

RESTORE LONGITUDINAL BARRIER



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## INTENDED USE

The RESTORE longitudinal barrier is a non-proprietary system. It is a restorable and reusable energy-absorbing roadside and median barrier which fits current roadside and median footprints and lowers lateral accelerations to passenger vehicle occupants during impact events as compared to impacts with rigid concrete barriers. The RESTORE longitudinal barrier is intended to be used in locations where a maximum dynamic deflection of 13.9" [353] or less is acceptable and where a working width of 60.2" [1529] is provided. The upstream and downstream ends of the RESTORE longitudinal barrier should be transitioned into another barrier, such as a rigid concrete barrier or buttress, or terminated with an acceptable termination for the RESTORE longitudinal barrier. The RESTORE longitudinal barrier has been crash tested under Test Level 4 (TL-4) conditions and deemed acceptable according to the Manual for Assessing Safety Hardware (MASH) performance criteria.

## COMPONENTS

Unit Length = 480" [12192]

DESIGNATOR	COMPONENTS	NUMBER
PPF01	Shear fender	8
FMM09	Adjustable continuity joint	4
FBB10	Round head bolt, 5½" [140] long	4
FBX20b	High-strength hex bolt, 21" [533] long, and nut	32
FBX24b	High-strength hex bolt, 11½" [292] long, and nut	16
FNX12b	High-strength hex nut	4
FNX20b	High-strength hex nut	32
FRR20c	Threaded rod, 10" [254] long	32
FWC12a	Plain round washer	4
FWC20b	Hardened round washer	96
FWR10	Square plate washer	32
ROM06	Concrete RESTORE barrier element	2
----	4" [102] square tube	8
----	Anchor plate	8
----	Skid	4
----	Splicing tube insert	2
----	Steel rail	2

## ELIGIBILITY

FHWA eligibility will be pursued.

## REFERENCES

Schmidt, J.D., Schmidt, T.L., Rosenbaugh, S.K., Faller, R.K., Bielenberg, R.W., Reid, J.D., Holloway, J.C., and Lechtenberg, K.A., *MASH TL-4 Crash Testing and Evaluation of the Restore Barrier*, Final Report to Nebraska Department of Roads and Federal Highway Administration, Transportation Research Report No. TRP-03-318-15, Project No. NDOR DPU-STWD (94), Midwest Roadside Safety Facility, University of Nebraska-Lincoln, November 3, 2015.

