Minnesota Department of Transportation
Engineering Services Division

Transmittal No. 21-03
May 26, 2021

Standard Plates

Distribution: **Electronic Distribution Recipients**

Subject: Standard Plates 8000 and 8337

The following Standard Plates are new or updated:

8000 – Temporary Channelizers
8337 – Temporary Portable Precast Concrete Barrier

See attached Summaries 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 21-02, dated May 5, 2021

2. Remove from the manual:
   - Numerical Index of Standard Plates
   - Standard Plate 8000
   - Standard Plate 8337

3. Insert into the manual:
   - Numerical Index of Standard Plates, Sheets 1-4 of 4 (05-14-2021)
   - Standard Plate 8000K, Sheets 1-3 of 3 (05-14-2021)
   - Standard Plate 8337D, Sheets 1-3 of 3 (05-14-2021)

4. The Standard Plates Manual and associated Transmittal Letters are available online in PDF format at https://standardplates.dot.state.mn.us/stdplate.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

Michael Elle, P.E.
State Design Standards Engineer
Office of Project Management and Technical Support

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STANDARD PLATES

PLATE NO.

0000 SERIES—BLANK

1000 SERIES—PAVEMENT

1070M	Supplemental Pavement Reinforcement
1103L	Typical Dowel Bar Assembly (2 Sheets)
1210G	Concrete Pavement Adjacent to Railway Crossing

2000 SERIES—BLANK

3000 SERIES—CULVERTS AND APPURTENANCES

3000M	Reinforced Concrete Pipe (6 Sheets)
3001B	Reinforced Concrete Reducer Pipe
3002B	Reinforced Concrete Increaser Pipe
3006H	Gasket Joint for R.C. Pipe (2 Sheets)
3007F	Shear Reinforcement for Precast Drainage Structures
3014K	Reinforced Concrete Pipe Arch (3 Sheets)
3020H	Reinforced Precast Concrete Cattle Pass (60" & 72")
3022C	Precast Concrete Safety Apron (3 Sheets)
3040F	Corrugated Metal Pipe Culvert (Standard 2-2/3" x 1/2" Corrugation)
3041E	Corrugated Metal Pipe (3" x 1" Corrugation)
3050B	Design Data Structural Plate Structures (18" Corner Radius)
3051B	Design Data Structural Plate Structures (31" Corner Radius)
3065C	Connection between Existing Culv. & New "C" Culv. Barrel (2 Sheets)
3066A	C.M. Extension for Box Culvert
3100G	Concrete Apron for Reinforced Concrete Pipe
3110G	Concrete Apron for Reinforced Concrete Pipe-Arch
3114H	Sectional Concrete Apron for Reinforced Concrete Pipe-Arch
3122K	Metal Apron for C.M. Pipe-Arch Culvert
3123J	Metal Apron for C.S. Pipe
3124B	Metal Apron Connection
3125A	Inlet Protection for Metal Culverts (90" dia. to 96" dia.)
3126B	Inlet Protection for Structural Plate Pipe (60" thru 96" dia. or span)
3127A	Inlet Protection for Structural Plate Pipe (102" thru 180" dia. or span)
3128H	Metal Safety Apron & Grate (2 Sheets)
3129A	Metal Apron for Corrugated Polyethylene Pipe (Use at Entrances and Driveways)
3131C	Precast Concrete Headwall for Subsurface Drains
3132A	Grate for 1:4 Precast Concrete Aprons

PLATE NO.

3133D	Riprap at RCP Outlets
3134D	Riprap at CSP Outlets
3135A	Hand-Placed Riprap at Precast Concrete Cattle Pass
3136B	Slotted Vane Drain for P.V.C. Pipe
3137B	Slotted Drain for 12" thru 30" Dia. C.M. Pipe (Stackable)
3138B	Slotted Drain for 12" thru 30" Dia. C.M. Pipe (Not Stackable)
3139B	Riprap at Precast Concrete End Sections
3142A	Outlet Screen for C.M. & S.C. Pipes
3143C	Inspection Tees
3145G	Concrete Pipe or Precast Culvert Ties
3146C	Anti-Seepage Diaphragm (For CMP and CMP-A)
3148A	Safety Slope Metal End Section for Circular & Arched Pipes (2 Sheets)
3221D	Corrugated Steel Pipe Coupling Band (3 Sheets)

4000 SERIES—SEWER APPURTENANCES

Drainage Structure and Castings (4 Sheets)

- Structure and Casting Combinations
- Standard Casting Assemblies
- List of Castings
- List of Drainage Structures

4000J	Manhole or Catch Basin (Masonry, Field Constructed) - Design A
4002F	Manhole or Catch Basin (Masonry, Field Construction) - Design C
4003B	30" Precast Catch Basin – Design N
4005M	Manhole or Catch Basin Type A & B Cone Sections Precast - Design F
4006L	Manhole or Catch Basin Precast - Designs G and H
4007C	Precast Mechanical Joint Sewer Manhole
4008E	Catch Basin (Sectional Concrete Pipe) - Design I
4009H	Manhole or Catch Basin (Sectional Concrete Pipe) - Design J
4010H	Concrete Short Cone & Adjusting Ring (Sectional Concrete)
4011E	Precast Concrete Base
4017C	Catch Basin (Concrete Pipe and Metal Pipe) - Designs PC and PM
4018B	Manhole or Catch Basin (Reducer Cone Section Precast) Design D
4020J	Manhole or Catch Basin (For Use With or Without Traffic Loads) (2 sheets)
4021F	Precast Curb Opening Catch Basin
4022A	Manhole or Catch Basin Cover (3 ft. X 2 ft. Opening)
4024A	48" Dia. Precast Shallow Depth Catch Basin - Design SD
4025B	Drop Inlets or Catch Basins - Design DI (Concrete & Metal)
4026A	Concrete Encased Concrete Adjusting Rings
4101D	Ring Casting For Manhole or Catch Basin
4108F	Adjusting Rings for Catch Basins and Manholes
4110F	Cover Casting for Manhole (For Use in all Traffic Areas) – Casting No. 715 and 716
4125D	Catch Basin Frame Casting (For Square Grate) – Casting No. 806
4126F	Catch Basin Frame Casting – Casting No. 801
4129G	Catch Basin Frame Casting (For Square Grate) - Casting No. 802A
4132G	Catch Basin Frame Casting (For Square Grate) – Casting No. 805
4133A	Curb Box Casting for Catch Basin - Casting No. 824
4134A	Curb Box Casting for Catch Basin (For Design B Curbs) - Casting No. 825
4140D	Special Grate Castings for Catch Basin (Convex and Concave) - Casting No. 720 and 721
4143E	Stool Grate & Concrete Frame (Median Drains) - Casting No. 731
4149C	Grate Casting for Catch Basin - Casting No. 810
4150C	Grate Casting for All Pipe Drainage Structures
4151B	Grate Casting for Catch Basin (Square Type) - Casting No. 811
4152C	Catch Basin Grate Casting - Casting No. 814A

PLATE NO.

