

H	T	H	T
8'-0" or less	6"	8'-1" TO 20'-0"	8"

SCORING LINE

CURB

R=4"

#4@5" OC

#4@4" OC

2" TYP.

E

E

R=4"

#4@5" OC

SEE STD. PLAN 1307 FOR STEP DETAILS

3'-6"

T

- \* WHEN OUTLET PIPE IS CONSTRUCTED WITHIN ROADWAY A MINIMUM OF 30 INCHES (CO. ORD. NO. 6-3-69) OR THE ROADWAY STRUCTURAL SECTION THICKNESS PLUS 6 INCHES, WHICHEVER IS GREATER, SHALL BE MAINTAINED BETWEEN THE TOP OF PIPE AND THE ROADWAY SURFACE.
- \*\* TO BE DETERMINED BY THE ENGINEER AND AS INDICATED ON PLANS.
- \*\*\* 2" DIA. WEEPHOLES AT SIDES & BACKWALL AT 24" OC; 2 WEEPHOLES MIN. PER WALL; MIN. 6" BELOW KEY

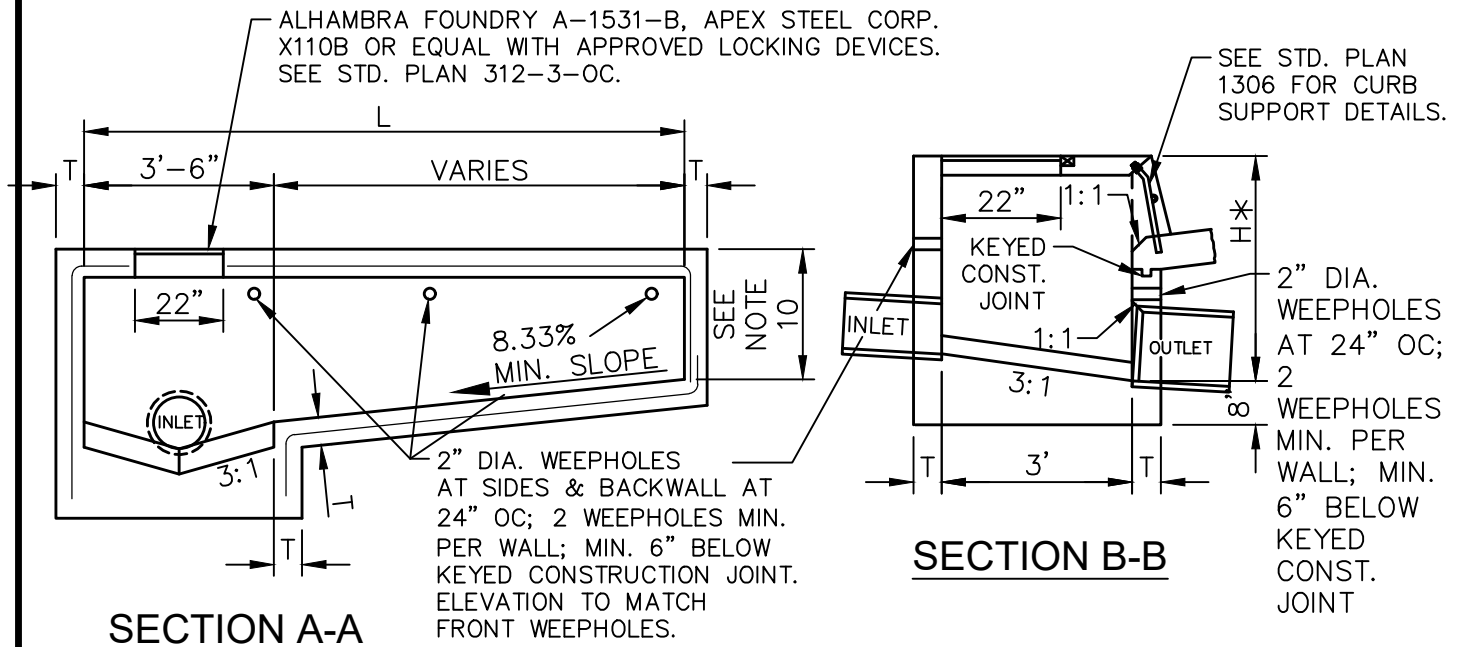
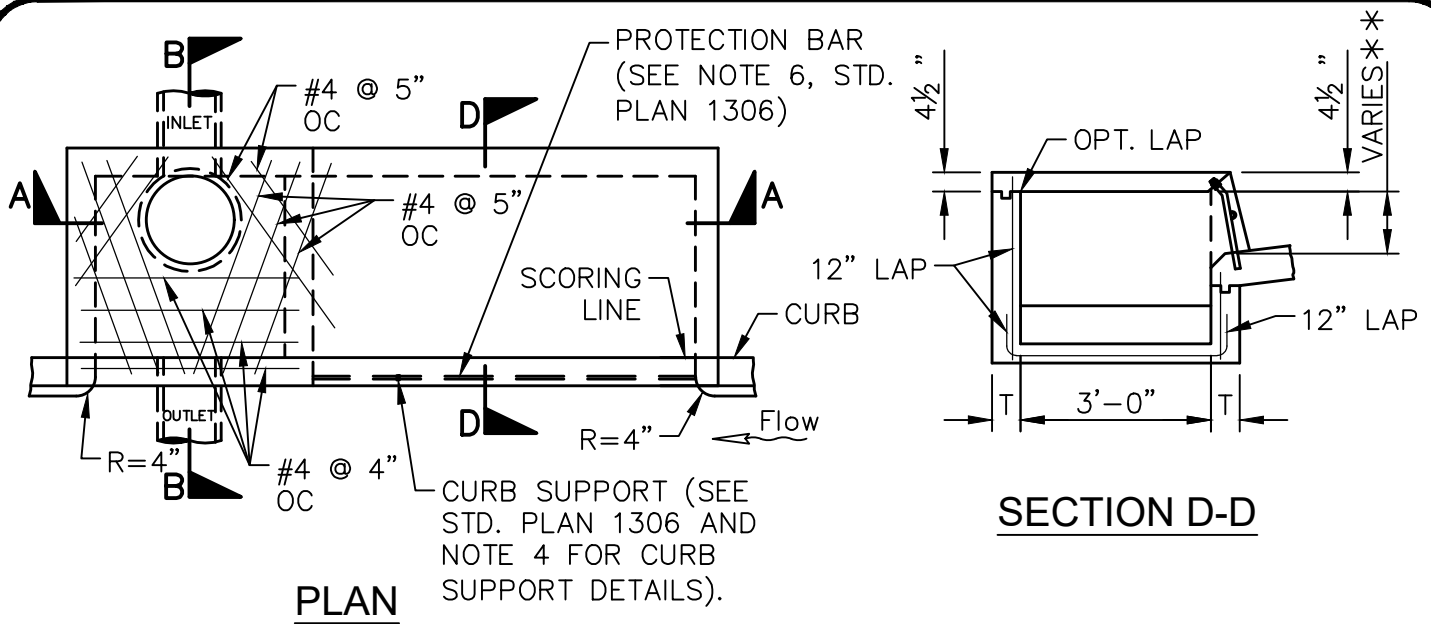
1. CURB OPENING SHALL CONFORM TO CURB ALIGNMENT.
2. SEE STD. PLANS 1306 AND 1307 FOR DETAILS AND NOTES.
3. SEE STD. PLAN 1308 FOR LOCAL DEPRESSION DETAILS.
4. DECK INCLUDING STEEL REINFORCEMENT SHALL BE CONSTRUCTED THE SAME WIDTH AS SIDEWALK (UP TO 6 INCHES WIDE).
5. A STAINLESS STEEL MARKER PER THE SPECIAL PROVISIONS WITH THE WORDS **"NO DUMPING DRAINS TO OCEAN"** SHALL BE MOUNTED ON THE TOP OF THE INLET WITH SILKABOND ADHESIVE OR EQUAL.
6. ALL CURVED CONCRETE SURFACES SHALL BE FORMED BY CURVED FORMS, AND SHALL NOT BE SHAPED BY PLASTERING.
7. BASIN FLOOR SHALL BE GIVEN A STEEL TROWEL FINISH. SLOPE FLOOR FROM ALL DIRECTIONS TO THE OUTLET.
8. CONCRETE STRENGTH AND TYPE SHALL BE PER STD. PLAN 1803.

DEPARTMENT  
*Khalid Bazmi*  
Khalid Bazmi, County Engineer

1301

## INLET TYPE I





\* WHEN OUTLET PIPE IS CONSTRUCTED WITHIN ROADWAY, A MINIMUM OF 30 INCHES (COUNTY ORD. NO. 6-3-69) OR THE ROADWAY STRUCTURAL SECTION THICKNESS PLUS 6 INCHES, WHICHEVER IS GREATER, SHALL BE MAINTAINED BETWEEN THE TOP OF PIPE AND THE ROADWAY SURFACE.

\*\* TO BE DETERMINED BY THE ENGINEER AND AS INDICATED ON PLANS.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

Revision: August 2018

STD. PLAN

1302

SHT. 1 OF 2

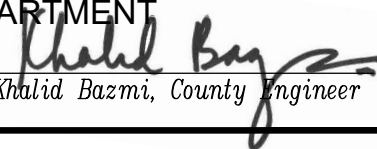
INLET TYPE II

NOTES:

1. STANDARD OPENING LENGTHS, "L" ARE 7 FEET, 10 FEET, 14 FEET AND 21 FEET. OTHER LENGTHS MAY BE USED, BUT SHALL NOT EXCEED 21 FEET, UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE ENGINEER.
2. ALL REINFORCING IS #4 AT 12 INCHES ON-CENTER FOR  $H < 8$  FEET AND #5 AT 12 INCHES ON-CENTER FOR  $H \geq 8$  FEET, UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE ENGINEER.
3. CURB OPENING SHALL CONFORM TO CURB ALIGNMENT.
4. SEE STD. PLANS 1306 AND 1307 FOR DETAILS AND NOTES.
5. SEE STD. PLAN 1308 FOR LOCAL DEPRESSION DETAILS.
6. ALL STEEL SHALL BE 2 INCHES CLEAR FROM INTERIOR CONCRETE SURFACES.
7.  $T=6$  INCHES FOR  $H=5$  FEET TO  $< 8$  FEET.  $T=8$  INCHES FOR  $H=8$  FEET TO 20 FEET.
8. A STAINLESS STEEL MARKER PER THE SPECIAL PROVISIONS WITH THE WORDS "NO DUMPING DRAINS TO OCEAN" SHALL BE MOUNTED ON THE TOP OF THE INLET WITH SILKABOND ADHESIVE OR EQUAL.
9. DECK, INCLUDING STEEL REINFORCEMENT, SHALL BE CONSTRUCTED THE SAME WIDTH AS SIDEWALK (UP TO 6 FEET WIDE).
10.  $D=3$  FEET FOR L LESS THAN OR EQUAL TO 10 FEET.  $D=4$  FEET FOR L GREATER THAN 10 FEET.
11. ALL CURVED CONCRETE SURFACES SHALL BE FORMED BY CURVED FORMS, AND SHALL NOT BE SHAPED BY PLASTERING.
12. BASIN FLOOR SHALL BE GIVEN A STEEL TROWEL FINISH. SLOPE FLOOR FROM ALL DIRECTIONS TO THE OUTLET.
13. CONCRETE STRENGTH AND TYPE SHALL BE PER STD. PLAN 1803.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

  
Khalid Bazmi, County Engineer

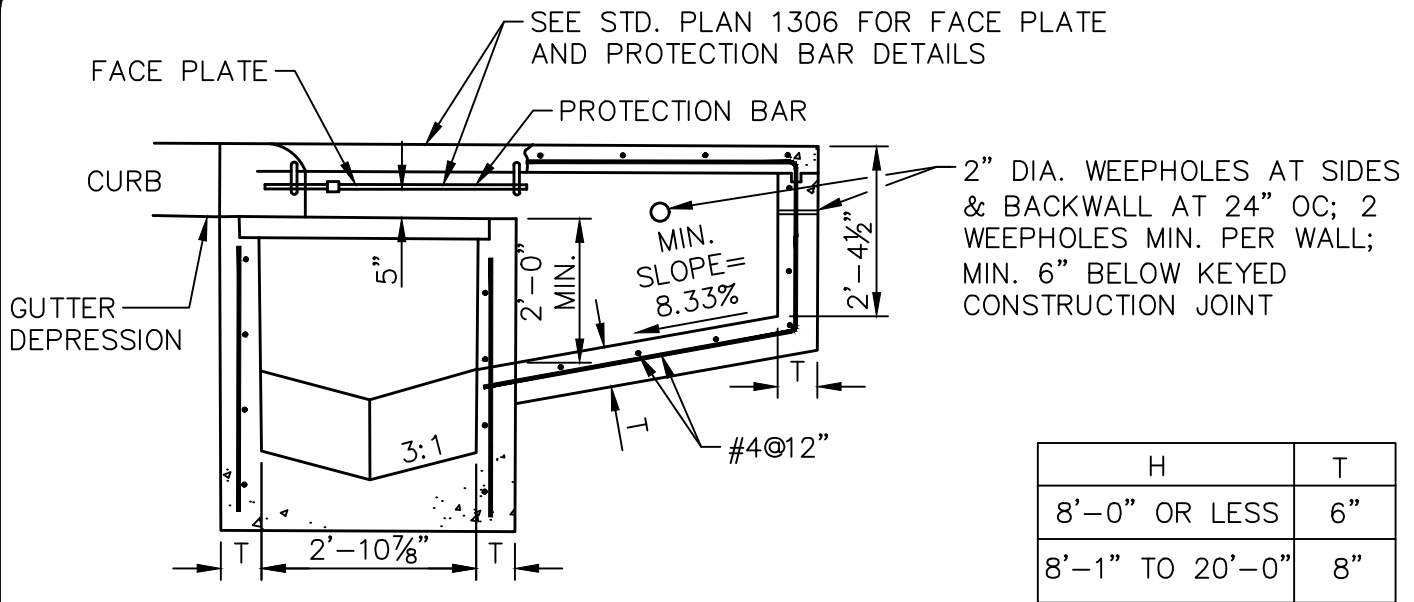
Revision: August 2018

STD. PLAN

1302

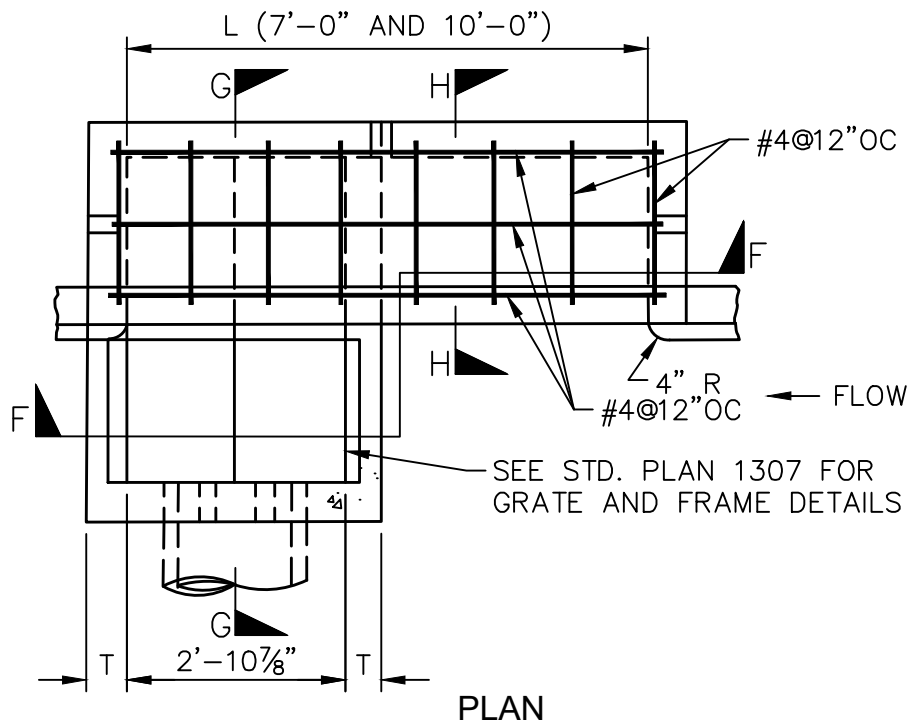
SHT. 2 OF 2

INLET TYPE II



**SECTION F-F**

CURB TYPE	CURB FACE HEIGHT	X	W
A2-8(200)	12"	2'-4"	1'-10"
A3-8(200) OR A2-6(150)	10"	2'-4 <sup>1</sup> / <sub>2</sub> "	1'-10 <sup>1</sup> / <sub>2</sub> "



COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Revision: August 2018

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

STD. PLAN

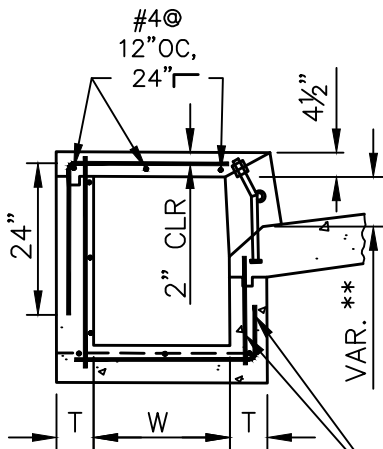
**1303**

SHT. 1 OF 2

**INLET TYPE III**

2" DIA. WEEPHOLES AT 24" OC; 2 WEEPHOLES MIN. PER WALL; MIN. 6" BELOW KEYED CONSTRUCTION JOINT.

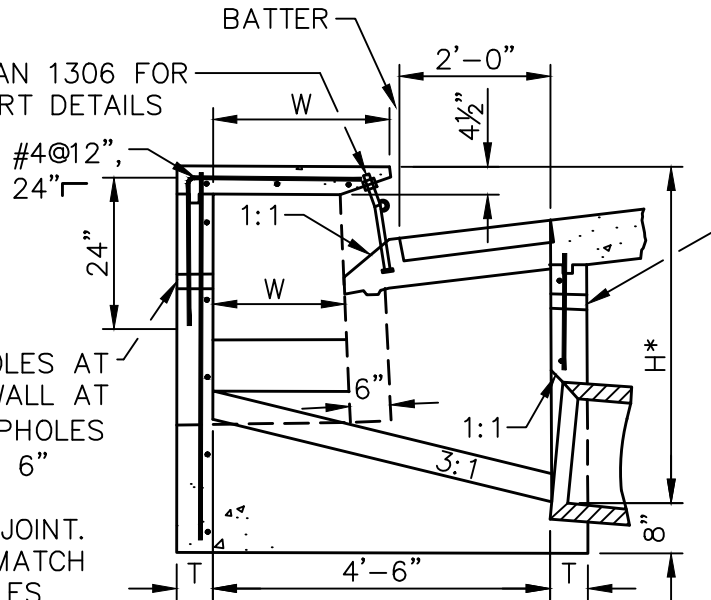
SEE STD. PLAN 1306 FOR CURB SUPPORT DETAILS



**SECTION H-H**

2" DIA. WEEPHOLES AT SIDES & BACKWALL AT 24" OC; 2 WEEPHOLES PER WALL; MIN. 6" BELOW KEYED CONSTRUCTION JOINT. ELEVATION TO MATCH FRONT WEEPHOLES

#4@12" OC



**SECTION G-G**

\* WHEN OUTLET PIPE IS CONSTRUCTED WITHIN ROADWAY A MINIMUM OF 30 INCHES (COUNTY ORD. NO. 6-3-69) OR THE ROADWAY STRUCTURAL SECTION THICKNESS PLUS 6 INCHES, WHICHEVER IS GREATER, SHALL BE MAINTAINED BETWEEN THE TOP OF PIPE AND THE ROADWAY SURFACE.

\*\* AS INDICATED ON PLANS, AND AS APPROVED BY THE ENGINEER.

**NOTES:**

1. CURB OPENING SHALL CONFORM TO CURB ALIGNMENT.
2. SEE STD. PLANS 1306 AND 1307 FOR DETAILS AND NOTES.
3. SEE STD. PLAN 1308 FOR LOCAL DEPRESSION DETAILS.
4. DECK INCLUDING STEEL REINFORCEMENT SHALL BE CONSTRUCTED THE SAME WIDTH AS SIDEWALK (UP TO 6 FEET WIDE).
5. A STAINLESS STEEL MARKER PER THE SPECIAL PROVISIONS WITH THE WORDS "NO DUMPING DRAINS TO OCEAN" SHALL BE MOUNTED ON THE TOP OF THE INLET WITH SILKABOND ADHESIVE OR EQUAL.
6. ALL CURVED CONCRETE SURFACES SHALL BE FORMED BY CURVED FORMS, AND SHALL NOT BE SHAPED BY PLASTERING.
7. BASIN FLOOR SHALL BE GIVEN A STEEL TROWEL FINISH. SLOPE FLOOR FROM ALL DIRECTIONS TO THE OUTLET.
8. CONCRETE STRENGTH AND TYPE SHALL BE PER STD. PLAN 1803.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

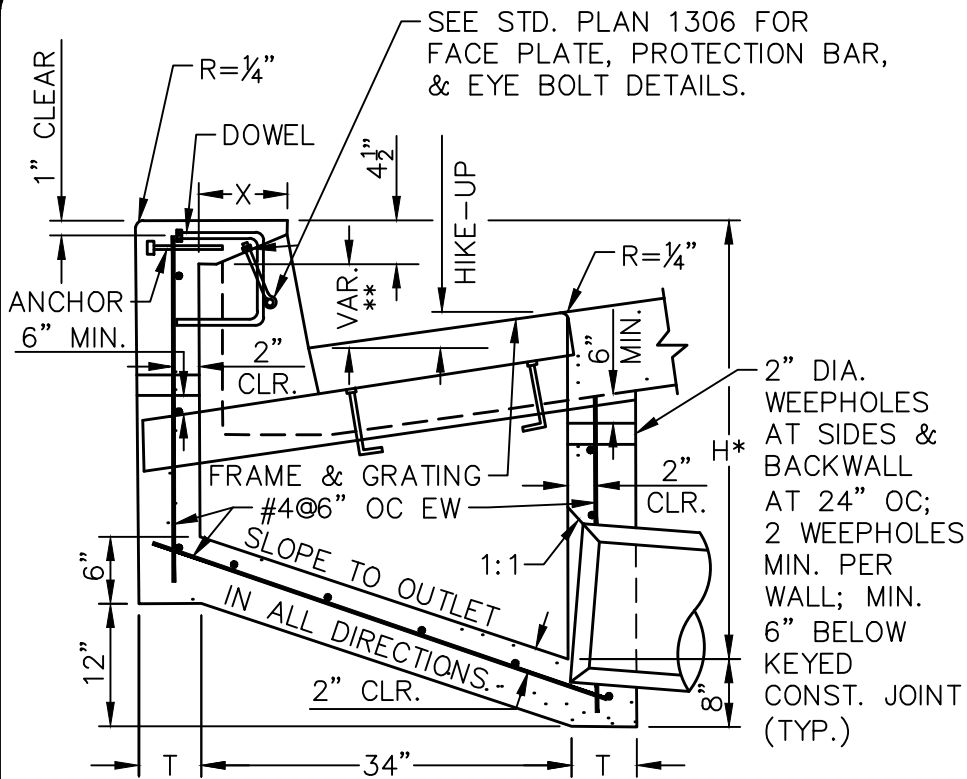
Revision: August 2018

STD. PLAN

**1303**

SHT. 2 OF 2

**INLET TYPE III**



**SECTION A-A**

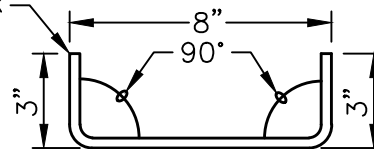
\* SEE NOTE 9 ON SHEET 2

\*\* TO BE DETERMINED BY THE ENGINEER AND AS INDICATED ON PLANS.

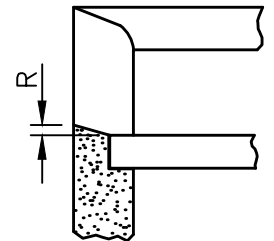
STEEL LIST						
NUMBER OF GRATINGS	#4 BARS 11" LONG	FACE PLATE (SEE STD. PLAN 1306)	DOWELS	ANCHORS	3/4" GALV. STEEL STEPS	REINFORCING STEEL
1	5	3'-10 7/8"	2	2	SEE NOTES #4	PROTECTION BAR (SEE STD. PLAN 1306)
2	12	7'-3 3/4"	2	3		
3	19	10'-8 7/8"	2	4		

2" DIA. WEEPHOLES AT SIDES & BACKWALL AT 24" OC; 2 WEEPHOLES MIN. PER WALL; MIN. 6" BELOW KEYED CONST. JOINT (TYP.)

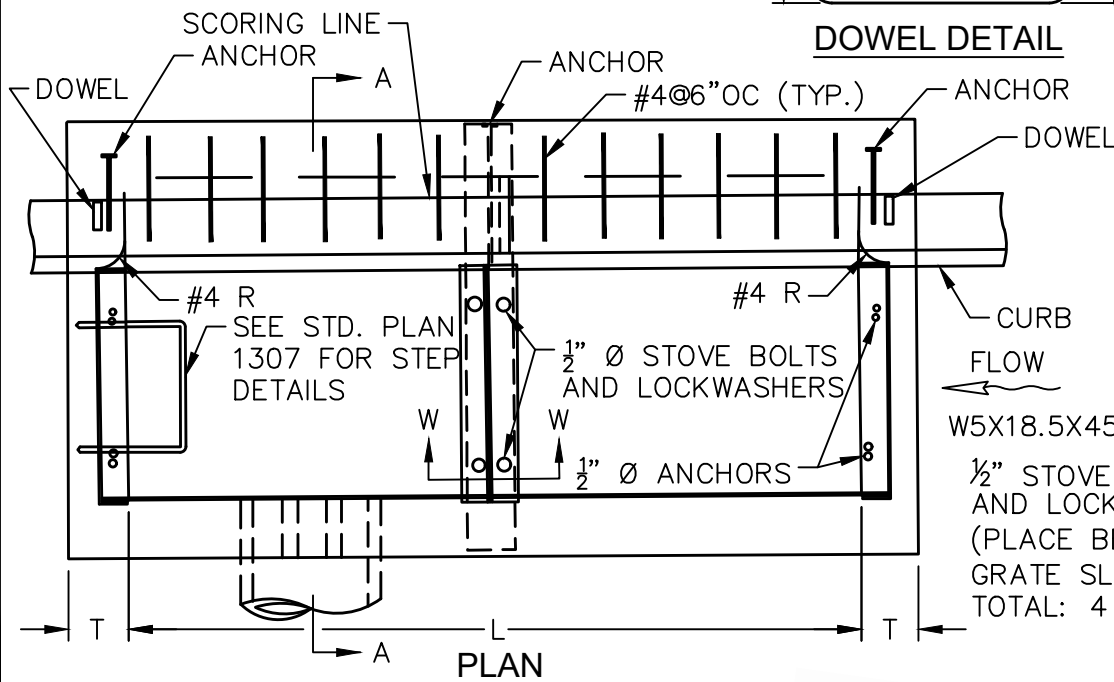
#4 DEF. BAR



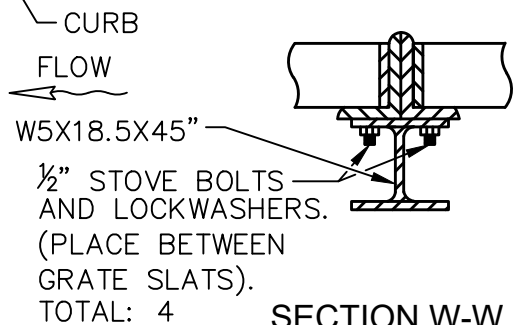
**DOWEL DETAIL**



**END WALL DETAIL**



**PLAN**



**SECTION W-W**

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

Revision: August 2018

STD. PLAN

**1304**

SHT. 1 OF 2

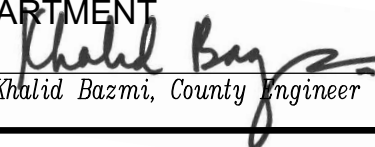
**INLET TYPE IV**

NOTES:

1. BASIN SHALL HAVE ONE GRATING UNLESS OTHERWISE SPECIFIED.
2. CURB OPENING SHALL CONFORM TO CURB ALIGNMENT.
3. CURVATURE OF THE END WALLS AT THE CURB OPENING SHALL BE FORMED BY CURVED FORMS AND SHALL NOT BE MADE BY PLASTERING.
4. DIMENSIONS:
  - HIKE-UP SHALL BE IN SAME PLANE AS LOCAL DEPRESSION.
  - $R = \frac{1}{2}$  INCH FOR LOWER END WALL OF A SINGLE BASIN, OR THE LOWEST BASIN OF A SERIES OF SPREAD BASINS.
  - $R = 0$  FOR ALL OTHER END WALLS.
  - $X = 8\frac{1}{2}$  INCHES FOR TYPE "A2-6" CURB.
  - $X = 8"$  FOR TYPE "A2-8" CURB.
  - $T = 6$  INCHES FOR  $H = 8$  FEET OR LESS.
  - $T = 8$  INCHES FOR  $H = 8$  FEET-1 INCH TO 20 FEET.
  - $H = 3$  FEET-6 INCHES UNLESS OTHERWISE SPECIFIED.
  - $L = 2$  FEET- $10\frac{7}{8}$  INCHES FOR ONE GRATING. ADD 3 FEET- $4\frac{7}{8}$  INCHES FOR EACH ADDITIONAL GRATING.
  - (SEE NOTE 4, STD. PLAN 1306 WHEN  $L = 7$  FEET).
5. EXPOSED SURFACES OF THE CATCH BASIN SHALL CONFORM IN SLOPE, GRADE, COLOR, FINISH AND SCORING TO EXISTING IMPROVEMENTS ADJACENT TO THE BASIN. THE TOP SHALL BE FINISHED TO CONFORM TO STANDARD SIDEWALK SLOPE AND FINISH WHERE NO SIDEWALK EXISTS.
6. OUTLET PIPE SHALL BE TRIMMED TO THE FINAL SHAPE AND LENGTH BEFORE CONCRETE IS PLACED.
7. BASIN FLOOR SHALL BE GIVEN A STEEL TROWEL FINISH AND SHALL HAVE A LONGITUDINAL AND LATERAL SLOPE OF 12:1 (H:V) MINIMUM AND 3:1 (H:V) MAXIMUM RESPECTIVELY, EXCEPT WHERE THE GUTTER GRADE EXCEEDS 8 PERCENT IN WHICH CASE THE LONGITUDINAL SLOPE OF THE FLOOR SHALL BE THE SAME AS THE GUTTER GRADE. SLOPE FLOOR FROM ALL DIRECTIONS TO THE OUTLET.
8. MISCELLANEOUS: SEE IMPROVEMENT PLANS FOR LENGTHS. SEE STD. PLANS 1306, 1307 AND 1308 FOR FACE PLATE, FACE PLATE ANCHORAGE, MISC. INLET DETAILS, ADDITIONAL NOTES, GRATE AND FRAME DETAILS, STEP DETAILS AND LOCAL DEPRESSION DETAILS.
9. WHEN THE OUTLET PIPE IS CONSTRUCTED WITHIN THE ROADWAY A MIN. OF 30 INCHES (CO. ORD. NO. 6-3-69) OR THE ROADWAY STRUCTURAL SECTION THICKNESS PLUS 6 INCHES, WHICHEVER IS GREATER, SHALL BE MAINTAINED BETWEEN THE TOP OF PIPE AND THE ROADWAY SURFACE.
10. A STAINLESS STEEL MARKER PER THE SPECIAL PROVISIONS WITH THE WORDS "NO DUMPING DRAINS TO OCEAN" SHALL BE MOUNTED ON THE TOP OF THE INLET WITH SILKABOND ADHESIVE OR EQUAL.
11. CONCRETE STRENGTH AND TYPE SHALL BE PER STD. PLAN 1803.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

