

DESIGN BULLETIN #63/2009 (Revised March 2016)

Revisions/Updates to the Roadside Design Guide, November 2007

Summary

This Bulletin is being issued as a revision and/or update to Alberta Transportation's Roadside Design Guide, November 2007.

A Revision/Update summary table can be found in the Roadside Design Guide web site. The updated pages indicated in the summary table can be found in the appropriate section(s) of the Guide.

<http://www.transportation.alberta.ca/3451.htm>

Implementation

The revisions/updates to the guideline as indicated in this Design Bulletin are to be implemented as per the usual practice.

Effective Date: July 15, 2009

Revision Date 1: April 5, 2012

Revision Date 2: October 23, 2012

Revision Date 3: July 16, 2013

Revision Date 4: March 11, 2016

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Updates/Revisions to the Alberta Transportation Roadside Design Guide, November 2007

The following updates/revisions apply to the Alberta Transportation Roadside Design Guide, November 2007. Please update your Guide to ensure that it is current.

Section	Page	Reference	Description	Comments	Date
MARCH 2016					
B1	H-APP-B1	TEB 3.01, TEB 3.09, RDG-B1.1, RDG-B1.4, RDG-B1.5, RDG-B1.6, RDG-B1.7, RDG-B1.8, RDG-B1.9	TEB 3.01 redrawn to include Steel Post detail and update to reflector sheeting size TEB 3.09 revised to show galvanized nail to prevent block rotation, correction to rail splice dimensions RDG-B1.1 and RDG-B1.9 revised to include notes on steel post usage RDG-B1.4, RDG-B1.5, RDG-B1.6, RDG-B1.7 added note to refer to manufacturer for latest drawings and specs for proprietary products RDG-B1.8 superseded by RDG-B5.10		Mar 11/16
B5	H-APP-B5	RDG-B5.5, RDGB-5.10	RDG-B5.5 and RDG-B5.10 revised to include notes on steel post usage. Post immediately after the transition in W-Beam section removed for consistency with crash tested system. RDG-B5.10 notes on specific manufactured reflector sheeting removed.		Mar 11/16

Section	Page	Reference	Description	Comments	Date
B6	H-APP-B6	RDG-B6.12, RDG-B6.15	RDG-B6.12 and RDG-B6.15 revised to include notes on steel post usage. RDG-B6.12 post immediately before the transition in W-Beam section removed for consistency with crash tested system.		Mar 11/16
B7	H-APP-B7	RDG-B7.1	RDG-B7.1 revised to include notes on steel post usage		Mar 11/16
JULY 2013					
H1.3	H1-6	---	The Alberta Weak Post W-Beam are not allowed to be used in new installations and major replacements	Refer to Design Bulletin 64/2012	July 2013
H2.2.1	H2-1	---	The Alberta Weak Post W-Beam are not allowed to be used in new installations and major replacements	Refer to Design Bulletin 64/2012	July 2013
H2.2.4	H2-2	---	Removed text regarding Alberta Weak Post W-Beam System	Refer to Design Bulletin 64/2012	July 2013
H3.2.2.1	H3-7	---	Modified text regarding the undertaking of a special economic analysis	Refer to Design Bulletin 64/2012	July 2013
H3.2.3.1	H3-12 to H3-14, H3-16, and H3-17	Includes: TABLES H3.4 and H3.5	Removed Alberta Weak Post W-Beam from list and also added notes on the Turn Down End Treatments as non-crashworthy. TABLE H3.4 - Longitudinal Traffic Barrier System Selection TABLE H3.5 – Barrier Design	Refer to Design Bulletin 64/2012	July 2013

