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NON-INVASIVE ALTERNATIVE TO THE 1500 LBS DECK TO HOUSE CONNECTION  
ELIMINATES GOING INSIDE THE HOME FOR CONNECTION\*

PATENT PENDING

\* W/ DIMENSIONAL LUMBER AND HOUSE FLOOR  
JOISTS PARALLEL TO DECK JOISTS

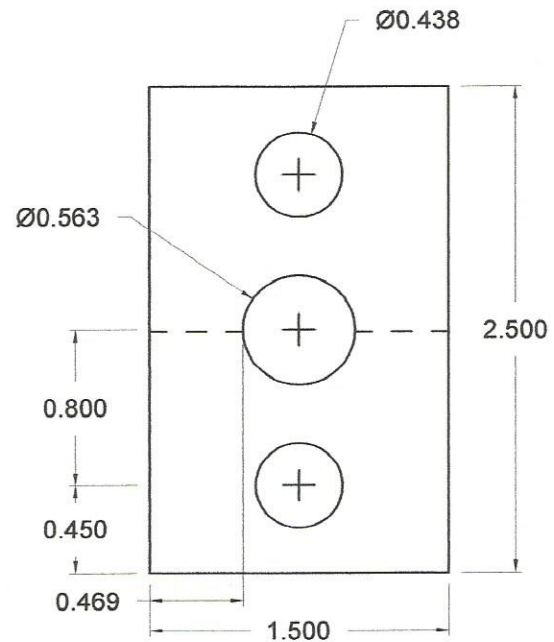
## BASE PLATE PLASTIC ANALYSIS

### ENGINEERING ANALYSIS

2009 IRC R301.1.1, R301.1.3, R502.2.2.3  
2012 IRC R301.1.1, R301.1.3, R507.2.3

$T_u$  = LOAD ON EACH LAG, =  $F/2$ , KIPS  
 $M_u$  = ULTIMATE MOMENT IN BASE PLATE, KIP\*IN  
 $d$  = DISTANCE FROM CENTER OF LAG TO CENTER OF ATR ROD, INCHES  
 $b$  = NET WIDTH OF PLATE AT BENDING PLANE, IN  
 $F_y$  = PLATE MATERIAL YIELD STRENGTH, KIP/IN<sup>2</sup>  
 $Z_x$  = PLASTIC SECTION MODULUS OF PLATE, IN<sup>3</sup>  
 $Z_x = M_u/F_y$   
 $t$  = PLATE THICKNESS, IN  
 $F$  = TOTAL LOAD, KIPS

$T_u = 0.75$  KIPS  
 $d = 0.800$  IN  
 $b = 2 * 0.469 = 0.938$ , IN  
 $F_y = 36$  KSI  
 $Z_x = (b * t^2) / 4$ , IN<sup>3</sup>  
 $Z_x = M_u / F_y$   
 $t = 0.375$ , IN  
 $F = 1.5$ , KIPS  
 $\phi = 0.9$



A36 STEEL PLATE  
0.375" THICK, HDG  
ASTM 123

### ENGINEERING CALCULATIONS

$M_u = 1.6 * 1.5 * 1.6 / 8 = 0.48$  KIP\*IN  
 $t_{min} = ( (4 * 0.48) / (0.9 * 0.938 * 36) )^{1/2} = 0.251$ "  
 $0.375 > 0.251$ "

### DESIGN REFERENCE

\*ROARK'S FORMULAS FOR STRESS AND STRAIN, 7TH EDITION, TABLE 8.1, 1e  
 \*ROARK'S FORMULAS FOR STRESS AND STRAIN, 7TH EDITION, TABLE A1, (2)  
 \*AISC 13TH ED., APPENDIX 1 SECT. 1.7