

- NOTE: (1) CONCRETE REINFORCEMENT AND NOISE WALL HARDWARE HAVE BEEN OMITTED IN THE SYSTEM VIEWS.
- (2) FOR DETAILS ON THE UPSTREAM AND DOWNSTREAM END ANCHORS, SEE MINNESOTA SPECIFICATIONS.
- (3) 3/16" [4.76] GAP IS PROVIDED BETWEEN EACH RAIL END AND SIDE OF STEEL MID-PLATE. TOTAL DISTANCE BETWEEN RAIL END TO ADJACENT RAIL END IS 3/4".
- (4) DOME HEAD BOLTS MAY HAVE A FLAT HEAD KEY IN CENTER REGION, KEY SHAPES IN THE HEADS, OR FLATTENED SIDES SUFFICIENT FOR AN OPEN-END WRENCH. TIGHTEN THE BOLTS SUFFICIENTLY TO REDUCE SNAGGING ON THE HEADS.

## TIMBER GUARDRAIL SYSTEM FOR ATTACHMENT TO NOISE WALL



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### INTENDED USE

Timber Guardrail System for Attachment to a Noise Wall should be used in locations where a maximum rail dynamic deflection of 3 5/8" [92] or less is acceptable and where a working width of 44 5/8" [1133] is provided. This working width includes the total deflection of the tops of the concrete posts. Timber Guardrail System for Attachment to a Noise Wall should be anchored and terminated using a suitable end treatment or placing the system end outside of the clear zone. Refer to MNDOT Standard Specifications for more detail on anchorage and termination. The Timber Guardrail System for Attachment to a Type No. 1 Noise Wall is TL-3 NCHRP 350 accepted.

### COMPONENTS

#### MAIN RAIL SECTION

Unit Length = 192" [4877]

DESIGNATOR	COMPONENT	SYSTEM	NUMBER
-	Concrete post		2
-	Main timber rail section		1
-	Timber blockout		2
FBB08	Post bolts and nuts		4
FBB09	Splice bolts and nuts		8
FWC30a	Flat washer		8
-	Splice plate		1

#### UPSTREAM END RAIL SECTION

Unit Length = 174 1/4" [4426]

DESIGNATOR	COMPONENT	SYSTEM	NUMBER
-	Concrete post		2
-	Upstream timber end rail section		1
-	Timber blockout		2
FBB08	Post bolts and nuts		4
FBB09	Splice bolts and nuts		8
FCA01	BCT Cable anchor assembly		1
FWC30a	Flat washer		8
-	Splice plate		1