Section	Page	Reference	Description	Comments	Date
			Deflection		
H3.2.3.2	H3-18	TABLE H3.7, H3.8, and H3.9	TABLE H3.7 – End Treatments for TL-3 Alberta Weak Post W-Beam TABLE H3.8 – End Treatments for TL-3 Weak Post Box Beam TABLE H3.9 – End Treatments for TL-3 Strong Post W-Beam Added note on Turn Down end treatments being non crash-worthy.	Refer to Design Bulletin 64/2012	July 2013
H3.3.1	H3-53	TABLE H3.15	TABLE H3.15 – Alberta-Specific RSAP Inputs	Refer to Design Bulletin 64/2012	July 2013
H3.3.3	H3-69	EXAMPLE 3	Added note on Turn Down end treatments being non crash-worthy.	Refer to Design Bulletin 64/2012	July 2013
H4.3	H4-5	TABLE H4.1	TABLE H4.1 – Appropriate Curb and Barrier System Combinations (Barrier Systems Behind Curb)	Refer to Design Bulletin 64/2012	July 2013
H4.7	H4-9	---	The Alberta Weak Post W-Beam are not allowed to be used in new installations and major replacements	Refer to Design Bulletin 64/2012	July 2013
H5.2	H5-2, H5-3	TABLE H5.1	The Alberta Weak Post W-Beam are not allowed to be used in new installations and major replacements TABLE H5.1 – Roadside Barrier Systems Characteristics Summary	Refer to Design Bulletin 64/2012	July 2013
H5.3	H5-6	---	The Alberta Weak Post W-Beam are not allowed to be used in new	Refer to Design Bulletin 64/2012	July 2013

Section	Page	Reference	Description	Comments	Date
			installations and major replacements		
H5.4.3	H5-11	FIGURE H5.2	FIG H5.2 – Installation of Barrier on First Stage Paving Projects	Refer to Design Bulletin 64/2012	July 2013
H5.5.1	H5-18	---	The Alberta Weak Post W-Beam and Turn Down End Treatments are not allowed to be used in new installations and major replacements	Refer to Design Bulletin 64/2012	July 2013
H5.5.3	H5-31	---	The Turn Down End Treatments are not allowed to be used in new installations and major replacements	Refer to Design Bulletin 64/2012	July 2013
H5.5.4	H5-34	---	The Turn Down End Treatments are not allowed to be used in new installations and major replacements	Refer to Design Bulletin 64/2012	July 2013
H6.1	H6-2	FIGURE H6.1, H6.2, and H6.3	FIG H6.1 – Preferred Grading Requirements for Gating End Treatments FIG H6.2 – Minimum Grading Requirements for Gating End Treatments FIG H6.3 – Preferred Grading Requirements for Flared End Treatments	Updated to match standard drawings. Refer to Design Bulletin 64/2012	July 2013
H6.1	H6-4	TABLE H6.1	TABLE H6.1 – Summary of Barrier End Treatments The Turn Down End Treatments are not allowed to be used in new installations and major replacements. Sand Barrel Systems are not allowed	Refer to Design Bulletin 64/2012	July 2013

Section	Page	Reference	Description	Comments	Date
			to be used in new permanent installations.		
H6.8	H6-14	---	Sand Barrel Systems not to be used at new permanent installations unless specifically approved by the Department.	Refer to Design Bulletin 64/2012	July 2013
H6.8.1	H6-15	---	Sand Barrel Systems not to be used at new permanent installations unless specifically approved by the Department.	Refer to Design Bulletin 64/2012	July 2013
H7.3	H7-3, H7-4	TABLE H7.3	The Alberta Weak Post W-Beam are not allowed to be used in new installations and major replacements TABLE H7.3 – Typical AT Bridge Approach Rail General Layout Drawings	Refer to Design Bulletin 64/2012	July 2013
H10.2	H10-1	---	Sand Barrel Systems can only be used as temporary end treatments	Refer to Design Bulletin 64/2012	July 2013
Appendix B1	APPENDIX B1-i		Table of Contents	Highlights on updated drawings	July 2013
Appendix B1	H-APP-B1-10	TEB 3.15a Rev 2	Typical W-Beam Strong Post or Modified Thrie Beam Guardrail Placement Roadside Hazards (Two and Four Lane Highways)	Refer to Design Bulletin 64/2012. End treatment notes and sections.	July 2013
Appendix B1	H-APP-B1-11	TEB 3.15b (Obsolete)	Typical W-Beam Weak Post Guardrail Placement Roadside Hazards	Refer to Design Bulletin 64/2012. Obsolete.	July 2013
Appendix	H-APP-B1-12	TEB 3.16a	Typical Strong Post W-Beam or	Refer to Design Bulletin 64/2012. End	July 2013

