

2012 Design Update Training

Structures Design Standards (July 2011 & January 2012)




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Introduction

- Website navigation for Structures Design Standards, Instructions, Data Tables & Developmental Design Standards
- Significant Revisions to Structures Design Standards (*July 2011 & January 2012*)
- Future Structures Design Standards


Design Standards Website

<http://www.dot.state.fl.us/rddesign/DesignStandards/Standards.shtm>



Roadway Design


Florida's Transportation Engineers



Design Standards

[Design Standards Procedure](#) (Topic Number: 625-010-003)

Current Design Standards

Fiscal Year	Design Standards eBooklet	Design Standards Revisions	Developmental Design Standards	
2012/13	<u>DSeB</u>	<u>DSR</u>	<u>DDS</u>	 Select the desired Current Design Standards eBooklet (DSeB), Design Standards Revisions (DSR) or Developmental Design Standards (DDS) by clicking on their underlined symbol.

Historical Design Standards

Year	Design Standards Booklet	Design Interim Standards	--	Design Standards Modifications			
Select the desired Historical Standard Booklet, Interim Standards or Standards Modification by clicking on their underlined symbol.				The dates shown under Standards Modifications are the effective dates of the Modifications.			
2010	<u>S</u>	<u>I</u>	N/A	<u>1-Jan-12</u>	<u>1-Jul-11</u>	<u>1-Jan-11</u>	<u>1-Jul-10</u>
2008	<u>S</u>	<u>I</u>	N/A	<u>1-Jan-10</u>	<u>1-Jul-09</u>	<u>1-Jan-09</u>	<u>1-Jul-08</u>
2006	<u>S</u>	<u>I</u>	N/A	<u>1-Jan-08 Eng</u>	<u>1-Jul-07 Eng</u>	<u>1-Jan-07 Eng</u>	<u>1-Jul-06 Eng</u>
2004	<u>S</u>	<u>I</u>	N/A	<u>1-Jan-06 English</u>		<u>1-Jul-05 English</u>	
2002	<u>S</u>	<u>I</u>	N/A	N/A			
2000	<u>S</u>	<u>I</u>	N/A	<u>1-Jan-06 Metric</u>		<u>1-Jul-05 Metric</u>	

Design Standards Website

2012 Design Standards - Structures Support Documents

Roadway Design Office



Roadway Design
Florida's Transportation Engineers

Design Standards eBooklet
Fiscal Year 2012/2013 Effective Date 7/1/2012

You must have the free [Adobe Acrobat Reader](#) to view and/or print these files. Entire groups may be printed by selecting the group name. The default print size for the Design Standard drawing files is 11 X 17 inches. Any available Instructions for Design Standards (IDS) are listed with their related Index. For questions, please contact the person noted under the area of responsibility listed beside the group headings (click on link for contact information). For use concerning plans incorporation and effective dates for the Design Standards and for information on the Data Tables select the [General Web Site Information](#) link.

Design Standards eBooklet		Design Information				
Index No.	Sheets	Index Title	Revision	Instructions for Design Stds (IDS)	Data Table Cell Library	Borderless DGNs
(PDF)				(PDF)	(ZIP)	(ZIP) Terms of Use
Complete eBooklet (272mb)	933	Fiscal Year 2012/2013 Design Standards eBooklet		Complete IDS (11mb)	Complete CELs (1mb)	Complete DGNs (52mb)
		* COVER, TABLE OF CONTENTS AND REVISIONS *				
Cover	3	2010 Design Standards Booklet Cover		Cover		
Content	2	Table of Contents		Content		
Revisions	4	Booklet Revisions		Introduction		
		* ABBREVIATIONS AND SYMBOLS *				
		Roadway Contact				
001	4	Standard Abbreviations				

Structures Support Documents include:

- IDS
- Data Tables
- DGN's (see Terms Of Use)

TERMS OF USE

The Microstation Drawings listed with their related Index (as zipped DGN files) are provided for designers who decide to modify a Design Standard to suit project specific requirements. It should be clearly understood that if modifications to the Design Standards are required, the work shall be performed under the direct supervision of a Professional Engineer. If any portion of a Design Standard is modified, the Professional Engineer responsible for the modifications to the drawings becomes the EOR. Use one of the following methods:

Method 1:

Produce a new project specific drawing using the details within the Microstation Drawing as a guide or template. In this event, no reference to the related Design Standard will be called out in the plans. The details in the plans which were created from the Microstation drawing cease to be a standard and the engineer responsible for the modifications to the drawings becomes the EOR for the application of the entire system.

Method 2:

Modify the details and notes within the Microstation Drawing for the project specific requirements. In this event, no reference to the related Design Standard will be called out in the plans. It is important that the plans clearly depict evidence that modifications have been made to the original design standard to avoid any confusion by the user. A plan note indicating the details are based on modifications to the original Design Standard may be appropriate. The details in the plans which were created from the Microstation drawing cease to be a standard and the engineer responsible for the modifications to the drawings becomes the EOR for the application of the entire system, including the applicability and correctness of the unaltered portions of the Microstation Drawings.

Method 3:

If the required modifications are minor, use the Microstation drawing to create details showing the modifications to the Design Standard on a separate sheet in the plans. In this event, reference the related Design Standard in the plans. Place the modified details in the plans on a sheet entitled, "Modifications to Design Standards Index XXXX". The engineer responsible for the modifications to the Design Standard becomes the EOR for the details on this sheet and for all effects the modification has on other components within the Design Standard.

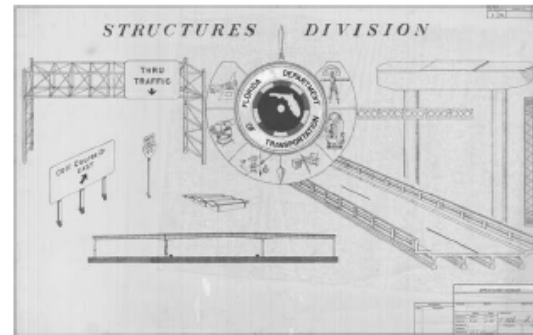
Design Standards Website

(Instructions for Design Standards (*IDS*))

Bookmarks

- Instructions for Design Standards
- Table of Contents
- Introduction
- Index 289
Concrete Box Culvert Details (LRFD) (Rev. 01/12)**
- Index 291
Supplemental Details for Precast Concrete Box
- Index 292
Standard Precast Concrete Box Culverts
- Index 302
Traffic Separators

FLORIDA DEPARTMENT OF TRANSPORTATION



INSTRUCTIONS FOR DESIGN STANDARDS

FISCAL YEAR 2012/2013

**EFFECTIVE BEGINNING JULY 2012 LETTINGS
FOR ALL INCLUDED DESIGN STANDARDS**

The Office of Design
Florida's Transportation Engineers



Design Standards Website

(Instructions for Design Standards (IDS))

Instructions for Design Standards
Index 289 Concrete Box Culvert Details (LRFD) (Rev. 01/12)

Topic No. 625-010-003-i
Fiscal Year 2012/2013

Index 289 Concrete Box Culvert Details (LRFD) (Rev. 01/12)

Design Criteria

AASHTO LRFD Bridge Design Specifications, 4th Edition; Structures Design Guidelines (SDG)

Design Assumptions and Limitations

Designs for box culverts shown in this Index are to be produced for analysis, utilizing the Department's LRFD Box Culvert Program limited to the live loads and dimensional restraints shown in this Index and to the fill on the barrel(s), as shown in the Contract

Headwalls with skew angles less than -50° or greater than $+51^\circ$ authorization. In these cases, other design options should be obtained from the District Drainage Engineer to obtain authorization.

At the contractor's option, Index 292 Standard Precast Concrete substituted for Index 289 cast-in-place box culverts unless specified in plan note. See also Instructions for Index 292.

Plan Content Requirements

In the Roadway or Structures Plans:

For box culvert extensions with skewed joints at the connection, provide additional reinforcing parallel to the joint for the full width to ensure proper load paths for transverse forces. Provide detail for reinforcing bars in the plans and manually add these bars to the drawings.

Complete the following "Box Culvert Data Tables" and include them in the drawing. Refer to Introduction 1.3 for more information regarding use of Data Tables.

Revision Bar

BOX, HEADWALL AND CUTOFF WALL DATA TABLE (Inches unless shown otherwise)																						Table Date 7-01-09
LOCATION	STRUCTURE / BRIDGE NUMBER	BOX									HEADWALL AND CUTOFF WALL											
		#(ft)	H(ft)	T ₁	T _w	T _b	T _i	#cols	LC(ft)	Cover	B ₁ hw	H ₁ hw	B ₁ rw	H ₁ rw	B ₁ cw	H ₁ cw	B ₁ crw	H ₁ crw	Slide	SR(deg)		

LEFT SIDE WINGWALLS DATA TABLE (Inches unless shown otherwise)														Table Date 01-01-11				
STRUCTURE / BRIDGE NUMBER	LEFT END WINGWALL							LEFT BEGIN WINGWALL										
	R ₁	R _w	R _b	R _d	SW(deg)	β (deg)	H _e (ft)	H _s (ft)	L _w (ft)	R ₁	R _w	R _b	R _d	SW(deg)	β (deg)	H _e (ft)	H _s (ft)	L _w (ft)

RIGHT SIDE WINGWALLS DATA TABLE (Inches unless shown otherwise)														Table Date 01-01-11				
STRUCTURE / BRIDGE NUMBER	RIGHT END WINGWALL							RIGHT BEGIN WINGWALL										
	R ₁	R _w	R _b	R _d	SW(deg)	β (deg)	H _e (ft)	H _s (ft)	L _w (ft)	R ₁	R _w	R _b	R _d	SW(deg)	β (deg)	H _e (ft)	H _s (ft)	L _w (ft)

ESTIMATED CONCRETE QUANTITIES (CY)																Table Date 7-01-09
STRUCTURE / BRIDGE NUMBER	BOX						LEFT END WINGWALL		LEFT BEGIN WINGWALL		RIGHT END WINGWALL		RIGHT BEGIN WINGWALL		Culvert	
	Left Cutoff Wall	Right Cutoff Wall	Bottom Slab	Walls	Top Slab	Sub Total	Footing	Wall	Sub Total	Footing	Wall	Sub Total	Footing	Wall	Sub Total	Total

MAIN STEEL REINFORCEMENT SPACING (inches)																		Table Date 7-01-09	
STRUCTURE / BRIDGE NUMBER	BOX											HEADWALLS						CUTOFF WALLS	
	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	

WINGWALL STEEL REINFORCEMENT SPACING (inches)																							Table Date 7-01-09					
STRUCTURE / BRIDGE NUMBER	LEFT END WINGWALL							LEFT BEGIN WINGWALL							RIGHT END WINGWALL					RIGHT BEGIN WINGWALL								
	401	402	404	406	409	410	411	501	502	504	506	509	510	511	601	602	604	606	609	610	612	701	702	704	706	709	710	712

WINGWALL NOTE: Bar designations in 'T' are only required for variable height wingwalls.

NOTES:

1. Environmental Class -----
2. Reinforcing Steel Grade -----
3. Concrete Class ----- f'c = ----- ksi
4. Soil Properties:
Friction Angle -----
Modulus of Subgrade Reaction -----
Nominal Bearing Resistance -----
5. Total Estimated Quantity of Reinforcing Steel ----- lbs
6. Work this Drawing with Design Standards Index No. 289 and Sheet Nos. -----
7. Settlement criteria for Precast Box Culvert option (Index No. 291):
Long Term Differential Settlement (Δ) ≤ ----- ft.
Effective Length for Settlement (L) = ----- ft.
8. Connection Types permitted for Box Culvert Extension Structure/ Bridge Number XXXXX -
(Type I/Type II/Type I or Type II)

Design Standards Website (Design Standards eBooket)

* PRESTRESSED CONCRETE BEAMS			Structures Contact		
20005	1	Prestressed I-Beam Temporary Bracing	IDS-20005	CEL-20005	DGN-20005
20010	2	Typical Florida I-Beam Details and Notes			DGN-20010
20036	2	Florida-I 36 Beam - Standard Details			DGN-20036
20045	2	Florida-I 45 Beam - Standard Details			DGN-20045
20054	2	Florida-I 54 Beam - Standard Details			DGN-20054
20063	2	Florida-I 63 Beam - Standard Details	IDS-20010	CEL-20010	DGN-20063
20072	2	Florida-I 72 Beam - Standard Details			DGN-20072
20078	2	Florida-I 78 Beam - Standard Details			DGN-20078
20084	2	Florida-I 84 Beam - Standard Details			DGN-20084
20096	2	Florida-I 96 Beam - Standard Details			DGN-20096
20199	1	Build-Up & Deflection Data for Florida-I Beams	IDS-20199	CEL-20199	DGN-20199
20210	2	Typical Florida U Beam Details and Notes			DGN-20210
20248	3	Florida U 48 Beam - Standard Details			DGN-20248
20254	3	Florida U 54 Beam - Standard Details	IDS-20210	CEL-20210	DGN-20254
20263	3	Florida U 63 Beam - Standard Details			DGN-20263
20272	3	Florida U 72 Beam - Standard Details			DGN-20272
20299	1	Build-up and Deflection Data for Florida U Beams	IDS-20299	CEL-20299	DGN-20299
* BRIDGE BEARINGS *			Structures Contact		
20502	1	Beveled Bearing Plate Details - Prestressed Florida U-Beams	IDS-20502	CEL-20502	DGN-20502
		Composite Elastomeric Bearing Pads -		CEL-	