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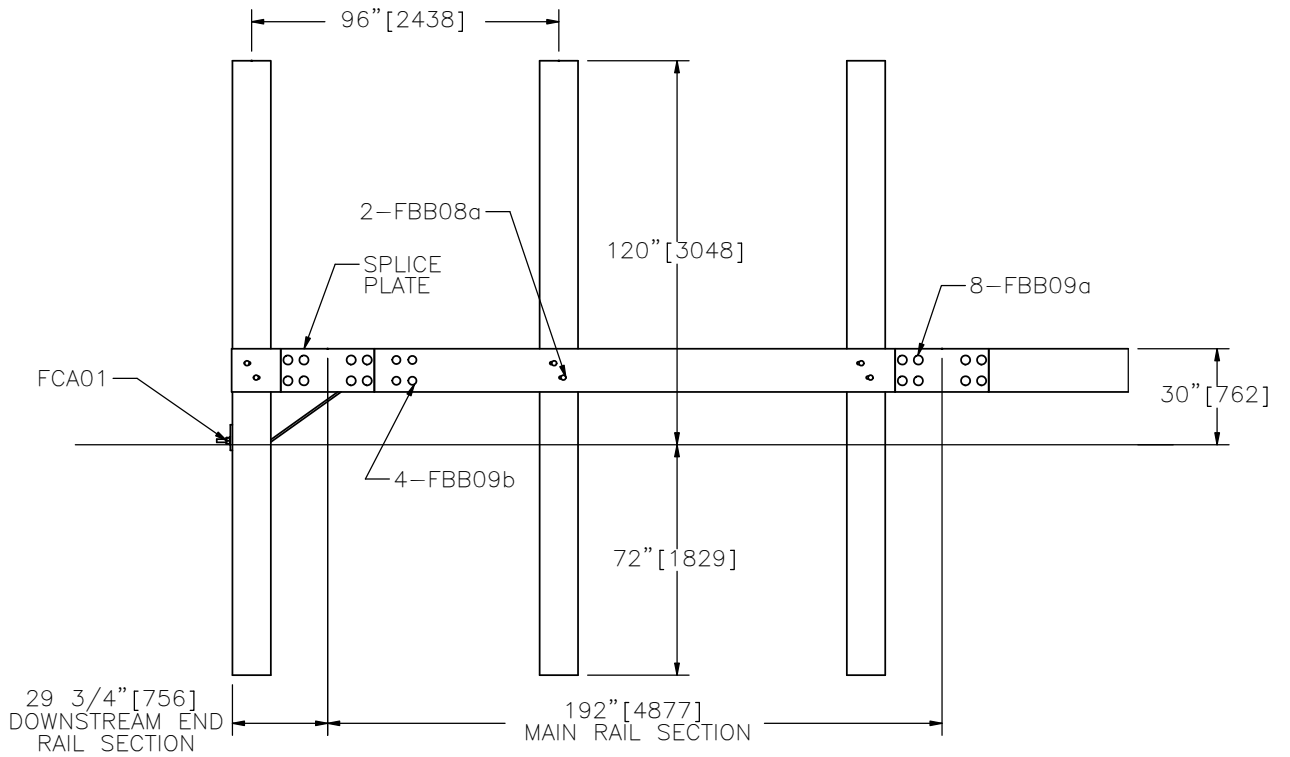
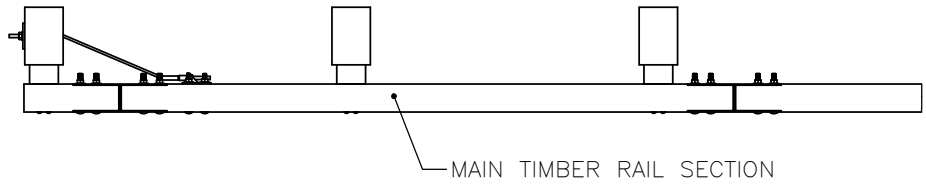


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DOWNSTREAM END RAIL SECTION

Unit Length = 29 5/8" [752.5]

DESIGNATOR	COMPONENT	SYSTEM	NUMBER
-	Concrete post		2
-	Downstream timber end rail section		1
-	Timber blockout		2
FBB08	Post bolts and nuts		4
FBB09	Splice bolts and nuts		8
FCA01	BCT Cable anchor assembly		1
FWC30a	Flat washer		8
-	Splice plate		1

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TIMBER BLOCKOUT

14 3/4" [375]

