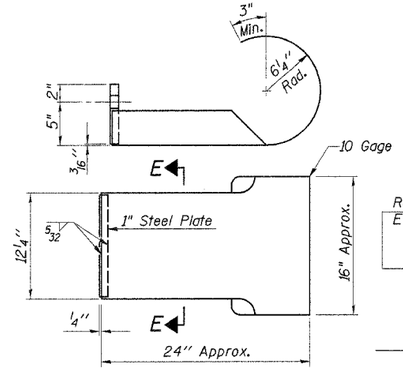
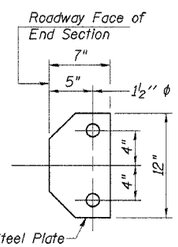
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
C.H. 16	06-00084	MARSHALL	15	9
F.A.S. 365	-00-BR			
	ILLINOIS	FED. AID PROJ.		

CONTRACT NO. 89409

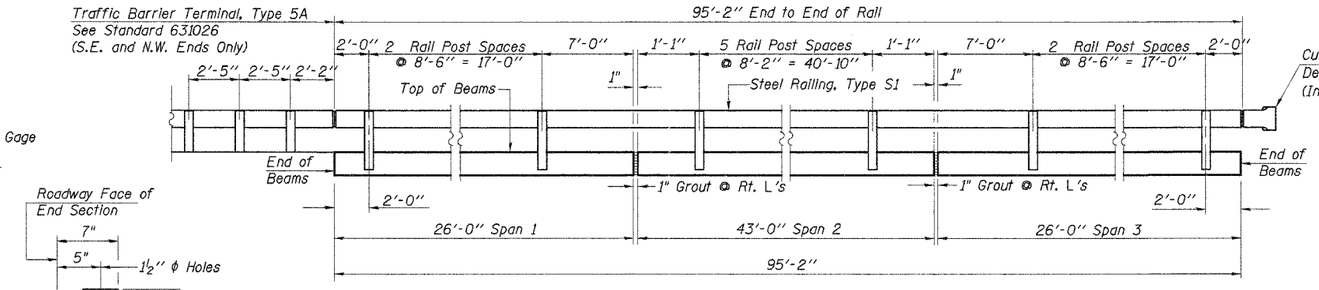


CURLED END SECTION DETAILS

(2 Required)



SECTION E-E



ELEVATION

NOTES

Hollow structural steel tubing shall conform to the requirements of ASTM designation A-500 Grade B Structural Steel Tubing and shall meet the longitudinal CVN requirements of 15 Ft.-Lbs. at 0°F.

All other steel shapes and plates shall conform to the requirements of AASHTO M-270, Grade 36 except posts and angles shall conform to AASHTO M-270, Grade 50.

Bolts, cap screws, and nuts shall conform to the requirement of ASTM designation A-307 except for high strength bolts, nuts and washers noted which shall conform to AASHTO M-164.

All bolts, nuts, cap screws, washers and lock washers shall be galvanized in accordance with AASHTO M-232.

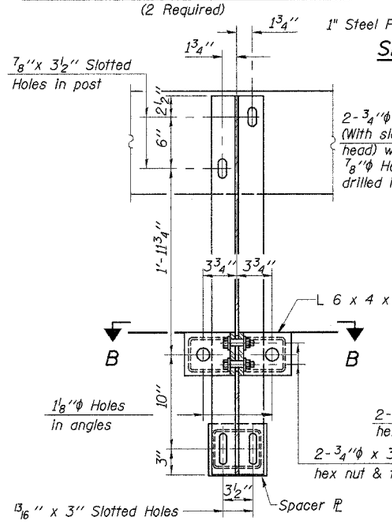
All posts, railing, rail splices, anchor devices, angles and spacers shall be galvanized after shop fabrication in accordance with AASHTO M-111 and ASTM A-385. Galvanized rail shall not be painted.

Railing shall be in accordance with Section 509 of the Standard Specifications, except as noted, and will be paid for at the contract unit price per foot for STEEL RAILING, TYPE S1.

