

NOTE:

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:

Robert Muddoch

CITY ENGINEER

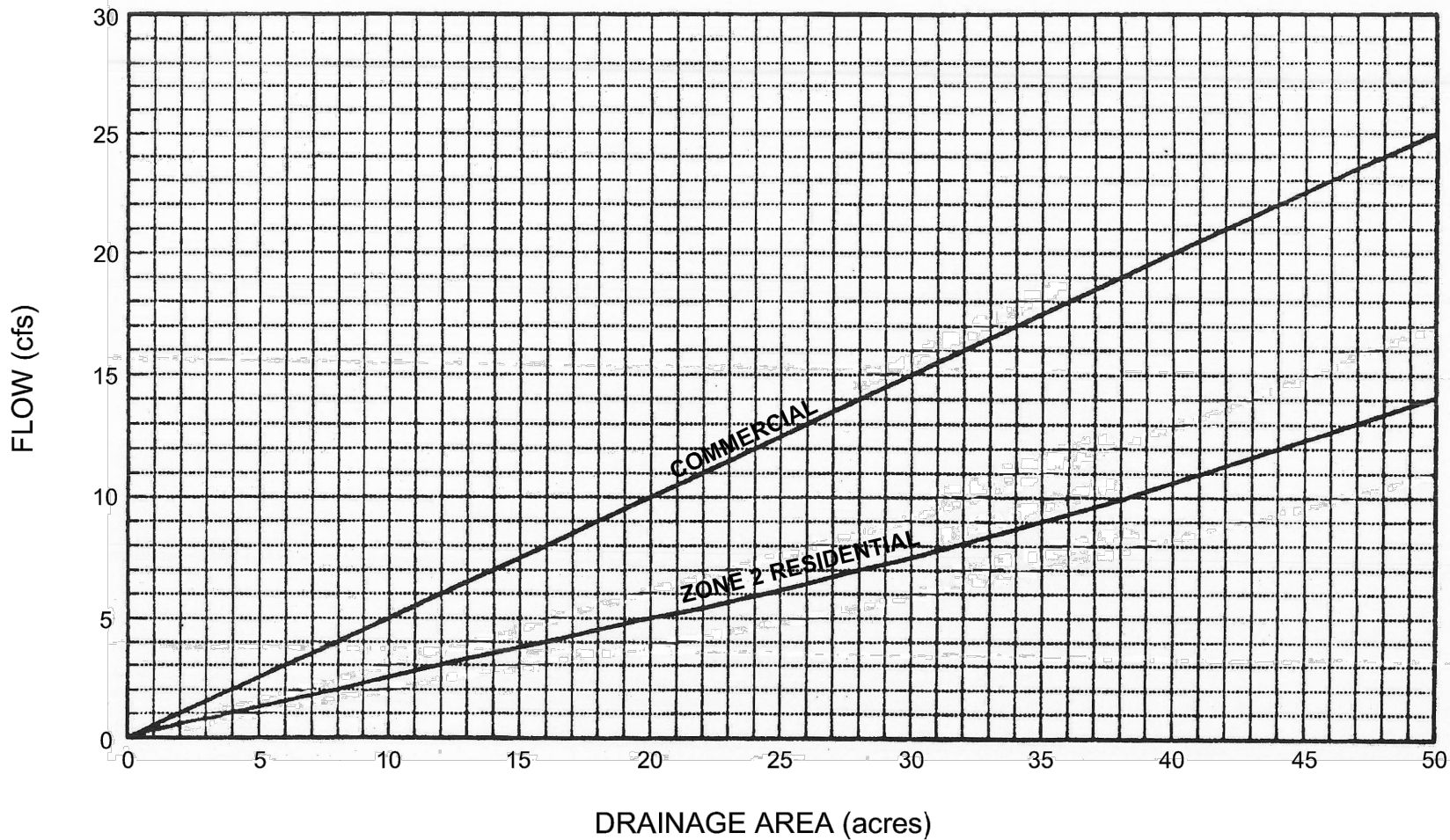
10/24/2018

DATE



DRAWING NUMBER

SD - 1



NOTE: 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 Muddoch

CITY ENGINEER

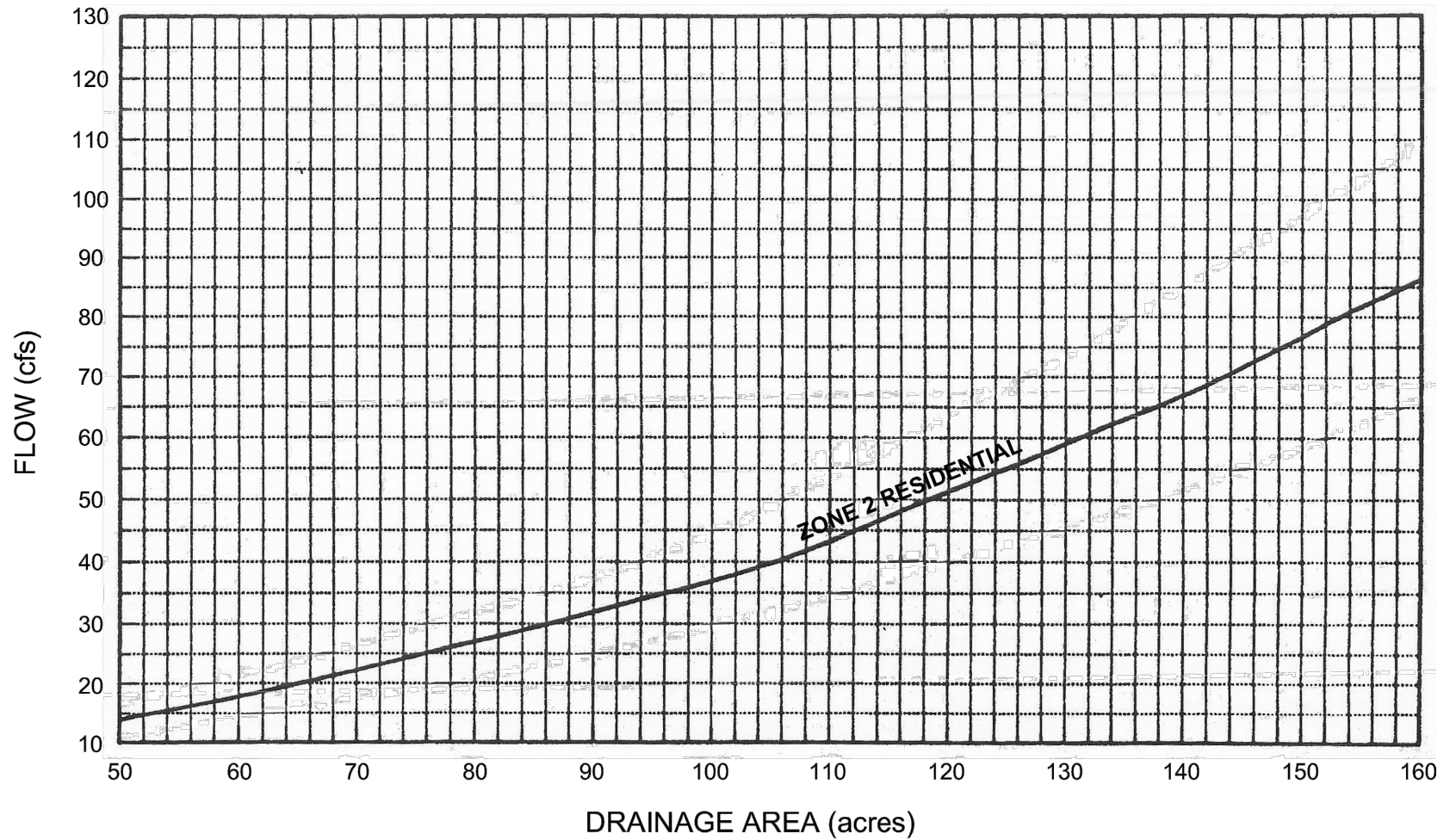
10/24/2018

DATE



DRAWING NUMBER

SD - 1A



NOTE: 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:

CITY ENGINEER

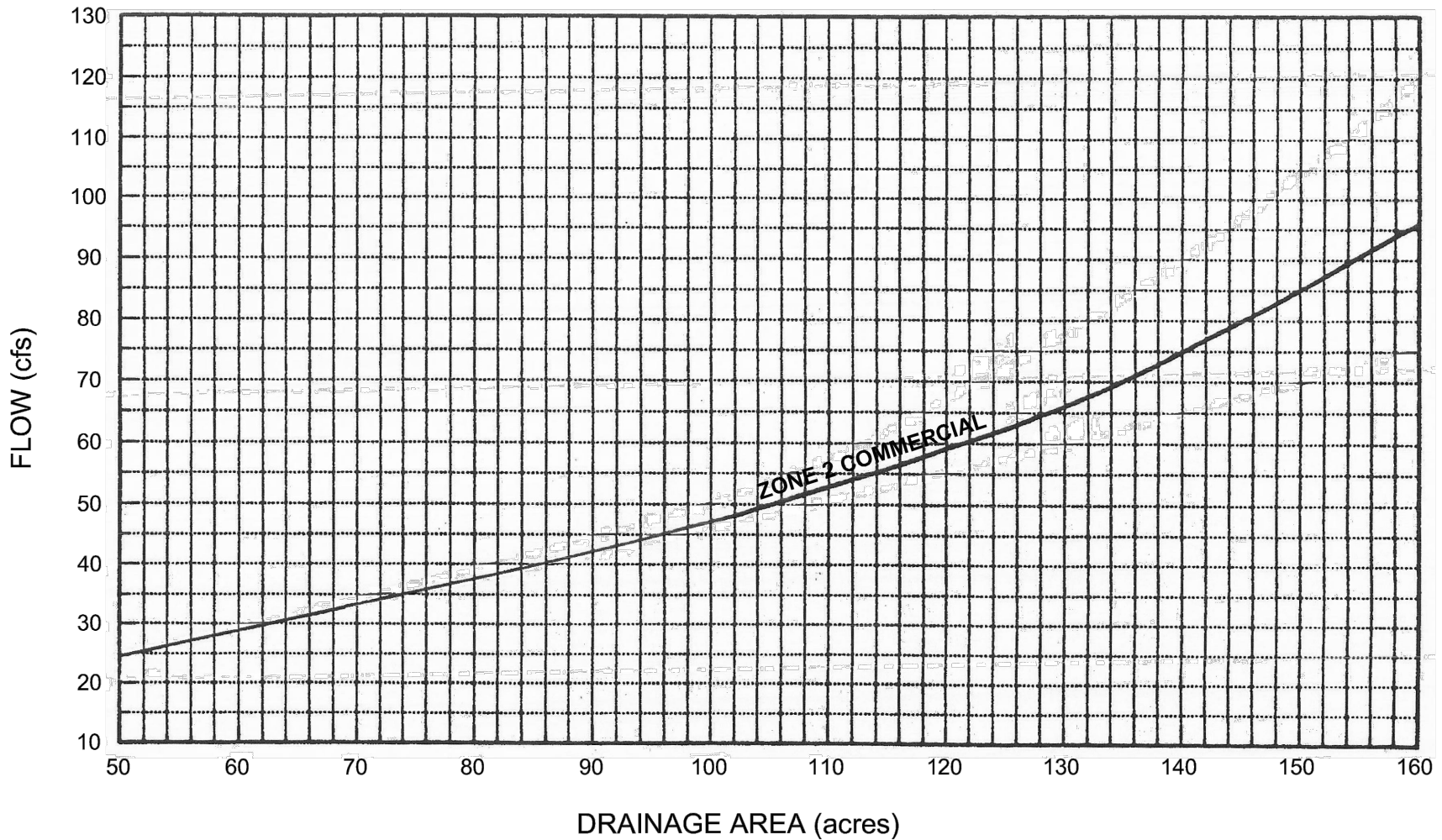
10/24/2018

DATE



DRAWING NUMBER

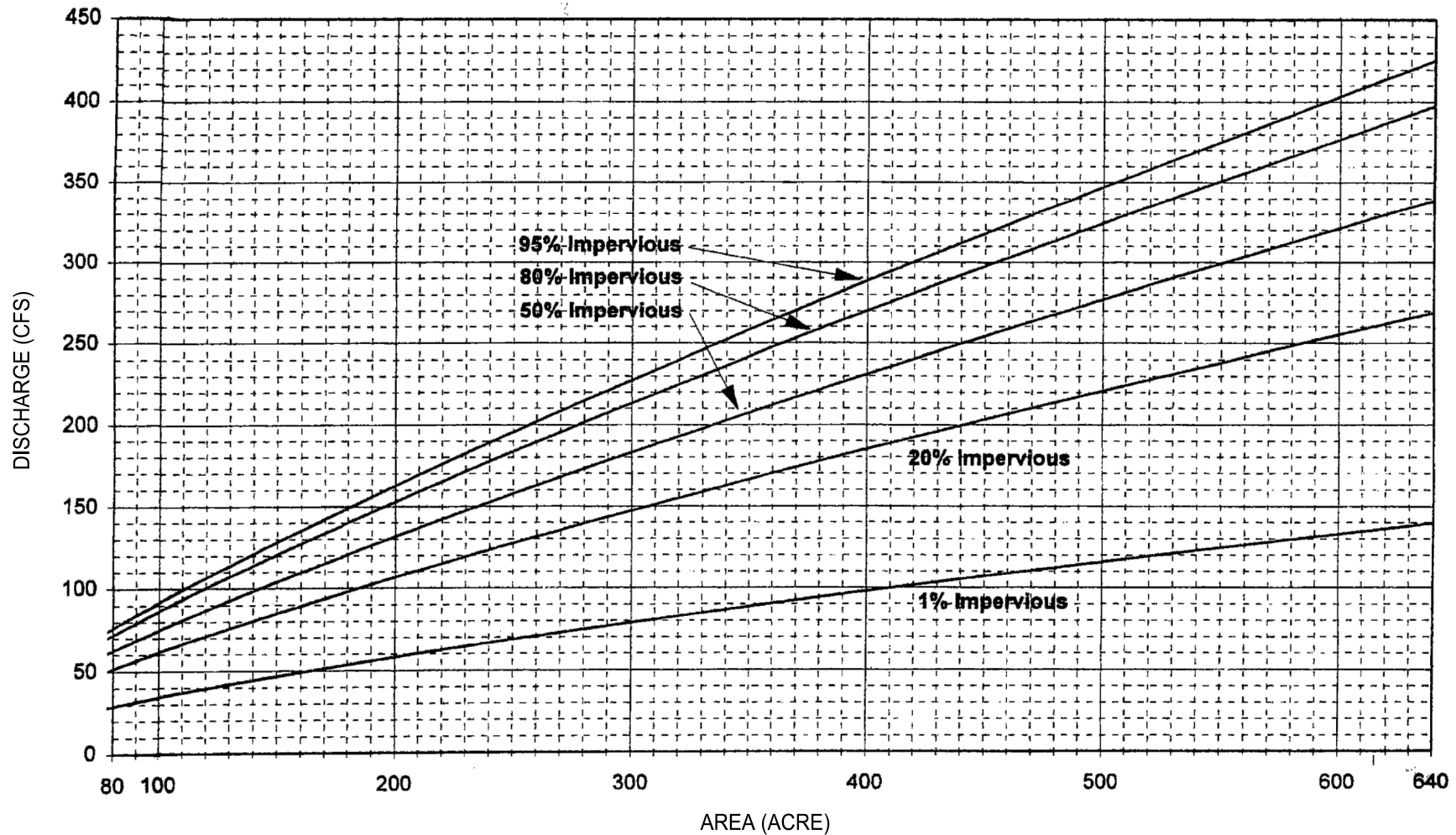
SD - 1B



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

DATE: 09/22/2007		NOT TO SCALE		CITY OF ELK GROVE - PUBLIC WORKS		APPROVED BY: <i>Paul Muddoch</i>	
REVISION	BY	APPROVED	DATE	DESIGN RUNOFF NOLTE METHOD COMMERCIAL AREAS, 50-160 ACRES		10/24/2018	DATE
						CITY ENGINEER	
						DRAWING NUMBER	
						SD - 1C	





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CITY OF ELK GROVE - PUBLIC WORKS

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

APPROVED BY:

Robert M. Muddoch

CITY ENGINEER

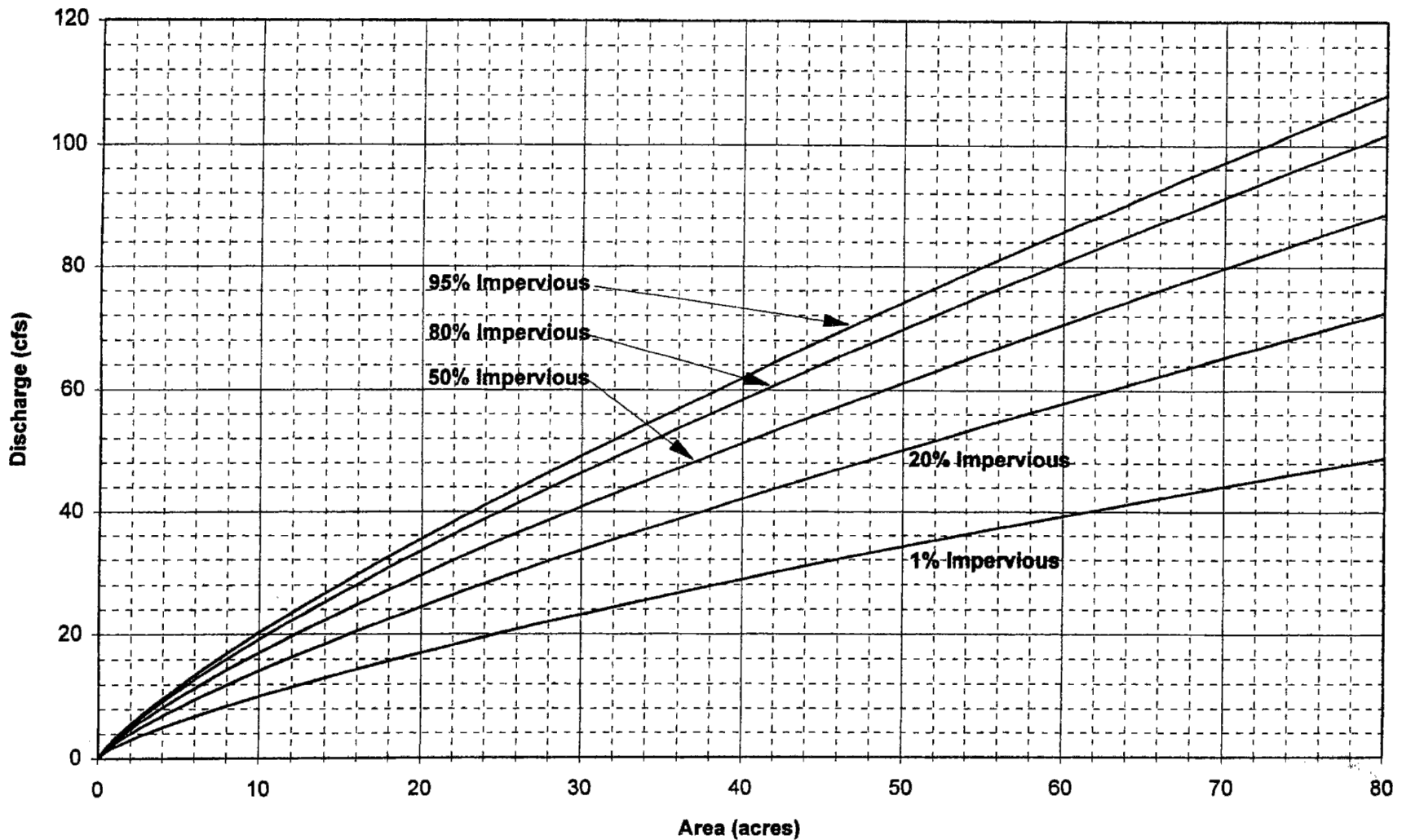
10/24/2018

DATE



DRAWING NUMBER

SD - 2



NOTE:

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

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REVISION	BY	APPROVED	DATE

CITY OF ELK GROVE - PUBLIC WORKS

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

APPROVED BY:

Paul Muddoch

CITY ENGINEER

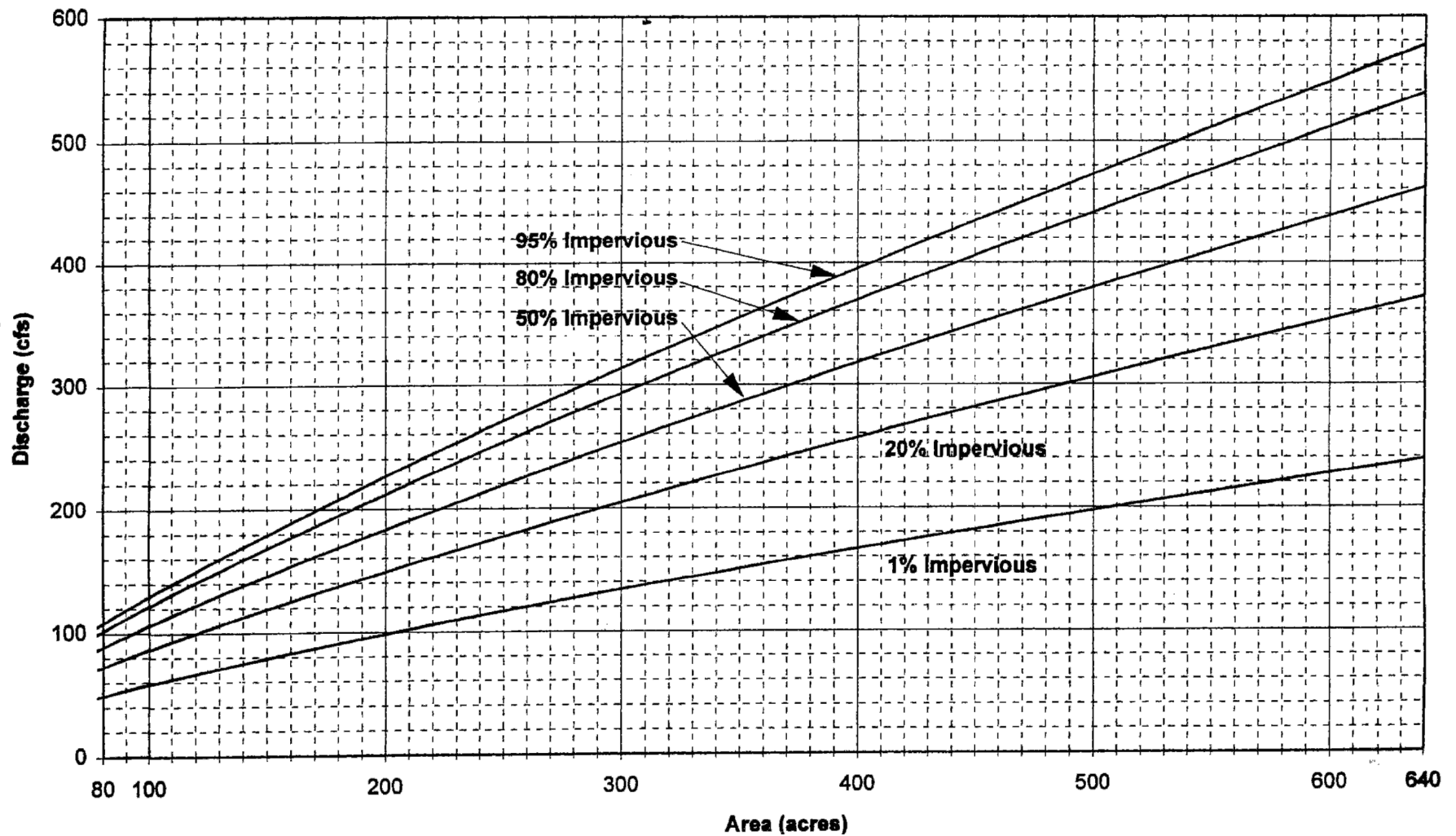
10/24/2018

DATE



DRAWING NUMBER

SD - 3



NOTE:

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

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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 M. Muddoch

CITY ENGINEER

10/24/2018

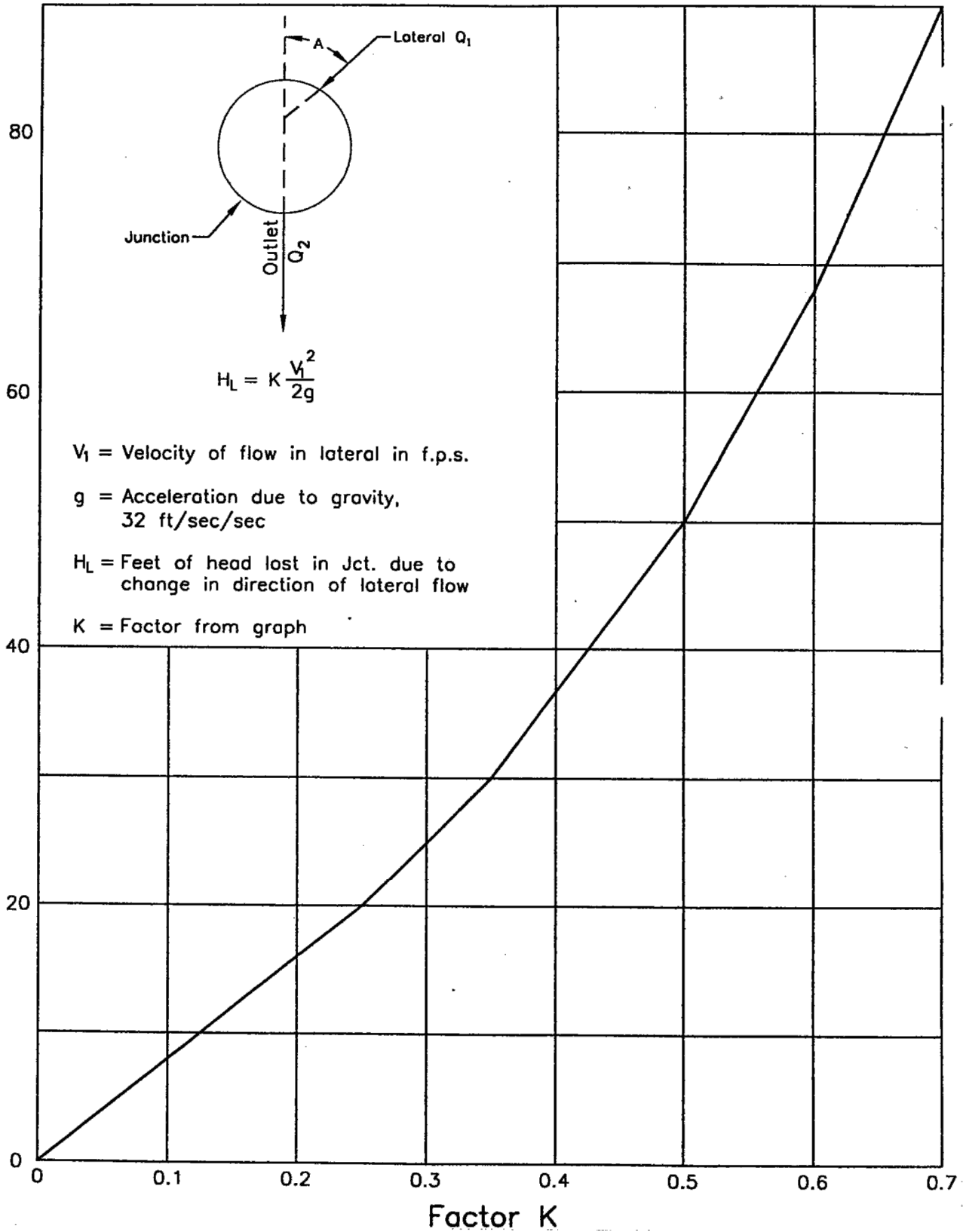
DATE



DRAWING NUMBER

SD - 4


Degree of Angle "A" Between Lateral & Outlet




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CITY OF ELK GROVE - PUBLIC WORKS

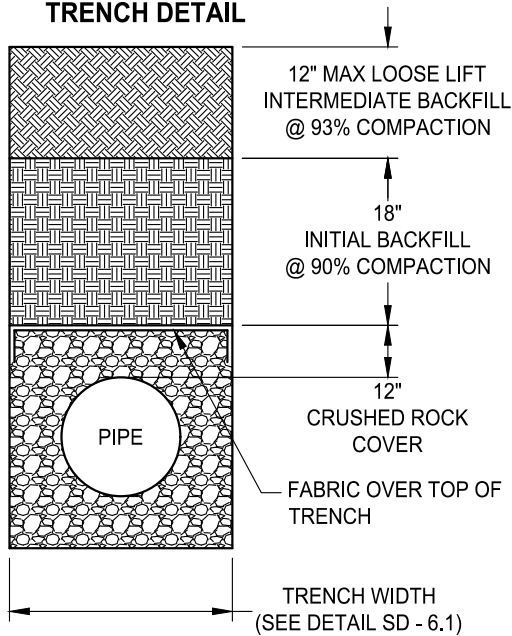
LOSS IN JUNCTION DUE TO CHANGE IN DIRECTION OF FLOW IN LATERAL

APPROVED BY:

 CITY ENGINEER 10/24/2018
 DATE

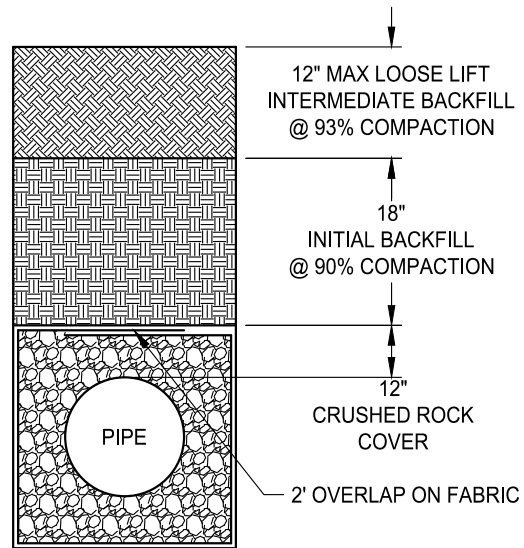
DRAWING NUMBER
SD - 5



**TYPE "A"
SANITARY SEWER / STORM DRAIN
TRENCH DETAIL**



**TYPE "B"
SANITARY SEWER / STORM DRAIN
TRENCH DETAIL**

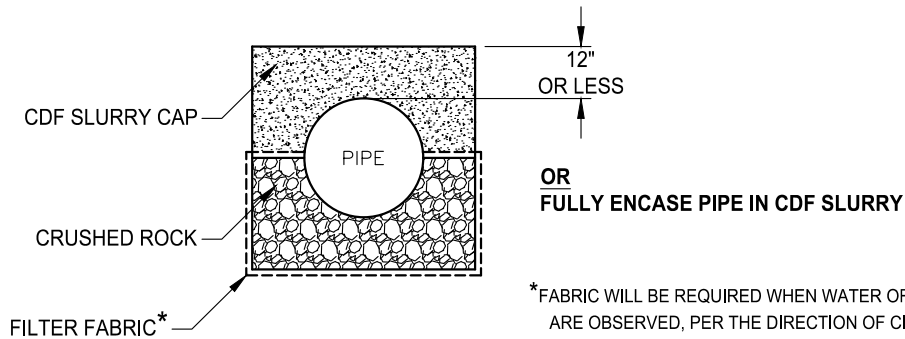


NOTES

- 1 GEOTECTILE FABRIC, PER CITY OF ELK GROVE STANDARD SPECIFICATIONS.
- 2 IF SUBGRADE IS WITHIN 12" OF TOP OF PIPE, BACKFILL MATERIAL TO BE CLASS 2 AGGREGATE BASE, OR CDF PER SPECIFICATIONS.
- 3 INITIAL BACKFILL TO BE PLACED IN AN 18" LOOSE LIFT, COMPACTED TO 12".
- 4 TRENCH DAMS TO BE INSTALLED EVERY MANHOLE RUN.
- 5 CDF BACKFILL AROUND MANHOLES TO BE INSTALLED PER SPECIFICATIONS.

**TYPE "C"
STORM DRAIN TRENCH DETAIL FOR SHALLOW COVER**

FOR USE WITH PVC PIPE ONLY
RCP CLASS IV OR V TO BE BACKFILLED PER NOTE 2



*FABRIC WILL BE REQUIRED WHEN WATER OR SOIL STABILITY CONDITIONS ARE OBSERVED, PER THE DIRECTION OF CITY GEOTECHNICAL STAFF.

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

CITY OF ELK GROVE - PUBLIC WORKS

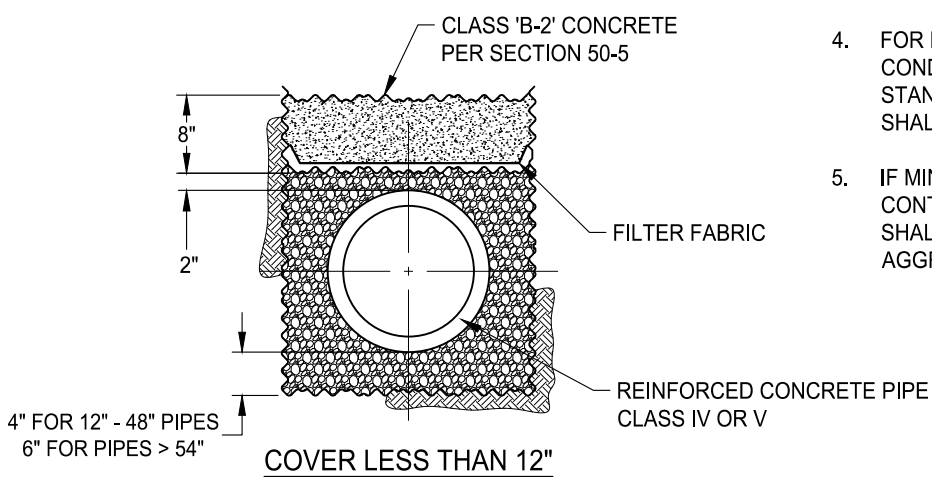
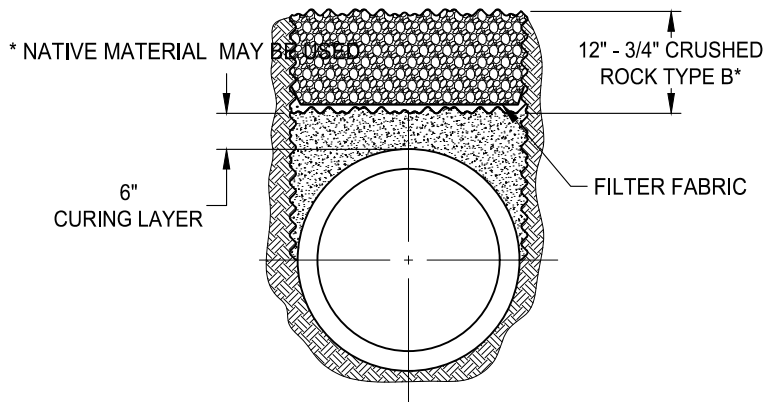
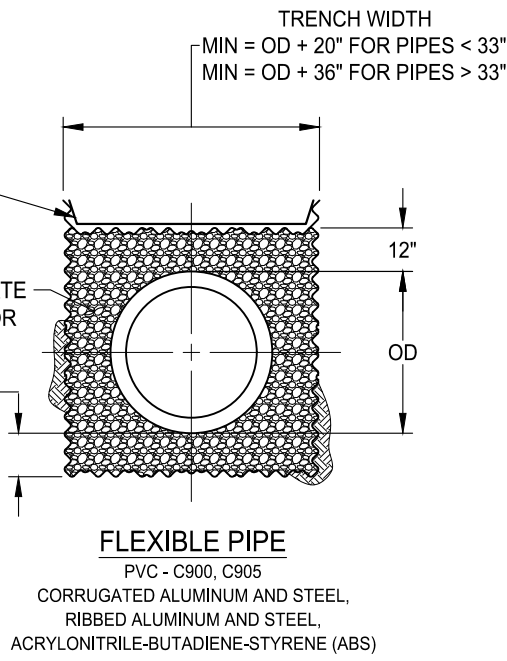
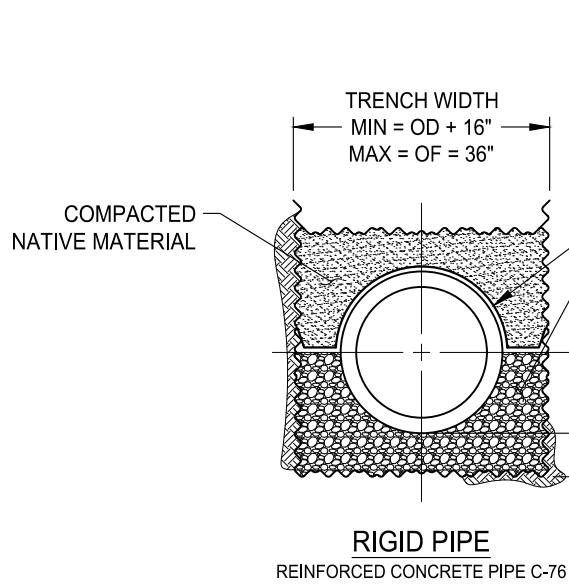
STORM DRAIN TRENCH DETAIL

APPROVED BY:
Robert Murdoch
CITY ENGINEER 10/24/2018
DATE



DRAWING NUMBER

SD - 6.0



GENERAL NOTES:

1. INITIAL BACKFILL MATERIAL SHALL BE THOROUGHLY COMPACTED AROUND PIPE BY SHOVEL SLICING OR TAMPING.
2. SEE SECTION 19 "TRENCH EXCAVATION, BEDDING AND BACKFILL."
3. MINIMUM DEPTH OF BEDDING MATERIAL SHALL BE 1-1/2 INCHES BELOW THE PIPE BELL.
4. FOR ROCKY OR FOR UNSTABLE BEDDING CONDITIONS, SECTION 19-1.07 OF THE STANDARD CONSTRUCTION SPECIFICATIONS SHALL APPLY.
5. IF MINIMUM WIDTH CANNOT BE ACHIEVED, CONTROL DENSITY FILL PER SECTION 50-15 SHALL BE USED IN LIEU OF 3/4" CRUSHED AGGREGATE AT NO EXTRA COST.

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CITY OF ELK GROVE - PUBLIC WORKS

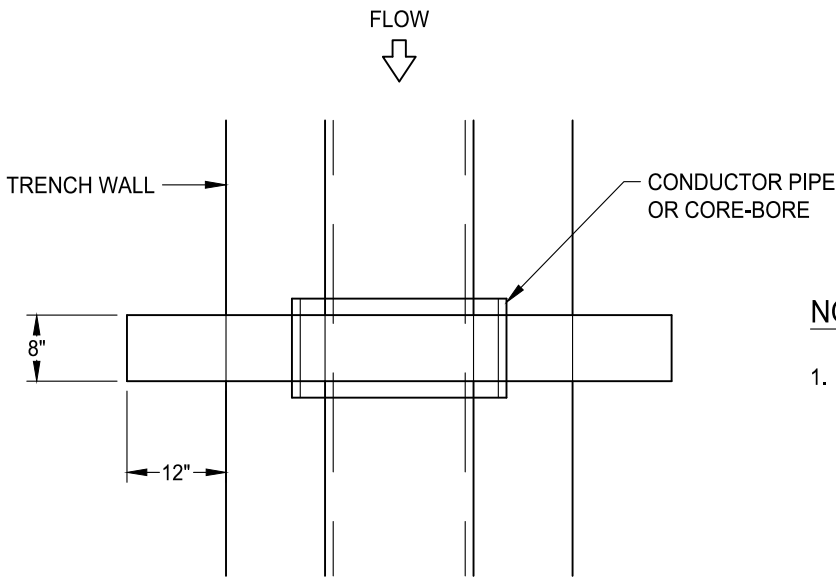
**STORM DRAIN PIPE BEDDING AND
INITIAL BACKFILL**

APPROVED BY:
Paul Muddoch
CITY ENGINEER

10/24/2018
DATE

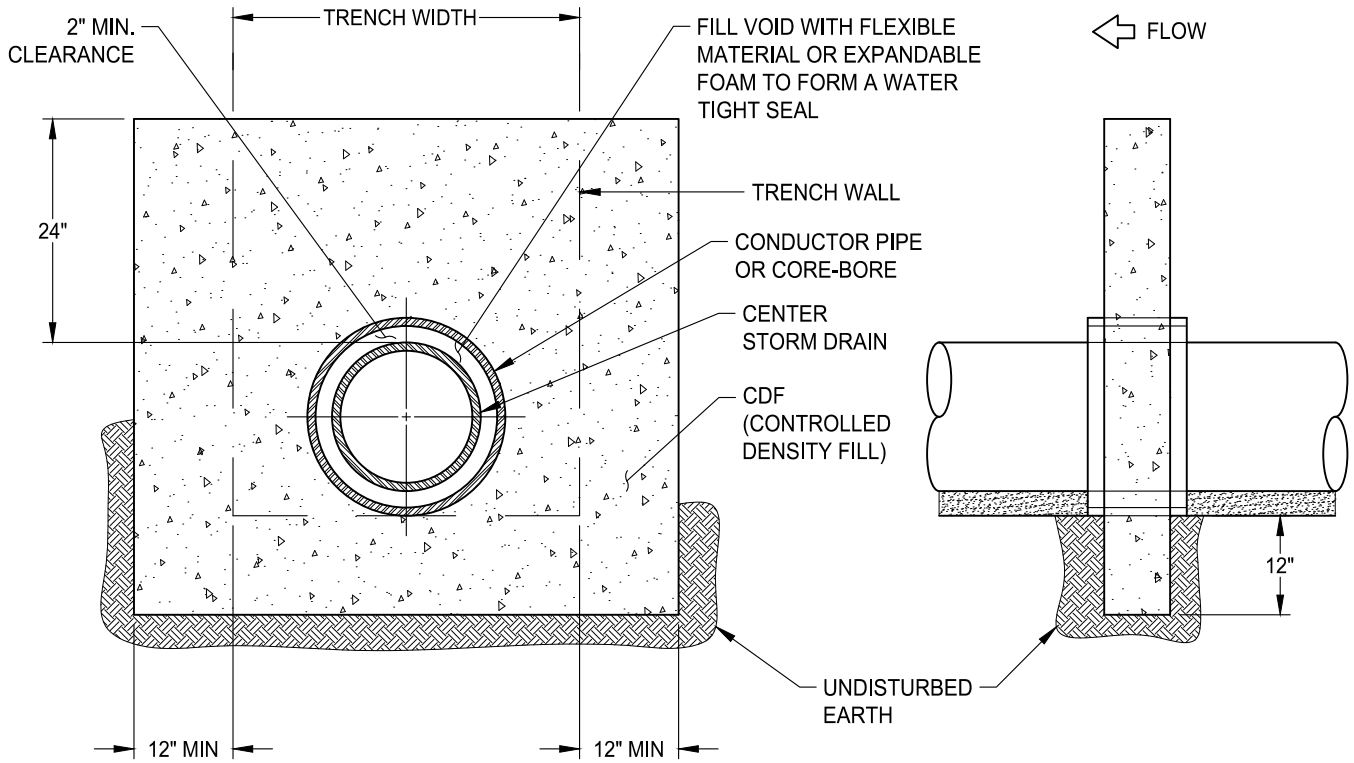
DRAWING NUMBER
SD - 6.1





NOTES:

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



DATE: 09/22/2017		NOT TO SCALE	
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CITY OF ELK GROVE - PUBLIC WORKS

APPROVED BY:
Robert M. Muddoch
CITY ENGINEER 10/24/2018
DATE

TRENCH DAM DETAIL



DRAWING NUMBER

SD - 6.2

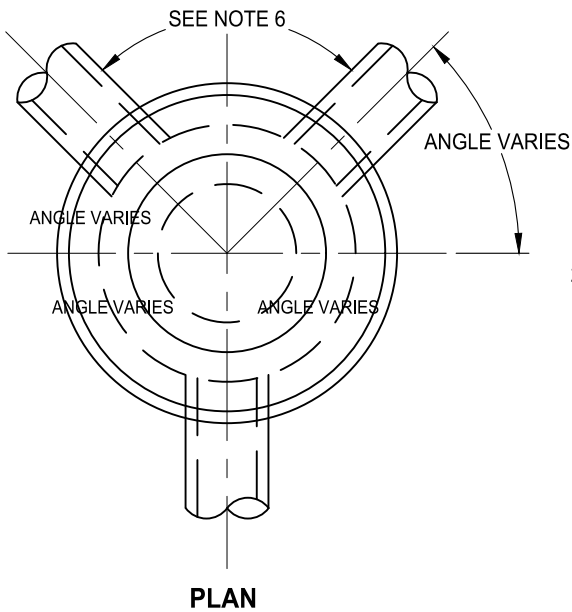
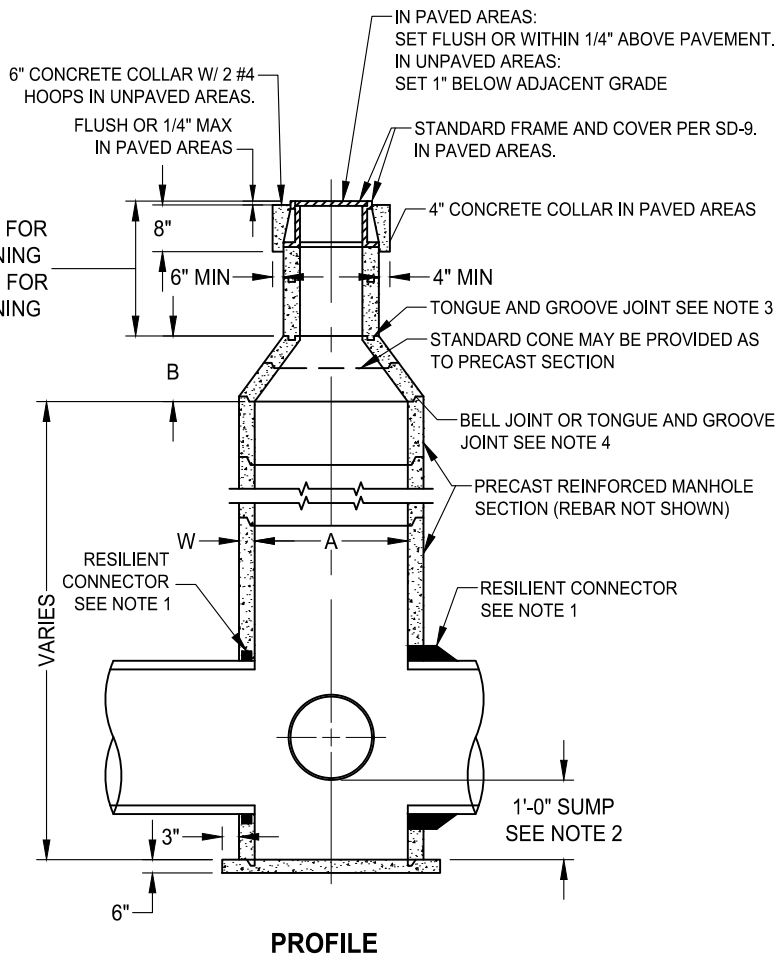


TABLE OF MINIMUM DIMENSIONS

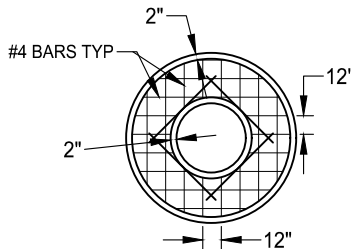
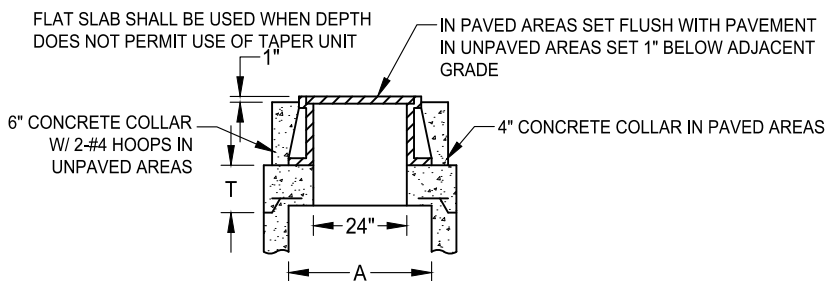
M.H.	A	B	T*	W
48"	48"	18"	8"	4'
60"	60"	28"	9"	6'
72"	72"	SEE NOTE 8	10"	7'

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 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 FROM THE FINISHED CONCRETE CONNECTION.
- SEE SECTION 39, CONSTRUCTION SPECIFICATIONS, "MANHOLES"
- CONE FOR MANHOLES GREATER THAN 60" DIAMETER SHALL BE INDIVIDUALLY DESIGNED.



PROFILE



FLAT SLAB TOP

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


CITY OF ELK GROVE - PUBLIC WORKS

STANDARD PRECAST CONCRETE DRAINAGE MANHOLE

APPROVED BY:
Paul Mulock
CITY ENGINEER

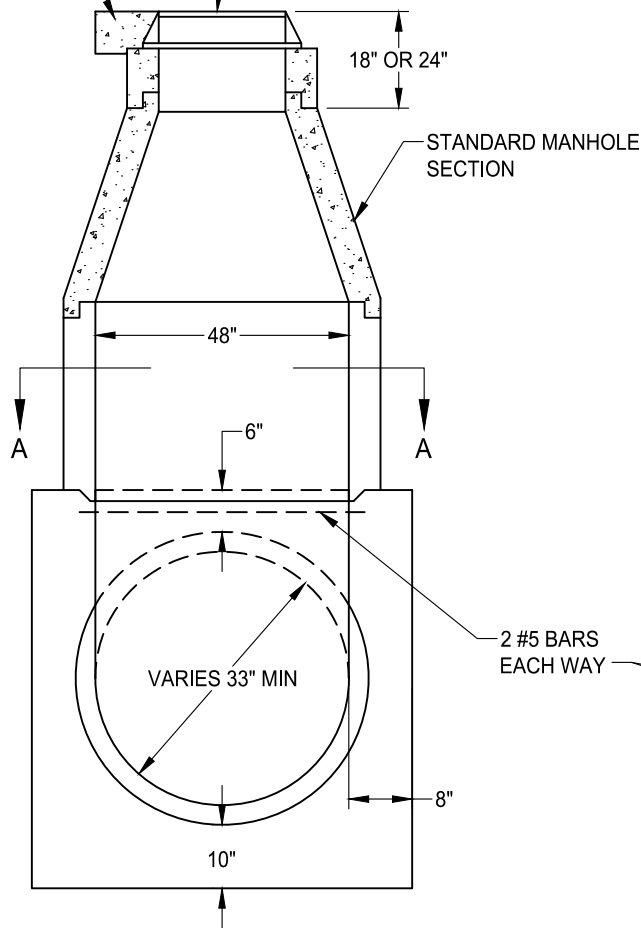
10/24/2018
DATE

DRAWING NUMBER
SD - 7

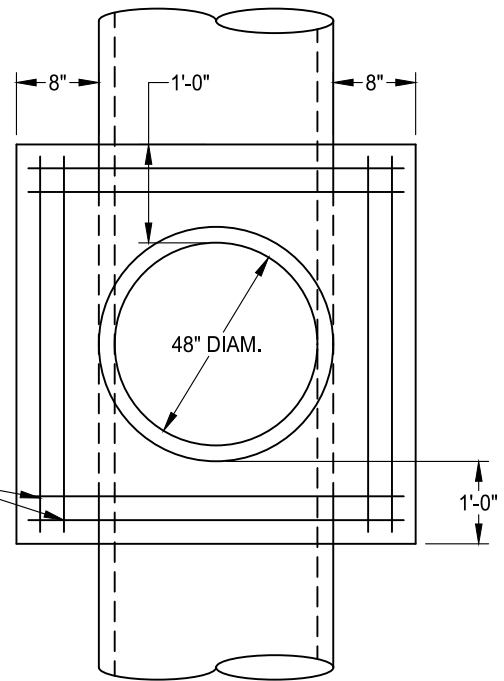


CONCRETE COLLAR
(SEE STD DWG SD-7)

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



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

CITY OF ELK GROVE - PUBLIC WORKS

**TYPE B
SADDLE MANHOLE**

APPROVED BY:

Paul Mulock

CITY ENGINEER

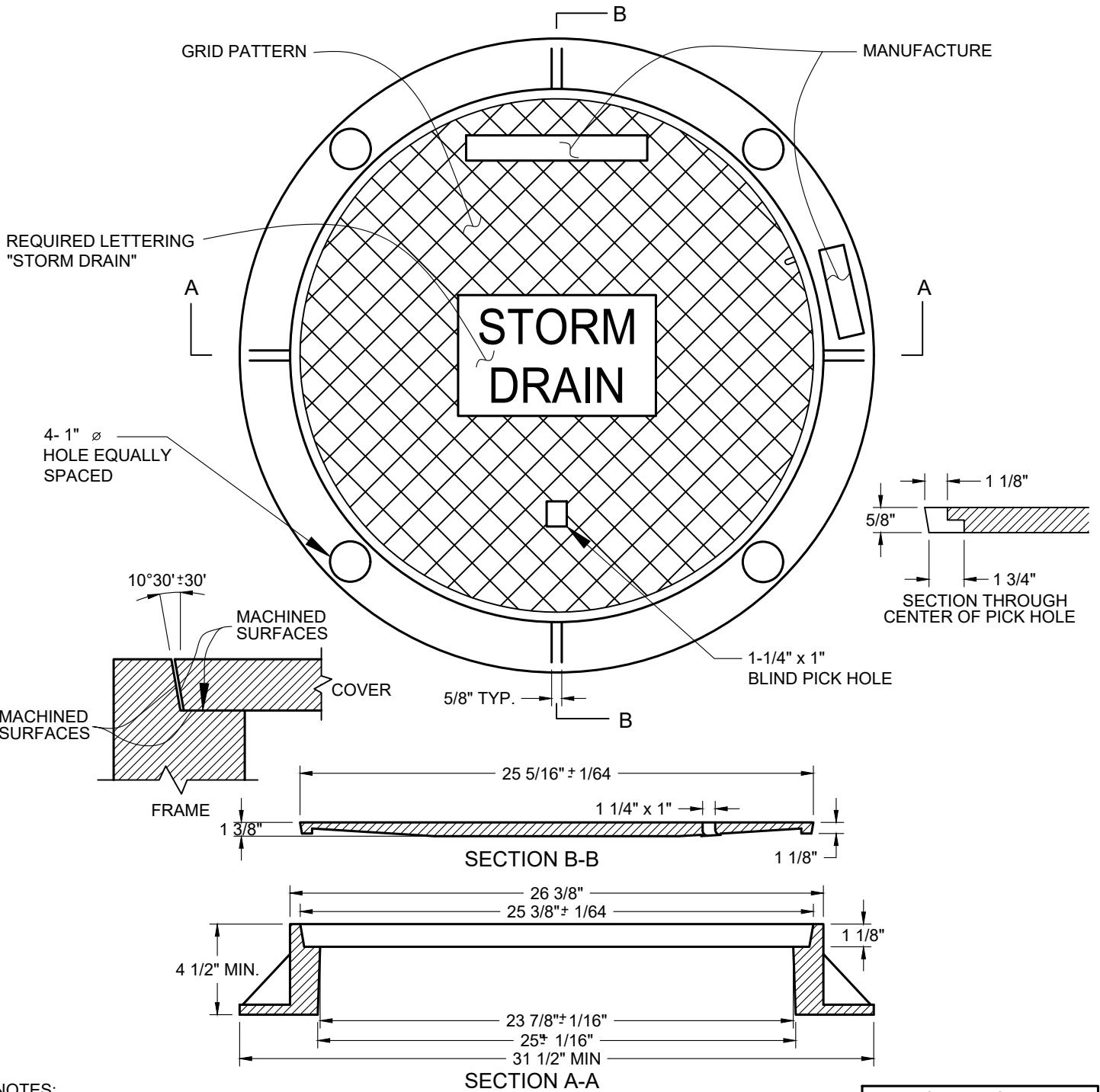
10/24/2018

DATE



DRAWING NUMBER

SD - 8B



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 MATERIAL.
5. LOCKING COVER TYPE FRAME AND COVERS SHALL BE USED IN EASEMENT AREAS UNLESS OTHERWISE APPROVED.

SET WEIGHT	
FRAME	140 LBS
COVER	130 LBS
TOTAL	270 LBS

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CITY OF ELK GROVE - PUBLIC WORKS

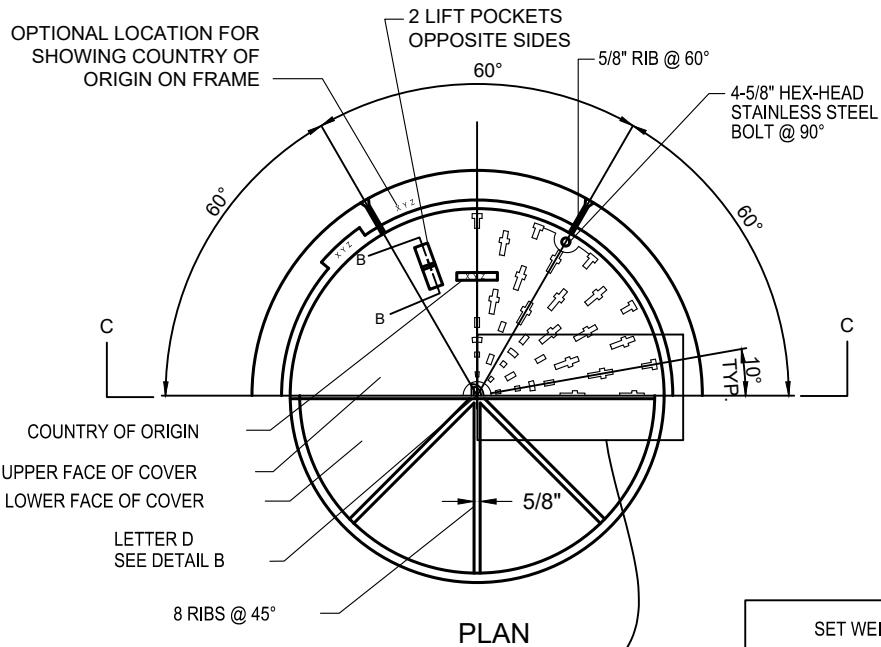
**GREY CAST IRON
STANDARD 24" MANHOLE
FRAME & COVER**

APPROVED BY:
Robert M. Muddoch
CITY ENGINEER

10/24/2018
DATE

DRAWING NUMBER
SD - 9

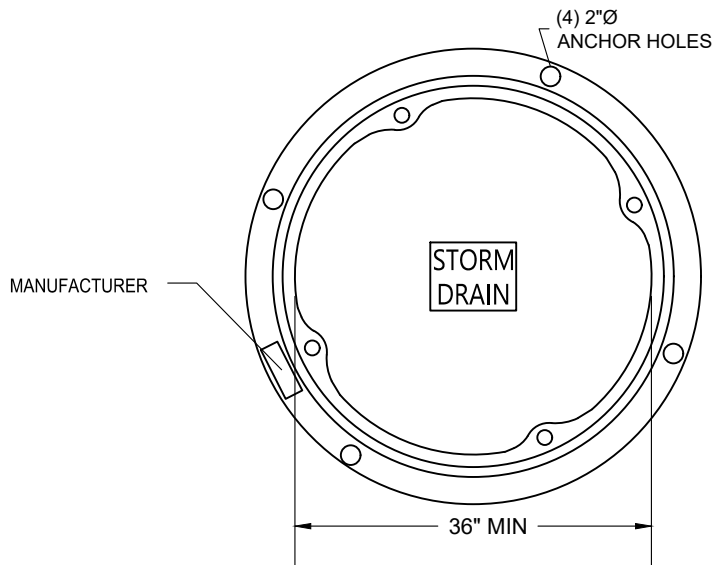




SET WEIGHT	
FRAME	310 LBS
COVER	290 LBS
TOTAL	600 LBS

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 SUBSTITUTED FOR COVER WHEN SPECIFIED IN CONTRACT DOCUMENTS OR UPON APPROVAL OF DIRECTOR.
7. COVER SHALL BE "STORM DRAIN" STAMPED.



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CITY OF ELK GROVE - PUBLIC WORKS

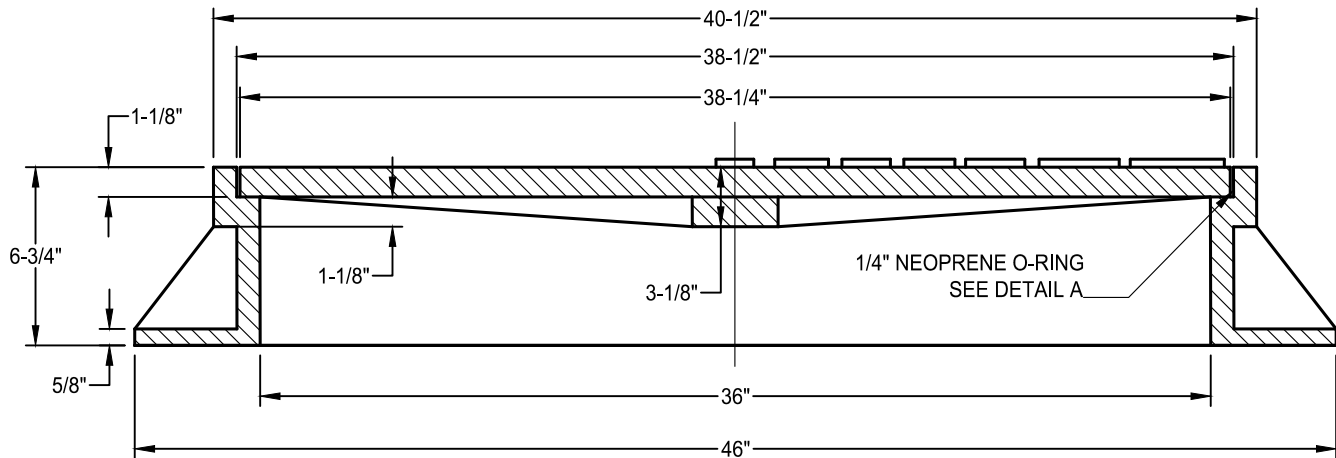
**GREY CAST IRON
STANDARD 36" MANHOLE
FRAME & COVER (PG 1 OF 2)**

APPROVED BY:
Robert M. Mueloch
CITY ENGINEER

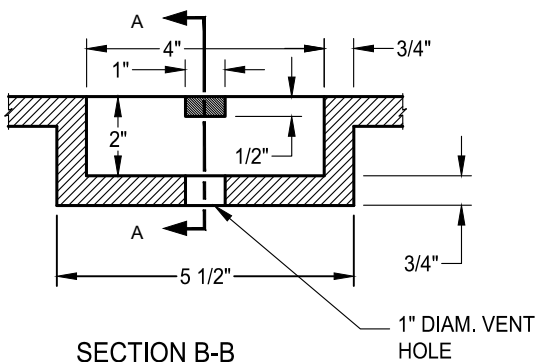
10/24/2018
DATE

DRAWING NUMBER
SD - 10.1



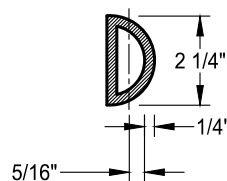


SECTION C-C

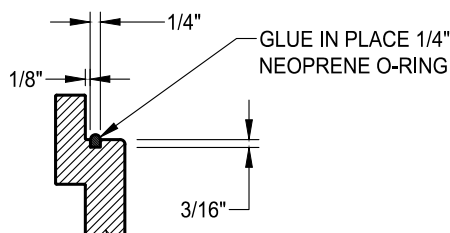


SECTION B-B

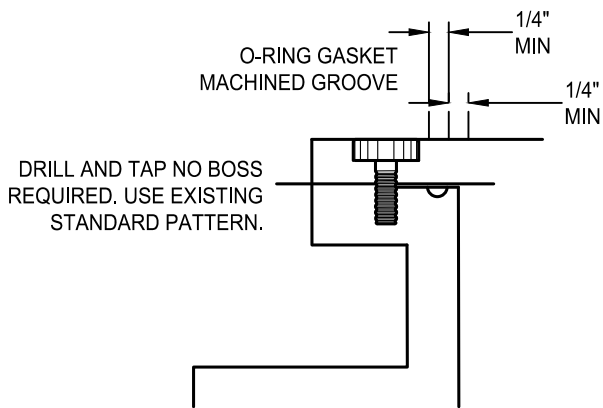
1" DIAM. VENT HOLE



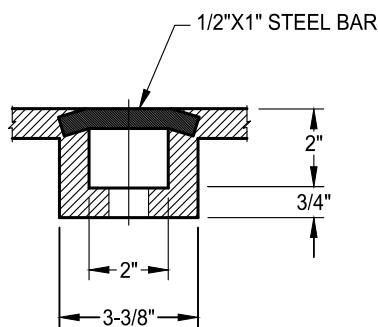
DETAIL B



DETAIL A



BOLT DOWN COVER DETAIL



SECTION A-A

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

CITY OF ELK GROVE - PUBLIC WORKS

**GREY CAST IRON
STANDARD 36" MANHOLE
FRAME & COVER (PAGE 2 OF 2)**

APPROVED BY:

Paul Mudoch

CITY ENGINEER

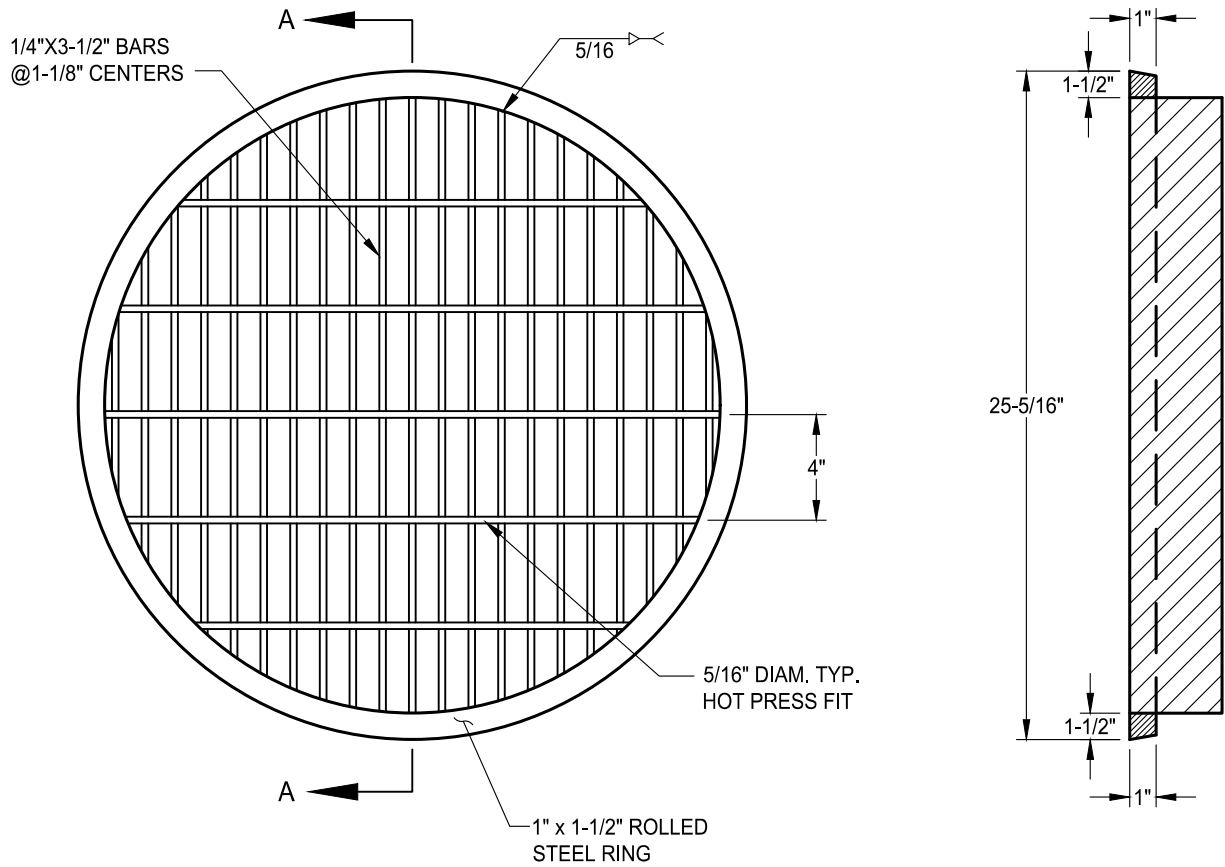
10/24/2018

DATE



DRAWING NUMBER

SD - 10.2

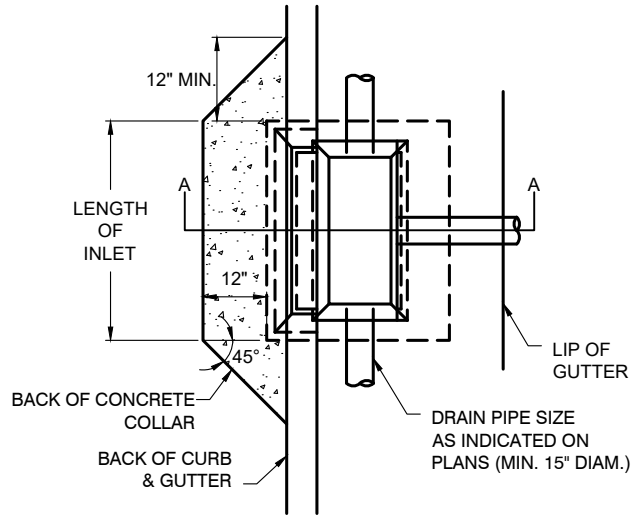


SECTION A-A

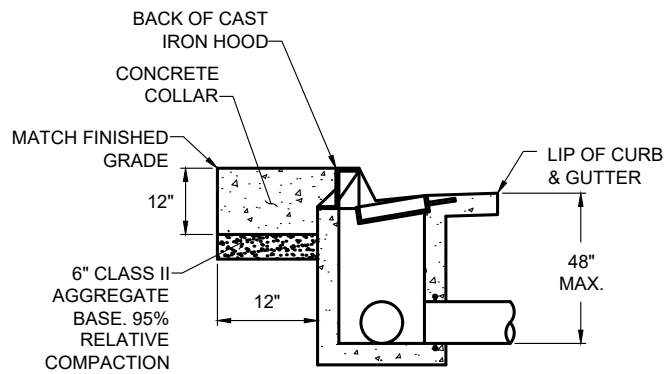
NOTES:

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.

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REVISION	BY	APPROVED	DATE	GRATE TYPE MANHOLE COVER		CITY ENGINEER	10/24/2018 DATE	
						DRAWING NUMBER		
						SD - 11		



PLAN



SECTION A-A

NOTES

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

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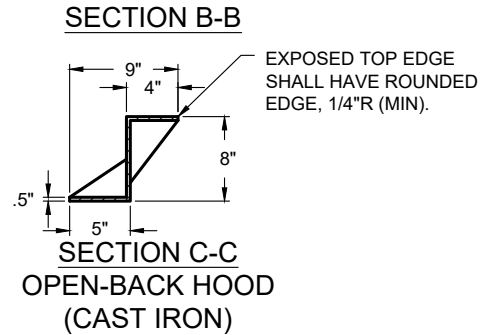
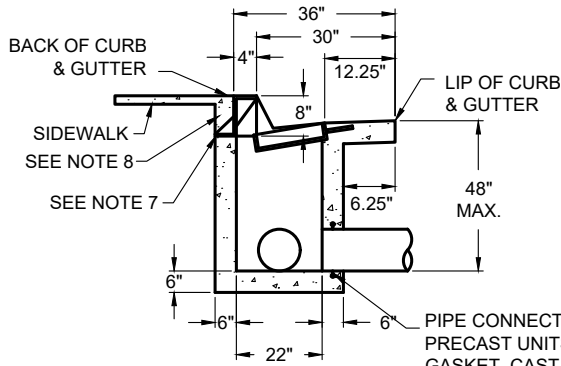
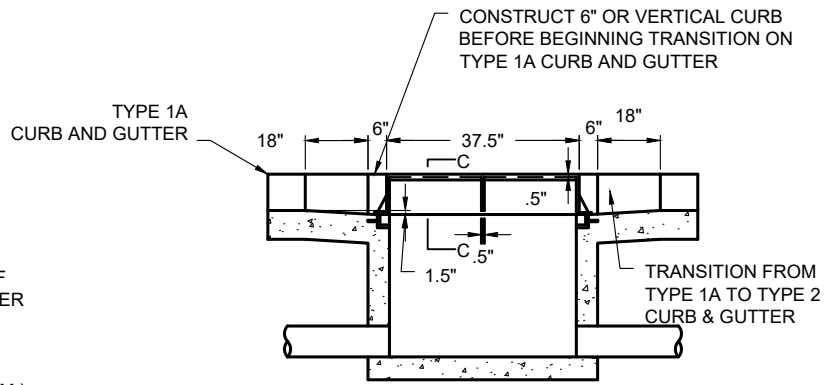
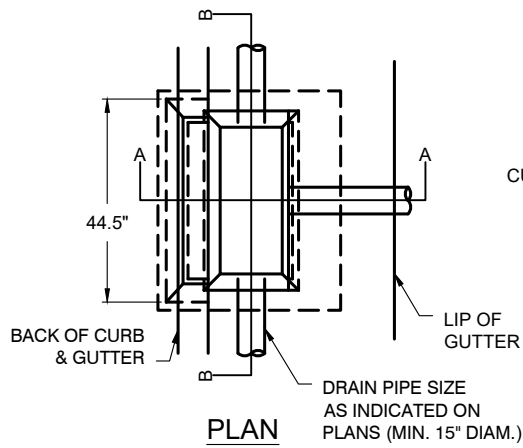
CITY OF ELK GROVE - PUBLIC WORKS

**DROP INLET
TYPE B
AT DETACHED SIDEWALK**

APPROVED BY:
Robert Muddoch
CITY ENGINEER 10/24/2018
DATE

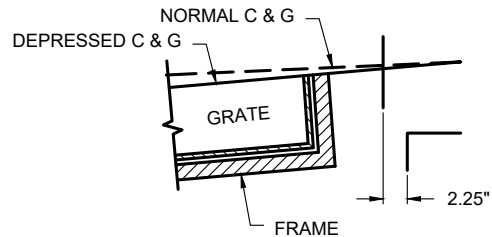
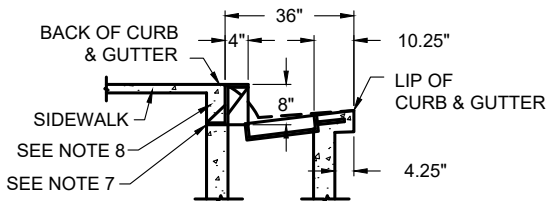


DRAWING NUMBER
SD - 12.1



SECTION A-A
TYPE 2-VERTICAL C&G

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



SECTION A-A
TYPE 1A - ROLLED C&G

CURB AND GUTTER
WITH FRAME DETAIL

NOTES

- STANDARD DEPRESSION FOR INLET IS 1-1/2" AND LIP OF GUTTER MUST BE SET BACK 3" FROM GUTTER FLOW LINE.
- FRAME AND GRATE SHALL CONFORM TO STANDARD DRAWINGS SD-14 AND SD-15.
- OPEN-BACK HOOD SHALL BE H-20 RATED.
- EXPOSED EDGES SHALL HAVE A 1/8" R (MINIMUM).
- AN EDGING TOOL SHALL BE USED ON ALL EDGES WHERE THE CONCRETE SIDEWALK AND CURB MEET THE TOP OF THE HOOD.
- ALL EXPOSED PARTS TO BE HOT DIP GALVANIZED PER ASTM A123, AFTER FABRICATION.
- SEE SD-12.1 FOR INSTALLATION OF INLETS AT DETACHED SIDEWALKS.
- INCREASE SIDEWALK THICKNESS TO 8" IN ORDER TO ANCHOR CAST IRON HOOD AND INLET WALL. WIDTH TO BE 6" MINIMUM.
- WHEN MORE THAN ONE GRATE IS PROPOSED, STD DWG SD-16 FOR SUPPORT ASSEMBLY.

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REVISION	BY	APPROVED	DATE

CITY OF ELK GROVE - PUBLIC WORKS

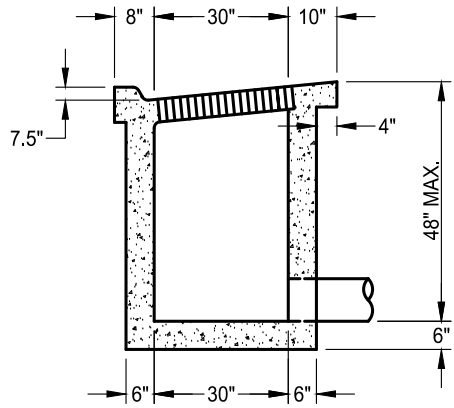
APPROVED BY:
Paul Murock
CITY ENGINEER
10/24/2018
DATE

**DROP INLET
TYPE B**

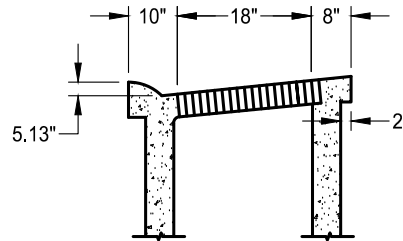


DRAWING NUMBER

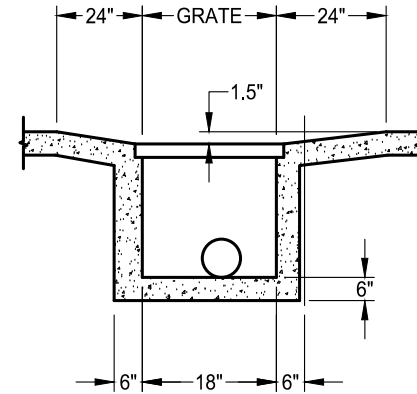
SD - 12



TYPE 2 CURB

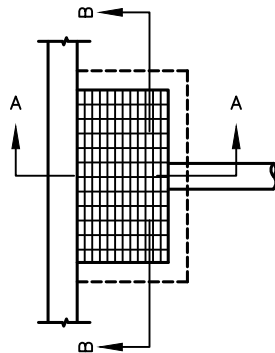


TYPE 1A CURB



SECTION B-B

SECTION A-A



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. OPEN-BACK HOOD SHALL BE H-20 RATED.
4. ALL 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. ALL EXPOSED PARTS TO BE HOT DIP GALVANIZED PER ASTM A123, AFTER FABRICATION.

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

CITY OF ELK GROVE - PUBLIC WORKS

**DROP INLET
TYPE C**

APPROVED BY:

Paul Muddoch

CITY ENGINEER

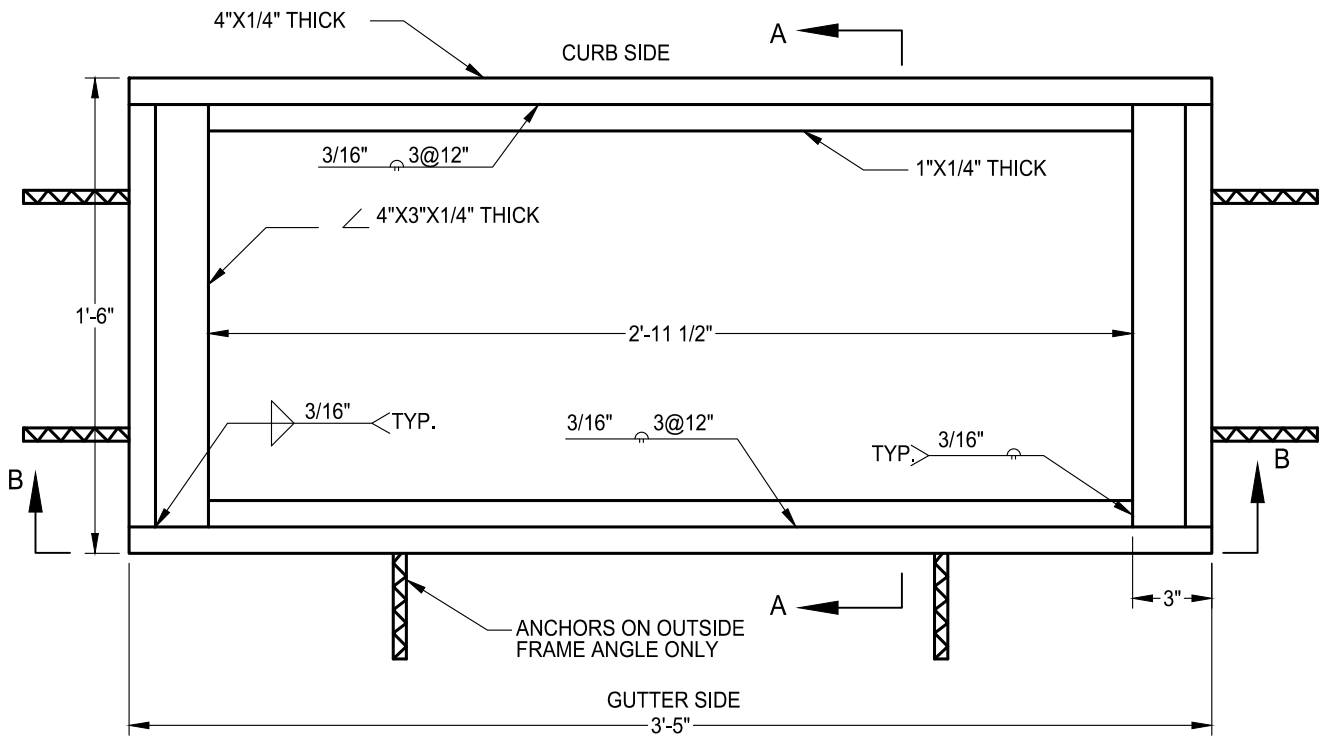
10/24/2018

DATE

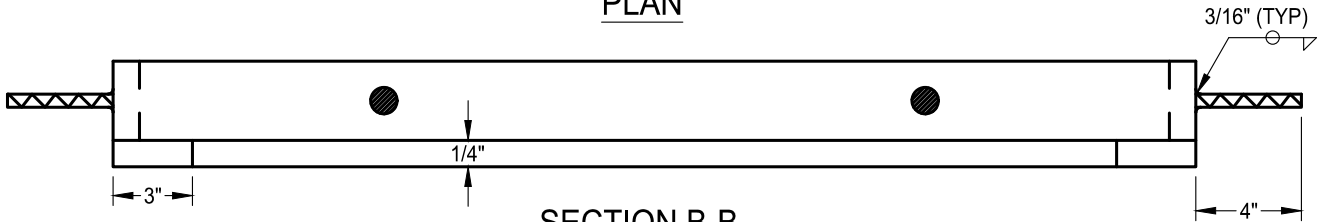
DRAWING NUMBER

SD - 13

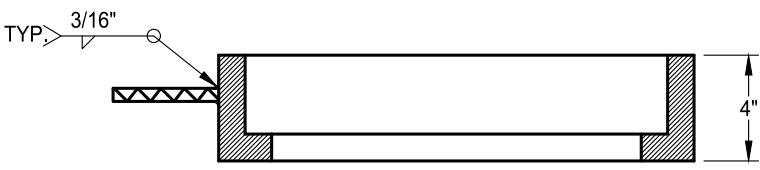




PLAN



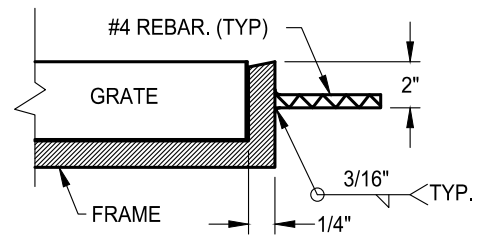
SECTION B-B



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

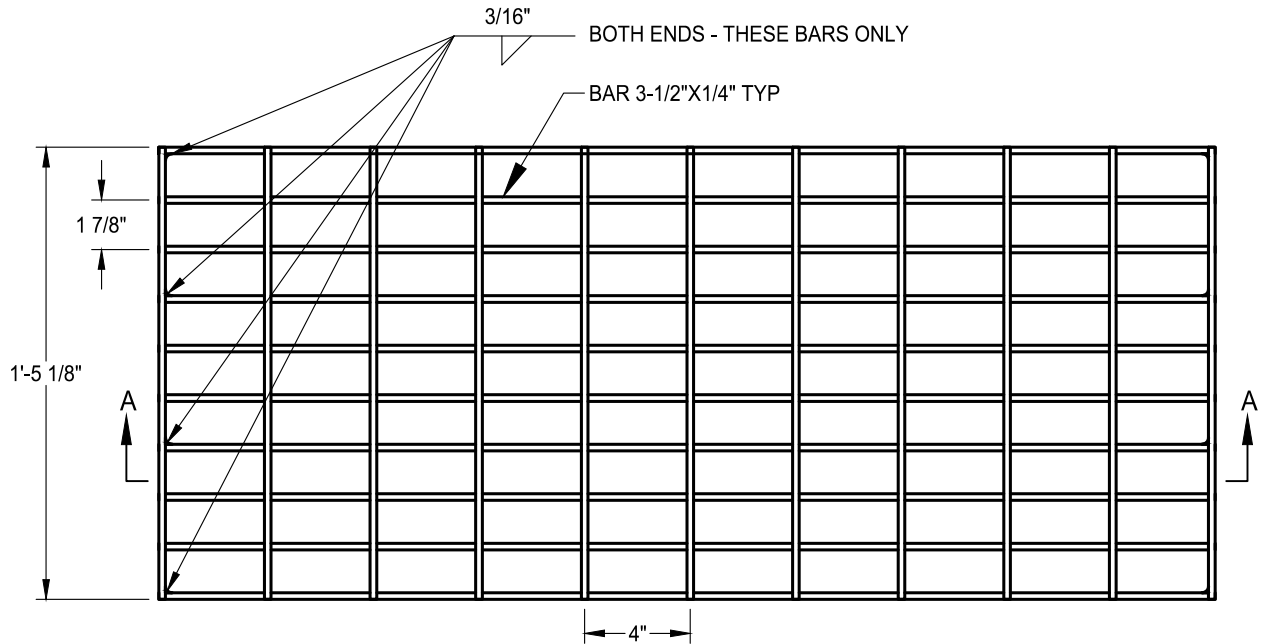
WELDED STEEL GRATE FRAME

APPROVED BY:
Robert M. Muddoch
CITY ENGINEER

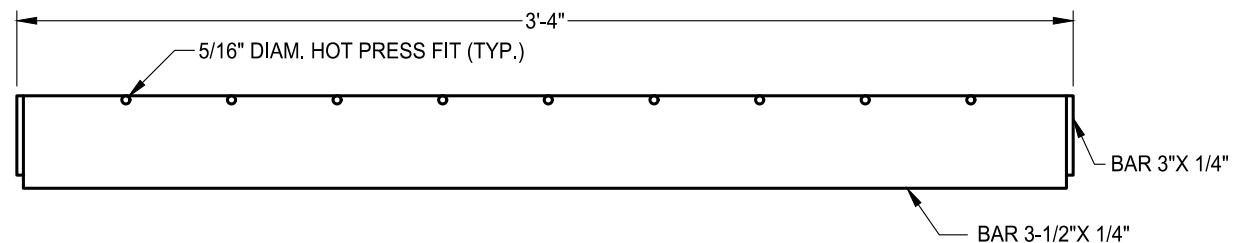
10/24/2018
DATE

DRAWING NUMBER
SD - 14





PLAN

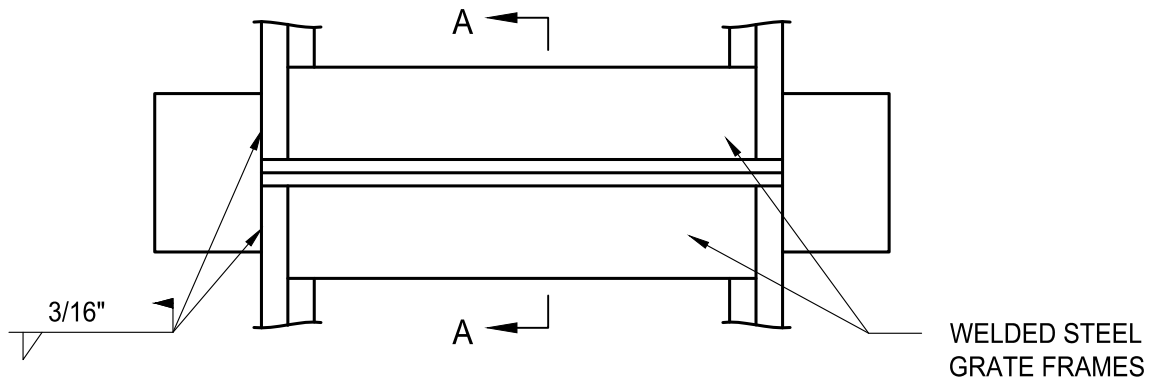


SECTION A-A

NOTES:

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

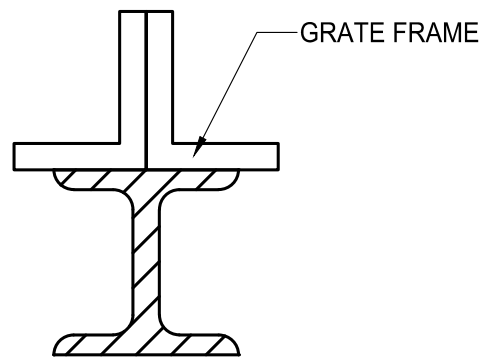
DATE: 09/22/2017		NOT TO SCALE		CITY OF ELK GROVE - PUBLIC WORKS			APPROVED BY: <i>Robert Muddoch</i> CITY ENGINEER			
		WELDED STEEL GRATE			10/24/2018 DATE			DRAWING NUMBER SD - 15		
REVISION	BY	APPROVED	DATE							



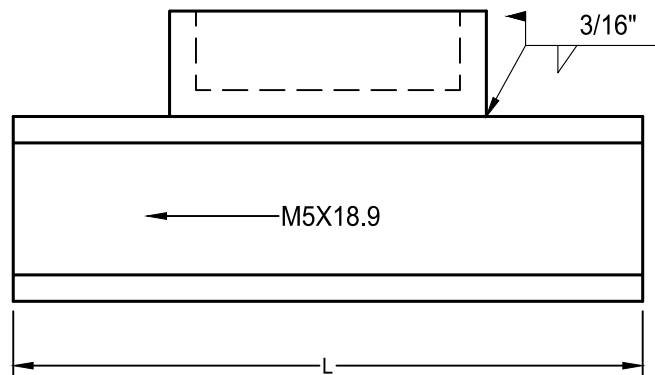
PLAN

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 (STANDARD PLAN 301).
3. ALL EXPOSED PARTS TO BE HOT DIP GALVANIZED PER ASTM A123, AFTER FABRICATION.