4153A Catch Basin Grate Casting - Casting No. 815
4154B Catch Basin Grate Casting - Casting No. 816
4155A ADA Grate Inlet Casting – Casting No. 817
4160D Curb Box Casting for Catch Basin - Casting No. 823A and 833A
4161F Curb Box Casting for Catch Basin - Casting No. 821B, 822 and 831A
4180J Manhole or Catch Basin Step

5000 SERIES—EROSION CONTROL STRUCTURES

5010A Reinforced Concrete Pipe Energy Dissipator

6000 SERIES—BLANK

7000 SERIES—CURB, CURB AND GUTTER, SIDEWALK

7000E Integrant Curbs (Design B, Design V and Design D)
7020K Concrete Curb (Design B, Design V, Design S, Design DR and Design BR) (2 Sheets)
7038A Detectable Warning Surface Truncated Domes
7065C Bituminous Curb
7100H Concrete Curb and Gutter (Design B and Design V)
7102K Concrete Curb and Gutter (Design D, Design S, and Design R)
7105C Concrete Median (Mountable Type)
7107I Entrance Nose (Urban Design)
7108G Exit Nose (Urban Design)
7109C Median Nose and Island (Undivided to Divided Roadway)
7111J Installation of Catch Basin Castings (Concrete Curb and Gutter)
7112C Installation & Reinforcement of Catch Basin & Manhole Castings (Concrete Integrant Curbs)
7113A Concrete Approach Nose Detail

8000 SERIES—BARRICADES, SIGNALS, MARKERS, ETC.

8000K Temporary Channelizers (3 Sheets)
8106D Equipment Pad B
8107A RLF Equipment Pad Foundation Layout
8110E Traffic Signal Bracketing (Pole Mounted)
8111E Traffic Signal Bracketing (Pedestal Mounted) (3 Sheets)
8112I Pedestal Foundation (Traffic Control Signals)
8117G Precast Concrete Handhole With Vehicle Load
8118D Service Equipment & Pole Traffic Control Signals
8119C Ground Mounted Cabinet Foundation
8120Q Pole Foundation (PA85)
8121H Transformer Base and Pole Base Plate (PA85, PA90 and PA100) (2 Sheets)
8122F Pedestal and Pedestal Base (For Traffic Control Signals Support) (2 Sheets)
8123G Pole and Mast Arm Luminaires and Traffic Lights Assembly (For All Pole Types) (2 Sheets)
8126L Pole Foundation (PA90 and PA100)
8127E Light Foundation - Design E, Precast/Cast-In-Place, 40 ft. Pole or Less (2 Sheets)
8128E Light Foundation - Design H, Precast/Cast-In-Place, 49 ft. Pole (2 Sheets)
8129A Shim and Washer (Traffic Control Signals and Roadway Lighting)
8130E Saw Cut Loop Detectors (3 Sheets)
8132B Preformed Rigid PVC Conduit Loop Detector (3 Sheets)
8133A Pole and Mast Arm - Type BA (9 Sheets)
8134C Pole Foundation - Type BA (4 Sheets)
8135A Anchor Rod Assembly for Light Tower Foundation

PLATE NO.

8150C	Installation of Culvert Markers
8307S	W-Beam Guardrail & End Anchorages (Installation with Wood Posts) (4 Sheets)
8308C	Reinforced Concrete Median Barrier Type F (Non-Glare Screen Type) (4 Sheets)
8309C	Reinforced Concrete Median Barrier Type F & Glare Screen (4 Sheets)
8316C	Post Seat for Anchorage on Footing or Box Culverts
8318C	Guardrail Anchorage Plate for Bridges and BCT'S
8326D	Flexible Plastic Glare Screen
8330G	3-Cable Guardrail (With Wood Posts) (Assembly Details) (2 Sheets)
8331B	3-Cable Guardrail (With Steel Posts) (3 Sheets)
8332E	Anchor Rod Assembly for Light Foundation - Barrier
8333B	3-Cable Guardrail Anchor (Anchor Details) (4 Sheets)
8337D	Temporary Portable Precast Concrete Barrier - Type F (3 Sheets)
8338D	W-Beam Guardrail & End Anchorages (Installation with Steel Posts) (4 Sheets)
8339A	3-Cable (Steel Posts) to W Beam (Wood Posts) Guardrail Transition
8340A	3-Cable (Steel Posts) to W Beam (Steel Posts) Guardrail Transition
8342B	High-Tension Cable Barrier Line Post Foundation (Concrete Design)
8343A	High-Tension Cable Barrier Line Post Foundation (Steel Design)
8347B	Portable Precast Concrete Barrier Anchors
8350A	Thrie Beam Anchorage Plate
8352B	Thrie Beam Wedge Plate for Single Slope Barrier
8355A	W-Beam guardrail
8356A	W-Beam to Thrie-Beam Transition Guardrail
8357A	Thrie Beam Guardrail
8358A	Thrie-Beam Slotted Rail for Bullnose (2 Sheets)
8360B	Guardrail Post Length Marking
8361B	Guardrail Steel Post (3 Sheets)
8362A	Universal Breakaway Steel Post (UBSP) (2 Sheets)
8365A	BCT Timber Post
8366A	BCT Foundation Tube
8368A	CRT Wood Post
8369A	Guardrail Blockout (2 Sheets)
8370A	BCT Cable and Components (2 Sheets)
8371A	Nose Cable – Bullnose Guardrail
8400F	Pipe Railing

9000 SERIES—MISCELLANEOUS

9000E	Approaches and Entrances - Recommended Standards
9101B	Shaping and Sodding of Slopes at Box Culvert Ends
9303B	Geodetic Survey Disks (Aluminum) (2 Sheets)
9304A	Geodetic Survey Disks (Removable Type Disk)
9308A	Survey Monument Cap (2 Sheets)
9309G	PLS (Public Land Survey) Monument (2 Sheets)
9320G	Woven Wire Fence (Wood Post)
9321E	Woven Wire Fence (Steel Post)
9322K	Chain Link Fence (2 Sheets)
9323D	Barbed Wire Fence (Wood Post)
9324C	Barbed Wire Fence (Steel Post)
9350A	Mailbox Support (Swing-Away Type)

Summary of Changes
Standard Plate 8000K
Temporary Channelizers
Transmittal Letter No. 21-03

General:

1. Plate designation was incremented from J to K.
2. Title was changed from Channelizers to Temporary Channelizers.

Sheet 1 of 3
Details:

1. All details were revised for clarity.
2. Surface Mounted Delineator title was changed to Tubular Marker ≥36” to <42”.
3. Tubular Markers title was changed to Tubular Marker 42” or Taller.
4. Cones were split into two details based on cone height.
5. Sheeting sizes were changed.

