

## Introduction

This electronic version of the 2001 Road and Bridge Standards is based on the hard copy (paper) edition dated February 1, 2001. The standards contained in this electronic version are tentatively scheduled to be used on VDOT projects using Imperial units beginning with those on the February 13, 2001 advertisement. A list of the changes from the 1993 edition that the 2001 edition will replace is located at the end of this document.

Please note that this final electronic version of the 2001 edition of the Road and Bridge Standards includes revisions and corrections not present in the preliminary draft dated 11-3-00. You should delete any downloaded copies of the preliminary draft of the standards and replace it with the file titles “Downloadable Version” on the web page. A document that notes the differences between the preliminary and final electronic versions is available by request.

## General Information

This electronic version of the 2001 edition of the Road and Bridge Standards is in Adobe Acrobat® .pdf format that requires Adobe Acrobat® Reader to viewing. If you do not have this software please click on the “Get Acrobat Reader” icon and follow the instructions to download and configure this software to view .pdf files. For instructions on the use of Adobe Acrobat® Reader please open the Reader.pdf file that should be included with the downloaded Adobe Acrobat® Reader software.

The electronic version is divided into two volumes with each of the volumes divided into sections such as Drainage Items, Curbs and Entrances, etc. that parallel the paper version. To access the standards, click on either [Volume I](#) or [Volume II](#) on the web page and Adobe Acrobat Reader will automatically open the selected volume’s table of contents. To access a specific standard and/or section click on blue colored text for the requested item and it should appear on your screen in the follow way: if you clicked on [Section 100](#), the first page in Section 100 will appear on your screen; if you clicked on a specific standard such as [SWM-1](#), the first (or only) page of that standard will appear on your screen. For your convenience a brief index of each volume has been placed at the end of this General Information section.

When the specific standard appears on the screen, an additional pane called “Bookmarks” will appear on the left side of the screen. The bookmarks are an additional listing of the standards contained in either the section or subsection of the standards. Bookmarks provide another way of accessing a standard within a section/subsection by clicking on the bookmark to directly view that standard rather than scrolling through the entire section/subsection. Within the standard document, any blue text is also a link to that information that can be viewed by clicking on the blue text.

Revised standards are identified in the table of contents in the column to the right of the description by a revision date. Click on this revision date to view the revised standard. Individual standard pages that have been revised are identified when the standard page appears by the revision date, in blue text, in the upper left-hand corner of the sheet. Clicking on this “**REVISED Date**” will open the revised sheet for viewing. If an insertable sheet is required in a project’s plan assembly, that insertable sheet will be identified, in blue text, in the upper right-hand corner of the sheet. The corresponding insertable sheet can be viewed by clicking on the insertable sheet’s number. Individual lists of revised standards have been provided and are identified by the month and year of the revision (i.e., if the revision occurred on July 2001, it’s file name would be 7-01.doc).

If you have any questions or comments regarding this version of the 2001 Road and Bridge Standards, please contact Paul Kelley E-mail: [Kelley\\_pe@vdot.state.va.us](mailto:Kelley_pe@vdot.state.va.us) or Bryant Lowery (E-mail: [lowery\\_bl@vdot.state.va.us](mailto:lowery_bl@vdot.state.va.us)) of the Engineering Services Section.

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  - Section 1400 – Utilities