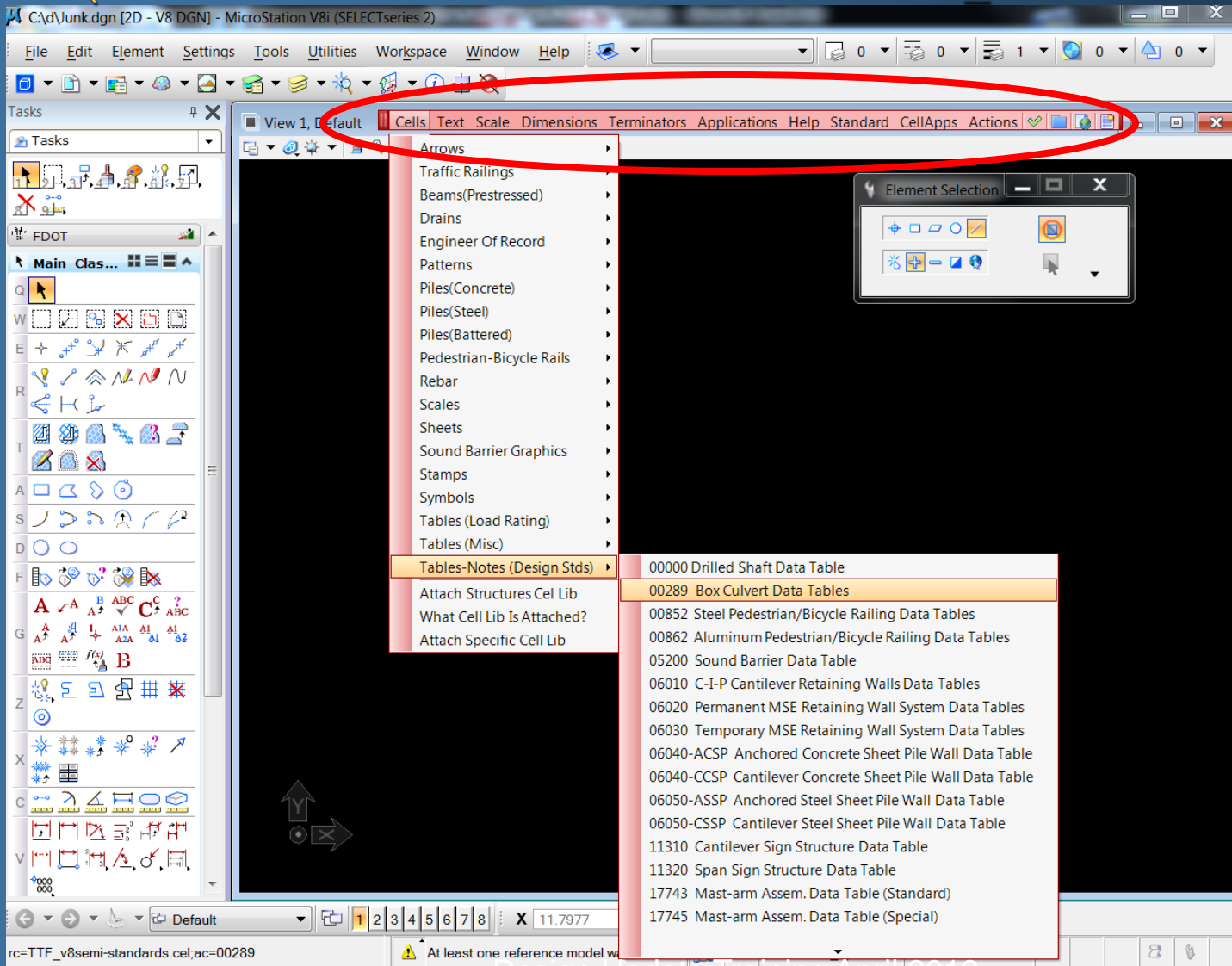
Individual IDS

Individual
Microstation
Cell (Data Table)

Index DGN
(without the
Border)

Data Tables for Structures Standards

(FDOT2010 Microstation CADD load – TTF_V8semi-standards.cel)



Data Tables for Structures Standards

Also available on the Structures Office website (Microstation cell libraries & .pdf's of Load Rating Tables since not associated with a particular Design Standard):

<http://www.dot.state.fl.us/structures/CADD/standards/CurrentStandards/MicrostationDrawings.shtm>

Florida Department of Transportation

FDOT Search: Go

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Home | Business Partners | Employment | Programs | Projects | Related Links | Research/Statistics | Travel Information

April 12, 2012
[April is Distracted Driving Awareness Month.](#)

Structures Design Office - FY 2012/2013 Design Standards Details & Data Tables

PLEASE READ THE FOLLOWING BEFORE DOWNLOADING MICROSTATION DRAWINGS

The official Design Standards are available at the Roadway Office website:
[Design Standards webpage](#)

Design Standards depict common structural components or elements suitable for standard Contract Plans to the official Design Standards as specified in the Plans Preparation Manual. "Structures" Design Standards require the designer to complete a Data Table(s) and include Tables should be available on the FDOT Structures bar menu within the V8semi-standard cell library. If a Data Table is not included in the FDOT Structures bar menu, the latest cell library provided below or individual cells can be downloaded from the [Design Standards webpage](#).

1.) Structures Related Design Standards Details:
(see [Archived Drawings](#) for 2010/2011 Design Standards Details & Interims)
(see [Design Standards website](#) for FY 2012/2013 Design Standards Details & Revisions)

2.) FDOT Structures Menu Data Table Cell Libraries:
(in Microstation format)

- [V8semi-standards.cel v2010.4.2 \(July 2011 - FDOT2008 MR5 and later - Font 16\)](#)
(1.2MB zip)
- [TTF_V8semi-standards.cel v2010.4.1 \(July 2011 - FDOT2010 - True Type Font\)](#)
(1.1MB zip)
- [TTF_V8semi-standards.cel v2012.1 \(January 2012 - FDOT2010 MR2 - True Type Font\)](#)
(0.8MB zip)

3.) FDOT Structures Menu LRFR Summary Tables:
(available in Microstation TTF v8semi-standards.cel Cell Library)

- [LRFR Summary Tables \(last revision: January 2012 - PDF\)](#)
(1.3MB)

4.) FDOT Structures Menu v8 Structures Cell Library:
(in Microstation or AutoCAD format on request)

- [TTF_v8structures.cel \(FDOT2010 MR2\)](#)
(0.5MB zip)

5.) FDOT True Type Fonts:
(Copy these files into the C:\Windows\Fonts directory to correctly display the .dgn's dated July 2010 which are automatically included in the FDOT2010 CADD Software download)

- [FDOT True Type Fonts](#)
(1.4MB zip)


6.) Training Presentations of Interim Changes:
(links to the Roadway Design Office Training web sites)

- [2007 Design Update Training \(January 2006, July 2006 & January 2007 Interims\)](#)
- [2009 Design Update Training \(January 2008, July 2008 & January 2009 Interims\)](#)
- [2010 Design Update Training \(July 2009 & January 2010 Interims\)](#)
- [2011 Design Update Training \(July 2010 & January 2011 Interims\)](#)

Developmental Design Standards

- The Structures Office has a number of **Developmental Design Standards** for implementing new design concepts or Standards that require closer monitoring or have limited use.


[Roadway Design Office](#)



Design Standards

[Design Standards Procedure](#) (Topic Number: 625-010-003)

Current Design Standards

Fiscal Year	Design Standards eBooklet	Design Standards Revisions	Developmental Design Standards	
2012/13	DSeB	DSR	DDS	 Select the desired Current Design Standard eBooklet (DSeB), Design Standards Revisions (DSR) or Developmental Standards (DDS) by clicking on their underlined symbol.

Historical Design Standards

Year	Design Standards Booklet	Design Interim Standards	--	Design Standards Modifications
Select the desired Historical Standard Booklet, Interim Standards or Standards Modification by clicking on their underlined symbol.				
The dates shown under Standards Modification effective dates of the Modifications.				


[For Developmental Design Standards Process](#) <--Click Here

Design Developmental Index No. (PDF)	Title	Monitor	Instructions for Developmental Design Stds (PDF)	Applicable Developmental Specifications? (YES/NO)
*WALL SYSTEMS *				
D06025	GRS-IBS	Larry Jones	IDS-D06025	YES
*TRAFFIC SIGNAL AND EQUIPMENT *				
D17749	Damping Device for Miscellaneous Structures	Gevin McDaniel	IDS-17749	NO
* PRESTRESSED CONCRETE INVERTED-T BEAMS *				
D20310	Typical Inverted-T Beam Details and Notes	Gevin McDaniel	IDS-20310	NO
D20320	Inverted-T Beam Standard Details			
* PRESTRESSED CONCRETE SLAB UNITS *				
D20350	Prestressed Slab Units	Gevin McDaniel	IDS-20350	YES
D20353	12" Custom Width Prestressed Slab Unit-Standard Details			
D20354	12"x48" Prestressed Slab Unit - Standard Details			
D20355	12"x60" Prestressed Slab Unit - Standard Details			
D20363	15" Custom Width Prestressed Slab Unit-Standard Details			
D20364	15"x48" Prestressed Slab Unit - Standard Details			
D20365	15"x60" Prestressed Slab Unit - Standard Details			
D20399	Overlay & Deflection Data for Prestressed Slab Units			


Design Standards 2012 – Future Revisions

- With the new change to a yearly cycle format, any mandatory revisions within the cycle that becomes necessary, will be posted under the DSR link. (Notification will provided by a Roadway Design Bulletin)

Roadway Design Office



Design Standards
[Design Standards Procedure](#) (Topic Number: 625-010-003)

Current Design Standards				
Fiscal Year	Design Standards eBooklet	Design Standards Revisions	Developmental Design Standards	
2012/13	DSeB	DSR	DDS	 Select the desired Current Design Standards eBooklet (DSeB), Design Standards Revisions (DSR) or Developmental Design Standards (DDS) by clicking on their underlined symbol.

Historical Design Standards				
Year	Design Standards Booklet	Design Interim Standards	--	Design Standards Modifications
Select the desired Historical Standard Booklet, Interim Standards or Standards Modification by clicking on their underlined symbol.				The dates shown under Standards Modifications are the effective dates of the Modifications.

Design Standards 2012 – Future Revisions

- Also the “Revision Number” will be listed next to the Index in the eBooklet which also provides links to the Design Standards Revision (DSR) webpage

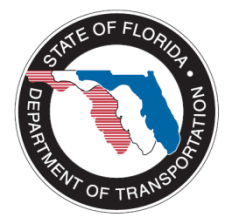
		<u>* TRAFFIC RAILINGS *</u>	(400-417, 430 & 461) Roadway Contact (420-425, 470-484) Structures Contact
400	26	Guardrail	R1301-400
402	24	Guardrail Transitions and Connections for Existing Bridges	IDS-402
403	3	Guardrail Transitions for Existing Bridge Traffic Railing Retrofits	IDS-403



Roadway Design
Florida's Transportation Engineers

Design Standards Revision
Fiscal Year 2012/2013

REVISION	Index No. (PDF)	Sheets	Description	Effective Date	Design Bulletin Number
R1301	400	13,17,18,22, 26	Index 400 revisions due to payment issues related to Bridge Anchorage, Pipe Rail and Rub Rail	07/01/2012	RDB12-06
	414	1	Added Alternative Design Requirements		
	619	1 & 2	Revision of Multi-Lane details (>3 lanes)		



Current Revisions to Design Standards

Design Standards 2012

- For the complete list of all revisions visit the Roadway Design Standards website:

<http://www.dot.state.fl.us/rddesign/DS/12/IDx/Revisions.pdf>

- Since this is a new booklet the listing will include all the Interims changes since the 2010 Booklet release (Jan 2010, July 2010, Jan 2011, July 2011).
 - We will only discuss the July 2011 Interims and changes made for the January release FY2012/2013 eBooklet.
- Revisions to Structural Indexes may include:
 - editorial changes/rewording (not included here);
 - reorganization within indexes (not included here);
 - Minor corrections and updates (not included here);
 - Major updates to reflect design code changes or other needs;
 - Enhancement of current systems.

Index 200

STRUCTURES BOTTOMS TYPE J & P

Drainage Index: Changed Table 2 and Table 8:

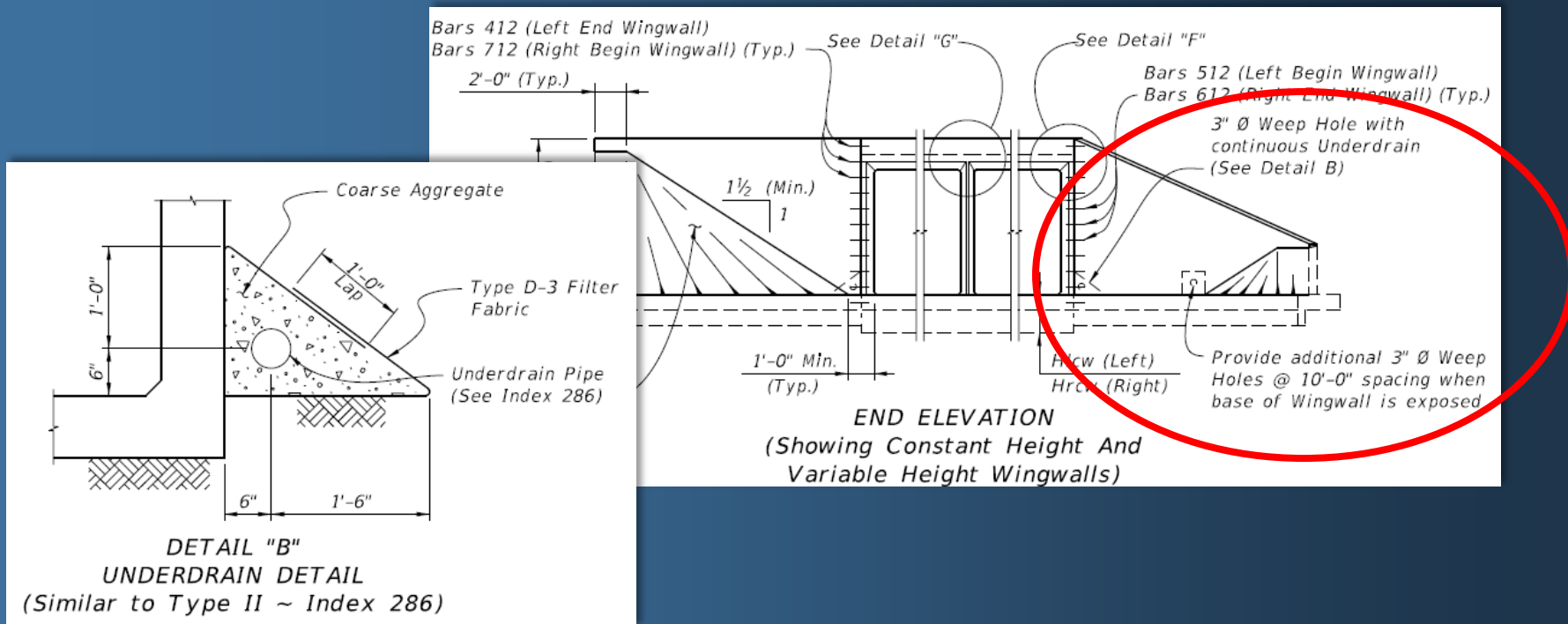
- Added a 16' size to the Precast or C-I-P structure.
- Added and a 9" thick wall option to Precast only wall options for 10', 12', 16', & 20' sizes.

