

### PREMIER MOUNTS

### AM65 WALL MOUNT

DES. J. ROBERSON

JOB NO. 11-1703

DATE 8/8/19

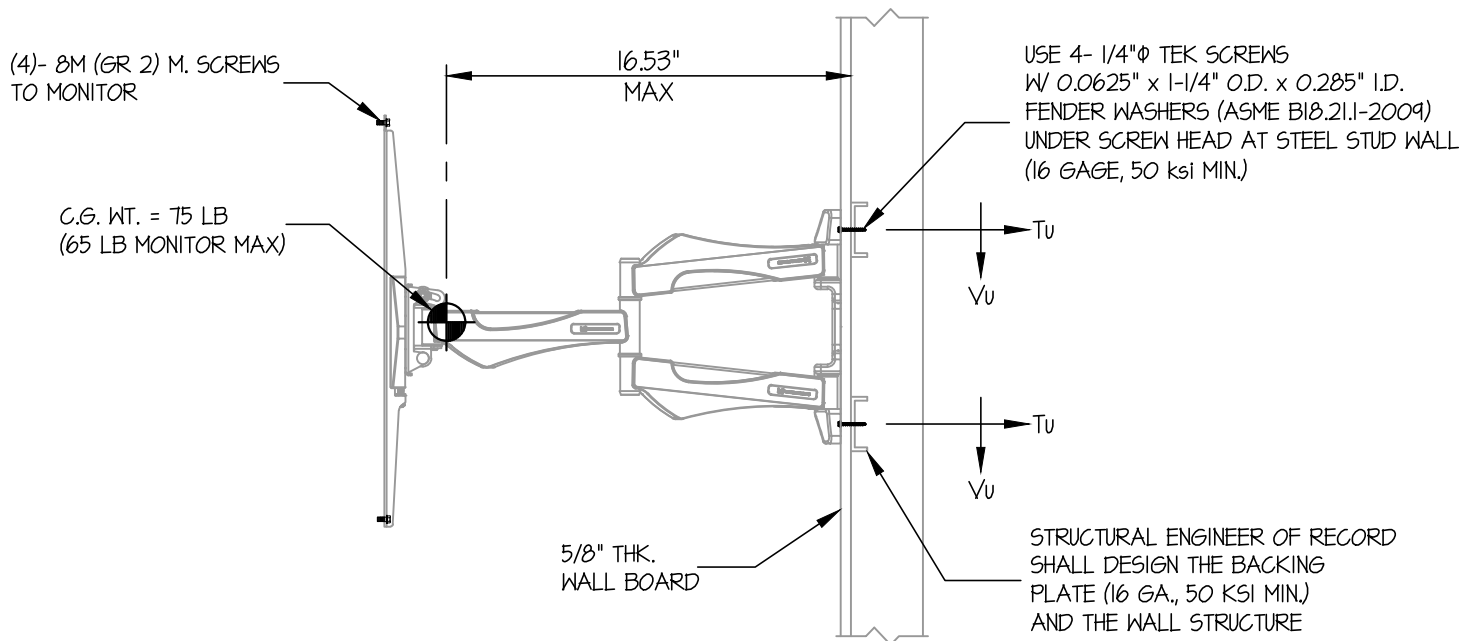
SHEET

1

OF 8 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS

WALL MOUNTED



### STEEL STUD WALL SECTION (AM65 MOUNT)

#### NOTES:

- FORCES ARE DETERMINED PER 2016 CALIFORNIA BUILDING CODE AND ASCE 7-10.

STRENGTH DESIGN IS USED. ( $a_p = 2.5$ ,  $l_p = 1.5$ ,  $R_p = 2.5$ ,  $\Omega_o = 2.0$ ,  $z/h \leq 1$ )

ANCHOR	MAX $S_{Ds}$	$T_u$ MAX	$T_u$ MAX
1/4" $\phi$ TEK SCREW	0.80	335	60
5/16" $\phi$ WOOD SCREW	1.00	396	73
5/16" $\phi$ (GR 5) BOLTS	2.20	756	152
1/4" $\phi$ HILTI HUS-EZ	0.70	600	121

- CENTER OF GRAVITY (C.G.) AND WEIGHT ARE THE GOVERNING PARAMETERS FOR DESIGN. THIS PREAPPROVAL ENCOMPASSES ALL WEIGHTS UP TO THE MAXIMUM WEIGHT SHOWN.
- STRUCTURAL ENGINEER OF RECORD FOR THE BUILDING SHALL PROVIDE SUPPORT STRUCTURE DESIGNED TO SUPPORT WEIGHTS AND FORCES SHOWN IN COMBINATION WITH ALL OTHER LOADS THAT MAY BE PRESENT.



