



DESIGN STANDARDS

*FOR DESIGN, CONSTRUCTION, MAINTENANCE AND UTILITY
OPERATIONS ON THE STATE HIGHWAY SYSTEM*

2014

TOPIC NO. 625-010-003

Approved For Use On Federal Aid Projects

A handwritten signature in blue ink, appearing to read "David Hawk", is written over a horizontal line.

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CERTIFICATION STATEMENT

I hereby certify that these Design Standards were compiled under my responsible charge from designs prepared, examined, adopted, and implemented by the Florida Department of Transportation in accordance with established procedures, and as approved by the Federal Highway Administration.

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289-292
404-405
420-425
470-484
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REVISIONS

INDEX No	SHEET No	DESCRIPTION
ABBREVIATIONS AND SYMBOLS		
1	3	Corrected MUTCD to be Manual on Uniform Traffic Control Devices.
2	2	Updated Utility Adjustment Symbols (Existing).
	3 thru 4	New Sheet 3 for UTILITY ADJUSTMENT SYMBOLS, Renumbered sheet 3 to sheet 4 of 4.
DRAINAGE		
199	1	Moved DESIGN NOTES, to new IDS-199. To D-2 Added Mechanically Stabilized Retaining Wall Supporting Spread Footing Foundations. Updated Values for D-5 Min Grab Tensile Strength and Min Sewn Strength.
200	2	ASTM References removed and replaced with Specification Section 931.
201	4	ASTM References removed and replaced with Specification Section 931.
205	1	Removed Tables and placed in the Drainage Manual. Added a pipe backfill detail.
	2 thru 6	Deleted.
210	1	A dimension line was deleted to eliminate confusion.
211	4	ASTM References removed and replaced with Specification Section 931.
216	1	Back slope information added to the inlet detail (Section A-A). Added a concrete slab to the rear of the Flume w/Sidewalk Inlet Type I.
	2	The GUARDRAIL FOR FLUME IN SIDEWALK detail was deleted.
240	1	Removed vendor call outs from PLAN VIEW, SIDE PANEL leader note.
245	1	Removed vendor call outs in GENERAL NOTES, Note 1.
264	2	Added general note at the bottom of the sheet. Changed Table title "Bent Bars".
273	4	Removed special from the Grate Size portion of the table and replaced with actual dimensions.
282	3	Removed vendor call outs and revised all notes for "YARD DRAIN ITEM INCLUDES:"
288	1	Removed STEEL WELL GRATE DETAIL removing all vendor references, and modified details SPECIAL MANHOLE STRUCTURE DETAIL WITH OUTFALL and SECTION A-A.
289	1 & 2	Clarified left and right exterior wall locations.
292	All	Changed wire As6 to As9 and deleted As6 from Tables 1 thru 16.
	2	Changed NOTE 4, to clarify the concrete cover for slightly, and moderately to aggressive environments and reinforcing specification to Section 931. Deleted "ASTM A615" in NOTE 5.
CURBS, CONCRETE PAVEMENT AND SIDEWALKS		
302	4	ASTM References removed and replaced with Specification Section 931.
304	1 thru 7	Index Title changed to DETECTABLE WARNINGS AND SIDEWALK CURB RAMPS and Index completely revised.

