JOB #: 17-307

CLIENT: WHISPER CREEK LOG HOMES

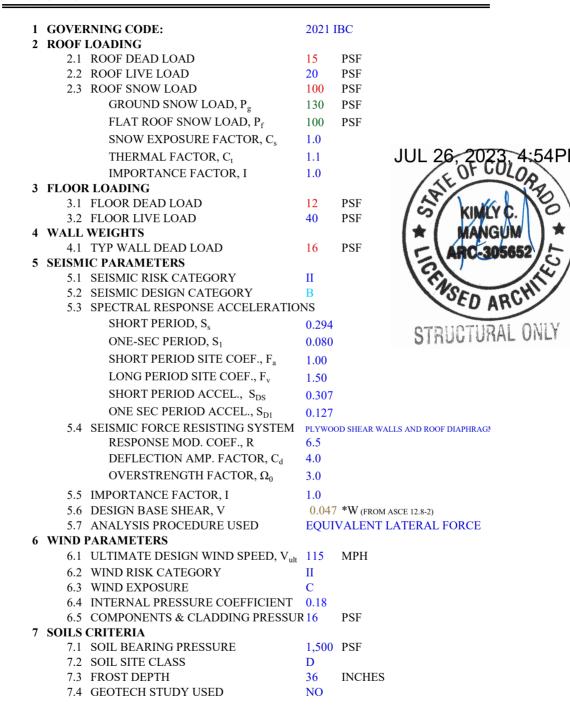
**MEYERS RESIDENCE** 

**LOCATION: CABIN SITE 66** 

SAN MIGUEL COUNTY, CO

**ALG** 

## **DESIGN CRITERIA**



# **▼USGS** Design Maps Summary Report

#### User-Specified Input

View Detailed Report Prin

Building Code Reference Document ASCE 7-10 Standard

(which utilizes USGS hazard data available in 2008)

Site Coordinates 37.82°N, 107.88°W
Site Soil Classification Site Class D – "Stiff Soil"

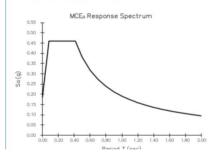
Risk Category I/II/III

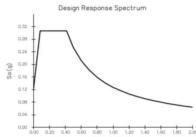


#### **USGS-Provided Output**

 $S_s = 0.294 g$  $S_1 = 0.080 g$   $S_{MS} = 0.460 g$  $S_{M1} = 0.191 g$   $S_{DS} = 0.307 g$  $S_{D1} = 0.127 g$ 

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.





# STRUCTURAL DESIGN INFORMATION

	F <sub>b</sub> (PSI)	F <sub>v</sub> (PSI)	F <sub>c</sub> _ _ (PSI)	E (PSI)
SELECT STRUCTURAL	1,350	180	625	1.90E+06
SPF#1	900	125	425	1.30E+06
DF#2	900	180	625	1.00E+06
DF#1 & BTR	1,150	180	625	1.80E+06
HF#2	850	150	405	1.30E+06
LVL (1.9E)	2,600	285	750	1.90E+06
PSL (2.0E)	2,900	290	750	2.00E+06
GLB	2,400	265	650	1.80E+06
ASTM A-992 STEEL	33,000	20,000	N/A	2.90E+07
TUDS DOUGLAS FIR DF	#2 OR BTR			
	Fb =	1,148	PSI	LUMBER FA
	$\mathbf{Ft} =$	500	PSI	0.82
SPF = SPRUCE-PINE-F	$\mathbf{F}\mathbf{v} =$	180	PSI	1.00
DF = DOUGLAS FIR	$Fc_l =$	625	PSI	
HF = HEM FIR	Fc ll =	1,400	PSI	
BTR = BETTER	E =	1.60E+06	PSI	
1	NAILED @	7/16"	,	15/32"
ALLOWABLE SHEAR	2" O.C. =	585	PLF	640
T 2306.4.1	3" O.C. =	450	PLF	490
	4" O.C. =	350	PLF	380

FW-1 7/16" APA 24/16 EXT GRADE SHEATHING NAILED W/8d @ 3-1/8" ALL PANEL EDGES & 12" O.C. MAX IN THE FIELD.

GOOD FOR 438 PLF MAX
FW-2 15/32" APA 24/16 EXT GRADE STRUCTURAL I SHEATHING NAII
2" O.C. AT ALL PANEL EDGES & 12" O.C. MAX IN THE FIELD. 3" NON
FRMG MEMBERS REQ'D.

GOOD FOR 640 PLF MAX



# **WEIGHTS**

| ROOF | ROOFING: 6.00 PSF | 7/16" SHTG: 2.50 PSF | INSULATION (.1 X 12): 1.20 PSF | JOISTS & BEAMS: 2.50 PSF | SHT ROCK 5/8": 2.00 PSF | TOTAL | 14.20 PSF |

USE



**MAIN FLOOR** 

FLOORING: 3.00 PSF
3/4" SHTG: 2.50 PSF
MISC: 1.00 PSF
JOISTS & BEAMS: 3.00 PSF
SHT ROCK 5/8": 2.00 PSF

TOTAL 11.50 PSF USE 12.00 PSF

15.00 PSF

**DECK** 

FLOORING: 4.00 PSF
MISC: 1.00 PSF

JOISTS & BEAMS: 5.00 PSF

TOTAL 10.00 PSF

**USE 10.00 PSF** 

**EXTERIOR WALLS** 

SHT ROCK 1/2": 2.20 PSF
INSULATION (.1 X 5.5): 0.55 PSF
STUDS: 1.40 PSF
7/16" SHTG: 1.70 PSF
SIDING: 10.00 PSF
TOTAL 15.85 PSF

USE 16.00 PSF



## FLOOR BEAMS

```
SIMPLE SPAN BEAM OR HEADER
    LOCATION: PORCH DECK BM
         FB - 7
OURATION INCREASE (D) =
                             1.00
        BEAM SPAN =
                           19.5 FT
        VENEER YES/NO:
                             NO
 TRIBUTARY LOADING
                         DECK
      TOTAL LOAD (TL) =
                              70 PSF
       LIVE LOAD (LL) =
                              60 PSF
        JOIST SPAN (1) =
                             6.0 FT
        JOIST CANT (c) =
                             0.0 FT
    wTL = TL*[(1+c)*2/2*1] =
                             210 PLF
    wLL = LL*[(l+c)*2/2*l] =
                             180 PLF
 BEAM LOADING
     TOTAL LOAD (wTL) =
                              20 PLF
       LIVE\ LOAD\ (wLL) =
                               0 PLF
 TOTAL UNIFORM LOADING
       wTL = SUM(TL) =
                             230 PLF
        wLL = SUM(LL) =
                             180 PLF
 POINT LOAD
     TOTAL LOAD P(TL) =
                             0 LBS
                              0 LBS
       LIVE LOAD P(LL) =
                            9.8 FT (FROM RHS)
        LOCATION (a) =
                b = L-a =
                            9.8 FT (a > b)
                           0 PLF
    EQUIV. UNIFORM TL =
    EQUIV. UNIFORM LL =
                              0 PLF
 REACTIONS
      RIGHT R(rt) wTL*L/2+P(TL)b/L =
                                     2243 LBS
                wLL*L/2+P(LL)b/L =
                                     1755 LBS
       LEFT R(lt) wTL*L/2+P(TL)a/L =
                                     2243 LBS
                 wLL*L/2+P(LL)a/L =
                                    1755 LBS
     Rrt/wTL =
                    9.8 FT x' =
                                      9.8 FT
 SUPPORT
                    POST/HGR/FDN: 2X4
                                                  1 STUDS
       RIGHT:
                          HEIGHT: 8
                    POST/HGR/FDN: 2X4
                                                  1 STUDS
        LEFT:
                         HEIGHT: 8
 MAXIMUM MOMENT
        Mmax = R(rt)*x'-wTL*x'^2/2 = 10,932 FT LBS
 δ CRITERIA:
                   L/ 480 L.L. δ L/ 360
                                                   T.L. δ
STRUCTURAL COMPOSITE LUMBER
        TYPE: GLB
 DEPTH (d)est. = 10 \ 1/2 \ IN.
                                      Fb =
                                            2,400 PSI
 WIDTH (b)est. =
                                               265 PSI
                 6 3/4 IN.
                                      Fv =
                                      E = 1.80E + 06 PSI
                                      CF =
        Areq =
                 11.55 IN(2)
                                            1.00
        Sreq =
                 54.66 IN(3)
                                      A =
                                              70.88 IN(2)
     Ireq(TL) =
                                      S =
                 426.36 IN(4)
                                            124.03 IN(3)
     Ireq(LL) =
                 500.50 IN(4)
                                       I =
                                              651.16 IN(4)
     BRGreg =
                     3 IN.
                   δmax OCCURS @
                                       9.8 FT. (FROM RHS)
                      \deltamax (T.L.) =
                                      0.64 IN. L/ 367
                                                   468
                                      0.50 IN.
                                                L/
                      \deltamax (L.L.) =
      USE
              6-3/4" X 10-1/2" GLB
                                                             NOTE:
                                   SAFETY FACTOR =
                                                      1.30
```



#### SIMPLE SPAN BEAM OR HEADER LOCATION: GAR HDR FB - 6 OURATION INCREASE (D) = 1.00 BEAM SPAN = 16.5 FT VENEER YES/NO: NO TRIBUTARY LOADING FLOOR ROOF 115 PSF 100 PSF JOIST SPAN (I) = 10.5 FT JOIST CANT (c) = 0.0 FT wTL = TL\*[(l+c)\*2/2\*1] = 368 PLF wLL = LL\*[(l+c)\*2/2\*1] = 315 PLF 25.0 FT 0.0 FT 1438 PLF 1250 PLF BEAM LOADING 20 PLF TOTAL LOAD (wTL) = $LIVE\ LOAD\ (wLL) =$ 0 PLF TOTAL UNIFORM LOADING 1825 PLF wTL = SUM(TL) =wLL = SUM(LL) = 1565 PLFPOINT LOAD OTAL LOAD P(TL) = 0 LBS LIVE LOAD P(LL) = 0 LBS LOCATION (a) = 8.3 FT (FROM RHS) b = L-a = 8.3 FT (a > b) TV. UNIFORM TL = 0 PLC TOTAL LOAD P(TL) = LIVE LOAD P(LL) =EQUIV. UNIFORM TL = EQUIV. UNIFORM LL = 0 PLF REACTIONS RIGHT R(rt) wTL\*L/2+P(TL)b/L = 15056 LBS wLL\*L/2+P(LL)b/L = 12911 LBSLEFT R(lt) wTL\*L/2+P(TL)a/L = 15056 LBS wLL\*L/2+P(LL)a/L = 12911 LBSRrt/wTL = 8.3 FT x' = 8.3 FT Rrt/wTL =SUPPORT RIGHT: POST/HGR/FDN: N/A 1 STUDS HEIGHT: 8

POST/HGR/FDN: N/A

HEIGHT: 8

1 STUDS

LEFT:

```
MAXIMUM MOMENT
       Mmax = R(rt)*x'-wTL*x'^2/2 = 62,107 FT LBS
                   L/ 480 L.L. δ L/ 360
δ CRITERIA:
                                                     T.L. δ
STRUCTURAL COMPOSITE LUMBER
       TYPE: GLB
DEPTH (d)est. = 21 IN.
WIDTH (b)est. = 6 3/4 IN.
                                       Fb = 2,400 PSI
                                       Fv =
                                                265 PSI
                                       E = 1.80E + 06 PSI
       Areq = 67.15 \text{ IN}(2)
                                      CF = 0.94
       Sreq =
               330.44 IN(3)
                                      A = 141.75 \text{ IN}(2)
     Ireq(TL) = 2049.53 IN(4)
                                      S = 496.13 \text{ IN}(3)
     Ireq(LL) =
                2636.32 IN(4)
                                       I = 5209.31 \text{ IN}(4)
     BRGreq =
                    10 IN.
                    δmax OCCURS @
                                      8.3 FT. (FROM RHS)
                      \deltamax (T.L.) =
                                       0.32 IN. L/ 610
                                       0.28 IN.
                      \deltamax (L.L.) =
                                                  L/ 711
             6-3/4" X 21" GLB
     USE
                                                                NOTE:
                                     SAFETY FACTOR =
                                                        1.50
STEEL BEAM
     DEPTH =
                 10.10 IN.
                                       Fb =
                                                33,000 PSI
                                       Fb = 33,000 \text{ PSI}

Fv = 20,000 \text{ PSI}
     WIDTH =
                8.02 IN.
                                        E = 2.90E + 07 PSI
        Areq =
                  1.13 IN(2)
                                       A =
                                               13.30 IN(2)
        Sreq =
                  22.58 IN(3)
     Ireq(TL) =
                  127.21 IN(4)
                                       S =
                                               49.10 IN(3)
     Ireq (LL) =
               163.63 IN(4)
                                       I =
                                             248.00 IN(4)
                           δmax @:
                                       8.3 FT. (FROM RHS)
                      \deltamax (T.L.) =
                                       0.42 IN. L/ 468
                      \deltamax (L.L.) =
                                       0.36 IN. L/ 546
       OR
                                                                NOTE:
                                     SAFETY FACTOR = 1.52
```

```
BEAM WITH POINT LOAD
    LOCATION: BASEMENT HALL
         FB - 5
OURATION INCREASE (D) =
                          1.00
        BEAM SPAN =
                             8.0 FT
 TRIBUTARY LOADING
                         FLOOR
                                               ROOF
      TOTAL LOAD (TL) =
                            52 PSF
                                                115 PSF
                                                100 PSF
       LIVE LOAD (LL) =
                              40 PSF
        JOIST SPAN (1) =
                              1.3 FT
                                                4.0 FT
        JOIST CANT (c) =
                              0.0 FT
                                                2.0 FT
    wTL = TL^*[(l+c)^*2/2^*l] =
                              34 PLF
                                                518 PLF
    wLL = LL^*[(1+c)^*2/2^*1] =
                              26 PLF
                                                450 PLF
 BEAM LOADING
     TOTAL\ LOAD\ (wTL) =
                              20 PLF
       LIVE LOAD (wLL) =
                               0 PLF
 TOTAL UNIFORM LOADING
        wTL = SUM(TL) =
                             571 PLF
        wLL = SUM(LL) =
                             476 PLF
 POINT LOAD
      TOTAL LOAD P(TL) =
                            13160 LBS FROM RB-1
       LIVE LOAD P(LL) =
                           11200 LBS
                            5.5 FT (FROM RHS)
        LOCATION (a) =
                b = L-a =
                             2.5 FT (a > b)
    EQUIV. UNIFORM TL =
                             2827 PLF
    EQUIV. UNIFORM LL =
                            2406 PLF
 REACTIONS
      RIGHT R(rt) wTL*L/2+P(TL)b/L =
                                      6398 LBS
                wLL*L/2+P(LL)b/L =
                                      5404 LBS
       LEFT R(lt) wTL*L/2+P(TL)a/L =
                                     11333 LBS
                 wLL*L/2+P(LL)a/L =
                                      9604 LBS
      Rrt/wTL =
                   11.2 FT x' =
                                       5.5 FT
 SUPPORT
       RIGHT:
                    POST/HGR/FDN: POST
                                                  6.6 POST
                          HEIGHT: 8
        LEFT:
                    POST/HGR/FDN: POST
                                                  4.6 POST
```

MAXIMUM MOMENT

**USE** 

HEIGHT: 8

#### STRUCTURAL COMPOSITE LUMBER - W/ PT. LOAD

```
TYPE: GLB
                 12 IN.
DEPTH (d)est. =
                                                   2,400 PSI
                                           Fb =
WIDTH (b)est. =
                    6 3/4 IN.
                                           Fv =
                                                     265 PSI
                                           E = 1.80E + 06 PSI
       Areq =
                   60.91 IN(2)
                                          CF =
                                                  1.00
        Sreq =
                  132.73 IN(3)
                                           A =
                                                    81.00 IN(2)
     Ireq(TL) =
                                                    162.00 IN(3)
                  351.00 IN(4)
                                           S =
     Ireq(LL) =
                                           I =
                                                   972.00 IN(4)
                  446.12 IN(4)
     BRGreq =
                      7 IN.
                                           4.3 FT. (FROM RHS)
                     δmax OCCURS @
                                           0.14 IN. L/ 666
                        \deltamax (T.L.) =
                        \deltamax (L.L.) =
                                           0.10 IN.
                                                      T/
                                                          1008
```

6-3/4" X 12" GLB

SAFETY FACTOR = 1.22

T.L. δ



```
SIMPLE SPAN BEAM OR HEADER
    LOCATION: PORCH BEAM
         FB - 4
OURATION INCREASE (D) =
                            1.00
        BEAM SPAN
                               6.5 FT
 TRIBUTARY LOADING
                          FLOOR
      TOTAL LOAD (TL) =
                               70 PSF
       LIVE LOAD (LL) =
                               60 PSF
        JOIST SPAN (1) =
                               6.0 FT
        JOIST CANT (c) =
                               0.0 FT
    wTL = TL*[(1+c)*2/2*1] =
                              210 PLF
     wLL = LL*[(1+c)*2/2*1] =
                              180 PLF
 BEAM LOADING
     TOTAL\ LOAD\ (wTL) =
                               20 PLF
       LIVE LOAD (wLL) =
                                0 PLF
 TOTAL UNIFORM LOADING
        wTL = SUM(TL) =
wLL = SUM(LL) =
                              230 PLF
                              180 PLF
 POINT LOAD
                                0 LBS
      TOTAL LOAD P(TL) =
       LIVE LOAD P(LL) =
                                0 LBS
        LOCATION (a) =
                               3.3 FT (FROM RHS)
                 b = L-a =
                              3.3 FT (a > b)
    EQUIV. UNIFORM TL =
                              0 PLF
    EQUIV. UNIFORM LL =
                               0 PLF
 REACTIONS
      RIGHT R(rt) wTL*L/2+P(TL)b/L =
                                        748 LBS
                 wLL*L/2+P(LL)b/L =
                                        585 LBS
       LEFT R(lt) wTL*L/2+P(TL)a/L =
                                        748 LBS
                 wLL*L/2+P(LL)a/L =
                                        585 LBS
                    3.3 FT x' =
      Rrt/wTL =
                                        3.3 FT
 SUPPORT
       RIGHT:
                     POST/HGR/FDN: 2X4
                                                    1 STUDS
                           HEIGHT: 8
         LEFT:
                     POST/HGR/FDN: 2X4
                                                    1 STUDS
                           HEIGHT: 8
 MAXIMUM MOMENT
        Mmax = R(rt)*x'-wTL*x'^2/2 = 1,215 FT LBS
                    L/ 480 L.L. δ L/ 360
 δ CRITERIA:
                                                      T.L. δ
DIMENSIONAL LUMBER
        TYPE: DF#2
                                        CF = 1.1
                                       Fb =
 DEPTH (d)est. = 9 \frac{1}{4} IN.
                                                  900 PSI
 WIDTH (b)est. =
                                                 180 PSI
                    4 1/2 IN.
                                        Fv =
                                        E = 1.00E + 06 PSI
                   4.75 IN(2)
        Areq =
        Sreq =
                   14.72 IN(3)
                                        A =
                                                 41.63 IN(2)
     Ireq(TL) =
                   28.42 IN(4)
                                        S =
                                                 64.17 IN(3)
      Ireq(LL) =
                   33.37 IN(4)
                                                296.79 IN(4)
                                        I =
      BRGreq =
                      3 IN.
                    δmax OCCURS @
                                        3.3 FT. (FROM RHS)
                                        0.03 IN
                       \deltamax (T.L.) =
                                                  L/ 2506
                       \deltamax (L.L.) =
                                        0.02 IN.
                                                  L/ 3202
      USE
             (3) - 2 X 10 (S)
                                                                NOTE:
```

SAFETY FACTOR



```
SIMPLE SPAN BEAM OR HEADER
    LOCATION: BASEMENT BEDROOM
         FB - 3
OURATION INCREASE (D) =
                              1.00
        BEAM SPAN
                              12.0 FT
         VENEER YES/NO:
                               NO
 TRIBUTARY LOADING
                          FLOOR
      TOTAL\ LOAD\ (TL) =
                            52 PSF
       LIVE LOAD (LL) =
                               40 PSF
        JOIST SPAN (1) =
                              19.0 FT
        JOIST CANT (c) =
                               0.0 FT
    wTL = TL*[(1+c)*2/2*1] =
                              494 PLF
     wLL = LL*[(1+c)*2/2*1] =
                              380 PLF
 BEAM LOADING
     TOTAL LOAD (wTL) =
                               20 PLF
       LIVE LOAD (wLL) =
                                0 PLF
 TOTAL UNIFORM LOADING
        wTL = SUM(TL) =
                               514 PLF
        wLL = SUM(LL) =
                              380 PLF
 POINT LOAD
      TOTAL LOAD P(TL) =
                               0 LBS
       LIVE LOAD P(LL) =
                               0 LBS
        LOCATION (a) =
                               6.0 FT (FROM RHS)
                b = I_{-a} =
                               6.0 FT (a > b)
    EQUIV. UNIFORM TL =
                               0 PLF
    EQUIV. UNIFORM LL =
                                0 PLF
 REACTIONS
      RIGHT R(rt) wTL*L/2+P(TL)b/L =
                                        3084 LBS
                 wLL*L/2+P(LL)b/L =
                                        2280 LBS
       LEFT R(lt) wTL*L/2+P(TL)a/L =
                                        3084 LBS
                 wLL*L/2+P(LL)a/L =
                                       2280 LBS
      Rrt/wTL =
                                        6.0 FT
                     6.0 FT x' =
 SUPPORT
                     POST/HGR/FDN: POST
       RIGHT:
                                                     1 POST
                           HEIGHT: 8
         LEFT:
                     POST/HGR/FDN: POST
                                                     1 POST
                           HEIGHT: 8
 MAXIMUM MOMENT
        Mmax = R(rt)*x'-wTL*x'^2/2 = 9,252 FT LBS

RIA: L/ 480 L.L. \delta L/ 360
 δ CRITERIA:
                                                      T.L. δ
STRUCTURAL COMPOSITE LUMBER
        TYPE: GLB
                                        Fb =
                                                2,400 PSI
 DEPTH (d)est. = 10 \frac{1}{2} IN.
                                        Fv =
                                                 265 PSI
 WIDTH (b)est. =
                   5 1/8 IN.
                                        E = 1.80E + 06 PSI
                   14.91 IN(2)
                                               1.00
        Areq =
                                        CF =
        Sreq =
                   46.26 IN(3)
                                        A =
                                                 53.81 IN(2)
     Ireq(TL) =
                  222.05 IN(4)
                                        S =
                                                 94.17 IN(3)
      Ireq(LL) =
                  246.24 IN(4)
                                        I =
                                                494.40 IN(4)
      BRGreq =
                      3 IN.
                    δmax OCCURS @
                                        6.0 FT. (FROM RHS)
                       \deltamax (T.L.) =
                                        0.27 IN. L/ 534
                       δmax (L.L.) =
                                        0.20 IN.
                                                      723
      USE
              5-1/8" X 10-1/2" GLB
                                                                 NOTE:
```

SAFETY FACTOR :



```
SIMPLE SPAN BEAM OR HEADER
    LOCATION: FAMILY ROOM
         FB - 2
OURATION INCREASE (D) =
                             1.00
        BEAM SPAN
                             12.5 FT
        VENEER YES/NO:
                              NO
 TRIBUTARY LOADING
                         FLOOR
      TOTAL LOAD (TL) =
                            52 PSF
       LIVE LOAD (LL) =
                              40 PSF
        JOIST SPAN (1) =
                             29.0 FT
        JOIST CANT (c) =
                              0.0 FT
    wTL = TL*[(1+c)*2/2*1] =
                              754 PLF
    wLL = LL*[(1+c)*2/2*1] =
                              580 PLF
 BEAM LOADING
     TOTAL\ LOAD\ (wTL) =
                              20 PLF
       LIVE LOAD (wLL) =
                               0 PLF
 TOTAL UNIFORM LOADING
        wTL = SUM(TL) =
                              774 PLF
        wLL = SUM(LL) =
                              580 PLF
 POINT LOAD
      TOTAL LOAD P(TL) =
                              0 LBS
       LIVE LOAD P(LL) =
                              0 LBS
        LOCATION (a) =
                              6.3 FT (FROM RHS)
                             6.3 FT (a > b)
                b = L-a =
    EQUIV. UNIFORM TL =
                              0 PLF
    EQUIV. UNIFORM LL =
                              0 PLF
 REACTIONS
      RIGHT R(rt) wTL*L/2+P(TL)b/L =
                                      4838 LBS
                wLL*L/2+P(LL)b/L =
                                      3625 LBS
       LEFT R(lt) wTL*L/2+P(TL)a/L =
                                      4838 LBS
                 wLL*L/2+P(LL)a/L =
                                      3625 LBS
      Rrt/wTL =
                    6.3 FT x' =
                                       6.3 FT
 SUPPORT
       RIGHT:
                    POST/HGR/FDN: POST
                                                   1 POST
                          HEIGHT: 8
         LEFT:
                    POST/HGR/FDN: POST
                                                   1 POST
                          HEIGHT: 8
 MAXIMUM MOMENT
        Mmax = R(rt)*x'-wTL*x'^2/2 = 15,117 FT LBS
                    L/ 480
                                 L.L. δ L/ 360
 δ CRITERIA:
                                                    T.L. δ
STRUCTURAL COMPOSITE LUMBER
        TYPE: GLB
 DEPTH(d)est. =
                12 IN.
                                       Fb =
                                              2,400 PSI
 WIDTH (b)est. =
                  5 1/8 IN.
                                       Fv =
                                                265 PSI
                                       E = 1.80E + 06 PSI
        Areq =
                  23.00 IN(2)
                                      CF =
                                             1.00
        Sreq =
                  75.59 IN(3)
                                       A =
                                               61.50 IN(2)
     Ireq(TL) =
                 377.93 IN(4)
                                       S =
                                               123.00 IN(3)
     Ireq(LL) =
                 424.80 IN(4)
                                       I =
                                              738.00 IN(4)
     BRGreq =
                     3 IN.
                    δmax OCCURS @
                                       6.3 FT. (FROM RHS)
                      \deltamax (T.L.) =
                                       0.32 IN. L/ 469
                                       0.24 IN.
                      \deltamax (L.L.) =
                                                 L/ 625
      USE
              5-1/8" X 12" GLB
                                                               NOTE:
                                    SAFETY FACTOR =
```



```
SIMPLE SPAN BEAM OR HEADER
    LOCATION: GARAGE
         FB - 1
OURATION INCREASE (D) =
                            1.00
        BEAM SPAN
                            19.5 FT
        VENEER YES/NO:
                             NO
 TRIBUTARY LOADING
                        FLOOR
     TOTAL LOAD (TL) =
                          52 PSF
       LIVE LOAD (LL) =
                             40 PSF
        JOIST SPAN (1) =
                           14.5 FT
        JOIST CANT (c) =
                             0.0 FT
    wTL = TL*[(1+c)*2/2*1] =
                            377 PLF
    wLL = LL*[(1+c)*2/2*1] =
                            290 PLF
 BEAM LOADING
                           20 PLF
     TOTAL\ LOAD\ (wTL) =
      LIVE\ LOAD\ (wLL) =
                             0 PLF
 TOTAL UNIFORM LOADING
        wTL = SUM(TL) =
                            397 PLF
                            290 PLF
        wLL = SUM(LL) =
 POINT LOAD
     TOTAL LOAD P(TL) =
                            0 LBS
       LIVE LOAD P(LL) =
                            0 LBS
                          9.8 FT (FROM RHS)
        LOCATION (a) =
               b = L-a =
                           9.8 FT (a > b)
    EQUIV. UNIFORM TL =
                            0 PLF
    EQUIV. UNIFORM LL =
                             0 PLF
 REACTIONS
      RIGHT R(rt) wTL*L/2+P(TL)b/L =
                                     3871 LBS
                wLL*L/2+P(LL)b/L =
                                     2828 LBS
       LEFT R(lt) wTL*L/2+P(TL)a/L =
                                     3871 LBS
                                     2828 LBS
                wLL*L/2+P(LL)a/L =
                   9.8 FT x' =
     Rrt/wTL =
                                      9.8 FT
 SUPPORT
       RIGHT:
                   POST/HGR/FDN: POST
                                                 1 POST
                         HEIGHT: 8
                   POST/HGR/FDN: POST
        LEFT:
                                                 1 POST
                         HEIGHT: 8
 MAXIMUM MOMENT
        Mmax = R(rt)*x'-wTL*x'^2/2 = 18,870 FT LBS
 δ CRITERIA: L/ 480 L.L. δ L/ 360
                                                   T.L. δ
STRUCTURAL COMPOSITE LUMBER
        TYPE: GLB
 DEPTH (d)est. = 12 IN.
                                           2,400 PSI
                                     Fb =
 WIDTH (b)est. =
                 6 3/4 IN.
                                     Fv = 265 PSI
                                     E = 1.80E + 06 PSI
        Areq =
                 19.66 IN(2)
                                     CF = 1.00
        Sreq =
                 94.35 IN(3)
                                     A =
                                             81.00 IN(2)
     Ireq(TL) =
                 735.93 IN(4)
                                     S =
                                            162.00 IN(3)
                                            972.00 IN(4)
     Ireq(LL) =
                 806.37 IN(4)
                                      I =
     BRGreq =
                    3 IN.
                   δmax OCCURS @
                                      9.8 FT. (FROM RHS)
                     \deltamax (T.L.) =
                                      0.74 IN. L/ 317
                     \deltamax (L.L.) =
                                     0.54 IN.
                                               L/
             6-3/4" X 12" GLB
      USE
                                                            NOTE:
                                   SAFETY FACTOR =
                                                      1.21
```



## **ROOF BEAMS**

```
SIMPLE SPAN BEAM OR HEADER
    LOCATION: PB3
        RB - 5
OURATION INCREASE (D) =
                        1.15
                        19.0 FT
       BEAM SPAN =
        VENEER YES/NO:
                          NO
 TRIBUTARY LOADING ROOF
     TOTAL LOAD (TL) =
                        115 PSF
       LIVE LOAD (LL) =
                           100 PSF
        JOIST SPAN (1) =
                           6.0 FT
    BEAM LOADING
                        20 PLF
     TOTAL\ LOAD\ (wTL) =
      LIVE\ LOAD\ (wLL) =
                            0 PLF
 TOTAL UNIFORM LOADING
       wTL = SUM(TL) =
                           633 PLF
       wLL = SUM(LL) =
                           533 PLF
 POINT LOAD
                           0 LBS
     TOTAL LOAD P(TL) =
      LIVE LOAD P(LL) =
                           0 LBS
                         9.5 FT (FROM RHS)
       LOCATION (a) =
               b = L-a =
                         9.5 FT (a > b)
                          0 PLF
    EQUIV. UNIFORM TL =
    EQUIV. UNIFORM LL =
                           0 PLF
 REACTIONS
     RIGHT R(rt) wTL*L/2+P(TL)b/L =
                                   6017 LBS
               wLL*L/2+P(LL)b/L =
                                   5067 LBS
      LEFT R(lt) wTL*L/2+P(TL)a/L =
                                   6017 LBS
               wLL*L/2+P(LL)a/L = 5067 LBS
                   9.5 FT x' =
                                   9.5 FT
     Rrt/wTL =
 SUPPORT
       RIGHT:
                   POST/HGR/FDN: 2X6
                                               3 STUDS
                        HEIGHT: 8
                   POST/HGR/FDN: 2X6
        LEFT:
                                               3 STUDS
                        HEIGHT: 8
 MAXIMUM MOMENT
       Mmax = R(rt)*x'-wTL*x'^2/2 = 28,579 FT LBS
 δ CRITERIA:
              L/ 360 L.L. δ L/ 240
                                                 T.L. δ
DIMENSIONAL LUMBER
                                   CF = 0.9
       TYPE: DF#1 & BTR
 DEPTH (d)est. = 13 \frac{1}{2} IN.
                                   Fb = 1,150 PSI
                                   Fv = 180 PSI
 WIDTH (b)est. =
                11 1/2 IN.
                                    E = 1.80E + 06 PSI
       Areq = 38.44 IN(2)
       Sreq =
              288.13 IN(3)
                                   A = 155.25 \text{ IN}(2)
     Ireq(TL) = 1086.01 IN(4)
                                   S = 349.31 \text{ IN}(3)
     Ireq(LL) =
               1371.80 IN(4)
                                    I = 2357.86 \text{ IN}(4)
     BRGreq =
                   4 IN.
                  δmax OCCURS @
                                    9.5 FT. (FROM RHS)
                     \deltamax (T.L.) =
                                    0.44 IN. L/ 521
                     \deltamax (L.L.) =
                                    0.37 IN.
                                             L/ 619
             12 X 14 TIMBER
     USE
                                                          NOTE:
                                  SAFETY FACTOR =
                                                    1.21
```



```
CANTILEVER BEAM
    LOCATION: STRUCTURAL FASCIA
                                (1) 1-3/4" X 14" LVL(S)
        RB - 4
                         1.15
OURATION INCREASE (D) =
       BEAM SPAN (L) =
                            4.0 FT
       BEAM CANT (a) =
                            2.0 FT
 TRIBUTARY LOADING BACK-SPAN
                                         CANTILEVER
                         115 PSF
      TOTAL LOAD (TL) =
                                              115 PSF
                                              100 PSF
       LIVE LOAD (LL) =
                            100 PSF
         JOIST SPAN (1) = 6.0 FT
                                               0 LBS (TL POINT)
                                                0 LBS (LL)
 BEAM LOADING
     TOTAL LOAD (wTL) =
                           20 PLF
                                               20 PLF
                                                0 PLF
      LIVE\ LOAD\ (wLL)\ =
                             0 PLF
 TOTAL UNIFORM LOADING
  wTL = TL*1/2 = 365 PLF cTL =
                                     365 PLF
  wLL = LL*1/2 =
                   300 PLF cLL=
                                      300 PLF
                                      0 LBS
                           PTL =
                                       0 LBS
                           PLL =
  REACTIONS
 LHS
              w*L/2 - c*a^2/2L - Pa/L =
                                     418 LBS (MIN)
                                     698 LBS (MAX)
 RHS
             /2+c*a(21+a)2L+P(L+a)/L=
                                     1643 LBS (MAX)
 MAXIMUM MOMENT
            Mmax (@ MID SPAN) =
                                      430 FT LBS
          Mmax (@ CANTILEVER) =
                                      730 FT LBS
 MAXIMUM SHEAR @ REACTION PT
             Vmax (FOR SPAN) =
                                     698 FT LBS
           Vmax (@ CANTILEVER) =
                                      730 FT LBS
 DEFLECTION * EI
                              TL & PART LL ONLY
         @ END OF CANTILEVER =
                                     -2330
                                             -2200
              @ MID SPAN
                                     1087
                                              1000
         @L/SORT(3) (FROM CANT) =
                                     -539
                                              -616
            MAX DEFLECTION *EI =
                                    1087
                                              1000
STRUCTURAL COMPOSITE LUMBER - CANTILEVER BEAM
        TYPE: LVL (1.9E)
 DEPTH(d)est. =
               14 IN.
                                            2,600 PSI
                                     Fb =
 WIDTH (b)est. =
                  1 3/4 IN.
                                     Fv =
                                              285 PSI
OF MEMBERS =
                                     E = 1.90E + 06 PSI
                   - 1
                  2.73 IN.(2)
                                     CF =
       Areq =
                                            0.98
                  2.93 IN.(3)
                                     A =
                                            24.50 IN(2)
        Sreq =
     Ireq(TL) =
                  10.60 IN.(4)
                                      S =
                                             57.17 IN(3)
     Ireq(LL) =
                  15.01 IN.(4)
                                     I =
                                             400.17 IN(4)
     BRGreq =
                    3 IN.
```

(1) 1-3/4" X 14" LVL(S)

SAFETY FACTOR =

8 98



**USE** 

```
SIMPLE SPAN BEAM OR HEADER
    LOCATION: MAIN ROOF
         RB - 3
OURATION INCREASE (D) =
                              1.15
        BEAM SPAN
                              28.0 FT
         VENEER YES/NO:
                               NO
 TRIBUTARY LOADING
                           ROOF
      TOTAL LOAD (TL) =
                              115 PSF
       LIVE LOAD (LL) =
                              100 PSF
         JOIST SPAN (1) =
                              16.0 FT
        JOIST CANT (c) =
                               0.0 FT
    wTL = TL*[(1+c)*2/2*1] =
                              920 PLF
     wLL = LL*[(1+c)*2/2*1] =
                              800 PLF
 BEAM LOADING
     TOTAL\ LOAD\ (wTL) =
                               20 PLF
       LIVE LOAD (wLL) =
                                0 PLF
 TOTAL UNIFORM LOADING
        wTL = SUM(TL) =
wLL = SUM(LL) =
                              940 PLF
                              800 PLF
 POINT LOAD
      TOTAL LOAD P(TL) =
                                0 LBS
       LIVE LOAD P(LL) =
                                0 LBS
        LOCATION (a) =
                              14.0 FT (FROM RHS)
                b = L-a =
                              14.0 FT (a > b)
    EQUIV. UNIFORM TL =
                              0 PLF
    EQUIV. UNIFORM LL =
                                0 PLF
 REACTIONS
      RIGHT R(rt) wTL*L/2+P(TL)b/L =
                                      13160 LBS
                 wLL*L/2+P(LL)b/L =
                                      11200 LBS
       LEFT R(lt) wTL*L/2+P(TL)a/L =
                                      13160 LBS
                 wLL*L/2+P(LL)a/L =
                                      11200 LBS
                   14.0 FT x' =
      Rrt/wTI =
                                       14.0 FT
 SUPPORT
       RIGHT:
                     POST/HGR/FDN: 2X6
                                                    3 STUDS
                           HEIGHT: 8
         LEFT:
                     POST/HGR/FDN: 2X6
                                                    3 STUDS
                           HEIGHT: 8
 MAXIMUM MOMENT
         Mmax = R(rt)*x'-wTL*x'^2/2 = 92,120 FT LBS
 δ CRITERIA:
                     L/ 360 L.L. δ L/ 240
                                                      T.L. \delta
STRUCTURAL COMPOSITE LUMBER
        TYPE: GLB
 DEPTH (d)est. =
                   24 IN.
                                                2,400 PSI
                                        Fb =
 WIDTH (b)est. =
                   6 3/4 IN.
                                                 265 PSI
                                       Fv =
                                        E = 1.80E + 06 PSI
                  55.52 IN(2)
                                       CF =
                                               0.93
        Sreq =
                  432.55 IN(3)
                                        A =
                                               162.00 IN(2)
      Ireq(TL) =
                 5158.72 IN(4)
                                        S =
                                                648.00 IN(3)
      Ireq(LL) =
                 6585.60 IN(4)
                                        I =
                                              7776.00 IN(4)
      BRGreq =
                      9 IN.
                    δmax OCCURS @
                                        14.0 FT. (FROM RHS)
                       \deltamax (T.L.) =
                                        0.93 IN. L/ 362
                                        0.79 IN
                                                  I/ 425
                       \deltamax (L.L.) =
             6-3/4" X 24" GLB
      USE
                                                                NOTE:
```

SAFETY FACTOR =

1.18

```
SIMPLE SPAN BEAM OR HEADER
    LOCATION: PORCH BEAM
         RB - 2
OURATION INCREASE (D) =
                            1.15
        BEAM SPAN
                               6.5 FT
 TRIBUTARY LOADING
                           ROOF
      TOTAL LOAD (TL) =
                           115 PSF
       LIVE LOAD (LL) =
                               100 PSF
         JOIST SPAN (1) =
                               6.0 FT
        JOIST CANT (c) =
                               2.0 FT
    wTL = TL*[(1+c)*2/2*1] =
                               613 PLF
     wLL = LL*[(1+c)*2/2*1] =
                               533 PLF
 BEAM LOADING
     TOTAL\ LOAD\ (wTL) =
                               20 PLF
       LIVE LOAD (wLL) =
                                0 PLF
 TOTAL UNIFORM LOADING
        wTL = SUM(TL) =
wLL = SUM(LL) =
                               633 PLF
                               533 PLF
 POINT LOAD
      TOTAL LOAD P(TL) =
                               0 LBS
       LIVE LOAD P(LL) =
                                0 LBS
        LOCATION (a) =
                               3.3 FT (FROM RHS)
                 b = L-a =
                             3.3 FT (a > b)
                              0 PLF
    EQUIV. UNIFORM TL =
    EQUIV. UNIFORM LL =
                                0 PLF
 REACTIONS
      RIGHT R(rt) wTL*L/2+P(TL)b/L =
                                        2058 LBS
                 wLL*L/2+P(LL)b/L =
                                       1733 LBS
       LEFT R(lt) wTL*L/2+P(TL)a/L =
                                       2058 LBS
                 wLL*L/2+P(LL)a/L =
                                       1733 LBS
                     3.3 FT x' =
      Rrt/wTI =
                                        3.3 FT
 SUPPORT
       RIGHT:
                     POST/HGR/FDN: 2X4
                                                     1 STUDS
                           HEIGHT: 8
         LEFT:
                     POST/HGR/FDN: 2X4
                                                     1 STUDS
                           HEIGHT: 8
 MAXIMUM MOMENT
        Mmax = R(rt)*x'-wTL*x'^2/2 = 3,345 FT LBS
 δ CRITERIA:
                    L/ 360 L.L. δ L/ 240
                                                      T.L. δ
DIMENSIONAL LUMBER
                                        CF = 1.2
        TYPE: DF#1 & BTR
                                       Fb = 1,150 PSI
Fv = 180 PSI
 DEPTH (d)est. = 7 \frac{1}{2} IN.
 WIDTH (b)est. =
                   5 1/2 IN.
                                        Fv =
                                        E = 1.80E + 06 PSI
        Areq =
                   12.05 IN(2)
        Sreq =
                   25.29 IN(3)
                                        A =
                                                 41.25 IN(2)
     Ireq(TL) =
                   43.48 IN(4)
                                         S =
                                                 51.56 IN(3)
      Ireq(LL) =
                   54.93 IN(4)
                                         I =
                                                193.36 IN(4)
      BRGreq =
                      3 IN.
                    \delta max \; OCCURS \; @
                                         3.3 FT. (FROM RHS)
                       \deltamax (T.L.) =
                                        0.07 IN. L/ 1067
                       \deltamax (L.L.) =
                                        0.06 IN
                                                   I/
                                                      1267
             6 X 8 TIMBER
      USE
                                                                 NOTE:
```

SAFETY FACTOR =

2.04



```
SIMPLE SPAN BEAM OR HEADER
    LOCATION: WB1
         RB - 1
OURATION INCREASE (D) =
                            1.15
        BEAM SPAN
                              5.0 FT
 TRIBUTARY LOADING
                           ROOF
      TOTAL LOAD (TL) =
                           115 PSF
                              100 PSF
       LIVE LOAD (LL) =
         JOIST SPAN (1) =
                             16.0 FT
        JOIST CANT (c) =
                              3.5 FT
    wTL = TL*[(1+c)*2/2*1] =
                             1367 PLF
     wLL = LL*[(1+c)*2/2*1] =
                             1188 PLF
 BEAM LOADING
     TOTAL\ LOAD\ (wTL) =
                             20 PLF
       LIVE LOAD (wLL) =
                               0 PLF
 TOTAL UNIFORM LOADING
        wTL = SUM(TL) =
wLL = SUM(LL) =
                             1387 PLF
                             1188 PLF
 POINT LOAD
                             0 LBS
      TOTAL LOAD P(TL) =
       LIVE LOAD P(LL) =
                               0 LBS
        LOCATION (a) =
                              2.5 FT (FROM RHS)
                b = I -a =
                              2.5 FT (a > b)
                             0 PLF
    EQUIV. UNIFORM TL =
    EQUIV. UNIFORM LL =
                               0 PLF
 REACTIONS
      RIGHT R(rt) wTL*L/2+P(TL)b/L =
                                       3466 LBS
                 wLL*L/2+P(LL)b/L =
                                       2971 LBS
       LEFT R(lt) wTL*L/2+P(TL)a/L =
                                       3466 LBS
                 wLL*L/2+P(LL)a/L =
                                       2971 LBS
                    2.5 FT x' =
                                        2.5 FT
      Rrt/wTI =
 SUPPORT
       RIGHT:
                     POST/HGR/FDN: 2X6
                                                    1 STUDS
                           HEIGHT: 8
         LEFT:
                     POST/HGR/FDN: 2X6
                                                    1 STUDS
                           HEIGHT: 8
 MAXIMUM MOMENT
        Mmax = R(rt)*x'-wTL*x'^2/2 = 4,333 FT LBS
 δ CRITERIA:
                   L/ 360 L.L. δ L/ 240
                                                      T.L. \delta
STRUCTURAL COMPOSITE LUMBER
        TYPE: LVL (1.9E)
 DEPTH (d)est. = 11 \frac{1}{4} IN.
                                                2,600 PSI
                                       Fb =
 WIDTH (b)est. =
                   1 1/4 IN.
                                                285 PSI
                                       Fv =
OF MEMBERS =
                    2
                                       E = 1.90E + 06 PSI
        Areq =
                   9.92 IN(2)
                                       CF =
                                             1.00
                                               28.13 IN(2)
                                       A =
        Sreq =
                   17.39 IN(3)
     Ireq(TL) =
                   41.05 IN(4)
                                        S =
                                                52.73 IN(3)
      Ireq(LL) =
                   52.77 IN(4)
                                        I =
                                               296.63 IN(4)
      BRGreq =
                     3 IN.
                    δmax OCCURS @
                                       2.5 FT. (FROM RHS)
                                        0.03 IN. L/ 1734
                       \deltamax (T.L.) =
                                       0.03 IN
                                                  L/ 2024
                       \deltamax (L.L.) =
             (2) 1-1/4'' \times 11-1/4'' \times VL(S)
      USE
                                                                NOTE:
```