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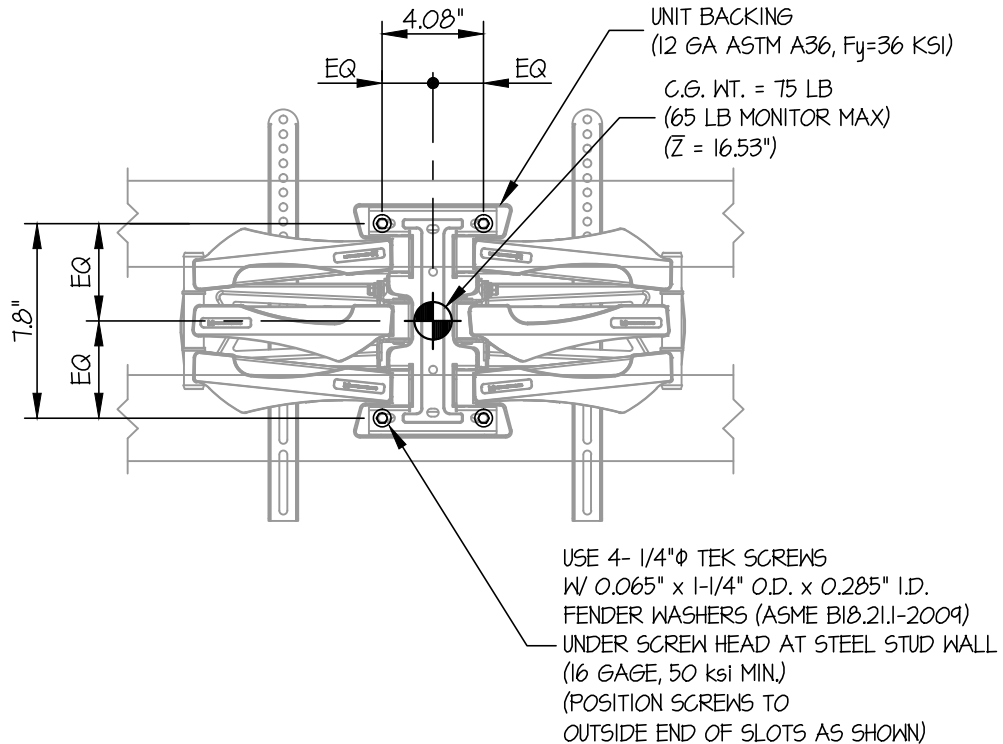
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OF 8 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS

MAX  $S_{Ds} \leq 0.80$

WALL MOUNTED



$T_u = 335$  LB/SCREW (MAX)

$V_u = 60$  LB/SCREW (MAX)

### ELEVATION AT STEEL STUD WALL (AM65 MOUNT)

LOADS: PER 2016 CALIFORNIA BUILDING CODE AND ASCE 7-10.

STRENGTH DESIGN IS USED ( $S_{Ds} = 0.80$ ,  $a_p = 2.5$ ,  $l_p = 1.5$ ,  $R_p = 2.5$ ,  $z/h \leq 1$ )

WEIGHT = 75 LB

HORIZONTAL FORCE ( $E_h$ ) = 1.44  $W_p = 108$  LB

VERTICAL FORCE ( $E_v$ ) = 0.16  $W_p = 12$  LB

SCREW FORCES:

TENSION (T)

$$T_{u \text{ VERTICAL}} = \frac{(1.2(75\#) + 12\#)(16.53")}{2 \text{ SCREWS}(7.8")} = 108 \text{ LB/SCREW}$$

$$T_{u \text{ PARALLEL}} = \frac{108\#(16.53")}{2 \text{ SCREWS}(4.08")} = 219 \text{ LB/SCREW}$$

$$T_{u \text{ PERP.}} = \frac{108\#}{4 \text{ SCREWS}} = 27 \text{ LB/SCREW}$$

$$T_{u \text{ MAX}} = 108\# + (0.3)(27\#) + 219\# = 335 \text{ LB/SCREW (MAX)}$$

SHEAR (V)

$$V_{u \text{ MAX}} = \sqrt{\left(\frac{1.2(75\#) + 12\#}{4 \text{ SCREWS}}\right)^2 + \left(\frac{108\#}{2 \text{ SCREWS}}\right)^2} = 60 \text{ LB/SCREW (MAX)}$$

