

2013 Design Update Training

Structures Related 2013 Design Standards

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Introduction

- Website navigation specific to structures related Design Standards and their support documents
- Design Standards Revisions (DSR) – No current structures related DSRs
- Developmental Design Standards (DDS)
- Significant changes to structures related Design Standards
- Invitation to Innovation


Design Standards Website

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

Roadway Design Office




Roadway Design
Florida's Transportation Engineers




Design Standards

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



Current Design Standards

Year	Design Standards eBooklet	Design Standards Revisions	Developmental Design Standards		Select the desired Current Design Standards eBooklet (DSeB), Design Standards Revisions (DSR) or Developmental Design Standards (DDS) by clicking on their underlined symbol.
2013	<u>DSeB</u>	<u>DSR</u>	<u>DDS</u>		

Historical Design Standards

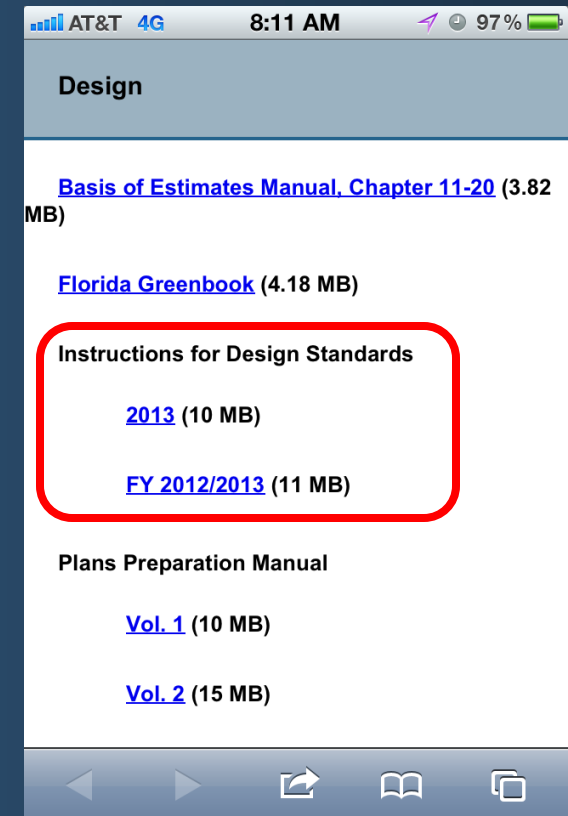
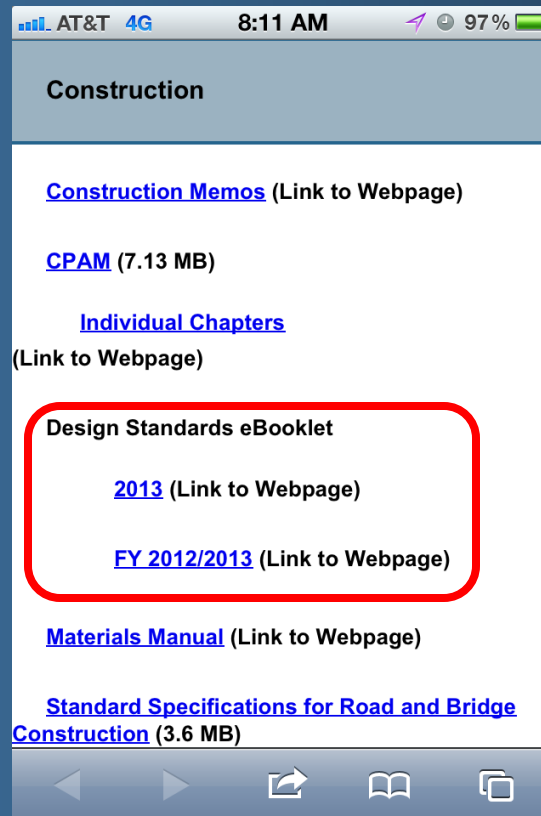
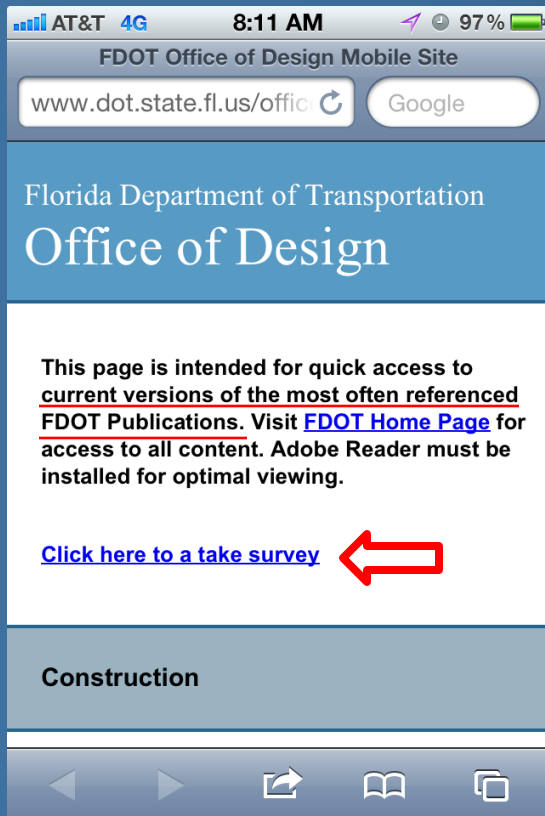
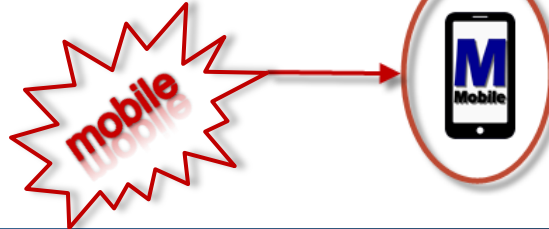
Fiscal Year	Design Standards eBooklet	Design Standards Revisions	
2012/13	<u>DSeB</u>	<u>DSR</u>	

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>	

Mobile Webpage – Simple, Direct Access

Tip: Download free Adobe Reader App for optimal viewing. It also saves files in “Recents” for future access.

Bookmark me



Design Standards e-Booklet (DSeB)

Design Standards - Structures Support Documents

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Design Standards eBooklet
Year _____ Effective Date _____

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.	Index Title	Revision	Instructions for Design Stds (IDS)	Data Table Cell Library	Borderless DGNs
(PDF)	Sheets		(PDF)	(ZIP)	(ZIP) Terms of Use
Complete eBooklet (272mb)	933	Year _____ 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			

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.