Index 289

CONCRETE BOX CULVERT DETAILS (LRFD)

Added Underdrain and Wingwall Weep Hole details (Sheet 5)

- Relieves external hydrostatic pressure without requiring weep holes in the barrel section.
- Companion language in **Construction Specification 400-6.**



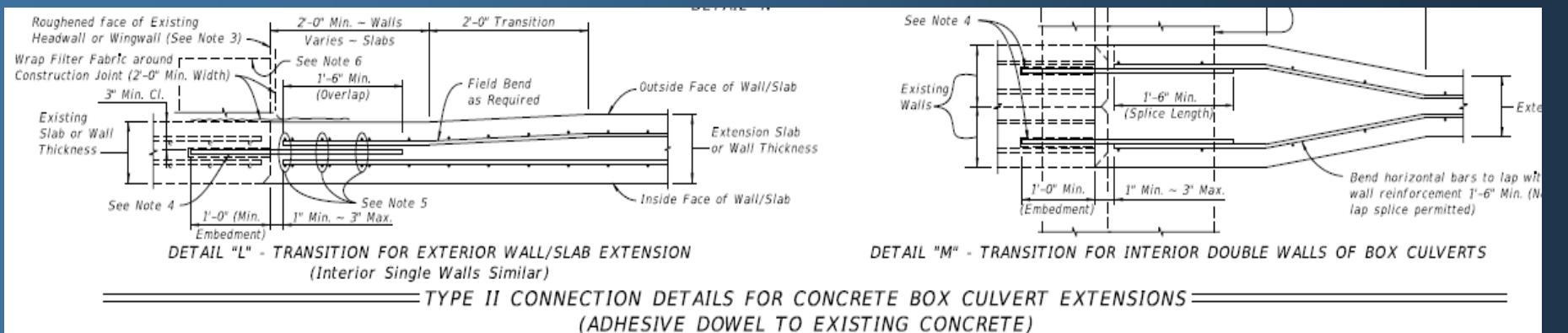
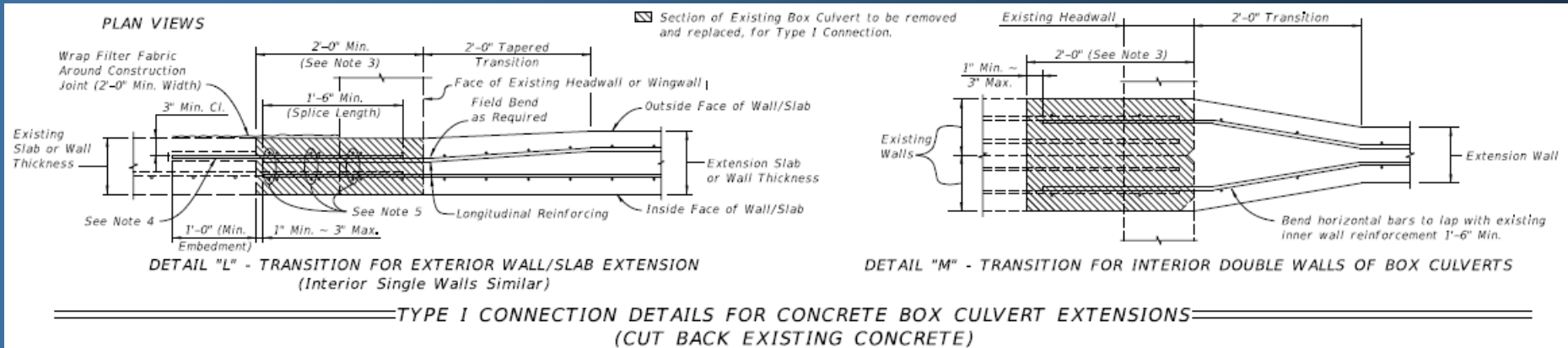
Index 289

CONCRETE BOX CULVERT DETAILS (LRFD)

Type I Connection defined (traditional method – Sheet 6),

Type II Connection added (adhesive dowels – Sheet 7)

(See the IDS-289 for direction on evaluating and including the “Type” of connection in the Plans.)



Index 289

CONCRETE BOX CULVERT DETAILS (LRFD) - Data Table

The Connection "Type" needs to be completed in Note 8 on the Data Table.

- Quantities are currently not reduced for Type II tie-in length (2' length added).
Reinforcing lengths from FDOT Box Culvert Program will be conservative.

8. Connection Types permitted for Box Culvert Extensions:
Structure/ Bridge Number XXXXX -

(Type I/Type II/Type I or Type II)

BOX CULVERT DATA TABLES

BOX, HEADWALL AND CUTOFF WALL DATA TABLE (inches unless shown otherwise) Table Date 7-01-09

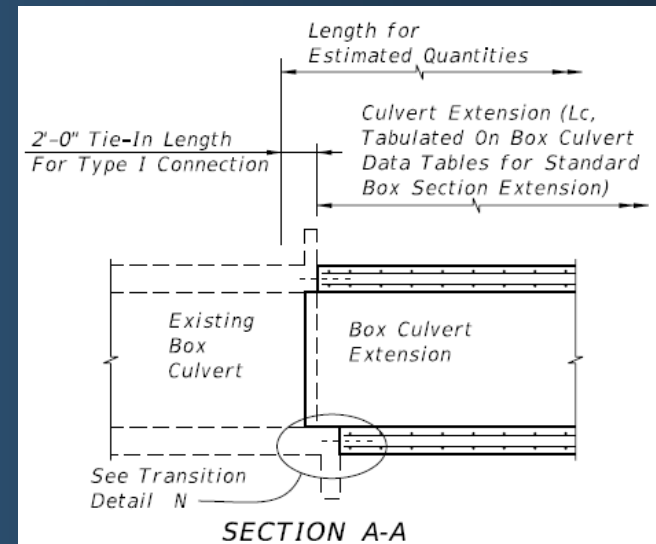
LOCATION	STRUCTURE / BRIDGE NUMBER	BOX											HEADWALL AND CUTOFF WALL												
		W1(U)	W2(U)	T1	Tw	Ts	T1	Foot(s)	Cut(T)	Cover	Box	W1(w)	Box	W2(w)	Box	W1(w)	Box	W2(w)	Box	W1(w)	Box	W2(w)	Box	Slab(s)	Slab(s)

STRUCTURE / BRIDGE NUMBER	R1	R2	ESTIMATED CONCRETE QUANTITIES (CY)																												
			Left Cutoff Wall	Right Cutoff Wall	Bottom Slab	Walls	Top Slab	Left Head Wall	Right Head Wall	Sub Total	Footings	Walls	Sub Total	Footings	Walls	Sub Total	Footings	Walls	Sub Total	Footings	Walls	Sub Total	Footings	Walls	Sub Total	Footings	Walls	Sub Total	Cover	Total	

STRUCTURE / BRIDGE NUMBER	MAIN STEEL REINFORCEMENT SPACING (inches)														HEADWALLS		CUTOFF WALLS			
	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	803	806	809	812

STRUCTURE / BRIDGE NUMBER	WINGWALL STEEL REINFORCEMENT SPACING (inches)																														
	LEFT END WINGWALL					LEFT BEGIN WINGWALL					RIGHT END WINGWALL					RIGHT BEGIN WINGWALL															
401	402	403	404	405	406	409	410	411	501	502	503	504	505	506	509	510	511	601	602	604	606	609	610	611	701	702	704	706	709	710	711
60718	403	405	406	409	410	411	50718	503	504	505	506	509	510	511	60718	603	605	606	609	610	611	70718	703	704	705	706	709	710	711		

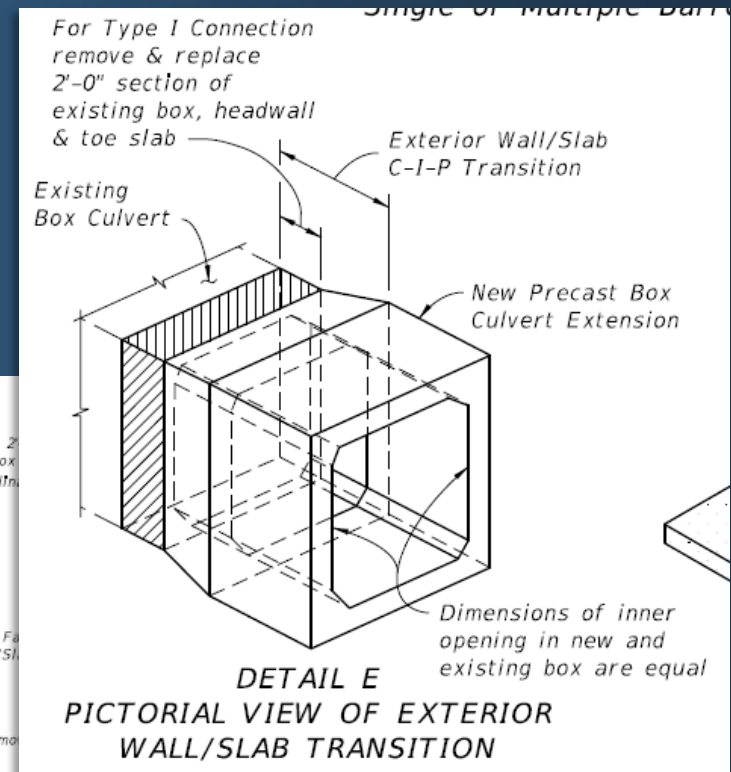
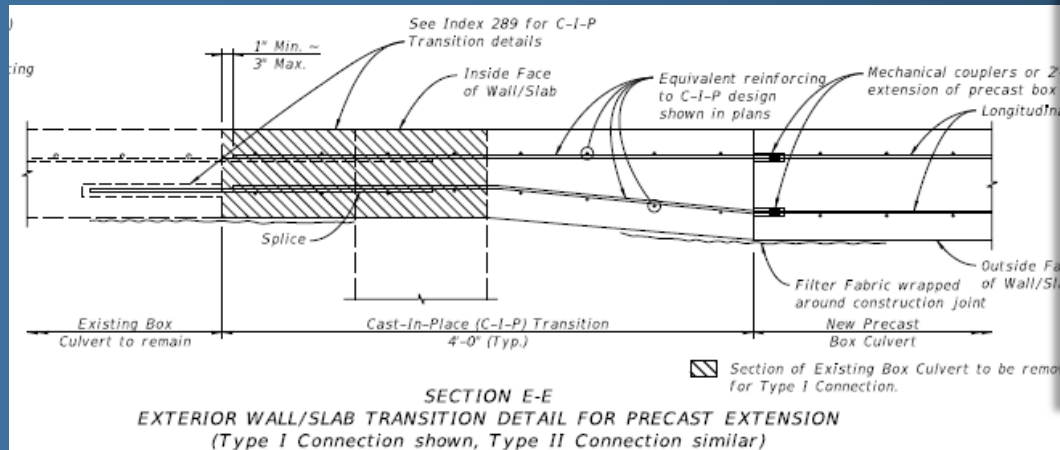
WINGWALL NOTE: Bar designations in "T" are not required for variable height wingwalls.



Index 291

SUPPLEMENTAL DETAILS FOR PRECAST CONCRETE BOX CULVERTS

- Sheet 1 – Added “for Type I Connection” to Detail E
- Sheet 3 – Updated Connection Details



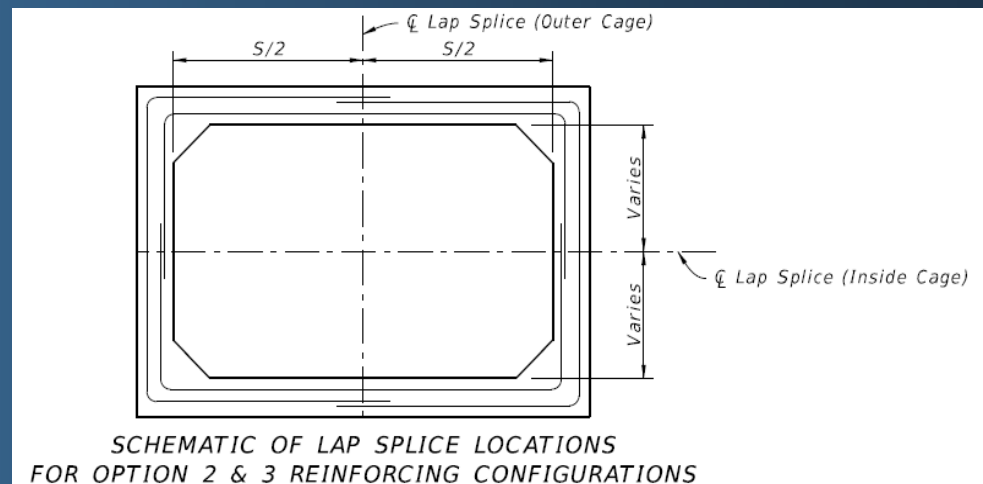
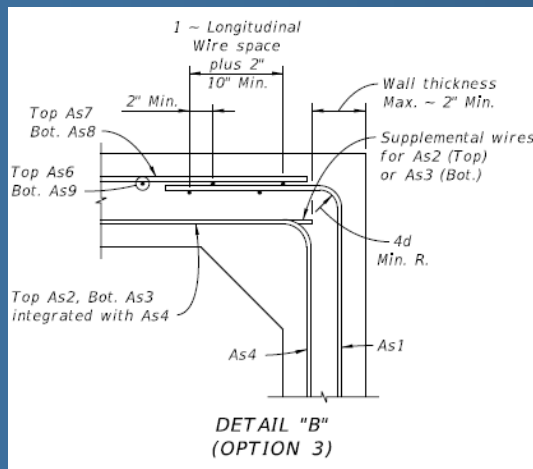
Index 292

STANDARD PRECAST CONCRETE BOX CULVERTS

- Sheet 2: Add Notes 7 & 11 to the General Notes and SCHEMATIC OF LAP SPLICE LOCATIONS FOR OPTION 2 & 3 REINFORCING CONFIGURATIONS

7. For alternate reinforcing configuration Options 2 and 3 shown in Detail "A" and "B" (Sheet 1), As1 may be extended to the middle of either slab and lap spliced with As7 and As8. As4 may be lap spliced at any location or connected to As2 or As3 at corners by welding.

