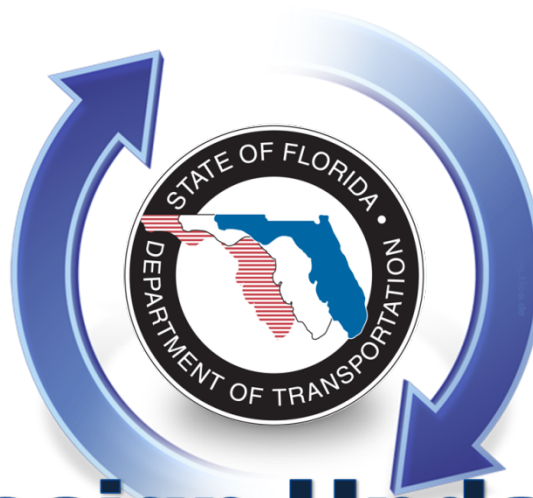


Design Standards Update



Design Update Training

Alan Hart, P.E.

Design Standards Manager

alan.hart@dot.state.fl.us

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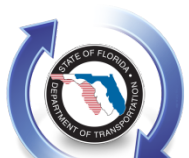
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2015	DSeB	DSR	DDS	

2015
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To skip directly to groups of Indexes, click on the index series:

100, 200, 300, 400, 500, 600, 700, 800, 5200, 6000, 11200, 13000, 17300, 17500, 17700, 17900, 18100, 20000, 20500, 20600, 20900, 21100, 21200, 21300, 21600, 21800, 21900

Index Number	Design Standards Revision (DSR)	Index Title	Design Information		
			Instructions for Design Stds (IDS)	Data Table Cell Library	Borderless DGNs
(PDF)			(PDF)	(ZIP)	(ZIP) Terms of Use
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COVER, TABLE OF CONTENTS AND REVISIONS					
Cover		Booklet Cover	Cover		
Content		Table of Contents	Content		
Revisions		Revision History	Introduction		
			Revisions		
ABBREVIATIONS AND SYMBOLS			Roadway Contact		
001		Standard Abbreviations			
002		Standard Symbols			
EROSION CONTROL AND WATER QUALITY			Drainage Contact		
104		Permanent Erosion Control			
105		Shoulder Sodding and Turf on Existing Facilities			
DRAINAGE			(199-288, 293-295) Drainage Contact (289-292) Structures Contact		
200		Structure Bottoms - Type J & P			
201		Supplementary Details for Manholes & Inlets			



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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.



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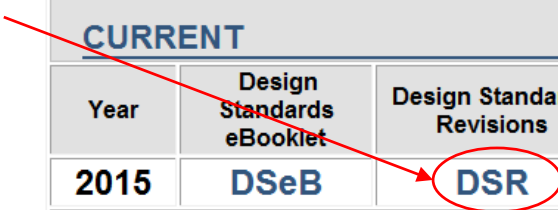
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2014 Design Standard Revisions

Index Number	Sheets	Index Title	Design Information			
			Instructions for Design Standards (IDS)	Data Table Cell Library	Borderless DGNs	Associated Design Bulletin
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Revisions	1-2 of 4	Revision History	N/A	N/A	N/A	Memo
400	1-26 of 26 (34 sheets total)	Guardrail Systems	IDS-400	N/A	N/A	RDB14-13
						RDB14-05
402	8-11, 16-24 of 24	Guardrail Transitions and Connections for Existing Bridges	N/A	N/A	N/A	RDB14-05
403	1 of 3	Guardrail Transitions for Existing Bridge Traffic Railing Retrofits	N/A	N/A	N/A	
404	6-7 of 8	Guardrail Transitions-Existing Post & Beam Bridge Railings (Narrow & Recessed Curbs)	N/A	N/A	N/A	
410	2 of 27	Concrete Barrier Wall	N/A	N/A	N/A	
414	4 of 15	Type K Temporary Concrete Barrier System	N/A	N/A	N/A	RDB14-06
415	1 of 7	Temporary Concrete Barrier	N/A	N/A	N/A	



2014 Roadway/Structures Design Bulletins

Roadway
Design
Bulletin

Index Number	Sheets	Index Title	Design Information			
			Instructions for Design Standards (IDS)	Data Table Cell Library	Borderless DGNs	Associated Design Bulletin
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410	2 of 27	Concrete Barrier Wall	N/A	N/A	N/A	
414	4 of 15	Type K Temporary Concrete Barrier System	N/A	N/A	N/A	RDB14-06
415	1 of 7	Temporary Concrete Barrier	N/A	N/A	N/A	



Roadway/Structures Design Bulletin



Florida Department of Transportation

RICK SCOTT
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

ANANTH PRASAD, P.E.
SECRETARY

ROADWAY DESIGN BULLETIN 14-13

(FHWA Approved: June 20, 2014)

DATE: June 20, 2014

TO: District Directors of Transportation Operations, District Directors of Transportation Development, District Design Engineers, District Construction Engineers, District Geotechnical Engineers, District Structures Design Engineers, and Program Management Engineers

FROM: Michael A. Shepard, P. E., State Roadway Design Engineer *Michael Shepard*

COPIES: Brian Blanchard, Tom Byron, Duane Brautigam, Robert Robertson, David Sadler, Tim Lattner, Mark Wilson, Bruce Dana, John Krause, Greg Schiess, Trey Tillander, Rudy Powell, Nick Finch (FHWA), Chad Thompson (FHWA) and Felix Delgado (FHWA)

SUBJECT: Guardrail Systems

This bulletin provides revisions and additional requirements for guardrail systems.

REQUIREMENTS

1. The following Design Standards Revisions (DSR) are released:
 - A. Revised Index 400 (Guardrail) is released.
 - B. The new IDS-400 (Guardrail) is released.
2. Delete Item 2 under "Shielding drop-off hazards for vehicle occupants;" in *Plans Preparation Manual*, Volume 1, Section 4.2.2 and replace it with the following:

When a drop-off is to be shielded with guardrail, a minimum of 62.5 feet of guardrail is required to develop proper ribbon strength. A minimum clear area 5'-0" wide from the face of the guardrail is to be provided behind the standard W-beam guardrail to allow for dynamic deflection when impacted. Alternates shown in Table 4.3.1 may be used to allow for a clear area less than 5'-0" wide. A minimum distance of 2'-0" shall be provided from the back face of the guardrail posts to the shoulder slope break in order to provide proper soil bearing resistance for the posts.

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Instruction for Design Standards (IDS)

Instruction for Design Standards

		TRAFFIC RAILINGS	(400-403,410-415, 430 & 461) Roadway Contact (404,405,420-425, 470-484) Structures Contact		
400		Guardrail	IDS-400		
402		Guardrail Transitions and Connections for Existing Bridges	IDS-402		
403		Guardrail Transitions for Existing Bridge Traffic Railing Retrofits	IDS-403		
404		Guardrail Transitions - Existing Post & Beam Bridge Railings (Narrow & Recessed Curbs)	IDS-404		DGN-404
405		Guardrail Transitions - Existing Post & Beam Bridge Railings (Wide Curbs)	IDS-405		DGN-405
410		Concrete Barrier Wall			
411		Pier Protection Barrier	IDS-411		
412		Low Profile Barrier			
414		Type K Temporary Concrete Barrier System	IDS-414		



Instruction for Design Standards (IDS)

Instructions for Design Standards
Index 402 Guardrail Transitions and Connections for Existing Bridges

Topic No. 625-010-003-j
2015

Index 402 Guardrail Transitions and Connections for Existing Bridges

Design Criteria

NCHRP Report 350; AASHTO LRFD Bridge Design Specifications, 6th Edition, Section 13; Structures Design Guidelines (SDG)

Design Assumptions and Limitations

This standard contains details for attaching three beam guardrail approach transition retrofits to Index 470 and 480 Series bridge railing retrofits and also to existing safety shape bridge traffic railings. Use this standard with Indexes 410, 470, 471, 472, 473, 474, 475, 476, 480, 481, 482, 483 and 484.

The appropriate Index 402 approach transition retrofit for Index 470 and 480 Series bridge railing retrofits must be selected and specified in the plans based on the shapes and designs of the existing bridge traffic railings, approach slabs and end bent wing walls. See the Instructions for [Index 470](#) and [Index 480](#) and *SDG 6.7* for more information.

The following three sections of instructions address the use of Index 402 with existing safety shape bridge traffic railings:

1. A Historical Compilation of Superseded Florida Department of Transportation "Structures Standard Drawings" for "F" and "New Jersey" Shape Structure Mounted Traffic Railings
2. Guardrail Approach Transition Retrofit Instructions for Existing Flat Slab Bridges
3. Guardrail Approach Transition Retrofit Instructions for Existing Beam/Girder Bridges

Index 402 Three-Beam Guardrail transition retrofits are bolted to existing safety shape bridge traffic railings through field drilled holes utilizing the pre-drilled Three-Beam Terminal Connector as a template. This method of attachment creates the potential for conflicts between the new attachment bolts and existing utilities and/or conduits. Compare the locations of the new attachment bolts with the positions of any existing utilities and/or conduits. Guidance is provided on Index 402 for selecting a bolt pattern for the Three-Beam Terminal Connector that may avoid existing utilities and/or conduits. Existing utilities and/or conduits that conflict with the possible bolt patterns shall be relocated if possible or placed out of service. Include all necessary utility adjustment information in the Roadway Plans.

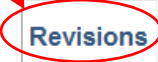


Revision History

- Over 250 revisions to the Design Standards for the 2015 eBooklet
- All revisions are listed on the Revisions History Sheets along with descriptions of the changes

Index Number	Design Standards Revision (DSR)	Index Title	Design Information		
			Instructions for Design Stds (IDS)	Data Table Cell Library	Borderless DGNs
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Complete eBooklet (252mb)			Combined Available IDS (11mb)	Combined Available CELs (1mb)	Combined Available DGNs (57mb)
		COVER, TABLE OF CONTENTS AND REVISIONS			
Cover		Booklet Cover	Cover		
Content		Table of Contents	Content		
Revisions		Revision History	Introduction Revisions		

Revision History



Revision History

2015 REVISIONS

INDEX No	SHEET No	DESCRIPTION
ABBREVIATIONS AND SYMBOLS		
1	3 of 4	Added NRTL Nationally Recognized Testing Laboratory; Deleted QPL Qualified Products List.
STANDARD SYMBOLS		
2	3 of 4	Deleted all lines that indicate quality level A.
DRAINAGE		
199	All	Deleted Index.
200	1 of 5	Clarify length/extension of #4 bars above pipe blockout as 6" beyond vertical bars.
201	3 of 5	Changed Notes #6 and #7.

INDEX No	SHEET No	DESCRIPTION
403	1 of 3	Changed Height of W-beam Guardrail.
404	6 of 8	Guardrail Transitions-Existing Post & Beam Bridge Railings (Narrow & recessed Curbs).
	8 and 7 of 8	Changed Height of W-beam Guardrail.
410	All	Changed Height of W-beam Guardrail.
	14 of 29	Revised top width and back side shape of the F Shape Concrete Barrier wall to match the transition and direction of the Bridge Traffic Railings in indexes 420 and 425.
412	1 of 5	Changed Note #1, 2 and 6.
		Changed Qualified Products List (QPL) to Approved

INDEX No	SHEET No	DESCRIPTION	
477	1 of 4	Changed "Reflective Railing Markers" to "Barrier Delineators".	
	2 of 4	Changed height of W-Beam Railing and Thrie-Beam transition.	
480	1 of 2	Corrected Payment Note.	
	2 of 2	Corrected skew angles in Partial Plan Views.	
GENERAL			
501	3 thru 11 of 11	Deleted Sheets 3 through 11.	
505	3 of 4	Corrected inside shoulder cross slope to 0.05.	
510	1 of 2	Changed SHOULDER ON HIGH SIDE note and added S/4 and S/2 on the Shoulder Construction With Super-elevation detail.	
	2 of 2	Added SPECIAL SHOULDER BREAK OVER DETAILS.	
517	1 of 1	New Index, Sheet 1 from Index 518.	
519	1 of 3	Deleted Sheet. Sheet 1 moved to Index 517.	
546	2-6 of 6	Changed the table data.	
TRAFFIC CONTROL THROUGH WORK ZONES			
600	1 of 13	Added Note "Except for emergencies" to the Preface Notes.	
	2 of 13	Changed Qualified Products List (QPL) to Approved Products List (APL).	
	4 of 13	Changed note #1; Deleted 40 or Less and 45 Speeds (mph) from Distance Between Signs Table.	
	6 of 13	Clarified Note #1; Deleted Note #2 from Design Notes; Added 48"x24" Sign Size and Number of Posts to the Post and Foundation Table; Changed Qualified Products List (QPL) to Approved Products List (APL).	
	9 of 13	Deleted Concrete Barrier Wall for the Steady-Burn note under Warning Lights.	
	10 of 13	Changed Notes & Table 1 for clarification; Changed QPL to APL.	
	11 of 13	Changed Table numbering from Table 2 to Table 3.	
	12 of 13	Changed QPL to APL.	
	13 of 13	Deleted Class D and E from the Use Of RPMS To Supplement Paint Or Removable Tape In Work Zones.	
	603	1 of 2	Changed Note #6.
	604	1 of 1	Changed Note #7.
	605	1 of 1	Changed Note #7.
	606	1 of 4	Changed Note #8.
670	1 of 1	Changed Tables 1 & 2 to show posted speeds of 55 mph or higher and updated General Note #1.	
ROADSIDE SAFETY			
700	2 of 2	Deleted nonfrangible from item #16 in Table C.	
FENCING AND PEDESTRIAN RAILINGS			
820	1 of 1	Clarified that expansion joints are "Assemblies".	
821	1 of 1	Added offset dimension to Splice Assembly; Clarified that Splice and Expansion Joints are "Assemblies".	
822	2 of 3	Clarified difference between expansion and splice joint assemblies.	
	3 of 3	Clarified naming of Rail Splice/Expansion Assemblies and RAIL INSTALLATION Note.	

201	3 of 5	Changed Notes #6 and #7.
216	1 of 3	Changed General Note #3 from 1 1/4" to 2" of cover; Changed drawings to show 2" of cover over steel; Added dimensions for cover.
	2 of 3	Added 3'-0" (Min) to Section BB for Clarification.
	3 of 3	Changed Drawings to show 2" of cover over steel; Added dimensions to INTER-WALL REINFORCING detail.