INDEX No	SHEET No	DESCRIPTION
305	1	The note under Logitudinal Butt Construction Joint was deleted.
310	All	Minor changes as a result of Index 304 redesign, and references to deleted Indices removed on sheet 1.
TRAFFIC RAILINGS		
400	6	Modified Detail P.
	7	Modified Details H and I.
	15	Modified Detail K.
402	1 thru 24	New Index 405 is referenced in sheets 13, 14, 18, 19, 29, 24.
	24	Changed references from "the Structures Manual" to "the Instructions for Design Standards (IDS)".
404	1 thru 8	New Index.
405	1 thru 6	New Index.
410	All	Minor reinforcement changes on multiple sheets, Index now has 27 sheets.
	5, 6 & 7	Sheet 5 deleted, added 3 sheets and Index renumbered, removed Design Speed restriction.
411	1	Revised Note 1 (General Notes) to remove references to Class 3 surface finishing and Class 5 Applied Finished Coating.
	8 thru 10	ASTM References removed and replaced with Specification Section 931.
412	1	Added note No. 9 to GENERAL NOTES.
	2	Updated table to read WORK ZONE SPEED and revised NOTES to be consistent with other indices.
414	1	ASTM References removed and replaced with Specification Section 931.
	4	Added notes No. 4 & 9 to NOTES FOR ALL INSTALLATIONS.
	6	Revised NOTES to be consistent with other indices.
415	2	Added "*Note", and called out "Hazard Free, Traversable Slopes".
	3	Added "*Note".
	7	Added stakes to TWO-WAY WITH CRASH CUSHION
420	1	Deleted MARKERS note. Changed "Reflective Railing Markers" to "Barrier Delineators".
	4	Referenced Specification Section 931 for WWR.
421	1	Changed "Reflective Railing Markers" to "Barrier Delineators".
	4	Referenced Specification Section 931 for WWR.
422	1	Deleted MARKERS note. Changed "Reflective Railing Markers" to "Barrier Delineators".
	3	Referenced Specification Section 931 for WWR.

INDEX No	SHEET No	DESCRIPTION
423	1	Deleted MARKERS note. Changed "Reflective Railing Markers" to "Barrier Delineators".
	3	Referenced Specification Section 931 for WWR.
424	1	Deleted MARKERS note. Changed "Reflective Railing Markers" to "Barrier Delineators".
425	1	Deleted MARKERS note. Changed "Reflective Railing Markers" to "Barrier Delineators".
	3	Referenced Specification Section 931 for WWR.
430	1 & 2	New Index.
470	1	Changed ELEVATION MARKERS note to "Elevation Markers need not be replaced when located on portions of the existing traffic railing to be removed." Changed "Reflective Railing Markers" to "Barrier Delineators".
477	1 thru 4	New Index.
480	1	Changed ELEVATION MARKERS note to "Elevation Markers need not be replaced when located on portions of the existing traffic railing to be removed."; Deleted SURFACE FINISH Note; Clarified Partial Elevation details. Changed "Reflective Railing Markers" to "Barrier Delineators".
		Clarified curb width is 3" max. and preferred.
481	1	Clarified curb width is 3" max. and preferred.
482	1	Clarified curb width is 3" max. and preferred.
483	1	Clarified curb width is 3" max. and preferred.
GENERAL		
501	All	Reorganized and updated Approved Geosynthetic Product tables. Deleted Sheet 12.
	1	Updated equation in General Note 2 to reflect changes to the PPM.
514	1	Modified * Note to include "...RCA Base at LBR 120..".
515	2	Plan A detail revised to include a Detectable Warning Surface.
521	1	Removed reference to Deleted Indices. Changed references in Note 6.
591	1	Index deleted.
TRAFFIC CONTROL THROUGH WORK ZONES		
600	2	Replaced "temporary traffic control" with "pedestrian longitudinal channelizing".
	3	Added quotation mark in front of High-Visibility.
	4	Moved BALLASTED RUMBLE STRIPS to match RAISED RUMBLE STRIPS.
	12	Added first sentence to note No. 11.
	13	Removed type D and E RPM's from notes.
625	1	Modified note No. 5.
631	1	Added note No. 9 to GENERAL NOTES.
660	1	Added note No. 11 to GENERAL NOTES.

