

Dimensions		
"S" (%)	"H1" (In.)	"H2" (In.)
1	16.33	16.89
2	16.67	17.78
3	17.00	18.67
4	17.33	19.56
5	17.67	20.45
6	18.00	21.34

All plate and edge armor steel to be ASTM A 36, galvanized after fabrication.

Remove cover plate before constructing concrete barrier.

Cast frames Into Intake top so tops of grates are $\frac{1}{4}$ " below Form Grade Elevation. Bolt intake frames together on both sides with four $\frac{1}{2}$ " x 4" bolts.

For joint details, refer to PV-101.

Maximum Pipe Diameter for 2 Pipes	
at 180° Separation	At 90° Separation
48 inches	36 inches

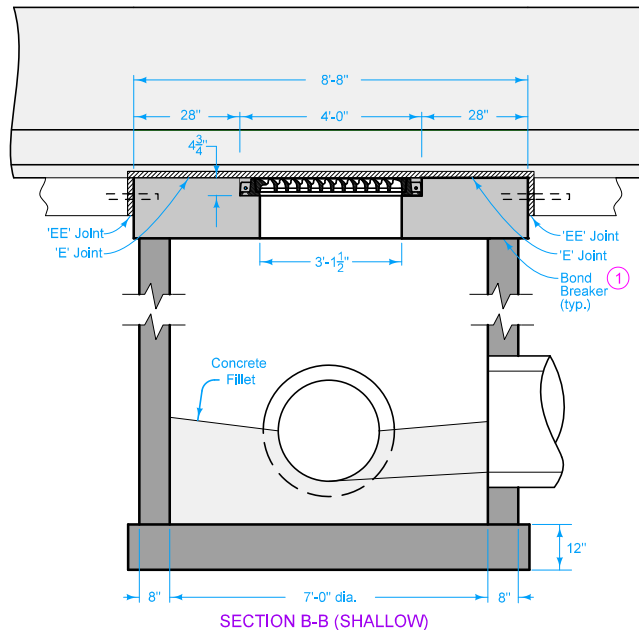
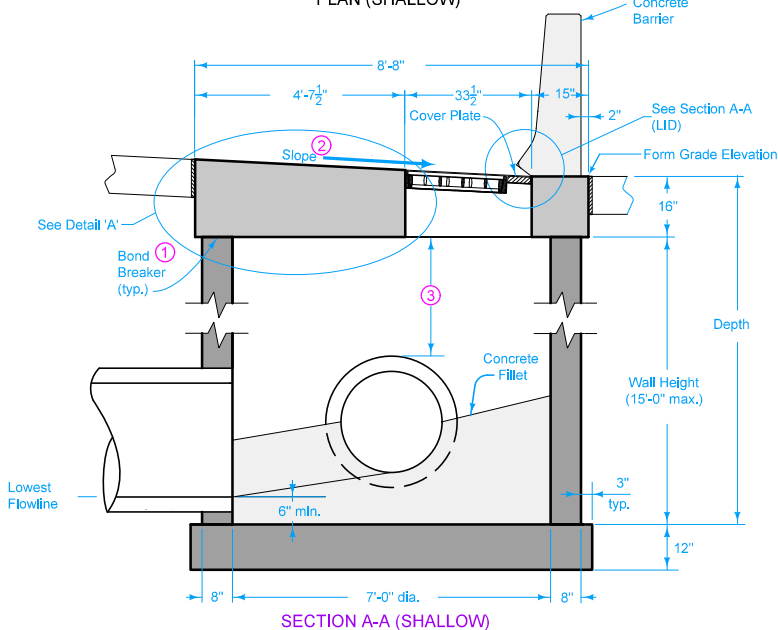
- ① Trowel smooth and place two layers of 30 pound roofing felt to prevent bond.
- ② Match slope of top and grate to adjacent pavement.
- ③ 12 inch minimum above all pipes.

