

# ***Design Standards***



## **2014 Design Update Training**

**Darren Martin**

**Design Standards Specialist**

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# NEW FOR 2014

## Roadway Standards

## Design Standards



Roadway Design <http://www.dot.state.fl.us/rddesign/ST/Default.shtm>

### Roadway Design / Roadway Standards Roadway Standards



#### Topics

[Design Standards Procedure](#)

[Design Standards](#)

[Design Bulletins](#)

[Lighting](#)

[Maintenance of Traffic](#)

[Roadside Barriers](#)

[Signalization and ITS](#)

[Signing and Pavement Marking](#)

#### Other Links of Interest

[ADA Public Rights of Way](#)

[Construction Office](#)

[Hydraulics Section](#)

[System Management Documents -  
Driveway Guide, Permits, Median  
Handbook and more](#)

[Engineering CADD \(EC SO\)](#)

[MUTCD](#)

[Roadway Criteria](#)

[Specifications - Estimates](#)

[Structures Design Office](#)

[Traffic Engineering Office](#)

[Transit Design Handbook](#)

[Traffic Engineering Manual](#)

[Utilities Office](#)

#### Contact Us

VACANT

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*Design Standards Engineer*

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*Engineering Systems Specialist*

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Applications Support-Web Author-Design Standards Technician*

VACANT

*Roadway Design Engineer*

VACANT

*Design Standards Engineer*

Many links on our site are PDF files and best viewed with Adobe Acrobat Reader



# NEW FOR 2014

## Design Standards

## INDUSTRY REVIEW

## Origination Form Instructions Example

## Current Submittals Under Review

## Submittal History



### Office of Design

#### Office of Design / Design Standards Design Standards



#### INDUSTRY REVIEW

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[Current Submittals Under Review](#)

[Submittal History](#)

#### CURRENT

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# NEW FOR 2014

## ORIGINATION FORM

### DESIGN STANDARDS - ORIGINATION FORM

INSTRUCTIONS

EXAMPLE

#### CONTACT

Date:

Name:

Phone:

Email:

#### DESIGN STANDARDS

Index No.:

Title:

Sheet No.:

#### COMMENTARY

#### BACKGROUND

#### IMPLEMENTATION

- Immediate deployment via a [Roadway Design Bulletin](#) (Virtual Implementation), allowing use on projects with lettings beginning in .
- OR
- Deployment of **Index**  will be accomplished for the  Design Standards e-Booklet, allowing use on projects with lettings beginning January 1, . A [Roadway Design Bulletin](#) will be required to release the  Design Standards.



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# ORIGINATION FORM

## OTHER AFFECTED DOCUMENTS

1. Other Design Standards – N/A
2. Utility Accommodation Manual – N/A
3. Plans Preparation Manual – N/A
4. Basis of Estimates Manual – N/A
5. Standard Specifications – N/A
6. Other – N/A

## ORIGINATION PACKAGE

- This origination package includes:

- Design Standards - Origination Form,
- Proposed Index Drawing(s),
- Revised Index Drawing(s),
- Proposed IDS,
- Revised IDS,
- Red-line Mark-ups,
- Other Support Documents,