REVISIONS

INDEX No	SHEET No	DESCRIPTION
ROADSIDE SAFETY		
700	1	Added GENERAL NOTES, Note 1, For Roadside Slopes, Refer to the Criteria and Details shown in the Plans Preparation Manual, Volume 1, Chapter 2.
	2	Additional information added to the table and Utility Exception notes were removed.
FENCING AND PEDESTRIAN RAILINGS		
820	1	Referenced Specification Section 931 for WWR.
851	1	Changed anchor bolts in SCHEME 1B to show nuts on top.
	2	Referenced Specification Section 931 for WWR.
852	1	Clarified Shop Drawings note.
	4	Change Top of Post/Rail weld symbol in SECTION A-A and DETAIL "A". Added last sentence to * NOTE below DETAIL "A".
	5	Added 45 degree Beveled End callout to DETAIL "1A" and "1B".
	6	Added Expansion Joint details for TYPE 3 infill panel to Elevation View and DETAIL "3E".
	7	Added Expansion Joint DETAIL "5E" for TYPE 5 infill panel.
861	1	Changed anchor bolts in SCHEME 1B to show nuts on top.
	2	Referenced Specification Section 931 for WWR.
862	1	Clarified Shop Drawings note. Added footnote (3) to TABLE 1.
	3	Added callout to permit 1" NPS (Sch. 40) rail sleeve on DETAIL "K".
	4	Changed Top of Post/Rail weld symbols in SECTION A-A and DETAIL "A". Added 1/8" fillet weld symbol to Stiffener plate on DETAIL "A" and last sentence to * NOTE below DETAIL "A" and "(See optional Detail "K" on Sheet 3)" to Aluminum Sleeve callout on VIEW F-F.
	5	Added 45 degree Beveled End callout to DETAIL "1A" and "1B".
	6	Added Expansion Joint details for TYPE 3 infill panel to Elevation View and DETAIL "3E".
	7	Added Expansion Joint DETAIL "5E" for TYPE 5 infill panel.
	870	1
880	1	Removed "Complete" from SHOP DRAWINGS Notes.

INDEX No	SHEET No	DESCRIPTION
NOISE WALL SYSTEMS		
5200	All	Replaced "Sound Barrier" with "Noise Wall" including titles.
	1	Revised Note B; Added note D.2; Clarified Notes H, J.1 and J.2; Added note J.4.
	4	Clarified step heights. Added Side-Installed panel details.
	5	Added Side-Installed panel details; Added Note 3.
	7	Modified additional reinforcement at panel openings; Corrected dimension for Type D.
	15	Revised VIEW A-A; Added Bars A1 and A2.
	16	Removed pile lengths on Wall Types J3 and K3 at 20' spacing.
	All	Replaced "Sound Barrier" with "Noise Wall" including titles.
5210	2	Removed Elevation Marker note; Removed crash testing note; Removed notes on reinforcing steel from "Concrete and Reinforcing Steel" note; Referenced Specification Section 931 for WWR. Changed "Reflective Railing Markers" to "Barrier Delineators".
	3	Changed "Barrier" to "Railing".
	4	Corrected number of Bars 5S2 (Section AA); Modified Note 1.
	All	Replaced "Sound Barrier" with "Noise Wall" including titles.
5211	1	Deleted Note 4, renumbered.
	3	Referenced Specification Section 931 for WWR; Corrected required number of Bars 5S2 (Section A-A)
	All	Replaced "Sound Barrier" with "Noise Wall" including titles.
5212	1	Modified Note 3.
	2	Referenced Specification Section 931 for WWR.
	All	Replaced "Sound Barrier" with "Noise Wall" including titles.
5213	1	Modified Note 3.
	2	Referenced Specification Section 931 for WWR.
	All	Replaced "Sound Barrier" with "Noise Wall" including titles.
5214	1	Modified Note 3.
	4	Referenced Specification Section 931 for WWR.
	All	Replaced "Sound Barrier" with "Noise Wall" including titles.
5215	1	Modified Note 3; Referenced Specification Section 931 for WWR.