Notes:

1. Notes were completely revised.

Sheet 2 of 3
Details:

1. All details were revised for clarity.
2. Table was removed.

Notes:

1. Notes were completely revised.

Sheet 3 of 3
Details:

1. Detail were revised for clarity.
2. Table was removed.

Notes:

1. Notes were completely revised.

Summary of Changes

Standard Plate 8337D

Temporary Portable Precast Concrete Barrier - Type F

Transmittal Letter No. 21-03

Sheet 1 of 3

General

1. Plate designation incremented from C to D.
2. Plate subtitle changed from Type “F” to Type F.
3. Minor changes for clarity and consistency.

Notes

1. Removed standard plate letter designation requirement from note 1.

Sheet 2 of 3

General

1. Plate designation incremented from C to D.
2. Plate subtitle changed from Type “F” to Type F.
3. Minor changes for clarity and consistency.

Sheet 3 of 3

General

1. Plate designation incremented from C to D.
2. Plate subtitle changed from Type “F” to Type F.
3. Changed all instances of “CONNECTION PIN” to “CONNECTOR PIN” to match Task Force 13 language.
4. Changed Connection Pin to S Connector Pin.
5. Added three T Connector Pin Details.
6. Minor changes for clarity and consistency.

Top Plate and Bottom Plate Detail

1. Renamed from Top Plate Detail to Top Plate and Bottom Plate.
2. Moved plate thickness and material type from Connector Pin Details to Top Plate and Bottom Plate.

Inset A

1. Was Retainer Bolt and Nut Detail; changed to an inset to apply to both connector pins.
2. Added optional bottom plate.
3. Updated connector pin names.

Pin Placement and S Connector Pin

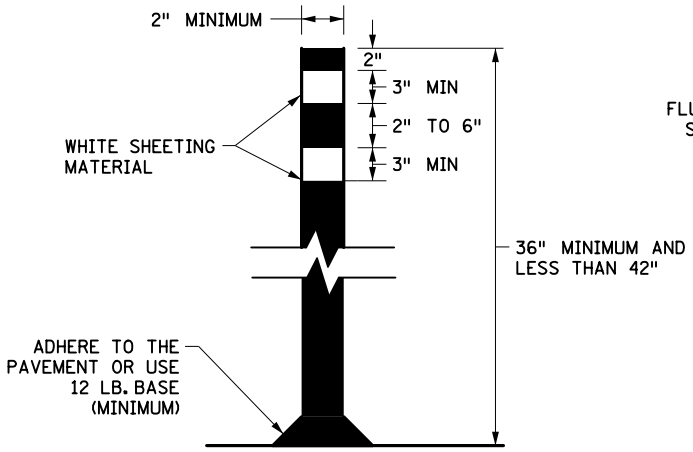
1. These were part of Connection Pin Details, but now stand alone.
2. Added material specification to S Connector Pin detail.

T Connector Pin

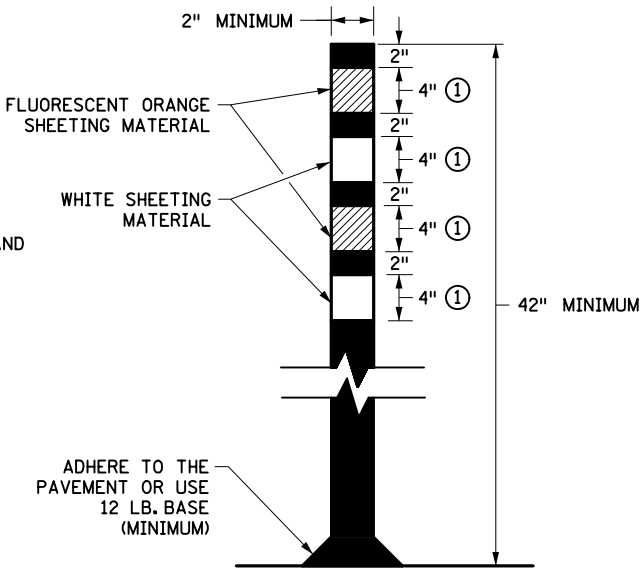
1. These three details are new and are unique to the T Connector Pin.

Note

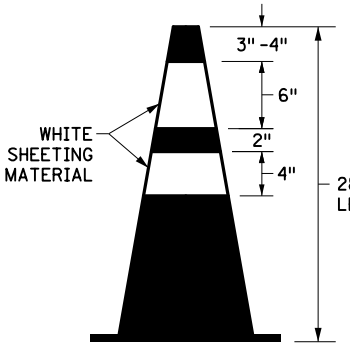
1. Added Note ①.



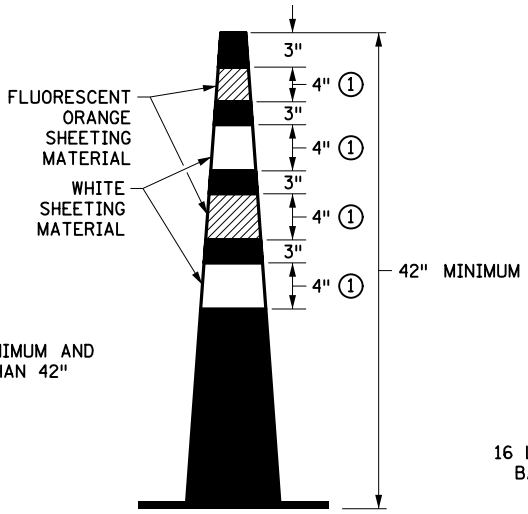
TUBULAR MARKER
≥36" TO <42"



