2016 Design Standards
Drainage Indexes

Drainage Design Office Updates

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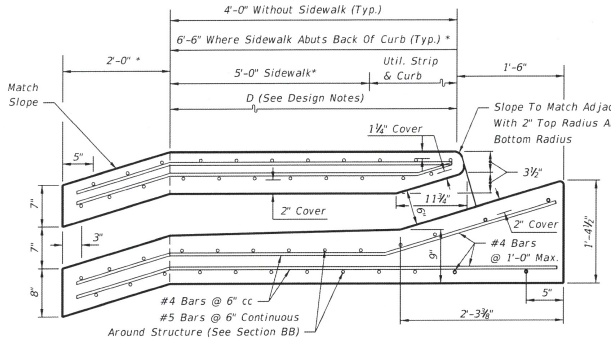
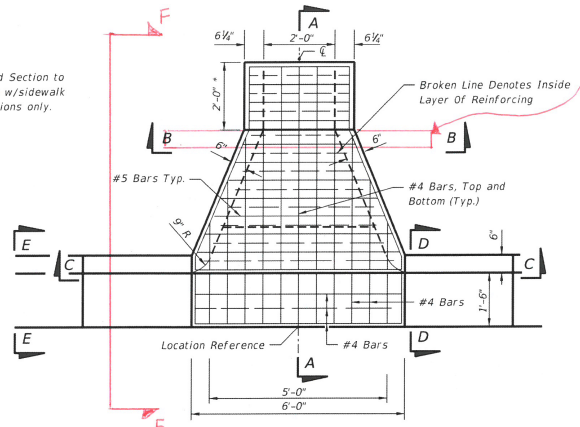


SECTION AA

* Sloped Section to be used w/sidewalk applications only.



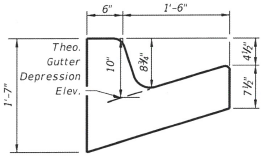
TOP VIEW

Add: TOE WALL
4'-0" x 1'-5" x 6"

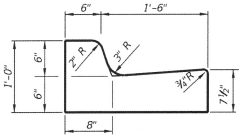
NOTE: Re-Arrange Sheet

GENERAL NOTES

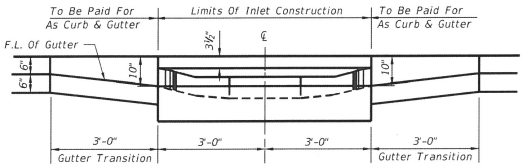
1. The finished grade and slope of the inlet top are to conform with the finished cross slope and grade of the proposed sidewalk and/or border.
2. When inlets are to be constructed on a curve, refer to the plans to determine the radius and, where necessary, modify the inlet details accordingly. Bend steel when necessary.
3. All steel shall have 2" minimum cover unless otherwise shown. Inlets can be either cast-in-place or precast concrete. Chamfer all exposed edges ¾".
4. All reinforcement is ASTM A615/A615M Grade 60 steel, either smooth or deformed. Equivalent area grade 40 steel or 65 ksi welded wire fabric may be substituted.
5. Inlets to be paid for under the contract unit price for Inlets (Closed Flume) EA.



SECTION DD

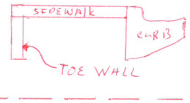


Curb And Gutter Type F
SECTION EE

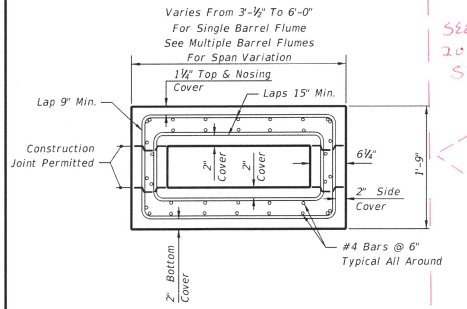


SECTION CC

ADD NEW SECTION FF



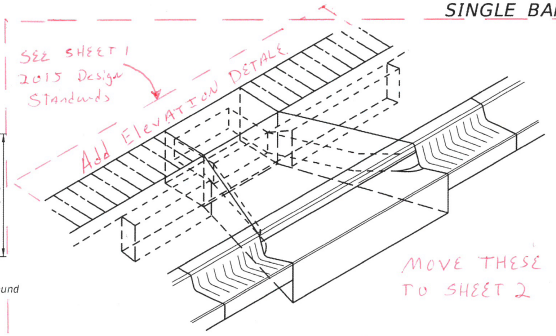
SINGLE BARREL FLUME



SECTION BB

SEE SHEET 1 2015 Design Standards

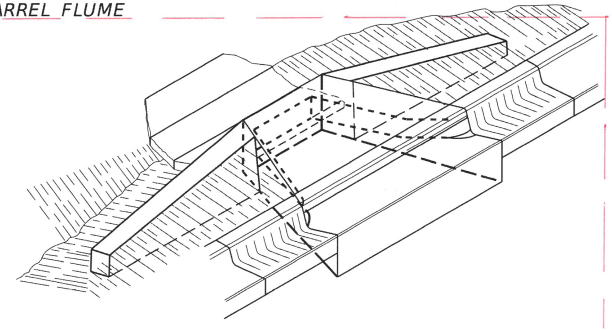
Add ELEVATION DETAIL



MOVE THESE TO SHEET 2

SINGLE BARREL FLUME DEPICTED

FLUME W/SIDEWALK INLET (CLOSED FLUME) TYPE I

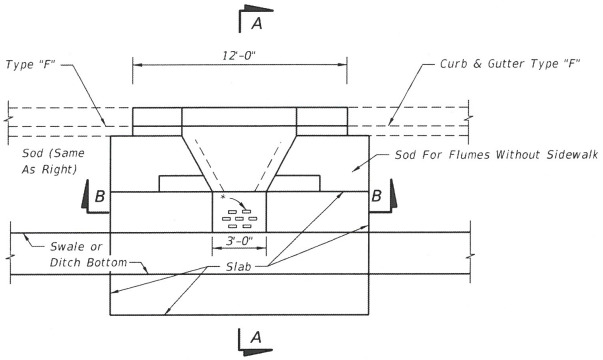


SINGLE BARREL FLUME DEPICTED

FLUME W/O SIDEWALK INLET (CLOSED FLUME) TYPE II

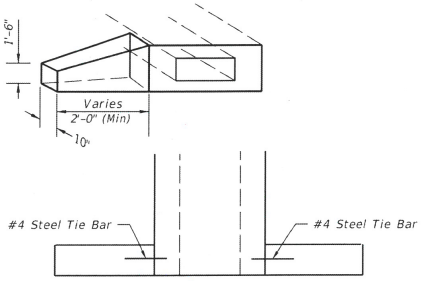
5/27/2014 3:33:34 PM

LAST REVISION 07/01/14	REVISION	DESCRIPTION:	FDOT 2015 DESIGN STANDARDS	CLOSED FLUME INLET	INDEX NO. 216	SHEET NO. 1 of 3

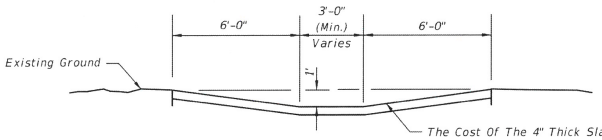


*Bricks to Dissipate Energy When Called For In Plans. Bricks To Be Included In The Cost Of The Inlet.