INDEX No	SHEET No	DESCRIPTION
WALL SYSTEMS		
6010	1	Clarified Notes, Removed Notes for Materials, Surface Finish, and Architectural Surface Textures.
	2	Updated surface finish treatment references, Clarified detail notes. Removed texture from drawings.
6011	1	Modified reinforcing steel note to refer to Specification Section 931. Changed KEYWAY & WALL JOINT DETAIL callout to permit a gray preformed plastic bond breaker.
6020	1	Removed Class 5 Coating from Drawing; Deleted CONSTRUCTION Note No. 9; renumbered.
6040	2	Referenced Specification Section 931 for WWR.
6100	1	Delete 3" cover requirement on SECTION A-A & B-B, and ** note
	2	Referenced Specification Section 931 for WWR; C-I-P COPING USED WITH PRECAST COPING detail: Deleted 3" cover requirement. C-I-P COPING ENCLOSURE DETAIL: Corrected callout arrows for Bars 4B and added field bend note for Bars 4A in extremely aggressive environments to maintain cover. REINFORCING STEEL BENDING DIAGRAMS: Added location of LENGTH dimension on diagrams with (L) and changed length for Bars U1, U2 & U3. Deleted ** dimension for Bars 4U1 & 4U2 and deleted *. Corrected short leg dimension on Bar 4U1 to 7" Min.
6110	1	Changed spacing of Bars at Expansion Joints in PARTIAL PLAN VIEW and Changed NOTE 1 to provide Bars 3D @ 8" spacing between Bars 5C.
	2	Changed NOTE 7 to NOTE 8. Added NOTE 7 and "(See Note 1, Sheet 1)" to Bars 5C callout in TYPICAL SECTION.
	3	Changed Bars 5C callout in TYPICAL SECTION, NOTE 4, NOTE 7 to NOTE 8, and REINFORCING STEEL NOTE 8 ("ASTM A497" to "Specification Section 931"). Added NOTE 7 and 1/2" Min. ~ 2 1/2" Max. Gap dimension in TYPICAL SECTION. Added Bars 3D to REINFORCING STEEL BENDING DIAGRAM.
6120	1	Changed callout 'Bars 5L at 6" sp. (tied to alternating Bars 5T and 5X)' to 'Bars 5L at 1'-0" sp.', corrected bar length in drawing for Bars 5L, and clarified spacing of Bars 4C and Expansion Joints, in PARTIAL PLAN VIEW. Changed Note 1.
	2	Added "(See Note 1, Sheet 1)" to Bars 4C callout and '1/2" Min. ~ 2 1/2" Max.' dimension in TYPICAL SECTION, and NOTE 7.
	3	Change REINFORCING STEEL NOTE 8 ("ASTM A 497" to "Specification Section 931").
6130	2	Referenced Specification Section 931 for WWR.
6200	All	Replaced "Pull Box" with "Embedded Junction Box" or "EJB".
	1	Corrected Junction Slab thickness in length dimension on PLAN VIEW to 1'-9".
	3	Changed REINFORCING STEEL NOTE 3 ("ASTM A 497" to "Specification Section 931"); Corrected Junction Slab thickness in length dimension on ELEVATION VIEW to 1'-9".

REVISIONS

INDEX No	SHEET No	DESCRIPTION
6201	1	Referenced Specification Section 931 for WWR.
SIGNING AND MARKINGS		
11200	1	Removed portions of material requirements under ALTERNATE MATERIALS.
	2	Changed table value for BASE CONNECTION DATA variable B for W 8X18 from 11.25" to 12.5".
	3	Added new sheet for ALTERNATE BASE DETAILS.
11300	1	Changed Zee hanger from "4X3.13X3.58" to "5X3.25X4.01". Added ASTM A193 B7 and Max. Spacing 12' to TYPICAL DETAIL OF SIGN & TRUSS CONNECTION. Also, changed overhang from 6' to varies 5' for maximum cantilever.
11310	2	Added "Top of Foundation" note to several details. Changed 3" to 2X Bolt Diameter on PLAN VIEW. Modified stirrup spacing-DRILLED SHAFT ELEVATION DETAIL.
	3	Changed 36' to 40' for SPLICE CONNECTION DETAIL. Changed weld note for UPRIGHT-TRUSS CONNECTION DETAIL.
	5	Changed weld note for DETAIL P.
11320	2	Changed 3" to 2X Bolt Diameter on PLAN VIEW. Changed weld note for UPRIGHT-TRUSS
	4	Changed weld note for DETAIL K.
	5	Added "Top of Foundation" note to ELEVATION DRILLED SHAFT. Modified stirrup spacing-DRILLED SHAFT ELEVATION DETAIL.
11860	4	Flipped zee bracket in VIEW A-A.
17346	3	The typical crosswalk marking details were revised.
	5	Added R6-1R to Figure 1 detail.
17349	1	Added ONE-WAY sign R6-1R to CASE I.
17355	9	Changed White to Black for the legend on FTP 79, 80, and 81.
	10	Added new sheet for FTP-85-13.
17359	2	Revised details and added table for spacing of RPM's.
ROADWAY LIGHTING		
17502	1	Deleted note No.8 and added a new note No.10. Revised note No. 4.
	2	Revised Base Plate Thickness values and changed Shaft Diameter, Shaft Length, and Longitudinal Reinforcement values.
	3	Revised weld note for SECTION E-E, and changed rebar spacing from 1'-6" to 1'-0" for SECTION B-B.
17504	1	Clarified a 4' minimum height for the service main.
	2	Added new sheet for SERVICE POINT DETAIL.
17505	1	Complete sheet revision.
	2	Complete sheet revision.
17515	2	Revised note No. 10.

