

New Jersey Department of Transportation
1035 Parkway Avenue, PO Box 600, Trenton, New Jersey 08625-0600



Baseline Document Change Announcement

ANNOUNCEMENT: **BDC16MB-01**

DATE: **October 7, 2016**

SUBJECT: **Release of the Design Manual for Bridges and Structures
Sixth Edition, 2016**

The Design Manual for Bridges and Structures Sixth Edition, 2016 is hereby released. The Design Manual for Bridges and Structures adopts the current AASHTO standards.

The following BDC/CAN/QIA documents are hereby superseded:

- BDC10MB-01 dated March 24, 2010
- BDC11MB-01 dated August 17, 2011
- BDC12MB-01 dated June 20, 2012
- CAN-83 dated September 14, 2012
- QIA-007 dated September 23, 1997
- QIA-040 dated June 23, 2005
- QIA-041 dated April 7, 2006

The changes are summarized in the following spreadsheet.

Sr. #	Manual Section	AASHTO Reference	Manual Page #	Type	Change	Reason
1	1.2	NA	1-1	Addition	Under reference, Inclusion of AASHTO Manual for Assessing Safety Hardware(MASH) used in conjunction with AASHTO/FHWA Joint Implementation Plan for the AASHTO Manual for Assessing Safety Hardware and AASHTO/AWS D1.2 Structural Welding Code-Aluminum.	AASHTO Manual for Assessing Safety Hardware (MASH) is the new state of the practice for the crash testing of safety hardware devices for use on the National Highway System (NHS). It updates and replaces NCHRP Report 350. Welding code included per FHWA guidance for consistency.
2	1.3	NA	1-2	New section	Lists the titles which when referred to in the manual mean approval by the Director of Bridge Engineering and Infrastructure Management or State Transportation Engineer.	Clarification

Sr. #	Manual Section	AASHTO Reference	Manual Page #	Type	Change	Reason
3	3.2	1.3.4	3-1	New section	Includes language that during concept design, the Designer shall ensure bridge is redundant per relevant AASHTO provisions.	Policy
4	3.2	2.2.2.1	3-2	Correction	Erroneous reference to section 2.2.2.1 of AASHTO instead of 2.3.2.2.1 for Protection of Structures	Correction of error
5	3.2	2.3.3.2	3-2	Correction	AASHTO section reference corrected from 3.3.2 to 2.3.3.2; AASHTO references have been changed to "AASHTO A Policy on Design of Highways and Streets" and "AASHTO A Policy on Design Standards Interstate System" (for Interstate Highways) from the previously listed "AASHTO Geometric Design of Highways and Streets Manual".	The name of the AASHTO references have been updated and a specific reference for interstate highways is included.
6	Table 3.3.2	none	3-3	Modifications	Table number changed from 3.3.2 to 2.3.3.2; Minimum vertical clearance requirements have been changed (reduced) for all Roadway Classification types and remain as previous for Railroads and Waterways; Remarks column changed to Notes.	Updated per standards and current practice.
7	Notes	none	3-3, 3-4	Modifications	Note #s 1 to 3 - Language changes; Note 8 - Inclusion of min vert. clearance of 14'-9" for bridges over State owned roadways.	Changes pertaining to changed Table above.
8	Title			Modifications	Underclearance changed to Clearance	Changes pertaining to changed Table above.
9		3.6.1.1.2	3-6	Correction	Erroneous section number listed as 2.6.1.1.2 corrected to 3.6.1.1.2	Wrong AASHTO section number listed previously-corrected.
10		3.6.5	3-7	Addition	Paragraph added detailing exemptions for projects involving resurfacing, restoration or rehabilitation.	Policy
11		5.12.4	3-11	Addition	References to subsections for requirements in corrosive conditions added for abutments/retaining walls and concrete piers.	Subsection references added for abutments/retaining walls & concrete piers.
12	3.2	Section 10	3-14	Deletion	Subsection references to 10.6.3,10.6.3.1 and 10.6.3.1.1 deleted and main section references 10.7, 8 & 9 added ; text under the original section deleted	Geotechnical Engineering suggested revisions in all sections of the Design Manual are current AASHTO LRFD verbiage, methods & testing, current NJDOT Standard Specification materials, construction
13	3.2	Section 11	3-14	Modification	Section title modified and subsection references added as in Section 10 above	