SAVE

SEND

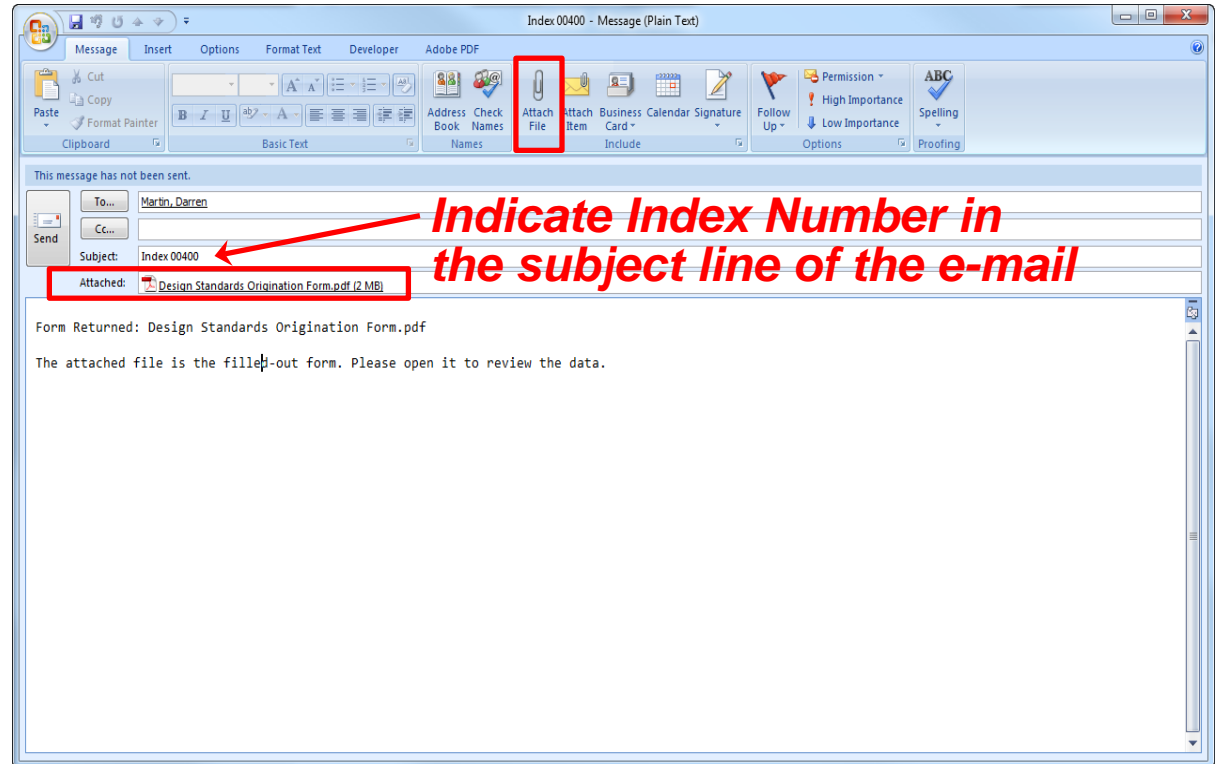
**NOTE:**  
Clicking SEND will create an Origination e-mail.  
Please, attach all supporting documents in this e-mail to  
complete the Origination Package.

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## ORIGINATION FORM

*e-mail*

**Attach All Documents  
to Complete the  
Origination Package**



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## INDUSTRY REVIEW

### Origination Form

### Instructions Examples



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Origination Form - **Instructions** - Example

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## Origination Form Instructions



### DESIGN STANDARDS - ORIGATION FORM

INSTRUCTIONS

EXAMPLE

#### CONTACT

**Date:** Date of Origination (m/d/yyyy) - (This date does not change).  
**Name:** Name of the Person Hosting the Revision or New Index. This Host will be the key contact person for questions, comments and responses related to the index.  
**Phone:** Phone Number of the Host. (10 digits and Enter)  
**Email:** Host email Address.

#### DESIGN STANDARDS

**Index No.:** Only one (1) Index Number per Revised Index Drawing(s) Origination Form. When establishing a New Index, list the Proposed Index Number. Coordinate with the Design Standards Manager to Establish the New Index Number.  
**Title:** List the existing Index Title; or the Proposed Index Title of a New Index.  
**Sheet No.:** List the Sheet Number(s) Affected by the Revision or List the Number of Sheets for the New Index.

#### COMMENTARY

Describe the need for hosting a revision to this design standard. This description should be no more than one or two sentences long. Commentary on new indexes; this section provides the essential technical support behind the new requirement. It includes references to literature (both pro and con), directives, studies, research findings and other information that influences the decision to create a new index.

#### BACKGROUND

This section discusses the circumstances that prompted the revision or new index. It does not duplicate the commentary section. It should simply facilitate the reader's understanding of the issue or situation that occurred and adequate responses to such issues. The background includes the history of a practice, problem, issue, concern, reference, sources of information, etc.