INDEX No	SHEET No	DESCRIPTION
TRAFFIC SIGNAL AND EQUIPMENT		
17600	All	Index deleted.
17700	1	Removed JUNCTION from the title block.
17721	1	Added FIGURE F from deleted Index 18202.
	2	Moved details from deleted Index 18202 to sheet 2.
17723	1	Deleted note No. 7 from STEEL STRAIN POLE NOTES, and revised 2 and 8. Added note to "Top of Finished Grade".
	2	Revised weld note for POLE SECTION.
	3	Made minor note revisions to TOP VIEW detail.
17725	1	Modified notes, removed Reference to Class 3 Surface Finishings.
	2 thru 8	Added to STRAND LEGEND and made minor note corrections.
17727	2	Complete sheet revision.
17743	1 & 2	Revised column UA for POLE, CONNECTION AND SHAFT DESIGN TABLE. Minor corrections to values in ARM DESIGN TABLE and column UC of POLE, CONNECTION AND SHAFT DESIGN TABLE.
17745	1	Revised GENERAL NOTES and added a note to ELEVATION VIEW for Top of Finished Grade. Changed centerline of Mast Arm height from top to 3'-0".
	3	Revised weld note for SECTION H-H and changed wiring hole diameter to 4".
	4	Revised weld note for SECTION M-M and changed wiring hole diameter to 4".
17882	5	Revised Lifting Bar note for TOP VIEW detail and changed bolt diameter to 3/8" min.
	1	Changed clearance height of the "Overhead Signal Unit" to 17'-6".
INTELLIGENT TRANSPORTATION SYSTEMS (ITS)		
18111	All	Revised index and added 2 sheets.
18113	All	Revised index and added 2 sheets.
18202	All	Deleted Index and merged with Index 17721.
18300	3	Corrected reference from deleted Index 18204 to current Index 17700.
	4	Revised GENERAL NOTES, Note 2 to read "Design Wind Speed: 150 mph. Maximum DMS weight for design: 4500 lb.".
PRESTRESSED CONCRETE BEAMS		
20005	1	Changed EXAMPLE bracing to allow straight bracing at ends of spans only.
20120	1 thru 4	New Index.
20199	All	Changed Index name; Added AASHTO Type II to * NOTE and SECTION A-A subtitle.
20210	2	Referenced Specification Section 931 for WWR.