SINGLE BARREL FLUME DEPICTED
PLAN

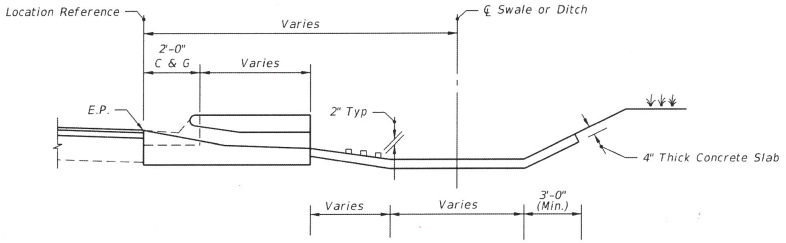


SINGLE BARREL FLUME DEPICTED
ENDWALL



The Cost Of The 4" Thick Slab And The 6"x6" W2.5xW2.5 Min. Welded Wire Reinforcement In The Middle Of Slab To Be Included In The Cost Of The Inlet.

SINGLE BARREL FLUME DEPICTED
SECTION BB



SECTION AA

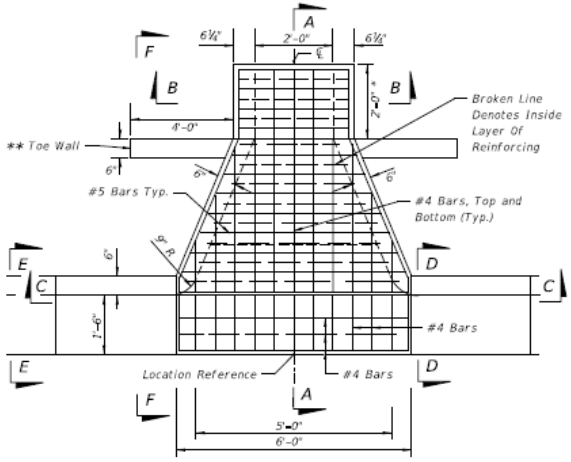
Move up and rearrange sheet.

SLOPES, DITCH APRON AND ENDWALLS

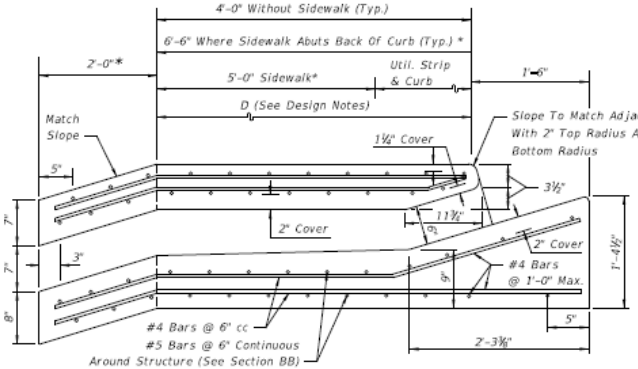
Add DETAILS Form SHEET 1

LAST REVISION	REVISION	DESCRIPTION:	FDOT 2015 DESIGN STANDARDS	CLOSED FLUME INLET	INDEX NO.	SHEET NO.
07/01/14					216	2 of 3

5/27/2014 5:33:34 PM



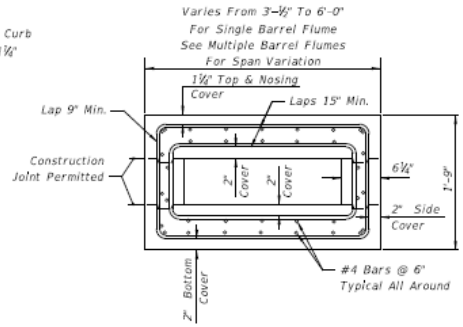
TOP VIEW



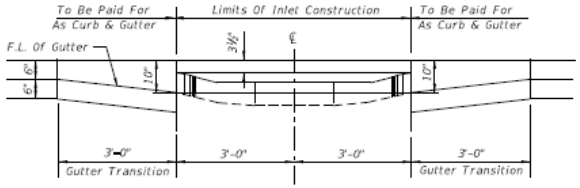
SECTION AA

* Sloped Section to be used w/sidewalk applications only.

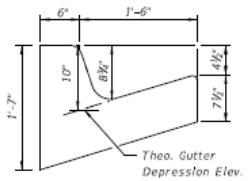
** Toe Walls as depicted to be used with sidewalk application only. For endwall without sidewalk see detail on Sheet 2.



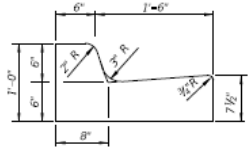
SECTION BB



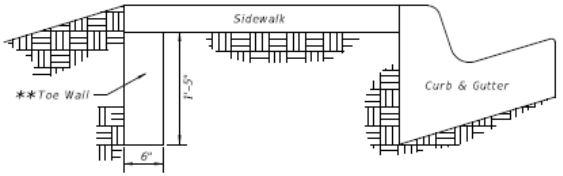
SECTION CC



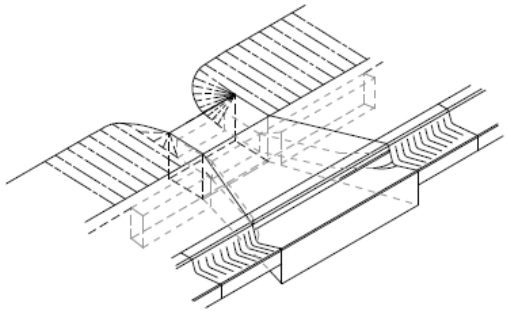
SECTION DD



SECTION EE
(Curb And Gutter Type F)



SECTION FF



FLUME W/SIDEWALK INLET (CLOSED FLUME) TYPE I
SINGLE BARREL FLUME DEPICTED

GENERAL NOTES

1. The finished grade and slope of the inlet top are to conform with the finished cross slope and grade of the proposed sidewalk and/or border.
2. When inlets are to be constructed on a curve, refer to the plans to determine the radius and, where necessary, modify the inlet details accordingly. Bend steel when ecessary.
3. All steel shall have 2" minimum cover unless otherwise shown. Inlets can be either cast-in-place or precast concrete. Chamfer all exposed edges ¾".
4. All reinforcement is ASTM A615/A615M Grade 60 steel, either smooth or deformed. Equivalent area grade 40 steel or 65 ksi welded wire fabric may be substituted.
5. Inlets to be paid for under the contract unit price for Inlets (Closed Flume) EA.

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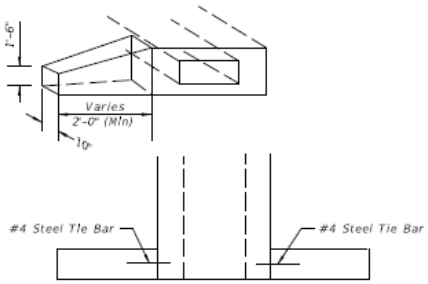
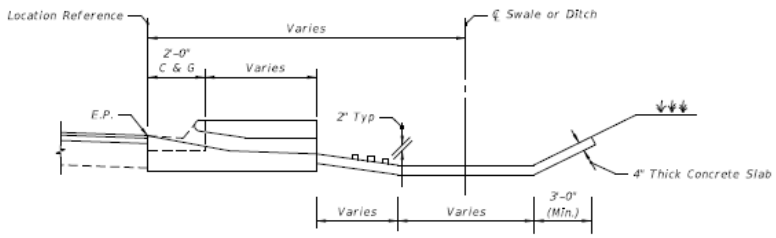
LAST REVISION	REVISION	DESCRIPTION:				
07/01/15			FDOT 2016 DESIGN STANDARDS	CLOSED FLUME INLET	INDEX NO. 216	SHEET NO. 1 of 3

