Minnesota Department of Transportation
Engineering Services Division

Transmittal No. 21-06
May 21, 2021

Standard Plans

Distribution: **Electronic Distribution Recipients**

Subject: Standard Plans 601, 612, and 613

The following Standard Plans are modified:
5-297.601 – Guardrail / End Treatments Miscellaneous Details
5-297.612 – Proprietary End Terminal – Tangent for Type 31 Guardrail
5-297.613 – Proprietary End Terminal – Flared for Type 31 Guardrail

See attached Summary of Changes 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 21-05, dated May 5, 2021.

2. Remove from the manual:
   - Standard Plan Index
   - Standard Plan 5-297.601
   - Standard Plan 5-297.612
   - Standard Plan 5-297.613

3. Insert into the manual:
   - Standard Plan Index, sheets 1-8 of 8 (05-14-2021)
   - Standard Plan 5-297.601, sheets 1-4 of 4 (05-14-2021)
   - Standard Plan 5-297.612 (05-14-2021)
   - Standard Plan 5-297.613 (05-14-2021)

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. Any technical questions regarding this transmittal should be directed to Mike Elle, State Design Standards Engineer, at (651) 252-7644, or by email to DesignStandards.DOT@state.mn.us

Michael Elle

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Office of Project Management and Technical Support

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Summary of Changes
Standard Plan 5-297.601
Guardrail / End Treatments Miscellaneous Details
Transmittal Letter No. (21-06)

General

1. Details modified to clarify the minimum recovery area behind the end terminal.
2. Details added to clarify and define the grading at both tangent and flared end terminals.

Sheet 1 of 4

1. The detail "*End Terminal Grading Requirements/Hazard Free Area (Proprietary System Shown)"* changed to "*Tangent/Flared End Terminal Minimum Recovery Area*".
   Other modifications to this detail include:
   a. "*Traversable Area*" changed to "*Minimum Recovery Area*"
   b. *Design Length of Need (75' Minimum)* dimension changed to *75' Minimum.*
   c. Grading dimensions removed and now included in their own detail.
2. Two new details added for end terminal grading: *Tangent End Terminal Grading* and *Flared End Terminal Grading.*
3. The detail *"Barrier Location/Working Width"* is updated and moved to Sheet 3 of 4.
4. Notes 3 and 4 modified/clarified.

Sheet 2 of 4

1. Inplace Curb at End Terminal detail modified to clarify where milling is required.
2. *72" W6 x 9 Steel Post (Typ.)* label removed from *Type 31 W-Beam Guardrail Height Transition to 28"* detail.
3. Note 2 modified.

Sheet 3 of 4

1. The detail *"Barrier Location/Working Width"* is updated and moved from Sheet 1 to Sheet 3.
2. In the Guardrail Stiffening General (Half Post Spacing, and Quarter Post Spacing) details, the location of the Hazard has been adjusted.

Sheet 4 of 4

1. The detail "Guardrail Post in Soil" is new.
2. *W6 x 9 Steel Post* label removed from details.

Summary of Changes

Standard Plan 5-297.612
Proprietary End Terminal – Tangent for Type 31 Guardrail
Transmittal Letter No. (21-06)

SoftStop Detail

1. The 34’ 3-1/2” dimension is updated to 34’ 4-1/2” +/-
2. Steel posts 3-8 clarified from “72” W6 x 9 Steel Posts” to “72” Steel Posts”

MSKT Detail

1. The 34’ 3-1/2” dimension is updated to 34’ 4-1/2” +/- .
2. Steel posts 3-8 clarified from “72” W6 x 9 Steel Posts” to “72” Steel Posts”

Summary of Changes

Standard Plan 5-297.613
Proprietary End Terminal – Flared for Type 31 Guardrail
Transmittal Letter No. (21-06)

General:

1. Length of Need Point moved from Post 3 to Post 4. Gating Section updated to reflect this.
2. Starting location of system moved to the first standard line post.
3. Total length dimension updated from 36’ 4-1/2” to 39’ 7”.
4. Length from starting location of system to post 4 updated from 23’ 10-1/2” to 22’ 11”.

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SERIES	SUBJECT
5-297.000	BLANK
5-297.100	GRADING
5-297.200	SURFACING
5-297.300	VEGETATION
5-297.400	DRAINAGE, EROSION CONTROL, AND SEDIMENT CONTROL
5-297.500	BLANK
5-297.600	SAFETY FEATURES AND SPECIAL STRUCTURES
5-297.700	SIGNING
5-297.800	TEMPORARY TRAFFIC CONTROL, PAVEMENT MARKING, LIGHTING, AND SIGNALS

PLAN NO.	SUBJECT	APPROVAL DATE	REVISION DATE
	5-297.000 BLANK		
	5-297.100 GRADING		
5-297.105	Escape Lanes at Major Ramp Exits	05-18-01	
5-297.106	Standard Acceleration and Deceleration Lanes (Rural) Bituminous Pavement	05-27-14	
5-297.108	Standard Acceleration and Deceleration Lanes (Urban) Bituminous Pavement	05-27-14	
5-297.111	Right and Left-Turn Lanes	05-27-14	
5-297.115 (1 of 2)	Staking Information Sheet	08-06-14	
5-297.115 (2 of 2)	Staking Information Sheet	08-06-14	
	5-297.200 SURFACING		
5-297.209	Acceleration and Deceleration Lane (Rural) Rigid Design Mainline Jointed Pavement 15 Ft. Panel Length	02-16-16	
5-297.210	Acceleration and Deceleration Lane (Urban) Rigid Design Mainline Jointed Pavement 15 Ft. Panel Length	02-16-16	
5-297.217 (1 of 2)	Concrete Mainline Pavement 15 Ft. Panel Length Rural	02-16-16	
5-297.217 (2 of 2)	Concrete Mainline Pavement 15 Ft. Panel Length Urban or Concrete Shoulder	02-16-16	
5-297.219	Concrete Ramp/Loop Pavement 15 Ft. Panel Length	02-16-16	
5-297.221 (1 of 4)	Pavement Joints Contraction (Design C)	08-13-20	
5-297.221 (2 of 4)	Pavement Joints Expansion (Design E)	08-13-20	
5-297.221 (3 of 4)	Pavement Joints Longitudinal (Design L)	08-13-20	
5-297.221 (4 of 4)	Pavement Joints Construction and Terminal Headers	08-13-20	
5-297.222 (1 of 2)	Bridge Approach Panel Layout (Type F Concrete Barrier on Wingwall)	02-16-16	08-22-16
5-297.222 (2 of 2)	Bridge Approach Panel Layout (Type S Concrete Barrier on Wingwall)	08-22-16	
5-297.223 (1 of 2)	Bridge Approach Panel Reinforcement Details (Type F Concrete Barrier on Wingwall)	12-20-11	08-22-16
5-297.223 (2 of 2)	Bridge Approach Panel Reinforcement Details (Type S Concrete Barrier on Wingwall)	08-22-16	
5-297.224 (1 of 2)	Bridge Approach Panel Layout (Type F Concrete Barrier on Approach Panel)	02-16-16	08-22-16
5-297.224 (2 of 2)	Bridge Approach Panel Layout (Type S Concrete Barrier on Approach Panel)	08-22-16	
5-297.225 (1 of 2)	Bridge Approach Panel Reinforcement Details (Type F Concrete Barrier on Approach Panel)	12-20-11	08-22-16
5-297.225 (2 of 2)	Bridge Approach Panel Reinforcement Details (Type S Concrete Barrier on Approach Panel)	08-22-16	