Shallow circular intake
H = 3'-0" to 15'-0"
7' barrel diameter

Deep circular option:
H = 15'-0" to 28'-0"
4' and 7' barrel diameters

Possible Contract Item:
Barrier Intake, SW-548

Possible Tabulation:
104-5B

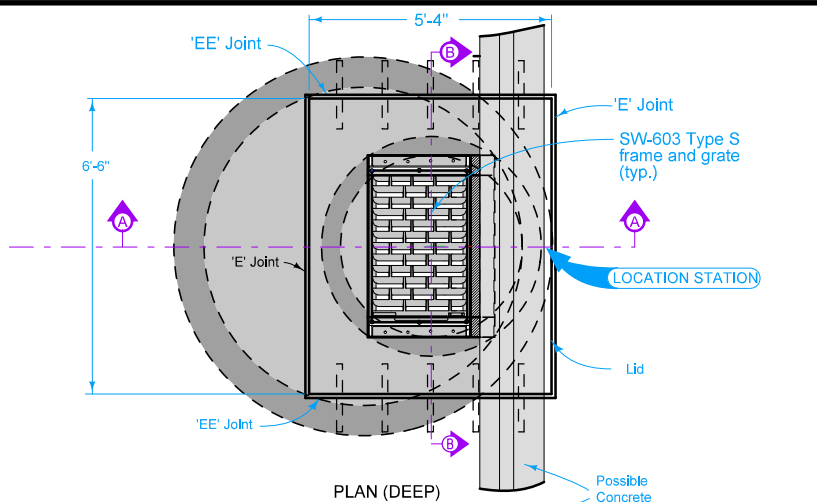


	REVISION	5	04-17-18
	STANDARD ROAD PLAN	SW-548	
	SHEET 1 of 6		

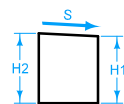
REVISIONS: Changed 'invert' callout to 'Concrete Fillet'. Added table for Maximum Pipe Diameter for 2 Pipes.

APPROVED BY DESIGN METHODS ENGINEER
Brian Smith

**SINGLE-GRATE BARRIER INTAKE,
CIRCULAR**



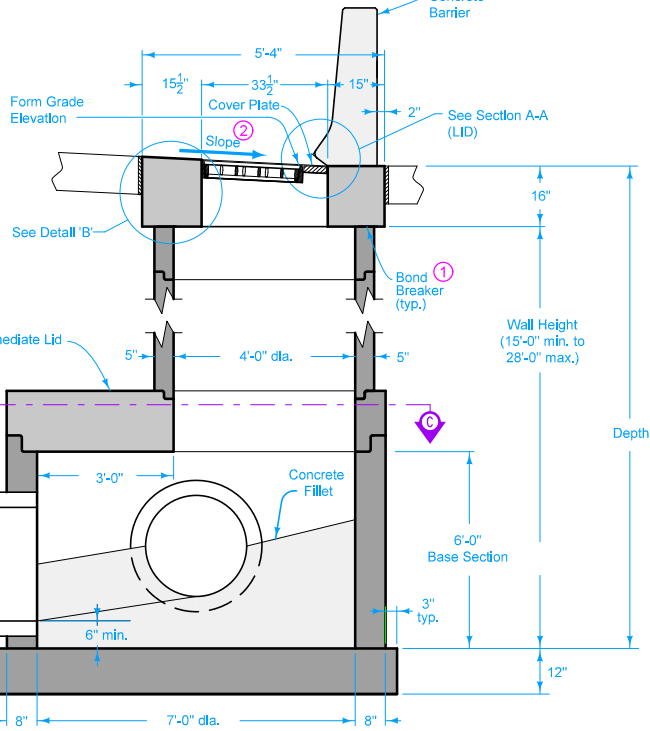
PLAN (DEEP)



