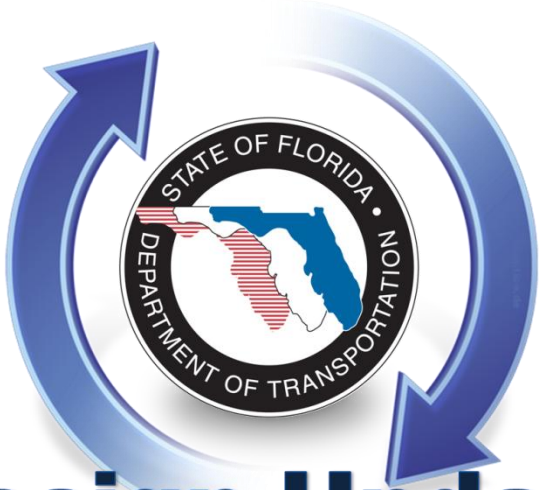
Design Standards Update



Design Update Training

Patrick Overton, P.E.

Design Standards Engineer

Patrick.Overton@dot.state.fl.us

Index 199 – Geotextile Criteria

- Mechanically Stabilized Retaining Wall and Supporting Spread Footing Foundations applications were added to the Drainage class(D-2).

Index 199 – Cont.

CLASS	TYPE (1)	APPLICATION DESCRIPTION	INDEX NO.	PERMITTIVITY (sec^{-1})	AOS SIEVE#	MIN. GRAB TENSILE STRENGTH (lb)	MIN. SEWN STRENGTH (lb/in)
DRAINAGE (D)	D-1	Revetment (Special)		(See D-2)	(See D-2)	315	7.2
	D-2	Revetment (Standard)		% SOIL PASSING No. 200 SIEVE <15% 0.7 15% to 50% 0.2 >50% 0.1	% SOIL PASSING No. 200 SIEVE <15% 40 15% to 50% 60 >50% 70*	Woven Monofilament 248 Other Geotextiles: Elongation <50% 315 ≥50% 203	Woven Monofilament 5.7 Other Geotextiles: Elongation <50% 6.9 ≥50% 4.7
		Articulating Block****					
		Gabions	281				
		Rock, Rubble, Broken Concrete					
		Mechanically Stabilized Retaining Wall Supporting Spread Footing Foundations					
	D-3	Underdrain ***	286	% SOIL PASSING No. 200 SIEVE <15% 0.5 15% to 50% 0.2 >50% 0.1	% SOIL PASSING No. 200 SIEVE <15% 40 15% to 50% 60 >50% 70*	Elongation <50% 248 ≥50% 158	Elongation <50% 5.7 ≥50% 3.6
		French Drain	285				
		Sheet Piling Filter					
		Filter Fabric Jacket (Culvert)	280				
		Concrete Pavement Subdrainage	287				
	D-4	Slope Pavement (Sand-Cement)		0.5	40	180	4.2
		Ditch Pavement (Sand-Cement)	281				
	D-5	Mechanically Stabilized Retaining Wall		0.5	40	180	4.2
		Cast-In-Place Retaining Wall					

Filtration Efficiency	%	ASTM-D-5141
Flow Rate	gal/min	ASTM-D-5141

LAST REVISION 07/01/13 | REVISION DESCRIPTION: | FDOT 2014 DESIGN STANDARDS | GEOTEXTILE CRITERIA | INDEX NO. 199 | SHEET NO. 1 of 1

Index 199 – Cont.

Index No (PDF)	Total Sheets	Index Title	Revision	Instructions for Design Stds (IDS) (PDF)	Data Table Cell Library (ZIP)	Borderless DGNs (ZIP) Terms of Use
Complete eBooklet *(277mb)*	966			Combined Available IDS *(11mb)*	Combined Available CELs *(1mb)*	Combined Available DGNs *(57mb)*
		COVER, TABLE OF CONTENTS AND REVISIONS				
Cover	3	Booklet Cover		Cover		
Content	2	Table of Contents		Content		
Revisions	4	Booklet Revisions		Introduction Revisions		
		ABBREVIATIONS AND SYMBOLS		Roadway Contact		
001	4	Standard Abbreviations				
002	4	Standard Symbols				
		EROSION CONTROL AND WATER QUALITY		Hydraulics Contact		
104	2	Permanent Erosion Control				
105	1	Shoulder Sodding and Turf on Existing Facilities				
		DRAINAGE		(199-288, 293-295) Hydraulics Contact (289-292) Structures Contact		
199	1	Geotextile Criteria		IDS-199		

Index 199 – Cont.

Index 199 Geotextile Criteria (Rev. 07/13)

Design Criteria

The Designer is to review the criteria provided in the index and determine the geotextile type that satisfies project requirements. The geotextile type shall be called for in the plans or contained in the project special provisions.

Plan Content Requirements

Provide the geotextile type required in the summary tables of the plans for the application except when this information is already detailed in another referenced Standard Index. In the case of project special provision, provide the geotextile type required in the summary tables of the plans.

Payment

The Drainage class (D) is a component of a Standard Index - No pay item exists.

Under Erosion class (E), Wind Screen or Silt Fence does not have a pay item. This will be an inclusive cost associated with a construction activity.

Item number	Item description	Unit Measure
0571-1-11	Plastic Erosion Mat, Turf Reinforced Mat, Type 1	SY
0571-1-12	Plastic Erosion Mat, Turf Reinforced Mat, Type 2	SY
0571-1-13	Plastic Erosion Mat, Turf Reinforced Mat, Type 3	SY

Index 200 Series

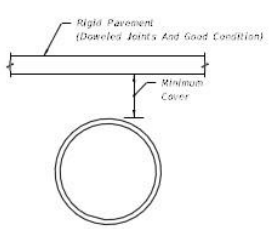
- Removed all Proprietary Product references throughout the Indexes.
- Precast and foundry suppliers to provide correlations between DOT Index requirements and their catalog of products.