## Changes From 1993 Edition Volume 1

### Section 100

Standard	Page	Comments
EW-2	101.03	Added 90" and 96" dia. pipe sizes.
EW-2A	101.04	Added 90" and 96" dia. pipe sizes.
EW-2 PC	101.06	Added 90" and 96" dia. pipe sizes.
EW-2S	101.08	Added 90" and 96" dia. pipe sizes.
	101.09	Added 90" and 96" dia. pipe sizes.
EW-2S PC	101.10	Added 90" and 96" dia. pipe sizes.
EW-7	101.17	Added 90" and 96" dia. pipe sizes.
EW-7 PC	101.18	Added 90" and 96" dia. pipe sizes.
EW-7S	101.19	Added 90" and 96" dia. pipe sizes.
	101.20	Added 90" and 96" dia. pipe sizes.
EW-7S PC	101.21	Added 90" and 96" dia. pipe sizes.
EW-12	101.32	<b>Replaces Insertable Sheet A57.</b> Added Underdrain Outlet Marker Detail and related notes.
ES-1	102.01	Added 21", 27", and 33" diameter pipes.
ES-1A	102.02	New standard.
ES-2	102.03	Replaced Metal with Corrugated in title.
T-DI-5	103.07	Combined Types: A1, A2, and 3; B1, B2, B3, B4, C1, C2, and C3.
R-1, 2, 3	103.10	Added maximum "H" dimension of 25 feet for R-2 Flat Slab.
B-3	103.12	<b>Replaces Insertable Sheet A111.</b>
B-4	103.13	<b>Replaces Insertable Sheet A112.</b>
DI-1A	104.02	Revised note on safety slabs.
DI-2D, 2E, 2F	104.06	
	104.07	Added note that inlet may be used with larger pipe (72" maximum).
DI-2DD, 2EE, 2FF	104.08	Added note that inlet may be used with larger pipe (72" maximum).
DI-3DD, 3EE, 3FF	104.14	Added note "This standard is intended for use in curb and gutter situations only."
DI-4D DI-4E DI-4F	104.18	
	104.19	Added note that inlet may be used with larger pipe (60" maximum) provided utility space clearance is not needed.
DI-4DD, 4EE, 4FF	104.20	Added note that inlet may be used with larger pipe (60" maximum) provided utility space clearance is not needed.
DI-10G, 10H, 10I	104.26	Added to Standards from and <b>replaces Insertable Sheet A99.</b>
	104.27	
DI-10J, 10K, 10L	104.28	Added to Standards from and <b>replaces Insertable Sheet A100.</b>
	104.29	

Standard	Page	Comments
DI-11		Deleted from standards
DI-11A		Deleted from standards.
DI-11B		Deleted from standards.
DI-13	104.35	Added to Standards from and replaces Insertable Sheet ISD2154.
	104.36	
PI-1	104.37	Added to Standards from and replaces Insertable Sheet A73.
DI-14A, 14B, 14C	104.38	Added to Standards from and replaces Insertable Sheet A101.
	104.39	
DI-14D, 14E, 14F	104.40	Added to Standards from and replaces Insertable Sheet A102.
	104.41	
SL-1	106.14	Revised note on applicability of Safety slab.
PB-1	107.01	Replaces Insertable Sheets A86 and A120. Revised the area and type of bedding and backfill material.
	107.02	Revised the area and type of bedding and backfill material
	107.03	Revised the area and type of bedding and backfill material. Replaces Insertable Sheet A120.
	107.04	Added to Standards.
PC-1	107.05	Replaces Insertable Sheet A121.
	107.06	Deleted Method "B" Bedding.
	107.19	
	107.20	Revised allowable maximum cover.
PP-1	107.22	Added to Standards from and replaces Insertable Sheet ISD1821.
UD-1	108.01	Replaces Insertable Sheet A80.
UD-2	108.02	Replaces Insertable Sheet A80.
UD-3	108.03	Replaces Insertable Sheet A55.
CD-1	108.04	Replaces Insertable Sheet A84
CD-2	108.05	Replaces Insertable Sheet A84.
UD-4	108.06	Replaces Insertable Sheet A81.
	108.07	Replaces Insertable Sheet A81.
UD-5	108.08	Replaces Insertable Sheet A82.
UD-6		Standard UD-6 deleted.
UD-7	108.09	Replaces Insertable Sheet A83.
PG-7	109.05	Added to Standards from and replaces Insertable Sheet ISD564A.
TD-CL	113.01	Added to Standards from and replaces Insertable Sheet A45.
EC-3	114.04	Added to Standards from and replaces Insertable Sheet A107.
EC-4	114.05	New standard. Information from and replaces Insertable Sheet ISD414_1. Revised slopes. Revise type of coarse aggregate.
EC-5	114.06	New standard. Information from and replaces Insertable Sheet ISD414_2
EC-6	114.07	New standard. Information from and replaces Insertable Sheet ISD414_3. Defined types of drop inlet silt traps.