#### IMPLEMENTATION

Virtual Implementation revisions will be issued without restriction on an "as needed" basis to effect changes which require immediate implementation (affect safety) or are cost effective to implement immediately (cost savings to Design, Construction, or Maintenance). This section specifies the method of deployment. In any case, an immediate deployment for Virtual Implementation candidates involves issuing a Roadway Design Bulletin with appropriate timeline for implementation.

- Immediate deployment via a [Roadway Design Bulletin](#) (Virtual Implementation), allowing use on projects with lettings beginning in MONTH, 20XX.
- Deployment of Index ##### will be accomplished for the 20XX Design Standards e-Booklet, allowing use on projects with lettings beginning January 1, 20XX. A [Roadway Design Bulletin](#) will be required to release the 20XX Design Standards. Choose the applicable deployment method (select only one).



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### Origination Form Instructions Examples



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## Origination Form Examples



### DESIGN STANDARDS - ORIGINATION FORM

INSTRUCTIONS

EXAMPLE

#### CONTACT

**Date:** April 19, 2013  
**Name:** John Mauthner, P.E. – Design Standards Manager  
**Phone:** (850) 414-4334  
**Email:** John.Mauthner@dot.state.fl.us

#### DESIGN STANDARDS

**Index No.:** 304  
**Title:** Detectable Warnings and Sidewalk Curb Ramps  
**Sheet No.:** 1-7 (New Sheets)

#### COMMENTARY

This revision is based on the redevelopment of Index 304.

#### BACKGROUND

Over the last 30 months calls and comments have been received in the Criteria and Standards Office with the following request: In Index 304 the curb ramp design details are not buildable and lack sufficient detail. The Construction Office received multiple requests from Contractors to generate a "Summary of Detectable Warnings" table which quantify the area of detectable warnings for typical curb ramp applications. In order to provide adequate resolve the Design Standards Office, Central Office ADA Coordinator, and the Construction Office hosted revisions to the redevelopment of Design Standard, Index 304.

#### IMPLEMENTATION

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- OR
- Deployment of **Index 304** will be accomplished for the 2014 Design Standards e-Booklet, allowing use on projects with lettings beginning January 1, 2014. A [Roadway Design Bulletin](#) will be required to release the 2014 Design Standards.

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## INDUSTRY REVIEW

### Current Submittals Under Review



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# INDUSTRY REVIEW



## Office of Design

### Design Standard Industry Review

[Help](#)



The following files are in the developmental process and are posted for Review. If you have comments, please use the comments section below. To track the History of proposed revisions go to: [Track the Status of Proposed Revisions](#)

**Note:** Files on this page are in Adobe Acrobat (PDF) format. All Files are less than 3mb in size unless noted otherwise.

Origination Form	Index Title	Redlines	Proposed Design Standards Revisions	Review End Date
<a href="#">18102 Origination</a>	Grounding and Lightning Protection	<a href="#">18102 Red-Line</a>	<a href="#">18102 Draft</a>	2-26-14
<a href="#">18300 Origination</a>	Dynamic Message Sign Walk-In	<a href="#">18300 Red-Line</a>	<a href="#">18300 Draft</a>	2-26-14

Select the Design Standard you want to comment on:

Select Design Standard ▼

Enter your comments in the space provided below: (Time will expire in 30 minutes.)

Tell us how to get in touch with you:

Name:

Phone:

E-mail:

Confirm E-mail:

Please Contact me as soon as possible regarding this matter.

Upload a file: (File must be a PDF and less than 14 MB in size.)

Select file to upload:



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## INDUSTRY REVIEW

### Submittal History



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## INDUSTRY REVIEW HISTORY



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### Office of Design

Office of Design / Design Standards / Industry Review History

### Industry Review History



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Origination	Redlines	Comment/Response	Proposed Design Standard Revisions
00400	00400	00400	00400
00410	00410	00410	00410
00412	00412	00412	00412
00430	00430	00430	00430
00510	00510	00510	00510
17346	17346	17346	17346
17347	17347	17347	17347
17500	17500	17500	17500

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2014 Design  
Update Training

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# INDUSTRY REVIEW COMMENTS AND RESPONSES

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## Index 412 Low Profile Barrier

### ORIGINATION

Date: November 4, 2013

Name: Chester Henson

Phone: (850) 414-4117

Email: [chester.henson@dot.state.fl.us](mailto:chester.henson@dot.state.fl.us)

### COMMENTARY

Note 1: (ADD) Pursuant to 35 United States Code, Chapter 18, also known as the Bayh Dole Act of 1980, the non mountable curb was developed through federal funding.