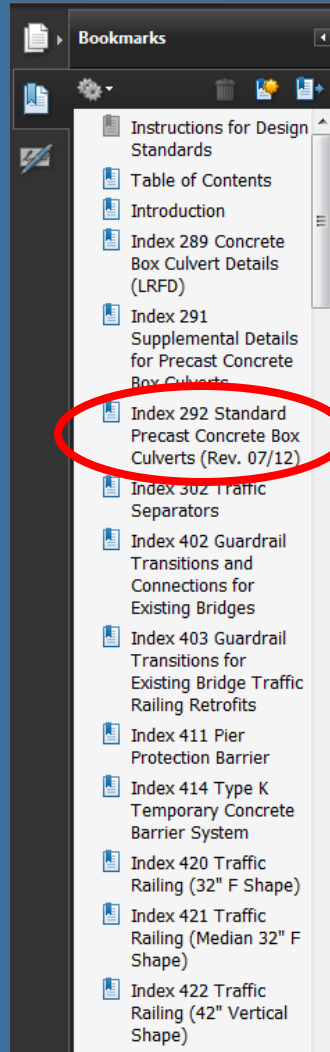
Method 2:

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 on a separate sheet 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 e-Booklet (Instructions for Design Standards (*IDS*))



- Instructions for Design Standards
- Table of Contents
- Introduction
- Index 289 Concrete Box Culvert Details (LRFD)
- Index 291 Supplemental Details for Precast Concrete Box Culverts
- Index 292 Standard Precast Concrete Box Culverts (Rev. 07/12)**
- Index 302 Traffic Separators
- Index 402 Guardrail Transitions and Connections for Existing Bridges
- Index 403 Guardrail Transitions for Existing Bridge Traffic Railing Retrofits
- Index 411 Pier Protection Barrier
- Index 414 Type K Temporary Concrete Barrier System
- Index 420 Traffic Railing (32" F Shape)
- Index 421 Traffic Railing (Median 32" F Shape)
- Index 422 Traffic Railing (42" Vertical Shape)

FLORIDA DEPARTMENT OF TRANSPORTATION



INSTRUCTIONS FOR DESIGN STANDARDS

2013

FOR USE WITH ALL INCLUDED INDEXES OF THE
FDOT DESIGN STANDARDS 2013

The Office of Design
Florida's Transportation Engineers 

Design Standards e-Booklet (Index Specific Support Documents)

* 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)

Design Standards e-Booklet

Instructions for Design Standards (IDS)

Instructions for Design Standards
Index 289 Concrete Box Culvert Details (LRFD)

Topic No. 625-010-003-j
2013

Index 289 Concrete Box Culvert Details (LRFD)

Design Criteria

AASHTO LRFD Bridge Design Specifications, 6th 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 Documents. Headwalls with skew angles less than -50° or greater than $+50^\circ$ are not authorized. In these cases, other design options should be developed and approved by the District Drainage Engineer to obtain authorization.

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

Plan Content Requirements

In the Roadway or Structures Plans:

For box culvert extensions with skewed joints at the connections, provide additional reinforcing parallel to the joint for the full length of the extension to ensure proper load paths for transverse forces. Provide detailed reinforcing bars in the plans and manually add these bars to the design tables.

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

Revision Bar

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																				
		#(ft)	H(ft)	T1	Tw	Tb	Tl	#cols	Lc(ft)	Cover	B/hw	H/hw	B/rhw	H/rhw	B/cw	H/cw	B/cw	H/cw	B/cw	H/cw	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																							
	Rc	Rw	Rh	Rd	SW(deg)	Hc(ft)	Hs(ft)	Lw(ft)	Rc	Rw	Rh	Rd	SW(deg)	Hc(ft)	Hs(ft)	Lw(ft)																
RIGHT SIDE WINGWALLS DATA TABLE (Inches unless shown otherwise) Table Date 01-01-11																																
STRUCTURE / BRIDGE NUMBER	RIGHT END WINGWALL								RIGHT BEGIN WINGWALL																							
	Rc	Rw	Rh	Rd	SW(deg)	Hc(ft)	Hs(ft)	Lw(ft)	Rc	Rw	Rh	Rd	SW(deg)	Hc(ft)	Hs(ft)	Lw(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 Total													
	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	Footing	Wall	Sub 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	803	806	809	812													
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 (DT) = ----- ft. Effective Length for Settlement (L) = ----- ft.
 8. Connection Types permitted for Box Culvert Extension Structure/ Bridge Number XXXX - (Type I/Type II/Type I or Type II)

Data Tables for Structures Standards


FDOT2010 MR3 CADD Software Suite (v2010.03.01) is now available

<http://www.dot.state.fl.us/ecso/>

The Engineering CADD Systems Office
Bruce Dana, Manager - ECSO

Engineering CADD
Florida's Transportation Engineers

About Us


 The Engineering CADD Systems Offices' mission is to coordinate and manage computer-based technology to provide the Department's engineering community with engineering / CADD oriented applications, support and training; to be used in the planning, design, construction, and maintenance of transportation facilities.


Our Vision is to remain the national leader in CADD Services provided by a state transportation agency.


Quick Links

- Acronyms
- FAQs
- GoToMeeting
- Training
- Quick Clips
- Webinars
- Staff
- CADD Links
- The Office of Design

News and Announcements

 **FDOT2010 MR3 CADD Software Suite (version 2010.03.01) is now available! - [Download Here](#)**
Posted: 07-30-2012


 **PEDDS version 3.7.2.1 is now available for download! - [Download Here](#)**
Posted: 04-09-2012

 **The New CADD Customer Support Guide is now available! - [Download Here](#)**
Posted: 01-11-2012

Support Links

Support Questions and Comments
[Directly email a Support Personnel your Questions and Comments.](#)

