

PIPE SIZE	≤ 33"	36"–54"	60"–72"
MINIMUM X	10"	12"	18"

NOTES

1. PROVIDE 95% COMPACTION IN 8" LAYERS FOR THE ENTIRE DEPTH OF TRENCH.
2. TRENCHES 5 FT OR MORE IN DEPTH MUST BE SHORED AND PROTECTED IN ACCORDANCE WITH CAL OSHA AND OTHER STATE AND FEDERAL SAFETY CODES, REGULATIONS, AND ORDINANCES.
3. ALL PIPES, INCLUDING, BUT NOT LIMITED TO STORM, WATER, GAS, SEWER, CULVERTS, AND LATERALS SHALL BE A MINIMUM OF 30" BELOW SUB GRADE AT EDGE OF PAVEMENT.
4. PONDING OR JETTING WILL NOT BE ALLOWED.
5. COMPACTION TESTS SHALL BE PERFORMED BY CONTRACTOR AND BE SUBMITTED TO (AND APPROVED) BY COUNTY INSPECTOR PRIOR TO PAVING, USING CALTRANS TEST METHOD NO. 216 AND NO. 231.
6. IF SOIL R-VALUE IS LESS THAN 50, USE CLASS 2 AB VERSUS NATIVE MATERIAL.
7. R-VALUE TEST REPORTS MUST BE PROVIDED AT TRENCH LOCATIONS.



**TRENCHING REQUIREMENTS
IN NEW STREETS**

COPPER VALLEY COMMUNITY SERVICE DISTRICT

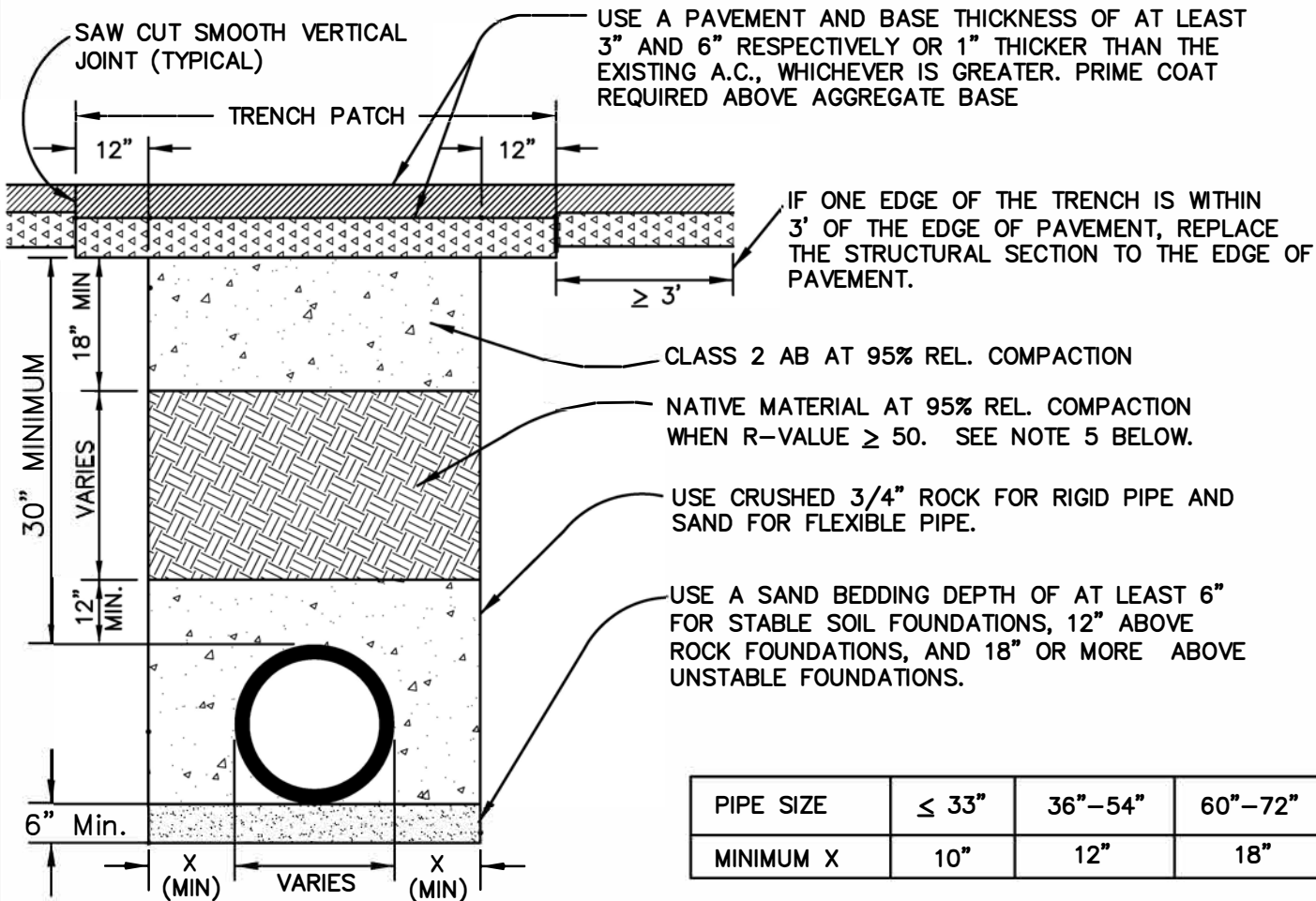
Date: JUNE 2020

Approved by:

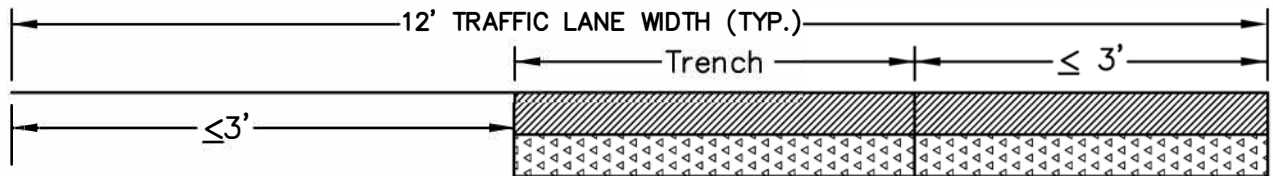
Peter Kampa, General Manager

No.	Revision	Description	Date

Std. Dwg. No. **3-H1**



LONGITUDINAL TRENCHES:



IF THE EDGE OF THE TRENCH IS ≤ 3' FROM THE EDGE OF THE LANE, THEN OVERLAY THE LANE WITH 1" OF AC.

NOTES:

1. TRENCHES 5 FT OR MORE IN DEPTH MUST BE SHORED AND PROTECTED IN ACCORDANCE WITH CAL OSHA AND OTHER STATE AND FEDERAL SAFETY CODES, REGULATIONS, AND ORDINANCES.
2. ALL PIPES, INCLUDING, BUT NOT LIMITED TO, STORM, WATER, GAS, SEWER, CULVERTS, AND LATERALS SHALL BE A MINIMUM OF 30" BELOW SUB GRADE AT EDGE OF PAVEMENT.
3. PROVIDE 95% COMPACTION IN 8" LAYERS FOR THE ENTIRE DEPTH OF TRENCH.
4. PONDING OR JETTING WILL NOT BE ALLOWED.
5. IF SOIL R-VALUE IS LESS THAN 50, USE CLASS 2 AB VERSUS NATIVE MATERIAL.
6. COMPACTION TESTS SHALL BE PERFORMED BY CONTRACTOR AND BE SUBMITTED TO (AND APPROVED) BY COUNTY INSPECTOR PRIOR TO PAVING, USING CALTRANS TEST METHOD NO. 216 AND NO. 231.



TRENCHING REQUIREMENTS
IN EXISTING STREETS

COPPER VALLEY COMMUNITY SERVICE DISTRICT

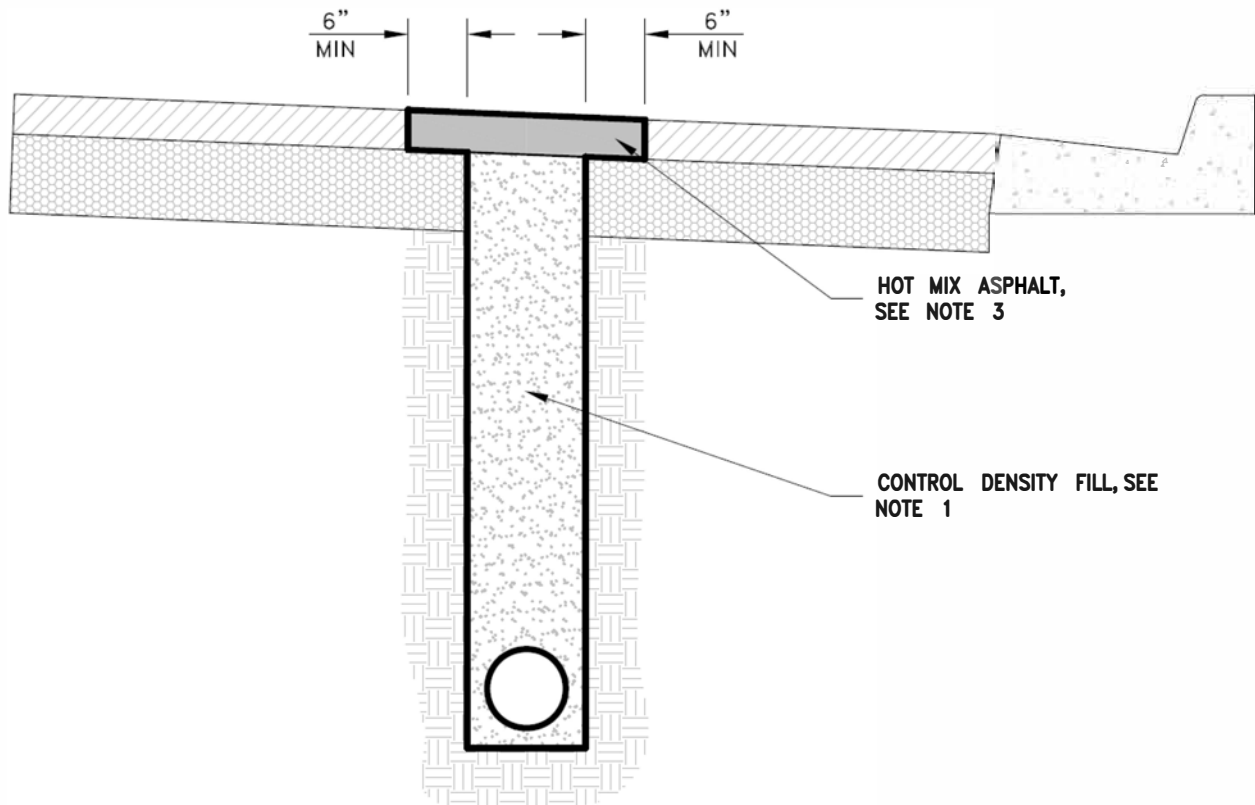
Date: JUNE 2020

Approved by:

Peter Kampa, General Manager

No.	Revision	Description	Date

Std. Dwg. No. 3-H2



NOTES:

1. TRENCH SECTION SHALL BE BACKFILLED ACCEPTABLE CONTROL DENSITY FILL. CONTRACTOR SHALL FURNISH, INSTALL, COMPACT AND MAINTAIN 2" TEMPORARY PAVEMENT UNTIL PERMANENT PAVEMENT IS PLACED.
2. PRIME COAT REQUIRED ABOVE CONTROL DENSITY FILL.
3. HOT MIX ASPHALT MINIMUM THICKNESS FOR TRENCH RESTORATION SHALL BE DETERMINED BY THE STREET DESIGN CHAPTER OF THESE STANDARD SPECIFICATIONS.



**POTHOLING for DESIGN
and CONSTRUCTION**

COPPER VALLEY COMMUNITY SERVICE DISTRICT

Date: JUNE 2020

Approved by:

Peter Kampa, General Manager

No.	Revision	Description	Date

Std. Dwg. No. **3-H3**

TRENCH CONSTRUCTION REQUIREMENTS IN DISTRICT ROADWAYS

NOTES:

1. UNSTABLE SUBGRADE MATERIAL SHALL BE EXCAVATED AND STABILIZED WITH #3 ROCK (PER ASTM 33 OR APPROVED EQUAL) OR WITH CEMENT SLURRY/CONCRETE AS APPROVED BY THE DISTRICT ENGINEER.
2. ALL TRENCHES SHALL BE SHORED OR PROTECTED IN ACCORDANCE WITH OSHA AND OTHER STATE AND FEDERAL SAFETY CODES, REGULATIONS AND ORDINANCES.
3. PLACEMENT OF AGGREGATE BASE SHALL BE IN 12" LIFTS EVENLY PLACED AND MECHANICALLY COMPACTED TO RELATIVE DENSITY AS SPECIFIED. COMPACTION TESTS SHALL BE REQUIRED AT THE DISCRETION OF THE DISTRICT ENGINEER. ALL COSTS RELATED TO THESE TESTS SHALL BE BORNE BY THE OWNER/CONTRACTOR/UTILITY COMPANY WHEN SUCH TESTS ARE REQUIRED. IF RESULTS OF THESE TESTS DO NOT MEET SPECIFIED REQUIREMENTS, BACKFILL SHALL BE EXCAVATED, REPLACED, COMPACTED AND RETESTED. IN CASE OF ONE SACK SLURRY MIX OR CONTROLLED DENSITY FILL, NO COMPACTION TEST WILL BE REQUIRED.
4. DROP HAMMER SHALL NOT BE USED TO CUT PAVEMENT.
5. ALL TRENCHES SHALL BE BACKFILLED AND TEMPORARILY PAVED AT THE END OF EACH WORKING DAY. THE USE OF STEEL PLATES MUST BE APPROVED BY THE COUNTY ENGINEER AT LEAST 48 HOURS IN ADVANCE. A MINIMUM 48 HOUR NOTICE SHALL BE REQUIRED FOR ALL COUNTY INSPECTIONS.
6. INITIAL CUT IN STREET PAVEMENT SHALL BE EQUAL TO THE WIDTH OF THE TRENCH WITH THE OPTION OF BEING JACK HAMMERED OR SAW CUT.
7. FINAL CUT IN STREET PAVEMENT SHALL BE 12" WIDER THAN THE TRENCH WIDTH AS SHOWN IN THE DETAIL AND SHALL BE MADE BY SAW CUTTING ONLY.
8. TEMPORARY BITUMINOUS SURFACING (CUT BACK) SHALL BE PLACED AND COMPACTED IMMEDIATELY ABOVE THE TRENCH FOLLOWING COMPACTION AND APPROVED BY THE COUNTY INSPECTOR. MINIMUM DEPTH OF CUT BACK SHALL BE 2" OR AS SPECIFIED BY THE COUNTY ENGINEER. CUT BACK SHALL BE MAINTAINED IN A CONDITION SATISFACTORY TO THE COUNTY INSPECTOR UP TO THE TIME THE FINAL PAVING IS PLACED ON TRENCH.
9. FINAL PAVING ABOVE THE TRENCH SECTION SHALL BE PLACED WITHIN 14 DAYS OF ITS BACKFILL AND COMPACTION. EXTENSION MAY BE GRANTED BY THE COUNTY ENGINEER DUE TO WEATHER CONDITIONS. IN THE EVENT PERMANENT PAVING IS NOT DONE WITHIN 14 DAYS, THE COUNTY MAY CONSIDER THIS AS INCOMPLETE WORK AND MAY TAKE NECESSARY ACTION IN ACCORDANCE WITH PREVAILING COUNTY ORDINANCES AND POLICIES.
10. TEMPORARY CUT BACK SHALL BE REMOVED BEFORE PLACEMENT OF FINAL PAVING. FINAL PAVING SHALL BE PLACED ON UNDISTURBED PREVIOUSLY INSPECTED AND COMPACTED AGGREGATE BASE OR ONE SACK SLURRY MIX/CONTROLLED DENSITY FILL. RECOMPACTION SHALL BE REQUIRED FOR ANY DISTURBED BASE OR SURFACE.
11. FOR A PARALLEL TRENCH LONGER THAN ONE HALF LENGTH OF THE BLOCK, A SLURRY SEAL SHALL BE REQUIRED ON THE ENTIRE HALF WIDTH OF THE STREET ON THE TRENCH SIDE AS DIRECTED BY THE COUNTY ENGINEER.
12. PROPER TRAFFIC CONTROLS AND COVERING OF TRENCHES SHALL BE MAINTAINED IN ACCORDANCE WITH THE CHAPTER 2 OF THE COUNTY STANDARD SPECIFICATIONS.
13. TRENCHING SHALL NOT BE ALLOWED ON ANY STREET WHICH HAS BEEN RECONSTRUCTED OR REPAVED WITHIN THE PAST 3 YEARS NOR ON SLURRY SEALED STREETS FOR A PERIOD OF EIGHTEEN (18) MONTHS WITHOUT PRIOR APPROVAL OF THE DISTRICT ENGINEER.