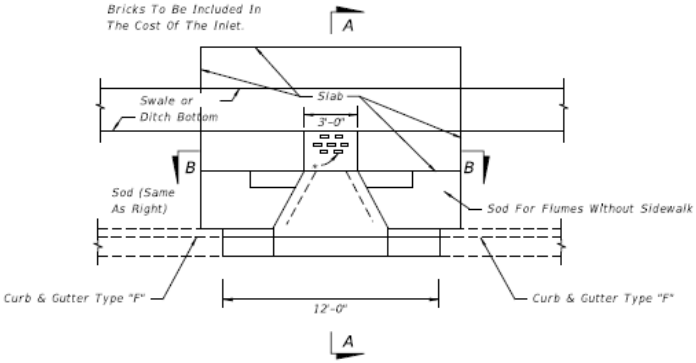


ENDWALL

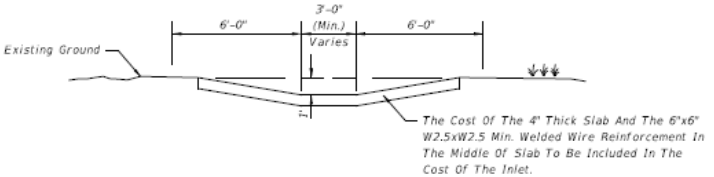


SECTION AA

*Bricks to Dissipate Energy When Called For In Plans. Bricks To Be Included In The Cost Of The Inlet.

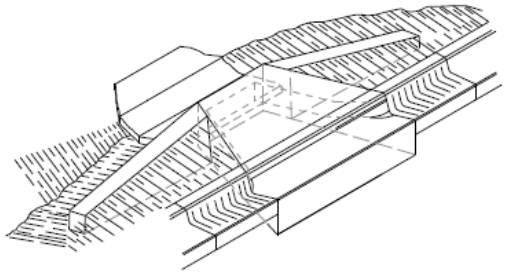


PLAN



The Cost Of The 4" Thick Slab And The 6"x6" W2.5xW2.5 Min. Welded Wire Reinforcement In The Middle Of Slab To Be Included In The Cost Of The Inlet.

SECTION BB

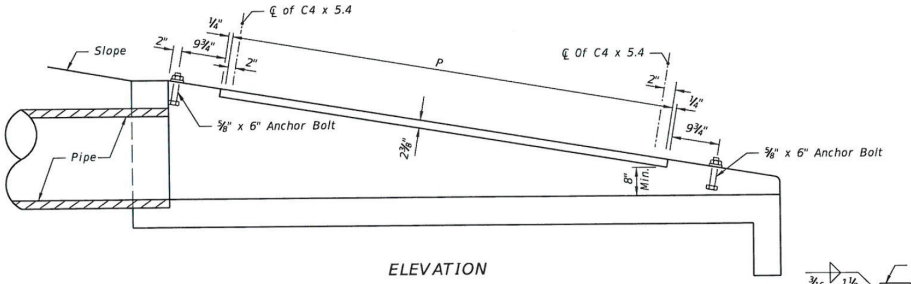


FLUME W/O SIDEWALK INLET (CLOSED FLUME) TYPE II

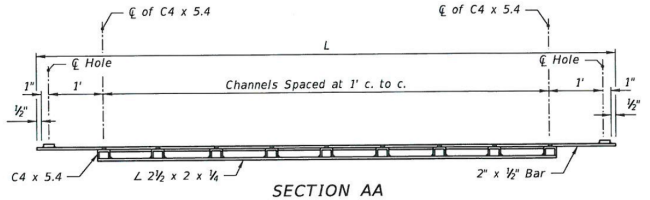
SINGLE BARREL FLUME DEPICTED

6/9/2015 2:[illegible] PM

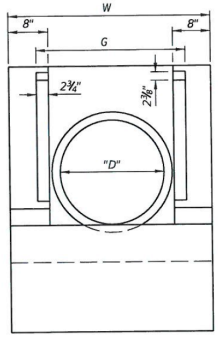
LAST REVISION 07/01/15	REVISION	DESCRIPTION:	FDOT 2016 DESIGN STANDARDS	CLOSED FLUME INLET	INDEX NO. 216	SHEET NO. 2 of 3



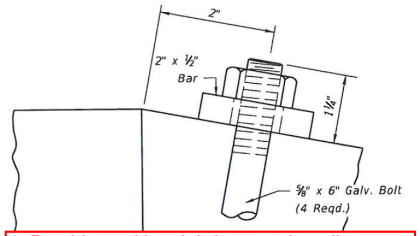
ELEVATION



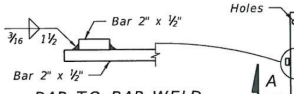
SECTION AA



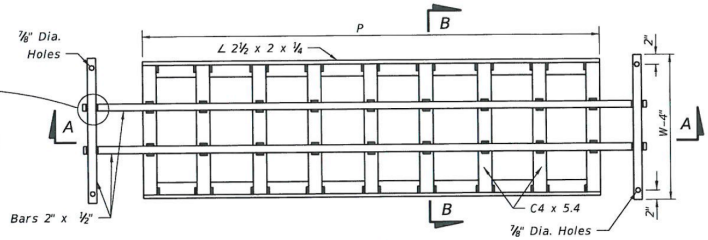
END VIEW



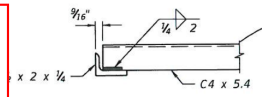
MOUNTING FOR S



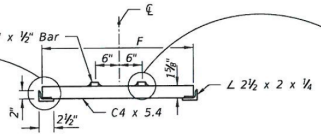
BAR TO BAR WELD



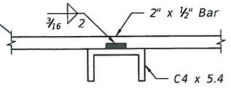
PLAN



CHANNEL TO ANGLE WELD



SECTION BB



BAR TO CHANNEL WELD

1. Provide positive debris control at all upgradient openings. Do not install grates unless one or more of the following conditions exist:
A. Pipe culvert endwalls are located within the designated clear zones.
Re-letter the others.

STEEL GRATE

TABLE OF DIMENSIONS AND QUANTITIES FOR ONE GRATE

Rate Of Slope	Size Pipe D	G	2 Each Bars @ 3.4 lb/ft			(X) Channels @ 5.4 lb/ft			2 Angles @ 3.62 lb/ft		Total Weight (lb)
			L	W-4"	lb	(X)	F	lb	P	lb	
1:6	15"	2' -8½"	9'-3"	3'-3"	85	8	2' -6⅞"	111	7'-4"	53	249
	18"	2' -11½"	10'-3"	3'-6"	94	9	3' -9⅞"	137	8'-4"	62	292
	24"	3' -5½"	13'-3"	4'-0"	117	12	3' -3⅜"	215	11'-4"	82	414
	30"	3' -11½"	16'-3"	4'-6"	141	15	3' -9⅞"	310	14'-4"	104	555
1:4	15"	2' -8½"	6'-3"	3'-3"	65	5	2' -6⅞"	70	4'-4"	32	167
	18"	2' -11½"	7'-3"	3'-6"	73	6	2' -9⅞"	92	5'-4"	39	204
	24"	3' -5½"	9'-3"	4'-0"	90	8	3' -3⅜"	144	7'-4"	53	287
	30"	3' -11½"	11'-3"	4'-6"	107	10	3' -9⅞"	206	9'-4"	68	381
1:3	15"	2' -8½"	4'-3"	3'-3"	51	3	2' -6⅞"	42	2'-4"	17	110
	18"	2' -11½"	5'-3"	3'-6"	60	4	2' -9⅞"	61	3'-4"	24	145
	24"	3' -5½"	6'-3"	4'-0"	70	5	3' -3⅜"	90	4'-4"	31	191
	30"	3' -11½"	8'-3"	4'-6"	87	7	3' -9⅞"	145	6'-4"	46	278

2'-9 7/8"

STEEL GRATING USE CRITERIA

1. Grates to be used on pipe culvert endwalls located within the designated clear zone. Positive debris control shall be provided at all upgradient openings. Grates shall not be used unless one or more of the following conditions exist:

   A. Drainage area to culvert consists of median or infield areas or areas where debris and/or drift is negligible.
   B. Runoff to culvert is by sheet flow or in such ill defined channels that debris transport is not considered a major problem.
   C. Runoff to culvert is minor except on an infrequent basis (10 to 15 year frequency); for example a drainage basin in flat sandy terrain with normally low ground water table.
   D. Areas where culvert blockage with resultant backwater would not seriously affect roadway embankment, traffic operation or upland property.