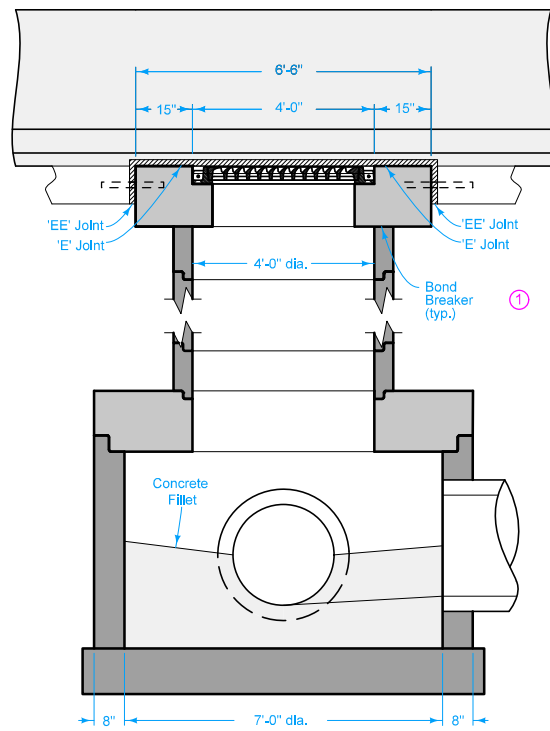
DETAIL 'B'

Dimensions		
"S" (%)	"H1" (In.)	"H2" (In.)
1	16.33	16.59
2	16.67	16.98
3	17.00	17.47
4	17.33	17.96
5	17.67	18.45
6	18.00	18.94

- ① Trowel smooth and place two layers of 30-pound roofing felt to prevent bond.
- ② Match slope of top and grate to adjacent pavement.

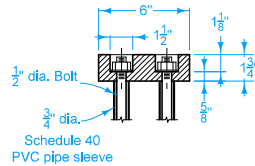
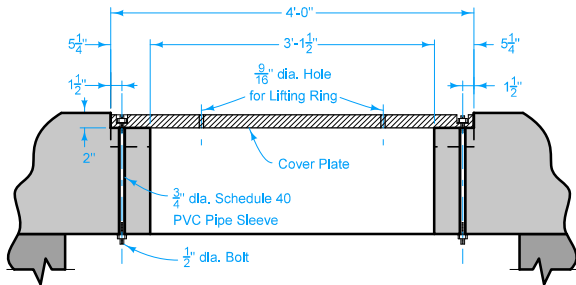
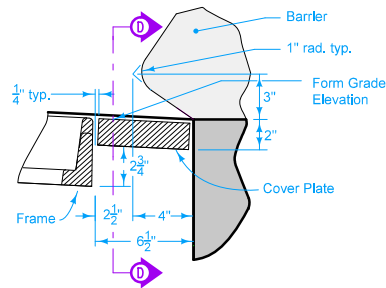
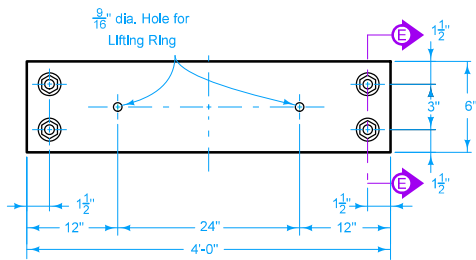


SECTION A-A (DEEP)

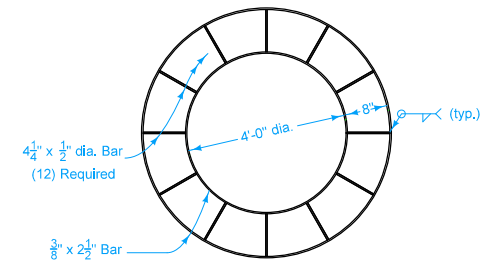
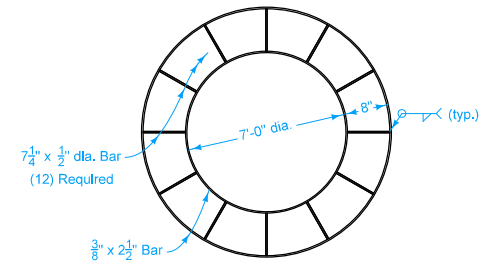
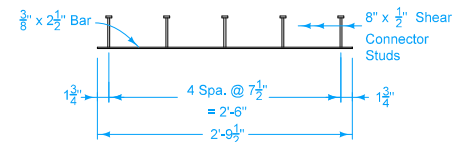


SECTION B-B (DEEP)

 STANDARD ROAD PLAN	REVISION
	5 04-17-18
	SW-548
SHEET 2 of 6	
<small>REVISIONS: Changed 'invert' callout to 'Concrete Fillet'. Added table for Maximum Pipe Diameter for 2 Pipes.</small>	
<i>Brian Smith</i> <small>APPROVED BY DESIGN METHODS ENGINEER</small>	
SINGLE-GRATE BARRIER INTAKE, CIRCULAR	

