

Transmittal No. 23-04  
November 3, 2023

## Standard Plans

Distribution: Electronic Distribution Recipients

**Subject: Standard Plan 5-297.682**

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The following standard plan is new:

5-297.682 Barrier Gap Rail (BGR) System for Single Slope Concrete Barrier

See attached Summary of Change documents for details.

### Instructions:

1. Record this transmittal letter number, date and subject on the transmittal record sheet located in the front of the manual. The last transmittal letter was 23-03, dated August 31, 2023.
2. Remove from the manual:
  - Standard Plan Index
3. Insert into the manual:
  - Standard Plan Index (10-11-2023)
  - Standard Plan 5-297.682 (10-11-2023)
4. The *Standard Plans Manual* and associated transmittal letters are available online in PDF format at <https://standardplans.dot.state.mn.us/StdPlan.aspx>
5. Direct any technical questions regarding this transmittal to Khamsai Yang, State Design Standards Engineer, at (612) 322-5601 or [DesignStandards.DOT@state.mn.us](mailto:DesignStandards.DOT@state.mn.us)



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## Summary of Changes

### Standard Plan 5-297.682

### Barrier Gap Rail (BGR) System for Single Slope Concrete Barrier

#### General

1. This new standard plan depicts the construction details for the single slope BGR system. This system
  - a. is a TL-3 system designed and developed for MnDOT by the Texas A&M Transportation Institute Proving Ground (TTI) and crash-tested under MASH criteria (Test Report Number 610461-01-3&4),
  - b. may be used when a gap in the barrier is required,
  - c. can accommodate gaps in the barrier from 24" to 96" in length (96" is typical), and
  - d. may only be used with Type 36 A single slope barrier which must extend at least 30' in both directions from the gap before ending or transitioning to other shapes or heights.
2. The proposed pay item is 2533.603 BARRIER GAP RAIL SYSTEM by the linear foot.
3. A special provision boiler plate is available. Contact the Design Standards Unit if the special provision is needed prior to the SP2020 update in December 2023.

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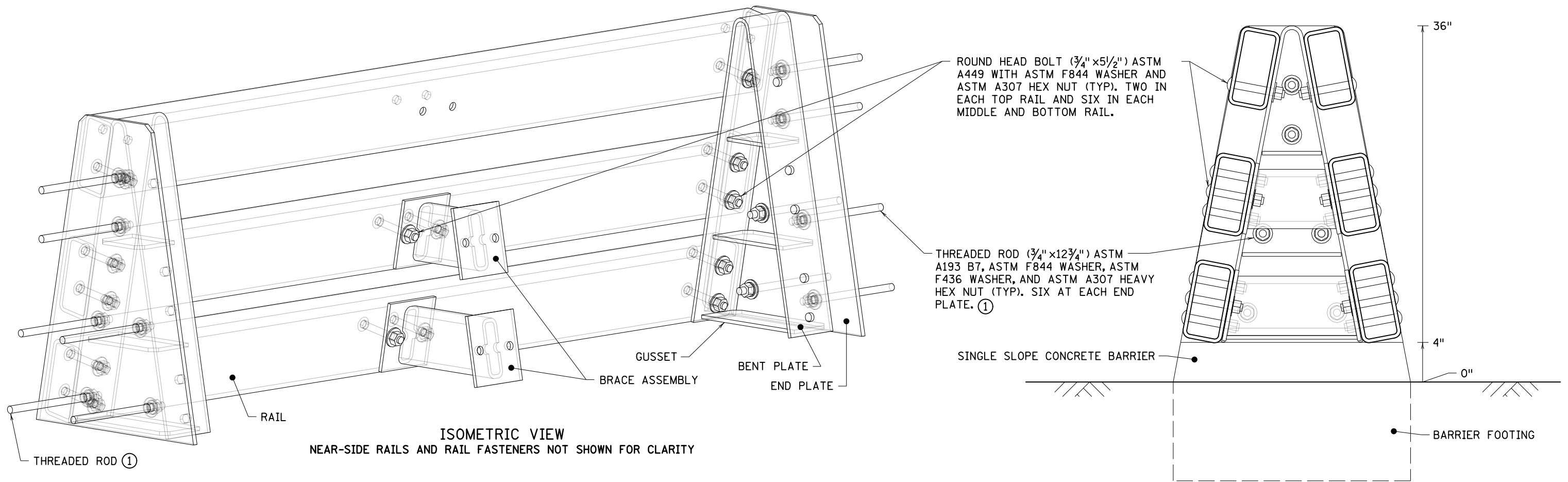