280	1 of 3	Removed note for Flexible Pipe; Changed the Filter Fabric Jacket (Elliptical and Round Pipe) callouts (See Specifications Section 985).
281	1 of 2	Changed Note #7 to "See Specifications Section 985".
286	1 of 2	Changed Note #5 to "See Specifications Section 985".
287	2, 3 and 4 of 4	Changed Filter Fabric Type D-3 call out - "See Specifications Section 985".
289	8 of 8	Changed Asphaltic Concrete Base Note "See Specifications Section 985".
CURBS, CONCRETE PAVEMENT AND SIDEWALKS		
302	1 of 4	Changed Flexible Pavement to Asphalt Pavement; Labeled and Hatched the Base for clarification.
308	1 of 2	Added Figure 10.6 - MULTIPLE SLAB FULL DEPTH REPLACEMENT.
TRAFFIC RAILINGS		
400	8-14, 16-26 of 26	Changed Height of W-beam Guardrail.
	1 of 26	Changed Note #17; Holes are to be Punched, Burning is not permitted.
	2 of 26	Changed Panel Splice Location, Modified General Note
	8 of 26	Changed QPL to APL.
	10 of 26	Changed QPL to APL.
	18 of 26	Changed QPL to APL.
402	8-11, 16-24 of 24	Changed Height of W-beam Guardrail.

415	1 of 7	Note #8-Deleted Type C Steady Burn Lights and replaced with Barrier Delineators; Note #9-Deleted Type C Steady Burn Lights payment information; Added Note #11, Added note 12.
	7 of 7	Added Notes 3, 4, 5, 6, and 9 from Index 430; Changed QPL to APL.
420	1 of 4	Changed height of W-Beam Railings.
	2 of 4	Changed location of W-Beam & Thrie-Beam Guardrail bolts in VIEW B-B; Clarified Guardrail Bolt callouts.
421	1 of 4	Changed height of W-Beam Railings.
	2 of 4	Changed location of W-Beam & Thrie-Beam Guardrail bolts in VIEW B-B; Clarified Guardrail Bolt callouts.
422	1 of 3	Revised height of W-Beam Railings.
	2 of 3	Changed location of W-Beam & Thrie-Beam Guardrail bolts in VIEW B-B; Clarified Guardrail Bolt callouts.
423	1 of 3	Changed height of W-Beam Railings; Clarified naming of rail splice/expansion assemblies.
	2 of 3	Changed location of W-Beam & Thrie-Beam Guardrail bolts in VIEW B-B; Clarified Guardrail Bolt callouts.
425	1 of 3	Changed height of W-Beam Railings.
	2 of 3	Clarified Guardrail Bolt callout.
430	All	Changed Height of W-beam Guardrail; Changed Qualified Products List (QPL) to Approved Products List (APL).



2015 Design Standards eBooklet

- ◆ Index 199 - Deleted
- ◆ 400 Series Indexes – Guardrail and Traffic Railing
- ◆ Index 501 – Geosynthetic Reinforced Soils
- ◆ Index 517 and 518 – Raised Rumble Strips and Shoulder Rumble Strips
- ◆ Index 600 – General Information for Traffic Control Through Work Zones
- ◆ Index 11871 - Single Post Median Barrier Mounted Sign Support
- ◆ Index 11861 - Single Column Cantilever Ground Mounted Sign



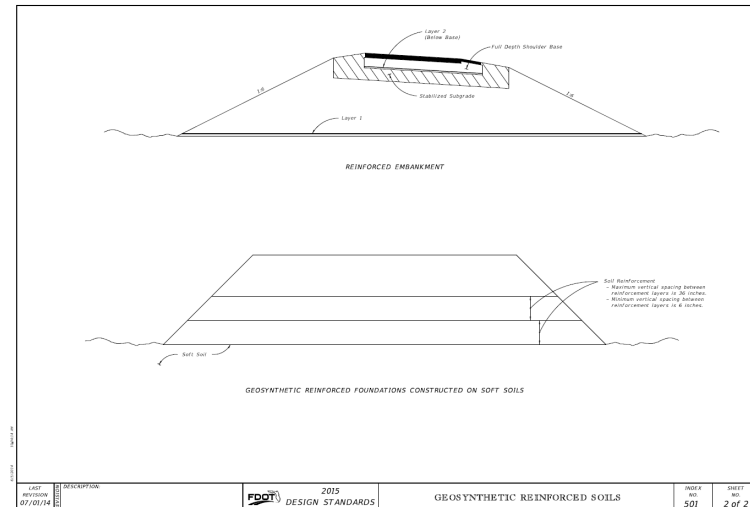
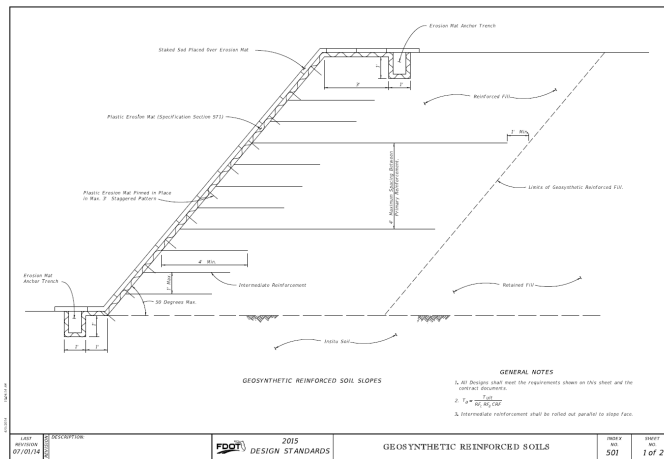
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- ◆ Index 11862 – Roadside Flashing Beacon Assembly
- ◆ Index 17346 – Special Marking Areas
- ◆ Index 17347 – Bicycle Markings
- ◆ Index 17515 – Standard Aluminum Lighting
- ◆ Change QPL to APL



Index 501 – Geosynthetic Reinforced Soils

- ◆ All Geosynthetic Products have been moved from the Standard Index to the Approved Products List (Sheets 3 -11 have been removed).



Index 517 and 518 – Raised Rumble Strips and Shoulder Rumble Strips

- ◆ Index 518 was broken up into 2 separate Indexes.
 - ✓ Shoulder Rumble Strips remained in Index 518
 - ✓ Raised Rumble Strips were removed from Index 518 and a new Index was created (Index 517) to accommodate the Raised Rumble Strips
 - ✓ These changes were implemented to accommodate upcoming Ground In Rumble Striping Index 519 (Currently being developed as a Developmental Design Standard Index)



Index 600 – General Information for Traffic Control Through Work Zones

- ❖ Sheet 4 added note 1

General Notes:

- 1) Temporary raised rumble strips shall be required for all two lane, two way flagging operation with work zones speeds greater than 45 mph and work duration greater than one hour.
- ❖ Sheet 9 deleted the reference to Type C Steady-Burn Warning Lights on top of the Concrete Barrier Wall.



Index 11871 – Single Post Median Barrier Mounted Sign Support

- ❖ Instructions for Design Standards (IDS) has been modified and released:

Use **Design Standards** Index 600 to layout sign locations in the plans. **Design Standards** Index 600 requires signs to be post mounted. When post mounted criteria cannot be met, the Designer must use **Design Standards** Index 11871, show the location of the barrier mounted signs in the plans, and include the pay item for barrier mounted work zone signs. However, to reduce the amount of barrier mounted work zone signs, modify the sign spacing as allowed by Index 600

Use pay item:

102-62 Barrier Mounted Work Zone Sign ED



Index 400 – Guardrail



Index 400 – Guardrail

- ◆ Changes to Index 400 resulting from new policy to increase the mounting height for new installations of guardrail from 1'-9" to 2'-1" effective July 1, 2014.
- ◆ DSRs to 2014 Design Standards eBook, now in 2015 eBook:
 - ✓ RDB 14-05 released March 6, 2014
 - ✓ RDB 14-13 released June 20, 2014
- ◆ Other Indexes in the 400 Series affected by raising the height of the guardrail included Indexes 402, 403, 404, 405, 420, 421, 422, 423, 425, 430 and 477.
- ◆ Major reorganization of Index 400 is planned
 - ✓ Goal to improve organization of criteria and details
 - ✓ Planned to release by Design Bulletin when completed
 - ✓ In-depth training will be provided for the reorganized Index and PPM sections associated with guardrail.



Index 400 – Guardrail

- ◆ Benefits of 31” (2’-1” mounting height) guardrail:
 - ✓ FHWA Memo dated 05/17/2010 requires newly-installed W-beam guardrail to be installed at a minimum height of 27.75 inches (to the top of the panel) including construction tolerances
 - ✓ Increased construction tolerances
 - ✓ Accommodation for over-paving
 - ✓ Updated testing for installations at or behind curbs
 - ✓ Crash tested alternatives for mounting at slope breaks
 - ✓ Increased margin of performance
 - ✓ Most other states are adopting the 31” guardrail systems
 - More pool-funded study opportunities

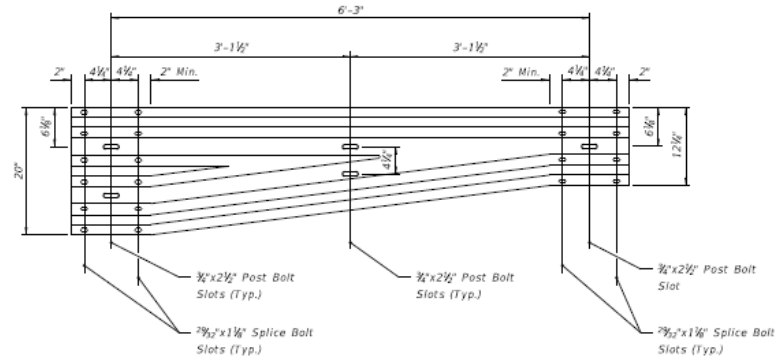


Index 400 – Guardrail

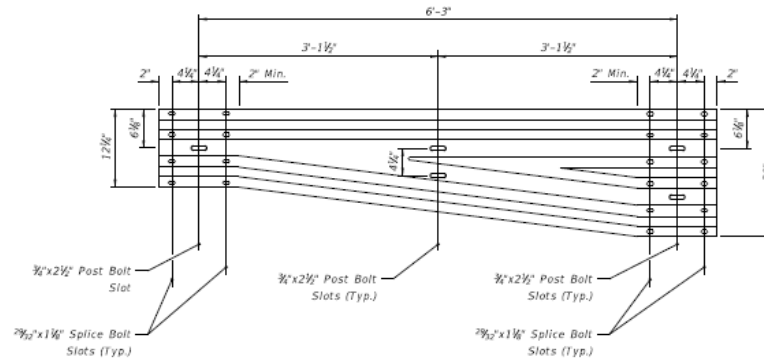
- ◆ Summary of major changes with RDB 14-05:
 - ✓ Mounting height for new installations increased from 1'-9" to 2'-1"
 - ✓ Asymmetrical W-beam to Thrie-beam transition section



Index 400 – Guardrail



TRANSITION PANEL RIGHT



TRANSITION PANEL LEFT

W-THRIE BEAM TRANSITION PANEL

ASYMMETRICAL W-THRIE BEAM TRANSITION PANEL
RWT02 (AASHTO-AGC-ARTBA Report) 10 Gauge

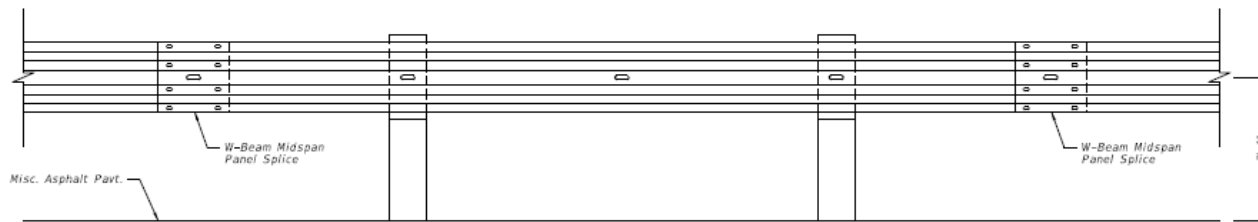
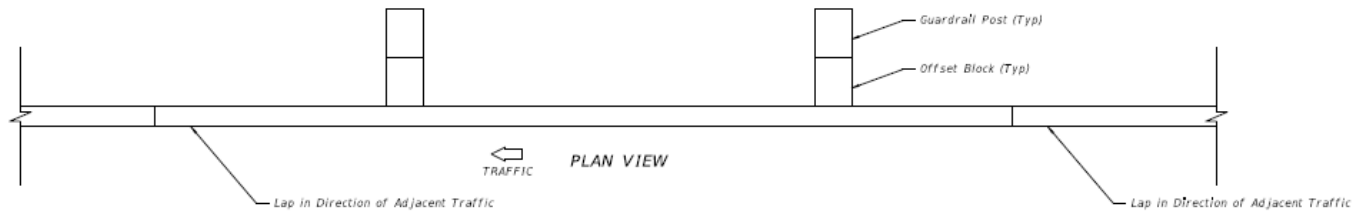
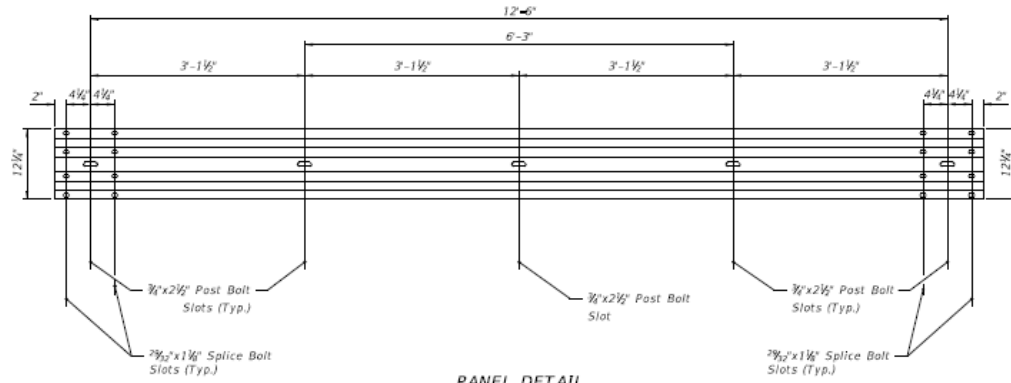