2. Steel grating to be used only where called for in plans.

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6/24/2013 8:54:41 PM

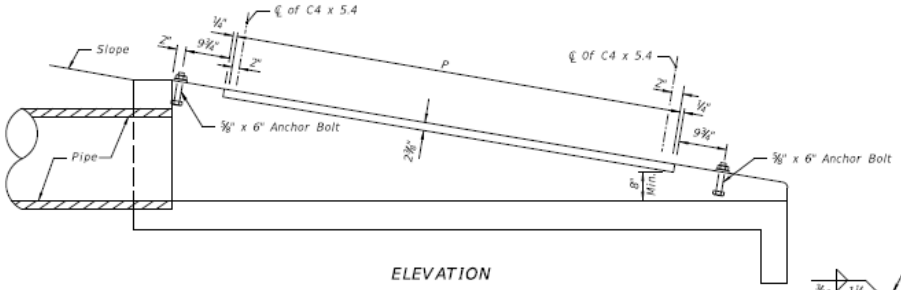
LAST REVISION 07/01/00	REVISION	DESCRIPTION:

FDOT 2014 DESIGN STANDARDS

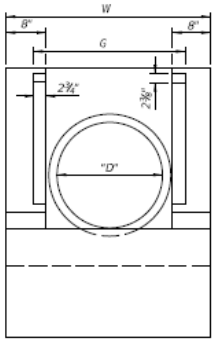
U-TYPE CONCRETE ENDWALLS BAFFLES & GRATE OPTIONAL 15" TO 30" PIPE

INDEX NO. 261

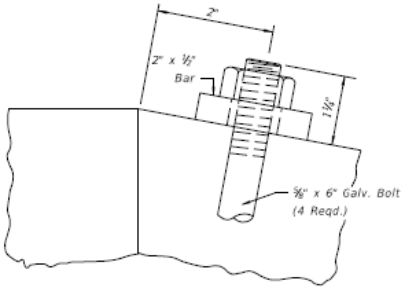
SHEET NO. 3 of 3



ELEVATION

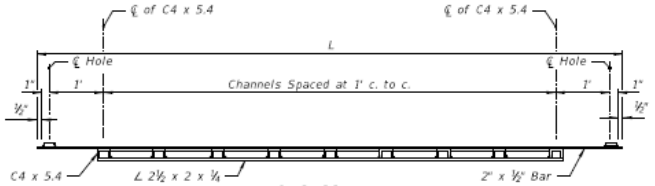


END VIEW

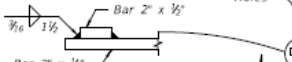


ANCHOR BOLT DETAIL

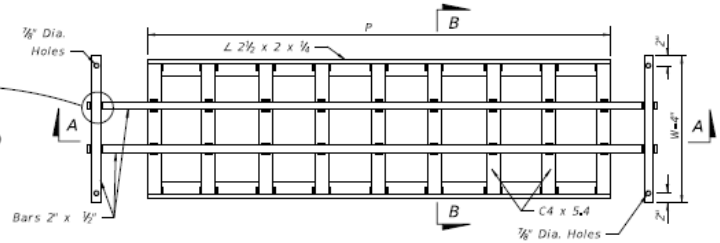
MOUNTING FOR STEEL GRATE



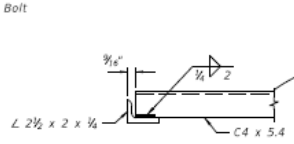
SECTION AA



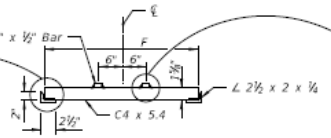
BAR TO BAR WELD



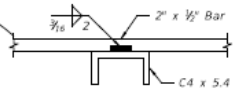
PLAN



CHANNEL TO ANGLE WELD



SECTION BB



BAR TO CHANNEL WELD

STEEL GRATE

STEEL GRATING USE CRITERIA

1. Provide positive debris control at all upgradient openings. Do not install grates unless one or more of the following conditions exist:

   A. Pipe culvert endwalls are located within the designated clear zone.

   B. Drainage area to culvert consists of median or infield areas or areas where debris and/or drift is negligible.

   C. Runoff to culvert is by sheet flow or in such ill defined channels that debris transport is not considered a major problem.

   D. Runoff to culvert is minor except on an infrequent basis (10 to 15 year frequency); for example a drainage basin in flat sandy terrain with normally low ground water table.

   E. Areas where culvert blockage with resultant backwater would not seriously affect roadway embankment, traffic operation or upland property.

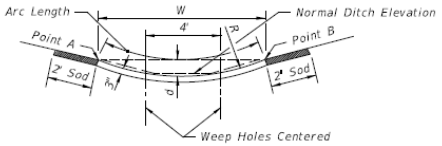
2. Steel grating to be used only where called for in plans.

TABLE OF DIMENSIONS AND QUANTITIES FOR ONE GRATE

Rate Of Slope	Size Pipe D	G	2 Each Bars @ 3.4 lb/ft			(X) Channels @ 5.4 lb/ft			2 Angles @ 3.62 lb/ft		Total Weight (lb)
			L	W-4"	lb	(X)	F	lb	P	lb	
1:6	15"	2' -8½"	9'-3"	3'-3"	85	8	2' -6⅛"	111	7'-4"	53	249
	18"	2' -11½"	10'-3"	3'-6"	94	9	2' -9⅛"	137	8'-4"	62	292
	24"	3' -5½"	13'-3"	4'-0"	117	12	3' -3⅛"	215	11'-4"	82	414
	30"	3' -11½"	16'-3"	4'-6"	141	15	3' -9⅛"	310	14'-4"	104	555
1:4	15"	2' -8½"	6'-3"	3'-3"	65	5	2' -6⅛"	70	4'-4"	32	167
	18"	2' -11½"	7'-3"	3'-6"	73	6	2' -9⅛"	92	5'-4"	39	204
	24"	3' -5½"	9'-3"	4'-0"	90	8	3' -3⅛"	144	7'-4"	53	287
	30"	3' -11½"	11'-3"	4'-6"	107	10	3' -9⅛"	206	9'-4"	68	381
1:3	15"	2' -8½"	4'-3"	3'-3"	51	3	2' -6⅛"	42	2'-4"	17	110
	18"	2' -11½"	5'-3"	3'-6"	60	4	2' -9⅛"	61	3'-4"	24	145
	24"	3' -5½"	6'-3"	4'-0"	70	5	3' -3⅛"	90	4'-4"	31	191
	30"	3' -11½"	8'-3"	4'-6"	87	7	3' -9⅛"	145	6'-4"	46	278