SECTION A-A



ELEVATION

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

CITY OF ELK GROVE - PUBLIC WORKS

**CENTER SUPPORT ASSEMBLY
FOR MULTIPLE GRATES**

APPROVED BY:

Robert M. Muddoch

CITY ENGINEER

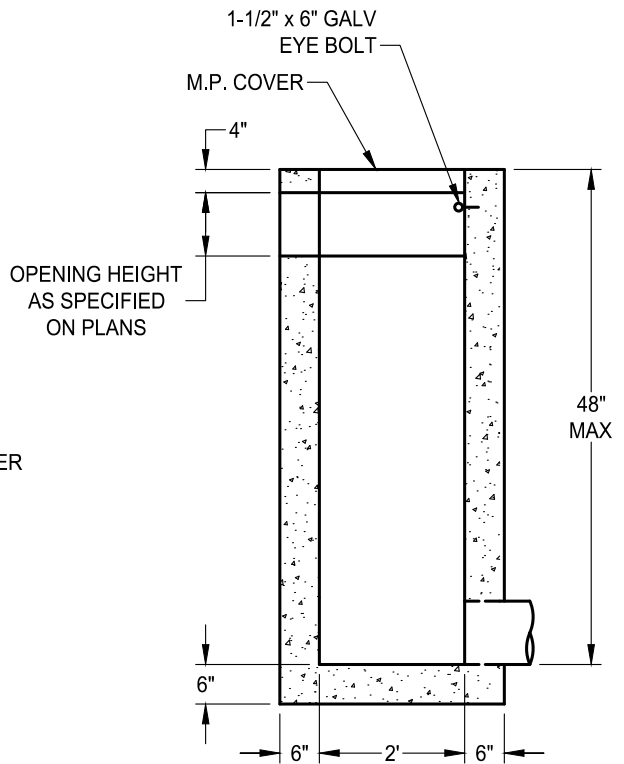
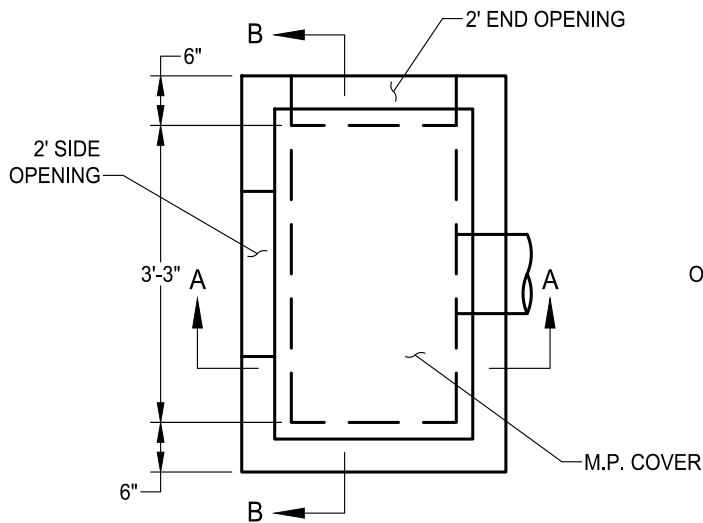
10/24/2018

DATE

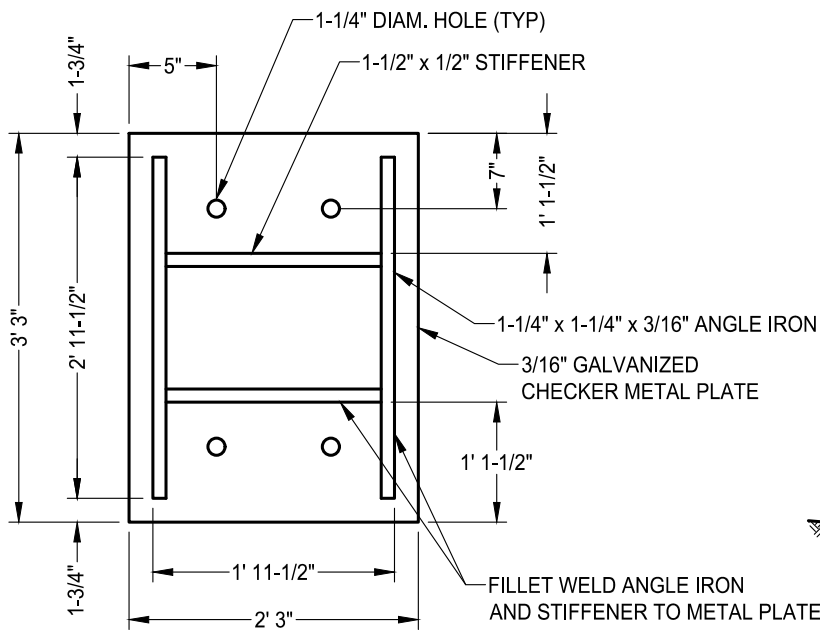


DRAWING NUMBER

SD - 16

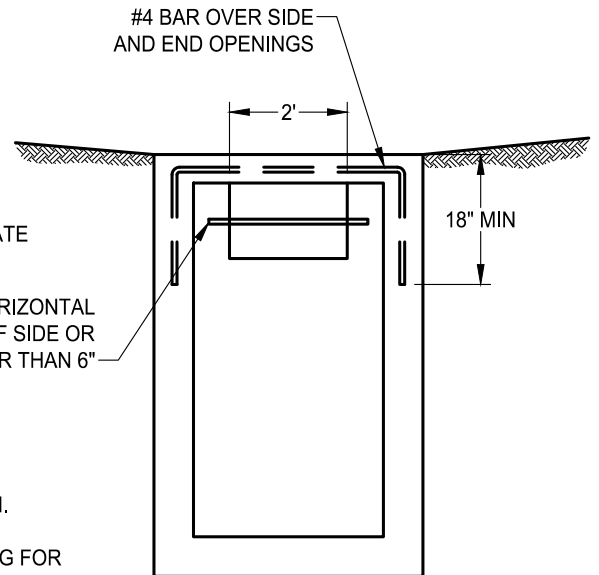


SECTION A-A



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

**DROP INLET
TYPE F**

APPROVED BY:

Paul Mulock

CITY ENGINEER

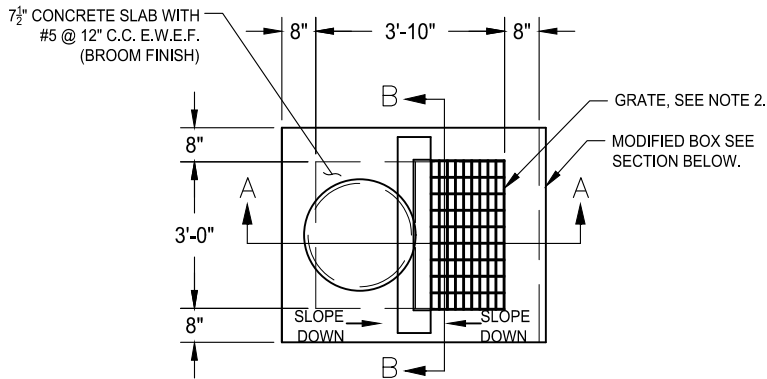
10/24/2018

DATE

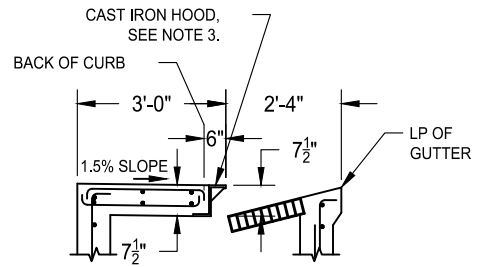


DRAWING NUMBER

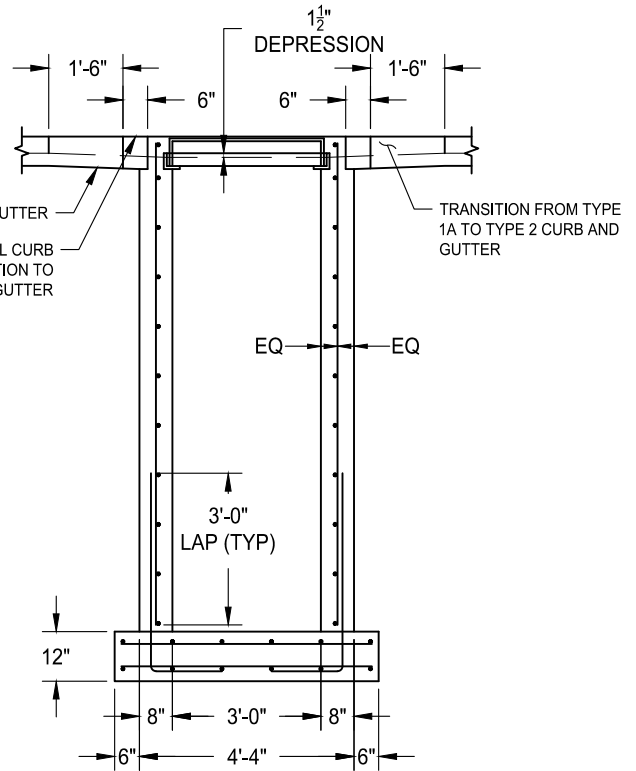
SD - 18



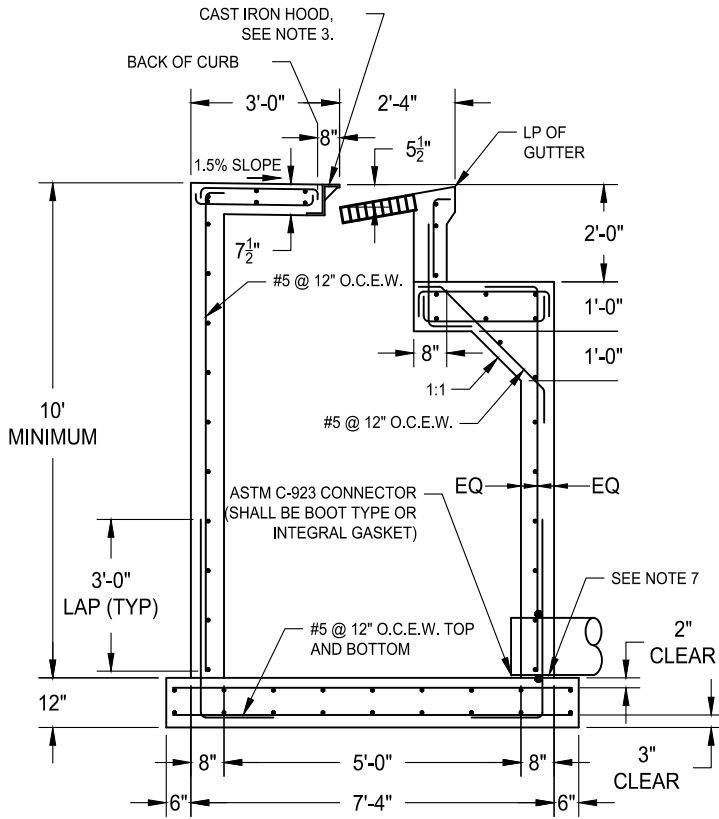
PLAN VIEW



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 B-B



SECTION A-A
TYPE 1A CURB AND GUTTER

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. OPEN BACK CAST IRON HOOD SHALL BE H-20 RATED, 3/4" THICK AND CONFORM TO STANDARD DRAWING SD-12.
4. 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.
6. 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.
7. THE MINIMUM PIPE SIZE IS 12" IF THE INLET DEPTH IS GREATER THAN 4', THE MINIMUM PIPE SIZE SHALL BE 15".
8. THE MANHOLE FRAME AND COVER SHALL BE PER STANDARD DRAWING SD-10.1 AND SD-10.2.

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

CITY OF ELK GROVE - PUBLIC WORKS

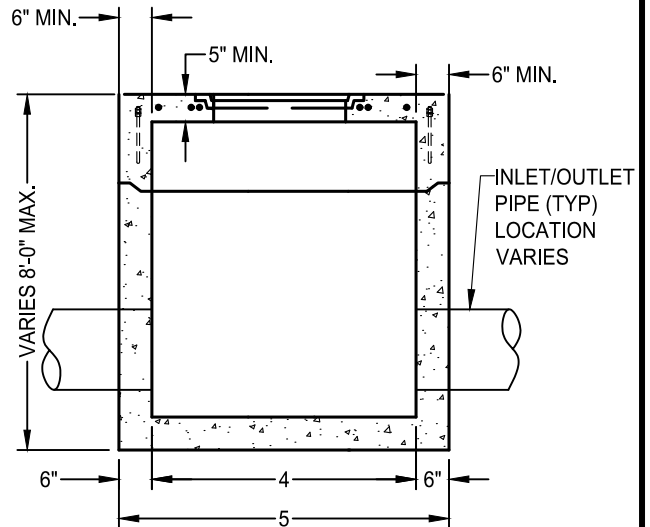
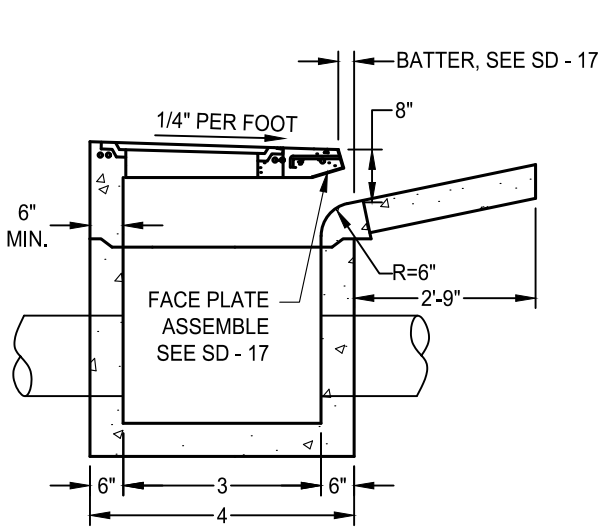
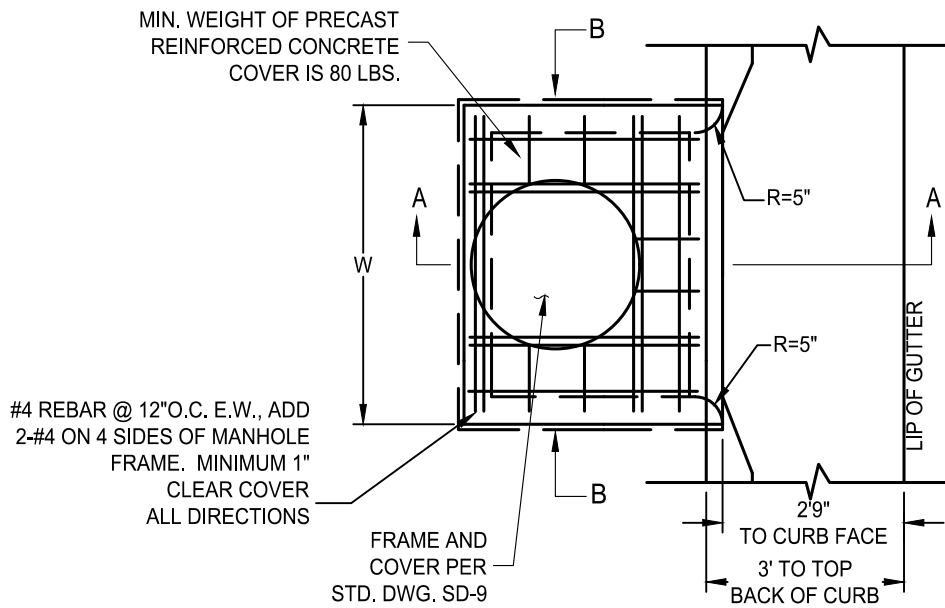
APPROVED BY:
Paul Mulock
CITY ENGINEER
10/24/2018
DATE

MODIFIED TYPE J INLET



DRAWING NUMBER

SD - 19.3



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

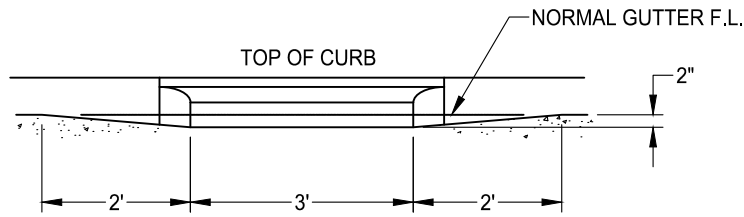
CITY OF ELK GROVE - PUBLIC WORKS

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

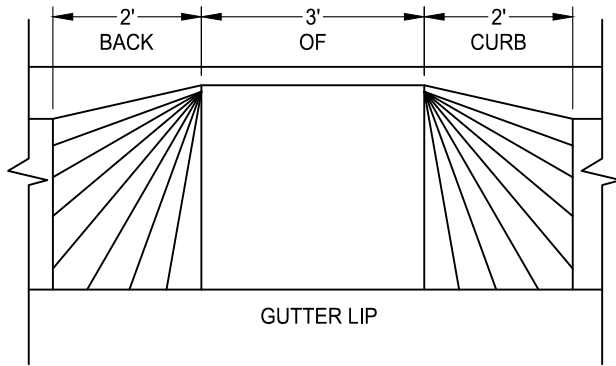
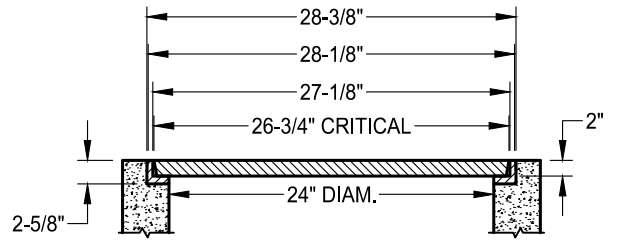
APPROVED BY:
Robert M. Muddoch
CITY ENGINEER 10/24/2018
DATE



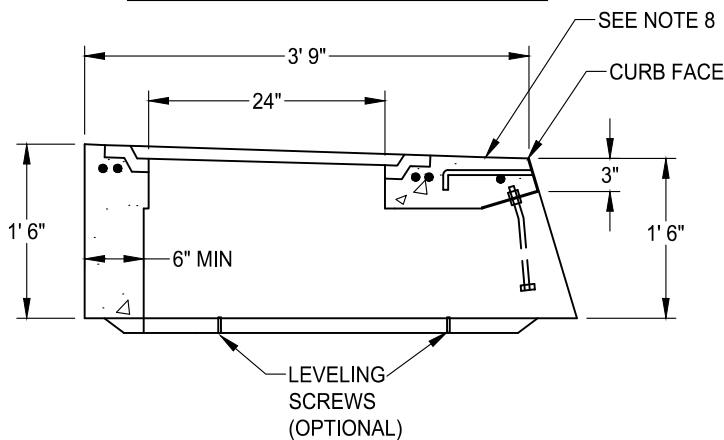
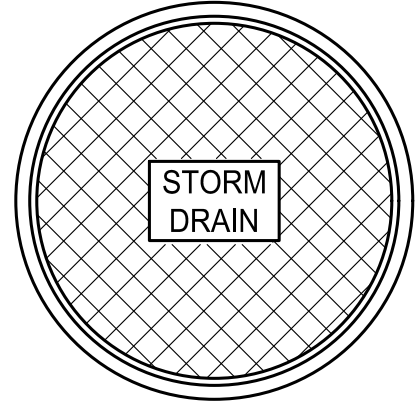
DRAWING NUMBER
SD - 19.1