INDEX No	SHEET No	DESCRIPTION
BRIDGE BEARINGS		
20510	All	Changed Index name.
	1	Added 4" bearing pad offset dimension from end of beam, in PARTIAL PLAN (Skew > 0) detail; Added PAD TYPE A & C to table and BEARING PAD NOTES 1 & 3; Deleted reference to End Diaphragms in PARTIAL PLAN titles; Deleted BEARING PAD NOTES 3 and renumber note 4.
20511	All	Changed Index name.
	1	Changed Embedded Bearing Plate Anchor Stud, & 3/4" Dia. Screw spacings and NOTE 3 to drill holes perpendicular to Embedded Bearing Plate A; Added AASHTO Type II dimensions and callouts.
	2	Changed Emdedded Bearing Plate Anchor Stud spacing. Added LEGEND.
20512	All	Changed Index name.
	1	Changed Embedded Bearing Plate Anchor Stud & 3/4" Dia. Screw spacings, and NOTE 3 to drill holes perpendicular to Embedded Bearing Plate A; Added AASHTO Type II dimensions and callouts.
	2	Changed Embedded Bearing Plate Anchor Stud spacing; Added AASHTO Type II dimensions and callouts.
SQUARE AND ROUND CONCRETE PILES		
20601	1	Added C-I-P PILE BUILD-UP DETAIL; Added Note 5.
20654	2	Added note for minimum cover on Spun Cast Cylinder Piles.
APPROACH SLABS		
20900	All	Replaced "Sound Barrier" with "Noise Wall" including titles.
	1	Referenced Specification Section 931 for WWR; Show "Optional Base Group 2" in Section A-A.
	2	Replace "Fill" with "Optional Base Group 2"; on side slope replace "Fill" with "Embankment".
20910	All	Replaced "Sound Barrier" with "Noise Wall" including titles.
	1	Referenced Specification Section 931 for WWR; Show "Optional Base Group 2" in Section A-A.
	2	Replace "Fill" with "Optional Base Group 2"; on side slope replace "Fill" with "Embankment".
BRIDGE EXPANSION JOINTS		
21100	1	Revised Dimension A in Typical Section; Modified Note 4 and added Note 5.
	3	Added anchor to nonskewed joint, Modified dimensions, Added min. edge distance note.
21110	2	Clarified Sleeve Anchor Note; Added dimension pointing to "Outside Anchor"; Added Min. distance from Centerline of anchor to outside edge of cover plate.
STRUCTURES ACCESS AND LIGHTING		
21200	All	Replaced "Pull Box" with "Embedded Junction Box" or "EJB".
	3	Replaced "Sound Barrier" with "Noise Wall".

REVISIONS

INDEX No	SHEET No	DESCRIPTION
21210	All	Replaced "Pull Box" with "Embedded Junction Box" or "EJB"; Reorganized Index.
	1	Revised General Notes 3 and 7.
	3	New Sheet.
	4	New Sheet.
21220	2	Replaced "Pull Box" with "Embedded Junction Box" or "EJB".
TEMPORARY DETOUR BRIDGES		
21600	1	Added 21640 to the note: "Work this Standard with Index Nos. 21610, 21620, and 21630." Added Traffic Railing Notes and Guardrail payment notes.
	2	Added Begin or End Detour Bridge line and callout. Deleted miscellaneous lines to clarify plan view. Added "Thrie-Beam Panel Not Shown For Clarity" on Section Title. Clarified Slopes.
	3	Added "Thrie-Beam Panel Not Shown For Clarity" on Section Title. Clarified Slopes.
	4	Added thrie-beam guardrail to Typical Section.
	6	Deleted "H Pile and Steel Pipe Pile" from Elevation View Section Title.
21620	1	Revised "HP 14 (Bent Cap)" to "Steel Bent Cap".
21640	1 Thru 6	New Index for thrie-beam guardrail attachment.
FENDER SYSTEM DETAILS		
21900	3	Changed length of Mark F1 to a maximum of 16' long due to unavailability of 32' long 6"x10" lumber. This change eliminated the need for Mark F2; therefore, required renumbering of Mark "F" members sequentially.
	4	Added detail for spacer blocks to maintain 2'-4" minimum catwalk width when piles are less than 16" in diameter.
	7	Changed length of Mark F1 to a maximum of 16' long due to unavailability of 32' long 6"x10" lumber. This change eliminated the need for Mark F2; therefore, required renumbering of Mark "F" members sequentially.