## RESTORE LONGITUDINAL BARRIER



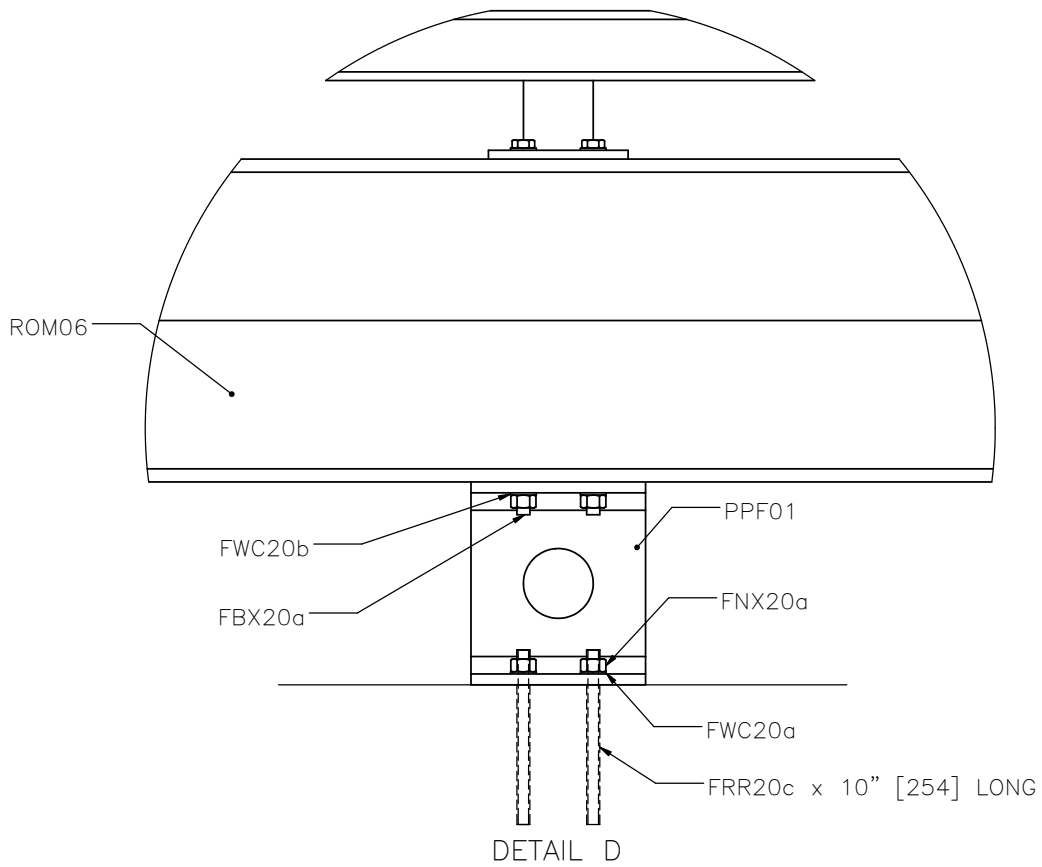
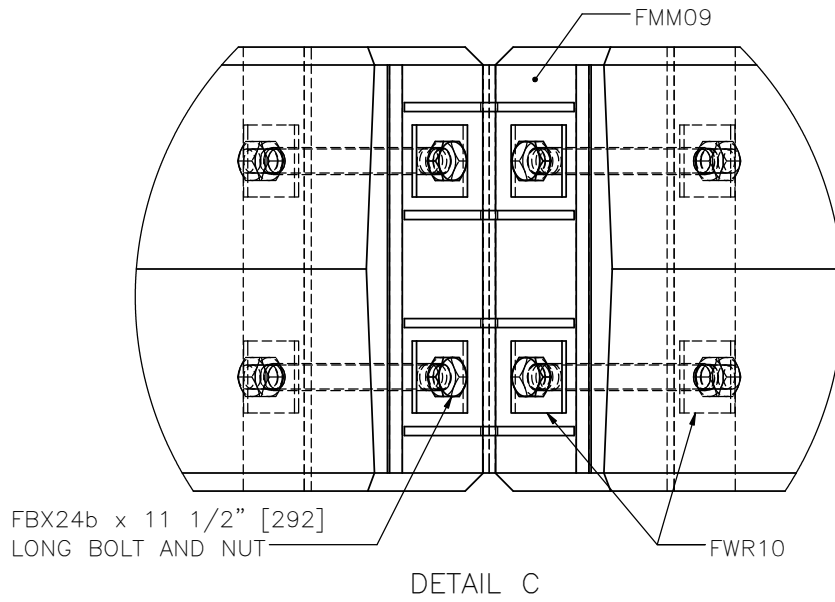
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## REFERENCES

Schmidt, J.D., Schmidt, T.L., Faller, R.K., Sicking, D.L., Reid, J.D., Lechtenberg, K.A., Bielenberg, R.W., Rosenbaugh, S.K., and Holloway, J.C., *Evaluation of Energy Absorbers for Use in a Roadside/Median Barrier*, Final Report to the Nebraska Department of Roads and the Federal Highway Administration – Nebraska Division, MwRSF Research Report No. TRP-03-280-14, Midwest Roadside Safety Facility, University of Nebraska-Lincoln, Lincoln, Nebraska, February 6, 2014.

Schmidt, J.D., Rosenbaugh, S.K., Faller, R.K., Bielenberg, R.W., Reid, J.D., Holloway, J.C., Lechtenberg, K.A., and Kohtz, J.E., *Design and Evaluation of an Energy-Absorbing, Reusable, Roadside/Median Barrier, Phase 3*, Draft Report to the Nebraska Department of Roads and the Federal Highway Administration, MwRSF Research Report No. TRP-03-317-15, Midwest Roadside Safety Facility, University of Nebraska-Lincoln, Lincoln, Nebraska, February 10, 2015.

Schmidt, J.D., Rosenbaugh, S.K., Bielenberg, R.W., Faller, R.K., Reid, J.D., Schmidt, T.L., *MASH TL-4 Design and Evaluation of A Restorable Energy-Absorbing Concrete Barrier*, Paper No. 16-0650, Transportation Research Record No. 2588, Journal of the Transportation Research Board, Washington, D.C., January 2016.