  
Khalid Bazmi, County Engineer

Revision: August 2018

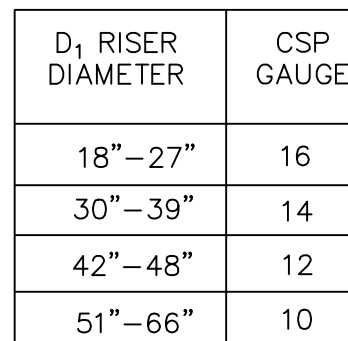
INLET TYPE IV

STD. PLAN

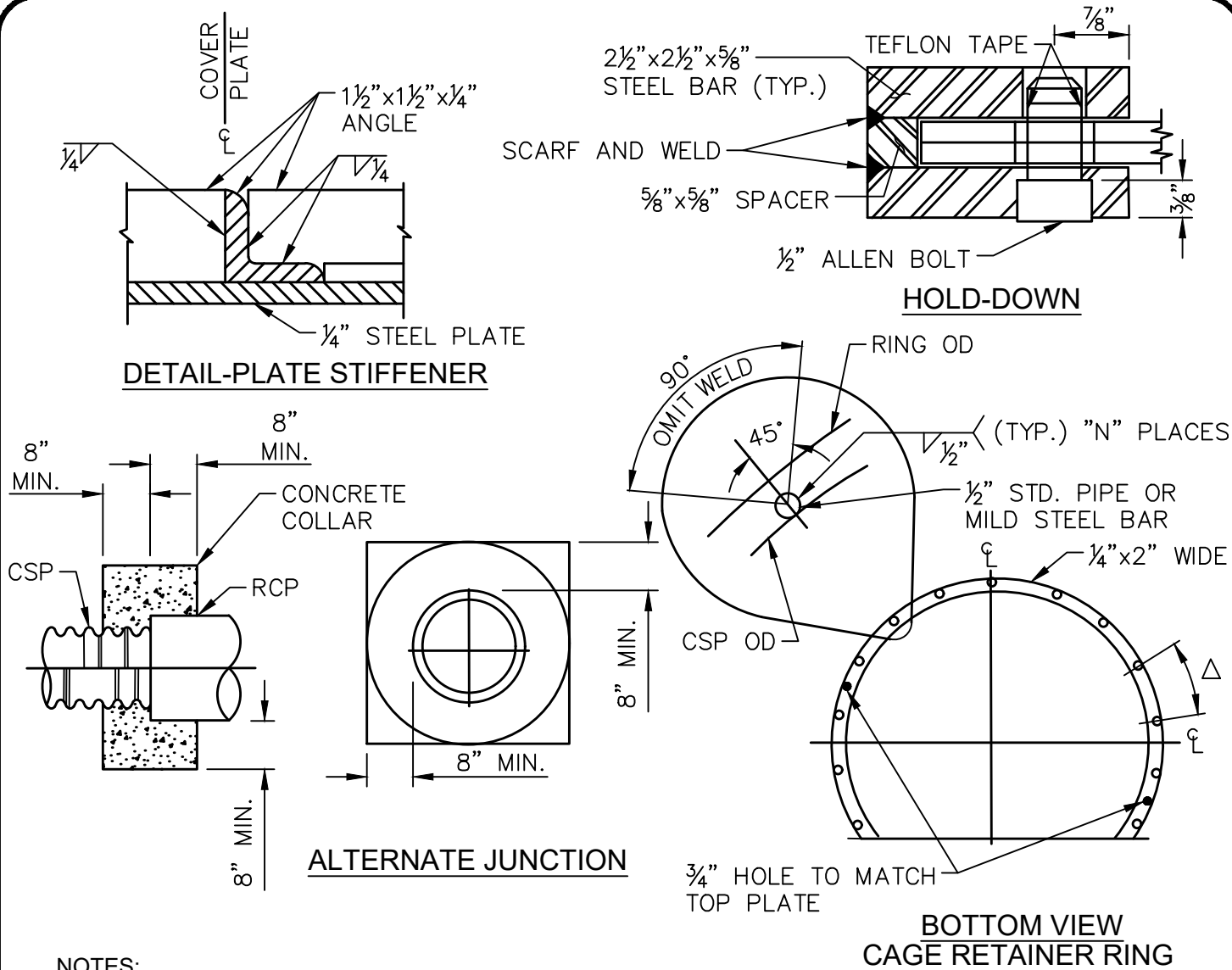
1304

SHT. 2 OF 2





D <sub>1</sub>	Δ	n	HD
18"	40°	9	2
24"–27"	30°	12	
30"–33"	24°	15	3
36"–39"	20°	18	
42"–45"	16.5°	22	4
48"–51"	14.5°	25	
54"–57"	13°	28	
60"–63"	11.5°	31	
66"	10.5°	34	



**NOTES:**

1. RISER PIPE SHALL EXTEND TO "ELEV. A".
2. ELEVATIONS A, D<sub>1</sub>, D<sub>2</sub>, L<sub>1</sub>, L<sub>2</sub> SHALL BE DETERMINED BY ENGINEER AND BE SHOWN ON PLANS.
3. CORRUGATED STEEL PIPE SHALL CONFORM TO AASHTO M-36.
4. GRATE ASSEMBLY SHALL BE GALVANIZED AFTER FABRICATION.
5. FOR D<sub>1</sub> = 54 INCHES AND LARGER, WELD  $1\frac{1}{2}$  INCH X  $1\frac{1}{2}$  INCH X  $\frac{1}{4}$  INCH TO PLATE WITH 1 INCH WELDS AT 6 INCHES ON-CENTER.
6. N=NUMBER OF BARS ON GRATE ASSEMBLY.
7. GAUGE OF PIPE FOR DIAMETER D<sub>2</sub> SHALL BE SAME AS FOR RISER.
8. RISER AND STUB SHALL BE SHOP FABRICATED AND GALVANIZED AFTER WELDING.
9. A STAINLESS STEEL MARKER PER THE SPECIAL PROVISIONS WITH THE WORDS "NO DUMPING DRAINS TO OCEAN" SHALL BE BOLTED ON TO GRATE.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
 Khalid Bazmi, County Engineer

Revision: August 2018

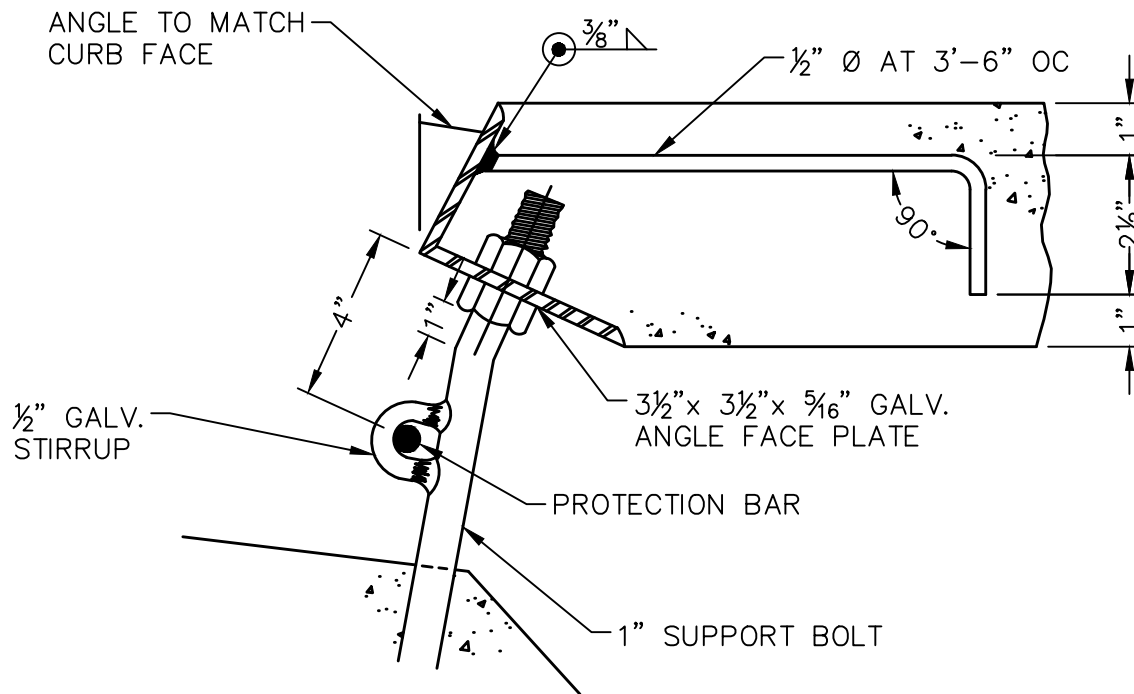
STD. PLAN

1305

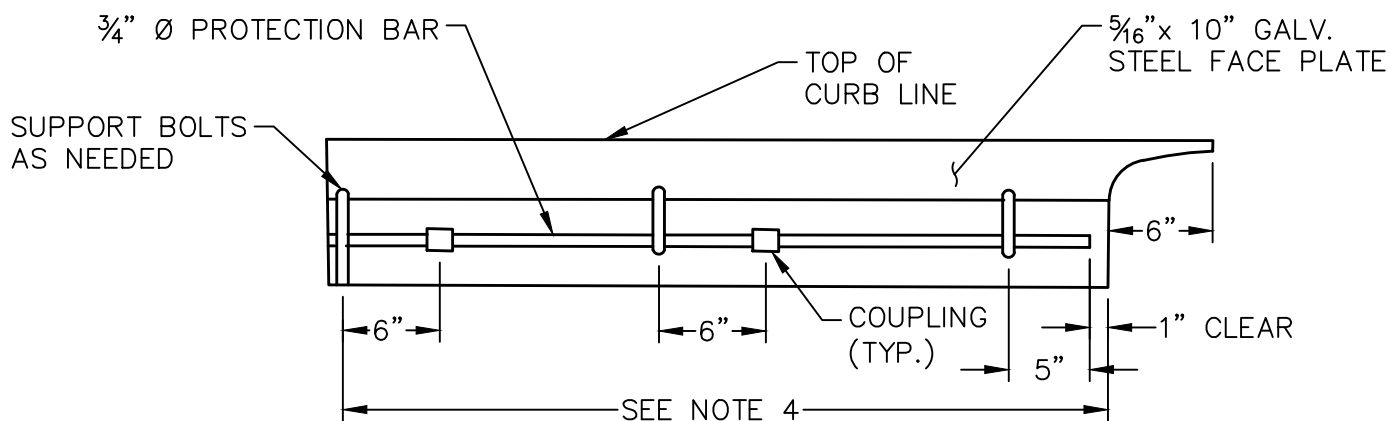
SHT. 2 OF 2

INLET TYPE V





DETAIL A



PROTECTION BAR DETAIL

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Revision: August 2018

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

STD. PLAN

1306

SHT. 2 OF 3

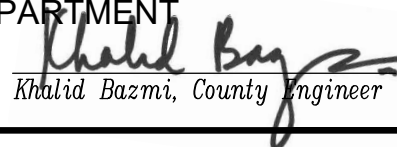
MISCELLANEOUS CURB INLET DETAILS AND NOTES

NOTES:

1. ONE EYEBOLT SHALL BE PLACED 12 INCHES FROM EACH END OF FACE PLATE.
2. EYEBOLTS SHALL BE SYMMETRICALLY SPACED IN THE CURB OPENING SO THAT THE UNSUPPORTED SPAN IS NOT MORE THAN 4 FEET; SUPPORT BOLTS, WHEN USED, SHOULD BE CONSIDERED AS EYEBOLTS IN THE SPACING.
3. ONE COUPLING SHALL BE PLACED 6 INCHES TO THE RIGHT OR LEFT OF EACH EYEBOLT WITH THE EXCEPTION OF THE LAST EYEBOLT. COUPLINGS SHALL BE THREADED TO FACILITATE REMOVAL OF PROTECTION BAR.
4. GALVANIZED STEEL SUPPORT BOLTS SHALL BE INSTALLED WHEN LENGTH OF CURB OPENING EXCEEDS 7- FEET AND SHALL BE SPACED AT NOT MORE THAN 7 FEET ON-CENTER AND NOT LESS THAN 5 FEET ON-CENTER.
5. FACE PLATE ANCHORS SHALL BE UNIFORMLY SPACED NOT TO EXCEED 4 FEET BETWEEN CENTERS AND SHALL BE PLACED 4½ INCHES FROM EACH END OF THE FACE PLATE. AN ANCHOR SHALL BE PLACED OVER EACH W-BEAM IN A GRATING INLET.
6. A COUPLING MAY BE OMITTED PROVIDED THE PROTECTION BAR IS REMOVABLE AFTER INSTALLATION.
7. ALL METAL SHALL BE GALVANIZED AFTER FABRICATION.
8. SUPPORT BOLTS, EYEBOLTS, AND ANCHORS MAY BE ATTACHED BY A FULL PENETRATION BUTT WELD AS AN ALTERNATE.
9. PLACE A ¾-INCH DIA. PROTECTION BAR HORIZONTALLY ACROSS THE ENTIRE LENGTH OF THE CURB OPENING.
10. SEE STD. PLAN 1307 FOR ADDITIONAL MISCELLANEOUS INLET DETAILS AND NOTES.
11. CURB SECTION SHALL MATCH ADJACENT CURB TYPE.
12. CURB OPENING SHALL CONFORM TO CURB ALIGNMENT.
13. HEIGHT OF CURB OPENING WILL VARY WITH THE TYPE OF CURB AND THE DEPTH OF THE LOCAL DEPRESSION (STD. PLAN 1308).
14. THE ANGLE AS SHOWN ON DETAIL A SHALL BE ALLOWED ONLY WHEN ON APPROVED PLANS.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

  
Khalid Bazmi, County Engineer

Revision: August 2018

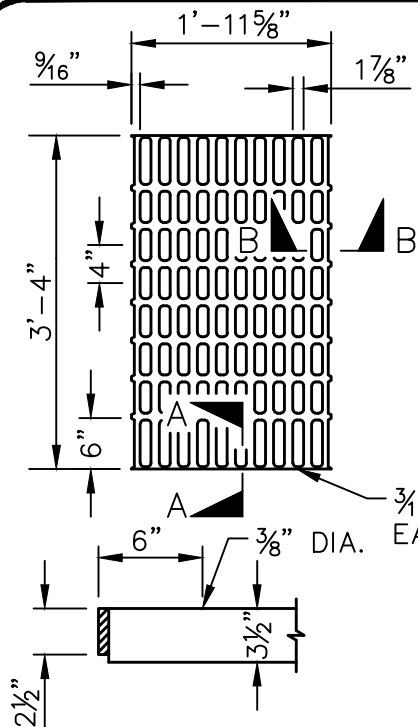
STD. PLAN

1306

MISCELLANEOUS CURB INLET DETAILS AND NOTES

SHT. 3 OF 3





### NOTES:

BEARING BARS TO BE  
3/2" x 1/4" BARS  
ON 1 7/8" CENTERS.

3/8" DIA. CROSS BARS  
RESISTANCE WELDED OR  
ELECTROFORGED TO  
BEARING BARS.

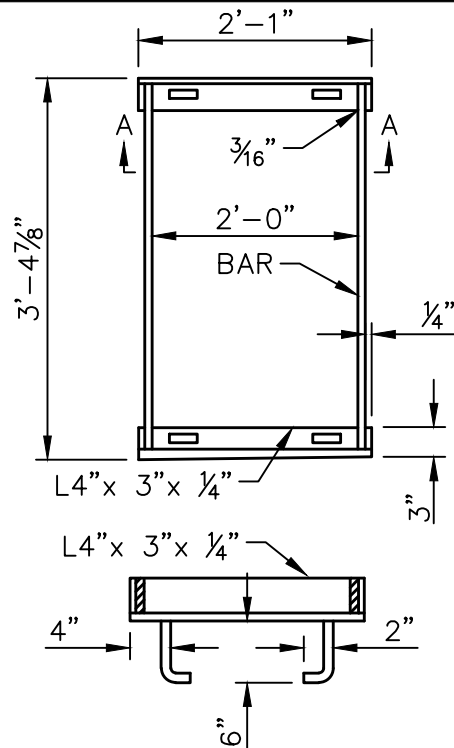
WEIGHT OF GRATE = 141 LBS  
USE TYPICAL FRAME AS SHOWN

3/16" FILLET WELD FULL DEPTH  
EACH SIDE ALL BARS

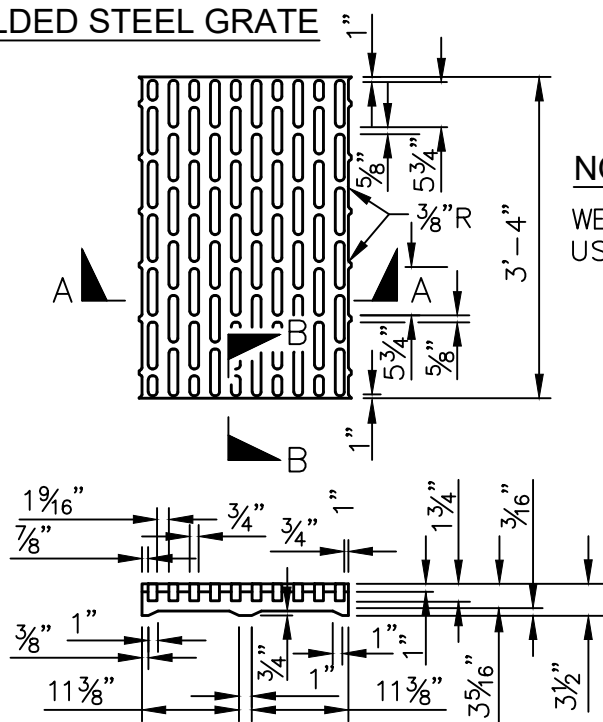
SECTION B-B

SECTION A-A

WELDED STEEL GRATE



SECTION A-A  
TYPICAL FRAME

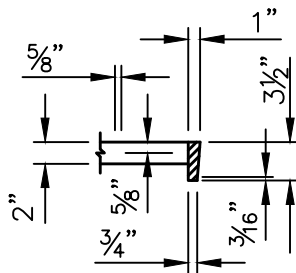


SECTION A-A

CAST MODULAR IRON GRATE

### NOTE:

WEIGHT OF GRATE = 155 LBS  
USE TYPICAL FRAME AS SHOWN



SECTION B-B

GRATE & FRAME DETAILS  
(SEE SHEET 3 FOR LOCKING DEVICE)

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Revision: August 2018

Approved

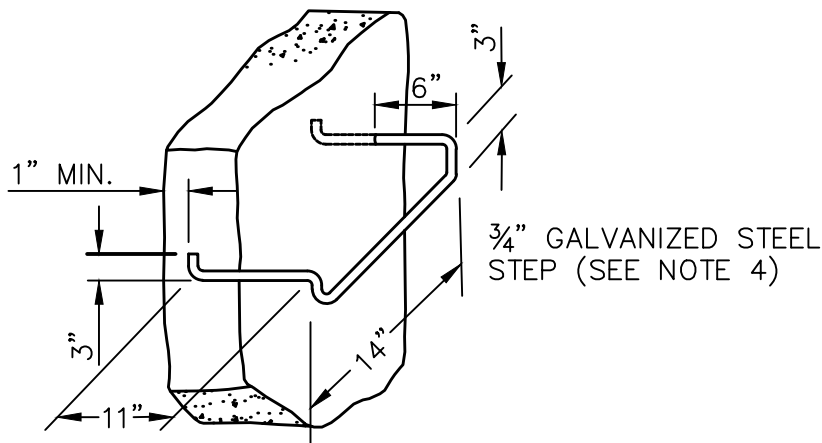
*Khalid Bazmi*  
Khalid Bazmi, County Engineer

STD. PLAN

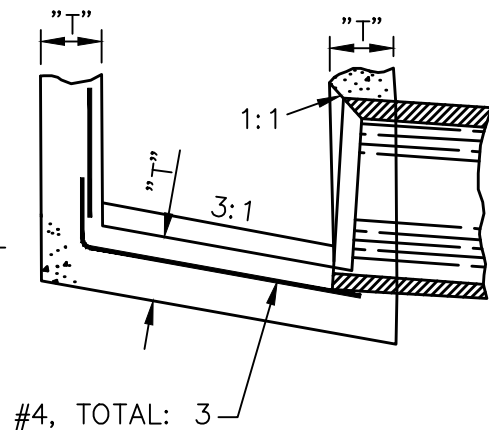
1307

SHT. 1 OF 3

MISCELLANEOUS CURB INLET DETAILS AND NOTES



STEP DETAIL



ALTERNATE  
REINFORCED FLOOR

(SEE NOTE 7)

NOTES:

1. GRATE AND FRAME SHALL BE GALVANIZED. SEE GREENBOOK OR SPECIAL PROVISIONS.
2. FOR "T" WALL THICKNESS SEE TABLE ON INLET PLAN.
3. REINFORCING STEEL SHALL BE #4 BARS AT 18 INCHES ON CENTER PLACED 1½ INCHES CLEAR TO INSIDE OF BOX, UNLESS OTHERWISE SHOWN.
4. STEPS – NONE REQUIRED WHERE "H" IS 3 FEET–6 INCHES OR LESS. INSTALL ONE STEP 16 INCHES ABOVE FLOOR WHEN "H" IS MORE THAN 3 FEET–6 INCHES AND LESS THAN 5 FEET–0 INCHES. WHERE "H" IS MORE THAN 5 FEET–0 INCHES, STEPS SHALL BE EVENLY SPACED AT 16 INCHES INTERVALS FROM 16 INCHES ABOVE FLOOR TO WITHIN 12 INCHES OF THE TOP OF THE BOX. PLACE STEPS IN WALL WITHOUT PIPE OPENINGS.
5. PIPE(S) CAN BE PLACED IN ANY WALL.
6. EXCEPT FOR INLETS USED AS JUNCTION BOXES AND AS NOTED ON PLANS, BASIN FLOORS SHALL BE GIVEN A STEEL TROWEL FINISH AND SHALL HAVE A LONGITUDINAL AND LATERAL SLOPE OF 12:1 (H:V) MINIMUM AND 3:1 (H:V) MAXIMUM RESPECTIVELY, EXCEPT WHERE THE GUTTER GRADE EXCEEDS 8 PERCENT IN WHICH CASE THE LONGITUDINAL SLOPE OF THE FLOOR SHALL BE THE SAME AS THE GUTTER GRADE. SLOPE FLOOR FROM ALL DIRECTIONS TO THE OUTLET.
7. ALTERNATE REINFORCED FLOOR AT THE OPTION OF THE CONTRACTOR.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

Revision: August 2018

STD. PLAN

1307

SHT. 2 OF 3

MISCELLANEOUS CURB INLET DETAILS AND NOTES

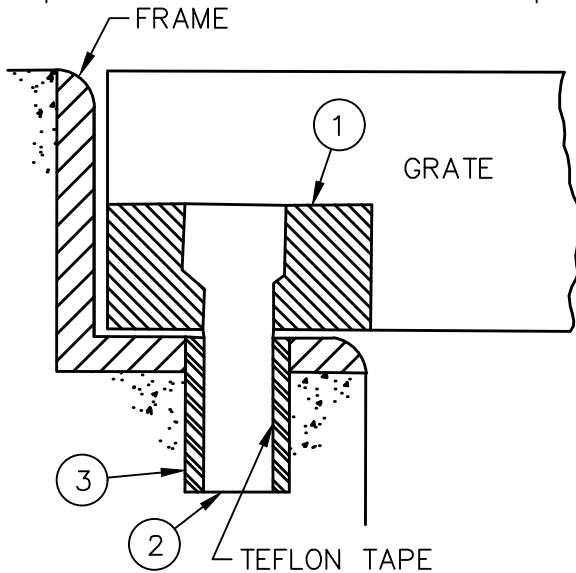
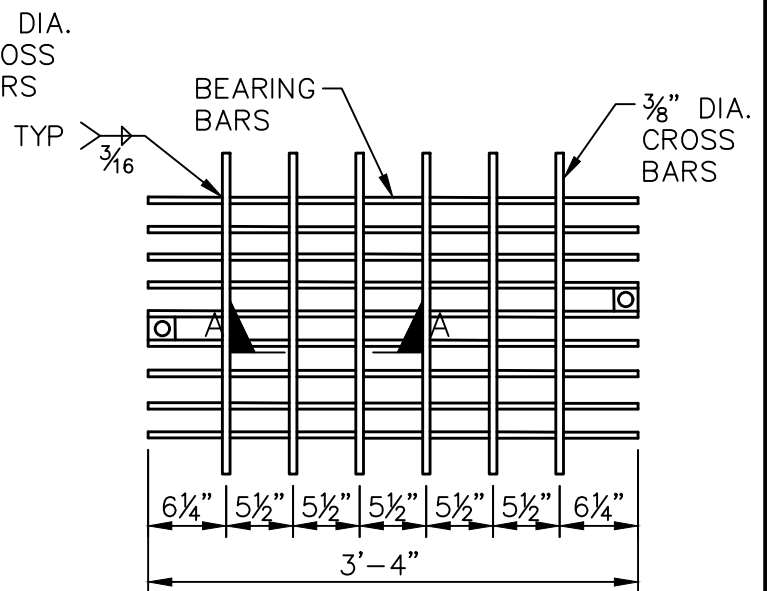
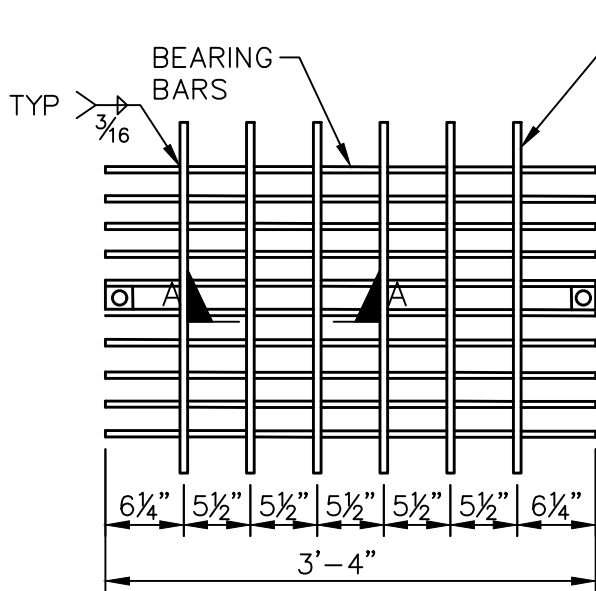


## CONSTRUCTION NOTES:

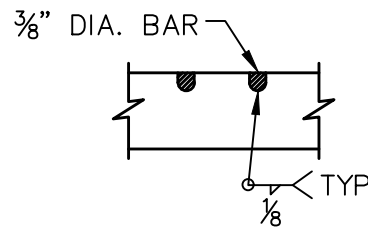
- ① USE  $\frac{3}{4}$  INCH THICK STEEL BAR. DRILL  $\frac{1}{2}$  INCH HOLE & COUNTERSINK WITH  $\frac{3}{4}$  INCH DRILL  $\frac{3}{8}$  INCH DEEP. WELD TO GRATE. PAINT TO PREVENT RUST.
- ②  $\frac{1}{2}$  INCH DIA. ALLEN BOLT.
- ③ USE  $\frac{1}{2}$  INCH CONCRETE ANCHOR OR OR  $\frac{1}{2}$  INCH THREADED RECEIVER WELDED TO FRAME

IF THERE ARE AN EVEN NUMBER OF BARS IN THE GRATE, INSTALL THE HOLD-DOWNS IN THE CENTER SPACE

IF THERE ARE AN ODD NUMBER OF BARS IN THE GRATE, INSTALL THE HOLD-DOWNS ON OPPOSITE SIDES OF THE CENTER BAR.



GRATE HOLD-DOWN



SECTION A-A

## NOTES:

BEARING BARS TO BE  $3\frac{1}{2}$ " X  $\frac{3}{8}$ "  
BARS ON  $1\frac{7}{8}$ " CENTERS.