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5-297.748 (1 of 2)	Monotube Overhead Sign Structures - Cantilever - Post and Baseplate Details	01-15-2021	
5-297.748 (2 of 2)	Monotube Overhead Sign Structures - Cantilever - Beam Details	01-15-2021	

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5-297.749 (1 of 2)	Monotube Overhead Sign Structures - Sign Panel and Exit Panel Geometry	01-15-2021	
5-297.749 (2 of 2)	Monotube Overhead Sign Structures - Sign Panel and Exit Panel Details	01-15-2021	
5-297.750	I-Beam and Panel Mounting Post Modification Details	08-09-2023	
5-297.752	Type F Median Barrier Foundation - Spread Footing	03-11-2022	
5-297.753	Type F Median Barrier Foundation - Drilled Shaft Footing	03-11-2022	
5-297.754	Single Slope Median Barrier Foundation - Spread Footing	03-11-2022	
5-297.755	Single Slope Median Barrier Foundation - Drilled Shaft Footing	03-11-2022	
5-297.760 (1 of 3)	Standard Overhead Sign Structures - Design D - Implementation Instructions and Notes	05-01-2019	05-28-2019
5-297.760 (2 of 3)	Standard Overhead Sign Structures - Design D - Cantilever Span Post and Truss Selection Table	05-01-2019	05-28-2019
5-297.760 (3 of 3)	Standard Overhead Sign Structures - Design D - Cantilever Span Post and Truss Selection Table	05-01-2019	05-28-2019
5-297.761	Standard Overhead Sign Structures - Design D - General Elevations, Sections, and Notes	11-29-2022	
5-297.762	Standard Overhead Sign Structures - Design D - Camber, Post Type, and Estimated Quantities	03-05-2020	
5-297.763 (1 of 2)	Standard Overhead Sign Structures - Design D - Foundation Details	03-05-2020	02-14-2022
5-297.763 (2 of 2)	Standard Overhead Sign Structures - Design D - Foundation Details	03-05-2020	02-14-2022
5-297.764	Standard Overhead Sign Structures - Design D - Base Plate, Hand-hole, Electrical, and Cover Plate Details	03-05-2020	
5-297.765	Standard Overhead Sign Structures - Design D - Truss-to-Post Connection Details	03-05-2020	
5-297.766	Standard Overhead Sign Structures - Design D - Sign Truss Details Type A	05-01-2019	05-28-2019
5-297.767	Standard Overhead Sign Structures - Design D - Sign Truss Details Type B	05-01-2019	05-28-2019
5-297.768	Standard Overhead Sign Structures - Design D - Sign Truss Details Type C	05-01-2019	05-28-2019
5-297.769 (1 of 3)	Standard Overhead Sign Structures - Design D - Walkway Details	03-05-2020	
5-297.769 (2 of 3)	Standard Overhead Sign Structures - Design D - Walkway Details: Railing	03-05-2020	
5-297.769 (3 of 3)	Standard Overhead Sign Structures - Design D - Walkway Details	05-01-2019	
5-297.770	Standard Overhead Sign Structures - Design D - Walkway and Railing Retrofit Details	05-01-2019	
5-297.772	Standard Overhead Sign Structures - Design D - DMS Mounting Details	03-23-2022	
5-297.773	Standard Overhead Sign Structures - Design D - Rock Socket Foundation Details	01-15-2021	
5-297.774	Standard Overhead Sign Structures - Design D - Variable Length Drilled Shaft Details	01-15-2021	
5-297.779	Overhead Sign Structures - Foundation Extension - Design D Extension Details - Type 1-4 Posts	01-15-2021	