Index 205 – Pipe BackFill

- All tables were removed and placed in the Drainage Manual.

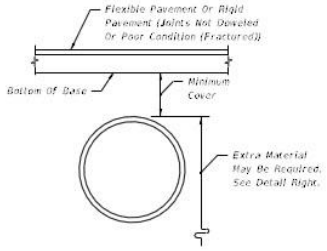
Design Update Training

Index 205 - Previous Sheet 1



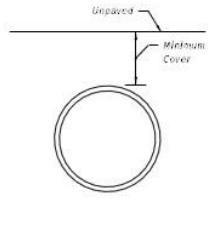
RIGID PAVEMENT

PIPE TYPE/SIZE & SHAPE	MINIMUM COVER
CONCRETE (See Note 6)	
Round & Elliptical	9"
CORRUGATED STEEL	
15"-72" Round & Arch Equiv.	9"
78" & Larger Round & Arch Eq.	15"
CORRUGATED ALUMINUM	
15"-72" Round & Arch Equiv.	9"
78"-102" Round & Arch Equiv.	15"
108" & Larger Round	18"
CORRUGATED POLYETHYLENE	
15"-60" Round	9"
POLYVINYL CHLORIDE	
15"-36" Round	9"



FLEXIBLE PAVEMENT

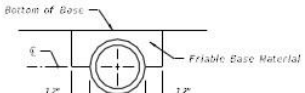
PIPE TYPE/SIZE & SHAPE	MINIMUM COVER
CONCRETE (See Note 6)	
Round & Elliptical	7"
CORRUGATED STEEL	
12"-30" Round	12" [12"]
36"-48" Round	18" (12") [15"]
54"-72" Round	21" (15") [18"]
78"-96" Round	(18") [27"]
102" & Larger Round	(24") [33"]
15"-30" Arch Equiv.	18" [18"]
36"-48" Arch Equiv.	24" (12") [18"]
54"-72" Arch Equiv.	27" (15") [24"]
78"-96" Arch Equiv.	(18") [30"]
102" & Larger Arch Equiv.	(24")
CORRUGATED ALUMINUM	
12"-24" Round	15" [12"]
30"-48" Round	18" (12") [18"]
54"-72" Round	24" (18") [24"]
78"-102" Round	(24") [30"]
108" & Larger	(30")
15"-24" Arch Equiv.	24" [24"]
30"-48" Arch Equiv.	27" (15") [24"]
54"-72" Arch Equiv.	30" (18") [27"]
78"-90" Arch Equiv.	(24") [30"]
96"-102" Arch Equiv.	(30")
CORRUGATED POLYETHYLENE	
15"-60" Round	15"
POLYVINYL CHLORIDE	
15"-36" Round	15"



UNPAVED

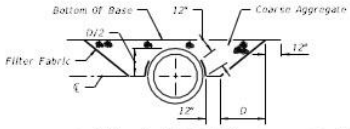
PIPE TYPE/SIZE & SHAPE	MINIMUM COVER	
	COMMERCIAL	NON-COMMERCIAL
CONCRETE (See Note 6)		
Round & Elliptical	12"	9"
CORRUGATED STEEL		
12"-30" Round	18" [15"]	12" [12"]
36"-48" Round	18" (12") [15"]	12" (12") [12"]
54"-72" Round	18" (12") [15"]	15" (12") [12"]
78"-96" Round	(18") [27"]	(12") [12"]
102" & Larger Round	24" [33"]	18" [21"]
15"-30" Arch Equiv.	18" [18"]	12" [12"]
36"-48" Arch Equiv.	24" (12") [21"]	18" (12") [15"]
54"-72" Arch Equiv.	30" (18") [24"]	24" (12") [18"]
78"-96" Arch Equiv.	(24") [27"]	(18") [21"]
102" & Larger Arch Equiv.	(30")	(24")
CORRUGATED ALUMINUM		
12"-24" Round	21" [21"]	15" [15"]
30"-48" Round	24" (18") [21"]	18" (12") [15"]
54"-72" Round	30" (24") [27"]	24" (18") [21"]
78"-102" Round	(30") [33"]	(24") [27"]
108" & Larger	36"	30"
15"-24" Arch Equiv.	27" [24"]	24" [21"]
30"-48" Arch Equiv.	33" (21") [27"]	27" (15") [21"]
54"-72" Arch Equiv.	36" (24") [30"]	30" (18") [24"]
78"-90" Arch Equiv.	(30") [36"]	(24") [30"]
96"-102" Arch Equiv.	(36")	(30")
CORRUGATED POLYETHYLENE		
15"-60" Round	21"	15"
POLYVINYL CHLORIDE		
15"-36" Round	21"	15"

MINIMUM COVER FOR CONCRETE, STEEL, ALUMINUM, POLYETHYLENE AND POLYVINYL CHLORIDE PIPE



The cost of furnishing and installing the extra base material shall be included in the cost of the culvert.

FRIABLE BASE



The coarse aggregate shall be placed in 6 inch lifts and compacted sufficiently as to be firm and unyielding. The coarse aggregate shall be gravel or stone meeting the requirements of Standard Specification Sections 901-2 or 901-3 respectively. The gradation shall meet Section 901-3.4, Grades 4, 467, 5, 56, or 57 unless restricted in the plans. The filter fabric shall be Type D-3 (See Index No. 199). The cost of furnishing and installing the coarse aggregate and filter fabric shall be included in the cost of the culvert.

ASPHALTIC CONCRETE BASE

Note: Extra material is required when cross culverts are located on facilities subject to high speed traffic (≥ 55 mph) or high traffic volumes (> 1650 ADT) and the cover is less than 12 inches for concrete pipe, 15 inches for corrugated steel pipe, and 18 inches for corrugated aluminum pipe, corrugated polyethylene and corrugated polyvinyl chloride pipe.