$\frac{3}{8}$ " DIA. CROSS BARS RESISTANCE WELDED  
OR ELECTROFORGED TO BEARING BARS.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Revision: August 2018

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

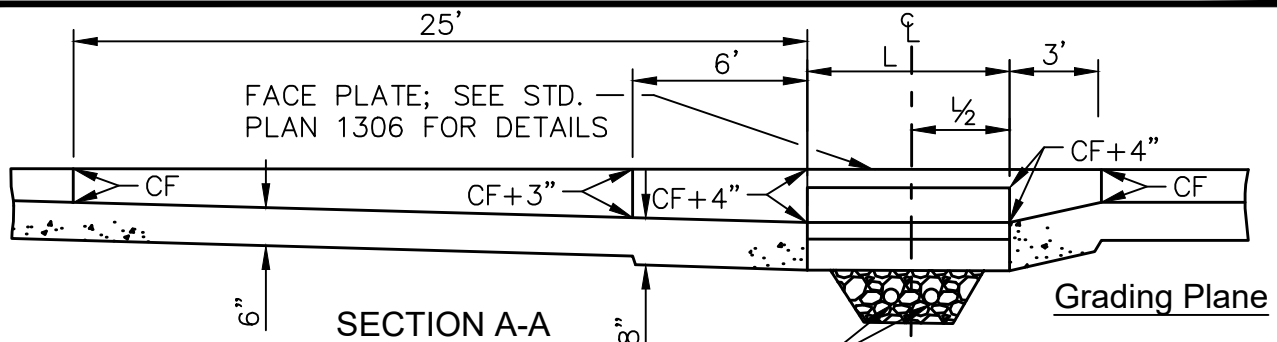
STD. PLAN

1307

SHT. 3 OF 3

MISCELLANEOUS CURB INLET DETAILS AND NOTES

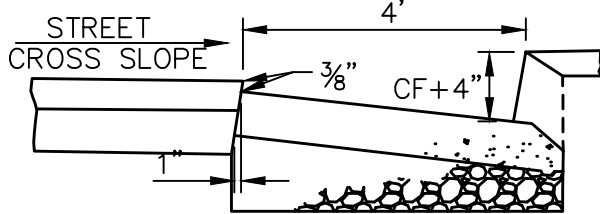
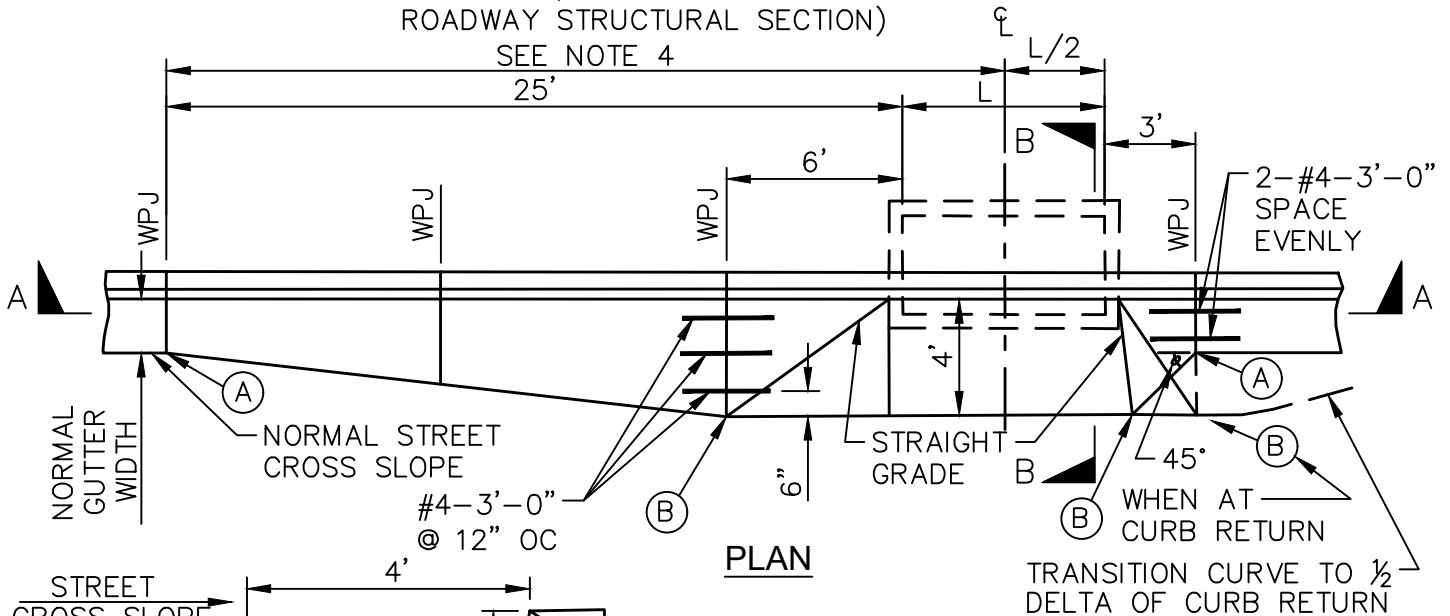




### SECTION A-A

TWO 2" DIA. WEEPHOLES AT 12" OC  
IN INLET (IF CMB IS UTILIZED IN  
ROADWAY STRUCTURAL SECTION)

SEE NOTE 4



### SECTION B-B

POINT	6" TO 10" CF TRANS DISTANCE BELOW TC	8" TO 12" CF TRANS DISTANCE BELOW TC
(A)	0.38'	0.50'
(B)	0.34'	0.47'

BASED ON 1.7 PERCENT STREET CROSS SLOPE.

### NOTES:

1. LOCAL DEPRESSION SHALL NOT BE CONSTRUCTED UNTIL CONNECTING CURB AND GUTTER HAS BEEN COMPLETED OR SHALL BE CONSTRUCTED MONOLITHICALLY WITH CONNECTING CURB AND GUTTER, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
2. LOCAL DEPRESSION SHALL CONFORM TO SAME SHAPE WHETHER GRATE INLET OR CURB OPENING, OR BOTH, ARE USED.
3. LENGTH OF OPENING "L" SHALL BE SPECIFIED ON PLANS.
4. BOTH ENDS OF DEPRESSION SHALL BE SYMMETRICAL ABOUT CENTERLINE OF OPENING IN SUMP CONDITION.
5. SEE STD. PLAN 1306 FOR CURB OPENING DETAIL.
6. SEE STD. PLAN 112-2-OC FOR JOINT DETAILS.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

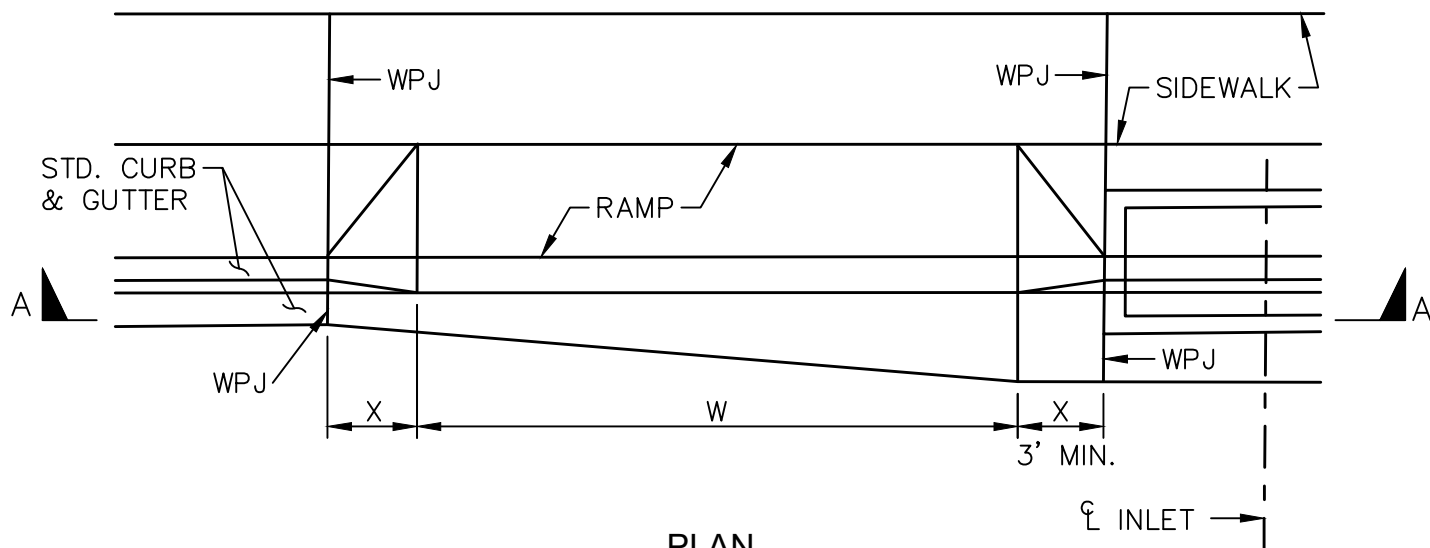
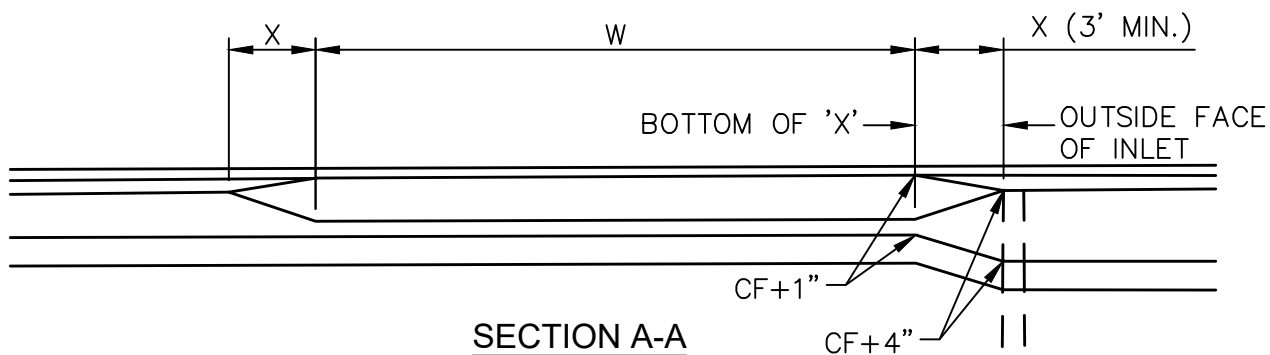
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SHT. 1 OF 2

LOCAL DEPRESSION



TYPE "A"

NOTES:

1. TYPE A LOCAL DEPRESSION SHALL BE USED ADJACENT TO DRIVEWAY DEPRESSIONS ONLY.
2. USE OF TYPE A LOCAL DEPRESSION MAY REQUIRE LENGTHENING OF INLET TO PROVIDE ADEQUATE HYDRAULIC CAPACITY.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Revision: August 2018

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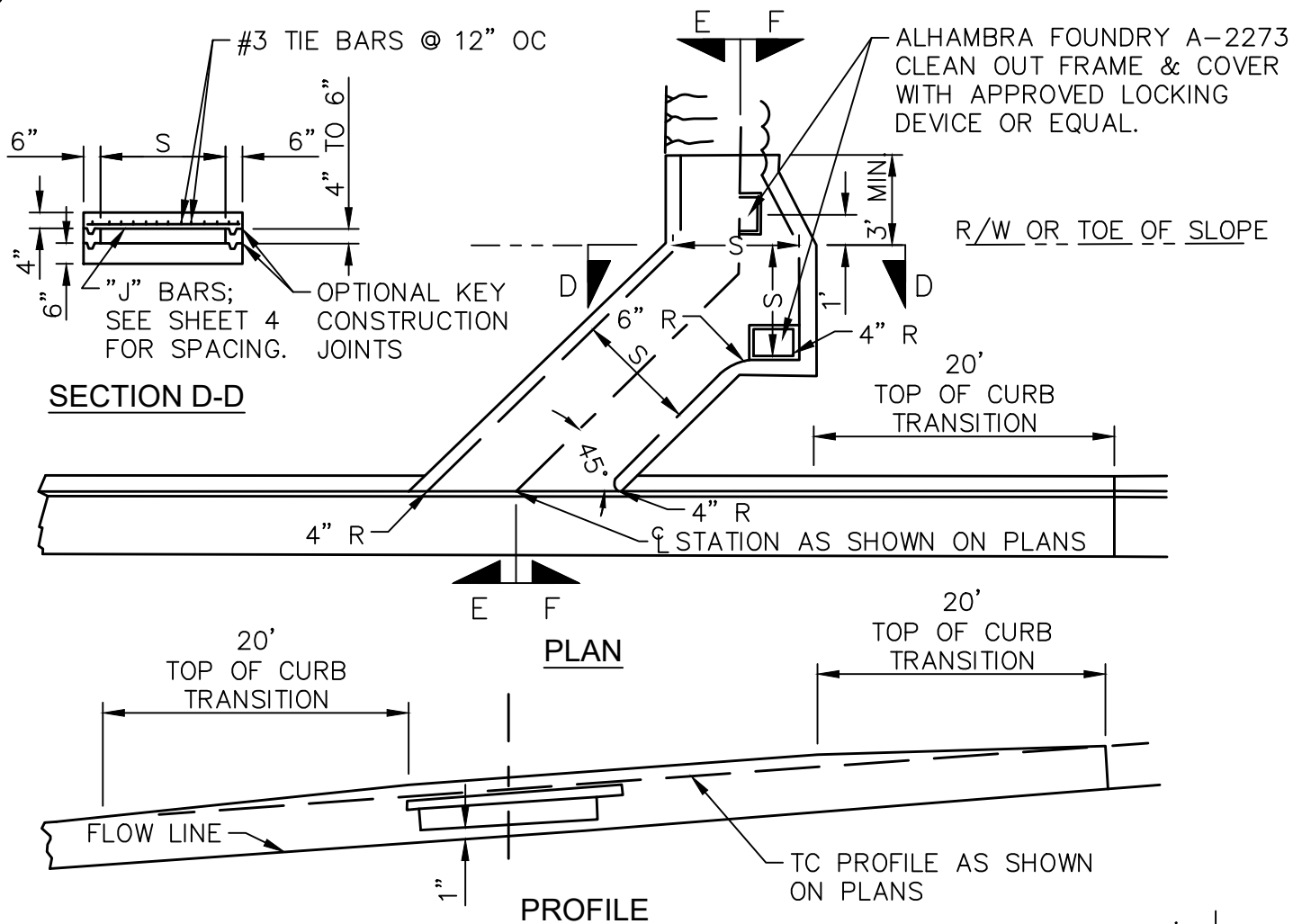
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Khalid Bazmi, County Engineer

STD. PLAN

1308

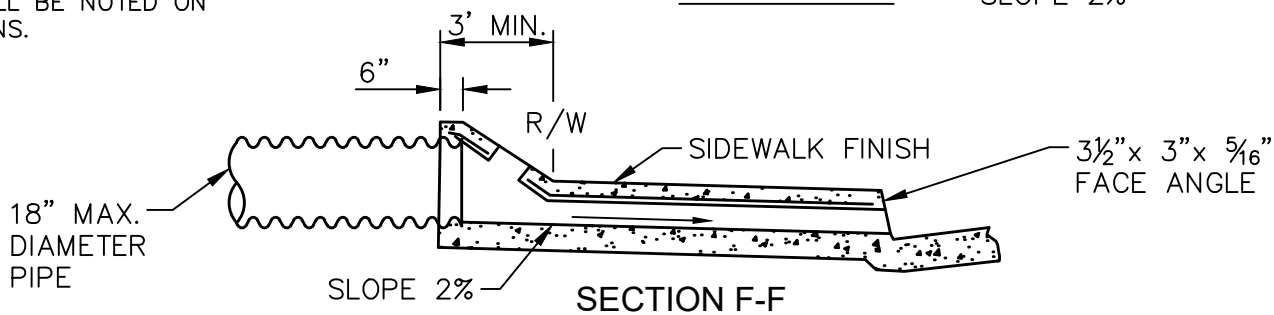
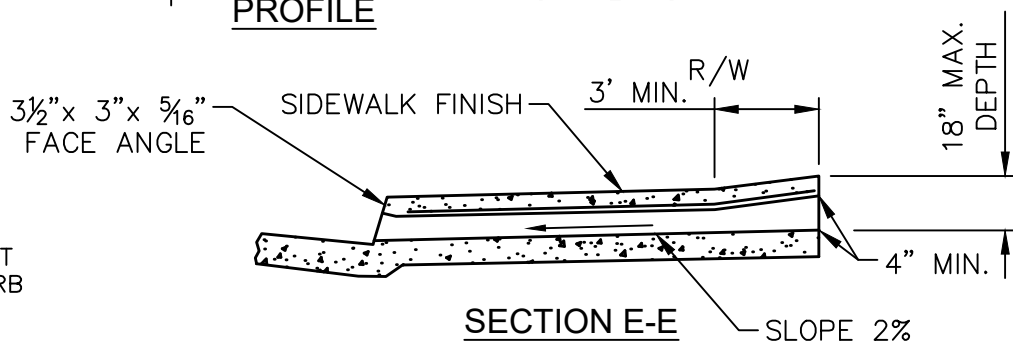
SHT. 2 OF 2

LOCAL DEPRESSION



**NOTES:**

1. SEE SHEET 4 FOR DETAILS AND NOTES.
2. SPAN "S" AND HEIGHT OF OPENING AND CURB FACE AT CULVERT SHALL BE NOTED ON PLANS.



COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

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*Khalid Bazmi*  
Khalid Bazmi, County Engineer

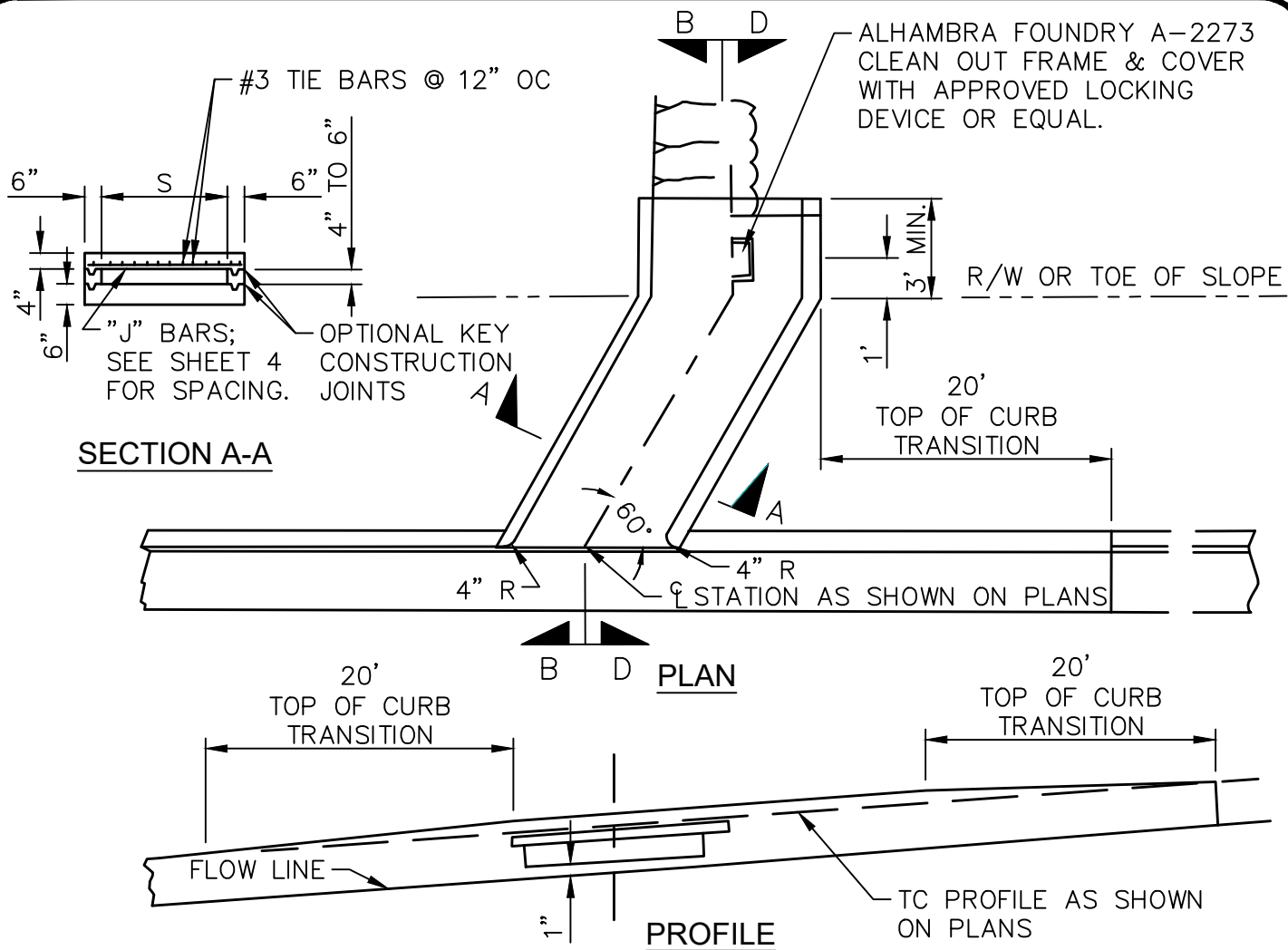
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STD. PLAN

1309

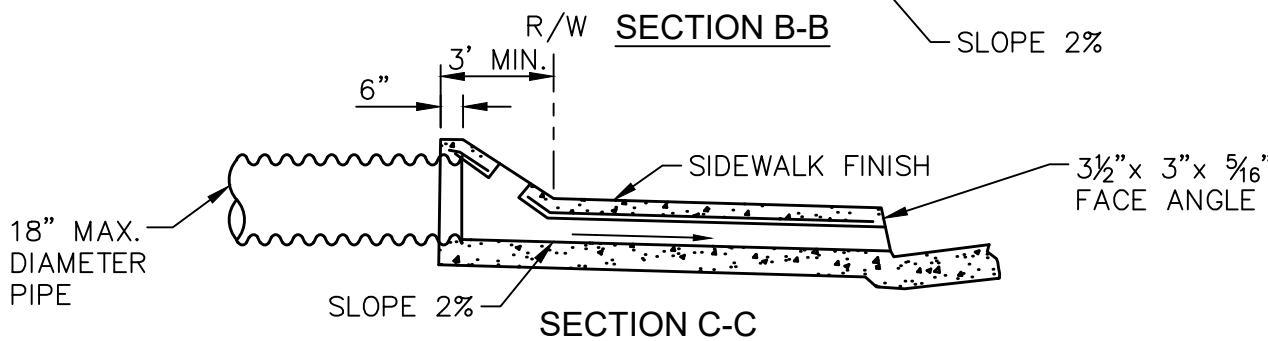
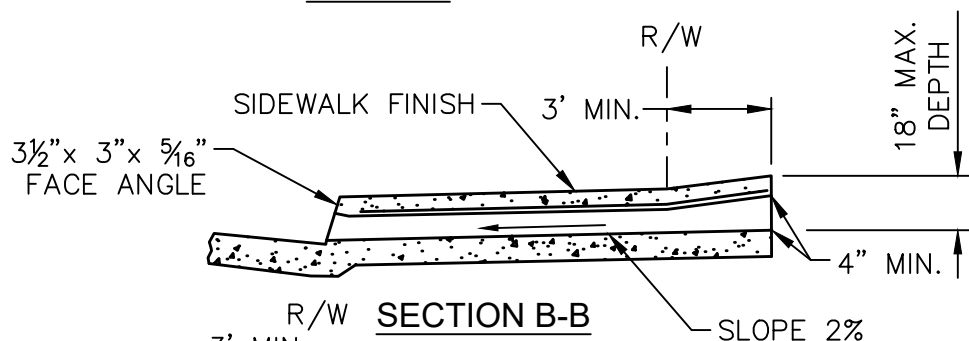
SHT. 1 OF 4

PARKWAY CULVERT TYPE - "A"



**NOTES:**

1. SEE SHEET 4 FOR DETAILS AND NOTES.
2. SPAN "S" AND HEIGHT OF OPENING AND CURB FACE AT CULVERT SHALL BE NOTED ON PLANS.



COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

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Khalid Bazmi, County Engineer

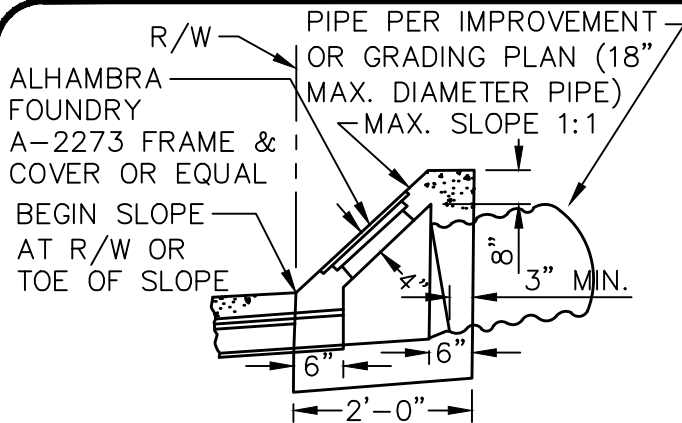
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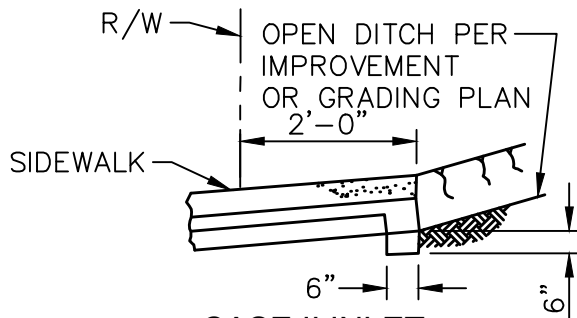
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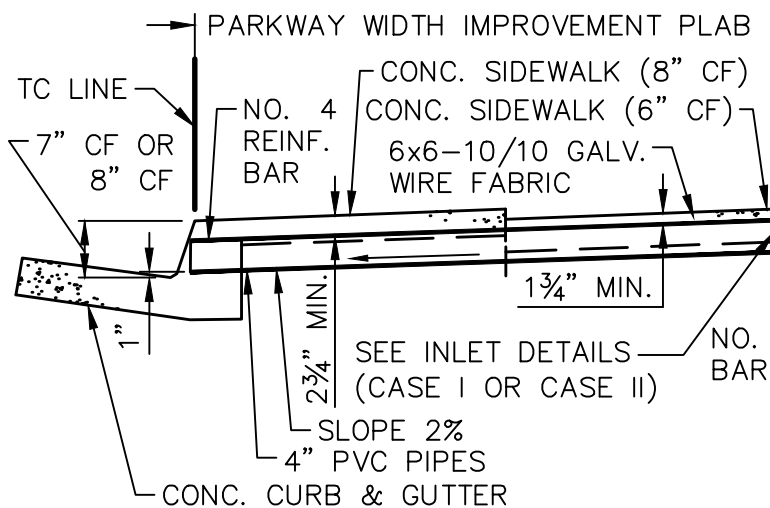
PARKWAY CULVERT TYPE - "B"



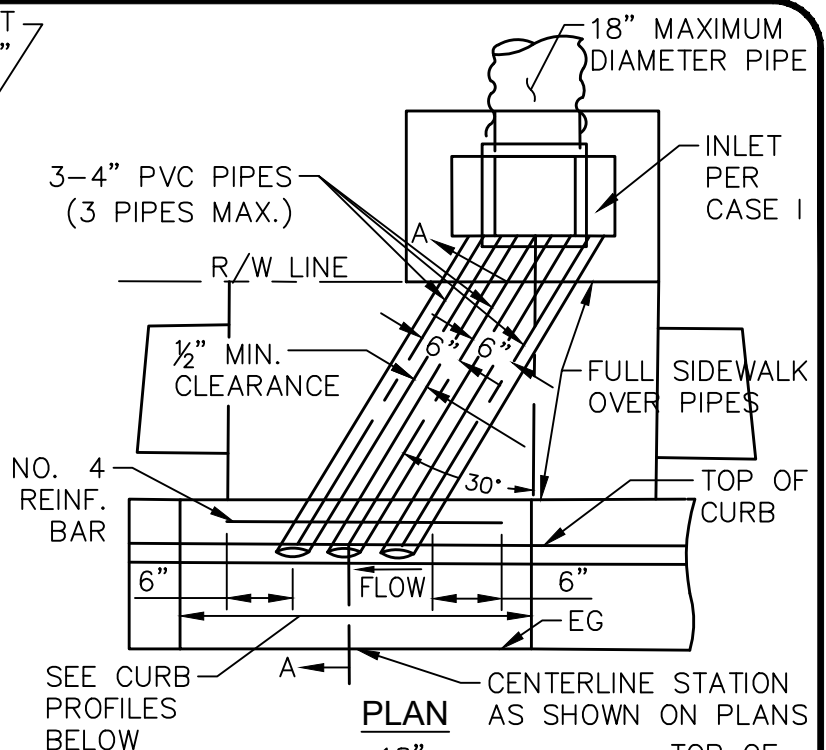
**CASE I INLET**  
TRANSITION STRUCTURE SECTION



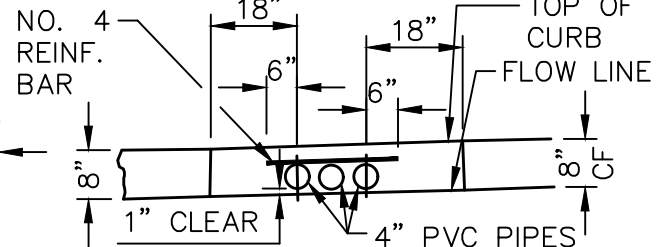
**CASE II INLET**



**SECTION A-A**

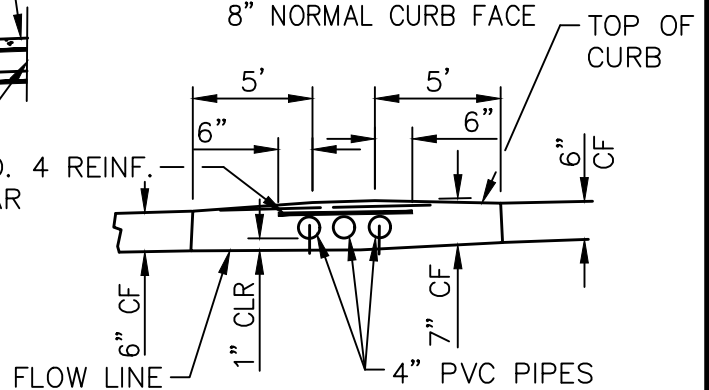


**PLAN**



**CURB PROFILE**

8" NORMAL CURB FACE



**CURB PROFILE**

6" NORMAL CURB FACE

\* NORMAL TO GRADE LINE AS SHOWN ON PROFILE

**NOTES:**

1. SEE SHEET 4 FOR DETAILS AND NOTES.
2. ALHAMBRA FOUNDRY A-470 RECTANGULAR CAST IRON CONDUIT MAY BE SUBSTITUTED AT THE CONTRACTOR'S OPTION OR AS SPECIFIED ON THE PLANS.
3. PVC PIPES SHALL BE SCHEDULE 80.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