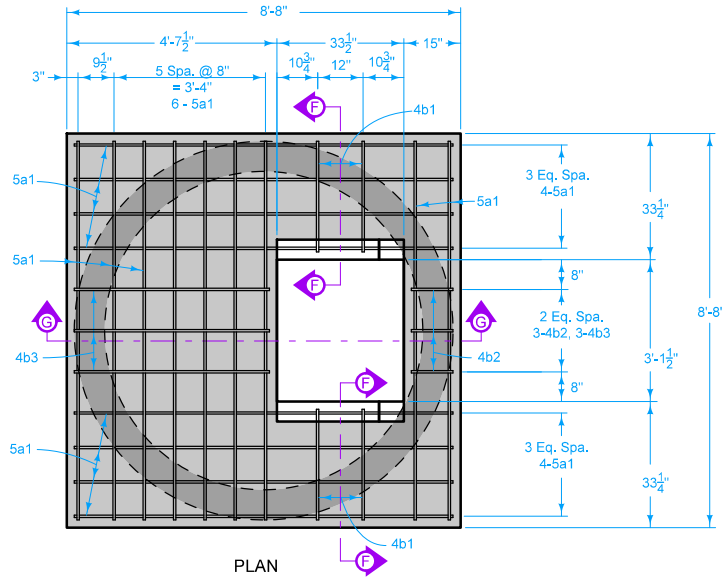


COVER PLATE

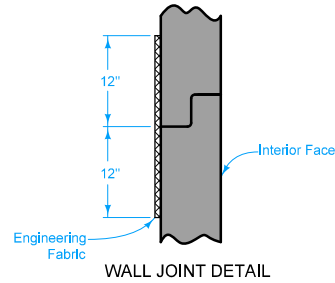


EDGE ARMOR

	REVISION
	5 04-17-18
	STANDARD ROAD PLAN SW-548
SHEET 3 of 6	
<small>REVISIONS: Changed 'invert' callout to 'Concrete Fillet'. Added table for Maximum Pipe Diameter for 2 Pipes.</small>	
<i>Brian Smith</i> <small>APPROVED BY DESIGN METHODS ENGINEER</small>	
SINGLE-GRATE BARRIER INTAKE, CIRCULAR	

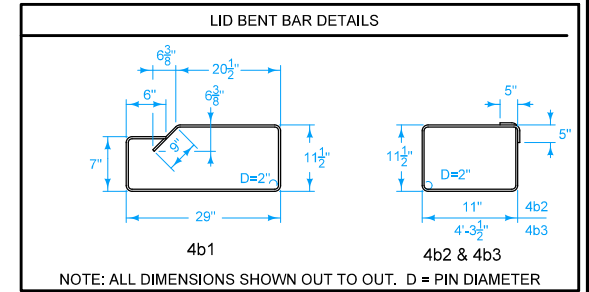


PLAN



WALL JOINT DETAIL

LID REINFORCING BAR LIST					
EPOXY-COATED					
BAR	LOCATION	SHAPE NO.	LENGTH	WEIGHT	
5a1	Lid. Longitudinal & Transverse	—	34	8'-4"	296
4b1	Lid Hoop	□	4	6'-11"	18
4b2	Lid Hoop	□	3	4'-7"	9
4b3	Lid Hoop	□	3	11'-4"	23
EPOXY COATED REINFORCING STEEL - TOTAL				346	