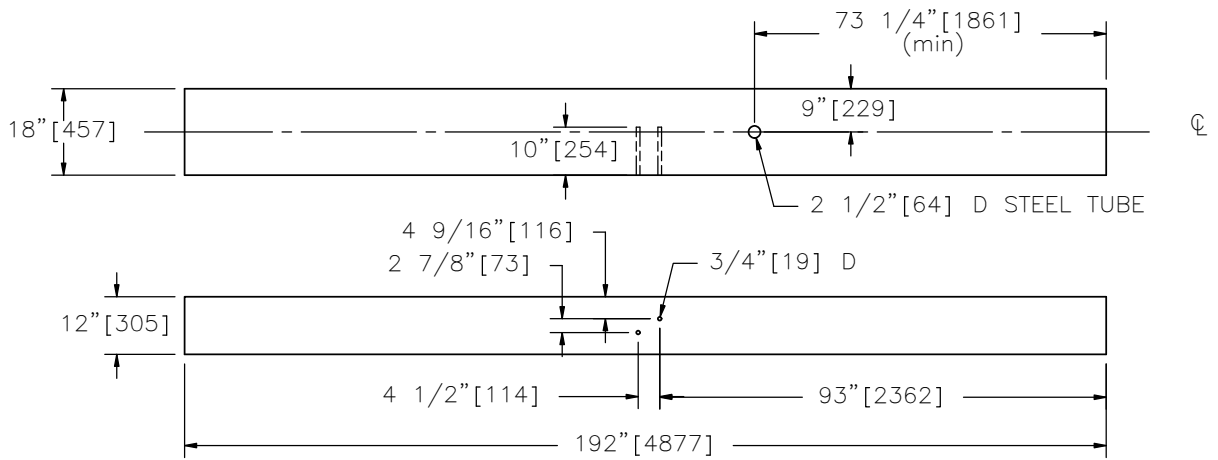
18" [457]

30" [762]

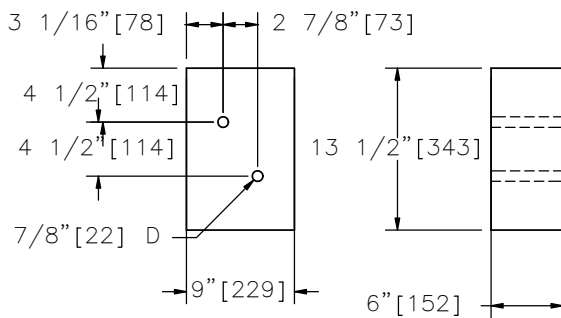
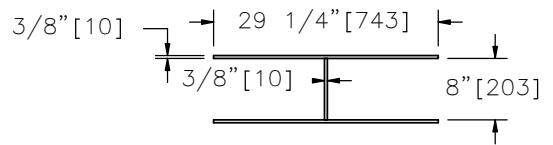
CONCRETE POST

MAIN TIMBER RAIL SECTION

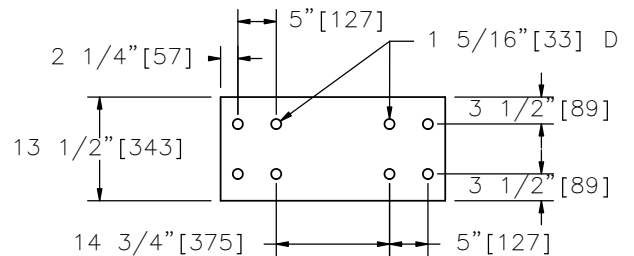
SECTION A-A



CONCRETE POST  
NOTE: REINFORCEMENT DETAIL CAN BE FOUND IN MINNESOTA STANDARDS



TIMBER BLOCKOUT



SPLICE PLATE

TIMBER GUARDRAIL SYSTEM FOR ATTACHMENT TO NOISE WALL



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## SPECIFICATIONS

All concrete posts shall be constructed according to Minnesota Standard Plans 5-297.661 and 5-297.663.

The glue laminated wood rubrail and spacer block shall be fabricated with Combination No. 48 Southern Pine or Combination No. 2 Western Species material, as specified in AASHTO's LRFD Bridge Design Specifications. The wood rubrail and spacer blocks shall be treated with pentachlorophenol in heavy oil to a minimum net retention of 0.6 lbs/cu. ft. as specified in AWWA Standard C14. All wood shall be cut, drilled, and completely fabricated prior to treatment with preservative. Drain excess chemicals and dry all treated wood at the place of manufacture. All field cuts, bore holes, and damages shall be treated with material acceptable to the engineer prior to installation. The application of any materials in field repairs shall be performed in a manner that prevents contamination of surrounding soil.

All steel components shall be formed from ASTM A36/A36M steel plate and zinc-coated according to AASHTO M111 (ASTM A123). No punching, drilling or cutting is permitted after the components are zinc-coated.