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5-297.227 (1 of 2)	Bridge Approach Panel Miscellaneous Details (Type F Concrete Barrier)	12-20-11	08-22-16
5-297.227 (2 of 2)	Bridge Approach Panel Miscellaneous Details (Type S Concrete Barrier)	08-22-16	
5-297.228 (1 of 2)	Bridge Approach Panel Joint Layout (Type F Concrete Barrier)	03-23-11	08-22-16
5-297.228 (2 of 2)	Bridge Approach Panel Joint Layout (Type S Concrete Barrier)	08-22-16	
5-297.229	Bridge Approach Panel Joint Details	12-20-11	03-22-13
5-297.231 (1 of 2)	Bridge Approach Panel Drainage Details (Type F Concrete Barrier)	03-23-11	08-22-16
5-297.231 (2 of 2)	Bridge Approach Panel Drainage Details (Type S Concrete Barrier)	08-22-16	
5-297.233 (1 of 2)	Bridge Abutment Approach Treatment for Abutment on Footing	08-22-19	
5-297.233 (2 of 2)	Bridge Abutment Approach Treatment for Abutment on Footing	08-22-19	
5-297.234 (1 of 2)	Bridge Abutment Approach Treatment for Integral Abutments	08-22-19	
5-297.234 (2 of 2)	Bridge Abutment Approach Treatment for Integral Abutments	08-22-19	
5-297.235	Pavement End Anchors Under Concrete Pavement (Grades 4% or Greater)	08-06-14	
5-297.250 (1 of 6)	Pedestrian Curb Ramp Details	01-23-17	
5-297.250 (2 of 6)	Pedestrian Curb Ramp Details	01-23-17	
5-297.250 (3 of 6)	Pedestrian Curb Ramp Details	01-23-17	
5-297.250 (4 of 6)	Pedestrian Curb Ramp Details	01-23-17	
5-297.250 (5 of 6)	Pedestrian Curb Ramp Details	01-23-17	
5-297.250 (6 of 6)	Pedestrian Curb Ramp Details	01-23-17	
5-297.254 (1 of 4)	Driveway and Sidewalk Details	01-23-17	
5-297.254 (2 of 4)	Driveway and Sidewalk Details	01-23-17	
5-297.254 (3 of 4)	Driveway and Sidewalk Details	01-23-17	
5-297.254 (4 of 4)	Driveway and Sidewalk Details	01-23-17	
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5-297.301 (2 of 3)	Standard Planting Details	12-11-15	
5-297.301 (3 of 3)	Standard Planting Details	12-11-15	
5-297.302 (1 of 1)	Protection and Restoration of Vegetation	12-11-15	
	5-297.400 DRAINAGE AND EROSION CONTROL, AND SEDIMENT CONTROL		
5-297.404 (1 of 3)	Permanent Erosion Control - Along Roadways, Ditches, and Flumes	02-28-17	
5-297.404 (2 of 3)	Permanent Erosion Control - Turf Establishment Detail at Culvert Ends	01-08-20	
5-297.404 (3 of 3)	Permanent Erosion Control - REPP (Blanket) Staple Pattern For Slopes	01-08-20	
5-297.405 (1 of 8)	Temporary Sediment Control - Silt Curtain or Silt Fence Type TB	02-28-17	
5-297.405 (2 of 8)	Temporary Sediment Control - Filter Berms, Sediment Control Logs, and Bale Barriers	01-08-20	
5-297.405 (3 of 8)	Temporary Sediment Control - Ditch Check	01-08-20	
5-297.405 (4 of 8)	Temporary Sediment Control - Storm Drain Inlet Protection	02-28-17	
5-297.405 (5 of 8)	Temporary Sediment Control - Stabilized Construction Exit	02-28-17	
5-297.405 (6 of 8)	Temporary Sediment Control - Silt Fence	02-28-17	
5-297.405 (7 of 8)	Temporary Sediment Control - Super Duty Silt Fence	02-28-17	
5-297.405 (8 of 8)	Temporary Sediment Control - Culvert End Controls	02-28-17	
5-297.407	Permanent Erosion Control - Bioengineering Soil Stabilization	08-06-14	
5-297.409	Temporary Erosion Control - Temporary Poly Coverings	02-28-17	
5-297.430	Subsurface Drains	08-06-14	
5-297.431	Subsurface Drains	08-06-14	

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5-297.433	Subsurface Drains, Outlet Pipes for Edge and Subcut Drains	08-06-14	
5-297.440	Standard Culvert Bedding for Flexible Pipe (without treatments)	01-18-19	
5-297.441	Standard Culvert Bedding for Rigid Pipe (without treatments)	01-18-19	
5-297.442	Standard Storm Sewer Bedding for Rigid and Flexible Pipe	01-18-19	
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	BLANK		
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	SAFETY FEATURES AND SPECIAL STRUCTURES		
5-297.601 (1 of 4)	Guardrail / End Treatments Miscellaneous Details	05-14-21	
5-297.601 (2 of 4)	Guardrail / End Treatments Miscellaneous Details	05-14-21	
5-297.601 (3 of 4)	Guardrail / End Treatments Miscellaneous Details	05-14-21	
5-297.601 (4 of 4)	Guardrail / End Treatments Miscellaneous Details	05-14-21	
5-297.603	W-Beam Transition to Concrete F-Shape Safety Rail with Approach Curb (Steel Post)	05-27-14	
5-297.605	W-Beam Transition to Concrete F-Shape Safety Rail with Approach Curb (Wood Post)	05-27-14	
5-297.607	W-Beam Transition to Concrete J-Shape Safety Rail with Approach Curb (Wood Post)	11-17-16	
5-297-608	Guardrail Transition to Glulam Timber Bridge Rail	03-26-21	
5-297.609 (1 of 2)	W-Beam Transition to Concrete End Post With or Without Approach Curb (Wood Post)	11-17-16	
5-297.609 (2 of 2)	W-Beam Transition to Concrete End Post With or Without Approach Curb (Wood Post)	11-17-16	
5-297.611 (1 of 6)	Thrie-Beam Bullnose Guardrail for Medians – System Widths 14' 2-1/2" to 24' Misc. Details	05-03-21	
5-297.611 (2 of 6)	Thrie-Beam Bullnose Guardrail for Medians – System Widths Over 24'	05-03-21	
5-297.611 (3 of 6)	Thrie-Beam Bullnose Guardrail for Medians – Bullnose Transition to W-Beam Rail	05-03-21	
5-297.611 (4 of 6)	Thrie-Beam Bullnose Guardrail for Medians – Nose Assembly and Curb Details	05-03-21	
5-297.611 (5 of 6)	Thrie-Beam Bullnose Guardrail for Medians – Post, Block, and Hardware Details	05-03-21	
5-297.611 (6 of 6)	Thrie-Beam Bullnose Guardrail for Medians – Grading and Cross Section	05-03-21	
5-297.612	Proprietary End Terminal – Tangent for Type 31 Guardrail	05-14-21	
5-297.613	Proprietary End Terminal – Flared for Type 31 Guardrail	05-14-21	
5-297.618	W-Beam Transition to Concrete J-Shape Safety Rail With Approach Curb (Steel Post)	11-17-16	
5-297.619 (1 of 2)	W-Beam Transition to Concrete End Post With or Without Approach Curb (Steel Post)	11-17-16	
5-297.619 (2 of 2)	W-Beam Transition to Concrete End Post With or Without Approach Curb (Steel Post)	11-17-16	
5-297.620	Retaining Wall General Notes and Summary of Quantities	08-27-14	09-01-16
5-297.621	Retaining Wall Reinforcement Details (Short Walls)	08-27-14	09-01-16
5-297.622	Retaining Wall Reinforcement Details (Medium Walls)	08-27-14	09-01-16
5-297.623	Retaining Wall Reinforcement Details (Tall Walls)	08-27-14	09-01-16
5-297.624 (1 of 6)	Retaining Wall Miscellaneous Details	02-16-16	09-01-16
5-297.624 (2 of 6)	Retaining Wall Miscellaneous Details	08-27-14	09-01-16
5-297.624 (3 of 6)	Retaining Wall Miscellaneous Details	08-27-14	09-01-16
5-297.624 (4 of 6)	Retaining Wall Miscellaneous Details (Geotechnical Details)	02-16-16	
5-297.624 (5 of 6)	Retaining Wall Miscellaneous Details (Geotechnical Details)	08-27-14	09-01-16
5-297.624 (6 of 6)	Retaining Wall Miscellaneous Details (Geotechnical Details)	08-27-14	09-01-16
5-297.625	Retaining Wall Shear Lug Details	08-27-14	
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5-297.626 (2 of 4)	Retaining Wall Panel Tabulations (Level Fill)	08-27-14	09-01-16