EXTRA MATERIAL FOR CROSS CULVERTS UNDER FLEXIBLE PAVEMENTS

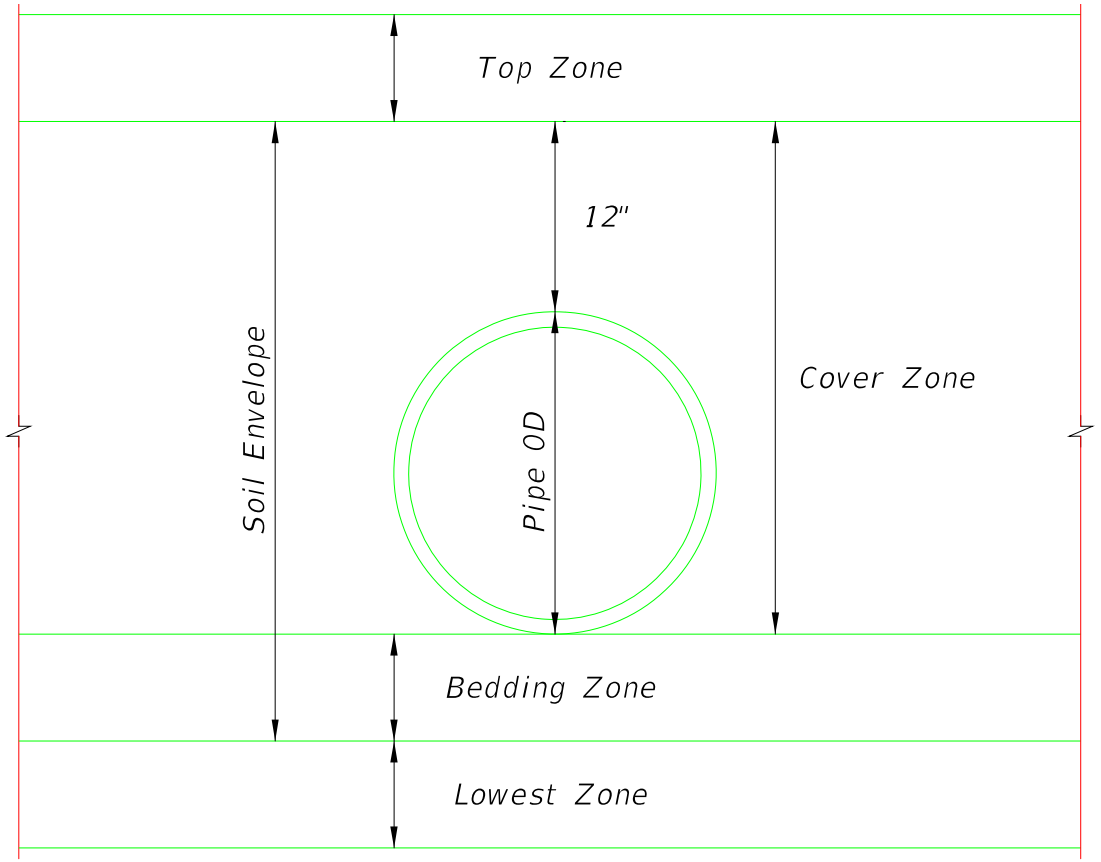
GENERAL NOTES

1. The tabulated values are recommended minimum dimensions to withstand anticipated highway traffic loads. Additional cover may be required to support construction equipment loads or highway traffic loads before pavement is completed. Some size thickness combinations may require minimum cover greater than those listed above. See Sheets 2, 3, & 4.
2. Less than the tabulated minimum cover may be used provided suitable method(s) are detailed in the plans.
3. Values shown in parenthesis () are for 2" x 1" corrugations which must be specified to utilize the lesser cover.
4. The tabulated values in the brackets [] apply to Type 1-R (Spiral Rib) pipe which must be specified to utilize the lesser cover.
5. Commercial and noncommercial refers to typical vehicular utilization of unpaved roads and drives where rutting and cover displacement may occur.
6. For Pipe Class 5 with diameters of 12" to 30", the minimum height of fill measured from top of finished grade to outside top of pipe is 3 feet.

LAST REVISION	DESCRIPTION:			INDEX NO.	SHEET NO.
07/01/07	REVISION	FDOT DESIGN STANDARDS 2013	COVER HEIGHT	205	1

Design Update Training

Index 205 Cont.