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5-297.780 (1 of 2)	Overhead Sign Structures - Foundation Extension - Design D Extension Details - Type 5-6 Posts	01-15-2021	
5-297.780 (2 of 2)	Overhead Sign Structures - Foundation Extension - Design D Extension Details - Type 5-6 Posts	01-15-2021	
5-297.781	Overhead Sign Structures - Foundation Extension - Interim Design B Extension Details - Type 1-4 Posts	01-15-2021	
5-297.782 (1 of 2)	Overhead Sign Structures - Foundation Extension - Interim Design B Extension Details - Type 5-7 Posts	01-15-2021	
5-297.782 (2 of 2)	Overhead Sign Structures - Foundation Extension - Interim Design B Extension Details - Type 5-7 Posts	01-15-2021	
5-297.783	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 1-3 Posts	01-15-2021	
5-297.784 (1 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 4-5 Posts	01-15-2021	
5-297.784 (2 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 4-5 Posts	01-15-2021	
5-297.785 (1 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 6-7 Posts	01-15-2021	
5-297.785 (2 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 6-7 Posts	01-15-2021	
5-297.786 (1 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 8-9 Posts	01-15-2021	
5-297.786 (2 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 8-9 Posts	01-15-2021	
5-297.787 (1 of 3)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 10-13 Posts	01-15-2021	
5-297.787 (2 of 3)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 10-13 Posts	01-15-2021	
5-297.787 (3 of 3)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 10-13 Posts	01-15-2021	
5-297.788	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 14-15 Posts	01-15-2021	
5-297.789 (1 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 16-19 Posts	01-15-2021	
5-297.789 (2 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 16-19 Posts	01-15-2021	
	<b>Series 800: Temporary Traffic Control, Pavement Marking, Lighting, and Signals</b>		
5-297.801	Interim Pavement Markings and Signing	10-10-2019	
5-297.805 (1 of 5)	Temporary Overhead Sign Structures - General Elevation and Notes	03-06-2020	
5-297.805 (2 of 5)	Temporary Overhead Sign Structures - Foundation Details	03-06-2020	
5-297.805 (3 of 5)	Temporary Overhead Sign Structures - Post and Baseplate Details	03-06-2020	
5-297.805 (4 of 5)	Temporary Overhead Sign Structures - Beam Details	06-28-2021	
5-297.805 (5 of 5)	Temporary Overhead Sign Structures - Sign Panel and Panel Mounting Post Details	03-06-2020	
5-297.811 (1 of 2)	Alternate Pedestrian Route (APR) Layouts	03-18-2021	

<b>Plan Sheet Number</b>	<b>Subject</b>	<b>Approval Date</b>	<b>Revision Date</b>
5-297.811 (2 of 2)	Alternate Pedestrian Route (APR) Layouts	03-18-2021	
5-297.813 (1 of 2)	Temporary Pedestrian Access Route (TPAR) Devices - Channelizers, Sidewalk Barricades, and Portable Stands	03-18-2021	
5-297.813 (2 of 2)	Temporary Pedestrian Access Route (TPAR) Devices - Temporary Curb Ramps and Walkway Surfaces	03-18-2021	
5-297.840 (1 of 3)	T-100 Light Tower Pile Foundation Design	11-05-2019	
5-297.840 (2 of 3)	T-120 Light Tower Pile Foundation Design	11-05-2019	
5-297.840 (3 of 3)	T-140 Light Tower Pile Foundation Design	11-05-2019	
5-297.841 (1 of 3)	T-100 Light Tower Mat Foundation Design	11-05-2019	
5-297.841 (2 of 3)	T-120 Light Tower Mat Foundation Design	11-05-2019	
5-297.841 (3 of 3)	T-140 Light Tower Mat Foundation Design	11-05-2019	
5-297.869	350 ATCC and SSB Cabinet Equipment Pad - Cast in Place	02-22-2022	
5-297.870	352 ATCC and SSB Cabinet Equipment Pad - Cast in Place	02-22-2022	