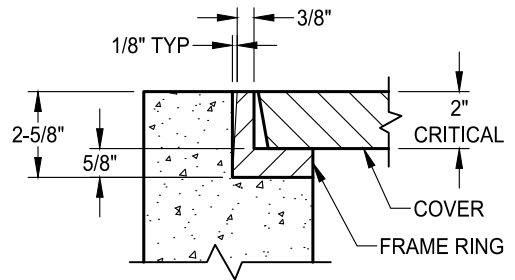
GUTTER TRANSITION ELEVATION



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

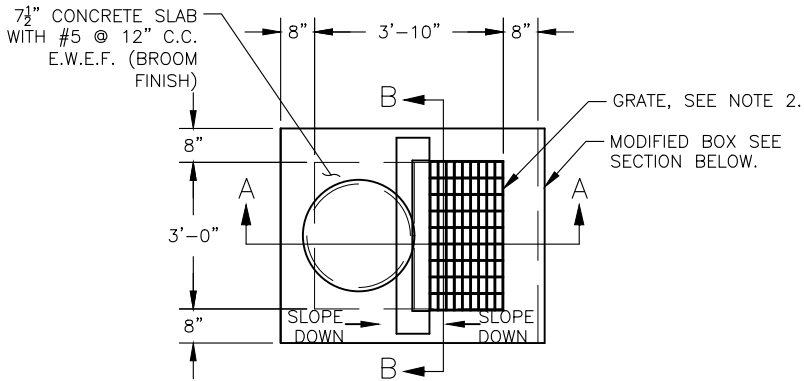
**DROP INLET TYPE G
TYPE 2 C&G ONLY
(SHEET 2 OF 2)**

APPROVED BY:
Paul Muroch
CITY ENGINEER

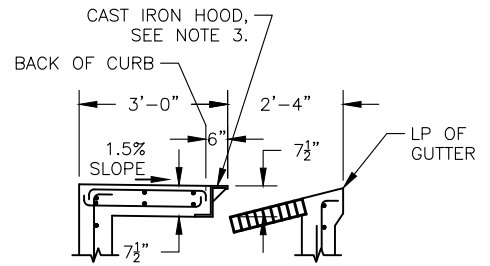
10/24/2018
DATE

DRAWING NUMBER
SD - 19.2





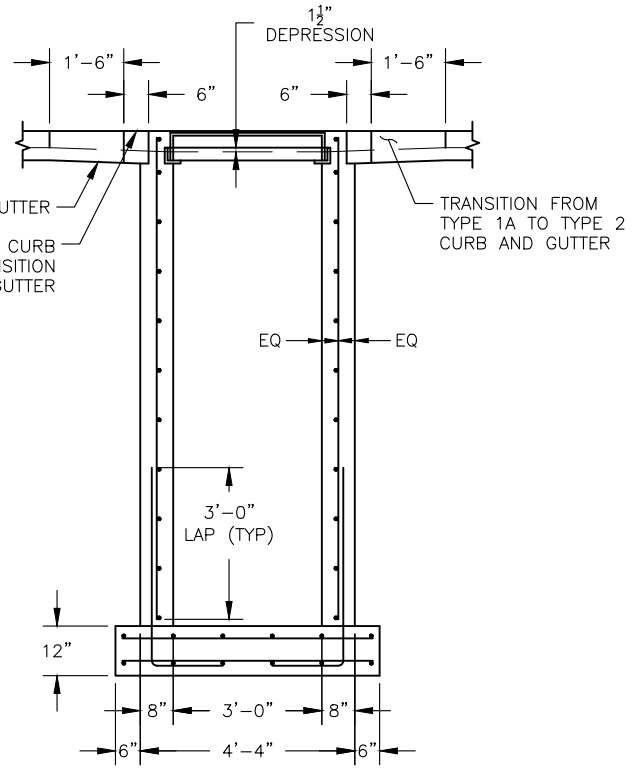
PLAN VIEW



SECTION A-A

TYPE 2 CURB AND GUTTER

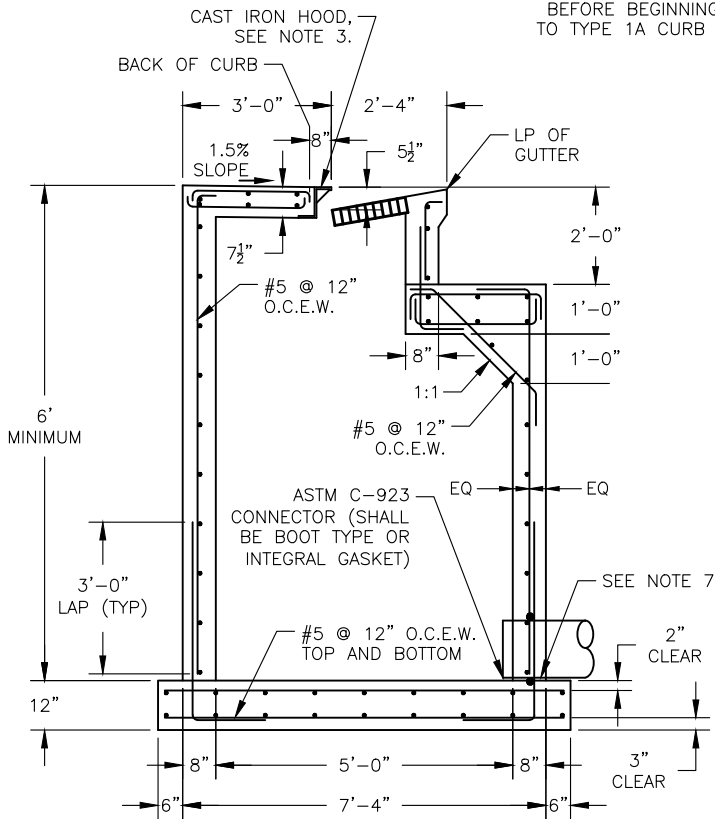
(FOR INFORMATION NOT SHOWN OR NOTED REFER TO SECTION A-A TYPE 1A CURB AND GUTTER)



SECTION B-B

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. OPEN BACK CAST IRON HOOD SHALL BE H-20 RATED, 3/4" THICK AND CONFORM TO STANDARD DRAWING SD-12.
4. ALL EXPOSED EDGES SHALL HAVE A 1/4" RADIUS (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 DISASSEMBLED SHALL BE PAINTED WITH COMMERCIAL QUALITY ASPHALTUM PAINT AFTER TESTING AND ASSEMBLY.
7. THE MINIMUM PIPE SIZE IS 12" IF THE INLET DEPTH IS GREATER THAN 4', THE MINIMUM PIPE SIZE SHALL BE 15".
8. THE MANHOLE FRAME AND COVER SHALL BE PER STANDARD DRAWING SD-9.



SECTION A-A
TYPE 1A CURB AND GUTTER

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

CITY OF ELK GROVE - PUBLIC WORKS

APPROVED BY:

Paul Mulock

10/24/2018

CITY ENGINEER

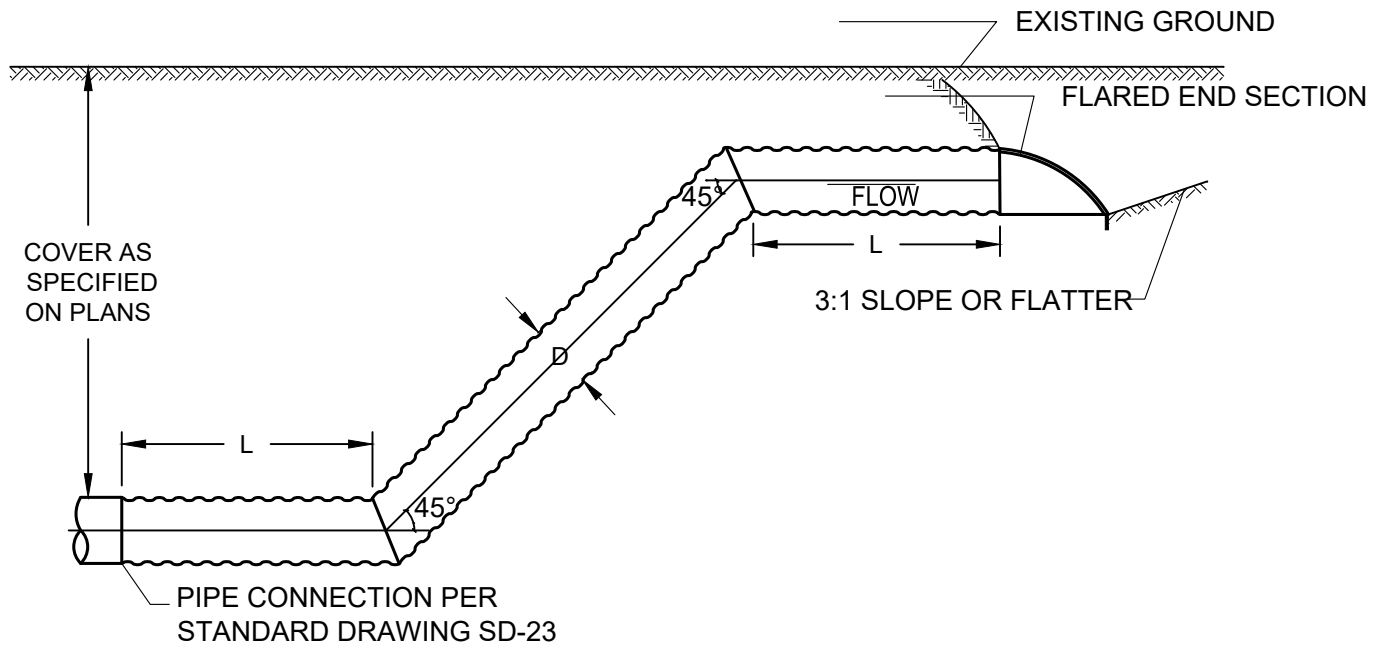
DATE

MODIFIED TYPE J INLET



DRAWING NUMBER

SD - 19.3

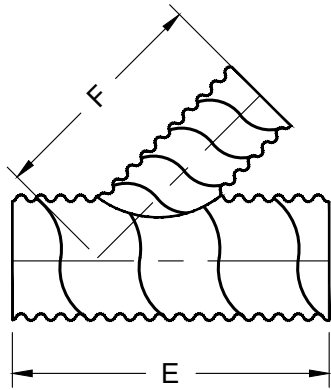


RISER DIAMETER, D	LENGTH OF HORIZONTAL PIPE, L
15"	1'-0"
18"	1'-6"
21"	1'-6"
24"	1'-6"
30"	2'-0"
36"	3'-0"
42"	4'-0"
48"	4'-0"

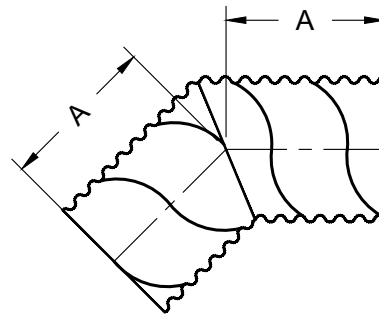
NOTES

1. USE 2-PIECE ELBOW AT BOTH ENDS OF RISER. ELBOWS SHALL CONFORM TO STANDARD DRAWING SD-22.
2. TO BE USED ONLY WITH THE SPECIFIC APPROVAL OF THE CITY ENGINEER.
3. PIPE MATERIAL TO BE CMP.

DATE: 09/22/2017	NOT TO SCALE	CITY OF ELK GROVE - PUBLIC WORKS	APPROVED BY: CITY ENGINEER
REVISION	BY	DRAINAGE INLET TYPE H	10/24/2018 DATE
			DRAWING NUMBER SD - 20



WYE LATERAL



ELBOW
0° to 45°

FITTING SIZES

DIAM (IN)	A (FT)	E (FT)	F (FT)
15	1	4	4
18	1	4	4
21	2	6	4
24	2	6	4
30	2	6	4
36	2	8	6
42	2	8	6
48	2	10	8
54	3	10	8
60	3	12	10
66	3	12	10
72	3	14	10
78	3	14	10
84	3	16	12
90	3	16	12
96	3	16	12


NOTES

1. TO USE TABLE, REFER TO DIAGRAM AND SELECT LETTER REPRESENTING DESIRED DIMENSION, THEN ENTER TABLE AT CORRECT PIPE DIMENSION AND READ DIMENSION IN COLUMN UNDER APPROPRIATE LETTER HEADING.
2. DIMENSIONS ON TABLE ALLOW FOR USE OF STANDARD 12 INCH WIDE BAND COUPLER ON SIZES 15 INCH THROUGH 54 INCH AND 24 INCH WIDE BAND ON 60 INCH AND LARGER SIZES.
3. FOR PIPE-ARCH FITTINGS, CHOOSE PIPE DIAMETER EQUAL TO OR GREATER THAN ARCH SPAN. (EXAMPLE: 35 INCH X 24 INCH PIPE-ARCH; USE DIMENSIONS FOR 36 INCH PIPE).
4. STRUCTURAL REINFORCEMENT MAY BE REQUIRED ON SOME LARGER SIZES.


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

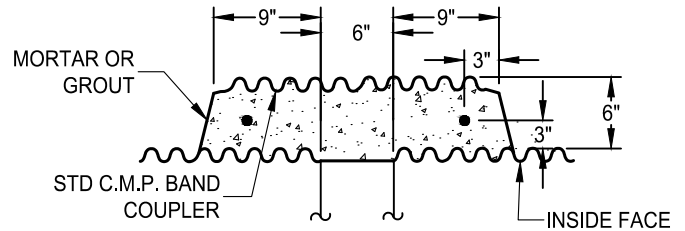
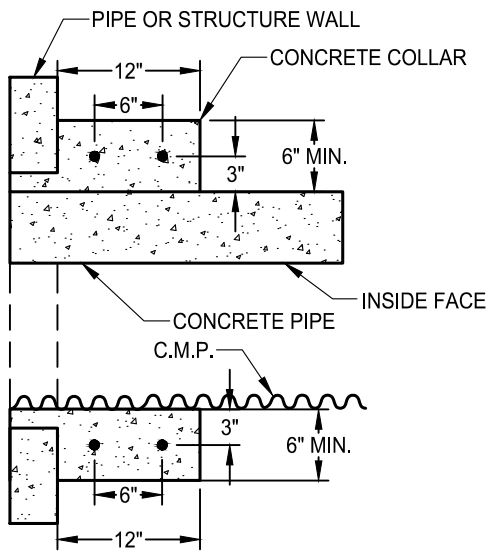
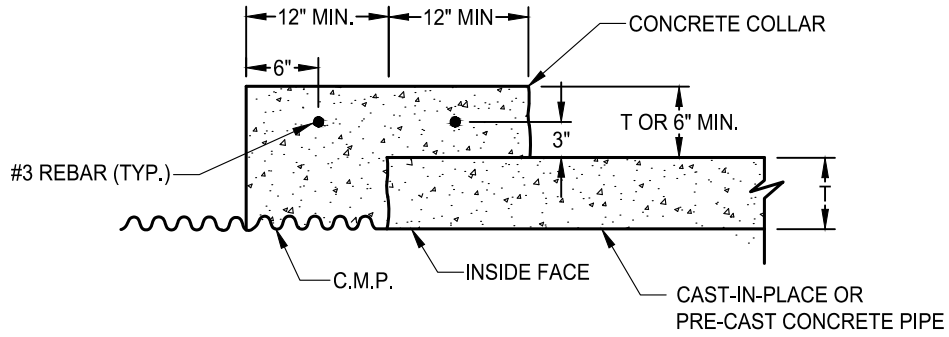
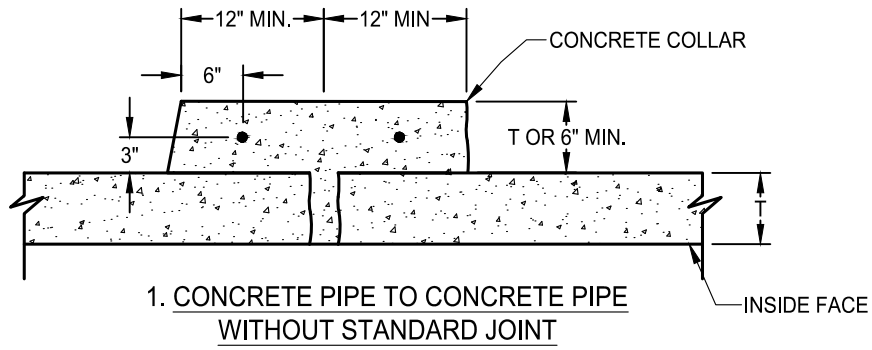
CITY OF ELK GROVE - PUBLIC WORKS

CORRUGATED PIPE FITTINGS

APPROVED BY:

 CITY ENGINEER 10/24/2018
DATE

DRAWING NUMBER
SD - 22






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

CITY OF ELK GROVE - PUBLIC WORKS

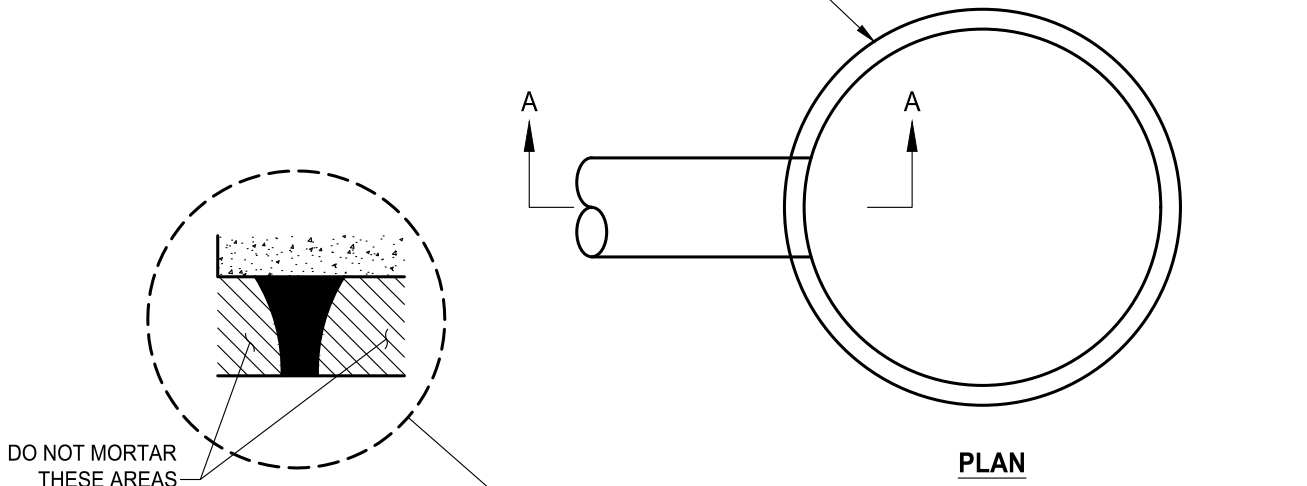
PIPE CONNECTIONS

APPROVED BY:
Robert M. ...
 CITY ENGINEER 10/24/2018 DATE

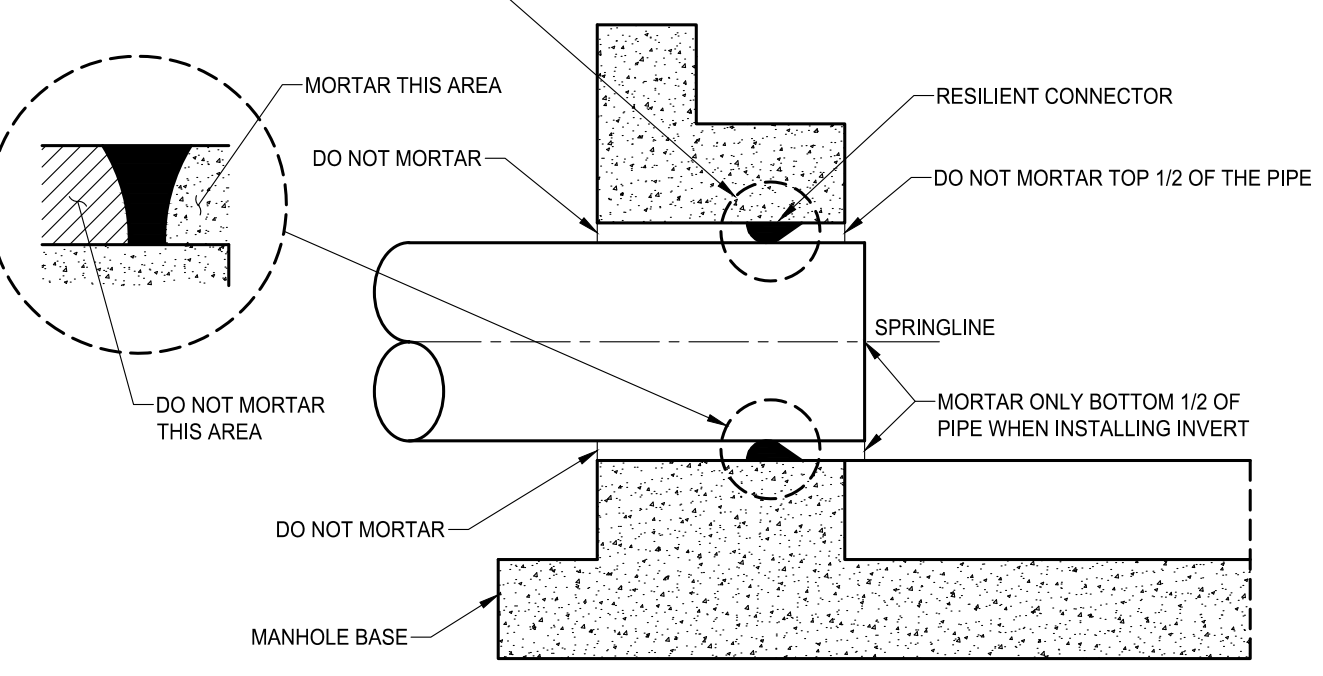
DRAWING NUMBER
SD - 23



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



PLAN



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 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