SAFETY FACTOR =

2.84



## **JOISTS**

```
TJI SIMPLE SPAN WEB JOIST
  LOCATION: TYPICAL JOIST
                                                     FLOOR LOAD
        RJ - 1
                                                         DL =
                                                                     15 PSF
         DURATION INCREASE (D) =
                                                         LL =
                                                                    100 PSF
                                       1.15
                  JOIST SPACING =
                                       16.0 IN.
                                                         TL =
                                                                    115 PSF
                  JOIST SPAN (L) =
                                      19.00 FT (MAX)
                    LOADING(w) =
                                       153 PLF(TL)
                                        133 PLF(LL)
                      REACTION = wTL*L/2 =
                                               1457
                                  wLL*L/2 =
                                                1267
          MAXIMUM MOMENT (M) = wL^2/8 =
                                                6,919 FT LBS
           MAXIMUM SHEAR (V) = w(L/2-d) =
                                                1,278 LBS
                    [22.5w(TL)L^4]/ 9.26E+08 +
     \Delta (TL) =
                     +2.67*w(TL)L^2/(dx10^5) =
                                                         0.58 IN.
     \Delta (LL) =
                     [22.5w(LL)L^4] 9.26E+08
                                                => L/396
                     +2.67*w(LL)L^2/(dx10^5) =
                                                         0.50 IN.
                                                => L/ 455
            MAXIMUM
                                   SAFETY
           ALLOWABLE
                                   FACTOR
        M =
              11275 FT LBS
                                     1.63
        V =
                 2390 LBS
                                     1.87
          DEFLECTION
                                     1.26
    USE
                                       560
              14
                      IN. TJI®
                                            @ 16.0 IN. O.C
                      CHECK HANGERS
                                            SAFETY FACTOR
TJI SIMPLE SPAN WEB JOIST
  LOCATION: TYPICAL JOIST
                                                     FLOOR LOAD
        RJ - 1
                                                         DL =
                                                                     15 PSF
         DURATION INCREASE (D) =
                                       1.15
                                                         LL =
                                                                    100 PSF
                  JOIST SPACING =
                                        24.0 IN.
                                                         TL =
                                                                    115 PSF
                  JOIST SPAN (L) =
                                       8.00 FT (MAX)
                    LOADING(w) =
                                        230 PLF(TL)
                                        200 PLF(LL)
                      REACTION = wTL*L/2 =
                                                920
                                  wLL*L/2 =
                                                800
          MAXIMUM MOMENT (M) = wL^2/8 =
                                                1,840 FT LBS
           MAXIMUM SHEAR (V) = w(L/2-d) =
                                                652 LBS
     \Delta (TL) =
                    [22.5w(TL)L^4] 4.15E+08 +
                     +2.67*w(TL)L^2/(dx10^5) =
                                                         0.08 IN.
                     [22.5w(LL)L^4]/ 4.15E+08
                                                => L/ 1213
     \Delta (LL) =
                     +2.67*w(LL)L^2/(dx10^5) =
                                                         0.07 IN.
                                                => L/1395
            MAXIMUM
                                   SAFETY
           ALLOWABLE
                                   FACTOR
        M =
                 4280 FT LBS
                                     2.33
        V =
                 1945 LBS
                                     2.98
          DEFLECTION
                                     3.87
    USE
              14
                      IN. TJI®
                                       210
                                            (a) 24.0 IN. O.
                                            SAFETY FACTOR =
```



## SIMPLE SPAN WOOD JOIST

```
LOCATION: ROOF JOIST
                                                     ROOF LOAD
         RJ-1
        DURATION INCREASE (D) =
                                       1.15
                                                         DL =
                                                                     15 PSF
               JOIST SPACING (1) =
                                       24.0 IN.
                                                         LL =
                                                                    100 PSF
                     JOIST SPAN =
                                        6.0 FT
                                                          TL =
                                                                    115 PSF
                                        230 PLF(TL)
                   LOADING(w) =
                                        200 PLF(LL)
                      REACTION = wTL*L/2 =
                                                690 LBS
                                  wLL*L/2 =
                                                600 LBS
MAXIMUM MOMENT
                       Mmax = [wTL/8*12]/(D*Fb*CF) =
                                                        1,035 FT LBS
JOIST SIZE
              GRADE: DF#2
                                                Fb =
                                                          900 PSI
        DEPTH (d)est. =
                             7.25 IN.
                                                Fv =
                                                          180 PSI
        WIDTH (b)est. =
                              1.5 IN.
                                              Fc | =
                                                          625 PSI
                                                 E = 1.00E + 06 PSI
               Areq =
                             3.99 IN(2)
                                                CF = 1.20
                 Sreq =
                             10.00 IN(3)
                                                          0.0
                                                 φ=
             Ireq(TL) =
                             22.36 IN(4)
                                                 A =
                                                         10.88 IN(2)
             Ireq(LL) =
                             29.16 IN(4)
                                                 S =
                                                         13.14 IN(3)
             BRGreq =
                                3 IN.
                                                 I =
                                                         47.63 IN(4)
    USE
                        2 X
                                            's @
                                                        24.0 IN. O.C
```

SAFETY FACTOR =

#### TJI SIMPLE SPAN WEB JOIST

```
LOCATION: TYPICAL JOIST
                                                    FLOOR LOAD
      FJ - 1
                                                         DL =
                                                                     12 PSF
       DURATION INCREASE (D) =
                                      1.00
                                                         LL =
                                                                     40 PSF
                JOIST SPACING =
                                      16.0 IN.
                                                         TL =
                                                                     52 PSF
                JOIST SPAN (L) =
                                     14.50 FT (MAX)
                  LOADING(w) =
                                        69 PLF(TL)
                                        53 PLF(LL)
                    REACTION = wTL*L/2 =
                                 wLL*L/2 =
                                                387
        MAXIMUM MOMENT (M) = wL^2/8 =
                                               1,822 FT LBS
         MAXIMUM SHEAR (V) = w(L/2-d) =
                                                434 LBS
  \Delta (TL) =
                  [22.5w(TL)L^4]/ 2.83E+08 +
                   +2.67*w(TL)L^2/(dx10^5) =
                                                         0.28 IN.
  \Delta (LL) =
                   [22.5w(LL)L^4]/ 2.83E+08
                                               => L/ 629
                                                         0.21 IN.
                   +2.67*w(LL)L^2/(dx10^5) =
                                               => L/818
```

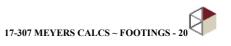
M	AXIMUM	SAFETY
ALI	LOWABLE	<b>FACTOR</b>
M =	3620 FT LBS	1.99
V =	1655 LBS	3.81
DEFL	LECTION	2.27

USE 11 7/8 IN. TJI ® 210 (a) 16.0 IN. O.C

SAFETY FACTOR =

# **FOOTINGS**

	LOCATION	DEAD LOAD	LIVE LOAD	TOTAL LOAD	FOOTING SIZE
CONT	INTERIOR	ROOF			
FTGS	BEARING	WIDTH SPAN LOAD	LOAD		
1105	WALL	FT FT PSF	PSF		
	WILL		$(a) \frac{100}{100} = 0$ PLF	0 PLF	
		FLOOR			
		WIDTH SPAN LOAD	LOAD		1,106 PLF
		FT FT PSF	PSF		1,500 PSF
		1 x 18 @ $12 = 216$ PLF	@ 40 = 720 PLF	936 PLF	
		WALL			= 0.7  FT
		WIDTH HEIGHT LOAD			
		FT FT PLF			
		1   x   17   @   10 =   170   PLF		170 PLF	
	USE AS	FOUNDATION			FC-18
	MINIMUM	THICK HEIGHT LOAD			USE:
	FOOTING	IN. FT PCF			
		0   x   0   @   150 =   0   PLF		0 PLF	1'-4" X CONT
		386 PLF	720 PLF	1,106 PLF	
CONT	EXTERIOR	ROOF			
FTGS	BEARING	WIDTH SPAN LOAD	LOAD		
	WALL	FT FT PSF	PSF		
			@ 100 = 800  PLF	920 PLF	
		FLOOR	TO 1 P		4 # 4# PT P
		WIDTH SPAN LOAD FT FT PSF	LOAD PSF		1,767 PLF 1,500 PSF
		$\begin{array}{cccccccccccccccccccccccccccccccccccc$		377 PLF	1,500 PSF
		WALL	(t) 40 2)0 1 E1	3// 1 LI	= 1.2 FT
		WIDTH HEIGHT LOAD			
		FT FT PLF			
		1 $x$ 18 @ 15 = 270 PLF		270 PLF	
	USE AS	FOUNDATION			FC-20
	MINIMUM	THICK HEIGHT LOAD			USE:
	FOOTING	IN. FT PCF			41.011.77.00.77
		8 x 2 @ 150 = 200 PLF	1 000 PLE	200 PLF	1'-8" X CONT
CDOT	DIMEDICS	677 PLF	1,090 PLF	1,767 PLF	
	INTERIOR	REACTION FROM BEAM			
FTGS	LOAD	TRUSS 12075 LBS			
	FROM BM			12075 LBS	
		FLOOR		120/3 LBS	
		WIDTH SPAN LOAD	LOAD		12,195 LBS
		FT FT PSF	PSF		1,500 PSF
		0   x   0   @   12 =   0   LBS		0 LBS	
		COLUMN			= 8.1 FT
		HEIGHT LOAD			
		FT PLF			2.85 FT SQR
		8  @  15  =  120  LBS		120 LBS	TEC 20
		FOUNDATION			FS-30
		AREA HEIGHT LOAD			USE:
		IN. FT PCF		0.100	21 011 7/ 21 011
		0 x 0 @ 150 = 0 LBS	0 100	0 LBS	3'-0" X 3'-0"
		120 LBS	0 LBS	LBS	



# LATERAL DESIGN

LATERAL RESISTING SYSTEM :

PLYWOOD SHEAR WALLS AND ROOF DIAPHRAGM

WIND DESIGN CRITERIA

MWFRS DIRECTIONAL PROCEDURE (ASCE 7-10, CHAP 27)

BASIC WIND SPEED:

WIND RISK CATEGORY:
EXPOSURE CATEGORY:
INT. PRESSURE COEF., GCp;:
DIRECTION FACTOR, Kd:
TOPOGRAPHIC FACTOR, Kz:
GUST-EFFECT FACTOR, G:

115 MPH FIG 26.5-1A

0.85 TBL 26.5-1A

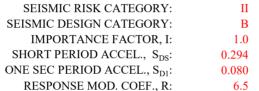
10 26.8.2
0.85 26.9.1

α: 10 z<sub>α</sub>: 900

0.8 TBL 27.4-1

SEISMIC DESIGN CRITERIA

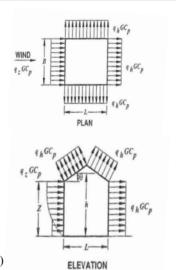
EQUIVALENT LATERAL FORCE PROCEDURE (ASCE 7-10, 12.8)



WINDWARD WALL Cp:

DEFLECTION AMP. FACTOR,  $C_d$ : 4.0 OVERSTRENGTH FACTOR,  $\Omega_0$ : 3.0

DESIGN BASE SHEAR, V: 0.047 \*W



DL (PSF)

15

16

**ROOF LOAD** 

FLOOR LOAD

WALL LOAD

LL (PSF)

0

0

0



## ZONE A

## WIND FORCES

DEPTH, L =	30	FT	h/L =	1.00	
WIDTH, B =	33	FT	VELOCITY PRESSURE COEF., $K_z$ :	0.90	TBL 27.3-1
h =	30	FT	VELOCITY PRESSURE COEF., $K_h$ :	0.98	TBL 27.3-1
$_{\mathrm{Z}} =$	20	FT	WIND VELOCITY PRESSURE, $q_z$ :	26	PSF EQ. 27.3-1
$C_{p1} =$	-0.2	FROM FIG. 27.4-1	WIND VELOCITY PRESSURE, $q_h$ :	28	PSF EQ. 27.3-1
$C_{p2} =$	0.2	FROM FIG. 27.4-1	ROOF WIND PRESSURE, $p_1$ :	-9.9	PSF
ROOF SLOPE	4	/12	ROOF WIND PRESSURE, $p_2$ :	9.9	PSF
ROOF SLOPE	16	DEGREES	ROOF DESIGN WIND PRESSURE, $p_R$ :	2.8	PSF EQ. 27.4-1
			WALL DESIGN WIND PRESSURE, pg:	22.7	PSF EQ 27 4-1

#### DESIGN

	AREA	PRESSURE	LOAD (LBS)	ROOF	DIAPHR	AGM
ROOF	0.0	2.8	0	DIAPHRAGM LOAD =	6594	LBS
WALL	290.0	22.7	6594	SHEAR LENGTH =	33.0	FT
		TOTAL	6594	DIAPHRAGM SHEAR =	200	PLF

## SEISMIC FORCES

	AREA	WEIGHTS	ZONE		
	(SF)	(PSF)	<b>VEIGHT (LBS</b>	8) <u>ROOF I</u>	DIAPHRAGM
ROOF	1220.0	15	18300	DIAPHRAGM LOAD =	1114 LBS
_LWALL	330.0	16	5280	SHEAR LENGTH =	33.0 FT
$\parallel$ WALL	150.0	16	2400	DIAPHRAGM SHEAR =	34 PLF
•		TOTAL	25980		
	S	HEAR LOAD	1227	LBS	

#### SHEAR WALL LOADS

SHEAR WE		ADS				
WIND SHEAR LOAD = TOTAL LOAD/1.4				SEISMIC SHI	EAR LOAD	WIND GOVERNS
4710	LBS			1227 I	LBS	
S.W. HT	12 4710	FT LBS		NET		
WALL	TRIB.	UNIFORM	PT LOAD	OVERIUR N	UPLIFT	HOLDOW N
LENGTH	SPAN	DL (PLF)	(LBS)	(FT-LB)	(LBS):	rev <sup>U</sup> ire

14.0 2.0 222 555 26991 1928 HDU2

SHEAR FORCE = SHEAR LOAD/SHEAR LENGTH SHEAR LENGTH = 14.0 FT

FW-1 SHEAR WALL SHEAR = 336 PLF

#### ZONE B

## WIND FORCES

DEPTH, $L =$	30	FT	h/L =	1.00	
WIDTH, B =	33	FT	VELOCITY PRESSURE COEF., $K_z$ :	0.90	TBL 27.3-1
h =	30	FT	VELOCITY PRESSURE COEF., $K_h$ :	0.98	TBL 27.3-1
$_{\mathbf{Z}} =$	20	FT	WIND VELOCITY PRESSURE, $q_z$ :	26	PSF EQ. 27.3-1
$C_{p1} =$	-0.2	FROM FIG. 27.4-1	WIND VELOCITY PRESSURE, $q_h$ :	28	PSF Eq. 27.3-1
$C_{p2} =$	0.2	FROM FIG. 27.4-1	ROOF WIND PRESSURE, $p_1$ :	-9.9	PSF
ROOF SLOPE	4	/12	ROOF WIND PRESSURE, $p_2$ :	9.9	PSF
ROOF SLOPE	16	DEGREES	ROOF DESIGN WIND PRESSURE, $p_R$ :	2.8	PSF EQ. 27.4-1
			WALL DESIGN WIND PRESSURE, $p_F$ :	22.7	PSF EQ. 27.4-1

#### DESIGN

	AREA	PRESSURE	LOAD (LBS)	
ROOF	0.0	2.8	0	I
WALL	290.0	22.7	6594	
		TOTAL	6594	D

# ROOF DIAPHRAGM DIAPHRAGM LOAD = 6594 LBS SHEAR LENGTH = 33.0 FT DIAPHRAGM SHEAR = 200 PLF

## **SEISMIC FORCES**

	AREA	WEIGHTS	ZONE		
	(SF)	(PSF)	VEIGHT (LB	S) ROOF I	DIAPHRAGM
ROOF	1220.0	15	18300	DIAPHRAGM LOAD =	1114 LBS
_ _WALL	330.0	16	5280	SHEAR LENGTH =	33.0 FT
$\parallel$ WALL	150.0	16	2400	DIAPHRAGM SHEAR =	34 PLF
		TOTAL	25980		
	S	HEAR LOAD	1227	LBS	

## SHEAR WALL LOADS

WIND SHEAR LOAD = TOTAL LOAD/1.4	SEISMIC SHEAR LOAD	WIND GOVERNS
4710 LBS	1227 LBS	

S.W. HT	12	FT	
SHEAK	4710		LBS
TOAD	4/10		LDS

				NET		
WALL	TRIB.	UNIFORM	PT LOAD	OVERIUR	UPLIFT	reγΩike πογησα
LENGTH	SPAN	DL (PLF)	(LBS)	(FT-LB)	(LBS):	NEQUIKE D
5.5	2.0	222	555	15793	2871	HDU2
3.0	2.0	222	555	9447	3149	HDQ8
5.5	2.0	222	555	15793	2871	HDU2

SHEAR FORCE = SHEAR LOAD/SHEAR LENGTH SHEAR LENGTH = 14.0 FT SHEAR WALL SHEAR =



## ZONE 1

## WIND FORCES

DEPTH, $L =$	66	FT	h/L =	0.21	
WIDTH, B =	15	FT	VELOCITY PRESSURE COEF., $K_z$ :	0.85	TBL 27.3-1
h =	14	FT	VELOCITY PRESSURE COEF., $K_h$ :	0.85	TBL 27.3-1
$_{\mathbf{Z}} =$	14	FT	WIND VELOCITY PRESSURE, $q_z$ :	24	PSF EQ. 27.3-1
$C_{p1} =$	-0.2	FROM FIG. 27.4-1	WIND VELOCITY PRESSURE, $q_h$ :	24	PSF EQ. 27.3-1
$C_{p2} =$	0.2	FROM FIG. 27.4-1	ROOF WIND PRESSURE, $p_1$ :	-8.6	PSF
ROOF SLOPE	4	/12	ROOF WIND PRESSURE, $p_2$ :	8.6	PSF
ROOF SLOPE	16	DEGREES	ROOF DESIGN WIND PRESSURE, $p_R$ :	2.4	PSF EQ. 27.4-1
			WALL DESIGN WIND PRESSURE, $p_F$ :	21.0	PSF EQ. 27.4-1

#### DESIGN

	AREA	PRESSURE	LOAD (LBS)	
ROOF	0.0	2.4	0	DIAPHRAGM
WALL	120.0	21.0	2521	SHEAR LE
		TOTAL	2521	DIAPHRAGM S

# ROOF DIAPHRAGMDIAPHRAGM LOAD =2521 LBSSHEAR LENGTH =15.0 FTDIAPHRAGM SHEAR =168 PLF

## **SEISMIC FORCES**

	AREA	WEIGHTS	ZONE		
	(SF)	(PSF)	VEIGHT (LBS	S) ROOF	DIAPHRAGM
ROOF	1072.0	15	16080	DIAPHRAGM LOAD =	873 LBS
_LWALL	150.0	16	2400	SHEAR LENGTH =	15.0 FT
$\parallel$ WALL	330.0	16	5280	DIAPHRAGM SHEAR =	58 PLF
•		TOTAL	23760		
	S	HEAR LOAD	1122	LBS	

## **SHEAR WALL LOADS**

WIND SHEAR	LOAD	= TOTAL LOA	D/1.4	SEISMIC SHEAR LOAD	WIND GOVERNS
1801	LBS			1122 LBS	-
S.W. HT SHEAR LOAD	10 1801	FT LBS			

				NET		
WALL	TRIB.	UNIFORM	PT LOAD	OVERTUR	UPLIFT	HOLDOW
WILL	TIGD.	Orth Oldin	11 LOND	N	OI EII I	N
LENGTH	SPAN	DL (PLF)	(LBS)	(FT-LB)	(LBS):	REQUIRE
LENGIII	SI AIN	DL (I LI')	(LDS)	(FI-LD)	(LDS).	D
11.8	7.0	265	663	-22067	-1870	NOT REQ'D
10.5	7.0	265	663	-17828	-1698	NOT REQ'D
10.5	7.0	265	663	-17828	-1698	NOT REQ'D
9.0	7.0	265	663	-13492	-1499	NOT REQ'D
8.8	7.0	265	663	-12959	-1473	NOT REQ'D

SHEAR FC	RCE = SHEAR LOAD/SHEAR LENGTH	SHEAR LENGTH =	50.6 FT
FW-1	SHI	EAR WALL SHEAR =	36 PLF
		' <u>-</u>	

#### ZONE B

## WIND FORCES

DEPTH, $L =$	66	FT	h/L =	0.45	
WIDTH, B =	15	FT	VELOCITY PRESS. COEF., $K_{z2}$ :	0.90	TBL 27.3-1
h =	30	FT	VELOCITY PRESS. COEF., $\mathbf{K}_{\mathrm{zl}}$ :	0.85	TBL 27.3-1
$\mathbf{z}_2 =$	20	$FT \ {\tt GROUND} \ {\tt TO} \ {\tt ROOF} \ {\tt EAVE}$	VELOCITY PRESS. COEF., $K_h$ :	0.98	TBL 27.3-1
$\mathbf{z}_1 =$	10	FT ground to upper flr	VELOCITY PRESS., $q_{z2}$ :	26	$PSF \; \text{EQ. } 27.31$
$C_{p1} =$	-0.2	FROM FIG. 27.4-1	VELOCITY PRESS., $q_{z1}$ :	24	$PSF \; \text{EQ. } 27.31$
$C_{p2} =$	0.2	FROM FIG. 27.4-1	VELOCITY PRESS., $q_h$ :	28	PSF EQ. 27.3-1
ROOF SLOPE	4	/12	ROOF PRESS., $p_1$ :	-9.9	PSF
ROOF SLOPE	16	DEGREES	ROOF PRESS., p <sub>2</sub> :	9.9	PSF

ROOF DESIGN PRESS.,  $p_R$ : 2.8 PSF eq. 27.4-1 UPPER WALL DESIGN PRESS.,  $p_{F2}$ : 22.7 PSF eq. 27.4-1 MAIN WALL DESIGN PRESS.,  $p_{F1}$ : 21.7 PSF eq. 27.4-1

#### DESIGN

_	AREA	PRESSURE	LOAD (LBS)
ROOF	0.0	2.8	0
JPPER WALL	157.5	22.7	3581
MAIN WALL	0.0	21.7	0
•	-	TOTAL	3581

UPPER SHEAR WALL LOAD 3581
MAIN SHEAR WALL LOAD 3581

## ROOF DIAPHRAGM

<u>FLOOR I</u>	DIAPHR	AGM
DIAPHRAGM SHEAR =	239	PLF
SHEAR LENGTH =	15.0	FT
DIAPHRAGM LOAD =	3581	LBS

 $\begin{array}{ccc} \text{DIAPHRAGM LOAD} = & 0 & \text{LBS} \\ \text{SHEAR LENGTH} = & 15.0 & \text{FT} \\ \text{DIAPHRAGM SHEAR} = & 0 & \text{PLF} \end{array}$ 

## SEISMIC FORCES

	AREA	WEIGHTS	ZONE
	(SF)	(PSF)	<b>VEIGHT (LBS</b>
ROOF	1290.0	15	19350
_ _WALL	240.0	16	3840
$\parallel$ WALL	594.0	16	9504
FLOOR	910.0	12	10920
_ _WALL	60.0	16	960
$\parallel$ WALL	330.0	16	5280
		TOTAL	49854
TIDDED	CITEAD	TILT TO LD	4.5.4.4

UPPER SHEAR WALL LOAD 1544
MAIN SHEAR WALL LOAD 2355

ROOF DIAPHRAGM

DIAPHRAGM LOAD = 1095 LBS

SHEAR LENGTH = 15.0 FT

DIAPHRAGM SHEAR = 73 PLF

FLOOR DIAPHRAGM

DIAPHRAGM LOAD = 561 LBS

SHEAR LENGTH = 15.0 FT
DIAPHRAGM SHEAR = 37 PLF

LBS LBS

#### 7/26/2023 4:47 PM

UPPER	SHEAR	WALL	LOADS
		*****	$\mathbf{L} \cup \mathbf{L} \mathbf{L} \cup \mathbf{L}$

WIND SHEAR LOAD = TOTAL LOAD/1.4 SEISMIC SHEAR LOAD WIND GOVERNS

2558 LBS 1544 LBS

S.W. HT: 15 FT SHEAR LOAD 2558 LBS

				NET		
WALL	TRIB.	UNIFORM	PT LOAD	OVERTUR N	UPLIFT	HOLDOW N
LENGTH	SPAN	DL (PLF)	(LBS)	(FT-LB)	(LBS):	REQUIRE D
6.0	8.0	360	900	-3026	-504	NOT REQ'D
7.0	8.0	360	900	-4790	-684	NOT REQ'D
4.0	1.0	255	638	1313	328	ST-1
4.0	1.0	255	638	1313	328	ST-1
5.0	8.0	360	900	-1621	-324	NOT REQ'D

SHEAR WALL FORCE = SHEAR LOAD/SHEAR LENGTHEAR LENGTH = 26.0 FT

SW-1 SHEAR WALL FORCE = 98 PLF

MAIN SHEAR WALL LOADS

WIND SHEAR LOAD = TOTAL LOAD/1.4 SEISMIC SHEAR LOAD WIND GOVERNS
2558 LBS
2355 LBS

S.W. HT: 10 FT SHEAR 2550 LPS

LOAD: 2558 LBS

				PT LOAD	NET		
WALL	TRIB.	FORCE	UNIFORM	EACH SIDE	OVERTURN	UPLIFT	HOLDOW N
LENGTH	SPAN	ABOVE	DL (PF)	(LBS)	(FT-LB)	FORCE	SCHEDUL E
19.0	7.0		265	663	-49375	-2599	NOT REQ'D
4.5	7.0		265	663	-3048	-677	NOT REQ'D
3.5	7.0		265	663	-1907	-545	NOT REQ'D
3.5	7.0		265	663	-1907	-545	NOT REQ'D
4.5	7.0		265	663	-3048	-677	NOT REQ'D
9.0	7.0		265	663	-11463	-1274	NOT REQ'D

SHEAR WALL FORCE = SHEAR LOAD/SHEAR LENGTHEAR LENGTH = 44.0 FT

FW-1 SHEAR WALL FORCE = 58 PLF



**JOB #: 08-078 CLIENT: WCLH LOCATION: BRACKETS** 

 $W_s = (0.2+0.025*(A-A_o))*P_f =$ 

RIB, GEJ

# **DESIGN CRITERIA**

## **GOVERNING CODE: VARIES**

SEISMIC DESIGN			DESIGN LOADING		
DESIGN CATEGORY:	<b>D2</b>		ROOF LIVE LOAD =	40	PSF
SRC(R) =	6.5		ROOF DEAD LOAD =	#REF!	PSF
$S_S =$	1.196		TOTAL ROOF LOAD =	#REF!	PSF
S1 =	0.435		FLOOR LIVE LOAD $=$	40	PSF
Fa =	1.50		$FLOOR\ DEAD\ LOAD\ =$	#REF!	PSF
Fv =	1.00		TOTAL FLOOR LOAD =	#REF!	PSF
SDS = 2/3*Fa*Ss =	1.196		WALL DEAD LOAD:	#REF!	PSF
SD1 = 2/3*Fv*S1 =	0.290				
V = 1.2*SDS/R =	0.221		SOILS		
			SITE CLASSIFICATION:	D	
WIND DESIGN			SOIL BEARING PRESSURE:	1,500	PSF
BASIC SPEED (3 SEC GUST):	90	MPH	FROST DEPTH:	30	<b>INCHES</b>
EXPOSURE:	$\mathbf{C}$				
HEAVY SNOW					
COUNTY:	COUN	TY			
A =	7.	.0			
$P_{o} =$					
S = S					
$A_{0} =$					
0 -					
$P_g = [P_o^2 + S^2(A - A_o)^2]^{0.5} =$		PSF	EXPOSURE FACTOR $(C_e)$ =	1.0	
$P_f = .7*C_e*C_t*I*P_g =$		PSF	THERMAL FACTOR $(C_t) =$	1.1	

**PSF APORTANCE FACTOR (I) = 1.0** 

## STRUCTURAL DESIGN INFORMATION

#### POST AND TIMBER DESIGN VALUES\*

\*NDS 2005, TABLE 4D

GLB -	24F-V4 D	F/DF	SF	PF#1 & BT	ΓR		LVL	
G =	0.50	GLB	G =	0.50	SPF #1	G =	0.50	LVL
Fb =	2,400	PSI	Fb =	850	PSI	Fb =	3,300	PSI
Ft =	1,100	PSI	Ft =	550	PSI	Ft =	2,300	PSI
Fv =	265	PSI	Fv =	180	PSI	$\mathbf{F}\mathbf{v} =$	290	PSI
Fc_ _ =	650	PSI	Fc_ _ =	625	PSI	Fc_ _ =	575	PSI
Fe    =	1,650	PSI	Fc    =	1,050	PSI	Fc    =	725	PSI
E =	1.80E+06	PSI	E =	1.60E+06	PSI	E =	2.00E+06	PSI

#### LATERAL DESIGN VALUES, 2005 NDS

**EQN I**<sub>m</sub>:  $\mathbf{Z} = \mathbf{D} \mathbf{I}_{m} \mathbf{F}_{em} / \mathbf{R}_{d}, \mathbf{R}_{d} = 4\mathbf{K}_{\theta}$ 

**EQN I**<sub>s</sub>:  $\mathbf{Z} = \mathbf{D} \mathbf{I}_{s} \mathbf{F}_{es} / \mathbf{R}_{d}$ ,  $\mathbf{R}_{d} = 4\mathbf{K}_{\theta}$ 

**EQN II**:  $Z = k_1 D l_s F_{es} / R_d$ ,  $R_d = 3.6 K_{\theta}$ 

**EQN III**<sub>m</sub>:  $\mathbf{Z} = \mathbf{k}_2 \text{ D } \mathbf{l}_m \, \mathbf{F}_{em} / \left[ (1 + 2 \mathbf{R}_e) \, \mathbf{R}_d \right], \, \mathbf{R}_d = 3.2 \mathbf{K}_\theta$ 

**EQN III**<sub>s</sub>:  $\mathbf{Z} = \mathbf{k}_3 \text{ D } \mathbf{l}_s \text{ F}_{em} / [(2 + R_e) \text{ R}_d], \text{ R}_d = 3.2 K_\theta$ 

**EQN IV**:  $\mathbf{Z} = (\mathbf{D2} / \mathbf{R}_d)^* \{2F_{em} F_{yb} / [3(1 + R_e)]\}^{0.5}, R_d = 3.2K_\theta$ 

 $\mathbf{D} = \mathbf{D}$ , THRU-BOLTS;  $\mathbf{D}_{r}$ , LAG SCREWS

 $\mathbf{F}_{yb} = 45,000 \text{ psi } (D \ge 3/8")$ 

 $\mathbf{R}_{\mathrm{e}} = \mathbf{F}_{\mathrm{em}} / \mathbf{F}_{\mathrm{es}}$ 

 $\mathbf{R}_{t} = \mathbf{1}_{m} / \mathbf{1}_{s}$ 

 $l_{\rm m}$  = LAG PENETRATION W/O TAPER

 $\mathbf{l}_{s}$  = THICKNESS OF BRACKET

 $\mathbf{F}_{\text{em}\_\perp} = 6,100\text{G} / \mathbf{D}^{0.5}$ 

 $\mathbf{F}_{\text{em}\parallel} = 11,200$ G

 $F_{es} = 87,000 \text{ psi (A36 STEEL)}$ 

 $\mathbf{k}_1 = [(R_e + R_e^2(1 + R_t + R_t^2) + R_t^2 R_e^3)]^{0.5} - R_e(1 + R_t)] / (1 + R_e)$ 

 $\mathbf{k}_2 = -1 + \left[ 2(1+R_e) + (2F_{yb}(1+2R_e)D^2) / (3F_{em}l_m^2) \right]^{0.5}$ 

 $\mathbf{k}_2 = -1 + [\{2(1+R_e) \setminus R_e\} + (2F_{yb}(2+R_e)D^2) / (3F_{em}l_s^2)]^{0.5}$ 

#### WCLH BRACKET

BRKT NO: C GF 18252 LBS

BRKT SHEAR RESIST. USING FOR BRG:	SPF #1	NDS VAR	IABLES
BRACKET LOADED IN SHEAR (V / H):	V	$G_{\text{Species}} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 2232.7$
LOADING PARA OR PERP TO GRAIN:	PARA	$\mathbf{Lag}\;\mathbf{D}_{\mathrm{r}}=\;0.371$	$\mathbf{F}_{\text{em}\parallel} = 5600.0$
POS. CONNECTION TO ALL MEMBERS?	Y	Bolt D = 1.000	$\mathbf{F}_{es} = 87000$
BRACKET THICKNESS (IN.) =	0.375	$\mathbf{F}_{\mathrm{yb}} = 45000$	$\mathbf{k}_{1} \perp = 0.183$
FASTENER TYPE (LAGS/BOLTS) =	BOLTS	$\mathbf{R}_{\mathrm{e}}$ _ $\perp$ = 0.0257	$\mathbf{k}_{1 \parallel} = 0.426$
		$\mathbf{R}_{\mathrm{e}\parallel} = 0.0644$	$\mathbf{k}_{2} \perp = 0.563$
		$\mathbf{R}_{\mathrm{t}} = 16.000$	$\mathbf{k}_{2\parallel} =  0.451$
		$l_{\rm m} = 6.000$	$\mathbf{k}_{3} \perp = 15.537$
		$l_{\rm s} = 0.375$	$\mathbf{k}_{3\parallel} = 9.569$

## BRACKET SECURED WITH LAG SCREWS BRACKET SECURED WITH THRU-BOLTS

 LAG SCREW DIA. (IN.) =
 1/2
 BOLT DIA. (IN.) =
 1

 LAG LENGTH (IN.) =
 4.0
 NO. BOLTS S.S. =
 0

 NO. LAG SCREWS =
 21
 NO. BOLTS D.S. =
 3

 MIN. PEN. REQ'D (IN.) =
 2.5
 MAIN MEMBER THICKNESS (IN.) =
 6

RESISTANCE FOI	R EACH LAG SCREW	SINGLE SH	EAR RES. / BOLT	DOUBLE SI	HEAR RES. / BOLT
EQN I <sub>m</sub> :	3116 LBS	EQN I <sub>m</sub> :	8400 LBS	EQN I <sub>m</sub> :	8400 LBS
EQN I <sub>s</sub> :	3026 LBS	EQN I <sub>s</sub> :	8156 LBS	EQN I <sub>s</sub> :	16313 LBS
EQN II:	1432 LBS	EQN II:	3859 LBS		
EQN III <sub>m</sub> :	1556 LBS	EQN III <sub>m</sub> :	4195 LBS		
EQN III <sub>s</sub> :	1129 LBS	EQN III <sub>s</sub> :	3042 LBS	EQN III <sub>s</sub> :	6084 LBS
EQN IV:	540 LBS	EQN IV:	3926 LBS	EQN IV:	7852 LBS
$RESIST_{DES} =$	540 LBS/LAG	$RESIST_{DES} =$	3042 LBS / BOLT	$\Gamma$ RESIST <sub>DES</sub> =	6084 LBS / BOLT
$RESIST_{GRP} =$	0 LBS	$RESIST_{GRP} =$	0 LBS	$RESIST_{GRP} =$	18252 LBS