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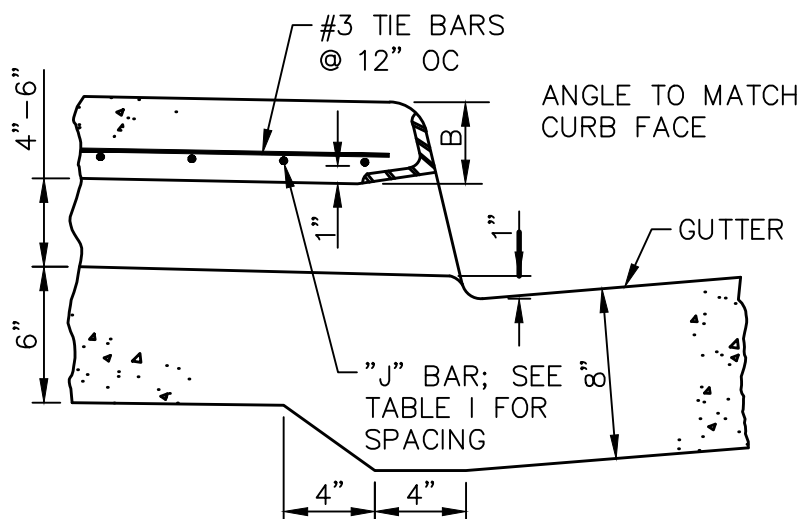
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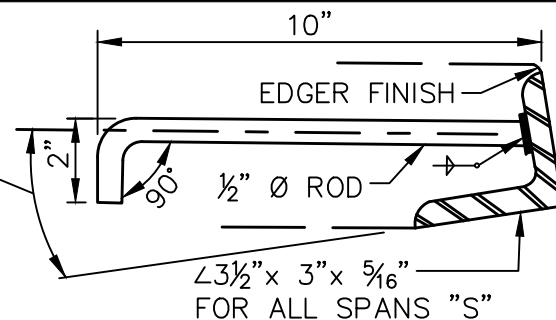
1309

SHT. 3 OF 4

PARKWAY CULVERT - TYPE "C"



OUTLET DETAIL



LENGTH OF CURB OPENING	NO. OF ANCHORS
3' OR LESS	2
3'-6" TO 6'-0"	3

FACE ANGLE ANCHOR  
DETAIL

Span S	B	STEEL	SCHEDULE	J-BARS
		SIZE	SPACING C-C	LENGTH
2'-0"	3"	#3	7"	2'-9"
2'-6"	"	"	"	3'-3"
3'-0"	"	"	"	3'-9"
3'-6"	"	"	6"	4'-3"
4'-0"	"	"	5"	4'-9"
4'-6"	4"	"	6½"	5'-3"
5'-0"	"	"	5"	5'-9"
5'-6"	"	"	4"	6'-3"
6'-0"	"	"	3½"	6'-9"

TABLE 1

GENERAL NOTES:

1. USE PARKWAY CULVERT – TYPE "A" WHEN INLET VELOCITIES ARE 10 FEET PER SECOND OR GREATER.
2. USE PARKWAY CULVERT – TYPE "B" WHEN INLET VELOCITIES ARE LESS THAN 10 FEET PER SECOND.
3. USE PARKWAY CULVERT – TYPE "C" WHEN INLET VELOCITIES ARE LESS THAN 5 FEET PER SECOND.
4. FLOOR OF PARKWAY CULVERT SHALL HAVE A STEEL TROWEL FINISH.
5. ALL EXPOSED METAL SHALL BE GALVANIZED AFTER FABRICATION.
6. HEIGHT OF CURB OPENING FOR TYPES "A" & "B" PARKWAY CULVERTS WILL VARY WITH TYPE OF CURB.
7. SPAN "S" AND HEIGHT OF CURB OPENING WILL BE DETERMINED FROM THE REQUIRED HYDRAULIC CAPACITY AND LIMITED TO THE DIMENSION IN TABLE 1.
8. REINFORCING STEEL SHALL BE 1 INCH CLEAR TO INSIDE OF CULVERT, UNLESS OTHERWISE SHOWN.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

Revision: August 2018

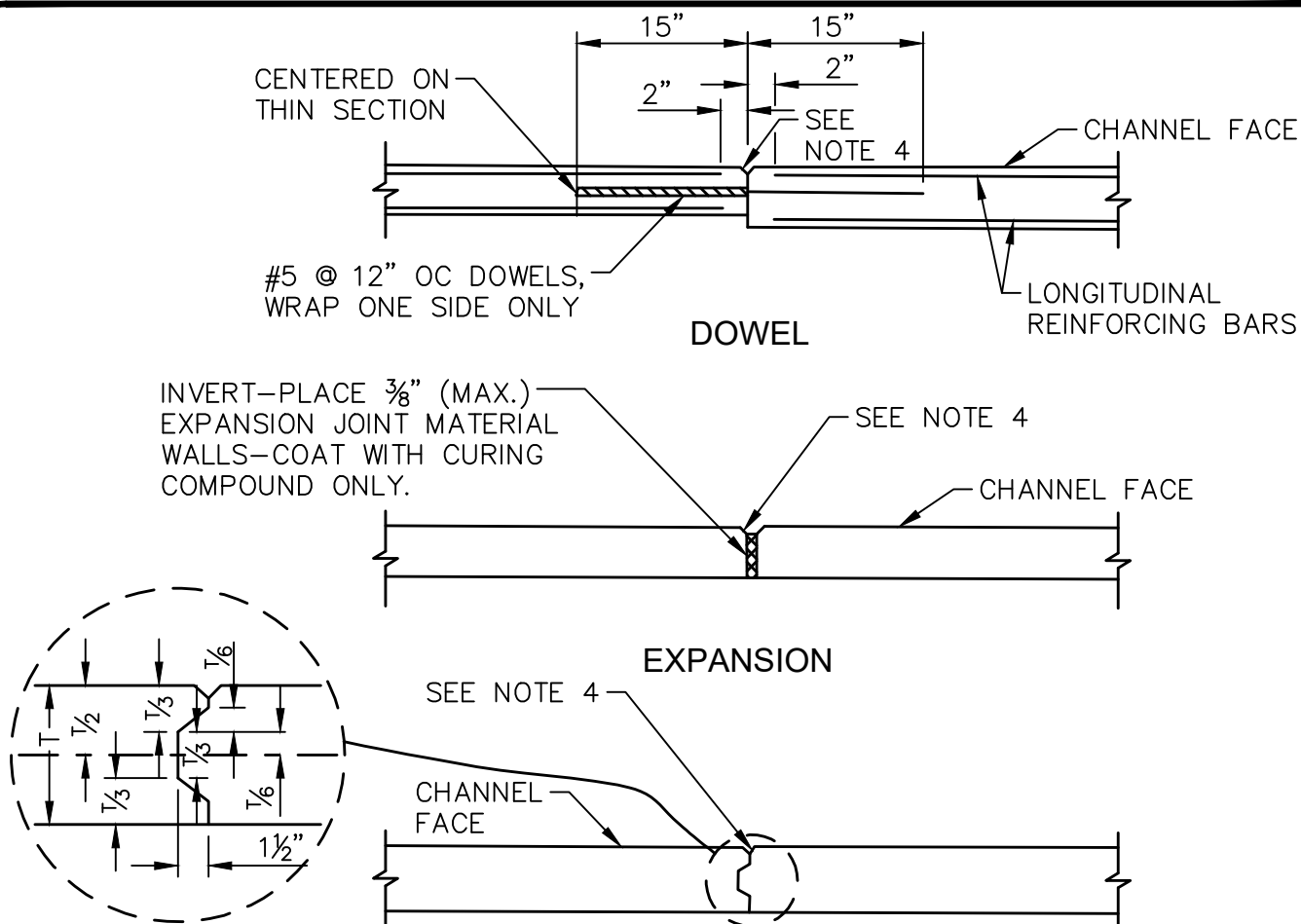
STD. PLAN

1309

SHT. 4 OF 4

PARKWAY CULVERT - DETAILS AND NOTES





#### NOTES:

1. EXPANSION JOINTS SHALL BE USED FOR RC CHANNEL AT INTERVALS NOT LESS THAN 10 FEET OR MORE THAN 50 FEET, UNLESS OTHERWISE NOTED.
2. ALL JOINTS SHALL BE IN THE SAME PLANE FOR THE ENTIRE STRUCTURE AND ON THE RADIAL FOR CURVED SECTIONS. NO STAGGERING OF JOINTS WILL BE PERMITTED.
3. CONSTRUCTION JOINTS SHALL BE USED FOR RCB CULVERTS AT INTERVALS NOT LESS THAN 10 FEET OR MORE THAN 50 FEET, UNLESS OTHERWISE NOTED.
4. JOINT FINISH FOR CHANNEL FACE SHALL BE CHAMFERED 1/2 INCH ON WALLS AND DECKS AND ROUNDED WITH EDGER TOOL ON INVERT.
5. LOCATION OF DOWEL JOINTS SHALL BE SHOWN ON PLANS.
6. EXPANSION JOINT MATERIAL SHALL MEET THE REQUIREMENT OF SECTION 201-3.2, "PREMOLDED JOINT FILLER", OF THE GREENBOOK AND SHALL BE APPROVED BY THE ENGINEER.
7. ALL JOINT TYPES SHALL BE SPECIFIED BY THE ENGINEER ON THE PLANS.
8. LONGITUDINAL REINFORCING BARS SHALL BE CONTINUOUS IN INVERTS AND NON-CONTINUOUS IN WALLS FOR ALL TRANSVERSE JOINTS.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

Revision: August 2018

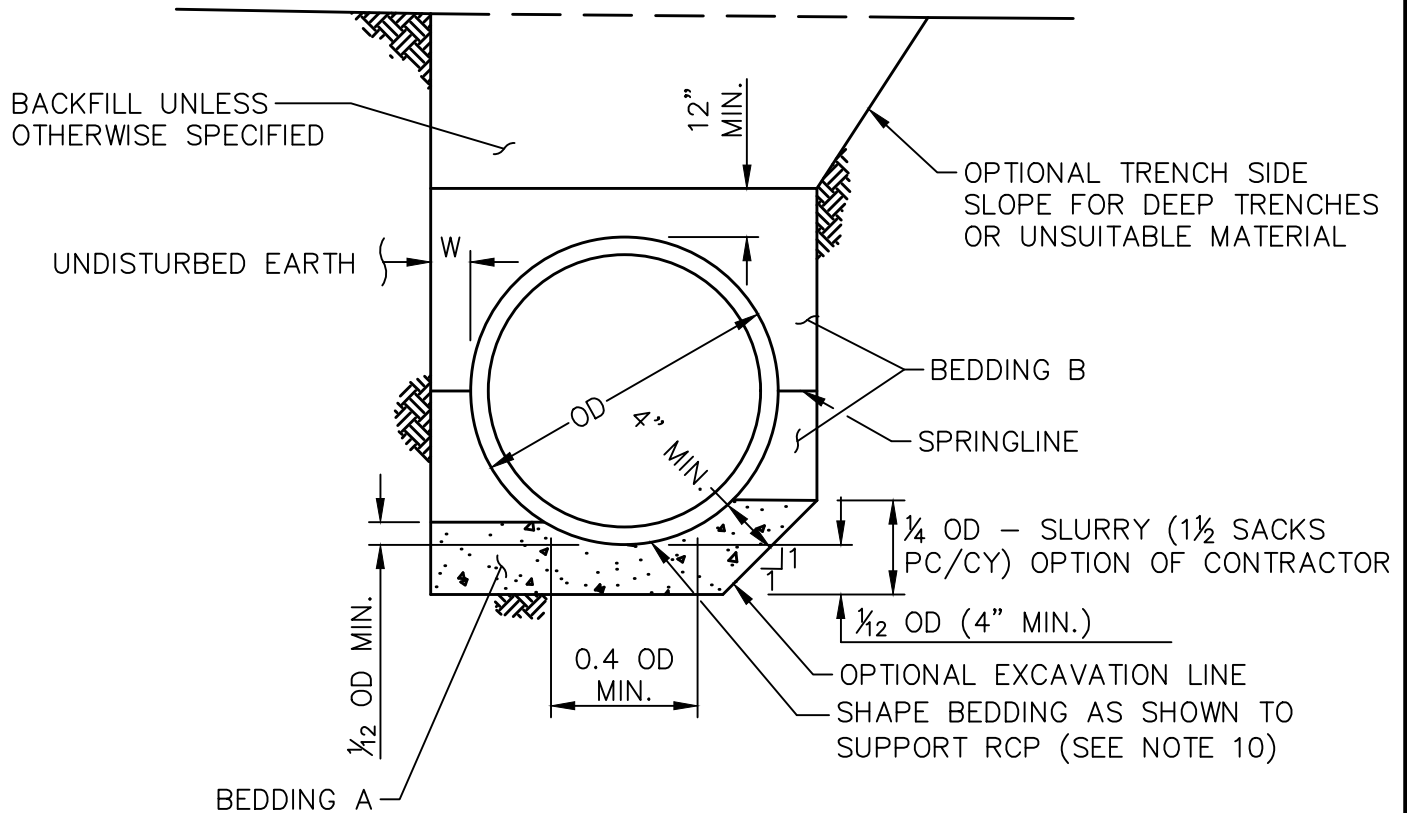
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SHT. 1 OF 1

TRAVERSE JOINT DETAILS





COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

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Revision: August 2018

STD. PLAN

1319

REINFORCED CONCRETE PIPE - BEDDING DETAIL

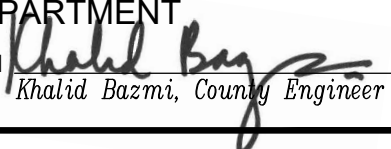
SHT. 1 OF 2

NOTES:

1. BEDDING A SHALL BE COMPOSED OF SAND, NO. 3 OR NO. 4 CRUSHED ROCK OR GRAVEL PER THE GREENBOOK OR OTHER GRANULAR MATERIAL AS MAY BE SPECIFIED OR APPROVED BY THE ENGINEER.
2. BEDDING B SHALL BE COMPOSED OF SAND OR OTHER GRANULAR MATERIAL AS MAY BE SPECIFIED OR APPROVED BY THE ENGINEER AND SHALL CONFORM TO SECTION 217-1.1 OF THE GREENBOOK & STD PLAN 1803.
3. BEDDING B SHALL BE COMPACTED TO A RELATIVE COMPACTION OF NOT LESS THAN 90 PERCENT UNLESS OTHERWISE SPECIFIED.
4. BEDDING B SHALL BE PLACED IN TWO OR MORE LIFTS FOR OD GREATER THAN 60 INCHES.
5. BACKFILL SHALL BE PER SECTION 217-2 & 306-12 OF THE GREENBOOK, AND STD PLAN 1803.
6. WHERE THE COVER IS 8 FEET OR LESS, "W" MUST BE GREATER THAN OR EQUAL TO 6 INCHES. WHERE THE COVER IS GREATER THAN 8 FEET, "W" MUST BE BETWEEN 6 AND 10 INCHES INCLUSIVE FOR PIPES UP TO AND INCLUDING 96 INCHES IN DIAMETER. FOR PIPES OVER 96 INCHES IN DIAMETER, "W" MUST BE BETWEEN 6 AND 12 INCHES INCLUSIVE.
7. "W" SHALL INCLUDE THE THICKNESS OF ANY SHORING.
8. SHORING SHALL BE A MINIMUM OF 6 INCHES FROM THE PIPE AT SPRINGLINE.
9. AN IMPROVED BEDDING METHOD SHALL BE SUBMITTED TO THE ENGINEER FOR ANY "W" OTHER THAN THAT PERMITTED IN NOTE 6.  
  
THE TRENCH BOTTOM SHALL BE SHAPED AS SHOWN, OR THE CONTRACTOR, AT HIS OPTION MAY CHOOSE NOT TO SCREED BEDDING "A" IN WHICH CASE, THE PIPE SHALL BE BACKFILLED TO A DEPTH OF  $\frac{1}{4}$ " OD WITH TRENCH BACKFILL SLURRY AT NO ADDITIONAL COST TO THE COUNTY.
10. THIS BEDDING DETAIL SHALL ONLY BE USED FOR RCP OR AS APPROVED BY THE ENGINEER.
11. BEDDING DETAIL FOR PLASTIC PIPE SHALL BE SHOWN ON THE PLANS.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

  
Khalid Bazmi, County Engineer

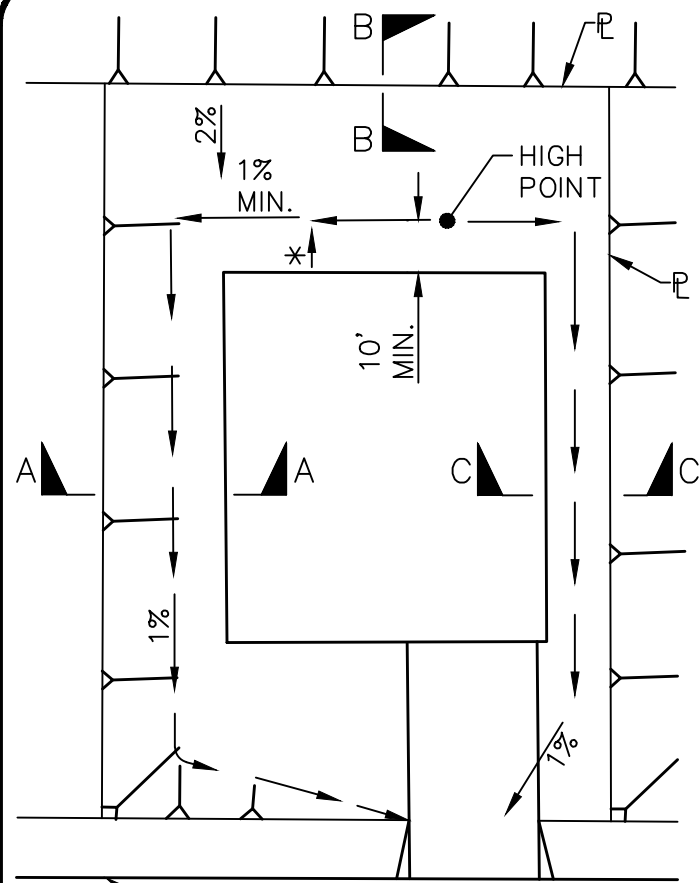
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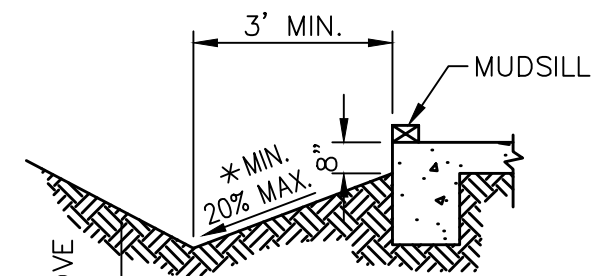
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REINFORCED CONCRETE PIPE - BEDDING DETAIL

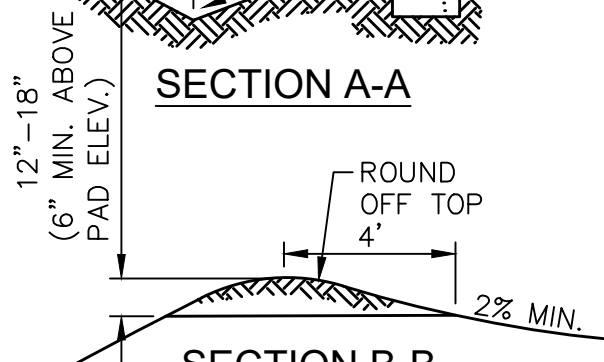
SHT. 2 OF 2



**PLAN**

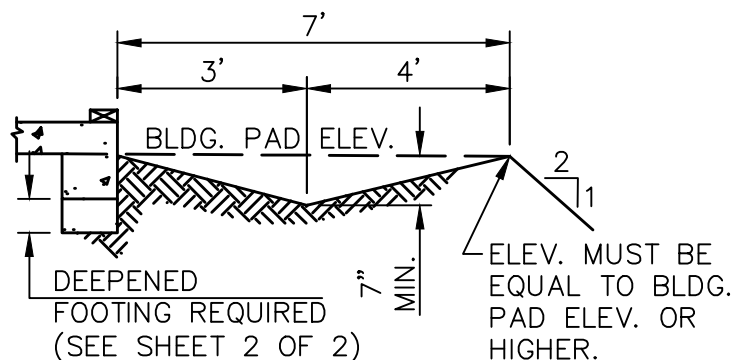


**SECTION A-A**



**SECTION B-B**

TYPICAL BERM DETAIL



**SECTION C-C**

ALTERNATE

\* 2 PERCENT MIN. FOR NON-EXPANSIVE SOILS AND 5 PERCENT MINIMUM FOR EXPANSIVE SOILS OR PER CURRENTLY ADOPTED COUNTY BUILDING REGULATIONS.

**NOTES:**

1. SWALES TO BE CUT IN AT 1 PERCENT AT ROUGH GRADING AND PRIOR TO BUILDING CONSTRUCTION.
2. A PAVED DRAINAGE SWALE, A CATCH BASIN AND PIPE, OR OTHER SIMILAR DRAINAGE DEVICE IS REQUIRED WHEN A STOOP, FIREPLACE, OR PORTION OF THE BUILDING EXTENDS WITHIN THE MINIMUM ESTABLISHED DRAINAGE SETBACKS.
3. A COMMON DRAINAGE SWALE MAY BE USED ALONG SIDEYARD PROPERTY LINES AS SHOWN ON SHEET 2 OF 2.
4. THIS DIMENSION MAY BE REDUCED TO THE REQUIRED MINIMUM SETBACK IN THE GRADING & EXCAVATION CODE IF AN IMPROVED (I.E., CONCRETE) DRAINAGE DEVICE IS USED.
5. ALL BUILDING SETBACKS FROM SLOPES SHALL BE IN ACCORDANCE WITH THE GRADING & EXCAVATION CODE.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

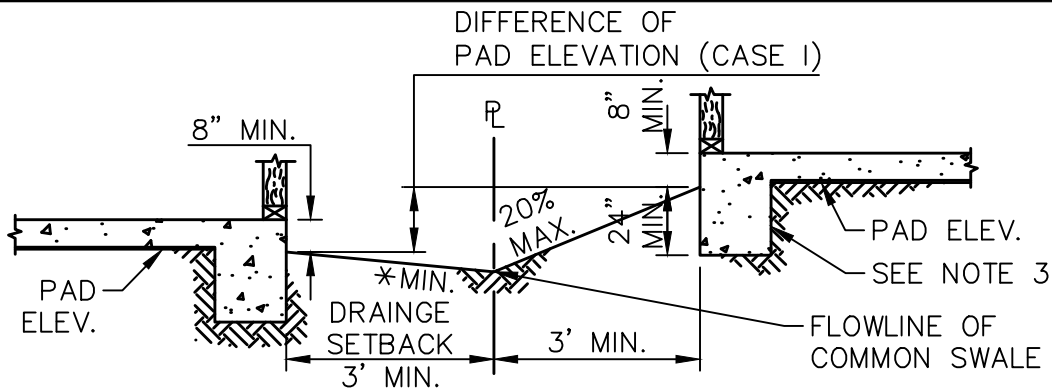
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STD. PLAN

1320

SHT. 1 OF 2

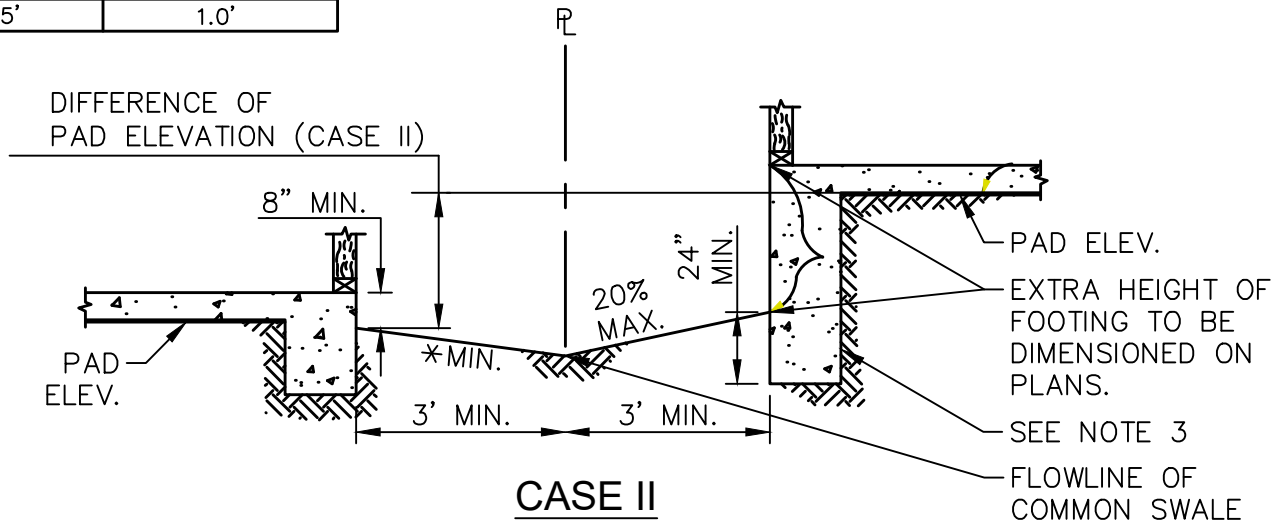
HILLSIDE LOT DRAINAGE



### CASE I

\* 2 PERCENT MIN. FOR NON-EXPANSIVE SOILS AND 5 PERCENT MINIMUM FOR EXPANSIVE SOILS OR PER CURRENTLY ADOPTED COUNTY BUILDING REGULATIONS.