SCREW SPEC: 1/4"  $\phi$  TEK SCREWS

$\phi T = 412$  LB/SCREW

$\phi V = 362$  LB/SCREW

UNITY CHECK:

$$\left(\frac{T_u}{\phi T}\right) + \left(\frac{V_u}{\phi V}\right) \leq 1.0$$

$$\left(\frac{335}{412}\right) + \left(\frac{60}{362}\right) = 0.99 \leq 1.0 \therefore \text{O.K.}$$

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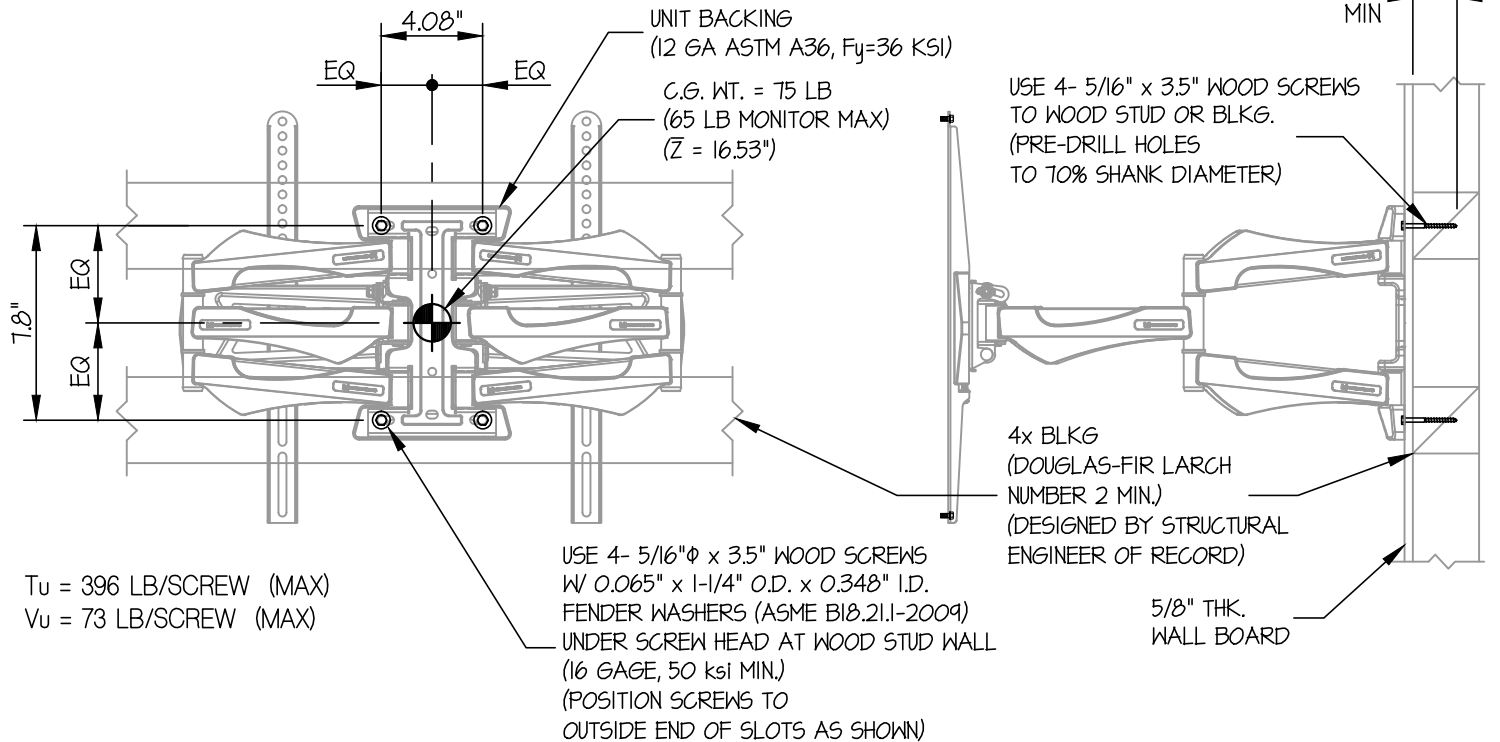
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OF 8 SHEETS

#### SEISMIC SUPPORTS & ATTACHMENTS

MAX  $Sds \leq 1.00$

#### WALL MOUNTED



ELEVATION AT WOOD STUD WALL  
(AM65 MOUNT)

WOOD STUD WALL SECTION  
(AM65 MOUNT)

LOADS: PER 2016 CALIFORNIA BUILDING CODE AND ASCE 7-10.