SUMMARY
BRKT # C GOOD FOR 18252 LBS

LOADING			18252	LBS		
LOADING	RESIST. USING	G FOR BRG:	SPF #1		NDS VARI	ABLES
LOADING	Γ LOADED IN S	HEAR (V / H):	V	$G_{Species}$		$\mathbf{F}_{\rm em} = 2232.7$
	G PARA OR PER				= 0.371	$\mathbf{F}_{\text{em}} = 5600.0$
DOC COMM	ECTION TO ALI				= 1.000	$F_{es} = 87000$
	RACKET THICK		0.375		= 45000	$\mathbf{k}_{1} \perp = 0.183$
FASTI	ENER TYPE (LA	GS/BOLTS) =	BOLTS		= 0.0257	$\mathbf{k}_{1\parallel} = 0.426$
				- 1	= 0.0644	$\mathbf{k}_{2} \perp = 0.563$
				$\mathbf{R}_{\mathrm{t}}$	= 16.000	$\mathbf{k}_{2\parallel} = 0.451$
				$\mathbf{l}_{\mathrm{m}}$	= 6.000	$\mathbf{k}_{3} \perp = 15.537$
				$\mathbf{l}_{\mathrm{s}}$	= 0.375	$\mathbf{k}_{3 \parallel} = 9.569$
BRACKI	ET SECURED V	WITH LAG SC	CREWS	BRACKET SECURE	D WITH THRU-	BOLTS
LAG SCR	EW DIA. (IN.) =	1/2		В	OLT DIA. (IN.) =	1
LAG I	LENGTH (IN.) =	4.0		N	O. BOLTS S.S.=	0
NO. L	AG SCREWS =	21		Ne	D. BOLTS D.S.=	3
MIN. PEN	N. REQ'D (IN.) =	2.5		MAIN MEMBER THI	CKNESS (IN.) =	6
RESISTANCE	FOR EACH L	AG SCREW	SINGLE	SHEAR RES. / BOLT	DOUBLE	SHEAR RES. / BOLT
EQN I <sub>m</sub> :	3116		EQN I <sub>m</sub> :	8400 LBS	EQN I <sub>m</sub> :	8400 LBS
EQN I <sub>s</sub> :	3026		EQN Is:	8156 LBS	EQN I <sub>s</sub> :	16313 LBS
EQN II:	1432		EQN II:	3859 LBS	2Q11 1s.	10313 LD3
EQN III <sub>m</sub> :	1556		EQN III <sub>m</sub> :	4195 LBS		
EQN III <sub>s</sub> :					FON III .	6004 IBC
	1129	LBS	EQN III <sub>s</sub> :	3042 LBS 3926 LBS	EQN III <sub>s</sub> :	6084 LBS 7852 LBS
EQN IV:			EQN IV:		EQN IV:	
RESIST <sub>DES</sub> =		LBS / LAG	RESIST <sub>DES</sub> =	3042 LBS / BOL		6084 LBS / BOLT
$RESIST_{GRP} =$	0	LBS	$RESIST_{GRP} =$	0 LBS	$RESIST_{GRP} =$	18252 LBS
					_	
	SUMMARY					
	BRKT #	D	GOOD FOR	18252 LBS		
					<del></del> -	
WCLH BRAG	CKET					
BRKT NO:	E	GF	24337	LRS		
DKKI NO.	12	GI	24337	LDS		
BRKT SHEAR	RESIST. USING	G FOR BRG:	SPF #1		NDS VARI	ABLES
BRACKE	Γ LOADED IN S	HEAR (V / H):	V	$G_{Species}$	= 0.50	$\mathbf{F}_{\rm em}   = 2232.7$
LOADING	G PARA OR PER	RP TO GRAIN:	PARA	Lag D <sub>r</sub>	= 0.371	$\mathbf{F}_{\text{em}\parallel} = 5600.0$
	ECTION TO ALI				= 1.000	$F_{es} = 87000$
	RACKET THICK				= 45000	$\mathbf{k}_{1 \mid } = 0.183$
		. ,				
FASII	ENER TYPE (LA	.05/BUL15) =	BOLTS		= 0.0257	$\mathbf{k}_{1\parallel} = 0.426$
					= 0.0644	$\mathbf{k}_{2} \perp = 0.563$
				$\mathbf{R}_{\mathrm{t}}$	= 16.000	$\mathbf{k}_{2\parallel} = 0.451$
				$\mathbf{l}_{\mathrm{m}}$	= 6.000	$\mathbf{k}_{3} \perp = 15.537$
				$\mathbf{l}_{\mathrm{s}}$	= 0.375	$\mathbf{k}_{3\parallel} = 9.569$
рваси	T SECUDED V	VITH LAC SC	DEWS	DDACKET SECURI	n with time:	POLTS
	ET SECURED V		CREWS	BRACKET SECURE		BOLTS
LAG SCR	EW DIA. (IN.) =	1/2	CREWS	В	OLT DIA. (IN.) =	1
LAG SCR LAG 1		1/2 4.0	CREWS	Bo N	OLT DIA. (IN.) = O. BOLTS S.S.=	BOLTS  1  0 4
LAG SCR LAG 1 NO. L	EW DIA. (IN.) = LENGTH (IN.) = .AG SCREWS =	1/2 4.0 21	CREWS	Bo N	DLT DIA. (IN.) = O. BOLTS S.S.= O. BOLTS D.S.=	1 0
LAG SCR LAG 1 NO. L	EW DIA. (IN.) = LENGTH (IN.) =	1/2 4.0 21	CREWS	B( N Ne	DLT DIA. (IN.) = O. BOLTS S.S.= O. BOLTS D.S.=	1 0 4
LAG SCR LAG I NO. L MIN. PEN	EW DIA. (IN.) = LENGTH (IN.) = .AG SCREWS =	1/2 4.0 21 2.5		B( N Ne	DLT DIA. (IN.) = O. BOLTS S.S.= O. BOLTS D.S.= CKNESS (IN.) =	1 0 4
LAG SCR LAG I NO. L MIN. PEN	EW DIA. (IN.) = LENGTH (IN.) = AG SCREWS = I. REQ'D (IN.) =	1/2 4.0 21 2.5 AG SCREW		BO N N MAIN MEMBER THI	DLT DIA. (IN.) = O. BOLTS S.S.= O. BOLTS D.S.= CKNESS (IN.) =	1 0 4 6
LAG SCR LAG I NO. L MIN. PEN RESISTANCE	EW DIA. (IN.) = LENGTH (IN.) = LAG SCREWS = I. REQ'D (IN.) =	1/2 4.0 21 2.5 AG SCREW	SINGLE	BO N NO MAIN MEMBER THI SHEAR RES. / BOLT 8400 LBS	OLT DIA. (IN.) =  O. BOLTS S.S.=  O. BOLTS D.S.=  CKNESS (IN.) =  DOUBLE	1 0 4 6 SHEAR RES./BOLT
LAG SCR LAG I NO. L MIN. PEN RESISTANCE EQN I <sub>m</sub> :	EW DIA. (IN.) = LENGTH (IN.) = AG SCREWS = I. REQ'D (IN.) = FOR EACH L 3116 3026	1/2 4.0 21 2.5 AG SCREW LBS LBS	SINGLE EQN I <sub>m</sub> :	BO N NO MAIN MEMBER THI SHEAR RES. / BOLT 8400 LBS 8156 LBS	DLT DIA. (IN.) = 0. BOLTS S.S.= 0. BOLTS D.S.= CKNESS (IN.) =  DOUBLE EQN I <sub>m</sub> :	1 0 4 6 SHEAR RES. / BOLT 8400 LBS
LAG SCR LAG I NO. L MIN. PEN RESISTANCE EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II:	EW DIA. (IN.) = LENGTH (IN.) = AG SCREWS = I. REQ'D (IN.) = FOR EACH L 3116 3026 1432	1/2 4.0 21 2.5 AG SCREW LBS LBS LBS	SINGLE EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II:	BO N NO MAIN MEMBER THI SHEAR RES. / BOLT 8400 LBS 8156 LBS 3859 LBS	DLT DIA. (IN.) = 0. BOLTS S.S.= 0. BOLTS D.S.= CKNESS (IN.) =  DOUBLE EQN I <sub>m</sub> :	1 0 4 6 SHEAR RES. / BOLT 8400 LBS
LAG SCR LAG I NO. L MIN. PEN RESISTANCE EQN I <sub>m</sub> : EQN II: EQN III <sub>m</sub> :	EW DIA. (IN.) = LENGTH (IN.) = AG SCREWS = I. REQ'D (IN.) = FOR EACH L 3116 3026 1432 1556	1/2 4.0 21 2.5 AG SCREW LBS LBS LBS LBS	SINGLE EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II: EQN III <sub>m</sub> :	BO N NO MAIN MEMBER THI SHEAR RES. / BOLT 8400 LBS 8156 LBS 3859 LBS 4195 LBS	DLT DIA. (IN.) = 0. BOLTS S.S.= 0. BOLTS D.S.= CKNESS (IN.) =  DOUBLE  EQN I <sub>m</sub> : EQN I <sub>s</sub> :	1 0 4 6 SHEAR RES./BOLT 8400 LBS 16313 LBS
LAG SCR LAG I NO. L MIN. PEN  RESISTANCE EQN I <sub>m</sub> : EQN II: EQN III <sub>m</sub> : EQN III <sub>m</sub> :	EW DIA. (IN.) = LENGTH (IN.) = AG SCREWS = I. REQ'D (IN.) = FOR EACH L 3116 3026 1432 1556 1129	1/2 4.0 21 2.5 AG SCREW LBS LBS LBS LBS LBS	SINGLE EQN I <sub>m</sub> ; EQN II; EQN III <sub>m</sub> ; EQN III <sub>m</sub> ;	BO N NO MAIN MEMBER THI SHEAR RES. / BOLT 8400 LBS 8156 LBS 3859 LBS 4195 LBS 3042 LBS	DLT DIA. (IN.) = 0. BOLTS S.S.= 0. BOLTS D.S.= CKNESS (IN.) =  DOUBLE  EQN I <sub>m</sub> : EQN I <sub>s</sub> :  EQN III <sub>s</sub> :	1 0 4 6 SHEAR RES. / BOLT 8400 LBS 16313 LBS
LAG SCR LAG I NO. I NO. I MIN. PEN  RESISTANCE EQN I <sub>m</sub> : EQN II: EQN III. EQN III,: EQN III,:	EW DIA. (IN.) = LENGTH (IN.) = AG SCREWS = I. REQ'D (IN.) = FOR EACH L 3116 3026 1432 1556 1129 540	1/2 4.0 21 2.5 AG SCREW LBS LBS LBS LBS LBS LBS LBS	SINGLE EQN I <sub>m</sub> : EQN II; EQN III <sub>m</sub> : EQN III <sub>s</sub> : EQN III <sub>s</sub> :	BO N NO MAIN MEMBER THI SHEAR RES. / BOLT 8400 LBS 8156 LBS 3859 LBS 4195 LBS 3042 LBS 3926 LBS	DLT DIA. (IN.) = 0. BOLTS S.S.= 0. BOLTS D.S.= CKNESS (IN.) =  DOUBLE EQN I <sub>m</sub> : EQN III <sub>s</sub> : EQN IV:	1 0 4 6 SHEAR RES. / BOLT 8400 LBS 16313 LBS 6084 LBS 7852 LBS
LAG SCR LAG I NO. I NO. I MIN. PEN  RESISTANCE EQN II,: EQN III EQN III,: EQN IV: RESISTDES	EW DIA. (IN.) = LENGTH (IN.) = AG SCREWS = I. REQ'D (IN.) = FOR EACH L 3116 3026 1432 1556 1129 540	1/2 4.0 21 2.5  AG SCREW  LBS LBS LBS LBS LBS LBS LBS LBS LBS LB	SINGLE EQN I <sub>m</sub> ; EQN II; EQN III <sub>m</sub> ; EQN III <sub>s</sub> ; EQN IV; RESIST <sub>DES</sub> =	BO N NO MAIN MEMBER THI SHEAR RES. / BOLT 8400 LBS 8156 LBS 3859 LBS 4195 LBS 3042 LBS 3042 LBS 3042 LBS	DLT DIA. (IN.) = 0. BOLTS S.S.= 0. BOLTS D.S.= CKNESS (IN.) =  DOUBLE  EQN I <sub>m</sub> : EQN III <sub>s</sub> : EQN IV: T RESIST <sub>DES</sub> =	1 0 4 6 SHEAR RES. / BOLT 8400 LBS 16313 LBS 6084 LBS 7852 LBS 6084 LBS / BOLT
LAG SCR LAG I NO. I NO. I MIN. PEN  RESISTANCE EQN I <sub>m</sub> : EQN II: EQN III. EQN III,: EQN III,:	EW DIA. (IN.) = LENGTH (IN.) = AG SCREWS = I. REQ'D (IN.) = FOR EACH L 3116 3026 1432 1556 1129 540	1/2 4.0 21 2.5 AG SCREW LBS LBS LBS LBS LBS LBS LBS	SINGLE EQN I <sub>m</sub> : EQN II; EQN III <sub>m</sub> : EQN III <sub>s</sub> : EQN III <sub>s</sub> :	BO N NO MAIN MEMBER THI SHEAR RES. / BOLT 8400 LBS 8156 LBS 3859 LBS 4195 LBS 3042 LBS 3926 LBS	DLT DIA. (IN.) = 0. BOLTS S.S.= 0. BOLTS D.S.= CKNESS (IN.) =  DOUBLE EQN I <sub>m</sub> : EQN III <sub>s</sub> : EQN IV:	1 0 4 6 SHEAR RES. / BOLT 8400 LBS 16313 LBS 6084 LBS 7852 LBS
LAG SCR LAG I NO. I NO. I MIN. PEN  RESISTANCE EQN II,: EQN II. EQN III,: EQN III,: EQN IV: RESIST_DES	EW DIA. (IN.) = LENGTH (IN.) = AG SCREWS = I. REQ'D (IN.) = FOR EACH L 3116 3026 1432 1556 1129 540	1/2 4.0 21 2.5  AG SCREW  LBS LBS LBS LBS LBS LBS LBS LBS LBS LB	SINGLE EQN I <sub>m</sub> ; EQN II; EQN III <sub>m</sub> ; EQN III <sub>s</sub> ; EQN IV; RESIST <sub>DES</sub> =	BO N NO MAIN MEMBER THI SHEAR RES. / BOLT 8400 LBS 8156 LBS 3859 LBS 4195 LBS 3042 LBS 3042 LBS 3042 LBS	DLT DIA. (IN.) = 0. BOLTS S.S.= 0. BOLTS D.S.= CKNESS (IN.) =  DOUBLE  EQN I <sub>m</sub> : EQN III <sub>s</sub> : EQN IV: T RESIST <sub>DES</sub> =	1 0 4 6 SHEAR RES. / BOLT 8400 LBS 16313 LBS 6084 LBS 7852 LBS 6084 LBS / BOLT

BRKT NO:	F	GF	30421	LBS		
BRKT SHEAF	R RESIST. USIN	G FOR BRG:	SPF #1		NDS VARI	ABLES
	T LOADED IN S		V	G <sub>Species</sub> =		$\mathbf{F}_{\rm em} = 2232.7$
	G PARA OR PER	, ,		Lag D <sub>r</sub> =		$\mathbf{F}_{\text{em}\parallel} = 5600.0$
	JECTION TO ALI			Bolt D =		$F_{es} = 87000$
	BRACKET THICK			•	45000	$\mathbf{k}_{1} \perp = 0.183$
FAST	ENER TYPE (LA	AGS/BOLTS)=	BOLTS		0.0257	$\mathbf{k}_{1\parallel} = 0.426$
					0.0644	$\mathbf{k}_{2} \perp = 0.563$
				$\mathbf{R}_{\mathrm{t}} =$	16.000	$\mathbf{k}_{2\parallel} = 0.451$
				$\mathbf{l}_{\mathrm{m}} =$	6.000	$\mathbf{k}_{3} \perp = 15.537$
				$\mathbf{l}_{\mathrm{s}}=$	0.375	$\mathbf{k}_{3\parallel} = 9.569$
BRACK	ET SECURED V	WITH LAG SO	CREWS	BRACKET SECUREI	) WITH THRU-I	BOLTS
LAG SCI	REW DIA. (IN.) =	1/2		BO	LT DIA. (IN.) =	1
LAG	LENGTH (IN.) =	4.0		NO	. BOLTS S.S.=	0
NO.	LAG SCREWS =	21		NO	. BOLTS D.S.=	5
MIN. PE	N. REQ'D (IN.) =	2.5		MAIN MEMBER THIC	KNESS (IN.) =	6
RESISTANC	E FOR EACH L	AG SCREW	SINGLE	SHEAR RES. / BOLT	DOUBLE	SHEAR RES. / BOLT
EQN I <sub>m</sub>			EQN I <sub>m</sub> :	8400 LBS	EQN I <sub>m</sub> :	8400 LBS
EQN I <sub>s</sub>			EQN I <sub>s</sub> :	8156 LBS	EQN I <sub>s</sub> :	16313 LBS
EQN II			EQN II:	3859 LBS	- 4s.	10010 1000
EQN III <sub>m</sub>			EQN III <sub>m</sub> :	4195 LBS		
EQN III,			EQN III <sub>s</sub> :		EQN III <sub>s</sub> :	6094 IDG
EQN III <sub>s</sub> EQN IV		LBS	EQN III <sub>s</sub> : EQN IV:	3042 LBS 3926 LBS	EQN III <sub>s</sub> : EQN IV:	6084 LBS 7852 LBS
RESIST <sub>DES</sub> =		LBS / LAG	RESIST <sub>DES</sub> =	3042 LBS/BOLT		6084 LBS / BOLT
$RESIST_{GRP} =$	0	LBS	$RESIST_{GRP} =$	0 LBS	$RESIST_{GRP} =$	30421 LBS
	SUMMARY				1	
	BRKT #	F	GOOD FOR	30421 LBS		
	DIXIXI #		GOODTOR	30421 EBS	1	
WCI H RRA	CKFT					
WCLH BRA		CE	24227	IDC		
WCLH BRA BRKT NO:		GF	24337	LBS		
BRKT NO:	G			LBS	NDS VARI	ABLES
BRKT NO:	G R RESIST, USIN	G FOR BRG:	SPF #1		NDS VARI	
BRKT NO:	G R RESIST. USING T LOADED IN S	G FOR BRG: HEAR (V / H):	SPF #1	$\mathbf{G}_{ ext{Species}}$ =	0.50	$\mathbf{F}_{\mathrm{em}} = 2232.7$
BRKT NO: BRKT SHEAF BRACKE LOADIN	G R RESIST. USING ET LOADED IN S G PARA OR PER	G FOR BRG: HEAR (V / H): RP TO GRAIN:	SPF #1 V PARA	$\mathbf{G}_{\mathrm{Species}} = \mathbf{Lag}  \mathbf{D}_{\mathrm{r}} =$	0.50 0.371	$\mathbf{F}_{\mathrm{em}\perp} = 2232.7$ $\mathbf{F}_{\mathrm{em}\parallel} = 5600.0$
BRKT NO: BRKT SHEAD BRACKE LOADIN POS. CONN	G R RESIST. USING T LOADED IN S G PARA OR PER RECTION TO AL	G FOR BRG: HEAR (V / H): RP TO GRAIN: L MEMBERS?	SPF #1  V PARA Y	$\begin{aligned} G_{Species} &= \\ Lag \ D_r &= \\ Bolt \ D &= \end{aligned}$	0.50 0.371 1.000	$\mathbf{F}_{em} = 2232.7$ $\mathbf{F}_{em} = 5600.0$ $\mathbf{F}_{es} = 87000$
BRKT NO: BRKT SHEAD BRACKI LOADIN POS. CON!	G R RESIST. USING T LOADED IN S G PARA OR PER RECTION TO ALI BRACKET THICK	G FOR BRG: HEAR (V / H): RP TO GRAIN: L MEMBERS? KNESS (IN.) =	SPF #1  V PARA Y 0.375	$\begin{aligned} \mathbf{G}_{Species} &= \\ \mathbf{Lag} \ \mathbf{D}_r &= \\ \mathbf{Bolt} \ \mathbf{D} &= \\ \mathbf{F}_{yb} &= \end{aligned}$	0.50 0.371 1.000 45000	$\begin{aligned} \mathbf{F}_{em} & = 2232.7 \\ \mathbf{F}_{em} & = 5600.0 \\ \mathbf{F}_{es} & = 87000 \\ \mathbf{k}_{1} & \perp & = 0.183 \end{aligned}$
BRKT NO: BRKT SHEAD BRACKI LOADIN POS. CON!	G R RESIST. USING T LOADED IN S G PARA OR PER RECTION TO AL	G FOR BRG: HEAR (V / H): RP TO GRAIN: L MEMBERS? KNESS (IN.) =	SPF #1  V PARA Y 0.375	$egin{align*} \mathbf{G}_{\mathrm{Species}} = & & & & & & \\ \mathbf{Lag} \ \mathbf{D}_{\mathrm{r}} = & & & & & \\ \mathbf{Bolt} \ \mathbf{D} = & & & & & \\ \mathbf{F}_{\mathrm{yb}} = & & & & & \\ \mathbf{R}_{\mathrm{e}} \ oxedown = & & & & \\ & & & & & & \\ \mathbf{R}_{\mathrm{e}} \ oxedown = & & & \\ \end{bmatrix}$	0.50 0.371 1.000 45000 0.0257	$\begin{aligned} \mathbf{F}_{em} &= 2232.7 \\ \mathbf{F}_{em} &= 5600.0 \\ \mathbf{F}_{es} &= 87000 \\ \mathbf{k}_{1} &= 0.183 \\ \mathbf{k}_{1} &= 0.426 \end{aligned}$
BRKT NO: BRKT SHEAD BRACKI LOADIN POS. CON!	G R RESIST. USING T LOADED IN S G PARA OR PER RECTION TO ALI BRACKET THICK	G FOR BRG: HEAR (V / H): RP TO GRAIN: L MEMBERS? KNESS (IN.) =	SPF #1  V PARA Y 0.375	$egin{align*} \mathbf{G}_{\mathrm{Species}} = & & & & & & \\ \mathbf{Lag} \ \mathbf{D}_{\mathrm{r}} = & & & & & \\ \mathbf{Bolt} \ \mathbf{D} = & & & & & \\ \mathbf{F}_{\mathrm{yb}} = & & & & & \\ \mathbf{R}_{\mathrm{e}} \ oxedown = & & & & \\ & & & & & & \\ \mathbf{R}_{\mathrm{e}} \ oxedown = & & & \\ \end{bmatrix}$	0.50 0.371 1.000 45000	$\begin{aligned} \mathbf{F}_{em} & = 2232.7 \\ \mathbf{F}_{em} & = 5600.0 \\ \mathbf{F}_{es} & = 87000 \\ \mathbf{k}_{1} & \perp & = 0.183 \end{aligned}$
BRKT NO: BRKT SHEAD BRACKI LOADIN POS. CON!	G R RESIST. USING T LOADED IN S G PARA OR PER RECTION TO ALI BRACKET THICK	G FOR BRG: HEAR (V / H): RP TO GRAIN: L MEMBERS? KNESS (IN.) =	SPF #1  V PARA Y 0.375	$\begin{aligned} \mathbf{G}_{Species} &= \\ \mathbf{Lag} \ \mathbf{D}_r &= \\ \mathbf{Bolt} \ \mathbf{D} &= \\ \mathbf{F}_{yb} &= \\ \mathbf{R}_{e} \ \_ &= \\ \mathbf{R}_{e} \ \  &= \\ \mathbf{R}_{e} \ \  &= \end{aligned}$	0.50 0.371 1.000 45000 0.0257	$\begin{aligned} \mathbf{F}_{em} &= 2232.7 \\ \mathbf{F}_{em} &= 5600.0 \\ \mathbf{F}_{es} &= 87000 \\ \mathbf{k}_{1} &= 0.183 \\ \mathbf{k}_{1} &= 0.426 \end{aligned}$
BRKT NO: BRKT SHEAD BRACKI LOADIN POS. CON!	G R RESIST. USING T LOADED IN S G PARA OR PER RECTION TO ALI BRACKET THICK	G FOR BRG: HEAR (V / H): RP TO GRAIN: L MEMBERS? KNESS (IN.) =	SPF #1  V PARA Y 0.375	$\begin{aligned} \mathbf{G}_{Species} &= \\ \mathbf{Lag} \ \mathbf{D}_r &= \\ \mathbf{Bolt} \ \mathbf{D} &= \\ \mathbf{F}_{yb} &= \\ \mathbf{R}_{e} &_{\perp} &= \\ \mathbf{R}_{e} &_{\parallel} &= \\ \mathbf{R}_{t} &= \\ \mathbf{R}_{t} &= \end{aligned}$	0.50 0.371 1.000 45000 0.0257 0.0644	$\begin{aligned} \mathbf{F}_{em} &= 2232.7 \\ \mathbf{F}_{em} &= 5600.0 \\ \mathbf{F}_{es} &= 87000 \\ \mathbf{k}_{1} &= 0.183 \\ \mathbf{k}_{1} &= 0.426 \\ \mathbf{k}_{2} &= 0.563 \end{aligned}$
BRKT NO: BRKT SHEAD BRACKI LOADIN POS. CON!	G R RESIST. USING T LOADED IN S G PARA OR PER RECTION TO ALI BRACKET THICK	G FOR BRG: HEAR (V / H): RP TO GRAIN: L MEMBERS? KNESS (IN.) =	SPF #1  V PARA Y 0.375	$\begin{aligned} G_{Species} &= \\ Lag \ D_r &= \\ Bolt \ D &= \\ F_{yb} &= \\ R_{e} &_{\perp} &= \\ R_{e} &_{\parallel} &= \\ R_t &= \\ I_m &= \end{aligned}$	0.50 0.371 1.000 45000 0.0257 0.0644 16.000	$\begin{aligned} \mathbf{F}_{em} &= 2232.7 \\ \mathbf{F}_{em} &= 5600.0 \\ \mathbf{F}_{es} &= 87000 \\ \mathbf{k}_{1} &= 0.183 \\ \mathbf{k}_{1} &= 0.426 \\ \mathbf{k}_{2} &= 0.563 \\ \mathbf{k}_{2} &= 0.451 \end{aligned}$
BRKT NO: BRKT SHEAI BRACKE LOADIN POS. CON! I FAST	G RESIST. USING T LOADED IN S G PARA OR PER RECTION TO ALE BRACKET THICK TENER TYPE (LA	G FOR BRG: HEAR (V / H): RP TO GRAIN: L MEMBERS? KNESS (IN.) =	SPF #1  V PARA Y 0.375 BOLTS	$G_{Species} = \\ Lag \ D_r = \\ Bolt \ D = \\ F_{yb} = \\ R_{e \perp} = \\ R_{e \parallel} = \\ R_t = \\ I_m = \\ I_s = \\$	0.50 0.371 1.000 45000 0.0257 0.0644 16.000 6.000 0.375	$\begin{aligned} \mathbf{F}_{cm\perp} &= 2232.7 \\ \mathbf{F}_{cm\parallel} &= 5600.0 \\ \mathbf{F}_{cs} &= 87000 \\ \mathbf{k}_{1\perp} &= 0.183 \\ \mathbf{k}_{1\parallel} &= 0.426 \\ \mathbf{k}_{2\perp} &= 0.563 \\ \mathbf{k}_{2\parallel} &= 0.451 \\ \mathbf{k}_{3\perp} &= 15.537 \\ \mathbf{k}_{3\parallel} &= 9.569 \end{aligned}$
BRKT NO: BRKT SHEAI BRACKE LOADIN POS. CONN FAST	G RESIST. USING T LOADED IN S G PARA OR PER RECTION TO ALI BRACKET THICK ENER TYPE (LA	G FOR BRG: HEAR (V / H): RP TO GRAIN: L MEMBERS? KNESS (IN.) = AGS/BOLTS) =	SPF #1  V PARA Y 0.375 BOLTS	$G_{Species} = \\ Lag \ D_r = \\ Bolt \ D = \\ F_{yb} = \\ R_{e} \bot = \\ R_{e} \parallel = \\ R_{t} = \\ l_m = \\ l_s = \\ BRACKET SECUREI$	0.50 0.371 1.000 45000 0.0257 0.0644 16.000 6.000 0.375	$\begin{aligned} \mathbf{F}_{cm\perp} &= 2232.7 \\ \mathbf{F}_{cm\parallel} &= 5600.0 \\ \mathbf{F}_{cs} &= 87000 \\ \mathbf{k}_{1\perp} &= 0.183 \\ \mathbf{k}_{1\parallel} &= 0.426 \\ \mathbf{k}_{2\perp} &= 0.563 \\ \mathbf{k}_{2\parallel} &= 0.451 \\ \mathbf{k}_{3\perp} &= 15.537 \\ \mathbf{k}_{3\parallel} &= 9.569 \end{aligned}$
BRKT NO: BRKT SHEAI BRACKE LOADIN POS. CONN FAST	G R RESIST. USING T LOADED IN S G PARA OR PEI SECTION TO ALI BRACKET THICK ENER TYPE (LA  ET SECURED V REW DIA. (IN.) =	G FOR BRG: HEAR (V/H): RP TO GRAIN: L MEMBERS? KNESS (IN.) = AGS/BOLTS) =	SPF #1  V PARA Y 0.375 BOLTS	$G_{Species} = \\ Lag \ D_r = \\ Bolt \ D = \\ F_{yb} = \\ R_{e \perp} = \\ R_{e \parallel} = \\ R_t = \\ l_m = \\ l_s = \\ BRACKET SECUREI \\ BOI$	0.50 0.371 1.000 45000 0.0257 0.0644 16.000 6.000 0.375 DWITH THRU-LT DIA. (IN.) =	$\begin{aligned} \mathbf{F}_{em\perp} &= 2232.7 \\ \mathbf{F}_{em\parallel} &= 5600.0 \\ \mathbf{F}_{es} &= 87000 \\ \mathbf{k}_{1\perp} &= 0.183 \\ \mathbf{k}_{1\parallel} &= 0.426 \\ \mathbf{k}_{2\perp} &= 0.563 \\ \mathbf{k}_{2\parallel} &= 0.451 \\ \mathbf{k}_{3\perp} &= 15.537 \\ \mathbf{k}_{3\parallel} &= 9.569 \end{aligned}$
BRKT NO:  BRKT SHEAI  BRACKE LOADIN POS. CONN FAST  BRACK LAG SCI LAG	G R RESIST. USING T LOADED IN S G PARA OR PER SECTION TO ALI BRACKET THICK ENER TYPE (LA  ET SECURED V REW DIA. (IN.) = LENGTH (IN.) =	G FOR BRG: HEAR (V / H): RP TO GRAIN: L MEMBERS? KNESS (IN.) = AGS/BOLTS) =	SPF #1  V PARA Y 0.375 BOLTS	$G_{Species} = \\ Lag \ D_r = \\ Bolt \ D = \\ F_{yb} = \\ R_{e \perp} = \\ R_{e \parallel} = \\ R_{t} = \\ l_m = \\ l_s = \\ BRACKET SECUREI \\ BOOM$	0.50 0.371 1.000 45000 0.0257 0.0644 16.000 0.375 DWITH THRU-LT DIA. (IN.) = 0. BOLTS S.S.=	$\begin{aligned} \mathbf{F}_{em} &= 2232.7 \\ \mathbf{F}_{em} &= 5600.0 \\ \mathbf{F}_{es} &= 87000 \\ \mathbf{k}_{1} &= 0.183 \\ \mathbf{k}_{1} &= 0.426 \\ \mathbf{k}_{2} &= 0.563 \\ \mathbf{k}_{2} &= 0.451 \\ \mathbf{k}_{3} &= 15.537 \\ \mathbf{k}_{3} &= 9.569 \end{aligned}$
BRKT NO: BRKT SHEAI BRACKI LOADIN POS. CONN I FAST	G R RESIST. USING T LOADED IN S G PARA OR PER RECTION TO ALI BRACKET THICK ENER TYPE (LA  ET SECURED N REW DIA. (IN.) = LENGTH (IN.) = LAG SCREWS =	G FOR BRG: HEAR (V/H): RP TO GRAIN: L MEMBERS? KNESS (IN.) = AGS/BOLTS) =	SPF #1  V PARA Y 0.375 BOLTS	$G_{Species} = \\ Lag \ D_r = \\ Bolt \ D = \\ F_{yb} = \\ R_{e \perp} = \\ R_{e \parallel} = \\ R_t = \\ l_m = \\ l_s = \\ BRACKET SECUREI \\ BOONO \\ NO. \\ NO. \\$	0.50 0.371 1.000 0.45000 0.0257 0.0644 1.16.000 0.0375 0.00111 THRU-ILT DIA. (IN.) = 0. BOLTS S.S.= 0. BOLTS D.S.=	$\begin{aligned} \mathbf{F}_{em\perp} &= 2232.7 \\ \mathbf{F}_{em\parallel} &= 5600.0 \\ \mathbf{F}_{es} &= 87000 \\ \mathbf{k}_{1\perp} &= 0.183 \\ \mathbf{k}_{1\parallel} &= 0.426 \\ \mathbf{k}_{2\perp} &= 0.563 \\ \mathbf{k}_{2\parallel} &= 0.451 \\ \mathbf{k}_{3\perp} &= 15.537 \\ \mathbf{k}_{3\parallel} &= 9.569 \end{aligned}$
BRKT NO: BRKT SHEAI BRACKI LOADIN POS. CONN I FAST	G R RESIST. USING T LOADED IN S G PARA OR PER SECTION TO ALI BRACKET THICK ENER TYPE (LA  ET SECURED V REW DIA. (IN.) = LENGTH (IN.) =	G FOR BRG: HEAR (V/H): RP TO GRAIN: L MEMBERS? KNESS (IN.) = AGS/BOLTS) =	SPF #1  V PARA Y 0.375 BOLTS	$G_{Species} = \\ Lag \ D_r = \\ Bolt \ D = \\ F_{yb} = \\ R_{e \perp} = \\ R_{e \parallel} = \\ R_{t} = \\ l_m = \\ l_s = \\ BRACKET SECUREI \\ BOOM$	0.50 0.371 1.000 0.45000 0.0257 0.0644 1.16.000 0.0375 0.00111 THRU-ILT DIA. (IN.) = 0. BOLTS S.S.= 0. BOLTS D.S.=	$\begin{aligned} \mathbf{F}_{em} &= 2232.7 \\ \mathbf{F}_{em} &= 5600.0 \\ \mathbf{F}_{es} &= 87000 \\ \mathbf{k}_{1} &= 0.183 \\ \mathbf{k}_{1} &= 0.426 \\ \mathbf{k}_{2} &= 0.563 \\ \mathbf{k}_{2} &= 0.451 \\ \mathbf{k}_{3} &= 15.537 \\ \mathbf{k}_{3} &= 9.569 \end{aligned}$
BRKT NO:  BRKT SHEAI  BRACKE LOADIN  POS. CONE  FAST  BRACK  LAG SCE  LAG  NO.  MIN. PE	G R RESIST. USING T LOADED IN S G PARA OR PER RECTION TO ALI BRACKET THICK ENER TYPE (LA  ET SECURED N REW DIA. (IN.) = LENGTH (IN.) = LAG SCREWS =	G FOR BRG: HEAR (V / H): RP TO GRAIN: L MEMBERS? KNESS (IN.) = AGS/BOLTS) =  WITH LAG SO 1/2 4.0 21 2.5	SPF #1  V PARA Y 0.375 BOLTS	$G_{Species} = \\ Lag \ D_r = \\ Bolt \ D = \\ F_{yb} = \\ R_{e \perp} = \\ R_{e \parallel} = \\ R_t = \\ l_m = \\ l_s = \\ BRACKET SECUREI \\ BOONO \\ NO. \\ NO. \\$	0.50 0.371 1.000 45000 0.0257 0.0644 16.000 6.000 0.375  DWITH THRU-LT DIA. (IN.) = 0. BOLTS D.S.= . BOLTS D.S.= . KNESS (IN.) =	$\begin{aligned} \mathbf{F}_{em\perp} &= 2232.7 \\ \mathbf{F}_{em\parallel} &= 5600.0 \\ \mathbf{F}_{es} &= 87000 \\ \mathbf{k}_{1\perp} &= 0.183 \\ \mathbf{k}_{1\parallel} &= 0.426 \\ \mathbf{k}_{2\perp} &= 0.563 \\ \mathbf{k}_{2\parallel} &= 0.451 \\ \mathbf{k}_{3\perp} &= 15.537 \\ \mathbf{k}_{3\parallel} &= 9.569 \end{aligned}$
BRKT NO:  BRKT SHEAI  BRACKE LOADIN  POS. CONE  FAST  BRACK  LAG SCE  LAG  NO.  MIN. PE	G R RESIST. USING ET LOADED IN S G PARA OR PER RECTION TO ALL BRACKET THICK ENER TYPE (LA  ET SECURED V REW DIA. (IN.) = LENGTH (IN.) = LAG SCREWS = N. REQ'D (IN.) = E FOR EACH L	G FOR BRG: HEAR (V / H): RP TO GRAIN: L MEMBERS? KNESS (IN.) = AGS/BOLTS) =  WITH LAG SO 1/2 4.0 21 2.5 AG SCREW	SPF #1  V PARA Y 0.375 BOLTS	$G_{Species} = \\ Lag \ D_r = \\ Bolt \ D = \\ F_{yb} = \\ R_{c} \perp = \\ R_{c} \parallel = \\ R_{t} = \\ I_{m} = \\ I_{s} = \\ BOI \\ NO \\ MAIN MEMBER THICK$	0.50 0.371 1.000 45000 0.0257 0.0644 16.000 6.000 0.375  DWITH THRU-LT DIA. (IN.) = 0. BOLTS D.S.= . BOLTS D.S.= . KNESS (IN.) =	$\begin{aligned} \mathbf{F}_{cm\perp} &= 2232.7 \\ \mathbf{F}_{cm\parallel} &= 5600.0 \\ \mathbf{F}_{cs} &= 87000 \\ \mathbf{k}_{1\perp} &= 0.183 \\ \mathbf{k}_{1\parallel} &= 0.426 \\ \mathbf{k}_{2\perp} &= 0.563 \\ \mathbf{k}_{2\parallel} &= 0.451 \\ \mathbf{k}_{3\perp} &= 15.537 \\ \mathbf{k}_{3\parallel} &= 9.569 \end{aligned}$
BRKT NO:  BRKT SHEAI  BRACKE LOADIN  POS. CONE  FAST  BRACK  LAG SCE  LAG  NO.  MIN. PE  RESISTANC	G R RESIST. USING ET LOADED IN S G PARA OR PER RECTION TO ALL BRACKET THICK ENER TYPE (LA  ET SECURED V REW DIA. (IN.) = LENGTH (IN.) = LAG SCREWS = N. REQ'D (IN.) = E FOR EACH L  3116	G FOR BRG: HEAR (V / H): RP TO GRAIN: L MEMBERS? KNESS (IN.) = AGS/BOLTS) =  WITH LAG SO 1/2 4.0 21 2.5  AG SCREW LBS	SPF #1  V PARA Y 0.375 BOLTS  CREWS	G <sub>Species</sub> = Lag D <sub>r</sub> = Bolt D = F <sub>yb</sub> = R <sub>e</sub> _ = R <sub>e</sub> = R <sub>t</sub> = l <sub>m</sub> = l <sub>s</sub> =  BRACKET SECUREI BOO NO MAIN MEMBER THIC	0.50 0.371 1.000 45000 0.0257 0.0644 16.000 0.375  DWITH THRU-LT DIA. (IN.) = 0. BOLTS D.S.= . BOLTS D.S.= . BOLTS D.S.= . BOUBLE :	$\begin{aligned} \mathbf{F}_{cm\perp} &= 2232.7 \\ \mathbf{F}_{cm\parallel} &= 5600.0 \\ \mathbf{F}_{cs} &= 87000 \\ \mathbf{k}_{1\perp} &= 0.183 \\ \mathbf{k}_{1\parallel} &= 0.426 \\ \mathbf{k}_{2\perp} &= 0.563 \\ \mathbf{k}_{2\parallel} &= 0.451 \\ \mathbf{k}_{3\perp} &= 15.537 \\ \mathbf{k}_{3\parallel} &= 9.569 \end{aligned}$
BRKT NO:  BRKT SHEAI  BRACKE LOADIN  POS. CONE  FAST  BRACK  LAG SCE  LAG  NO.  MIN. PE  RESISTANC  EQN I <sub>m</sub>	G R RESIST. USING ET LOADED IN S G PARA OR PER RECTION TO ALL BRACKET THICK ENER TYPE (LA  ET SECURED V REW DIA. (IN.) = LENGTH (IN.) = LAG SCREWS = N. REQ'D (IN.) = E FOR EACH L  3116 3026	G FOR BRG: HEAR (V / H): RP TO GRAIN: L MEMBERS? KNESS (IN.) = AGS/BOLTS) =  WITH LAG SO 1/2 4.0 21 2.5  AG SCREW LBS LBS	SPF #1  V PARA Y 0.375 BOLTS  CREWS  SINGLE EQN I <sub>m</sub> :	$G_{Species} = \\ Lag  D_r = \\ Bolt  D = \\ F_{yb} = \\ R_{e} \perp = \\ R_{e} \parallel = \\ R_{t} = \\ I_{m} = \\ I_{s} = \\ BOI \\ NO \\ NO \\ MAIN  MEMBER  THIC \\ SHEAR  RES. /  BOLT \\ 8400  LBS$	0.50 0.371 1.000 45000 0.0257 0.0644 16.000 0.375  DWITH THRU-LT DIA. (IN.) = D. BOLTS D.S.= KNESS (IN.) =  DOUBLE : EQN I <sub>m</sub> :	$\begin{aligned} \mathbf{F}_{cm\perp} &= 2232.7 \\ \mathbf{F}_{cm\parallel} &= 5600.0 \\ \mathbf{F}_{cs} &= 87000 \\ \mathbf{k}_{1\perp} &= 0.183 \\ \mathbf{k}_{1\parallel} &= 0.426 \\ \mathbf{k}_{2\perp} &= 0.563 \\ \mathbf{k}_{2\parallel} &= 0.451 \\ \mathbf{k}_{3\perp} &= 15.537 \\ \mathbf{k}_{3\parallel} &= 9.569 \end{aligned}$ BOLTS $\begin{vmatrix} 0 \\ 4 \\ 6 \end{vmatrix}$
BRKT NO:  BRKT SHEAI  BRACKI LOADIN  POS. CON!  FAST  BRACK  LAG SCI LAG NO. MIN. PE  RESISTANC  EQN I <sub>m</sub> EQN I <sub>s</sub>	G R RESIST. USING T LOADED IN S G PARA OR PER RECTION TO ALL BRACKET THICK TENER TYPE (LA  ET SECURED V REW DIA. (IN.) = LENGTH (IN.) = LAG SCREWS = N. REQ'D (IN.) = E FOR EACH L  3116 3026 1432	G FOR BRG: HEAR (V / H): RP TO GRAIN: L MEMBERS? KNESS (IN.) = AGS/BOLTS) =  WITH LAG SO 1/2 4.0 21 2.5  AG SCREW LBS LBS LBS LBS	SPF #1  V PARA Y 0.375 BOLTS  CREWS  SINGLE EQN I <sub>m</sub> : EQN I <sub>s</sub> :	$G_{Species} = \\ Lag  D_r = \\ Bolt  D = \\ F_{yb} = \\ R_{e} \perp = \\ R_{t} = \\ I_{m} = \\ I_{s} = \\ \\ BOI  NO \\ MAIN  MEMBER  THIC \\ \\ SHEAR  RES. /  BOLT \\ 8400  LBS \\ 8156  LBS \\ $	0.50 0.371 1.000 45000 0.0257 0.0644 16.000 0.375  DWITH THRU-LT DIA. (IN.) = D. BOLTS D.S.= KNESS (IN.) =  DOUBLE : EQN I <sub>m</sub> :	$\begin{aligned} \mathbf{F}_{cm\perp} &= 2232.7 \\ \mathbf{F}_{cm\parallel} &= 5600.0 \\ \mathbf{F}_{cs} &= 87000 \\ \mathbf{k}_{1\perp} &= 0.183 \\ \mathbf{k}_{1\parallel} &= 0.426 \\ \mathbf{k}_{2\perp} &= 0.563 \\ \mathbf{k}_{2\parallel} &= 0.451 \\ \mathbf{k}_{3\perp} &= 15.537 \\ \mathbf{k}_{3\parallel} &= 9.569 \end{aligned}$ BOLTS $\begin{vmatrix} 0 \\ 4 \\ 6 \end{vmatrix}$
BRKT NO:  BRKT SHEAI  BRACKI LOADIN  POS. CON  I  FAST  BRACK  LAG SCI  LAG  NO.  MIN. PE  RESISTANC  EQN I  EQN II  EQN II	G R RESIST. USING T LOADED IN S G PARA OR PER SECTION TO ALL BRACKET THICK TENER TYPE (LA  ET SECURED V TEW DIA. (IN.) = LENGTH (IN.) = LAG SCREWS = N. REQ'D (IN.) = E FOR EACH L  3116 3026 1432 1556	G FOR BRG: HEAR (V / H): RP TO GRAIN: L MEMBERS? KNESS (IN.) = AGS/BOLTS) =  WITH LAG SO 1/2 4.0 21 2.5  AG SCREW  LBS LBS LBS LBS LBS	SPF #1  V PARA Y 0.375 BOLTS  CREWS  SINGLE EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II:	$G_{Species} = \\ Lag  D_r = \\ Bolt  D = \\ F_{yb} = \\ R_{e} \perp = \\ R_{e} = \\ R_{t} = \\ I_{m} = \\ I_{s} = \\ BOI  DOI  $	0.50 0.371 1.000 45000 0.0257 0.0644 16.000 0.375  DWITH THRU-LT DIA. (IN.) = D. BOLTS D.S.= KNESS (IN.) =  DOUBLE : EQN I <sub>m</sub> :	$\begin{aligned} \mathbf{F}_{em\perp} &= 2232.7 \\ \mathbf{F}_{em\parallel} &= 5600.0 \\ \mathbf{F}_{es} &= 87000 \\ \mathbf{k}_{1\perp} &= 0.183 \\ \mathbf{k}_{1\parallel} &= 0.426 \\ \mathbf{k}_{2\perp} &= 0.563 \\ \mathbf{k}_{2\parallel} &= 0.451 \\ \mathbf{k}_{3\perp} &= 15.537 \\ \mathbf{k}_{3\parallel} &= 9.569 \end{aligned}$ $\begin{aligned} \mathbf{BOLTS} &= 0.569 \\ BO$
BRKT NO:  BRKT SHEAI  BRACKI LOADIN POS. CON  I FAST  BRACK  LAG SCI LAG NO. MIN. PE  RESISTANC  EQN II EQN II EQN III EQN III	GRESIST. USING TLOADED IN SECTION TO ALL BRACKET THICK ENER TYPE (LASE WE DIA. (IN.) = LENGTH (IN.) = LAG SCREWS = N. REQ'D (IN.) = EFOR EACH L  3116 3026 1432 1556 1129	G FOR BRG: HEAR (V / H): RP TO GRAIN: L MEMBERS? KNESS (IN.) = AGS/BOLTS) =  WITH LAG SO 1/2 4.0 21 2.5  AG SCREW  LBS LBS LBS LBS LBS	SPF #1  V PARA Y 0.375 BOLTS  CREWS  SINGLE EQN II EQN III EQN III	$G_{Species} = \\ Lag  D_r = \\ Bolt  D = \\ F_{yb} = \\ R_{e_{\parallel}} = \\ R_{e_{\parallel}} = \\ R_{t} = \\ I_{m} = \\ I_{s} = \\ \\ BOI \\ MO \\ MAIN  MEMBER  THICH \\ SHEAR  RES. /  BOLT \\ 8400  LBS \\ 8156  LBS \\ 3859  LBS \\ 4195  LBS \\$	0.50 0.371 1.000 45000 0.0257 0.0644 16.000 0.375  DWITH THRU-ILT DIA. (IN.) = . BOLTS S.S. = . KNESS (IN.) =  DOUBLE: EQN I <sub>n</sub> : EQN I <sub>s</sub> :	$\begin{aligned} \mathbf{F}_{cm\perp} &= 2232.7 \\ \mathbf{F}_{cm\parallel} &= 5600.0 \\ \mathbf{F}_{cs} &= 87000 \\ \mathbf{k}_{1\perp} &= 0.183 \\ \mathbf{k}_{1\parallel} &= 0.426 \\ \mathbf{k}_{2\perp} &= 0.563 \\ \mathbf{k}_{2\parallel} &= 0.451 \\ \mathbf{k}_{3\perp} &= 15.537 \\ \mathbf{k}_{3\parallel} &= 9.569 \end{aligned}$ BOLTS $\begin{vmatrix} 0 \\ 4 \\ 6 \end{vmatrix}$
BRKT NO:  BRKT SHEAI  BRACKE LOADIN  POS. CONE  FAST  BRACK  LAG SCI LAG NO. MIN. PE  RESISTANC  EQN III  EQN III  EQN III  EQN IIII  EQN IIII	G R RESIST. USING T LOADED IN S G PARA OR PER SECTION TO ALL BRACKET THICK ENER TYPE (LA  ET SECURED N REW DIA. (IN.) = LENGTH (IN.) = LENGTH (IN.) = LAG SCREWS = N. REQ'D (IN.) = E FOR EACH L  3116 3026 1432 1556 1129 540	G FOR BRG: HEAR (V/H): RP TO GRAIN: L MEMBERS? KNESS (IN.) = AGS/BOLTS) =  WITH LAG SC 1/2 4.0 21 2.5  AG SCREW LBS LBS LBS LBS LBS LBS LBS LBS	SPF #1  V PARA Y 0.375 BOLTS  CREWS  SINGLE EQN II EQN III EQN III EQN III	$G_{Species} = \\ Lag  D_r = \\ Bolt  D = \\ F_{yb} = \\ R_{e} \bot = \\ R_{e} \parallel = \\ R_{t} = \\ l_{m} = \\ l_{s} = \\ BRACKET SECUREI \\ BOI \\ NO \\ NO \\ MAIN MEMBER THIC \\ SHEAR RES. / BOLT \\ 8400 LBS \\ 8156 LBS \\ 3859 LBS \\ 4195 LBS \\ 3042 LBS \\ 3926 LBS \\ 3926 LBS \\$	0.50 0.371 1.000 45000 0.371 1.000 45000 0.0257 0.0644 16.000 0.375  DWITH THRU-I LT DIA. (IN.) = 0.BOLTS S.S.= EKNESS (IN.) =  DOUBLE: EQN I <sub>s</sub> : EQN II <sub>s</sub> : EQN IV:	$\begin{aligned} \mathbf{F}_{em\perp} &= 2232.7 \\ \mathbf{F}_{em\parallel} &= 5600.0 \\ \mathbf{F}_{es} &= 87000 \\ \mathbf{k}_{1\perp} &= 0.183 \\ \mathbf{k}_{1\parallel} &= 0.426 \\ \mathbf{k}_{2\perp} &= 0.563 \\ \mathbf{k}_{2\parallel} &= 0.451 \\ \mathbf{k}_{3\perp} &= 15.537 \\ \mathbf{k}_{3\parallel} &= 9.569 \end{aligned}$ $\begin{aligned} \mathbf{BOLTS} &= 0 \\ 0 \\ 4 \\ 6 \end{aligned}$ $\mathbf{SHEAR RES. / BOLT}$ $\begin{aligned} 8400 &                                 $
BRKT NO:  BRKT SHEAI  BRACKE LOADIN  POS. CONN  I  FAST  BRACK  LAG SCI  LAG SCI  LAG NO.  MIN. PE  RESISTANC  EQN II  EQN III  EQN III  EQN III  EQN IV  RESIST <sub>DES</sub> =	G R RESIST. USING T LOADED IN S G PARA OR PER SECTION TO ALL BRACKET THICK ENER TYPE (LA EET SECURED V REW DIA. (IN.) = LENGTH (IN.) = LENGTH (IN.) = LAG SCREWS = N. REQ'D (IN.) = E FOR EACH L 3116 3026 1432 1556 1129 540	G FOR BRG: HEAR (V/H): RP TO GRAIN: L MEMBERS? KNESS (IN.) = AGS/BOLTS) =  WITH LAG SC 1/2 4.0 21 2.5  AG SCREW LBS	SPF #1  V PARA Y 0.375 BOLTS  CREWS  SINGLE EQN II,: EQN III,: EQN III,: EQN IV: RESIST_DES	$G_{Species} = \\ Lag  D_r = \\ Bolt  D = \\ F_{yb} = \\ R_{e} \bot = \\ R_{e} \parallel = \\ R_{t} = \\ l_{m} = \\ l_{s} = \\ BRACKET SECUREI \\ BOOM NOOM NOOMAIN MEMBER THICH SHEAR RES. / BOLT \\ 8400 LBS \\ 8156 LBS \\ 3859 LBS \\ 4195 LBS \\ 3042 LBS \\ 3926 LBS \\ 3042 LBS / BOLT \\ $	0.50 0.371 1.000 45000 0.375 0.0644 16.000 0.375  DWITH THRU-I LT DIA. (IN.) = 0. BOLTS S.S. = 0. BOLTS D.S. = EVNESS (IN.) =  DOUBLE: EQN I <sub>m</sub> : EQN I <sub>k</sub> : EQN IV: RESIST <sub>DES</sub> =	$\begin{aligned} \mathbf{F}_{em\perp} &= 2232.7 \\ \mathbf{F}_{em\parallel} &= 5600.0 \\ \mathbf{F}_{es} &= 87000 \\ \mathbf{k}_{1\perp} &= 0.183 \\ \mathbf{k}_{1\parallel} &= 0.426 \\ \mathbf{k}_{2\perp} &= 0.563 \\ \mathbf{k}_{2\parallel} &= 0.451 \\ \mathbf{k}_{3\perp} &= 15.537 \\ \mathbf{k}_{3\parallel} &= 9.569 \end{aligned}$ $\begin{aligned} \mathbf{BOLTS} &= 0 \\ BO$
BRKT NO:  BRKT SHEAI  BRACKE LOADIN  POS. CONN  FAST  BRACKE  LAG  NO.  MIN. PE  RESISTANC  EQN II.  EQN III.  EQN III.  EQN III.  EQN III.	G R RESIST. USING T LOADED IN S G PARA OR PER SECTION TO ALL BRACKET THICK ENER TYPE (LA EET SECURED V REW DIA. (IN.) = LENGTH (IN.) = LENGTH (IN.) = LAG SCREWS = N. REQ'D (IN.) = E FOR EACH L 3116 3026 1432 1556 1129 540	G FOR BRG: HEAR (V/H): RP TO GRAIN: L MEMBERS? KNESS (IN.) = AGS/BOLTS) =  WITH LAG SC 1/2 4.0 21 2.5  AG SCREW LBS LBS LBS LBS LBS LBS LBS LBS	SPF #1  V PARA Y 0.375 BOLTS  CREWS  SINGLE EQN I <sub>m</sub> : EQN II <sub>s</sub> : EQN II <sub>s</sub> : EQN III <sub>s</sub> : EQN III <sub>s</sub> :	$G_{Species} = \\ Lag  D_r = \\ Bolt  D = \\ F_{yb} = \\ R_{e} \bot = \\ R_{e} \parallel = \\ R_{t} = \\ l_{m} = \\ l_{s} = \\ BRACKET SECUREI \\ BOI \\ NO \\ NO \\ MAIN MEMBER THIC \\ SHEAR RES. / BOLT \\ 8400 LBS \\ 8156 LBS \\ 3859 LBS \\ 4195 LBS \\ 3042 LBS \\ 3926 LBS \\ 3926 LBS \\$	0.50 0.371 1.000 45000 0.371 1.000 45000 0.0257 0.0644 16.000 0.375  DWITH THRU-I LT DIA. (IN.) = 0.BOLTS S.S.= EKNESS (IN.) =  DOUBLE: EQN I <sub>s</sub> : EQN II <sub>s</sub> : EQN IV:	$\begin{aligned} \mathbf{F}_{em\perp} &= 2232.7 \\ \mathbf{F}_{em\parallel} &= 5600.0 \\ \mathbf{F}_{es} &= 87000 \\ \mathbf{k}_{1\perp} &= 0.183 \\ \mathbf{k}_{1\parallel} &= 0.426 \\ \mathbf{k}_{2\perp} &= 0.563 \\ \mathbf{k}_{2\parallel} &= 0.451 \\ \mathbf{k}_{3\perp} &= 15.537 \\ \mathbf{k}_{3\parallel} &= 9.569 \end{aligned}$ $\begin{aligned} \mathbf{BOLTS} &= 0 \\ 0 \\ 4 \\ 6 \end{aligned}$ $\mathbf{SHEAR RES. / BOLT}$ $\begin{aligned} 8400 &                                 $
BRKT NO:  BRKT SHEAI  BRACKE LOADIN  POS. CONN  I  FAST  BRACK  LAG SCI  LAG SCI  LAG NO.  MIN. PE  RESISTANC  EQN II  EQN III  EQN III  EQN III  EQN IV  RESIST <sub>DES</sub> =	G R RESIST. USING T LOADED IN S G PARA OR PER SECTION TO ALL BRACKET THICK ENER TYPE (LA EET SECURED V REW DIA. (IN.) = LENGTH (IN.) = LENGTH (IN.) = LAG SCREWS = N. REQ'D (IN.) = E FOR EACH L 3116 3026 1432 1556 1129 540	G FOR BRG: HEAR (V/H): RP TO GRAIN: L MEMBERS? KNESS (IN.) = AGS/BOLTS) =  WITH LAG SC 1/2 4.0 21 2.5  AG SCREW LBS	SPF #1  V PARA Y 0.375 BOLTS  CREWS  SINGLE EQN II,: EQN III,: EQN III,: EQN IV: RESIST_DES	$G_{Species} = \\ Lag  D_r = \\ Bolt  D = \\ F_{yb} = \\ R_{e} \bot = \\ R_{e} \parallel = \\ R_{t} = \\ l_{m} = \\ l_{s} = \\ BRACKET SECUREI \\ BOOM NOOM NOOMAIN MEMBER THICH SHEAR RES. / BOLT \\ 8400 LBS \\ 8156 LBS \\ 3859 LBS \\ 4195 LBS \\ 3042 LBS \\ 3926 LBS \\ 3042 LBS / BOLT \\ $	0.50 0.371 1.000 45000 0.375 0.0644 16.000 0.375  DWITH THRU-I LT DIA. (IN.) = 0. BOLTS S.S. = 0. BOLTS D.S. = EVNESS (IN.) =  DOUBLE: EQN I <sub>m</sub> : EQN I <sub>k</sub> : EQN IV: RESIST <sub>DES</sub> =	$\begin{aligned} \mathbf{F}_{em\perp} &= 2232.7 \\ \mathbf{F}_{em\parallel} &= 5600.0 \\ \mathbf{F}_{es} &= 87000 \\ \mathbf{k}_{1\perp} &= 0.183 \\ \mathbf{k}_{1\parallel} &= 0.426 \\ \mathbf{k}_{2\perp} &= 0.563 \\ \mathbf{k}_{2\parallel} &= 0.451 \\ \mathbf{k}_{3\perp} &= 15.537 \\ \mathbf{k}_{3\parallel} &= 9.569 \end{aligned}$ $\begin{aligned} \mathbf{BOLTS} &= 0 \\ BO$