TRENCH CONSTRUCTION
Notes 1 of 2

COPPER VALLEY COMMUNITY SERVICE DISTRICT

Date: JUNE 2020

Approved by:			
Peter Kampa, General Manager			
No.	Revision	Description	Date
Std. Dwg. No.			3-H4

TRENCH CONSTRUCTION REQUIREMENTS IN DISTRICT ROADWAYS

NOTES:(CONT.)

13. FOR A PARALLEL TRENCH LONGER THAN ONE HALF LENGTH OF THE BLOCK, A SLURRY SEAL SHALL BE REQUIRED ON THE ENTIRE HALF WIDTH OF THE STREET ON THE TRENCH SIDE AS DIRECTED BY THE COUNTY ENGINEER.
14. PROPER TRAFFIC CONTROLS AND COVERING OF TRENCHES SHALL BE MAINTAINED IN ACCORDANCE WITH THE COUNTY STANDARD SPECIFICATIONS – CHAPTER 2.
15. NO TRENCH SHALL BE OPENED IN ANY STREET FOR THE PURPOSE OF LAYING PIPES OR CONDUITS MORE THAN FIVE HUNDRED (500) FEET AT A TIME.
16. ASPHALT CONCRETE SHALL BE IN ACCORDANCE WITH THE COUNTY STANDARD SPECIFICATIONS – CHAPTER 3.
17. TRENCHING SHALL NOT BE ALLOWED ON ANY STREET WHICH HAS BEEN RECONSTRUCTED OR REPAVED WITHIN THE PAST 3 YEARS NOR ON SLURRY SEALED STREETS FOR A PERIOD OF EIGHTEEN (18) MONTHS WITHOUT APPROVAL OF DISTRICT ENGINEER.



TRENCH CONSTRUCTION
Notes 2 of 2

COPPER VALLEY COMMUNITY SERVICE DISTRICT

Date: JUNE 2020

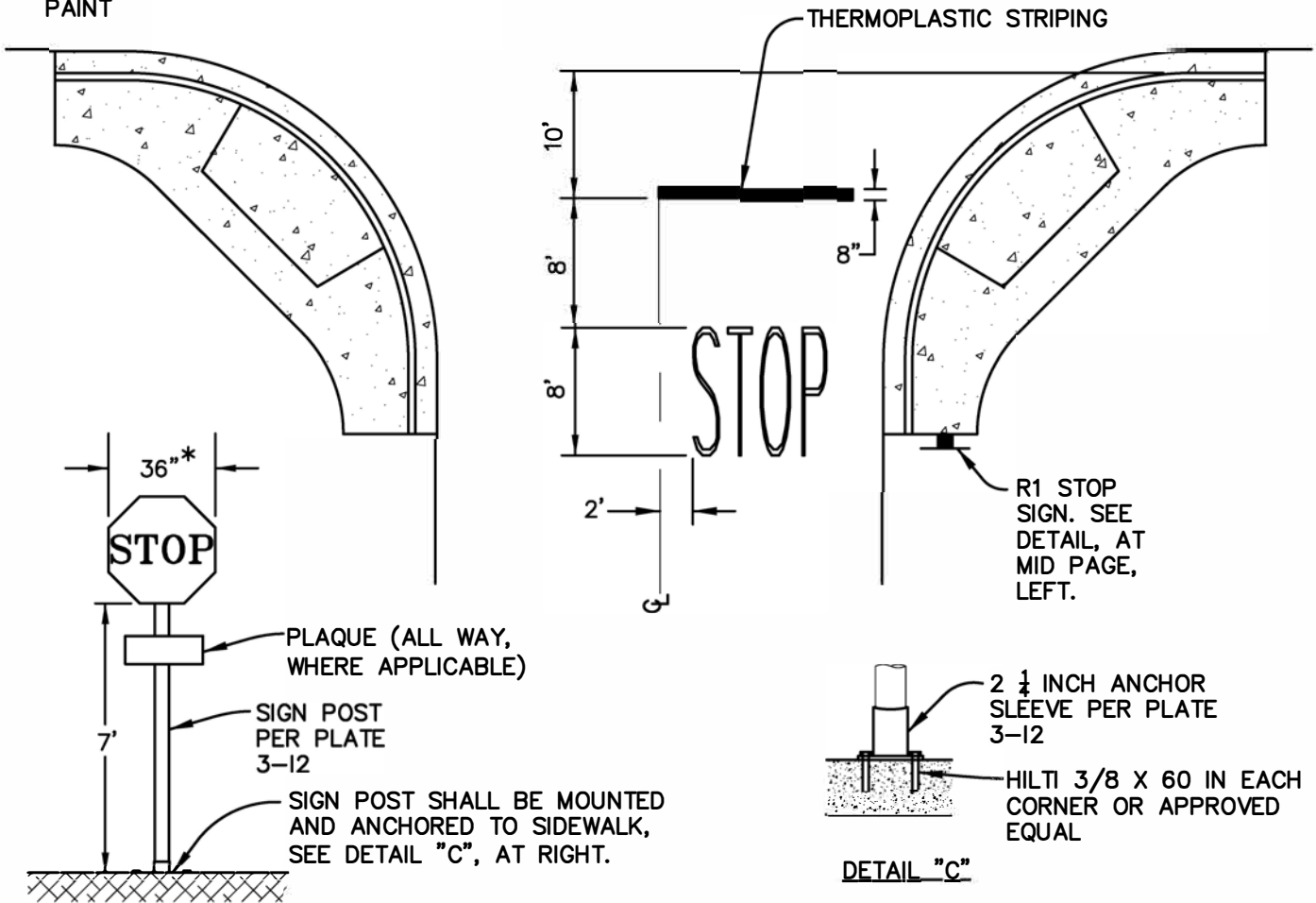
Approved by:

Peter Kampa, General Manager

No.	Revision	Description	Date

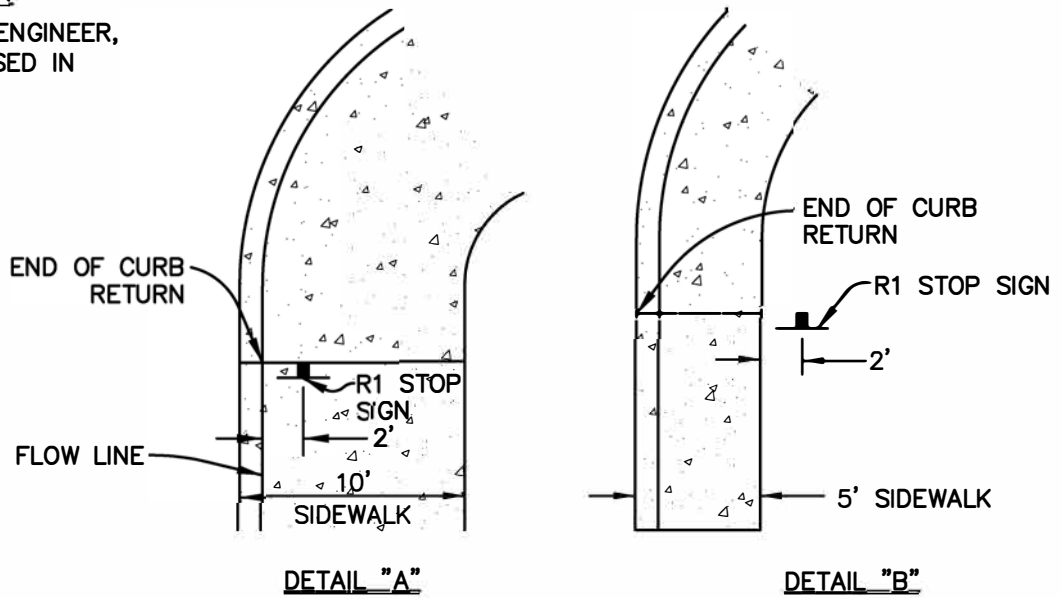
Std. Dwg. No. 3-H5

NOTE: ALL STRIPING FOR STOP BAR, AND OTHER PAVEMENT MARKINGS SHALL BE 3 COATS OF PAINT



R-1 STOP SIGN

* WITH APPROVAL OF ENGINEER, 30" SIGN MAY BE USED IN RESIDENTIAL AREA



STOP SIGN INSTALLATION

COPPER VALLEY COMMUNITY SERVICE DISTRICT

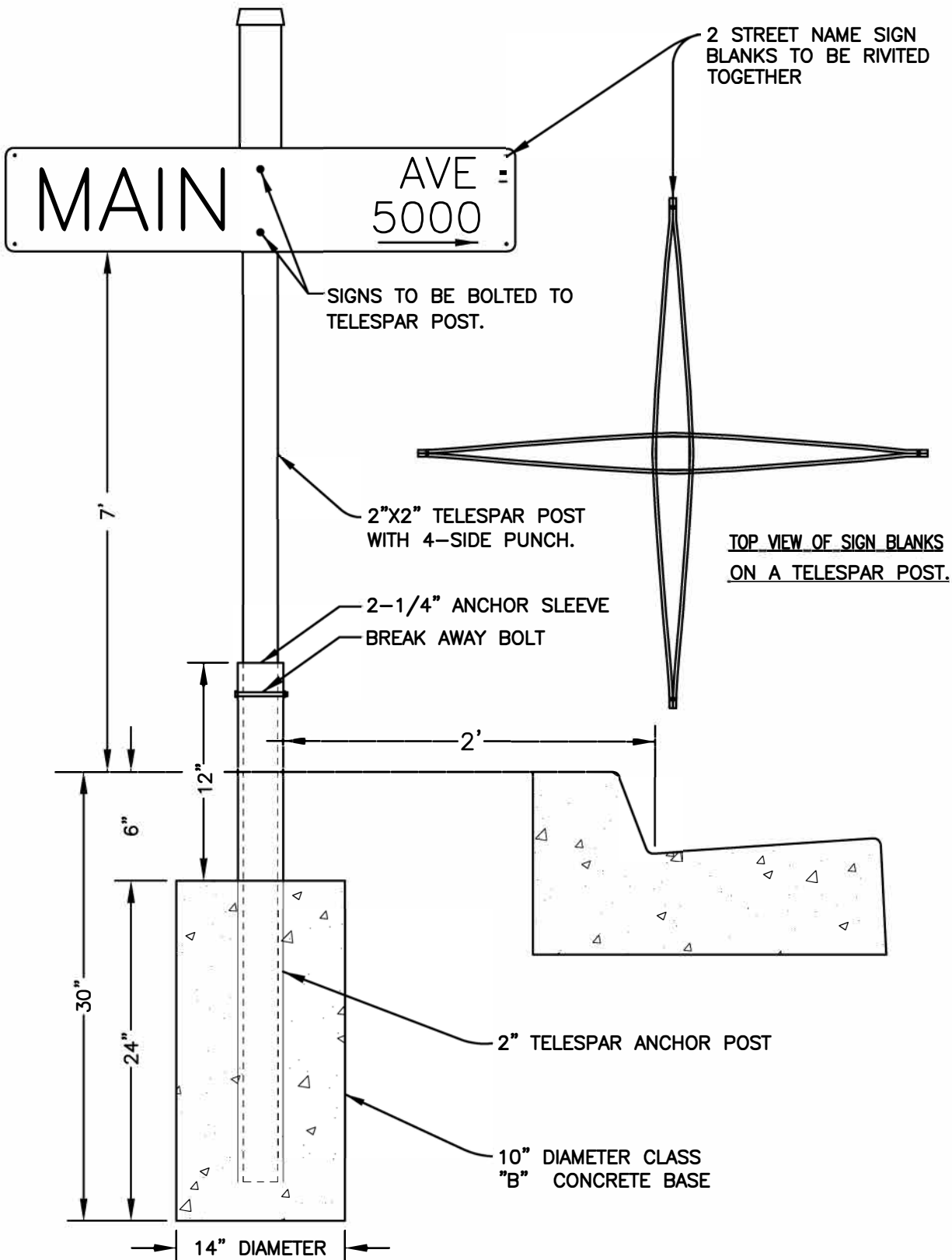
Date: JUNE 2020

Approved by:

Peter Kampa, General Manager

No.	Revision	Description	Date

Std. Dwg. No. **3-11**



SIGN POST
(In Non-Sidewalk Areas)

COPPER VALLEY COMMUNITY SERVICE DISTRICT

Approved by:

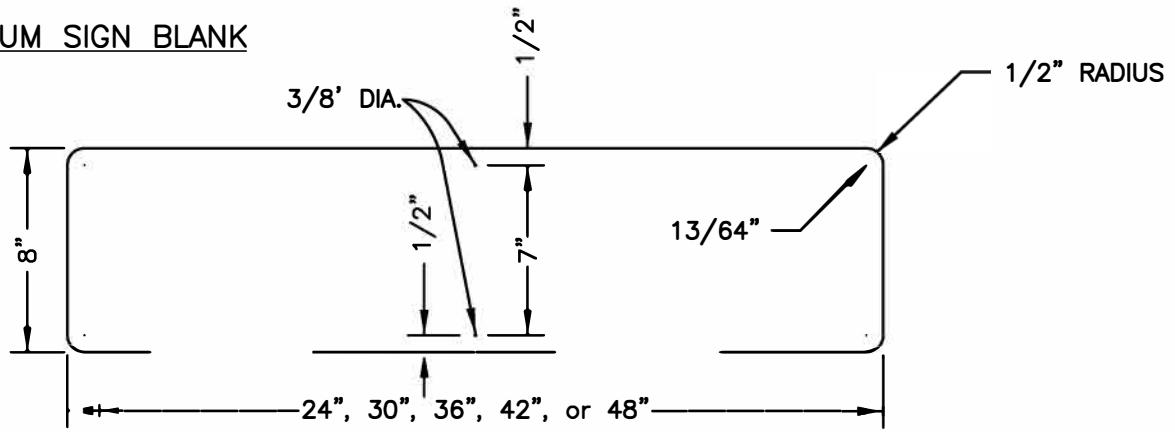
PETER KAMPA, GENERAL MANAGER

No.	Revision	Description	Date

Std. Dwg. No. **3-12**

Date: JUNE 2020

ALUMINUM SIGN BLANK



1. ALL BLANKS TO BE 0.063 GAUGE ALUMINUM ALLOY (6061-TB OR 5155-H3B), DECREASED AND TREATED WITH ALADDIN 1200.
2. THE SIGN BLANKS SHALL CONFORM TO THE STANDARD B.P.R. SHAPES AND CORNER RADII, EXCEPT THAT HOLE PUNCHING, OR DRILLING, SHALL CONFORM TO THE HOLE SIZES AND LOCATIONS SHOWN HEREON. EACH CORNER SHALL HAVE A 13/64" DIAMETER HOLE.
3. ALL BLANKS SHALL BE 8" HIGH BY 24", 30", 36", 42", OR 48" WIDE. THE 3/8" HOLES SHALL BE CENTERED ON THE VERTICAL CENTERLINE OF EACH BLANK.