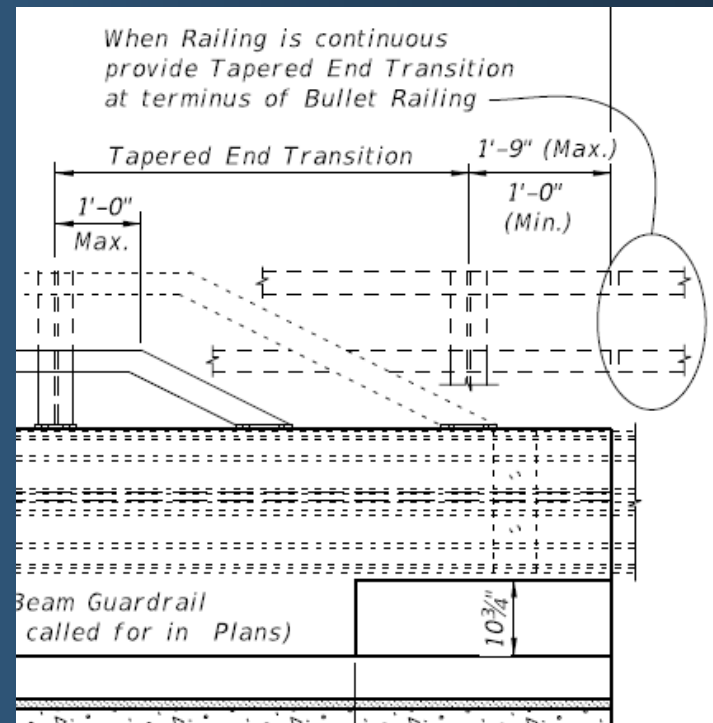
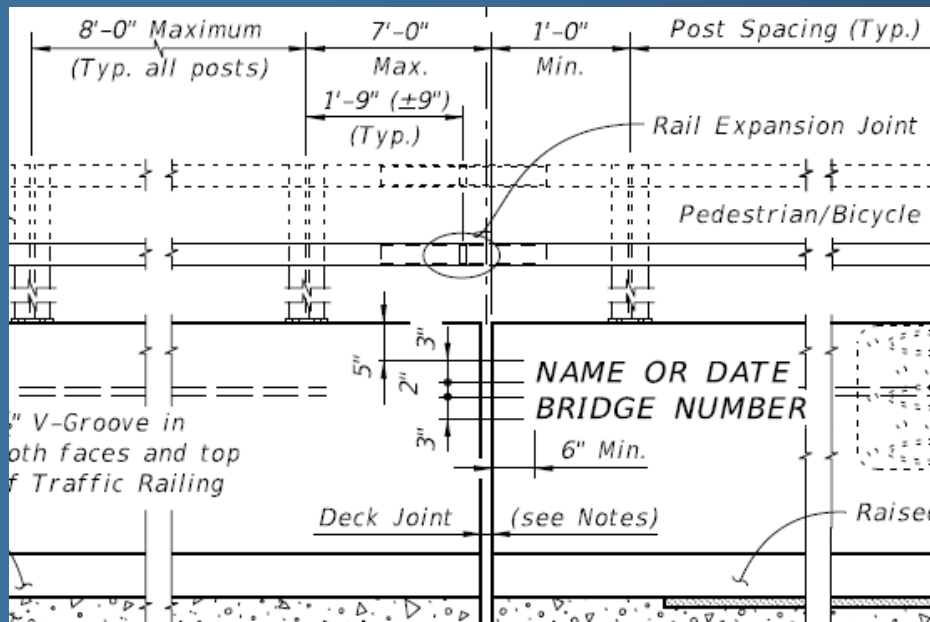
11. Minimum length of precast box segments is 4 feet and maximum length is 16 feet.



Index No. 423

TRAFFIC RAILING – (32" VERTICAL SHAPE)

- Sheet 1 – Added tapered end detail for Bullet Railing attachment (similar to Index 821) and revised post offset dimensions.



Indexes 822

BRIDGE ALUMINUM PEDESTRIAN/BICYCLE BULLET RAILING

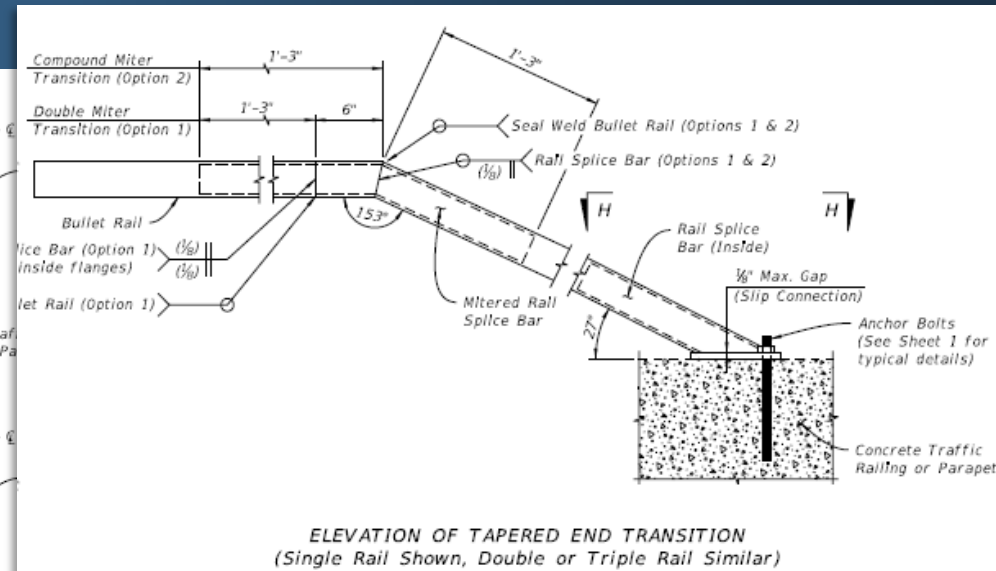
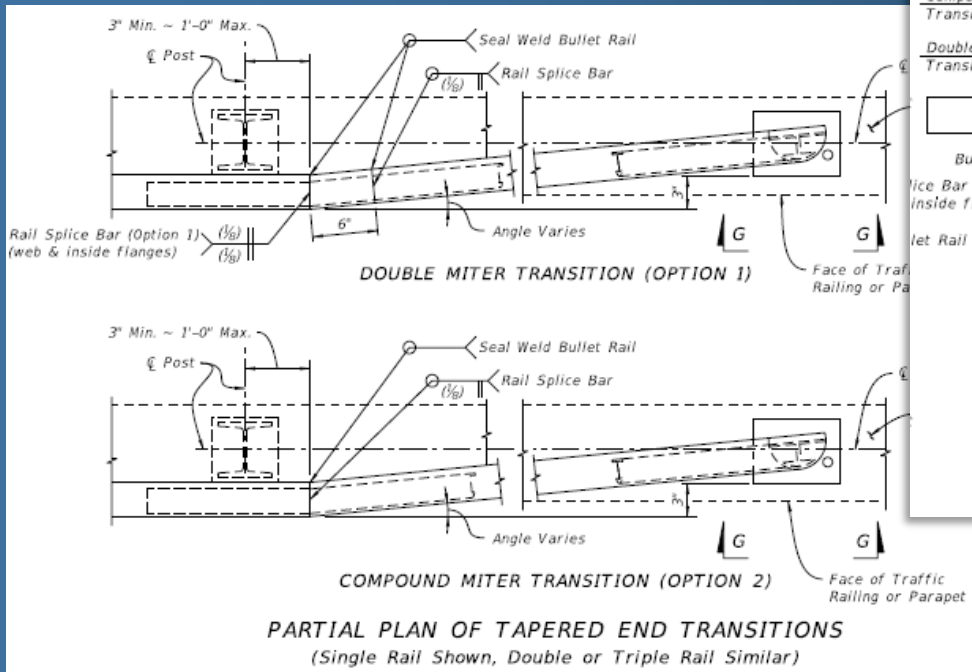
- Sheet 3:
 - Added “**Bridge**” to title (all sheets)
 - Added DOUBLE MITER TRANSITION (OPTION 1) detail with Tapered End Details
 - Simplified SHOP DRAWING note requirements.
 - Added “Post shall be uniformly spaced with reasonable consistency” to RAIL INSTALLATION note.
 - Deleted third sentence from RAIL SPLICES note which located the center of the splice at 1'-5" minimum offset from posts. (*Details on Indexes 423, 820 & 822 allow 1'-0" min. to 2'-6" max.*).

Indexes 822

BRIDGE ALUMINUM PEDESTRIAN/BICYCLE BULLET RAILING (Continued)

Sheet 3:

- Added DOUBLE MITER TRANSITION (OPTION 1) detail with Tapered End Details



Index 5200

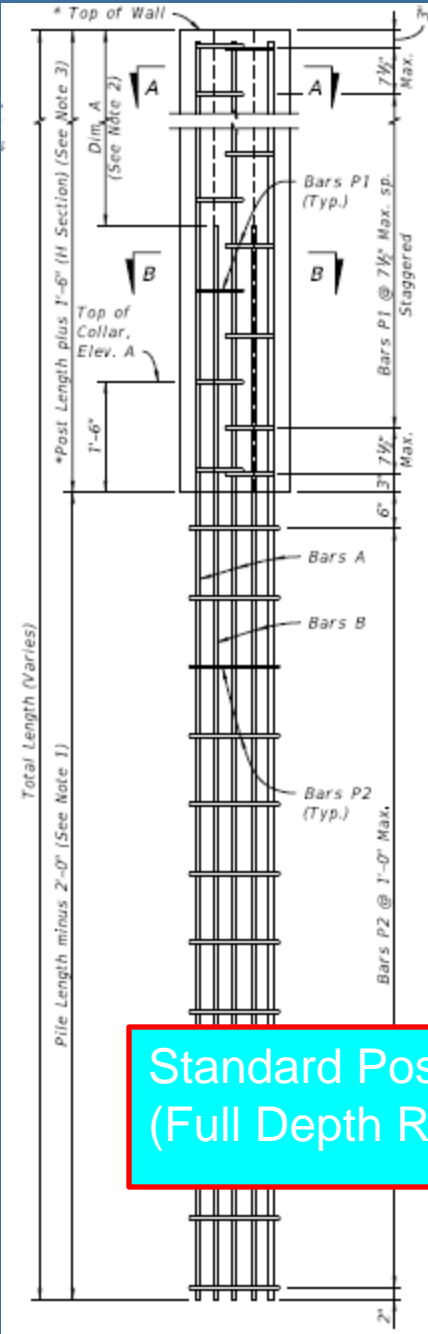
PRECAST SOUND BARRIERS

- Changed Design Specification to LRFD, and moved all information from **Structures Manual**-Volume 6 to Volume 1-**SDG** Section 3-16.
- Redesigned using new LRFD criteria (**AASHTO LRFD Bridge Design Specification** - Section 15 - 6th Edition, and revisions to **SDG** Section 3-16 including FDOT wind loads)
- Added 3 Wind Speed Categories (110, 130, and 150 mph)
 - Each Wind Speed Table has two soil options: Medium Dense; and Loose granular soil.
- Reinforcing and foundation depths changed slightly, same post shape (130 mph LRFD is similar to 110 mph under previous LFD Guide Specification)
- Added “Low Clearance” Foundation Option.

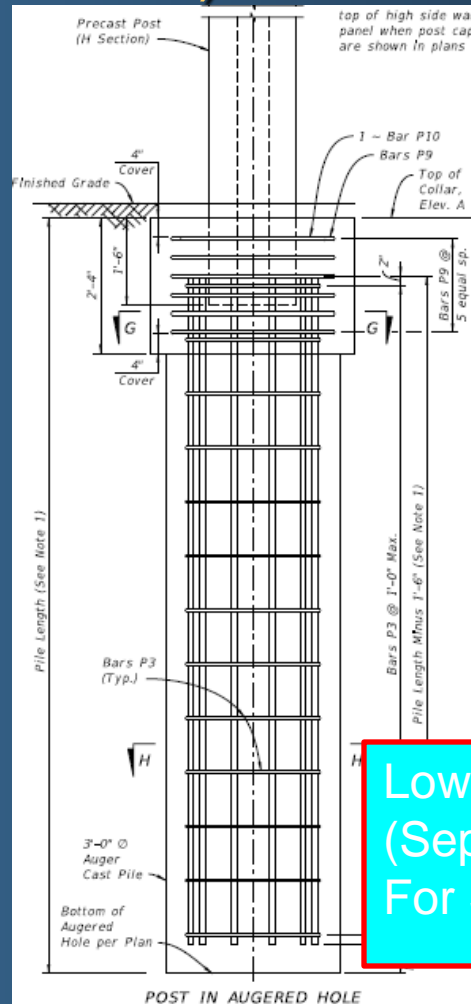
Index 5200

PRECAST SOUND BARRIERS (Continued)

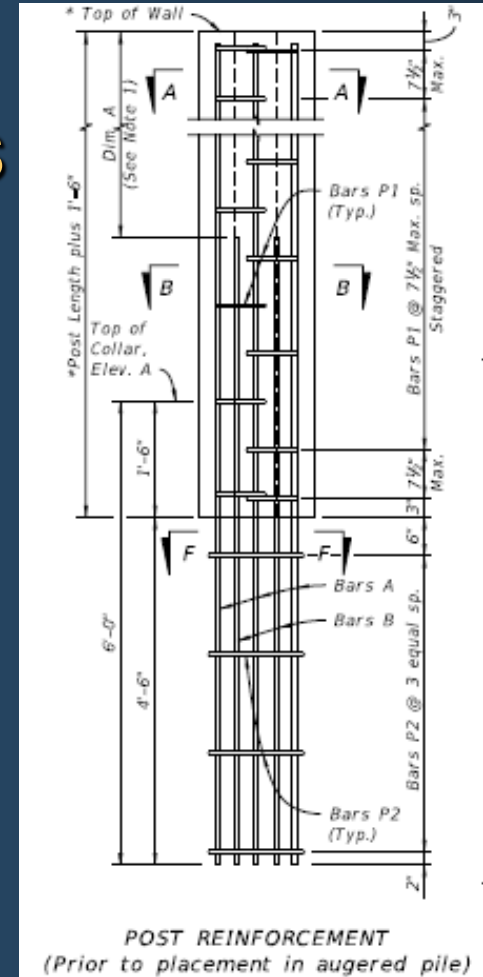
Sheets 11 & 12
 – Low Clearance Option



Standard Post
 (Full Depth Rebar)