Standard	Page	Comments
EC-7	114.08	New standard. Information from and <b>replaces Insertable Sheet ISD414_3.</b>
EC-8	114.09	New standard. Information from and <b>replaces Insertable Sheet ISD414_3.</b>
EC-9	114.10	New standard.
ESC-INS	115.01	New page. Information from and <b>replaces Insertable Sheets ISD414_1 and ISD414_2.</b>
	115.02	New page. Information from and <b>replaces Insertable Sheet ISD414_1.</b>
	115.03	New page. Information from and <b>replaces Insertable Sheet ISD414_2.</b>
SWM-1	116.01	New standard. Information from and <b>replaces Insertable Sheet ISD2216.</b>
	116.02	
SWM-1	116.03	New standard. Information from and <b>replaces Insertable Sheet ISD2216.</b>
SWM-DR	116.04	New standard. Information from and <b>replaces Insertable Sheet ISD2216A.</b>
	116.05	New standard. Information from and <b>replaces Insertable Sheet ISD2209.</b>
SWM-DR	116.06	New standard. Information from and <b>replaces Insertable Sheet ISD2209.</b>

### Section 200

Standard	Page	Comments
CG-6	201.03	<b>Replaces Insertable Sheet A123.</b>
CG-7	201.04	<b>Replaces Insertable Sheet A123.</b>
MC-4	201.07	New standard from and <b>replaces Insertable Sheet ISD2154A.</b>
	201.08	
CG-9A	203.01	<b>Replaces Insertable Sheet A76.</b>
CG-9B	203.02	<b>Replaces Insertable Sheet A79.</b>
CG-9D	203.03	<b>Replaces Insertable Sheet A78.</b>
CG-11	203.04	<b>Replaces Insertable Sheet A77.</b>
CG-12A, 12B, 12C	203.05	<b>Replaces Insertable Sheet A59.</b> Revised to meet Americans With Disabilities Act Accessibility Guidelines and/or the Uniform Federal Accessibility Standards.
	203.06	
	203.07	
CG-13	203.08	<b>Replaces Insertable Sheet A108.</b>

**Section 300**

<b>Standard</b>	<b>Page</b>	<b>Comments</b>
PR-5	301.13	New standard from and <b>replaces Insertable Sheet ISD2724.</b>
	301.14	
	301.15	
PR-6	301.16	New standard from and replaces <b>Insertable Sheet ISD2623.</b>
	301.17	
	301.18	
PR-7	301.19	New standard from and <b>replaces Insertable Sheet ISD2761.</b>
	301.20	
	301.21	
PR-8	301.22	New standard.
	301.23	
	301.24	
PR-9	301.25	New standard..
	301.26	
	301.27	
XJ-1	302.01	Replaces Insertable Sheet A122.
	302.02	
RS-1	304.01	New standard from and <b>replaces Insertable Sheet ISD1722A.</b>
RS-2	304.02	New standard from and <b>replaces Insertable Sheet ISD1722.</b>

**Section 500**

<b>Standard</b>	<b>Page</b>	<b>Comments</b>
GR-2, 2A	501.04	<b>Replaces Insertable Sheet A87.</b>
	501.05	<b>Replaces Insertable Sheet A87.</b> Added Detail A.
GR-3	501.06	<b>Replaces Insertable Sheet A133.</b>
	501.07	
	501.08	Added sheet and replaced guardrail terminal anchor with NYDOT design that has met NCHRP 350 TL-3 test criteria.
GR-6	501.09	<b>Replaces Insertable Sheet A132.</b>
	501.10	
GR-7	501.11	<b>Replaces Insertable Sheet A89.</b>
	501.12	
	501.13	
GR-8, 8A, 8B, 8C	501.14	<b>Replaces Insertable Sheet A91.</b>
	501.15	
GR-SP	501.16	Redrawn to match FHWA Requirements.