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5-297.626 (4 of 4)	Retaining Wall Panel Tabulations (Level Fill)	08-27-14	09-01-16
5-297.627 (1 of 3)	Retaining Wall Panel Tabulations (1V:2H Sloped Fill)	08-27-14	09-01-16
5-297.627 (2 of 3)	Retaining Wall Panel Tabulations (1V:2H Sloped Fill)	08-27-14	09-01-16
5-297.627 (3 of 3)	Retaining Wall Panel Tabulations (1V:2H Sloped Fill)	08-27-14	09-01-16
5-297.628 (1 of 3)	Retaining Wall Panel Tabulations (Live Load Surcharge)	09-01-16	
5-297.628 (2 of 3)	Retaining Wall Panel Tabulations (Live Load Surcharge)	09-01-16	
5-297.628 (3 of 3)	Retaining Wall Panel Tabulations (Live Load Surcharge)	09-01-16	
5-297.630 (1 of 2)	Retaining Wall (Level Fill) Spread Footing Geometry and Data	08-27-14	09-01-16
5-297.630 (2 of 2)	Retaining Wall (Level Fill) Pile Foundation Geometry and Data	08-27-14	09-01-16
5-297.631 (1 of 2)	Retaining Wall (1V:2H Sloped Fill) Spread Footing Geometry and Data	08-27-14	09-01-16
5-297.631 (2 of 2)	Retaining Wall (1V:2H Sloped Fill) Pile Foundation Geometry and Data	08-27-14	09-01-16
5-297.632 (1 of 2)	Retaining Wall (Live Load Surcharge) Spread Footing Geometry and Data	08-27-14	09-01-16
5-297.632 (2 of 2)	Retaining Wall (Live Load Surcharge) Pile Foundation Geometry and Data	08-27-14	09-01-16
5-297.633	Retaining Wall Concrete Parapet (Type P-1)	09-01-16	
5-297.634	Retaining Wall Concrete Parapet (Type P-4)	09-01-16	
5-297.635	Retaining Wall Concrete Barrier (Type F, TL-4)	09-01-16	
5-297.636	Retaining Wall Concrete Barrier (Type S, TL-4)	09-01-16	
5-297.638	Concrete Retaining Wall Rustication	08-27-14	
5-297.639	Cast In Place Concrete Retaining Wall Basis of Design	08-27-14	
5-297.640	Modular Block Retaining Wall General Notes	12-01-14	
5-297.641	Modular Block Retaining Wall Soil Reinforcement for Level Fill, Case 1	08-06-14	
5-297.643	Modular Block Retaining Wall Soil Reinforcement for 1:2 Fill Slope, Case 3	08-06-14	
5-297.644	Modular Block Retaining Wall Soil Reinforcement for 1:3 Fill Slope, Case 4	08-06-14	
5-297.645	Modular Block Retaining Wall Details	08-06-14	
5-297.646	Reinforced Soil Slope General Notes	12-01-14	
5-297.647	Reinforced Soil Slope (45° Maximum Slope)	08-06-14	
5-297.648	Reinforced Soil Slope (70° Maximum Slope)	08-06-14	
5-297.649	Reinforced Soil Slope Details	08-06-14	
5-297.661 (1 of 3)	Wood Planking Noise Wall with Concrete Posts	10-22-19	
5-297.661 (2 of 3)	Wood Planking Noise Wall with Concrete Posts	10-22-19	
5-297.661 (3 of 3)	Wood Planking Noise Wall with Concrete Posts	10-22-19	
5-297.678 (1 of 5)	Glue Laminated Rubrail (Concrete Posts) General Layout: Planking on Residential Side	10-22-19	
5-297.678 (2 of 5)	Glue Laminated Rubrail (Concrete Posts) General Layout: Planking on Highway Side	10-22-19	
5-297.678 (3 of 5)	Glue Laminated Rubrail (Concrete Posts) Concrete Post Construction Details	10-22-19	
5-297.678 (4 of 5)	Glue Laminated Rubrail (Concrete Posts) Rubrail Sections and Spacer Block	10-22-19	
5-297.678 (5 of 5)	Glue Laminated Rubrail (Concrete Posts) Anchor Cable, Anchor Plate, and Splice Plate	10-22-19	
5-297.680 (1 of 2)	Temporary Portable Precast Concrete Barrier Anchoring	07-16-19	
5-297.680 (2 of 2)	Temporary Portable Precast Concrete Barrier Anchoring - Transition Systems	07-16-19	
5-297.681 (1 of 7)	Concrete Median Barrier Single Slope - Type 36 A, Type 42 A, and Type 54 A	04-14-20	07-22-20
5-297.681 (2 of 7)	Concrete Median Barrier Single Slope -Type 36 A Step, Type 42 A Step, and Type 54 A Step	04-14-20	07-22-20
5-297.681 (3 of 7)	Concrete Median Barrier Single Slope - Type 36 A-A, Type 42 A-A, and Type 54 A-A	04-14-20	07-22-20

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5-297.681 (4 of 7)	Concrete Median Barrier Single Slope – End Anchor and Expansion/Open Joint Anchor	04-14-20	07-22-20
5-297.681 (5 of 7)	Concrete Median Barrier Single Slope – Light Foundation/Sign Base Transition - Monolithic Barrier Placement	04-14-20	07-22-20
5-297.681 (6 of 7)	Concrete Median Barrier Single Slope – Light Foundation/Sign Base Transition – Barrier on Footing	04-14-20	07-22-20
5-297.681 (7 of 7)	Concrete Median Barrier Single Slope – Type F Barrier Transitions - Single Slope Vertical Transitions	04-14-20	07-22-20
5-297.684 (1 of 2)	W-Beam Transition to Pier Columns Without Approach Curb (Steel Post)	11-17-16	
5-297.684 (2 of 2)	W-Beam Transition to Pier Columns without Approach Curb (Steel Post)	11-17-16	
5-297.686 (1 of 3)	Box Beam Transition to Concrete F-Shape Barrier	05-27-14	
5-297.686 (2 of 3)	Box Beam Transition to Concrete F-Shape Barrier (Details)	05-27-14	
5-297.686 (3 of 3)	Box Beam Transition to Concrete F-Shape Barrier (Curb Transition and Splice Details)	05-27-14	
5-297.688	High Tension Cable Barrier Median Placement and Overlap	10-27-14	
5-297.690	Traffic Barrier Type 31 Assembly Details	03-06-20	
5-297.692	Traffic Barrier Type 31 End Anchorage Assembly Details	03-02-20	
5-297.693 (1 of 3)	Approach Guardrail Transition (AGT) Type 31 at Vertical End Post - Assembly Details	02-09-21	
5-297.693 (2 of 3)	Approach Guardrail Transition (AGT) Type 31 at Vertical End Post - Curb Details	02-09-21	
5-297.693 (3 of 3)	Approach Guardrail Transition (AGT) Type 31 at Vertical End Post - Miscellaneous and Component Details	02-09-21	
5-297.694 (1 of 3)	Approach Guardrail Transition (AGT) Type 31 at Single Slope End Post - Assembly Details	02-09-21	
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5-297.694 (3 of 3)	Approach Guardrail Transition (AGT) Type 31 at Single Slope End Post - Miscellaneous and Component Details	02-09-21	
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5-297.702	Delineator and Marker Placement	10-16-19	
5-297.703	Sign, Delineator, and Marker Placement near Interchange Ramp Gores	10-26-19	
5-297.710 (1 of 4)	Extruded Panel Mounting Details	05-03-21	
5-297.710 (2 of 4)	Extruded Panel Mounting Details – Panel Mounting Post Details	05-03-21	
5-297.710 (3 of 4)	Extruded Panel Mounting Details	05-03-21	
5-297.710 (4 of 4)	Extruded Panel Mounting Details	05-03-21	
5-297.711 (1 of 2)	I-Beam Supported Sign Structural Details - Footings and Base Connection	05-03-21	
5-297.711 (2 of 2)	I-Beam Supported Sign Structural Details - Post and Friction Fuse	05-03-21	
5-297.713	I-Beam Supported Sign Structural Details - Shallow Spread Foundation	05-03-21	
5-297.721	Three-Wall Base – For 1¾” Square-Tube Riser Post	05-03-21	
5-297.726 (1 of 3)	Sign Mounted on Concrete Wall	05-03-21	
5-297.726 (2 of 3)	Sign Mounted on Concrete Wall – Sign Mounting Details	05-03-21	
5-297.726 (3 of 3)	Sign Mounted on Concrete Wall – Sign Connection Details	05-03-21	
5-297.730	Sign Mounting Systems for Round Supports	10-16-19	
5-297.731	Sign Mounting Details for Signal Mast Arms	10-16-19	04-17-20
5-297.740 (1 of 4)	Concrete Rail Mounted Sign	06-04-19	
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5-297.740 (4 of 4)	Concrete Rail Mounted Sign - Sign Connection Details	06-04-19	