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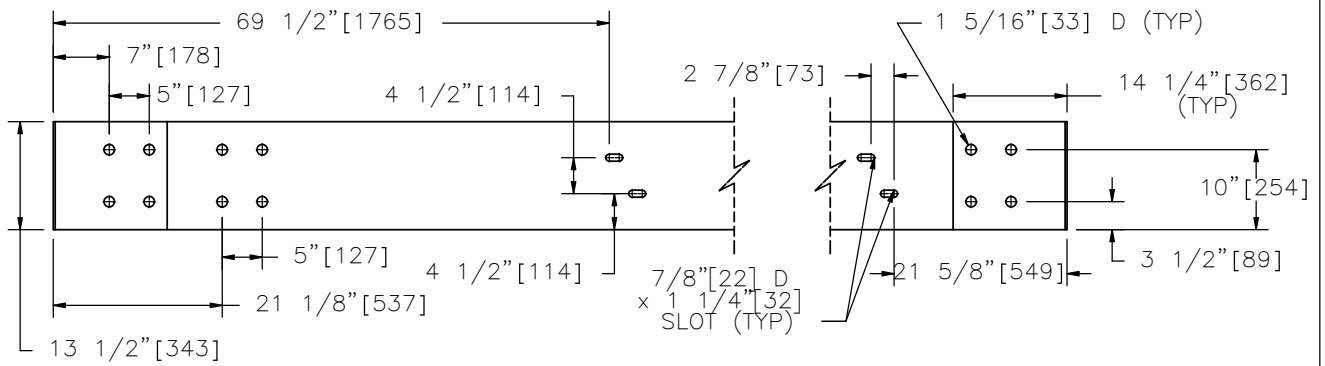


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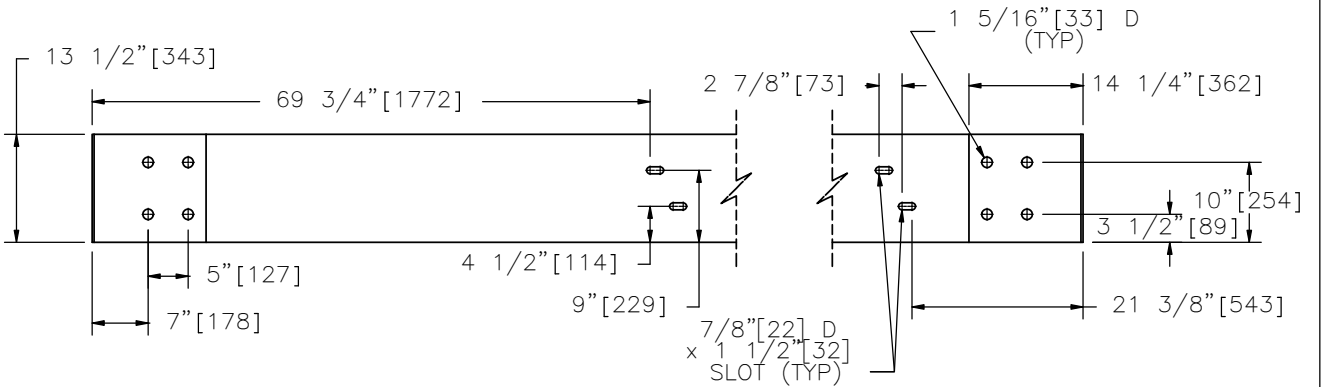
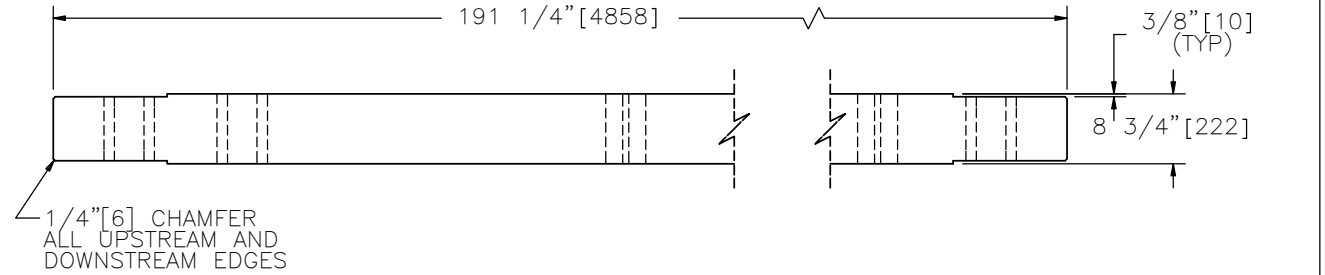
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RAIL SECTION WITH ANCHOR PLATE