Pipe Backfill

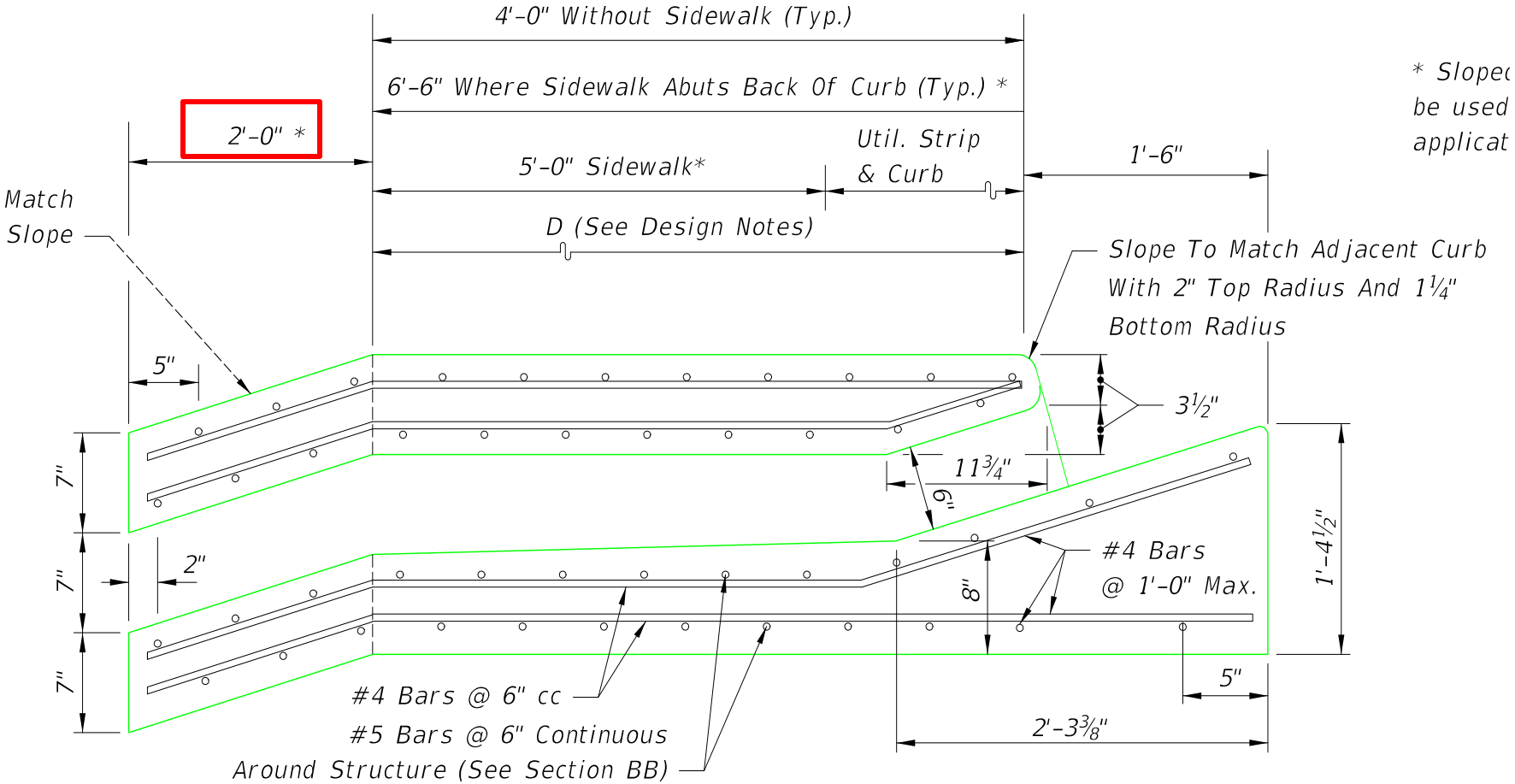
LAST REVISION 07/01/13

SHEET NO. 1 of 1

For Additional Information On Pipe Backfill Requirements See Specification Section 125.

Design Update Training

Index 216 – Closed Flume Inlet



* Slope(be used applicat

SECTION AA

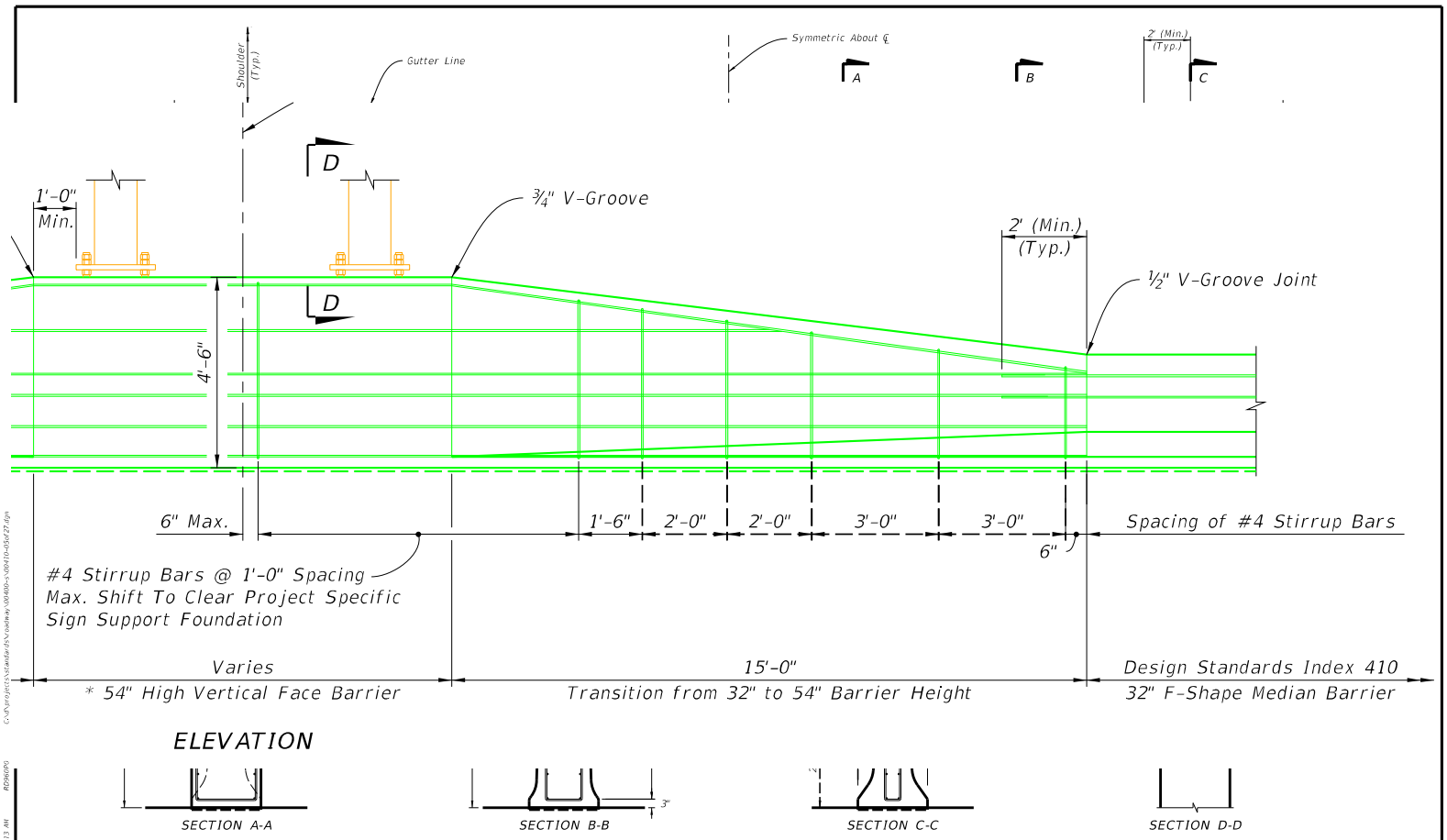
LAST REVISION	REVISION	DESCRIPTION:			INDEX NO.	SHEET NO.
07/01/13			FDOT 2014 DESIGN STANDARDS	CLOSED FLUME INLET	216	1 of 3