TABLE A	
LIMITING CASE 1 CONDITIONS	
DRAINAGE SETBACK	MAXIMUM DIFFERENCE OF PAD ELEVATIONS
3'	0.6'
4'	0.8'
5'	1.0'



### CASE II

### NOTES:

1. CASE I APPLIES WHEN THE DIFFERENCE IN PAD ELEVATIONS AND DRAINAGE SETBACK ALLOWS A COMMON DRAINAGE SWALE TO BE CONSTRUCTED IN ACCORDANCE WITH TABLE A.
2. CASE II MAY BE USED WITH A COMMON DRAINAGE SWALE WHEN THE DIFFERENCE OF PAD ELEVATIONS EXCEEDS THE LIMITING CONDITIONS OF TABLE A AND THE EXTRA HEIGHT FOOTING IS SHOWN ON THE GRADING AND STRUCTURAL PLANS.
3. IN NO CASE SHALL THE SWALE FLOW LINE BE LOWER THAN THE BOTTOM OF THE FOOTING WITHIN 5 FEET OF THE FOOTING.
4. A COMMON SIDEYARD DRAINAGE SWALE SHALL NOT BE USED WHEN THE DIFFERENCE BETWEEN THE PAD ELEVATIONS EXCEEDS ONE FOOT.
5. MINIMUM GRADIENTS TO COMPLY WITH THE CURRENT ADOPTED COUNTY BUILDING REGULATIONS.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

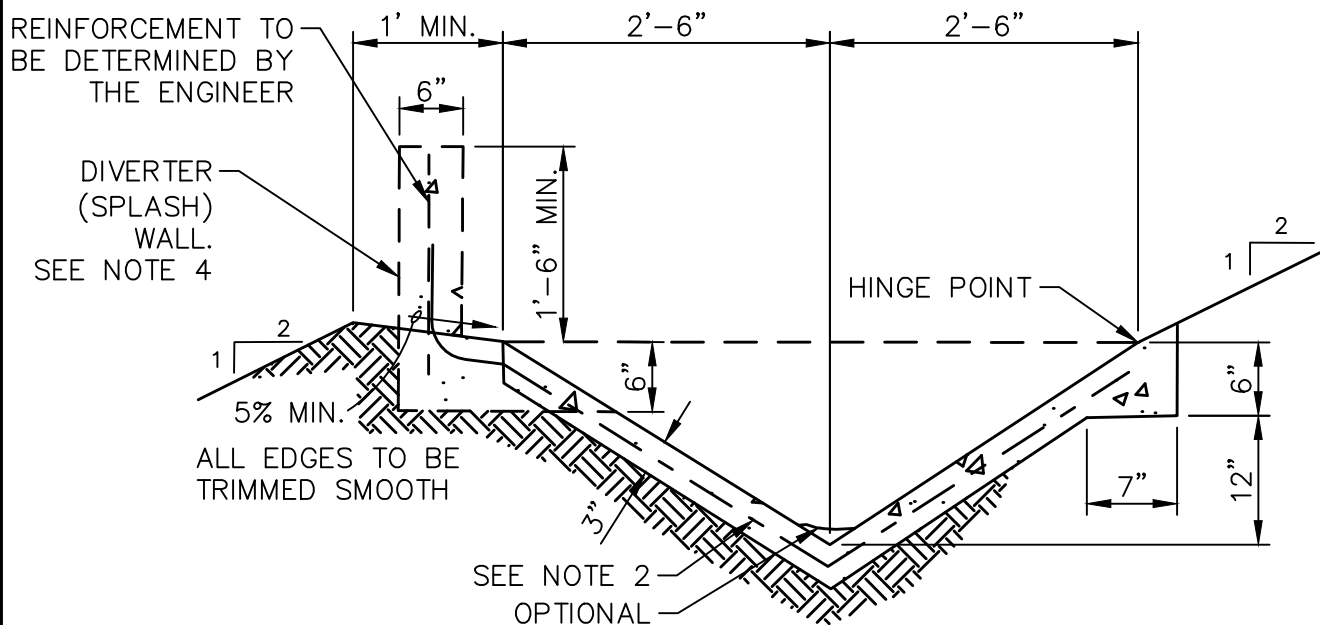
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STD. PLAN

1320

SHT. 2 OF 2

COMMON SIDEYARD DRAINAGE



## TERRACE DRAIN

### NOTES:

1. CONCRETE SHALL BE TYPE II OR V, CLASS 520-C-2500 OR 520-C-2500P (IF PUMPED) CONFORMING TO THE REQUIREMENTS OF OCPW STANDARD PLAN 1803. AIR-PLACED CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF SECTION 303-2, "AIR-PLACED CONCRETE," AND METHOD OF PLACEMENT SHALL CONFORM TO SECTION 303-2.1.3, "METHOD B (SHOTCRETE)" OF THE GREENBOOK, UNLESS OTHERWISE ALLOWED FOR BY THE ENGINEER.
2. REINFORCING SHALL BE 6-INCH X 6-INCH - W 1.4 X W 1.4 WWM OR ENGINEER APPROVED EQUAL. REINFORCING SHALL HAVE A MINIMUM OF 1-INCH CLEAR COVER AND SHALL BE PROPERLY FIXED AND SUPPORTED DURING PLACEMENT OF CONCRETE.
3. GROUND SHALL BE PRE-WETTED TO THE SATISFACTION OF THE ENGINEER PRIOR TO PLACEMENT OF CONCRETE.
4. CONCRETE OR CONCRETE BLOCK DIVERTER (SPLASH) WALL SHALL BE CONSTRUCTED WHEN DOWN DRAIN TERMINATES AT TERRACE DRAIN. SEE PLAN FOR LOCATION AND DETAILS.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

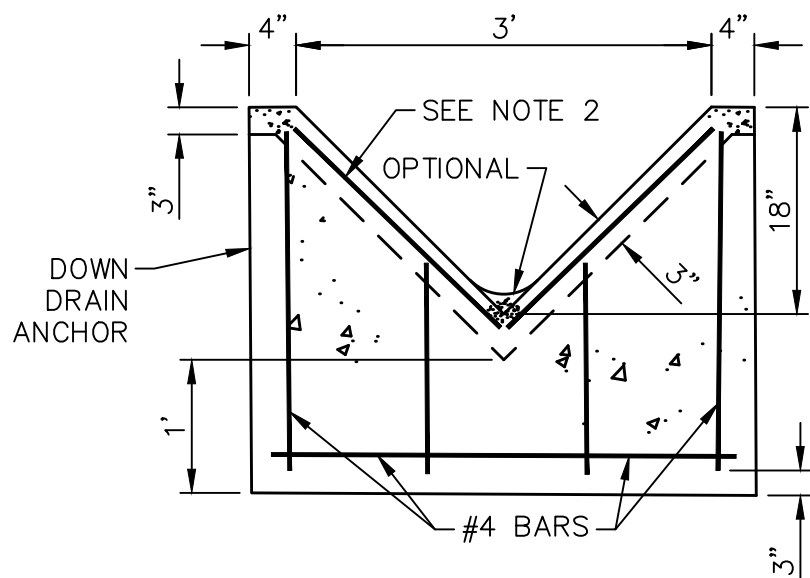
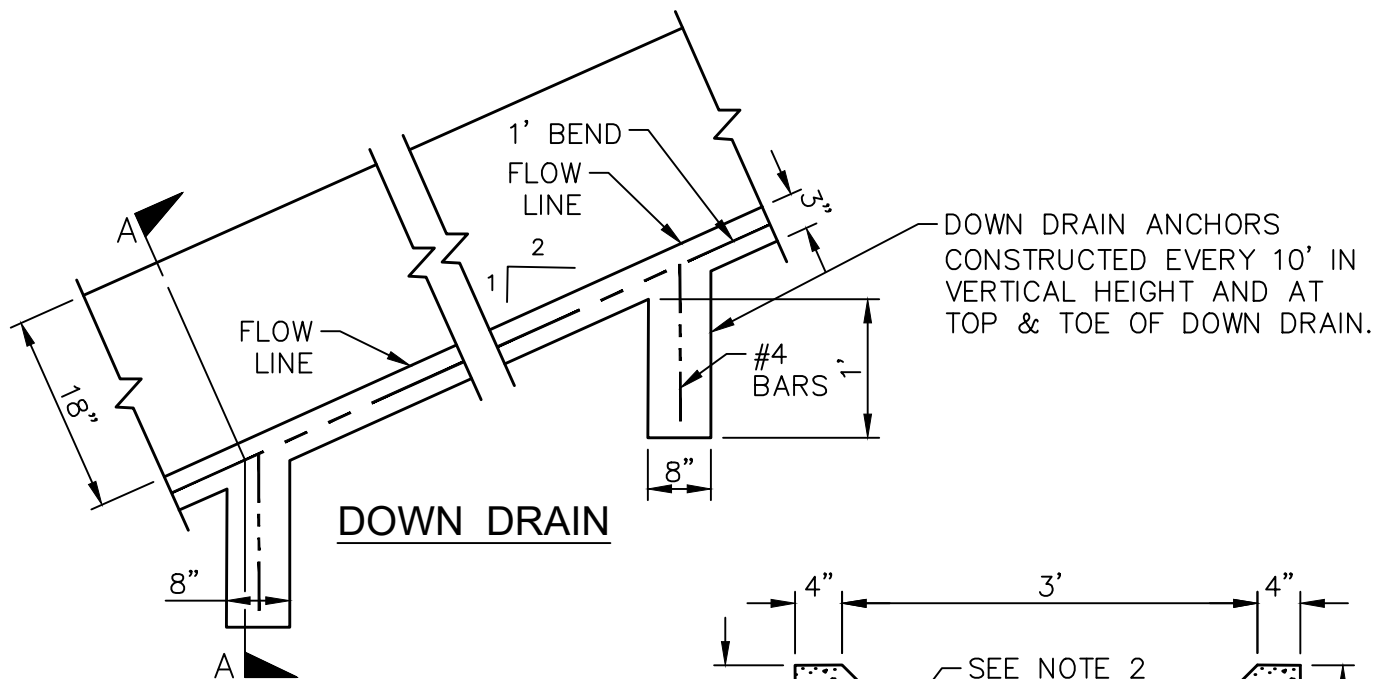
Revision: August 2018

STD. PLAN

1321

TERRACE AND DOWN DRAIN

SHT. 1 OF 3



**SECTION A-A**

**NOTES:**

1. CONCRETE SHALL BE TYPE II OR V, CLASS 520-C-2500 OR 520-C-2500P (IF PUMPED) CONFORMING TO THE REQUIREMENTS OF OCPW STANDARD PLAN 1803. AIR-PLACED CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF SECTION 303-2, "AIR-PLACED CONCRETE," AND METHOD OF PLACEMENT SHALL CONFORM TO SECTION 303-2.1.3, "METHOD B (SHOTCRETE)" OF THE GREENBOOK UNLESS OTHERWISE ALLOWED FOR BY THE ENGINEER.
2. REINFORCING SHALL BE 6-INCH X 6-INCH - W 1.4 X W 1.4 WWM OR ENGINEER APPROVED EQUAL. REINFORCEMENT SHALL HAVE A MINIMUM OF 1-INCH CLEAR COVER AND SHALL BE PROPERLY FIXED AND SUPPORTED DURING PLACEMENT OF CONCRETE.
3. GROUND SHALL BE PRE-WETTED TO THE SATISFACTION OF THE ENGINEER PRIOR TO PLACEMENT OF CONCRETE.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

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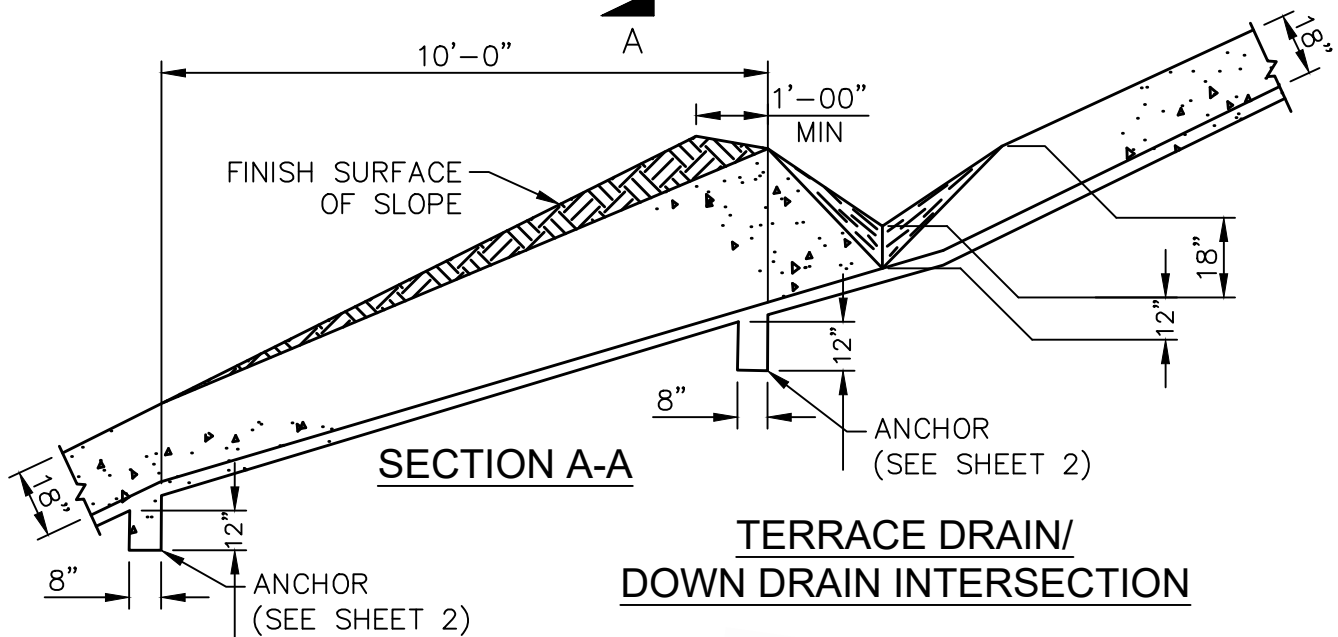
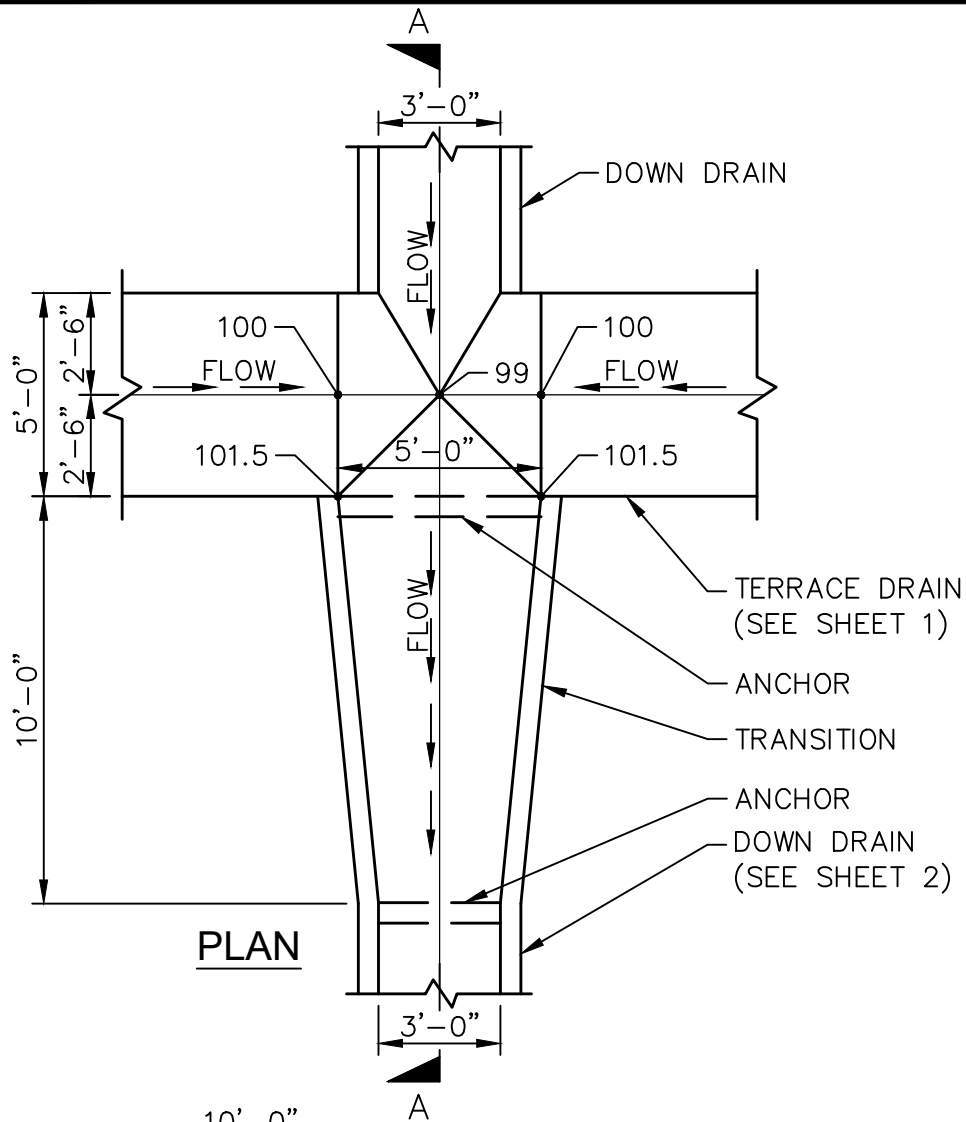
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**1321**

SHT. 2 OF 3

**TERRACE AND DOWN DRAIN**





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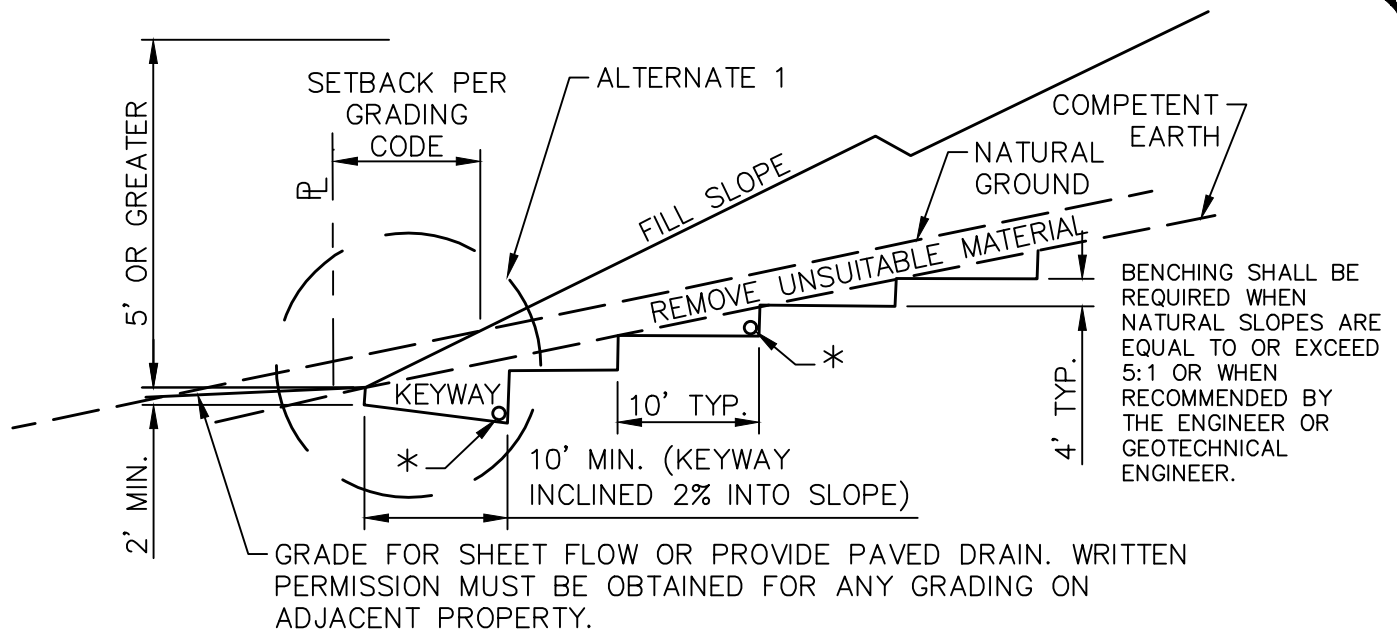
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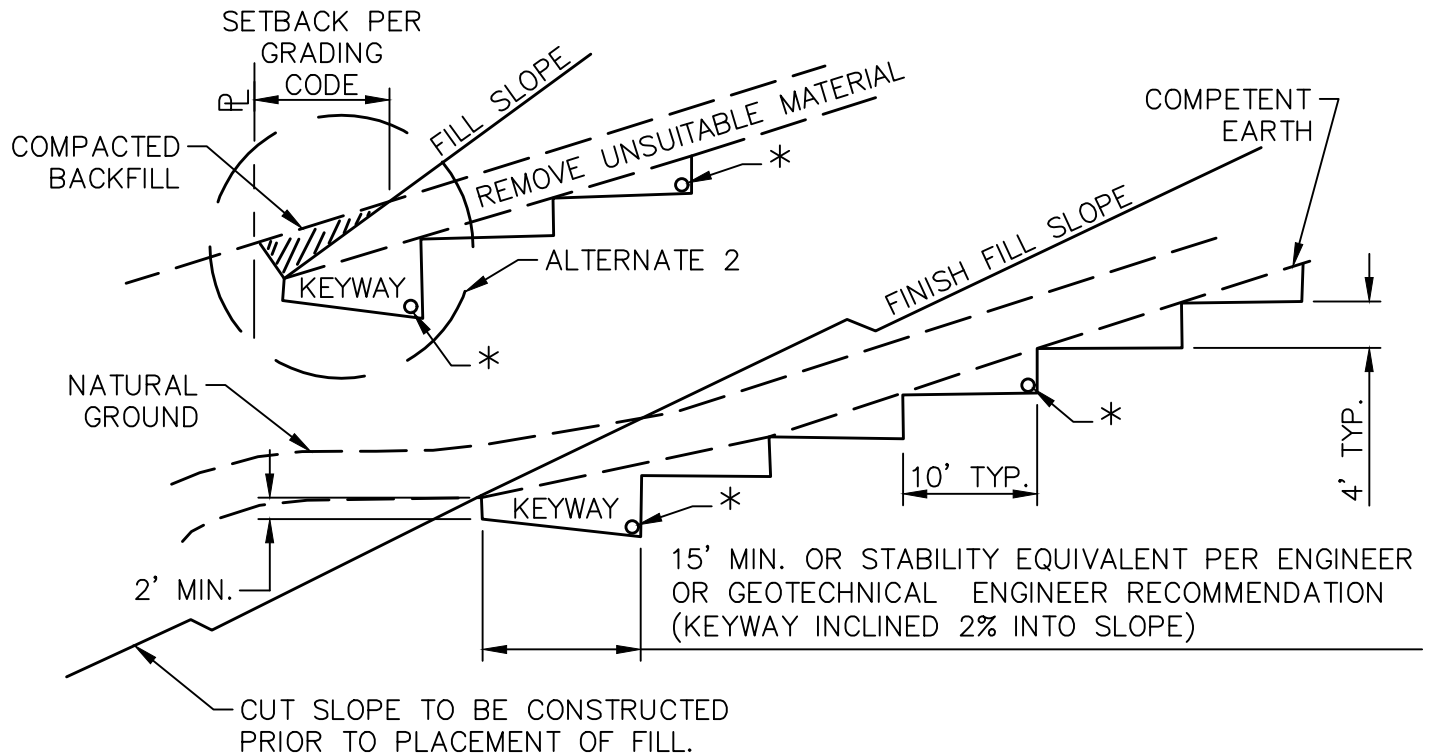
SHT. 3 OF 3

TERRACE AND DOWN DRAIN





### BENCHED FILL OVER NATURAL



### BENCHED FILL OVER CUT

- \* CONSTRUCT SUBDRAIN IN KEYWAY AND FOR BENCHES AT 15 VERTICAL FEET OR WHERE NEEDED BASED ON SEEPAGE OR POTENTIAL SEEPAGE ENCOUNTERED.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

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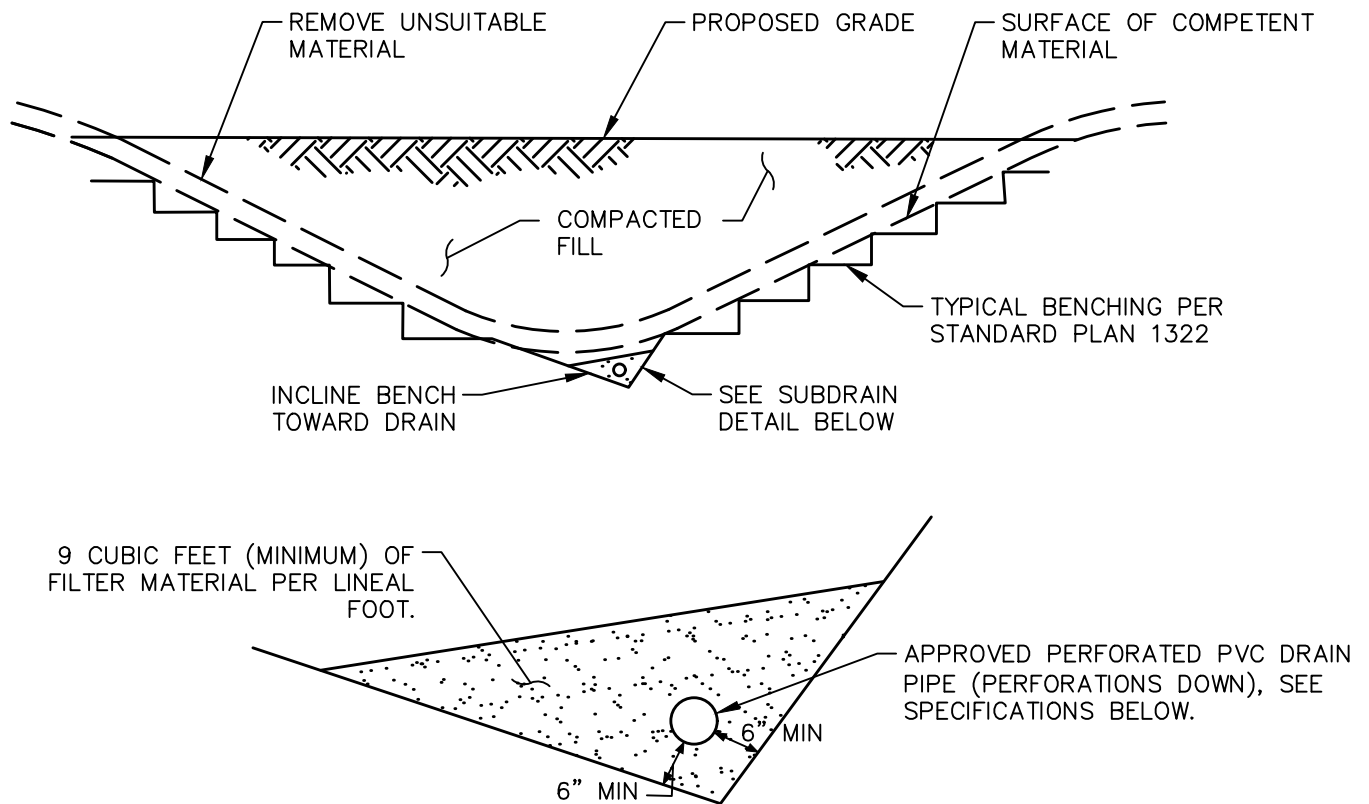
STD. PLAN

1322

BENCHING FOR COMPACTED FILL

SHT. 1 OF 1





### SUBDRAIN DETAIL

#### NOTES:

1. IN THE ABSENCE OF A GEOTECHNICAL ENGINEER'S RECOMMENDATION, THIS STANDARD SHALL BE USED.
2. PIPE SPECIFICATIONS: DRAIN PIPE SHALL BE A MINIMUM OF 4-INCH DIAMETER (6-INCH MINIMUM FOR RUNS OF 500- FEET OR GREATER OR AS RECOMMENDED BY THE ENGINEER. PIPE SPECIFICATIONS SHALL CONFORM TO THE GREENBOOK OR AS APPROVED BY THE ENGINEER.
3. FILTER MATERIAL SHALL MEET THE FOLLOWING SPECIFICATIONS OR AS RECOMMENDED BY THE ENGINEER:

#### SIEVE SIZE                      PERCENTAGE PASSING

1"	_____	100
$\frac{3}{4}$ "	_____	90-100
$\frac{3}{8}$ "	_____	40-100
NO.4	_____	25-40
NO.8	_____	18-33
NO.30	_____	5-15
NO.50	_____	0-7
NO.200	_____	0-3

### SUBDRAIN

4. ALTERNATIVE FILTER MATERIAL MAY CONSIST OF CLEAN  $\frac{3}{4}$ " INCH CRUSHED ROCK, WRAPPED IN TYPE I NON-WOVEN FILTER FABRIC PER STANDARD PLAN 1808 OR ENGINEER APPROVED EQUAL. USE PERFORATED PVC DRAIN PIPE PER NOTE 2 & DETAIL.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

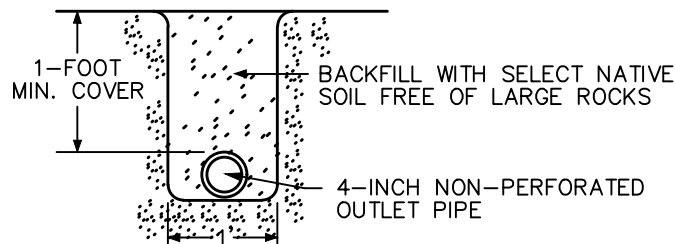
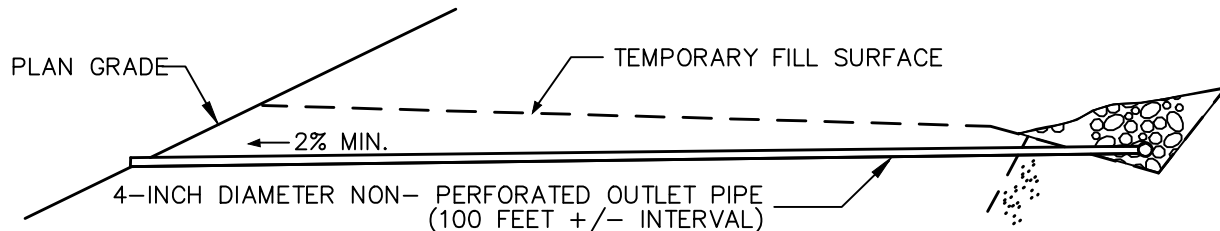
Revision: August 2018

STD. PLAN

1323

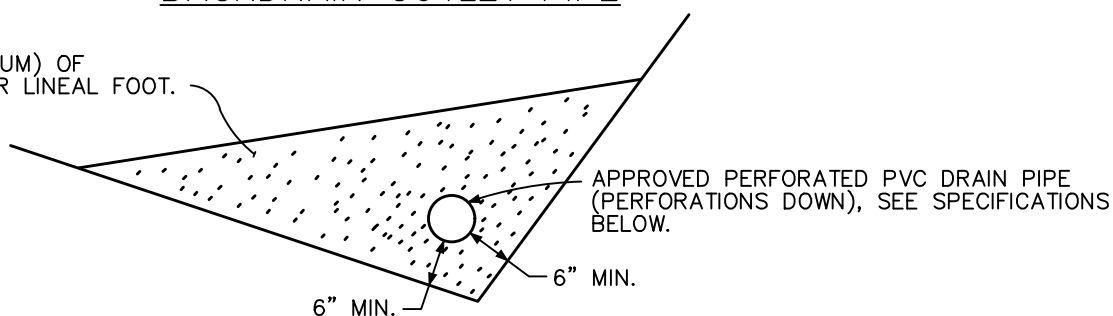
SHT. 1 OF 2

SUBDRAIN / BACKDRAIN



BACKDRAIN OUTLET PIPE

4 CUBIC FEET (MINIMUM) OF  
FILTER MATERIAL PER LINEAL FOOT.



BACKDRAIN DETAIL

NOTES:

1. IN THE ABSENCE OF A GEOTECHNICAL ENGINEER'S RECOMMENDATION, THIS STANDARD SHALL BE USED.
2. PIPE SPECIFICATIONS: DRAIN PIPE SHALL BE A MINIMUM OF 4-INCH DIAMETER (6-INCH MINIMUM FOR RUNS OF 500- FEET OR GREATER OR AS RECOMMENDED BY THE ENGINEER. PIPE SPECIFICATIONS SHALL CONFORM TO THE GREENBOOK OR AS APPROVED BY THE ENGINEER.
3. FILTER MATERIAL SHALL MEET THE FOLLOWING SPECIFICATIONS OR AS RECOMMENDED BY THE ENGINEER:

<u>SIEVE SIZE</u>	<u>PERCENTAGE PASSING</u>
1" _____	100
3/4" _____	90-100
3/8" _____	40-100
NO.4 _____	25-40
NO.8 _____	18-33
NO.30 _____	5-15
NO.50 _____	0-7
NO.200 _____	0-3

BACKDRAIN

4. ALTERNATIVE FILTER MATERIAL MAY CONSIST OF CLEAN 3/4" INCH CRUSHED ROCK, WRAPPED IN TYPE I NON-WOVEN FILTER FABRIC PER STANDARD PLAN 1808 OR ENGINEER APPROVED EQUAL. USE PERFORATED PVC DRAIN PIPE PER NOTE 2 & DETAIL.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

