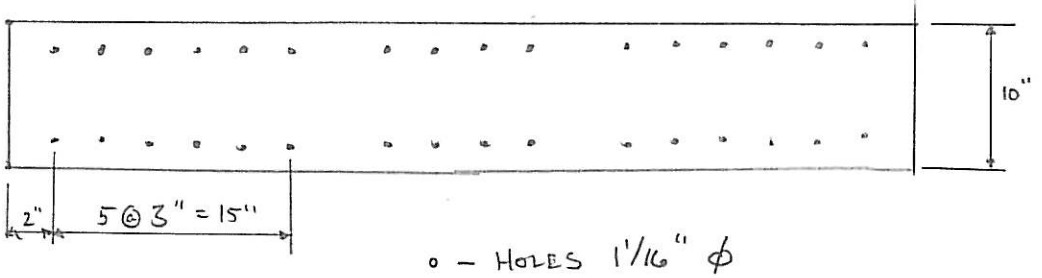
TranSystems

Made By: BKC	Date: 9/10/09	Job No: P:110 07 0010	
Checked By: CTY	Date: 10/9/09	Sheet No. 1/2	

COLUMBIA PARKWAY - CHECK OF TIE PL FOR PORK CHOP

TIE PL



o - HOLES 1'/16" ϕ

PL = 3/4"
GRADE 50
F_y = 50 KSI
F_u = 65 KSI

CAPACITY IN TENSION

$A_g = 10" \times 3/4" = 7.5 in^2$

$A_n = (10" - 2 \times 1\frac{1}{8}") \times 3/4" = 5.8125 in^2$

$P_n = 0.9 A_g F_y \leq 0.75 A_n F_u$

$375 K \leq 377.81$

375 K CONTROLS

FROM PLANS PORK CHOP 3'5" TALL AT BASE

ASSUME MOMENT ARM = $\frac{3'5" + 3/4" + 3/4" \times 1/2}{2} = 21.625 in = 1.8102 ft$

	MOMENTS	TENSION FORCES	INV. RATING	OP RATING
DL	67.4 K-ft	37.4 K	—	—
HS20	82.7 K-ft	45.89 K	3.28	5.47
2F1	53.2 K-ft	29.52 K	5.10	8.50
3F1	73.2 K-ft	40.62 K	3.71	6.18
4S1	69.5 K-ft	38.57 K	3.91	6.51
5C1	71.4 K-ft	39.62 K	3.80	6.34

SEE
NORTH CANTILEVER BRACKET LIVE LOAD SHEET (2/6) FOR LL MOMENTS
NORTH CANTILEVER BRACKET DEAD LOAD SHEET (4/6) FOR DL MOMENTS
OR
LFD Typ North Cantilever Bracket (Section at end).xls

Calculations for 1/4 US Grid

Check Tie R. for pedestrian loads

From LFD Typ South Cantilever Bracket (section at end).xls

From Page 1 Moment Arm = 1.802'

DL Moment = 229.2 k-ft DL Tension = 127.2 K

LL Moment = 44.2 k-ft LL Tension = 24.5 K

From Page 1 Capacity = 375 K

Inventory Rating = $\frac{375^K - 1.3(127.2^K)}{\left(1.3 \times \frac{5}{3}(24.5^K)\right)} = \boxed{3.94}$

Operating Rating = $\frac{375^K - 1.3(127.2^K)}{(1.3 \times 24.5^K)} = \boxed{6.58}$

Calculations for 1/8 US Grid