Design Update Training

Index 410 – Concrete Barrier Wall

- Structures Bulletin 13-02 and Roadway Bulletin 13-01 (Median Barrier Mounted Overhead Sign Structures) was released in last March
- The index was revised to include the drawings from the bulletin.

Index 410 Cont.

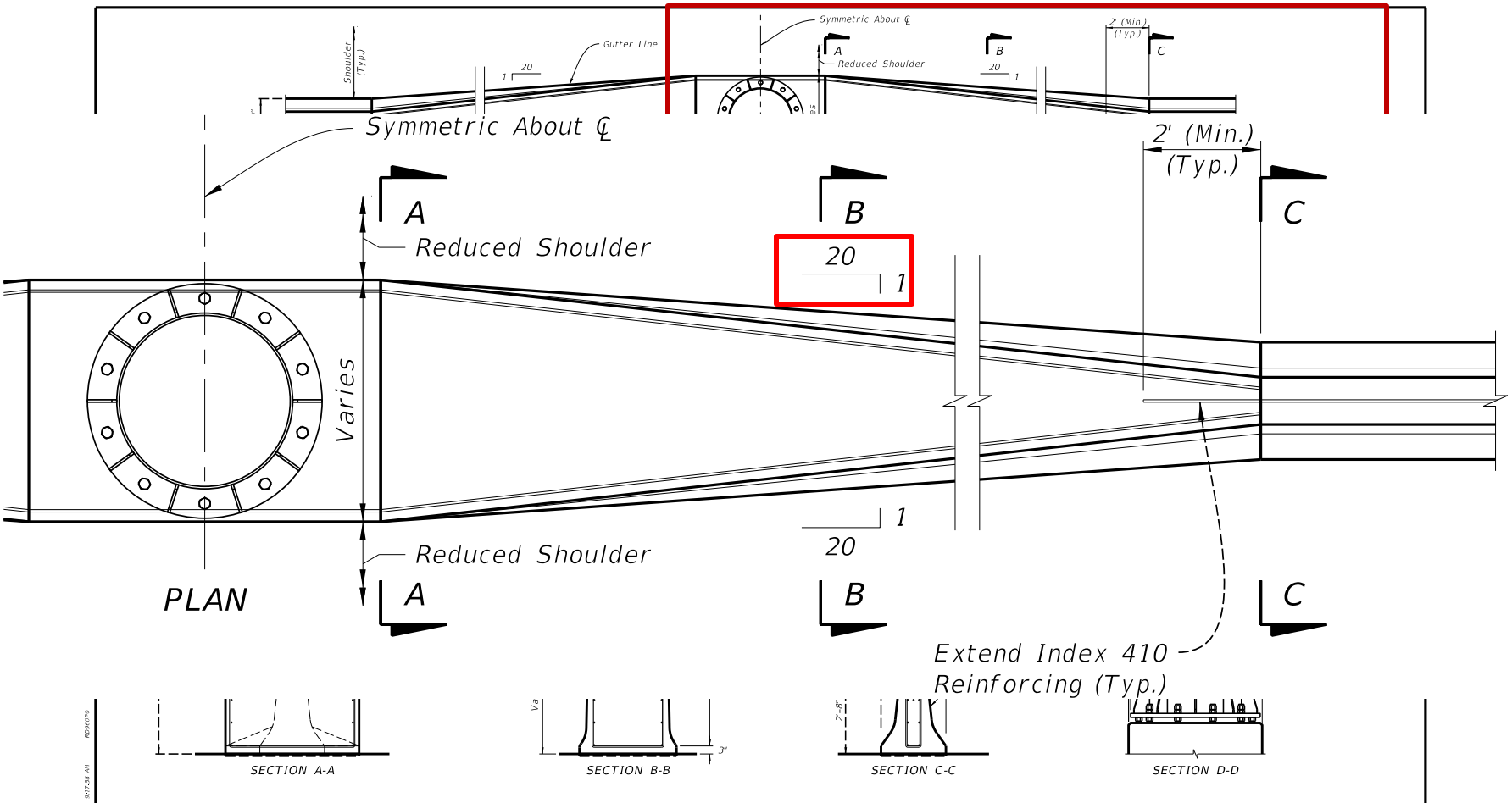


LARGE SIGN MEDIAN BARRIER MOUNTED SIGN SUPPORT TRANSITION (OPTION 1)

