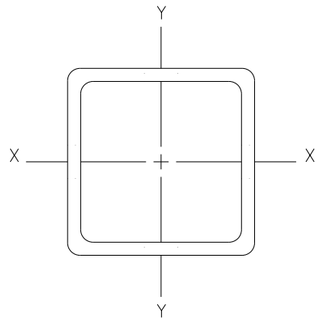


PERFORATED / KNOCKOUT SQUARE TUBE

MATERIAL: ASTM A-446 (GRADE A) OR A-1011 GRADE 50

F_Y=60,000 PSI MIN.

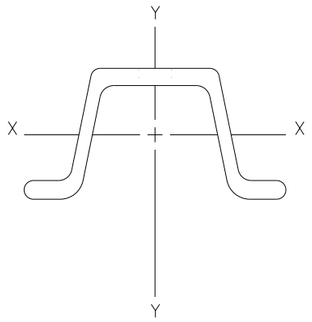
STEEL "U"-POST SHALL BE MANUFACTURED FROM STEEL CONFORMING TO THE MATERIAL REQUIREMENTS OF ASTM A-499 AND GALVANIZED CONFORMING TO ASTM A-123.

PERFORATED/KNOCKOUT POSTS SHALL BE SQUARE TUBE FORMED 10 OR 12 GUAGES, ASTM A1011 GRADE 50 STEEL. THE SQUARE TUBES SHALL BE WELDED DIRECTLY IN THE CORNER BY HIGH FREQUENCY RESISTANCE WELDING OR EQUAL. THE POSTS SHALL BE EXTERNALLY SCARFED TO AGREE WITH STANDARD CORNER RADII OF $\frac{5}{32}\pm\frac{1}{64}$ INCHES.

PERFORATED/KNOCKOUT POSTS SHALL BE SQUARE TUBE FORMED FROM USS GAGE (12 GAGE) ASTM A-446 COLD ROLLED CARBON STEEL OR A-1011 HOT ROLLED CARBON SHEET STEEL. THE MINIMUM YIELD (Fy) IS TO BE 60,000 POUNDS PER SQUARE INCH, OR USS 14 GAGE HAVING A MINIMUM YIELD STRENGTH OF 60,000 POUNDS PER INCH. THE SQUARE TUBES SHALL BE WELDED DIRECTLY IN THE CORNERS BY HIGH FREQUENCY RESISTANCE WELDING OR EQUAL. THE SUPPORT POSTS ARE TO BE EXTERNALLY SCARFED TO AGREE WITH STANDARD CORNER RADII OF $\frac{5}{32}$" $\pm$ $\frac{1}{64}$".

PERFORATED/KNOCKOUT POSTS SHALL BE GALVANIZED TO CONFORM TO ASTM-525, DESIGNATION C-90 OR ITS CORROSION-RESISTANCE EQUIVALENT, WHEN TESTED IN ACCORDANCE WITH ASTM B-117 STANDARDS.

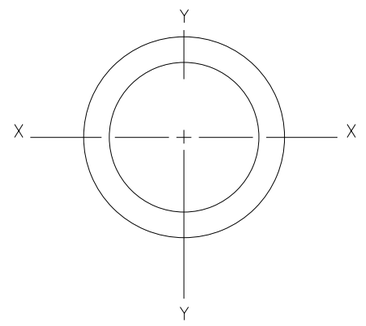
(TO BE PAID UNDER ITEM NO. 713-11.02)



U-POST

MATERIAL: ASTM A-499 GRADE 50
F_Y=50,000 PSI MIN.

(TO BE PAID UNDER ITEM NO. 713-11.01)



ROUND POST

MATERIAL: ASTM A-500 GRADE C
F_Y=50,000 PSI MIN.
SCHEDULE 80

ONLY SYSTEMS LISTED ON THE TDOT OPL SHALL BE USED.

BWG 10 SCHEDULE 80 PIPE SPECIFICATIONS (SIGN POST):
2.875" OUTSIDE DIAMETER
0.276" NOMINAL WALL THICKNESS
STEEL TUBING PER ASTM A500 GRADE C
OTHER SEAMLESS OR ELECTRIC-RESISTANCE WELDED STEEL TUBING OR PIPE WITH EQUIV. OUTSIDE DIA. AND WALL THICKNESS MAY BE USED IF THEY MEET THE FOLLOWING:
46,000 PSI MINIMUM YIELD STRENGTH, 62,000 PSI MINIMUM TENSILE STRENGTH
WALL THICKNESS (UNCOATED) SHALL BE WITHIN THE RANGE OF 0.248" TO 0.304"
OUTSIDE DIAMETER (UNCOATED) SHALL BE WITHIN THE RANGE OF 2.855" TO 2.895"
GALVANIZATION PER ASTM A123

(TO BE PAID UNDER ITEM NO. 713-11.03)

REV. 06-01-76: ADDED WEIGHTS.

REV. 08-13-76: REVISED WEIGHTS ALUMINUM.

REV. 09-22-77: ADDED "MU"-POST; REVISED PROPERTIES OF RIBBED "U"-POST.

REV. 07-01-78: REQUIREMENTS OF MATERIAL FOR STEEL "U"-POST.

REV. 03-01-88: KNOCKOUT ALTERNATE ADDED.