Index 400 – Guardrail

- ◆ Summary of major changes with RDB 14-05:
 - ✓ Mounting height for new installations increased from 1'-9" to 2'-1"
 - ✓ Asymmetrical W-beam to Thrie-beam transition section
 - ✓ W-beam panel joints shifted from the posts to the center of the span between posts
 - ✓ Standard W-beam panel revised to accommodate all post orientations and spacing in 3'- 1 ½" increments



Index 400 – Guardrail



12'-6" W-BEAM PANEL

4-SPACE W-BEAM GUARD
RWM04a (AASHTO-AGC-Af)

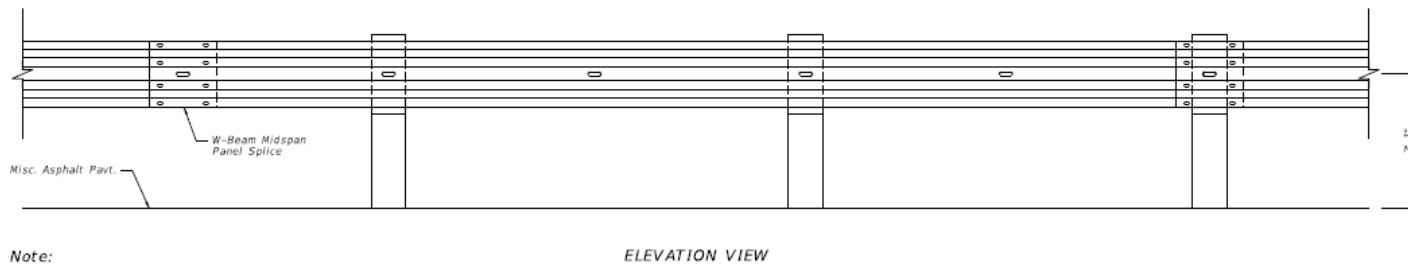
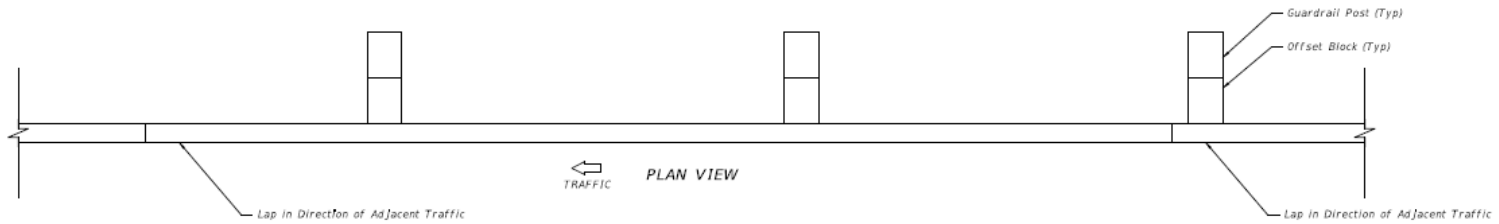
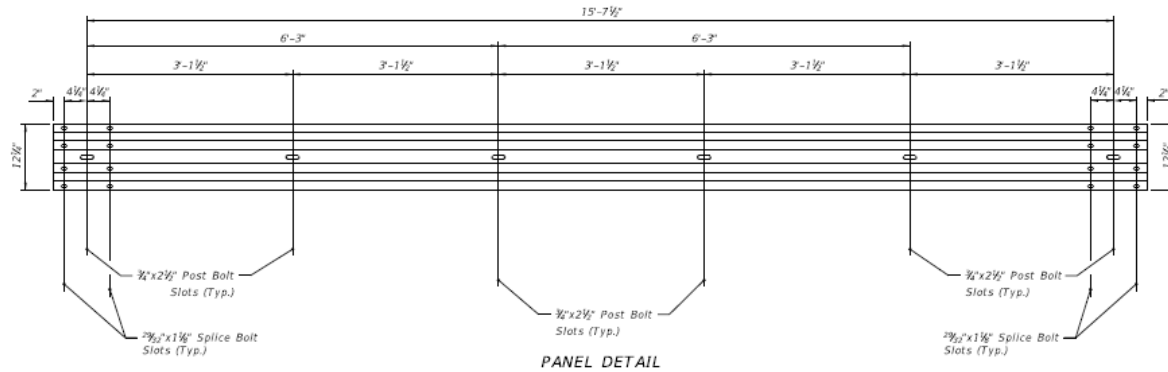


Index 400 – Guardrail

- ◆ Summary of major changes with RDB 14-05:
 - ✓ Mounting height for new installations increased from 1'-9" to 2'-1"
 - ✓ Asymmetrical W-beam to Thrie-beam transition section
 - ✓ W-Beam panel joints shifted from the posts to the center of the span between posts
 - ✓ Standard W-Beam panel revised to accommodate all post orientations and spacing in 3'- 1 ½" increments
 - ✓ Added special 15'-7 ½" W-beam panel to allow splice location shift from post to midspan



Index 400 – Guardrail



Note:

1. The 5-Space 15'-7 1/2" W-beam Guardrail Panel shall be used at the downstream end of an End Anchor System that does not offset the W-beam Panel Splice to Midspan.

15'-7 1/2" W-BEAM PANEL

5-SPACE 15'-7 1/2" W-BEAM GUARDRAIL PANEL

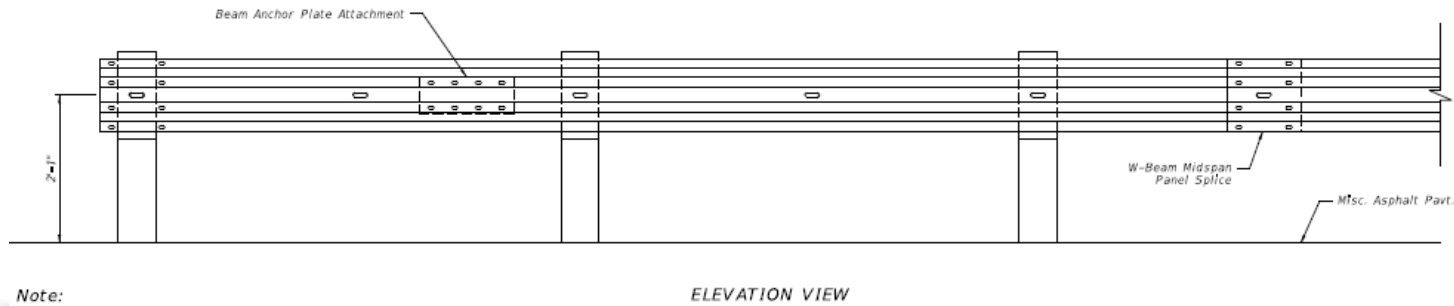
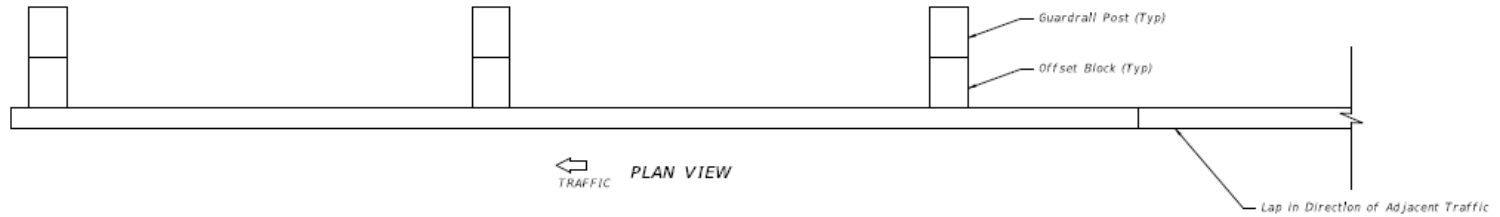
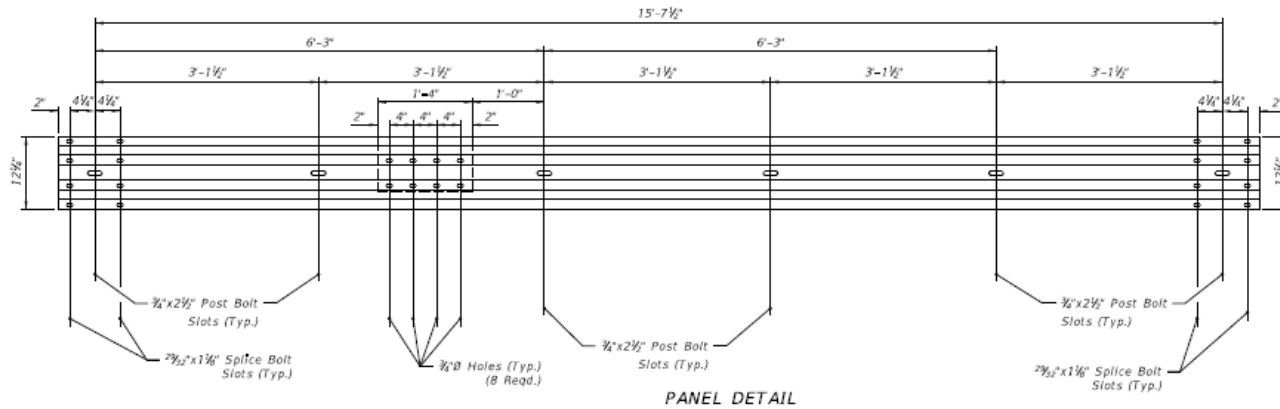


Index 400 – Guardrail

- ◆ Summary of major changes with RDB 14-05:
 - ✓ Mounting height for new installations increased from 1'-9" to 2'-1"
 - ✓ Asymmetrical W-beam to Thrie-beam transition section
 - ✓ W-Beam panel joints shifted from the posts to the center of the span between posts
 - ✓ Standard W-Beam panel revised to accommodate all post orientations and spacing in 3'- 1 ½" increments
 - ✓ Added special 15'-7 ½" W-beam panel to allow splice location shift from post to midspan
 - ✓ Added detail for 15'-7 ½" W-beam End Anchorage Panel with Anchor Plate Attachment for End Anchorage Assemblies



Index 400 – Guardrail



Note:

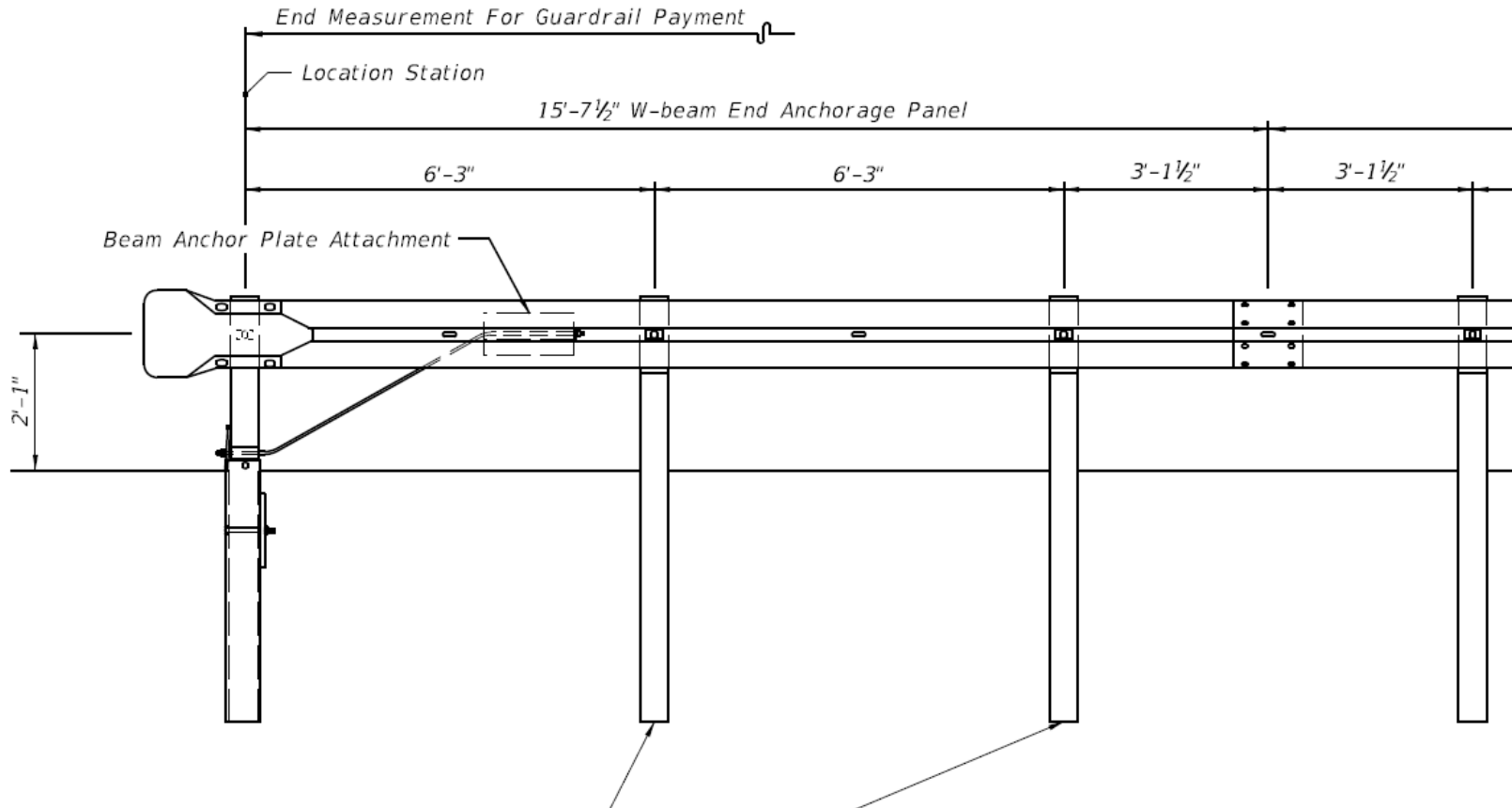
- The 5-Space 15'-7 1/2" W-beam Guardrail Panel with Beam Anchor Plate Attachment shall be used to Anchor the Type II or Type CRT End Anchorage Assemblies.