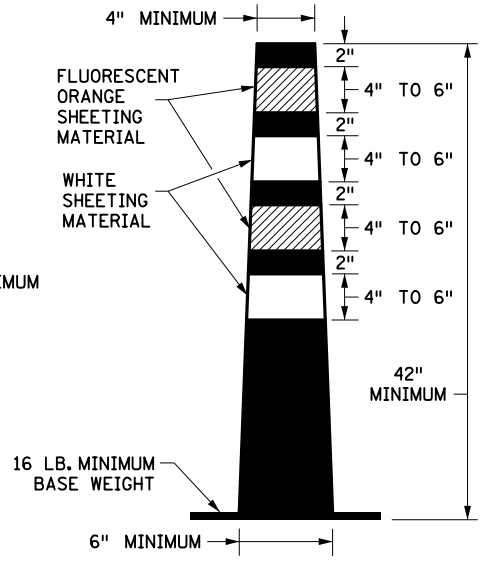
TUBULAR MARKER
42" OR TALLER



CONE
≥28" TO <42"



CONE
42" OR TALLER



WEIGHTED CHANNELIZER ②

NOTES:

ALL CHANNELIZERS MUST MEET MnDOT CRASHWORTHY COMPLIANCE REQUIREMENTS.

WEIGHTED CHANNELIZERS MUST BE MADE OF PREDOMINANTELY ORANGE, LIGHTWEIGHT, DEFORMABLE MATERIALS.

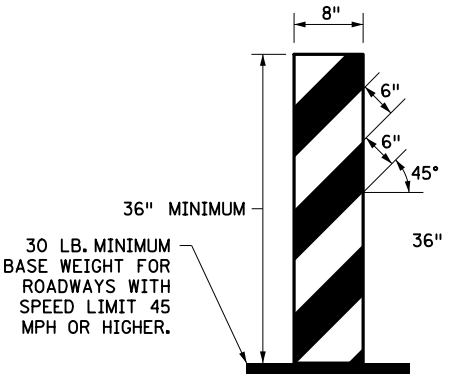
CONES AND TUBULAR MARKERS MUST BE MADE OF A PREDOMINANTELY ORANGE MATERIAL.

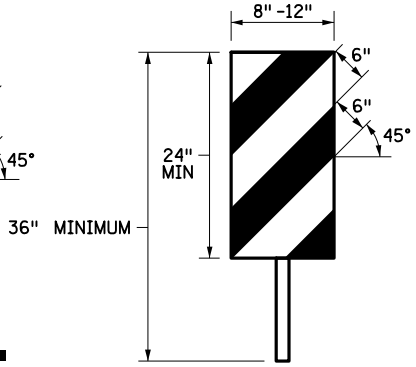
THE SHEETING MATERIALS APPROVED/QUALIFIED PRODUCTS LIST (APL/QPL) SHOWS ALLOWED CHANNELIZER SHEETING AS INDICATED BELOW:
- -FOR TUBULAR MARKERS, USE SHEETING FROM THE TUBE DELINEATOR SHEETING APL/QPL.
- -FOR WEIGHTED CHANNELIZERS, USE SHEETING FROM THE DRUM AND WEIGHTED CHANNELIZER SHEETING APL/QPL.
- -FOR CONES, USE SHEETING FROM THE TRAFFIC CONE SHEETING APL/QPL.

① 5" OR 6" ALLOWED FOR ADDED CONSPICUITY.

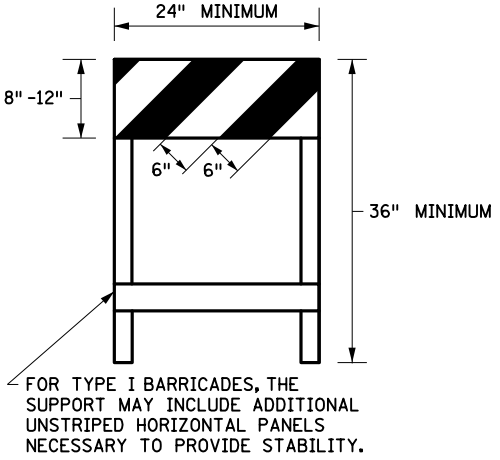
② WEIGHTED CHANNELIZER SHAPE MUST BE CONICAL.

APPROVED 05-14-2021 STATE DESIGN ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **TEMPORARY CHANNELIZERS** TYPE A	SPECIFICATION REFERENCE 1710 2563	STANDARD PLATE NO. 8000K 1 OF 3

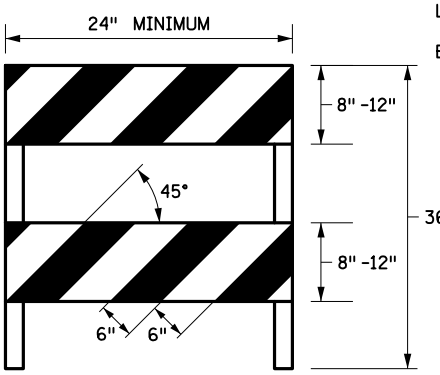




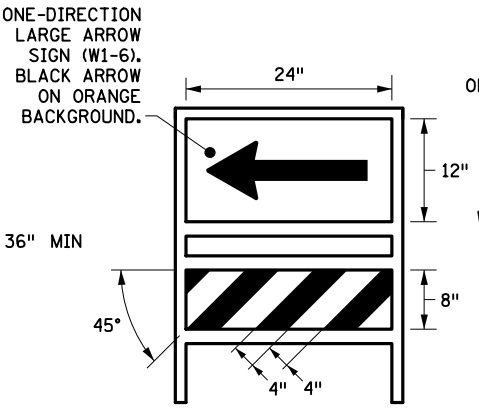
VERTICAL PANEL
FREESTANDING OR POST-MOUNTED



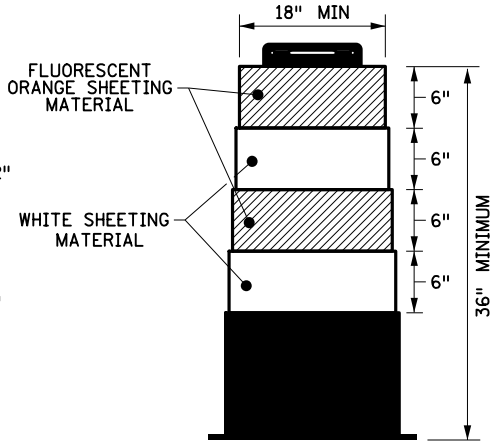
TYPE I BARRICADE



TYPE II BARRICADE



DIRECTION INDICATOR BARRICADE



DRUM

NOTES:

ALL CHANNELIZERS MUST MEET MNDOT CRASHWORTHY COMPLIANCE REQUIREMENTS.