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5-297.742	Structural Details for Bridge Mounted Type D Signs - Minor Guide Signs	06-04-19	
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5-297.746 (2 of 2)	Monotube Overhead Sign Structures - Foundation Details	01-15-21	
5-297.747 (1 of 2)	Monotube Overhead Sign Structures - Simple Span - Post and Baseplate Details	01-15-21	
5-297.747 (2 of 2)	Monotube Overhead Sign Structures - Simple Span - Beam Details	01-15-21	
5-297.748 (1 of 2)	Monotube Overhead Sign Structures - Cantilever - Post and Baseplate Details	01-15-21	
5-297.748 (2 of 2)	Monotube Overhead Sign Structures - Cantilever - Beam Details	01-15-21	
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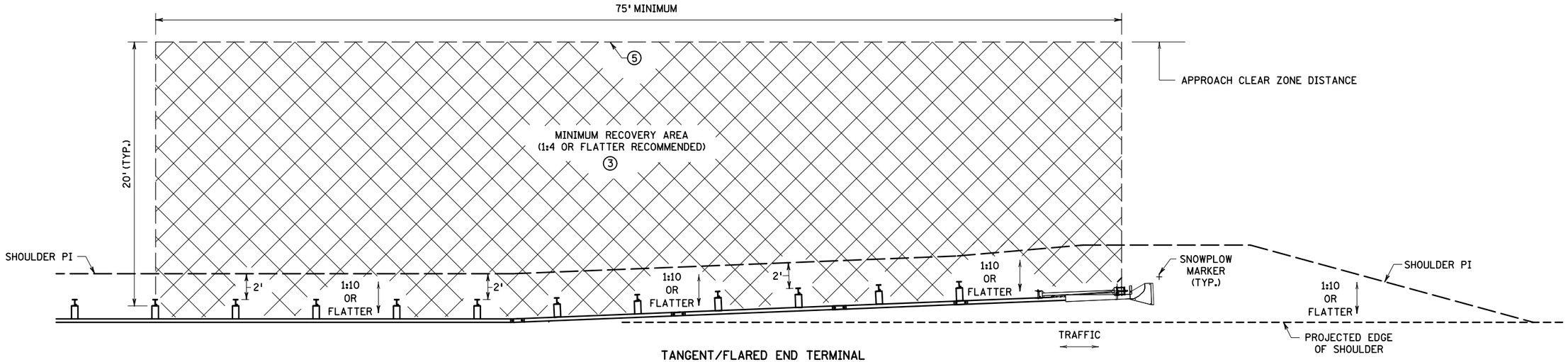
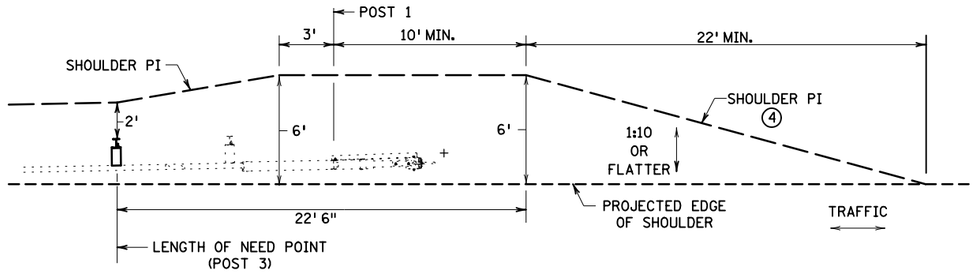
5-297.749 (2 of 2)	Monotube Overhead Sign Structures - Sign Panel and Exit Panel Details	01-15-21	
5-297.750	Panel Mounting Post Modification Details	01-15-21	
5-297.752	Type F Median Barrier Foundation - Spread Footing	05-01-19	05-28-19
5-297.753	Type F Median Barrier Foundation - Drilled Shaft Footing	05-01-19	05-28-19
5-297.754	Single Slope Median Barrier Foundation - Spread Footing	05-01-19	05-28-19
5-297.755	Single Slope Median Barrier Foundation - Drilled Shaft Footing	05-01-19	05-28-19
5-297.760 (1 of 3)	Standard Overhead Sign Structures - Design D - Implementation Instructions and Notes	05-01-19	05-28-19
5-297.760 (2 of 3)	Standard Overhead Sign Structures - Design D - Cantilever Span Post and Truss Selection Table	05-01-19	05-28-19
5-297.760 (3 of 3)	Standard Overhead Sign Structures - Design D - Cantilever Span Post and Truss Selection Table	05-01-19	05-28-19
5-297.761	Standard Overhead Sign Structures - Design D - General Elevations, Sections and Notes	03-05-20	
5-297.762	Standard Overhead Sign Structures - Design D - Camber, Post Type, and Estimated Quantities	03-05-20	
5-297.763 (1 of 2)	Standard Overhead Sign Structures - Design D - Foundation Details	03-05-20	05-26-20
5-297.763 (2 of 2)	Standard Overhead Sign Structures - Design D - Foundation Details	03-05-20	
5-297.764	Standard Overhead Sign Structures - Design D - Base Plate, Handhole, Electrical, and Cover Plate Details	03-05-20	
5-297.765	Standard Overhead Sign Structures - Design D - Truss-to-Post Connection Details	03-05-20	
5-297.766	Standard Overhead Sign Structures - Design D - Sign Truss Details Type A	05-01-19	05-28-19
5-297.767	Standard Overhead Sign Structures - Design D - Sign Truss Details Type B	05-01-19	05-28-19
5-297.768	Standard Overhead Sign Structures - Design D - Sign Truss Details Type C	05-01-19	05-28-19
5-297.769 (1 of 3)	Standard Overhead Sign Structures - Design D - Walkway Details	03-05-20	
5-297.769 (2 of 3)	Standard Overhead Sign Structures - Design D - Walkway Details: Railing	03-05-20	
5-297.769 (3 of 3)	Standard Overhead Sign Structures - Design D - Walkway Details	05-01-19	
5-297.770	Standard Overhead Sign Structures - Design D - Walkway and Railing Retrofit Details	05-01-19	
5-297.772	Standard Overhead Sign Structures - Design D - DMS Mounting Details	03-05-20	
5-297.773	Standard Overhead Sign Structures - Design D - Rock Socket Foundation Details	01-15-21	
5-297.774	Standard Overhead Sign Structures - Design D - Variable Length Drilled Shaft Details	01-15-21	

PLAN NO.	SUBJECT	APPROVAL DATE	REVISION DATE
5-297.779	Overhead Sign Structures - Foundation Extension - Design D Extension Details - Type 1-4 Posts	01-15-21	
5-297.780 (1 of 2)	Overhead Sign Structures - Foundation Extension - Design D Extension Details - Type 5-6 Posts	01-15-21	
5-297.780 (2 of 2)	Overhead Sign Structures - Foundation Extension - Design D Extension Details - Type 5-6 Posts	01-15-21	
5-297.781	Overhead Sign Structures - Foundation Extension – Interim Design B Extension Details - Type 1-4 Posts	01-15-21	
5-297.782 (1 of 2)	Overhead Sign Structures - Foundation Extension – Interim Design B Extension Details - Type 5-7 Posts	01-15-21	
5-297.782 (2 of 2)	Overhead Sign Structures - Foundation Extension – Interim Design B Extension Details - Type 5-7 Posts	01-15-21	
5-297.783	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 1-3 Posts	01-15-21	
5-297.784 (1 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 4-5 Posts	01-15-21	
5-297.784 (2 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 4-5 Posts	01-15-21	
5-297.785 (1 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 6-7 Posts	01-15-21	
5-297.785 (2 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 6-7 Posts	01-15-21	
5-297.786 (1 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 8-9 Posts	01-15-21	
5-297.786 (2 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 8-9 Posts	01-15-21	
5-297.787 (1 of 3)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 10-13 Posts	01-15-21	
5-297.787 (2 of 3)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 10-13 Posts	01-15-21	
5-297.787 (3 of 3)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 10-13 Posts	01-15-21	
5-297.788	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 14-15 Posts	01-15-21	
5-297.789 (1 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 16-19 Posts	01-15-21	
5-297.789 (2 of 2)	Overhead Sign Structures - Foundation Extension - Design B Extension Details - Type 16-19 Posts	01-15-21	
	5-297.800		
	TEMPORARY TRAFFIC CONTROL, PAVEMENT MARKING, LIGHTING, AND SIGNALS		
5-297.801	Interim Pavement Markings and Signing	10-10-19	
5-297.805 (1 of 5)	Temporary Overhead Sign Structures – General Elevation and Notes	03-06-20	
5-297.805 (2 of 5)	Temporary Overhead Sign Structures – Foundation Details	03-06-20	
5-297.805 (3 of 5)	Temporary Overhead Sign Structures – Post and Baseplate Details	03-06-20	
5-297.805 (4 of 5)	Temporary Overhead Sign Structures – Beam Details	03-06-20	
5-297.805 (5 of 5)	Temporary Overhead Sign Structures – Sign Panel and Panel Mounting Post Details	03-06-20	
5-297.811 (1 of 2)	Alternate Pedestrian Route (APR) Layouts	03-18-21	
5-297.811 (2 of 2)	Alternate Pedestrian Route (APR) Layouts	03-18-21	
5-297.813 (1 of 2)	Temporary Pedestrian Access Route (TPAR) Devices – Channelizers, Sidewalk Barricades, and Portable Stands	03-18-21	
5-297.813 (2 of 2)	Temporary Pedestrian Access Route (TPAR) Devices – Temporary Curb Ramps and Walkway Surfaces	03-18-21	
5-297.820 (1 of 3)	T-100 Light Tower Pile Foundation Design	11-05-19	
5-297.820 (2 of 3)	T-120 Light Tower Pile Foundation Design	11-05-19	
5-297.820 (3 of 3)	T-140 Light Tower Pile Foundation Design	11-05-19	

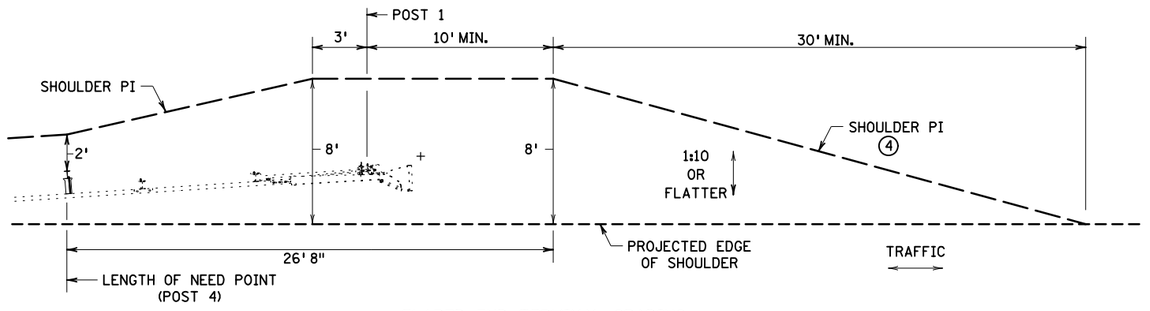
PLAN NO.	SUBJECT	APPROVAL DATE	REVISION DATE
5-297.821 (1 of 3)	T-100 Light Tower Mat Foundation Design	11-05-19	
5-297.821 (2 of 3)	T-120 Light Tower Mat Foundation Design	11-05-19	
5-297.821 (3 of 3)	T-140 Light Tower Mat Foundation Design	11-05-19	