## CONTACT INFORMATION

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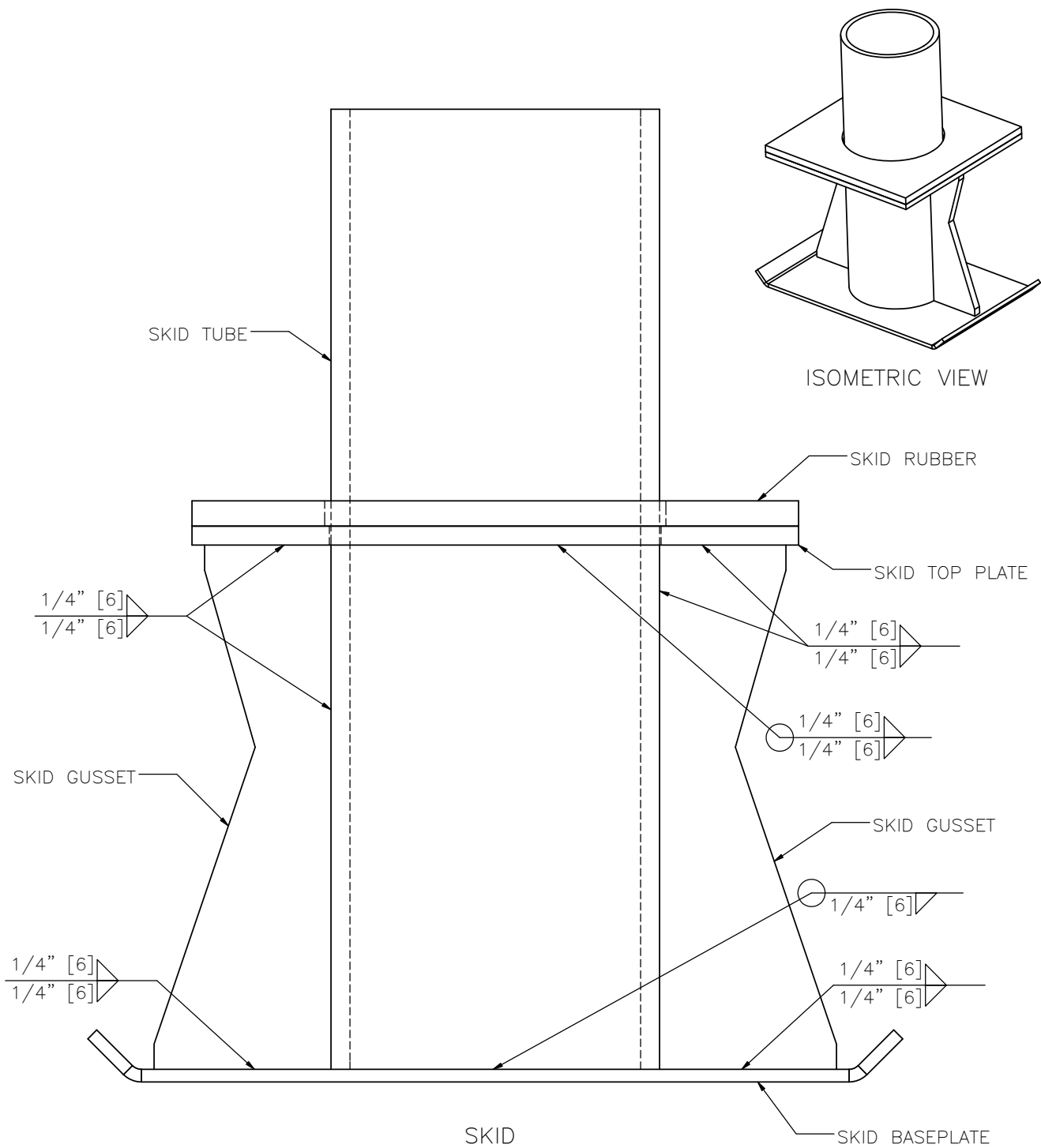
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NOTE: SKID RUBBER ADDED AFTER ALL WELDING AND GALVANIZATION HAS BEEN COMPLETED.

