



Office of Engineering
Project Development Division
Bridge Design Section
PO Box 94245 | Baton Rouge, LA 70804-9245

John Bel Edwards, Governor
Shawn D. Wilson, Ph.D., Secretary

MEMORANDUM

TO: ALL BRIDGE DESIGNERS - IN-HOUSE AND CONSULTANTS

FROM: ZHENGZHENG “JENNY” FU, P.E.
BRIDGE DESIGN ENGINEER ADMINISTRATOR

SUBJECT: BRIDGE DESIGN TECHNICAL MEMORANDUM NO. 103 (BDTM.103) -
GUARD RAIL DESIGN DATA AND ITEM LENGTHS TABLES

DATE: May 24, 2021

Effective immediately, use the Guard Rail Design Data Table and Guard Rail Item Lengths Table as published by this BDTM on project plans that have not yet reached 100% Final Plans.

See Attachment A for the new tables and usage instructions. Standard DGN cells for the new tables have been created and will be available in CAD conform.

This technical memorandum is posted on the LA DOTD Website under [Inside La DOTD > Divisions - Engineering > Bridge Design > Technical Memoranda – BDTMs.](#)
Please contact Kelly Kemp (kelly.kemp@la.gov or 225-379-1809) if you have questions or comments.

ZZF/kmk/mb

Attachment

c: Christopher P. Knotts (Chief Engineer)
Edward Wedge (Deputy Engineer Administrator)
Chad Winchester (Chief, Project Development Division)
Vince Latino (Assistant Secretary of Operations)
David Miller (Chief Maintenance Administrator)
Nick Fagerburg (Bridge Maintenance Administrator)
Michael Vosburg (Chief Construction Division Engineer)
Brian Owens (Construction Engineer Administrator)
Joe Umeozulu (Acting Project Management Director)
Chris Nickel (Pavement and Geotechnical Engineer Administrator)
David Smith (Road Design Engineer Administrator)
Mark Chenevert (Contract Services Administrator)
Art Aguirre (FHWA)
District Administrators and ADAs of Engineering and Operations
District Bridge Engineers and Area Engineers

Attachment A – Guard Rail Design Data Table, Item Lengths Table and Usage Instructions

GUARD RAIL DESIGN DATA								
HIGHWAY CLASS		GUARD RAIL DESIGN SPEED (MPH)			2041 ADT		LC (FT)	
RURAL COLLECTOR		35			3,500		12	
GUARD RAIL LAYOUT REQUIREMENTS (FT)								
LOCATION	LR	LA	L2	CZc	A:B	X	Y	Z
(A)	95	12	8	18	0:1	62.50	8.00	17.00
(B)	95	12	8	18	0:1	62.50	20.00	29.00

Sample Completed Guard Rail Design Data Table

GUARD RAIL ITEM LENGTHS		
SECTION	PAY ITEM	LENGTH
a	704-07-00200	25'-0"
b	704-03-00200	12'-6"
c	704-10-00310	37'-6"

Sample Completed Guard Rail Item Lengths Table

GUARD RAIL DESIGN DATA								
HIGHWAY CLASS		GUARD RAIL DESIGN SPEED (MPH)			ADT		LC (FT)	
GUARD RAIL LAYOUT REQUIREMENTS (FT)								
LOCATION	LR	LA	L2	CZc	A:B	X	Y	Z
(A)					0:1			
(B)					0:1			

Microstation Guard Rail Design Data Table Cell

GUARD RAIL ITEM LENGTHS		
SECTION	PAY ITEM	LENGTH
-	-	-
-	-	-
-	-	-

Microstation Guard Rail Item Lengths Table Cell

Usage Instructions for Guard Rail Data Table:

1. Use table for all guard rail details. Add/delete lines to table as needed to provide layout information for each unique guard rail.
2. Highway Class
 - a. Match the roadway classification defined by the LADOTD Minimum Design Guidelines.
 - b. Use one of the following highway class definitions
 - i. Urban Freeway
 - ii. Urban Arterial
 - iii. Urban Collector
 - iv. Urban Local
 - v. Rural Freeway
 - vi. Rural Arterial
 - vii. Rural Collector
 - viii. Rural Local
 - ix. Ramp ## or Ramp Letter (Ex: Ramp 1 or Ramp A)
 - c. Format = Text
3. Guard Rail Design Speed
 - a. Enter design speed in mph.
 - b. Format = ##
4. Design Year ADT
 - a. Enter design year
 - b. Format = #####
5. ADT
 - a. Enter the ADT for the design year.
 - b. Use a comma for values greater than or equal to 1,000.
 - c. Format = ###,###
6. LC – Required Clear Zone
 - a. Enter required clear zone in feet.
 - b. Format = ##
7. Location
 - a. Identify unique guard rail designs using an alphabetic designation beginning with “A”.
 - b. Subsequent guard rails shall be designated with sequential alphabetic designations.
 - c. Identify guard rails on plan view with the same designation.
 - d. Format = Circled single upper case letter
8. LR – Runout Length
 - a. Enter runout length in feet.
 - b. Format = ###
9. LA – Distance from the edge of the travel lane to the lateral extent of the object; LA = LC for bridge applications
 - a. Enter value in feet.
 - b. Format = ##
10. L2 – Distance from edge of travel lane to tangent section of rail
 - a. Enter value in feet.
 - b. Format = ##

11. CZc – Clear zone on outside of curvature
 - a. Enter calculated value in feet. Round number to one decimal.
 - b. Only applies to curved guard rail designs. For straight guard rail designs, enter N/A.
 - c. Format = ##.#
12. A:B – Guard rail flare rate
 - a. Enter flare rate.
 - b. Tangent and curved guard rail shall be entered as 0:1.
 - c. Format = #:1
13. X – Calculated length of need
 - a. Enter calculated value in feet. Value should be a multiple of 6.25'. Round number to two decimals.
 - b. Format = ###.##
14. Y – Distance from edge of the travel lane to the beginning of the length of need
 - a. Enter calculated value in feet. Round number to two decimals.
 - b. Format = ##.##
15. Z – Distance from edge of the travel lane to the edge of the embankment
 - a. Enter calculated value in feet. Round number to two decimals.
 - b. Format = ##.##

Usage Instructions for Guard Rail Item Lengths Table:

1. Use table as needed if unable to fit guard rail pay item or segment length on the guard rail detail.
2. Section
 - a. Identify unique guard rail segments using a lower case alphabetic designation beginning with “a”.
 - b. Subsequent unique guard rail segments shall be designated with sequential alphabetic designations.
 - c. Identify guard rail segments on plan view with the same designation.
 - d. Format = Single lower case letter
3. Pay Item
 - a. Enter pay item of guard rail segment.
 - b. Format = ###-##-#####
4. Length
 - a. Enter guard rail segment length in feet and inches.
 - b. Format = ###'-##"