LAST REVISION 07/01/13	DESCRIPTION:	FDOT 2014 DESIGN STANDARDS	CONCRETE BARRIER WALL	INDEX NO. 410	SHEET NO. 5 of 27

Design Update Training

Index 410 Con't – Single Sign Support

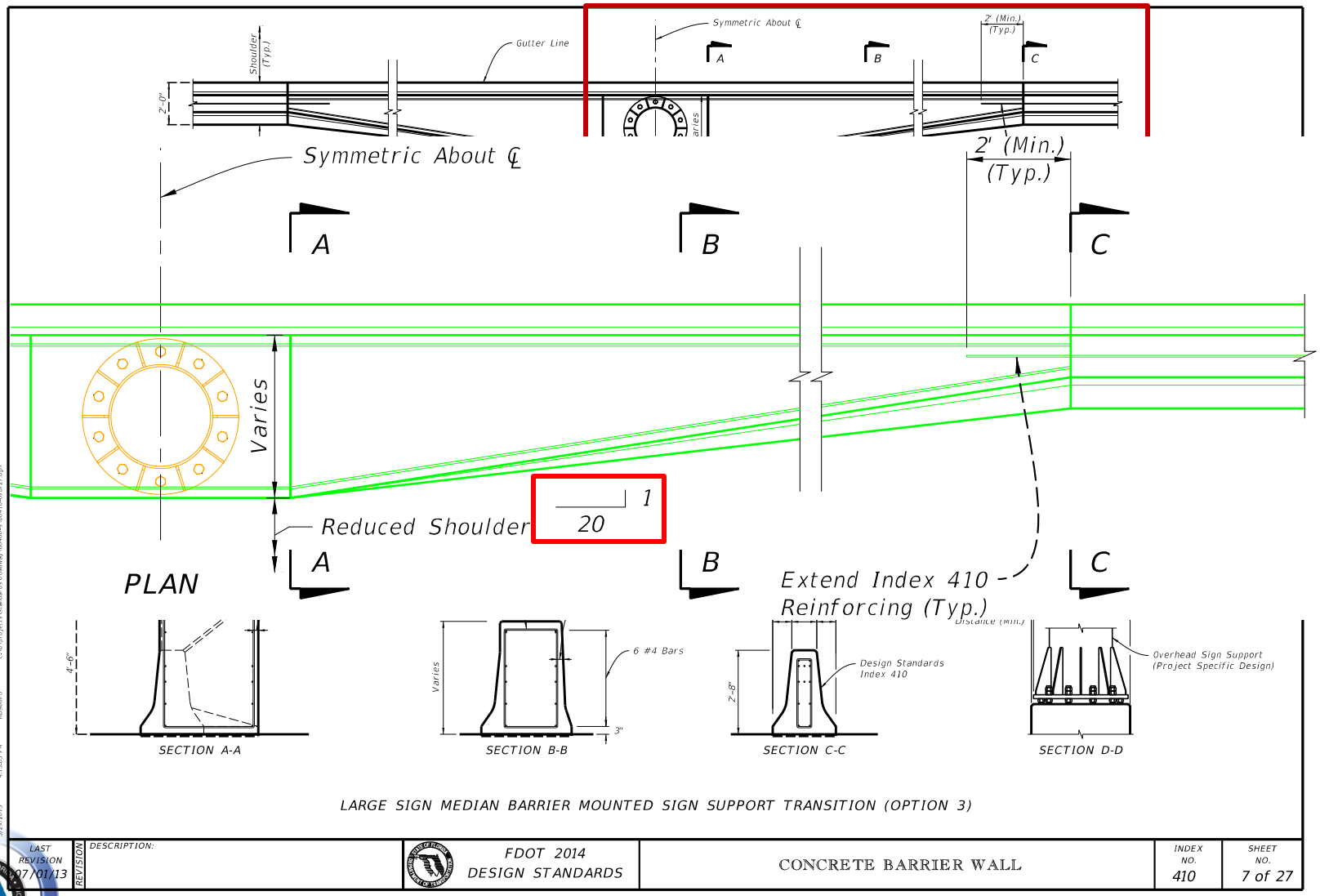


LARGE SIGN MEDIAN BARRIER MOUNTED SIGN SUPPORT TRANSITION (OPTION 2)

LAST REVISION 07/01/13	REVISION DESCRIPTION:	FDOT 2014 DESIGN STANDARDS	CONCRETE BARRIER WALL	INDEX NO. 410	SHEET NO. 6 of 27

