



TRENCH SAFETY

2731 Huffman Mill Road Burlington, NC 27215 336-516-8011

ironlot.com

Road Plate Tabulated Data

For Iron Lot, LLC



**J.M. TURNER
ENGINEERING, INC.**

Consulting Engineers

CIVIL ENGINEERING • STRUCTURAL ENGINEERING
CONSTRUCTION ENGINEERING

**TABULATED DATA
FOR
STEEL TRENCH PLATES**

DESIGN CALCULATIONS

**IRON LOT, LLC.
2731 HUFFMAN MILL ROAD
BURLINGTON, NC 27215**

Design of tabulated data sheet is based on HS20-44 traffic loading. Steel to be Minimum ASTM A36, $F_y = 36$ ksi. Design for Steel in accordance with AISC Manual for Steel construction, Caltrans Trench and Shoring Manual, & IBC.



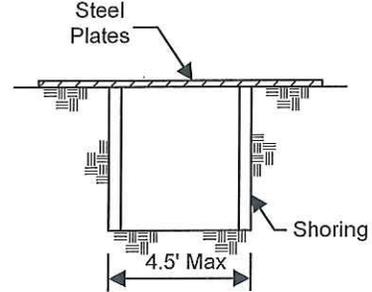
DATE: 11/30/2019
BY: A.M.A.
BY DIRECTION OF: A.J.V.
SHEET NO: 1 OF 3
JOB NO: 17351-1



Check Steel Plate Covers:

Check Effective Width of Plates:

Plate Thickness (in): $t := 1.0$
Yield Stress (ksi): $F_y := 36.0$
Allowable Stress (ksi): $f := 0.75 \cdot F_y \cdot 1.33$ $f = 35.9$
Actual Width of Plate (in): $b := 48$



Section Modulus of Plate (in³): $S_{xx} := \frac{b \cdot t^2}{6}$ $S = 8.0$

Check Bending:

Clear Span for Plates (ft): $L_{max} := 4.5$
HS20 Loading (kips): $P := 16.0$
Impact Factor: $IF := 1.3$
Design Load (kips): $P_{max} := P \cdot IF$ $P_{max} = 20.8$
Maximum Moment (k*ft): $M_{max} := \frac{P_{max} \cdot L}{4}$ $M_{max} = 23$
 $f_b := \frac{M_{max} \cdot 12}{S}$ $f_b = 35.1$
 $F_b := f$ $F_b = 35.9$ $f_b < F_b$ **OK**

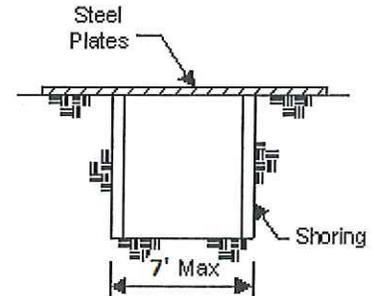
Use 1.0" Steel Plates for a 4.5' Span



Check Steel Plate Covers:

Check Effective Width of Plates:

Plate Thickness (in): $t := 1.25$
 Yield Stress (ksi): $F_y := 36.0$
 Allowable Stress (ksi): $f := 0.75 \cdot F_y \cdot 1.33 \quad f = 35.9$
 Actual Width of Plate (in): $b := 48$



Section Modulus of Plate (in³): $S_{xx} := \frac{b \cdot t^2}{6} \quad S = 12.5$

Check Bending:

Clear Span for Plates (ft): $L_{max} := 7$
 HS20 Loading (kips): $P := 16.0$
 Impact Factor: $IF := 1.3$
 Design Load (kips): $P_{max} := P \cdot IF \quad P_{max} = 20.8$
 Maximum Moment (k*ft): $M_{max} := \frac{P_{max} \cdot L}{4} \quad M_{max} = 36$
 $f_b := \frac{M_{max} \cdot 12}{S} \quad f_b = 34.9$
 $F_b := f \quad F_b = 35.9 \quad f_b < F_b \quad \text{OK}$