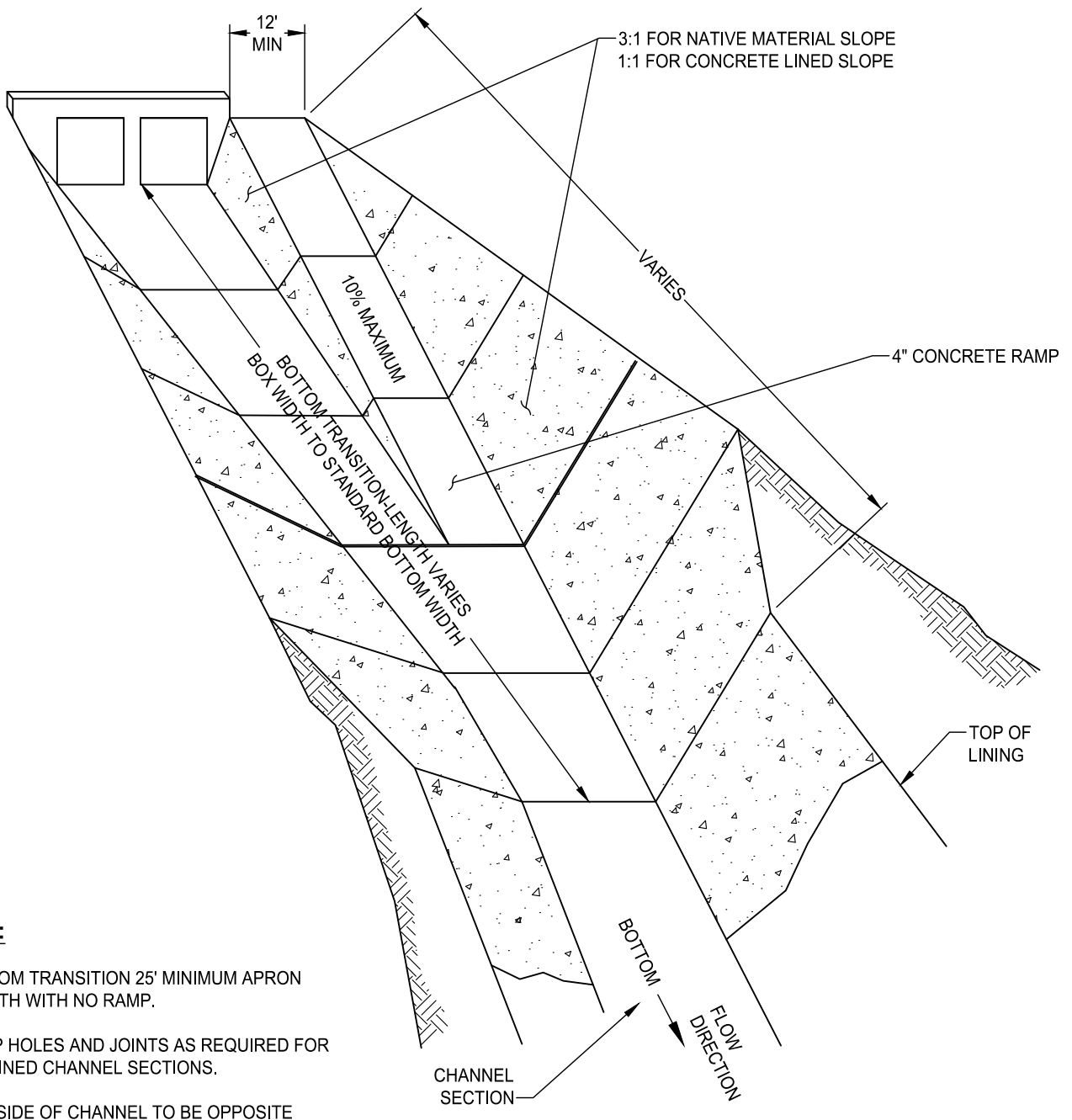
CITY OF ELK GROVE - PUBLIC WORKS

FLEXIBLE PIPE TO MANHOLE CONNECTION

APPROVED BY: *Rhett Murdoch* 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**

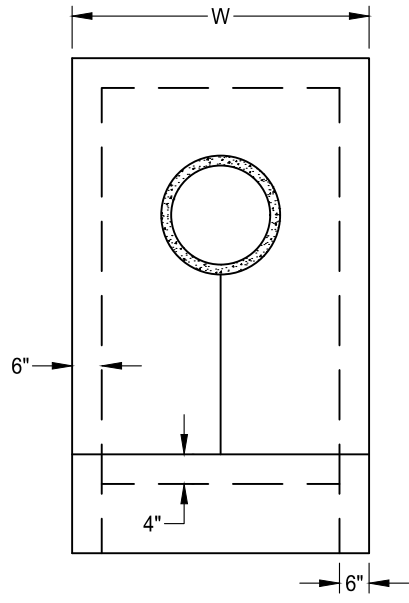
APPROVED BY:

 _____ 10/24/2018
 CITY ENGINEER DATE

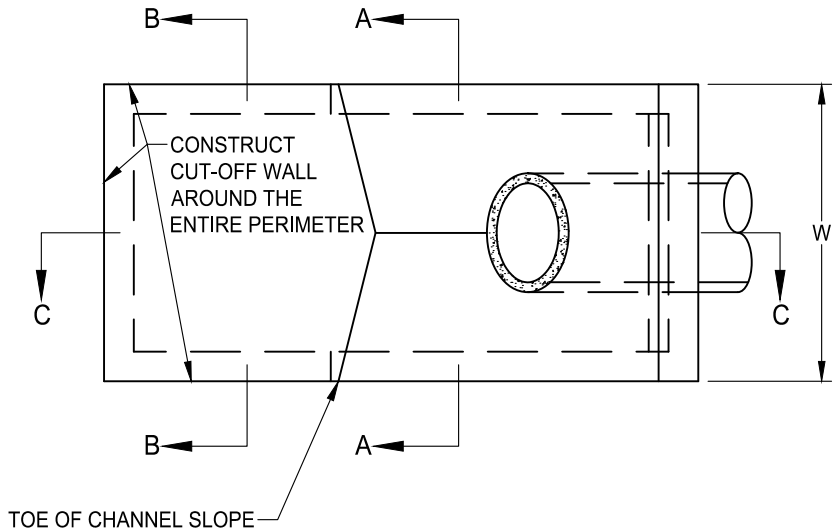
DRAWING NUMBER
SD - 25

CITY OF ELK GROVE
CALIFORNIA

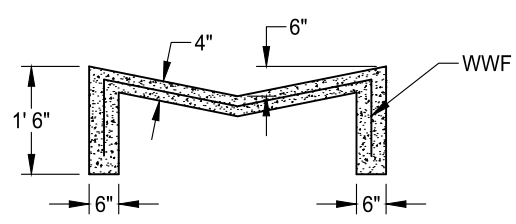
W = 6' 0" MINIMUM
W = 2 x PIPE DIAM. (3'+)



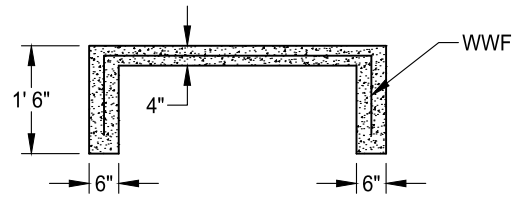
FRONT VIEW



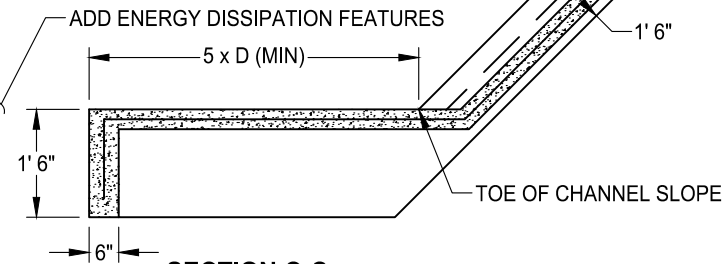
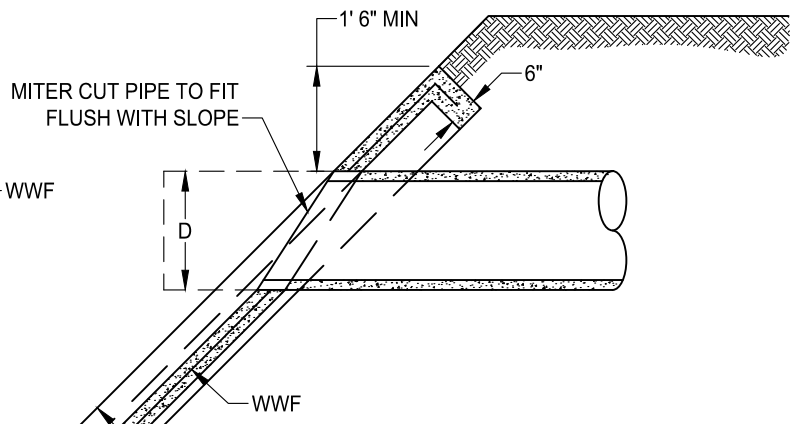
TOP VIEW



SECTION A-A




SECTION B-B

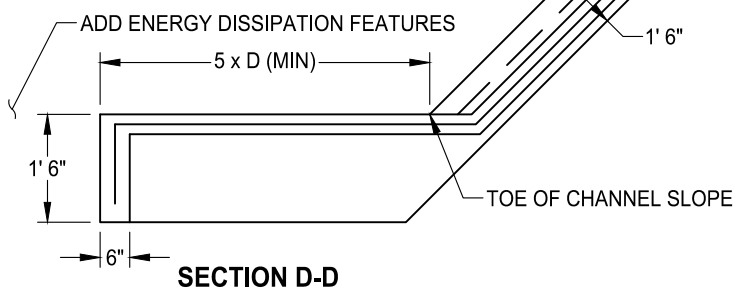
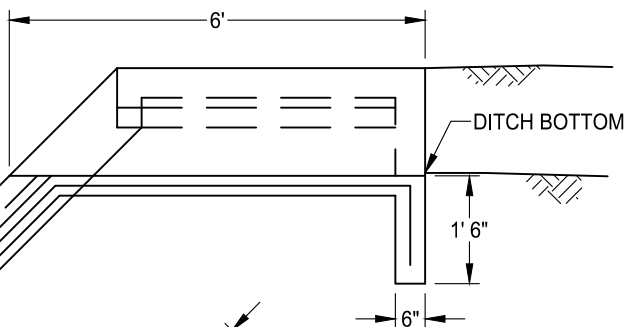
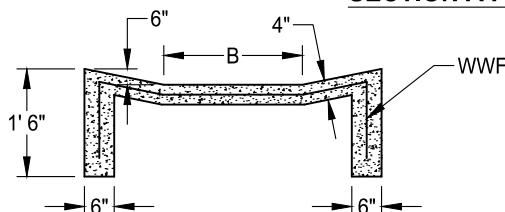
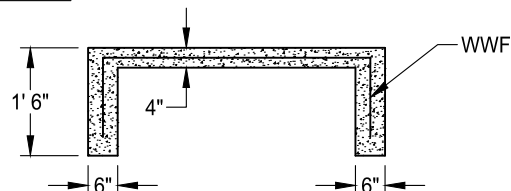
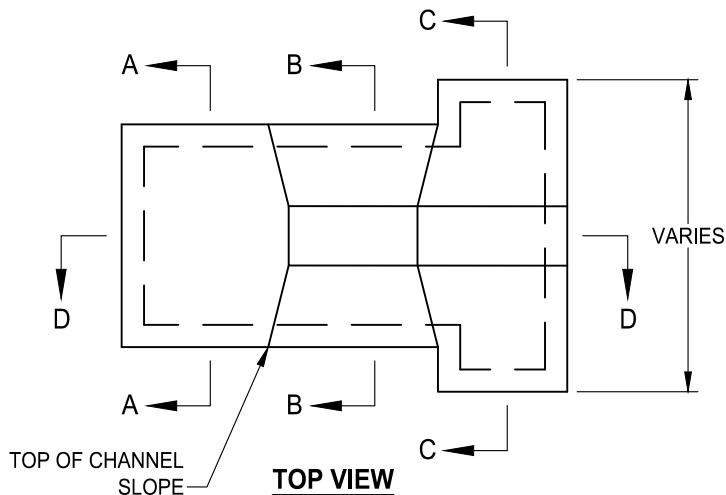
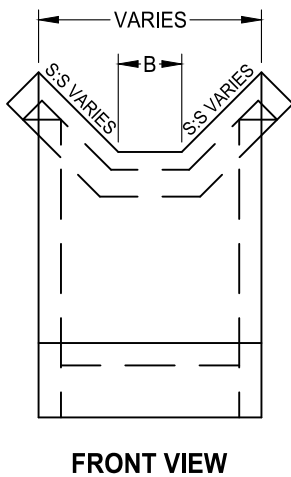


SECTION C-C

NOTES:

- 1. USE CLASS "B" CONCRETE.
- 2. 6" x 6" - W6 x W6 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		CITY OF ELK GROVE - PUBLIC WORKS		APPROVED BY: <i>Robert M. ...</i>	
REVISION	BY	APPROVED	DATE			CITY ENGINEER	
				OUTLET PIPE HEADWALL AND APRON		DRAWING NUMBER	
						SD - 26	
							



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.

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CITY OF ELK GROVE - PUBLIC WORKS

DITCH DISCHARGE CONTROL AND APRON

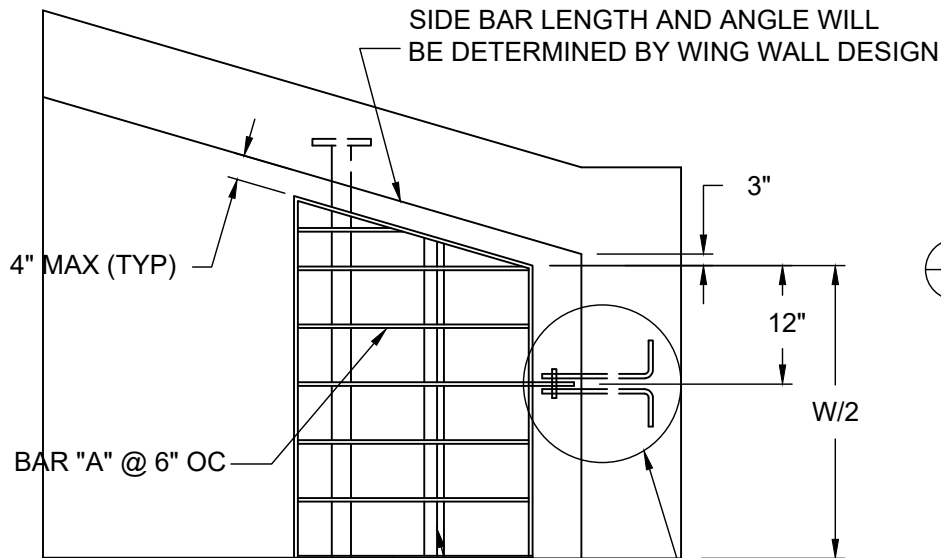
APPROVED BY:

CITY ENGINEER 10/24/2018
DATE

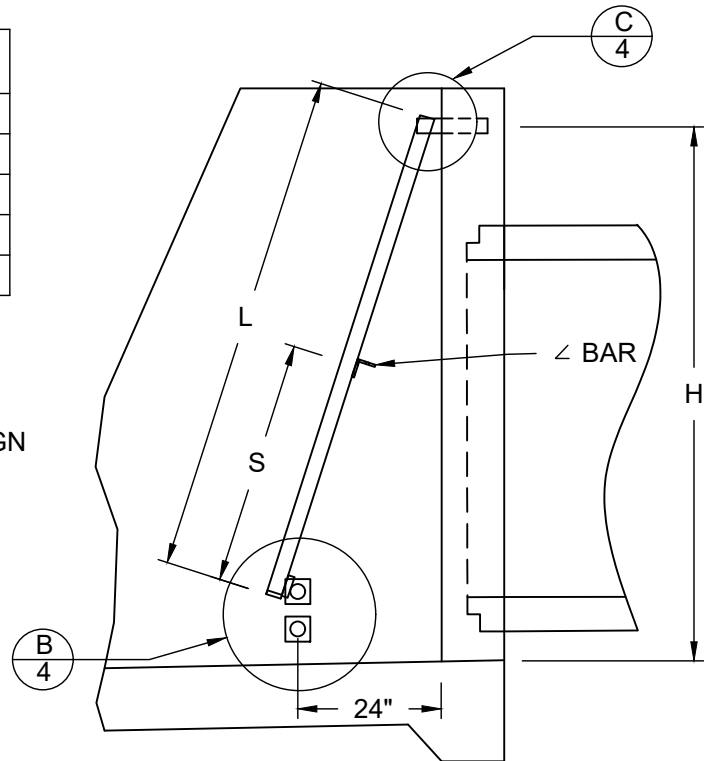
DRAWING NUMBER
SD - 27

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



TOP VIEW




SIDE VIEW

SYMMETRICAL ABOUT CENTER LINE

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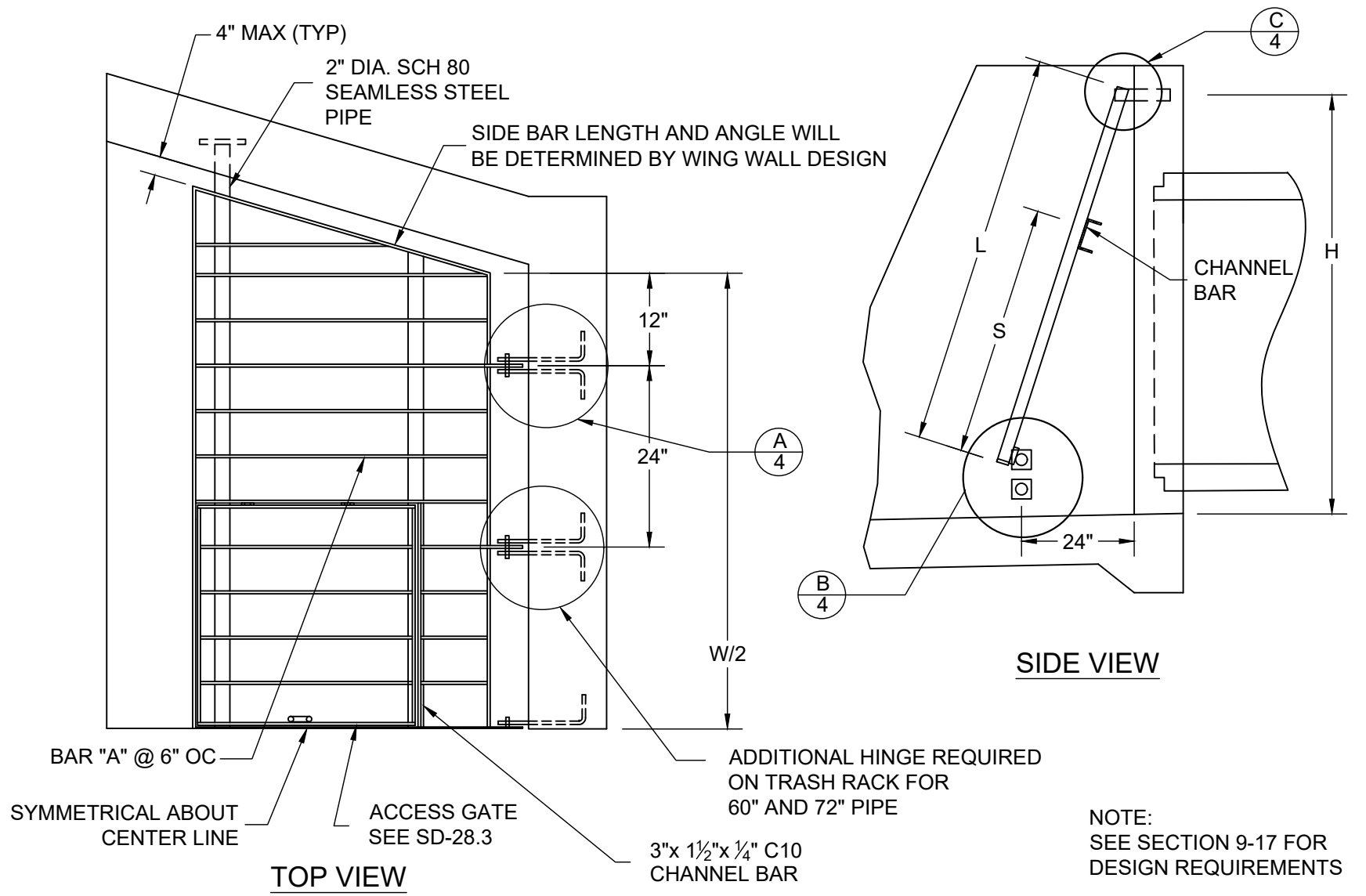
CITY OF ELK GROVE - PUBLIC WORKS

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

APPROVED BY:

 CITY ENGINEER DATE 10/24/2018



DRAWING NUMBER
SD - 28.1



NOTE:
SEE SECTION 9-17 FOR
DESIGN REQUIREMENTS

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REVISION	BY	APPROVED	DATE


CITY OF ELK GROVE - PUBLIC WORKS

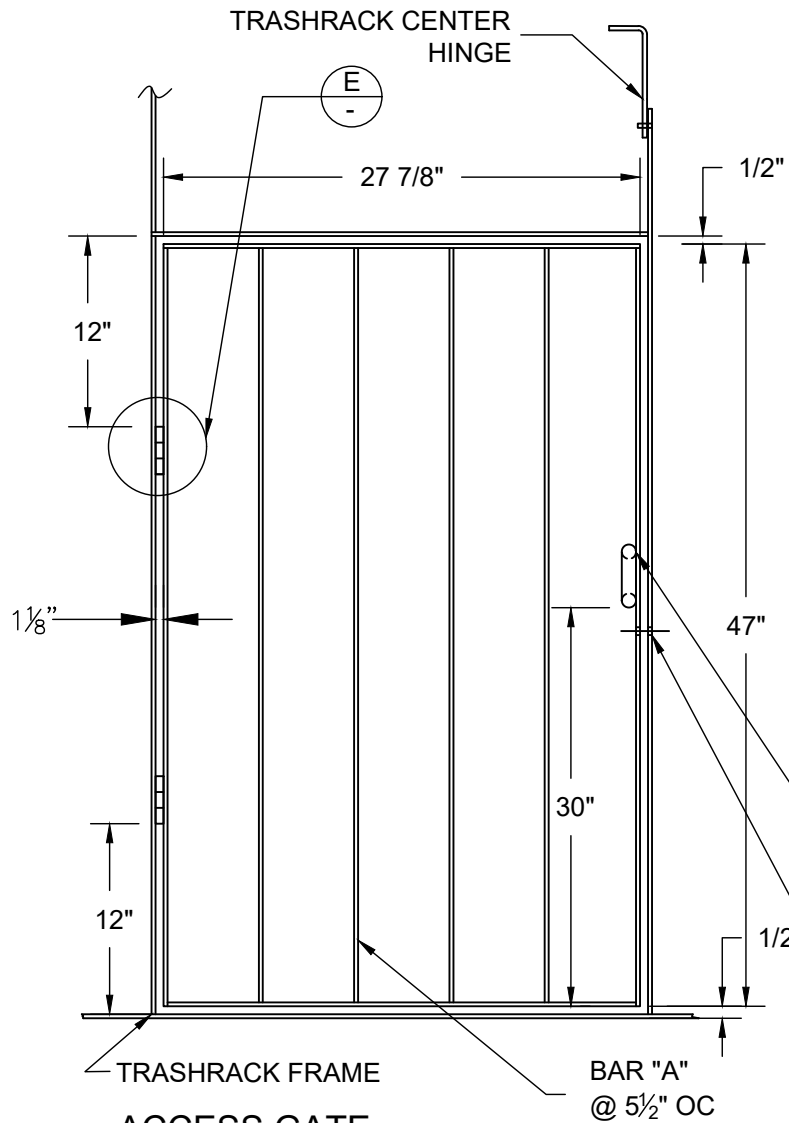
**TRASH RACK
42" PIPE AND LARGER
(SHEET 2 OF 4)**

APPROVED BY:
Paul M. Muddock
CITY ENGINEER

10/24/2018
DATE

DRAWING NUMBER
SD - 28.2

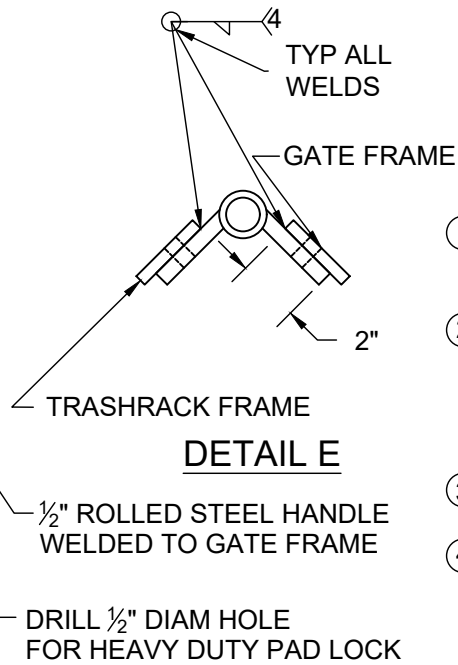




**ACCESS GATE
DETAIL**

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



DETAIL E

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.