Sr. #	Manual Section	AASHTO Reference	Manual Page #	Type	Change	Reason
14		11.10.1		Deletion	Procedures for use of extensible reinforcement in MSE wall systems.	methods, measurements of payment, NJDOT current Pay Item Names, FHWA HEC 18, current FHWA Drilled Shaft Design and Construction Methods, unless otherwise stated.
15		13.11.2	3-15	Addition	References to Roadway Design Manual and Standard Construction detail added.	Detail added in the manual per BDC07MR-04 dated September 29, 2008
16		14.5.2.1	3-15	Addition	New language added regarding number and type of joints	Policy
17	3.3		3-16	Modifications	Year and edition of AASHTO Standard Specifications for Structural Supports for Highway Signs, etc updated.	New edition of AASHTO standard specifications (5th Edition, 2009 & 2010 with interim revisions in 2011) released superseding older versions.
18	5.6		5-5	Modification	Text modified throughout the section to reflect current practice.	Same as serial #12
19	6.1-e,f		6-1	Deletion	Requirements for showing boring locations, Boring log ID number, foundation pile design loadings in preliminary plan removed	
20	6.1.3		6-2	Modification	Text included.	
21	6.2		6-3, 4, 5	Deletion	Entire section deleted	
22	6.3 -1, 8, 9		6-5	Modification & Deletion	Section numbers modified to 6.2 and following requirements for notes deleted: 8. Indication of boring locations; 9. Foundation design criteria	Deletion of 6.2 above; included in section 7.2.3
23	7.2.1-1, 2		7-1	Modification	Text modified throughout the section to reflect current practice.	Same as serial #12
24	7.2.3		7-2	Modification & Deletion	"Pile Plan" changed to "Foundations Layout"; Pile Design capacity and Ultimate Design Capacity, Pile tip details, Pile splice details deleted.	
25	7.2.3-b,c		7-3	Addition	New section added for Drilled shaft plan and elevation requirements, Micropile Plan and Elevation	
26	7.2.4-2, 3 & 5-2, 3, 9		7-4, 5, 8	Modification	Text modified to reflect current practice.	
27	7.2.7		7-6	Addition	Note added for foundation and bridge excavation quantities to be added up with roadway excavation for total excavation pay item.	Change required by Construction
28	7.2.8		7-7	Correction	Language corrections; Division corrected to Appendix	Clarification