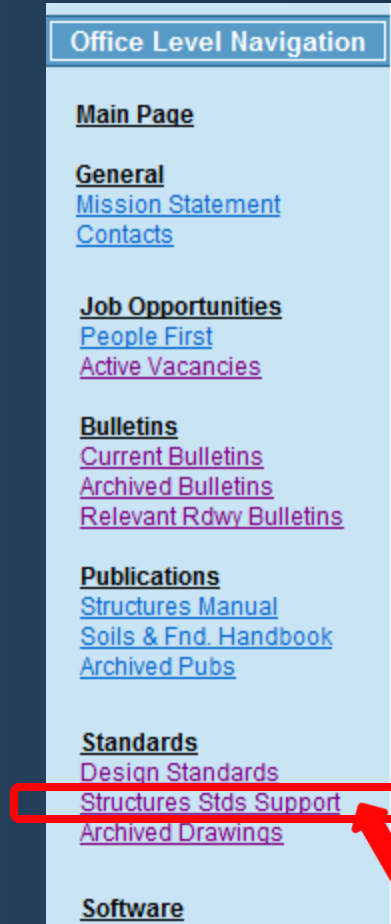
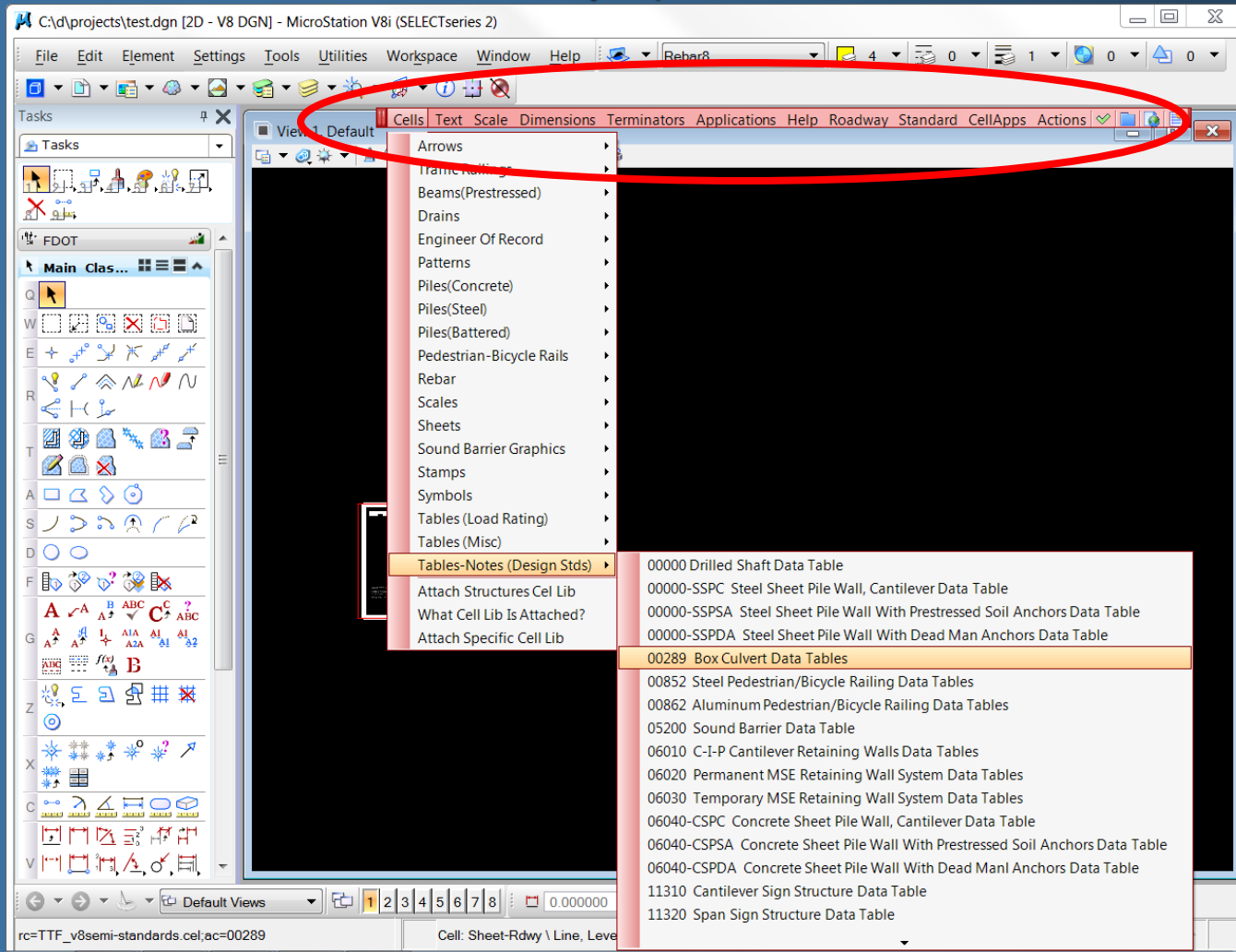
Website Evaluation
[Give us your feedback about our website.](#)



Data Tables for Structures Standards

(FDOT2010 MicroStation CADD load – TTF_V8semi-standards.cel

Need to manually replace "cells.xml" with file from SDO website)



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); and Structures Bar Menu **cells.xml** file (Data Tables pull-down menu update for FDOT2010 MR3 CADD Software download):

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

Florida Department Of Transportation

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August 20, 2012

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Structures Design Office - Structures Standards Support

PLEASE READ THE FOLLOWING BEFORE DOWNLOADING MICROSTATION

The official Design Standards are available at the Roadway Office website:

[Design Standards webpage](#)

Design Standards depict common structural components or elements suitable Plans to the official Design Standards as specified in the Plans Preparation M Standards require the designer to complete a Data Table(s) and include in the FDOT Structures bar menu within the TTF_v8semi-standards.cel cell library. the latest cell library can be downloaded from the link provided below or indiv [webpage](#) for FY2012/2013 and later.

- 1.) Structures Related Design Standards Details:**
(see [Design Standards website](#) for FY 2012/2013 and later Design Stand
(see [Archived Drawings](#) for 2010/2011 and earlier Design Standards Det
- 2.) FDOT Structures Menu Data Table Cell Libraries:**
(in Microstation format. PDF examples are available in the [Instructions for Design Standards](#) (IDS).)
[TTF_V8semi-standards.cel v2013.1 \(July 2012 - For use with 2013 Design Standards. Included in FDOT2010 MR3 CADD Software Release\)](#)
(0.9MB zip)
[TTF_V8semi-standards.cel v2012.1 \(January 2012 - For use with FY2012/2013 Design Standards. Included in FDOT2010 MR2 CADD Software Release\)](#)
(0.8MB zip)
- 3.) FDOT Structures Menu Data Tables not included in the IDS:**
(available in Microstation TTF_v8semi-standards.cel Cell Library)
[Drilled Shaft Data Tables \(last revision: Jan 2012 - PDF\)](#)
(.11MB)
[Steel Sheet Pile Walls Data Tables \(last revision: July 2012 - PDF\)](#)
(.50MB)
[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 \(FDOT2010 MR3\)](#)
(1.0MB zip)
- 5.) FDOT True Type Fonts:**
(Copy these files into the C:\Windows\Fonts directory to correctly display the .dgn's dated July 2011 or later. These files are automatically included in the FDOT2010 CADD Software download)
[FDOT True Type Fonts](#)
(1.4MB zip)
- 6.) FDOT Structures Menu UI:**
(Copy the cells.xml file into the \FDOT2010\MENU\UI\UI.Menus\Structures folder to correctly display the pull down menu for the Data Tables cells that were released in July 2012 for the 2013 Design Standards. This file was not updated in the FDOT2010 MR3 CADD Software download)
[cells.xml](#)
(4KB zip)
- 7.) Training Presentations of Interim Changes:**
(links to the Roadway Design Office Training web sites)

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.