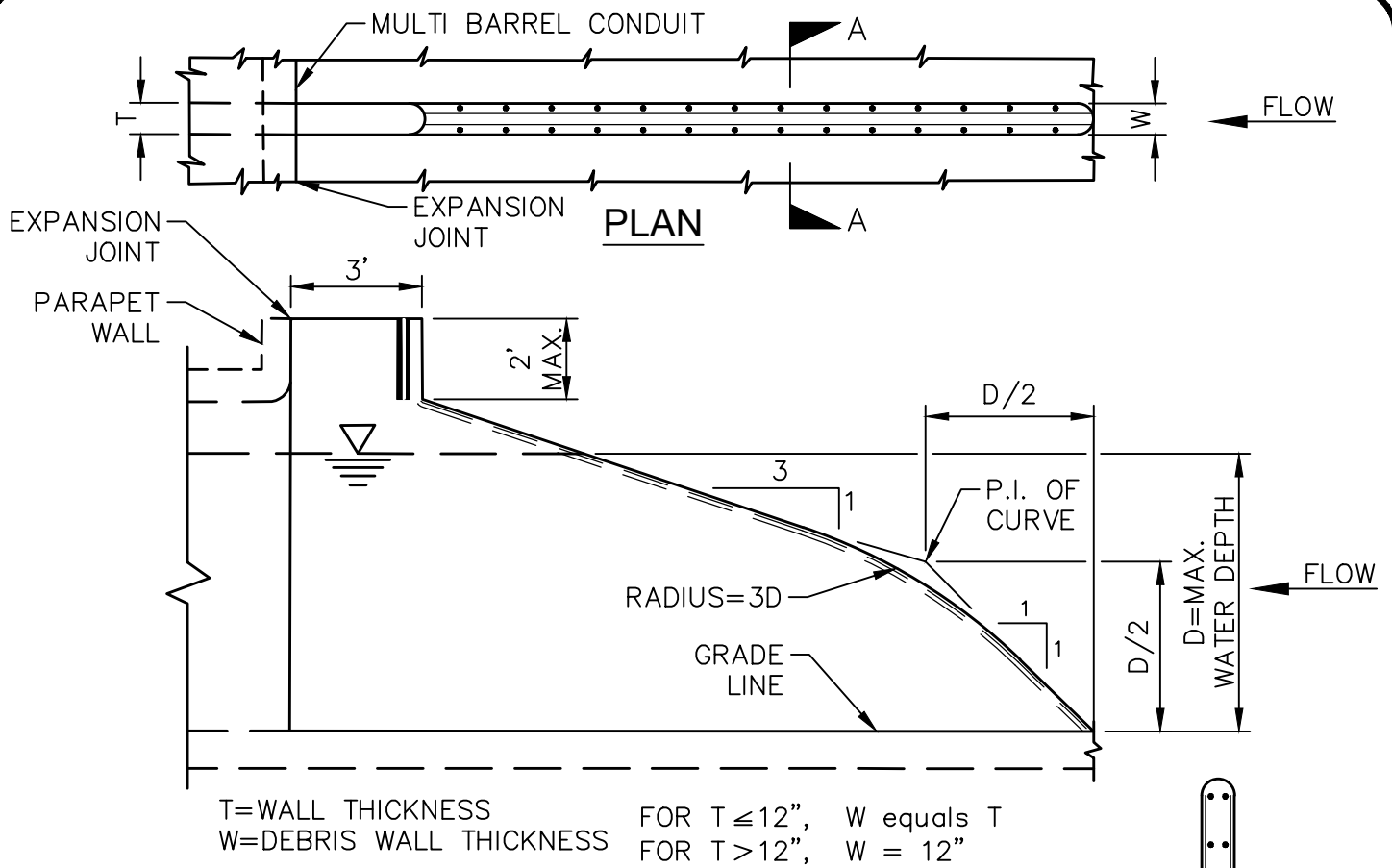
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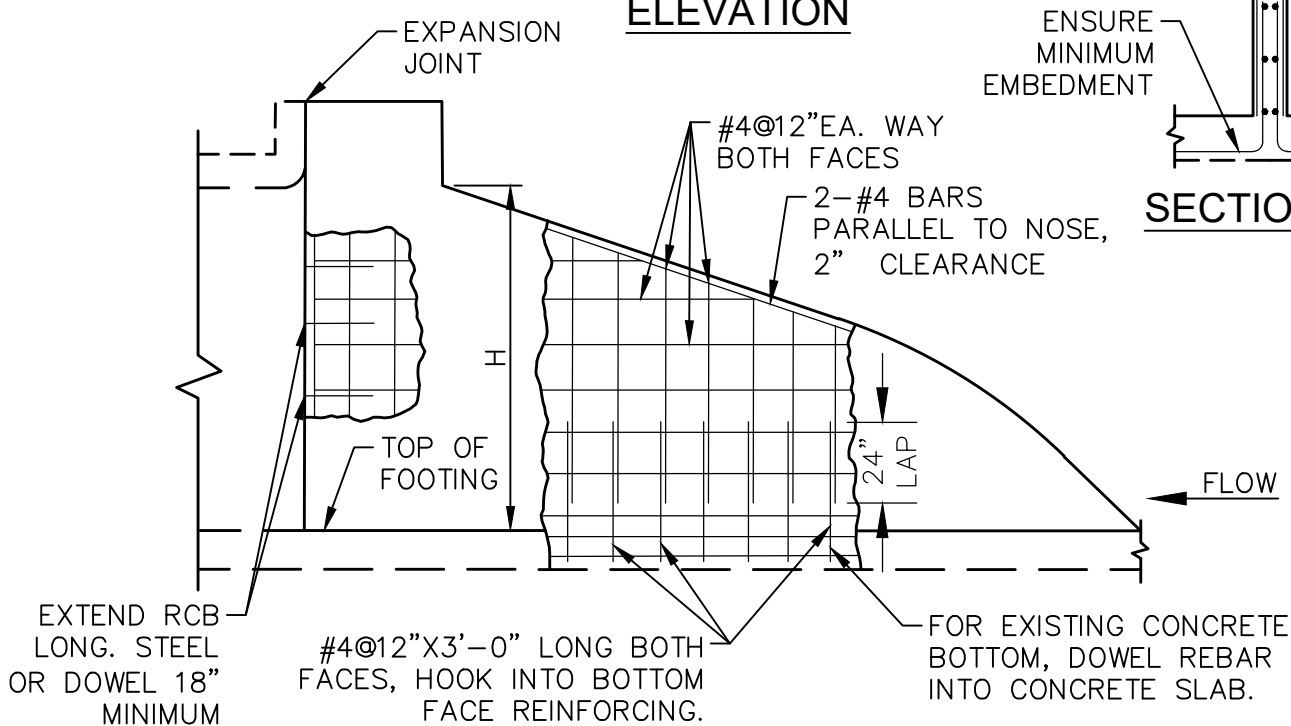
1323

SHT. 2 OF 2

SUBDRAIN / BACKDRAIN



### ELEVATION



ENSURE MINIMUM EMBEDMENT

### SECTION A-A

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Revision: August 2018

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*Khalid Bazmi*  
Khalid Bazmi, County Engineer

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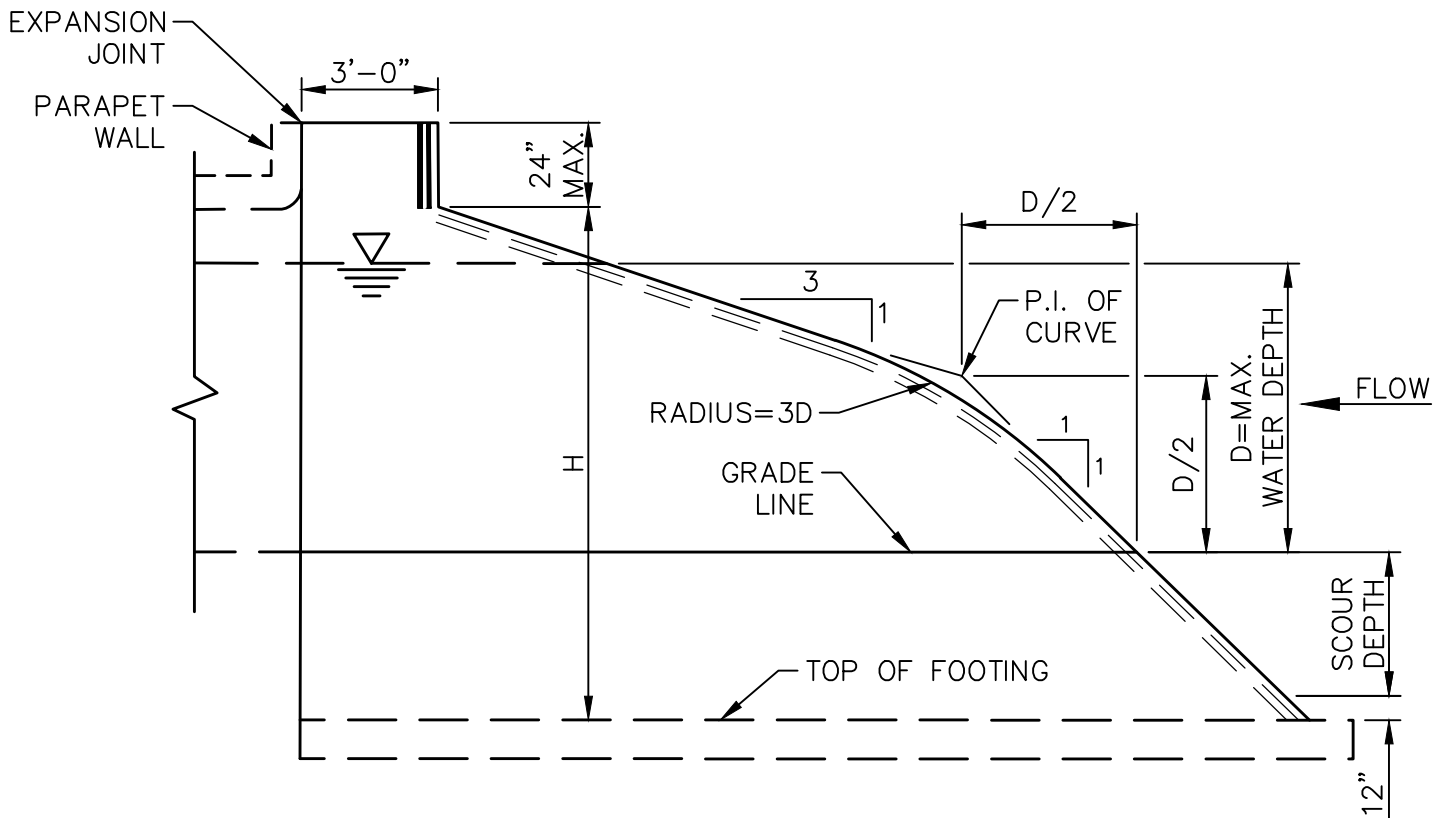
1324

SHT. 1 OF 2

DEBRIS WALL

## NOTES:

1. CONCRETE AND REINFORCING SHALL BE PER STD. PLAN 1803.
2. FOR HEIGHTS "H" GREATER THAN 12 FEET, SUBMIT STRUCTURAL CALCULATIONS.
3. FOR SOFT CHANNEL BOTTOM APPLICATIONS:
  - a. WALL FOOTING MUST BE DESIGNED TO ENSURE WALL STABILITY AS A FREE STANDING STRUCTURE.
  - b. TOP OF FOOTING MUST BE 12 INCHES BELOW MAXIMUM ANTICIPATED SCOUR DEPTH.
  - c. DEPTH "D" SHALL BE THE DISTANCE FROM THE DESIGN GRADELINE TO THE DESIGN WATERSURFACE. EXTEND 1:1 SLOPE FROM DESIGNED GRADELINE TO TOP OF FOOTING.



## SOFT CHANNEL BOTTOM APPLICATION

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

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*Khalid Bazmi*  
Khalid Bazmi, County Engineer

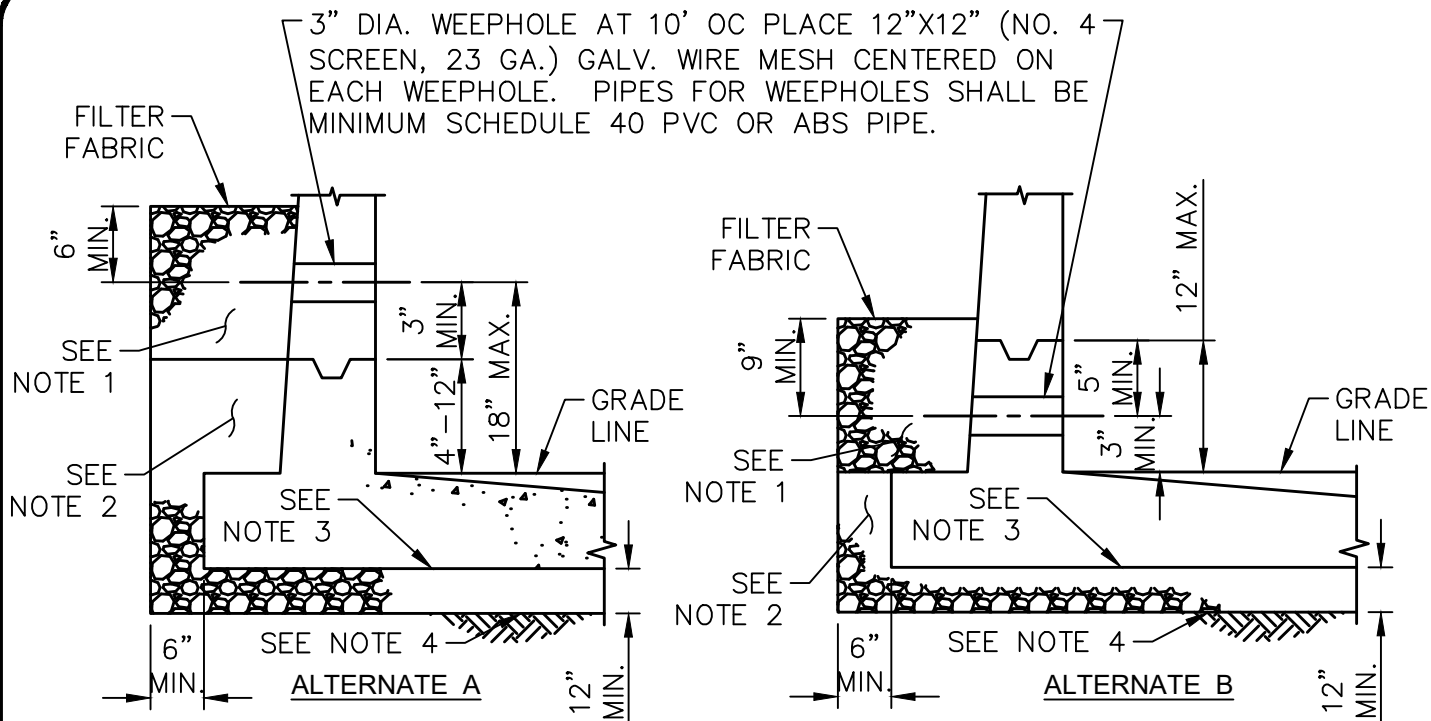
STD. PLAN

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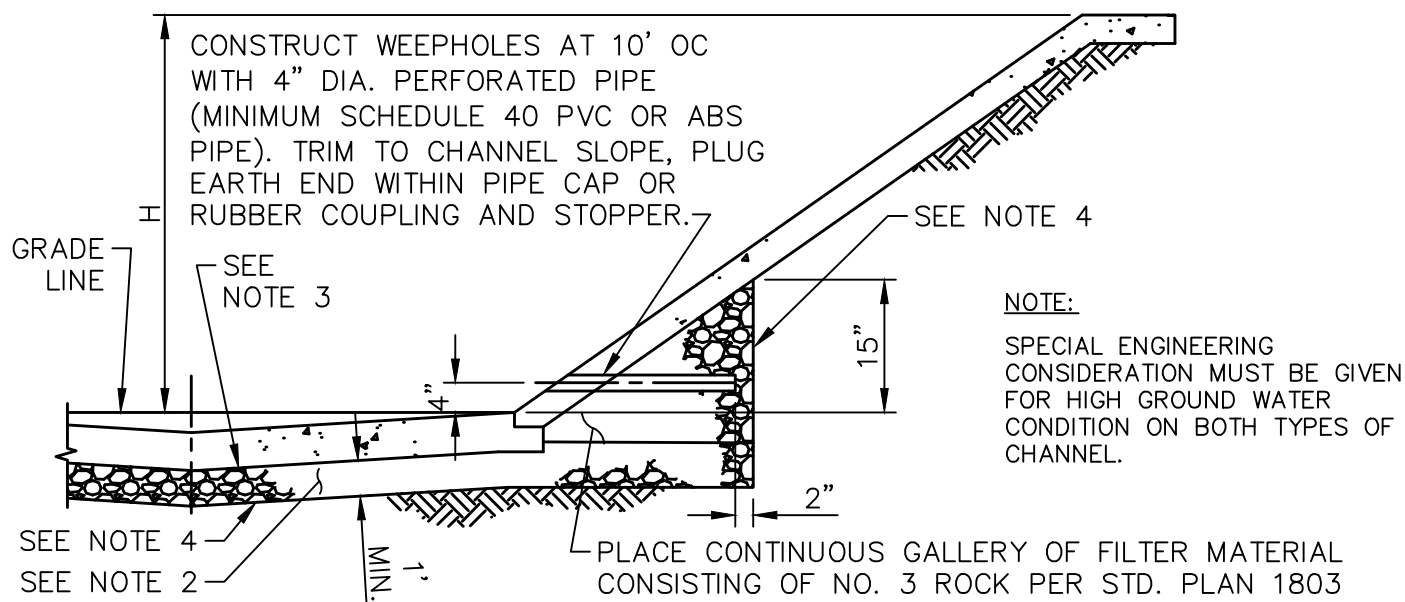
SHT. 2 OF 2

DEBRIS WALL





**VERTICAL WALL CHANNEL**



**TRAPEZOIDAL CHANNEL**

**NOTES:**

1. PERVIOUS MATERIAL SHALL BE NO. 3 ROCK AS SPECIFIED IN STD. PLAN 1803 AND SHALL BE WRAPPED IN FILTER FABRIC AS SHOWN
2. NO. 3 ROCK PER STD. PLAN 1803
3. TYPE I NON-WOVEN FILTER FABRIC PER STD. PLAN 1808
4. TYPE II NON-WOVEN FILTER FABRIC PER STD. PLAN 1808

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

Revision: August 2018

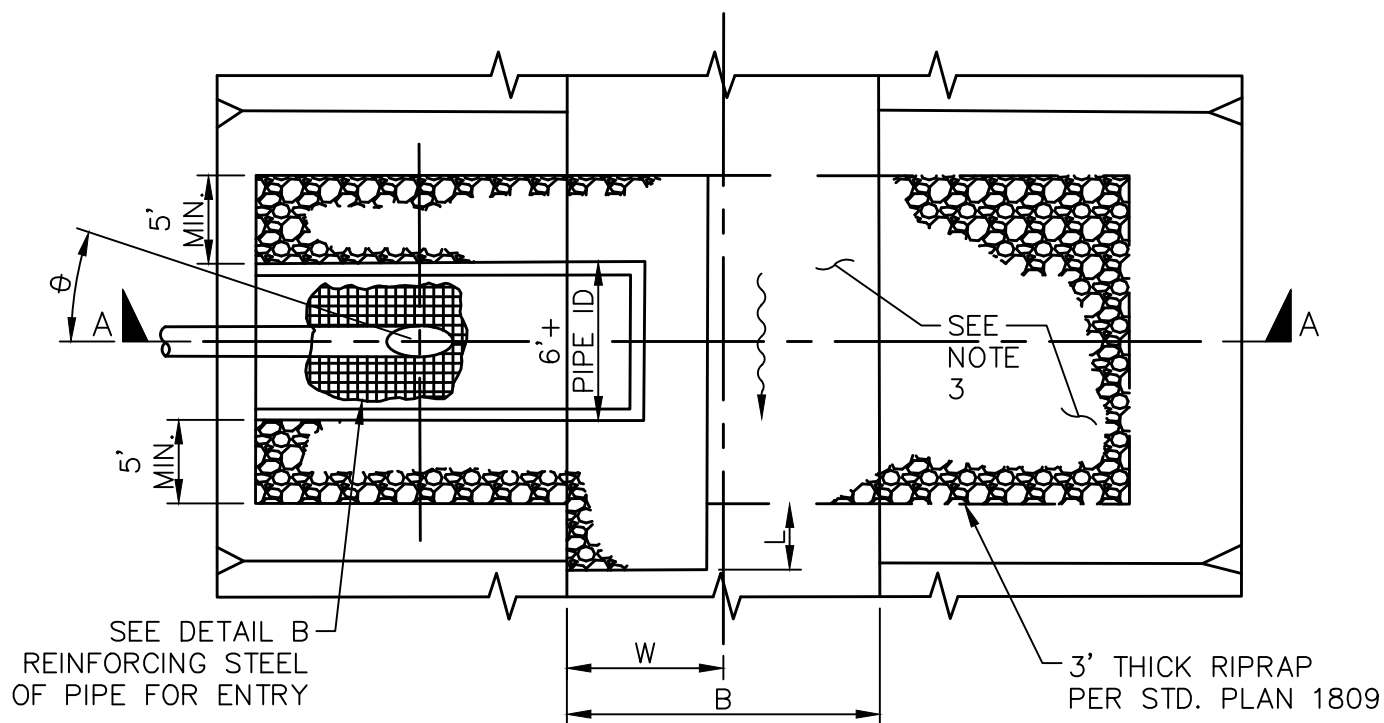
STD. PLAN

**1325**

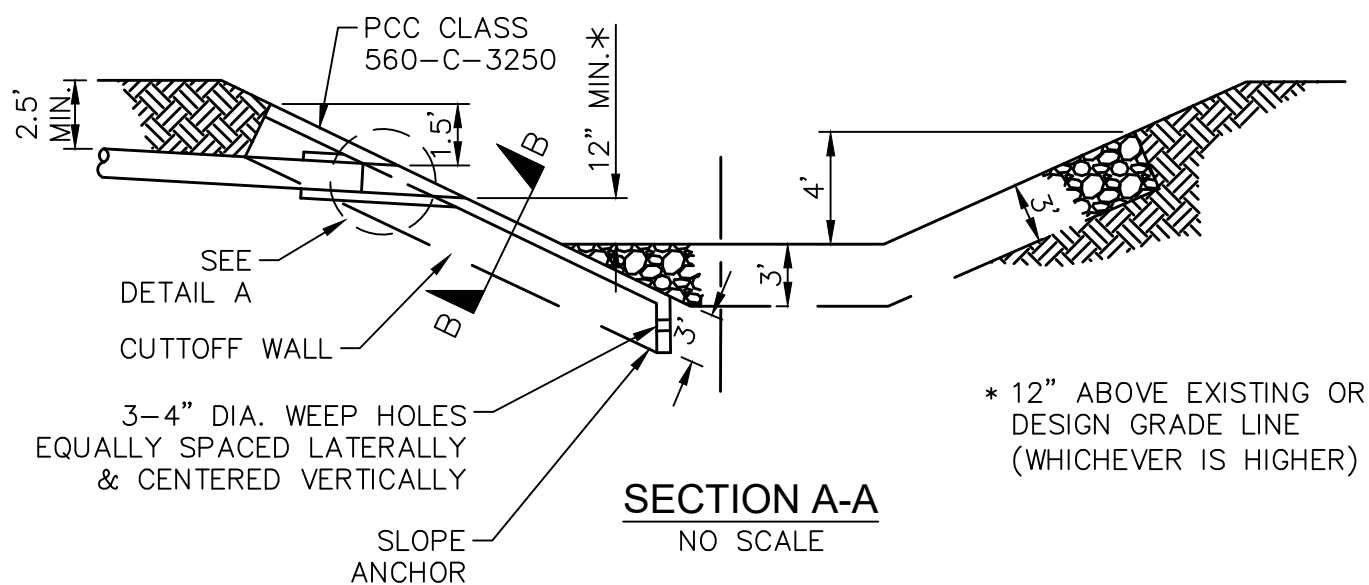
SHT. 1 OF 1

**CHANNEL WEEPHOLES AND DRAINAGE GALLERIES**





**PLAN VIEW**



**SECTION A-A**

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

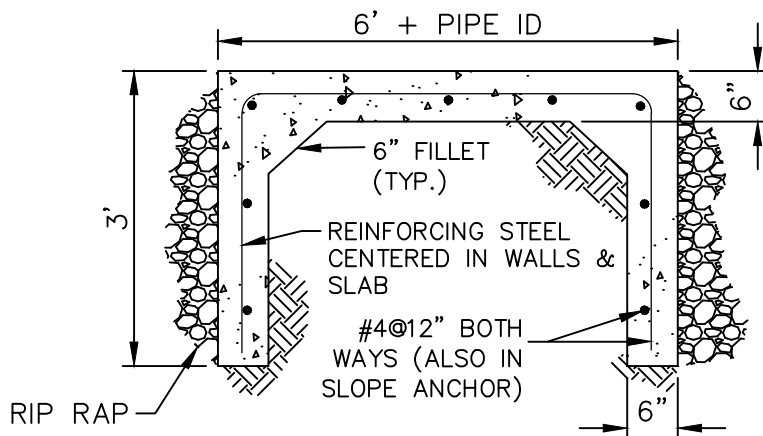
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STD. PLAN

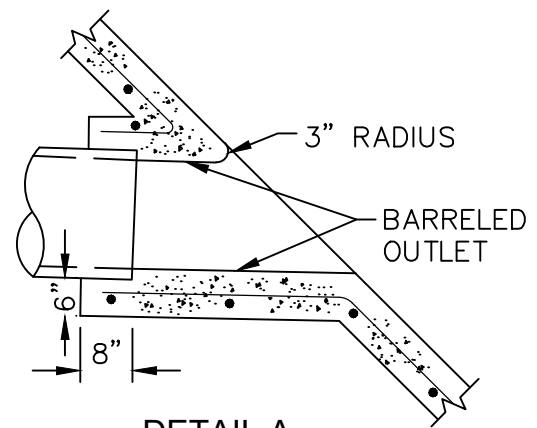
**1326**

SHT. 1 OF 2

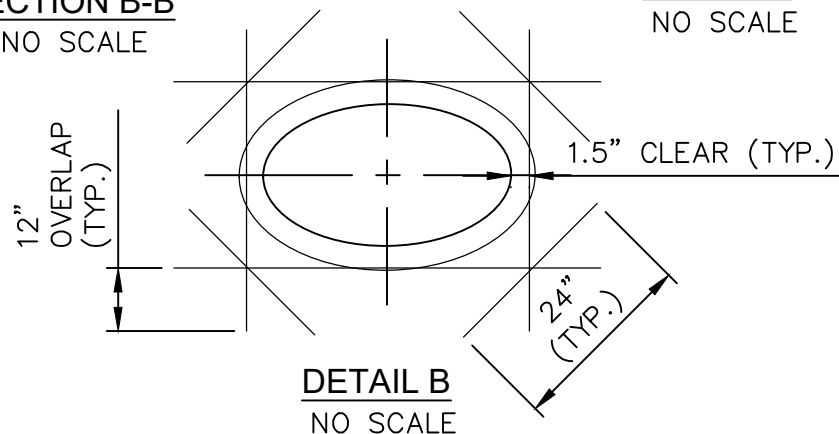
**PIPE ENTRANCE TO EARTH CHANNEL**



**SECTION B-B**  
NO SCALE



**DETAIL A**  
NO SCALE



**DETAIL B**  
NO SCALE

**NOTES:**

1. IF LATERAL FLOW EXCEEDS 10 PERCENT OF THE UPSTREAM FLOW, ANGLE  $\theta$  SHALL BE DETERMINED BY THE HYDRAULICS OF THE CONFLUENCE.
2. MAXIMUM SIDE SLOPE GRADIENT EQUALS 1.5 TO 1.0.
3. TERMINATE TRANSVERSE DIMENSION OF RIPRAP 10 FEET FROM TOE OF SLOPE. IF 10 FEET EXCEEDS 50 PERCENT OF CHANNEL BASE WIDTH, OR CHANNEL VELOCITY EXCEEDS 10 FPS RIPRAP 'X' FEET WIDE SHALL EXTEND ACROSS INVERT AND 4 FEET UP OPPOSITE SLOPE, PER SECTION A-A.
4. INCREASE DOWNSTREAM LIMIT OF INVERT RIPRAP BLANKET BY 'L' FEET IF LATERAL PIPE'S HORIZONTAL ENTRY ANGLE IS DEFLECTED FROM NORMAL.  $L = 2 \sin \theta$  (PIPE DIAMETER). IF 'W' EXCEEDS 50 PERCENT OF CHANNEL BASE WIDTH, OR CHANNEL VELOCITY EXCEEDS 10 FPS, RIPRAP SHALL EXTEND ACROSS ENTIRE INVERT. (MIN. W=10 FEET)
5. PROVIDE 1.5 INCH STEEL COVER.
6. PIPES 27 INCHES OR LARGER SHALL BE DESIGNED STRUCTURE.
7. FINISH EXPOSED SURFACE OF PCC WITH WOOD FLOAT.
8. IF VELOCITY EXCEEDS 12 FPS, DESIGN RIPRAP PER US ARMY CORP OF ENGINEERS (USACE) PUBLICATION NUMBER EM 1110-2-1601, CHAPTER 3.
9. PIPE SIZE TO BE DETERMINED BY ENGINEER.