ALL TYPE B CHANNELIZERS MUST HAVE A MINIMUM OF 270 SQUARE INCHES OF RETROREFLECTIVE SHEETING ON THE SIDE FACING ROAD USERS.

PLACE ALL PANELS WITH RETROREFLECTIVE SHEETING PERPENDICULAR TO THE ROADWAY.

DRUMS MUST BE MADE OF PREDOMINANTELY ORANGE, LIGHTWEIGHT, DEFORMABLE MATERIALS.

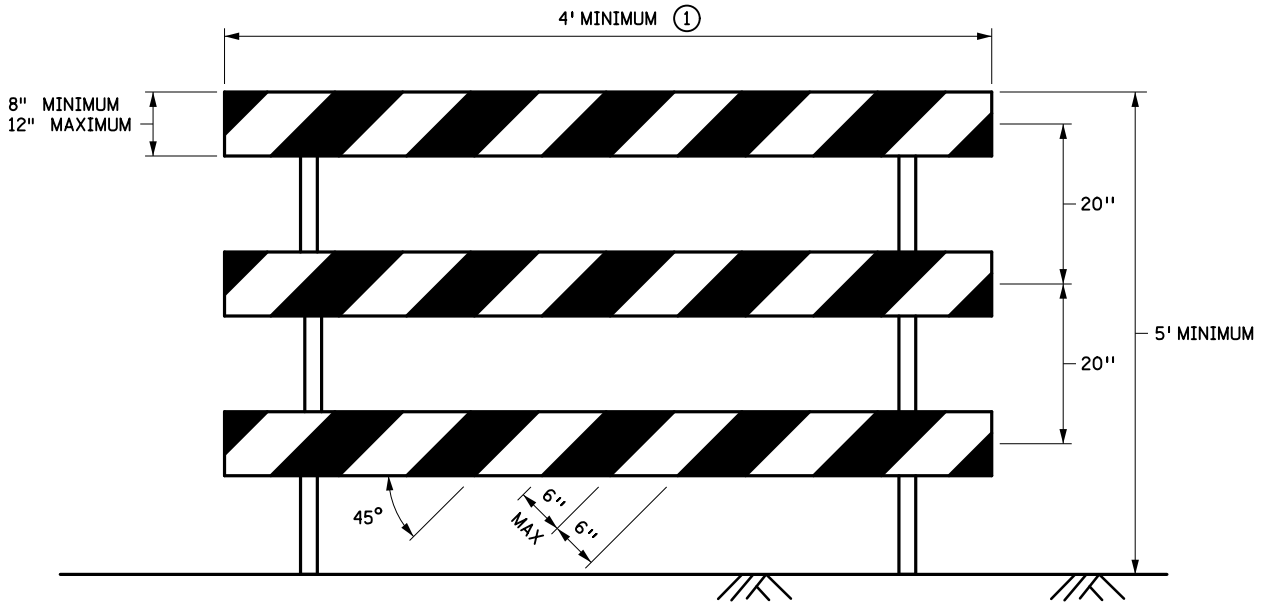
STRIPES ON BARRICADE RAILS AND VERTICAL PANELS MUST BE ALTERNATING ORANGE AND WHITE RETROREFLECTIVE STRIPES SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES IN THE DIRECTION TRAFFIC IS TO PASS. BARRICADES AND VERTICAL PANELS WITH STRIPES WHICH BEGIN AT THE UPPER RIGHT SIDE AND SLOPE DOWN DOWNWARD TO THE LEFT LOWER SIDE ARE DESIGNATED AS "RIGHT" (R) BARRICADES AND VERTICAL PANELS. BARRICADES AND VERTICAL PANELS WITH STRIPES WHICH BEGIN AT THE UPPER LEFT SIDE AND SLOPE DOWN DOWNWARD TO THE RIGHT LOWER SIDE ARE DESIGNATED AS "LEFT" (L) BARRICADES AND VERTICAL PANELS. BARRICADE SHEETING, PROPERLY ORIENTED (R OR L) SHALL BE APPLIED TO ANY BARRICADE RAIL BOARD THAT FACES ROAD USERS.

THE SHEETING MATERIALS APPROVED/QUALIFIED PRODUCTS LIST (APL/QPL) SHOWS THE ALLOWED CHANNELIZER SHEETING AS INDICATED BELOW:

-FOR BARRICADE RAILS (INCLUDING THAT ON THE DIRECTION INDICATOR BARRICADE) AND VERTICAL PANELS, USE SHEETING FROM THE BARRICADE SHEETING APL/QPL.

-FOR DRUMS, USE SHEETING FROM THE DRUM AND WEIGHTED CHANNELIZER SHEETING APL/QPL.

APPROVED 05-14-2021 STATE DESIGN ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **TEMPORARY CHANNELIZERS** TYPE B	SPECIFICATION REFERENCE 1710 2563	STANDARD PLATE NO. 8000K 2 OF 3



TYPE III BARRICADE
R IS SHOWN

NOTES:

ALL CHANNELIZERS MUST MEET MNDOT CRASHWORTHY COMPLIANCE REQUIREMENTS.

ALL PANELS WITH RETROREFLECTIVE SHEETING MUST BE PLACED PERPENDICULAR TO THE ROADWAY.

STRIPES ON BARRICADE RAILS SHALL BE ALTERNATING ORANGE AND WHITE RETROREFLECTIVE STRIPES SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES IN THE DIRECTION TRAFFIC IS TO PASS. BARRICADES WITH STRIPES WHICH BEGIN AT THE UPPER RIGHT SIDE AND SLOPE DOWNWARD TO THE LOWER LEFT SIDE ARE DESIGNATED AS "RIGHT" (R) BARRICADES. BARRICADES WITH STRIPES WHICH BEGIN AT THE UPPER LEFT SIDE AND SLOPE DOWNWARD TO THE LOWER RIGHT SIDE ARE DESIGNATED AS "LEFT" (L) BARRICADES. PROPERLY-ORIENTED (R OR L) BARRICADE SHEETING SHALL BE APPLIED TO ANY BARRICADE RAIL BOARD WHICH FACES ROAD USERS.

ALLOWED CHANNELIZER SHEETING IS SHOWN ON THE SHEETING MATERIALS APPROVED/QUALIFIED PRODUCTS LIST (APL/QPL). FOR BARRICADE RAILS, USE SHEETING FROM THE BARRICADE SHEETING APL/QPL.