Low Clearance Option
 (Separate Rebar Cage For Shaft)



Index 5200

PRECAST SOUND BARRIERS (Continued)

- Sheet 16 - New Sheet for 130 mph and 150 mph Wind Speeds

TABLE 2 - WIND SPEED = 130 MPH

POST AND PILE DIMENSIONS										TABLE OF REINFORCING STEEL												
WALL TYPE	POST LENGTH WITHOUT CAP	POST LENGTH WITH CAP	PILE LENGTH								PILE/POST REINFORCING											
			N = 10 to 40 Med. Dense Granular Soil				N = 4 to 9 Loose Granular Soil				10'-0" POST SPACING					20'-0" POST SPACING						
			10'-0" POST SPACING		20'-0" POST SPACING		10'-0" POST SPACING		20'-0" POST SPACING		BARS A	BARS B		BARS D	BARS E		BARS A	BARS B		BARS D	BARS E	
			30" Ø	36" Ø	30" Ø	36" Ø	30" Ø	36" Ø	30" Ø	36" Ø	SIZE	SIZE	DIM 'A'	SIZE	SIZE	DIM 'A'	SIZE	SIZE	DIM 'A'	SIZE	SIZE	DIM 'A'
A2	12'-0 1/2"	12'-2 1/2"	12	11	16	15	12	11	16	15	#4	#4	11'-5"	#4	#4	9'-5"	#5	#5	9'-2"	#6	#6	8'-9"
B2	13'-0 1/2"	13'-2 1/2"	12	12	16	15	13	12	17	16	#4	#4	11'-5"	#5	#5	12'-2"	#5	#5	9'-2"	#6	#6	8'-9"
C2	14'-0 1/2"	14'-2 1/2"	13	12	17	16	13	12	18	16	#4	#4	11'-5"	#5	#5	12'-2"	#6	#6	10'-9"	#7	#7	10'-4"
D2	15'-0 1/2"	15'-2 1/2"	13	13	18	16	14	13	18	17	#4	#4	11'-5"	#5	#5	12'-2"	#6	#6	10'-9"	#7	#7	10'-4"
E2	16'-0 1/2"	16'-2 1/2"	14	13	19	17	14	13	19	18	#5	#5	13'-2"	#6	#6	13'-9"	#7	#7	12'-4"	#8	#8	11'-10"
F2	17'-0 1/2"	17'-2 1/2"	14	13	19	18	15	14	20	18	#5	#5	13'-2"	#6	#6	13'-9"	#7	#7	12'-4"	#8	#8	11'-10"
G2	18'-0 1/2"	18'-2 1/2"	15	14	20	18	15	14	20	19	#5	#5	13'-2"	#6	#6	13'-9"	#8	#8	13'-10"	#9	#9	12'-4"
H2	19'-0 1/2"	19'-2 1/2"	15	14	20	19	16	15	21	20	#6	#6	15'-9"	#7	#7	15'-4"	#8	#8	13'-10"	#9	#10	11'-2"
J2	20'-0 1/2"	20'-2 1/2"	16	15	21	19	16	15	22	20	#6	#6	15'-9"	#7	#7	15'-4"	#8	#8	12'-10"	#10	#10	13'-2"
J2	21'-0 1/2"	21'-2 1/2"	16	15	22	20	17	16	22	21	#6	#6	15'-9"	#7	#7	15'-4"	#9	#9	14'-4"	#10	#11	12'-10"
K2	22'-0 1/2"	22'-2 1/2"	17	16	22	21	17	16	23	21	#7	#7	17'-4"	#8	#8	16'-10"	#9	#9	14'-4"	#11	#11	13'-10"

TABLE 3 - WIND SPEED = 150 MPH

POST AND PILE DIMENSIONS										TABLE OF REINFORCING STEEL												
WALL TYPE	POST LENGTH WITHOUT CAP	POST LENGTH WITH CAP	PILE LENGTH								PILE/POST REINFORCING											
			N = 10 to 40 Med. Dense Granular Soil				N = 4 to 9 Loose Granular Soil				10'-0" POST SPACING					20'-0" POST SPACING						
			10'-0" POST SPACING		20'-0" POST SPACING		10'-0" POST SPACING		20'-0" POST SPACING		BARS A	BARS B		BARS D	BARS E		BARS A	BARS B		BARS D	BARS E	
			30" Ø	36" Ø	30" Ø	36" Ø	30" Ø	36" Ø	30" Ø	36" Ø	SIZE	SIZE	DIM 'A'	SIZE	SIZE	DIM 'A'	SIZE	SIZE	DIM 'A'	SIZE	SIZE	DIM 'A'
A3	12'-0 1/2"	12'-2 1/2"	13	12	18	16	14	13	18	17	#4	#4	9'-5"	#5	#5	10'-2"	#6	#6	8'-9"	#6	#7	7'-4"
B3	13'-0 1/2"	13'-2 1/2"	14	13	19	17	14	13	19	18	#4	#4	9'-5"	#5	#5	10'-2"	#6	#6	8'-9"	#7	#7	8'-4"
C3	14'-0 1/2"	14'-2 1/2"	14	13	19	18	15	14	20	19	#5	#5	11'-2"	#6	#6	11'-9"	#7	#7	10'-4"	#8	#8	9'-10"
D3	15'-0 1/2"	15'-2 1/2"	15	14	20	19	16	14	21	19	#5	#5	11'-2"	#6	#6	11'-9"	#7	#7	10'-4"	#8	#9	9'-4"
E3	16'-0 1/2"	16'-2 1/2"	16	14	21	19	16	15	22	20	#5	#5	11'-2"	#6	#6	11'-9"	#8	#8	10'-10"	#9	#9	10'-4"
F3	17'-0 1/2"	17'-2 1/2"	16	15	22	20	17	16	22	21	#6	#6	13'-9"	#7	#7	13'-4"	#8	#8	10'-10"	#9	#10	9'-7"
G3	18'-0 1/2"	18'-2 1/2"	17	16	22	21	17	16	23	21	#6	#6	12'-9"	#7	#7	13'-4"	#9	#9	12'-4"	#10	#10	11'-2"
H3	19'-0 1/2"	19'-2 1/2"	17	16	23	21	18	17	24	22	#6	#6	12'-9"	#8	#8	14'-10"	#9	#9	12'-4"	#11	#11	11'-9"
I3	20'-0 1/2"	20'-2 1/2"	18	17	24	22	18	17	25	23	#7	#7	15'-4"	#8	#8	14'-10"	#9	#10	11'-2"	#11	#14	10'-0"
J3	21'-0 1/2"	21'-2 1/2"	18	17	24	23	19	18	25	23	#7	#7	15'-4"	#9	#9	16'-4"	-	-	-	-	-	-
K3	22'-0 1/2"	22'-2 1/2"	19	17	25	23	19	18	26	24	#8	#8	16'-10"	#9	#9	16'-4"	-	-	-	-	-	-

Index 5200

PRECAST SOUND BARRIERS (Data Table)

- Deleted QPL Notes.
- Added WIND SPEED and BACK FACE OF POSTS columns and deleted SOUND ABSORPTIVE PANEL column in PROJECT REQUIREMENTS table.
- Added MINIMUM HEIGHT column in ANTI-GRAFFITI table.

LIMITS OF ANTI-GRAFFITI COATING ⁽⁵⁾					Table Date 1-01-12	
BARRIER NO.	STATION TO STATION	* FRONT FACE/ BACK FACE/ BOTH	MINIMUM HEIGHT **	AREA (SF)		
TOTAL:						

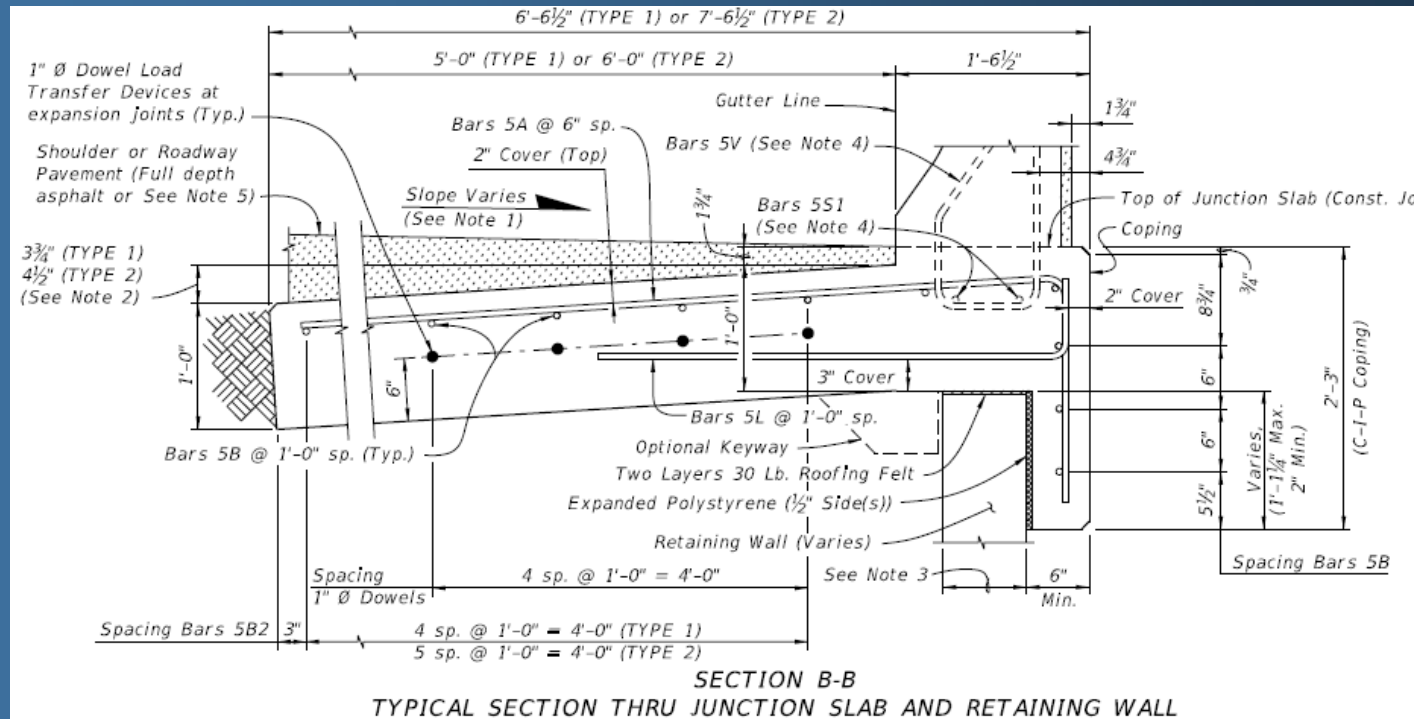
(5) Coat limits shown in table with _____ (sacrificial/non-sacrificial/water cleanable) anti-graffiti coating.
* Includes Posts and Panels.
** Height is measured from final grade.

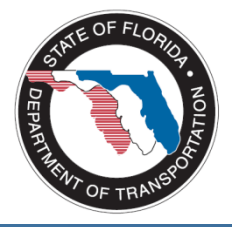
PROJECT REQUIREMENTS								Table Date 1-01-12	
BARRIER NO.	WIND SPEED (MPH)	REQUIRED: (YES/NO)			REQUIRED TEXTURES:				PANEL TYPE (FLUSH/ RECESSED/ EITHER)
		GRAPHICS (1)	COLORED COATINGS (2)	PRECAST POST CAP (3)	PANELS:		POSTS:		
					FRONT FACE	BACK FACE	FRONT FACE	BACK FACE	

Index 5212

TRAFFIC RAILING/SOUND BARRIER (8'-0") JUNCTION SLAB

- Changed coping height to 2'-3" to match Index 6000 series.
- Added Type 2 Junction Slab (6'-0" wide).
 - See *IDS-5210* for table showing use of Type 1 or Type 2 width Junction Slabs (Type 2 for 150 mph wind zone).





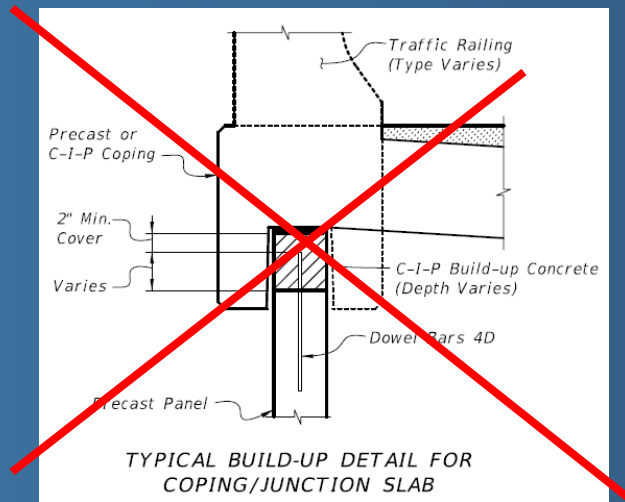
Major Reorganization of Retaining Wall Indexes last year

Indexes 520, 5100, 5300, 5301 reorganized Into the **New 6000 Series** (Details were presented in last years Update Training)

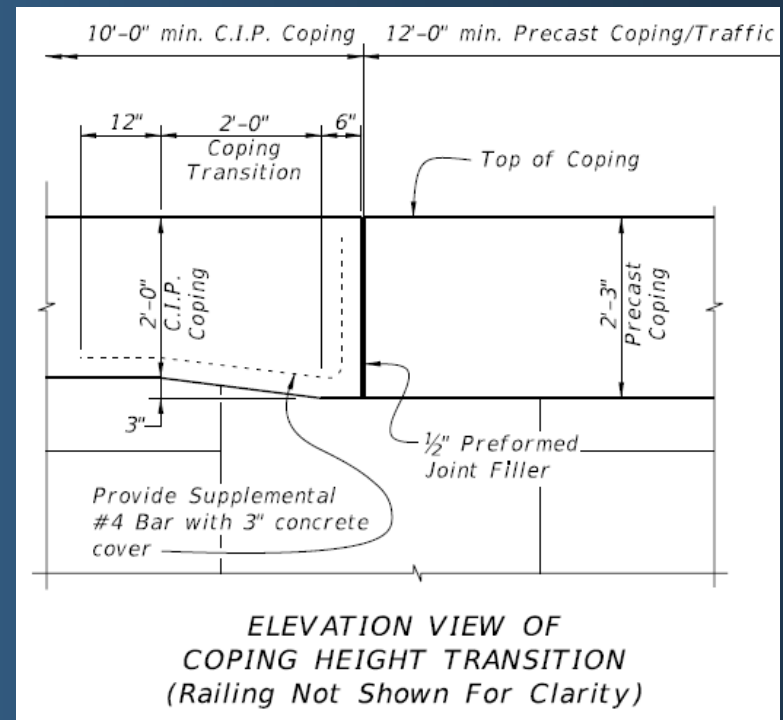
Index 6020

PERMANENT MSE RETAINING WALL SYSTEMS

- Removed "Typical Build-up Detail For Coping/Junction Slab".
- Added new "Elevation View Of Coping Height Transition" detail.
(This is to accommodate transitions to approach slabs and other 2'-0" coping heights)



This is now shown on other Indexes for Precast copings.