LAST REVISION	REVISION	DESCRIPTION:				
07/01/15			FDOT 2016 DESIGN STANDARDS	U-TYPE CONCRETE ENDWALLS BAFFLES & GRATE OPTIONAL 15" TO 30" PIPE	INDEX NO. 261	SHEET NO. 3 of 3

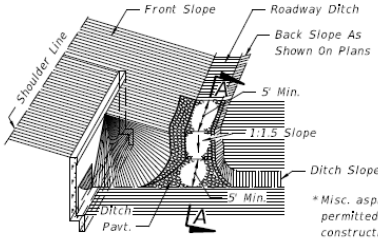
6/9/2015 2:25:13 PM



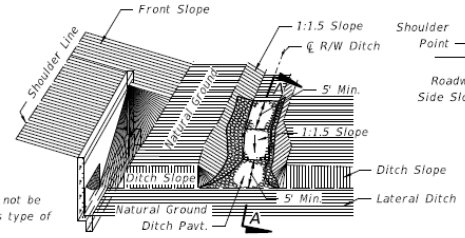
TO REPLACE:	W	d	R	Rows Of Weep Holes	Arc Length
6' Median Swale	6'	0.24'	19'	0	6.0'
1:6 Front Slopes; 1:4 Back Slope					
5' BW Ditch	10'	0.67'	19'	2	10.1'
4' BW Ditch	9'	0.54'	19'	2	9.1'
1:4 Front Slopes & Back Slope					
5' BW Ditch	9'	0.74'	14'	2	9.2'
4' BW Ditch	8'	0.58'	14'	1 (in center)	8.1'

For use only where side slopes are 1:4 or flatter. Point "A" and "B" are to be the same elevation and should be used to locate the paved section.

ALTERNATE DITCH PAVEMENT

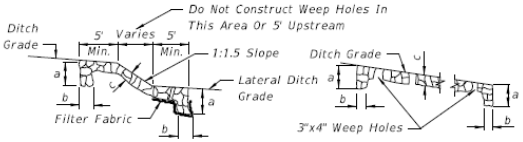


JUNCTION OF ROADWAY DITCH* AND LATERAL DITCH

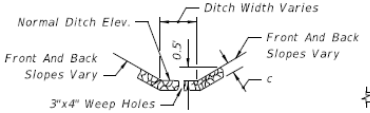


JUNCTION OF R/W DITCH* AND LATERAL DITCH

*Misc. asphalt will not be permitted for this type of construction.



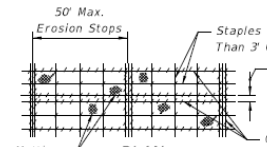
SECTION AA



TYPICAL SECTION

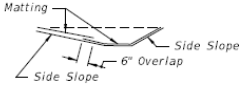
PROFILE OF DITCH PAVEMENT AT LOCATIONS OTHER THAN JUNCTION WITH LATERAL DITCH

DITCH PAVEMENT								
Pavement Type	Dimensions			Payment Unit	Basis Of Estimate	Filter Fabric Type	Velocity Range	References & Remarks
	a	b	c					
Concrete	24"	6"	3"	SY	SY	D-6	Low-High	Section 524 of the Standard Specifications.
Miscellaneous Asphalt	24"	12"	4"	TN	0.2 TN/SY	None	Low-Moderate	Section 339.
Riprap (Sand-Cement)	24"	12"	4"	CY	0.11 CY/SY	D-4	Low-Moderate	Section 530. Grouting of joints required.
Riprap (Ditch Lining)				TN	TN	D-2	Moderate-High	Section 530.



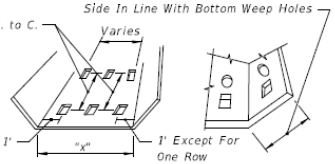
PLAN

LONGITUDINAL SECTION



SECTION

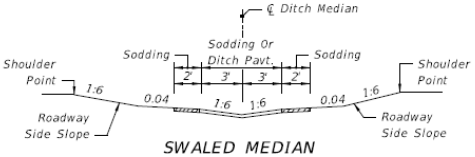
MATTING FOR DITCH



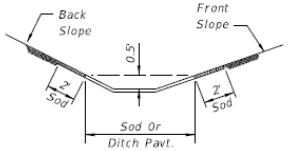
When "x"= 1' To 4' Const. 1 Row (Centered)
"x"= 5' To 7' Const. 2 Rows
"x"= 8' To 12' Const. 3 Rows
"x"= 13' To 17' Const. 4 Rows
"x"= 18' To 22' Const. 5 Rows

Note: All weep holes to be 3"x4" rectangle or 4" or 5" dia. circle hole. ½ cu. ft. (12" x 12" x 6") of No. 6 aggregate to be placed under each hole. 1 sq. ft. of galv. wire mesh (¼" openings) shall be placed between the aggregate and the concrete. Cost of holes, aggregate and wire mesh to be included in the cost of ditch pavement.

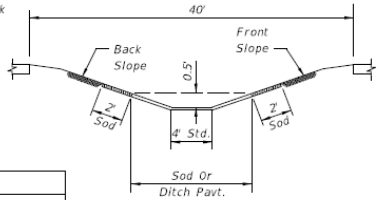
WEEP HOLE ARRANGEMENT



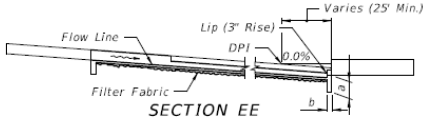
SWALED MEDIAN (No Weep Holes)



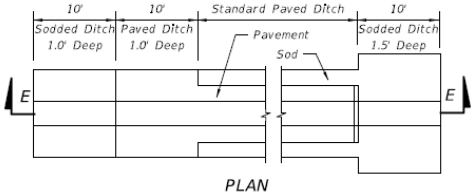
ROADWAY SIDE DITCH



40' MEDIAN



SECTION EE



PLAN

PAVED DITCH END TREATMENT

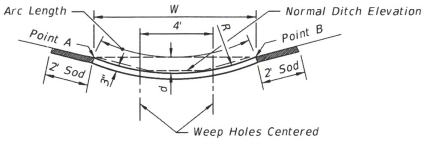
GENERAL NOTES

1. Type of ditch pavement shall be as shown on plans.
2. In concrete ditch pavement, contraction joints are to be spaced at 25' maximum intervals, or as directed by the Engineer. Contraction joints may be either formed (construction joint) or tooled. No open joints will be permitted in concrete ditch pavement.

   Expansion joints with ½" preformed joint filler shall be constructed at all inlets, endwalls, and at intervals of not more than 200'.
3. Lip at end of ditch pavement shall normally be located downstream of DPI or on flatter grades where there is a decrease in ditch velocity.
4. Toewalls are to be used with all ditch paving. A toewall is not required adjacent to drainage structures.
5. When directed by the Engineer, weep hole spacing may be reduced to 5' minimum.
6. For junction of R/W ditch spillway and lateral ditch, sides of paving to be 1' high minimum.
7. For ditch pavements requiring filter fabric, the fabric shall be placed directly beneath the pavement for the entire length and width of the pavement. When weep holes with aggregate are used, the filter fabric shall be placed below the aggregate to form a mat continuous with or underlapping the pavement fabric. (See Specifications Section 985) for fabric type and application).
8. Ditch pavement requiring reinforcement shall be detailed in the plan.
9. Cost of plastic filter fabric to be included in the contract unit price for ditch pavement.
10. Sodding to be paid for under contract unit price for Performance Turf, SY

LAST REVISION	REVISION	DESCRIPTION:	FDOT 2015 DESIGN STANDARDS	DITCH PAVEMENT AND SODDING	INDEX NO.	SHEET NO.
07/01/14					281	1 of 2

6/5/2014 10:39:03 AM



TO REPLACE:	W	d	R	Rows Of Weep Holes	Arc Length
6' Median Swale	6'	0.24'	19'	0	6.0'
1:6 Front Slopes; 1:4 Back Slope					
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4' BW Ditch	9'	0.54'	19'	2	9.1'
1:4 Front Slopes & Back Slope					
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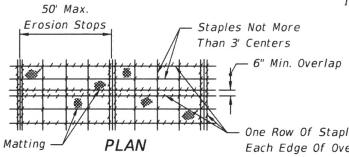
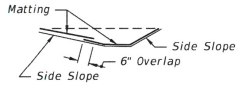
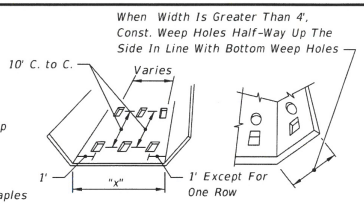
For use only where side slopes are 1:4 or flatter. Point "A" and "B" are to be the same elevation and should be used to locate the paved section.