Section	Page	Reference	Description	Comments	Date
B1		Rev 3	Modified Thrie Beam Guardrail Placement at Bridge Approaches (Two-Lane Highway)	treatment notes, sections and clear zone.	
Appendix B1	H-APP-B1-13	TEB 3.16b (Obsolete)	Typical W-Beam Weak Post Guardrail Placement at Bridge Approaches (Two-Lane Highway)	Refer to Design Bulletin 64/2012. Obsolete.	July 2013
Appendix B1	H-APP-B1-15	TEB 3.17a Rev 2	Typical Strong Post W-Beam or Modified Thrie Beam Guardrail Placement at Bridge Approaches (Four-Lane Divided Highway)	Refer to Design Bulletin 64/2012. End treatment notes and sections.	July 2013
Appendix B1	H-APP-B1-18	TEB 3.53 (Obsolete)	W-Beam Guardrail Turn Down End Hardware	Refer to Design Bulletin 64/2012. Obsolete.	July 2013
Appendix B1	H-APP-B1-19	TEB 3.56a Rev 2	Weak Post W-Beam Installation on First Stage Paving Projects	Refer to Design Bulletin 64/2012. Notes and plan view revised.	July 2013
Appendix B1	H-APP-B1-23	RDG-B1.4 Rev 1	W-Beam Strong Post TL-3 ET-PLUS Extruder Energy Absorbing Terminal	Refer to Design Bulletin 64/2012. Revised flare note.	July 2013
Appendix B7	APPENDIX B7-i		Table of Contents	Highlights on updated drawings	July 2013
Appendix B7	H-APP-B7-1	TEB 3.19 Rev 1	Sand Barrel Cushion System	Refer to Design Bulletin 64/2012. Approval note added.	July 2013
October 23, 2012					
Appendix B6	H-APP-B6-5	RDG-B6.6 Rev 1	TL-4 Single Slope Concrete Median Barrier Transition Around New Bridge Pier – Sheet 2 of 3	Bar list and note.	Oct. 2012

Section	Page	Reference	Description	Comments	Date
April 5, 2012					
Chapter H	H-i to H-x	---	Table of Contents	Various sections in the RDG have been updated based on Design Bulletin 75/2012 - High Tension Cable Barrier (HTCB) System – Median and Roadside Application.	Feb. 2012
H-1.3	H1-4	AASHTO-MASH 2009	The American Association of State Highway and Transportation Officials, <i>Manual for Assessing Safety Hardware 2009</i> (AASHTO-MASH 2009)	Applies to all new barriers. Design Bulletin 75/2012.	Feb. 2012
H-1.4 to H1.6	H1-5 to H1-13	---	Pages renumbered.	No changes to sections.	Feb. 2012
H1.7	H1-12	References	AASHTO-MASH 2009	Design Bulletin 75/2012.	Feb. 2012
H3.2.1.1	H3-5	TABLE H3.2	TABLE H3.2 - Curve Modification Factors	Include new column (Design Speed <60km/h) and row (Radius <100m) to TABLE H3.2	Feb. 2012
H3.2.3.1	H3-12 to H3-14, H3-16, H3-17	Includes: TABLES H3.4 and H3.5	TABLE H3.4 - Longitudinal Traffic Barrier System Selection TABLE H3.5 – Barrier Design Deflection	Design Bulletin 75/2012.	Feb. 2012
H4.3	H4-5	TABLE H4.1	TABLE H4.1 – Appropriate Curb and Barrier System Combinations (footnote #5)	Added “also” to footnote to clarify the acceptability of installing curbs behind barriers at speeds greater than 85 km/h for semi-mountable and barrier curbs.	Feb. 2012
H4.3	H4-6	---	Critical dimensions for semi-mountable curbs revised	Semi-mountable curb height (125 mm typical) Semi-mountable curb slope (1:1.6 typical)	Feb. 2012