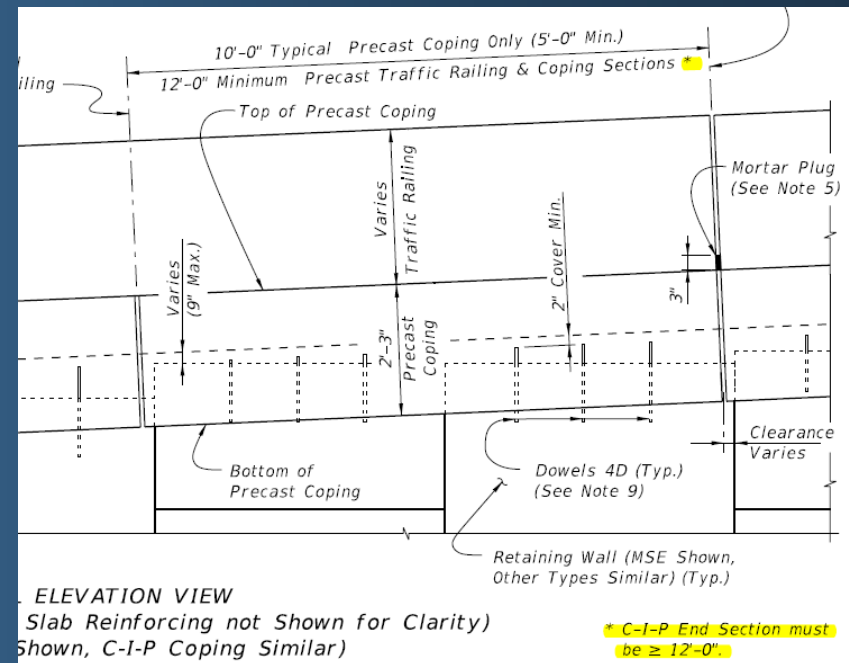


Index 6110

WALL COPING WITH TRAFFIC RAILING/JUNCTION SLAB

Sheet1:

- Changed Junction Slab Notes 2 to state “Slip forming of coping and/or junction slab is not permitted” – i.e. Traffic railing portion is allowed.
- Corrected Note 3 to only allow Class II concrete for “slightly” aggressive environments (not “moderately” aggressive).
- Added minimum 12’-0” length for C.I.P. end sections for Precast Traffic Railings;

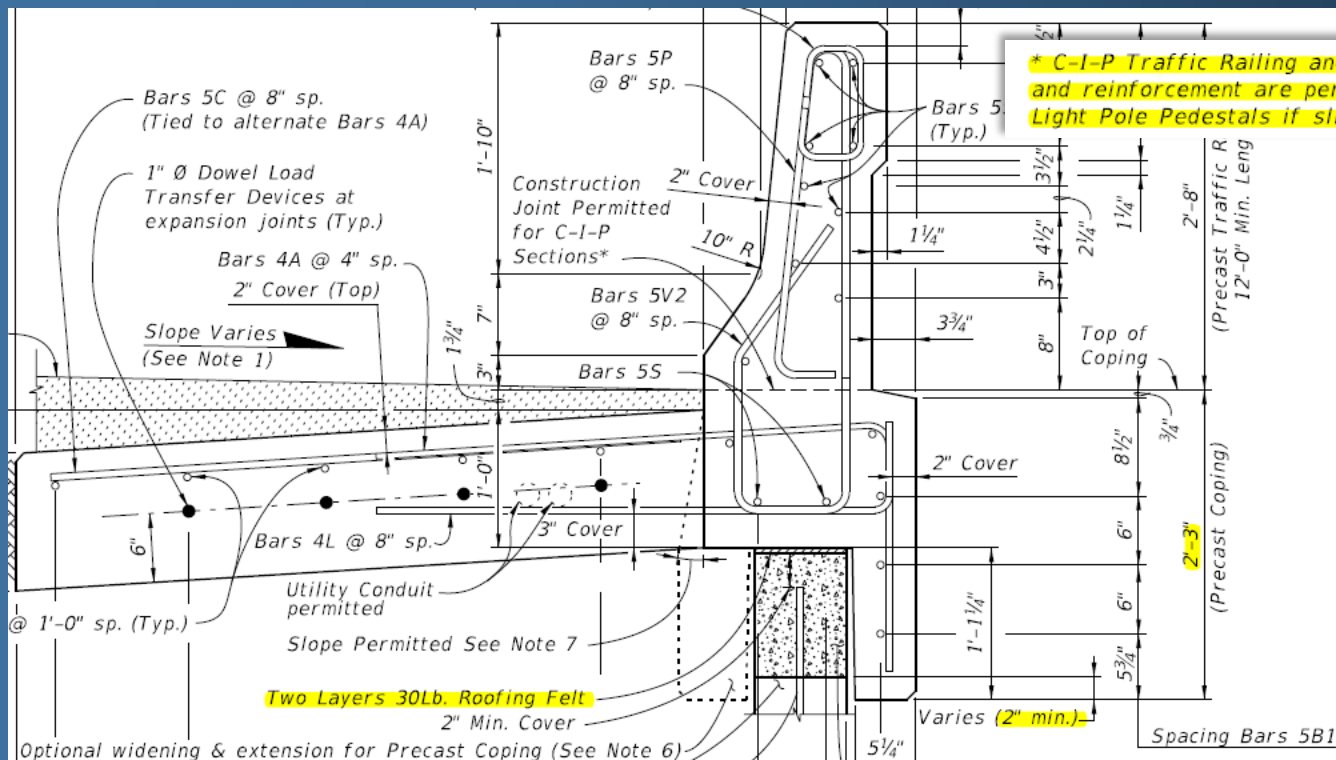


Index 6110

WALL COPING WITH TRAFFIC RAILING/JUNCTION SLAB

Sheet 2 (Precast Traffic Railing/Coping Option):

- Changed coping height to 2'-3" (all sheets);
- Added * note to allow C.I.P Sections using Precast dimensions, where slip forming is not used;
- Changed **1" Preformed Joint Filler** to **Two layers 30 Lb Roofing Felt**.

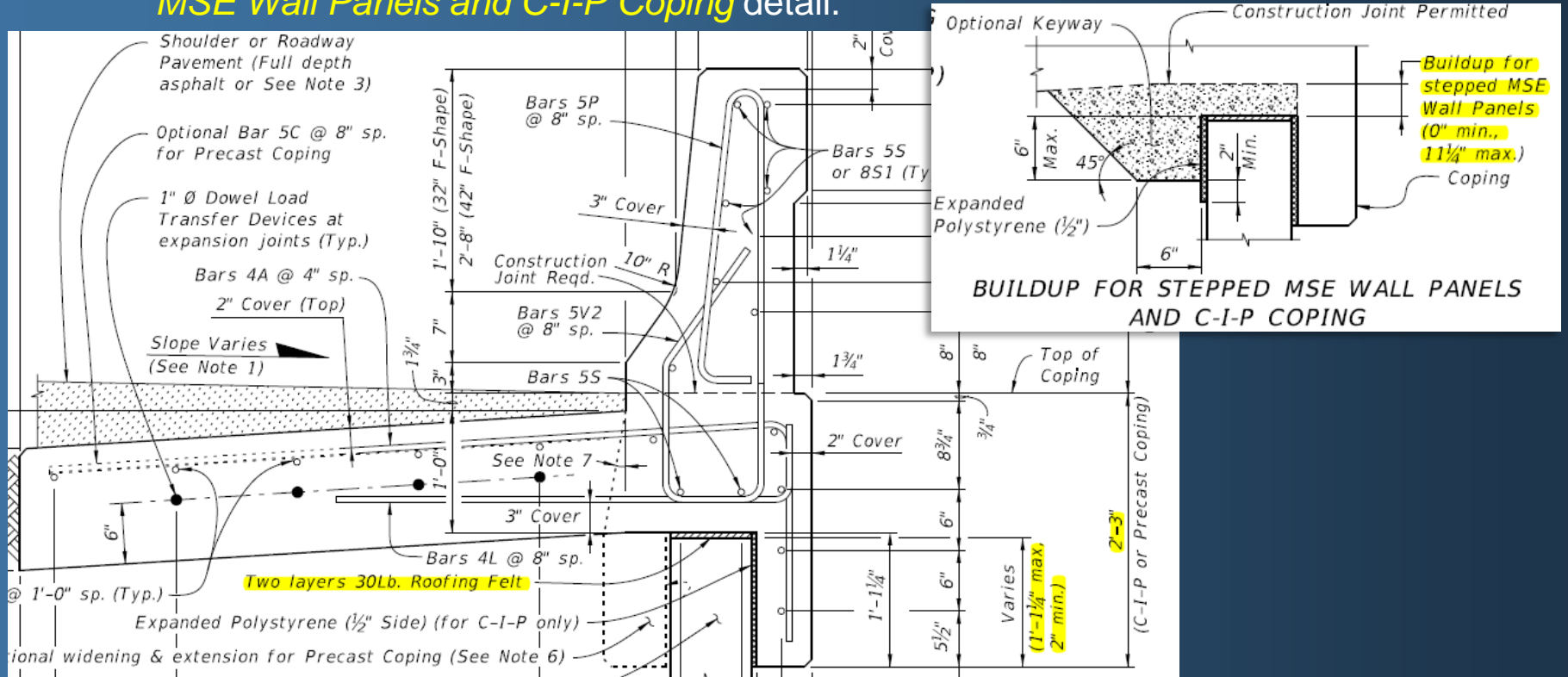


Index 6110

WALL COPING WITH TRAFFIC RAILING/JUNCTION SLAB

Sheet 3 (C-I-P Traffic Railing Option):

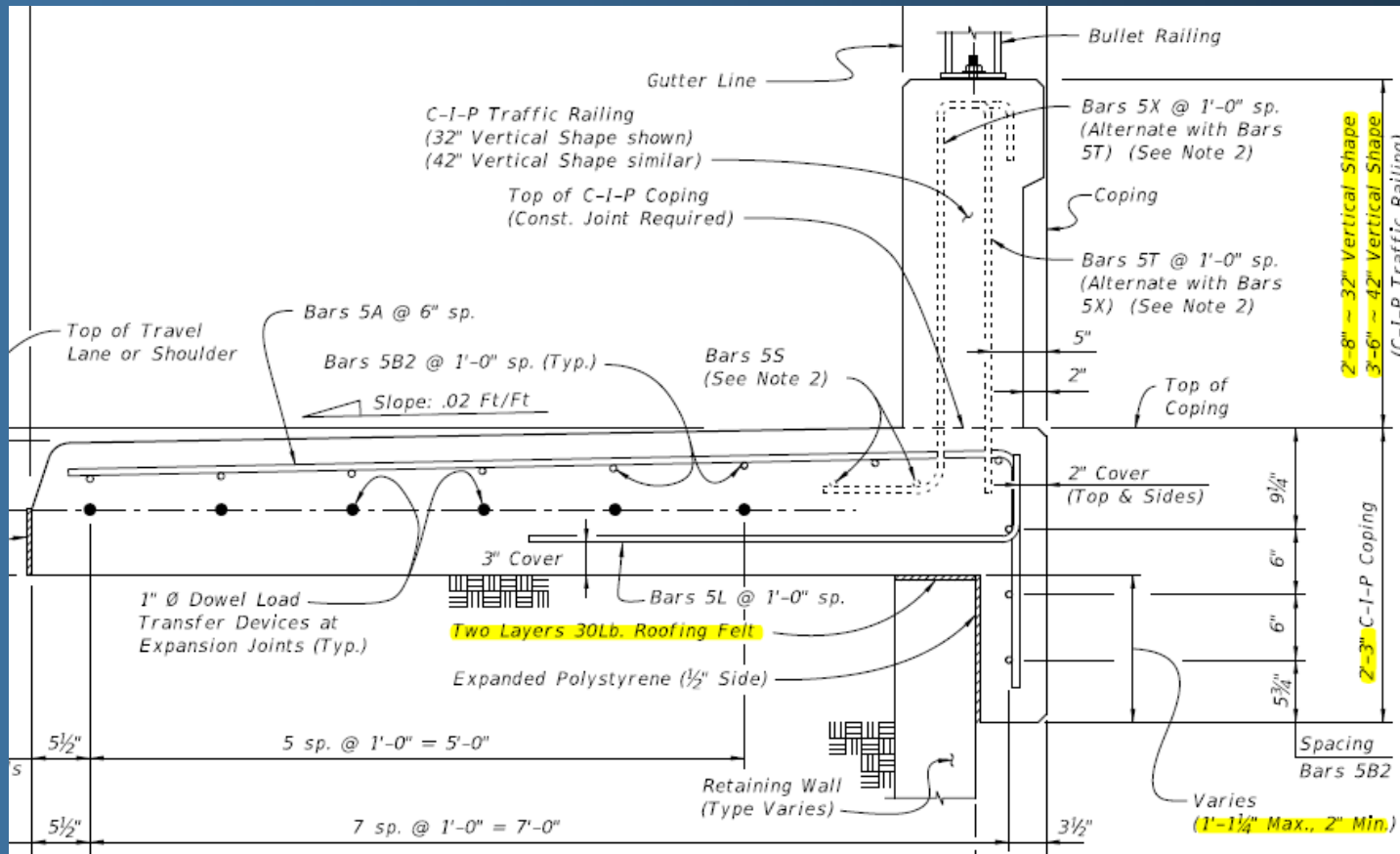
- Changed coping height to 2'-3" (all sheets);
- Changed recess limits for MSE wall panels.
- Changed **1" Preformed Joint Filler** to **Two layers 30 Lb Roofing Felt**.
- Changed **Optional C-I-P Junction Slab Keyway** detail to **Buildup For Stepped MSE Wall Panels and C-I-P Coping** detail.