Note 2: (ADD) This legally mandated relationship is unique to federally funded University patents that Department contractors use on contracts. Pursuant to federal law, the University may pursue royalties for a valid patent.

### COMMENTS AND RESPONSES

BLACK = Industry Review Comments    RED = Design Standards Response

**John Swift**

December 12, 2013 9:56 AM

The additions seem to be only housekeeping and copy right issues, No problem.

**Design Standards Response**

January 15, 2014

Thank you for your response.

**Phillip Bello**

December 12, 2013 12:16 PM

The FHWA has reviewed the proposed changes to design standard Index 00412. We do not have comments/concerns since the amendments only address the intellectual property claim that the University of Florida has over the low profile wall. The wall's installation or configuration and the design speed requirement are not being changed. Please feel free to call if you have any other questions.

**Design Standards Response**

January 15, 2014

Thank you for your response



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## Design Standards

## CURRENT

## eBooklet 2014

## Design Standards Revisions

## Developmental Design Standards



### Office of Design

#### Office of Design / Design Standards Design Standards



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STANDARD CRITERIA

CLASS	TYPE (1)	APPLICATION DESCRIPTION	INDEX NO.	PERMITTIVITY (sec <sup>2</sup> )	AOS SIEVE#	MIN. GRAB TENSILE STRENGTH (lb)	MIN. SEWN STRENGTH (lb/in)	MIN. PUNCTURE (lb)	MIN. TRAPEZOIDAL TEAR (lb)	MIN. WIDE WIDTH TENSILE STRENGTH (lb/in)	UV RESISTANCE (Min. Allowed)		COMMENTS					
											%	Time (Hrs.)						
DRAINAGE (D)	D-1	Revetment (Special)		(See D-2)	(See D-2)	315	7.2	113	113		50	500	Woven Monofilament Geotextiles only (Elongation <50%) Provide 12" thick bedding stone layer.					
	D-2	Revetment (Standard)				Woven Monofilament 248	Woven Monofilament 5.7	Woven Monofilament 90	Woven Monofilament 57					Woven Geotextiles only. No Silt Film Geotextiles allowed. Provide 12" thick bedding stone layer for revetment (standard). The bedding layer may be omitted if a D-1 fabric is used with revetment (standard). ****Bedding Stone not required for Articulating Block. *For cohesive soils with a plasticity index >7, maximum average roll value for AOS is number 50 sieve.				
		Articulating Block****		% SOIL PASSING No. 200 SIEVE	% SOIL PASSING No. 200 SIEVE													
		Gabions	281	<15%	0.7	<15%	40	Other Geotextiles: Elongation	Other Geotextiles: Elongation	Other Geotextiles: Elongation	Other Geotextiles: Elongation	50	500					
		Rock, Rubble, Broken Concrete		15% to 50%	0.2	15% to 50%	60	<50%	315	<50%	6.9	<50%	113		<50%	113	>50%	79
	Mechanically Stabilized Retaining Wall Supporting Spread Footing Foundations		>50%	0.1	>50%	70*	>50%	203	>50%	4.7	>50%	79	>50%	79				
	D-3	Underdrain ***	286	% SOIL PASSING No. 200 SIEVE	% SOIL PASSING No. 200 SIEVE	Elongation	Elongation	Elongation	Elongation			50	500	No woven silt film fabrics allowed. *For cohesive soils with a plasticity index >7, maximum average roll value for AOS is number 50 sieve. **Required Trapezoidal tear for woven monofilament is 250. ***See Index No. 286 for the permittivity and AOS values of the internal filter fabric of Type V Underdrain.				
		French Drain	285	<15%	0.5	<15%	40	<50%	248	<50%	5.7	<50%	90		<50%	90**	>50%	57
		Sheet Piling Filter		15% to 50%	0.2	15% to 50%	60	>50%	158	>50%	3.6	>50%	57		>50%	57		
		Filter Fabric Jacket (Culvert)	280	>50%	0.1	>50%	70*											
		Concrete Pavement Subdrainage	287															
	D-4	Slope Pavement (Sand-Cement)			0.5	40	180	4.2	50	35		50	500	Non-woven, needle-punch only. Elongation ≥50%				
D-5	Mechanically Stabilized Retaining Wall Cast-In-Place Retaining Wall			0.5	40	180	4.2	50	40		50	500						
D-6	Slope Pavement (Concrete)			0.5	40	180	4.2	50	35		50	500	Non-woven, needle-punch only. Elongation ≥50%					
	Ditch Pavement (Concrete)	281																
EROSION (E)	E-1	Staked Silt Fence		0.05	NA	90	2.1	NA	35		80	500	Min. Filtration Efficiency of 75% & min. flow rate of 0.3 gal.					
	E-2	Wind Screen		0.05	NA	90	2.1	NA	NA		80	150						
	E-3	Plastic Erosion Mat (Turf Reinforcement Mat) (Type 1)		NA	NA	NA	NA	NA	NA	12 x 6	80	500	Use where design shear stress Ts ≤2.1 psf					
	E-4	Plastic Erosion Mat (Turf Reinforcement Mat) (Type 2)		NA	NA	NA	NA	NA	NA	23 x 12	80	500	Use where design shear stress Ts ≤3.6 psf					
	E-5	Plastic Erosion Mat (Turf Reinforcement Mat) (Type 3)		NA	NA	NA	NA	NA	NA	46 x 23	80	500	Use where design shear stress Ts ≤5.0 psf					