NAME FACE



1. ALL FACES SHALL BE "ENGINEER GRADE" REFLECTIVE SHEETING WITH REFLECTIVE SILVER COPY ON REFLECTIVE GREEN BACKGROUND.
2. EACH SIGN FACE SHALL HAVE SUFFICIENT SPACING PROVIDED TO PERMIT APPLICATION OF A 5-DIGIT NUMBER.
3. NUMERICAL STREET NAMES SHALL BE SPELLED OUT INSTEAD OF USING THE NUMERAL LETTER TYPE ABBREVIATED LEGENDS.



STREET NAME SIGN

COPPER VALLEY COMMUNITY SERVICE DISTRICT

Date: JUNE 2020

Approved by:

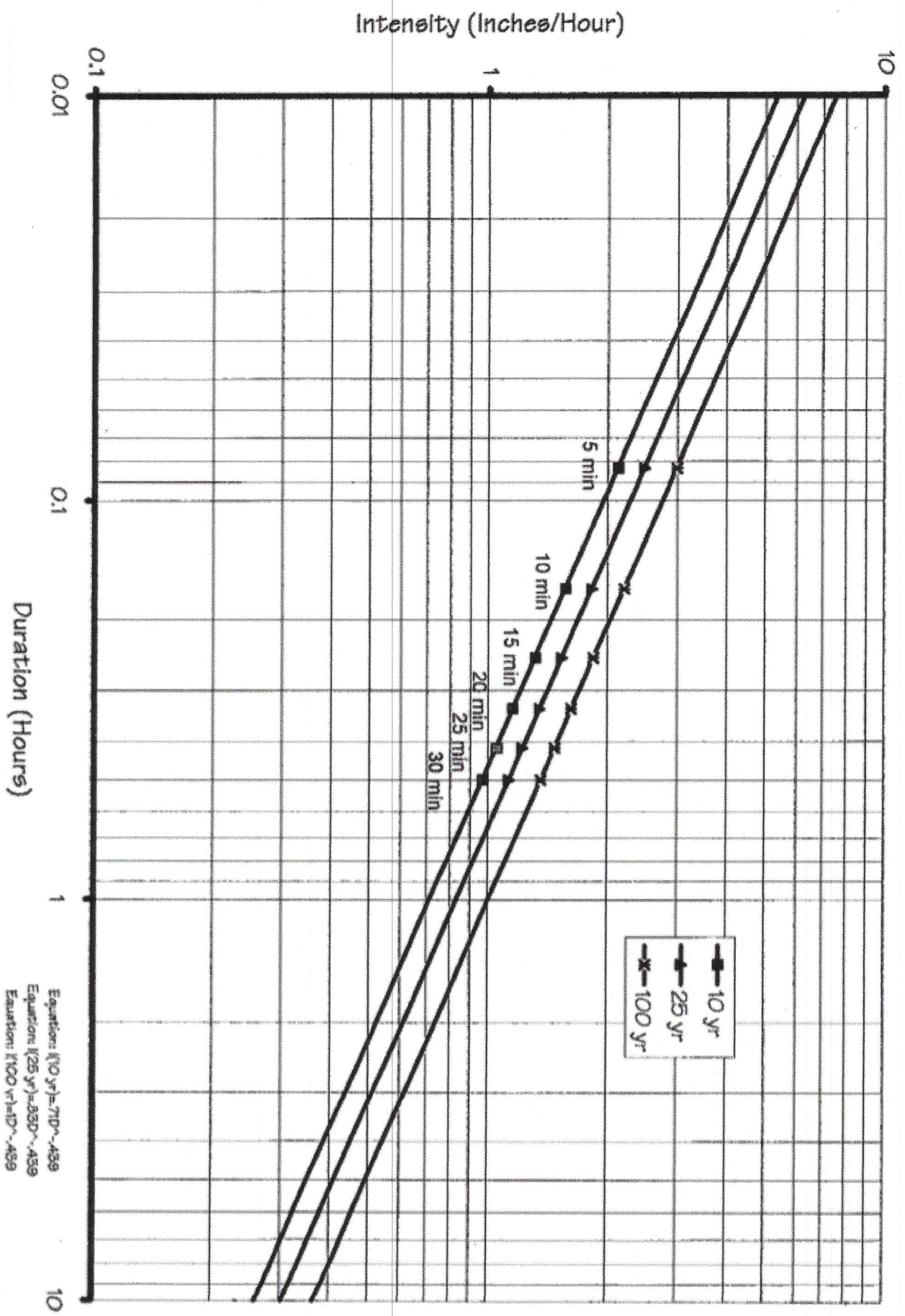
PETER KAMPA, GENERAL MANAGER

No.	Revision	Description	Date

Std. Dwg. No. **3-13**

Intensity-Duration-Frequency Curves for Melones Dam

Elevation = 900 feet
Years of Record: 1978-1991



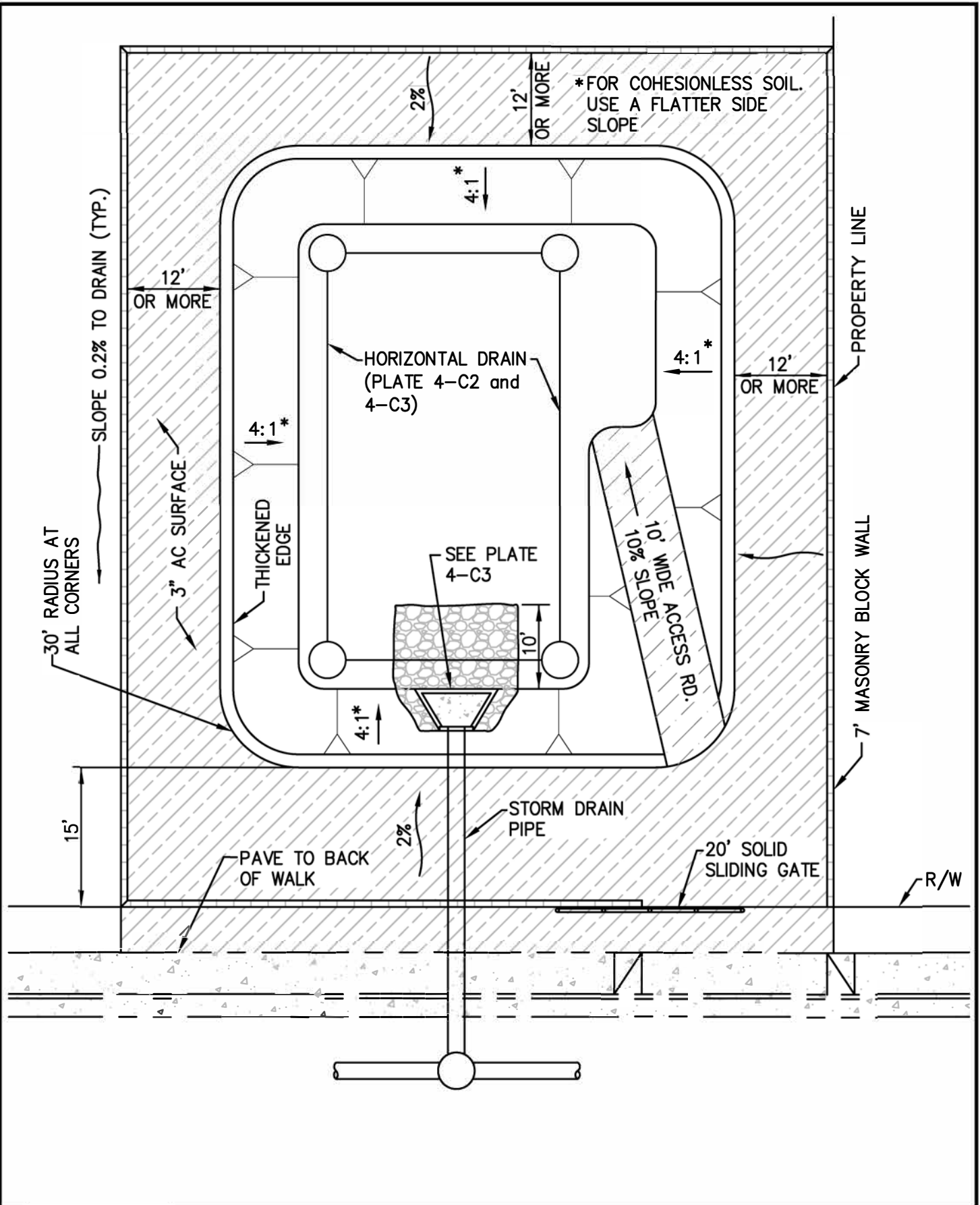
COPPER VALLEY
COMMUNITY
SERVICE DISTRICT

Approved By:
Peter Kampa
Date: _____

IDF CURVES

Revised:

4-A1



NO.	REVISED	BY
UPDATED BY:		
CHECKED BY:		

RETENTION DRAINAGE BASIN
PLAN VIEW

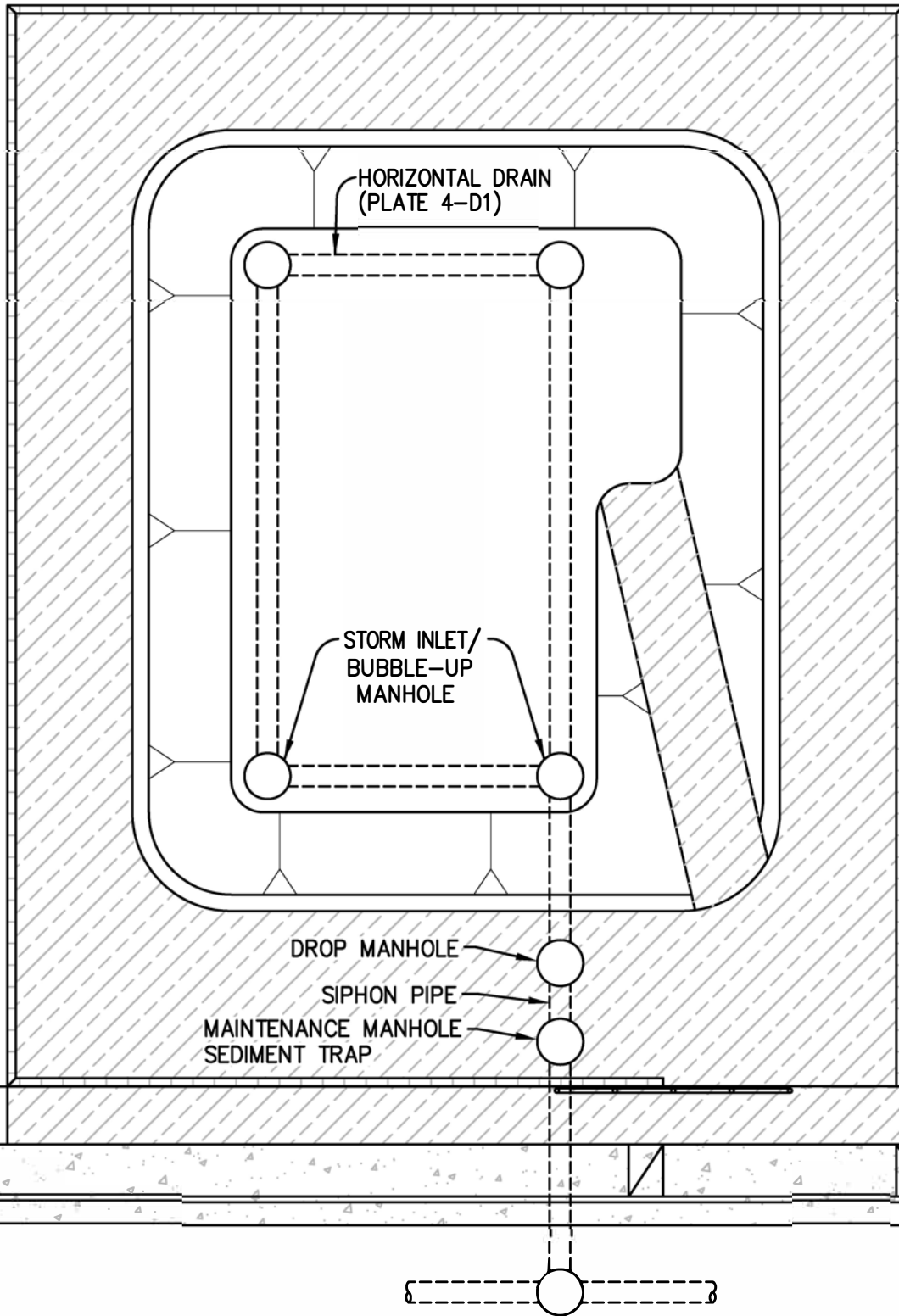
COPPER VALLEY COMMUNITY
SERVICE DISTRICT

APPROVED BY:

Peter Kampa
General Manager

DATE: JUNE, 2020

PLATE NO: 4-B1



NO.	REVISED	BY

UPDATED BY: _____

CHECKED BY: _____

HORIZONTAL DRAIN
PLAN VIEW

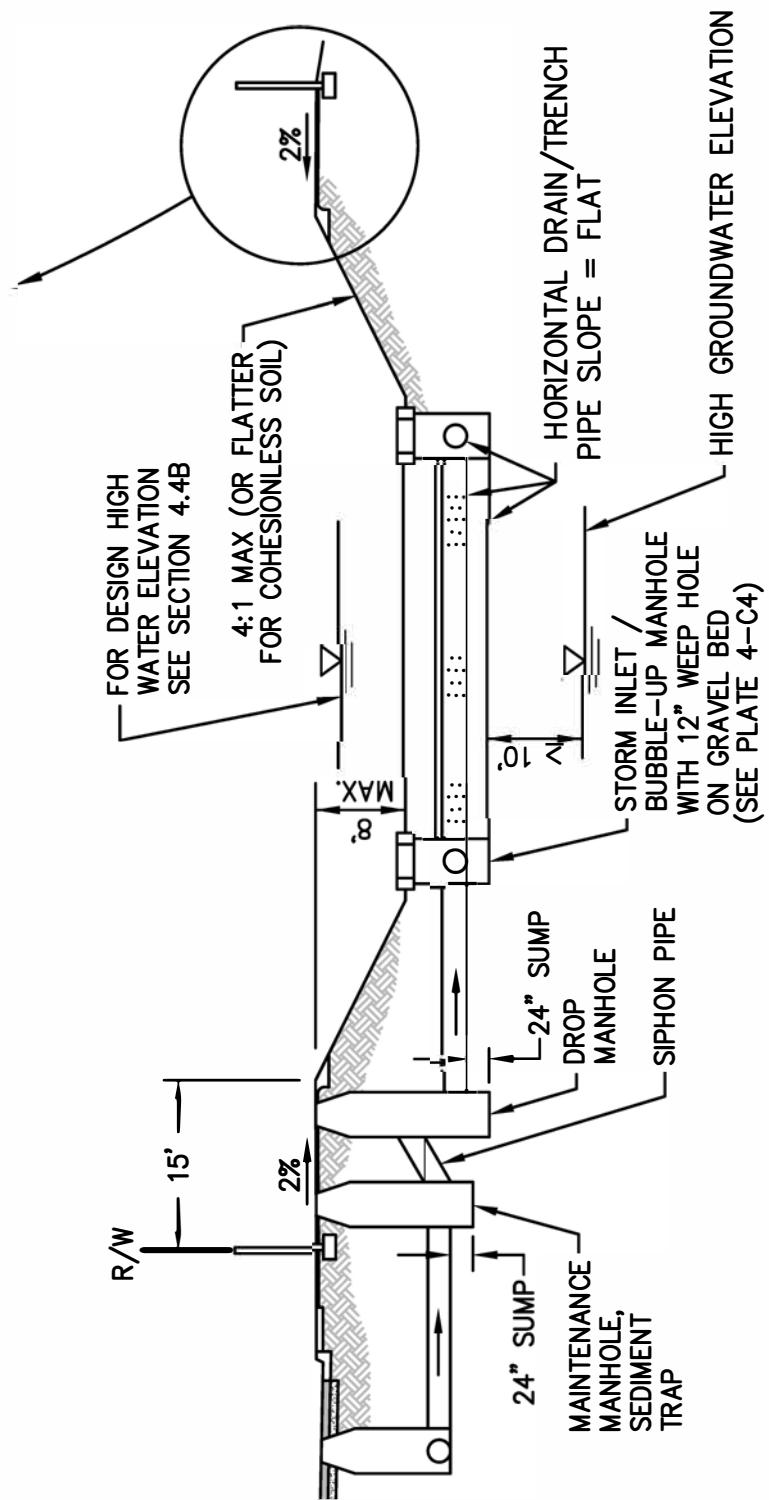
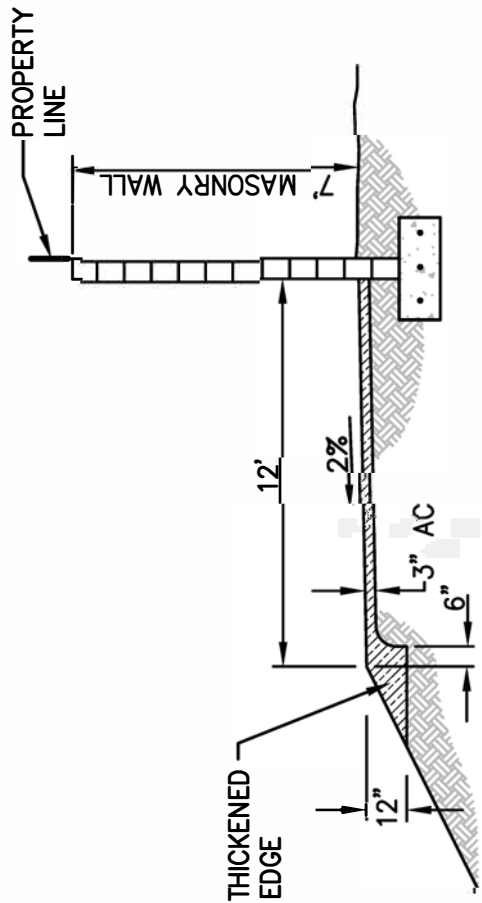
COPPER VALLEY COMMUNITY
SERVICE DISTRICT

APPROVED BY:

Peter Kampa
General Manager

DATE: JUNE, 2020

PLATE NO: 4-B2

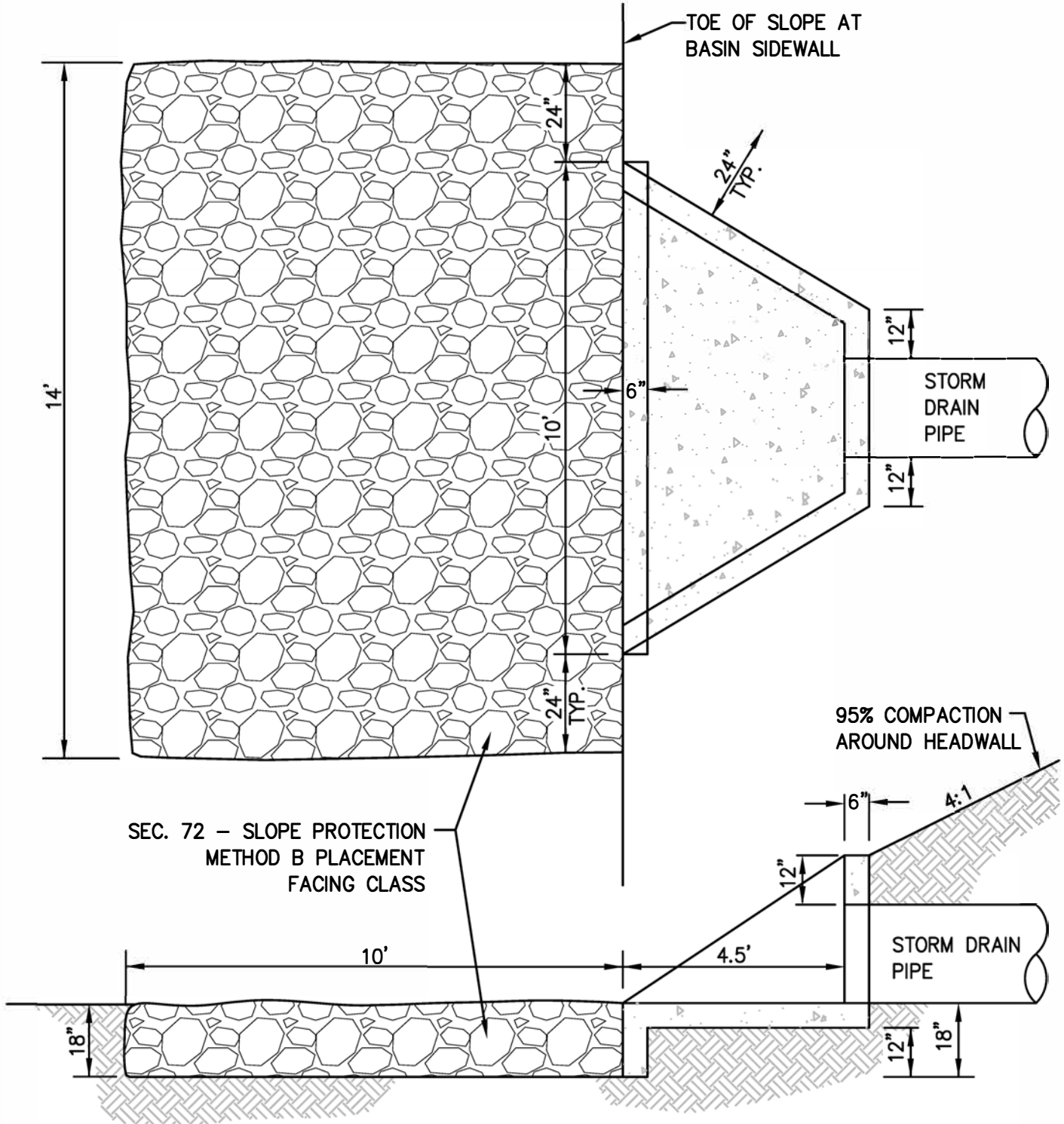


TYPICAL DRAINAGE BASIN PROFILE

No.	REVISED	BY
UPDATED BY:		
CHECKED BY:		

COPPER VALLEY COMMUNITY SERVICE DISTRICT

APPROVED BY:
 Peter Kampa
 General Manager
 DATE: JUNE 2020
 PLATE NO: 4-B3



NO.	REVISED	BY

UPDATED BY: _____

CHECKED BY: _____

**DRAINAGE BASIN
SIDE INLET**

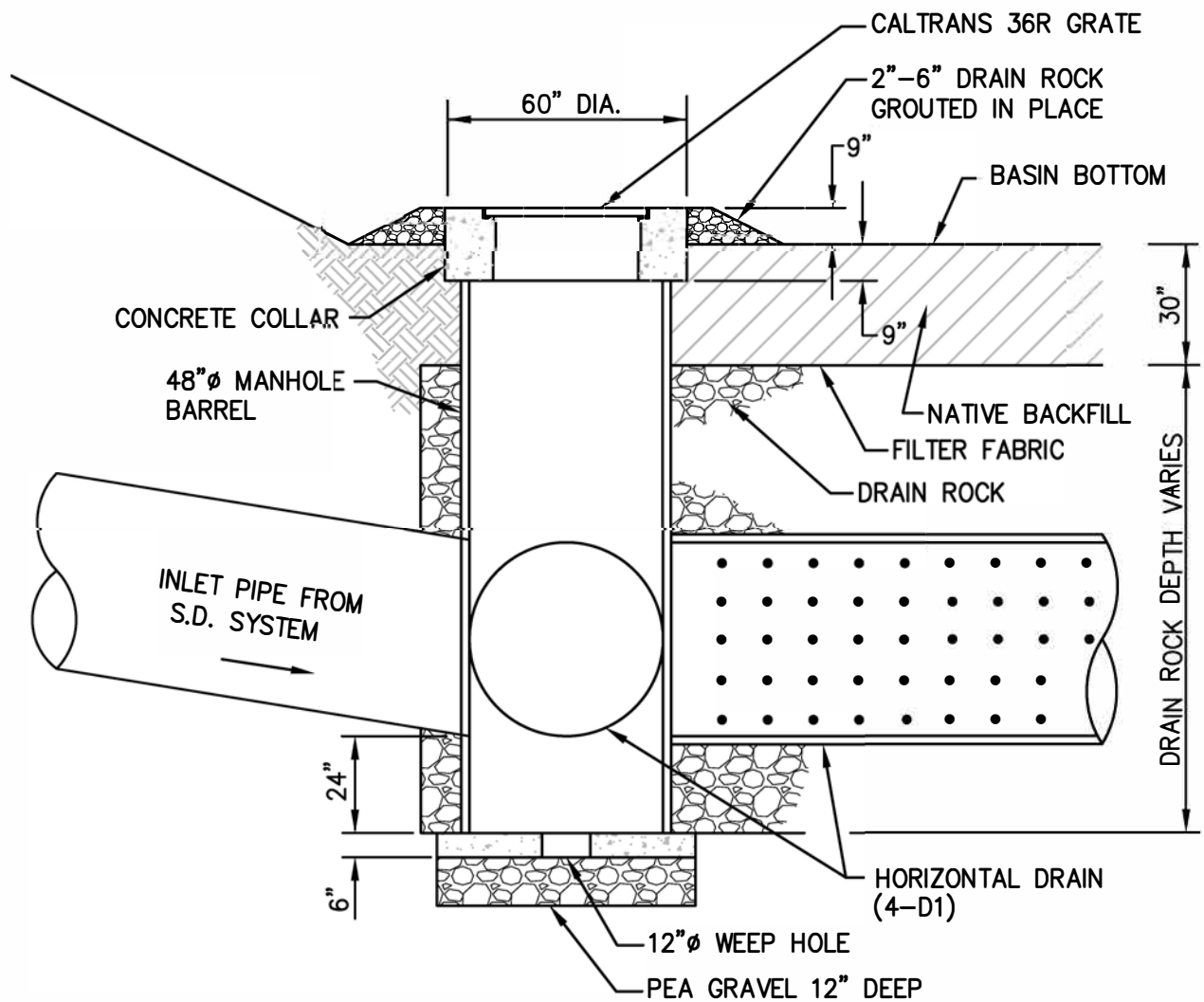
**COPPER VALLEY COMMUNITY
SERVICE DISTRICT**

APPROVED BY:

Peter Kampa
General Manager

DATE: JUNE, 2020

PLATE NO: 4-B4



NO.	REVISED	BY
UPDATED BY:		
CHECKED BY:		

**DRAINAGE BASIN
BUBBLE-UP INLET**

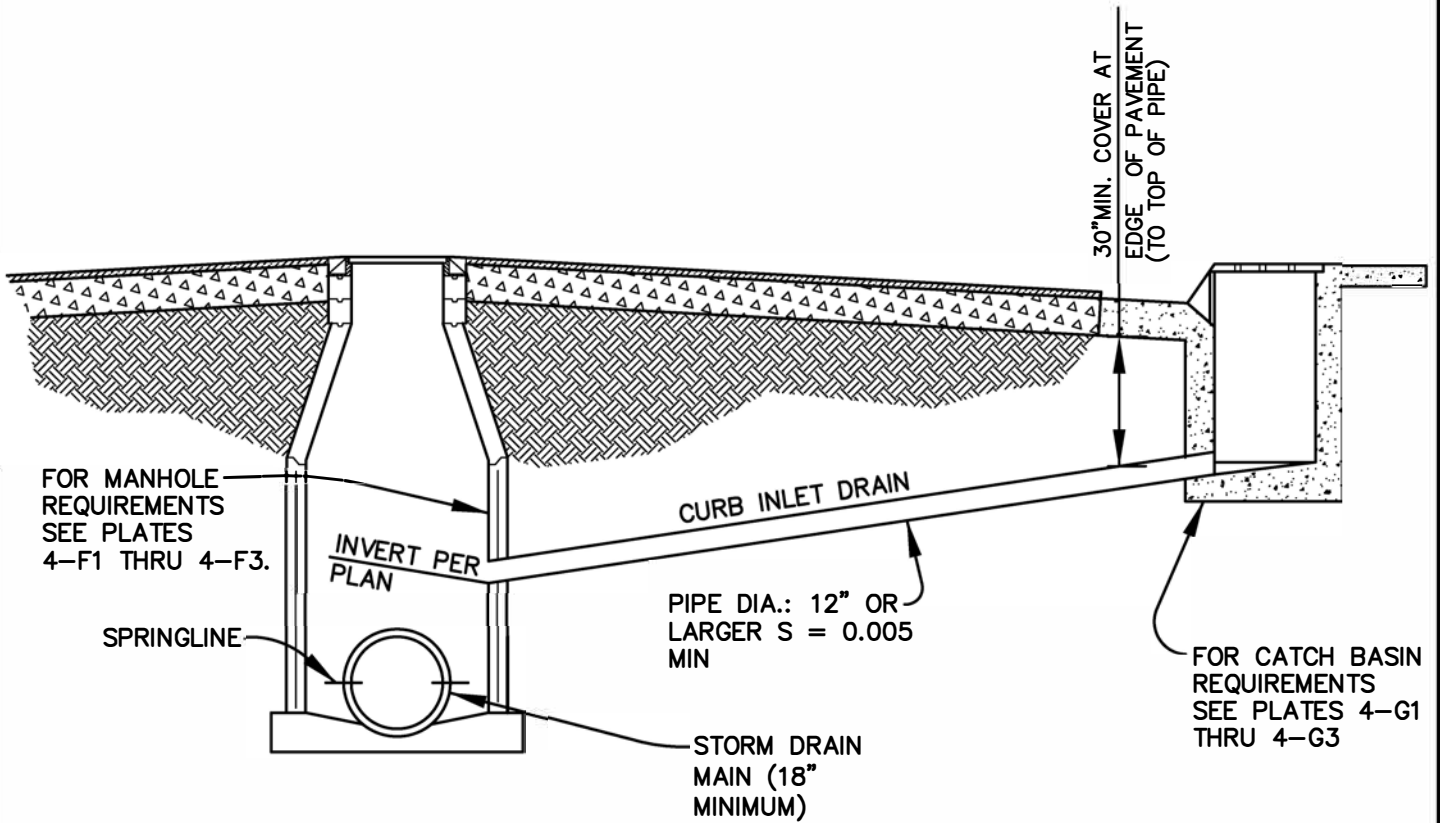
COPPER VALLEY COMMUNITY
SERVICE DISTRICT

APPROVED BY:

Peter Kampa
General Manager

DATE: JUNE, 2020

PLATE NO: 4-B5



NOTE:
 FOR TRENCHING AND PIPE INSTALLATION
 SEE PLATES 3-H1 AND 3-H2.