[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)
New DDS, Index D477 See SDB 12-11	How to request/use a DDS			
* TRAFFIC RAILINGS *				
D477	Thrie-Beam Panel Retrofit (Concrete Handrail)	Gevin McDaniel	IDDS-D477	NO
* WALL SYSTEMS *				
D6025	GRS-IBS	Larry Jones		
* TRAFFIC SIGNAL AND EQUIPMENT *				
D17749	Damping Device for Miscellaneous Structures	Gevin McDaniel		
* PRESTRESSED CONCRETE INVERTED-T BEAMS *				
D20310	Typical Inverted-T Beam Details and Notes	Gevin McDaniel		
D20320	Inverted-T Beam Standard Details	Gevin McDaniel		
* PRESTRESSED CONCRETE SLAB UNITS *				
D20350	Prestressed Slab Units	Gevin McDaniel		
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			

Roadway Design Office



Design Standards

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

Current Design Standards				
Year	Design Standards eBooklet	Design Standards Revisions	Developmental Design Standards	
2013	DSeB	DSR	DDS	
Historical Design Standards				
Fiscal Year	Design Standards eBooklet	Design Standards Revisions		
2012/13	DSeB	DSR		

Developmental Design Standards

(Index D477 – Thrie-Beam Panel Retrofit)

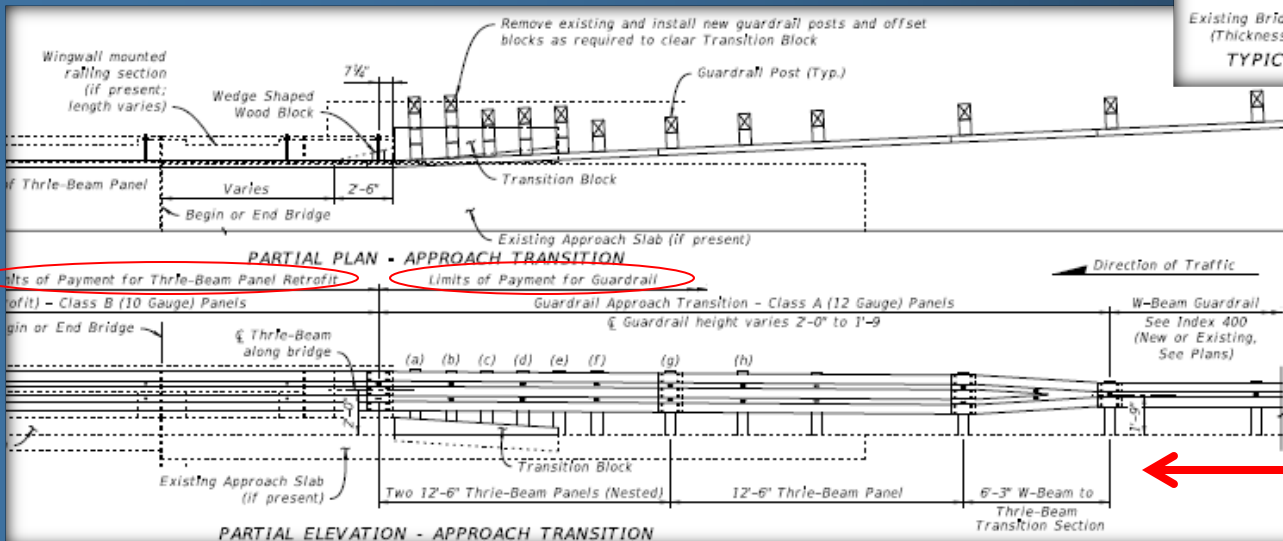
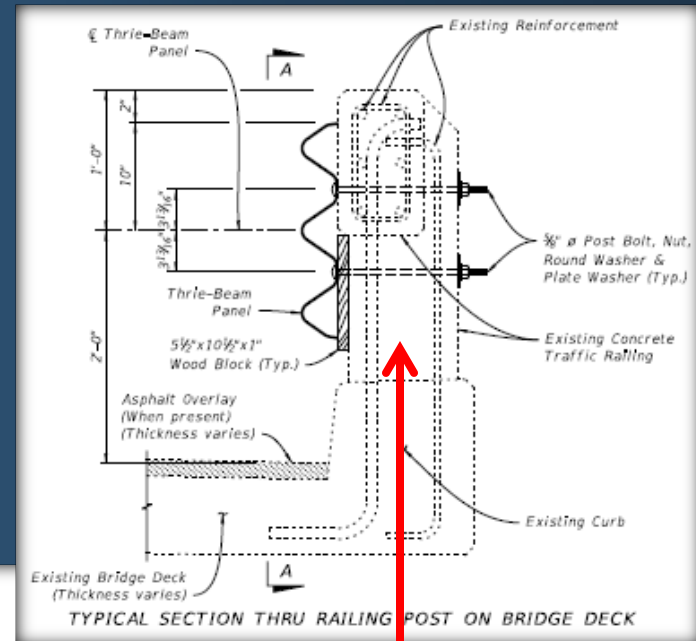
See Structures Design Bulletin 12-11:

COMMENTARY

This DDS is applicable for use in retrofitting existing Post and Beam Concrete Handrails (bridge mounted traffic railings) as listed in its *IDDs*, located on bridges along roadways with design speeds of 45 mph or less and where the existing traffic railing is structurally sound and free of major cracks or spalls. Other similar Post and Beam Concrete Handrails not listed in the *IDDs*, must be deemed appropriate for this application by the Structures Design Office. This DDS is not applicable for use in retrofitting Post and Beam Concrete Handrails having discontinuous top rails.

The use of this DDS may be ideal for use on bridges having applicable existing traffic railings as described above and that have been selected to be improved within the scope of Resurfacing, Restoration and Rehabilitation (RRR) projects.

This DDS differs from *Design Standards*, Indexes 470 thru 476 in that the existing traffic railing stays in place and the retrofit 10 Gauge Thrie-Beam panels are bolted directly to the existing railing.



Existing traffic railing stays in place

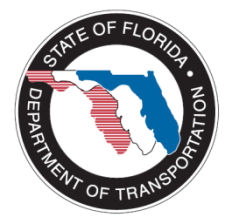
Special Approach and Trailing end Transition details

Developmental Design Standards

(Index D477 – Thrie-Beam Panel Retrofit)

When railings having discontinuous top rails as seen in these examples are encountered, use Indexes 470-476 or Index 480 Series.