Section	Page	Reference	Description	Comments	Date
H5.2	H5-2 to H5-3	Includes: TABLE H5.1	TABLE H5.1 – Roadside Barrier Systems Characteristic Summary	Design Bulletin 75/2012.	Feb. 2012
H5.3	H5-4 to H5-5	Includes: TABLE H5.2	TABLE H5.2 – Median Barrier Systems Characteristic Summary	Design Bulletin 75/2012.	Feb. 2012
H5.4	H5-7	TABLE H5.3	TABLE H5.3 – Minimum Distance (L) for Barrier Placement	Design Bulletin 75/2012.	Feb. 2012
H5.52	H5-21 to H5-25	HTCB System	High Tension Cable Barrier System guidelines.	Design Bulletin 75/2012.	Feb. 2012
H5.52	H5-26	HTCB System	High Tension Cable Barrier System guidelines.	Design Bulletin 75/2012 (Revised April 2012)	Apr. 2012
H5.52	H5-27 to H5-28	HTCB System	High Tensions Cable Barrier System guidelines.	Design Bulletin 75/2012.	Feb. 2012
H5.5.3 to H5.5.7	H5-29 to H5-38	---	Pages renumbered only.	No changes to sections.	Feb. 2012
H5.6	H5-39	References	AASHTO-MASH 2009	Design Bulletin 75/2012.	Feb. 2012
Appendix B1	APPENDIX B1-ii	---	Table of Contents	RDG-B1.12 added.	Feb. 2012
Appendix B1	H-APP-B1-33	RDG-B1.12 (New Dwg.)	Typical Material Widening for Barrier Installations	New drawing added.	Apr. 2012
Appendix B2	H-APP-B2-1		High Tension Cable Barrier System	- Product Development and Testing - Update of HTCB manufacturer's as of January 24, 2012.	Feb. 2012
Appendix	APPEDIX B2-I		Table of Contents	New pages	Feb. 2012

Section	Page	Reference	Description	Comments	Date
B2	and B2-ii				
Appendix B2	H-APP-B2-3	RDG-B2.1 (New Dwg.)	Typical HTCB Median Installation, Slopes 6H:1V or Flatter	Design Bulletin 75/2012. New drawing added.	Feb. 2012
Appendix B2	H-APP-B2-4	RDG-B2.2 (New Dwg.)	Typical HTCB Median Installation, 6H:1V > Slopes \geq 4H:1V	Design Bulletin 75/2012. New drawing added.	Feb. 2012
Appendix B2	H-APP-B2-5	RDG-B2.3 (New Dwg.)	Typical HTCB Median Installation, Slopes Steeper Than 4H:1V	Design Bulletin 75/2012. New drawing added.	Feb. 2012
Appendix B2	H-APP-B2-6	RDG-B2.4 (New Dwg.)	Typical HTCB Roadside Installation	Design Bulletin 75/2012. New drawing added. (Superseded April 2012)	Feb. 2012
Appendix B2	H-APP-B2-6	RDG-B-2.4 (New Dwg.)	Typical HTCB Roadside Installation	Design Bulletin 75/2012. New drawing added.	Apr. 2012
Appendix B3	H-APP-B3-12	TEB 3.35	Standard Box Beam Guardrail Splice Plate Detail	Rev. 1 – Revised bolt placement	Feb. 2012
Appendix B6	H-APP-B6-5	RDG-B6.1 Rev 1	TL-4 Standard Single Slope Concrete Barrier Details	Note # 10.	Feb. 2012
Appendix B6	H-APP-B6-18	RDG-B6.14 Rev 1	TL-4 Single Slope Concrete Barrier Transition to PL-2 Standard Bridge Concrete Barrier	General revisions	Apr. 2010
Appendix E	Appendix E and Appendix E-i		Cover Page and Table of Contents	Design Bulletin 75/2012. New appendix added.	Feb. 2012
Appendix	Appendix E1,		Divider Page and Table of Contents	Design Bulletin 75/2012. New appendix	Feb. 2012