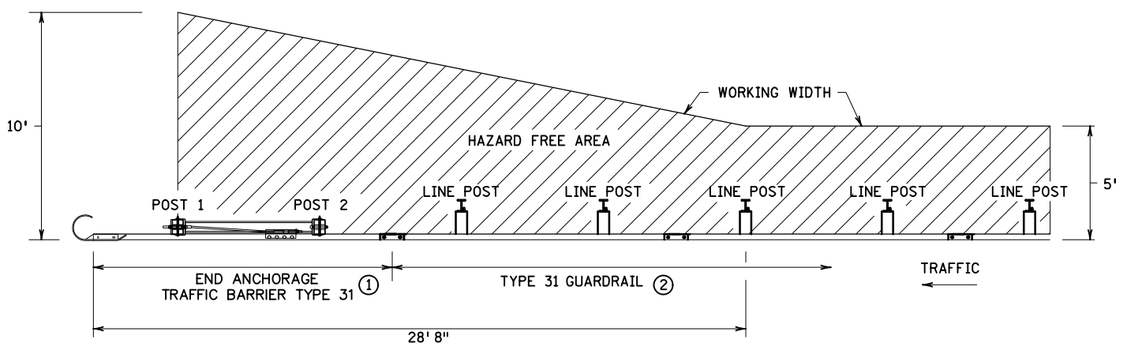
TANGENT/FLARED END TERMINAL
MINIMUM RECOVERY AREA



TANGENT END TERMINAL GRADING
(SOFTSTOP SHOWN)



FLARED END TERMINAL GRADING
(MFLEAT SHOWN)



TYPE 31 END ANCHORAGE
STANDARD POST SPACING
TRAILING END HAZARD FREE AREA

NOTES:

① SEE STANDARD PLAN 5-297.692.

② SEE STANDARD PLAN 5-297.690.

③ THIS AREA FREE OF FIXED OBJECTS. SLOPES BETWEEN 1:3 AND 1:4 PERMITTED WHEN 1:4 OR FLATTER IS NOT POSSIBLE. FOR SLOPES STEEPER THAN 1:3, THIS AREA SHOULD BE SIMILAR IN CROSS SECTION TO THE UNSHIELDED ROADSIDE AREA UPSTREAM OF THE END TERMINAL.

④ SMOOTHLY TRANSITION THE GRADING PLATFORM TO EXISTING SIDE SLOPE SO THE ENTIRE ROADSIDE APPROACH TO THE BARRIER REMAINS TRAVERSABLE.

⑤ GRADUALLY BLEND SLOPE FROM TRAVERSABLE AREA TO STEEP EXISTING SLOPE (WHEN SLOPE IS STEEPER THAN 1:6).

REVISION:

APPROVED: 05-14-2021

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DEPARTMENT
OF
TRANSPORTATION

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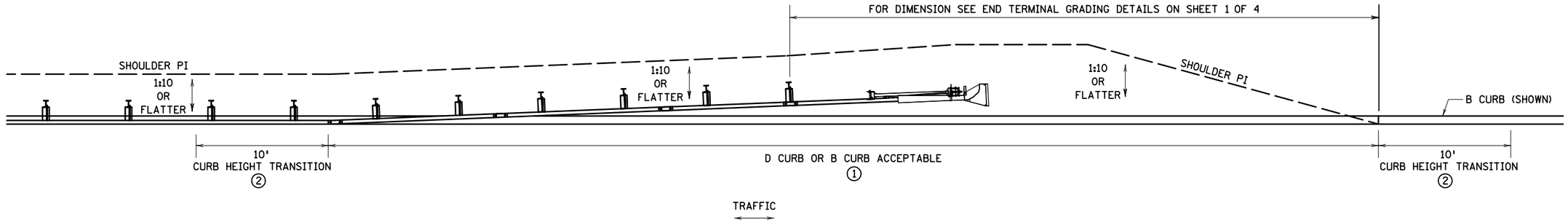
STANDARD PLAN 5-297.601 | 1 OF 4

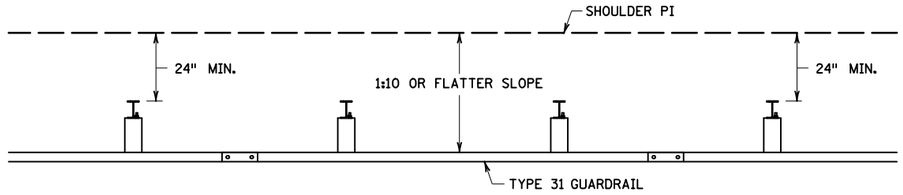
APPROVED: 05-14-2021
REVISED:

GUARDRAIL / END TREATMENTS MISCELLANEOUS DETAILS

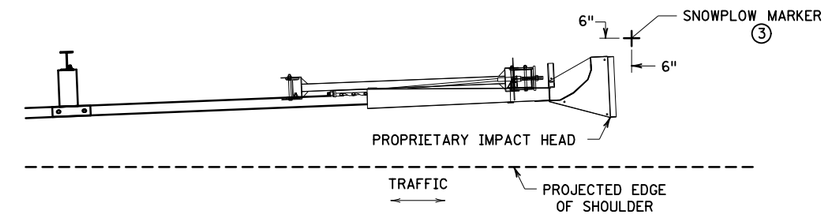
STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS

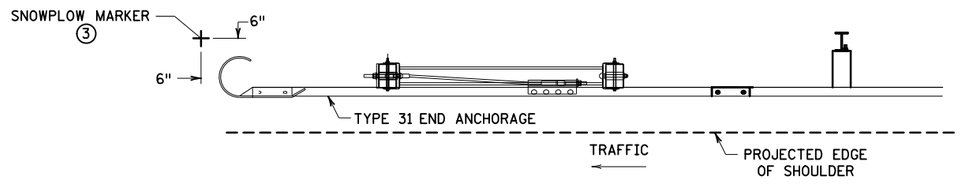


INPLACE CURB AT END TERMINAL

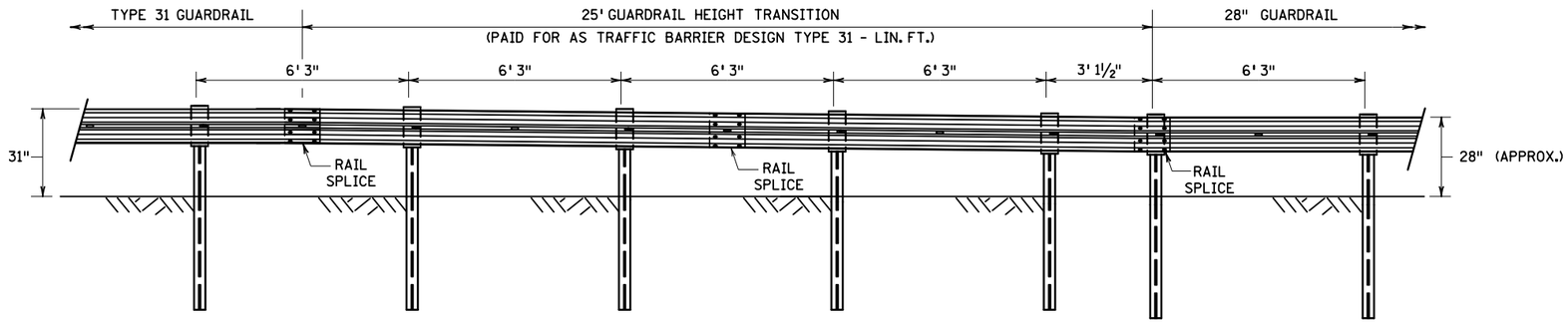


GRADING REQUIREMENTS AT TYPE 31 GUARDRAIL





SNOWPLOW MARKER LOCATION AT END TERMINAL/END ANCHORAGE



TYPE 31 W-BEAM GUARDRAIL HEIGHT TRANSITION TO 28" ④

NOTES:

① IF INPLACE CURB IS OVER 4" HEIGHT, MILL TO 3" HEIGHT.
② CONTINUE MILLING FROM 3" MILLED HEIGHT TO MATCH INPLACE CURB HEIGHT.
③ SNOWPLOW MARKER (X3-5) WITH A SQUARE-TUBE THREE-WALL SIGN BASE PER STANDARD PLAN 5-297.721. TOP OF POST SHALL BE 3' ABOVE THE HEIGHT OF THE END TERMINAL/END ANCHORAGE. PLACE MARKER AT BOTH ENDS OF GUARDRAIL RUN.
④ USE ONLY WHEN CONNECTING TO GUARDRAIL TYPES 8338 AND 8307.