Current Significant Revisions to Design Standards

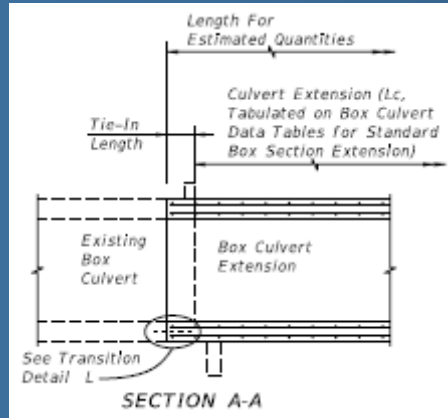
Design Standards 2013

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

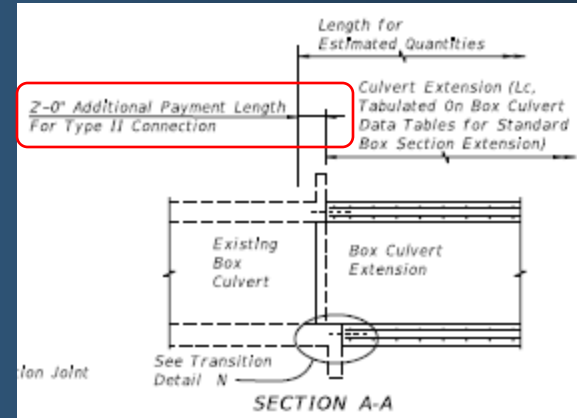
<http://www.dot.state.fl.us/rddesign/DS/13/IDx/Revisions.pdf>

Index 289

CONCRETE BOX CULVERT DETAILS (LRFD)



TYPE I CONNECTION DETAILS FOR CONCRETE BOX CULVERT EXTENSIONS (CUT BACK EXISTING CONCRETE)



TYPE II CONNECTION DETAILS FOR CONCRETE BOX CULVERT EXTENSIONS (ADHESIVE DOWEL TO EXISTING CONCRETE)

Added note to Data Table (Cell) to clarify Payment includes 2 ft. additional payment length.

Reasoning:

- Type 1 connection will typically be allowed as an option for all projects.
- MathCAD Design Program calculates quantities based on Type 1 connection and generates the quantities for importing into the Data Table.
- Contractor's bids will be consistent.

NOTES [Notes Date 7-01-12]:

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 (ΔY) = ----- ft.
Effective Length for Settlement (L) = ----- ft.
8. Connection Types permitted for Box Culvert Extensions:
Structure/ Bridge Number XXXXX - (Type I/Type II/Type I or Type II)
9. Quantities for Type I and Type II Connections include 2 ft. additional payment length beyond L_c for connection to existing box culvert.

Index 470

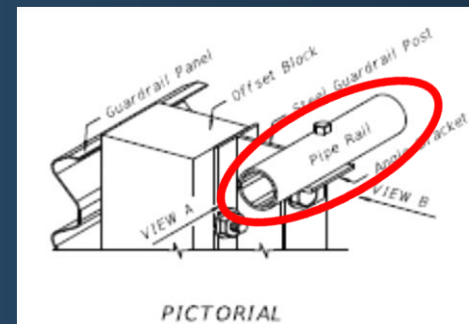
TRAFFIC RAILING (THRIE BEAM RETROFIT)

PEDESTRIAN SAFETY PIPE RAIL: Pedestrian Safety Pipe Rails required when called for in the Plans. See Index No. 400 for details.

BRIDGE NAME PLATE: If a portion of the existing Traffic Railing is to be removed that carries the bridge name, number and or date, or if the installation of the Traffic Railing (Thrie Beam Retrofit) will obscure the bridge name, number and or date, then replace the information that has been removed or obscured, with 3" tall black lettering on white nonreflective sheeting applied to the top of the adjacent guardrail. The information must be clearly visible from the right side of the approaching travel lane. The sheeting and adhesive backing shall comply with Specification Section 994 and may comprise of individual decals of letters and numbers.

PAYMENT: Payment will be made under Metal Traffic Railing (Thrie-Beam Retrofit) which shall include all materials and labor required to fabricate and install the barrier and lapped guardrail where necessary to maintain post spacing. The Pedestrian Safety Pipe Rail Transition Blocks and Curbs, Bridge Name Plate, Reflective Railing Markers and installation of Elevation Markers, where required, will not be paid for directly but shall be considered as incidental work.

FY 2012/2013 Design Standards



CPR

PEDESTRIAN SAFETY TREATMENTS: Pedestrian Safety Treatment is required when called for in the Plans. See Index No. 400 for details.

BRIDGE NAME PLATE: If a portion of the existing Traffic Railing is to be removed that carries the bridge name, number and or date, or if the installation of the Traffic Railing (Thrie Beam Retrofit) will obscure the bridge name, number and or date, then replace the information that has been removed or obscured, with 3" tall black lettering on white nonreflective sheeting applied to the top of the adjacent guardrail. The information must be clearly visible from the right side of the approaching travel lane. The sheeting and adhesive backing shall comply with Specification Section 994 and may comprise of individual decals of letters and numbers.

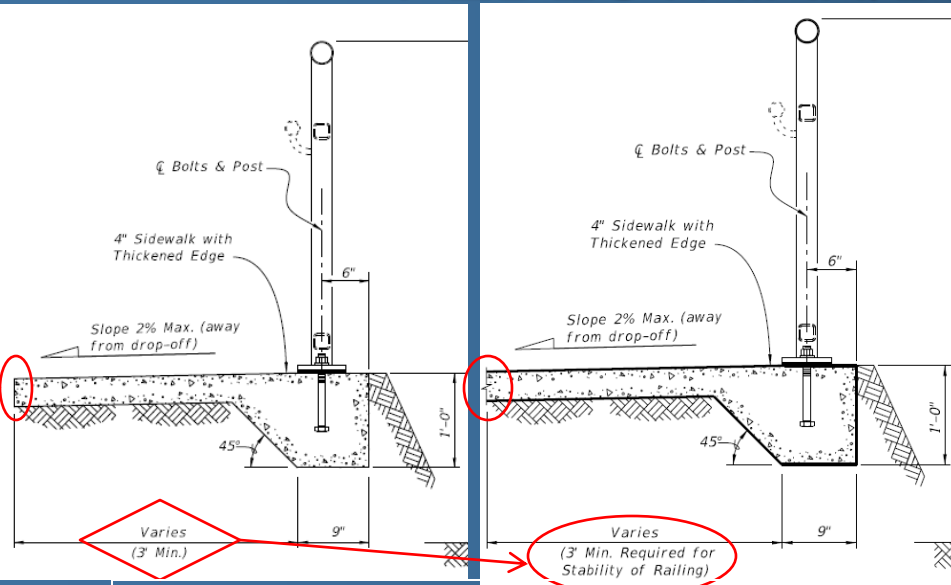
PAYMENT: Payment will be made under Metal Traffic Railing (Thrie-Beam Retrofit) which shall include all materials and labor required to fabricate and install the barrier and lapped guardrail where necessary to maintain post spacing. Transition Blocks and Curbs, Bridge Name Plate, Reflective Railing Markers and installation of Elevation Markers, where required, will not be paid for directly but shall be considered as incidental work.