BRKT NO:	Н	GF	30421	LBS			
BRKT SHEAR RI	ESIST. USING	FOR BRG:	SPF #1			NDS VARI	ABLES
BRACKET L	OADED IN SHE	EAR (V / H):	V		G <sub>Species</sub> =	0.50	$\mathbf{F}_{\mathrm{em}} = 2232.7$
LOADING P	ARA OR PERP	TO GRAIN:	PARA		$Lag D_r =$	0.371	$\mathbf{F}_{\text{em}\parallel} = 5600.0$
POS. CONNEC	TION TO ALL N	MEMBERS?	Y		Bolt D =	1.000	$\mathbf{F}_{es} = 87000$
BRA	CKET THICKN	ESS (IN.) =	0.375		$\mathbf{F}_{\mathrm{yb}} =$	45000	$\mathbf{k}_{1\  } = 0.183$
FASTEN	ER TYPE (LAG	S/BOLTS) =	BOLTS		$\mathbf{R}_{\mathrm{e}}$   =	0.0257	$\mathbf{k}_{1 \parallel} = 0.426$
					$\mathbf{R}_{e}$	0.0644	$\mathbf{k}_{2} = 0.563$
					$\mathbf{R}_{\mathrm{t}} =$	16.000	$\mathbf{k}_{2\parallel} = 0.451$
					l <sub>m</sub> =	6.000	$\mathbf{k}_{3} = 15.537$
					$\mathbf{l}_{\mathrm{s}} =$	0.375	$\mathbf{k}_{3\parallel} = 9.569$
BRACKET	SECURED WI	TH LAG SC	REWS	BRACK	ET SECUREI	O WITH THRU-I	BOLTS
LAG SCREW	/ DIA. (IN.) =	1/2			ВО	LT DIA. (IN.) =	1
LAG LE	NGTH (IN.) =	4.0			NC	. BOLTS S.S.=	0
	G SCREWS =	21				. BOLTS D.S.=	5
MIN. PEN. F	REQ'D (IN.) =	2.5		MAIN M	IEMBER THIC	KNESS (IN.) =	6
RESISTANCE F	OR EACH LAC	SCREW	SINGLI	E SHEAR RES	S. / BOLT	DOUBLE	SHEAR RES. / BOLT
EQN $I_m$ :	3116 LI	3S	EQN I <sub>m</sub>	8400	LBS	EQN $I_m$ :	8400 LBS
EQN I <sub>s</sub> :	3026 LI	3S	EQN I <sub>s</sub> :	8156	LBS	EQN $I_s$ :	16313 LBS
EQN II:	1432 LI	3S	EQN II:	3859	LBS		
EQN III <sub>m</sub> :	1556 LI	3S	EQN III <sub>m</sub>	4195	LBS		
EQN III <sub>s</sub> :	1129 LI	3S	EQN III <sub>s</sub> :	3042	LBS	EQN III <sub>s</sub> :	6084 LBS
EQN IV:	540 Ll	3S	EQN IV:	3926	LBS	EQN IV:	7852 LBS
$RESIST_{DES} =$	540 L	BS / LAG	RESIST <sub>DES</sub> =	3042	LBS / BOLT	$RESIST_{DES} =$	6084 LBS / BOL
$RESIST_{GRP} =$	0 L	BS	RESIST <sub>GRP</sub> =	0	LBS	$\mathbf{RESIST}_{\mathrm{GRP}} =$	30421 LBS
SI.	JMMARY					1	
30							

WCLH BRAC BRKT NO:	BK69Z	GF	4655	LBS			
BRKT SHEAR I	RESIST. USIN	G FOR BRG:	SPF #1			NDS VARI	ABLES
BRACKET	LOADED IN S	SHEAR (V / H)	V		$G_{Specie}$	$_{\rm s} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 3665.6$
LOADING	PARA OR PE	RP TO GRAIN	PARA		Lag D	$_{\rm r} = 0.371$	$F_{em } = 5600.0$
POS. CONNE	CTION TO AL	L MEMBERS?	Y		Bolt I	0 = 0.500	$F_{\rm es}=87000$
BR	ACKET THIC	KNESS (IN.) =	0.250		$\mathbf{F}_{\mathrm{yl}}$	b = 45000	$\mathbf{k}_{1} = 0.247$
FASTE	NER TYPE (LA	AGS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$
					$\mathbf{R}_{\mathrm{e}}$	= 0.0644	$\mathbf{k}_2 \mid = 0.480$
					R	t = 13.500	$\mathbf{k}_{2\parallel} = 0.480$
					$\mathbf{l}_{\mathrm{r}}$	n = 3.375	$\mathbf{k}_{3} = 8.288$
					ı	s = 0.250	$k_{3\parallel} = 6.578$
	T SECURED		CREWS	BRACK		ED WITH THRU-I	
	W DIA. (IN.) = ENGTH (IN.) =					OLT DIA. (IN.) = NO. BOLTS S.S.=	1/2 0
	AG SCREWS =					O. BOLTS D.S.=	0
	REQ'D (IN.) =			MAIN M		ICKNESS (IN.) =	5 1/8
RESISTANCE	FOR EACH L	AG SCREW	SINGLI	E SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES. / BOLT
EQN I <sub>m</sub> :	1753	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN I <sub>m</sub> :	3588 LBS
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN $I_s$ :	5438 LBS
EQN II:	815	LBS	EQN II:	1098	LBS		
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub> :	1908	LBS		
EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	1394 LBS
	540	LBS	EQN IV:	982	LBS	EQN IV:	1963 LBS
EQN IV:		LBS / LAG	$RESIST_{DES} =$		LBS / BOI	T RESIST <sub>DES</sub> =	1394 LBS / BOL
EQN IV: RESIST <sub>DES</sub> =	517	LDS / LAIG			LBS	$RESIST_{GRP} =$	0 LBS
EQN IV:		LBS	$RESIST_{GRP} =$	U	LDS	- GRI	0 220
$\frac{\text{EQN IV:}}{\text{RESIST}_{\text{DES}}} = \\ \text{RESIST}_{\text{GRP}} = \\$		LBS	RESIST <sub>GRP</sub> =		LBS		V EBS

WCLH BRAC BRKT NO:		GF	1552	LBS			
BRKT SHEAR I	RESIST. USING	G FOR BRG:	SPF #1			NDS VARI	ABLES
BRACKET	LOADED IN S	HEAR (V / H):	: V		$G_{Spec}$	$v_{ies} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 3665.6$
LOADING	PARA OR PER	P TO GRAIN:	PARA		Lag	$D_{\rm r} = 0.371$	$\mathbf{F}_{\text{em} } = 5600.0$
POS. CONNE	CTION TO ALI	L MEMBERS?	Y		Bolt	D = 0.500	$\mathbf{F}_{\mathrm{es}} = 87000$
BR	ACKET THICK	NESS (IN.) =	0.250		F	$T_{yb} = 45000$	$\mathbf{k}_{1} = 0.247$
FASTE	NER TYPE (LA	GS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$
					R	$R_{e1} = 0.0644$	$\mathbf{k}_{2} = 0.480$
						$R_t = 13.500$	$\mathbf{k}_{2\parallel} = 0.480$
						$l_{\rm m} = 3.375$	$\mathbf{k}_{3} + 8.288$
						$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 6.578$
	Γ SECURED V W DIA. (IN.) =	VITH LAG SO	CREWS	BRACK		RED WITH THRU-I BOLT DIA. (IN.) =	BOLTS 1/2
	ENGTH (IN.) =	4.0				NO. BOLTS S.S.=	0
	G SCREWS =	3				NO. BOLTS D.S.=	0
MIN. PEN.	REQ'D (IN.) =	2.5		MAIN M	IEMBER T	HICKNESS (IN.) =	5 1/8
RESISTANCE	FOR EACH L	AG SCREW	SINGLE	SHEAR RES	S. / BOLT	DOUBLE S	SHEAR RES. / BOLT
EQN $I_m$ :	1753	LBS	EQN I <sub>m</sub> :	3588	LBS	$\mathbf{EQN}\ \mathbf{I}_{\mathrm{m}}$ :	3588 LBS
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN I <sub>s</sub> :	5438 LBS
EQN II:	815	LBS	EQN II:	1098	LBS		
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub> :	1908	LBS		
EQN III <sub>s</sub> :	517		EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	1394 LBS
EQN IV:	540	LBS	EQN IV:		LBS	EQN IV:	1963 LBS
$RESIST_{DES} =$	517	LBS / LAG	$RESIST_{DES} =$	697	LBS / BC	$RESIST_{DES} =$	1394 LBS / BOL
	1552	LBS	$RESIST_{GRP} =$	0	LBS	$\mathbf{RESIST}_{\mathrm{GRP}} =$	0 LBS
$RESIST_{GRP} =$							
_	UMMARY						

WCLH BRACK BRKT NO: B		GF	6206	LBS		
BRKT SHEAR RE	SIST. USIN	G FOR BRG:	SPF #1		NDS VARL	ABLES
BRACKET LO	OADED IN S	HEAR (V / H):	. V	$G_{Speci}$	$_{\rm les} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 3665.6$
LOADING P.	ARA OR PE	RP TO GRAIN:	PARA	Lag I	$O_r = 0.371$	$\mathbf{F}_{\rm em\parallel} = 5600.0$
POS. CONNEC	ΓΙΟΝ ΤΟ AL	L MEMBERS?	Y	Bolt 1	D = 0.500	$\mathbf{F}_{es} = 87000$
BRA	CKET THIC	KNESS (IN.) =	0.250	F,	$_{yb} = 45000$	$\mathbf{k}_{1} = 0.247$
FASTENI	ER TYPE (LA	AGS/BOLTS) =	LAGS	$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1 \parallel} = 0.364$
				R	e   = 0.0644	$\mathbf{k}_{2} = 0.480$
				I	$R_t = 13.500$	$\mathbf{k}_{2\parallel} = 0.480$
				l	$l_{\rm m} = 3.375$	$\mathbf{k}_3 = 8.288$
					$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 6.578$
LAG SCREW LAG LEN	DIA. (IN.) = NGTH (IN.) =				BOLT DIA. (IN.) =	1/2
	SCREWS =	12			NO. BOLTS S.S.= NO. BOLTS D.S.= HICKNESS (IN.) =	0 0 5 1/8
NO. LAG	SCREWS = EQ'D (IN.) =	12 2.5	SINGLE	1	NO. BOLTS D.S.= HICKNESS (IN.) =	0
NO. LAG MIN. PEN. R	SCREWS = EQ'D (IN.) =	12 2.5 AG SCREW	SINGLE EQN I <sub>m</sub> :	MAIN MEMBER TH	NO. BOLTS D.S.= HICKNESS (IN.) =	0 5 1/8
NO. LAG MIN. PEN. R RESISTANCE FO	SCREWS = EQ'D (IN.) = DR EACH L 1753 2017	12 2.5 AG SCREW LBS LBS		MAIN MEMBER TH  SHEAR RES. / BOLT  3588 LBS 2719 LBS	NO. BOLTS D.S.= HICKNESS (IN.) = DOUBLE S	0 5 1/8 SHEAR RES. / BOLT
NO. LAG MIN. PEN. R  RESISTANCE FO  EQN I <sub>m</sub> :  EQN I <sub>s</sub> :  EQN II:	SCREWS = EQ'D (IN.) = DR EACH L 1753 2017	12 2.5 AG SCREW LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II:	MAIN MEMBER TH SHEAR RES. / BOLT 3588 LBS	NO. BOLTS D.S.= HICKNESS (IN.) = DOUBLE S EQN I <sub>m</sub> :	0 5 1/8 SHEAR RES. / BOLT 3588 LBS
NO. LAG MIN. PEN. R  RESISTANCE FO  EQN I <sub>m</sub> :  EQN I <sub>s</sub> :  EQN II:  EQN III <sub>m</sub> :	S SCREWS = EQ'D (IN.) = OR EACH L 1753 2017 815	12 2.5 AG SCREW LBS LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II: EQN III <sub>m</sub> :	MAIN MEMBER TH  SHEAR RES. / BOLT  3588 LBS 2719 LBS	NO. BOLTS D.S.= HICKNESS (IN.) =  DOUBLE S  EQN I <sub>m</sub> : EQN I <sub>s</sub> :	0 5 1/8 SHEAR RES. / BOLT 3588 LBS
NO. LAG MIN. PEN. R  RESISTANCE FO  EQN I <sub>m</sub> :  EQN II:  EQN III <sub>m</sub> :  EQN III <sub>m</sub> :	S SCREWS = EQ'D (IN.) = DR EACH L 1753 2017 815 933 517	12 2.5 AG SCREW LBS LBS LBS LBS LBS LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II: EQN III <sub>m</sub> : EQN III <sub>s</sub> :	MAIN MEMBER TH  SHEAR RES. / BOLT  3588 LBS 2719 LBS 1098 LBS 1908 LBS 697 LBS	NO. BOLTS D.S.= HICKNESS (IN.) =  DOUBLE S  EQN I <sub>m</sub> : EQN I <sub>s</sub> :	0 5 1/8 SHEAR RES./BOLT 3588 LBS 5438 LBS
NO. LAG MIN. PEN. R  RESISTANCE FO  EQN I <sub>m</sub> :  EQN II:  EQN III <sub>m</sub> :  EQN III <sub>s</sub> :  EQN III <sub>s</sub> :	SCREWS = EQ'D (IN.) =  DR EACH L  1753  2017  815  933  517  540	12 2.5 AG SCREW LBS LBS LBS LBS LBS LBS LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II: EQN III <sub>m</sub> : EQN III <sub>s</sub> : EQN III <sub>s</sub> :	MAIN MEMBER TH  SHEAR RES. / BOLT  3588 LBS 2719 LBS 1098 LBS 1908 LBS 697 LBS 982 LBS	NO. BOLTS D.S.= HICKNESS (IN.) =  DOUBLE S  EQN I <sub>n</sub> : EQN I <sub>s</sub> :  EQN III <sub>s</sub> : EQN IV:	0 5 1/8 SHEAR RES./BOLT 3588 LBS 5438 LBS 1394 LBS 1963 LBS
NO. LAG MIN. PEN. R  RESISTANCE FO  EQN I <sub>m</sub> :  EQN II:  EQN III <sub>m</sub> :  EQN III <sub>s</sub> :  EQN IV:  RESIST <sub>DES</sub> =	SCREWS = EQ'D (IN.) =  DR EACH L  1753 2017 815 933 517 540	12 2.5 AG SCREW LBS LBS LBS LBS LBS LBS LBS LBS	$\begin{split} & EQN \ I_m: \\ & EQN \ I_s: \\ & EQN \ II: \\ & EQN \ III_m: \\ & EQN \ III_s: \\ & EQN \ IV: \\ & RESIST_{DES} = \end{split}$	MAIN MEMBER TH  SHEAR RES. / BOLT  3588 LBS 2719 LBS 1098 LBS 1908 LBS 697 LBS 982 LBS 697 LBS / BO	NO. BOLTS D.S.= HICKNESS (IN.) =  DOUBLE S  EQN I <sub>m</sub> : EQN II <sub>s</sub> : EQN IV: LT RESIST <sub>DES</sub> =	0 5 1/8 SHEAR RES./BOLT 3588 LBS 5438 LBS 1394 LBS 1963 LBS 1394 LBS/BOLT
NO. LAG MIN. PEN. R  RESISTANCE FO  EQN I <sub>m</sub> :  EQN II:  EQN III <sub>m</sub> :  EQN III <sub>s</sub> :  EQN III <sub>s</sub> :	SCREWS = EQ'D (IN.) =  DR EACH L  1753  2017  815  933  517  540	12 2.5 AG SCREW LBS LBS LBS LBS LBS LBS LBS LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II: EQN III <sub>m</sub> : EQN III <sub>s</sub> : EQN III <sub>s</sub> :	MAIN MEMBER TH  SHEAR RES. / BOLT  3588 LBS 2719 LBS 1098 LBS 1908 LBS 697 LBS 982 LBS	NO. BOLTS D.S.= HICKNESS (IN.) =  DOUBLE S  EQN I <sub>n</sub> : EQN I <sub>s</sub> :  EQN III <sub>s</sub> : EQN IV:	0 5 1/8 SHEAR RES./BOLT 3588 LBS 5438 LBS 1394 LBS 1963 LBS

BRKT NO:	BK65R	GF	6206	LBS				
BRKT SHEAR R	ESIST. USING	G FOR BRG:	SPF #1		NDS VARIABLES			
BRACKET I	LOADED IN SE	HEAR (V / H):	: V		G <sub>Species</sub> =	0.50	$\mathbf{F}_{\mathrm{em}} = 3665.$	6
LOADING I	PARA OR PER	P TO GRAIN:	PARA		$Lag D_r =$	0.371	$\mathbf{F}_{\text{em}\parallel} = 5600.$	.0
POS. CONNEC	CTION TO ALL	MEMBERS?	Y		Bolt D =	0.500	$\mathbf{F}_{\rm es} = 87000$	0
BRA	ACKET THICK	NESS (IN.) =	0.250		$\mathbf{F}_{yb} =$	45000	$\mathbf{k}_{1 \mid} = 0.247$	
FASTEN	ER TYPE (LA	GS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$   =	0.0421	$\mathbf{k}_{1\parallel} = 0.364$	
					$\mathbf{R}_{e\parallel}$	0.0644	$\mathbf{k}_{2} \mid = 0.480$	ı
					$\mathbf{R}_{\mathrm{t}} =$	13.500	$\mathbf{k}_{2\parallel} = 0.480$	1
					$l_{\rm m} =$	3.375	$\mathbf{k}_{3} = 8.288$	1
					$\mathbf{l}_{\mathrm{s}} =$	0.250	$\mathbf{k}_{3\parallel} = 6.578$	
	SECURED W	VITH LAG SO	CREWS	BRACKI		D WITH THRU-I LT DIA. (IN.) =	BOLTS 1/2	
LAG LE	NGTH (IN.) =	4.0			NC	. BOLTS S.S.=	0	
	G SCREWS =	12				. BOLTS D.S.=	0	
MIN. PEN. 1	REQ'D (IN.) =	2.5		MAIN MI	EMBER THIC	KNESS (IN.) =	5 1/8	
RESISTANCE F	OR EACH LA	AG SCREW	SINGLE	SHEAR RES.	. / BOLT	DOUBLE S	SHEAR RES. / BO	LT
EQN $I_m$ :	1753	LBS	EQN $I_m$ :	3588	LBS	EQN $I_m$ :	3588 LBS	
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN I <sub>s</sub> :	5438 LBS	
EQN II:	815	LBS	EQN II:	1098	LBS			
EQN III <sub>m</sub> :	933		EQN III <sub>m</sub> :	1908				
EQN III <sub>s</sub> :	517		EQN III <sub>s</sub> :	697		EQN III <sub>s</sub> :	1394 LBS	
EQN IV:	540		EQN IV:	982		EQN IV:	1963 LBS	
	517	LBS / LAG	$RESIST_{DES} =$			$RESIST_{DES} =$	1394 LBS	/ BOL
RESIST <sub>DES</sub> =		IDC	$RESIST_{GRP} =$	0	LBS	$RESIST_{GRP} =$	0 LBS	
	6206	LDS						
$\mathbf{RESIST}_{\mathrm{DES}} =$ $\mathbf{RESIST}_{\mathrm{GRP}} =$	6206 UMMARY	LBS				1		

BRKT NO: B		GF	6206	LBS				
BRKT SHEAR R	ESIST. USING	G FOR BRG:	SPF #1		NDS VARIABLES			
BRACKET I	OADED IN S	HEAR (V / H):	V		$G_{Spec}$	$_{\text{ies}} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 3665.6$	
LOADING F	ARA OR PER	P TO GRAIN:	PARA		Lag I	$O_r = 0.371$	$\mathbf{F}_{\text{em}\parallel} = 5600.0$	
POS. CONNEC	TION TO ALI	MEMBERS?	Y		Bolt	D = 0.500	$F_{es} = 87000$	
BRA	CKET THICK	NESS (IN.) =	0.250		F	$_{yb} = 45000$	$\mathbf{k}_{1} \perp = 0.247$	
FASTEN	ENER TYPE (LAGS/BOLTS) =		LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$	
					R	e   = 0.0644	$\mathbf{k}_{2} = 0.480$	
					I	$R_t = 13.500$	$\mathbf{k}_{2\parallel} = 0.480$	
					1	$I_{\rm m} = 3.375$	$\mathbf{k}_{3}$ = 8.288	
						$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 6.578$	
BRACKET SECURED WITH LAG SC LAG SCREW DIA. (IN.) = 1/2 LAG LENGTH (IN.) = 4.0 NO. LAG SCREWS = 12			CREWS	BRACK	-	RED WITH THRU-E BOLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.=	1/2 0 0	
MIN. PEN. I	REQ'D (IN.) = OR EACH LA	2.5 AG SCREW	SINGLI	MAIN M E SHEAR RES		HICKNESS (IN.) =  DOUBLE S	5 1/8 SHEAR RES. / BOLT	Γ
EQN I <sub>m</sub> :	1753	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN I <sub>m</sub> :	3588 LBS	
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN $I_s$ :	5438 LBS	
EQN II:	815	LBS	EQN II:	1098	LBS			
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub> :	1908	LBS			
EQN III <sub>s</sub> :	517		EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	1394 LBS	
EQN IV:	540	LBS	EQN IV:		LBS	EQN IV:	1963 LBS	
$RESIST_{DES} =$		LBS / LAG	$RESIST_{DES} =$			$LT RESIST_{DES} =$	1394 LBS / B	OLT
$RESIST_{GRP} =$	6206	LBS	RESIST <sub>GRP</sub> =	0	LBS	$\mathbf{RESIST}_{GRP} =$	0 LBS	
SU	MMARY	DIV (FI SO	GOOD FOR	6206	LBS			

WCLH BRAC BRKT NO:		GF	6206	LBS				
BRKT SHEAR I	RESIST. USING	G FOR BRG:	SPF #1			NDS VARL	ABLES	
BRACKET	LOADED IN S	HEAR (V / H)	. V		$G_{Specia}$	$_{\rm es} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 3665$	.6
LOADING	PARA OR PER	P TO GRAIN	PARA		Lag D	$p_{\rm r} = 0.371$	$\mathbf{F}_{\text{em} } = 5600$	0.0
POS. CONNE	CTION TO ALI	L MEMBERS?	Y		Bolt I	0 = 0.500	$\mathbf{F}_{\mathrm{es}} = 8700$	0
BR	ACKET THICK	NESS (IN.) =	0.250		F,	$_{b} = 45000$	$\mathbf{k}_{1} \perp = 0.24$	7
FASTE	NER TYPE (LA	GS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.36$	4
					$\mathbf{R}_{\mathrm{e}}$	= 0.0644	$\mathbf{k}_{2} = 0.48$	0
					F	$R_t = 13.500$	$\mathbf{k}_{2\parallel} = 0.48$	0
					1	$_{\rm m} = 3.375$	$\mathbf{k}_{3} = 8.28$	8
					j	$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 6.57$	8
LAG SCRE	T SECURED V W DIA. (IN.) =	1/2	CREWS	BRACK	I	RED WITH THRU-E BOLT DIA. (IN.) =	1/2	
	ENGTH (IN.) =	4.0				NO. BOLTS S.S.=	0	
	AG SCREWS = REQ'D (IN.) =	12 2.5		MAININ		NO. BOLTS D.S.= HCKNESS (IN.) =	0 5 1/8	
WIIIN. FEIN.	KEQD (IIV.) –	2.3		WAIN W	EMBEK II	iickiness (iiv.) –	3 1/6	
RESISTANCE	FOR EACH L	AG SCREW	SINGLI	E SHEAR RES	./BOLT	DOUBLE S	SHEAR RES. / B	OLT
EQN I <sub>m</sub> :	1753	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN I <sub>m</sub> :	3588 LBS	
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN $I_s$ :	5438 LBS	
EQN II:	815	LBS	EQN II:	1098	LBS			
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub> :	1908	LBS			
EQN III <sub>s</sub> :	517	LBS	EQN III <sub>s</sub> :	697	LBS	EQN III <sub>s</sub> :	1394 LBS	
EQN IV:	540	LBS	EQN IV:		LBS	EQN IV:	1963 LBS	
$RESIST_{DES} =$	517	LBS / LAG	$RESIST_{DES} =$	697	LBS / BOI	LT RESIST <sub>DES</sub> =	1394 LBS	/ BOL
$\mathbf{RESIST}_{\mathrm{GRP}} =$	6206	LBS	$RESIST_{GRP} =$	0	LBS	$\mathbf{RESIST}_{GRP} =$	0 LBS	
-	SUMMARY					7		

BRKT NO:	<b>BK60</b>	GF	621	LBS		
BRKT SHEAR RE	SIST. USIN	G FOR BRG:	LVL		NDS VARL	ABLES
BRACKET L	OADED IN S	HEAR (V / H)	: V	$\mathbf{G}_{Spec}$	$_{\text{ties}} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 3665.6$
LOADING P.	ARA OR PEF	RP TO GRAIN	: PERP	Lag l	$\mathbf{D}_{\mathrm{r}} = 0.371$	$\mathbf{F}_{em\parallel} = 5600.0$
POS. CONNEC	TION TO AL	L MEMBERS	? Y	Bolt	D = 0.500	$\mathbf{F}_{es} = 87000$
BRA	CKET THICE	KNESS (IN.) =	0.250	F	$r_{\rm vb} = 45000$	$\mathbf{k}_{1}$ = 0.138
FASTENI	ER TYPE (LA	AGS/BOLTS) =	LAGS	$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.184$
				R	$L_{e \parallel} = 0.0644$	$\mathbf{k}_{2} = 0.652$
				1	$R_t = 5.500$	$\mathbf{k}_{2\parallel} = 0.652$
					$l_{\rm m} = 1.375$	$\mathbf{k}_{3} = 8.288$
					$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 6.578$
LAG SCREW	. ,	1/2	CKEWS		BOLT DIA. (IN.) =	1/2
LAG SCREW LAG LEN NO. LAC MIN. PEN. R	T DIA. (IN.) = NGTH (IN.) = S SCREWS = EQ'D (IN.) =	1/2 2.0 2 2.5		MAIN MEMBER T	BOLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.= HICKNESS (IN.) =	1/2 0 0 5 1/8
LAG SCREW LAG LEN NO. LAC MIN. PEN. R RESISTANCE FO	T DIA. (IN.) = NGTH (IN.) = S SCREWS = EQ'D (IN.) =	1/2 2.0 2 2.5 AG SCREW	SINGLE	MAIN MEMBER T	BOLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.= HICKNESS (IN.) =	1/2 0 0 5 1/8 SHEAR RES. / BOLT
LAG SCREW LAG LEN NO. LAC MIN. PEN. R RESISTANCE FO EQN I <sub>m</sub> :	Y DIA. (IN.) = NGTH (IN.) = S SCREWS = EQ'D (IN.) = OR EACH L 467	1/2 2.0 2 2.5 AG SCREW LBS	SINGLE EQN I <sub>m</sub> :	MAIN MEMBER T E SHEAR RES./BOLT 2348 LBS	BOLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.= HICKNESS (IN.) =  DOUBLE S EQN I <sub>m</sub> :	1/2 0 0 5 1/8 SHEAR RES. / BOLT 2348 LBS
LAG SCREW LAG LEN NO. LAC MIN. PEN. R  RESISTANCE FO EQN I <sub>m</sub> : EQN I <sub>s</sub> :	T DIA. (IN.) = NGTH (IN.) = S SCREWS = EQ'D (IN.) =  OR EACH L  467 2017	1/2 2.0 2 2.5 AG SCREW LBS LBS	SINGLE EQN I <sub>m</sub> : EQN I <sub>s</sub> :	MAIN MEMBER T E SHEAR RES./BOLT 2348 LBS 2719 LBS	BOLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.= HICKNESS (IN.) =	1/2 0 0 5 1/8 SHEAR RES. / BOLT
LAG SCREW LAG LEN NO. LAC MIN. PEN. R  RESISTANCE FO EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II:	TDIA. (IN.) = NGTH (IN.) = S SCREWS = EQ'D (IN.) =  DR EACH L  467 2017 310	1/2 2.0 2 2.5 AG SCREW LBS LBS LBS	SINGLE EQN I <sub>m</sub> ; EQN II; EQN II:	MAIN MEMBER T E SHEAR RES./BOLT 2348 LBS 2719 LBS 418 LBS	BOLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.= HICKNESS (IN.) =  DOUBLE S EQN I <sub>m</sub> :	1/2 0 0 5 1/8 SHEAR RES. / BOLT 2348 LBS
LAG SCREW LAG LEN NO. LAC MIN. PEN. R  RESISTANCE FO EQN I <sub>m</sub> ; EQN II; EQN III <sub>m</sub> ;	DIA. (IN.) = NGTH (IN.) = NGTH (IN.) = S SCREWS = EQ'D (IN.) = DR EACH L 467 2017 310 352	1/2 2.0 2 2.5 AG SCREW LBS LBS LBS LBS	SINGLE EQN I <sub>m</sub> ; EQN II; EQN III <sub>m</sub> ;	MAIN MEMBER T E SHEAR RES./BOLT 2348 LBS 2719 LBS 418 LBS 1766 LBS	BOLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.= HICKNESS (IN.) =  DOUBLE S  EQN I <sub>m</sub> : EQN I <sub>s</sub> :	1/2 0 0 5 1/8 SHEAR RES./BOLT 2348 LBS 5438 LBS
LAG SCREW LAG LEN NO. LAC MIN. PEN. R  RESISTANCE FO EQN I <sub>m</sub> : EQN II: EQN III. EQN III <sub>m</sub> :	DIA. (IN.) = NGTH (IN.) = S SCREWS = EQ'D (IN.) = DR EACH L 467 2017 310 352 431	1/2 2.0 2 2.5 AG SCREW LBS LBS LBS LBS LBS	SINGLE EQN I <sub>m</sub> ; EQN II; EQN III <sub>m</sub> ; EQN III <sub>s</sub> ;	MAIN MEMBER T E SHEAR RES. / BOLT 2348 LBS 2719 LBS 418 LBS 1766 LBS 581 LBS	BOLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.= HICKNESS (IN.) =  DOUBLE S  EQN I <sub>n</sub> ; EQN III <sub>s</sub> ;	1/2 0 0 5 1/8 SHEAR RES. / BOLT 2348 LBS 5438 LBS
LAG SCREW LAG LEN NO. LAC MIN. PEN. R  RESISTANCE FO EQN I <sub>m</sub> : EQN II: EQN III <sub>m</sub> : EQN III <sub>m</sub> : EQN III <sub>m</sub> :	DIA. (IN.) = NGTH (IN.) = SGREWS = SGREWS = LEQ'D (IN.) = DR EACH L  467 2017 310 352 431 442	1/2 2.0 2 2.5 AG SCREW LBS LBS LBS LBS LBS LBS LBS LBS	SINGLE EQN I,,; EQN II; EQN III,,; EQN III,; EQN IV;	MAIN MEMBER T 2348 LBS 2719 LBS 418 LBS 1766 LBS 581 LBS 803 LBS	BOLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.= HICKNESS (IN.) =  DOUBLE S  EQN I <sub>n</sub> :  EQN III <sub>s</sub> :  EQN IV:	1/2 0 0 5 1/8 SHEAR RES. / BOLT 2348 LBS 5438 LBS 1162 LBS 1605 LBS
LAG SCREW LAG LEN NO. LAC MIN. PEN. R  RESISTANCE FO EQN I <sub>m</sub> : EQN II: EQN III <sub>m</sub> : EQN III <sub>m</sub> :	DIA. (IN.) = NGTH (IN.) = SGREWS = SGREWS = EQ'D (IN.) = DR EACH L 467 310 352 431 442 310	1/2 2.0 2 2.5 AG SCREW LBS LBS LBS LBS LBS	SINGLE EQN I <sub>m</sub> ; EQN II; EQN III <sub>m</sub> ; EQN III <sub>s</sub> ;	MAIN MEMBER T 2348 LBS 2719 LBS 418 LBS 1766 LBS 581 LBS 803 LBS 418 LBS/BO	BOLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.= HICKNESS (IN.) =  DOUBLE S  EQN I <sub>n</sub> ; EQN III <sub>s</sub> ;	1/2 0 0 5 1/8 SHEAR RES. / BOLT 2348 LBS 5438 LBS

WCLH BRAC BRKT NO:	BK56	GF	276	LBS			
BRKT SHEAR I	RESIST. USIN	G FOR BRG:	SPF #1			NDS VARI	ABLES
BRACKET	LOADED IN S	HEAR (V / H)	: V		$G_{Species}$	= 0.50	$\mathbf{F}_{\mathrm{em}} = 4337.2$
LOADING	PARA OR PE	RP TO GRAIN	PARA		Lag D <sub>r</sub>	= 0.265	$\mathbf{F}_{\text{em}\parallel} = 5600.0$
POS. CONNE	CTION TO AL	L MEMBERS	? Y		Bolt D	= 0.500	$\mathbf{F}_{es} = 87000$
BR	ACKET THIC	KNESS (IN.) =	0.250		$\mathbf{F}_{\mathrm{vb}}$	= 45000	$\mathbf{k}_{1}$ = 0.183
FASTE	NER TYPE (LA	AGS/BOLTS) =	LAGS		R <sub>e</sub>	= 0.0499	$\mathbf{k}_{1\parallel} = 0.223$
					R <sub>e I</sub>	= 0.0644	$\mathbf{k}_{2} = 0.501$
						= 7.500	$\mathbf{k}_{2\parallel} = 0.501$
					l <sub>m</sub>	= 1.875	$\mathbf{k}_{3} = 6.619$
						= 0.250	$\mathbf{k}_{3\parallel} = 5.745$
DDACKE	Γ SECURED <b>'</b>	WITH LAC S	CDEWS	DDACK	ET SECUDI	ED WITH THRU-E	POLTS
	W DIA. (IN.) =		CKEWS	BRACK		OLT DIA. (IN.) =	1/2
	ENGTH (IN.) =					O. BOLTS S.S.=	0
	G SCREWŚ =				N	O. BOLTS D.S.=	0
MIN. PEN.	REQ'D (IN.) =	2.0		MAIN M	EMBER THI	CKNESS (IN.) =	5 1/8
RESISTANCE	FOR EACH L	AG SCREW	SINGLI	E SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES. / BOLT
EQN $I_m$ :	696	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN $I_m$ :	3588 LBS
EQN I <sub>s</sub> :	1441	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN $I_s$ :	5438 LBS
EQN II:	358	LBS	EQN II:	675	LBS		
EQN III <sub>m</sub> :	386	LBS	EQN III <sub>m</sub> :	1989	LBS		
EQN III <sub>s</sub> :	323	LBS	EQN III <sub>s</sub> :	609	LBS	EQN III <sub>s</sub> :	1218 LBS
EQN IV:	276	LBS	EQN IV:	982	LBS	EQN IV:	1963 LBS
$RESIST_{DES} =$	276	LBS / LAG	$RESIST_{DES} =$	609	LBS / BOL	$T RESIST_{DES} =$	1218 LBS / BO
$RESIST_{\text{GRP}} =$	276	LBS	RESIST <sub>GRP</sub> =	0	LBS	$\mathbf{RESIST}_{\mathrm{GRP}} =$	0 LBS
						7	
S	SUMMARY BRKT #			276			