Sr. #	Manual Section	AASHTO Reference	Manual Page #	Type	Change	Reason
29	7.2.10		7-8	Addition	References and text updated and new text added to reflect current practice.	Same as serial #12
30	7.2.12		7-9	Addition	Variable Message Sign changed to Variable/Dynamic Message Sign; similarly VMS/DMS Support Structures.	To update terminology with Section 30 of this manual.
31	7.2.12, 14, 15		7-9, 10, 11	Modification	Text modified to reflect current practice.	Same as serial #12
32	7.3		7-11, 12	Deletion	Entire section deleted & subsequent section renumbered.	
33	8.6		8-3	Modifications	Bridge widening's (superstructures) < 30% of deck area can follow either AASHTO LRFD criteria or original design criteria.	Original design criteria allowed-to align with existing elements.
34				Inclusion	Substructure widening criteria-Strength 1 changed to I; added option for evaluation for Design load to be done per guidance in Section 6 Part A (LRFR) of the AASHTO Manual for Bridge Evaluation to the reconstructed conditions.	Existing bridge substructures can be analyzed based on either the LRFD or LRFR criteria depending on the project.
35	9.1		9-1	Clarification	Clarification regarding the requirement of new waterproofing membrane overlay types.	No waterproofing membrane is required if a Bridge Deck Waterproof Surface Course is used.
36	9.1.1		9-1	Modification	HMA overlays with water surface membrane modified to Polymer; "other types of concrete overlay" added for projects that may be scheduled for resurfacing.	Terminology changed.
37				New section	New language added regarding conditions under which HMA overlays shall be allowed.	Clarification
38	9.1.1 A		9-1, 2	Modification	HMA Overlays(When applicable)	Clarifying that the clause applies only where HMA overlays are applicable
39	9.1.1 B		9-2	Modification	Text modified	To confirm
40	9.4.C		9-3	Correction	Reference to subsection to be corrected to 20.9-1 from 20.9a	Incorrect section number
41	9.5 E		9-4	Modification	Language change	Correction of error
42	9.6.B.2		9-5	Modification	Language change	Correction of error
43	9.7-A		9-5, 6	Modification	Restructuring of text for existing testing methods	Clarification.
44	9.9		9-9	Modification	Table 9.1 modified.	To reflect changes to methods in serial#43 above.
45	14.1.2		14-1	Addition	NJDOT design requirements reference	Same as serial #11
46	15.3.3		15-3	Modification	Title modified to include criteria & numbering revised	Missing section numbers

Sr. #	Manual Section	AASHTO Reference	Manual Page #	Type	Change	Reason
47				Modification	Text modified throughout the section to reflect current practice.	Same as serial #12
48	16.3.1, 2		16-1, 2	Additions, Deletions and Modifications	New items added, existing requirements deleted where not applicable and text modified throughout.	
49	16.3.3		16-3	Deletion	Entire section on Prestressed/Precast Concrete Piles deleted	
50	16.3.4		16-4	Modification	Section renumbered to 16.3.3 Drilled Shaft Foundations	Due to deletion above
51			16-4, 5	Addition / Deletion	New text added; existing items deleted and modifications to flow chart	same as serial#12
52	16.3.4 (new)			Addition	New subsection added for MicroPile Foundations	
53	16.3.5		16-6	Modification	Subsection renumbered to 16.3.5	
54	16.3.6			Deletion	Entire subsection deleted.	
55	17.1.3			Modification	Porous fill replaced with I-9 Soil (Aggregate)	
56	17.1.5			Modification	Deleted text; "reinforced concrete" replaced with "conventional retaining" walls	
57	17.1.14		17-2	Addition	New text added	
58	17.2.7			Modification	Text modified to reflect current practice.	
59	17.3		17-3	Deletion	Title modified to remove "Alternate"	
60	17.3.1, 2, 3, 4, 5, 6		17-3, 4	Modification	Text modified to reflect current practice.	
61	17.3.7		17-4, 5	Deletion	Limitations for MSE walls, Prefabricated Modular Wall systems deleted.	
62	17.3.9		17-5	Modification	AASHTO subsection reference changed	
63	17.4, 17.4.1, 5			Modification	Title and text changed to reflect current practice	
64	20.3		20-2	Deletion	Effective slab depth guidance deleted.	Text moved to appropriate section.
65	20.4.1		20-2	Modification	Language change	Clarification
66	20.10.3		20-6	Addition	New language added for rehabilitation of old bridges without approach slabs.	Clarification
67	20.10.4		20-7	Modifications	For bridges with new alignments, Director's approval is needed for approach slab length less than 45'; previous requirement of consulting the manager of structural engineering deleted.	Clarification