15'-7 1/2" W-BEAM END ANCHORAGE PANEL

5-SPACE 15'-7 1/2" W-BEAM GUARDRAIL PANEL WITH BEAM ANCHOR PLATE ATTACHMENT



Index 400 – Guardrail

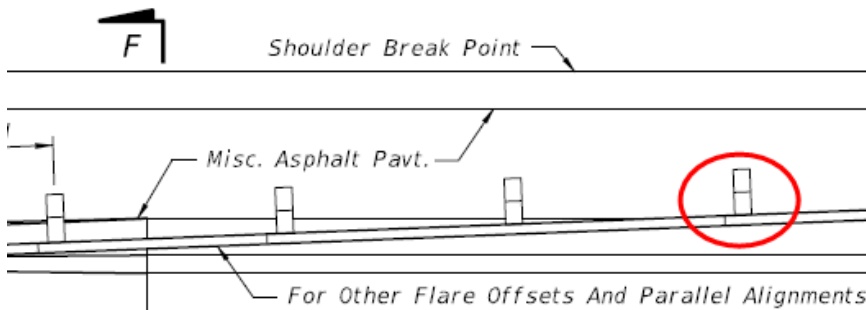
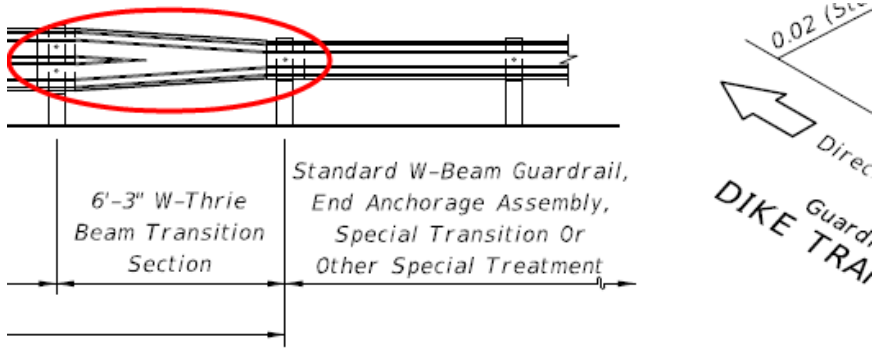


Index 400 – Guardrail

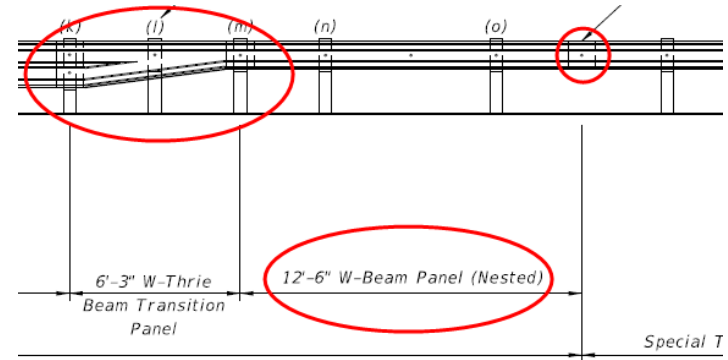
- ◆ Summary of major changes with RDB 14-05 (cont.):
 - ✓ Approach transition details (Detail J) modified
 - Length increased from 43'-9" to 56'-3"
 - Required to accommodate additional W-beam panel (nested)
 - Asymmetrical W-beam to Thrie-beam transition section



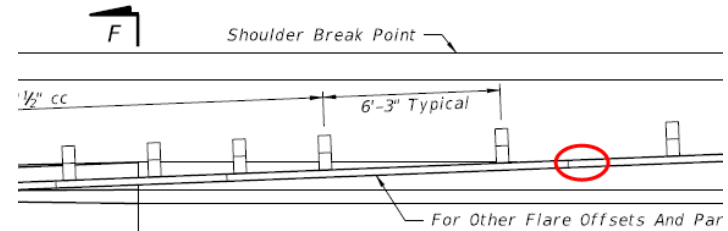
Index 400 – Guardrail



Old



SECTION VIEW



New

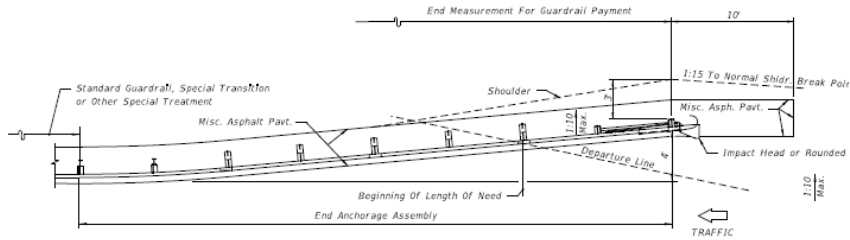


Index 400 – Guardrail

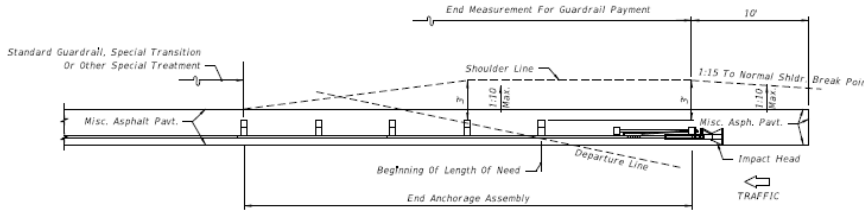
- ◆ Summary of major changes with RDB 14-05 (cont.):
 - ✓ Approach End Anchorage Assembly lengths increased
 - Requires a 15'-7 ½" W-beam panel to shift the splice location
 - APL drawings will show each system within the:
 - 53'-1 ½" for TL-3 systems
 - 40'-7 ½" for TL-2 systems



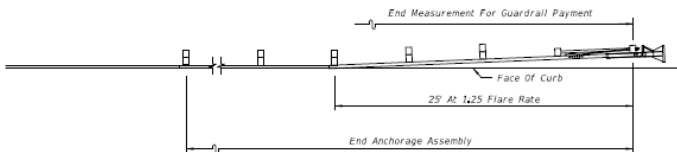
Index 400 – Guardrail



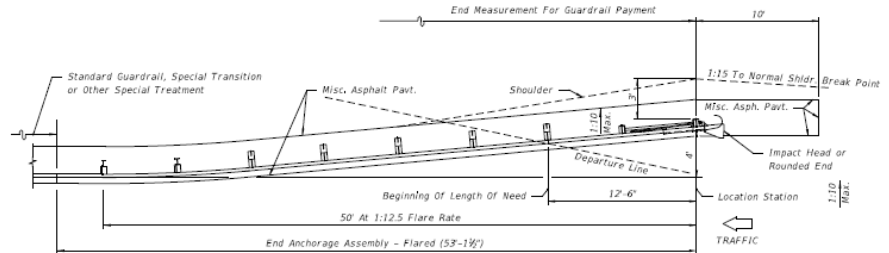
FLARED OPTION



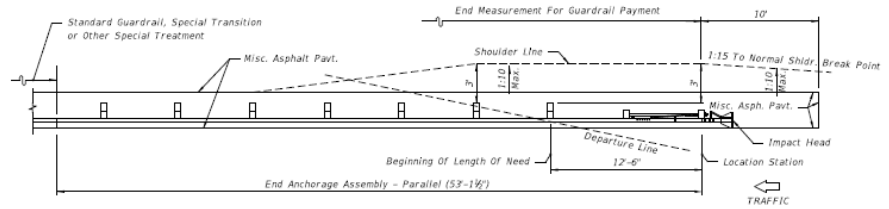
PARALLEL OPTION



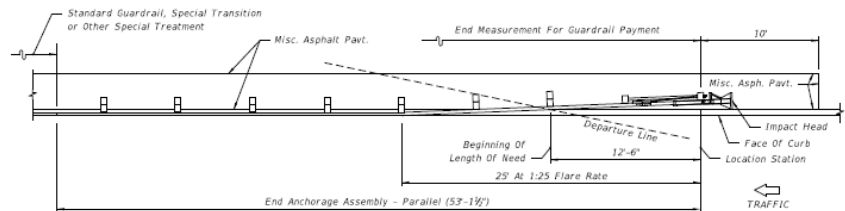
PLACEMENT OF PARALLEL OPTION AT CURBED LOCATIONS



FLARED OPTION
PLAN VIEW



PARALLEL OPTION
PLAN VIEW



PLACEMENT OF PARALLEL OPTION AT CURBED LOCATIONS
PLAN VIEW

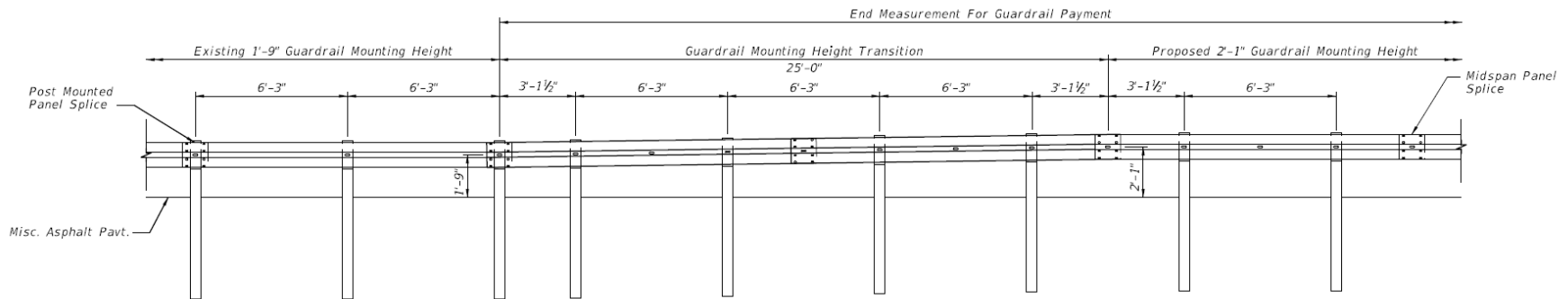
Old

New



Index 400 – Guardrail

- ◆ Summary of major changes with RDB 14-05 (cont.):
 - ✓ Added detail for height transition from 1'-9" mounting height to 2'-1" mounting height
 - To be used in special cases as determined by the District where connecting long runs of new guardrail to long runs of existing guardrail
 - Ensure opposite end of new guardrail run is not bound by fixed barrier. Must use whole panel lengths.

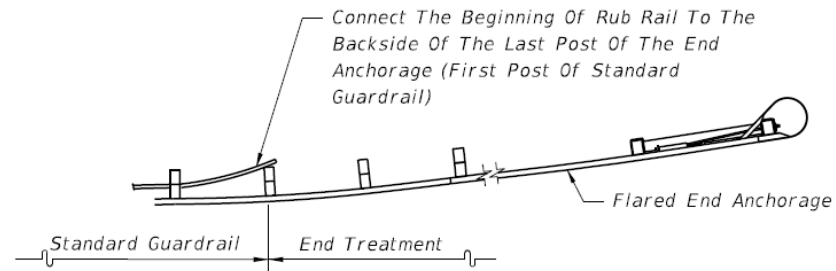


ELEVATION VIEW

Index 400 – Guardrail

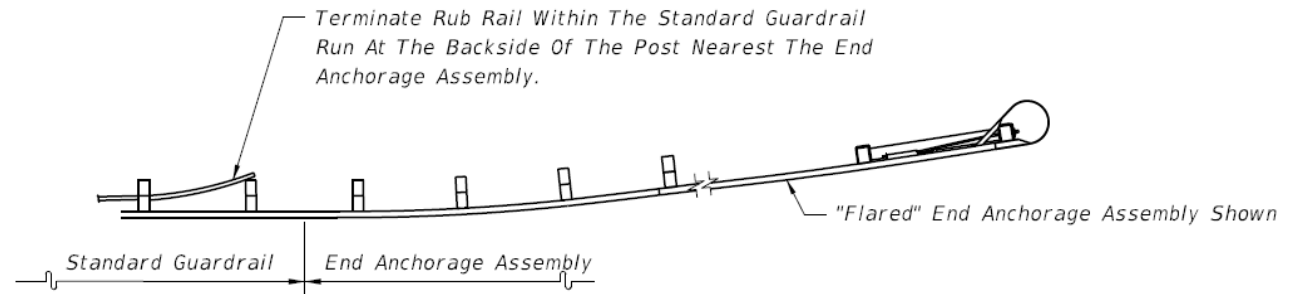
- ◆ Summary of major changes with RDB 14-05 (cont.):
 - ✓ Rub rail terminates at the first post in advance of the End Anchorage Assembly

Old



RUB RAIL TERMINATION

New



RUB RAIL TERMINATION



Index 400 – Guardrail

- ◆ After the release of RDB 14-05, there were many unanswered questions and unresolved issues that necessitated the release of RDB 14-13.
- ◆ Summary of RDB 14-13:
 - ✓ Revisions to Index 400:
 - Revised minimum offset for standard (6'-3" post spacing) W-beam guardrail from 4'-0" to 5'-0"
 - Updated "Offsets" table on Sheet 19
 - Added Redirective Median End Anchorage Assemblies as an alternate to Crash Cushions
 - A product currently on the QPL under Crash Cushions will be moved to this new category
 - Other minor clarifications
 - New ***Instructions for Design Standards***, IDS-400
 - Currently only gives guidance on guardrail system length calculations
 - Will be expanded during the Index 400 reorganization effort.



Index 400 – Guardrail

- ◆ Summary of RDB 14-13 (cont.):
 - ✓ Revisions/Clarifications to the PPM for the following:
 - Shielding drop-offs
 - Guardrail placement at or behind curbs
 - Existing bridge end treatments
 - Extending guardrail
 - Resetting guardrail
 - Guidance for RRR projects
 - Revised table of Minimum Offsets of Barriers
 - Revised Offsets for W-beam and Thrie-beam guardrail based on the 2011 AASHTO Roadside Design Guide.
 - This table correlates to the “Offsets” table in Index 400, Sheet 19.