Removed "Pedestrian Safety Treatments"; Now paid for directly per linear foot as in Index 400.

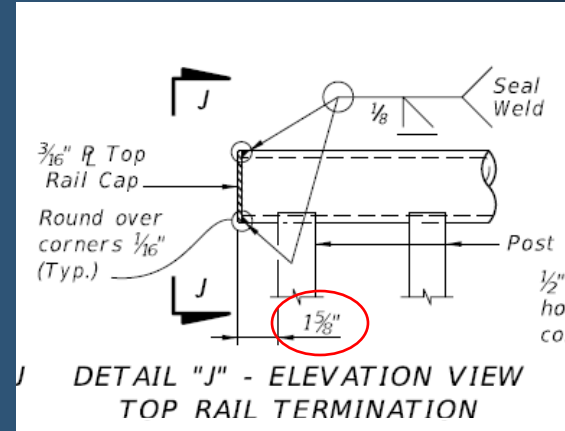
2013 Design Standards

Indexes 852 & 862

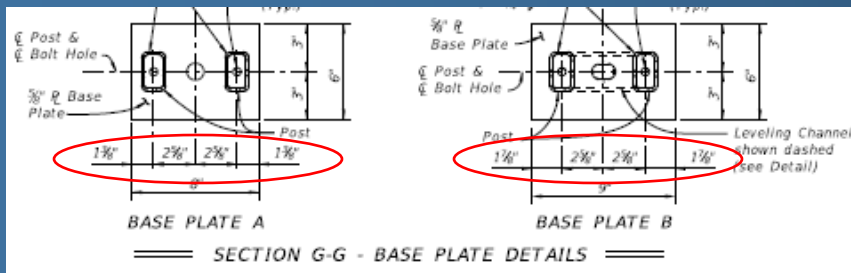
PEDESTRIAN/BICYCLE RAILING



Indexes 852 & 862



Index 852 Only



Indexes 852 & 862

MEMBER	DESIGNATION	OUTSIDE DIMENSION	WALL THICKNESS
Post "A"	HSS2 1/2 x 1 1/2 x 1/8	2.50" x 1.50"	0.125"
Post "B"	HSS2 1/2 x 1 1/2 x 3/16	2.50" x 1.50"	0.188"
Top Rail	2 1/2" NPS (Sch. 10)	2.875"	0.120"
	HSS3.000x0.120	3.000"	0.120"
End Hoops	2 1/2" NPS (Sch. 10)	2.875"	0.120"
	HSS3.000x0.120	3.000"	0.120"
Top Rail Joint/Splice Sleeves	HSS2.500x0.125	2.500"	0.125"
Intermediate & Bottom Rail	HSS2x2x3/16	2.00" x 2.00"	0.188" ⁽¹⁾
Int. & Bottom Rail Post Connection Sleeve	HSS1.500x0.125	1.500"	0.125" ⁽¹⁾
Handrail Joint/Splice Sleeves	1" NPS (Sch. 40)	1.315"	0.133"
Handrails	1 1/2" NPS (Sch. 40)	1.900"	0.145"
Handrail Support Bar	3/8" Ø Round Bar	0.750"	N/A
Pickets (Type 1 Infill Panel)	3/8" Ø Round Bar	0.750"	N/A
Infill Panel Members (Types 2 - 5)	Varies (See Details)	Varies	Varies

Index 852 Only

Indexes 852 & 862 - Pay Items

BOE has been updated to clarify validity of Rail Types – See new Section 515-2

References PPM Chapter Vol 1, Section 8.8
 Trns-port
 Other
 Standards Index No. 851, 852, 860, 861, 862
 Index 850, 860 valid through June 2012.
 Index 825, 862 effective July 2012.
 Specifications **852**
T: Selected Items may require Plan Details Specifications

Prep & Doc Manual Chapter(s)

TRNS*PORT Category (DRAFT FIELD): 0200 Roadway

Struct. 515- 2-ABB PEDESTRIAN/BICYCLE RAILING

- A = Required Material Types
- 1 (Non Specified Material)
- 2 (Steel Only) Index 851 & 852
- 3 (Aluminum Only) Index 861 & 862
- 4 (Special Materials) full material specifications needed

BB = Rail Type

- ~~01 (42" Picket Railing)~~
- ~~02 (54" Picket Railing)~~
- ~~03 (Non standard Height) see detail requirements above~~

Now Invalid

Additional types available July 2011 letting and later (see index for infill panel details):

- 11 (42" Type 1) Picket infill panel
- 12 (42" Type 2) Chain link, continuous infill panel
- 13 (42" Type 3) Sunshine infill panel
- 14 (42" Type 4) Broadway infill panel
- 15 (42" Type 5) Perforated infill panel
- 19 (42" Custom Panel) Details & material requirements in plans
- 21 (54" Type 1) Picket infill panel
- 22 (54" Type 2) Chain link, continuous infill panel
- 23 (54" Type 3) Sunshine infill panel
- 24 (54" Type 4) Broadway infill panel
- 25 (54" Type 5) Perforated infill panel
- 29 (54" Custom Panel) Details & material requirements in plans

Valid ★

Item	Description	Unit	TSP/Detail	Valid Date	Obsolete Date
0515 2101	PEDESTRIAN/ BICYCLE RAILING, NON SPECIFIED,42" PICKET RAIL	LF		1/1/2010	
0515 2102	PEDESTRIAN/ BICYCLE RAILING, NON SPECIFIED,54" PICKET RAIL	LF		1/1/2010	
0515 2201	PEDESTRIAN/ BICYCLE RAILING, STEEL,42" PICKET RAIL	LF		1/1/2010	
0515 2202	PEDESTRIAN / BICYCLE RAILING, STEEL, 54" PICKET RAIL	LF		1/1/2010	
0515 2213	PEDESTRIAN / BICYCLE RAILING, STEEL, 42" TYPE 3 SUNSHINE INFILL	LF		7/1/2011	★
0515 2301	PEDESTRIAN/ BICYCLE RAILING ALUMINUM ONLY,42" PICKET RAIL	LF		1/1/2010	
0515 2302	PEDESTRIAN/ BICYCLE RAILING ALUMINUM ONLY,54" PICKET RAIL	LF		1/1/2010	
0515 2303	PEDESTRIAN/ BICYCLE RAILING ALUMINUM, NON-STANDARD HEIGHT	LF	T	1/1/2010	
0515 2311	PEDESTRIAN/ BICYCLE RAILING, ALUMINUM ONLY,42" TYPE 1	LF		1/1/2010	★

Payment

Item number	Item description	Unit Measure
515-2-1BB	Pedestrian / Bicycle Railing, Non Specified, 42" (Type___)	LF
515-2-1BB	Pedestrian / Bicycle Railing, Non Specified, 54" (Type___)	LF
515-2-2BB	Pedestrian / Bicycle Railing, Steel Only, 42" (Type___)	LF
515-2-2BB	Pedestrian / Bicycle Railing, Steel Only, 54" (Type___)	LF

From IDS-852

For projects with letting dates of October 2012 and later, correct the Plans and Comp Book with the valid Pay Item numbers for Indexes 852 & 862.