MAIN TIMBER RAIL SECTION

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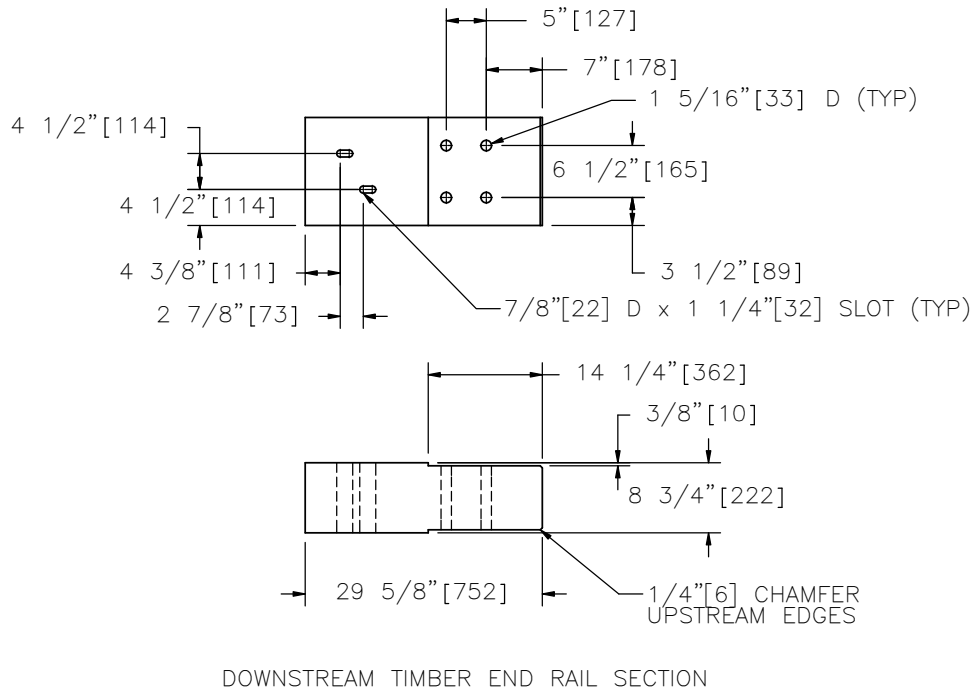
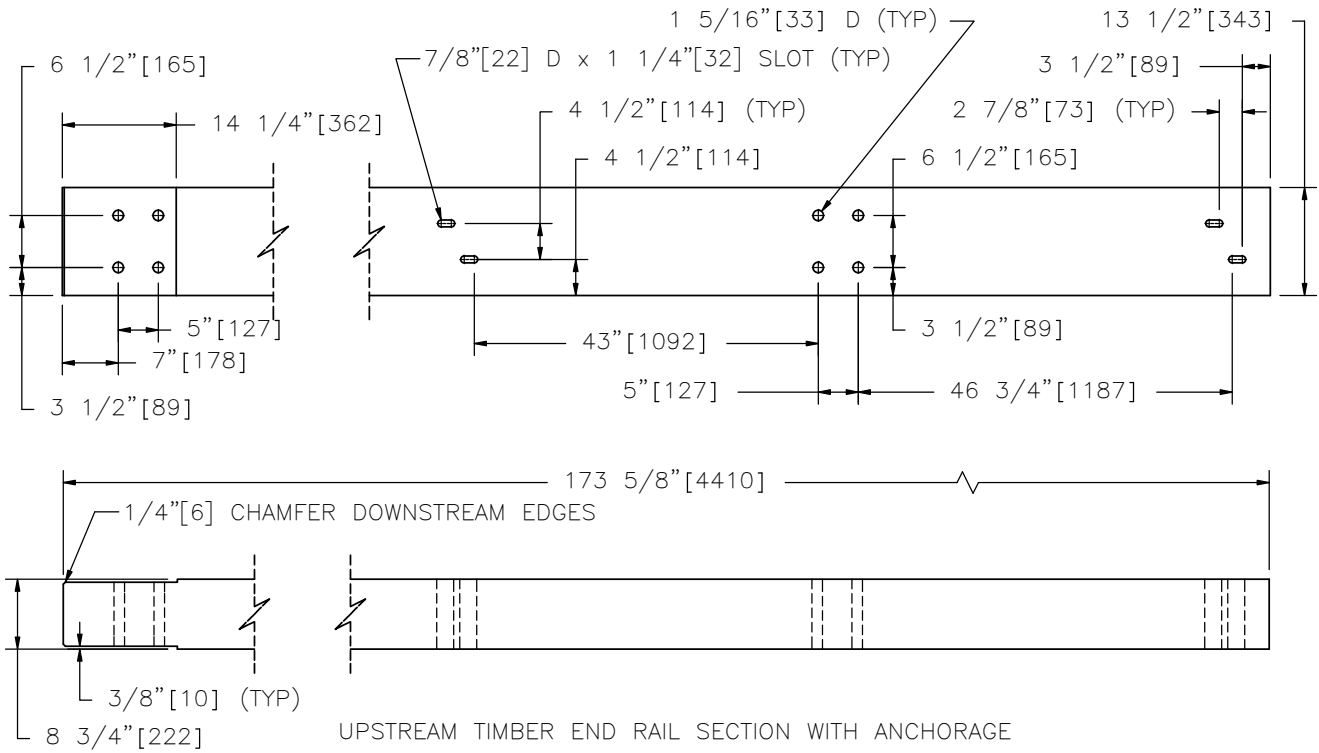
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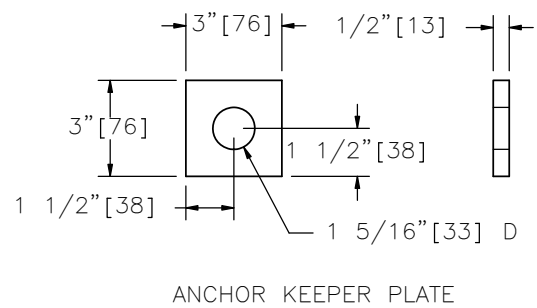
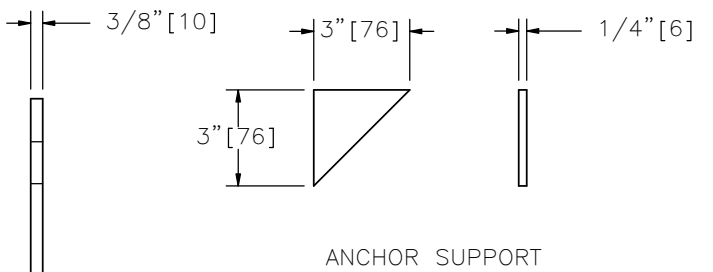
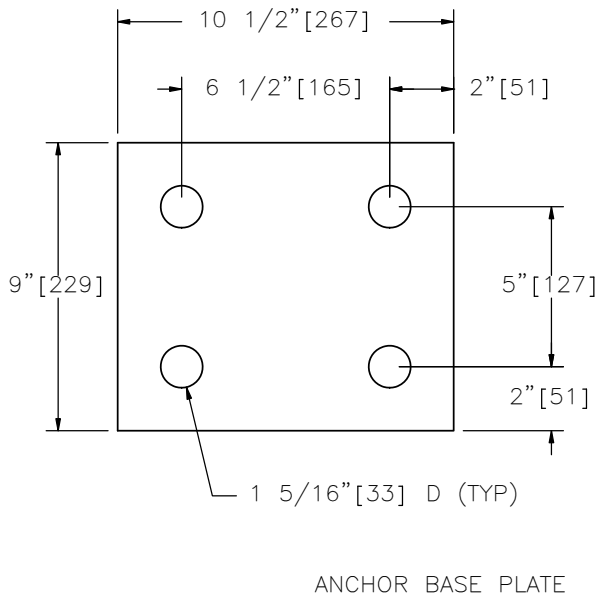
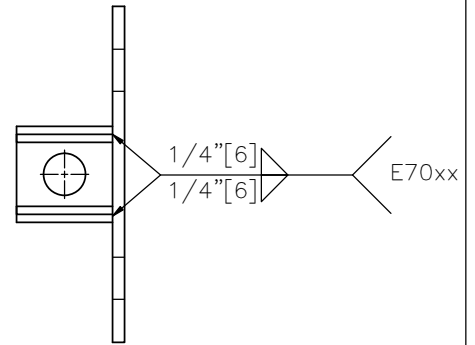