Index 400 – Guardrail

**Table 4.3.1 Minimum Offset of Barriers
(Measured from the face of the barrier)**

BARRIER TYPE	OFFSET
W-Beam with Post Spacing @ 6'-3"	4'-0"
W-Beam with Post Spacing @ 3'-1½"	3'-0"
Thrie-Beam with Post Spacing @ 6'-3"	3'-4"
Thrie-Beam with Post Spacing @ 3'-1½"	2'-8"
Concrete Barrier Wall	*
Double W-Beams (Nested) with Post Spacing @ 3'-1½"	2'-8"
Double W-Beams (Nested) with Post Spacing @ 1'-6¾"	2'-4"
Double Thrie-Beams (Nested) with Post Spacing @ 3'-1½"	2'-4"
Double Thrie-Beams (Nested) with Post Spacing @ 1'-6¾"	2'-0"

* These offsets are specifically provided in the **Design Standards**. For additional information on offsets to barriers see **Section 7.1.2**.

Old

**Table 4.3.1 Minimum Offsets of Barriers
(Measured from the face of the barrier)**

BARRIER TYPE	OFFSET
W-Beam with Post Spacing @ 6'-3"	5'-0"
W-Beam with Post Spacing @ 3'-1½"	3'-10"
W-Beam with Post Spacing @ 1'-6¾"	3'-2"
Thrie-Beam with Post Spacing @ 6'-3"	3'-10"
Thrie-Beam with Post Spacing @ 3'-1½"	3'-2"
Thrie-Beam with Post Spacing @ 1'-6¾"	2'-10"
Concrete Barrier Wall	*
Double W-Beams (Nested) with Post Spacing @ 3'-1½"	3'-0"
Double W-Beams (Nested) with Post Spacing @ 1'-6¾"	2'-8"
Double Thrie-Beams (Nested) with Post Spacing @ 3'-1½"	2'-10"
Double Thrie-Beams (Nested) with Post Spacing @ 1'-6¾"	2'-6"

* These offsets are specifically provided in the **Design Standards**. For additional information on offsets to barriers see **Section 7.1.2**.

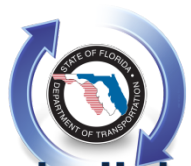
New



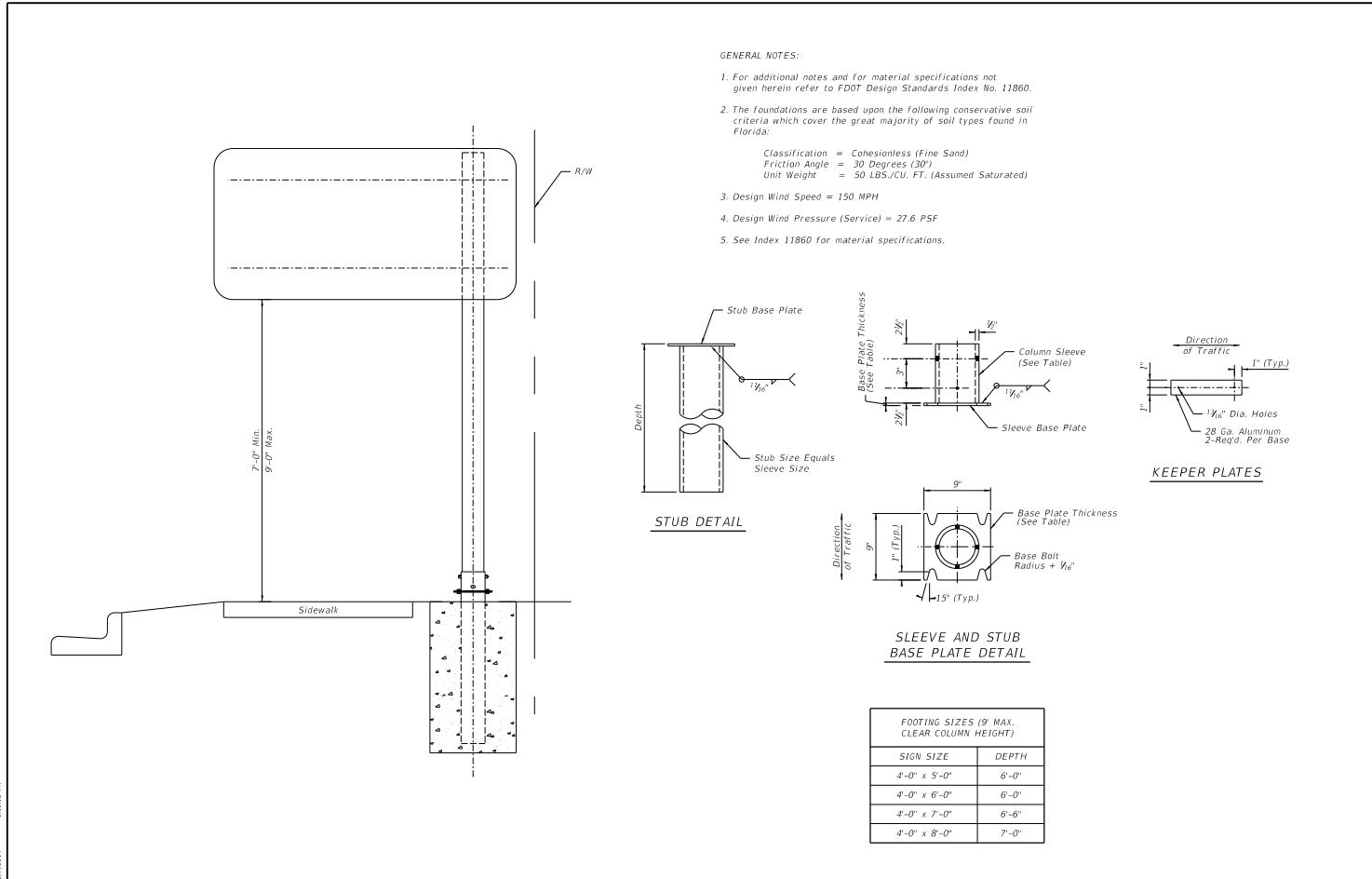
Index 400 – Guardrail

Contact Information:

Gevin J. McDaniel, P.E.
State Roadway Design Office
gevin.mcdaniel@dot.state.fl.us
(850) 414-4284



Index 11861 – Single Column Cantilever Ground Mounted Sign



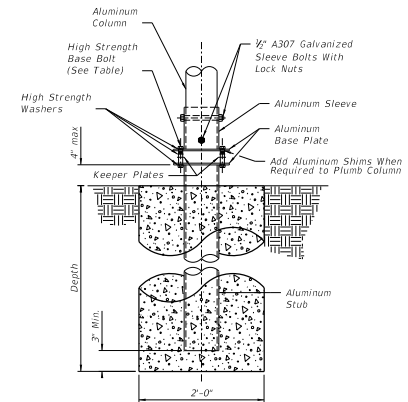
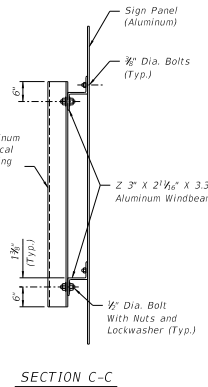
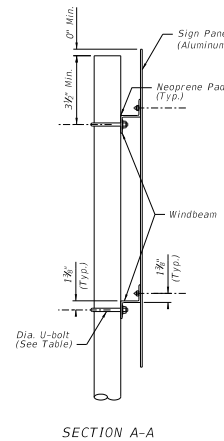
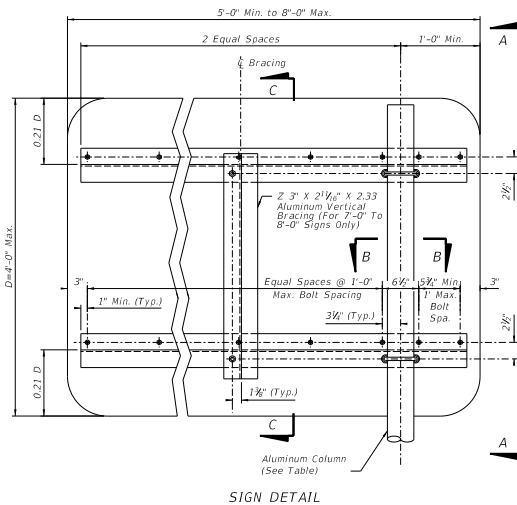
07/2014 2/18/15 DW

LAST REVISION 07/01/14	DESCRIPTION:	2015 FDOT DESIGN STANDARDS	SINGLE COLUMN CANTILEVER GROUND MOUNTED SIGN	INDEX NO. 11861	SHEET NO. 1 of 2
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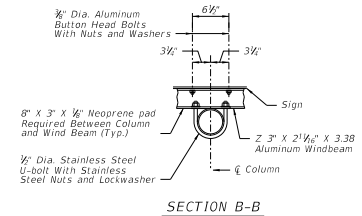


Index 11861 – Single Column Cantilever Ground Mounted Sign

COLUMN SELECTION TABLE					
Sign Size Height (ft) x Length (ft)	Column Size Diameter (in) x Thickness (in)	Sleeve Size Diameter (in) x Thickness (in)	U-bolt Diameter (in)	Base Bolt Diameter (in) x Length (in)	Base Plate Thickness (in)
4'-0" x 5'-0"	4.5" x 0.337"	5.563" x 0.5"			
4'-0" x 6'-0"	(Schedule 80)	(Schedule 120)	1/2"	3/4" x 3 1/2"	1"
4'-0" x 7'-0"	5.563" x 0.375"	6.625" x 0.432"			
4'-0" x 8'-0"	(Schedule 80)	(Schedule 80)	3/8"	3/4" x 4"	1 1/2"



BASE AND FOUNDATION DETAIL



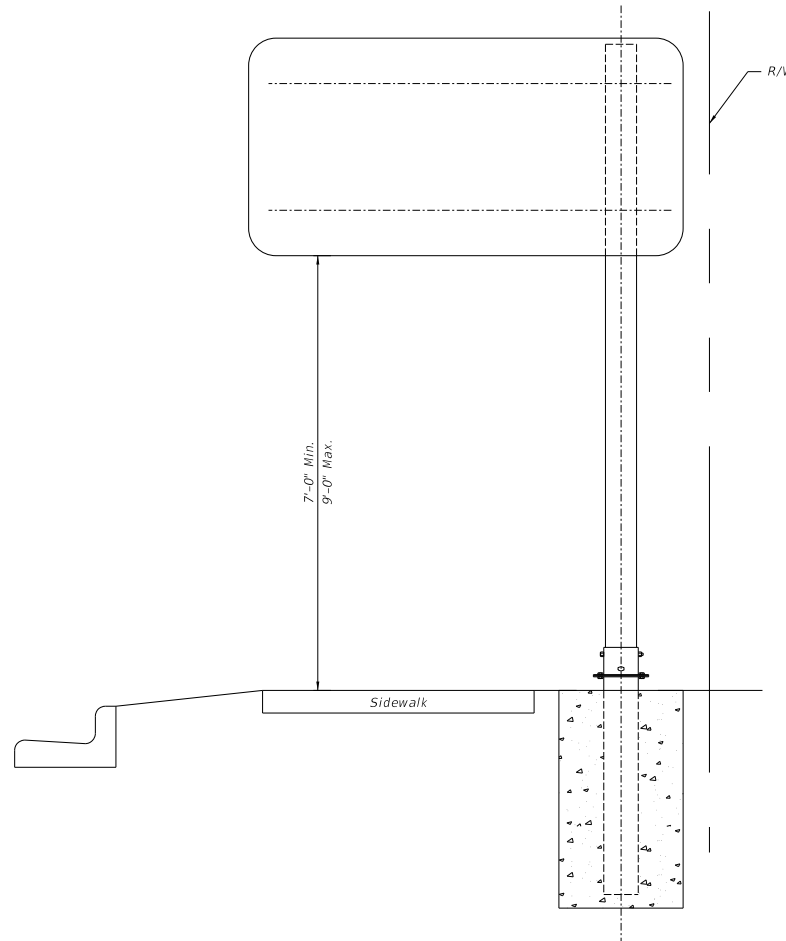
SECTION B-B

07/2014 11861 DW

LAST REVISION	DESCRIPTION	2015 DESIGN STANDARDS	SINGLE COLUMN CANTILEVER GROUND MOUNTED SIGN	INDEX NO. 11861	SHEET NO. 2 of 2
07/01/14					



Index 11861 – Single Column Cantilever Ground Mounted Sign



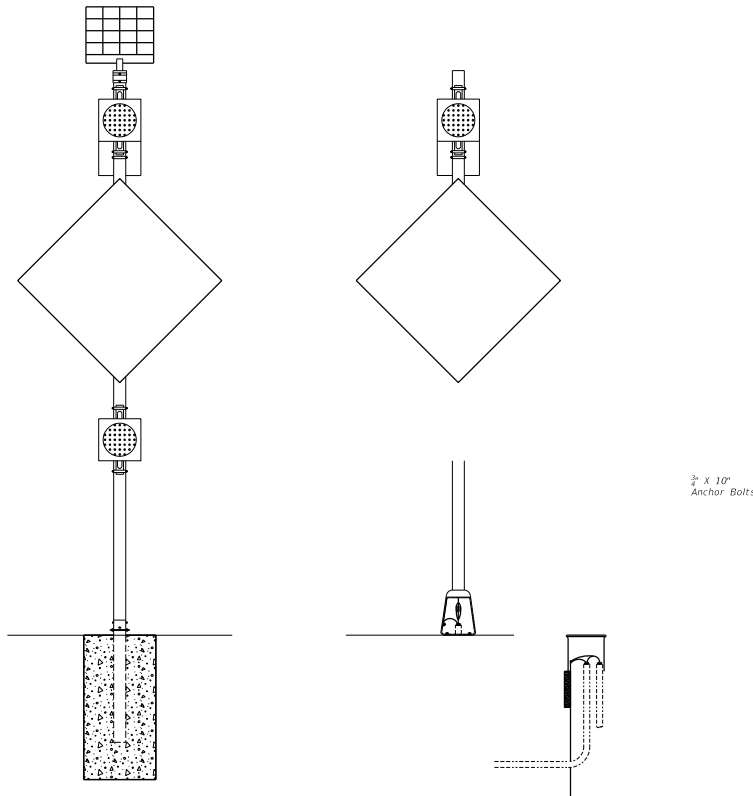
Index 11861 – Single Column Cantilever Ground Mounted Sign