BRKT NO:	BK55	GF	276	LBS			
BRKT SHEAR	RESIST. USIN	G FOR BRG:	SPF #1			NDS VARI	ABLES
BRACKET	Γ LOADED IN S	HEAR (V / H)	V		$G_{Species}$	= 0.50	$\mathbf{F}_{\mathrm{em}} = 4337.2$
LOADING	FARA OR PER	RP TO GRAIN:	PARA		Lag D	= 0.265	$\mathbf{F}_{em\parallel} = 5600.0$
POS. CONN	ECTION TO ALI	L MEMBERS?	Y		Bolt D	= 0.500	$F_{es} = 87000$
В	RACKET THICE	KNESS (IN.) =	0.250		$\mathbf{F}_{yb}$	= 45000	$\mathbf{k}_{1} = 0.183$
FASTI	ENER TYPE (LA	AGS/BOLTS) =	LAGS		R <sub>e</sub>	= 0.0499	$\mathbf{k}_{1\parallel} = 0.223$
					$\mathbf{R}_{\mathrm{e}}$	= 0.0644	$\mathbf{k}_{2} = 0.501$
					$\mathbf{R}_{t}$	= 7.500	$\mathbf{k}_{2\parallel} = 0.501$
					$\mathbf{l}_{\mathrm{m}}$	= 1.875	$\mathbf{k}_3 = 6.619$
					$\mathbf{l}_{\mathrm{s}}$	= 0.250	$\mathbf{k}_{3\parallel} = 5.745$
RRACKI	ET SECURED V	WITH LAG SO	PFWS	RRACK	ET SECURI	ED WITH THRU-I	eol TS
	EW DIA. (IN.) =		CRE W.S	Dicter		OLT DIA. (IN.) =	1/2
	LENGTH (IN.) =					IO. BOLTS S.S.=	0
NO. L	AG SCREWS =	1			N	O. BOLTS D.S.=	0
MIN. PEN	I. REQ'D (IN.) =	2.0		MAIN M	EMBER TH	ICKNESS (IN.) =	5 1/8
RESISTANCE	FOR EACH L	AG SCREW	SINGLE	E SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES. / BOLT
$EQNI_{m}$ :	696	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN $I_m$ :	3588 LBS
EQN $I_s$ :	1441	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN $I_s$ :	5438 LBS
EQN II:	358	LBS	EQN II:	675	LBS		
EQN III <sub>m</sub> :	386	LBS	EQN III <sub>m</sub> :	1989	LBS		
EQN III <sub>s</sub> :	323	LBS	EQN III <sub>s</sub> :	609	LBS	EQN III <sub>s</sub> :	1218 LBS
EQN IV:	276	LBS	EQN IV:		LBS	EQN IV:	1963 LBS
$RESIST_{DES} =$	276	LBS / LAG	RESIST <sub>DES</sub> =	609	LBS / BOL	$T RESIST_{DES} =$	1218 LBS / BOL
$RESIST_{GRP} =$	276	LBS	$RESIST_{GRP} =$	0	LBS	$\mathbf{RESIST}_{GRP} =$	0 LBS
						7	
I	SUMMARY						

WCLH BRACE BRKT NO:	<u>KET</u> BK51	GF	7106	LBS			
BRKT SHEAR RI	ESIST. USING	FOR BRG:	LVL			NDS VARI	ABLES
BRACKET L	OADED IN SH	EAR (V / H):	V		$G_{Spe}$	cies = 0.50	$F_{em   } = 2824.2$
LOADING P	ARA OR PERI	TO GRAIN:	PERP		Lag	$D_{\rm r} = 0.371$	$\mathbf{F}_{em } = 5600.0$
POS. CONNEC	TION TO ALL	MEMBERS?	Y		Bolt	D = 0.625	$\mathbf{F}_{\mathrm{es}} = 87000$
BRA	CKET THICK	NESS (IN.) =	0.250		I	$F_{\rm vb} = 45000$	$\mathbf{k}_{1} = 0.282$
FASTEN	ER TYPE (LAC	GS/BOLTS) =	BOLTS		$\mathbf{R}_{\mathrm{e}}$	= 0.0325	$\mathbf{k}_{1\parallel} = 0.540$
					F	$R_{e\parallel} = 0.0644$	$\mathbf{k}_{2} = 0.494$
						$R_t = 20.500$	$\mathbf{k}_{2} = 0.457$
						$l_{\rm m} = 5.125$	$\mathbf{k}_{3} = 13.091$
						$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 9.109$
LAG SCREW LAG LEI NO. LAG	NGTH (IN.) = G SCREWS =	1/2 4.0 4 2.5	.KE WS			RED WITH THRU-I BOLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.=	5/8 0 4 5 1/8
RESISTANCE FO	REQ'D (IN.) = OR EACH LA		SINGLI	MAIN M		THICKNESS (IN.) = DOUBLE S	SHEAR RES. / BOLT
EQN I <sub>m</sub> :	1342 I	LBS	EQN I <sub>m</sub> :	2262	LBS	EQN I <sub>m</sub> :	2262 LBS
EQN I <sub>s</sub> :	2017 I	LBS	EQN I <sub>s</sub> :	3398	LBS	EQN I <sub>s</sub> :	6797 LBS
EQN II:	632 I	LBS	EQN II:	1064	LBS		
EQN III <sub>m</sub> :	779 I	LBS	EQN III <sub>m</sub> :	1312	LBS		
EQN III <sub>s</sub> :	527 I		EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	1776 LBS
EQN IV:	390 I	LBS	EQN IV:			EQN IV:	2212 LBS
$RESIST_{DES} =$	390 I	LBS / LAG	$RESIST_{DES} =$	888	LBS / BC	$OLT RESIST_{DES} =$	1776 LBS / BOL
$RESIST_{GRP} =$	0 I	LBS	$RESIST_{GRP} =$	0	LBS	$\mathbf{RESIST}_{GRP} =$	7106 LBS
						_	
	MMARY BRKT #			7106			

WCLH BRA		CT.	(20)	I DC				
BRKT NO:	BK47Z	GF	6206	LBS				
BRKT SHEAR	RESIST. USIN	G FOR BRG:	SPF #1			NDS VARI	ABLES	
BRACKE	LOADED IN S	HEAR (V / H)	: V		$G_{Spec}$	$_{cies} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 3665.6$	
LOADING	G PARA OR PEI	RP TO GRAIN	: PARA		Lag	$D_{\rm r} = 0.371$	$\mathbf{F}_{em } = 5600.0$	
POS. CONN	ECTION TO AL	L MEMBERS	? Y		Bolt	D = 0.500	$F_{es} = 87000$	
В	RACKET THICI	KNESS (IN.) =	0.250		F	$T_{yb} = 45000$	$\mathbf{k}_{1} \perp = 0.247$	
FASTI	ENER TYPE (LA	AGS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$	
					R	$R_{e\parallel} = 0.0644$	$\mathbf{k}_{2} \mid = 0.480$	
						$R_t = 13.500$	$\mathbf{k}_{2\parallel} = 0.480$	
						$l_{\rm m} = 3.375$	$\mathbf{k}_3 = 8.288$	
						$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 6.578$	
	T SECURED V		CREWS	BRACK		RED WITH THRU-E	BOLTS	
	EW DIA. (IN.) =					BOLT DIA. (IN.) =	1/2	
	LENGTH (IN.) =					NO. BOLTS S.S.=	0	
	AG SCREWS =					NO. BOLTS D.S.=	0	
MIN. PEN	I. REQ'D (IN.) =	2.5		MAIN M	IEMBER T	HICKNESS (IN.) =	5 1/8	
RESISTANCE	FOR EACH L	AG SCREW	SINGLI	E SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES. / BOL	Г
EQN I <sub>m</sub> :	1753	LBS	EQN I <sub>m</sub>	3588	LBS	EQN I <sub>m</sub> :	3588 LBS	
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN $I_s$ :	5438 LBS	
EQN II:	815	LBS	EQN II:	1098	LBS			
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub>	1908	LBS			
EQN III <sub>s</sub> :	517	LBS	EQN III <sub>s</sub> :	697	LBS	EQN III <sub>s</sub> :	1394 LBS	
EQN IV:	540	LBS	EQN IV:	982	LBS	EQN IV:	1963 LBS	
$RESIST_{DES} =$	517	LBS / LAG	RESIST <sub>DES</sub> =	697	LBS / BO	$OLT RESIST_{DES} =$	1394 LBS / B	OLT
$RESIST_{\text{GRP}} =$	6206	LBS	RESIST <sub>GRP</sub> =	0	LBS	$\mathbf{RESIST}_{\mathrm{GRP}} =$	0 LBS	
ŀ	SUMMARY							
	BRKT #	BK47Z	GOOD FOR	6206	LBS			

BRKT NO:	BK46SQ	GF	6206	LBS		
BRKT SHEAR RI	ESIST. USING	G FOR BRG:	SPF #1		NDS VARL	ABLES
BRACKET L	OADED IN S	HEAR (V / H):	. V	$\mathbf{G}_{\mathrm{Species}}$	s = 0.50	$\mathbf{F}_{\mathrm{em}} = 3665.6$
LOADING P	ARA OR PER	RP TO GRAIN:	PARA	Lag D	$_{\rm r} = 0.371$	$F_{em } = 5600.0$
POS. CONNEC	TION TO ALI	L MEMBERS?	Y	Bolt D	0 = 0.500	$\mathbf{F}_{\mathrm{es}} = 87000$
BRA	CKET THICK	(NESS (IN.) =	0.250	$\mathbf{F}_{\mathrm{yt}}$	b = 45000	$\mathbf{k}_{1} = 0.247$
FASTEN	ER TYPE (LA	GS/BOLTS) =	LAGS	$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$
					= 0.0644	$\mathbf{k}_{2} = 0.480$
				R	t = 13.500	$\mathbf{k}_{2} = 0.480$
				l,	n = 3.375	$\mathbf{k}_{3} + 8.288$
				-	s = 0.250	$\mathbf{k}_{3\parallel} = 6.578$
NO. LAC MIN. PEN. R	NGTH (IN.) = G SCREWS = REQ'D (IN.) =	12 2.5		N MAIN MEMBER TH	. ,	0 0 5 1/8
NO. LAC MIN. PEN. R RESISTANCE FO	G SCREWS = REQ'D (IN.) = OR EACH L	12 2.5 <b>AG SCREW</b>		MAIN MEMBER TH	IO. BOLTS D.S.= IICKNESS (IN.) = DOUBLE S	0 5 1/8 SHEAR RES. / BOLT
NO. LAC MIN. PEN. R RESISTANCE FO EQN I <sub>m</sub> :	G SCREWS = REQ'D (IN.) = OR EACH L 1753	12 2.5 AG SCREW LBS	EQN I <sub>m</sub> :	MAIN MEMBER TH SHEAR RES./BOLT 3588 LBS	OO. BOLTS D.S.=  IICKNESS (IN.) =  DOUBLE S  EQN I <sub>m</sub> :	0 5 1/8 SHEAR RES. / BOLT 3588 LBS
NO. LAC MIN. PEN. R RESISTANCE FO EQN I <sub>m</sub> : EQN I <sub>s</sub> :	G SCREWS = REQ'D (IN.) = OR EACH L 1753 2017	12 2.5 AG SCREW LBS LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> :	MAIN MEMBER TH SHEAR RES./BOLT 3588 LBS 2719 LBS	IO. BOLTS D.S.= IICKNESS (IN.) = DOUBLE S	0 5 1/8 SHEAR RES. / BOLT
NO. LAC MIN. PEN. F  RESISTANCE FO  EQN I <sub>m</sub> :  EQN I <sub>s</sub> :  EQN II:	G SCREWS = REQ'D (IN.) = OR EACH L. 1753 2017 815	12 2.5 AG SCREW LBS LBS LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II:	MAIN MEMBER TH SHEAR RES./BOLT 3588 LBS 2719 LBS 1098 LBS	OO. BOLTS D.S.=  IICKNESS (IN.) =  DOUBLE S  EQN I <sub>m</sub> :	0 5 1/8 SHEAR RES. / BOLT 3588 LBS
NO. LAC MIN. PEN. F  RESISTANCE FO  EQN I <sub>m</sub> :  EQN I <sub>s</sub> :  EQN II:  EQN III <sub>m</sub> :	G SCREWS = REQ'D (IN.) = OR EACH L.  1753 2017 815 933	12 2.5 AG SCREW LBS LBS LBS LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II: EQN III <sub>m</sub> :	MAIN MEMBER TH SHEAR RES./BOLT 3588 LBS 2719 LBS 1098 LBS 1908 LBS	IO. BOLTS D.S.= IICKNESS (IN.) =  DOUBLE S  EQN I <sub>m</sub> : EQN I <sub>s</sub> :	0 5 1/8 SHEAR RES. / BOLT 3588 LBS 5438 LBS
NO. LAC MIN. PEN. F  RESISTANCE FO  EQN I <sub>m</sub> :  EQN II:  EQN III <sub>m</sub> :  EQN III <sub>m</sub> :	G SCREWS = REQ'D (IN.) = OR EACH L. 1753 2017 815 933 517	12 2.5 AG SCREW LBS LBS LBS LBS LBS LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II: EQN III <sub>m</sub> : EQN III <sub>s</sub> :	MAIN MEMBER TH SHEAR RES./BOLT 3588 LBS 2719 LBS 1098 LBS 1908 LBS 697 LBS	IO. BOLTS D.S.= IICKNESS (IN.) =  DOUBLE S  EQN I <sub>m</sub> : EQN I <sub>s</sub> :	0 5 1/8 SHEAR RES. / BOLT 3588 LBS 5438 LBS
NO. LAC MIN. PEN. F  RESISTANCE FO  EQN I <sub>m</sub> :  EQN II:  EQN III <sub>m</sub> :  EQN III <sub>m</sub> :  EQN III <sub>s</sub> :  EQN III <sub>s</sub> :	G SCREWS = REQ'D (IN.) = OR EACH L.  1753 2017 815 933 517 540	12 2.5 AG SCREW LBS LBS LBS LBS LBS LBS LBS LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II: EQN III <sub>m</sub> : EQN III <sub>s</sub> : EQN III <sub>s</sub> :	MAIN MEMBER TH SHEAR RES./BOLT 3588 LBS 2719 LBS 1098 LBS 1908 LBS 697 LBS 982 LBS	IO. BOLTS D.S.= IICKNESS (IN.) =  DOUBLE S  EQN I <sub>m</sub> : EQN II <sub>s</sub> :  EQN IV:	0 5 1/8 SHEAR RES. / BOLT 3588 LBS 5438 LBS 1394 LBS 1963 LBS
NO. LAC MIN. PEN. F  RESISTANCE FO  EQN I <sub>m</sub> :  EQN II:  EQN III <sub>m</sub> :  EQN III <sub>s</sub> :  EQN III <sub>s</sub> :  EQN IV:  RESIST <sub>DES</sub> =	G SCREWS = REQ'D (IN.) = 1753 2017 815 933 517 540 517	12 2.5 AG SCREW LBS LBS LBS LBS LBS LBS LBS LBS	$\begin{split} & EQN \ I_m; \\ & EQN \ I_s; \\ & EQN \ III. \\ & EQN \ IIIm; \\ & EQN \ IIV; \\ & EQN \ IV: \\ \end{split}$	MAIN MEMBER TH 2 SHEAR RES. / BOLT 3588 LBS 2719 LBS 1098 LBS 1908 LBS 697 LBS 982 LBS 697 LBS / BOL	IO. BOLTS D.S.= IICKNESS (IN.) =  DOUBLE S  EQN I <sub>m</sub> : EQN III <sub>s</sub> : EQN IV: T RESIST <sub>DES</sub> =	0 5 1/8 SHEAR RES. / BOLT 3588 LBS 5438 LBS 1394 LBS 1963 LBS 1394 LBS / BOL
NO. LAC MIN. PEN. F  RESISTANCE FO  EQN I <sub>m</sub> :  EQN II:  EQN III <sub>m</sub> :  EQN III <sub>m</sub> :  EQN III <sub>s</sub> :  EQN III <sub>s</sub> :	G SCREWS = REQ'D (IN.) = OR EACH L.  1753 2017 815 933 517 540	12 2.5 AG SCREW LBS LBS LBS LBS LBS LBS LBS LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II: EQN III <sub>m</sub> : EQN III <sub>s</sub> : EQN III <sub>s</sub> :	MAIN MEMBER TH SHEAR RES./BOLT 3588 LBS 2719 LBS 1098 LBS 1908 LBS 697 LBS 982 LBS	IO. BOLTS D.S.= IICKNESS (IN.) =  DOUBLE S  EQN I <sub>m</sub> : EQN II <sub>s</sub> :  EQN IV:	0 5 1/8 SHEAR RES. / BOLT 3588 LBS 5438 LBS 1394 LBS 1963 LBS
NO. LAC MIN. PEN. F  RESISTANCE FO  EQN I <sub>m</sub> :  EQN II <sub>s</sub> :  EQN III <sub>s</sub> :  EQN III <sub>s</sub> :  EQN IV:  RESIST <sub>DES</sub> =  RESIST <sub>GRP</sub> =	G SCREWS = REQ'D (IN.) = 1753 2017 815 933 517 540 517	12 2.5 AG SCREW LBS LBS LBS LBS LBS LBS LBS LBS	$\begin{split} & EQN \ I_m; \\ & EQN \ I_s; \\ & EQN \ III. \\ & EQN \ IIIm; \\ & EQN \ IIV; \\ & EQN \ IV: \\ \end{split}$	MAIN MEMBER TH 2 SHEAR RES. / BOLT 3588 LBS 2719 LBS 1098 LBS 1908 LBS 697 LBS 982 LBS 697 LBS / BOL	IO. BOLTS D.S.= IICKNESS (IN.) =  DOUBLE S  EQN I <sub>m</sub> : EQN III <sub>s</sub> : EQN IV: T RESIST <sub>DES</sub> =	0 5 1/8 SHEAR RES. / BOLT 3588 LBS 5438 LBS 1394 LBS 1963 LBS 1394 LBS / BOL

BRKT NO:	BK46	GF	6206	LBS				
BRKT SHEAR I	RESIST. USIN	G FOR BRG:	SPF #1			NDS VARI	ABLES	
BRACKET	LOADED IN S	HEAR (V / H)	: V		G <sub>Species</sub> =	= 0.50	$\mathbf{F}_{\mathrm{em}} = 3665$	5.6
LOADING	PARA OR PEI	RP TO GRAIN	: PARA		$Lag D_r =$	= 0.371	$F_{em } = 5600$	0.0
POS. CONNE	CTION TO AL	L MEMBERS	? Y		Bolt D =	= 0.500	$\mathbf{F}_{\mathrm{es}} = 8700$	00
BR	ACKET THICE	KNESS (IN.) =	0.250		F <sub>yb</sub> =	= 45000	$\mathbf{k}_{1} = 0.24$	7
FASTE	NER TYPE (LA	AGS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$   =	= 0.0421	$\mathbf{k}_{1\parallel} = 0.36$	4
					R <sub>e I</sub> =	= 0.0644	$\mathbf{k}_{2} + 0.48$	0
					$\mathbf{R}_{t} =$	= 13.500	$\mathbf{k}_{2\parallel} = 0.48$	0
					l <sub>m</sub> =	= 3.375	$\mathbf{k}_{3} + 8.28$	8
					l <sub>s</sub> =	= 0.250	$\mathbf{k}_{3\parallel} = 6.57$	
	Γ SECURED V		CREWS	BRACK		D WITH THRU-I		
	W DIA. (IN.) =					OLT DIA. (IN.) =	1/2	
	ENGTH (IN.) =					D. BOLTS S.S.=	0	
	AG SCREWS = REQ'D (IN.) =			MAININ		D. BOLTS D.S.= CKNESS (IN.) =	0 5 1/8	
WIIIN. FEIN.	KEQD (IIV.) –	2.3		WAIN W	IEMBEK ITIK	ZKINESS (IIV.) –	3 1/6	
RESISTANCE	FOR EACH L	AG SCREW	SINGLE	SHEAR RES	S. / BOLT	DOUBLES	SHEAR RES. / B	OLT
EQN I <sub>m</sub> :	1753	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN $I_m$ :	3588 LBS	
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN $I_s$ :	5438 LBS	
EQN II:	815	LBS	EQN II:	1098	LBS			
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub> :	1908	LBS			
EQN III <sub>s</sub> :	517	LBS	EQN III <sub>s</sub> :	697	LBS	EQN III <sub>s</sub> :	1394 LBS	
EQN IV:	540	LBS	EQN IV:	982	LBS	EQN IV:	1963 LBS	
$RESIST_{DES} =$	517	LBS / LAG	$RESIST_{DES} =$	697	LBS / BOLT	$\mathbf{RESIST}_{DES} =$	1394 LBS	/ BOL
$RESIST_{GRP} =$	6206	LBS	$RESIST_{GRP} =$	0	LBS	$\mathbf{RESIST}_{\mathrm{GRP}} =$	0 LBS	;
						7		
s	UMMARY							

WCLH BRA		~-						
BRKT NO:	BK45R	GF	3103	LBS				
BRKT SHEAR	RESIST. USIN	G FOR BRG:	SPF #1			NDS VARI	ABLES	
BRACKE	Γ LOADED IN S	HEAR (V / H)	: V		$G_{Speci}$	$_{\rm es} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 3665.6$	
LOADIN	G PARA OR PE	RP TO GRAIN	: PARA		Lag I	$O_r = 0.371$	$\mathbf{F}_{\text{em} } = 5600.0$	
POS. CONN	ECTION TO AL	L MEMBERS	? Y		Bolt l	D = 0.500	$F_{es} = 87000$	
В	RACKET THIC	KNESS (IN.) =	0.250		F,	$_{\rm vb} = 45000$	$\mathbf{k}_{1} \perp = 0.247$	
FAST	ENER TYPE (LA	AGS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$	
					R	= 0.0644	$\mathbf{k}_{2} = 0.480$	
					F	$R_t = 13.500$	$\mathbf{k}_{2\parallel} = 0.480$	
					1	<sub>m</sub> = 3.375	$\mathbf{k}_3 = 8.288$	
					I	$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 6.578$	
	ET SECURED Y		CREWS	BRACK		RED WITH THRU-I		
	EW DIA. (IN.) =					BOLT DIA. (IN.) =	1/2	
	LENGTH (IN.) =					NO. BOLTS S.S.=	0	
	AG SCREWS =			MARIA		NO. BOLTS D.S.=	0	
MIN. PEI	I. REQ'D (IN.) =	2.5		MAIN M	IEMBEK II	HICKNESS (IN.) =	5 1/8	
RESISTANCE	FOR EACH L	AG SCREW	SINGLI	E SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES. / BOL	Т
EQN I <sub>m</sub> :	1753	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN I <sub>m</sub> :	3588 LBS	
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN I <sub>s</sub> :	5438 LBS	
EQN II:	815	LBS	EQN II:	1098	LBS			
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub> :	1908	LBS			
EQN III <sub>s</sub> :	517	LBS	EQN III <sub>s</sub> :	697	LBS	EQN III <sub>s</sub> :	1394 LBS	
EQN IV:	540	LBS	EQN IV:	982	LBS	EQN IV:	1963 LBS	
$RESIST_{DES} =$	517	LBS / LAG	RESIST <sub>DES</sub> =	697	LBS / BO	LT RESIST <sub>DES</sub> =	1394 LBS/1	BOLT
$RESIST_{GRP} =$	3103	LBS	$RESIST_{GRP} =$	0	LBS	$\mathbf{RESIST}_{\mathrm{GRP}} =$	0 LBS	
	SUMMARY							

WCLH BRACI BRKT NO:		GF	3103	LBS		
BRKT SHEAR RI	ESIST. USING	FOR BRG:	SPF #1		NDS VARI	ABLES
BRACKET L	OADED IN SH	EAR (V / H):	V	G	Species = 0.50	$\mathbf{F}_{\mathrm{em}} = 3665.6$
LOADING P	ARA OR PERP	TO GRAIN:	PARA	La	$\mathbf{ng} \ \mathbf{D}_{r} = \ 0.371$	$\mathbf{F}_{\text{em} } = 5600.0$
POS. CONNEC	TION TO ALL	MEMBERS?	Y	В	olt $D = 0.500$	$\mathbf{F}_{\rm es} = 87000$
BRA	ACKET THICKN	NESS (IN.) =	0.250		$\mathbf{F}_{vb} = 45000$	$\mathbf{k}_{1} = 0.247$
FASTEN	ER TYPE (LAG	S/BOLTS) =	LAGS		$R_{e \perp} = 0.0421$	$\mathbf{k}_{1\parallel} = 0.364$
					$R_{e\parallel} = 0.0644$	$\mathbf{k}_{2} = 0.480$
					$R_t = 13.500$	$\mathbf{k}_{2} = 0.480$
					$l_{\rm m} = 3.375$	$\mathbf{k}_{3}$ = 8.288
					$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 6.578$
LAG SCREW LAG LE	SECURED WI V DIA. (IN.) = NGTH (IN.) = G SCREWS =	1/2 4.0 6	REWS	BRACKET SEC	BOLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.=	1/2 0 0
MIN. PEN. F	REQ'D (IN.) =	2.5 G SCREW	SINGLE	MAIN MEMBER SHEAR RES. / BOL	THICKNESS (IN.) =	5 1/8 SHEAR RES. / BOLT
		O DOTEL !!				
EQN I:	1753 I	BS	EQN I:	3588 LBS	EUN I <sub>m</sub> :	3588 LBS
EQN I <sub>m</sub> : EQN I <sub>s</sub> :	1753 L 2017 I		EQN I <sub>m</sub> : EQN I <sub>s</sub> :	3588 LBS 2719 LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> :	3588 LBS 5438 LBS
	1753 L 2017 L 815 L	BS		3588 LBS 2719 LBS 1098 LBS		3588 LBS 5438 LBS
EQN I <sub>s</sub> :	2017 L	.BS .BS	EQN I <sub>s</sub> :	2719 LBS		
EQN I <sub>s</sub> : EQN II:	2017 L 815 L	.BS .BS .BS	EQN I <sub>s</sub> : EQN II:	2719 LBS 1098 LBS		
EQN I <sub>s</sub> : EQN II: EQN III <sub>m</sub> :	2017 L 815 L 933 L	BS BS BS BS	EQN II: EQN III <sub>m</sub> :	2719 LBS 1098 LBS 1908 LBS	EQN I <sub>s</sub> :	5438 LBS
EQN II; EQN III EQN III <sub>m</sub> : EQN III <sub>s</sub> :	2017 L 815 L 933 L 517 L 540 L	BS BS BS BS	EQN I <sub>s</sub> : EQN II: EQN III <sub>m</sub> : EQN III <sub>s</sub> :	2719 LBS 1098 LBS 1908 LBS 697 LBS 982 LBS	EQN III <sub>s</sub> :	5438 LBS
EQN II; EQN III; EQN III <sub>m</sub> ; EQN IV;	2017 L 815 L 933 L 517 L 540 L	BS BS BS BS BS BS/LAG	EQN I <sub>s</sub> : EQN II: EQN III <sub>m</sub> : EQN III <sub>s</sub> : EQN IV:	2719 LBS 1098 LBS 1908 LBS 697 LBS 982 LBS	EQN III <sub>s</sub> :  EQN IV:	5438 LBS 1394 LBS 1963 LBS
$EQN I_{s};$ $EQN III;$ $EQN III_{m};$ $EQN III_{s};$ $EQN IV;$ $RESIST_{DES} =$ $RESIST_{GRP} =$	2017 L 815 L 933 L 517 L 540 L	BS BS BS BS BS BS/LAG	$EQN I_{s}:$ $EQN II:$ $EQN III_{m}:$ $EQN III_{s}:$ $EQN IV:$ $RESIST_{DES} =$	2719 LBS 1098 LBS 1908 LBS 697 LBS 982 LBS	EQN III <sub>s</sub> :  EQN III <sub>s</sub> :  EQN IV:  BOLT RESIST <sub>DES</sub> =	5438 LBS  1394 LBS 1963 LBS  1394 LBS/BOL

WCLH BRAG BRKT NO:	CKET BK44	GF	5172	LBS				
BRKT SHEAR	RESIST, USIN	G FOR BRG:	SPF #1			NDS VARI	ABLES	
	Γ LOADED IN S				$G_{Specie}$	es = 0.50	$F_{em} = 3665.6$	
	G PARA OR PEI				Lag D	$o_r = 0.371$	$\mathbf{F}_{\text{eml}} = 5600.0$	
POS. CONN	ECTION TO AL	L MEMBERS?	Y		Bolt I	0 = 0.500	$\mathbf{F}_{es} = 87000$	
	RACKET THICI		0.250		$\mathbf{F}_{\mathbf{v}}$	$_{b} = 45000$	$\mathbf{k}_{1} = 0.247$	
FASTI	ENER TYPE (LA	AGS/BOLTS) =	LAGS		Re	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$	
					R <sub>e</sub>	= 0.0644	$\mathbf{k}_{2} \mid = 0.480$	
						$R_t = 13.500$	$\mathbf{k}_{2\parallel} = 0.480$	
					I,	<sub>m</sub> = 3.375	$\mathbf{k}_{3} = 8.288$	
					i	$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 6.578$	
	ET SECURED V EW DIA. (IN.) =		CREWS	BRACK		RED WITH THRU-I BOLT DIA. (IN.) =	3OLTS 1/2	
	LENGTH (IN.) =					NO. BOLTS S.S.=	0	
NO. I	AG SCREWS =	10			ľ	NO. BOLTS D.S.=	0	
MIN. PEN	N. REQ'D (IN.) =	2.5		MAIN M	EMBER TH	HICKNESS (IN.) =	5 1/8	
RESISTANCE	FOR EACH L	AG SCREW	SINGLE	SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES. / BOLT	
EQN I <sub>m</sub> :	1753	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN I <sub>m</sub> :	3588 LBS	
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN I <sub>s</sub> :	5438 LBS	
EQN II:	815	LBS	EQN II:	1098	LBS			
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub> :	1908	LBS			
EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :			EQN III <sub>s</sub> :	1394 LBS	
2	540	LBS	EQN IV:			EQN IV:	1963 LBS	
EQN IV:				CO=	I RC / ROI	LT RESIST <sub>DES</sub> =	1394 LBS / BC	)LT
$\frac{\text{EQN IV:}}{\text{RESIST}_{\text{DES}}} =$		LBS / LAG	$RESIST_{DES} =$					
EQN IV:			$\mathbf{RESIST}_{\mathrm{DES}} = $ $\mathbf{RESIST}_{\mathrm{GRP}} = $		LBS	$\mathbf{RESIST}_{GRP} =$	0 LBS	
$\frac{\text{EQN IV:}}{\text{RESIST}_{\text{DES}}} = $ $\text{RESIST}_{\text{GRP}} = $	517						0 LBS	

BRKT NO: B	8K43SQ	GF	3103	LBS				
BRKT SHEAR RE	SIST. USING	FOR BRG:	SPF #1			NDS VARL	ABLES	
BRACKET LO	DADED IN SH	EAR (V / H):	. V		$G_{Specie}$	$_{\rm es} = 0.50$	$\mathbf{F}_{\mathrm{em}\_\!\!\!\perp} =$	3665.6
LOADING PA	ARA OR PERI	TO GRAIN:	PARA		Lag D	$o_r = 0.371$	$\mathbf{F}_{\text{em}\parallel} =$	5600.0
POS. CONNECT	ΓΙΟΝ ΤΟ ALL	MEMBERS?	Y		Bolt I	0 = 0.500	$\mathbf{F}_{\mathrm{es}} =$	87000
BRA	CKET THICK	NESS (IN.) =	0.250		$\mathbf{F}_{\mathbf{y}}$	$_{b} = 45000$	$\mathbf{k}_{1}$ =	0.247
FASTEN	ER TYPE (LAC	GS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} =$	0.364
					R <sub>e</sub>	= 0.0644	$k_{2}   =$	0.480
					R	$R_t = 13.500$	k <sub>2   </sub> =	0.480
					l,	<sub>m</sub> = 3.375	k <sub>3</sub>   =	
						$l_s = 0.250$		6.578
LAG SCREW LAG LEN	IGTH (IN.) = SCREWS =	1/2 4.0 6 2.5	CREWS		E I N	EED WITH THRU-E BOLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.= HICKNESS (IN.) =	1/2 0 0 5 1/8	
RESISTANCE FO	OR EACH LA	G SCREW	SINGLE	E SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES	S. / BOLT
EQN I <sub>m</sub> :	1753 I	BS	EQN I <sub>m</sub> :	3588	LBS	EQN I <sub>m</sub> :	3588	LBS
EQN $I_s$ :	2017 I	BS	EQN I <sub>s</sub> :	2719	LBS	EQN $I_s$ :	5438	LBS
EQN II:	815 I	BS	EQN II:	1098	LBS			
EQN III <sub>m</sub> :	933 I	BS	EQN III <sub>m</sub> :	1908	LBS			
EQN III <sub>s</sub> :	517 I	BS	EQN III <sub>s</sub> :	697	LBS	EQN III <sub>s</sub> :	1394	LBS
EQN IV:	540 I	BS	EQN IV:	982	LBS	EQN IV:	1963	LBS
$RESIST_{DES} =$	517 I	LBS / LAG	$RESIST_{DES} =$	697	LBS / BOI	LT RESIST <sub>DES</sub> =	1394	LBS / BOLT
$\boldsymbol{RESIST_{GRP}} =$	3103 I	LBS	RESIST <sub>GRP</sub> =	0	LBS	$RESIST_{GRP} =$	0	LBS
	MMARY							
SU	BRKT #			3103				

WCLH BRACE BRKT NO:		GF	3103	LBS			
BRKT SHEAR RI	ESIST. USING	FOR BRG:	SPF #1			NDS VARI	ABLES
BRACKET L	OADED IN SH	EAR (V / H):	V		$G_{Species}$	= 0.50	$\mathbf{F}_{\mathrm{em}} = 3665.6$
LOADING P	ARA OR PERI	P TO GRAIN:	PARA		Lag D <sub>r</sub>	= 0.371	$\mathbf{F}_{\text{em} } = 5600.0$
POS. CONNEC	TION TO ALL	MEMBERS?	Y		Bolt D	= 0.500	$\mathbf{F}_{\mathrm{es}} = 87000$
BRA	CKET THICK	NESS (IN.) =	0.250		$\mathbf{F}_{vb}$	= 45000	$\mathbf{k}_{1} = 0.247$
FASTEN	ER TYPE (LAC	GS/BOLTS) =	LAGS		R <sub>e</sub>	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$
					R <sub>e l</sub>	= 0.0644	$\mathbf{k}_{2} = 0.480$
					$\mathbf{R}_{t}$	= 13.500	$\mathbf{k}_{2} = 0.480$
					I <sub>m</sub>	= 3.375	$\mathbf{k}_{3} + 8.288$
					l <sub>s</sub>	= 0.250	$\mathbf{k}_{3\parallel} = 6.578$
LAG SCREW LAG LEI NO. LAG	NGTH (IN.) = G SCREWS =	1/2 4.0 6 2.5			BC NO NO	DLT DIA. (IN.) =  O. BOLTS S.S.=  O. BOLTS D.S.=	1/2 0 0 5 1/8
RESISTANCE FO	REQ'D (IN.) = OR EACH LA		SINGLI	MAIN MES		CKNESS (IN.) =  DOUBLE S	SHEAR RES. / BOLT
EQN I <sub>m</sub> :	1753 I	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN I <sub>m</sub> :	3588 LBS
EQN I <sub>s</sub> :	2017 I	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN $I_s$ :	5438 LBS
EQN II:	815 I	LBS	EQN II:	1098	LBS		
EQN III <sub>m</sub> :	933 I	LBS	EQN III <sub>m</sub> :	1908	LBS		
EQN III <sub>s</sub> :	517 I		EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	1394 LBS
EQN IV:	540 I	LBS	EQN IV:	982	LBS	EQN IV:	1963 LBS
$RESIST_{DES} =$	517 1	LBS / LAG	$RESIST_{DES} =$	697	LBS / BOLT	$\Gamma$ RESIST <sub>DES</sub> =	1394 LBS / BOL
$RESIST_{GRP} =$	3103 1	LBS	$RESIST_{GRP} =$	0	LBS	$RESIST_{GRP} =$	0 LBS
	MMARY					7	
SU	BRKT#	BK43R	GOOD FOR	3103	LBS		

WCLH BRAC BRKT NO:		GF	3103	LBS				
BRKT SHEAR	RESIST. USIN	G FOR BRG:	SPF #1			NDS VARL	ABLES	
BRACKET	LOADED IN S	HEAR (V / H)	: V		$G_{Speci}$	$_{\rm res} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 3665.6$	
LOADING	PARA OR PER	RP TO GRAIN:	PARA		Lag I	$O_r = 0.371$	$\mathbf{F}_{em\parallel} = 5600.0$	
POS. CONNE	ECTION TO ALI	L MEMBERS?	Y		Bolt 1	D = 0.500	$F_{es} = 87000$	
BI	RACKET THICK	(NESS (IN.) =	0.250		F,	$_{yb} = 45000$	$\mathbf{k}_{1} \perp = 0.247$	
FASTE	ENER TYPE (LA	GS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1 \parallel} = 0.364$	
					R	e   = 0.0644	$\mathbf{k}_{2} \mid = 0.480$	
					I	$R_t = 13.500$	$\mathbf{k}_{2\parallel} = 0.480$	
					I	$_{\rm m} = 3.375$	$\mathbf{k}_{3} = 8.288$	
						$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 6.578$	
LAG SCRI	EW DIA. (IN.) =	1/2	CREWS	BRACK	]	RED WITH THRU-E BOLT DIA. (IN.) =	1/2	
	.ENGTH (IN.) = AG SCREWS =					NO. BOLTS S.S.=	0	
	. REQ'D (IN.) =			MAIN M		NO. BOLTS D.S.= HICKNESS (IN.) =	0 5 1/8	
RESISTANCE	FOR EACH L	AG SCREW	SINGLE	E SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES. / BOI	LT
EQN I <sub>m</sub> :	1753	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN I <sub>m</sub> :	3588 LBS	
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN $I_s$ :	5438 LBS	
EQN II:	815	LBS	EQN II:	1098	LBS			
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub> :	1908	LBS			
EQN III <sub>s</sub> :	517	LBS	EQN III <sub>s</sub> :	697	LBS	EQN III <sub>s</sub> :	1394 LBS	
EQN IV:	540	LBS	EQN IV:		LBS	EQN IV:	1963 LBS	
$RESIST_{DES} =$	517	LBS / LAG	$RESIST_{DES} =$	697	LBS / BO	$LT RESIST_{DES} =$	1394 LBS/	BOL
$RESIST_{GRP} =$	3103	LBS	$RESIST_{GRP} =$	0	LBS	$RESIST_{GRP} =$	0 LBS	
Г	SUMMARY							
1	BRKT #							

WCLH BRAG BRKT NO:	CKET BK42	GF	4655	LBS			
BRKT SHEAR	RESIST. USIN	G FOR BRG:	SPF #1			NDS VARI	ABLES
BRACKE	Γ LOADED IN S	HEAR (V / H)	. V		$G_{Specie}$	$_{\rm es} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 3665.6$
LOADING	G PARA OR PEI	RP TO GRAIN	PARA		Lag D	$O_r = 0.371$	$F_{em } = 5600.0$
POS. CONN	ECTION TO AL	L MEMBERS?	Y		Bolt I	0 = 0.500	$F_{\rm es}=87000$
В	RACKET THICI	KNESS (IN.) =	0.250		$\mathbf{F}_{\mathbf{y}}$	$_{b} = 45000$	$\mathbf{k}_{1} = 0.247$
FASTI	ENER TYPE (LA	AGS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$
					$\mathbf{R}_{\mathrm{e}}$	= 0.0644	$\mathbf{k}_{2} = 0.480$
					R	$R_t = 13.500$	$\mathbf{k}_{2\parallel} = 0.480$
					l,	$_{\rm m} = 3.375$	$\mathbf{k}_{3} = 8.288$
					I	$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 6.578$
LAG SCR LAG	ET SECURED V EW DIA. (IN.) = LENGTH (IN.) = .AG SCREWS =	1/2 4.0	CREWS	BRACK	E	ED WITH THRU-I BOLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.=	1/2 0 0
MIN. PEN	N. REQ'D (IN.) =	2.5	CINCLI	MAIN M	IEMBER TH	IICKNESS (IN.) =	5 1/8 SHEAR RES. / BOLT
EQN I <sub>m</sub> :	1753		EQN I <sub>m</sub> :			EQN I <sub>m</sub> :	3588 LBS
EQN I <sub>s</sub> :	2017		EQN I <sub>s</sub> :			EQN I <sub>s</sub> :	5438 LBS
EQN II:		LBS	EQN II:				3430 LD3
EQN III <sub>m</sub> :		LBS	EQN III <sub>m</sub> :				
EQN III <sub>s</sub> :		LBS	EQN IIIs:		LBS	EQN III <sub>s</sub> :	1394 LBS
EQN IV:		LBS	EQN IV:		LBS	EQN IV:	1963 LBS
RESIST <sub>DES</sub> =	517	LBS / LAG	RESIST <sub>DES</sub> =	697	LBS / BOI	LT RESIST <sub>DES</sub> =	1394 LBS / BOL
	4655	LBS	$RESIST_{GRP} =$	0	LBS	$\mathbf{RESIST}_{\mathrm{GRP}} =$	0 LBS
$\mathbf{RESIST}_{\mathrm{GRP}} =$							
$RESIST_{GRP} =$	SUMMARY						

BRKT NO:	<b>BK40</b>	GF	10861	LBS				
BRKT SHEAR R	ESIST. USING	G FOR BRG:	SPF #1			NDS VARL	ABLES	
BRACKET I	OADED IN SI	HEAR (V / H):	V		$G_{Specie}$	$_{\rm s} = 0.50$	$\mathbf{F}_{\mathrm{em}_{\perp}} =$	3665.6
LOADING I	PARA OR PER	P TO GRAIN:	PARA		Lag D	$_{\rm r} = 0.371$	$\mathbf{F}_{\text{em}\parallel} =$	5600.0
POS. CONNEC	TION TO ALI	MEMBERS?	Y		Bolt D	0 = 0.500	$\mathbf{F}_{\mathrm{es}} =$	87000
BRA	ACKET THICK	NESS (IN.) =	0.250		$\mathbf{F}_{\mathrm{yt}}$	, = 45000	$\mathbf{k}_{1}$ =	0.247
FASTEN	ER TYPE (LA	GS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} =$	0.364
					$\mathbf{R}_{\mathrm{e}}$	= 0.0644	$k_{2}   =$	0.480
					R	t = 13.500	$\mathbf{k}_{2\parallel} =$	0.480
					l,	= 3.375	k <sub>3</sub>   =	8.288
					l	s = 0.250		6.578
BRACKET	SECURED W	VITH LAG SO	CREWS	BRACK	ET SECUR	ED WITH THRU-E	OLTS	
	V DIA. (IN.) =	1/2				OLT DIA. (IN.) =	1/2	
	NGTH (IN.) =	4.0				NO. BOLTS S.S.=	0	
	G SCREWS =	21				IO. BOLTS D.S.=	0	
MIN. PEN. I	REQ'D (IN.) =	2.5		MAIN M	IEMBER TH	ICKNESS (IN.) =	5 1/8	
RESISTANCE F	OR EACH LA	AG SCREW	SINGLE	SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES	S. / BOLT
EQN I <sub>m</sub> :	1753	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN I <sub>m</sub> :	3588	LBS
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN I <sub>s</sub> :	5438	LBS
EQN II:	815	LBS	EQN II:	1098	LBS			
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub> :	1908	LBS			
EQN III <sub>s</sub> :	517	LBS	EQN III <sub>s</sub> :	697	LBS	EQN III <sub>s</sub> :	1394	LBS
EQN IV:	540	LBS	EQN IV:	982	LBS	EQN IV:	1963	LBS
$RESIST_{DES} =$	517	LBS / LAG	$RESIST_{DES} =$	697	LBS / BOI	T RESIST <sub>DES</sub> =	1394	LBS / BOLT
$RESIST_{GRP} =$	10861	LBS	$RESIST_{GRP} =$	0	LBS	$\mathbf{RESIST}_{\mathrm{GRP}} =$	0	LBS
_	JMMARY							
St	JIVIIVIAICI							

