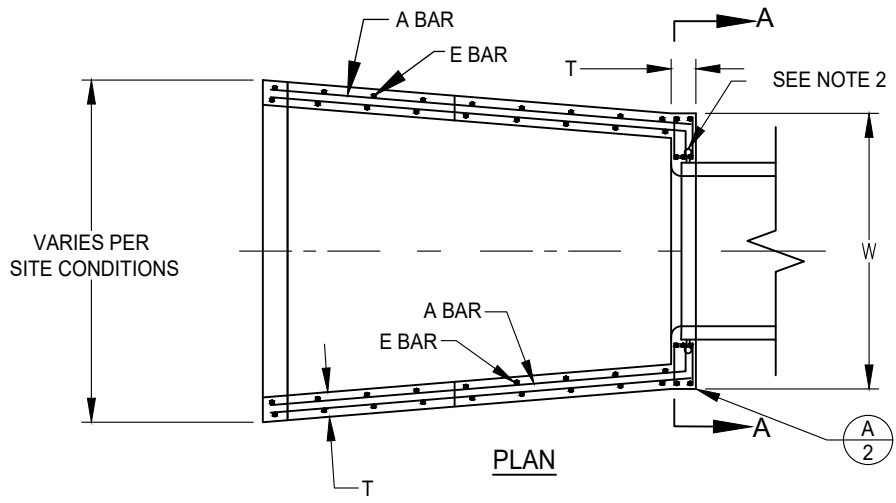
**TRASH RACK  
DETAILS  
(SHEET 4 OF 4)**

APPROVED BY:  
*Paul Murock*  
CITY ENGINEER

10/24/2018  
DATE

DRAWING NUMBER  
**SD - 28.4**





- NOTES:**
- SEE DWG SD-28 FOR EMBEDMENT OF TRASH RACK COMPONENTS PRIOR TO POURING CONCRETE

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REVISION	BY	APPROVED	DATE


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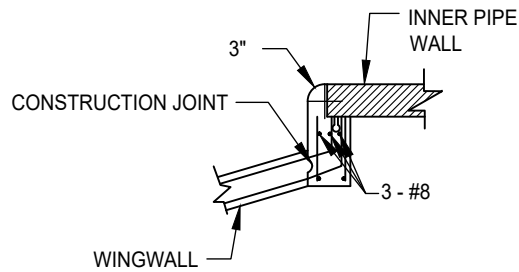
**INLET PIPE HEADWALL  
WINGWALL STRUCTURE  
(SHEET 1 OF 2)**

APPROVED BY:  
*Paul Murock*  
CITY ENGINEER

10/24/2018  
DATE

DRAWING NUMBER  
**SD - 29.1**





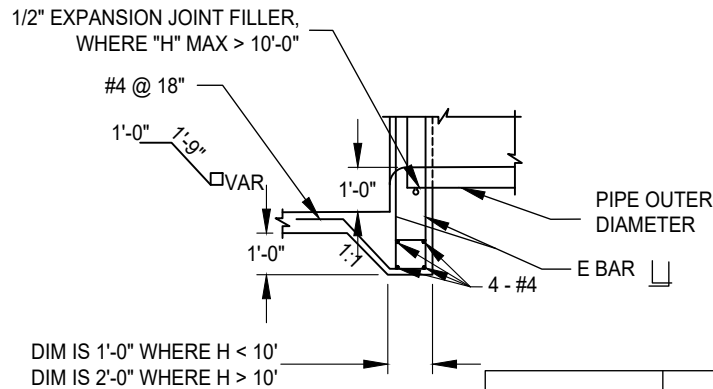
DETAIL A

NOTES:

1. PLACE #5 REBAR ON DIAGONALS @ 4" FROM PIPE OD.
2. PIPE CONNECTIONS SHALL CONFORM TO ASTM C-923. UNITS SHALL INCLUDE A WATER STOP.
3. CHAMFER ALL EXPOSED EDGES 3/4".
4. ALL STEEL MINIMUM 2" FROM CONCRETE EDGES.
5. ALL LAP SPLICES MINIMUM 12".

HEADWALL DIMENSIONS

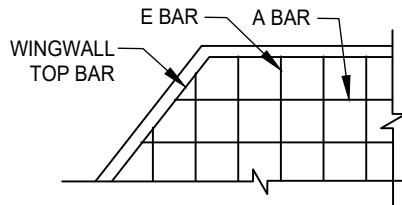
PIPE DIA	PIPE OD	W	H <sub>min</sub>	T	L <sub>min</sub>
24"	30"	4'-6"	4'-8"	8"	2'-9"
27"	33.5"	4'-6"	4'-10"	8"	3'-0"
30"	37"	4'-6"	5'-3"	8"	3'-3"
33"	40.5"	4'-6"	5'-9"	8"	3'-6"
36"	44"	5'-6"	5'-9"	8"	3'-9"
42"	51"	6'-6"	6'-6"	8"	4'-3"
48"	58"	7'-6"	7'-5"	10"	5'-3"
54"	65"	9'-6"	7'-7"	10"	5'-9"
60"	72"	10'-6"	8'-3"	10"	6'-0"
72"	86"	12'-6"	9'-8"	10"	7'-3"