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REVISION	BY	APPROVED	DATE

CITY OF ELK GROVE - PUBLIC WORKS

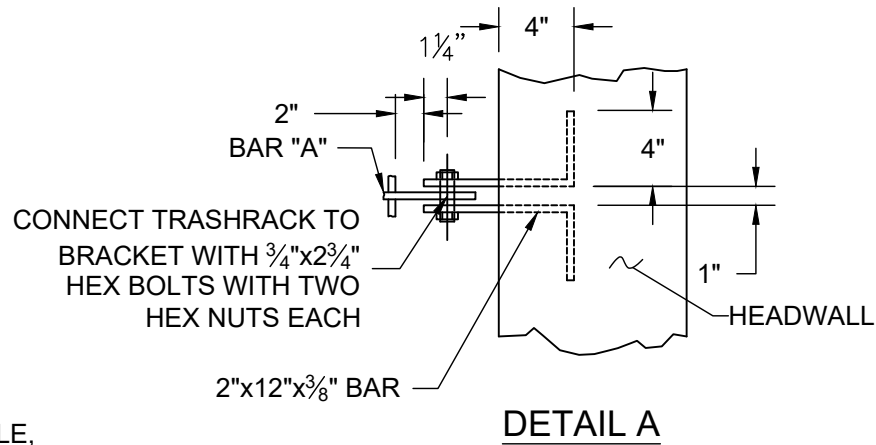
APPROVED BY:

Paul M. Muddock 10/24/2018
CITY ENGINEER DATE

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

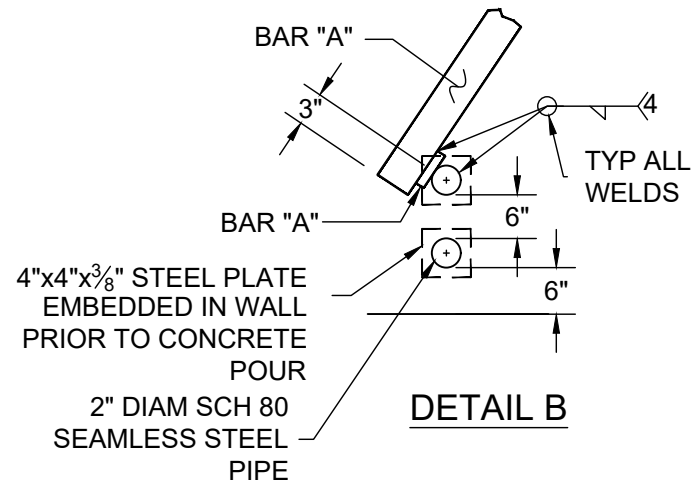
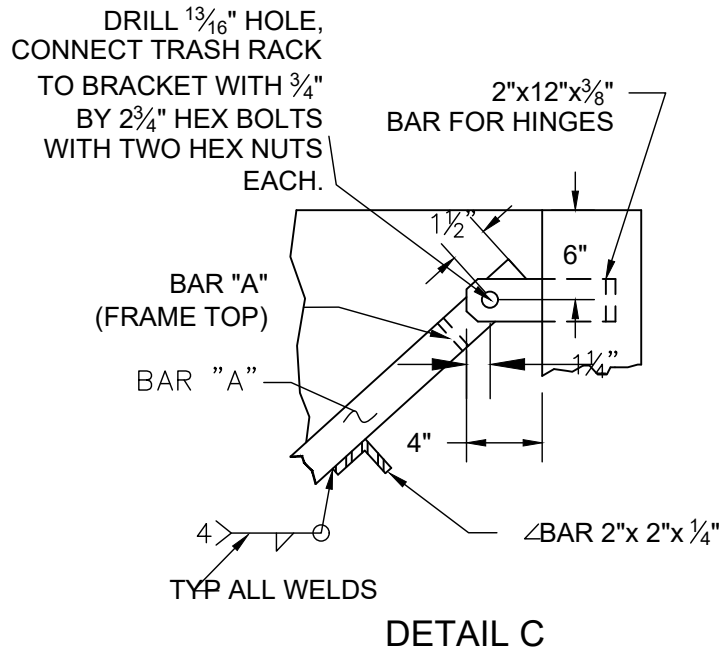


DRAWING NUMBER
SD - 28.3



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 $\frac{3}{16}$ ".
- 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 M. Muddoch

CITY ENGINEER

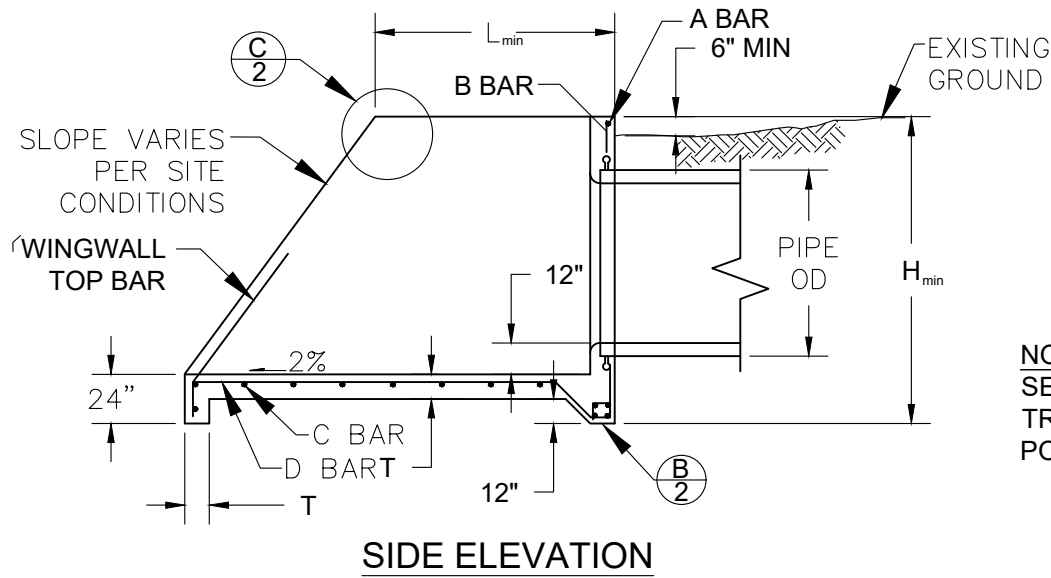
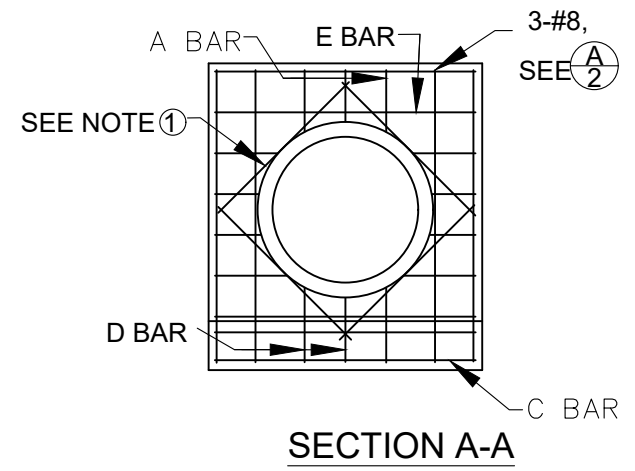
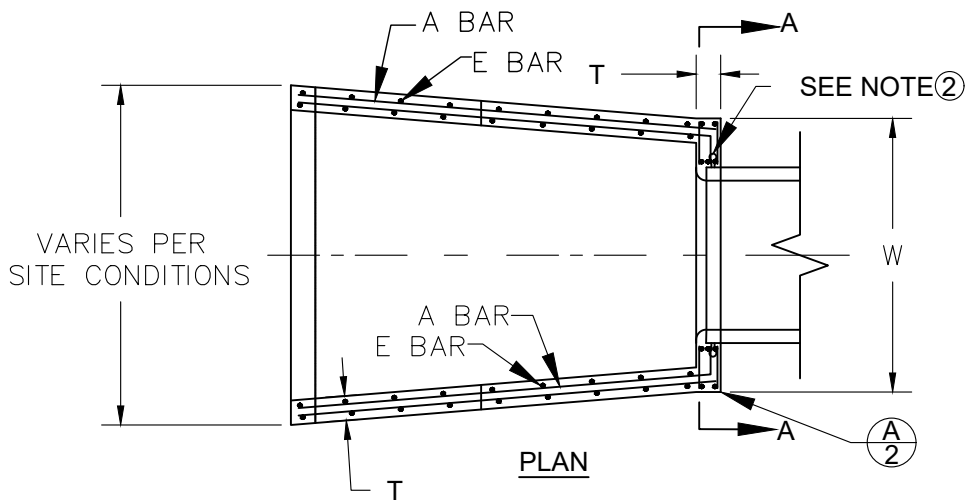
10/24/2018

DATE

DRAWING NUMBER

SD - 28.4





NOTE
SEE DWG SD-28 FOR EMBEDMENT OF
TRASH RACK COMPONENTS PRIOR TO
POURING CONCRETE

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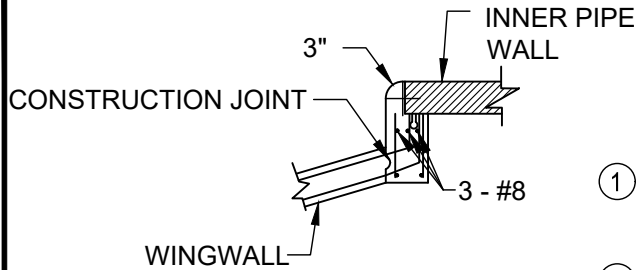
CITY OF ELK GROVE - PUBLIC WORKS

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

APPROVED BY:
Paul M. Muddoch
CITY ENGINEER
10/24/2018
DATE



DRAWING NUMBER
SD - 29.1



DETAIL A

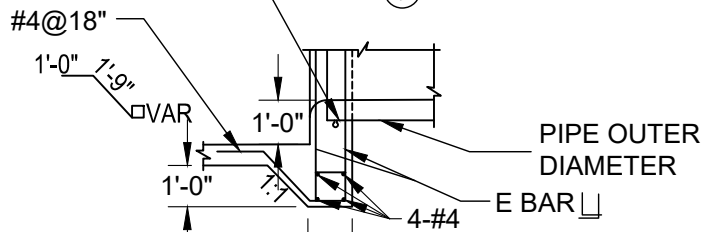
NOTES

- 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 $\frac{3}{4}$ ".
- ④ ALL STEEL MINIMUM 2" FROM CONCRETE EDGES.
- ⑤ ALL LAP SPLICES MINIMUM 12".

HEADWALL DIMENSIONS

PIPE DIA	PIPE OD	W	H _{min}	T	L _{min}
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"

1/2" EXPANSION JOINT FILLER, WHERE "H" MAX > 10'-0"

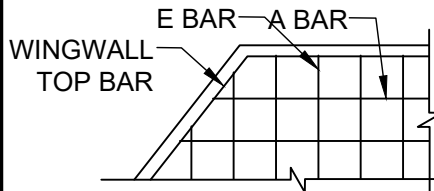


DIM IS 1'-0" WHERE H < 10'
DIM IS 2'-0" WHERE H > 10'

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

CITY OF ELK GROVE - PUBLIC WORKS

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

APPROVED BY:

Paul M. Muddoch

CITY ENGINEER

10/24/2018

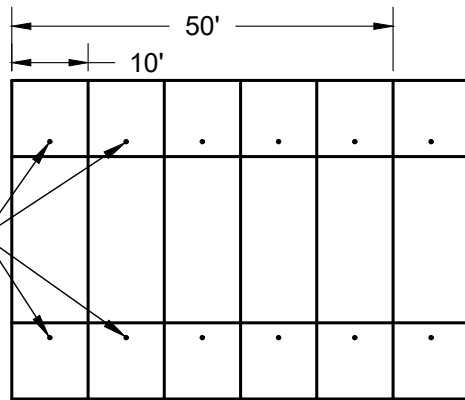
DATE



DRAWING NUMBER

SD - 29.2

2" WEEP HOLES
AT 10' CENTERS

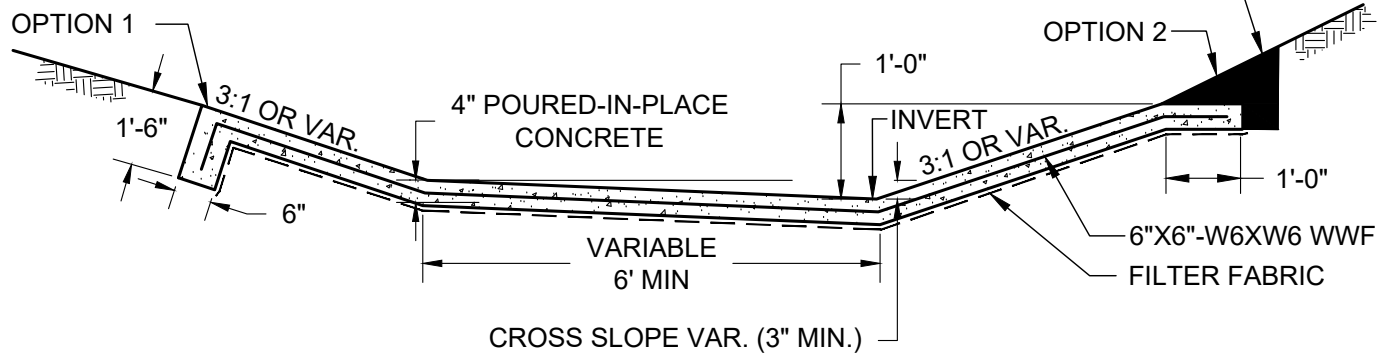


CONTRACTION JOINT
AT 10' CENTERS

EXPANSION JOINT
AT 50' CENTERS

PLAN VIEW

NATIVE OR OTHER BACKFILL SELECT
90% RELATIVE COMPACTION



TYPICAL BOTTOM LINING

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CITY OF ELK GROVE - PUBLIC WORKS

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

APPROVED BY:

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CITY ENGINEER

10/24/2018

DATE



DRAWING NUMBER

SD - 30.1

OPTION 2

NATIVE OR OTHER SELECT
BACKFILL 90%
RELATIVE COMPACTION

WEEP HOLE SHALL BE CENTERED IN A
MINIMUM OF 1 C.F. OF 3/4" CRUSHED
ROCK CONFORMING TO SECTION 50
"CLEAN CRUSHED ROCK", TYPE B.
ROCK SHALL BE WRAPPED IN FABRIC
CONFORMING TO SECTION 50
"GEOTEXTILE FABRIC". HOLE SHALL BE
2" DIAMETER PIPE CUT TO FIT FLUSH
WITH CHANNEL FACE. (TYPICAL)

4" POURED-IN-PLACE
CONCRETE

6' CHAIN LINK FENCE

ALTERNATE FOR
LINING TO R/W

INVERT

4"

6' 6"

R/W
3" POURED-IN-PLACE
CONCRETE OR AIR-BLOWN
MORTAR

1'-0"

6"X6"-W6XW6 WWF

1:1 OR VAR.

1:1 OR VAR.

12"

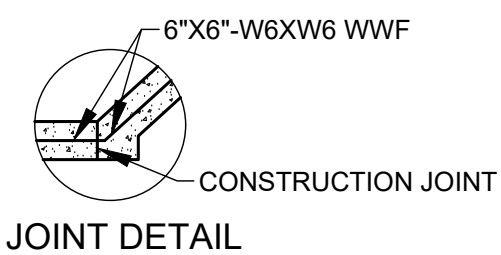
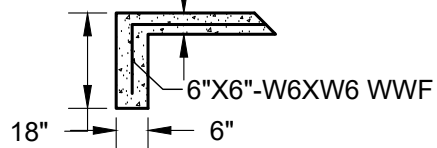
VARIABLE
6' MIN

CROSS SLOPE VAR. (3" MIN.)

SEE JOINT DETAIL

TYPICAL FULL LINING

OPTION 1 VAR.



CUTOFF WALL

TO BE PLACED ALONG ENTIRE
END OF LINED SECTION AT
BEGINNING AND AT END OF
LINING

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APPROVED BY:

Paul M. Muddoch

10/24/2018

CITY ENGINEER

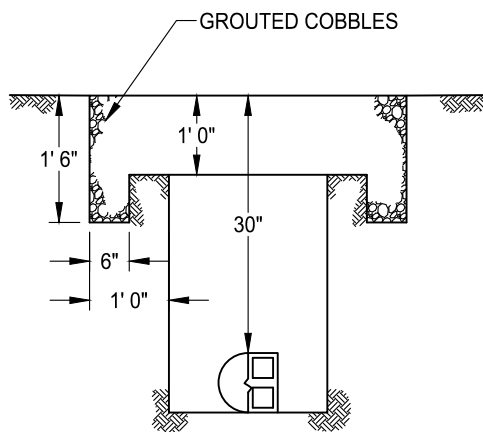
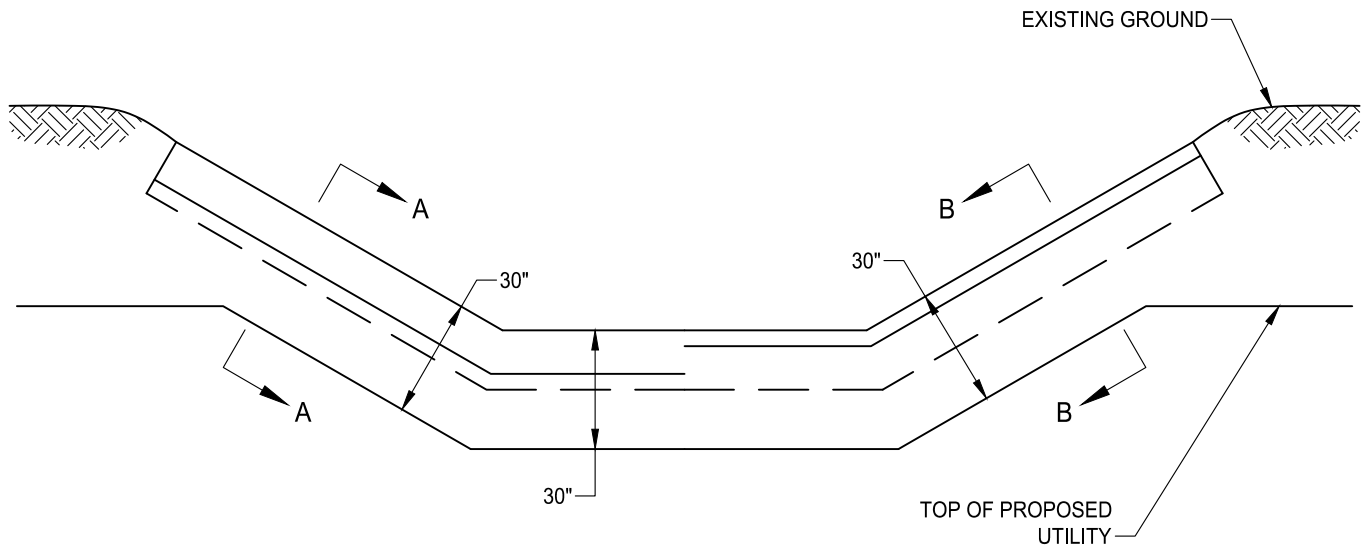
DATE

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

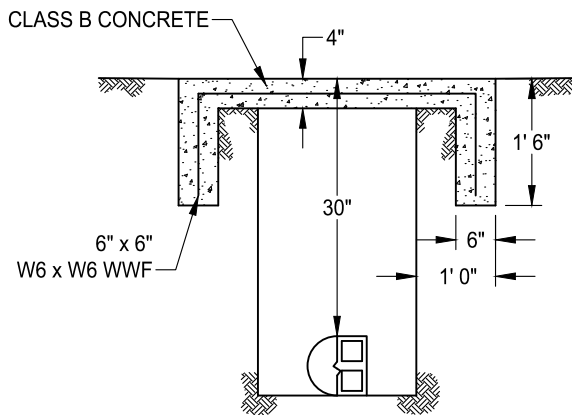


DRAWING NUMBER

SD - 30.2



SECTION A-A



SECTION B-B

NOTES:

1. ALL UTILITY CROSSINGS OF EXISTING STREAMS SHALL BE AT LEAST 30" BELOW EXISTING CHANNEL SIDES AND BOTTOMS. DEEPER PLACEMENT MAY BE REQUIRED IF FUTURE CHANNEL IMPROVEMENTS ARE ANTICIPATED.
2. THE CUT SHALL BE SEALED AS SHOWN WITH GROUTED COBBLES OR CLASS B CONCRETE TO A WIDTH OF 1 FOOT EACH SIDE OF THE UTILITY TRENCH. ALL NATURAL STREAMS, AS SHOWN ON THE NATURAL STREAMS PLAN, SHALL UTILIZED GROUTED COBBLES.
3. CONSTRUCTION IS TO CONFORM TO SECTION 44 OF THE CITY OF ELK GROVE CONSTRUCTION SPECIFICATIONS WITH CUT OFF WALLS CONFORMING TO STANDARD DRAWING SD-30.

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CITY OF ELK GROVE - PUBLIC WORKS

UTILITY STREAM CROSSING

APPROVED BY:

 CITY ENGINEER 10/24/2018
DATE



DRAWING NUMBER

SD - 31