NO.	REVISED	BY

UPDATED BY: _____

CHECKED BY: _____

CATCH BASIN TO
 MANHOLE CONNECTION

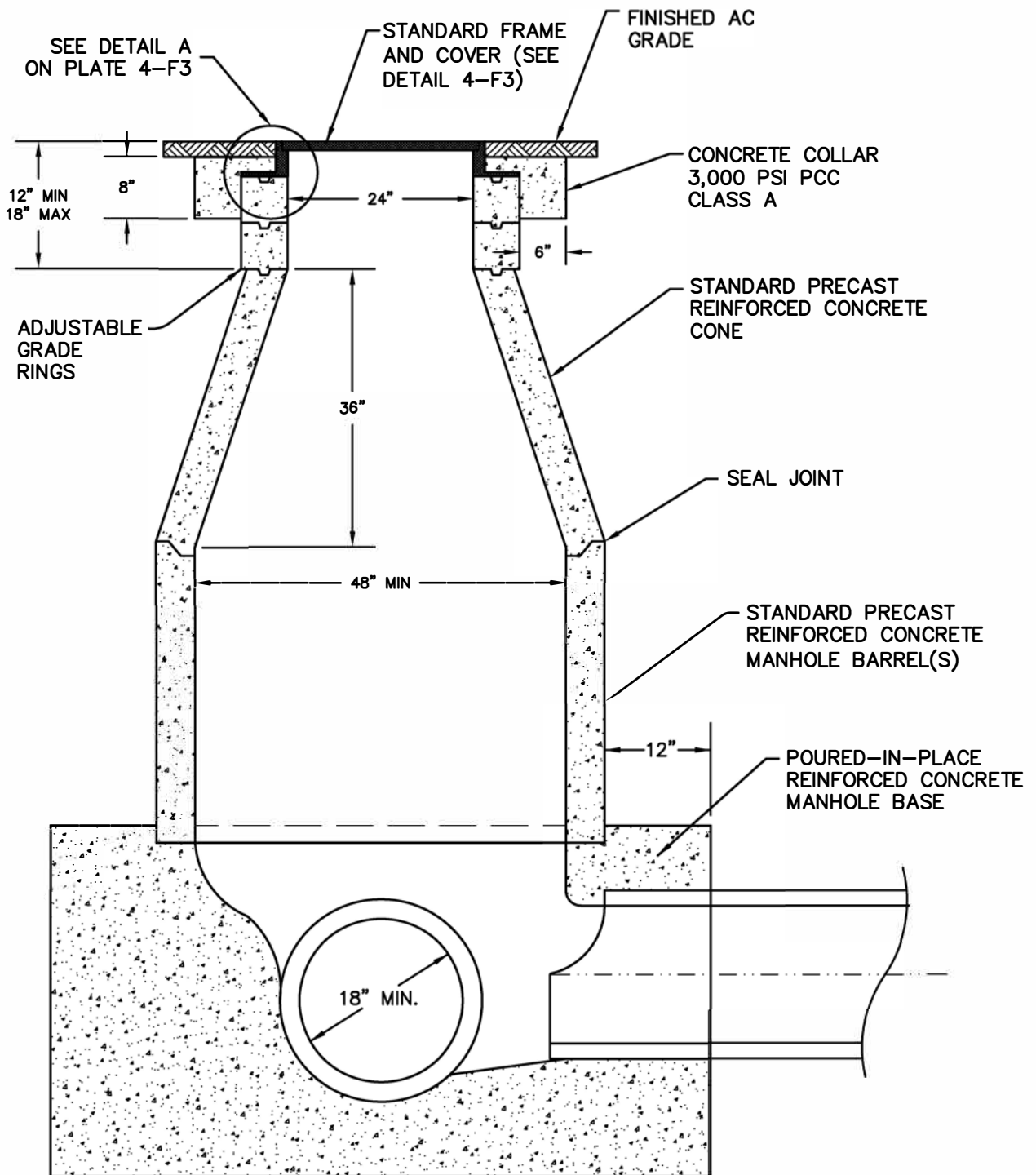
COPPER VALLEY COMMUNITY
 SERVICE DISTRICT

APPROVED BY:

Peter Kampa
 General Manager

DATE: JUNE, 2020

PLATE NO: 4-C1



NOTES:

1. FOR MANHOLE BASE SEE PLATE 4-F2 AND F-2A
2. FOR MANHOLE FRAME AND COVER SEE PLATE 4-F3
3. MINIMUM D = 18" PIPE DIAMETER FOR STORM DRAIN MAINS & 12" DIAMETER FOR LATERALS



NO.	REVISED	BY
UPDATED BY:		
CHECKED BY:		

TYPICAL STORM DRAIN MANHOLE

COPPER VALLEY COMMUNITY
SERVICE DISTRICT

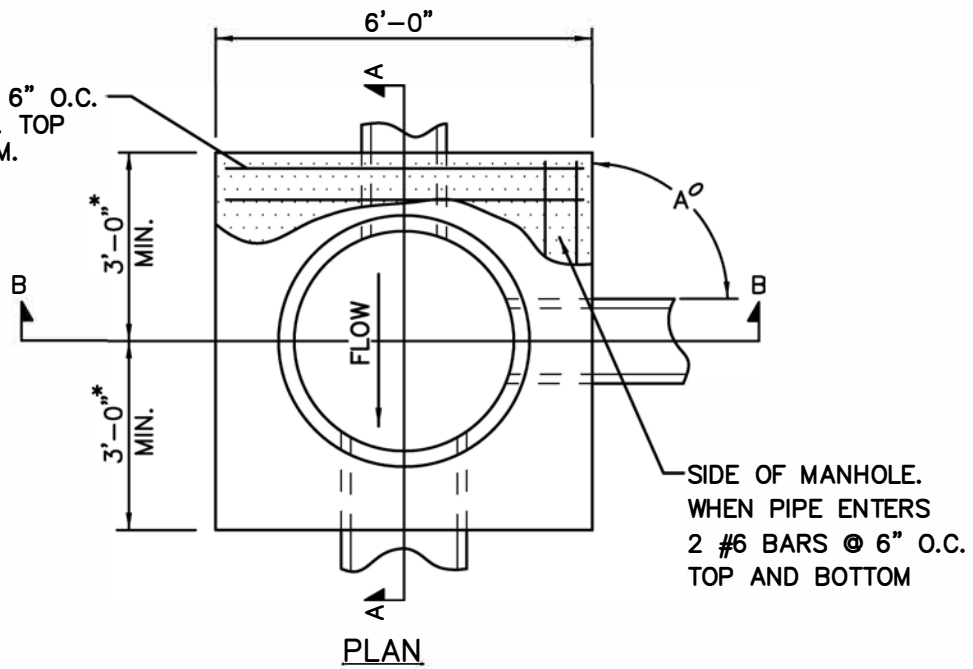
APPROVED BY:

Peter Kampa
General Manager

DATE: JUNE, 2020

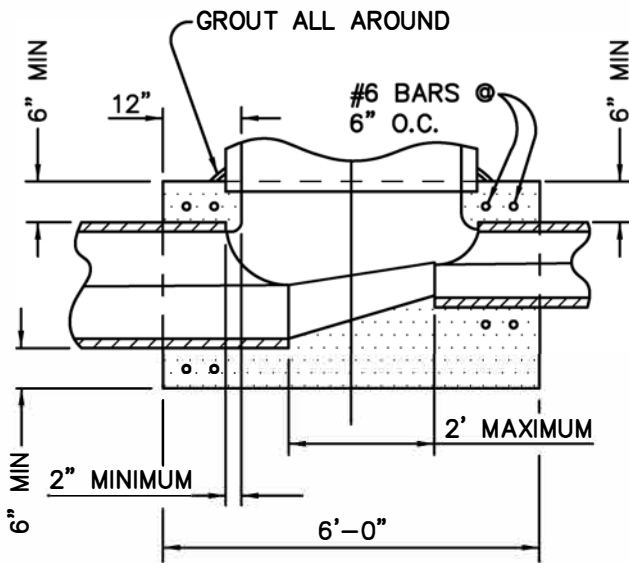
PLATE NO: 4-D1

#6 BARS @ 6" O.C.
TOTAL OF 2. TOP
AND BOTTOM.

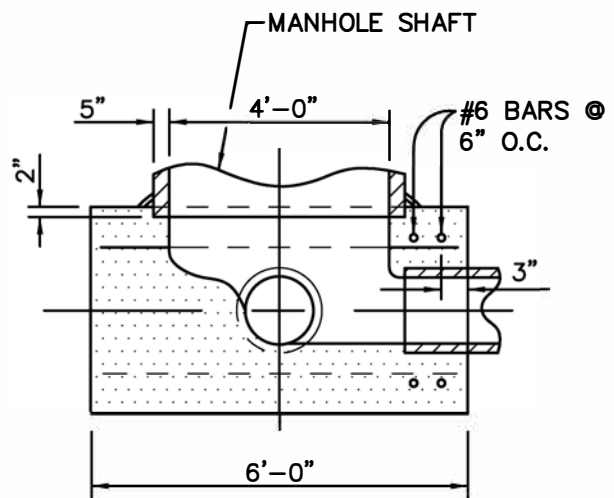


*MAY NEED TO BE
LONGER DEPENDING
ON PIPE DIAMETER
AND SKEW ANGLE A

PLAN



SECTION A-A



SECTION B-B

NOTES

1. ALL CONCRETE TO BE CLASS "A".
2. MATCH CROWN LINES OF PIPES ENTERING M.H. UNLESS OTHERWISE NOTED.
3. CUT PIPES TO ALLOW SETTING OF 4' DIAMETER CYLINDRICAL FORM FROM 6" ABOVE MAIN LINE PIPE TO SPRING LINE. CUT PIPE 2" LARGER THAN FORM TO ALLOW 2" CONCRETE OVER ENDS OF ALL CUT PIPE.
4. INVERT AND BASE OF M.H. TO BE POURED AND INVERT TO BE SHAPED BY HAND TO MAKE SMOOTH TRANSITION. FINISH WITH RUBBER FLOAT.
5. CENTER M.H. ON PIPE JOINT WHERE PIPE CHANGES SIZES, LEAVING A GAP OF 12" MINIMUM, 24" MAXIMUM.



NO.	REVISED	BY
UPDATED BY:		
CHECKED BY:		

STORM DRAIN MANHOLE BASE
FOR 30" AND SMALLER PIPES

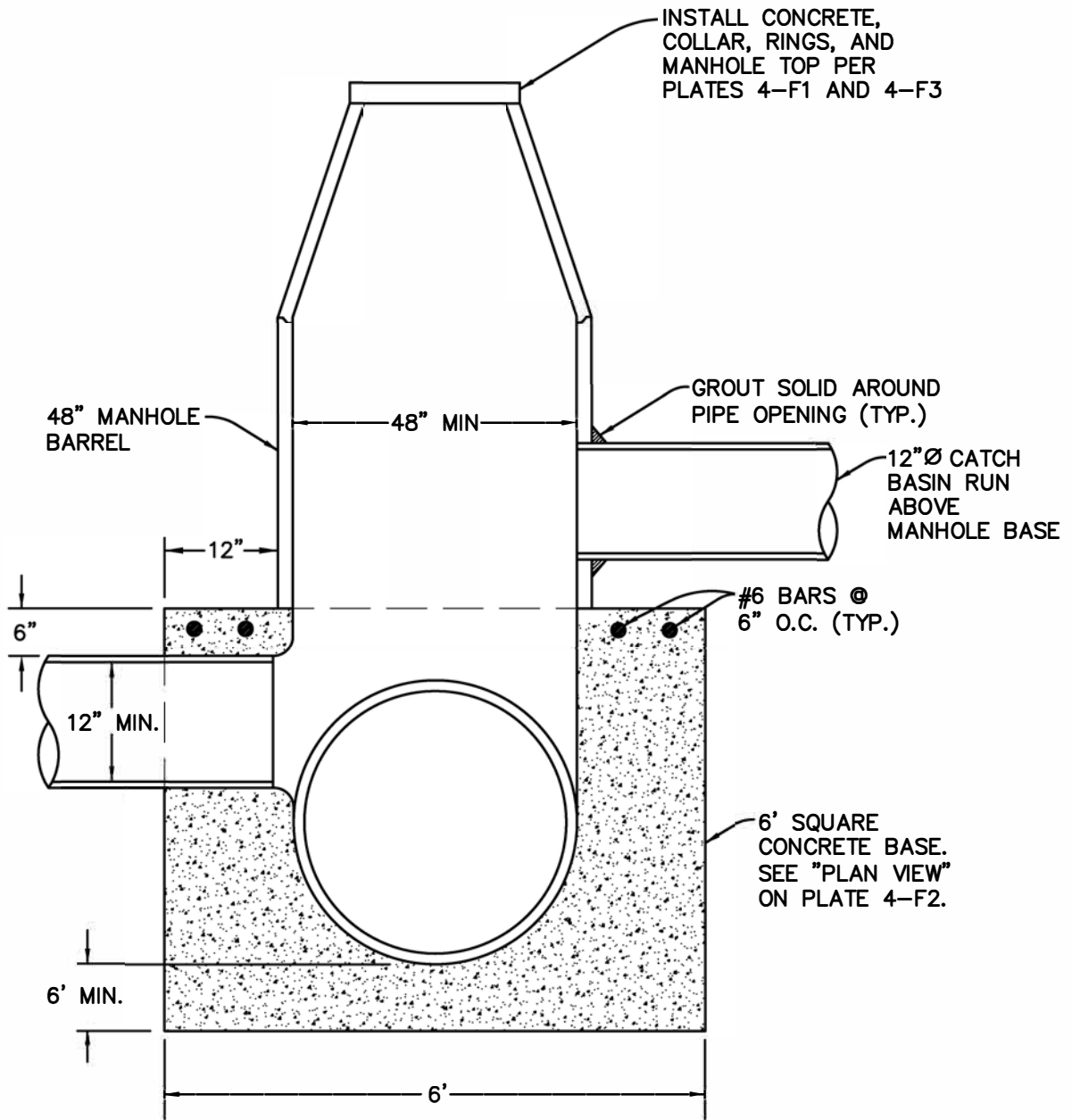
COPPER VALLEY COMMUNITY
SERVICE DISTRICT

APPROVED BY:

Peter Kampa
General Manager

DATE: JUNE, 2020

PLATE NO. 4-D2A

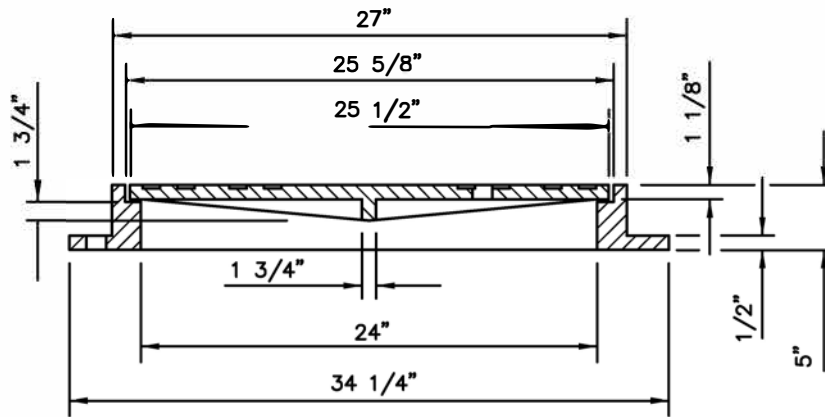


NOTES:

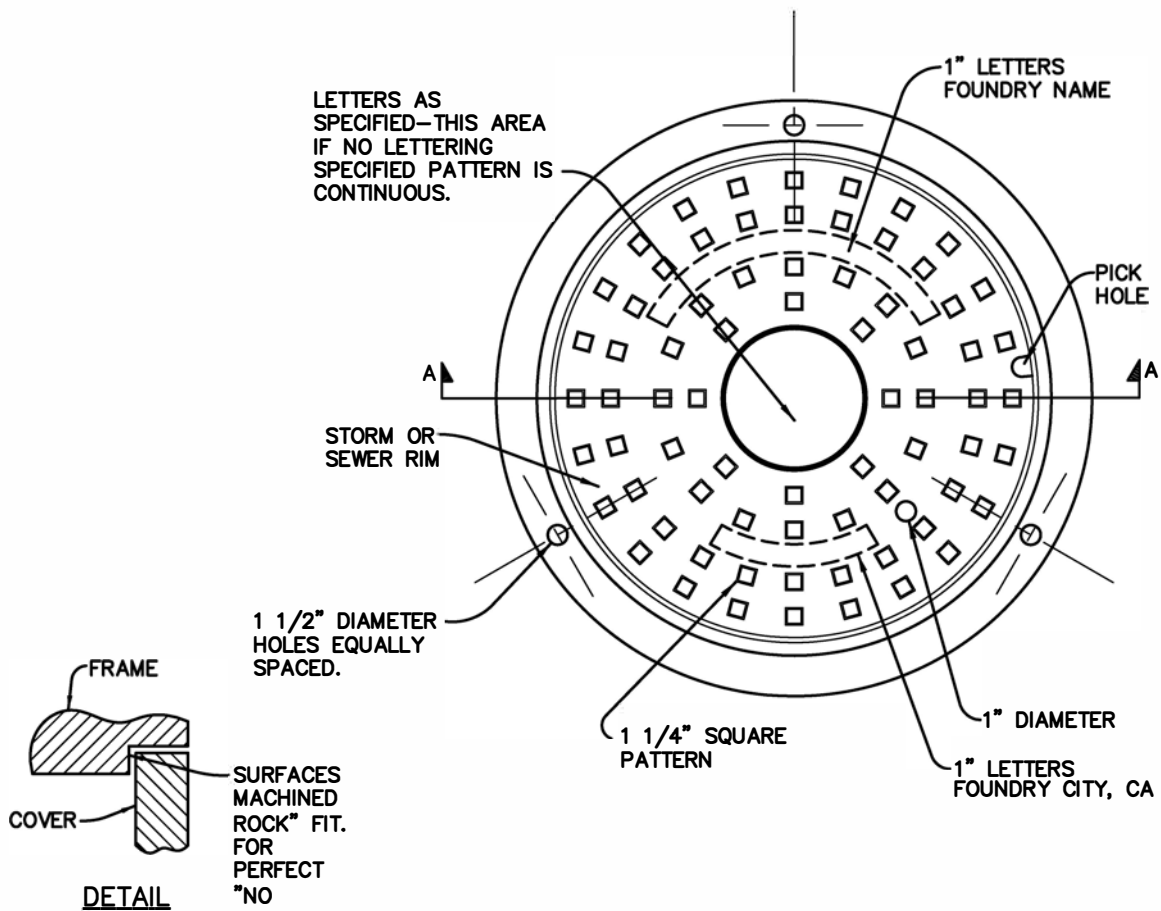
1. ALL CONCRETE TO BE CLASS A
2. CUT PIPES TO ALLOW SETTING OF 4' DIAMETER CYLINDRICAL FORM FROM 6" ABOVE MAIN LINE PIPE TO SPRING LINE. CUT PIPE 2" LARGER THAN FORM TO ALLOW 2" CONCRETE OVER ENDS OF ALL CUT PIPE.
3. INVERT AND BASE OF MANHOLE TO BE POURED AND INVERT TO BE AND INVERT TO BE SHAPED BY HAND FOR A SMOOTH TRANSITION. FINISH WITH RUBBER FLOAT.
4. CENTER MANHOLE ON PIPE JOINT WHERE PIPE CHANGES SIZE., LEAVING A GAP OF 12" MIN. AND 24" MAX.
5. FOR PIPES LARGER THAN 48" DIAMETER, MANHOLE BASE DETAILS SHALL BE PROPOSED BY THE ENGINEER FOR REVIEW AND APPROVAL BY THE COUNTY.



NO.	REVISED	BY	STORM DRAIN MANHOLE BASE FOR 36" TO 48" PIPES	APPROVED BY:	
					Peter Kampa General Manager
UPDATED BY:				COPPER VALLEY COMMUNITY SERVICE DISTRICT	DATE: JUNE 2020
CHECKED BY:					PLATE NO: 4-D2B



SECTION A-A



NO.	REVISED	BY

UPDATED BY: _____

CHECKED BY: _____

**MANHOLE FRAME
AND COVER**

**COPPER VALLEY COMMUNITY
SERVICE DISTRICT**

APPROVED BY:

Peter Kampa
General Manager

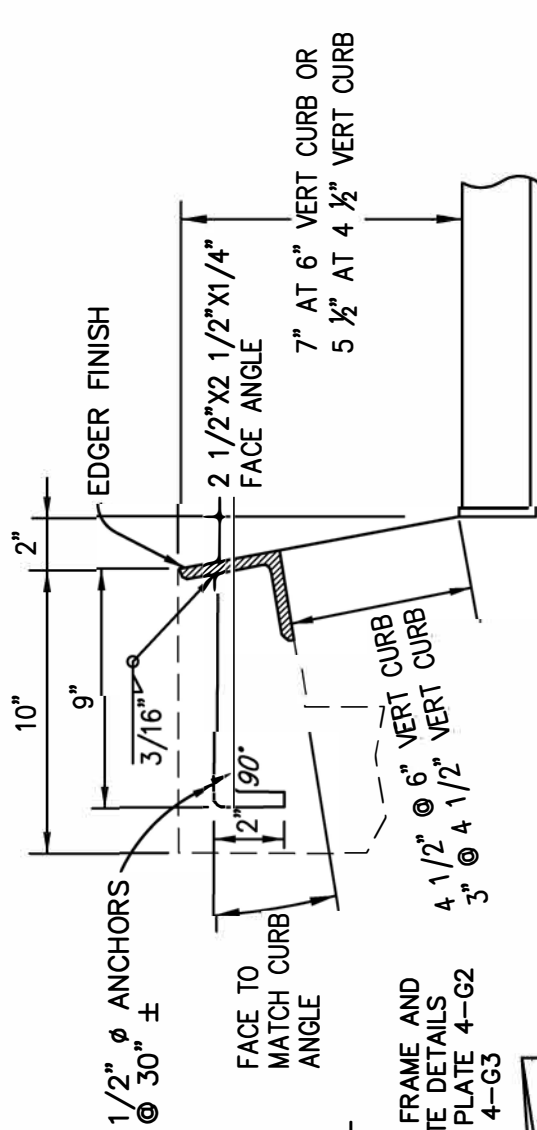
DATE: JUNE 2020

PLATE NO: 4-D3

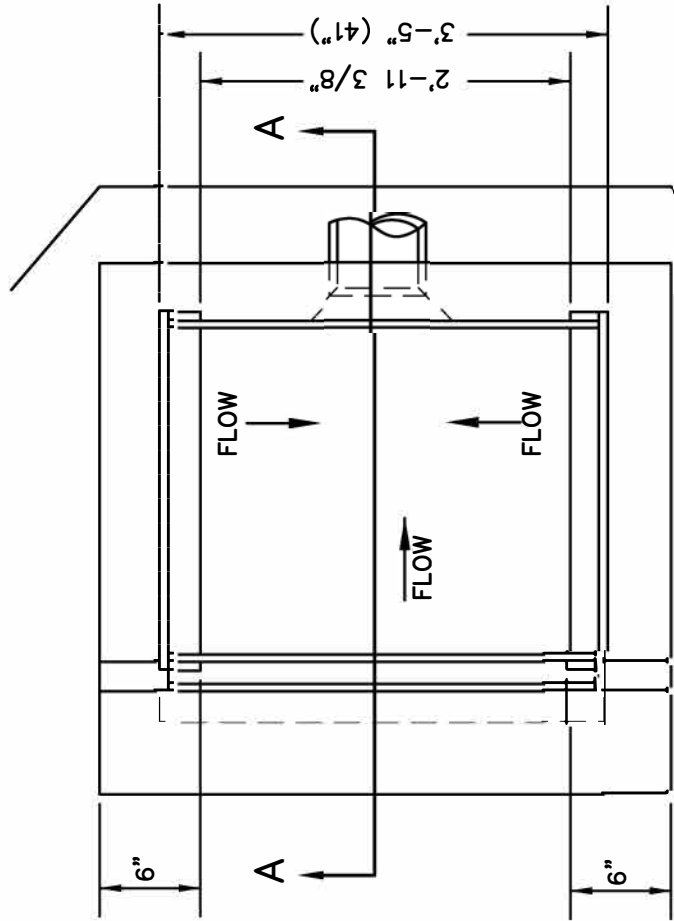
NOTE:

ALL FRAME AND GRATES SHALL BE HOT-DIPPED GALVANIZED.

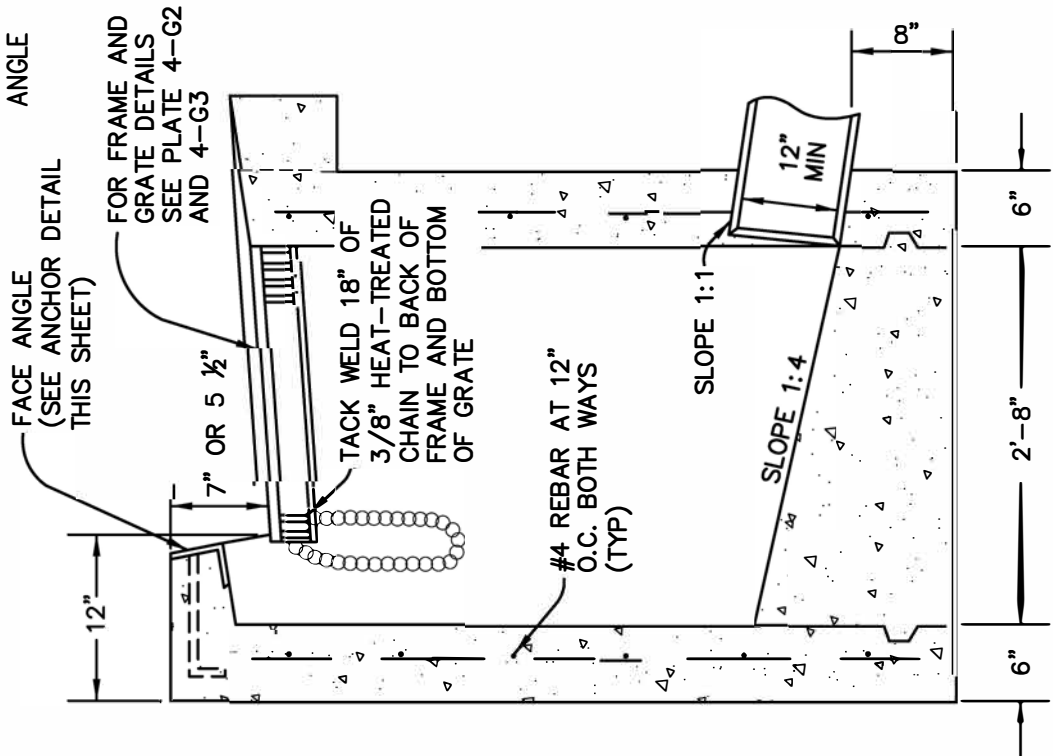
BASIN FRAME AND GRATE SHALL CONFORM TO CALTRANS STANDARD PLATE D74B, TYPE G.O.



FACE ANGLE ANCHOR DETAIL



**PLAN
SEE 4-G1A**



SECTION A-A



NO.	REVISED	BY
UPDATED BY:		
CHECKED BY:		

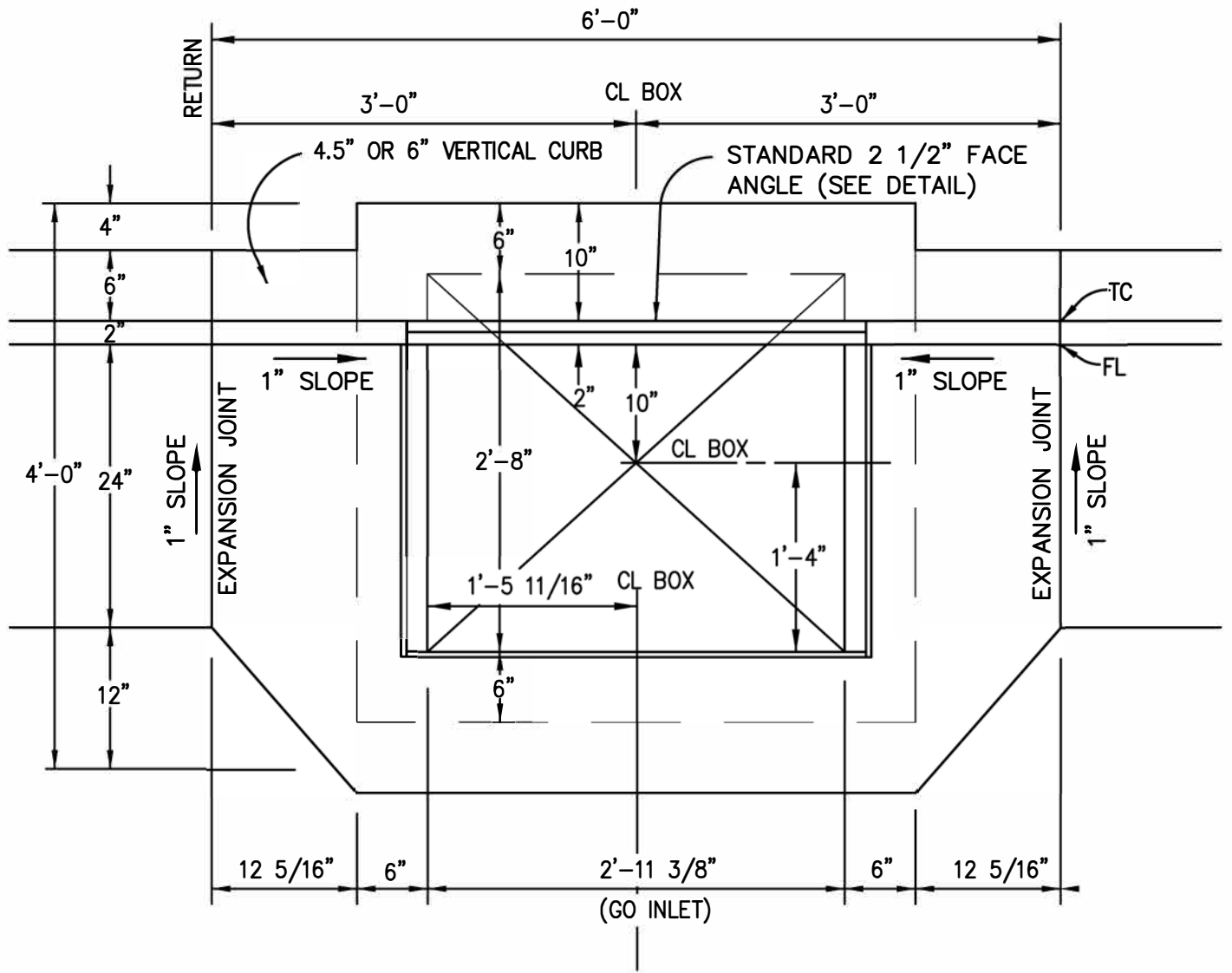
**GRATE with CURB OPENING
TYPE G.O. CATCH BASIN**