COLUMN SELECTION TABLE

<i>Sign Size Height (ft) x Length (ft)</i>	<i>Column Size Diameter (in) x Thickness (in)</i>	<i>Sleeve Size Diameter (in) x Thickness (in)</i>	<i>U-bolt Diameter (in)</i>	<i>Base Bolt Diameter (in) x Length (in)</i>	<i>Base Plate Thickness (in)</i>
4'-0" x 5'-0"	4.5" x 0.337" (Schedule 80)	5.563" x 0.5" (Schedule 120)	1/2"	5/8" x 3 1/2"	1"
4'-0" x 6'-0"					
4'-0" x 7'-0"	5.563" x 0.375" (Schedule 80)	6.625" x 0.432" (Schedule 80)	5/8"	3/4" x 4"	1 1/8"
4'-0" x 8'-0"					



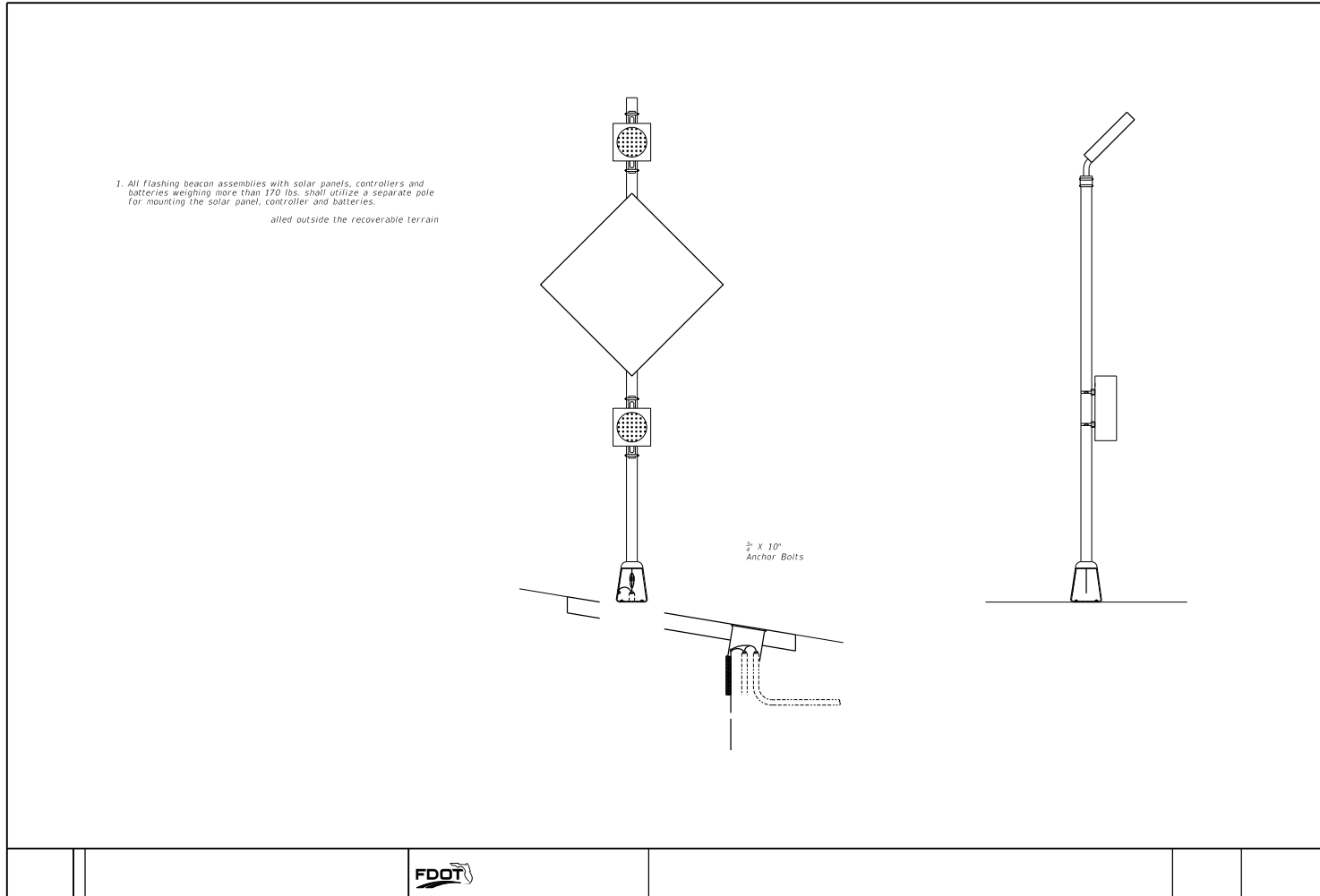
Index 11862 – Roadside Flashing Beacon Assembly



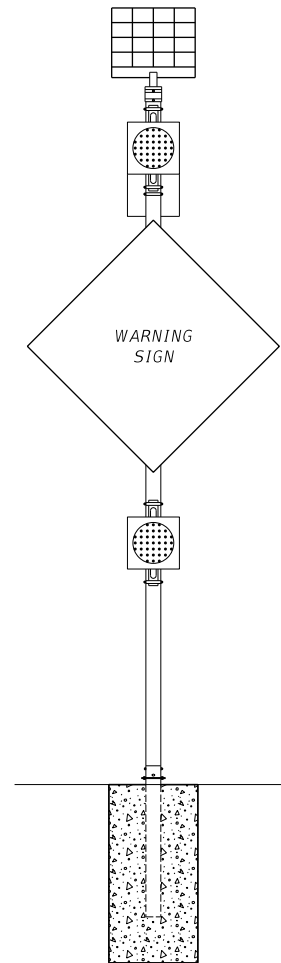
on



Index 11862 – Roadside Flashing Beacon Assembly



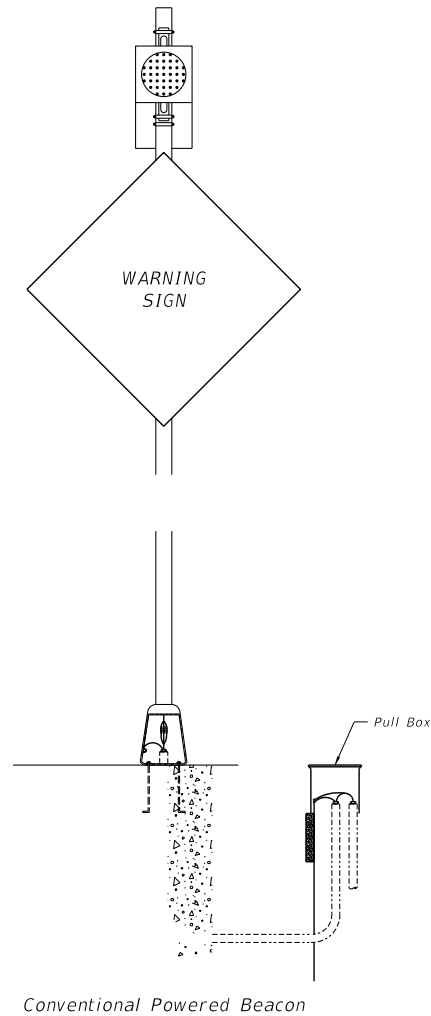
Index 11862 – Roadside Flashing Beacon Assembly



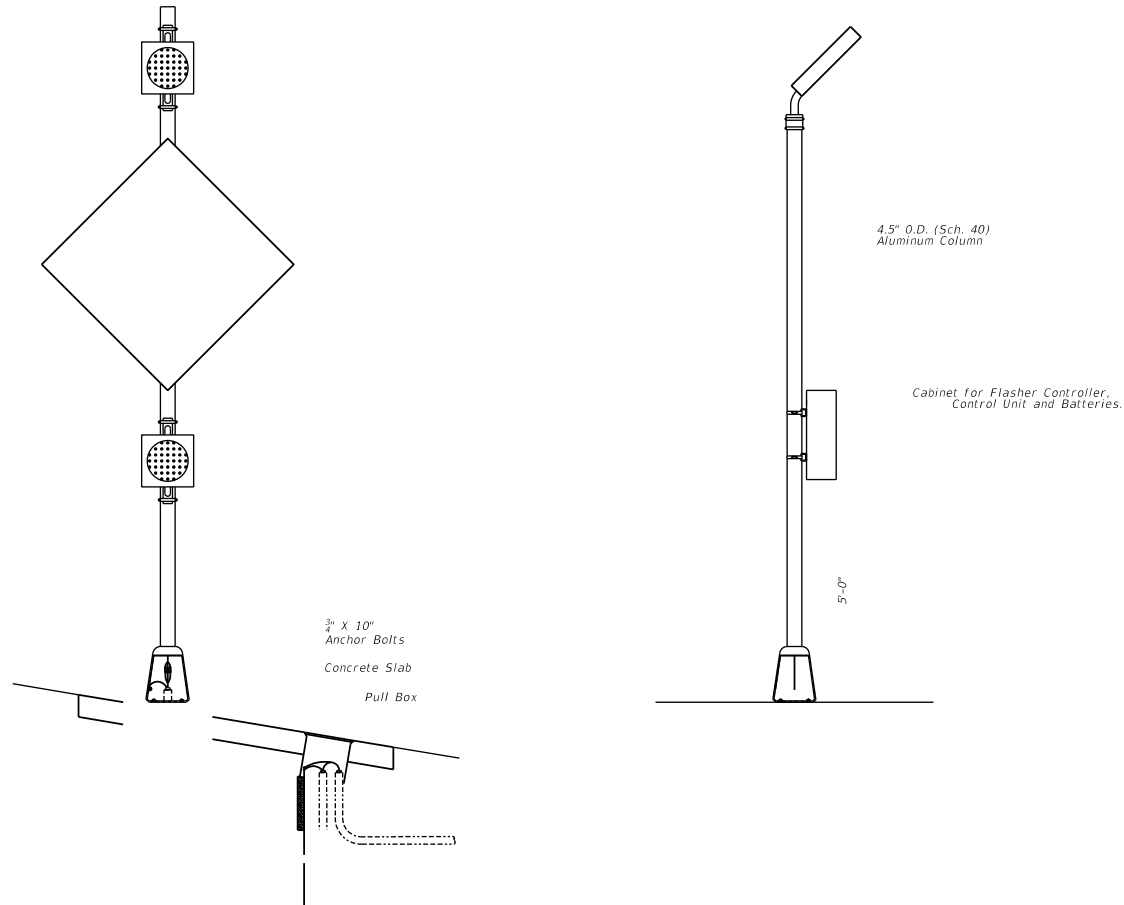
Solar Powered Beacon



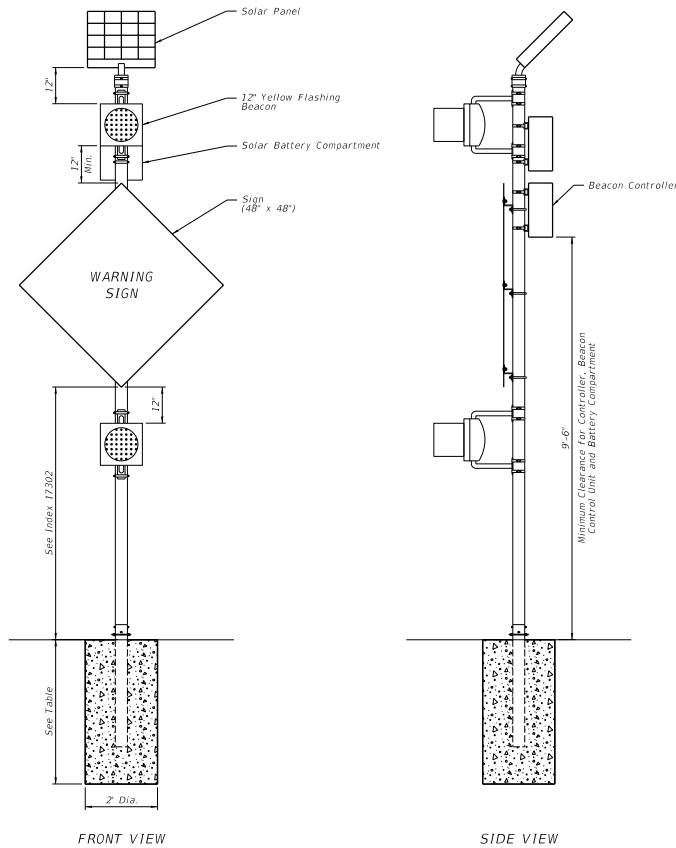
Index 11862 – Roadside Flashing Beacon Assembly



Index 11862 – Roadside Flashing Beacon Assembly



Index 11862 – Solar Powered Warning Sign Details



STANDARD WARNING SIGN COLUMN SIZE			
Wind Speed	Sign Height	Column Size	Footing Depth
110	7'	4"	4'
130	7'	4.5"	4'
150	7'	5"	4.5'
110	8.5'	4.5"	4'
130	8.5'	5"	4.5'
150	8.5'	6"	5'

NOTES

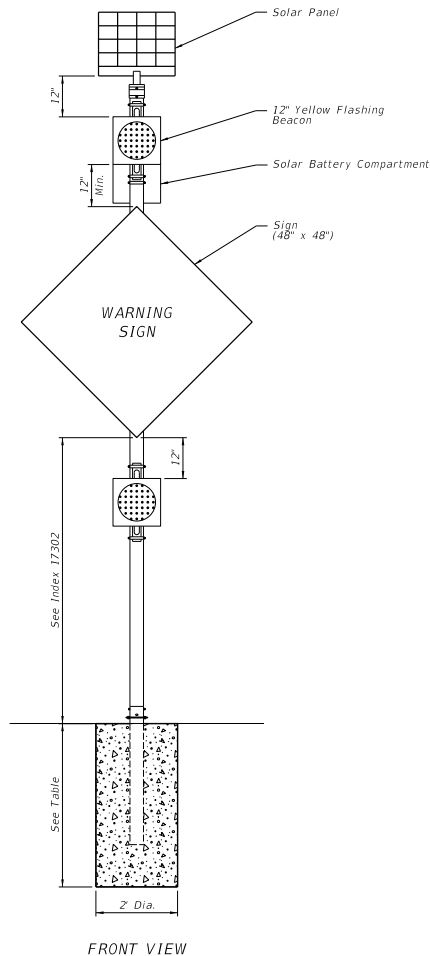
1. Details show a typical warning sign with two flashing beacon heads. When only one beacon is required, install upper beacon.
2. Sign column slip base shall be in accordance with Design Standard Index 11860.
3. Beacon and beacon controllers shall be listed on Approved Products List (APL).