STRENGTH DESIGN IS USED ( $Sds = 100$ ,  $a_p = 2.5$ ,  $l_p = 15$ ,  $R_p = 2.5$ ,  $z/h \leq 1$ )

WEIGHT = 75 LB

HORIZONTAL FORCE ( $E_h$ ) = 180  $W_p$  = 135 LB

VERTICAL FORCE ( $E_v$ ) = 0.20  $W_p$  = 15 LB

SCREW FORCES:

TENSION (T)

$$T_{u \text{ VERTICAL}} = \frac{(1.2(75\#) + 15\#)(16.53")}{2 \text{ SCREWS}(7.8")} = 112 \text{ LB/SCREW}$$

$$T_{u \text{ PARALLEL}} = \frac{135\#(16.53")}{2 \text{ SCREWS}(4.08")} = 274 \text{ LB/SCREW}$$

$$T_{u \text{ PERP.}} = \frac{135\#}{4 \text{ SCREWS}} = 34 \text{ LB/SCREW}$$

$$T_{u \text{ MAX}} = 112\# + (0.3)(34\#) + 274\# = 396 \text{ LB/SCREW (MAX)}$$

SHEAR (V)

$$V_{u \text{ MAX}} = \sqrt{\left(\frac{1.2(75\#) + 15\#}{4 \text{ SCREWS}}\right)^2 + \left(\frac{135\#}{2 \text{ SCREWS}}\right)^2} = 73 \text{ LB/SCREW (MAX)}$$

SCREW SPEC: 5/16"  $\phi$  WOOD SCREWS

$\phi T$  = 724 LB/SCREW

$\phi V$  = 234 LB/SCREW

$\phi V$  = 216 LB/SCREW (DUE TO BENDING)

UNITY CHECK:

$$\left(\frac{T_u}{\phi T}\right) + \left(\frac{V_u}{\phi V}\right) \leq 1.0$$

$$\left(\frac{396}{724}\right) + \left(\frac{73}{216}\right) = 0.89 \leq 1.0 \therefore \text{O.K.}$$

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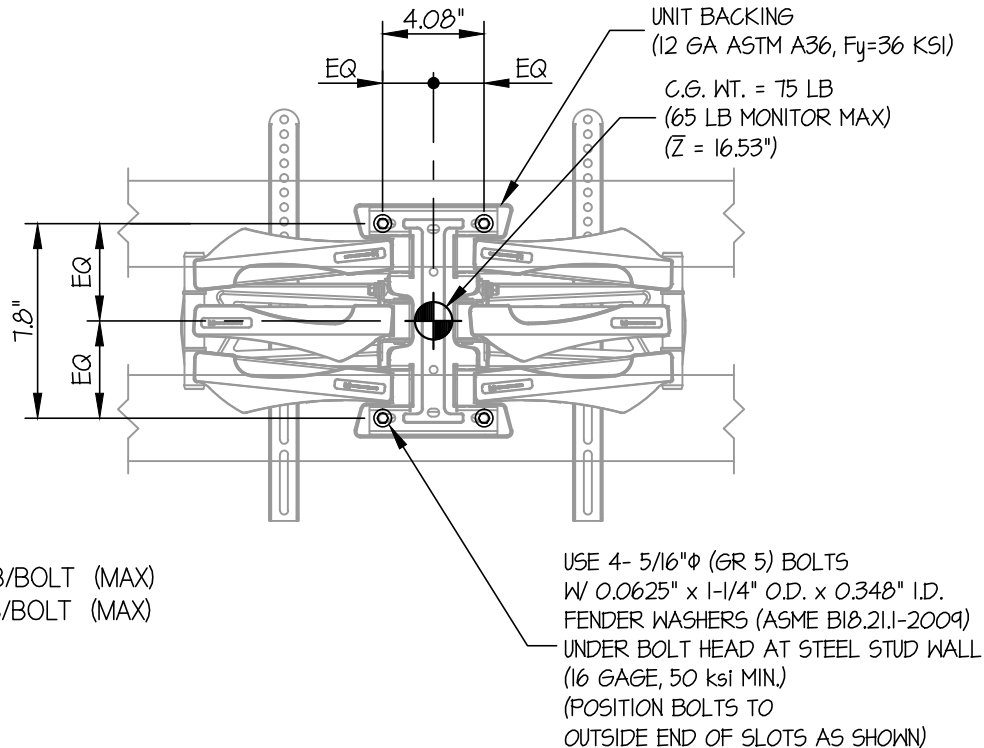
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SEISMIC SUPPORTS & ATTACHMENTS