(1) Type refers to FDOT class and application.

TABLE I

Test	Unit	Test Method
Permittivity	sec <sup>2</sup>	ASTM-D-4491
AOS	US Sieve No.	ASTM-D-4751
Elongation	%	ASTM-D-4632
Grab Tensile Strength	lb	ASTM-D-4632
Wide Width Tensile Strength	lb/in	ASTM-D-4595
Maximum Design Velocity	fps	See Note 8
Sewn Strength	lb/in	ASTM-D-4884
Puncture	lb	ASTM-D-4833
Trapezoidal Tear	lb	ASTM-D-4533
Ultraviolet Resistance	% Retained In Strength	See Note 7
Filtration Efficiency	%	ASTM-D-5141
Flow Rate	gal <sup>3</sup> /min	ASTM-D-5141

GENERAL NOTES

- Specifications for geotextiles are in Section 985. Physical criteria for each application is provided by this standard, in conjunction with those sections.
- All values except AOS are MINIMUM AVERAGE ROLL values in the weakest principal direction. Values for AOS are MAXIMUM AVERAGE ROLL values.
- Test soil or fill material adjacent to the geotextile for gradation to select values for permittivity and AOS.
- Unless specifically restricted in COMMENTS column, any type of material meeting specification 985 may be used.
- Wide width tensile strength is expressed in units of measure of lb./in., in machine direction and cross direction, as MD x CD.
- The Manufacturer shall provide results in English Units.
- UV Resistance: The value represents the percent minimum textile strength retained (ASTM-D-4632) after weathering per ASTM-D-4355 for the test period (hours).
- Shear stress limits for plastic erosion mats determined by 30 minutes sustained flow in unvegetated state as determined by tests performed by Utah State University, Texas Transportation Institute or an independent testing laboratory approved by the State Drainage Engineer.