Standard	Page	Comments
GR-SP	501.17	Added sheet for GR-9. Site prep per FHWA Requirements.
GR-9	501.18	Replaces Insertable Sheet SD2390.
GR-10	501.19	Replaces Insertable Sheet A88.
	501.20	Revised standard to match design that met NCHRP 350 TL-3 test criteria. Added Type III (3 posts omitted) to standard.
BGR-01	501.22	Added to Standard. Added note limiting use to NCHRP 350 TL-2.
	501.23	
	501.24	
GR-FOA-1	501.25	Replaces Insertable Sheet A65.
	501.26	
GR-FOA-2	501.28	Replaces Insertable Sheet A66.
	501.29	
GR-FOA-4	501.31	Replaces Insertable Sheet A67.
GR-INS	501.33	Revised instruction to terminate guardrail for run off side to 50 feet past roadside obstruction.
	501.34	Revised dimension A to match bridge widths published in the Road Design Manual and the AASHTO Green Book. Added dimension J.
	501.35	Increased distance of GR-2A to 25 feet before roadside obstruction. Revised measurement of post/barrier offset from back of post to roadside obstruction (Sections A-A, B-B, and C-C). Revised Section D-D to a maximum of 3 blockouts for one post.
		Replaces Insertable Sheet A92. Added detail for guardrail installation sites requiring longer guardrail posts.
	501.38	Added specific locations for adjusting rail heights for transitions between different guardrail systems.
	501.39	Replaces Insertable Sheet A93.
	501.40	Replaces Insertable Sheet A94.
MB-3	501.41	Replaces Insertable Sheet A95. Deleted Bent Plate Post. Added CAT and Brakemaster to impact attenuator note.
MB-5	501.42	Added to Standards. Replaces Insertable Sheet A98.
	501.43	
MB-7D, 7E, 7F	501.44	Added to Standards. Replaces Insertable Sheet A103.
MB-7D PC	501.45	Added to Standards. Replaces Insertable Sheet A103.
	501.46	
MB-8A	501.47	Added to Standards. Replaces Insertable Sheet ISD1954A.
	501.48	
MB-9A	501.49	Added to Standards. Replaces Insertable Sheet ISD1676A.
MB-9A PC	501.50	Added to Standards. Replaces Insertable Sheet SD1676A.
MB-10A	501.51	Added to Standards. Replaces Insertable Sheet ISD1276A.
	501.52	
MB-11A	501.53	Added to Standards. Replaces Insertable Sheet ISD1165A.



Standard	Page	Comments
MB-11A	501.54	Added to Standards. <b>Replaces Insertable Sheet ISD1165A.</b>
MB-12A, B, C	501.55	Added to Standards. <b>Replaces Insertable Sheet A96.</b> Moved barrier delineator from top of barrier to sides of the barrier.
	501.56	
MB-13	501.57	Added to Standards from and <b>replaces Insertable Sheet A104.</b>
	501.58	Moved barrier delineator from top of barrier to sides of the barrier.
MB-INS	501.59	Added to Standards. Non-proprietary positive connection that has met NCHRP 350 TL-3 test criteria.
	501.60	Added to Standards. <b>Replaces Insertable Sheet A105.</b>
	501.61	
	501.62	Added to Standards. <b>Replaces Insertable Sheet ISD2063A.</b>
501.63		
FOA-CZ	501.64	New Standard

### Section 600

Standard	Page	Comments
HR-1	601.05	<b>Replaces Insertable Sheet A68.</b>
LR-1	601.06	<b>Replaces Insertable Sheet A85.</b>
NG-1	605.01	New Standard. <b>Replaces Insertable Sheet ISD2330.</b>
SD-3	608.04	New Standard.
	608.05	

### Section 700

Standard	Page	Comments
CS-3B	701.05	Added to Standards. <b>Replaces Insertable Sheet A109.</b>
CS-4C	701.09	Added to Standards. <b>Replaces Insertable Sheet A110.</b>

### Section 800

Standard	Page	Comments
TC-5	801.01	TC-4 deleted from standards. TC-5 standard symbols revised to match IGRDS software.
	801.02	Replaced Degree of Curve with radii. Revise note to compute LS for radii not listed in tables.
	801.03	Replaced Degree of Curve with radii. Deleted note on the relationship of transition length to curve length. Revise note to compute LS for radii not listed in tables.