BRKT NO:	BK38	GF	3103	LBS				
BRKT SHEAR I	RESIST. USIN	G FOR BRG:	SPF #1			NDS VARI	ABLES	
BRACKET	LOADED IN S	HEAR (V / H)	: V		G <sub>Species</sub> =	0.50	$\mathbf{F}_{\mathrm{em}} = \mathbf{j}$	3665.6
LOADING	PARA OR PER	RP TO GRAIN	: PARA		Lag D <sub>r</sub> =	0.371	$\mathbf{F}_{\text{em}\parallel} = \mathbf{i}$	5600.0
POS. CONNE	CTION TO ALI	L MEMBERS	? Y		Bolt D =	= 0.500	$\mathbf{F}_{es} = \mathbf{i}$	87000
BR	ACKET THICK	(NESS (IN.) =	0.250		$\mathbf{F}_{vb} =$	45000	$\mathbf{k}_{1}$   =	0.247
FASTE	NER TYPE (LA	GS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	0.0421	$k_{1 } = 0$	0.364
					R <sub>e I</sub> =	0.0644	$\mathbf{k}_{2}   = 0$	0.480
						13.500	$\mathbf{k}_{2\parallel} = 0$	
					-	3.375	$\mathbf{k}_3 \mid = 1$	
						0.250	$\mathbf{k}_{3\parallel} = \mathbf{k}_{3\parallel}$	
LAG L NO. LA	W DIA. (IN.) = ENGTH (IN.) = AG SCREWS = REQ'D (IN.) =	4.0 6		MAIN M	NO NO	LT DIA. (IN.) =  D. BOLTS S.S.=  D. BOLTS D.S.=  CKNESS (IN.) =	1/2 0 0 5 1/8	
RESISTANCE	FOR EACH L	AG SCREW	SINGLE	SHEAR RES	./BOLT	DOUBLE S	SHEAR RES.	/ BOLT
EQN I <sub>m</sub> :	1753		EQN I <sub>m</sub> :	3588		EQN I <sub>m</sub> :	3588	
EQN I <sub>s</sub> :	2017		EQN I <sub>s</sub> :	2719		EQN I <sub>s</sub> :	5438	
EON II:	815		EQN II:	1098		- 5		
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub> :	1908	LBS			
EQN III <sub>s</sub> :	517	LBS	EQN III <sub>s</sub> :	697	LBS	EQN III <sub>s</sub> :	1394	LBS
EQN IV:	540	LBS	EQN IV:	982	LBS	EQN IV:	1963	LBS
RESIST <sub>DES</sub> =	517	LBS / LAG	$RESIST_{DES} =$	697	LBS / BOLT	$\mathbf{RESIST}_{\mathrm{DES}} =$	1394	LBS / BOL
TELESIES T DES	3103	LBS	$\mathbf{RESIST}_{\mathrm{GRP}} =$	0	LBS	$\mathbf{RESIST}_{\mathrm{GRP}} =$	0	LBS
$\mathbf{RESIST}_{\mathrm{GRP}} =$						7		
RESIST <sub>GRP</sub> =	SUMMARY							

WCLH BRA BRKT NO:		GF	2587	IRC				
BKKI NO:	DK3/G	GI	2307	LDS				
BRKT SHEAR	RESIST. USIN	G FOR BRG:	SPF #1			NDS VARI	ABLES	
BRACKE	Γ LOADED IN S	SHEAR (V / H)	: V		$G_{Speci}$	$_{\rm les} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 3665.6$	
LOADING	G PARA OR PE	RP TO GRAIN	PERP		Lag I	$O_r = 0.371$	$\mathbf{F}_{\rm em\parallel} = 5600.0$	
POS. CONN	ECTION TO AL	L MEMBERS	? Y		Bolt 1	D = 0.500	$\mathbf{F}_{\rm es} = 87000$	
В	RACKET THIC	KNESS (IN.) =	0.250		F,	$_{yb} = 45000$	$\mathbf{k}_{1} \perp = 0.247$	
FAST	ENER TYPE (LA	AGS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	_ = 0.0421	$\mathbf{k}_{1\parallel} = 0.364$	
					R	e   = 0.0644	$\mathbf{k}_{2} \perp = 0.480$	
					I	$R_t = 13.500$	$\mathbf{k}_{2\parallel} = 0.480$	
					I	$_{\rm m} = 3.375$	$\mathbf{k}_3 = 8.288$	
						$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 6.578$	
	ET SECURED		CREWS	BRACK		RED WITH THRU-I	BOLTS	
	EW DIA. (IN.) =					BOLT DIA. (IN.) =	1/2	
	LENGTH (IN.) =					NO. BOLTS S.S.=	0	
	AG SCREWS =			MAININ		NO. BOLTS D.S.=	0 5 1/8	
MIIN. PER	I. REQ'D (IN.) =	2.3		IVIAIN IV	IEMBEK II	HICKNESS (IN.) =	3 1/8	
RESISTANCE	FOR EACH L	AG SCREW	SINGLI	E SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES. / BOLT	Γ
EQN I <sub>m</sub> :	1147	LBS	EQN I <sub>m</sub> :	2348	LBS	EQN I <sub>m</sub> :	2348 LBS	
EQN $I_s$ :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN I <sub>s</sub> :	5438 LBS	
EQN II:	554	LBS	EQN II:	747	LBS			
EQN III <sub>m</sub> :	635	LBS	EQN III <sub>m</sub>	1300	LBS			
EQN III <sub>s</sub> :	431	LBS	EQN III <sub>s</sub> :	581	LBS	EQN III <sub>s</sub> :	1162 LBS	
EQN IV:	442	LBS	EQN IV:	803	LBS	EQN IV:	1605 LBS	
$RESIST_{DES} =$	431	LBS / LAG	RESIST <sub>DES</sub> =	581	LBS / BO	LT RESIST <sub>DES</sub> =	1162 LBS / B	OLT
$RESIST_{GRP} =$	2587	LBS	RESIST <sub>GRP</sub> =	0	LBS	$\mathbf{RESIST}_{\mathrm{GRP}} =$	0 LBS	
						_		
ĺ	SUMMARY							

WCLH BRAC BRKT NO:	KET BK37	GF	2587	LBS				
BRKT SHEAR I	RESIST. USIN	G FOR BRG:	SPF #1			NDS VARL	ABLES	
BRACKET	LOADED IN S	HEAR (V / H)	: V		$G_{Specie}$	$_{\rm s} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 3665.6$	
LOADING	PARA OR PEI	RP TO GRAIN	PERP		Lag D	$_{\rm r} = 0.371$	$\mathbf{F}_{em } = 5600.0$	
POS. CONNE	CTION TO AL	L MEMBERS	? Y		Bolt D	0 = 0.500	$\mathbf{F}_{es} = 87000$	
BR	ACKET THICI	(NESS (IN.) =	0.250		$\mathbf{F}_{\mathrm{yt}}$	, = 45000	$\mathbf{k}_{1} \perp = 0.247$	
FASTE	NER TYPE (LA	AGS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$	
					$\mathbf{R}_{\mathrm{e}}$	= 0.0644	$\mathbf{k}_{2} + 0.480$	
					R	t = 13.500	$\mathbf{k}_{2\parallel} = 0.480$	
					l <sub>n</sub>	= 3.375	$\mathbf{k}_{3} + 8.288$	
					l,	s = 0.250	$\mathbf{k}_{3\parallel} = 6.578$	
LAG SCRE LAG L	T SECURED V W DIA. (IN.) = ENGTH (IN.) = G SCREWS =	1/2 4.0	CREWS	BRACK	B N	ED WITH THRU-E OLT DIA. (IN.) = NO. BOLTS S.S.= IO. BOLTS D.S.=	1/2 0 0	
MIN. PEN. RESISTANCE	REQ'D (IN.) = $FOR EACH L$		SINGLI	MAIN M		ICKNESS (IN.) = <b>DOUBLE S</b>	5 1/8 SHEAR RES. / BOLT	Г
EQN I <sub>m</sub> :	1147	LBS	EQN I <sub>m</sub> :	2348	LBS	EQN I <sub>m</sub> :	2348 LBS	
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN $I_s$ :	5438 LBS	
EQN II:	554	LBS	EQN II:	747	LBS			
EQN III <sub>m</sub> :	635	LBS	EQN III <sub>m</sub> :	1300	LBS			
EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	201	LBS	EQN III <sub>s</sub> :	1162 LBS	
EQN IV:	442	LBS	EQN IV:		LBS	EQN IV:	1605 LBS	
$RESIST_{DES} =$	431	LBS / LAG	$RESIST_{DES} =$	581	LBS / BOL	T RESIST <sub>DES</sub> =	1162 LBS/B	OLT
$\mathbf{RESIST}_{\mathrm{GRP}} =$	2587	LBS	$RESIST_{GRP} =$	0	LBS	$\mathbf{RESIST}_{\mathrm{GRP}} =$	0 LBS	
s	UMMARY BRKT #							

WCLH BRACK BRKT NO: BK		GF	3553	LBS				
BRKT SHEAR RES	SIST. USING	FOR BRG:	GLB			NDS VARIA	ABLES	
BRACKET LO	ADED IN SE	HEAR (V / H):	V		$G_{Specis}$	$_{\rm es} = 0.50$	$\mathbf{F}_{\mathrm{em}_{\perp}} =$	2824.2
LOADING PA	RA OR PER	P TO GRAIN:	PERP		Lag D	$o_r = 0.371$	$\mathbf{F}_{\text{em}\parallel} =$	5600.0
POS. CONNECT	ION TO ALL	MEMBERS?	Y		Bolt I	0 = 0.625	$\mathbf{F}_{\mathrm{es}} =$	87000
BRAC	CKET THICK	NESS (IN.) =	0.250		F,	$_{b} = 45000$	$k_{1}   =$	0.365
FASTENE	R TYPE (LAC	GS/BOLTS) =	BOLTS		$\mathbf{R}_{\mathrm{e}}$	= 0.0325	$\mathbf{k}_{1\parallel} =$	0.708
					$\mathbf{R}_{\mathrm{e}}^{-}$	= 0.0644	$\mathbf{k}_{2}   =$	0.470
					F	$R_t = 27.000$	k <sub>2   </sub> =	0.449
					l,	$_{\rm m} = 6.750$	k <sub>3</sub>   =	13.091
					j	$l_s = 0.250$	k <sub>3   </sub> =	
BRACKET S  LAG SCREW		1/2 4.0	CREWS	BRACK	I	EED WITH THRU-E BOLT DIA. (IN.) = NO. BOLTS S.S.=	5/8 0	
	SCREWS =	0				NO. BOLTS D.S.=	2	
MIN. PEN. RE		2.5		MAIN M		HICKNESS (IN.) =	6 3/4	
RESISTANCE FO	R EACH LA	G SCREW	SINGLI	E SHEAR RES	./BOLT	DOUBLE S	SHEAR RES	. / BOLT
EQN I <sub>m</sub> :	1768	LBS	EQN I <sub>m</sub> :	2979	LBS	EQN I <sub>m</sub> :	2979	LBS
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	3398	LBS	EQN $I_s$ :	6797	LBS
EQN II:	818	LBS	EQN II:	1378	LBS			
EQN III <sub>m</sub> :	976	LBS	EQN III <sub>m</sub> :	1644	LBS			
EQN III <sub>s</sub> :	527		EQN III <sub>s</sub> :			EQN III <sub>s</sub> :	1776	
EQN IV:	390	LBS	EQN IV:	1106	LBS	EQN IV:	2212	LBS
$RESIST_{DES} =$	390	LBS / LAG	$RESIST_{DES} =$		LBS / BOI	LT RESIST <sub>DES</sub> =	1776	LBS / BOLT
$\mathbf{RESIST}_{\mathrm{GRP}} =$	0 1	LBS	RESIST <sub>GRP</sub> =	0	LBS	$\mathbf{RESIST}_{GRP} =$	3553	LBS
SUN	MARY			3553				
		K35C-RID			LBS			

WCLH BRACKET BRKT NO: BK35C-VA	LY G	F 3553	LBS		
BRKT SHEAR RESIST. US	SING FOR BRO	G: LVL		NDS VAR	RIABLES
BRACKET LOADED I	N SHEAR (V / I	H): V		$G_{\text{Species}} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 2824.2$
LOADING PARA OR	PERP TO GRAI	N: PERP		$Lag D_r = 0.371$	$\mathbf{F}_{\text{em} } = 5600.0$
POS. CONNECTION TO	ALL MEMBER	S? Y		Bolt $D = 0.625$	$\mathbf{F}_{\rm es} = 87000$
BRACKET TH	HICKNESS (IN.)	= 0.250		$\mathbf{F}_{yb} = 45000$	$\mathbf{k}_{1\  } = 0.288$
FASTENER TYPE	(LAGS/BOLTS)	= BOLTS		$R_{e   } = 0.0325$	$\mathbf{k}_{1\parallel} = 0.553$
				$R_{e\parallel} = 0.0644$	$\mathbf{k}_{2} \mid = 0.492$
				$R_t = 21.000$	$\mathbf{k}_{2\parallel} = 0.457$
				$l_{\rm m} = 5.250$	$\mathbf{k}_{3} \mid = 13.091$
				$l_s = 0.250$	$k_{3\parallel} = 9.109$
BRACKET SECURE LAG SCREW DIA. (IN LAG LENGTH (IN NO. LAG SCREW	$f(x) = \frac{1}{2}$ $f(x) = \frac{1}{2}$ $f(x) = \frac{1}{2}$ $f(x) = \frac{1}{2}$ $f(x) = \frac{1}{2}$ $f(x) = \frac{1}{2}$ $f(x) = \frac{1}{2}$	SCREWS		SECURED WITH THRU BOLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.=	5/8 0 2
MIN. PEN. REQ'D (IN		SINGL	MAIN MEM E SHEAR RES. / I	BER THICKNESS (IN.) =  BOLT DOUBLE	5 1/4 C SHEAR RES. / BOLT
EQN I <sub>m</sub> : 13	75 LBS	EQN I <sub>m</sub>	2317 LB	S EQN $I_m$ :	2317 LBS
EQN $I_s$ : 20	17 LBS	EQN I <sub>s</sub>	3398 LB	S EQN $I_s$ :	6797 LBS
•	46 LBS	EQN II		S	
	94 LBS	EQN III <sub>m</sub>			
	27 LBS	EQN III <sub>s</sub>			1776 LBS
	90 LBS	EQN IV			2212 LBS
	90 LBS/LAG			$S / BOLT RESIST_{DES} =$	1776 LBS / BOLT
$\mathbf{RESIST}_{\mathrm{GRP}} =$	0 LBS	RESIST <sub>GRP</sub> =	0 LE	$\mathbf{RESIST}_{\mathrm{GRP}} =$	3553 LBS
SUMMARY BRK		L' GOOD FOR	3553 LE	BS	

BRKT NO: BK		GF	3553	LBS				
BRKT SHEAR RES	IST. USING F	OR BRG:	GLB			NDS VARI	ABLES	
BRACKET LO.	ADED IN SHE	AR (V / H):	V		$G_{S}$	$p_{pecies} = 0.50$	$\mathbf{F}_{\mathrm{em}_{\perp}} =$	2824.2
LOADING PA	RA OR PERP	TO GRAIN:	PERP		La	$\mathbf{g}\mathbf{D}_{\mathrm{r}}=0.371$	$\mathbf{F}_{\text{em}\parallel} =$	5600.0
POS. CONNECTI	ON TO ALL M	IEMBERS?	Y		Bo	olt $D = 0.625$	$\mathbf{F}_{\mathrm{es}} =$	87000
BRAC	KET THICKNE	ESS (IN.) =	0.250			$\mathbf{F}_{yb} = 45000$	$\mathbf{k}_1 \mid$ =	0.282
FASTENEI	R TYPE (LAGS	S/BOLTS) =	BOLTS		I	$R_{e    } = 0.0325$	$\mathbf{k}_{1\parallel} =$	0.540
						$R_{e\parallel} = 0.0644$	k <sub>2</sub>   =	0.494
						$R_t = 20.500$	$\mathbf{k}_{2\parallel} =$	0.457
						$l_{\rm m} = 5.125$	k <sub>3</sub>   =	
						$l_s = 0.250$	k <sub>3   </sub> =	
LAG SCREW I		1/2	CREWS	BRACK	ET SEC	URED WITH THRU-I BOLT DIA. (IN.) =	5/8	
LAG SCREW I	. ,	4.0				NO. BOLTS S.S.=	0	
	SCREWS =	0				NO. BOLTS D.S.=	2	
MIN. PEN. RE		2.5		MAIN M	EMBER	THICKNESS (IN.) =	5 1/8	
RESISTANCE FO	R EACH LAG	SCREW	SINGLI	E SHEAR RES	. / BOLT	Γ DOUBLE S	SHEAR RES	. / BOLT
EQN I <sub>m</sub> :	1342 LB	BS	EQN I <sub>m</sub>	2262	LBS	EQN I <sub>m</sub> :	2262	LBS
EQN I <sub>s</sub> :	2017 LB	BS	EQN I <sub>s</sub> :	3398	LBS	EQN I <sub>s</sub> :	6797	LBS
EQN II:	632 LB	BS	EQN II:	1064	LBS			
EQN III <sub>m</sub> :	779 LB	BS	EQN III <sub>m</sub> :	1312	LBS			
EQN III <sub>s</sub> :	527 LB	BS	EQN III <sub>s</sub> :	888	LBS	EQN III <sub>s</sub> :	1776	LBS
EQN IV:	390 LB	BS	EQN IV:	1106	LBS	EQN IV:	2212	LBS
$RESIST_{DES} =$	390 LE	BS / LAG	RESIST <sub>DES</sub> =	888	LBS / E	SOLT RESIST <sub>DES</sub> =	1776	LBS / BOL
$RESIST_{GRP} =$	0 LE	38	$RESIST_{GRP} =$	0	LBS	$\mathbf{RESIST}_{GRP} =$	3553	LBS
SUM	IMARY							
	DDITTE #		GOOD FOR	3553	LBS			

BRKT NO: BK	35-VALY	GF 3553	LBS		
BRKT SHEAR RES	SIST. USING FOR BI	RG: LVL		NDS VA	RIABLES
BRACKET LO.	ADED IN SHEAR (V	/ H): V		$G_{\text{Species}} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 2824.2$
LOADING PA	RA OR PERP TO GRA	AIN: PERP		$Lag D_r = 0.371$	$\mathbf{F}_{\text{em}\parallel} = 5600.0$
POS. CONNECTI	ON TO ALL MEMBE	RS? Y		Bolt $D = 0.625$	$\mathbf{F}_{\mathrm{es}} = 87000$
BRAC	KET THICKNESS (IN	(.) = 0.250		$\mathbf{F}_{yb} = 45000$	$\mathbf{k}_{1} = 0.288$
FASTENEI	R TYPE (LAGS/BOLT	S) = BOLTS		$R_{e \perp} = 0.0325$	$\mathbf{k}_{1\parallel} = 0.553$
				$R_{e\parallel} = 0.0644$	$\mathbf{k}_{2} = 0.492$
				$R_t = 21.000$	$\mathbf{k}_{2\parallel} = 0.457$
				$l_{\rm m} = 5.250$	$\mathbf{k}_{3} \perp = 13.091$
				$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 9.109$
LAG SCREW I LAG LENG NO. LAG S MIN. PEN. RE	GTH (IN.) = 4.0 GCREWS = 0		MAIN MEN	BOLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.= MBER THICKNESS (IN.) =	= 0 = 2
RESISTANCE FO	R EACH LAG SCRE	W SINGLI	E SHEAR RES./I	BOLT DOUBL	E SHEAR RES. / BOLT
EQN I <sub>m</sub> :	1375 LBS	EQN I <sub>m</sub>	2317 LE	BS EQN I <sub>m</sub>	: 2317 LBS
EQN I <sub>s</sub> :	2017 LBS	EQN I <sub>s</sub>	3398 LE	S EQN I <sub>s</sub>	6797 LBS
EQN II:	646 LBS	EQN II	: 1088 LE	BS	
EQN III <sub>m</sub> :	794 LBS	EQN III <sub>m</sub>	1337 LE	BS	
EQN III <sub>s</sub> :	527 LBS	EQN III <sub>s</sub>	888 LE	BS EQN III <sub>s</sub>	1776 LBS
EQN IV:	390 LBS	EQN IV	1106 LE	BS EQN IV	: 2212 LBS
$RESIST_{DES} =$	390 LBS / LA	G RESIST <sub>DES</sub> =	888 LI	BS / BOLT RESIST <sub>DES</sub> =	1776 LBS / BOL
$\mathbf{RESIST}_{GRP} =$	0 LBS	RESIST <sub>GRP</sub> =	0 LI	$\mathbf{RESIST}_{GRP} =$	3553 LBS
SUM	IMARY				
		ALY GOOD FOR	3553 LI		

BRKT NO:		GF	4655	LBS				
BRKT SHEAR R	ESIST. USIN	G FOR BRG:	SPF #1			NDS VARIA	ABLES	
BRACKET I	OADED IN S	HEAR (V / H)	: V		$G_{Speci}$	$_{\text{ies}} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 3665$	5.6
LOADING F	ARA OR PEI	RP TO GRAIN	: PARA		Lag I	$O_r = 0.371$	$F_{em } = 5600$	0.0
POS. CONNEC	TION TO AL	L MEMBERS	? Y		Bolt	D = 0.500	$\mathbf{F}_{\mathrm{es}} = 8700$	00
BRA	CKET THIC	KNESS (IN.) =	0.250		F.	<sub>yb</sub> = 45000	$\mathbf{k}_{1} = 0.24$	7
FASTEN	ER TYPE (LA	AGS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.36$	4
					R	e   = 0.0644	$\mathbf{k}_{2} \mid = 0.48$	0
					I	$R_t = 13.500$	$\mathbf{k}_{2\parallel} = 0.48$	0
					I	$I_{\rm m} = 3.375$	$\mathbf{k}_{3} + 8.28$	8
						$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 6.57$	
LAG SCREV LAG LE	SECURED V / DIA. (IN.) = NGTH (IN.) = G SCREWS =	4.0	CREWS	BRACK	]	RED WITH THRU-E BOLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.=	1/2 0 0	
	REQ'D (IN.) =	2.5	enici i	MAIN M	IEMBER TI	HICKNESS (IN.) =	5 1/8 SHEAR RES. / B	OI T
EQN I <sub>m</sub> :	1753		EQN I <sub>m</sub> :			EQN I <sub>m</sub> :	3588 LBS	
EQN I <sub>s</sub> :	2017		EQN I <sub>s</sub> :			EQN I <sub>s</sub> :	5438 LBS	
EQN II:		LBS	EQN II:			EQIVI <sub>S</sub> .	3436 LBS	
EQN III <sub>m</sub> :		LBS	EQN III <sub>m</sub> :					
EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	1394 LBS	
EQN IV:		LBS	EQN IV:	77.1	LBS	EQN IV:	1963 LBS	
RESIST <sub>DES</sub> =	517	LBS / LAG	RESIST <sub>DES</sub> =		LBS / BO	LT RESIST <sub>DES</sub> =	1394 LBS	S / BOLT
$RESIST_{GRP} =$	4655	LBS	RESIST <sub>GRP</sub> =	0	LBS	$\mathbf{RESIST}_{\mathrm{GRP}} =$	0 LBS	3
SU	MMARY BRKT #	BK34SO	GOOD FOR	4655	LBS			

WCLH BRAC BRKT NO:	CKET BK34	GF	4655	LBS				
BRKT SHEAR	RESIST. USIN	G FOR BRG:	SPF #1			NDS VARI	ABLES	
BRACKET	LOADED IN S	SHEAR (V / H):	. V		$G_{Speci}$	$_{\rm les} = 0.50$	$F_{em} = 3665.6$	
LOADING	PARA OR PE	RP TO GRAIN:	PARA		Lag I	$O_r = 0.371$	$\mathbf{F}_{\text{em}\parallel} = 5600.0$	
POS. CONNI	ECTION TO AL	L MEMBERS?	Y		Bolt l	D = 0.500	$\mathbf{F}_{es} = 87000$	
В	RACKET THIC	KNESS (IN.) =	0.250		F,	$_{yb} = 45000$	$\mathbf{k}_{1} = 0.247$	
FASTI	ENER TYPE (LA	AGS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$	
					R.	e   = 0.0644	$\mathbf{k}_{2} \mid = 0.480$	
					F	$R_t = 13.500$	$\mathbf{k}_{2\parallel} = 0.480$	
					l	$l_{\rm m} = 3.375$	$\mathbf{k}_{3} = 8.288$	
					Ī	$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 6.578$	
LAG SCR	T SECURED EW DIA. (IN.) = LENGTH (IN.) =	1/2	CREWS	BRACK	I	RED WITH THRU-I BOLT DIA. (IN.) = NO. BOLTS S.S.=	1/2 0	
	AG SCREWS =					NO. BOLTS D.S.=	0	
MIN. PEN	. REQ'D (IN.) =	2.5		MAIN M	IEMBER TI	HICKNESS (IN.) =	5 1/8	
RESISTANCE	FOR EACH L	AG SCREW	SINGLI	E SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES. / BOLT	,
EQN I <sub>m</sub> :	1753	LBS	EQN I <sub>m</sub> :	3588	LBS	$EQNI_{m}$ :	3588 LBS	
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN I <sub>s</sub> :	5438 LBS	
EQN II:	815	LBS	EQN II:		LBS			
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub> :		LBS			
EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	1394 LBS	
EQN IV:		LBS	EQN IV:		LBS	EQN IV:	1963 LBS	
$RESIST_{DES} =$		LBS / LAG	RESIST <sub>DES</sub> =			$LT RESIST_{DES} =$	1394 LBS / BC	OLT
$RESIST_{GRP} =$	4655	LBS	RESIST <sub>GRP</sub> =	0	LBS	$RESIST_{GRP} =$	0 LBS	
ſ	SUMMARY							

WCLH BRACK BRKT NO: BK		GF	3089	LBS				
BRKT SHEAR RES	SIST. USING	G FOR BRG:	LVL			NDS VARL	ABLES	
BRACKET LC	ADED IN SI	HEAR (V / H):	V		$G_{Specie}$	s = 0.50	$\mathbf{F}_{\mathrm{em}} = 2824.2$	
LOADING PA	RA OR PER	P TO GRAIN:	PERP		Lag D	$p_r = 0.371$	$F_{em } = 5600.0$	
POS. CONNECT	ION TO ALL	MEMBERS?	Y		Bolt I	0 = 0.625	$\mathbf{F}_{es} = 87000$	
BRAC	CKET THICK	NESS (IN.) =	0.250		$\mathbf{F}_{\mathbf{y}}$	$_{\rm b} = 45000$	$\mathbf{k}_{1\  } = 0.202$	
FASTENE	R TYPE (LA	GS/BOLTS) =	BOLTS		$\mathbf{R}_{\mathrm{e}}$	= 0.0325	$\mathbf{k}_{1\parallel} = 0.376$	
					$\mathbf{R}_{\mathrm{e}}$	_ = 0.0644	$\mathbf{k}_{2} \mid = 0.557$	
					R	$t_{\rm r} = 14.000$	$\mathbf{k}_{2\parallel} = 0.481$	
					l,	<sub>m</sub> = 3.500	$\mathbf{k}_{3} + 13.091$	
					-	s = 0.250	$\mathbf{k}_{3\parallel} = 9.109$	
	DIA. (IN.) = GTH (IN.) = SCREWS =	1/2 4.0 0 2.5	CREWS		E I N	ED WITH THRU-E BOLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.= IICKNESS (IN.) =	5/8 0 2 3 1/2	
RESISTANCE FO	R EACH LA	AG SCREW	SINGLI	E SHEAR RES	S. / BOLT	DOUBLE S	SHEAR RES. / BOL	т
EQN I <sub>m</sub> :	917		EQN I <sub>m</sub>			EQN I <sub>m</sub> :	1544 LBS	
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	3398	LBS	EQN I <sub>s</sub> :	6797 LBS	
EQN II:	453	LBS	EQN II:	763	LBS	_		
EQN III <sub>m</sub> :	600	LBS	EQN III <sub>m</sub>	1011	LBS			
EQN III <sub>s</sub> :	527	LBS	EQN III <sub>s</sub> :	888	LBS	EQN III <sub>s</sub> :	1776 LBS	
EQN IV:	390	LBS	EQN IV:	1106	LBS	EQN IV:	2212 LBS	
RESIST <sub>DES</sub> =	390	LBS / LAG	RESIST <sub>DES</sub> =	763	LBS / BOI	T RESIST <sub>DES</sub> =	1544 LBS / B	OL
$\mathbf{RESIST}_{\mathrm{GRP}} =$	0	LBS	RESIST <sub>GRP</sub> =	0	LBS	$\mathbf{RESIST}_{\mathrm{GRP}} =$	3089 LBS	
CIII	MMARY							
SUP								

WCLH BRACKI BRKT NO: BK		GF	3553	LBS				
BRKT SHEAR RES	IST. USIN	G FOR BRG:	GLB			NDS VARL	ABLES	
BRACKET LO	ADED IN S	HEAR (V / H):	V		G <sub>Species</sub> =	0.50	$\mathbf{F}_{\mathrm{em}} = 2824.2$	
LOADING PA	RA OR PEI	RP TO GRAIN:	PERP		$Lag D_r =$	0.371	$\mathbf{F}_{\text{em}\parallel} = 5600.0$	
POS. CONNECT	ON TO AL	L MEMBERS?	Y		Bolt D =	0.625	$F_{es} = 87000$	
BRAC	KET THIC	KNESS (IN.) =	0.250		$\mathbf{F}_{\mathrm{yb}} =$	45000	$\mathbf{k}_{1} = 0.282$	
FASTENEI	R TYPE (LA	AGS/BOLTS) =	BOLTS		$\mathbf{R}_{\mathrm{e}}$   =	0.0325	$\mathbf{k}_{1\parallel} = 0.540$	
					$\mathbf{R}_{e\parallel} =$	0.0644	$\mathbf{k}_{2} = 0.494$	
					$\mathbf{R}_{\mathrm{t}} =$	20.500	$\mathbf{k}_{2\parallel} = 0.457$	
					$\mathbf{l}_{\mathrm{m}} =$	5.125	$\mathbf{k}_{3} = 13.091$	
					$\mathbf{l}_{\mathrm{s}} =$	0.250	$\mathbf{k}_{3\parallel} = 9.109$	
BRACKET S	ECURED V	WITH LAG SO	CREWS	BRACK	ET SECUREI	) WITH THRU-E	BOLTS	
LAG SCREW I	OIA. (IN.) =	1/2			BO	LT DIA. (IN.) =	5/8	
LAG LENG	6TH (IN.) =	4.0			NO	. BOLTS S.S.=	0	
NO. LAG						. BOLTS D.S.=	2	
MIN. PEN. RE	Q'D (IN.) =	2.5		MAIN M	IEMBER THIC	KNESS (IN.) =	5 1/8	
RESISTANCE FO	R EACH L	AG SCREW	SINGLI	E SHEAR RES	S. / BOLT	DOUBLE S	SHEAR RES. / BOLT	Γ
EQN $I_m$ :	1342	LBS	EQN I <sub>m</sub> :	2262	LBS	EQN $I_m$ :	2262 LBS	
EQN $I_s$ :	2017	LBS	EQN I <sub>s</sub> :	3398	LBS	EQN I <sub>s</sub> :	6797 LBS	
EQN II:	632	LBS	EQN II:	1064	LBS			
EQN III <sub>m</sub> :	779	LBS	EQN III <sub>m</sub> :	1312	LBS			
EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	000	LBS	EQN III <sub>s</sub> :	1776 LBS	
EQN IV:	390	LBS	EQN IV:	1106	LBS	EQN IV:	2212 LBS	
$RESIST_{DES} =$	390	LBS / LAG	$RESIST_{DES} =$		LBS / BOLT	$\mathbf{RESIST}_{\mathrm{DES}} =$	1776 LBS / B	OL
$\mathbf{RESIST}_{GRP} =$	0	LBS	$RESIST_{GRP} =$	0	LBS	$RESIST_{GRP} =$	3553 LBS	
SUM	IMARY					]		
	RRKT #	RK30-RIDG	GOOD FOR	3553	LBS	I		

BRKT NO: BK30	C-VALY	<b>GF</b> 3089	LBS		
BRKT SHEAR RESI	ST. USING FOR	BRG: LVL		NDS VARI	IABLES
BRACKET LOA	DED IN SHEAR (	V / H): V	(	$G_{\text{Species}} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 2824.2$
LOADING PAR	A OR PERP TO G	RAIN: PERP	I	$\mathbf{Lag} \ \mathbf{D_r} = \ 0.371$	$\mathbf{F}_{\text{em}\parallel} = 5600.0$
POS. CONNECTIO	ON TO ALL MEME	BERS? Y	I	Bolt D = 0.625	$F_{es}=87000$
BRACK	ET THICKNESS (	IN.) = 0.250		$\mathbf{F}_{yb} = 45000$	$\mathbf{k}_{1} \perp = 0.202$
FASTENER	TYPE (LAGS/BOI	LTS) = BOLTS		$R_{e} = 0.0325$	$\mathbf{k}_{1\parallel} = 0.376$
				$R_{e\parallel} = 0.0644$	$\mathbf{k}_{2} = 0.557$
				$R_t = 14.000$	$\mathbf{k}_{2\parallel} = 0.481$
				$l_{\rm m} = 3.500$	$\mathbf{k}_{3}$ = 13.091
				$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 9.109$
BRACKET SE LAG SCREW D LAG LENG NO. LAG S	TH(IN.) = 4.0	2	BRACKET SE	BOLT DIA. (IN.) =  NO. BOLTS S.S.=  NO. BOLTS D.S.=	5/8 0 2
MIN. PEN. REQ	Q'D(IN.) = 2.5	5		ER THICKNESS (IN.) =	3 1/2
RESISTANCE FOR EQN I <sub>m</sub> :	917 LBS	EQN I	E SHEAR RES. / BO : 1544 LBS	EQN I <sub>m</sub> :	SHEAR RES. / BOLT 1544 LBS
EQN I <sub>s</sub> :	2017 LBS	EQN I <sub>s</sub>		EQN I <sub>s</sub> :	6797 LBS
EQN II:	453 LBS	EQN II		EQIVI <sub>S</sub> .	0/9/ LBS
EQN III <sub>m</sub> :	600 LBS	EQN III <sub>m</sub>			
EQN III <sub>s</sub> :	527 LBS	EQN III <sub>s</sub>		EQN III <sub>s</sub> :	1776 LBS
EQN IV:	390 LBS	EQN IV		EQN IV:	2212 LBS
	390 LBS/I			BOLT RESIST <sub>DES</sub> =	1544 LBS / BOL
		RESIST <sub>GRP</sub> =		$\mathbf{RESIST}_{GRP} =$	3089 LBS
$\frac{\text{RESIST}_{\text{DES}}}{\text{RESIST}_{\text{GRP}}} =$	0 LBS	KESIS I GRP			

BRKT NO: BK	30C-RIDG	GF	3553	LBS				
BRKT SHEAR RES	SIST. USING	FOR BRG:	GLB			NDS VARI	ABLES	
BRACKET LO	ADED IN SHE	EAR (V / H):	V		$G_{Sp}$	ecies = 0.50	$\mathbf{F}_{\mathrm{em}} = 2824.2$	
LOADING PA	RA OR PERP	TO GRAIN:	PERP		Lag	$\mathbf{D}_{\mathrm{r}} = 0.371$	$\mathbf{F}_{em\parallel} = 5600.0$	
POS. CONNECT	ION TO ALL N	MEMBERS?	Y		Bol	t D = 0.625	$F_{es} = 87000$	
BRAC	CKET THICKN	ESS (IN.) =	0.250			$F_{yb} = 45000$	$\mathbf{k}_{1} = 0.365$	
FASTENE	R TYPE (LAG	S/BOLTS) =	BOLTS		R	$_{\rm e}$   = 0.0325	$\mathbf{k}_{1\parallel} = 0.708$	
						$R_{e\parallel} = 0.0644$	$\mathbf{k}_{2} = 0.470$	
						$R_t = 27.000$	$\mathbf{k}_{2\parallel} = 0.449$	
						$l_{\rm m} = 6.750$	$\mathbf{k}_{3} = 13.091$	
						$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 9.109$	
	GTH (IN.) = SCREWS =	1/2 4.0 0 2.5		MAIN M	EMBER	BOLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.= THICKNESS (IN.) =	5/8 0 2 6 3/4	
RESISTANCE FO	R EACH LAC	SCREW	SINGLI	E SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES. / BOL	Т
EQN I <sub>m</sub> :	1768 LI		EQN I <sub>m</sub> :			EQN I <sub>m</sub> :	2979 LBS	
EQN I <sub>s</sub> :	2017 LI	3S	EQN I <sub>s</sub> :	3398	LBS	EQN I <sub>s</sub> :	6797 LBS	
EQN II:	818 LI	3S	EQN II:	1378	LBS			
EQN III <sub>m</sub> :	976 LI	3S	EQN III <sub>m</sub> :	1644	LBS			
EQN III <sub>s</sub> :	527 LI	3S	EQN III <sub>s</sub> :	888	LBS	EQN III <sub>s</sub> :	1776 LBS	
EQN IV:	390 LI	3S	EQN IV:	1106	LBS	EQN IV:	2212 LBS	
$RESIST_{DES} =$	390 L	BS / LAG	RESIST <sub>DES</sub> =	888	LBS / B	OLT RESIST <sub>DES</sub> =	1776 LBS / I	BOL
$\mathbf{RESIST}_{GRP} =$	0 L	BS	RESIST <sub>GRP</sub> =	0	LBS	$\mathbf{RESIST}_{GRP} =$	3553 LBS	
SUN	MMARY							

WCLH BRAC BRKT NO:	BK29	GF	4655	LBS			
BRKT SHEAR	RESIST. USIN	G FOR BRG:	SPF #1			NDS VARL	ABLES
BRACKET	LOADED IN S	HEAR (V / H)	V		$G_{\text{Species}}$	$_{\rm s} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 3665.6$
LOADING	PARA OR PEI	RP TO GRAIN:	PARA		Lag D	$_{\rm r} = 0.371$	$\mathbf{F}_{\text{em}\parallel} = 5600.0$
POS. CONNE	CTION TO AL	L MEMBERS?	Y		Bolt D	0 = 0.500	$\mathbf{F}_{es} = 87000$
BI	ACKET THICK	KNESS (IN.) =	0.250		$\mathbf{F}_{\mathrm{yt}}$	,= 45000	$\mathbf{k}_{1} \perp = 0.247$
FASTE	NER TYPE (LA	AGS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1 \parallel} = 0.364$
					$\mathbf{R}_{\mathrm{e}}$	= 0.0644	$\mathbf{k}_{2} \mid = 0.480$
					R	t = 13.500	$\mathbf{k}_{2\parallel} = 0.480$
					$\mathbf{l}_{n}$	$_{n} = 3.375$	$\mathbf{k}_3 = 8.288$
					l,	s = 0.250	$\mathbf{k}_{3\parallel} = 6.578$
BRACKE	T SECURED V	WITH LAG SO	CREWS	RRACK	ET SECUR	ED WITH THRU-F	ROLTS
	W DIA. (IN.) =		0112110	Divien		OLT DIA. (IN.) =	1/2
LAG L	ENGTH (IN.) =	4.0			N	NO. BOLTS S.S.=	0
NO. L	AG SCREWS =	9			N	IO. BOLTS D.S.=	0
MIN. PEN	REQ'D (IN.) =	2.5		MAIN M	EMBER TH	ICKNESS (IN.) =	5 1/8
RESISTANCE	FOR EACH L	AG SCREW	SINGLI	E SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES. / BOLT
EQN I <sub>m</sub> :	1753	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN $I_m$ :	3588 LBS
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN I <sub>s</sub> :	5438 LBS
EQN II:	815	LBS	EQN II:		LBS		
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub> :	1908	LBS		
EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	1394 LBS
EQN IV:		LBS	EQN IV:		LBS	EQN IV:	1963 LBS
$RESIST_{DES} =$		LBS / LAG	$RESIST_{DES} =$			T RESIST <sub>DES</sub> =	1394 LBS / BOL
$RESIST_{GRP} =$	4655	LBS	$RESIST_{GRP} =$	0	LBS	$\mathbf{RESIST}_{GRP} =$	0 LBS
!	SUMMARY BRKT #						

WCLH BRAG BRKT NO:		GF	5172	LBS			
				LDS			
BRKT SHEAR					~	NDS VARI	
BRACKE	Γ LOADED IN S	SHEAR (V / H)	: <b>V</b>			es = 0.50	$\mathbf{F}_{\mathrm{em}} = 3665.6$
LOADING	G PARA OR PEI	RP TO GRAIN	PARA			$o_{\rm r} = 0.371$	$\mathbf{F}_{\text{em}\parallel} = 5600.0$
POS. CONN	ECTION TO AL	L MEMBERS	? Y		Bolt I	0 = 0.500	$\mathbf{F}_{\mathrm{es}} = 87000$
В	RACKET THIC	KNESS (IN.) =	0.250		$\mathbf{F}_{\mathbf{y}}$	$_{b} = 45000$	$\mathbf{k}_{1} \perp = 0.247$
FASTI	ENER TYPE (LA	AGS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	_ = 0.0421	$\mathbf{k}_{1 \parallel} = 0.364$
					$\mathbf{R}_{\mathrm{e}}$	= 0.0644	$\mathbf{k}_{2} \perp = 0.480$
					R	$R_t = 13.500$	$\mathbf{k}_{2\parallel} = 0.480$
					l,	$_{\rm m} = 3.375$	$\mathbf{k}_{3} = 8.288$
					i	$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 6.578$
							- 11
BRACKI	ET SECURED V	WITH LAG S	CREWS	BRACK	ET SECUR	ED WITH THRU-I	BOLTS
	EW DIA. (IN.) =					BOLT DIA. (IN.) =	1/2
	LENGTH (IN.) =					NO. BOLTS S.S.=	0
	AG SCREWS =			361873		NO. BOLTS D.S.=	0
MIN. PEN	I. REQ'D (IN.) =	2.5		MAIN M	EMBER TE	HICKNESS (IN.) =	5 1/8
RESISTANCE	FOR EACH L	AG SCREW	SINGLI	E SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES. / BOLT
EQN I <sub>m</sub> :	1753	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN I <sub>m</sub> :	3588 LBS
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN I <sub>s</sub> :	5438 LBS
EQN II:	815	LBS	EQN II:	1098	LBS		
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub> :	1908	LBS		
EQN III <sub>s</sub> :	517	LBS	EQN III <sub>s</sub> :	697	LBS	EQN III <sub>s</sub> :	1394 LBS
EQN IV:	540	LBS	EQN IV:	982	LBS	EQN IV:	1963 LBS
$RESIST_{DES} =$	517	LBS / LAG	$RESIST_{DES} =$	697	LBS / BOI	LT RESIST <sub>DES</sub> =	1394 LBS / BOI
DECICE	5172	LBS	RESIST <sub>GRP</sub> =	0	LBS	$\mathbf{RESIST}_{GRP} =$	0 LBS
$\mathbf{RESIST}_{\mathrm{GRP}} =$							
	SUMMARY						

WCLH BRAG BRKT NO:	CKET BK28L	GF	5172	LBS			
BRKT SHEAR	RESIST. USIN	G FOR BRG:	SPF #1			NDS VARI	ABLES
BRACKET	LOADED IN S	SHEAR (V / H)	. V		$G_{Spec}$	$_{\text{ies}} = 0.50$	$\mathbf{F}_{\rm em} + 3665.6$
	PARA OR PE				Lag I	$D_{\rm r} = 0.371$	$\mathbf{F}_{\text{em}} = 5600.0$
POS. CONN	ECTION TO AL	L MEMBERS	Y		Bolt	D = 0.500	$\mathbf{F}_{\rm es} = 87000$
	RACKET THIC				F	<sub>vb</sub> = 45000	$\mathbf{k}_{1} + 0.247$
FASTI	ENER TYPE (LA	AGS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1} = 0.364$
					R	e   = 0.0644	$\mathbf{k}_{2} = 0.480$
						$R_t = 13.500$	$\mathbf{k}_{2\parallel} = 0.480$
						$I_{\rm m} = 3.375$	$\mathbf{k}_{3} \perp = 8.288$
						$l_s = 0.250$	$k_{3\parallel} = 6.578$
	T SECURED		CREWS	BRACK		RED WITH THRU-I	
	EW DIA. (IN.) = LENGTH (IN.) =					BOLT DIA. (IN.) = NO. BOLTS S.S.=	1/2 0
	AG SCREWS =					NO. BOLTS D.S.=	0
	I. REQ'D (IN.) =			MAIN M		HICKNESS (IN.) =	5 1/8
RESISTANCE	FOR EACH L	AG SCREW	SINGLE	E SHEAR RES	S. / BOLT	DOUBLE S	SHEAR RES. / BOLT
EQN I <sub>m</sub> :	1753	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN I <sub>m</sub> :	3588 LBS
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN I <sub>s</sub> :	5438 LBS
EQN II:	815	LBS	EQN II:	1098	LBS		
EQN $III_m$ :	933	LBS	EQN III <sub>m</sub> :	1908	LBS		
EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	1394 LBS
EQN IV:		LBS	EQN IV:		LBS	EQN IV:	1963 LBS
$RESIST_{DES} =$	517	LBS / LAG	$RESIST_{DES} =$		LBS / BO	LT RESIST <sub>DES</sub> =	1394 LBS / BOL
	5153	LBS	$RESIST_{GRP} =$	0	LBS	$\mathbf{RESIST}_{\mathrm{GRP}} =$	0 LBS
$\mathbf{RESIST}_{\mathrm{GRP}} =$	5172	225					
$RESIST_{GRP} =$	SUMMARY					$\neg$	