MAX  $S_{Ds} \leq 2.20$

WALL MOUNTED



$T_u = 756$  LB/BOLT (MAX)  
 $V_u = 152$  LB/BOLT (MAX)

### ELEVATION AT STEEL STUD WALL (AM65 MOUNT)

LOADS: PER 2016 CALIFORNIA BUILDING CODE AND ASCE 7-10.

STRENGTH DESIGN IS USED ( $S_{Ds} = 2.20$ ,  $a_p = 2.5$ ,  $l_p = 1.5$ ,  $R_p = 2.5$ ,  $z/h \leq 1$ )

WEIGHT = 75 LB

HORIZONTAL FORCE ( $E_h$ ) =  $3.96 W_p = 297$  LB

VERTICAL FORCE ( $E_v$ ) =  $0.44 W_p = 33$  LB

BOLT FORCES:

TENSION (T)

$$T_{u \text{ VERTICAL}} = \frac{(1.2(75\#) + 33\#)(16.53'')}{2 \text{ BOLTS } (7.8'')} = 131 \text{ LB/BOLT}$$

$$T_{u \text{ PARALLEL}} = \frac{297\#(16.53'')}{2 \text{ BOLTS } (4.08'')} = 602 \text{ LB/BOLT}$$

$$T_{u \text{ PERP.}} = \frac{297\#}{4 \text{ BOLTS}} = 74 \text{ LB/BOLT}$$

$$T_{u \text{ MAX}} = 131\# + (0.3)(74\#) + 602\# = 756 \text{ LB/BOLT (MAX)}$$

SHEAR (V)

$$V_{u \text{ MAX}} = \sqrt{\left(\frac{1.2(75\#) + 33\#}{4 \text{ BOLTS}}\right)^2 + \left(\frac{297\#}{2 \text{ BOLTS}}\right)^2} = 152 \text{ LB/BOLT (MAX)}$$

BOLT SPEC: 5/16" (GR 5) BOLTS

$\phi T = 5177$  LB/BOLT

$\phi V = 2698$  LB/BOLT

UNITY CHECK:

$$\left(\frac{T_u}{\phi T}\right) + \left(\frac{V_u}{\phi V}\right) \leq 1.0$$

$$\left(\frac{756}{5177}\right) + \left(\frac{152}{2698}\right) = 0.21 \leq 1.0 \therefore \text{O.K.}$$