Section	Page	Reference	Description	Comments	Date
E1	Appendix E1-i			added.	
Appendix E1	H-APP-E1-1 to H-APP-E1-2		HTCB Products List and Acceptance Testing details	Design Bulletin 75/2012. New appendix added.	Feb. 2012
Appendix E2	Appendix E2, Appendix E2-i		Divider Page and Table of Contents	Design Bulletin 75/2012. New appendix added.	Feb. 2012
Appendix E2	H-APP-E2-1 to H-APP-E2-5		General HTCB Design Process	Design Bulletin 75/2012. New appendix added.	Feb. 2012
JULY 15, 2009					
H-3.3.1	H3-53	TABLE H3.15	Alberta –Specific RSAP Inputs	<ul style="list-style-type: none"> - “Impact Speed” revised to read “Design Speed”. - SI values for Design Speed 110 km/h. - Reference to Note 2 and 3 added. 	July 2009
H4.3	H4-4	--	Curbs	<ul style="list-style-type: none"> - “use a mountable curb” revised to read “a mountable curb is desirable”. 	July 2009
H4.3	H4-5	TABLE H4.1	Appropriate Curb and Barrier System Combinations (Barrier System Behind Curb)	<ul style="list-style-type: none"> - “Permitted” and “Non Permitted” curb and barrier system combination revised in accordance with NCHRP Report 537. - Under Barrier Systems heading. “Concrete Barrier” revised to “Rigid Barrier System” - Dimension X. Refined from face of the curb to face of the guardrail (barrier). - “Note 2. EP = Edge of Driving Lane” deleted. Notes renumbered. - Notes 4 and 5 added. 	July 2009
H5.4.1	H5-8 and H5-9	--	An exception to the 9 m minimum clear roadway would be on new bridge structures for SLC girders on specific	Refer to Bridge Best Design Practices, BDG10 Minimum Bridge Width for SLC Girder Structures	July 2009

Section	Page	Reference	Description	Comments	Date
			low volume roadways.	http://www.transportation.alberta.ca/2649.htm	
H5.4.3	H5-11	FIGURE H5.2	Installation of Barrier on First Stage Paving Projects (that are proposed to be final paved in less than 10 yrs)	Figure H5.2 updated to coincide with revisions to TEB 3.56a, Rev 1 (below).	July 2009
H5.4.6	H5-17	--	Stopping Sight Distance on Directional Interchange Ramps	- Consideration for two lane ramps and durable pavement markings included for provisions for stopping sight distance on directional ramps.	July 2009
H8.3	H8-5	FIGURE H8.4	Breakaway Wood Post	- The breakaway feature for wood posts with dimensions greater than 100 mm x 100 mm is required for posts located within the Clear Zone and desirable for posts located outside the Clear Zone within the roadway right of way. - Reference to new drawing TEB 1.81.	July 2009
Appendix B1	APPENDIX B1-ii	--	Table of Contents	New drawings added.	July 2009
Appendix B1	H-APP-B1-1	TEB 3.01 Rev 3	W Beam Guardrail Hardware Wood Spacer Block and Post Strong Post System	Reflector Details. Refer to Design Bulletin 62/2008: Updated Standards for Guardrail Reflectors and Reflective Strips on Guide Posts (Delineators)	July 2009
Appendix B1	H-APP-B1-7	TEB 3.09 Rev 6	Strong Post W-Beam Blocked-Out Guardrail	Refer to Design Bulletin 62/2008: Updated Standards for Guardrail Reflectors and Reflective Strips on Guide Posts (Delineators)	July 2009
Appendix B1	H-APP-B1-8	TEB 3.10 Rev 2	W-Beam Guardrail Weak-Post End Treatment Turn Down (1.9m Spacing – With Blocks)	Refer to Design Bulletin 62/2008: Updated Standards for Guardrail Reflectors and Reflective Strips on Guide Posts	July 2009