WCLH BRAC BRKT NO:	BK24	GF	2069	LBS			
BRKT SHEAR F	ESIST. USING	G FOR BRG:	SPF #1			NDS VARL	ABLES
BRACKET	LOADED IN SI	HEAR (V / H):	V		$G_{Species}$	= 0.50	$\mathbf{F}_{\mathrm{em}} = 3665.6$
LOADING	PARA OR PER	P TO GRAIN:	PARA		Lag D	$_{r} = 0.371$	$\mathbf{F}_{em } = 5600.0$
POS. CONNE	CTION TO ALL	MEMBERS?	Y		Bolt D	0 = 0.500	$\mathbf{F}_{\mathrm{es}} = 87000$
BR	ACKET THICK	NESS (IN.) =	0.250		$\mathbf{F}_{yt}$	, = 45000	$\mathbf{k}_{1} = 0.247$
FASTE	NER TYPE (LA	GS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$
					Re	= 0.0644	$\mathbf{k}_{2} + 0.480$
					R	t = 13.500	$\mathbf{k}_{2} = 0.480$
					I,	= 3.375	$\mathbf{k}_{3}$ = 8.288
					l,	s = 0.250	$k_{3\parallel} = 6.578$
LAG SCRE LAG LI	SECURED W W DIA. (IN.) = ENGTH (IN.) = .G SCREWS =	1/2 4.0 4	CREWS	BRACK	B N	ED WITH THRU-E OLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.=	1/2 0 0
MIN. PEN.	REQ'D (IN.) =	2.5			EMBER TH	ICKNESS (IN.) =	5 1/8
RESISTANCE				E SHEAR RES			SHEAR RES. / BOLT
EQN I <sub>m</sub> :	1753		EQN I <sub>m</sub> :			EQN I <sub>m</sub> :	3588 LBS
EQN I <sub>s</sub> :	2017		EQN I <sub>s</sub> :	_, _,		EQN I <sub>s</sub> :	5438 LBS
EQN II: EQN III <sub>m</sub> :	815		EQN II: EQN III <sub>m</sub> :				
EQN III <sub>s</sub> :	933		EQN III <sub>m</sub> .			EQN III <sub>s</sub> :	1204 I.DC
EQN III <sub>s</sub> : EQN IV:	517 540		EQN III <sub>s</sub> : EQN IV:		LBS LBS	EQN III <sub>s</sub> : EQN IV:	1394 LBS 1963 LBS
RESIST <sub>DES</sub> =		LBS / LAG	RESIST <sub>DES</sub> =			T RESIST <sub>DES</sub> =	1394 LBS / BOL
$\mathbf{RESIST}_{\mathrm{GRP}} =$	2069		RESIST <sub>GRP</sub> =		LBS	$\mathbf{RESIST}_{\mathrm{GRP}} =$	0 LBS
S	UMMARY BRKT #	BK24	GOOD FOR	2069	LBS		

WCLH BRAC BRKT NO:		GF	50625	LBS				
BRKT SHEAR	RESIST. USIN	G FOR BRG:	GLB			NDS VARI	ABLES	
BRACKET	LOADED IN S	HEAR (V / H):	· V		$G_{Spe}$	$_{\text{ecies}} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 3665.6$	
LOADING	PARA OR PEI	RP TO GRAIN:	PARA		Lag	$D_r = 0.371$	$\mathbf{F}_{em\parallel} = 5600.0$	
POS. CONNE	CTION TO AL	L MEMBERS?	Y		Bol	t D = 0.500	$\mathbf{F}_{es} = 87000$	
BF	ACKET THICE	(NESS (IN.) =	0.250		]	$F_{yb} = 45000$	$\mathbf{k}_{1\  } = 0.161$	
FASTE	NER TYPE (LA	GS/BOLTS) =	LAGS		R	e   = 0.0421	$\mathbf{k}_{1\parallel} = 0.223$	
					1	$R_{e\parallel} = 0.0644$	$\mathbf{k}_{2} = 0.559$	
						$R_t = 7.500$	$\mathbf{k}_{2\parallel} = 0.559$	
						$l_{\rm m} = 1.875$	$\mathbf{k}_{3}$ = 8.288	
						$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 6.578$	
LAG SCRE LAG L	T SECURED V W DIA. (IN.) = ENGTH (IN.) = AG SCREWS =	1/2 2.5	CREWS	BRACK	ET SECU	BOLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.=	1/2 0 0	
MIN. PEN	REQ'D (IN.) =		SINGLI	MAIN M E SHEAR RES		THICKNESS (IN.) =  DOUBLE S	5 1/8 SHEAR RES. / BOL	Т
EQN I <sub>m</sub> :	974	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN I <sub>m</sub> :	3588 LBS	
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN I <sub>s</sub> :	5438 LBS	
EQN II:	501	LBS	EQN II:	675	LBS			
EQN III <sub>m</sub> :	603	LBS	EQN III <sub>m</sub> :	2222	LBS			
EQN III <sub>s</sub> :	517	LBS	EQN III <sub>s</sub> :	697	LBS	EQN III <sub>s</sub> :	1394 LBS	
EQN IV:	540	LBS	EQN IV:	982	LBS	EQN IV:	1963 LBS	
$RESIST_{DES} =$	501	LBS / LAG	RESIST <sub>DES</sub> =	675	LBS / Bo	OLT RESIST <sub>DES</sub> =	1394 LBS / B	OLT
$\mathbf{RESIST}_{\mathrm{GRP}} =$	6006	LBS	RESIST <sub>GRP</sub> =	0	LBS	$\mathbf{RESIST}_{GRP} =$	0 LBS	
5	SUMMARY							
	BRKT#							

WCLH BRAG BRKT NO:	CKET BK21	GF	50625	LBS			
BRKT SHEAR	RESIST. USIN	G FOR BRG:	SPF #1			NDS VARI	ABLES
BRACKE	LOADED IN S	SHEAR (V / H):	V		$G_{Spe}$	cies = 0.50	$\mathbf{F}_{\rm em} + 3665.6$
LOADING	B PARA OR PE	RP TO GRAIN:	PERP		Lag	$D_{\rm r} = 0.371$	$\mathbf{F}_{\text{em}} = 5600.0$
POS. CONN	ECTION TO AL	L MEMBERS?	Y		Bolt	D = 0.500	$\mathbf{F}_{\rm es} = 87000$
В	RACKET THIC	KNESS (IN.) =	0.250		1	$F_{\rm vb} = 45000$	$\mathbf{k}_{1} + 0.161$
FASTI	ENER TYPE (LA	AGS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1 \parallel} = 0.223$
					I	$R_{e \parallel} = 0.0644$	$\mathbf{k}_2 = 0.559$
						$R_t = 7.500$	$\mathbf{k}_{2\parallel} = 0.559$
						$l_{\rm m} = 1.875$	$\mathbf{k}_3 = 8.288$
						$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 6.578$
BRACKI	T SECURED	WITH LAG SO	CREWS	BRACK	ET SECU	RED WITH THRU-I	BOLTS
	EW DIA. (IN.) =					BOLT DIA. (IN.) =	1/2
	ENGTH (IN.) =					NO. BOLTS S.S.=	0
	AG SCREWS =			MARIA	EL (DED 7	NO. BOLTS D.S.=	0
MIN. PEN	I. REQ'D (IN.) =	2.5		MAIN IV	IEMBEK I	THICKNESS (IN.) =	5 1/8
RESISTANCE	FOR EACH L	AG SCREW	SINGLI	SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES. / BOLT
EQN I <sub>m</sub> :	637	LBS	EQN I <sub>m</sub> :	2348	LBS	EQN I <sub>m</sub> :	2348 LBS
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN I <sub>s</sub> :	5438 LBS
EQN II:	360	LBS	EQN II:	485	LBS		
EQN III <sub>m</sub> :	411	LBS	EQN III <sub>m</sub> :	1514	LBS		
EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	1162 LBS
EQN IV:		LBS	EQN IV:		LBS	EQN IV:	1605 LBS
$RESIST_{DES} =$		LBS / LAG	RESIST <sub>DES</sub> =			$OLT RESIST_{DES} =$	1162 LBS / BOL
$RESIST_{GRP} =$	4322	LBS	RESIST <sub>GRP</sub> =	0	LBS	$\mathbf{RESIST}_{GRP} =$	0 LBS
	SUMMARY					$\neg$	
	BRKT #					-	

BRKT NO:	BK19Z	GF	4655	LBS				
BRKT SHEAR R	ESIST. USIN	G FOR BRG:	SPF #1			NDS VARI	ABLES	
BRACKET	LOADED IN S	HEAR (V / H)	: V		G <sub>Species</sub>	= 0.50	$\mathbf{F}_{\mathrm{em}} = 3665.6$	
LOADING	PARA OR PER	RP TO GRAIN	: PARA		Lag D <sub>r</sub>	= 0.371	$\mathbf{F}_{\text{em} } = 5600.0$	
POS. CONNE	CTION TO AL	L MEMBERS?	? Y		Bolt D	= 0.500	$F_{\rm es}=87000$	
BR	ACKET THICK	(NESS (IN.) =	0.250		$\mathbf{F}_{yb}$	= 45000	$\mathbf{k}_{1} = 0.247$	
FASTE	NER TYPE (LA	GS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$	
					R <sub>e I</sub>	= 0.0644	$\mathbf{k}_{2} = 0.480$	
					$\mathbf{R}_{\mathrm{t}}$	= 13.500	$\mathbf{k}_{2\parallel} = 0.480$	
					I <sub>m</sub>	= 3.375	$\mathbf{k}_{3}$ = 8.288	
					l <sub>s</sub> :	= 0.250	$\mathbf{k}_{3\parallel} = 6.578$	
	SECURED V		CREWS	BRACK		DUT DIA. (IN.) =	BOLTS 1/2	
	ENGTH (IN.) =					O. BOLTS S.S.=	0	
	.G SCREWŚ =				NO	D. BOLTS D.S.=	0	
MIN. PEN.	REQ'D (IN.) =	2.5		MAIN M	EMBER THI	CKNESS (IN.) =	5 1/8	
RESISTANCE I	OR EACH L	AG SCREW	SINGLE	SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES. / BOL	Т
$\mathbf{EQN}\ \mathbf{I}_{\mathrm{m}}$ :	1753	LBS	EQN $I_m$ :	3588	LBS	EQN $I_m$ :	3588 LBS	
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN I <sub>s</sub> :	5438 LBS	
EQN II:	815	LBS	EQN II:	1098	LBS			
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub> :	1908	LBS			
EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	697		EQN III <sub>s</sub> :	1394 LBS	
EQN IV:		LBS	EQN IV:			EQN IV:	1963 LBS	
$RESIST_{DES} =$		LBS / LAG	$RESIST_{DES} =$			$\Gamma$ RESIST <sub>DES</sub> =	1394 LBS / I	BOL
	4655	LBS	$RESIST_{GRP} =$	0	LBS	$RESIST_{GRP} =$	0 LBS	
$\boldsymbol{RESIST_{GRP}} =$						_		
	UMMARY							

WCLH BRAC BRKT NO:	BK18	GF	10861	LBS			
BRKT SHEAR	RESIST. USING	G FOR BRG:	SPF #1			NDS VARL	ABLES
BRACKET	LOADED IN S	HEAR (V / H):	V		$G_{Specie}$	s = 0.50	$\mathbf{F}_{\mathrm{em}\perp} = 3665.6$
LOADING	PARA OR PER	RP TO GRAIN:	PARA		Lag D	$_{\rm r} = 0.371$	$\mathbf{F}_{\text{em}\parallel} = 5600.0$
POS. CONNE	CTION TO ALI	L MEMBERS?	Y		Bolt D	0 = 0.500	$\mathbf{F}_{\mathrm{es}} = 87000$
BI	RACKET THICK	(NESS (IN.) =	0.250		$\mathbf{F}_{\mathrm{yt}}$	$_{\rm b} = 45000$	$\mathbf{k}_{1} \perp = 0.247$
FASTE	NER TYPE (LA	AGS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$
					$\mathbf{R}_{\mathrm{e}}$	= 0.0644	$\mathbf{k}_{2} = 0.480$
					R	t = 13.500	$\mathbf{k}_{2\parallel} = 0.480$
					l <sub>n</sub>	$_{\rm n} = 3.375$	$\mathbf{k}_{3} = 8.288$
					l,	s = 0.250	$\mathbf{k}_{3\parallel} = 6.578$
	T SECURED V	VITH LAG SO	CREWS	BRACK		ED WITH THRU-E	BOLTS 1/2
	ENGTH (IN.) =					NO. BOLTS S.S.=	0
NO. L	AG SCREWS =	21			N	IO. BOLTS D.S.=	0
MIN. PEN	. REQ'D (IN.) =	2.5		MAIN M	EMBER TH	IICKNESS (IN.) =	5 1/8
RESISTANCE	FOR EACH L	AG SCREW	SINGLI	SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES. / BOLT
EQN I <sub>m</sub> :	1753	LBS	EQN $I_m$ :	3588	LBS	EQN $I_m$ :	3588 LBS
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	-,-,	LBS	EQN I <sub>s</sub> :	5438 LBS
EQN II:	815	LBS	EQN II:		LBS		
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub> :	1908	LBS		
EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	1394 LBS
EQN IV:		LBS	EQN IV:		LBS	EQN IV:	1963 LBS
$RESIST_{DES} =$		LBS / LAG	$RESIST_{DES} =$			T RESIST <sub>DES</sub> =	1394 LBS / BO
$RESIST_{GRP} =$	10861	LBS	RESIST <sub>GRP</sub> =	0	LBS	$\mathbf{RESIST}_{GRP} =$	0 LBS
5	SUMMARY						
	BRKT #	BK18	GOOD FOR	10861	LBS		

WCLH BRAC BRKT NO:	BK12	GF	2587	LBS			
BRKT SHEAR I	RESIST. USIN	G FOR BRG:	GLB			NDS VARI	ABLES
BRACKET	LOADED IN S	SHEAR (V / H)	. V		$G_{Species}$	= 0.50	$\mathbf{F}_{\mathrm{em}} = 3665.6$
LOADING	PARA OR PE	RP TO GRAIN	PERP		$Lag D_r$	= 0.371	$\mathbf{F}_{\text{em}\parallel} = 5600.0$
POS. CONNE	CTION TO AL	L MEMBERS	? Y		Bolt D	= 0.500	$F_{es} = 87000$
BR	ACKET THIC	KNESS (IN.) =	0.250		$\mathbf{F}_{\mathrm{yb}}$	= 45000	$\mathbf{k}_{1} = 0.247$
FASTE	NER TYPE (LA	AGS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$
					R <sub>e  </sub>	= 0.0644	$\mathbf{k}_{2} = 0.480$
					$\mathbf{R}_{\mathrm{t}}$	= 13.500	$\mathbf{k}_{2\parallel} = 0.480$
					$\mathbf{l}_{\mathrm{m}}$	= 3.375	$\mathbf{k}_{3}$ = 8.288
					$\mathbf{l}_{\mathrm{s}}$	= 0.250	$\mathbf{k}_{3\parallel} = 6.578$
	T SECURED V		CREWS	BRACK		CD WITH THRU-I	BOLTS 1/2
	W DIA. (IN.) = ENGTH (IN.) =					O. BOLTS S.S.=	0
	AG SCREWS =					O. BOLTS D.S.=	0
MIN. PEN.	REQ'D (IN.) =	2.5		MAIN M	EMBER THI	CKNESS (IN.) =	5 1/8
RESISTANCE	FOR EACH L	AG SCREW	SINGLI	SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES. / BOLT
EQN I <sub>m</sub> :	1147	LBS	EQN I <sub>m</sub> :	2348	LBS	EQN I <sub>m</sub> :	2348 LBS
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN $I_s$ :	5438 LBS
EQN II:	554	LBS	EQN II:		LBS		
EQN III <sub>m</sub> :	635	LBS	EQN III <sub>m</sub> :		LBS		
EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	1162 LBS
EQN IV:		LBS	EQN IV:		LBS	EQN IV:	1605 LBS
$RESIST_{DES} =$		LBS / LAG	RESIST <sub>DES</sub> =			$\Gamma$ RESIST <sub>DES</sub> =	1162 LBS / BOL
	2587	LBS	$RESIST_{GRP} =$	0	LBS	$RESIST_{GRP} =$	0 LBS
RESIST <sub>GRP</sub> =						_	
RESIST <sub>GRP</sub> =	SUMMARY BRKT #	BK12	GOOD FOR	2587	LBS		

WCLH BRACE BRKT NO:	BK11	GF	2069	LBS			
BRKT SHEAR RI	ESIST. USING	FOR BRG:	SPF #1			NDS VARI	ABLES
BRACKET L	OADED IN SH	EAR (V / H):	V		$G_{Species}$	= 0.50	$\mathbf{F}_{\mathrm{em}} = 3665.6$
LOADING P	ARA OR PERI	TO GRAIN:	PARA		Lag D <sub>r</sub>	= 0.371	$\mathbf{F}_{em\parallel} = 5600.0$
POS. CONNEC	TION TO ALL	MEMBERS?	Y		Bolt D	= 0.500	$\mathbf{F}_{es} = 87000$
BRA	CKET THICK	NESS (IN.) =	0.250		$\mathbf{F}_{yb}$	= 45000	$\mathbf{k}_{1\  } = 0.247$
FASTEN	ER TYPE (LAC	GS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$
					R <sub>e  </sub>	= 0.0644	$\mathbf{k}_{2} \mid = 0.480$
					$\mathbf{R}_{\mathrm{t}}$	= 13.500	$\mathbf{k}_{2\parallel} = 0.480$
					$\mathbf{l}_{\mathrm{m}}$	= 3.375	$\mathbf{k}_{3} = 8.288$
					I <sub>s</sub>	= 0.250	$\mathbf{k}_{3\parallel} = 6.578$
LAG SCREW LAG LEI NO. LAG	NGTH (IN.) = G SCREWS =	1/2 4.0 4	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		BC NO NO	DLT DIA. (IN.) =  O. BOLTS S.S.=  D. BOLTS D.S.=	1/2 0 0
MIN. PEN. F	REQ'D (IN.) = OR EACH LA	2.5 G SCREW	SINGLE	MAIN M. SHEAR RES.		CKNESS (IN.) =  DOUBLE S	5 1/8 SHEAR RES. / BOLT
EQN I <sub>m</sub> :	1753 I	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN I <sub>m</sub> :	3588 LBS
EQN I <sub>s</sub> :	2017 I	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN $I_s$ :	5438 LBS
EQN II:	815 I	LBS	EQN II:	1098	LBS		
EQN III <sub>m</sub> :	933 I	LBS	EQN III <sub>m</sub> :	1908	LBS		
	517 I		EQN III <sub>s</sub> :	697		EQN III <sub>s</sub> :	1394 LBS
EQN III <sub>s</sub> :			EON IV.	982	LBS	EQN IV:	1963 LBS
EQN IV:	540 I	LBS	EQN IV:				
	540 I	LBS / LAG	RESIST <sub>DES</sub> =	697	LBS / BOLT	$\Gamma$ RESIST <sub>DES</sub> =	1394 LBS / BOI
EQN IV:	540 I	LBS / LAG	•		LBS / BOLT	$\mathbf{r}$ RESIST <sub>DES</sub> = $\mathbf{RESIST}_{GRP}$ =	1394 LBS/BOI 0 LBS
$\frac{\text{EQN IV:}}{\text{RESIST}_{\text{DES}}} = \\ \text{RESIST}_{\text{GRP}} = \\$	540 I	LBS / LAG	RESIST <sub>DES</sub> =				

BRKT NO:		GF	4655	LBS				
BRKT SHEAR R	ESIST. USING	FOR BRG:	SPF #1			NDS VARL	ABLES	
BRACKET I	OADED IN SH	EAR (V / H):	V		$G_{Spec}$	$_{\text{ies}} = 0.50$	$\mathbf{F}_{\mathrm{em}_{\perp}} = 3$	665.6
LOADING I	PARA OR PERI	TO GRAIN:	PARA		Lag l	$D_{\rm r}=0.371$	$\mathbf{F}_{\text{em}\parallel} = 5$	600.0
POS. CONNEC	CTION TO ALL	MEMBERS?	Y		Bolt	D = 0.500	$\mathbf{F}_{\mathrm{es}} = 8$	7000
BRA	ACKET THICK	NESS (IN.) =	0.250		F	$y_b = 45000$	$\mathbf{k}_{1} \perp = 0$	.247
FASTEN	ER TYPE (LAC	GS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0$	.364
					R	e  = 0.0644	$\mathbf{k}_{2} \mid = 0$	.480
					I	$R_t = 13.500$	$\mathbf{k}_{2\parallel} = 0$	.480
						$l_{\rm m} = 3.375$	$k_{3}   = 8$	.288
						$l_{\rm s} = 0.250$	$\mathbf{k}_{3\parallel} = 6$	.578
LAG SCREV	SECURED W V DIA. (IN.) = NGTH (IN.) =	1/2 4.0	CREWS	BRACK		RED WITH THRU-E BOLT DIA. (IN.) = NO. BOLTS S.S.=	1/2 0	
	G SCREWS =	9				NO. BOLTS D.S.=	0	
MIN. PEN. I	REQ'D (IN.) =	2.5		MAIN M	EMBER T	HICKNESS (IN.) =	5 1/8	
RESISTANCE F	OR EACH LA	G SCREW	SINGLI	E SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES.	/ BOLT
EQN I <sub>m</sub> :	1753 I	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN I <sub>m</sub> :	3588 L	BS
EQN I <sub>s</sub> :	2017 I	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN $I_s$ :	5438 L	BS
EQN II:	815 I	LBS	EQN II:	1098	LBS			
EQN III <sub>m</sub> :	933 I	LBS	EQN III <sub>m</sub> :	1908	LBS			
EQN III <sub>s</sub> :	517 I		EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	1394 L	
EQN IV:	540 I	LBS	EQN IV:		LBS	EQN IV:	1963 L	BS
$RESIST_{DES} =$	517 I	LBS / LAG	RESIST <sub>DES</sub> =		LBS / BO	LT RESIST <sub>DES</sub> =	1394 I	BS / BOLT
$RESIST_{GRP} =$	4655 I	LBS	RESIST <sub>GRP</sub> =	0	LBS	$RESIST_{GRP} =$	0 I	BS
SI	UMMARY							
	BRKT #	BK10SQ	GOOD FOR	4655	LBS			

WCLH BRAC BRKT NO:	BK10	GF	4655	LBS			
BRKT SHEAR	RESIST. USIN	G FOR BRG:	SPF #1			NDS VARI	ABLES
BRACKET	LOADED IN S	HEAR (V / H)	: V		$G_{Specie}$	s = 0.50	$\mathbf{F}_{\mathrm{em}\perp} = 3665.6$
LOADING	PARA OR PEI	RP TO GRAIN:	PARA		Lag D	$p_r = 0.371$	$\mathbf{F}_{em\parallel} = 5600.0$
POS. CONNI	ECTION TO AL	L MEMBERS?	Y		Bolt I	0 = 0.500	$F_{es} = 87000$
Bl	RACKET THIC	KNESS (IN.) =	0.250		$\mathbf{F}_{\mathrm{yl}}$	$_{\rm b} = 45000$	$\mathbf{k}_{1} \perp = 0.247$
FASTE	NER TYPE (LA	AGS/BOLTS) =	LAGS		R <sub>e</sub>	= 0.0421	$\mathbf{k}_{1 \parallel} = 0.364$
					$\mathbf{R}_{\mathrm{e}}$	= 0.0644	$\mathbf{k}_{2} = 0.480$
					R	L <sub>t</sub> = 13.500	$\mathbf{k}_{2\parallel} = 0.480$
					$\mathbf{l}_{\mathrm{r}}$	$_{\rm m} = 3.375$	$\mathbf{k}_3 = 8.288$
					l	$_{\rm s} = 0.250$	$k_{3\parallel} = 6.578$
	T SECURED V		CREWS	BRACK	ET SECUR	ED WITH THRU-I	BOLTS
	EW DIA. (IN.) =					BOLT DIA. (IN.) =	1/2
	ENGTH (IN.) =					NO. BOLTS S.S.=	0
	AG SCREWS =			MADIN		NO. BOLTS D.S.=	0 5 1/8
MIIN. PEN	. REQ'D (IN.) =	2.3		MAIN W	IEMBEK IT	IICKNESS (IN.) =	3 1/8
RESISTANCE	FOR EACH L	AG SCREW	SINGLI	E SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES. / BOLT
EQN I <sub>m</sub> :	1753	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN $I_m$ :	3588 LBS
EQN $I_s$ :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN $I_s$ :	5438 LBS
EQN II:	815	LBS	EQN II:	1098	LBS		
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub> :	1908	LBS		
EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	1394 LBS
EQN IV:	540	LBS	EQN IV:		LBS	EQN IV:	1963 LBS
$RESIST_{DES} =$	517	LBS / LAG	RESIST <sub>DES</sub> =		LBS / BOI	T RESIST <sub>DES</sub> =	1394 LBS / BOL
$RESIST_{GRP} =$	4655	LBS	RESIST <sub>GRP</sub> =	0	LBS	$\mathbf{RESIST}_{\mathrm{GRP}} =$	0 LBS
						_	
Ţ	SUMMARY BRKT #						

WCLH BRAC BRKT NO:		GF	8792	LBS				
BRKT SHEAR I	RESIST. USING	G FOR BRG:	SPF #1			NDS VARL	ABLES	
BRACKET	LOADED IN S	HEAR (V / H):	V		$G_{Speci}$	$_{\rm es} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 3665$	5.6
LOADING	PARA OR PER	P TO GRAIN:	PARA		Lag I	$O_r = 0.371$	$F_{em } = 5600$	0.0
POS. CONNE	CTION TO ALI	MEMBERS?	Y		Bolt l	D = 0.500	$\mathbf{F}_{\mathrm{es}} = 8700$	00
BR	ACKET THICK	NESS (IN.) =	0.250		F,	$_{\rm vb} = 45000$	$\mathbf{k}_{1} = 0.24$	7
FASTE	NER TYPE (LA	GS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.36$	4
					R	= 0.0644	$\mathbf{k}_{2} + 0.48$	0
					F	$R_t = 13.500$	$\mathbf{k}_{2\parallel} = 0.48$	0
					I	$_{\rm m} = 3.375$	$\mathbf{k}_{3} + 8.28$	8
					I	$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 6.57$	8
	T SECURED V W DIA. (IN.) =	VITH LAG SO	CREWS	BRACK		RED WITH THRU-E	BOLTS 1/2	
	ENGTH (IN.) =	4.0				NO. BOLTS S.S.=	0	
	AG SCREWS =	17			1	NO. BOLTS D.S.=	0	
MIN. PEN.	REQ'D (IN.) =	2.5		MAIN M	EMBER TH	HICKNESS (IN.) =	5 1/8	
RESISTANCE	FOR EACH L	AG SCREW	SINGLI	E SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES. / B	OLT
EQN $I_m$ :	1753	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN $I_m$ :	3588 LBS	
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN $I_s$ :	5438 LBS	
EQN II:	815	LBS	EQN II:	1098	LBS			
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub>	1908	LBS			
EQN III <sub>s</sub> :	517		EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	1394 LBS	
EQN IV:	540	LBS	EQN IV:		LBS	EQN IV:	1963 LBS	
$RESIST_{DES} =$	517	LBS / LAG	RESIST <sub>DES</sub> =		LBS / BO	LT RESIST <sub>DES</sub> =	1394 LBS	/ BOLT
$RESIST_{GRP} =$	8792	LBS	RESIST <sub>GRP</sub> =	0	LBS	$RESIST_{GRP} =$	0 LBS	1
Ī.	SUMMARY							
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WCLH BRA BRKT NO:		GF	10861	LBS			
RDKT SHFAR	RESIST. USIN		SPF #1			NDS VARI	ADIES
	T LOADED IN S				Generic	s = 0.50	$F_{em} = 3665.6$
	G PARA OR PE	` ′				r = 0.371	$\mathbf{F}_{\text{eml}} = 5600.0$
	ECTION TO AL				_	0 = 0.500	$F_{es} = 87000$
	RACKET THIC		0.250			b = 45000	$\mathbf{k}_{1\perp} = 0.247$
	ENER TYPE (LA	. ,			,	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$
IASI	E. ER TITE (E	ico bobio)	LAGS			= 0.0644	$\mathbf{k}_{1\parallel} = 0.364$ $\mathbf{k}_{2\parallel} = 0.480$
						$t_{\rm f} = 13.500$	$\mathbf{k}_{2} = 0.480$
						n = 3.375	$\mathbf{k}_{2\parallel} = 8.288$
					-	s = 0.250	$\mathbf{k}_{3\parallel} = 6.578$
					-	0.230	1.5   0.570
BRACK	ET SECURED	WITH LAG SO	CREWS	BRACK	ET SECUR	ED WITH THRU-I	BOLTS
LAG SCR	EW DIA. (IN.) =	1/2			Е	OLT DIA. (IN.) =	1/2
LAG	LENGTH (IN.) =	4.0			1	NO. BOLTS S.S.=	0
NO. I	LAG SCREWS =	21			N	O. BOLTS D.S.=	0
MIN. PEI	N. REQ'D (IN.) =	2.5		MAIN M	EMBER TH	ICKNESS (IN.) =	5 1/8
RESISTANCI	E FOR EACH L	AG SCREW	SINGLE	SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES. / BOLT
EQN I <sub>m</sub> :	1753	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN I <sub>m</sub> :	3588 LBS
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN I <sub>s</sub> :	5438 LBS
EQN II:	815	LBS	EQN II:	1098	LBS		
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub> :	1908	LBS		
EQN III <sub>s</sub> :	517	LBS	EQN III <sub>s</sub> :	697	LBS	EQN III <sub>s</sub> :	1394 LBS
EQN IV:	540	LBS	EQN IV:	982	LBS	EQN IV:	1963 LBS
RESIST <sub>DES</sub> =	517	LBS / LAG	$RESIST_{DES} =$	697	LBS / BOI	T RESIST <sub>DES</sub> =	1394 LBS / BOL
KESIST DES -	10071	LBS	$RESIST_{GRP} =$	0	LBS	$RESIST_{GRP} =$	0 LBS
$\mathbf{RESIST}_{\mathrm{GRP}} =$	10861						
	SUMMARY						

WCLH BRAC BRKT NO:		GF	8792	LBS			
BRKT SHEAR R	ESIST. USING	G FOR BRG:	SPF #1			NDS VARI	ABLES
BRACKET	LOADED IN SE	HEAR (V / H):	V		$G_{Speci}$	$_{\rm es} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 3665.6$
LOADING	PARA OR PER	P TO GRAIN:	PARA		Lag I	$O_r = 0.371$	$\mathbf{F}_{\text{em}\parallel} = 5600.0$
POS. CONNEC	CTION TO ALL	MEMBERS?	Y		Bolt l	D = 0.500	$\mathbf{F}_{es} = 87000$
BR.	ACKET THICK	NESS (IN.) =	0.250		F,	$_{b} = 45000$	$\mathbf{k}_{1} = 0.247$
FASTEN	NER TYPE (LA	GS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$
					R.	= 0.0644	$\mathbf{k}_{2} = 0.480$
						$R_t = 13.500$	$\mathbf{k}_{2\parallel} = 0.480$
					1	<sub>m</sub> = 3.375	$\mathbf{k}_{3}$ = 8.288
					Ī	$I_s = 0.250$	$k_{3\parallel} = 6.578$
LAG SCREV LAG LE	W DIA. (IN.) = ENGTH (IN.) =	1/2 4.0	CREWS	BRACK	I	RED WITH THRU-I BOLT DIA. (IN.) = NO. BOLTS S.S.=	1/2 0
	G SCREWS =	17				NO. BOLTS D.S.=	0
RESISTANCE I	REQ'D (IN.) = FOR EACH LA	2.5 AG SCREW	SINGLE	SHEAR RES		HICKNESS (IN.) =  DOUBLE S	5 1/8 SHEAR RES. / BOLT
EQN I <sub>m</sub> :	1753	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN I <sub>m</sub> :	3588 LBS
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN I <sub>s</sub> :	5438 LBS
EQN II:	815	LBS	EQN II:	1098	LBS		
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub> :	1908	LBS		
EQN III <sub>s</sub> :	517		EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	1394 LBS
EQN IV:	540	LBS	EQN IV:	982	LBS	EQN IV:	1963 LBS
	517	LBS / LAG	$\mathbf{RESIST}_{\mathrm{DES}} =$	697	LBS / BO	LT RESIST <sub>DES</sub> =	1394 LBS / BOL
$RESIST_{DES} =$		I DC	$RESIST_{GRP} =$	0	LBS	$RESIST_{GRP} =$	0 LBS
$\begin{aligned} \mathbf{RESIST}_{DES} &= \\ \mathbf{RESIST}_{GRP} &= \end{aligned}$	8792	LDS	o.u				
$RESIST_{GRP} =$	8792 UMMARY	LDS	-				

BRKT NO:	BK8	GF	10861	LBS				
BRKT SHEAR RI	ESIST. USING	G FOR BRG:	SPF #1			NDS VARL	ABLES	
BRACKET L	OADED IN S	HEAR (V / H):	V		$G_{Species} =$	0.50	$\mathbf{F}_{\mathrm{em}} =$	3665.6
LOADING P	ARA OR PER	P TO GRAIN:	PARA		$Lag D_r =$	0.371	$\mathbf{F}_{\text{em}\parallel} =$	5600.0
POS. CONNEC	TION TO ALI	L MEMBERS?	Y		Bolt D =	0.500	$\mathbf{F}_{\mathrm{es}} =$	87000
BRA	CKET THICK	NESS (IN.) =	0.250		$\mathbf{F}_{yb} =$	45000	$\mathbf{k}_1 \mid$ =	0.247
FASTEN	ER TYPE (LA	GS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$   =	0.0421	$\mathbf{k}_{1\parallel} =$	0.364
					$\mathbf{R}_{e\parallel} =$	0.0644	k <sub>2  </sub> =	0.480
					$\mathbf{R}_{\mathrm{t}} =$	13.500	k <sub>2   </sub> =	0.480
					$\mathbf{l}_{\mathrm{m}} =$	3.375	<b>k</b> <sub>3</sub>   =	8.288
					$\mathbf{l}_{\mathrm{s}} =$	0.250	$\mathbf{k}_{3\parallel}$ =	6.578
BRACKET	SECURED V	VITH LAG SC	REWS	BRACK	ET SECUREI	WITH THRU-E	BOLTS	
LAG SCREW	/ DIA. (IN.) =	1/2			BOI	LT DIA. (IN.) =	1/2	
LAG LE	NGTH (IN.) =	4.0			NO	BOLTS S.S.=	0	
	G SCREWS =	21				BOLTS D.S.=	0	
MIN. PEN. F	REQ'D (IN.) =	2.5		MAIN M	IEMBER THIC	KNESS (IN.) =	5 1/8	
RESISTANCE F	OR EACH L	AG SCREW	SINGLE	E SHEAR RES	S. / BOLT	DOUBLE S	SHEAR RES	S. / BOLT
EQN $I_m$ :	1753	LBS	EQN $I_m$ :	3588	LBS	EQN $I_m$ :	3588	LBS
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN I <sub>s</sub> :	5438	LBS
EQN II:	815	LBS	EQN II:	1098	LBS			
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub> :	1908	LBS			
EQN III <sub>s</sub> :	517	LBS	EQN III <sub>s</sub> :	697	LBS	EQN III <sub>s</sub> :	1394	LBS
EQN IV:	540	LBS	EQN IV:	982	LBS	EQN IV:	1963	LBS
$RESIST_{DES} =$	517	LBS / LAG	RESIST <sub>DES</sub> =	697	LBS / BOLT	$RESIST_{DES} =$	1394	LBS / BOLT
$RESIST_{GRP} =$	10861	LBS	$RESIST_{GRP} =$	0	LBS	$\mathbf{RESIST}_{\mathrm{GRP}} =$	0	LBS
SU	MMARY					1		
	BRKT #	BK8	GOOD FOR	10861	LBS	I		

WCLH BRAC BRKT NO:	BK7Z	GF	4655	LBS			
BRKT SHEAR I	RESIST. USIN	G FOR BRG:	SPF #1			NDS VARI	ABLES
BRACKET	LOADED IN S	SHEAR (V / H):	· V		$G_{Species}$	s = 0.50	$\mathbf{F}_{\mathrm{em}} = 3665.6$
LOADING	PARA OR PE	RP TO GRAIN:	PARA		Lag D	$_{r} = 0.371$	$\mathbf{F}_{\text{em}\parallel} = 5600.0$
POS. CONNE	CTION TO AL	L MEMBERS?	Y		Bolt D	0 = 0.500	$F_{\rm es}=87000$
BF	ACKET THIC	KNESS (IN.) =	0.250		$\mathbf{F}_{yt}$	, = 45000	$\mathbf{k}_{1} = 0.247$
FASTE	NER TYPE (LA	AGS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$
					Re	= 0.0644	$\mathbf{k}_{2} = 0.480$
					R	t = 13.500	$\mathbf{k}_{2\parallel} = 0.480$
					l <sub>n</sub>	= 3.375	$k_3 = 8.288$
					l,	s = 0.250	$\mathbf{k}_{3\parallel} = 6.578$
	T SECURED Y		CREWS	BRACK		ED WITH THRU-I OLT DIA. (IN.) =	BOLTS 1/2
	ENGTH (IN.) =					IO. BOLTS S.S.=	0
	AG SCREWS =					O. BOLTS D.S.=	0
MIN. PEN	REQ'D (IN.) =	2.5		MAIN M	EMBER TH	ICKNESS (IN.) =	5 1/8
RESISTANCE	FOR EACH L	AG SCREW	SINGLE	SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES. / BOLT
EQN $I_m$ :	1753	LBS	EQN $I_m$ :	3588	LBS	EQN $I_m$ :	3588 LBS
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN $I_s$ :	5438 LBS
EQN II:	815	LBS	EQN II:	1098	LBS		
	933	LBS	EQN III <sub>m</sub> :		LBS		
EQN III <sub>m</sub> :			EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	1394 LBS
EQN III <sub>m</sub> : EQN III <sub>s</sub> :		LBS				EQN IV:	1963 LBS
EQN III <sub>s</sub> : EQN IV:	540	LBS	EQN IV:				
$\begin{aligned} & \textbf{EQN III}_{s}: \\ & \textbf{EQN IV}: \\ & \textbf{RESIST}_{DES} = \end{aligned}$	540 <b>517</b>	LBS / LAG	EQN IV: RESIST <sub>DES</sub> =	697	LBS / BOL	T RESIST <sub>DES</sub> =	1394 LBS / BOL
EQN III <sub>s</sub> : EQN IV:	540 <b>517</b>	LBS	EQN IV:	697			
$\begin{aligned} & EQN \text{ III}_s: \\ & EQN \text{ IV:} \\ & RESIST_{DES} = \\ & RESIST_{GRP} = \end{aligned}$	540 <b>517</b>	LBS LBS/LAG LBS	EQN IV: RESIST <sub>DES</sub> =	697 0	LBS / BOL	T RESIST <sub>DES</sub> =	1394 LBS / BOL

WCLH BRAC BRKT NO:	BK7	GF	4655	LBS			
BRKT SHEAR	RESIST. USIN	G FOR BRG:	SPF #1			NDS VARI	ABLES
BRACKET	LOADED IN S	SHEAR (V / H)	V		$G_{Species}$	= 0.50	$\mathbf{F}_{\mathrm{em}} = 3665.6$
LOADING	PARA OR PEI	RP TO GRAIN	PARA		Lag D	= 0.371	$\mathbf{F}_{\text{em}\parallel} = 5600.0$
POS. CONNI	ECTION TO AL	L MEMBERS:	Y		Bolt D	= 0.500	$\mathbf{F}_{es} = 87000$
B	RACKET THIC	KNESS (IN.) =	0.250		$\mathbf{F}_{yb}$	= 45000	$\mathbf{k}_{1} \perp = 0.247$
FASTE	ENER TYPE (LA	AGS/BOLTS) =	LAGS		R <sub>e</sub>	= 0.0421	$\mathbf{k}_{1 \parallel} = 0.364$
					$\mathbf{R}_{\mathrm{e}}$	= 0.0644	$\mathbf{k}_{2} \mid = 0.480$
					R	= 13.500	$\mathbf{k}_{2\parallel} = 0.480$
					$\mathbf{l}_{\mathrm{m}}$	= 3.375	$\mathbf{k}_{3} = 8.288$
					$\mathbf{l}_{\mathrm{s}}$	= 0.250	$\mathbf{k}_{3\parallel} = 6.578$
BRACKE	T SECURED V	WITH LAG S	CREWS	BRACK	ET SECURI	ED WITH THRU-I	BOLTS
LAG SCRI	EW DIA. (IN.) =	1/2			В	OLT DIA. (IN.) =	1/2
	ENGTH (IN.) =					IO. BOLTS S.S.=	0
	AG SCREWS =			3440134		O. BOLTS D.S.=	0
MIN. PEN	. REQ'D (IN.) =	2.5		MAIN M	IEMBEK IH	ICKNESS (IN.) =	5 1/8
RESISTANCE	FOR EACH L	AG SCREW	SINGLI	E SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES. / BOLT
EQN I <sub>m</sub> :	1753	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN I <sub>m</sub> :	3588 LBS
EQN $I_s$ :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN I <sub>s</sub> :	5438 LBS
EQN II:	815	LBS	EQN II:	1098	LBS		
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub> :	1908	LBS		
EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	1394 LBS
EQN IV:	540	LBS	EQN IV:		LBS	EQN IV:	1963 LBS
$RESIST_{DES} =$	517	LBS / LAG	RESIST <sub>DES</sub> =		LBS / BOL	T RESIST <sub>DES</sub> =	1394 LBS / BOL
$RESIST_{GRP} =$	4655	LBS	RESIST <sub>GRP</sub> =	0	LBS	$\mathbf{RESIST}_{\mathrm{GRP}} =$	0 LBS
						<b>-</b>	
ſ	SUMMARY BRKT #						