DO NOT MOUNT SIGNS ON TYPE III BARRICADES THAT COVER MORE THAN 50 PERCENT OF THE TOP TWO RAILS OR 33 PERCENT OF THE TOTAL AREA OF THE THREE RAILS.

(1) ON CONSTRUCTION PROJECTS, UNLESS OTHERWISE SPECIFIED BY THE CONTRACT PROVISIONS OR REGULATIONS, TYPE III BARRICADES FURNISHED BY THE CONTRACTOR MUST HAVE BARRICADE RAILS AT LEAST 6' LONG.

APPROVED 05-14-2021 STATE DESIGN ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **TEMPORARY CHANNELIZERS** TYPE C	SPECIFICATION REFERENCE 1710 2563	STANDARD PLATE NO. 8000K 3 OF 3

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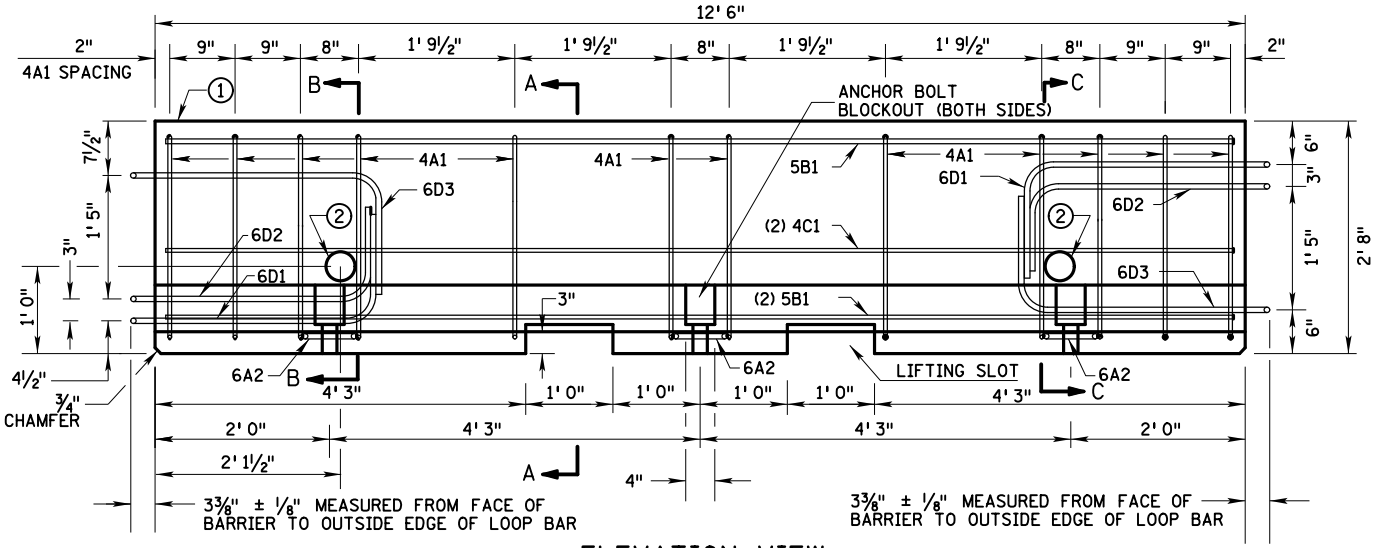
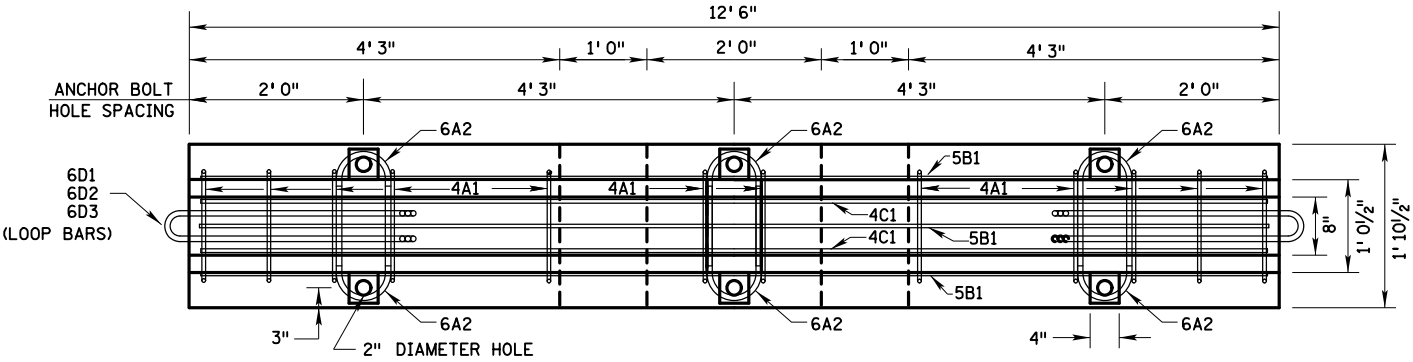
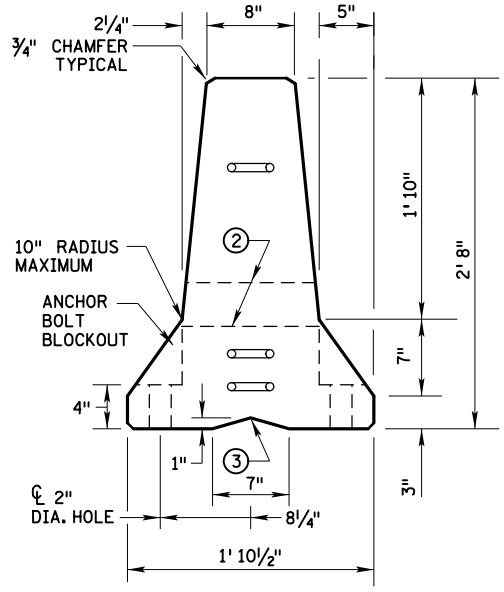


ELEVATION VIEW



PLAN VIEW



END VIEW

NOTES:

THIS BARRIER IS CONSISTENT WITH TYPE SWC09, AS DEFINED IN "A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE."

BARRIER SECTIONS SHALL NOT BE PERMANENTLY INCORPORATED INTO CONSTRUCTION OR MAINTENANCE PROJECTS.

AT NO TIME SHALL THE BARRIERS BE LIFTED, MOVED, ETC. BY USE OF THE LOOP BARS: 6D1, 6D2 OR 6D3.