REVISION:

APPROVED: 05-14-2021

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MINNESOTA DEPARTMENT OF TRANSPORTATION

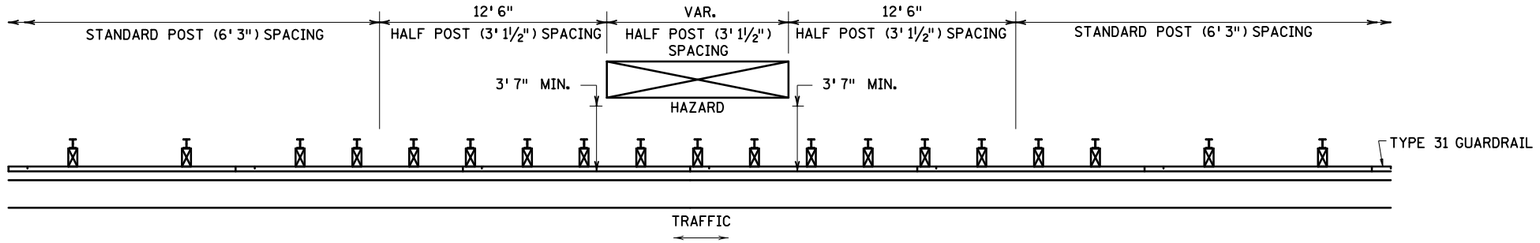
THOMAS STYRBICKI
STATE DESIGN ENGINEER

STANDARD PLAN 5-297.601 | 2 OF 4

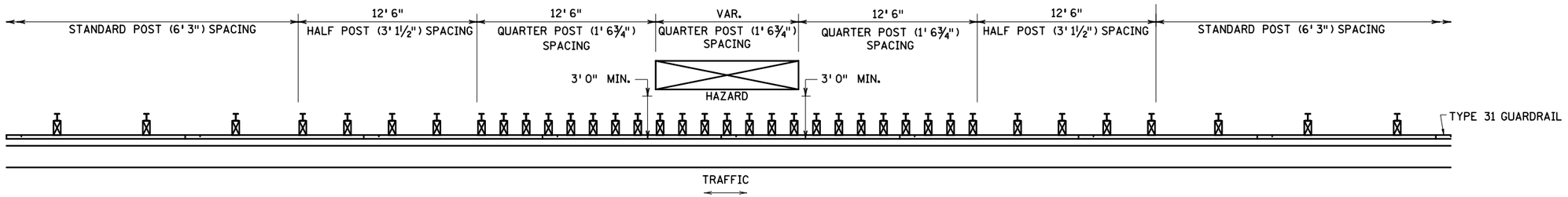
APPROVED: 05-14-2021
REVISED:

GUARDRAIL / END TREATMENTS MISCELLANEOUS DETAILS

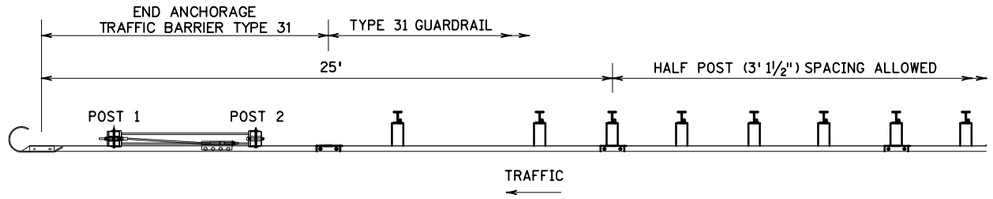
STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS



GUARDRAIL STIFFENING GENERAL - HALF POST SPACING

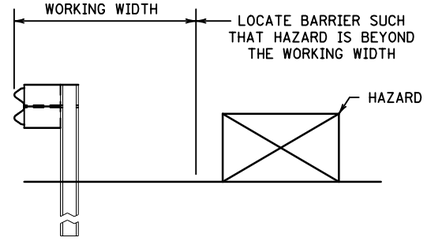


GUARDRAIL STIFFENING GENERAL - QUARTER POST SPACING



GUARDRAIL STIFFENING AT TYPE 31 END ANCHORAGE

ESTIMATED WORKING WIDTH FOR TYPE 31 GUARDRAIL	
STANDARD POST (6' 3") SPACING	5' 0"
STANDARD POST (6' 3") SPACING 9' POST AT 1:2 BREAKLINE	5' 5"
HALF POST (3' 1½") SPACING	3' 7"
QUARTER POST (1' 6¾") SPACING	3' 0"



BARRIER LOCATION / WORKING WIDTH

NOTES:

REGARDLESS OF TRAFFIC DIRECTION, ALL GUARDRAIL STIFFENING SHALL TRANSITION INTO AND OUT OF EACH POST SPACING SEGMENT.

REVISION:

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NANCY YOO
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OFFICE OF PROJECT MANAGEMENT & TECHNICAL SUPPORT

MINNESOTA
DEPARTMENT OF TRANSPORTATION

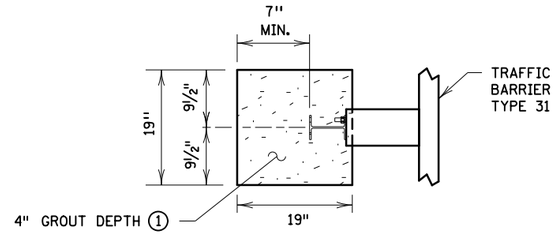
STANDARD PLAN 5-297.601 | 3 OF 4

APPROVED: 05-14-2021
REVISED:

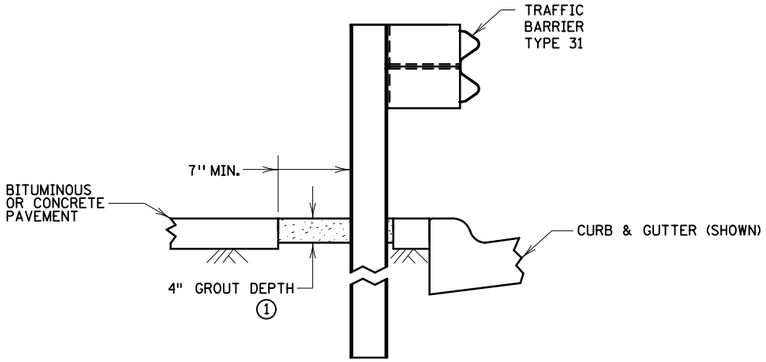
THOMAS STYRBICKI
STATE DESIGN ENGINEER

GUARDRAIL / END TREATMENTS MISCELLANEOUS DETAILS

STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS

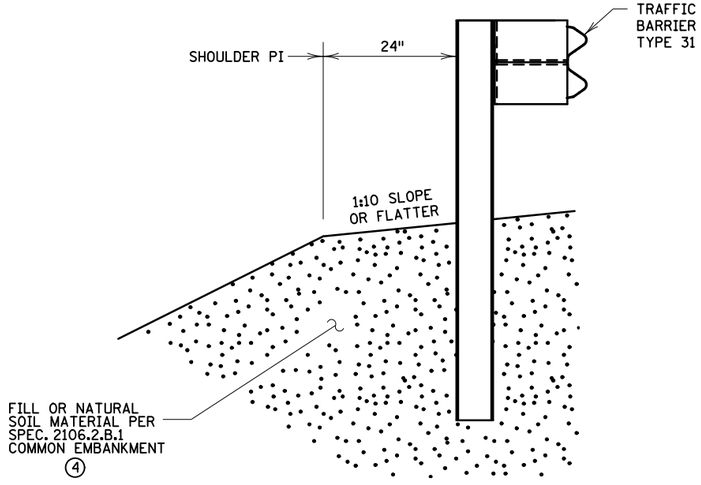


PLAN VIEW

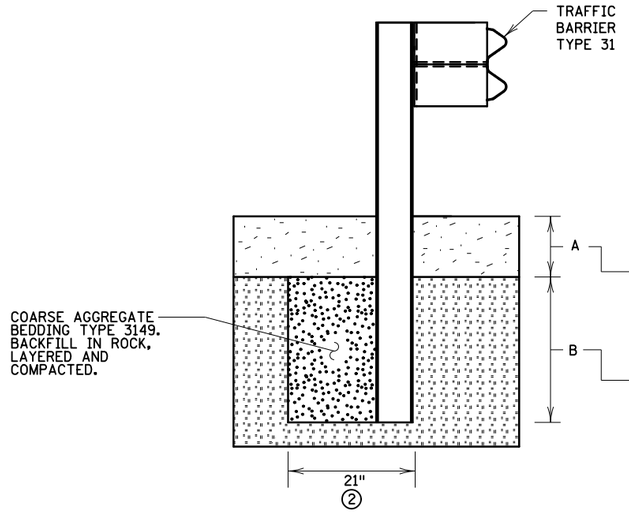


ELEVATION

POST LEAVE-OUT FOR
TRAFFIC BARRIER TYPE 31

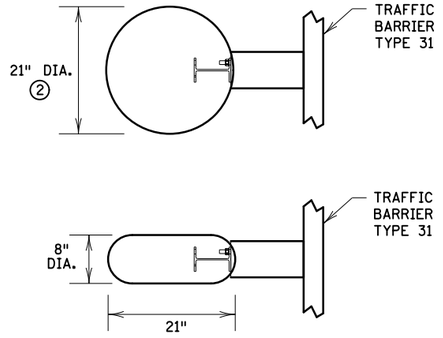


GUARDRAIL POST IN SOIL



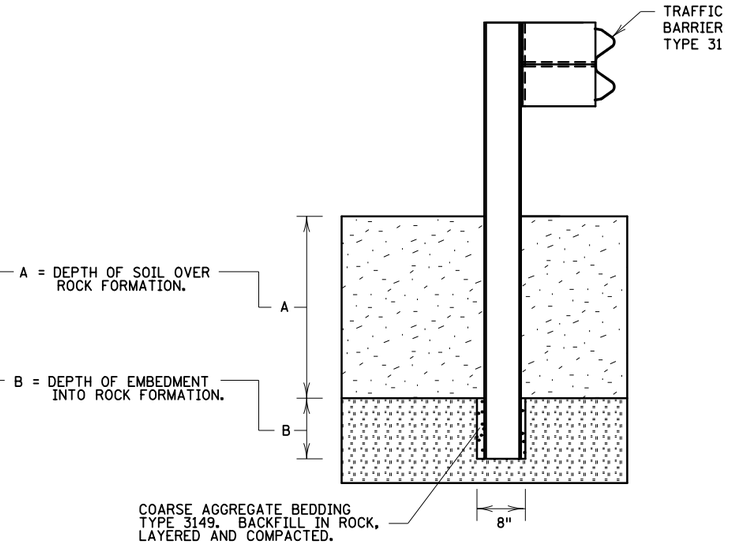
- FOR OVERLYING SOIL DEPTHS (A) RANGING FROM 0" TO 18", THE DEPTH INTO ROCK (B) IS 24".

ELEVATION



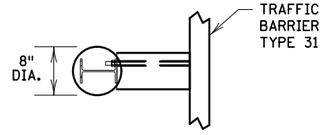
PLAN VIEWS (3)

GUARDRAIL POST IN ROCK
0" TO 18" OVERLYING SOIL DEPTH
(POST HOLE IN ROCK SPECIAL)



- FOR OVERLYING SOIL DEPTHS (A) RANGING FROM 18" TO FULL POST EMBEDMENT DEPTH. THE REQUIRED DEPTH INTO ROCK (B) IS EQUAL TO FULL POST EMBEDMENT DEPTH MINUS (A). FULL POST EMBEDMENT DEPTH FOR BLOCKED OUT W-BEAM IS APPROXIMATELY 42".

ELEVATION



PLAN VIEW

GUARDRAIL POST IN ROCK
18" OR GREATER OVERLYING SOIL DEPTH
(POST HOLE IN ROCK)

NOTES:

1. GROUT IS ONE PART TYPE 1A CEMENT, 14 PARTS SAND, AND 5 PARTS WATER, BY VOLUME.
2. 24" DIAMETER ACCEPTABLE.
3. EITHER HOLE CONFIGURATION (CIRCULAR OR ELONGATED) ACCEPTABLE.
4. MATERIAL SHALL NOT CONTAIN GEOFOAM, TIRE SHREDS, OR OTHER LIGHTWEIGHT FILL MATERIALS. POST SHALL NOT BE DRIVEN THROUGH PAVEMENT OR GEOCELL SLOPE REINFORCEMENT.

REVISION:

APPROVED: 05-14-2021

NANCY TOO
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MINNESOTA
DEPARTMENT
OF
TRANSPORTATION

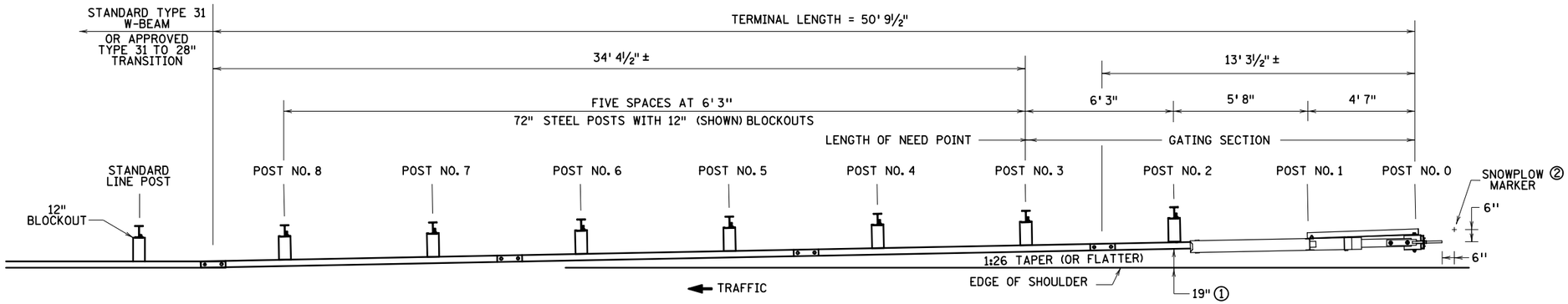
STANDARD PLAN 5-297.601 | 4 OF 4

APPROVED: 05-14-2021
REVISED:

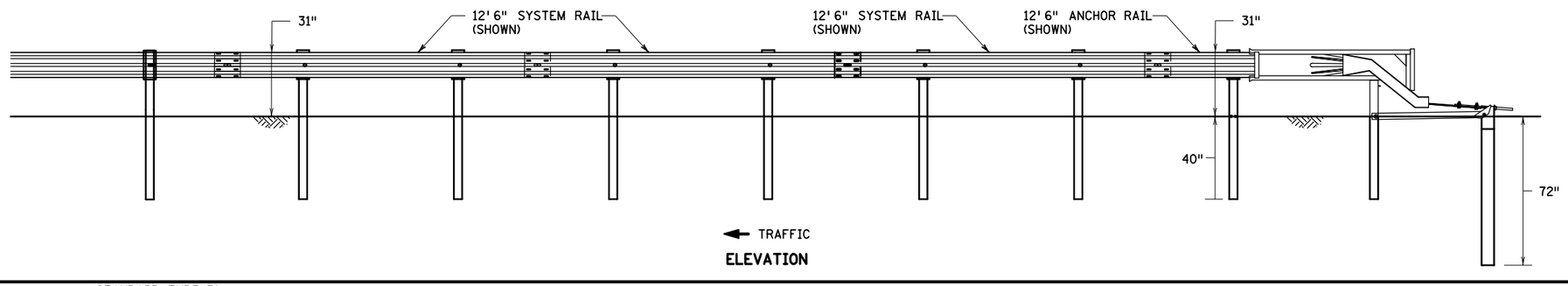
THOMAS STYRBICKI
STATE DESIGN ENGINEER

GUARDRAIL / END TREATMENTS MISCELLANEOUS DETAILS

STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS



PLAN



ELEVATION

SOFTSTOP
(TRINITY HIGHWAY PRODUCTS)

NOTES:

THIS IS A PROPRIETARY ITEM AS PER SPEC. 1703.

THESE DETAILS ARE FOR DESIGN GUIDANCE INFORMATION ONLY. CHECK WITH MANUFACTURER FOR CURRENT DETAILS AND INSTALLATION INSTRUCTIONS.

ALL TERMINAL RAIL MUST BE STRAIGHT. CURVED TERMINAL RAIL IS NOT ALLOWED.

ALL BOLTS, NUTS, CABLE ASSEMBLIES, CABLE ANCHORS, AND BEARING PLATES SHALL BE GALVANIZED PER MnDOT SPEC. 3392.

POSTS 1 AND 2 ARE PROPRIETARY STEEL YIELDING TERMINAL POSTS.

POST 0 IS A PROPRIETARY ANCHOR POST.

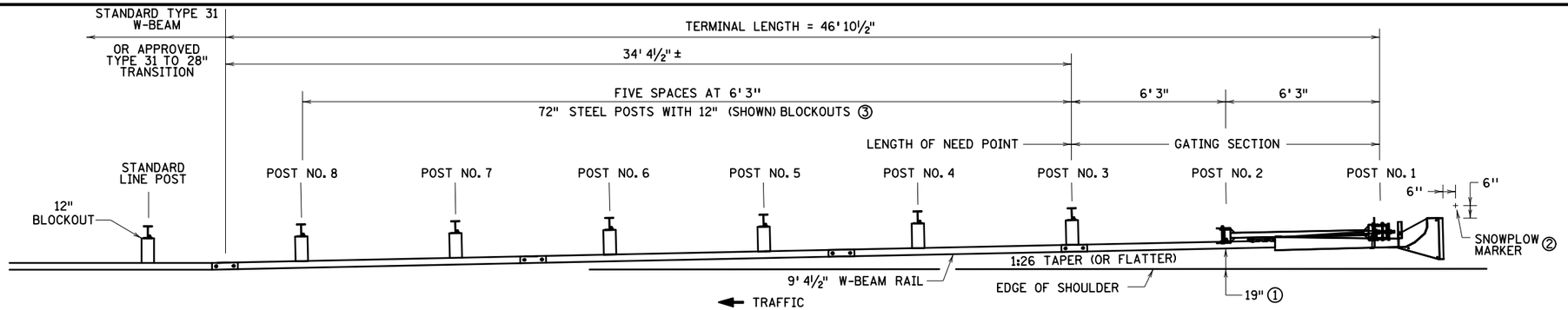
POSTS 2 - 8, 8" BLOCKOUTS ACCEPTABLE.