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Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

Revision: August 2018

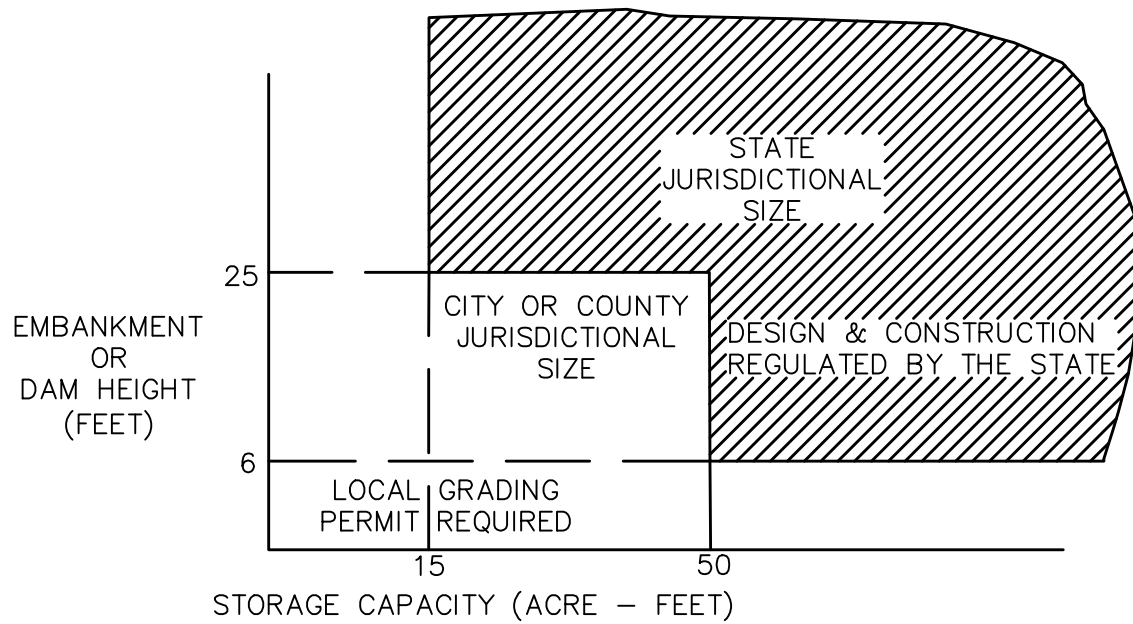
STD. PLAN

**1326**

SHT. 2 OF 2

**PIPE ENTRANCE TO EARTH CHANNEL**

## JURISDICTIONAL DAM SIZE



## EXHIBIT 1

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Revision: August 2018

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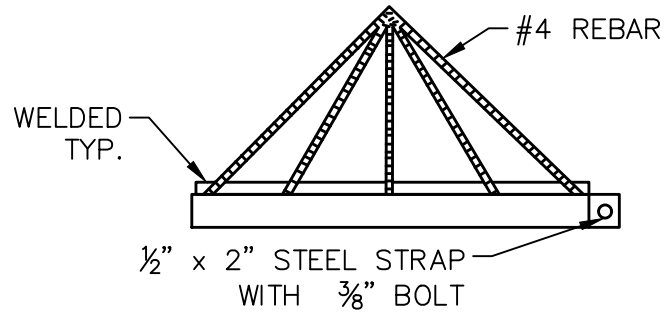
*Khalid Bazmi*  
Khalid Bazmi, County Engineer

STD. PLAN

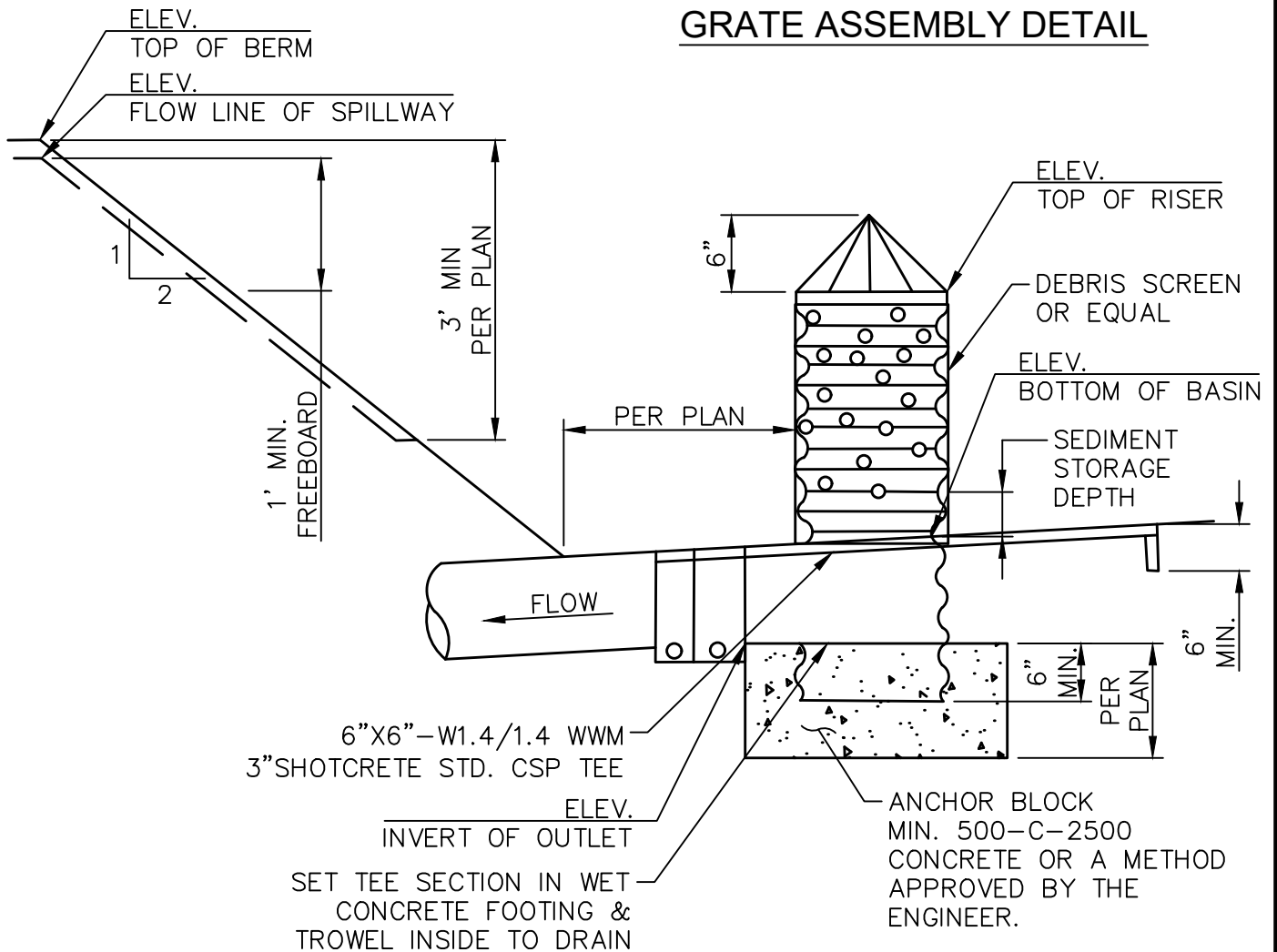
1327

SHT. 1 OF 4

DESILTING BASIN



GRATE ASSEMBLY DETAIL



DRAIN PIPE & RISER

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Revision: August 2018

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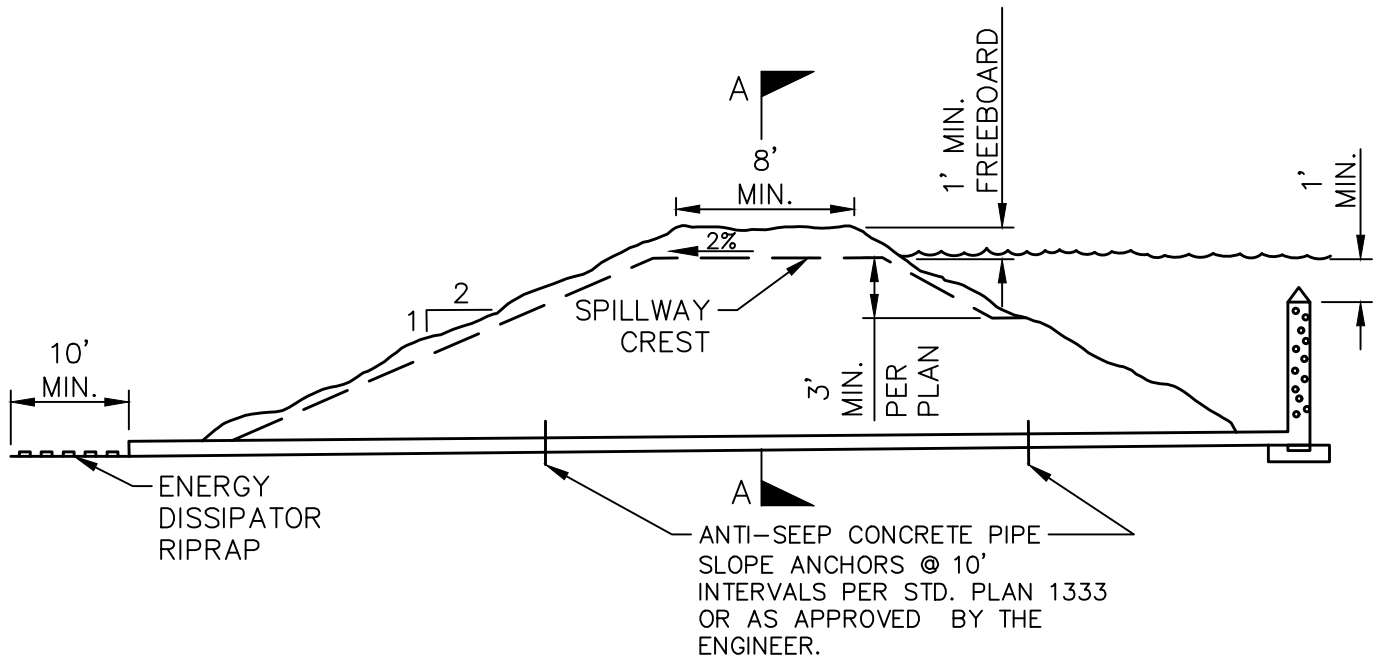
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Khalid Bazmi, County Engineer

STD. PLAN

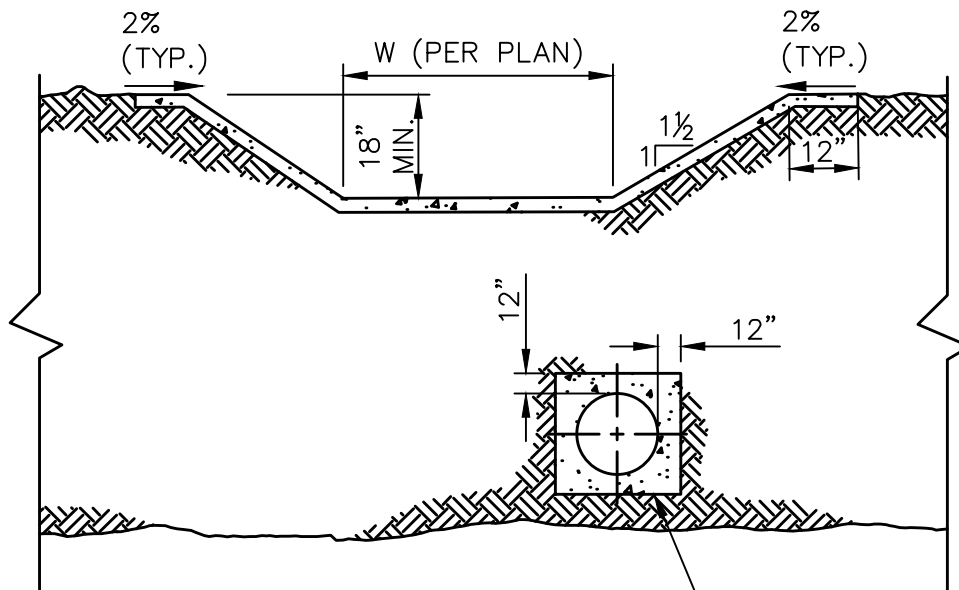
1327

SHT. 2 OF 4

DESILTING BASIN



### SECTION THROUGH EMBANKMENT



### SECTION A-A

ANTI-SEEP CONCRETE PIPE  
SLOPE ANCHORS @ 10'  
INTERVALS PER STD. PLAN  
1333 OR AS APPROVED  
BY THE ENGINEER.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

Revision: August 2018

STD. PLAN

**1327**

**DESILTING BASIN**

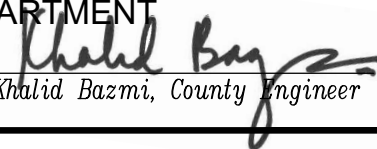
SHT. 3 OF 4

## GENERAL NOTES

1. SIZING AND DESIGN OF THE DESILTING BASIN SHALL BE BASED ON THE METHOD OUTLINED IN SE-2 OF THE CASQA CONSTRUCTION BMP HANDBOOK, LOCATED ON THE CASQA WEB PORTAL, WWW.CASQA.ORG, SEDIMENT CONTROL BMP SE-2.
2. DO NOT LOCATE THE BASIN IN A JURISDICTIONAL STREAM, OR IN A LIVE (RUNNING) STREAMBED.
3. BASIN SITES SHOULD BE LOCATED WHERE FAILURE OF THE STRUCTURE WILL NOT CAUSE LOSS OF LIFE, DAMAGE TO HOMES OR BUILDINGS, OR INTERRUPTION OF USE OR SERVICE OF PUBLIC ROADS OR UTILITIES. THE SIZE MAY BE LIMITED BY AVAILABILITY OF RIGHT-OF-WAY.
4. IF CERTAIN LIMITATIONS OF EMBANKMENT HEIGHT AND STORAGE CAPACITY ARE EXCEEDED. THE DESIGN OF A DESILTING BASIN MAY COME UNDER THE JURISDICTION OF, AND REQUIRE THE APPROVAL OF, THE CALIFORNIA DEPARTMENT OF WATER RESOURCES, DIVISION OF SAFETY OF DAMS (SEE EXHIBIT 1, SHEET 1 OF 4).
5. IT IS RECOMMENDED THAT STORM WATER DESILTING BASINS BE IN PLACE AND OPERATIONAL PRIOR TO THE START OF GENERAL CONSTRUCTION ACTIVITIES AND PRIOR TO THE STORM SEASON (OCTOBER 1ST THROUGH APRIL 15TH).
6. DESILTING BASIN STORM WATER RETENTION TIMES SHOULD NOT EXCEED 72 HOURS. BASIN DESIGN RETENTION TIMES GREATER THAN 72 HOURS SHALL BE TREATED AND MAINTAIN DAILY TO ELIMINATE MOSQUITOES AND OTHER WATER BORNE VECTORS, AND SHALL BE INSPECTED WEEKLY BY THE OCVCD OR AS SO DETERMINED BY OCVCD PERSONNEL.
7. ALL DESILTING BASINS MUST BE DESIGNED BY PROFESSIONAL CIVIL ENGINEER CURRENTLY AUTHORIZED AND LICENSED TO PRACTICE IN THE STATE OF CALIFORNIA.
8. PRIOR TO DESIGN OF BASIN, THE DESIGNER SHALL CONFER WITH THE LOCAL JURISDICTION TO DETERMINE IF ADDITIONAL REQUIREMENTS OR STANDARDS ARE REQUIRED. SOME LOCAL JURISDICTIONS MAY HAVE MORE STRINGENT REQUIREMENTS THAN THOSE INCLUDED HEREIN.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

  
Khalid Bazmi, County Engineer

Revision: August 2018

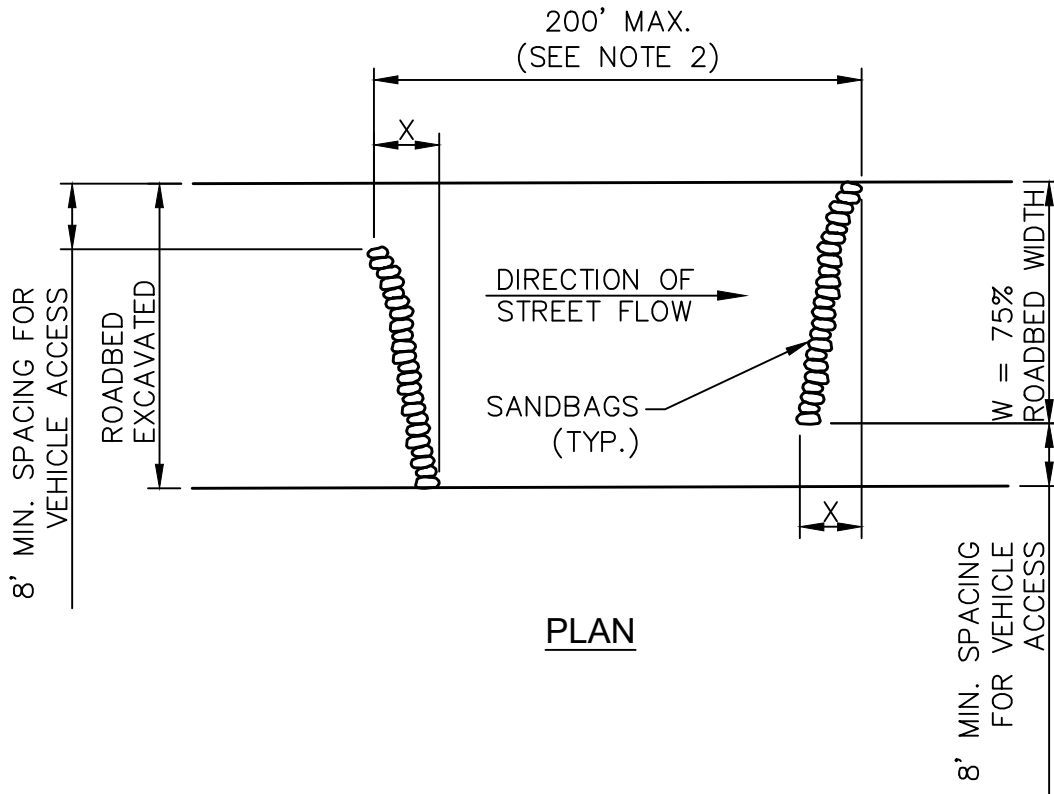
**DESILTING BASIN**

STD. PLAN

**1327**

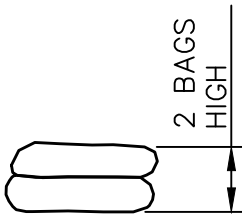
SHT. 4 OF 4



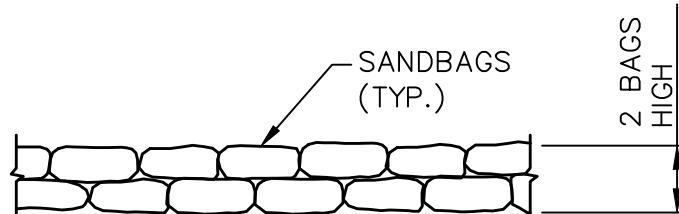


PLAN

W	X
20'–30'	5'
31'–40'	7'
41'–50'	9'
51'–60'	10.5'
61'–70'	12'



TYPICAL SECTION



TYPICAL ELEVATION

NOTES:

1. GRAVEL BAGS ARE ENCOURAGED OVER THE USE OF SANDBAGS AND MAY BE REQUIRED IN AREAS WHICH ARE PARTICULARLY SENSITIVE TO SEDIMENT DEPOSITION.
2. REQUIREMENTS AND SPACING OF VELOCITY REDUCERS FOR STREETS WITH GRADES OF LESS THAN 4 PERCENT SHALL BE AS SHOWN ON THE APPROVED EROSION CONTROL PLAN.
3. THIS STANDARD DETAIL SHALL BE USED AS SHOWN ON THE APPROVED EROSION CONTROL PLAN.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

Revision: August 2018

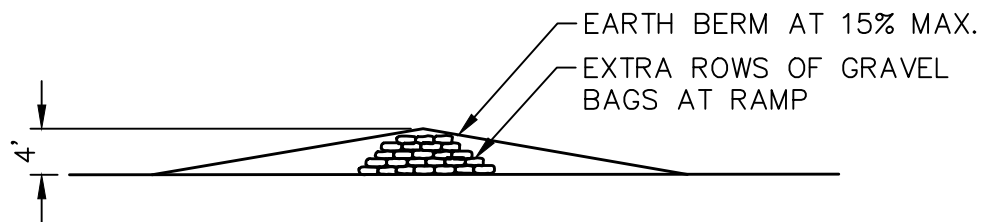
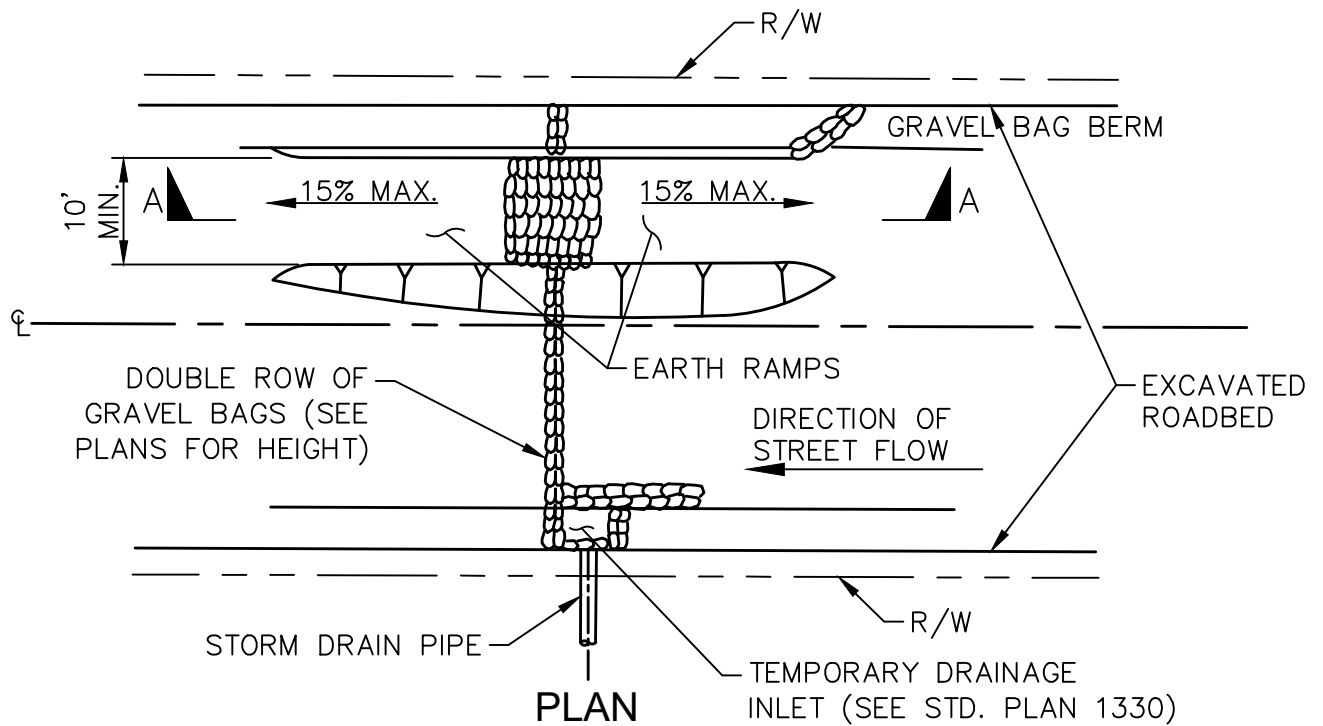
STD. PLAN

1328

SHT. 1 OF 1

SANDBAG VELOCITY REDUCER





SECTION A-A

NOTES:

1. STORAGE CAPACITY SHALL BE IN ACCORDANCE WITH CASQA CONSTRUCTION BMP HANDBOOK & THE DIMENSIONS OF THE STORAGE AREA SHALL BE SHOWN ON THE EROSION CONTROL PLAN.
2. GRAVEL BAGS ARE ENCOURAGED OVER SANDBAGS AND MAY BE REQUIRED IN AREAS WHICH ARE PARTICULARLY SENSITIVE TO SEDIMENT DEPOSITION.
3. THIS STANDARD DETAIL SHALL BE USED AS SHOWN ON THE APPROVED EROSION CONTROL PLAN.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

Revision: August 2018

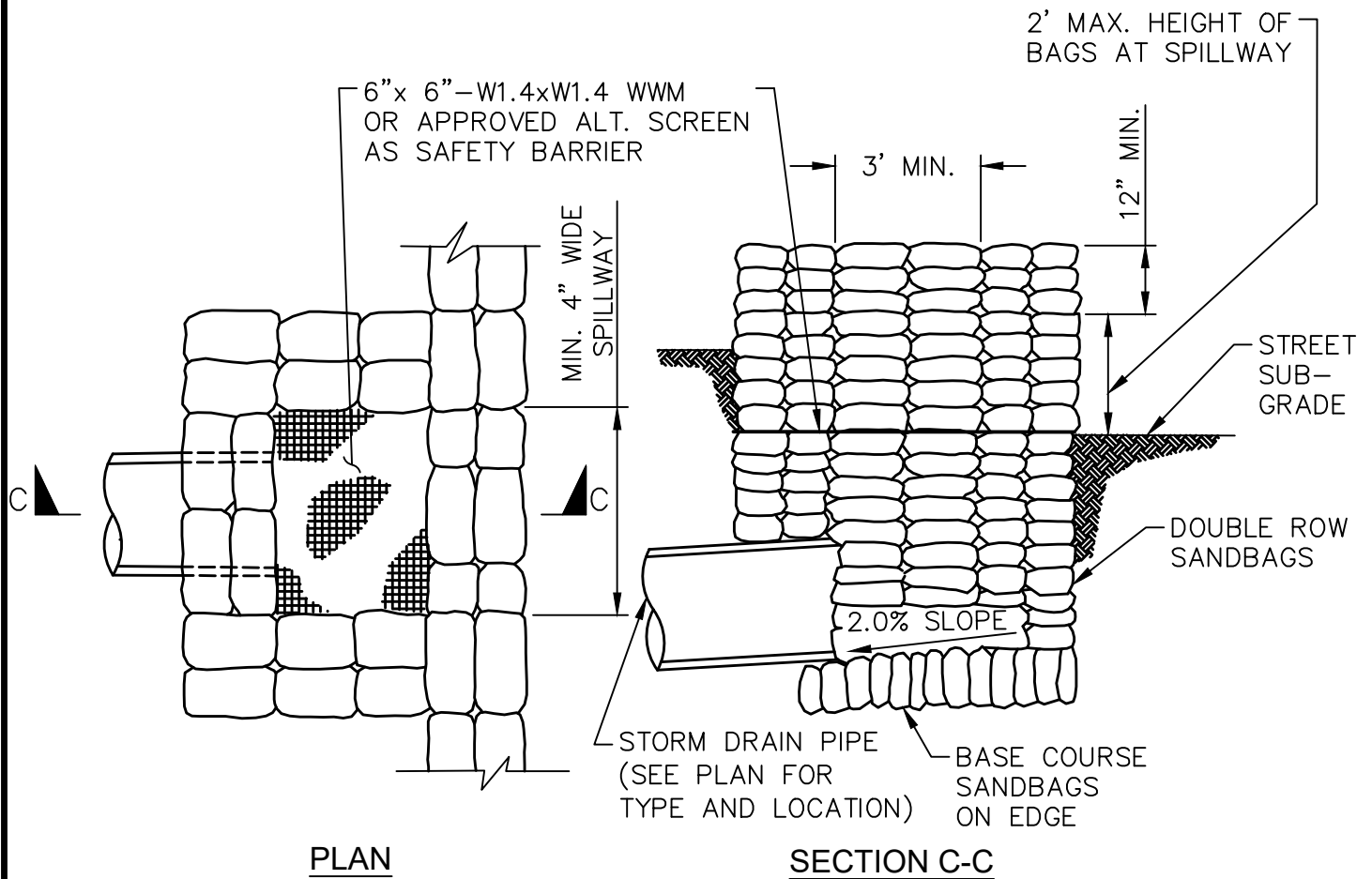
STD. PLAN

1329

SHT. 1 OF 1

STREET DESILTING BASIN-VEHICLE ACCESS RAMP





### NOTES:

1. GRAVEL BAGS ARE ENCOURAGED OVER THE USE OF SANDBAGS AND MAY BE REQUIRED IN AREAS WHICH ARE PARTICULARLY SENSITIVE TO SEDIMENT DEPOSITION.
2. A PORTION OF CATCH BASIN MAY BE CONSTRUCTED IN PLACE OF SANDBAGS.
3. THIS STANDARD DETAIL SHALL BE USED AS SHOWN ON THE APPROVED EROSION CONTROL PLAN.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Revision: August 2018

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

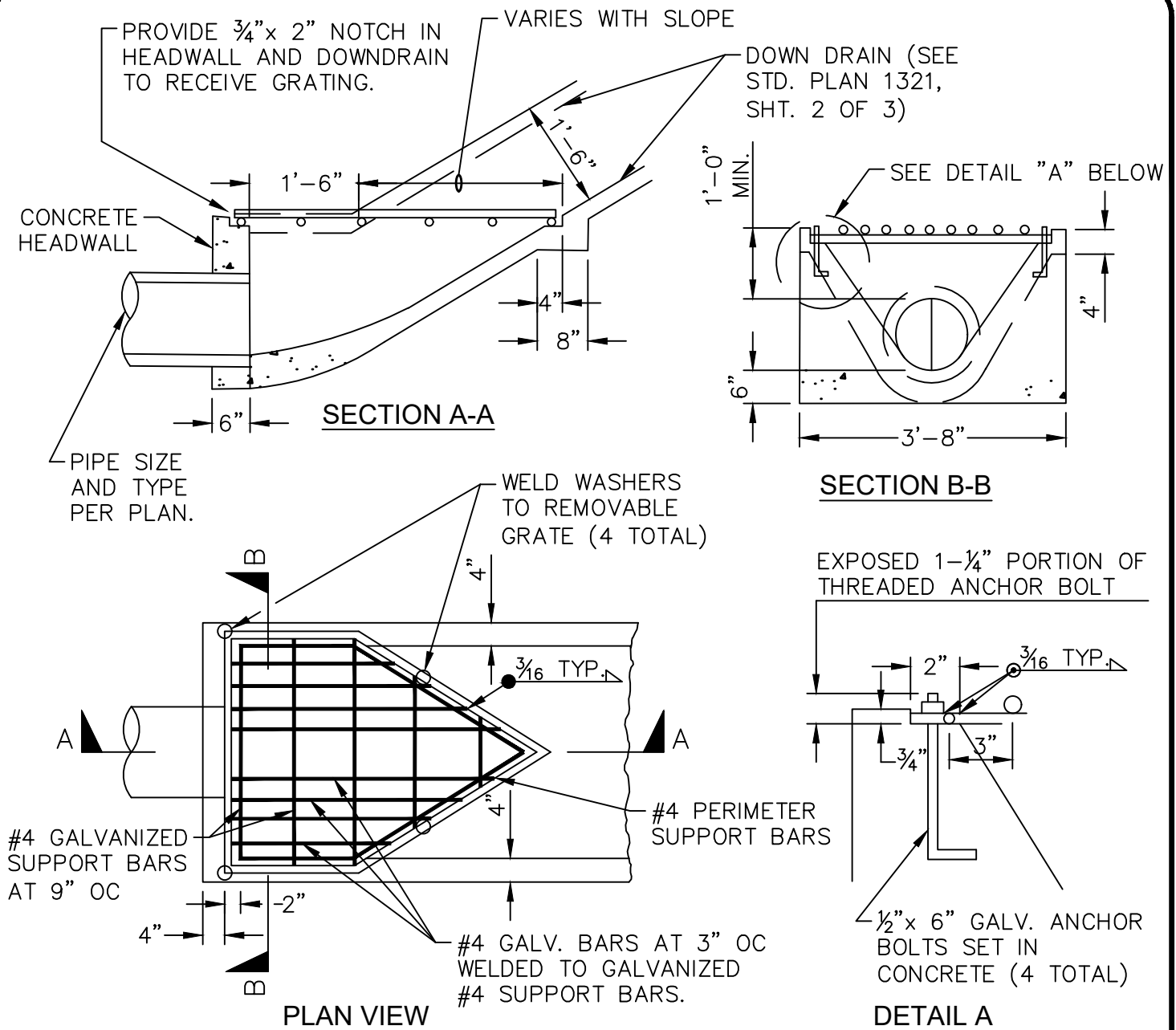
STD. PLAN

1330

SHT. 1 OF 1

TEMPORARY DRAINAGE INLET





#### NOTES:

1. GROUND SHALL BE PRE-WETTED TO THE SATISFACTION OF THE ENGINEER PRIOR TO PLACEMENT OF CONCRETE.
2. REINFORCING SHALL BE 6-INCH X 6-INCH - W 1.4 X W 1.4 WWM OR ENGINEER APPROVED EQUAL. REINFORCEMENT SHALL HAVE A MINIMUM OF 1-INCH CLEAR COVER AND SHALL BE PROPERLY FIXED AND SUPPORTED DURING PLACEMENT OF CONCRETE.
3. GRATE SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