(1) MARKED END: THE MARKED END IS THAT END OF THE BARRIER HAVING ONE LOOP BAR AT THE TOP AND TWO LOOP BARS AT THE BOTTOM. EACH BARRIER SHALL BE PERMANENTLY MARKED ON THIS END BY FORMING INTO THE BARRIER THE FOLLOWING INFORMATION:
- TYPE 8337
- NAME OR TRADEMARK OF MANUFACTURER
- LOCATION OF PLANT
- DATE MANUFACTURED (MONTH AND YEAR)

(2) LIFTING HOLE: 4" DIAMETER, 11-GAUGE STEEL ROUND MECHANICAL TUBING SLEEVE. THESE HOLES ARE OPTIONAL.

(3) V NOTCH IS OPTIONAL.

APPROVED 05-14-2021

STATE DESIGN ENGINEER

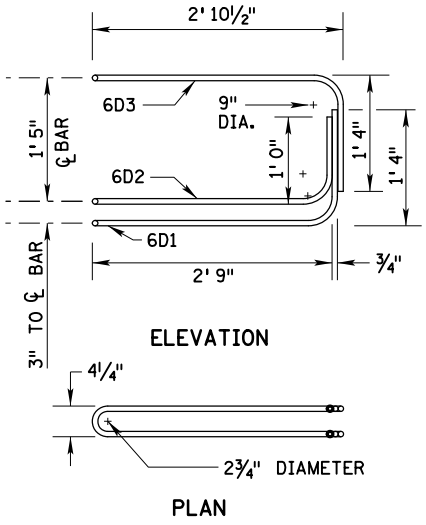
STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

TEMPORARY PORTABLE PRECAST CONCRETE BARRIER

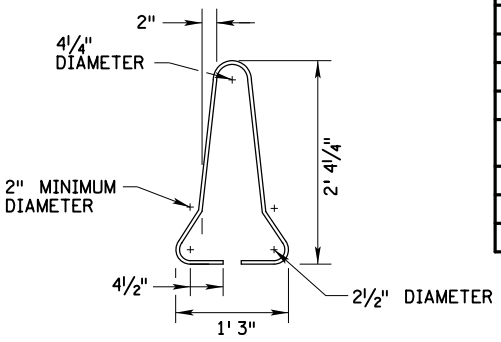
TYPE F

SPECIFICATION REFERENCE
2533 3301 3309

STANDARD PLATE NO.
8337D
1 OF 3

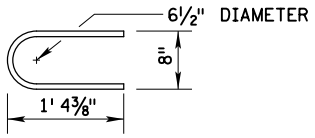


LOOP BAR ASSEMBLY ①
BARS 6D1, 6D2, 6D3

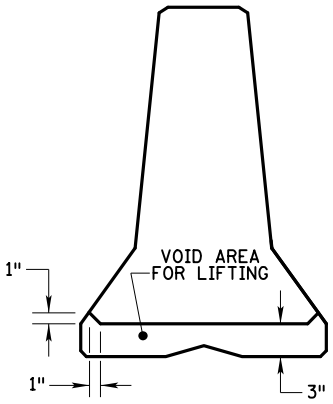


VERTICAL STIRRUP
BAR 4A1

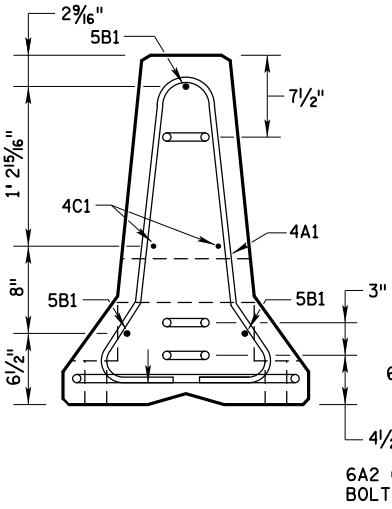
12' 6" BARRIER SECTION					
BILL OF REINFORCING MATERIALS ②					
BAR	BAR SIZE	SHAPE	NO. OF BARS	LENGTH	WEIGHT LBS.
4A1	4		12	6' 0"	48.1
6A2	6		6	2' 11"	26.3
5B1	5		3	12' 2"	38.1
4C1	4		2	12' 2"	16.3
BILL OF LOOP ASSEMBLY MATERIALS ③					
6D1	6		2	8' 5"	25.3
6D2	6		2	7' 7"	22.8
6D3	6		2	8' 6"	25.5



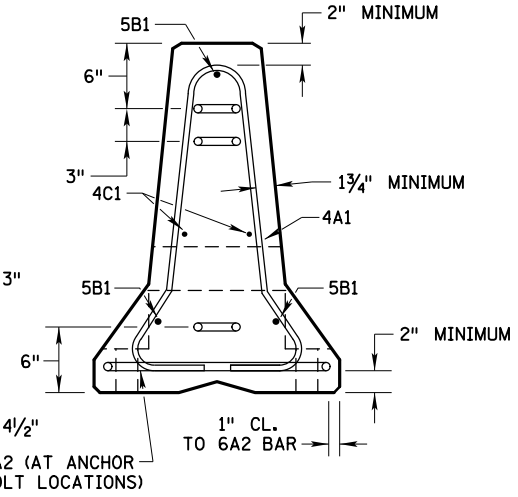
BAR 6A2



SECTION A-A
LIFTING SLOT DETAIL



SECTION B-B
TYPICAL SECTION



SECTION C-C
TYPICAL SECTION

NOTES:

DIMENSIONS ARE OUT-TO-OUT OF BARS UNLESS OTHWISE NOTED.

CONCRETE SHALL DEVELOP A MINIMUM OF 28-DAY CONCRETE COMPRESSIVE STRENGTH OF NOT LESS THAN 5 KSI. THE CONCRETE SHALL USE A PORTLAND CEMENT SPECIFIED IN AASHTO M 85 FOR TYPE I OR II CEMENT.

SECTION: THE SECTION FURNISHED MUST GENERALLY COMPLY WITH DIMENSIONS SHOWN. REQUESTS FOR MINOR VARIATIONS IN SECTION GEOMETRY AND ATTACHMENTS MAY BE SUBMITTED TO THE STATE MATERIALS ENGINEER FOR APPROVAL.

LIFTING SLOTS: LIFTING SLOTS SHALL BE CONSTRUCTED WHERE SPECIFIED ON THE PLANS TO FACILITATE THE DRAINAGE OF WATER AFTER INSTALLATION ON THE ROADWAY.