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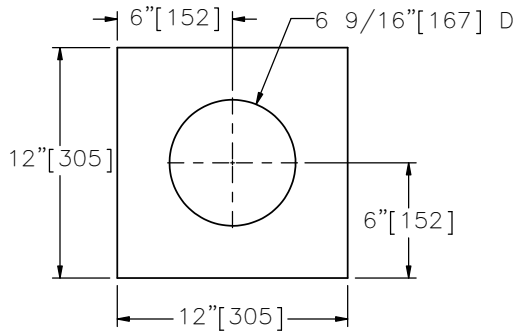
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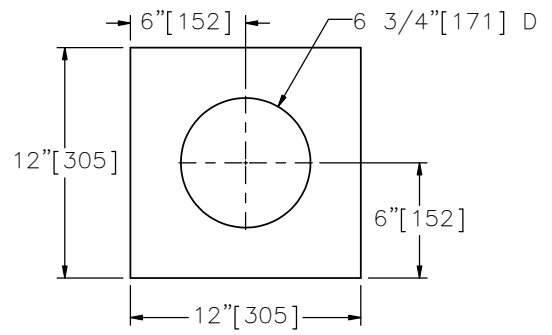
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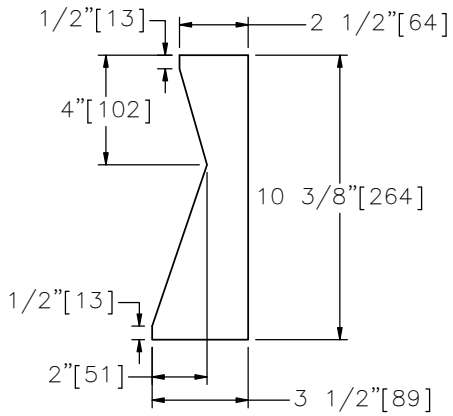
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3/8" [10] THICK SKID TOP PLATE

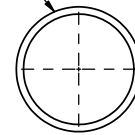


1/2" [13] THICK SKID RUBBER

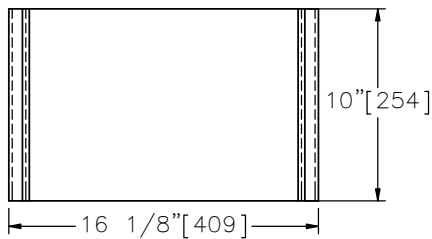


1/2" [13] THICK SKID GUSSET

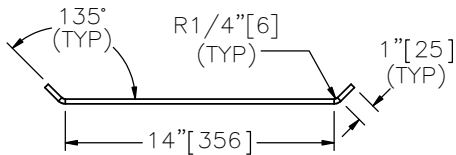
DOM 6 1/2" [165] D x 3/8" [10] THICK  
OR  
DOM 6 1/2" [165] D x 1/2" [13] THICK  
OR  
HFS 6 1/2" [165] D x 1/2" [13] THICK  
OR EQUIVALENT