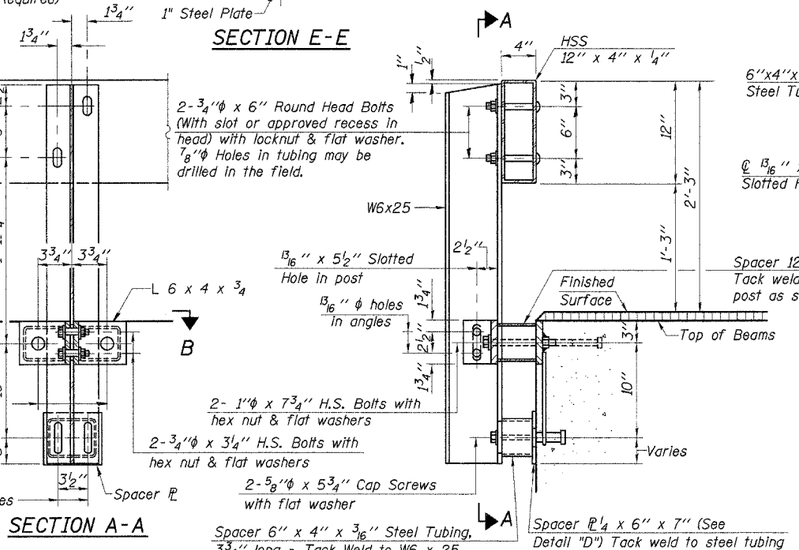
All field drilled holes shall be coated with an approved zinc rich paint before erection.

The lower plate of the post spacer in contact with concrete shall receive two coats of asphalt paint conforming to Section 1060.07 Type II or place ⅛" fabric bearing pad between the post spacer and concrete.

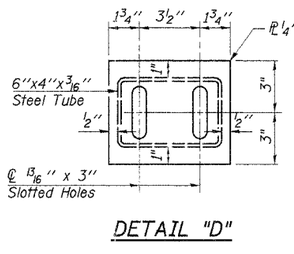
The ¾"ϕ high strength bolts used to connect the 6 x 4 x ¾ angles to the post shall be tightened in accordance with Article 505.04(f)(2) of the Standard Specifications. The 1"ϕ high strength bolts connecting the angles to the concrete shall be tightened to a snug fit and given an additional ⅛ turn. The ⅝"ϕ cap screws in bottom of posts shall be tightened to a snug fit only.



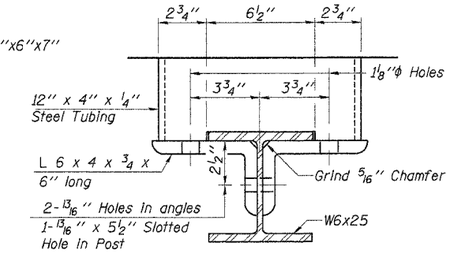
SECTION A-A



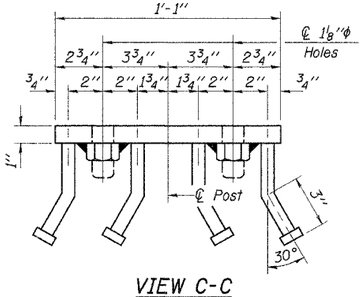
SECTION AT RAIL POST



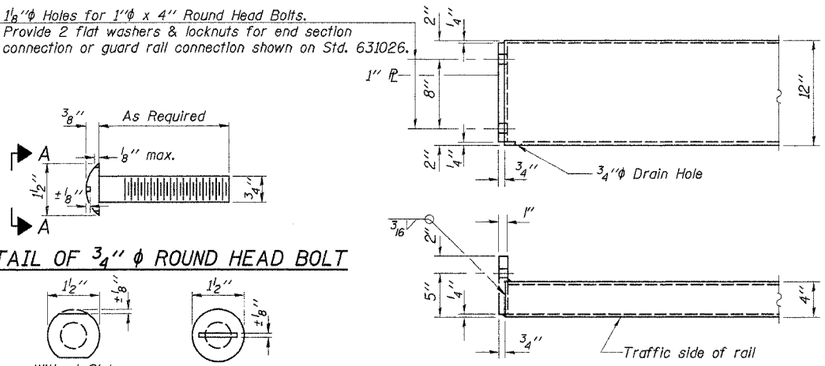
DETAIL "D"