Use 1.25" Steel Plates for a 7' Span

IRON LOT, LLC

MANUFACTURERS TABULATED DATA SHEET

TRENCH PLATES

REVISIONS	BY

TRENCH PLATES
TRAFFIC COVER TABULATED DATA

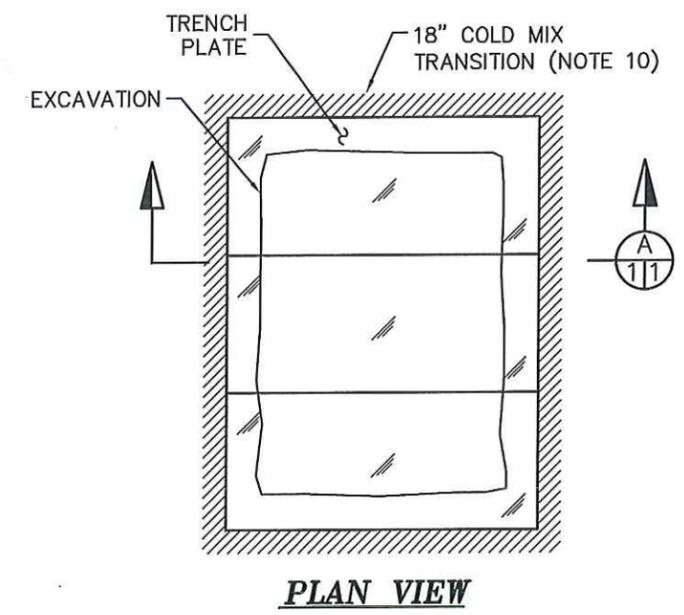
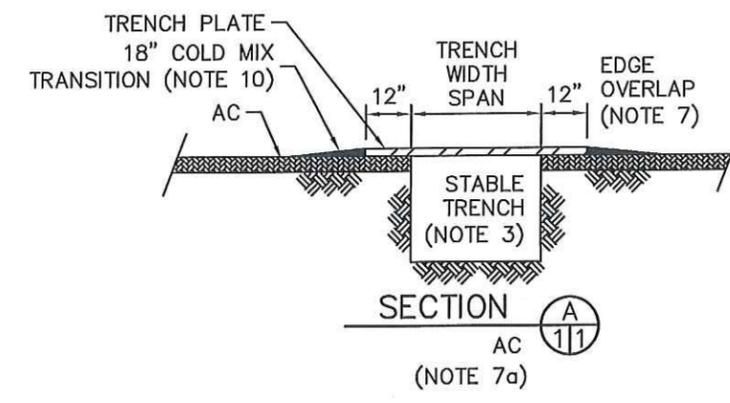
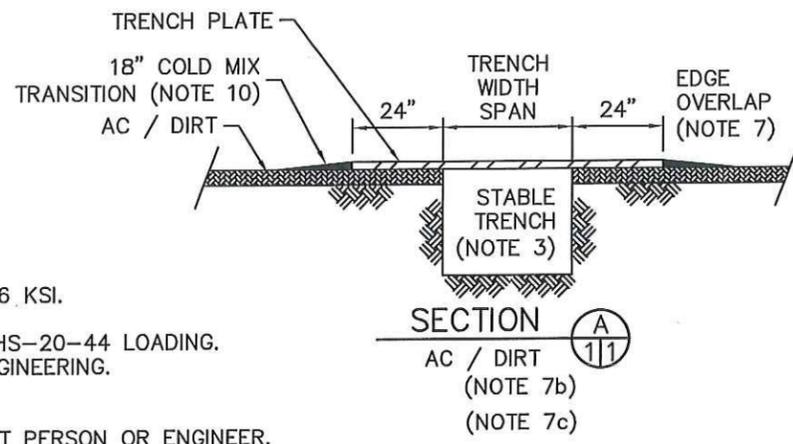


J.M. TURNER ENGINEERING, INC.
CONSULTING ENGINEERS
1325 COLLEGE AVE., SANTA ROSA, CA 95404
(707) 528-4503 FAX (707) 528-4505

DATE: 11/30/19
DRAWN BY: A.M.A.
CHECKED BY: A.J.V.
DRAWING NO: 17351-1/ S1
SHEET: 1 OF 1

HS-20-44 LOADING

PLATE THICKNESS (IN)	MAX ALLOWED SPAN (FT)	PLATE SIZE (FT x FT) / WEIGHT (LB)														
		4'x8'	4'x10'	5'x8'	5'x10'	6'x10'	6'x12'	8'x10'	8'x12'	8'x14'	8'x15'	8'x16'	8'x20'	10'x12'	10'x14'	10'x20'
1"	4'-6"	1307 #	1633 #	1633 #	2042 #	2450 #	2940 #	3267 #	3920 #	4573 #	4900 #	5227 #	6533 #	4900 #	5717 #	8167 #
1 1/4"	7'	1633 #	2042 #	2042 #	2552 #	3062 #	3675 #	4084 #	4900 #	5717 #	6125 #	6533 #	8167 #	6125 #	7146 #	10208 #



NOTES

1. PLATES ARE ASTM A36 MIN. STEEL, $F_y = 36$ KSI.
2. SPAN OR TRENCH WIDTH IS DESIGNED FOR HS-20-44 LOADING. ANY SPACE EXCEEDING TABLE REQUIRES ENGINEERING.
3. CHART IS BASED ON STABLE TRENCH. STABILITY TO BE DETERMINED BY COMPETENT PERSON OR ENGINEER.
4. 3/4" THICK PLATES ARE NOT FOR ON-ROAD VEHICLE TRAFFIC USE; (THEY ARE RESTRICTED TO OFF-ROAD USE SUCH AS SIDE WALKS FOR FOOT TRAFFIC OF INSIDE WAREHOUSE TO COVER SMALL TRENCHES).
5. PLATES MUST BE PLACED WITH POSITIVE CONTACT ON ALL SUPPORTING SURFACES AS TO PREVENT ACCIDENTAL MOVEMENT FROM TRAFFIC DEFLECTION (COLD PATCH CAN BE USED TO DISPLACE ANY VOIDS BETWEEN THE PLATE AND SUPPORTING SURFACE).
6. PLATES MAY REQUIRE ANCHORAGE WHEN SPEEDS EXCEED 45 MPH OR ON SLOPES GREATER THAN 5% (IN ACCORDANCE WITH LOCAL REQUIREMENTS, COMPETENT PERSON, OR ENGINEER).
7. EDGE OVERLAP SHALL BE AS FOLLOWS:
 - a) ASPHALT-TRAFFIC SPEED UNDER 45 MPH; TRENCH WIDTH + 24" MIN. (12" EA. PER SIDE)
 - b) ASPHALT-TRAFFIC SPEED OVER 45 MPH; TRENCH WIDTH + 48" MIN. (24" EA. PER SIDE)
 - c) DIRT-TRAFFIC SPEED UNDER 45 MPH; TRENCH WIDTH + 48" MIN. (24" EA. PER SIDE)
8. PLATES USED ON DIRT WITH TRAFFIC SPEED EXCEEDING 45 MPH REQUIRES ENGINEERING.
9. PLATES USED ON A/C WITH TRAFFIC SPEED EXCEEDING 55 MPH REQUIRES ENGINEERING.
10. THERE SHOULD BE A MINIMUM OF 18" COLD MIX TRANSITION RAMP ALL AROUND.