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LAST REVISION 07/01/14	DESCRIPTION:	2015 DESIGN STANDARDS	ROADSIDE FLASHING BEACON ASSEMBLY SOLAR POWERED WARNING SIGN DETAILS	INDEX NO. 11862	SHEET NO. 3 of 7
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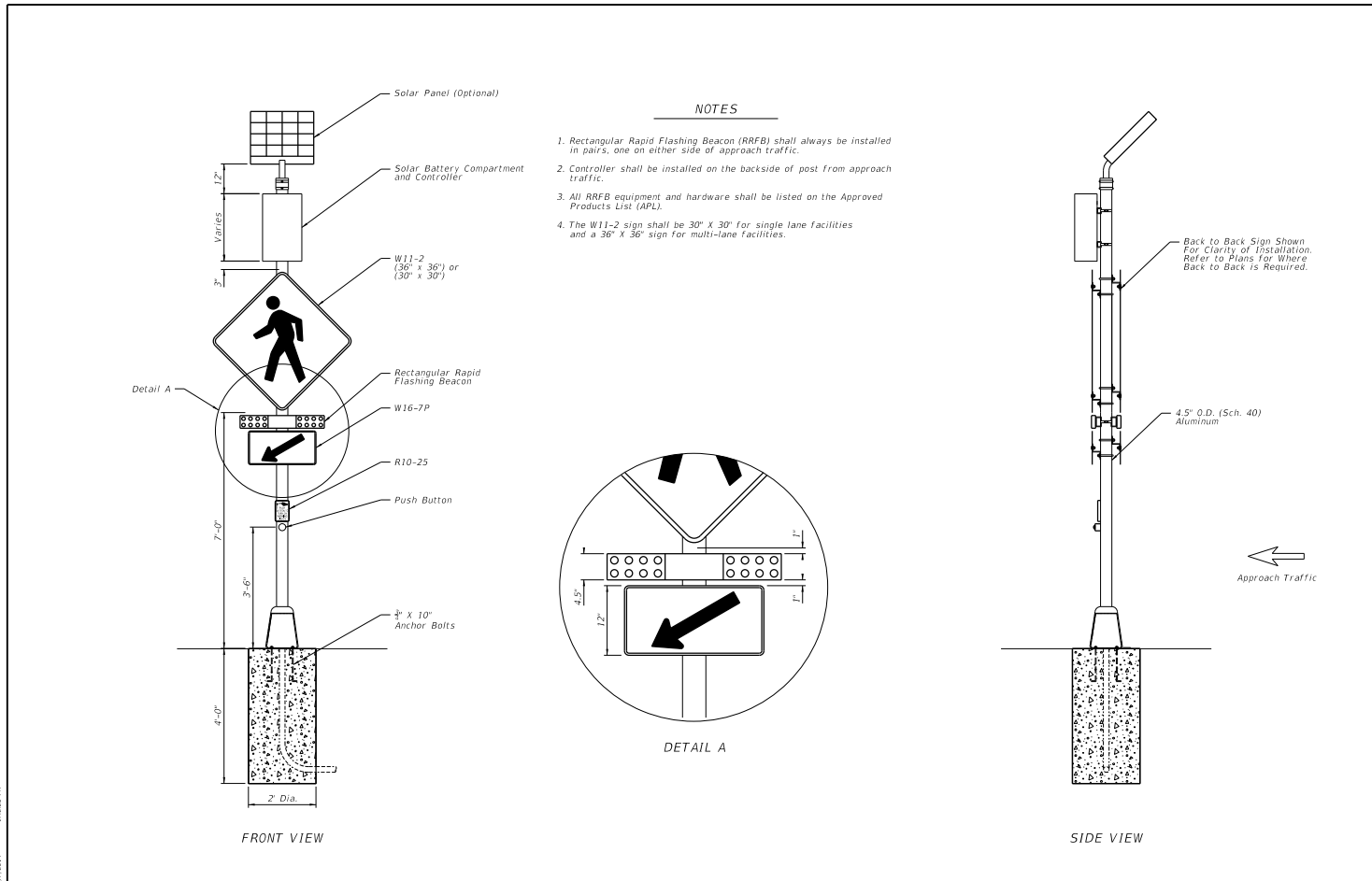
Index 11862 – Solar Powered Warning Sign Details



<i>STANDARD WARNING SIGN COLUMN SIZE</i>			
<i>Wind Speed</i>	<i>Sign Height</i>	<i>Column Size</i>	<i>Footing Depth</i>
110	7'	4"	4'
130	7'	4.5"	4'
150	7'	5"	4.5'
110	8.5'	4.5"	4'
130	8.5'	5"	4.5'
150	8.5'	6"	5'



Index 11862 – Rectangular Rapid Flashing Sign Details

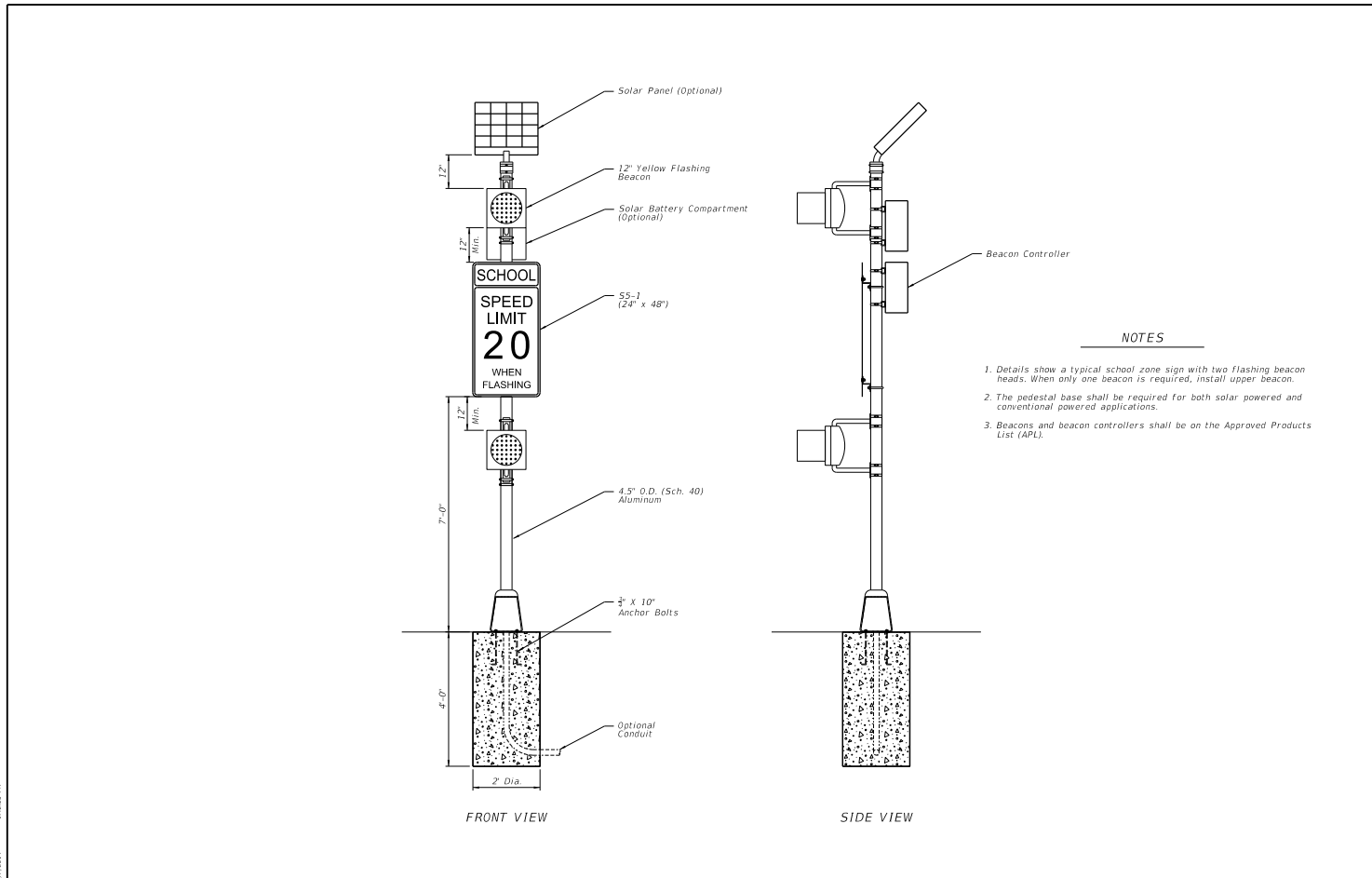


07/2014 11/2016 REV

LAST REVISION 07/01/14	REVISION	DESCRIPTION:		2015 DESIGN STANDARDS	ROADSIDE FLASHING BEACON ASSEMBLY RECTANGULAR RAPID FLASHING BEACON DETAILS	INDEX NO. 11862	SHEET NO. 4 of 7
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Index 11862 – School Regulatory Sign Details

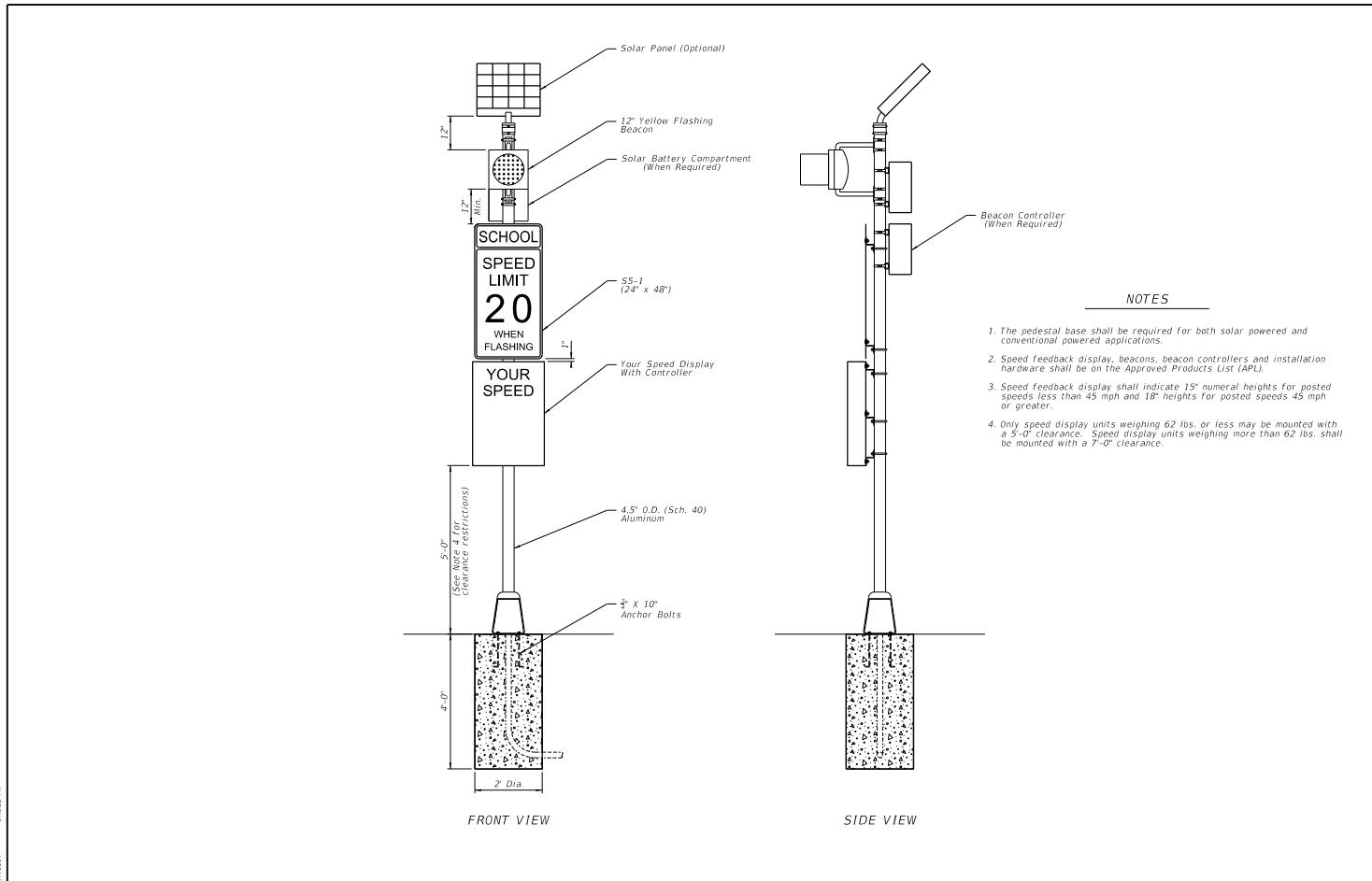


- NOTES**
1. Details show a typical school zone sign with two flashing beacon heads. When only one beacon is required, install upper beacon.
 2. The pedestal base shall be required for both solar powered and conventional powered applications.
 3. Beacons and beacon controllers shall be on the Approved Products List (APL).