Standard	Page	Comments
TC-5	801.04	Deleted elevation differential note. Added note defining slope of normal crown
	801.05	Revised application of LS between T.S./S.T. to S.C./C.S. in Profile of Transition detail. Deleted transition baseline (ZC).
	801.06	LS application changed to 2/3 before curve and 1/3 on curve. CR applied outside of LS. CR formula added. Added Plan View.
	801.07	Added IGRDS input information.
	801.08	Added IGRDS input information.
	801.09	Replaced Degree of Curve with radii. Deleted 1/2 LS notation.
	801.10	Deleted Degree of Curve note.
	801.11	Revised Chord Point (CP) formula. Deleted transition baseline (ZC) and related notes. Deleted Spiral Factors Tables. Deleted Urban Designs note. Broken back alignment (LS overlap) sheet deleted from standards.
	801.12	Added table to standards.
	801.13	Added rural conditions without pavement widening.
	801.14	Deleted 1/2 LS notation and revised table accordingly. Added "With Pavement Widening."
	801.15	Replaced Degree of Curve with radius of curve.
	801.16	Replaced Degree of Curve with radius of curve.
	801.17	New sheet.
	801.18	New sheet.
	801.19	New sheet.
	801.20	Revised standard to correspond to "Design for Low-Speed Urban Streets" as published in the 1990 edition of AASHTO's Green Book.
	801.21 Thru 801.29	Revised standard to correspond to "Design for All Rural Highways and High-Speed Urban Streets" as published in the 1990 edition of AASHTO's Green Book. Added CR values per VDOT Standards.
	801.30 Thru 801.40	Revised standard to correspond to "Design for All Rural Highways and High-Speed Urban Streets" as published in the 1990 edition of AASHTO's Green Book. Added CR values per VDOT Standards.

**2001 Road and Bridge Standards  
Changes From 1993 Edition  
Volume 2**

**Section 1200**

Standard	Page	Comments
L-5		Deleted from standards.

**Section 1300**

Standard	Page	Comments
SM-1	1301.14	Deleted from standards.
SM-2	1301.15	Deleted from standards.
FB-2	1301.20	Added to standards.
FB-3	1301-21	Added to standards.
CCW-1	1301.43	Added to standards.
CCW-1	1302.44	Added to standards.
ECI-1, ECI-2	1301.53	Defined pavement area installation as Standard ECI-2.
WSP-1	1302.58	Added to standards.
PM-3	1301.88	Replaces Insertable Sheet A-75-2
PM-4	1301.89	Replaces Insertable Sheet A-75-1
PM-5	1301.90	Added to standards.
PM-6	1301.91	Added to standards. Replaces Insertable Sheet A-75-3
PM-7	1301.92	Added to standards. Replaces Insertable Sheet A-75-3
PM-8	1301.93	Was Standard PM-3 in 1993 edition.
PM-9	1301.94	Was Standard PM-3 in 1993 edition.
PCS-1	1301.95	Added to standards.
SPCS-1	1301.96	Added to standards.
CSI-1	1301.97	Added to standards. Replaces Insertable Sheet A126
	1301.98	
	1301.99	
	1301.10 0	
	1301.10 1	
PS1-1	1301.10 2	Added to standards. Replaces Insertable Sheet A125
	1301.10 3	

Standard	Page	Comments
PS1-1	1301.10 4	Added to standards. <b>Replaces Insertable Sheet A125</b>
	1301.10 5	
	1301.10 6	