Index 6120

WALL COPING WITH TRAFFIC RAILING/RAISED SIDEWALK

- Similar Changes to 6110:

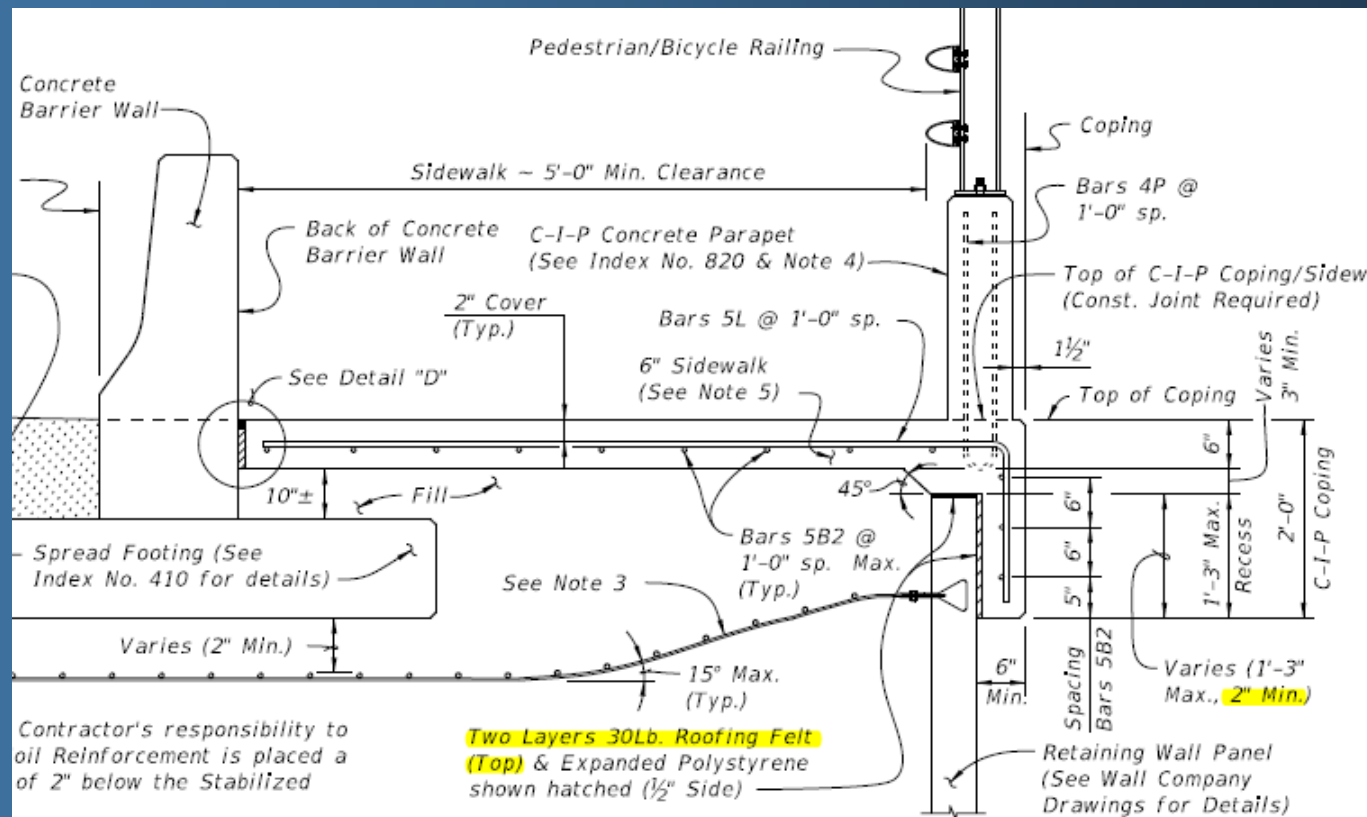


Index 6130

WALL COPING/PARAPET WITH C-I-P SIDEWALK

Sheet 2:

- Coping height remained at 2'-0";
- Changed recess limits for MSE wall panels.
- Changed *1" Preformed Joint Filler* to *Two layers 30 Lb Roofing Felt*.

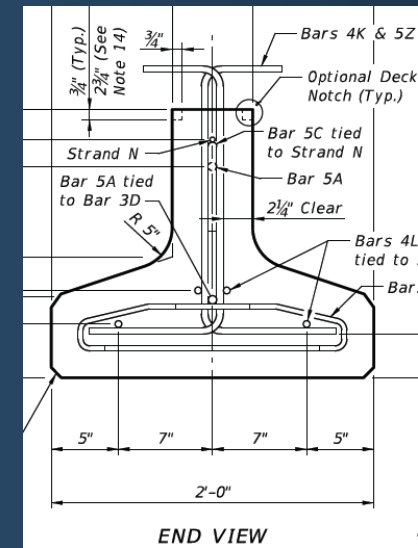


AASHTO & BULB-T BEAM SERIES

- **Deleted Indexes:** 20110, 20120, 20130, 20140, 20150, 20160, 20172 and 20178
- **Deleted Index 20500** Composite Elastomeric Bearing Pads
- **Deleted Index 20501** Beveled Bearing Plate Details - Prestressed AASHTO and Bulb-T Beams:

INVERTED-T BEAMS

- Deleted Indexes 20310 & 20320
- (Reassigned as Developmental Design Standards)



[For Developmental Design Standards Process](#) <--Click Here

Design Developmental Index No. (PDF)	Title	Monitor	Instructions for Developmental Design Stds (PDF)	Applicable Developmental Specifications? (YES/NO)
*WALL SYSTEMS *				
D06025	GRS-IBS	Larry Jones	IDDS-D06025	YES
*TRAFFIC SIGNAL AND EQUIPMENT *				
D17749	Damping Device for Miscellaneous Structures	Gevin McDaniel	IDDS-17749	NO
* PRESTRESSED CONCRETE INVERTED-T BEAMS *				
D20310	Typical Inverted-T Beam Details and Notes	Gevin McDaniel	IDDS-20310	NO
D20320	Inverted-T Beam Standard Details			
* PRESTRESSED CONCRETE SLAB UNITS *				

PRESTRESSED SLAB UNITS

- Deleted Indexes 20350 thru 20399.
- (Reassigned as Developmental Design Standards)

[For Developmental Design Standards Process](#) <--Click Here

Design Developmental Index No. (PDF)	Title	Monitor	Instructions for Developmental Design Stds (PDF)	Applicable Developmental Specifications? (YES/NO)
*WALL SYSTEMS *				
D06025	GRS-IBS	Larry Jones	IDDS-D06025	YES
*TRAFFIC SIGNAL AND EQUIPMENT *				
D17749	Damping Device for Miscellaneous Structures	Gevin McDaniel	IDDS-17749	NO
* PRESTRESSED CONCRETE INVERTED-T BEAMS *				
D20310	Typical Inverted-T Beam Details and Notes	Gevin McDaniel	IDDS-20310	NO
D20320	Inverted T Beam Standard Details			
* PRESTRESSED CONCRETE SLAB UNITS *				
D20350	Prestressed Slab Units			
D20353	12" Custom Width Prestressed Slab Unit-Standard Details			
D20354	12"x48" Prestressed Slab Unit - Standard Details			
D20355	12"x60" Prestressed Slab Unit - Standard Details			
D20363	15" Custom Width Prestressed Slab Unit-Standard Details	Gevin McDaniel	IDDS-20350	YES
D20364	15"x48" Prestressed Slab Unit - Standard Details			
D20365	15"x60" Prestressed Slab Unit - Standard Details			
D20399	Overlay & Deflection Data for Prestressed Slab Units			

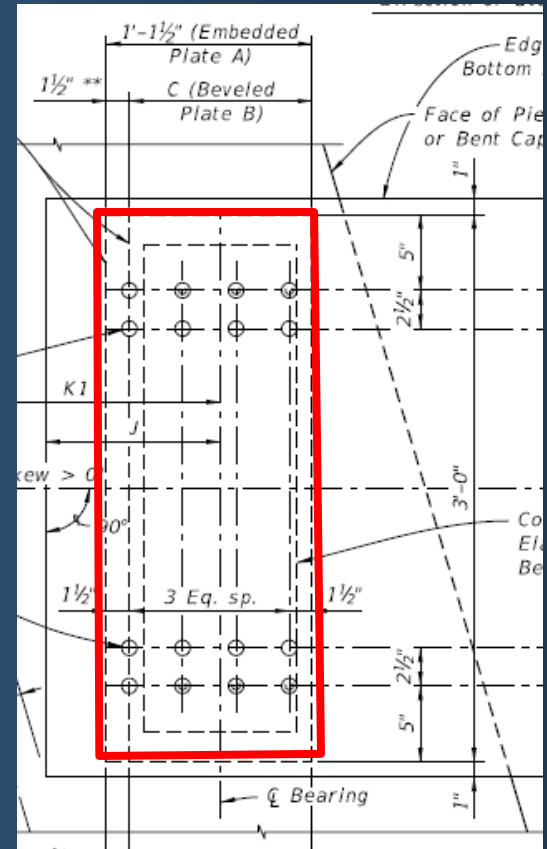
Index 20511 & 20512 BEARING PLATES PRESTRESSED FLORIDA-I BEAMS

Index 20511:

- Added TYPE 1 to the Title
- Revised plate shape to parallelogram.
- Data Table completely revised for revised width parameters.
- Intended for beams with end diaphragms or skewed beam ends.

Index 20512 :

- Added TYPE 2 to the Title
- Removed skew.
- Intended for squared end beams with or without end diaphragms.

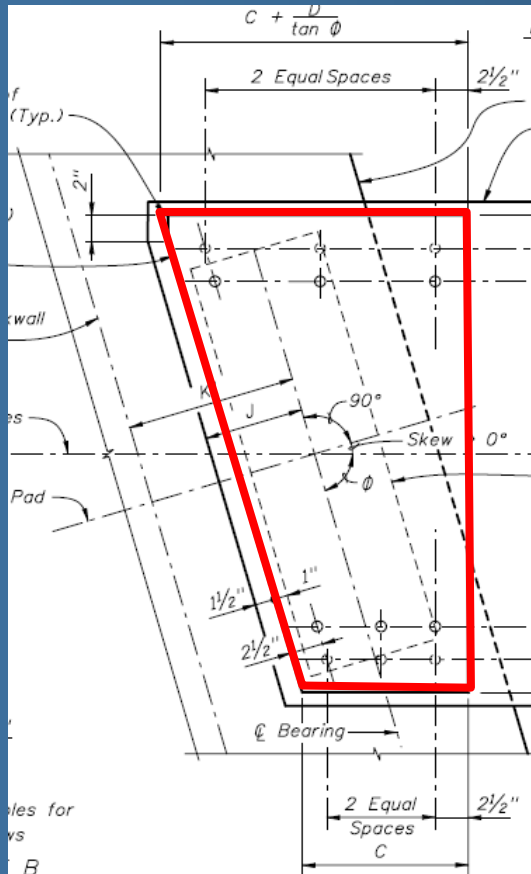


Index 20512 Non-Skewed

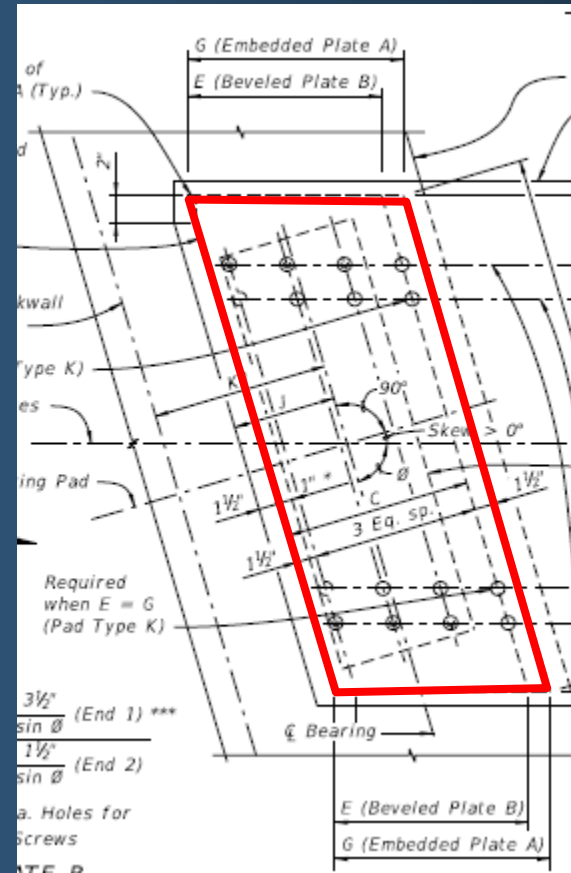
Index 20511

BEARING PLATES (TYPE 1)

PRESTRESSED FLORIDA-I BEAMS



Old Trapezoidal Shape



New Parallelogram Shape

Index 20600 Series Pile Data Table

- Added Uplift Columns
- Deleted EMBEDDED DATA COLLECTOR NOTE (no longer mandatory – Use in test piles for Dynamic Load Testing is at the Contractor’s option) – See archived [Structures Design Bulletin C11-03](#) (March 31, 2011) and **SDG 3.5.10.F**.

PILE DATA TABLE																						Table Date 01/01/12				
INSTALLATION CRITERIA								DESIGN CRITERIA							PILE CUT-OFF ELEVATIONS											
PIER or BENT NUMBER	PILE SIZE (in.)	NOMINAL BEARING RESISTANCE (tons)	NOMINAL UPLIFT RESISTANCE (tons)	MINIMUM TIP ELEVATION (ft.)	TEST PILE LENGTH (ft.)	REQUIRED JET ELEVATION (ft.)	REQUIRED PREFORM ELEVATION (ft.)	FACTORED DESIGN LOAD (tons)	FACTORED DESIGN UPLIFT LOAD (tons)	DOWN DRAG (tons)	TOTAL SCOUR RESISTANCE (tons)	NET SCOUR RESISTANCE (tons)	100-YEAR SCOUR ELEVATION (ft.)	LONG TERM SCOUR ELEVATION (ft.)	PILE CUT-OFF ELEVATION (ft.)	# UPLIFT	PILE 1	PILE 2	PILE 3	PILE 4	PILE 5	PILE 6	PILE 7	PILE 8	PILE 9	

Drilled Shaft Data Table

- No Index number associated, but now available in the Data Table cell library (00000.cel).
- Same table shown in the *Structures Detail Manual Figure 11.5-1*.