Section	Page	Reference	Description	Comments	Date
				(Delineators)	
Appendix B1	H-APP-B1-9	TEB 3.12 Rev 6	W-Beam Guardrail Weak-Post End Treatment Turn Down (3.8m Spacing – No Block)	Refer to Design Bulletin 62/2008: Updated Standards for Guardrail Reflectors and Reflective Strips on Guide Posts (Delineators)	July 2009
Appendix B1	H-APP-B1-19	TEB 3.56a Rev 1	Weak Post W-Beam Installation on First Stage Paving Projects	Notes 3 and 9 (added) and to Sections A-A, B-B and C-C.	July 2009
Appendix B1	H-APP-B1-27	RDG-B1.8 Rev 1	W-Beam Strong Post to Modified Thrie Beam Guardrail Transition at Roadside Structure.	Refer to Design Bulletin 62/2008: Updated Standards for Guardrail Reflectors and Reflective Strips on Guide Posts (Delineators).	July 2009
Appendix B1	H-APP-B1-28	RDG-B1.9 Rev 1	Transition of Weak Post W-Beam Guardrail to Strong Post W-Beam Guardrail Transition at Roadside Structure.	Refer to Design Bulletin 62/2008: Updated Standards for Guardrail Reflectors and Reflective Strips on Guide Posts (Delineators).	July 2009
Appendix B1	H-APP-B1-29	RDG-B1.10 (New Dwg.)	Typical Strong Post W-Beam Blocked-Out (2 Spacer Blocks) with Mountable and Semi-Mountable Curbs	- Where X=0 and where permitted (Refer to RDG Table H4.1). To avoid installation of the barrier post into the curb/gutter section an additional spacer block has been added to Strong Post W-Beam system.	July 2009
Appendix B1	H-APP-B1-30	RDG-B1.11 (New Dwg.)	Typical Strong Post W-Beam Guardrail TL-3 End Treatment with Curb and Gutter Transition.	Recommended treatment. Proposed curb and gutter combination with TL-3 end treatment has not been crash tested under NCHRP 350 testing protocols.	July 2009
Appendix B5	H-APP-B5-17	TEB 3.70 Rev 4	Modified Thrie Beam Guardrail Rev. 4: Bolt, Reflector and Notes	- Hex bolt required for connection between spacer and post. - Reflector. Refer to Design Bulletin 62/2008.	July 2009

Section	Page	Reference	Description	Comments	Date
				- Notes: additional notes added	
Appendix B6	H-APP-B6-19	RDG-B6.15 Rev 1	Transition of W-Beam Guardrail to TL-4 Single Slope Concrete Roadside Barrier	Refer to Design Bulletin 62/2008: Updated Standards for Guardrail Reflectors and Reflective Strips on Guide Posts (Delineators).	July 2009
Appendix B7	APPENDIX B7-i	--	Table of Contents	New drawing added.	July 2009
Appendix B7	H-APP-B7-4	TEB 1.81 (New Dwg.)	Typical Breakaway Wood Post	New reference drawing added to RDG. Drawing was previously issued by TSB Traffic Operations Branch, June 2008. Refer also to revised Page HB-5 above.	13 June 2008