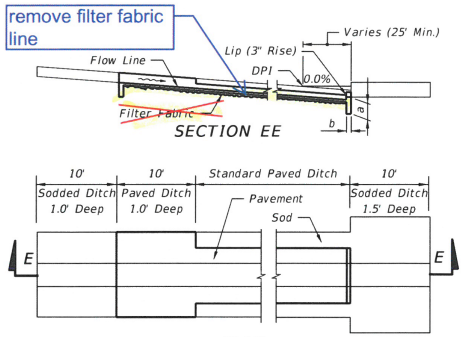


MATTING FOR DITCH

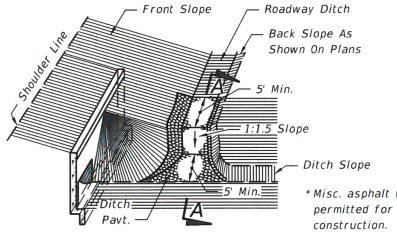


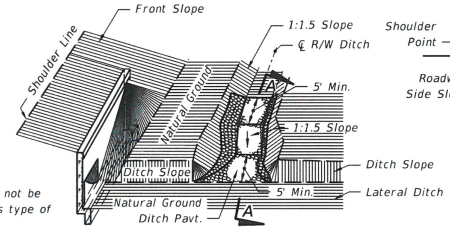
Note: All weep holes to be 3"x4" rectangle or 4" or 5" dia. circle hole. ½ cu. ft. (12" x 12" x 6") of No. 6 aggregate to be placed under each hole. 1 sq. ft. of galv. wire mesh (¼" openings) shall be placed between the aggregate and the ~~concrete~~ ditch pavement. Cost of holes, aggregate and wire mesh to be included in the cost of ditch pavement.

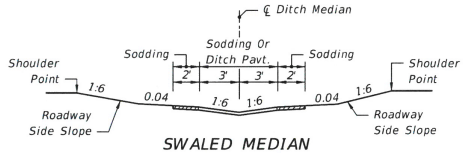
WEEP HOLE ARRANGEMENT

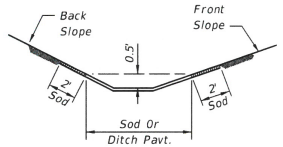


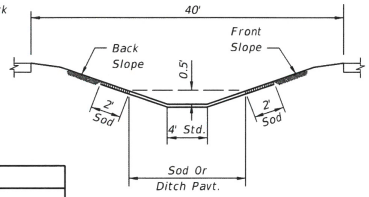
ALTERNATE DITCH PAVEMENT



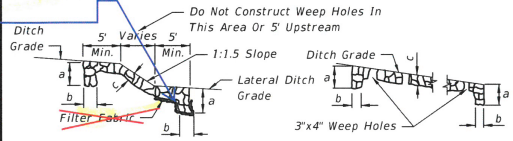


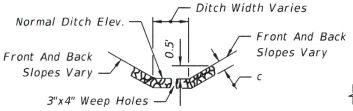






remove filter fabric line





PROFILE OF DITCH PAVEMENT AT LOCATIONS OTHER THAN JUNCTION WITH LATERAL DITCH

Add asterisk

TABLE 1: DITCH PAVEMENT

Pavement Type	Dimensions a	b	c	Payment Unit	Basis Of Estimate	Filter Fabric Type	Velocity Range	References & Remarks
Concrete	24"	6"	3"	SY	SY	D-6*	Low-High	Section 524 of the Standard Specifications.
Miscellaneous Asphalt	24"	12"	4"	TN	0.2 TN/SY	None	Low-Moderate	Section 339.
Riprap (Sand-Cement)	24"	12"	4"	CY	0.11 CY/SY	D-4*	Low-Moderate	Section 530. Grouting of joints required.
Riprap (Ditch Lining)				TN	TN	D-2*	Moderate-High	Section 530.

*Filter Fabric Required.

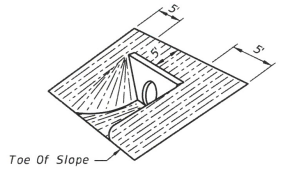
GENERAL NOTES

1. Type of ditch pavement shall be as shown on plans.
2. In concrete ditch pavement, contraction joints are to be spaced at 25' maximum intervals, or as directed by the Engineer. Contraction joints may be either formed (construction joint) or tooled. No open joints will be permitted in concrete ditch pavement.

   Expansion joints with ½" preformed joint filler shall be constructed at all inlets, endwalls, and at intervals of not more than 200'.
3. Lip at end of ditch pavement shall normally be located downstream of DPI or on flatter grades where there is a decrease in ditch velocity.
4. Toewalls are to be used with all ditch paving. A toewall is not required adjacent to drainage structures.
5. When directed by the Engineer, weep hole spacing may be reduced to 5' minimum.
6. For junction of R/W ditch spillway and lateral ditch, sides of paving to be 1' high minimum.
7. For ditch pavements requiring filter fabric (See Table 1) place the filter fabric directly beneath the pavement for the entire length and width of the pavement. See Standard Specification Section 985 for fabric type and application.
8. When weep holes with aggregate are used, place filter fabric below the aggregate to form a mat continuous with the pavement filter fabric or underlapping the pavement filter fabric, if present.
9. Ditch pavement requiring reinforcement shall be detailed in the plans.
10. Cost of plastic filter fabric to be included in the contract unit price for ditch pavement.
11. Sodding to be paid for under contract unit price for Performance Turf, SY

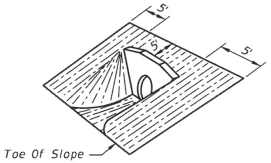
10:39:03 AM
6/5/2014

LAST REVISION	DESCRIPTION:	FDOT 2015 DESIGN STANDARDS	DITCH PAVEMENT AND SODDING	INDEX NO.	SHEET NO.
07/01/14	REVISION			281	1 of 2

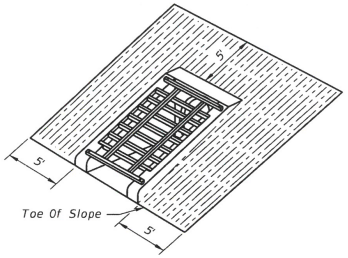


Note: Sodding quantities for each endwall to be determined by the designer from this detail.