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## Design Standards

## Design Standards Revisions



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n/a = Non Applicable  
n/c = No Change

Index Number	Revised Sheets	Index Title	Design Information			
	(PDF)		Instructions for Design Standards (IDS) (PDF)	Data Table Cell Library (ZIP)	Borderless DGNs (ZIP) Terms of Use	Associated Design Bulletin (PDF)
05200	n/c	Precast Noise Walls	IDS-5200	CEL-5200	n/c	SDB14-02
05250	1-10 of 10	Perimeter Walls	IDS-5250	CEL-5250	DGN-5250	SDB14-02
21110	1 of 2	Poured Joint with Backer Rod Expansion Joint System	n/c	n/c	DGN-21110	SDB14-02
21250	n/c	Access Hatch Assembly for Steel Box Sections	IDS-21250	n/a	n/c	SDB14-02
21251	n/c	Access Hatch Assembly for Concrete Box Sections		n/a	n/c	SDB14-02
21252	1 of 1	Access Door Assembly for Steel Box Sections	IDS-21252	CEL-21252	DGN-21252	SDB14-02

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### Developmental Design Standards



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Design Developmental Index No. (PDF)	Title	Monitor	Instructions for Developmental Design Stds (PDF)	Applicable Developmental Specifications? (YES/NO)
* TRAFFIC RAILINGS *				
D477	Thrie-Beam Panel Retrofit (Concrete Handrail)  (NOTE***Migrated to the <i>Design Standards</i> effective for lettings beginning January 2014; See Index 477 in the current <i>Design Standards eBooklet</i> )	Gevin McDaniel		NO
* GENERAL *				
D591	Landscape Irrigation Sleeves	Jeff Caster		NO
* WALL SYSTEMS *				
D6025	GRS-IBS	Larry Jones	IDDs-D6025	YES
* TRAFFIC SIGNAL AND EQUIPMENT *				
D17749	Damping Device for Miscellaneous Structures	Gevin McDaniel	IDDs-D17749	NO
* PRESTRESSED CONCRETE INVERTED-T BEAMS *				
D20310	Typical Inverted-T Beam Details and Notes	Gevin McDaniel	IDDs-D20310	NO
D20320	Inverted-T Beam Standard Details			
* PRESTRESSED CONCRETE SLAB UNITS *				
D20350	Prestressed Slab Units	Gevin McDaniel	IDDs-D20350	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			



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### eBooklet

### Fiscal Year 2012/2013

### eBooklet

### 2010 through 2000



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#### CURRENT

Year	Design Standards eBooklet	Design Standards Revisions	Developmental Design Standards	Click on the Current eBooklet link "DSeB" for the most current Design Standards.
2014	<a href="#">DSeB</a>	<a href="#">DSR</a>	<a href="#">DDS</a>	Thank you for visiting our site.

#### HISTORICAL

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FY 2012/13	<a href="#">DSeB</a>	<a href="#">DSR</a>

Year	Design Standards Booklet	Design Standards Interim Standards	Design Standards Modifications			
Select the desired Historical Standards Booklet, Interim Standards or Standards Modification by clicking on their underlined symbol.			The dates shown under Design Standards Modifications are the effective dates of the Modifications with detailed content in English Units unless otherwise noted.			
2010	<a href="#">Standards</a>	<a href="#">Interim</a>	<a href="#">January 2012</a>	<a href="#">July 2011</a>	<a href="#">January 2011</a>	<a href="#">July 2010</a>
2008	<a href="#">Standards</a>	<a href="#">Interim</a>	<a href="#">January 2010</a>	<a href="#">July 2009</a>	<a href="#">January 2009</a>	<a href="#">July 2008</a>
2006	<a href="#">Standards</a>	<a href="#">Interim</a>	<a href="#">January 2008</a>	<a href="#">July 2007</a>	<a href="#">January 2007</a>	<a href="#">July 2006</a>
2004	<a href="#">Standards</a>	<a href="#">Interim</a>	<a href="#">January 2006</a>		<a href="#">July 2005</a>	
2002	<a href="#">Standards</a>	<a href="#">Interim</a>	N/A			
2000	<a href="#">Standards</a>	<a href="#">Interim</a>	<a href="#">January 2006 Metric</a>		<a href="#">July 2005 Metric</a>	

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Traffic Engineering Office  
Transit Design Handbook  
Traffic Engineering Manual  
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VACANT <i>Roadway Design Engineer</i>		
VACANT <i>Design Standards Engineer</i>		

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or

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