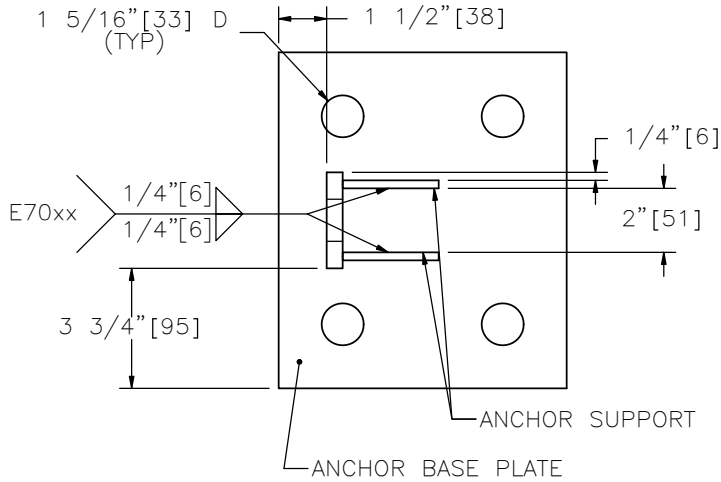
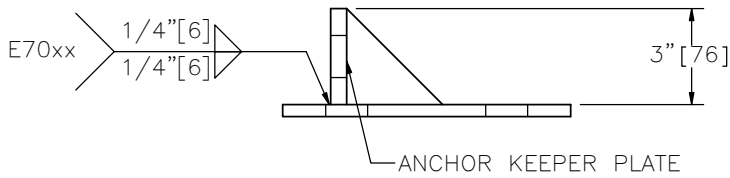
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## ACCEPTANCE

FHWA Acceptance Letter B-135, May 26, 2005.

## REFERENCES

Polivka, K.A., Rohde, J.R., Faller, R.K., Holloway, J.C., Sicking, D.L., *Design and Evaluation of Minnesota's Timber Rub-Rail for Noise Barriers*, Final Report to the Minnesota Department of Transportation, Transportation Research Report No. TRP-03-156-05, Midwest Roadside Safety Facility, University of Nebraska-Lincoln, March 8, 2005.

Minnesota Department of Transportation, *Glue Laminated Rubrail (Concrete Posts)*, Standard Sheet No. 5-297.678 (Sheet Nos. 1-3), July 25, 2006.

## CONTACT INFORMATION

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