PLAN VIEW

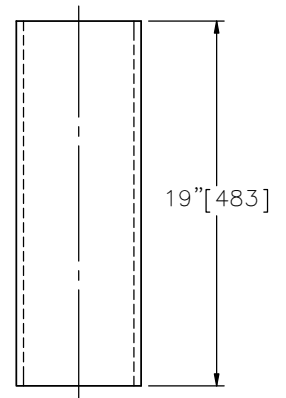


PLAN VIEW



ELEVATION VIEW

1/4" [6] THICK SKID BASEPLATE



ELEVATION VIEW

SKID TUBE

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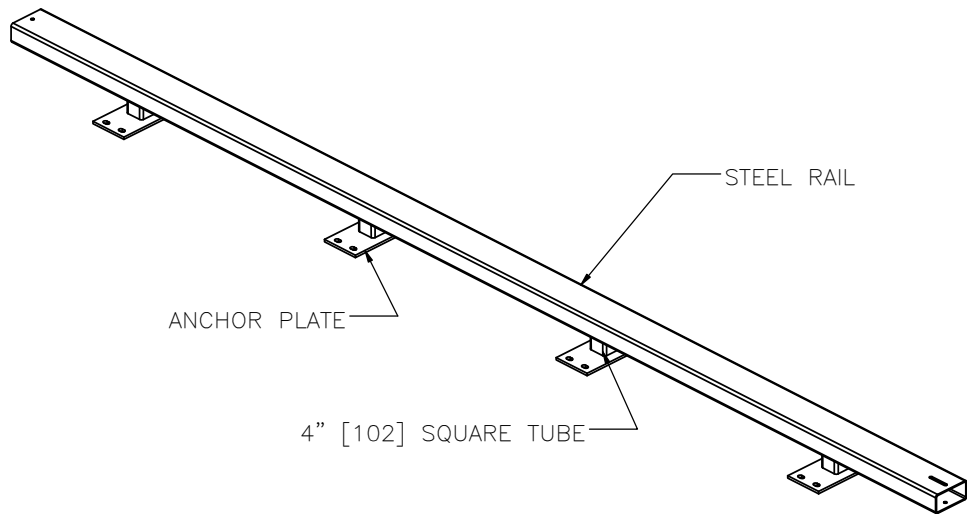
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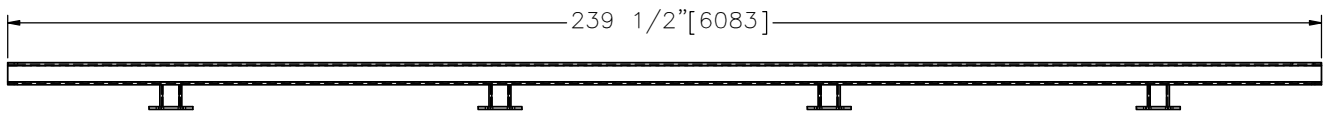
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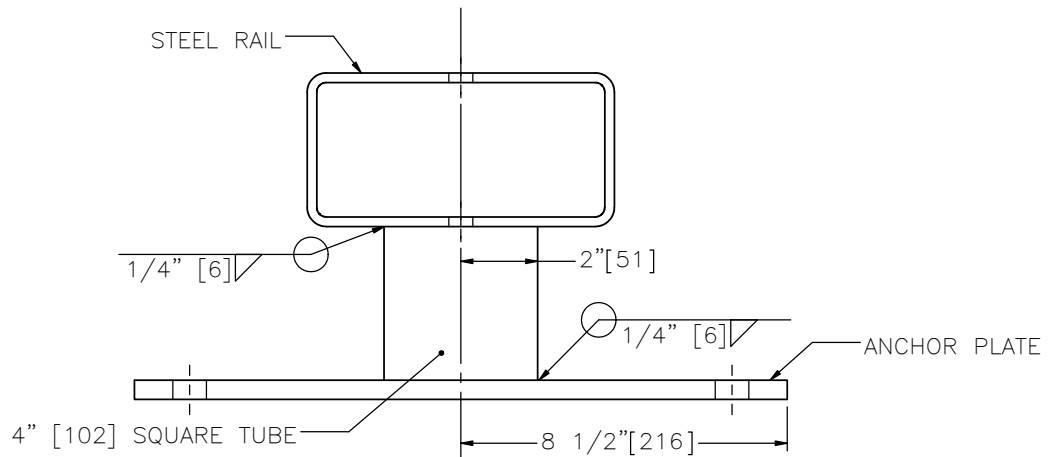
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PLAN VIEW



