OREGON DEPARTMENT OF TRANSPORTATION TECHNICAL SERVICES Traffic-Roadway Section BULLETIN				
SUBJECT Transition to Use of 31-inch Midwest Guardrail System	FINAL NUMBER RD15-05(B)	EFFECTIVE DATE 10/01/2015	VALIDATION DATE	SUPERSEDES or RESCINDS NEW
	WEB LINK(S) http://www.oregon.gov/ODOT/HWY/TECHSERV/Pages/technicalguidance.aspx			
TOPIC/PROGRAM Guardrail: MGS-31 Highway Design Manual and Standard Drawings	APPROVED SIGNATURE Original signed by: Bob Pappe, PE, PLS State Traffic-Roadway Engineer			

PURPOSE

The purpose of this Technical Bulletin is to:

- Add the MGS-31 guardrail system standards (installed height is 31 inches) to ODOT's guardrail standards;
- Direct that all STIP projects, with PS&E dates of January 1, 2016 and later that install new guardrail use the MGS-31 guardrail standards for installations of guardrail;
- Allow Technical Centers to specify the new MGS-31guardrail on projects with PS&E dates earlier than January 1, 2016,
- Allow projects already under contract to execute change orders to change from ODOT current standard guardrail to the new MGS-31 guardrail;
- Provide information on subsequent guidance that will address 'adjusting' guardrail on STIP projects, as well as provide information on future maintenance communication to assist with decisions of when to use MGS-31 guardrail when repairs are made.

This bulletin begins the Department's transition from ODOT's current guardrail standard G4(1S) guardrail system to the generic Midwest Guardrail System (MGS-31), which is installed at a height of 31-inches to the top of rail.

DEFINITIONS

- NCHRP: National Cooperative Highway Research Program
- FHWA: Federal Highway Administration
- STIP: Statewide Transportation Improvement Program
- G4(1S): Strong post w-beam guardrail system, installed height 27 $^{5/8}$ inches – commonly referred to as 27" guardrail.
- MSG-31: Midwest Guardrail System, installed height 31 inches, commonly referred to as 31" guardrail.

- Guardrail Height Conversion: A section of guardrail used to adjust the height differences between 31" guardrail and 27" guardrail (see Std. Dwg. RD481). The term conversion is being used so as to not cause confusion with other 'transition' items.

BACKGROUND/REFERENCE

Recent research and guidance from FHWA on the 27-inch W-beam guardrail system used by Oregon and other DOTS's shows that the minimum acceptable height of guardrail meeting NCHRP Report 350 is 27 ¾ inches; there is no tolerance for less than the minimum 27 ¾ inch minimum. ODOT's current standard for guardrail height specifies a height of 27 5/8 inches. FHWA recommends a 31-inch height for all new installations of guardrail.

The MGS-31 guardrail uses the same rail, posts, and blocks as the Department's current standard guardrail. The only hardware difference is that the splice is mid-span instead of at the post like our 27" current guardrail standard. MGS-31 is installed at a height of 31 inches. ODOT now has standard drawings in place for using the MGS-31, including standard drawings for height conversions between the current standard guardrail system and the new MGS-31 system.

RESPONSIBILITIES

<u>Adding the MGS-31 guardrail standard:</u>

1. Traffic Roadway Section is responsible to complete and make available required bid items, specifications and standard drawings for the MGS-31 guardrail system, including Height Conversion sections used between the new MGS-31 and any remainder of the run of guardrail that will not be replaced with MGS-31, and to provide assistance and information to the regions as ODOT makes this transition.

2. The Traffic-Roadway Section is responsible to work with the State Construction and Materials Engineer to perform outreach to the construction industry, including subcontractors who specialize in supplying and installing guardrail, to ensure their advance knowledge of ODOT's transition to the MGS-31 guardrail.

<u>Use of the MGS-31 guardrail standard on STIP projects:</u>

1. Region Technical Center Managers are responsible to require the use of the MGS-31 guardrail system in all STIP project plans that include installing guardrail for projects that have a PS&E date of January 1, 2016 and later. Regions may specify the 31" guardrail sooner and may execute change orders to incorporate MGS-31 guardrail on existing contracts.

2. Unique situations may justify not using the MGS-31 guardrail systems on certain STIP projects, in which case the Technical Center Manager will follow the design exception process to assure that ODOT has documentation of the justification and decision.

3. Standard drawings for Height Conversions between 31” guardrail and 27” guardrail are complete. It is allowable to use Height Conversion sections when an entire run of existing guardrail is not required to be replaced. For decisions during project development, when the remaining run of guardrail is less than 250 feet in length, a height conversion shall not be used, instead the remaining run is be replaced with MGS-31 guardrail.

Subsequent decisions on ‘adjusting’ guardrail and on Maintenance guardrail repairs:

1. Traffic-Roadway Section staff will work with Construction Leadership Team and Technical Leadership Team to determine how STIP projects that require an ‘adjust guardrail’ bid item will determine when to adjust existing guardrail and when to replace the existing guardrail with MGS-31 guardrail, and the requirements of documenting the reasoning and decisions. A subsequent technical bulletin will be issued upon completion.

2. Maintenance Operations Branch intends to provide a decision making framework in an Operational Notice for maintenance forces to use in determining how damaged existing guardrail should be repaired in consideration of this Technical Bulletin. Traffic Roadway staff are working up a cost matrix to help support decision making.

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