WCLH BRAC BRKT NO:	BK6	GF	2069	LBS				
BRKT SHEAR R	ESIST. USING	FOR BRG:	SPF #1		N	DS VARIA	BLES	
BRACKET	LOADED IN SH	EAR (V / H):	V		$G_{\text{Species}} = 0.50$		$\mathbf{F}_{\mathrm{em}} = 3$	665.6
LOADING	PARA OR PERI	P TO GRAIN:	PARA		$Lag D_r = 0.371$		$\mathbf{F}_{\text{em}\parallel} = 5$	600.0
POS. CONNEC	CTION TO ALL	MEMBERS?	Y		Bolt D = 0.500		$\mathbf{F}_{\mathrm{es}} = 8$	7000
BR.	ACKET THICK	NESS (IN.) =	0.250		$\mathbf{F}_{yb} = 45000$		$\mathbf{k}_{1}   = 0$	.247
FASTEN	NER TYPE (LAC	GS/BOLTS) =	LAGS		$R_{e} = 0.0421$		$k_{1 } = 0$	.364
					$R_{e\parallel} = 0.0644$		$\mathbf{k}_{2} \mid = 0$	.480
					$R_t = 13.500$		$\mathbf{k}_{2\parallel} = 0$	.480
					$l_{\rm m} = 3.375$		$k_{3}   = 8$	
					$l_s = 0.250$		$\mathbf{k}_{3\parallel} = 6$	
LAG SCREV LAG LE NO. LA	SECURED W W DIA. (IN.) = ENGTH (IN.) = G SCREWS =	1/2 4.0 4	CREWS		SECURED WITH BOLT DIA. NO. BOLT NO. BOLTS	(IN.) = S S.S.= S D.S.=	1/2 0 0	
MIN. PEN. RESISTANCE I	REQ'D (IN.) = $FOR EACH LA$	2.5 AG SCREW	SINGLE	MAIN MEN	MBER THICKNESS  BOLT  D		5 1/8 HEAR RES.	/ BOLT
EQN I <sub>m</sub> :	1753 I	LBS	EQN I <sub>m</sub> :	3588 LI	BS E	QN I <sub>m</sub> :	3588 L	BS
EQN I <sub>s</sub> :	2017 I	LBS	EQN I <sub>s</sub> :	2719 LI	BS F	EQN I <sub>s</sub> :	5438 L	BS
	815 I	BS	EQN II:	1098 LI	BS			
EQN II:	015 1							
EQN II: EQN III <sub>m</sub> :	933 I		EQN III <sub>m</sub> :	1908 LI	BS			
-	933 I 517 I	LBS LBS	EQN III <sub>m</sub> : EQN III <sub>s</sub> :	697 LI	BS EQ	ON III <sub>s</sub> :	1394 L	
EQN III <sub>m</sub> :  EQN III <sub>s</sub> :  EQN IV:	933 I 517 I 540 I	LBS LBS LBS	EQN III <sub>s</sub> : EQN IV:	697 LI 982 LI	BS EC	QN IV:	1963 L	BS
EQN III <sub>m</sub> : EQN III <sub>s</sub> :	933 I 517 I 540 I	LBS LBS	EQN III <sub>s</sub> :	697 LI 982 LI	BS EC	QN IV:	1963 L	BS
EQN III <sub>m</sub> :  EQN III <sub>s</sub> :  EQN IV:	933 I 517 I 540 I	LBS LBS LBS / LAG	EQN III <sub>s</sub> : EQN IV:	697 LI 982 LI	BS EQ BS BS/BOLT RESIS	QN IV:	1963 L	BS / BOL
$\begin{split} & EQN \ III_m: \\ & EQN \ III_s: \\ & EQN \ IV: \\ & RESIST_{DES} = \\ & RESIST_{GRP} = \end{split}$	933 I 517 I 540 I <b>517 I</b>	LBS LBS LBS / LAG	EQN III <sub>s</sub> : EQN IV: RESIST <sub>DES</sub> =	697 LI 982 LI <b>697 L</b> I	BS EQ BS BS/BOLT RESIS	QN IV: ST <sub>DES</sub> =	1963 L 1394 L	BS / BOLT

WCLH BRACE BRKT NO:		GF	2587	LBS		
BRKT SHEAR R	ESIST. USING	FOR BRG:	SPF #1		NDS VARI	ABLES
BRACKET I	LOADED IN SH	EAR (V / H):	Н	$G_{Spec}$	$_{\text{ies}} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 3665.6$
LOADING F	PARA OR PERP	TO GRAIN:	PERP	Lag l	$D_{\rm r} = 0.371$	$\mathbf{F}_{\text{em} } = 5600.0$
POS. CONNEC	TION TO ALL	MEMBERS?	Y	Bolt	D = 0.500	$\mathbf{F}_{es} = 87000$
BRA	ACKET THICKN	VESS (IN.) =	0.250	F	<sub>yb</sub> = 45000	$\mathbf{k}_{1} = 0.247$
FASTEN	ER TYPE (LAG	iS/BOLTS) =	LAGS	$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$
				R	e   = 0.0644	$\mathbf{k}_{2} = 0.480$
				1	$R_t = 13.500$	$\mathbf{k}_{2\parallel} = 0.480$
					$I_{\rm m} = 3.375$	$\mathbf{k}_3 = 8.288$
					$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 6.578$
LAG SCREV LAG LE NO. LAG	V DIA. (IN.) = NGTH (IN.) = G SCREWS =	1/2 4.0 6	REWS		RED WITH THRU- BOLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.=	1/2 0 0
MIN. PEN. I	REQ'D (IN.) = $TOR EACH LACTOR$	2.5	SINCL F	MAIN MEMBER T SHEAR RES. / BOLT		5 1/8 SHEAR RES. / BOLT
		GSCKEW	SHIGHE			JILLAK KES. / DOLI
EQN I <sub>m</sub> :	1147 L		EQN I <sub>m</sub> :	2348 LBS	EQN I <sub>m</sub> :	2348 LBS
		BS				
EQN I <sub>m</sub> :	1147 L	.BS .BS	EQN I <sub>m</sub> :	2348 LBS	EQN I <sub>m</sub> :	2348 LBS
EQN I <sub>m</sub> : EQN I <sub>s</sub> :	1147 L 2017 L	BS BS BS	EQN I <sub>m</sub> : EQN I <sub>s</sub> :	2348 LBS 2719 LBS	EQN I <sub>m</sub> :	2348 LBS
EQN $I_m$ : EQN $I_s$ : EQN $II$ :	1147 L 2017 L 554 L 635 L 431 L	BS BS BS BS	EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II:	2348 LBS 2719 LBS 747 LBS 1300 LBS 581 LBS	EQN I <sub>m</sub> :	2348 LBS 5438 LBS
EQN I <sub>m</sub> :  EQN I <sub>s</sub> :  EQN III:  EQN III <sub>m</sub> :  EQN III <sub>s</sub> :  EQN IV:	1147 L 2017 L 554 L 635 L	.BS .BS .BS .BS .BS	EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II: EQN III <sub>m</sub> : EQN III <sub>s</sub> : EQN III <sub>s</sub> :	2348 LBS 2719 LBS 747 LBS 1300 LBS 581 LBS 803 LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> :  EQN III <sub>s</sub> : EQN IV:	2348 LBS 5438 LBS
EQN I <sub>m</sub> :  EQN I <sub>s</sub> :  EQN II:  EQN III <sub>m</sub> :  EQN III <sub>s</sub> :	1147 L 2017 L 554 L 635 L 431 L 442 L	.BS .BS .BS .BS .BS	EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II: EQN III <sub>m</sub> : EQN III <sub>s</sub> :	2348 LBS 2719 LBS 747 LBS 1300 LBS 581 LBS 803 LBS	EQN $I_m$ :  EQN $I_s$ :	2348 LBS 5438 LBS
EQN I <sub>m</sub> :  EQN I <sub>s</sub> :  EQN III:  EQN III <sub>m</sub> :  EQN III <sub>s</sub> :  EQN IV:	1147 L 2017 L 554 L 635 L 431 L 442 L	BS BS BS BS BS BS BS/LAG	EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II: EQN III <sub>m</sub> : EQN III <sub>s</sub> : EQN III <sub>s</sub> :	2348 LBS 2719 LBS 747 LBS 1300 LBS 581 LBS 803 LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> :  EQN III <sub>s</sub> : EQN IV:	2348 LBS 5438 LBS 1162 LBS 1605 LBS
$\begin{split} & EQN \ I_m; \\ & EQN \ I_s; \\ & EQN \ II; \\ & EQN \ III_m; \\ & EQN \ III_s; \\ & EQN \ IV; \\ \hline & RESIST_{DES} = \\ & RESIST_{GRP} = \end{split}$	1147 L 2017 L 554 L 635 L 431 L 442 L	BS BS BS BS BS BS BS/LAG	$\begin{split} & EQN \: I_m \\ & EQN \: I_s \\ & EQN \: II \\ & EQN \: III_m \\ & EQN \: III_s \\ & EQN \: IV \\ & ESIST_{DES} = \end{split}$	2348 LBS 2719 LBS 747 LBS 1300 LBS 581 LBS 803 LBS 581 LBS/BO	EQN I <sub>m</sub> ; EQN I <sub>s</sub> ;  EQN III <sub>s</sub> ; EQN IV:  LT RESIST <sub>DES</sub> =	2348 LBS 5438 LBS 1162 LBS 1605 LBS 1162 LBS / BOL

WCLH BRA		CE	2597	I DC		
BRKT NO:	BK5	GF	2587	LBS		
BRKT SHEAR	RESIST. USIN	G FOR BRG:	SPF #1		NDS VARI	ABLES
BRACKE	T LOADED IN S	SHEAR (V / H):	Н	$G_{Spe}$	cies = 0.50	$\mathbf{F}_{\mathrm{em}} = 3665.6$
LOADING	G PARA OR PEI	RP TO GRAIN:	PERP	Lag	$D_{\rm r} = 0.371$	$\mathbf{F}_{\text{em}\parallel} = 5600.0$
POS. CONN	ECTION TO AL	L MEMBERS?	Y	Bolt	D = 0.500	$\mathbf{F}_{es} = 87000$
В	RACKET THIC	KNESS (IN.) =	0.250	I	$T_{yb} = 45000$	$\mathbf{k}_{1} \perp = 0.247$
FAST	ENER TYPE (LA	AGS/BOLTS) =	LAGS	$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1 \parallel} = 0.364$
				F	$R_{e \parallel} = 0.0644$	$\mathbf{k}_{2} \perp = 0.480$
					$R_t = 13.500$	$\mathbf{k}_{2\parallel} = 0.480$
					$l_{\rm m} = 3.375$	$k_3 = 8.288$
					$l_{\rm s} = 0.250$	$\mathbf{k}_{3\parallel} = 6.578$
	ET SECURED V		CREWS	BRACKET SECU	RED WITH THRU-I	
	EW DIA. (IN.) =				BOLT DIA. (IN.) =	1/2
	LENGTH (IN.) =				NO. BOLTS S.S.=	0
	LAG SCREWS = N. REQ'D (IN.) =			MAIN MEMBER T	NO. BOLTS D.S.= THICKNESS (IN.) =	0 5 1/8
MIIN. FEI	1. KEQD (II1.) –	2.3		MAIN MEMBER I	HICKNESS (IIV.) –	3 1/6
RESISTANCE	E FOR EACH L	AG SCREW	SINGLE	SHEAR RES. / BOLT	DOUBLE S	SHEAR RES. / BOLT
RESISTANCE EQN I <sub>m</sub> :			SINGLE EQN I <sub>m</sub> :	SHEAR RES. / BOLT 2348 LBS	DOUBLE S EQN I <sub>m</sub> :	SHEAR RES. / BOLT 2348 LBS
	1147	LBS				
EQN I <sub>m</sub> :	1147 2017	LBS	EQN I <sub>m</sub> :	2348 LBS	EQN I <sub>m</sub> :	2348 LBS
EQN I <sub>m</sub> : EQN I <sub>s</sub> :	1147 2017 554	LBS LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> :	2348 LBS 2719 LBS	EQN I <sub>m</sub> :	2348 LBS
EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II:	1147 2017 554 635 431	LBS LBS LBS LBS LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II:	2348 LBS 2719 LBS 747 LBS 1300 LBS 581 LBS	EQN I <sub>m</sub> :	2348 LBS 5438 LBS
EQN I <sub>m</sub> : EQN II; EQN III; EQN III <sub>m</sub> : EQN III <sub>s</sub> :	1147 2017 554 635 431 442	LBS LBS LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II: EQN III <sub>m</sub> : EQN III <sub>s</sub> : EQN III <sub>s</sub> :	2348 LBS 2719 LBS 747 LBS 1300 LBS	EQN $I_m$ : EQN $I_s$ :	2348 LBS 5438 LBS
$\begin{split} & EQN \ I_m: \\ & EQN \ I_s: \\ & EQN \ II: \\ & EQN \ III_m: \\ & EQN \ III_s: \\ & EQN \ IV: \\ \hline & RESIST_{DES} = \end{split}$	1147 2017 554 635 431 442	LBS LBS LBS LBS LBS	$\begin{split} & EQN \ I_m: \\ & EQN \ I_s: \\ & EQN \ II: \\ & EQN \ III_m: \\ & EQN \ III_s: \\ & EQN \ IV: \\ & RESIST_{DES} = \end{split}$	2348 LBS 2719 LBS 747 LBS 1300 LBS 581 LBS 803 LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> :  EQN III <sub>s</sub> :  EQN IV:  DLT RESIST <sub>DES</sub> =	2348 LBS 5438 LBS
EQN I <sub>m</sub> : EQN II; EQN III; EQN III <sub>m</sub> : EQN III <sub>s</sub> :	1147 2017 554 635 431 442	LBS LBS LBS LBS LBS LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II: EQN III <sub>m</sub> : EQN III <sub>s</sub> : EQN III <sub>s</sub> :	2348 LBS 2719 LBS 747 LBS 1300 LBS 581 LBS 803 LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN III <sub>s</sub> : EQN IV:	2348 LBS 5438 LBS 1162 LBS 1605 LBS
$\begin{split} & EQN \ I_m: \\ & EQN \ I_s: \\ & EQN \ II: \\ & EQN \ III_m: \\ & EQN \ III_s: \\ & EQN \ IV: \\ \hline & RESIST_{DES} = \end{split}$	1147 2017 554 635 431 442	LBS LBS LBS LBS LBS LBS LBS	$\begin{split} & EQN \ I_m: \\ & EQN \ I_s: \\ & EQN \ II: \\ & EQN \ III_m: \\ & EQN \ III_s: \\ & EQN \ IV: \\ & RESIST_{DES} = \end{split}$	2348 LBS 2719 LBS 747 LBS 1300 LBS 581 LBS 803 LBS 581 LBS/BC	EQN I <sub>m</sub> : EQN I <sub>s</sub> :  EQN III <sub>s</sub> :  EQN IV:  DLT RESIST <sub>DES</sub> =	2348 LBS 5438 LBS 1162 LBS 1605 LBS 1162 LBS/BOLT

WCLH BRACE BRKT NO:	BK5	GF	3303	LBS - TENSION	-	CONNECTION
BRKT SHEAR R	ESIST. USING	FOR BRG:	GLB		NDS VARI	ABLES
BRACKET I	LOADED IN SH	IEAR (V / H):	H	$\mathbf{G}_{Species}$	= 0.50	$\mathbf{F}_{\rm em} = 3157.6$
LOADING I	PARA OR PERI	P TO GRAIN:	PARA	Lag D <sub>r</sub>	= 0.371	$\mathbf{F}_{\text{em}\parallel} = 5600.0$
POS. CONNEC	CTION TO ALL	MEMBERS?	Y	Bolt D	= 0.500	$F_{es} = 87000$
BRA	ACKET THICK	NESS (IN.) =	0.250	$\mathbf{F}_{vb}$	= 45000	$\mathbf{k}_{1} = 0.313$
FASTEN	ER TYPE (LAC	GS/BOLTS) =	BOLTS	$\mathbf{R}_{\mathrm{e}}$ .	= 0.0363	$\mathbf{k}_{1\parallel} = 0.540$
					= 0.0644	$\mathbf{k}_{2} = 0.473$
					= 20.500	$\mathbf{k}_{2\parallel} = 0.458$
				$\mathbf{l}_{\mathrm{m}}$	= 5.125	$k_{3} = 10.597$
					= 0.250	$\mathbf{k}_{3\parallel} = 7.792$
	W DIA. (IN.) = ENGTH (IN.) =	1/2 4.0			OLT DIA. (IN.) =	1/2
NO. LA	G SCREWS = REQ'D (IN.) =	0 2.5			O. BOLTS S.S.= O. BOLTS D.S.= CKNESS (IN.) =	0 2 5 1/8
NO. LA	G SCREWS = REQ'D (IN.) =	0 2.5	SINGLE	NO	D. BOLTS D.S.= CKNESS (IN.) =	2
NO. LA MIN. PEN. I	G SCREWS = REQ'D (IN.) =	0 2.5 AG SCREW	SINGLE EQN I <sub>m</sub> :	NO MAIN MEMBER THIO SHEAR RES./BOLT	D. BOLTS D.S.= CKNESS (IN.) =	2 5 1/8
NO. LAC MIN. PEN. I RESISTANCE F	G SCREWS = REQ'D (IN.) = FOR EACH LA	0 2.5 AG SCREW		NO MAIN MEMBER THIO SHEAR RES. / BOLT 3588 LBS	D. BOLTS D.S.= CKNESS (IN.) = DOUBLE S	2 5 1/8 SHEAR RES. / BOLT
NO. LAC MIN. PEN. I RESISTANCE F EQN I <sub>m</sub> :	G SCREWS = REQ'D (IN.) =  FOR EACH LA  2662 I	0 2.5 AG SCREW LBS	EQN I <sub>m</sub> :	NO MAIN MEMBER THIS  SHEAR RES. / BOLT  3588 LBS 2719 LBS	D. BOLTS D.S.= CKNESS (IN.) = DOUBLE S EQN I <sub>m</sub> :	2 5 1/8 SHEAR RES. / BOLT 3588 LBS
NO. LAI MIN. PEN. I RESISTANCE F EQN I <sub>m</sub> : EQN I <sub>s</sub> :	G SCREWS = REQ'D (IN.) = OOR EACH LA 2662 II 2017 II	0 2.5 AG SCREW LBS LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> :	NO MAIN MEMBER THIS  E SHEAR RES. / BOLT  3588 LBS 2719 LBS 1632 LBS	D. BOLTS D.S.= CKNESS (IN.) = DOUBLE S EQN I <sub>m</sub> :	2 5 1/8 SHEAR RES. / BOLT 3588 LBS
NO. LAI MIN. PEN. I  RESISTANCE F  EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II:	G SCREWS = REQ'D (IN.) =  OR EACH LA  2662 I  2017 I 1211 I 1350 I 613 I	0 2.5 G SCREW LBS LBS LBS LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II:	NO MAIN MEMBER THICK  SHEAR RES. / BOLT  3588 LBS 2719 LBS 1632 LBS 1820 LBS 826 LBS	D. BOLTS D.S.= CKNESS (IN.) = DOUBLE S EQN I <sub>m</sub> :	2 5 1/8 SHEAR RES./BOLT 3588 LBS 5438 LBS
NO. LAMIN. PEN. I  RESISTANCE F  EQN I <sub>m</sub> :  EQN II:  EQN III <sub>m</sub> :  EQN III <sub>s</sub> :  EQN III <sub>s</sub> :	G SCREWS = REQ'D (IN.) =  OOR EACH LA  2662 I  2017 I 1211 I 1350 I	0 2.5 G SCREW LBS LBS LBS LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II: EQN III <sub>m</sub> : EQN III <sub>s</sub> : EQN IV:	NO MAIN MEMBER THIO  2 SHEAR RES. / BOLT  3588 LBS 2719 LBS 1632 LBS 1820 LBS 826 LBS 982 LBS	D. BOLTS D.S.= CKNESS (IN.) =  DOUBLE S EQN I <sub>m</sub> ; EQN I <sub>s</sub> ;  EQN III <sub>s</sub> ; EQN IV:	2 5 1/8 SHEAR RES. / BOLT 3588 LBS 5438 LBS
NO. LAMIN. PEN. I  RESISTANCE F  EQN I <sub>m</sub> :  EQN II:  EQN III <sub>m</sub> :  EQN III <sub>s</sub> :  EQN IV:  RESIST <sub>DES</sub> =	G SCREWS = REQ'D (IN.) =  FOR EACH LA  2662 1 2017 1 1211 1 1350 1 613 1 540 1	0 2.5 G SCREW LBS LBS LBS LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II: EQN III <sub>m</sub> : EQN IIII <sub>m</sub> :	NO MAIN MEMBER THIO  2 SHEAR RES. / BOLT  3588 LBS 2719 LBS 1632 LBS 1820 LBS 826 LBS 982 LBS	D. BOLTS D.S.= CKNESS (IN.) =  DOUBLE S EQN I <sub>m</sub> ; EQN I <sub>s</sub> ;  EQN III <sub>s</sub> ; EQN IV:	2 5 1/8 SHEAR RES./BOLT 3588 LBS 5438 LBS
NO. LAMIN. PEN. I  RESISTANCE F  EQN I <sub>m</sub> :  EQN II:  EQN III <sub>m</sub> :  EQN III <sub>s</sub> :  EQN III <sub>s</sub> :	G SCREWS = REQ'D (IN.) =  FOR EACH LA  2662 1 2017 1 1211 1 1350 1 613 1 540 1	0 2.5 G SCREW LBS LBS LBS LBS LBS LBS LBS	EQN I <sub>m</sub> : EQN I <sub>s</sub> : EQN II: EQN III <sub>m</sub> : EQN III <sub>s</sub> : EQN IV:	NO MAIN MEMBER THICK  2 SHEAR RES. / BOLT  3588 LBS 2719 LBS 1632 LBS 1820 LBS 826 LBS 982 LBS 826 LBS / BOLT	D. BOLTS D.S.= CKNESS (IN.) =  DOUBLE S EQN I <sub>m</sub> ; EQN I <sub>s</sub> ;  EQN III <sub>s</sub> ; EQN IV:	2 5 1/8 SHEAR RES. / BOLT 3588 LBS 5438 LBS 1651 LBS 1963 LBS
NO. LAMIN. PEN. II  RESISTANCE F  EQN I <sub>m</sub> :  EQN II;  EQN III,  EQN III,  EQN IV:  RESIST <sub>DES</sub> =  RESIST <sub>GRP</sub> =	G SCREWS = REQ'D (IN.) =  FOR EACH LA  2662 I  2017 I  1211 I  1350 I  613 I  540 I	0 2.5 G SCREW LBS LBS LBS LBS LBS LBS LBS	$\begin{split} & EQN \ I_m; \\ & EQN \ II_s; \\ & EQN \ III_m; \\ & EQN \ III_s; \\ & EQN \ IV; \\ & EQN \ IV : \end{split}$	NO MAIN MEMBER THICK  2 SHEAR RES. / BOLT  3588 LBS 2719 LBS 1632 LBS 1820 LBS 826 LBS 982 LBS 826 LBS / BOLT	D. BOLTS D.S.= CKNESS (IN.) =  DOUBLE S EQN I <sub>m</sub> ; EQN II <sub>s</sub> ; EQN IV: T RESIST <sub>DES</sub> =	2 5 1/8 SHEAR RES. / BOLT 3588 LBS 5438 LBS 1651 LBS 1963 LBS 1651 LBS / BOLT

WCLH BRACE BRKT NO:		GF	6206	LBS			
BRKT SHEAR RE	ESIST. USING	FOR BRG:	SPF #1			NDS VARI	ABLES
BRACKET L	OADED IN SH	EAR (V / H):	V		$G_{Specie}$	= 0.50	$\mathbf{F}_{\mathrm{em}} = 3665.6$
LOADING P	ARA OR PERI	TO GRAIN:	PARA		Lag D	$_{r} = 0.371$	$\mathbf{F}_{em } = 5600.0$
POS. CONNEC	TION TO ALL	MEMBERS?	Y		Bolt D	0 = 0.500	$\mathbf{F}_{es} = 87000$
BRA	CKET THICK	NESS (IN.) =	0.250		$\mathbf{F}_{\mathrm{yt}}$	, = 45000	$\mathbf{k}_{1} = 0.247$
FASTENI	ER TYPE (LAC	SS/BOLTS) =	LAGS		R <sub>e</sub>	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$
					$\mathbf{R}_{\mathrm{e}}$	= 0.0644	$\mathbf{k}_{2} = 0.480$
					R	t = 13.500	$\mathbf{k}_{2\parallel} = 0.480$
					l <sub>n</sub>	= 3.375	$\mathbf{k}_{3} + 8.288$
					-	s = 0.250	$\mathbf{k}_{3\parallel} = 6.578$
LAG SCREW LAG LEN	SECURED W.  ODIA. (IN.) =  NGTH (IN.) =  G SCREWS =	1/2 4.0 12	CREWS	BRACK	B N	ED WITH THRU-I OLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.=	3OLTS 1/2 0 0
MIN. PEN. R	REQ'D (IN.) =	2.5	an.a.		EMBER TH	ICKNESS (IN.) =	5 1/8
RESISTANCE FO			EQN I <sub>m</sub> :	SHEAR RES		EQN I <sub>m</sub> :	SHEAR RES. / BOLT
EQN I <sub>m</sub> .  EQN I <sub>s</sub> :	1753 I		EQN I <sub>m</sub> .	3588		EQN I <sub>m</sub> .  EQN I <sub>s</sub> :	3588 LBS
EQN I <sub>s</sub> . EQN II:	2017 I 815 I		EQN I <sub>s</sub> .	2719 1098		EQN I <sub>s</sub> .	5438 LBS
EQN III <sub>m</sub> :	933 I		EQN III <sub>m</sub> :	1908			
EQN III <sub>s</sub> :	517 I		EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	1394 LBS
EON IV:	540 I		EQN IV:		LBS	EON IV:	1963 LBS
	517 I	BS / LAG	RESIST <sub>DES</sub> =		LBS / BOI	T RESIST <sub>DES</sub> =	1394 LBS / BOL
RESIST <sub>DES</sub> =			RESIST <sub>GRP</sub> =		LBS	$RESIST_{GRP} =$	0 LBS
$\begin{aligned} \mathbf{RESIST}_{\mathrm{DES}} &= \\ \mathbf{RESIST}_{\mathrm{GRP}} &= \end{aligned}$	6206 I	ъ					
$RESIST_{GRP} =$	6206 I					$\neg$	

BRKT NO:		GF	3103	LBS				
BRKT SHEAR R	ESIST. USIN	G FOR BRG:	SPF #1			NDS VARIA	ABLES	
BRACKET I	OADED IN S	HEAR (V / H)	: V		$G_{Specis}$	$_{\rm es} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 3665.6$	
LOADING I	ARA OR PEI	RP TO GRAIN	: PARA		Lag D	$O_r = 0.371$	$\mathbf{F}_{em } = 5600.0$	
POS. CONNEC	TION TO AL	L MEMBERS	? Y		Bolt I	D = 0.500	$\mathbf{F}_{es} = 87000$	
BRA	CKET THIC	KNESS (IN.) =	0.250		F,	$_{b} = 45000$	$\mathbf{k}_{1} = 0.247$	
FASTEN	ER TYPE (LA	AGS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$	
					$\mathbf{R}_{\mathrm{e}}$	= 0.0644	$\mathbf{k}_{2} + 0.480$	
						$R_t = 13.500$	$\mathbf{k}_{2\parallel} = 0.480$	
					1	<sub>m</sub> = 3.375	$\mathbf{k}_{3} + 8.288$	
						$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 6.578$	
LAG SCREV LAG LE	SECURED V V DIA. (IN.) = NGTH (IN.) = G SCREWS =	4.0	CREWS	BRACK	I	RED WITH THRU-E BOLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.=	1/2 0 0	
MIN. PEN. I	REQ'D (IN.) = $OR EACH L$		SINGLI	MAIN M		HICKNESS (IN.) = DOUBLE S	5 1/8 SHEAR RES. / BOLT	Т
EQN I <sub>m</sub> :	1753	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN I <sub>m</sub> :	3588 LBS	
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN I <sub>s</sub> :	5438 LBS	
EQN II:	815	LBS	EQN II:	1098	LBS			
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub> :	1908	LBS			
EQN III <sub>s</sub> :	517	LBS	EQN III <sub>s</sub> :	697	LBS	EQN III <sub>s</sub> :	1394 LBS	
EQN IV:	540	LBS	EQN IV:	982	LBS	EQN IV:	1963 LBS	
$RESIST_{DES} =$	517	LBS / LAG	$RESIST_{DES} =$	697	LBS / BOI	LT RESIST <sub>DES</sub> =	1394 LBS / B	OLI
$RESIST_{GRP} =$	3103	LBS	RESIST <sub>GRP</sub> =	0	LBS	$\mathbf{RESIST}_{\mathrm{GRP}} =$	0 LBS	
St	JMMARY BRKT #	BK3ZSQ	GOOD FOR	3103	LBS			

WCLH BRAG BRKT NO:		GF	2586	I DC				
BRKI NO:	DK35Q	Gr	2300	LDS				
BRKT SHEAR	RESIST. USIN	G FOR BRG:	SPF #1			NDS VARI	ABLES	
BRACKE	Γ LOADED IN S	HEAR (V / H)	: V		$G_{Speci}$	$_{\rm ies} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 3665.6$	
LOADING	G PARA OR PE	RP TO GRAIN	: PARA		Lag I	$O_{\rm r} = 0.371$	$\mathbf{F}_{em\parallel} = 5600.0$	
POS. CONN	ECTION TO AL	L MEMBERS	? Y		Bolt	D = 0.500	$\mathbf{F}_{\mathrm{es}} =  87000$	
В	RACKET THIC	KNESS (IN.) =	0.250		F	$_{yb} = 45000$	$\mathbf{k}_{1} \perp = 0.247$	
FASTI	ENER TYPE (LA	AGS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$	
					R	e   = 0.0644	$\mathbf{k}_{2} \mid = 0.480$	
					I	$R_t = 13.500$	$\mathbf{k}_{2\parallel} = 0.480$	
					I	$I_{\rm m} = 3.375$	$\mathbf{k}_{3} \mid = 8.288$	
						$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 6.578$	
BRACKI	ET SECURED	WITH LAG S	CREWS	BRACK	ET SECUE	RED WITH THRU-I	BOLTS	
	EW DIA. (IN.) =					BOLT DIA. (IN.) =	1/2	
	LENGTH (IN.) =					NO. BOLTS S.S.=	0	
	AG SCREWS =			3440134		NO. BOLTS D.S.=	0	
MIN. PEN	I. REQ'D (IN.) =	2.5		MAIN M	IEMBEK II	HICKNESS (IN.) =	5 1/8	
RESISTANCE	FOR EACH L	AG SCREW	SINGLI	E SHEAR RES	S. / BOLT	DOUBLE S	SHEAR RES. / BOL	Т
EQN I <sub>m</sub> :	1753	LBS	EQN I <sub>m</sub> :	3588	LBS	EQN I <sub>m</sub> :	3588 LBS	
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN $I_s$ :	5438 LBS	
EQN II:	815	LBS	EQN II:	1098	LBS			
EQN III <sub>m</sub> :	933	LBS	EQN III <sub>m</sub> :	1908	LBS			
EQN III <sub>s</sub> :	517	LBS	EQN III <sub>s</sub> :	697	LBS	EQN III <sub>s</sub> :	1394 LBS	
EQN IV:	540	LBS	EQN IV:	982	LBS	EQN IV:	1963 LBS	
$RESIST_{DES} =$	517	LBS / LAG	RESIST <sub>DES</sub> =	697	LBS / BO	LT RESIST <sub>DES</sub> =	1394 LBS / I	BOLT
$RESIST_{GRP} =$	2586	LBS	RESIST <sub>GRP</sub> =	0	LBS	$\mathbf{RESIST}_{\mathrm{GRP}} =$	0 LBS	
	SUMMARY							

WCLH BRAC BRKT NO:	BK3	GF	3103 I	LBS		
BRKT SHEAR F	RESIST. USING	G FOR BRG:	SPF #1		NDS VARI	ABLES
BRACKET	LOADED IN SI	HEAR (V / H):	V	$\mathbf{G}_{\mathrm{Speci}}$	$_{\rm es} = 0.50$	$\mathbf{F}_{\mathrm{em}} = 3665.6$
LOADING	PARA OR PER	P TO GRAIN:	PARA	Lag I	$O_r = 0.371$	$\mathbf{F}_{\text{em} } = 5600.0$
POS. CONNE	CTION TO ALL	MEMBERS?	Y	Bolt 1	D = 0.500	$\mathbf{F}_{es} = 87000$
BR	ACKET THICK	NESS (IN.) =	0.250	F,	$_{\rm vb} = 45000$	$\mathbf{k}_{1} = 0.247$
FASTE	NER TYPE (LA	GS/BOLTS) =	LAGS	$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1\parallel} = 0.364$
				R	= 0.0644	$\mathbf{k}_{2} = 0.480$
				I	$R_t = 13.500$	$\mathbf{k}_{2} = 0.480$
				l	<sub>m</sub> = 3.375	$\mathbf{k}_{3} + 8.288$
					$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 6.578$
LAG SCRE LAG L	I SECURED W W DIA. (IN.) = ENGTH (IN.) = AG SCREWS =	1/2 4.0 6	CREWS		RED WITH THRU-I BOLT DIA. (IN.) = NO. BOLTS S.S.= NO. BOLTS D.S.=	1/2 0 0
MIN. PEN. RESISTANCE	REQ'D (IN.) =  FOR EACH LA	2.5 AG SCREW	SINGLE S	MAIN MEMBER TH	. ,	5 1/8 SHEAR RES. / BOLT
EQN I <sub>m</sub> :	1753		EQN I <sub>m</sub> :	3588 LBS	EQN I <sub>m</sub> :	3588 LBS
			EON L	2719 LBS	EQN I <sub>s</sub> :	5438 LBS
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2/19 LDS	EQITE.	
EQN I <sub>s</sub> : EQN II:	2017 815		EQN I <sub>s</sub> : EQN II:	1098 LBS	EQIVI <sub>s</sub> .	3430 LB3
		LBS	- 5		EQIVI <sub>s</sub> .	5436 LB3
EQN II:	815	LBS LBS	EQN II:	1098 LBS	EQN III <sub>s</sub> :	1394 LBS
EQN II: EQN III <sub>m</sub> :	815 933	LBS LBS LBS	EQN II: EQN III <sub>m</sub> :	1098 LBS 1908 LBS	- 5	
EQN II: EQN III <sub>m</sub> : EQN III <sub>s</sub> :	815 933 517 540	LBS LBS LBS	EQN II: EQN III <sub>m</sub> : EQN III <sub>s</sub> :	1098 LBS 1908 LBS 697 LBS 982 LBS	EQN III <sub>s</sub> :	1394 LBS
EQN II: EQN III <sub>n</sub> : EQN III <sub>s</sub> : EQN IV:	815 933 517 540	LBS LBS LBS LBS	EQN II: EQN III <sub>m</sub> : EQN III <sub>s</sub> : EQN IV:	1098 LBS 1908 LBS 697 LBS 982 LBS	EQN III <sub>s</sub> : EQN IV:	1394 LBS 1963 LBS
$\begin{aligned} & \textbf{EQN II:} \\ & \textbf{EQN III_m:} \\ & \textbf{EQN III_s:} \\ & \textbf{EQN IV:} \\ & \textbf{RESIST}_{DES} = \\ & \textbf{RESIST}_{GRP} = \end{aligned}$	815 933 517 540 <b>517</b>	LBS LBS LBS LBS	$\begin{aligned} & \textbf{EQN II:} \\ & \textbf{EQN III_m:} \\ & \textbf{EQN III_s:} \\ & \textbf{EQN IV:} \\ & \textbf{RESIST}_{DES} = \end{aligned}$	1098 LBS 1908 LBS 697 LBS 982 LBS	EQN III <sub>s</sub> : EQN IV: LT RESIST <sub>DES</sub> =	1394 LBS 1963 LBS 1394 LBS/BOL

WCLH BRA		C.F.	2505	I DC				
BRKT NO:	BK2SQ	GF	2587	LBS				
BRKT SHEAR	RESIST. USIN	G FOR BRG:	GLB			NDS VARI	ABLES	
BRACKE	Γ LOADED IN S	HEAR (V / H)	: V		$G_{Specie}$	s = 0.50	$\mathbf{F}_{\mathrm{em}} = 3665.6$	
LOADING	B PARA OR PE	RP TO GRAIN	PERP		Lag D	$p_r = 0.371$	$\mathbf{F}_{em\parallel} = 5600.0$	
POS. CONN	ECTION TO AL	L MEMBERS	? Y		Bolt I	0 = 0.500	$\mathbf{F}_{es} = 87000$	
В	RACKET THIC	KNESS (IN.) =	0.250		$\mathbf{F}_{\mathbf{y}}$	$_{\rm b} = 45000$	$\mathbf{k}_{1} \perp = 0.247$	
FAST	ENER TYPE (LA	AGS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	= 0.0421	$\mathbf{k}_{1 \parallel} = 0.364$	
					$\mathbf{R}_{\mathrm{e}}$	= 0.0644	$\mathbf{k}_{2} \perp = 0.480$	
					R	$L_t = 13.500$	$\mathbf{k}_{2\parallel} = 0.480$	
					$\mathbf{l}_{r}$	$_{\rm m} = 3.375$	$\mathbf{k}_{3} \perp = 8.288$	
					l	$_{\rm s} = 0.250$	$\mathbf{k}_{3\parallel} = 6.578$	
	ET SECURED Y		CREWS	BRACK		ED WITH THRU-I		
	EW DIA. (IN.) =					BOLT DIA. (IN.) =	1/2	
	LENGTH (IN.) = .AG SCREWS =					NO. BOLTS S.S.=	0	
	.AG			MAINIM		NO. BOLTS D.S.= IICKNESS (IN.) =	0 5 1/8	
WIIIN. I EI	КЕQD (IIV.) –	2.3		WIZHIN W	EMBEK II.	iickivess (iiv.) –	3 1/6	
RESISTANCE	FOR EACH L	AG SCREW	SINGLI	E SHEAR RES	./BOLT	DOUBLE S	SHEAR RES. / BOLT	Г
EQN I <sub>m</sub> :	1147	LBS	EQN I <sub>m</sub> :	2348	LBS	EQN I <sub>m</sub> :	2348 LBS	
EQN $I_s$ :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN $I_s$ :	5438 LBS	
EQN II:	554	LBS	EQN II:	747	LBS			
EQN III <sub>m</sub> :	635	LBS	EQN III <sub>m</sub>	1300	LBS			
EQN III <sub>s</sub> :	431	LBS	EQN III <sub>s</sub> :	581	LBS	EQN III <sub>s</sub> :	1162 LBS	
EQN IV:	442	LBS	EQN IV:	803	LBS	EQN IV:	1605 LBS	
$RESIST_{DES} =$	431	LBS / LAG	RESIST <sub>DES</sub> =	581	LBS / BOI	T RESIST <sub>DES</sub> =	1162 LBS / B	OLT
$\mathbf{RESIST}_{GRP} =$	2587	LBS	RESIST <sub>GRP</sub> =	0	LBS	$\mathbf{RESIST}_{GRP} =$	0 LBS	
						_		
	SUMMARY							

WCLH BRAC BRKT NO:	BK2	GF	2587	LBS			
BRKT SHEAR F	RESIST. USING	FOR BRG:	GLB			NDS VARI	ABLES
BRACKET	LOADED IN SH	HEAR (V / H):	V		$G_{Spe}$	cies = 0.50	$\mathbf{F}_{\mathrm{em}} = 3665.6$
LOADING	PARA OR PER	P TO GRAIN:	PERP		Lag	$D_r = 0.371$	$\mathbf{F}_{em } = 5600.0$
POS. CONNE	CTION TO ALL	MEMBERS?	Y		Bolt	D = 0.500	$\mathbf{F}_{\mathrm{es}} = 87000$
BR	ACKET THICK	NESS (IN.) =	0.250		1	$F_{yb} = 45000$	$\mathbf{k}_{1} = 0.247$
FASTE	NER TYPE (LAG	GS/BOLTS) =	LAGS		$\mathbf{R}_{\mathrm{e}}$	,   = 0.0421	$\mathbf{k}_{1\parallel} = 0.364$
					I	$R_{e\parallel} = 0.0644$	$\mathbf{k}_{2} = 0.480$
						$R_t = 13.500$	$\mathbf{k}_{2\parallel} = 0.480$
						$l_{\rm m} = 3.375$	$\mathbf{k}_{3} = 8.288$
						$l_s = 0.250$	$\mathbf{k}_{3\parallel} = 6.578$
	r secured w		CREWS	BRACK	ET SECU	RED WITH THRU-I	
	W DIA. (IN.) = ENGTH (IN.) =	1/2 4.0				BOLT DIA. (IN.) = NO. BOLTS S.S.=	1/2 0
	AG SCREWS =	6				NO. BOLTS D.S.=	0
	REQ'D (IN.) =	2.5		MAIN M	IEMBER 7	THICKNESS (IN.) =	5 1/8
RESISTANCE	FOR EACH LA	G SCREW	SINGLI	E SHEAR RES	./BOLT	DOUBLE S	SHEAR RES. / BOLT
EQN I <sub>m</sub> :	1147	LBS	EQN I <sub>m</sub> :	2348	LBS	EQN I <sub>m</sub> :	2348 LBS
EQN I <sub>s</sub> :	2017	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN I <sub>s</sub> :	5438 LBS
EQN II:	554	LBS	EQN II:	747	LBS		
EQN III <sub>m</sub> :	635	LBS	EQN III <sub>m</sub>	1300	LBS		
EQN III <sub>s</sub> :	431		EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	1162 LBS
EQN IV:	442	LBS	EQN IV:		LBS	EQN IV:	1605 LBS
$RESIST_{DES} =$	431	LBS / LAG	$RESIST_{DES} =$	581	LBS / BC	$OLT RESIST_{DES} =$	1162 LBS / BOL
$\mathbf{RESIST}_{\mathrm{GRP}} =$	2587	LBS	RESIST <sub>GRP</sub> =	0	LBS	$\mathbf{RESIST}_{GRP} =$	0 LBS
S	UMMARY						
	BRKT #		GOOD FOR	2587			

WCLH BRAC BRKT NO:	BK1	GF	489	LBS				
BRKT SHEAR	RESIST. USING	FOR BRG:	SPF #1			NDS VARL	ABLES	
BRACKET	LOADED IN SH	IEAR (V / H):	Н		$G_{Species}$	= 0.50	$\mathbf{F}_{\mathrm{em}} = 43$	37.2
LOADING	PARA OR PER	P TO GRAIN:	PERP		Lag D	= 0.265	$\mathbf{F}_{\text{em}\parallel} = 56$	00.0
POS. CONNE	ECTION TO ALL	MEMBERS?	N		Bolt D	= 0.500	$\mathbf{F}_{\mathrm{es}} = 87$	000
BF	RACKET THICK	NESS (IN.) =	0.250	<u>-</u>	$\mathbf{F}_{yb}$	= 45000	$\mathbf{k}_{1 \mid} = 0.$	288
FASTE	NER TYPE (LAG	GS/BOLTS) =	LAGS		R <sub>e</sub>	= 0.0499	$\mathbf{k}_{1\parallel} = 0$ .	364
					$\mathbf{R}_{\mathrm{e}}$	= 0.0644	$\mathbf{k}_{2} + 0$	465
					$\mathbf{R}_{t}$	= 13.500	$\mathbf{k}_{2\parallel} = 0$ .	465
					$\mathbf{l}_{\mathrm{m}}$	= 3.375	$\mathbf{k}_3 \mid = 6$ .	619
					$\mathbf{l}_{\mathrm{s}}$	= 0.250	$k_{3\parallel} = 5.$	745
LAG SCRE	T SECURED W W DIA. (IN.) = ENGTH (IN.) =	7ITH LAG SO 3/8 4.0	CREWS	BRACK	В	ED WITH THRU-E OLT DIA. (IN.) = IO. BOLTS S.S.=	1/2 0	
	AG SCREWS =	4.0				O. BOLTS D.S.=	0	
	REQ'D (IN.) =	2.0		MAIN M		ICKNESS (IN.) =	5 1/8	
RESISTANCE	FOR EACH LA	G SCREW	SINGLI	E SHEAR RES	. / BOLT	DOUBLE S	SHEAR RES. /	BOLT
EQN I <sub>m</sub> :	970	LBS	EQN I <sub>m</sub> :	2779	LBS	EQN I <sub>m</sub> :	2779 LI	3S
EQN I <sub>s</sub> :	1441	LBS	EQN I <sub>s</sub> :	2719	LBS	EQN I <sub>s</sub> :	5438 LI	3S
EQN II:	461	LBS	EQN II:	869	LBS			
EQN III <sub>m</sub> :	513	LBS	EQN III <sub>m</sub> :	1469	LBS			
EQN III <sub>s</sub> :	290		EQN III <sub>s</sub> :		LBS	EQN III <sub>s</sub> :	1094 LI	
EQN IV:	244	LBS	EQN IV:		LBS	EQN IV:	1739 LI	3S
$RESIST_{DES} =$		LBS / LAG	RESIST <sub>DES</sub> =			$T RESIST_{DES} =$		BS / BOL
$\mathbf{RESIST}_{\mathbf{GRP}} =$	489	LBS	RESIST <sub>GRP</sub> =	0	LBS	$\mathbf{RESIST}_{\mathbf{GRP}} =$	0 L	BS
5	SUMMARY					7		
	BRKT #	BK1	GOOD FOR	489	LBS	1		