REV. 10-26-90: REDREW AND REORGANIZED SHEET. DELETED ALUMINUM "U"-POST AND "MU"-POST FROM SHEET. CHANGED SHEET NAME ACCORDINGLY. NUMBERED FOOTNOTES AND ADDED FOOTNOTE NO. (2).

REV. 7-29-91: ADDED P7 AND P8 PERFORATED/KNOCKOUT TUBE POST. ADDED FOOTNOTE NOS. (5) AND (6).

☐ REV. 7-19-15: FY FOR 12 GAUGE P POST CHANGED TO 60K Psi. ADDED P9 POST REVISED FOOTNOTES. CHANGE TITLE. ADDED ROUND POST INFORMATION.

REV. 7-11-17: REMOVED OLD FOOT NOTES FROM P5 AND P9

REV. 6-12-20: FOOT NOTE 7 ADDED

	MEMBER DESIGNATION	MINIMUM SECTION PROPERTIES	WT LBS/FT
	P1	A = 0.380 IN.^{2} Sxx= 0.172 IN.^{3} Ixx= 0.129 IN.^{4}	1.302 1 $\frac{1}{2}$" Ø
	P2	A = 0.485 IN.^{2} Sxx= 0.264 IN.^{3} Ixx= 0.231 IN.^{4}	2.060 1 $\frac{3}{4}$" Ø
(3)	P3	A = 0.590 IN.^{2} Sxx= 0.372 IN.^{3} Ixx= 0.372 IN.^{4}	2.416 2" Ø
	P4	A = 0.695 IN.^{2} Sxx= 0.499 IN.^{3} Ixx= 0.561 IN.^{4}	2.773 2 $\frac{1}{4}$" Ø
	P5	A = 0.803 IN.^{2} Sxx= 0.643 IN.^{3} Ixx= 0.804 IN.^{4}	3.141 2 $\frac{1}{2}$" Ø
(6)	P6	A = 1.010 IN.^{2} Sxx= 0.783 IN.^{3} Ixx= 0.979 IN.^{4}	4.006 2 $\frac{1}{2}$" Ø
	(4) P7	A = 0.392 IN.^{2} Sxx= 0.230 IN.^{3} Ixx= 0.201 IN.^{4}	1.882 1 $\frac{3}{4}$" Ø
(5)	(4) P8	A = 0.474 IN.^{2} Sxx= 0.296 IN.^{3} Ixx= 0.296 IN.^{4}	2.164 2" Ø
	P9	A = 0.841 IN.^{2} Sxx= 0.533 IN.^{3} Ixx= 0.605 IN.^{4}	3.430 2 $\frac{3}{16}$" Ø

MEMBER DESIGNATION	MINIMUM SECTION PROPERTIES	WT LBS/FT
U1	A = 0.590 IN.^{2} Sxx= 0.225 IN.^{3} Ixx= 0.179 IN.^{4}	2.00
U2	A = 0.645 IN.^{2} Sxx= 0.254 IN.^{3} Ixx= 0.201 IN.^{4}	2.25
U3	A = 0.748 IN.^{2} Sxx= 0.289 IN.^{3} Ixx= 0.233 IN.^{4}	2.50
U4	A = 0.819 IN.^{2} Sxx= 0.329 IN.^{3} Ixx= 0.277 IN.^{4}	2.75
U5	A = 0.817 IN.^{2} Sxx= 0.363 IN.^{3} Ixx= 0.331 IN.^{4}	2.75
U6	A = 0.918 IN.^{2} Sxx= 0.403 IN.^{3} Ixx= 0.372 IN.^{4}	3.00
U7	A = 1.195 IN.^{2} Sxx= 0.511 IN.^{3} Ixx= 0.460 IN.^{4}	4.00

MEMBER DESIGNATION	MINIMUM SECTION PROPERTIES	WT LBS/FT
R1 2 $\frac{1}{2}$" Ø	A = 1.154 IN.^{2} Sxx= 0.754 IN.^{3} Ixx= 1.08 IN.^{4}	3.92

FOOTNOTES

(1) SEE GENERAL NOTES (A) AND (B) ON STANDARD DRAWING T-S-17 FOR MANUFACTURING REQUIREMENTS FOR STEEL AND GALVANIZING.

(2) STEEL "U"-POST SHALL BE MANUFACTURED FROM STEEL CONFORMING TO THE MATERIAL REQUIREMENTS OF ASTM A-499 AND GALVANIZED CONFORMING TO ASTM A-123.

(3) P1 THRU P5 MEMBER DESIGNATIONS ARE TO BE 12 GAGE.

(4) THE CONTRACTOR MAY SUBSTITUTE P2 FOR P7 AND P3 FOR P8. QUANTITIES ARE COMPUTED ON PLANS BASED ON USING P7 OR P8. NO INCREASE IN QUANTITIES WILL BE ALLOWED WHEN USING THE ABOVE SUBSTITUTIONS.

(5) P7, P8 AND P9 MEMBER DESIGNATIONS ARE TO BE 14 GAGE.

(6) P6 IS TO BE 10 GUAGE.

(7) SIGN POSTS MAY BE SUBSTITUTED WITH AN EQUIVILANT POST SHAPE. FIELD ENGINEER SHALL CONFIRM BREAKAWAY HARDWARE TYPE AND FOUNDATION DESIGN REQUIREMENTS FOR THE SUBSTITUTED POST SIZE AND SHAPE.

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

STANDARD STEEL SIGN SUPPORTS

T-S-19