Sr. #	Manual Section	AASHTO Reference	Manual Page #	Type	Change	Reason
68	20.10.5		20-7	Addition	Minimum length requirements for Approach slabs.	Standard details
69	20.10.6		20-7	Modifications	Designers are required to provide quantities for approach slab including reinforcement steel.	Note for the designer
70	23.2.3, 4		23-1, 2	Additions & Modifications	Changes in text and language included pertaining to Bicycle railing and Steel/Aluminum Picket Railing.	AASHTO references added
71	24.19.5		24-18	Addition	Provide drip plates only on fascia girder at the low end of appropriate spans.	Note for the designer
72				Addition	Show limits of painting on the plans for the ends of girder and exposed surface of fascia.	Note for the designer
73	3.1.1			Correction	Section numbering typo corrected to 30.1.1	Same as serial #12
74	30.4.2 to 8		30-4	Modification	Text modified and references updated to reflect current practice and standards.	
75	30.5			Modification	Text modified and references updated to reflect current practice.	
76	33.3.3		33-2	Modification	Text modified to reflect current practice.	
77	33.4		33-2	Modification	Text modified related to measurements for Temporary sheeting.	
78	33.5			Modification	Code references updated	
79	34.1		34-1	Addition	New text added pertaining to electronic submission of boring logs.	
80	34.2			Deletion	Preliminary test borings requirement.	
81	34.2.1-D		34-2	Modification	"Preliminary" changed to "Final"	
82	34.2.5			Modification	Text modified to reflect current practice.	
83	34.2.6-F		34-4	Addition	Tests added to existing list	
84	34.2.6-G-3			Addition	Text added for recording of water readings.	
85	34.4.2-B,C		34-8, 9	Addition	Additional requirements for geotechnical roadway analysis	
86	34.4.4-A		34-9	Addition	Preliminary Geotechnical report defined	
87	34.4.4-B		34-9	Modification	Lab testing requirements updated.	
88	34.4.4-D-1, 2		34-9, 10	Modification	Text modified to reflect current practice.	
89	34.4.4-D-3		34-10	Addition	Section reference updated.	
90				Addition	New subsection # 34.4.4.D-4 added for Micropile foundations	

Sr. #	Manual Section	AASHTO Reference	Manual Page #	Type	Change	Reason
91	Section 35		35-1,2	Modifications	Existing text modified and new subsections added to reflect current practice related to Structure Numbers and Names.	To update the Design Manual Section in accordance with CAN-83.
92	36.1-1		36-1	Modifications	Year and edition of AASHTO Standard Specifications for Structural Supports for Highway Signs, etc updated.	Referenced edition supersedes previous editions.
93	36.1-2a			Modification	Language change based on latest edition- to be based on manufacturer's specs	Luminaire specs to conform to manufacturer's specifications no limits specified in the manual.
94	36.1-2b			Modification	Minor language change- "other type of luminaires" changed to "hardware"	Change based on new edition
95	36.1-2f			New section	Section added to accommodate changes in technology	Policy
96	36.4		36-1	Addition	New language added and existing language changes for foundations in unstable soils;	Clarification
97	38.3.4-C-6		38-3	Modification	References updated to latest edition	Same as serial #12
98	39.5.2,3 & 6		39-8,9	Modification	Text modified and references updated to reflect current practice.	
99	41.2.1		41-1	Addition	Language change regarding parking under bridges.	
100	41.2.12		41-2	Addition / Modification	New item for fire hazard measures, AASHTO "Bridge Security Guidelines" referenced.	Safety measures
101	41.3		41-2	Addition	New sub-section added for critical bridges.	New information
102	43.1		43-1	Modification	Updated references to manuals	Updated for latest standards
103	43.2.1			Modification	Rating Live loads to be done in conformance with the Manual of Bridge Evaluation (MBE)	Updated for latest standards
104	43.2.2 to 8		43-1,2	Modification	Section number references to MBE updated	Corrections
105			43-4	Modification	Revisions to Appendix C6B - text change	Updated per MBE
106	43.3.A, B, C-1, 2		43-4, 5, 6	Modification	Language and text changes	Updated per current practice
107	43.3.C-3		43-6	Deletion	Existing subsection deleted	Load Ratings included in the Load Rating Summary Sheet (LRSS); so deleted in this subsection as it was deemed not necessary.
108	43.3.C-2-a, b, c		43-6	Modification	Subsections reconfigured to 43.3.C.3 titled "Component Rating Summary".	Restructuring based on above deletions and to reflect current practice.
109	43.3.C-4, 7, 8, 9, 10, 11, 13		43-7, 8, 9	Modification	Text changes throughout subsections.	To reflect current practice and updated standards.