ELEVATION VIEW



PROFILE VIEW

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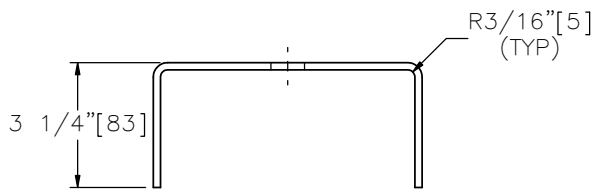
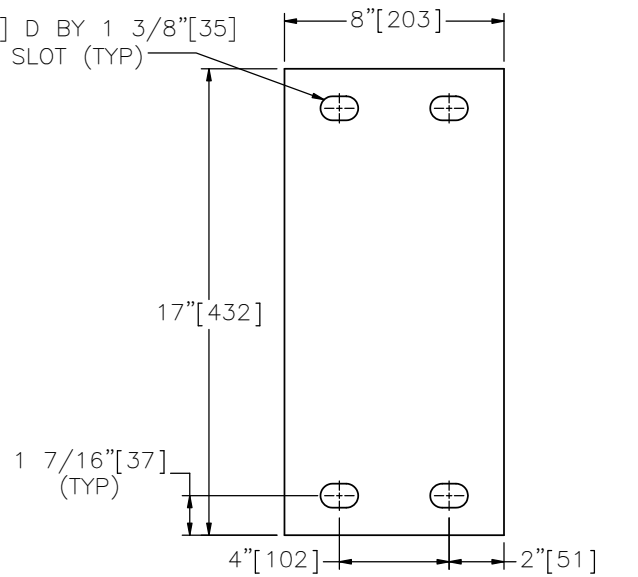
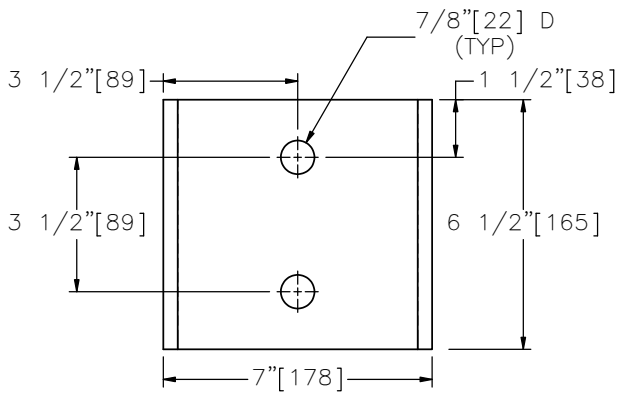
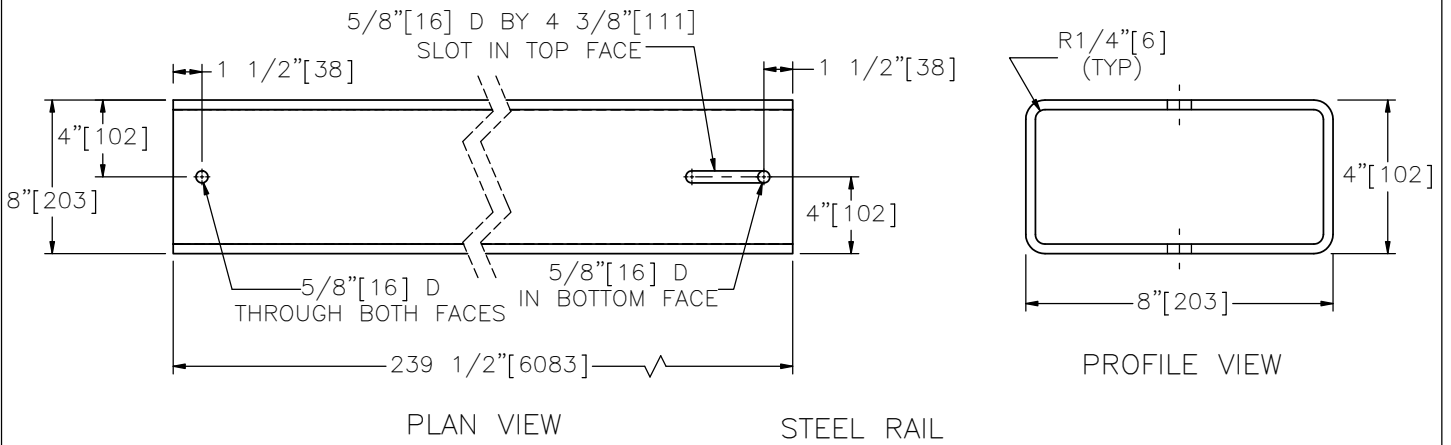
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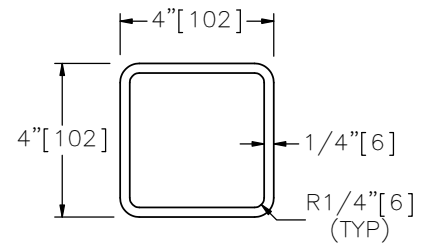
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1/2" [13] THICK ANCHOR PLATE

3/16" [10] THICK SPLICING TUBE INSERT



4" [102] SQUARE TUBE x 4" [102] LONG

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## SPECIFICATIONS

The skid tube shall be manufactured using AISI 1026 or AISI 1020 steel. The skid gusset, skid baseplate, and skid top plate shall be manufactured using ASTM A572 Grade 50 steel. The skid rubber shall be made using minimum 50 durometer rubber.

After the skid assembly is welded, the skid assembly shall be zinc-coated according to AASHTO M111 (ASTM A123) except when corrosion resistant steel is required. The skid rubber is added after all welding and galvanization has been completed.

The steel rail, and 4" [102] square tube shall be manufactured using ASTM A500 Grade B steel. The splicing tube insert and anchor plate shall be manufactured using ASTM A572 Grade 50 steel or equivalent.

After welding the steel rail, anchor plate, and 4" [102] square tube, the assembly shall be zinc-coated according to AASHTO M111 (ASTM A123) except when corrosion resistant steel is required. The splicing tube insert shall be zinc-coated according to AASHTO M111 (ASTM A123) except when corrosion resistant steel is required.

Dimensional tolerances not shown or implied are intended to be those consistent with the proper functioning of the part, including its appearance and accepted manufacturing practices.

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