Design Update Training

Index 410 Cont. – Single Sign Support

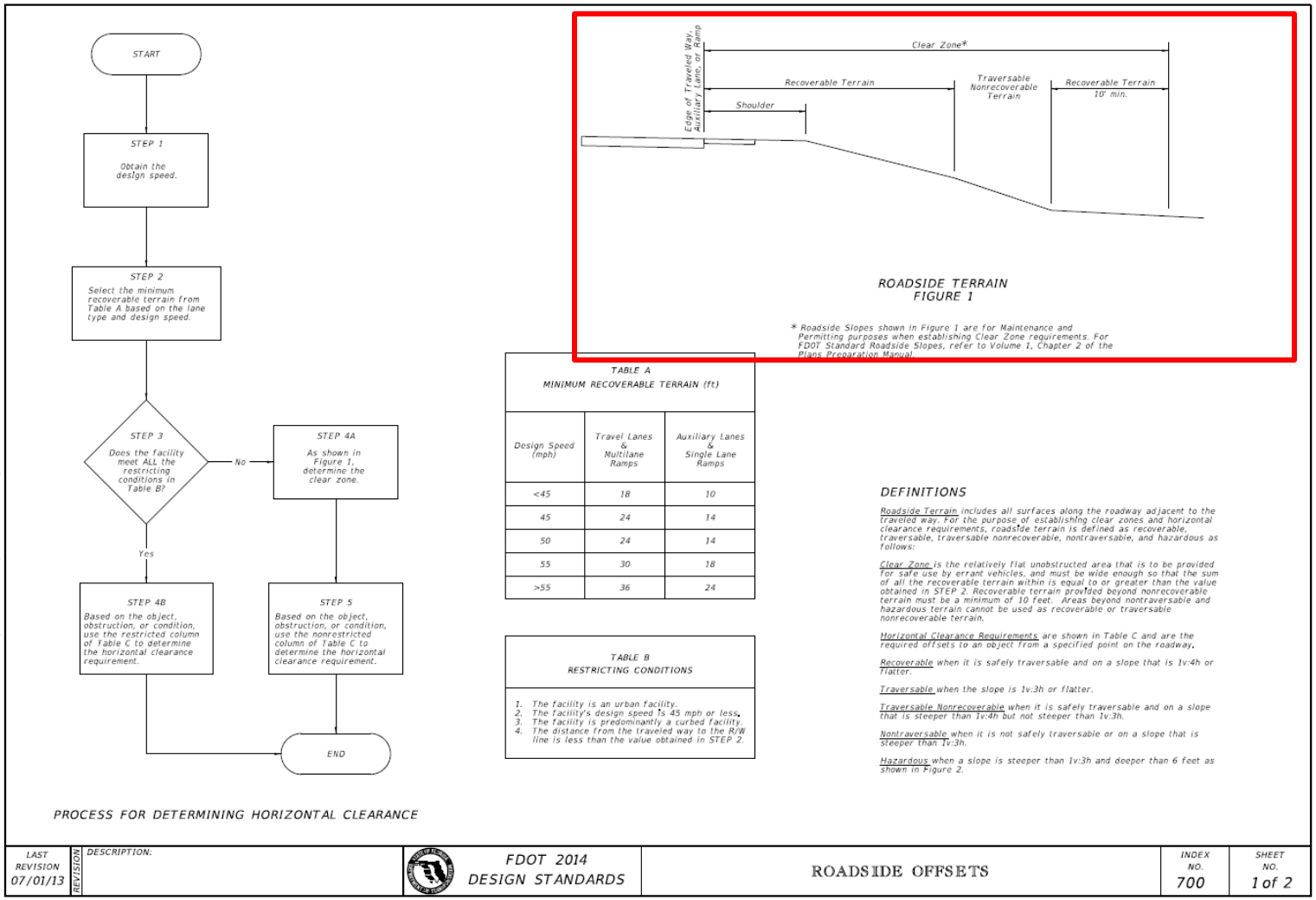


LARGE SIGN MEDIAN BARRIER MOUNTED SIGN SUPPORT TRANSITION (OPTION 3)

LAST REVISION	DESCRIPTION:	FDOT 2014 DESIGN STANDARDS	CONCRETE BARRIER WALL	INDEX NO.	SHEET NO.
07/01/13	REVISION			410	7 of 27

Design Update Training

Index 700



Design Update Training

Index 700 Cont.

Way, Ramp

Clear Zone*

Traversable Nonrecoverable when it is safely traversable and on a slope that is steeper than 1v:4h but not steeper than 1v:3h.

* *Roadside Slopes shown in Figure 1 are for Maintenance and Permitting purposes when establishing Clear Zone requirements. For FDOT Standard Roadside Slopes, refer to Volume 1, Chapter 2 of the Plans Preparation Manual.*

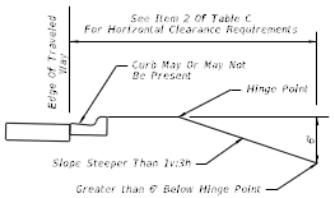
Index 700 Cont.

TABLE C

CATEGORY	Item No.	OBJECTS, OBSTRUCTIONS OR CONDITIONS		HORIZONTAL CLEARANCE REQUIREMENTS	
				Restricted (See Table B)	Nonrestricted
GENERAL	1	Above ground fixed hazards: All roadside objects, obstructions or conditions other than those listed below that exceed 4 inches in height and pose a hazard to errant vehicles and vehicle occupants.		Locate as close to the Right Of Way as practical and not less than 4 feet from face of curb.	Locate outside the clear zone as close to the Right Of Way as practical.
	2	Drop-off hazards: Any point along a roadside slope steeper than 1v:3h that is deeper than 6 feet below the hinge point. See Figure 2.		Locate the point that is 6 feet below the hinge point no less than 22 feet from the edge of traveled way.	Treat as roadside slopes in accordance with Design Standard, Index 400.
ROADWAY	3	All FDOT approved guardrails, guardrail end terminals, crash cushions, and concrete barriers (temporary or permanent).		Locate as shown in the Design Standards.	
	4	Mailboxes	Design Standard, Index 532	Locate in accordance with Design Standard, Index 532.	
	5		Not Shown in Design Standard, Index 532	Not to be used.	
	6	Trees	Expected to become greater than 4 inches in diameter (measured 6 inches above the ground).	Outside roadways: Locate no less than 4 feet from face of curb in accordance with Design Standard, Index 546. Inside medians: Locate no less than 6 feet from the edge of traffic lane and in accordance with Design Standard, Index 546.	Locate outside the clear zone as close to the Right Of Way as practical and in accordance with Design Standard, Index 546.
	7		Not expected to become greater than 4 inches in diameter (measured 6 inches above the ground).	Locate in accordance with Design Standard, Index 546.	
	8	Canals	Behind guardrail.	Locate no less than 5 feet from the back of the guardrail post.	
	9		Unshielded	Locate as close to the Right Of Way as practical and not less than 40 feet from the edge of traveled way.	Design Speeds of 50 mph and greater: Locate as close to the Right Of Way as practical and not less than 60 feet from the edge of traveled way. Design speeds less than 50mph: Locate as close to the Right of Way as practical and not less than 50 feet from the edge of traveled way.
DRAINAGE	10	Culvert wing walls, endwalls, retaining walls and flared end sections	less than or equal 6 feet deep.	Locate no less than 4 feet from face of curb.	Locate outside the clear zone.
	11		greater than 6 feet deep.	Treat as drop-off hazard; See Item No. 2.	
	12	Mitered end sections.		Locate as shown in Design Standard, Index 273 and Index 273.	
TRAFFIC CONTROL DEVICES	13	Frangible or breakaway sign supports.		Locate in accordance with Design Standard, Index 17302.	
	14	Overhead sign supports and other nonfrangible signs.		Locate no less than 4 feet from face of curb.	Locate outside the clear zone
	15	Traffic infraction detectors, signal controller cabinets, signal poles, strain poles and mast arms		Locate no less than 4 feet from face of curb and not in medians.	Locate outside the clear zone and not in medians.
LIGHTING	16	Conventional lighting (frangible and nonfrangible).		Locate no less than 4 feet from face of curb and only on barrier walls in medians.	Locate 20 feet from travel lanes or 14 feet from auxiliary lanes. Not in medians. May be clear zone width when the clear zone is less than 20 feet.
	17	Highmast lighting		Not applicable	Locate outside the clear zone.
STRUCTURES	18	Bridge piers and abutments: Above ground vertical structures.		Locate not less than 16 feet from edge of traveled way.	Locate outside the clear zone.
UTILITIES	19	Fire hydrants with bases no higher than 4 inches above ground.		Locate not less than 2 feet from face of curb.	Locate as close to the Right Of Way as practical.
	20	Aboveground fixed Utilities (AFUs).		New AFUs placed no closer than 4 feet from the face of curb and as close to the R/W as practical.	New AFUs are to be outside the Clear Zones established using Table A Recoverable Terrain and as close to the R/W line as practical.
RAILROADS	21	Railroad crossing traffic control devices.		Locate in accordance with Design Standard, Index 17882.	