The Specifications and Estimates Office will be releasing a Bulletin in the near future to address this issue.

Notes

Index 5200

PRECAST SOUND BARRIERS

Major Changes Summary:

- Removed Note K; CSIP and Contractor Redesign is now allowed
- Reorganized to improve flow of information and separate processes where appropriate
- Removed redundant information, details and notes
- Eliminated C-I-P Collars where possible; Contractors prefer Precast Collars.

Index 6040

PRECAST CONCRETE SHEET PILE WALL

Cell for Anchored Walls (was 06040-ACSP) has been separated into two Cells and renamed
 For walls using Dead Man Anchors: 06040-CSPDA

CONCRETE SHEET PILE WALL WITH DEAD MAN ANCHORS DATA TABLE														Table Date 07-01-12			
CONSTRUCTION INFORMATION											DESIGN PARAMETERS						
WALL LOCATION		WALL NO.	CONCRETE SHEET PILE FABRICATION						ANCHORS		MINIMUM WALL TIP ELEVATION (ft)	TOP OF WALL ELEV. (ft)	SOIL ELEVATION		WATER ELEVATION		FACTORED DESIGN SURCHARGE LOAD (psf)
			TYPE (See Detail A)	NUMBER REQUIRED	PILE LENGTH L (ft)	PILE THICKNESS T (in)	GROOVE LENGTH X (ft)	CORNER ANGLE Ø (degrees)	ANCHOR BAR SPACING (ft)	ANCHOR BAR DIAMETER (in)			* FRONT OF WALL (ft)	BACK OF WALL (ft)	FRONT OF WALL (ft)	BACK OF WALL (ft)	
STATION (begin to end)	OFFSET (ft)																

* Minimum of Design Ground Surface or Design Scour Depth.

- NOTES:**
1. Work the Data Table with Index No. 6040.
 2. Environmental Classification Is _____.
 3. Concrete for cast-in-place retaining wall caps shall be Class _____ (f'c = _____ psf), _____ (with/without) silica fume, metakaolin or ultrafine fly ash.

ESTIMATED QUANTITIES			
WALL NO.	ITEM	UNIT	QUANTITY
1	Concrete Sheet Piling, #X#	LF	##
	Concrete Class ##, Bulkhead	CY	##
	Reinforcing Steel - Bulkhead	LB	##
	Anchor Bar, Steel	EA	##
	Prestressed Concrete Piling, ##" Sq.	LF	##
2	Concrete Sheet Piling, #X#	LF	##
	Concrete Class ##, Bulkhead	CY	##
	Reinforcing Steel - Bulkhead	LB	##
	Anchor Bar, Steel	EA	##
	Prestressed Concrete Piling, ##" Sq.	LF	##

IDS Index 20000 Series

PRESTRESSED FLORIDA-I BEAMS (FIBs)

Added instructions under Plan Content Requirements for detailing of Bars 4L when full depth diaphragm is required.

Instructions for Design Standards

Topic No. 625-010-003-j

Index 20010 Series Prestressed Florida-I Beams (Rev. 07/12)

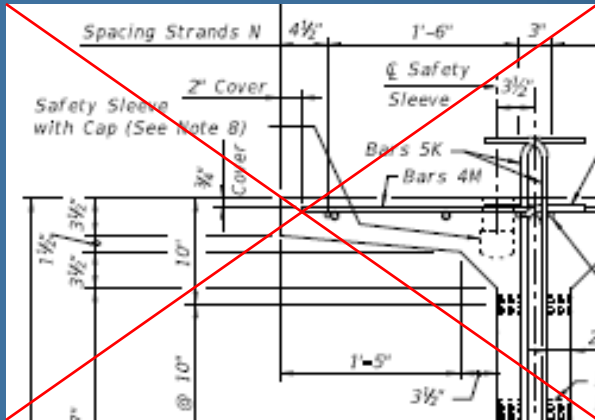
2013

adjustments for beams placed on grade and for elastic and time dependent shortening effects. See **SDM** Chapter 15 for preferred diaphragm and reinforcing details.

For bridge widenings where beam ends are encased in full height diaphragms and the diaphragms are to be extended, modify Index 20010 and the appropriate Index associated with the specific beam height and include them in the plans as follows:

- Modify the Design Standards in accordance with Method 1, Method 2 or Method 3 as defined in the [Terms Of Use](#) for the Borderless DGNs provided in the Design Standards eBooklet.
- Remove all notes, call-outs and details regarding cutting the strands and coating the ends of the beams with epoxy.
- Insert all notes, call-outs and details to ensure proper placement of Bars 4L as shown in the 2010 Design Standards Interim Dated 01/01/10 (Effective Date: July 1, 2010). Detail the number of bars, bar locations and bar bending diagrams

Index 20000 Series & 20200 Series FIBs & FUBs (FIBs Shown, FUBs similar)



~~8. Safety Sleeves or other Safety Line Anchorage Devices are permitted in the top flange. One Safety Sleeve alternative is provided herein as 2 1/4" NPS x 5" Sch. 40 PVC Pipe with Cap installed 2'-0" from ends of beams and spaced on 8'-0" (Max.) centers. Holes shall be free of debris and water prior to casting deck.~~

OLD

PRECAST PRESTRESSED CONCRETE CONSTRUCTION. (REV 1-18-12 5-81421-12)

SUBARTICLE 450-5 (of the Supplemental Specifications) is deleted and the following substituted:

450-5 Shop Drawings.

Submit shop drawings when the Contract Documents do not contain all the detailed information necessary to fabricate and erect the pretensioned prestressed concrete product. Ensure the submitted shop drawings meet the requirements of 5-1 and any additional Contract Document requirements.

Shop drawings are not required to depict supplemental reinforcing steel used to facilitate fabrication of products.

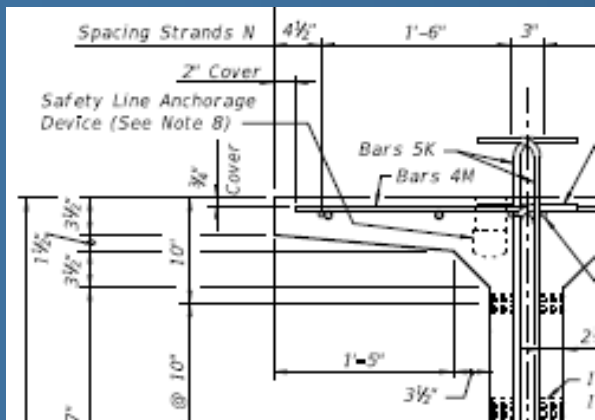
In lieu of shop drawings, furnish one copy of the following to the Engineer:

1. A copy of the Framing Plan with product designations for all superstructure components.
2. Strand detensioning schedule.
3. Tensioning and elongation calculations.
4. Details of supplemental steel that remains as part of the finished product.