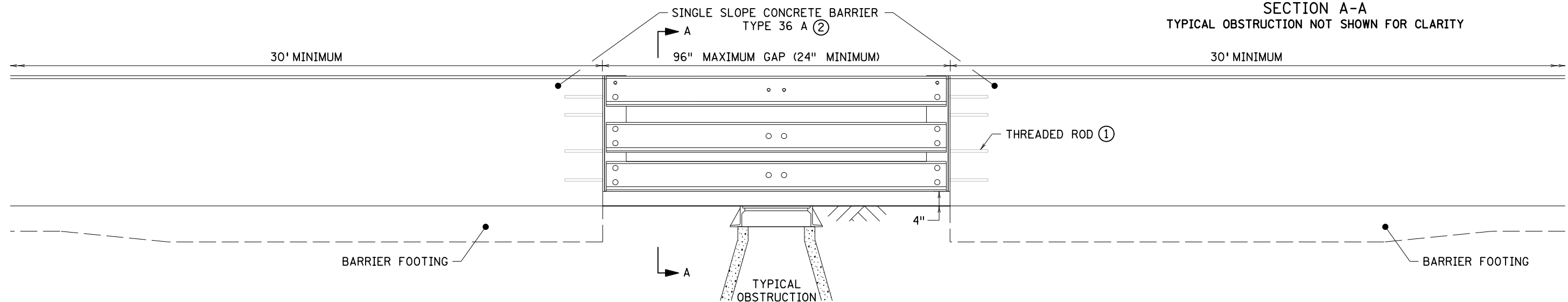


ISOMETRIC VIEW  
NEAR-SIDE RAILS AND RAIL FASTENERS NOT SHOWN FOR CLARITY

ROUND HEAD BOLT ( $\frac{3}{4}$ " x  $5\frac{1}{2}$ " ) ASTM A449 WITH ASTM F844 WASHER AND ASTM A307 HEX NUT (TYP). TWO IN EACH TOP RAIL AND SIX IN EACH MIDDLE AND BOTTOM RAIL.

THREADED ROD ( $\frac{3}{4}$ " x  $12\frac{3}{4}$ " ) ASTM A193 B7, ASTM F844 WASHER, ASTM F436 WASHER, AND ASTM A307 HEAVY HEX NUT (TYP). SIX AT EACH END PLATE. ①

SECTION A-A  
TYPICAL OBSTRUCTION NOT SHOWN FOR CLARITY



PROFILE VIEW

NOTES:

RAILS ARE IDENTICAL. NOT ALL HOLES IN THE TOP RAIL ARE USED. SEE STANDARD PLATE 8320 FOR COMPONENT DETAILS.

GALVANIZE THREADED RODS, BOLTS, WASHERS, AND NUTS IN ACCORDANCE WITH SPEC. 3392.

① PROVIDE AN ADHESIVE WITH A MINIMUM CHARACTERISTIC BOND STRENGTH OF 2.1 KSI IN UNCRACKED CONCRETE AND 1.25 KSI IN CRACKED CONCRETE. ENSURE THAT THE ADHESIVE IS CONSIDERED A CATEGORY 1 CONCRETE ANCHORAGE AS DEFINED IN ACI 318 UNDER WATER-SATURATED CONCRETE CONDITIONS. EMBED THE ANCHORAGE NO LESS THAN 11" REGARDLESS OF CHARACTERISTIC BOND STRENGTH. DRILL THROUGH REINFORCEMENT (IF ENCOUNTERED) TO ACHIEVE MINIMUM EMBEDMENT. ENSURE HEX NUT IS IN CONTACT WITH THE ADJACENT SURFACE AND TORQUE TO 60 FT-LBS UNLESS A HIGHER TORQUE IS RECOMMENDED BY THE MANUFACTURER. SEE SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

② BARRIER MUST BE TYPE 36 A. SEE STANDARD PLAN 5-297.681 FOR FOOTING DETAILS.

LEAD EXPERT OFFICE  
  
NANCY YOO  
DESIGN SUPPORT DIRECTOR  
OFFICE OF PROJECT MANAGEMENT  
& TECHNICAL SUPPORT



STANDARD PLAN 5-297.682 1 OF 1  
  
APPROVED: 10-11-2023  
REVISED:  
  
STATE PROJ. NO. (TH ) SHEET NO. OF SHEETS

BARRIER GAP RAIL (BGR) SYSTEM  
FOR SINGLE SLOPE CONCRETE BARRIER

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