GENERAL NOTES

1. When shielding an object and sidewalks are present, an unobstructed sidewalk width of at least 4 feet must be provided.
2. When site specific conditions prohibit meeting the horizontal clearance requirements in TABLE C, the object, obstruction or condition must be crashworthy or mitigated, possibly by shielding. Otherwise, the Plans Preparation Manual, Volume 1, Chapters 2, 4, 21, 23 and 25.



DROP-OFF HAZARDS
FIGURE 2

LAST REVISION	DESCRIPTION:				
07/01/13		FDOT 2014 DESIGN STANDARDS	ROADSIDE OFFSETS	INDEX NO. 700	SHEET NO. 2 of 2

Design Update Training

Index 700 Cont. – Table C

TABLE C

CATEGORY	Item No.	OBJECTS, OBSTRUCTIONS OR CONDITIONS	HORIZONTAL CLEARANCE REQUIREMENTS	
			Restricted (See Table B)	Nonrestricted
ROADWAY	3	All FDOT approved guardrails, guardrail end terminals, crash cushions, and concrete barriers (temporary or permanent).	Locate as shown in the Design Standards.	
	4	Mailboxes – Design Standard, Index 532	Locate in accordance with Design Standard, Index 532.	
	5	Mailboxes – Not Shown in Design Standard, Index 532	Not to be used.	
	6	Trees – Expected to become greater than 4 inches in diameter (measured 6 inches above the ground).	Outside roadways: Locate no less than 4 feet from face of curb in accordance with Design Standard, Index 546. Inside medians: Locate no less than 6 feet from the edge of traffic lane and in accordance with Design Standard, Index 546.	Locate outside the clear zone as close to the Right Of Way as practical and in accordance with Design Standard, index 546.
	7	Trees – Not expected to become greater than 4 inches in diameter (measured 6 inches above the ground).	Locate in accordance with Design Standard, Index 546.	
	8	Canals – Behind guardrail.	Locate no less than 5 feet from the back of the guardrail post.	
	9	Canals – Unshielded	Locate as close to the Right Of Way as practical and not less than 40 feet from the edge of traveled way.	Design Speeds of 50 mph and greater: Locate as close to the Right Of Way as practical and not less than 60 feet from the edge of traveled way. Design speeds less than 50mph: Locate as close to the Right of Way as practical and not less than 50 feet from the edge of traveled way.
	12	Mitered end sections.	Locate as shown in Design Standard, Index 273 and Index 273.	
TRAFFIC CONTROL DEVICES	13	Frangible or breakaway sign supports.	Locate in accordance with Design Standard, Index 17302.	
	14	Overhead sign supports and other nonfrangible signs.	Locate no less than 4 feet from face of curb.	Locate outside the clear zone
	15	Traffic infraction detectors, signal controller cabinets, signal poles, strain poles and mast arms	Locate no less than 4 feet from face of curb and not in medians.	Locate outside the clear zone and not in medians.
LIGHTING	16	Conventional lighting (frangible and nonfrangible).	Locate no less than 4 feet from face of curb and only on barrier walls in medians.	Locate 20 feet from travel lanes or 14 feet from auxiliary lanes. Not in medians. May be clear zone width when the clear zone is less than 20 feet.
	17	Highmast lighting	Not applicable	Locate outside the clear zone.
STRUCTURES	18	Bridge piers and abutments: Above ground vertical structures.	Locate not less than 16 feet from edge of traveled way.	Locate outside the clear zone.
UTILITIES	19	Fire hydrants with bases no higher than 4 inches above ground.	Locate not less than 2 feet from face of curb.	Locate as close to the Right Of Way as practical.
	20	Aboveground fixed Utilities (AFUs).	New AFUs placed no closer than 4 feet from the face of curb and as close to the R/W as practical.	New AFUs are to be outside the Clear Zones established using Table A Recoverable Terrain and as close to the R/W line as practical.
RAILROADS	21	Railroad crossing traffic control devices.	Locate in accordance with Design Standard, Index 17882.	

Design Update Training

Questions or Comments

Design Update Training

The End

Patrick Overton, P.E

Design Standards Engineer

(850) 414-4348

Patrick.overton@dot.state.fl.us

Design Standards Update 2014 eBooklet

The End

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or

contact me

Darren Martin

Design Standards Specialist

(850) 414 - 4824

Darren.Martin@dot.state.fl.us

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