Revision: August 2018

STD. PLAN

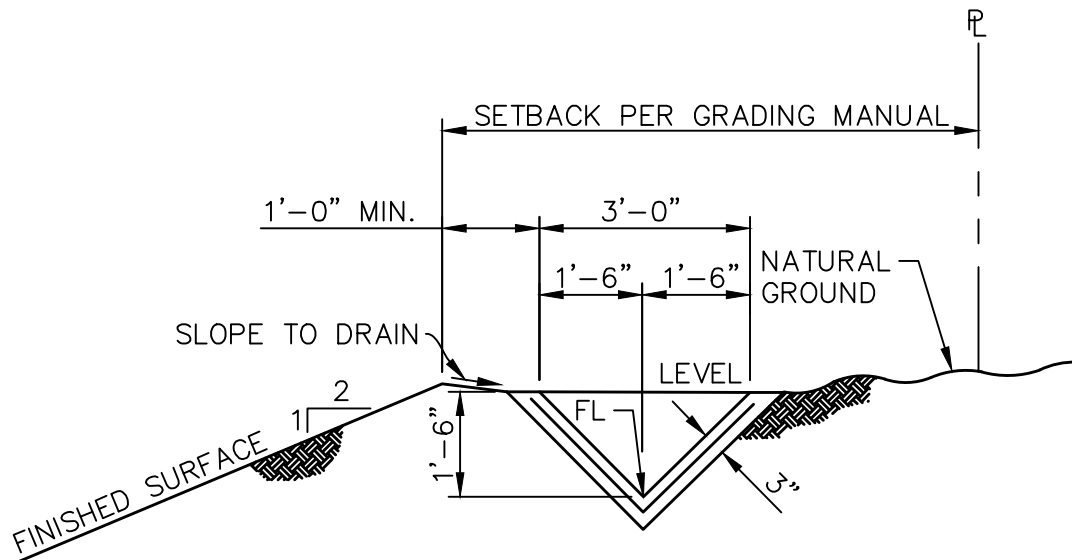
1331

SHT. 1 OF 1

DOWNDRAIN TO PIPE TRANSITION







#### NOTES:

1. CONCRETE SHALL BE TYPE II OR V, CLASS 520-C-2500 OR 520-C-2500P (IF PUMPED) CONFORMING TO THE REQUIREMENTS OF OCPW STANDARD PLAN 1803. AIR-PLACED CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF SECTION 303-2, "AIR-PLACED CONCRETE," AND METHOD OF PLACEMENT SHALL CONFORM TO SECTION 303-2.1.3, "METHOD B (SHOTCRETE)" OF THE GREENBOOK UNLESS OTHERWISE ALLOWED FOR BY THE ENGINEER.
2. REINFORCING SHALL BE 6-INCH X 6-INCH - W 1.4 X W 1.4 WWM OR ENGINEER APPROVED EQUAL. REINFORCEMENT SHALL HAVE A MINIMUM OF 1-INCH CLEAR COVER AND SHALL BE PROPERLY FIXED AND SUPPORTED DURING PLACEMENT OF CONCRETE.
3. GROUND SHALL BE PRE-WETTED TO THE SATISFACTION OF THE ENGINEER PRIOR TO PLACEMENT OF CONCRETE.
4. ANCHORS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD PLAN 1321 (SHEET 2) WHEN SLOPE EQUALS OR EXCEEDS 2:1.

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Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

Revision: August 2018

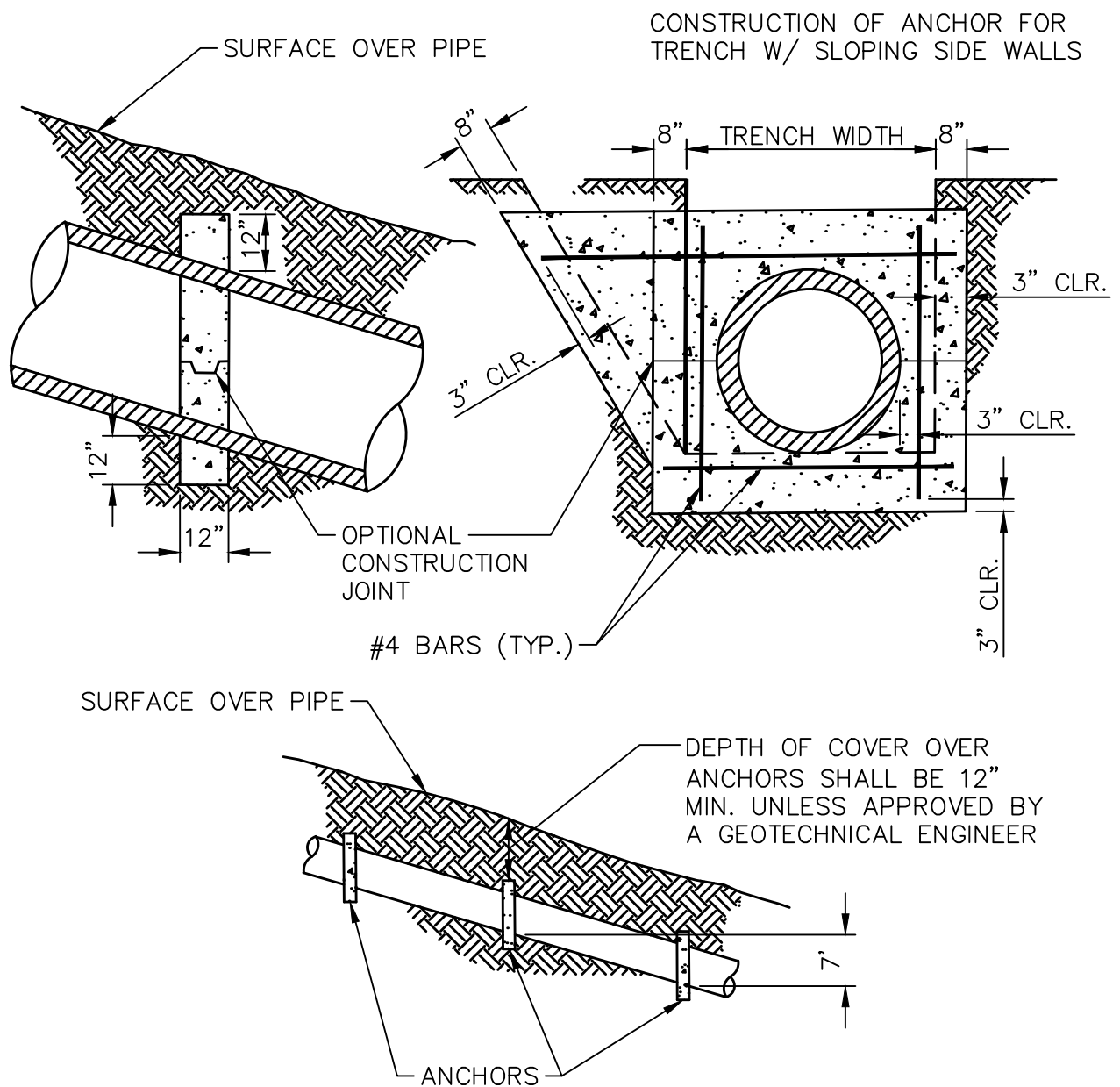
STD. PLAN

1332

SHT. 1 OF 1

INTERCEPTOR DRAIN





**NOTES:**

1. PIPE ANCHORS SHALL BE CONSTRUCTED AT 7 FEET VERTICAL INTERVAL ON ALL SLOPES OF 5:1 OR STEEPER.
2. ALL REINFORCING STEEL SHALL BE #4 BARS.
3. CONCRETE STRENGTH AND TYPE SHALL BE PER STD. PLAN 1803.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Revision: August 2018

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

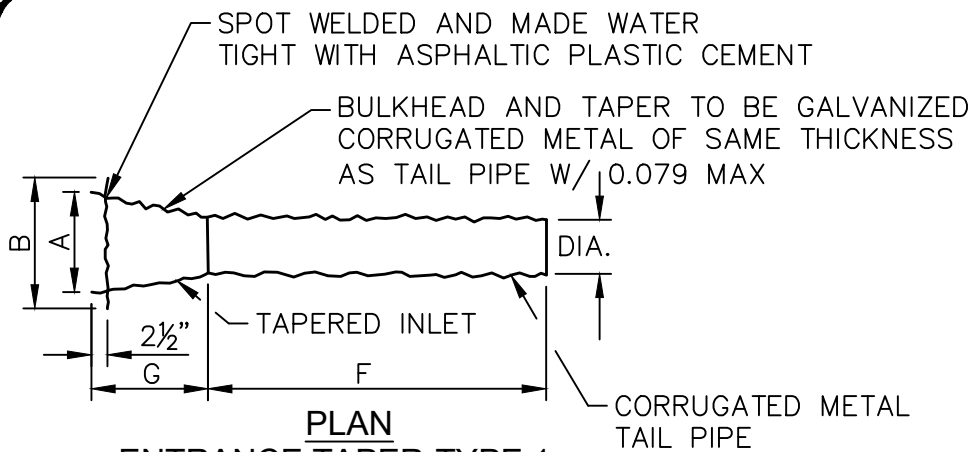
STD. PLAN

**1333**

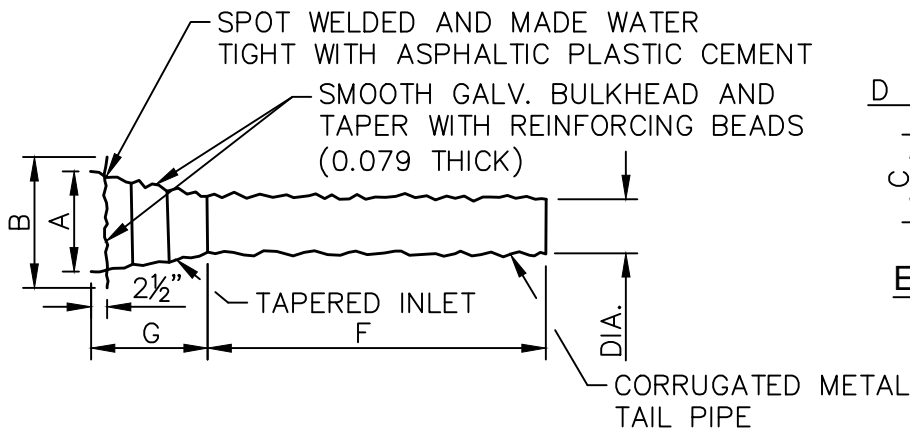
SHT. 1 OF 1

**CONCRETE PIPE SLOPE ANCHOR**

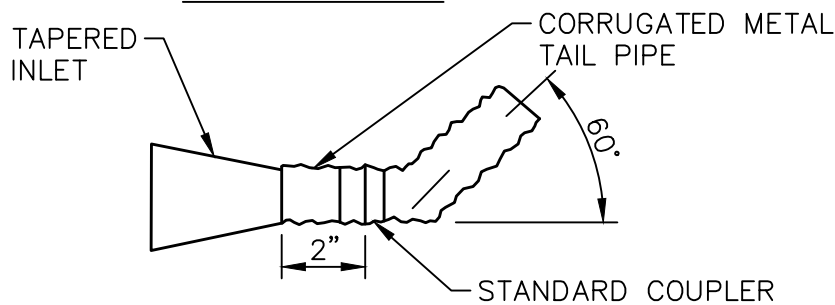




**PLAN**  
**ENTRANCE TAPER-TYPE 1**  
**ALTERNATIVE A**



**PLAN**  
**ENTRANCE TAPER-TYPE 1**  
**ALTERNATIVE B**



**ENTRANCE TAPER-TYPE 2**

**NOTE:**  
TAPERED INLET OF SAME CONSTRUCTION AND DIMENSIONS AS TYPE 1-ALTERNATIVE A OR B

**NOTES:**

TAIL PIPE SHALL BE SAME THICKNESS AS DOWNDRAIN PIPE. TAPER JOINTS MAY BE WELDED OR RIVETED.

DIMENSIONS TO BE AS TABULATED BELOW FOR TYPE 1, ALTERNATIVES A AND B

DIA	A	B	C	D	E	F	G
8"	16"	25 1/2"	15"	4 3/4"	5"	6'	2'
12"	18"	25 1/2"	19"	3 3/4"	5"	6'	2'
15"	21"	30"	23"	4 1/2"	6"	6'	2'
18"	24"	34"	27"	5"	7"	6'	2'
24"	34"	46"	35"	6"	9"	4'	4'

**ENTRANCE TAPER - TYPE 1**  
**ALTERNATIVE A & B**

**GALVANIZED STEEL OVERSIDE DRAIN**

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

Revision: August 2018

STD. PLAN

**1334**

SHT. 1 OF 4

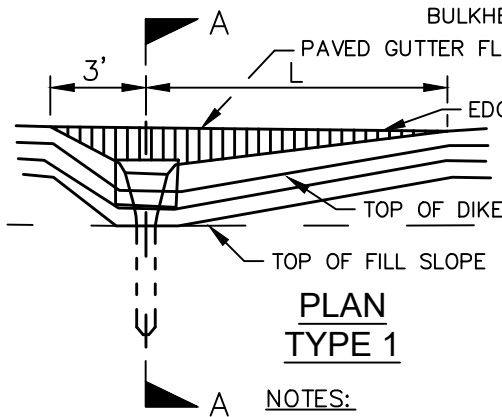
**OVERSIDE DRAINS**

CSP DIMENSIONS AS TABULATED BELOW

DIA.	MIN. L	M	N
8"	10'	18'	8"
12"	15'	20"	12"
15"	25'	24"	15"
18"	30'	30"	16"
24"	40'	36"	18"

P	10"	15"	18"	21"	27"
Q	8"	12"	15"	18"	24"

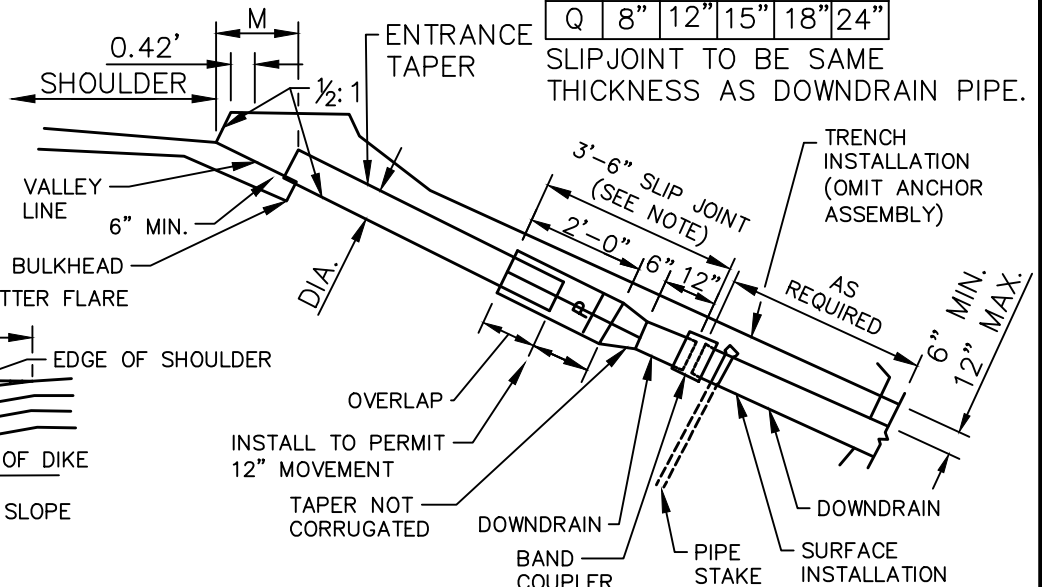
SLIPJOINT TO BE SAME THICKNESS AS DOWNDRAIN PIPE.



**PLAN  
TYPE 1**

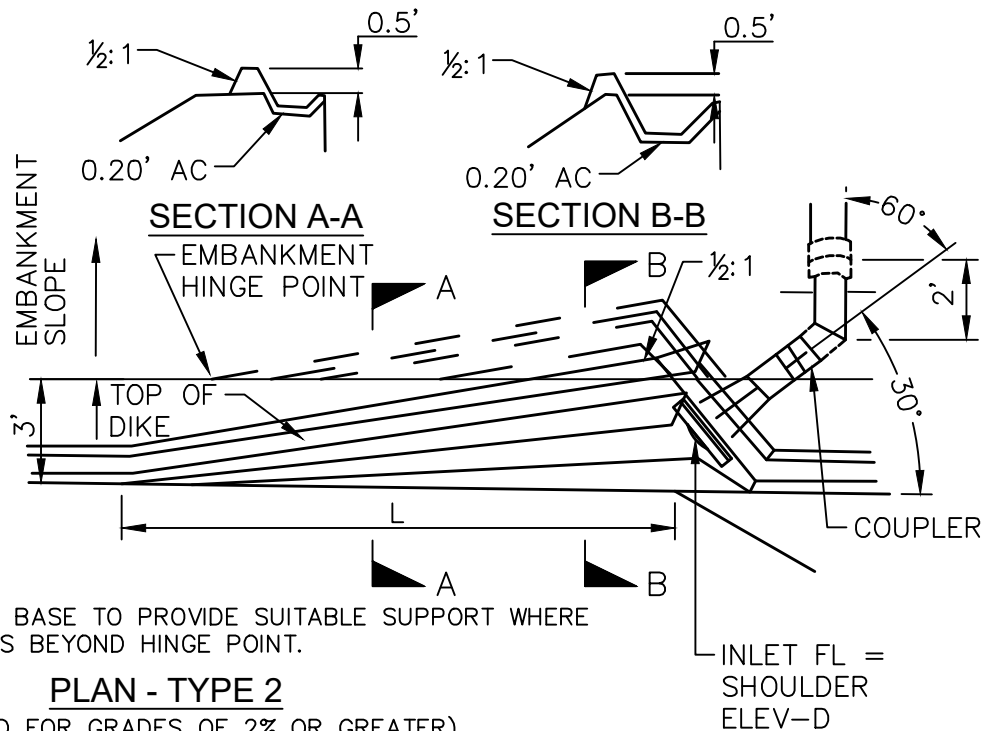
NOTES:

- (1) CABLE, SLIP JOINT OR ANCHOR ASSEMBLY TO BE PLACED WHEN SPECIFIED.
- (2) SLIP JOINT TO BE OMITTED WHEN COMPLETELY BURIED.
- (3) SLIP JOINT FOR TYPE 1 ENTRANCE TAPER SHOWN. TYPE 2 SIMILAR



**SECTION A-A (TYPE 1)**

DIA D	MIN. L
8"	15'
12"	20'
15"	30'
18"	35'
24"	45'



NOTE:

EXTEND DIKE BASE TO PROVIDE SUITABLE SUPPORT WHERE DIKE EXTENDS BEYOND HINGE POINT.

**PLAN - TYPE 2**

(RECOMMENDED FOR GRADES OF 2% OR GREATER)

**GALVANIZED STEEL OVERSIDE DRAIN**

SEE SHEET 3 OF 4 FOR ANCHOR ASSEMBLY

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

*Khalid Bazmi*  
Khalid Bazmi, County Engineer

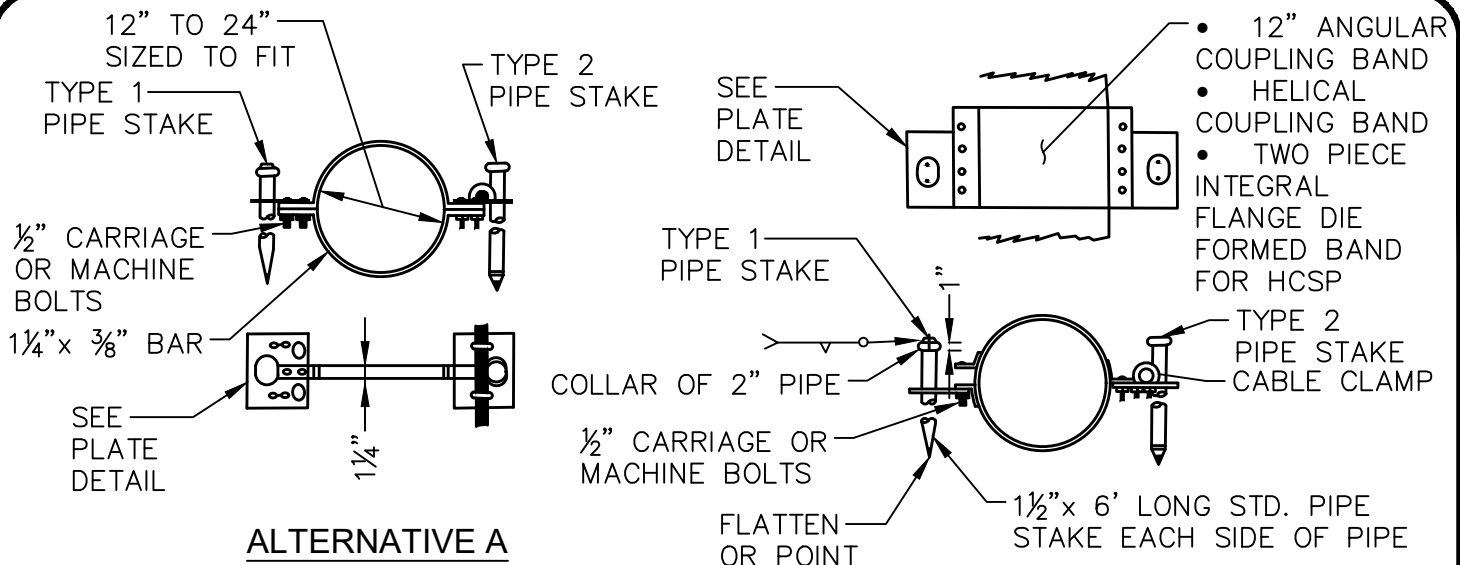
Revision: August 2018

STD. PLAN

**1334**

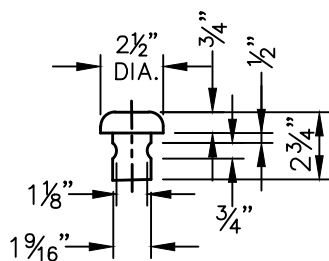
SHT. 2 OF 4

**OVERSIDE DRAINS**

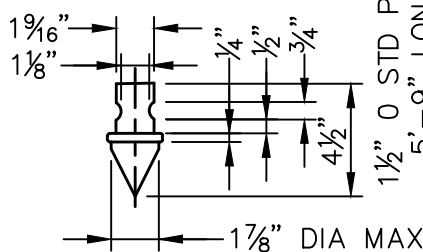


### ANCHOR ASSEMBLY

NOTE:  
CABLE AND CABLE CLAMPS  
TO BE USED WHEN REQUIRED  
BY THE SPECIAL PROVISIONS

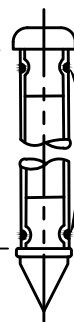


### CI DRIVE PLUG



### CI DRIVE POINT

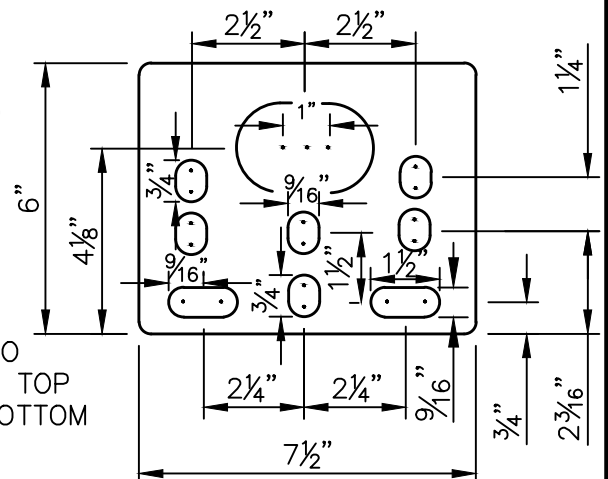
1 1/2" O STD PIPE  
5'-9" LONG



CRIMP PIPE TO  
FASTEN PLUG TOP  
AND POINT BOTTOM

### ASSEMBLY DETAILS PIPE STAKE-TYPE 2

### ALTERNATIVE B



MATERIAL TO BE 1/4" PLATE  
GALVANIZED AFTER FABRICATION

### PLATE DETAIL

### NOTES:

1. FOR PAYMENT PURPOSES, AN ANCHOR ASSEMBLY SHALL INCLUDE TWO PIPE STAKES.
2. ALL PIPE STAKES AND HARDWARE TO BE GALVANIZED AFTER FABRICATION.
3. EITHER ALTERNATIVE A OR ALTERNATIVE B ANCHOR ASSEMBLIES AND TYPE 1 OR TYPE 2 PIPE STAKES MAY BE USED AT CONTRACTOR'S OPTION FOR CMP OR CAP ALTERNATIVE A ANCHOR ASSEMBLY, ONLY TO BE PLACED IN ANNULAR CORRUGATION, MAY BE PLACED ON ANNULAR OR REFORMED END HCSP COUPLING BAND IF SECURELY FASTENED ON DOWNSTREAM SIDE OF JOINT. ALTERNATIVE B ANCHOR ASSEMBLY TO BE FASTENED TO PIPE SECTION AND NOT TO BE A BAND COUPLER USED TO JOIN SECTIONS.

COUNTY OF ORANGE, OC PUBLIC WORKS DEPARTMENT

Approved

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Khalid Bazmi, County Engineer

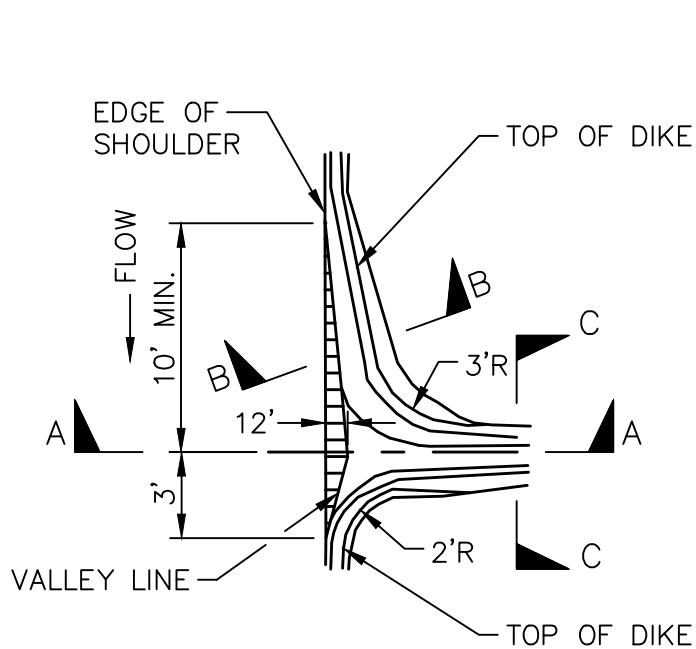
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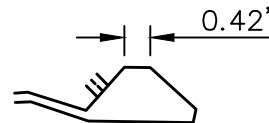
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SHT. 3 OF 4

OVERSIDE DRAINS



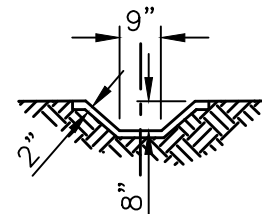
PLAN



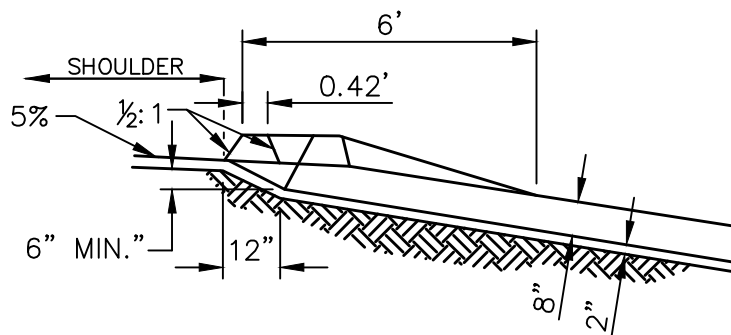
SECTION B-B

NOTE:

CROSS-SECTION OF SLOPE DITCH  
MAY BE SEMICIRCULAR, VEE OR  
TRAPEZOIDAL  
MIN TOP WIDTH = 25"  
MIN DEPTH = 8"



SECTION C-C



SECTION A-A

ASPHALT CONCRETE OVERSIDE DRAINS

TO BE USED ON FILL SLOPES FLATTER THAN 2:1. USE MIN 10' LENGTH  
OF GUTTER ON BOTH SIDES IN A SAG LOCATION

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STD. PLAN

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SHT. 4 OF 4

OVERSIDE DRAINS