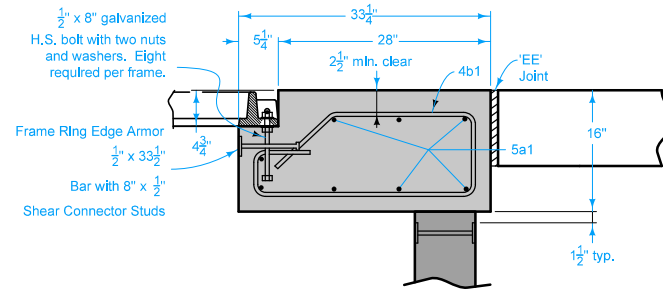


NOTE: ALL DIMENSIONS SHOWN OUT TO OUT. D = PIN DIAMETER

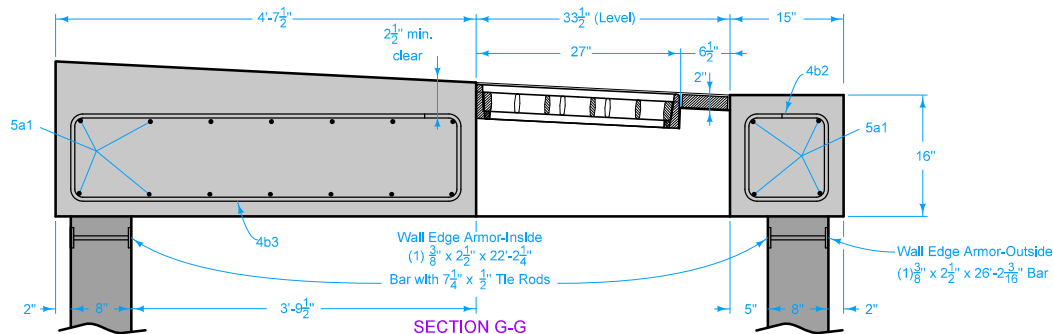
LID QUANTITY SUMMARY (SHALLOW)		
Concrete		3.2 CY*
Epoxy Coated Reinforcing Steel		346 LB

* Based on Minimum thickness = 16"

Maximum Pipe Diameter for Pipes at:	
90° Separation	180° Separation
36	48



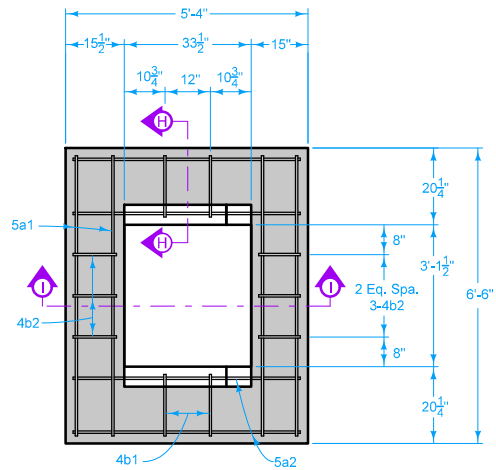
SECTION F-F



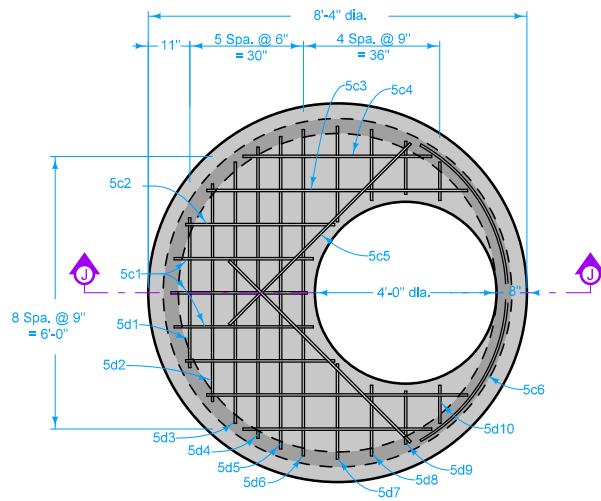
SECTION G-G

LID (SHALLOW)

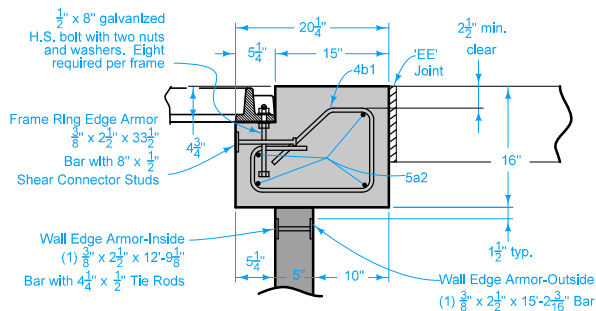
 STANDARD ROAD PLAN	REVISION
	5 04-17-18
	SW-548
SHEET 4 of 6	
<small>REVISIONS: Changed 'invert' callout to 'Concrete Fillet'. Added table for Maximum Pipe Diameter for 2 Pipes.</small>	
 <small>APPROVED BY DESIGN METHODS ENGINEER</small>	
SINGLE-GRATE BARRIER INTAKE, CIRCULAR	