① MARKED END SHOWN. INVERT FOR OTHER END.

② REINFORCING STEEL SHALL BE GRADE 60 AND SHALL CONFORM TO EITHER OF THE FOLLOWING:
- EPOXY-COATED DEFORMED BARS AS SPECIFIED IN SPEC. 3301
- SPEC. 3301 DEFORMED AND PLAIN BILLET STEEL REINFORCING BARS FOR USE WITH CALCIUM NITRITE CORROSION INHIBITOR (30% CALCIUM NITRITE SOLUTION, AASHTO M 194, TYPE C)

③ LOOP BARS SHALL BE 0.75" DIAMETER SMOOTH STEEL BARS, ASTM A709 GRADE 70W OR ASTM A706 GRADE 60. ALTERNATIVE STEEL CHEMISTRY MAY BE USED AS LONG AS THE ALTERNATIVE MATERIAL PROVIDES A MINIMUM YIELD OF 60 KSI, A TENSILE STRENGTH OF NOT LESS THAN 1.25 TIMES THE YIELD STRENGTH BUT A MINIMUM OF 78 KSI, A MINIMUM 14% ELONGATION IN 8", AND PASSING A 180 DEGREE BEND TEST USING A 3.5D PIN BEND DIAMETER. THE LOOPS SHALL BE INSTALLED WITHIN ⅛" OF THE PLAN DIMENSIONS.

APPROVED 05-14-2021

STATE DESIGN ENGINEER

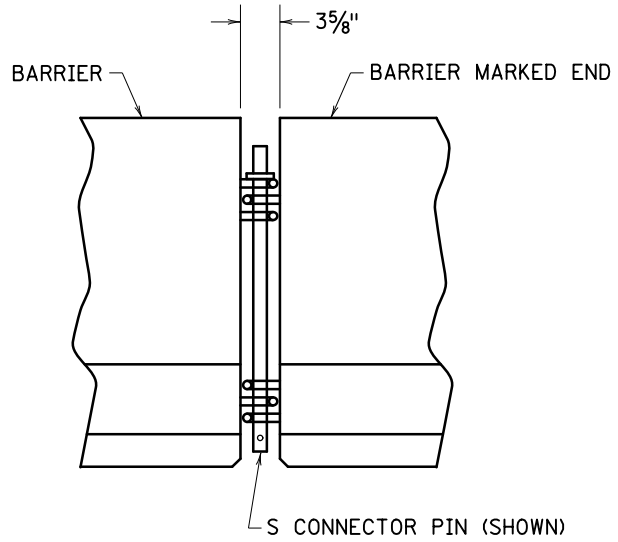
STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

TEMPORARY PORTABLE PRECAST CONCRETE BARRIER

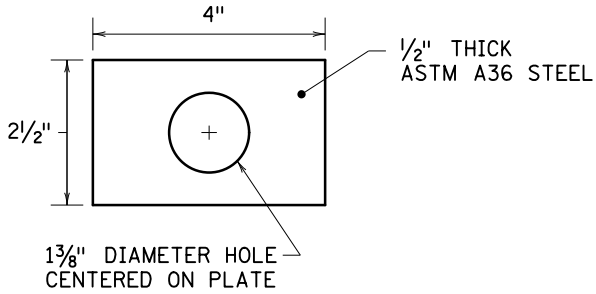
TYPE F

SPECIFICATION REFERENCE
2533 3306
3301

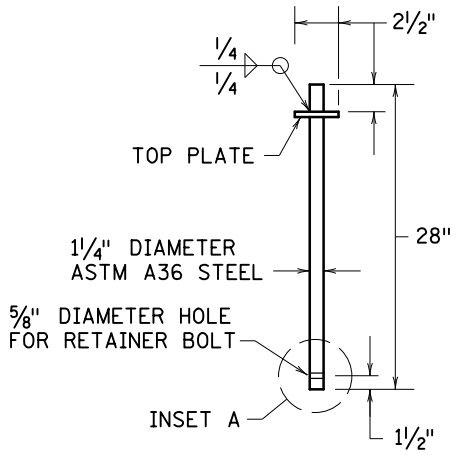
STANDARD PLATE NO.
8337D
2 OF 3



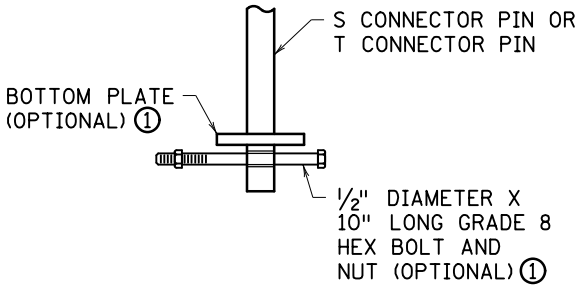
PIN PLACEMENT



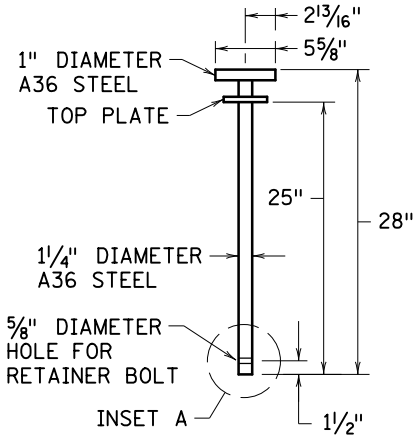
TOP PLATE AND BOTTOM PLATE

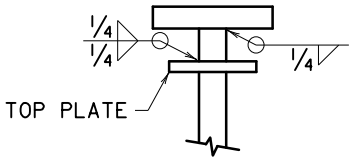


S CONNECTOR PIN

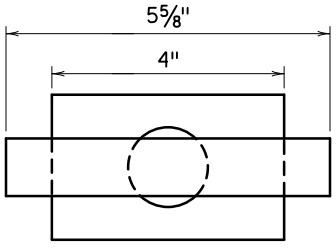


INSET A





T CONNECTOR PIN



PIN AND TOP PLATE ALIGNMENT
TOP VIEW

NOTE:

① BOTTOM PLATE, BOLT, AND NUT ARE REQUIRED WHEN TIE-DOWN STRAP ANCHORS ARE USED.

APPROVED 05-14-2021 STATE DESIGN ENGINEER	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION **TEMPORARY PORTABLE PRECAST CONCRETE BARRIER** TYPE F	SPECIFICATION REFERENCE 2533 3301 3309	STANDARD PLATE NO. **8337D** 3 OF 3

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