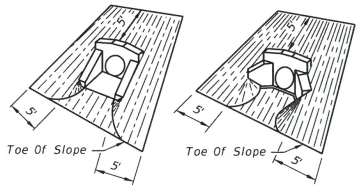
(EXCEPT INDEX NO. 250) STRAIGHT ENDWALL



STRAIGHT ENDWALL INDEX NO. 250

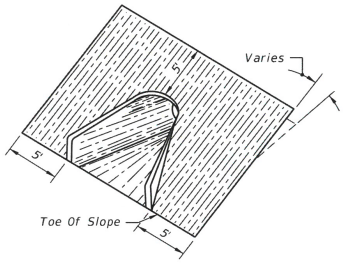


U-TYPE ENDWALL INDEX NO. 261



U-TYPE WINGS 45° WINGS

WINGED ENDWALLS INDEX NO. 266

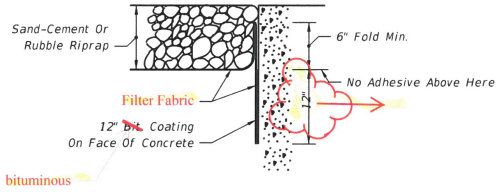


FLARED END SECTION INDEX NO. 270

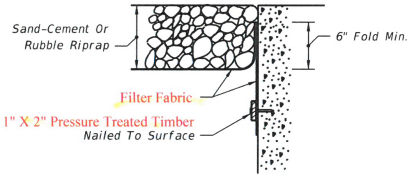
TABLE 2: SOD QUANTITIES (SY)

PIPE SIZE	INDEX NO. 250												INDEX NO. 261				INDEX NO. 266				INDEX NO. 270
	SLOPE												SLOPE				SLOPE				ALL SLOPES
	1:2			1:3			1:4			1:6			1:2	1:3	1:4	1:6	1:2	1:3	1:4	1:6	
	PIPES												PIPES				PIPES				PIPES
	1	2	3	1	2	3	1	2	3	1	2	3	1	1	1	1	1	1	1	1	1
12"																	14	15	18	22	10
15"	19	21	24	22	26	29	26	30	33	34	38	43	13 (15)	16	17	23	15	17	20	25	11
18"	21	24	27	25	29	33	30	34	38	39	44	50	14 (16)	17	19	25	16	18	22	28	11
21"																					12
24"	26	30	34	32	37	42	38	44	50	50	58	66	15 (17)	19	21	28	19	22	26	34	14
27"																					15
30"	31	37	42	39	46	53	46	55	63	62	74	85	17 (18)	21	24	32	21	25	30	40	16
36"	37	44	52	46	56	65	56	67	79	76	91	107					24	29	35	47	18
42"	43	53	62	55	67	79	67	82	96	91	111	132					27	32	39	54	19
48"	50	62	73	64	79	93	78	97	115	108	133	158					30	36	44	61	21
54"	57	71	85	74	92	110	91	113	136	126	157	188									21
60"																					22
66"																					25
72"																					26
													() Endwall With Baffles								

SOD PLACEMENT AT PIPE/CULVERT END TREATMENTS



BONDED OPTION



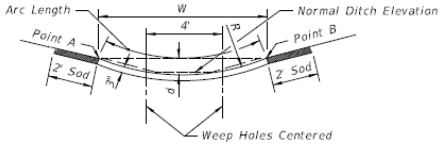
NAILED OPTION

Note: Either option may be used unless otherwise called for in the plans.

FILTER FABRIC PLACEMENT AT CONCRETE STRUCTURE

6/5/2014 10:39:04 AM

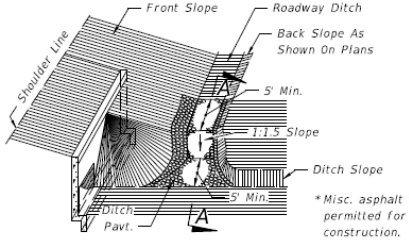
LAST REVISION	REVISION	DESCRIPTION:	FDOT 2015 DESIGN STANDARDS	DITCH PAVEMENT AND SODDING	INDEX NO.	SHEET NO.
07/01/00					281	2 of 2



TO REPLACE:	W	d	R	Rows Of Weep Holes	Arc Length
6' Median Swale	6'	0.24'	19'	0	6.0'
1:6 Front Slopes; 1:4 Back Slope					
5' BW Ditch	10'	0.67'	19'	2	10.1'
4' BW Ditch	9'	0.54'	19'	2	9.1'
1:4 Front Slopes & Back Slope					
5' BW Ditch	9'	0.74'	14'	2	9.2'
4' BW Ditch	8'	0.58'	14'	1 (in center)	8.1'

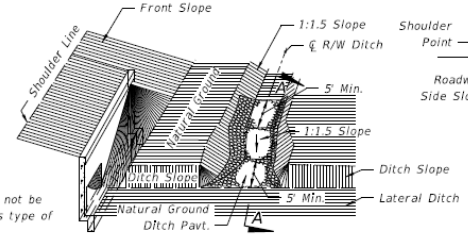
For use only where side slopes are 1:4 or flatter. Point "A" and "B" are to be the same elevation and should be used to locate the paved section.

ALTERNATE DITCH PAVEMENT

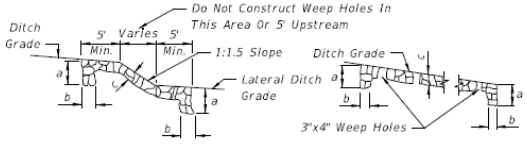


JUNCTION OF ROADWAY DITCH* AND LATERAL DITCH

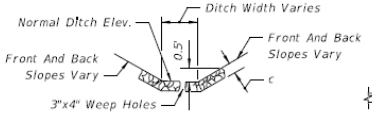
*Misc. asphalt will not be permitted for this type of construction.



JUNCTION OF R/W DITCH* AND LATERAL DITCH



SECTION AA



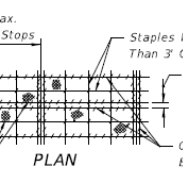
TYPICAL SECTION

PROFILE OF DITCH PAVEMENT AT LOCATIONS OTHER THAN JUNCTION WITH LATERAL DITCH

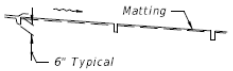
TABLE 1: DITCH PAVEMENT

Pavement Type	Dimensions a	b	c	Payment Unit	Basis Of Estimate	Filter Fabric Type	Velocity Range	References & Remarks
Concrete	24"	6"	3"	SY	SY	D-6*	Low-High	Section 524 of the Standard Specifications.
Miscellaneous Asphalt	24"	12"	4"	TN	0.2 TN/SY	None	Low-Moderate	Section 339.
Riprap (Sand-Cement)	24"	12"	4"	CY	0.11 CY/SY	D-4*	Low-Moderate	Section 530. Grouting of joints required.
Riprap (Ditch Lining)				TN	TN	D-2*	Moderate-High	Section 530.

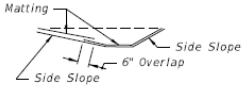
* Filter Fabric Required.



PLAN

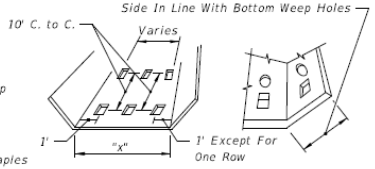


LONGITUDINAL SECTION



SECTION

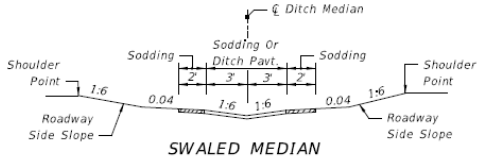
MATTING FOR DITCH



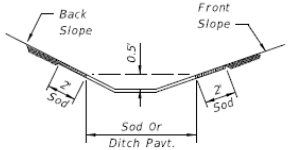
When "x"= 1' To 4' Const. 1 Row (Centered)
"x"= 5' To 7' Const. 2 Rows
"x"= 8' To 12' Const. 3 Rows
"x"= 13' To 17' Const. 4 Rows
"x"= 18' To 22' Const. 5 Rows

Note: All weep holes to be 3"x4" rectangle or 4" or 5" dia. circle hole. ½ cu. ft. (12" x 12" x 6") of No. 6 aggregate to be placed under each hole. 1 sq. ft. of galv. wire mesh (¼" openings) shall be placed between the aggregate and the ditch pavement. Cost of holes, aggregate and wire mesh to be included in the cost of ditch pavement.