07/2014 11/23/15 PW

LAST REVISION 07/01/14	DESCRIPTION:	 2015 DESIGN STANDARDS	ROADSIDE FLASHING BEACON ASSEMBLY SCHOOL REGULATORY SIGN DETAILS	INDEX NO. 11862	SHEET NO. 5 of 7
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Index 11862 – School Regulatory With Speed Feedback Details

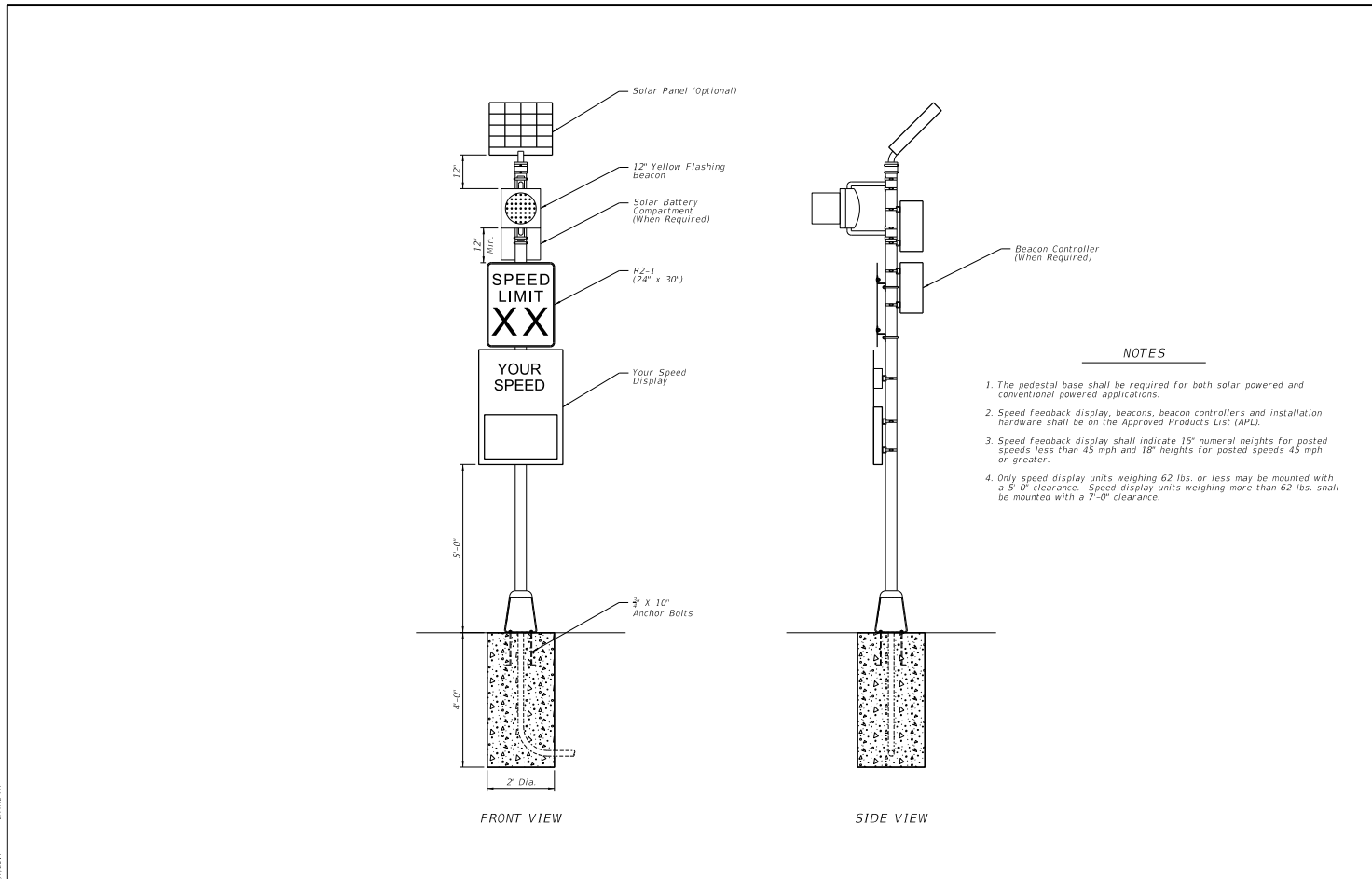


07/2014 11/22/14 PW

LAST REVISION 07/01/14	DESCRIPTION:	FDOT 2015 DESIGN STANDARDS	ROADSIDE FLASHING BEACON ASSEMBLY SCHOOL REGULATORY WITH SPEED FEEDBACK DETAILS	INDEX NO. 11862	SHEET NO. 6 of 7
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Index 11862 – Regulatory Sign With Speed Feedback Details

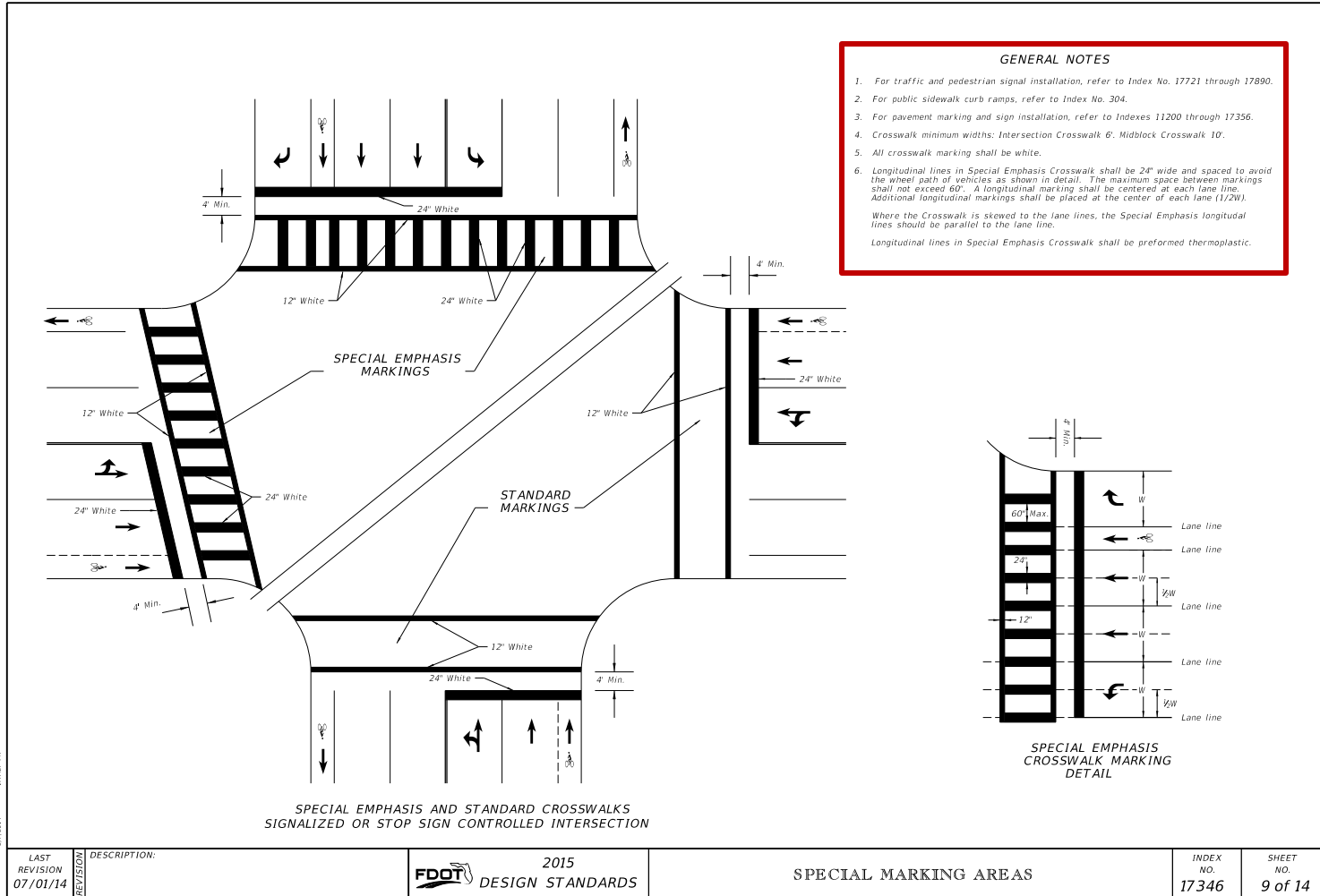


07/2014 3/14/12 DW

LAST REVISION 07/01/14	DESCRIPTION:	FDOT 2015 DESIGN STANDARDS	ROADSIDE FLASHING BEACON ASSEMBLY REGULATORY SIGN WITH SPEED FEEDBACK DETAILS	INDEX NO. 11862	SHEET NO. 7 of 7
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Index 17346 – Special Marking Areas



07/2014 11/27/14

LAST REVISION 07/01/14	DESCRIPTION:	2015 FDOT DESIGN STANDARDS	SPECIAL MARKING AREAS	INDEX NO. 17346	SHEET NO. 9 of 14
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Index 17346 – Special Marking Areas

GENERAL NOTES

1. For traffic and pedestrian signal installation, refer to Index No. 17721 through 17890.
2. For public sidewalk curb ramps, refer to Index No. 304.
3. For pavement marking and sign installation, refer to Indexes 11200 through 17356.
4. Crosswalk minimum widths: Intersection Crosswalk 6'. Midblock Crosswalk 10'.
5. All crosswalk marking shall be white.
6. Longitudinal lines in Special Emphasis Crosswalk shall be 24" wide and spaced to avoid the wheel path of vehicles as shown in detail. The maximum space between markings shall not exceed 60". A longitudinal marking shall be centered at each lane line. Additional longitudinal markings shall be placed at the center of each lane (1/2W).

Where the Crosswalk is skewed to the lane lines, the Special Emphasis longitudinal lines should be parallel to the lane line.

Longitudinal lines in Special Emphasis Crosswalk shall be preformed thermoplastic.



Index 17347 – Bicycle Markings

1. Recommended placement of bicycle lane markings:

- At the beginning of a bicycle lane, on the far side of major intersections, and prior to and within the bicycle lane keyhole.
- Along the roadway as needed to provide a maximum spacing of 1,320 feet for posted speeds less than 45 mph, 2,640 feet for a posted speed of 45 mph or greater.

2. Recommended spacing for shared lane marking symbols: Immediately after intersections and at a maximum spacing of 250 feet.

3. All pavement markings and pavement messages shall be White.

4. All bicycle pavement markings shall be performed thermoplastic.

5. Bike lane signs (R3-17, R3-17a, R3-17b) are not required.

Table 1: Lane Width and Sharrow Symbols

Lane Width (w)	Sharrow ζ (A)
13' or Greater	4'
Less Than 13'	5 1/2' **

Table 2: Shared Use Path Markings

Symbol	Width	Spacing
Stop Bar	3'-4"	9 s.f.
White Pavement Message	11"	15'
W10-1	18" Diameter	50'

Footnotes:

** For lane widths less than 11' in width, the symbol shall be centered in the lane.

* When used in bike lane, markings shall be placed adjacent to markings in travel lane and W10-1 sign shall be deleted.

07/2012 3:48:07 PM

LAST REVISION 07/01/12	DESCRIPTION:	2015 DESIGN STANDARDS	BICYCLE MARKINGS	INDEX NO. 17347	SHEET NO. 1 of 4
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Index 17347 – Bicycle Markings

1. *Recommended placement of bicycle lane markings:*

a) *At the beginning of a bicycle lane, on the far side of major intersections, and prior to and within the bicycle lane keyhole.*

b) *Along the roadway as needed to provide a maximum spacing of 1,320 feet for posted speeds less than 45 mph, 2,640 feet for a posted speed of 45 mph or greater.*

2. *Recommended spacing for shared lane marking symbols: Immediately after intersections and at a maximum spacing of 250 feet.*

3. *All pavement markings and pavement messages shall be White.*

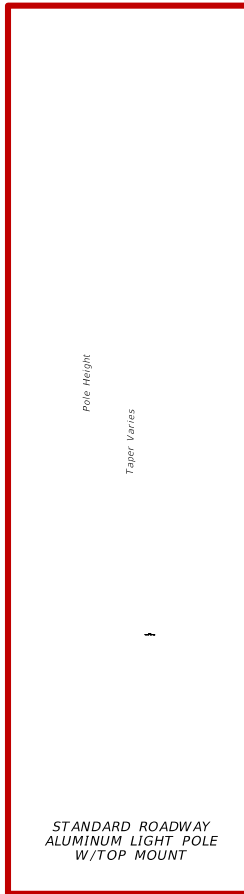
4. *All bicycle pavement markings shall be preformed thermoplastic.*

5. *Bike lane signs (R3-17, R3-17a, R3-17b) are not required.*

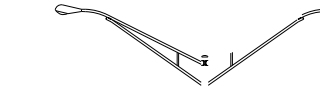


Index 17515 – Standard Aluminum Lighting

STANDARD ROADWAY
ALUMINUM LIGHT POLE
W/ARM



STANDARD ROADWAY
ALUMINUM LIGHT POLE
W/TOP MOUNT

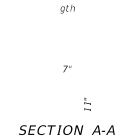


NOTE:
DO NOT ERECT POLE
WITHOUT LUMINAIRE
ATTACHED.

MEDIAN BARRIER MOUNTED ALUMINUM LIGHT POLE
ON CYLINDRICAL FOUNDATION



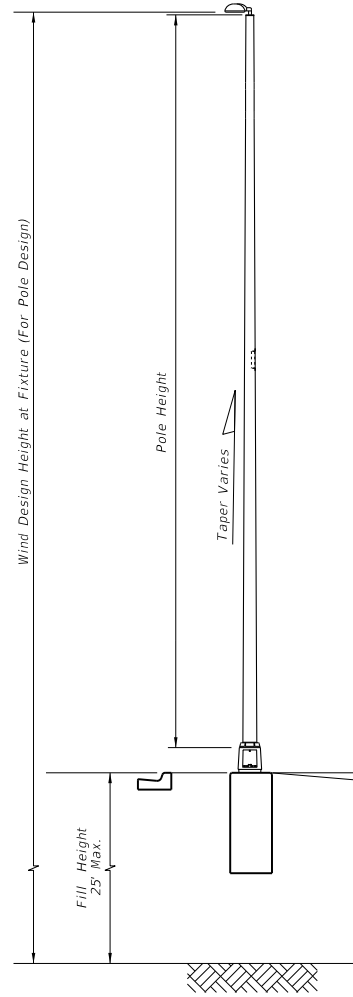
MEDIAN BARRIER MOUNTED ALUMINUM LIGHT POLE
ON SPREAD FOOTING FOUNDATION



ELEVATIONS



Index 17515 – Standard Aluminum Lighting



STANDARD ROADWAY
ALUMINUM LIGHT POLE
W/TOP MOUNT



Questions or Comments



Thanks!



Alan Hart, P.E.

Design Standards Manager

(850) 414-4373

alan.hart@dot.state.fl.us



Thanks!



Chester Henson, P.E.

Design Standards Engineer

(850) 414-4373

chester.henson@dot.state.fl.us



Thanks!



Ezzel Benghuzzi, P.E.

Design Standards Engineer

(850) 414-4352

ezzeldin.benghuzzi@dot.state.fl.us