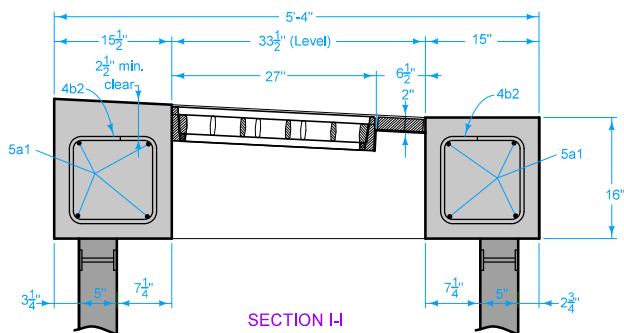
PLAN



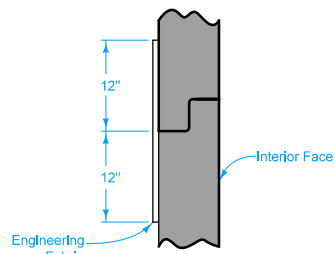
SECTION C-C
INTERMEDIATE LID



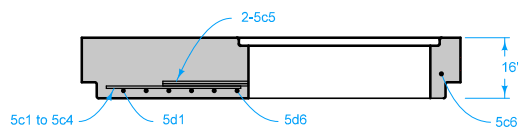
SECTION H-H



SECTION I-I



WALL JOINT DETAIL

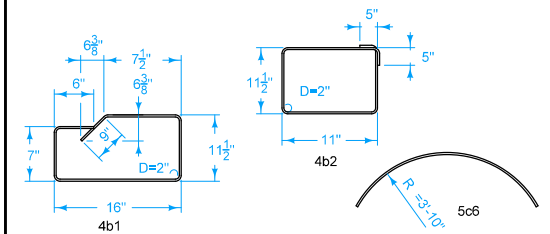


LID (DEEP)

LID REINFORCING BAR LIST

EPOXY-COATED				
BAR	LOCATION	SHAPE	NO.	LENGTH/WEIGHT
5a1	Lid, Longitudinal	—	8	6'-2" 51
5a2	Lid, Transverse	—	8	5'-0" 42
4b1	Lid Hoop	⊔	4	4'-9" 13
4b2	Lid Hoop	⊔	6	4'-7" 18
5c1	Intermediate Lid	—	3	3'-0" 9
5c2	Intermediate Lid	—	2	3'-3" 7
5c3	Intermediate Lid	—	2	5'-9" 12
5c4	Intermediate Lid	—	2	4'-2" 9
5c5	Intermediate Lid	—	2	5'-8" 12
5c6	Intermediate Lid	—	1	8'-2" 9
5d1	Intermediate Lid	—	1	3'-5" 4
5d2	Intermediate Lid	—	1	4'-10" 5
5d3	Intermediate Lid	—	1	5'-9" 6
5d4	Intermediate Lid	—	1	6'-5" 7
5d5	Intermediate Lid	—	1	6'-10" 7
5d6	Intermediate Lid	—	1	7'-2" 7
5d7	Intermediate Lid	—	2	7'-1" 4
5d8	Intermediate Lid	—	2	1'-6" 3
5d9	Intermediate Lid	—	2	1'-2" 2
5d10	Intermediate Lid	—	2	0'-11" 2
EPOXY COATED REINFORCING STEEL - TOTAL				229

LID BENT BAR DETAILS



NOTE: ALL DIMENSIONS SHOWN OUT TO OUT. D=PIN DIAMETER

LID QUANTITY SUMMARY
(DEEP)