OPTIONAL 25' ANCHOR RAIL AND 25' SYSTEM RAIL ACCEPTABLE.

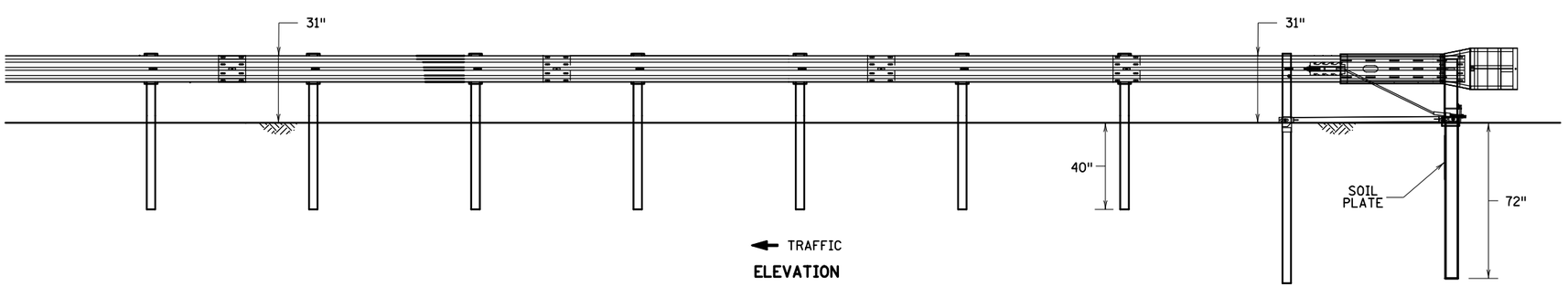
END TERMINAL TO FOLLOW A STRAIGHT TAPER.

① LESSER OFFSET ALLOWED WITH APPROVAL OF THE ENGINEER.

② SEE STANDARD PLAN 5-297.601.



PLAN



ELEVATION

MSKT
(ROAD SYSTEMS INC.)

NOTES:

THIS IS A PROPRIETARY ITEM AS PER SPEC. 1703.

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ALL TERMINAL RAIL MUST BE STRAIGHT. CURVED TERMINAL RAIL IS NOT ALLOWED.

ALL BOLTS, NUTS, CABLE ASSEMBLIES, CABLE ANCHORS, AND BEARING PLATES SHALL BE GALVANIZED PER MnDOT SPEC. 3392.

POSTS 1 AND 2 ARE PROPRIETARY HINGED POSTS.

THE RAIL IS DESIGNED TO EXIT THE IMPACT HEAD ON THE BACK SIDE OF THE TERMINAL.

END TERMINAL TO FOLLOW A STRAIGHT TAPER.

① LESSER OFFSET ALLOWED WITH APPROVAL OF THE ENGINEER.

② SEE STANDARD PLAN 5-297.601.

③ 8" BLOCKOUTS ARE ACCEPTABLE.

REVISION:

APPROVED: 05-14-2021

NANCY YOO
DESIGN SUPPORT DIRECTOR
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MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.612 | 1 OF 1

APPROVED: 05-14-2021
REVISED:

THOMAS STYRBICKI
STATE DESIGN ENGINEER

PROPRIETARY END TERMINAL - TANGENT FOR TYPE 31 GUARDRAIL

STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS

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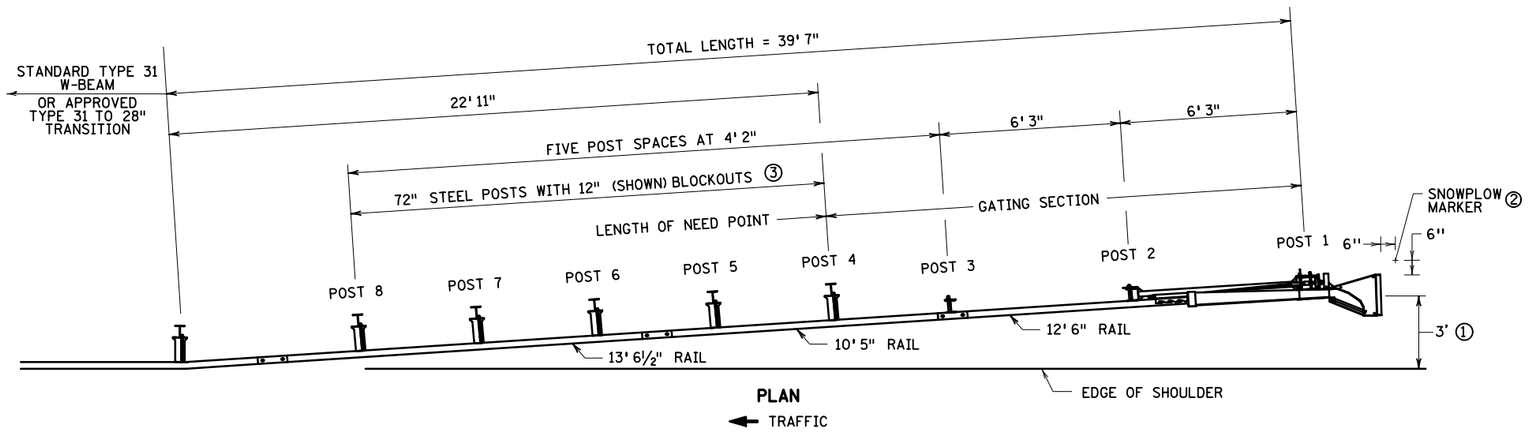
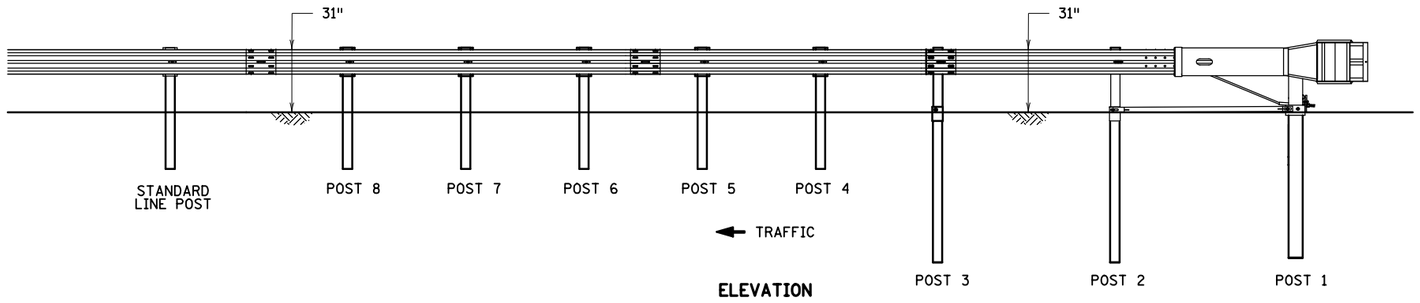


PLAN

← TRAFFIC



ELEVATION

MFLEAT
(ROAD SYSTEMS INC.)

NOTES:

THIS IS A PROPRIETARY ITEM AS PER SPEC. 1703.

THESE DETAILS ARE FOR DESIGN GUIDANCE INFORMATION ONLY. CHECK WITH MANUFACTURER FOR CURRENT DETAILS AND INSTALLATION INSTRUCTIONS.

ALL TERMINAL RAIL MUST BE STRAIGHT. CURVED TERMINAL RAIL IS NOT ALLOWED.

ALL BOLTS, NUTS, CABLE ASSEMBLIES, CABLE ANCHORS, AND BEARING PLATES SHALL BE GALVANIZED PER MnDOT SPEC. 3392.

POSTS 1 - 3 ARE PROPRIETARY HINGED POSTS.

THE RAIL IS DESIGNED TO EXIT THE IMPACT HEAD ON THE TRAFFIC SIDE OF THE TERMINAL.

① MEASURED TO THE FACE OF RAIL AT POST 1.
② SEE STANDARD PLAN 5-297.601.
③ 8" BLOCKOUTS ARE ACCEPTABLE.

REVISION:

APPROVED: 05-14-2021

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

MINNESOTA DEPARTMENT OF TRANSPORTATION

THOMAS STYRBICKI
STATE DESIGN ENGINEER

STANDARD PLAN 5-297.613 | 1 OF 1

APPROVED: 05-14-2021
REVISED:

PROPRIETARY END TERMINAL – FLARED FOR TYPE 31 GUARDRAIL

STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS

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