Sr. #	Manual Section	AASHTO Reference	Manual Page #	Type	Change	Reason
110	Sample Format "A"		43-10 to 18	Modification	Format and text changes throughout including Sample SI&A sheets.	To reflect current practice and updated standards.
111	43.4		43-18 to 22	Modification	Re-Evaluation Survey Report Format-B- updates and changes throughout.	Updated per current practice and standards.
112	43.5		43-23 to 26	Modification	Re-Evaluation Survey Report Format-C- updates and changes throughout.	
113	43.6		43-27 to 30	Modification	Interim Survey Report Format -D - updates and changes throughout.	
114	43.7		43-31	Modification	Guidelines for CADD Bridge Evaluation Survey Field Inspection Drawings - text modified and subsections reconfigured.	Updated per current practice and standards.
115	43.7.B		New	Addition	New drawings (sample sheets) added for LARS Member Identification Sketch(MIS), Soundings and Deck Cross Section	Updated for new requirements per latest standards and current practice.
116			43-39	Modification	Providing an index for the Lowest and highest vertical under clearance for a lane; included under new section 43.7.B "Required Drawings".	Clarification
117			43-39	Deletion	Existing Underclearance diagram deleted; replaced with drawing above.	Updated to reflect current practice.
118	43.7.C		43-32	Modification	Subsection for Standard Defect Codes renumbered as 43.3.D; current subsection number renamed "Other Drawings"	Restructuring based on above deletions and to update per current practice.
119	44.1.A, B, C -1, 2		44-1	Modification	Language and text changes	Updated to reflect current practice.
120	44.1.C-3		44-3	Deletion	Existing subsection deleted	Load Ratings included in the Load Rating Summary Sheet (LRSS); so deleted in this subsection as it was deemed not necessary.
121	44.1.C-2-a, b, c		44-2	Modification	Subsections reconfigured to 44.3.C.3 titled "Component Rating Summary".	Restructuring based on above deletions and to reflect current practice.
122	44.1.C-4, 7, 8, 9, 10, 11, 13		44-3,4	Modification	Text changes throughout subsections.	To reflect current practice and updated standards.

Sr. #	Manual Section	AASHTO Reference	Manual Page #	Type	Change	Reason
123	Sample Format AR for Railroad Carrying Bridges		44-5 to 9	Modification	Format and text changes throughout including Sample SI&A sheets.	To reflect current practice and updated standards.
124	44.2		44-14 to 18	Modification	Re-Evaluation Survey Report Format-BR for Railroad Carrying Bridges- updates and changes throughout.	Updated per current practice and standards.
125	44.3		44-19 to 22	Modification	Re-Evaluation Survey Report Format-CR - (For Railroad Carrying Bridges) - updates and changes throughout.	
126	44.4		44-23 to 26	Modification	Interim Survey Report Format-DR - (For Railroad Carrying Bridges) - updates and changes throughout.	
127	Guide plate 3.9-2			Modifications	Dimensions changed	Updated per AASHTO standards

Implementation Code R (ROUTINE)

Instructions to Designers

Changes must be implemented in all applicable Department projects scheduled for Final Design Submission at least one month after the date of the BDC announcement. This will allow designers to make necessary plan, specifications, and estimate/proposal changes without requiring the need for an addenda or postponement of advertisement or receipt of bids.

Recommended By:


 Paul F. Schneider
 Acting Director
 Capital Program Support

Approved By:


 Eli D. Lambert III, P.E.
 Assistant Commissioner
 Capital Program Management

Attachment: Design Manual for Bridges and Structures Sixth Edition, 2016