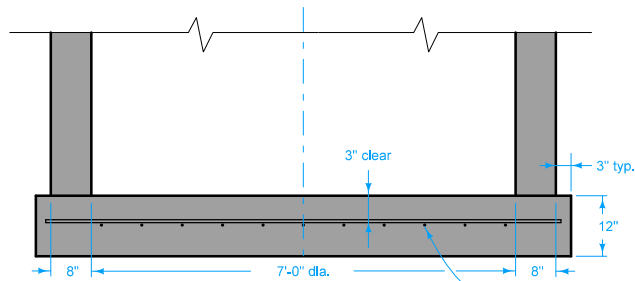
Concrete - Lid	1.2 CY
Concrete - Intermediate Lid	2.1 CY
Epoxy Coated Reinforcing Steel	229 LB

IOWA DOT REVISION 5 04-17-18
STANDARD ROAD PLAN SW-548
 SHEET 5 of 6

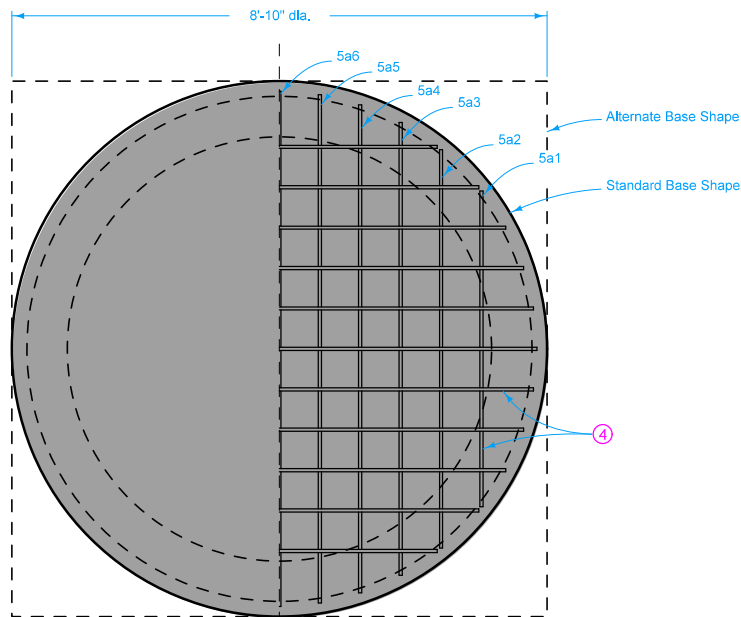
REVISIONS: Changed 'invert' callout to 'Concrete Fillet'. Added table for Maximum Pipe Diameter for 2 Pipes.

Brian Smith
 APPROVED BY DESIGN METHODS ENGINEER

SINGLE-GRATE BARRIER INTAKE,
 CIRCULAR



PROFILE



PLAN

BASE

BASE REINFORCING BAR LIST					
EPOXY-COATED					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5a1	Base Longit. & Transverse	—	4	5'-3"	22
5a2	Base Longit. & Transverse	—	4	6'-7"	27
5a3	Base Longit. & Transverse	—	4	7'-6"	31
5a4	Base Longit. & Transverse	—	4	8'-0"	33
5a5	Base Longit. & Transverse	—	4	8'-4"	35
5a6	Base Longit. & Transverse	—	2	8'-6"	18
EPOXY COATED REINFORCING STEEL - TOTAL					166

BASE QUANTITY SUMMARY		
Concrete		2.3 CY *
Epoxy Coated Reinforcing Steel		166 LB *

* Based on Standard Base Shape

- ④ #5 at 8 Inch centers each direction or equivalent welded wire fabric.
- ⑤ 4el bar length to be pipe diameter plus 12 Inches. Place 4el bar inside of vertical reinforcing. Shift main reinforcing bars as required for pipe entrance. Filled cut bars to maintain 3 inch clearance from bottom. Maintain 2 inch clearance from face of walls. Four 4el bars required per pipe entrance.

	REVISION	5	04-17-18
	STANDARD ROAD PLAN	SW-548	
	SHEET 6 of 6		
<small>REVISIONS: Changed 'Invert' callout to 'Concrete Fillet'. Added table for Maximum Pipe Diameter for 2 Pipes.</small>			
 <small>APPROVED BY DESIGN METHODS ENGINEER</small>			
SINGLE-GRATE BARRIER INTAKE, CIRCULAR			