**COPPER VALLEY COMMUNITY
SERVICE DISTRICT**

APPROVED BY:
Peter Kampa
General Manager

DATE: JUNE 2020

PLATE NO: 4-E1A



NO.	REVISED	BY
UPDATED BY:		
CHECKED BY:		

(TYPE G.O.) CATCH BASIN
WITH 4.5" OR 6" CURB

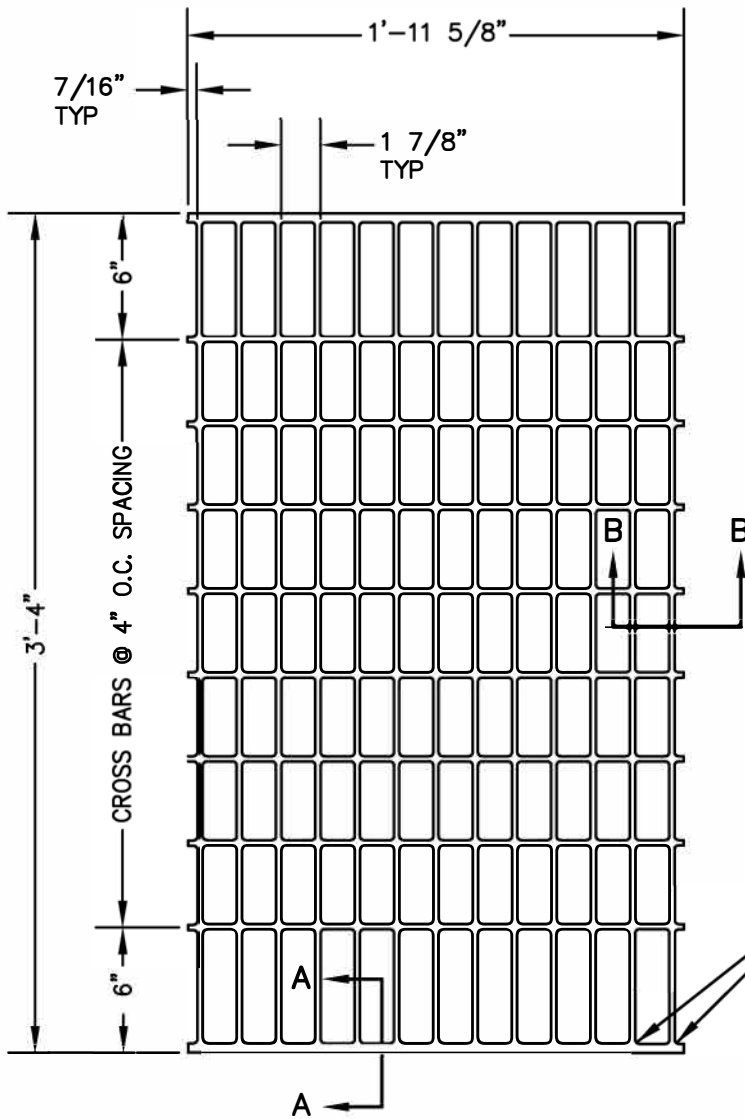
**COPPER VALLEY COMMUNITY
SERVICE DISTRICT**

APPROVED BY:

Peter Kampa
General Manager

DATE: JUNE 2020

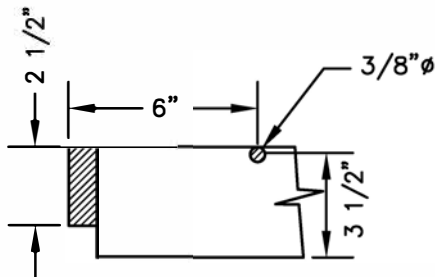
PLATE NO: 4-E1B



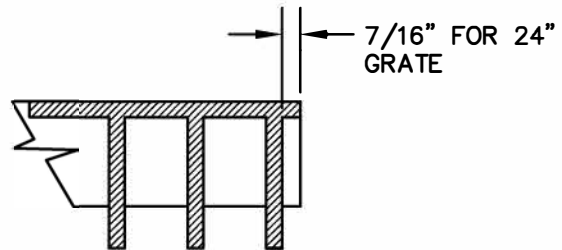
NOTES:

1. BEARING BARS TO BE 3 1/2" X 1/4" BARS ON 1 7/8" CENTERS.
2. 3/8" ϕ CROSS BARS MAY BE FILLET WELDED, RESISTANCE WELDED OR ELECTROFORGED TO BEARING BARS.
3. WEIGHT OF 24" GRATE = 141LBS.
4. GRATE SHALL BE CHAINED TO CATCH BASIN.
5. ALL FRAMES AND GRATES SHALL BE HOT-DIPPED GALVANIZED AFTER MANUFACTURE
6. GRATE SHALL CONFORM TO CALTRANS STANDARD PLAN D77B, TYPE 24-13 GRATE.

3/16 FILLET WELD FULL DEPTH EACH SIDE ON OUTSIDE BEARING BARS AND ON EVERY THIRD INTERNAL BEARING BAR.



SECTION A-A



SECTION B-B

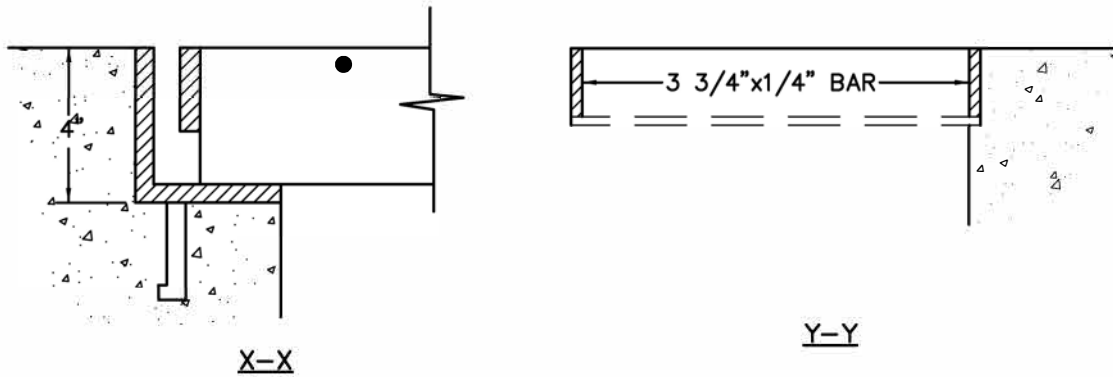
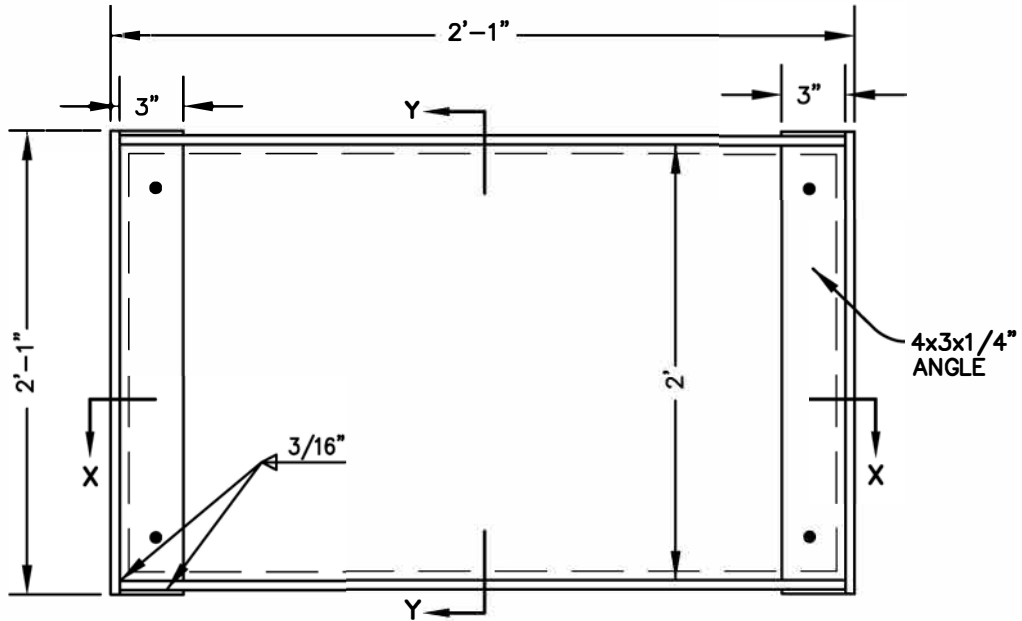


NO.	REVISED	BY
UPDATED BY:		
CHECKED BY:		

**CATCH BASIN GRATE
FOR TYPE G.O. CATCH BASIN**

**COPPER VALLEY COMMUNITY
SERVICE DISTRICT**

APPROVED BY:
Peter Kampa General Manager
DATE: JUNE 2020
PLATE NO: 4-E2



NOTE:


1. ALL FRAMES AND GRATES SHALL BE HOT-DIPPED GALVANIZED AFTER MANUFACTURE.
2. FRAME SHALL CONFORM TO CALTRANS STANDARD PLAN D77A, FOR TYPE 600 GRATE.

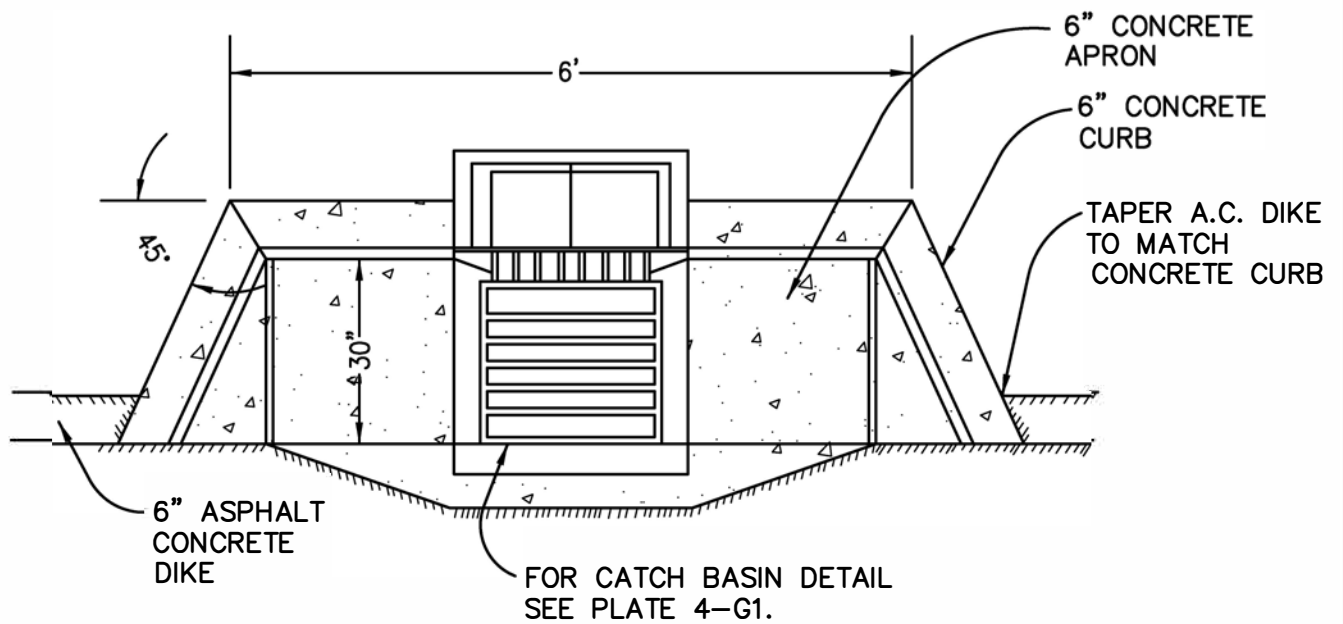


NO.	REVISED	BY
UPDATED BY:		
CHECKED BY:		

**CATCH BASIN FRAME
FOR TYPE G.O. CATCH BASIN**

**COPPER VALLEY COMMUNITY SERVICE
DISTRICT**

APPROVED BY:
 Peter Kampa General Manager
DATE: JUNE 2020
PLATE NO: 4-E3



NO.	REVISED	BY
UPDATED BY:		
CHECKED BY:		

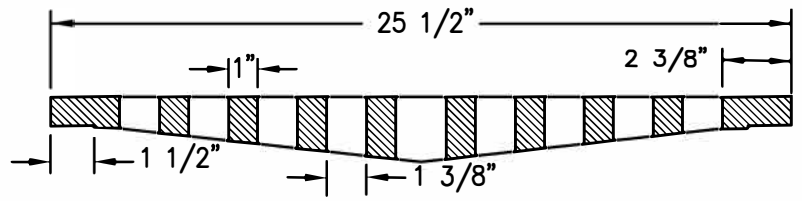
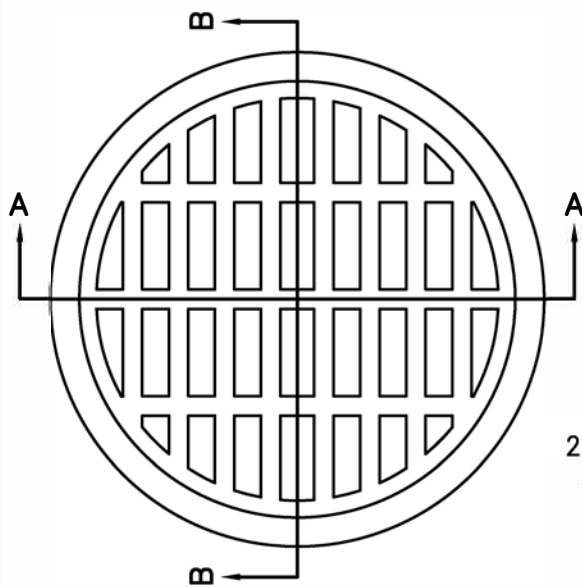
**G.O. CATCH BASIN
AT A.C. DIKE**

**COPPER VALLEY COMMUNITY
SERVICE DISTRICT**

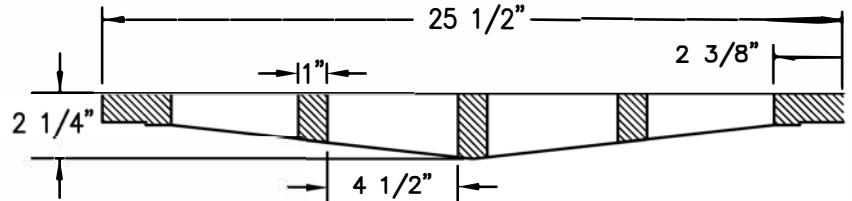
APPROVED BY:

Peter Kampa
General Manager

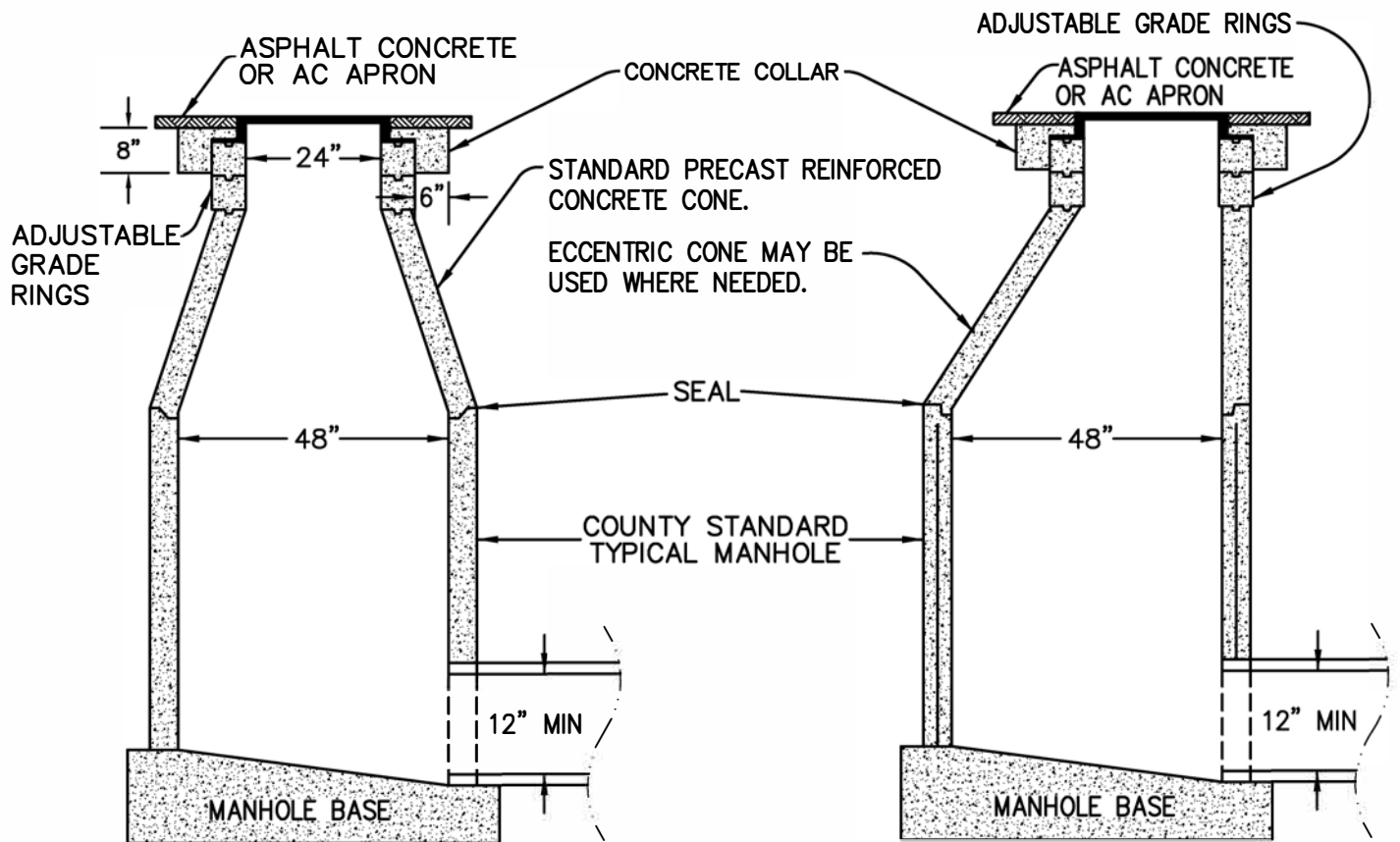
DATE: JUNE 2020
PLATE NO. 4-E4



SECTION A-A



SECTION B-B



NOTE:

1. THIS CATCH BASIN IS TO BE USED IN AREAS WITHOUT CURBING OR ASPHALT CONCRETE DIKE.
2. MINIMUM D = 12" PIPE DIAMETER FOR STORM DRAIN LATERAL



NO.	REVISED	BY
UPDATED BY:		
CHECKED BY:		

CATCH BASIN ALTERNATIVE

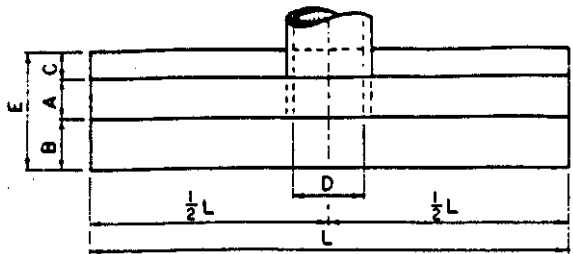
COPPER VALLEY COMMUNITY SERVICE DISTRICT

APPROVED BY:

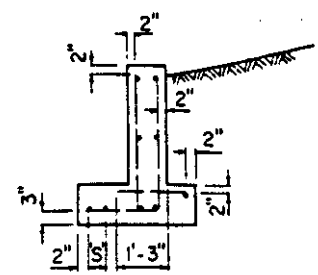
Peter Kampa
General Manager

DATE: JUNE 2020

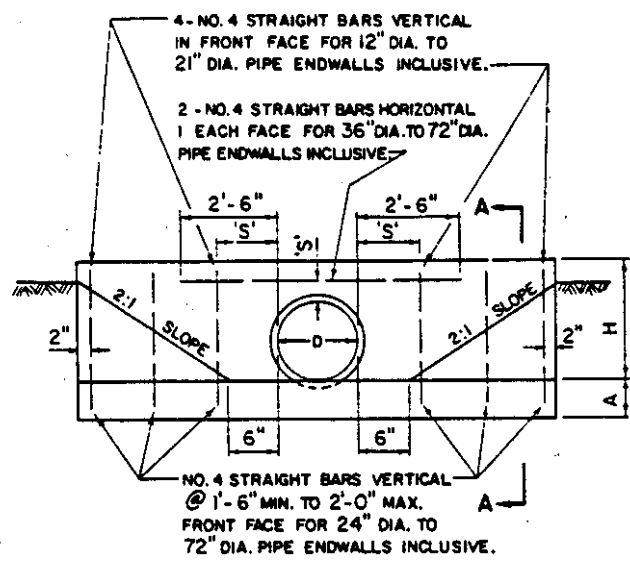
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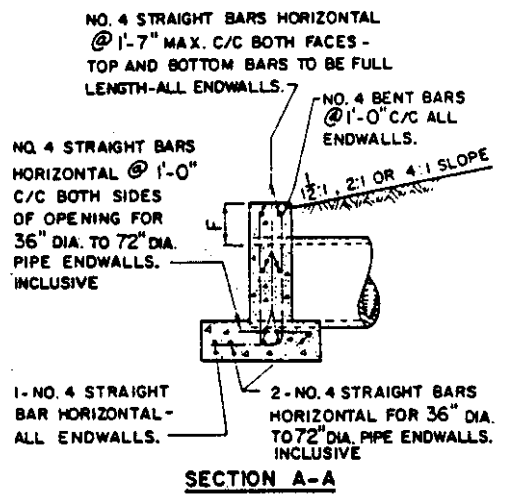
PLAN



DISPOSITION OF BARS DETAIL



ELEVATION



SECTION A-A

QUANTITIES FOR ESTIMATING PURPOSES ONLY

OPENING		DIMENSIONS							QUANTITIES	
D	AREA	A	B	C	E	F	H	L	CONC.	STEEL
INCHES	SQ. FT.								C.Y.	LBS.
12	0.79	9"	6"	6"	1'-9"	9"	1'-9"	6'-6"	0.61	41
15	1.23	9"	6"	6"	1'-9"	9"	2'-0"	7'-9"	0.77	47
18	1.77	9"	6"	6"	1'-9"	9"	2'-3"	9'-0"	0.95	54
21	2.40	9"	6"	6"	1'-9"	9"	2'-6"	10'-3"	1.14	70
24	3.14	9"	14"	6"	2'-5"	9"	2'-9"	11'-6"	1.56	80
27	3.98	9"	14"	6"	2'-5"	9"	3'-0"	12'-10"	1.82	88
30	4.91	9"	14"	6"	2'-5"	12"	3'-6"	14'-2"	2.22	98
33	5.94	9"	14"	6"	2'-5"	12"	3'-9"	15'-5"	2.48	105
36	7.07	12"	16"	10"	3'-2"	12"	4'-0"	16'-8"	4.16	182
42	9.62	12"	16"	10"	3'-2"	12"	4'-6"	19'-2"	5.07	206
48	12.57	12"	16"	10"	3'-2"	12"	5'-0"	21'-8"	6.09	244
54	15.90	12"	20"	12"	3'-8"	12"	5'-6"	24'-2"	7.62	275
60	19.64	12"	20"	12"	3'-8"	12"	6'-0"	26'-8"	8.82	304
72	28.27	12"	20"	12"	3'-8"	12"	7'-0"	31'-8"	11.46	377

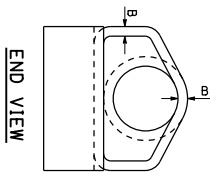
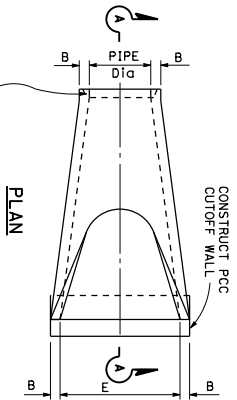
'S' DISTANCES

4" FOR 12" DIA. TO 21" DIA. PIPES INCLUSIVE.
 6" FOR 24" DIA. TO 36" DIA. PIPES INCLUSIVE.
 8" FOR 42" DIA. TO 72" DIA. PIPES INCLUSIVE.

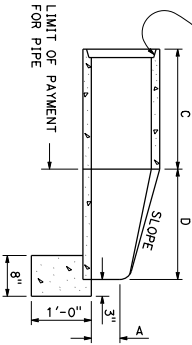
GENERAL NOTES:

CONCRETE: MIX NO. 3
 REINFORCING: DEFORMED STEEL BARS-NO. 4
 CHAMFER: ALL EXPOSED EDGES 1" X 1" OR AS DIRECTED.

COPPER VALLEY COMMUNITY SERVICE DISTRICT	Approved By:	STANDARD HEADWALL CIRCULAR PIPE	REVISED	4-F2
	_____		_____	
	Peter Kampa		_____	
	DATE: _____		_____	

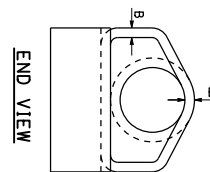
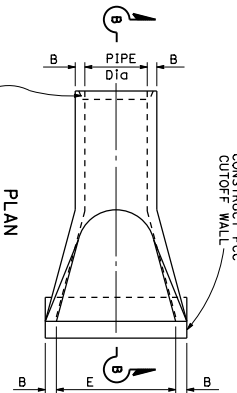


TONGUE END ON INLET SECTION
GROOVE END ON OUTLET SECTION

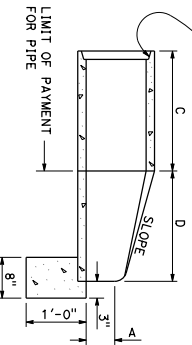


PIPE Dia	MINIMUM DIMENSIONS					SLOPE
	A	B	C	D	E	
12"	4"	1 3/4"	SEE NOTE 2	2'-0"	2'-0"	2:1 OR FLATTER
18"	9"	2 1/4"		2'-3"	3'-0"	
24"	9 1/2"	2 3/4"		3'-7 1/2"	4'-0"	
30"	1'-0"	3 1/4"		4'-6"	5'-0"	
36"	1'-3"	3 3/4"		5'-3"	6'-0"	
42"	1'-9"	4 1/4"		5'-3"	6'-6"	
48"	2'-0"	4 3/4"		6'-0"	7'-0"	
54"	2'-3"	5 1/4"		5'-5"	7'-6"	

PRECAST CONCRETE FLARED END SECTION TYPE A



TONGUE END ON INLET SECTION
GROOVE END ON OUTLET SECTION



PIPE Dia	MINIMUM DIMENSIONS					SLOPE
	A	B	C	D	E	
12"	4"	1 1/2"	SEE NOTE 2	1'-10"	2'-0"	2:1 OR FLATTER
18"	9"	1 3/4"		2'-1"	3'-0"	
24"	9 1/2"	2 1/4"		3'-6"	4'-0"	
30"	1'-0"	2 3/4"		4'-5"	5'-0"	
36"	1'-3"	3 1/4"		5'-2"	6'-0"	
42"	1'-9"	3 1/2"		5'-3"	6'-6"	
48"	2'-0"	4"		6'-0"	7'-0"	
54"	2'-3"	4 3/8"		5'-6"	6'-10"	

PRECAST CONCRETE FLARED END SECTION TYPE B

NOTES:

- Contractor has the option of using either Type A or B precast concrete flared end section.
- "C" dimension varies by manufacturer and will be paid for as concrete pipe.

**COPPER VALLEY
COMMUNITY
SERVICE
DISTRICT**

Approved by:

Peter Kampa

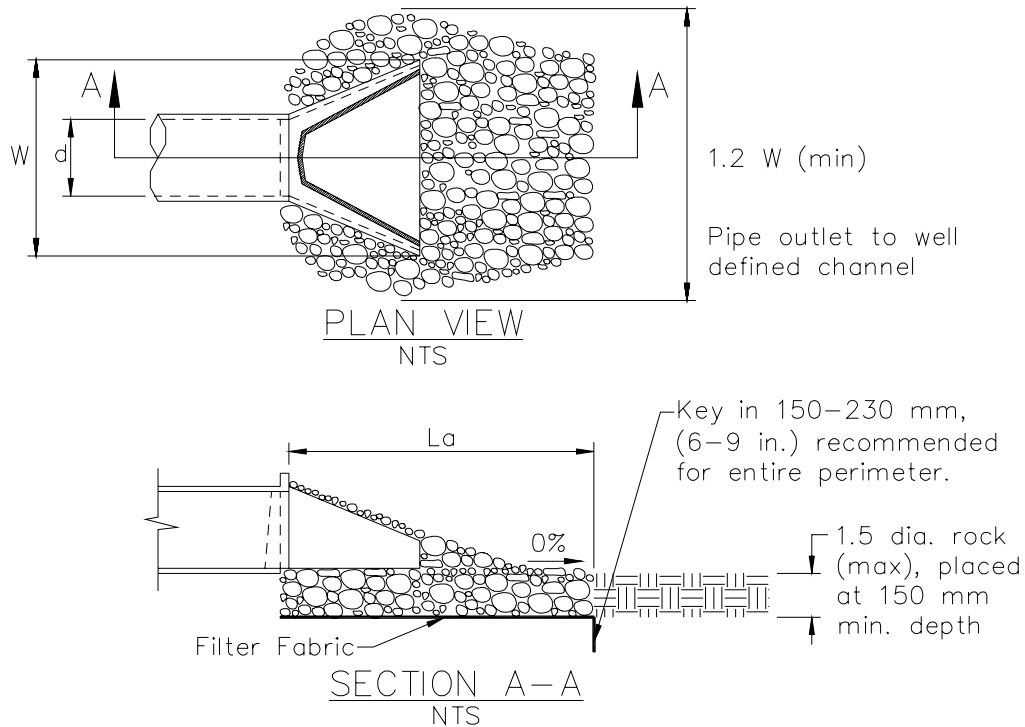
Date: _____

**CONCRETE
FLARED-END
SECTIONS**

Revised

4-F3

CULVERT OUTLET ROCK SLOPE PROTECTION/ ENERGY DISSIPATOR



Pipe Diameter mm	Discharge m ³ /s	Apron Length, La m	Rip Rap D ₅₀ Diameter Min mm
300	0.14	3	100
	0.28	4	150
450	0.28	3	150
	0.57	5	200
	0.85	7	300
	1.13	8	400
600	0.85	5	200
	1.13	8	200
	1.42	8	300
	1.70	9	400

COPPER VALLEY COMMUNITY SERVICE DISTRICT	Approved By: _____	CULVERT ROCK SLOPE PROTECTION/ENERGY DISSIPATOR	Revised	4-F4
	Peter Kampa		_____	
	Date: _____		_____	