5. Drawings, details and spacing for embedded items associated with fall protection systems used on beams.

5o. When proposing to use materials and/or methods that differ from the requirements of the Contract Documents, submit full plan details and Specifications for the alternate materials and methods. Ensure the alternate materials and methods meet the following requirements:

NEW



8. Safety Line Anchorage Devices or sleeves are required and permitted in the top flange only to accommodate fall protection systems used during construction. See shop drawings for details and spacing of any required embedments.

Index 20000 Series - FIBs

What not to do...



- Look for guidance in future releases of the Structures Manual
- Meanwhile, consider implications on FIBS (wide flanges) when designing beams for bridges having significant skews

Index 21900

FENDER SYSTEM – POLYMERIC PILES

IDS 21900 Changes:

Design Assumptions and Limitations

Design Standards Index 21900 includes standard geometry and details for Polymeric Fender Systems.

Refer to **SDG** 3.14 for Fender System design criteria, assumptions and limitations.

Use this standard with Index 21220.

Fender System Deflection Limitations:

Polymeric fender systems are intended to be flexible energy absorptive systems; however, their deflections should be limited to avoid contact with pier footings when possible to allow for impacts without potential for pocketing or snagging and to avoid unnecessary damage to, and maintenance of, the fender system. Coordinate with the District Structures Design Engineer to determine the maximum allowable deflection of the fender system acceptable for the project.

Plan Content Requirements

In the Structures Plans:

Place the required fender system deflection limitations (determined as described above) in the plans.

FDOT is currently working with the Polymeric Fender System Industry to streamline delivery of fender system designs on a project specific basis. This will allow suppliers to maximize the efficiency of their fender systems.

QPL listings will eventually be phased out and suppliers will be placed on an Approved Fabricator listing.

Structures Design Bulletin is scheduled for release this year containing further direction.

Invitation to Innovation

Visit <http://www.dot.state.fl.us/officeofdesign/>

Florida Department Of Transportation

August 14, 2012

Alert Today Alive Tomorrow - [Safety Doesn't Happen by Accident.](#)

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Robert Robertson, P.E. - State Structures Design Engineer

INVITATION TO INNOVATION

M Mobile

Mission Statement
Provide design guidance and technical assistance for structural, geotechnical, mechanical and electrical issues related to structural design and construction.

Invitation to Innovation

The Structures Design Office has posted innovative ideas that should be considered for use on projects where applicable and feasible

Transportation Innovation



Recently, the Department embarked into a new bold era for innovative ideas, research and accelerated implementation. Success in this new era depends on the ability to innovate the products and services Florida's transportation system provides its users. The Florida Department of Transportation's desire for innovation will utilize newly developed technology or employ "outside the box" thinking to generate new and better value for every transportation dollar invested.

After researching and evaluating many innovative ideas, the Central Office has developed a list of concepts, products and services that may be the best solution to the project's needs or design challenges. Some items on the list are completely developed, and only need tailoring to your project. We encourage you to propose one or more of these innovations for project specific solutions with confidence of approval by the Districts. Other items are not fully detailed and will require coordination with and approval by the District's Design Office. Many of these innovations have been successfully implemented in other states and countries. Not all projects benefit from these innovations and the Department is not advocating the general use of new products or designs where an economical well proven solution exists and is the most appropriate solution for the situation.

Please consider these innovations as possible solutions to your project-specific needs. We invite you to review innovations listed in the links below. Additional innovations will be added as they are identified and developed. If you have any questions, details and contact information are included within the information for each innovation web site.

Innovative Ideas

Structures Design Office

[Prefabricated Bridge Elements and Systems](#)

[Curved Precast Spliced U-Girder Bridges](#)

[Geosynthetic Reinforced Soil Integrated Bridge System](#)

[Geosynthetic Reinforced Soil Wall](#)

[Segmental Block Walls](#)

Roadway Design Office

Coming Soon

Surveying and Mapping Office

Coming Soon

Engineering CADD Office

Coming Soon

Invitation to Innovation

Structures Design - Transportation Innovation

Segmental Block Walls (SBW)

[Overview](#)
[Design Criteria](#)
[Specifications](#)
[Implementation Plan](#)
[Usage Restrictions / Parameters](#)
[Contact](#)

Overview

Segmental Block Walls (SBWs) may be used as an alternative to most MSE walls, but not to support spread footings. The construction of SBWs is achievable without the use of heavy equipment or cranes. Interlocking CMUs are used to provide a mechanical connection of the geotextile reinforcement to the wall face.

The primary difference between SBW and GRS is the frequency of the reinforcement. SBW facing blocks may be used for [GRS Abutments](#) and [GRS Walls](#).

Design Criteria

Follow the design criteria of MSE walls in accordance with the FDOT Structures Manual and the AASHTO LRFD Bridge Design Specifications, 6th Edition. The maximum geosynthetic vertical spacing is the lesser of two facing blocks in height or 30 inches. Provide a minimum horizontal distance between the edge of the travel lane and the wall equal to one-half of the wall height.

Specifications

Specifications are currently being developed for the July 2013 Workbook; however, until they are posted, Technical Special Provisions (TSP) will be required for use of SBW walls. Contact the SDO for recommendations for TSP language.

Implementation Plan

Segmental Block Walls are available for immediate implementation with authorization from SDO and concurrence from the District on limited projects.

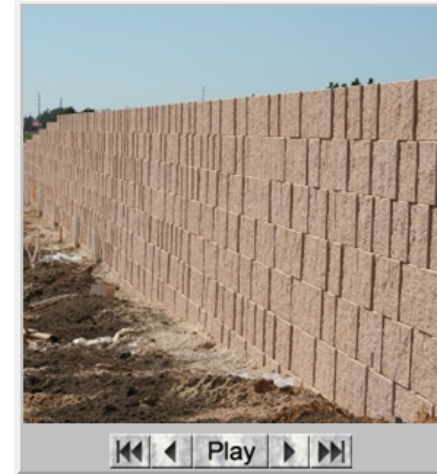
Usage Restrictions / Parameters

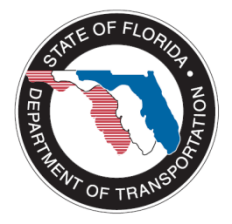
SBWs may be considered for walls having heights up to 40 feet. When the wall face is within the clear zone of an adjacent roadway, the facing blocks must be solid from the bottom of the wall to 8 feet above the proposed grade.

Contact Information

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Photo Slideshow





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Questions?