SECTION B-B

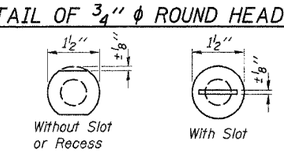


VIEW C-C



DETAIL OF ¾" ϕ ROUND HEAD BOLT

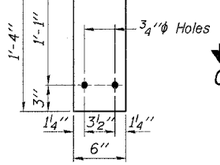
END OF RAIL DETAILS



VIEW A-A

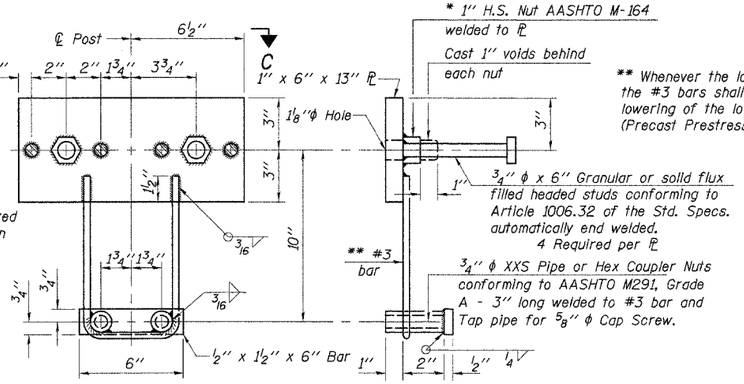
BILL OF MATERIAL

Item	Unit	Quantity
Steel Railing, Type S1	Foot	191



¼" SHIM PLATE

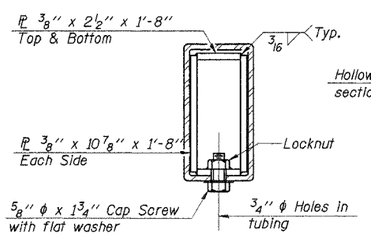
Note: For multi-span bridges, sufficient ¼" x 6" x 1'-4" galvanized steel shims shall be provided to align rail between adjacent spans. Cost Incidental to Steel Railing.



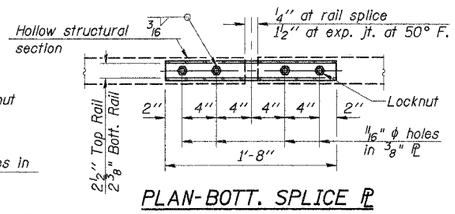
ANCHOR DEVICE

* Threaded areas shall be plugged or blocked off during casting of beam.

** Whenever the lower insert assemblies interfere with strand locations, the #3 bars shall be cut and adjusted in order to allow raising or lowering of the lower inserts. Maximum adjustment not to exceed ½". (Precast Prestressed Concrete Deck Beam Bridges Only)



SECTIONS AT RAIL SPLICE



PLAN-BOTT. SPLICE ℄ TYPICAL

DESIGNED	F.J.S.
CHECKED	S.F.M.
DRAWN	S.A.P.
CHECKED	S.F.M.

STEEL RAILING, TYPE S1

COUNTY HIGHWAY 16
SECTION 06-00084-00-BR
MARSHALL COUNTY
STATION 125+55

4440 ASH GROVE
SPRINGFIELD, IL. 62711
(217) 793-8600
www.fehr-graham.com

FEHR-GRAHAM & ASSOCIATES, LLC
ENGINEERING AND SCIENCE CONSULTANTS
FREEPORT, IL ROCKFORD, IL ROCHELLE, IL MORTON, IL SPRINGFIELD, IL

JOB NO.: 46813
FILE: 0423RAIL.DGN
DATE: 04/11/06

RAIL_S1-3.DGN UPDATES 4-20-04