Figure 11.5-1 Drilled Shaft Data Table

DRILLED SHAFT DATA TABLE													Table Date 01/01/12
INSTALLATION CRITERIA						DESIGN CRITERIA						TESTING	
PIER OR BENT NO.	SHAFT SIZE (In.)	(1) TIP ELEV. (Ft.)	(2) MIN. TIP ELEV. (Ft.)	MIN. ROCK SOCKET LENGTH (Ft.)	(3) MIN. TOP OF ROCK SOCKET ELEVATION (Ft.)	FACTORED DESIGN LOAD (tons)	FACTORED DESIGN UPLIFT LOAD (tons)	DOWN DRAG (tons)	LONG TERM SCOUR ELEV. (Ft.)	100-YEAR SCOUR ELEV. (Ft.)	Ø COMPRESSION	Ø UPLIFT	(4) CONSIDER NONREDUNDANT

(1) The Tip Elevation is the highest elevation the shaft tip shall be constructed unless load test data, rock core tests, or other geotechnical test data obtained during pilot holes allows the Engineer to authorize a different Tip Elevation.

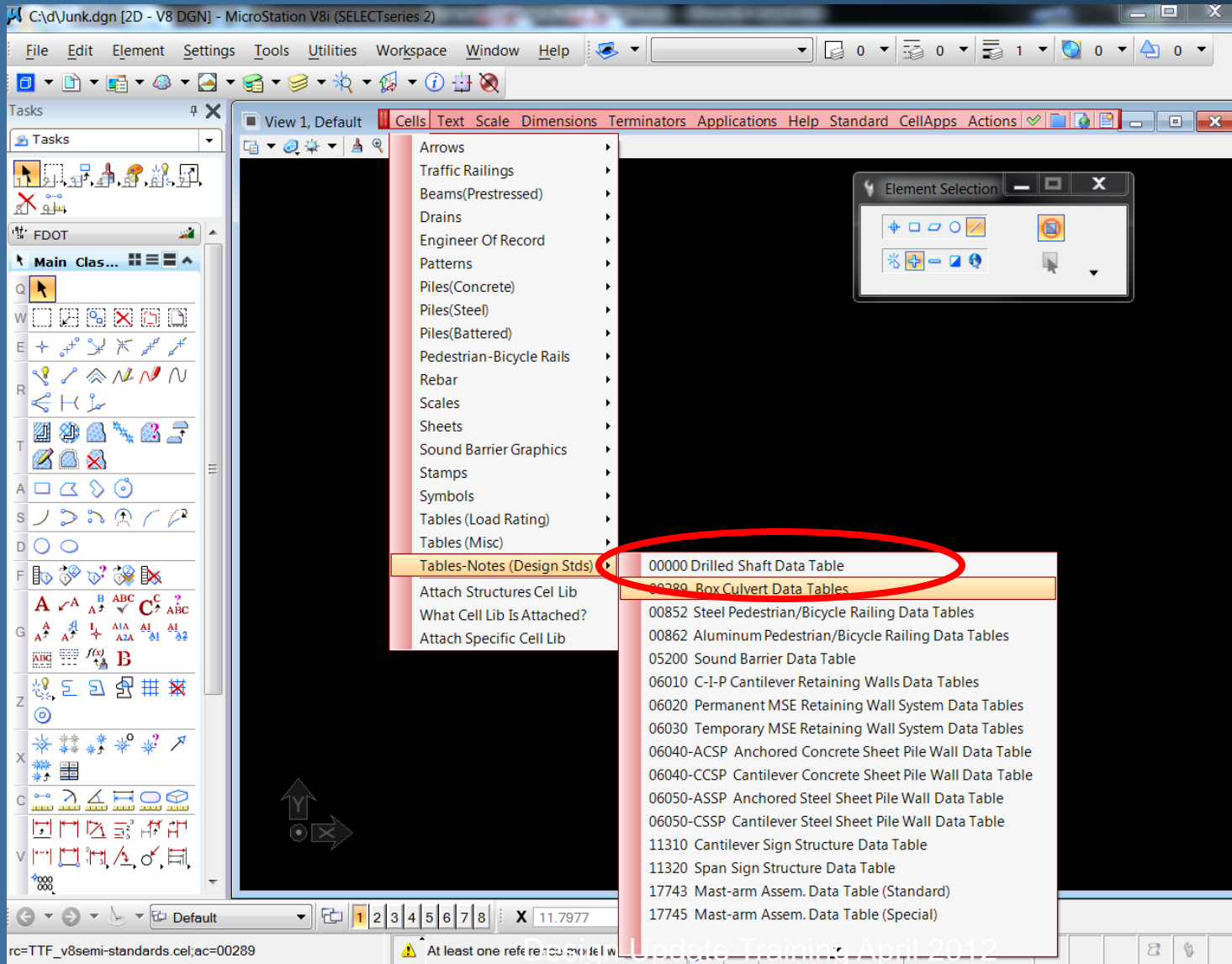
(2) The Min. Tip Elevation is the tip elevation required for lateral stability.

(3) Rock encountered above the Min. Top of Rock Socket Elevation is considered unsuitable for inclusion in the rock socket length. The Engineer may revise this elevation based on pilot holes, if performed.

(4) Inspect all shafts considered nonredundant using the SID or an approved alternate down-hole camera to verify shaft bottom cleanliness at the time of concreting. Test all nonredundant drilled shafts using Cross-hole-Sonic Logging (CSL).

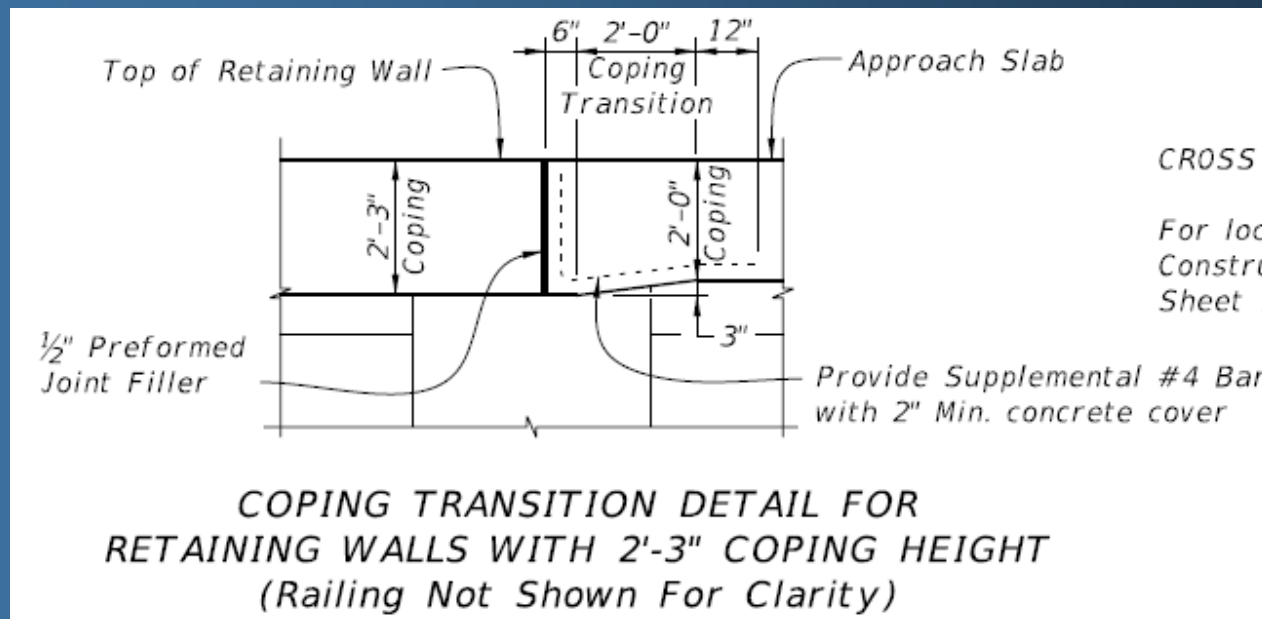
Drilled Shaft Data Table

(FDOT2010 Microstation CADD load – TTF_V8semi-standards.cel)



Index 20900 & 20910 APPROACH SLABS

- Sheet 1 - Deleted Note 9 specifying Class II concrete (*This requirement is already in Construction Specification 400-20*).
- Sheet 2 - Added Coping Transition Detail for Retaining Walls with 2'-3" Coping Height.



Index 21900 Series FENDER SYSTEMS

Major Reorganization in July 2011 Interim - Simplified to a Polymeric or Prestressed Concrete Fender System.

- 21910, 20920, and 21930 Fender System – Heavy, Medium and Light Duty no longer exist.
- 21900 Fender System General Notes And Layout is now **Fender System – Polymeric Piles**
 - The Index includes standard geometry and details for Polymeric Fender Systems.
 - Specification 471 (Polymeric Fender Systems) requires polymeric piling configurations to be listed on the QPL; therefore, polymeric piling suppliers submit piling configurations for listing on the QPL which are qualified for certain levels of Energy Capacity.
 - Refer to **SDG 3.14** for Fender System design criteria, assumptions and limitations.
 - See IDS 21900 for more information and Plans requirements.
- 21930 was renamed **Fender System – Prestressed Concrete Piles**
 - Requires project specific District approval.
 - See IDS 21930 for more information.

Developmental Design Standard GRS-IBS

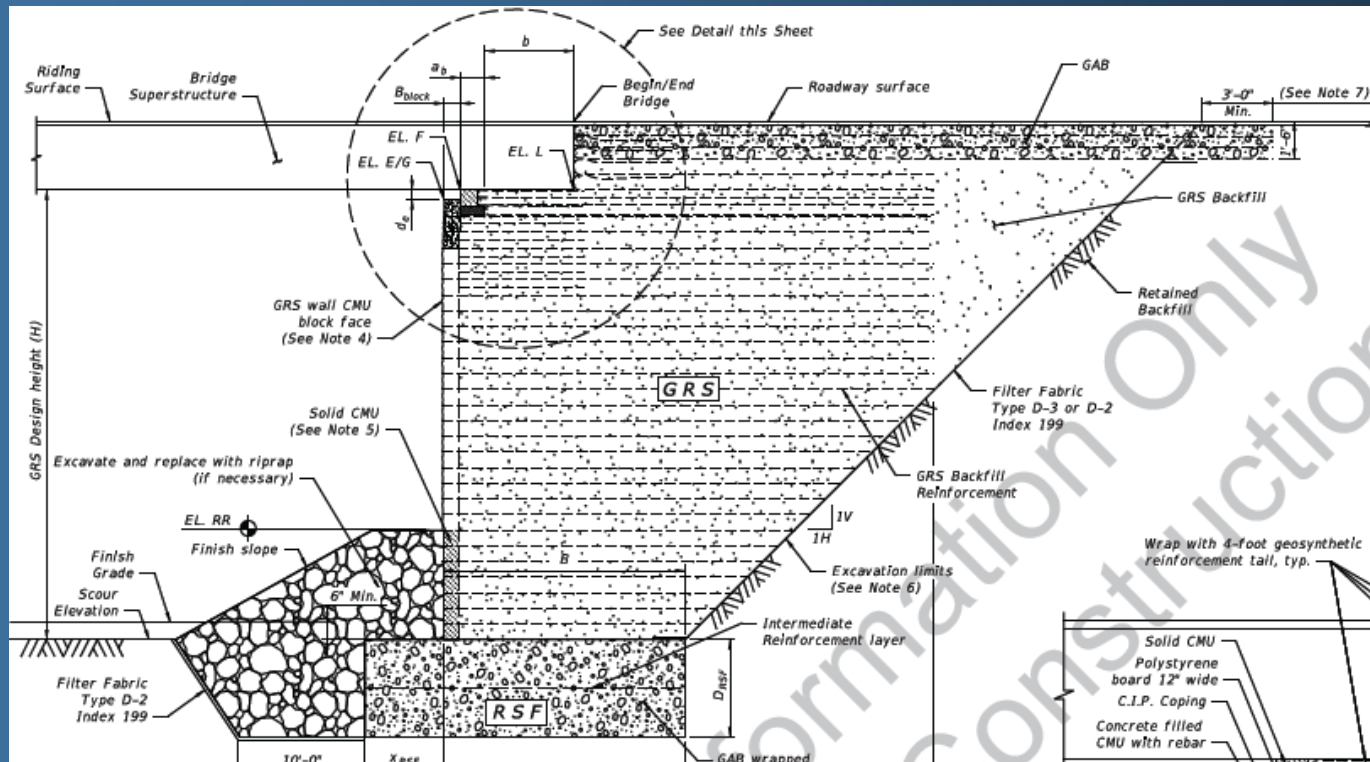
Geosynthetic Reinforced Soil Abutments & Walls:

- [Structures Design Bulletin 12-06](#) (March 30, 2012) recently established policy and design requirements.
- Developmental Design Standard **D06025** is available for use for project specific designs on Flat Slab Bridges.
- Developmental Specification **Dev549** must be used for projects with GRS.

For Developmental Design Standards Process <--Click Here				
Design Developmental Index No. (PDF)	Title	Monitor	Instructions for Developmental Design Stds (PDF)	Applicable Developmental Specifications? (YES/NO)
*WALL SYSTEMS *				
D06025	GRS-IBS	Larry Jones	IDDS-D06025	YES

Developmental Design Standard GRS-IBS

- D06025 GRS-IBS (Geosynthetic Reinforced Soil Integrated Bridge System)

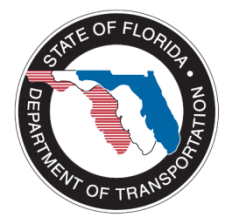


Future Developmental Design Standards

- New precast bridges elements being considered as part of FHWA's *Every Day Counts* Initiative:
 - Precast Pile Caps
 - Full Depth Deck Panels

<http://www.fhwa.dot.gov/everydaycounts/>





Contact Information

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Ph. (850) 414-4272

Questions?