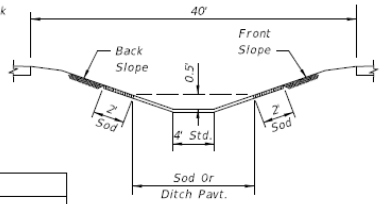
WEEP HOLE ARRANGEMENT



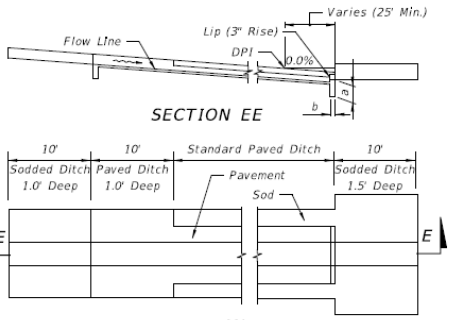
SWALED MEDIAN (No Weep Holes)



ROADWAY SIDE DITCH



40' MEDIAN



PAVED DITCH END TREATMENT

GENERAL NOTES

1. Type of ditch pavement shall be as shown on plans.
2. In concrete ditch pavement, contraction joints are to be spaced at 25' maximum intervals, or as directed by the Engineer. Contraction joints may be either formed (construction joint) or tooled. No open joints will be permitted in concrete ditch pavement.

   Expansion joints with ½" preformed joint filler shall be constructed at all inlets, endwalls, and at intervals of not more than 200'.
3. Lip at end of ditch pavement shall normally be located downstream of DPI or on flatter grades where there is a decrease in ditch velocity.
4. Toewalls are to be used with all ditch paving. A toewall is not required adjacent to drainage structures.
5. When directed by the Engineer, weep hole spacing may be reduced to 5' minimum.
6. For junction of R/W ditch spillway and lateral ditch, sides of paving to be 1' high minimum.
7. For ditch pavements requiring filter fabric (See Table 1) place the filter fabric directly beneath the pavement for the entire length and width of the pavement. See Standard Specification Section 985 for fabric requirements and application.
8. When weep holes with aggregate are used, place filter fabric below the aggregate to form a mat continuous with the pavement filter fabric or underlapping the pavement filter fabric, if present.
9. Ditch pavement requiring reinforcement shall be detailed in the plans.
10. Cost of plastic filter fabric to be included in the contract unit price for ditch pavement.
11. Sodding to be paid for under contract unit price for Performance Turf, SY

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LAST REVISION	REVISION	DESCRIPTION:	FDOT 2016 DESIGN STANDARDS	DITCH PAVEMENT AND SODDING	INDEX NO.	SHEET NO.
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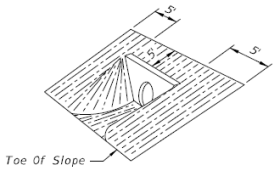
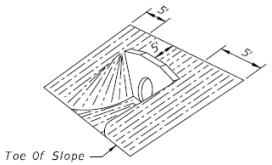
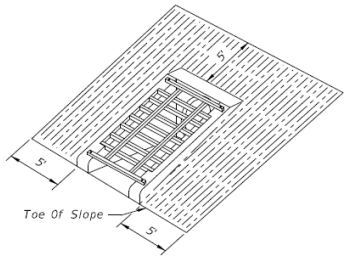


Note: Sodding quantities for each endwall to be determined by the designer from this detail.

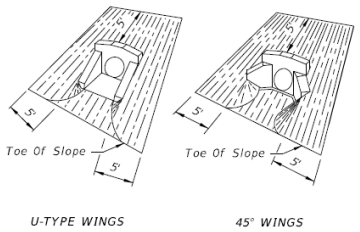
(EXCEPT INDEX NO. 250)
STRAIGHT ENDWALL



STRAIGHT ENDWALL
INDEX NO. 250

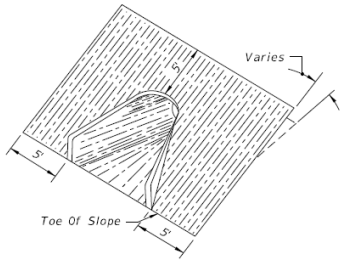


U-TYPE ENDWALL
INDEX NO. 261



U-TYPE WINGS 45° WINGS

WINGED ENDWALLS
INDEX NO. 266

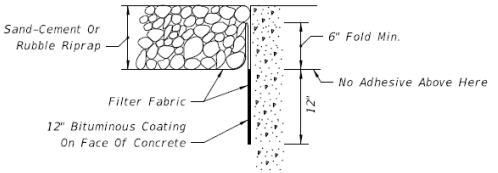


FLARED END SECTION
INDEX NO. 270

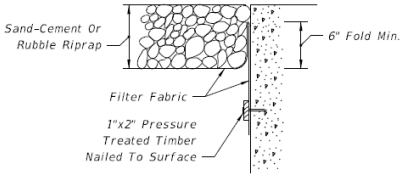
TABLE 2: SOD QUANTITIES (SY)

PIPE SIZE	INDEX NO. 250												INDEX NO. 261				INDEX NO. 266				INDEX NO. 270
	SLOPE												SLOPE				SLOPE				ALL SLOPES
	1:2			1:3			1:4			1:6			1:2	1:3	1:4	1:6	1:2	1:3	1:4	1:6	
	PIPES												PIPES				PIPES				PIPES
	1	2	3	1	2	3	1	2	3	1	2	3	1	1	1	1	1	1	1	1	1
12"																	14	15	18	22	10
15"	19	21	24	22	26	29	26	30	33	34	38	43	13 (15)	16	17	23	15	17	20	25	11
18"	21	24	27	25	29	33	30	34	38	39	44	50	14 (16)	17	19	25	16	18	22	28	11
21"																					12
24"	26	30	34	32	37	42	38	44	50	50	58	66	15 (17)	19	21	28	19	22	26	34	14
27"																					15
30"	31	37	42	39	46	53	46	55	63	62	74	85	17 (18)	21	24	32	21	25	30	40	16
36"	37	44	52	46	56	65	56	67	79	76	91	107					24	29	35	47	18
42"	43	53	62	55	67	79	67	82	96	91	111	132					27	32	39	54	19
48"	50	62	73	64	79	93	78	97	115	108	133	158					30	36	44	61	21
54"	57	71	85	74	92	110	91	113	136	126	157	188									21
60"																					22
66"																					25
72"																					26
													() Endwall With Baffles								

SOD PLACEMENT AT PIPE/CULVERT END TREATMENTS



BONDED OPTION



NAILED OPTION

Note: Either option may be used unless otherwise called for in the plans.

FILTER FABRIC PLACEMENT AT CONCRETE STRUCTURE

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LAST REVISION 07/01/15	REVISION	DESCRIPTION:	FDOT 2016 DESIGN STANDARDS	DITCH PAVEMENT AND SODDING	INDEX NO. 281	SHEET NO. 2 of 2