DETAIL B

REINFORCING STEEL DIMENSIONS AND DATA

	A BAR	B BAR	C BAR	D BAR	E BAR	WINGWALL TOP BAR
H ≤ 7'	#4 @ 12"OC	#4 @ 12"OC	#4 @ 12"OC	#4 @ 12"OC	#4 @ 12"OC	#4
7' < H ≤ 8'	#4 @ 12"OC EF	#4 @ 12"OC EF	#4 @ 12"OC EF	#4 @ 12"OC EF	#4 @ 12"OC EF	#4
8' < H ≤ 10'	#5 @ 12"OC EF	#5 @ 6"OC EF	#5 @ 12"OC EF	#5 @ 12"OC EF	#5 @ 12"OC EF	#5



DETAIL C

DATE: 09/22/2007		NOT TO SCALE	
REVISION	BY	APPROVED	DATE


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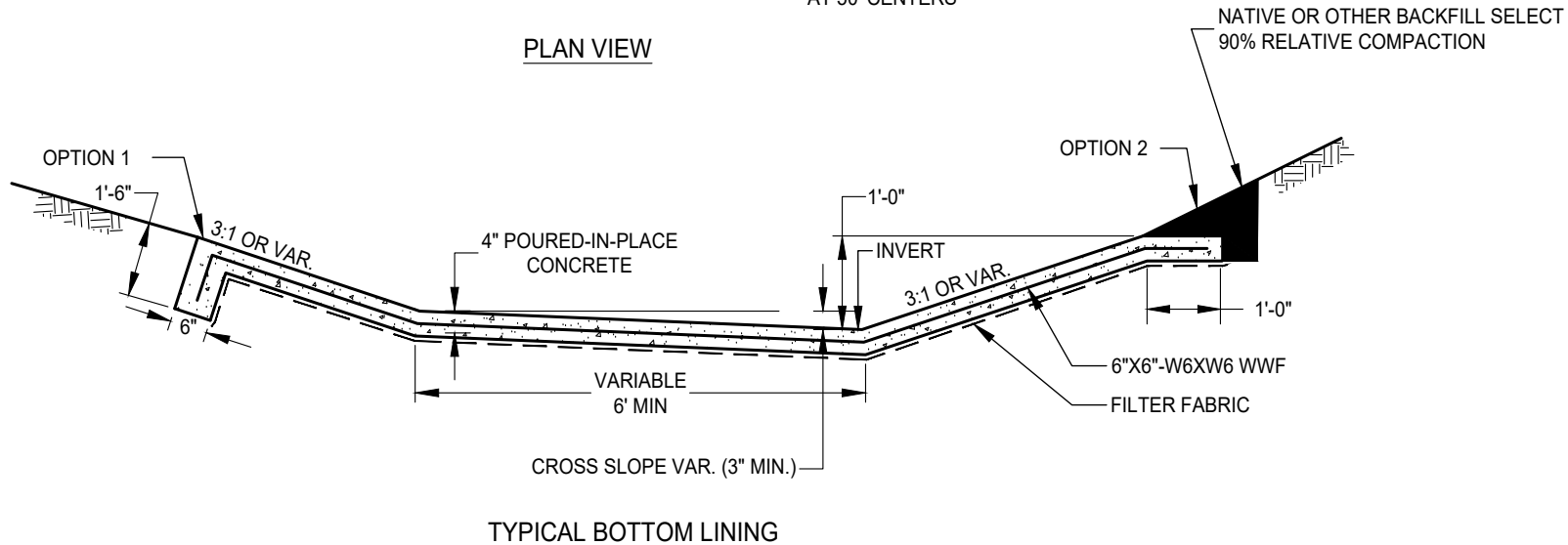
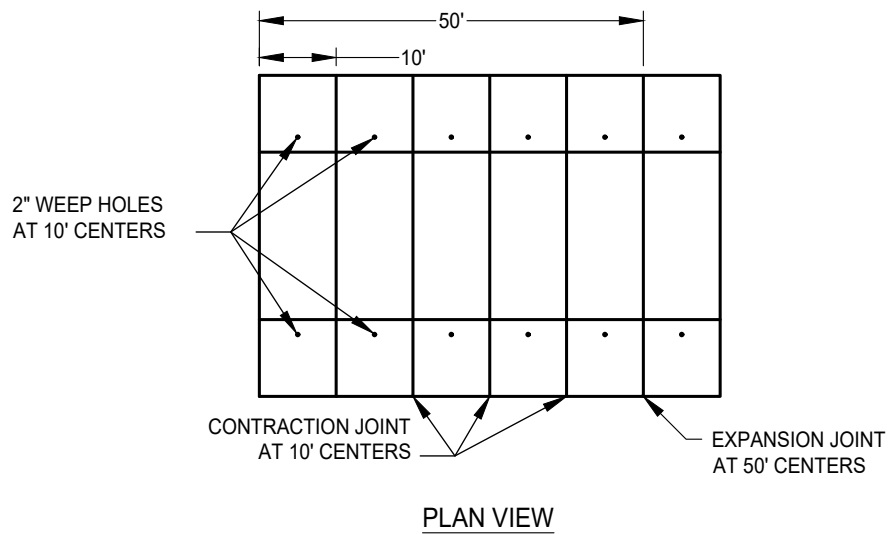
**INLET PIPE HEADWALL  
WINGWALL STRUCTURE  
(SHEET 2 OF 2)**

APPROVED BY:  
*Paul Muebeck*  
CITY ENGINEER

10/24/2018  
DATE

DRAWING NUMBER  
**SD - 29.2**





DATE: 09/22/2007		NOT TO SCALE	
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CITY OF ELK GROVE - PUBLIC WORKS

**LINED CHANNEL SECTION  
(SHEET 1 OF 2)**

APPROVED BY:

*Paul Murock*

CITY ENGINEER

10/24/2018

DATE



DRAWING NUMBER

**SD - 30.1**