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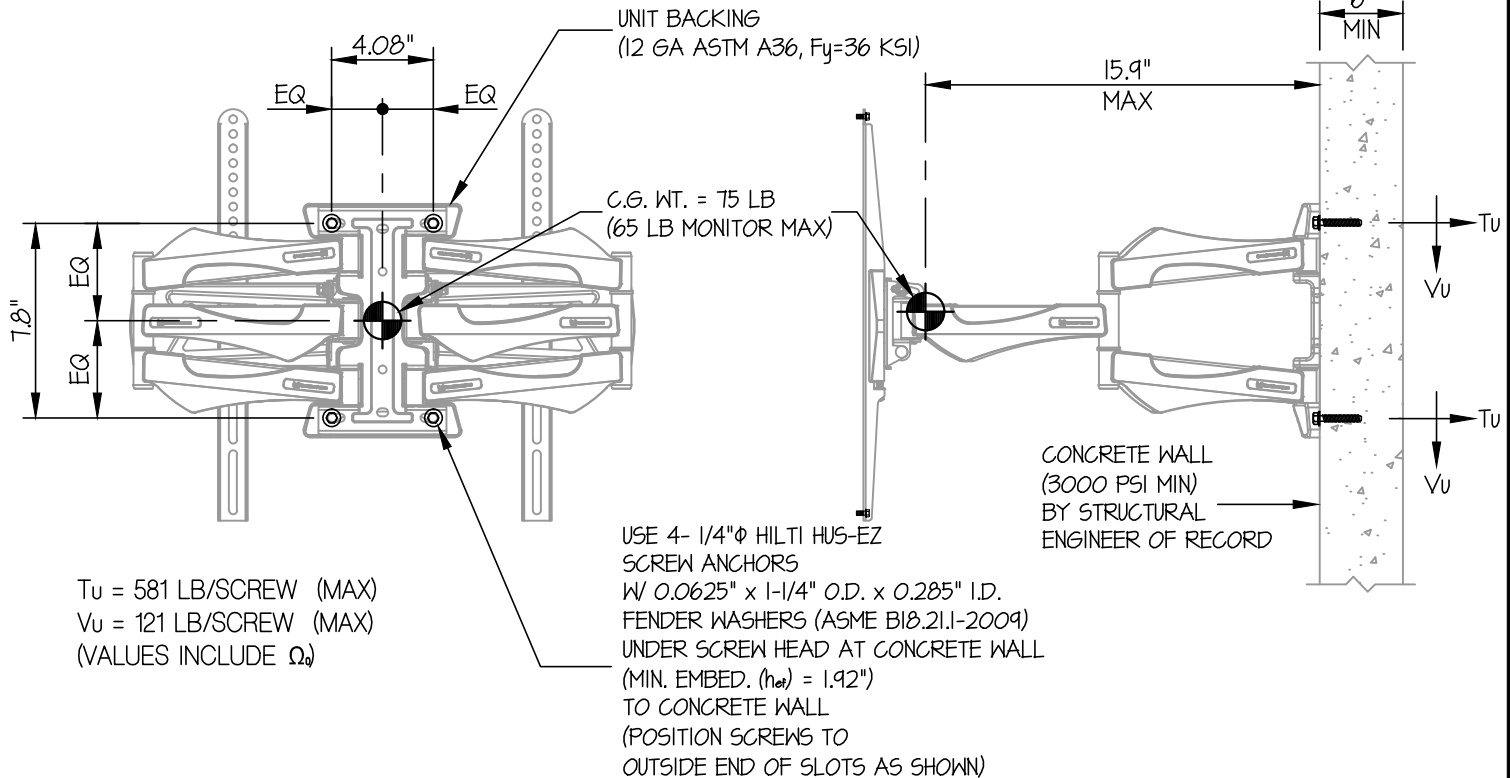
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OF 8 SHEETS

#### SEISMIC SUPPORTS & ATTACHMENTS

MAX  $S_{ds} \leq 0.70$

WALL MOUNTED



#### ELEVATION AT CONCRETE WALL

(AM65 MOUNT)

#### CONCRETE WALL SECTION

(AM65 MOUNT)

LOADS: PER 2016 CALIFORNIA BUILDING CODE AND ASCE 7-10.

STRENGTH DESIGN IS USED ( $S_{ds} = 0.70$ ,  $a_p = 2.5$ ,  $I_p = 1.5$ ,  $R_p = 2.5$ ,  $\Omega_o = 2.0$ ,  $z/h \leq 1$ )

WEIGHT = 75 LB

HORIZONTAL FORCE ( $E_h$ ) = 126  $W_p$  = 95 LB

HORIZONTAL FORCE ( $E_{mh}$ ) = 3.15  $W_p$  = 236 LB

VERTICAL FORCE ( $E_v$ ) = 0.14  $W_p$  = 11 LB

#### SCREW FORCES:

TENSION (T)

$$T_{u \text{ VERTICAL}} = \frac{(1.2(75\#) + 11\#)(15.9")}{2 \text{ SCREWS}(7.8")} = 103 \text{ LB/SCREW}$$

$$T_{u \text{ PARALLEL}} = \frac{236\#(15.9")}{2 \text{ SCREWS}(4.08")} = 460 \text{ LB/SCREW}$$

$$T_{u \text{ PERP.}} = \frac{236\#}{4 \text{ SCREWS}} = 59 \text{ LB/SCREW}$$

$$T_{u \text{ MAX}} = 103\# + (0.3)(59\#) + 460\# = 581 \text{ LB/SCREW (MAX)}$$

SHEAR (V)

$$V_{u \text{ MAX}} = \sqrt{\left(\frac{1.2(75\#) + 11\#}{4 \text{ SCREWS}}\right)^2 + \left(\frac{236\#}{4 \text{ SCREWS}}\right)^2} = 121 \text{ LB/SCREW (MAX)}$$

BOLT SPECS: 1/4"  $\phi$  HILTI HUS-EZ

$\phi T = 0.75 \phi n = 623$  LB/SCREW (TENSION)

$\phi V = \phi v_n = 836$  LB/SCREW (SHEAR)

UNITY CHECK:

$$\left(\frac{T_u}{\phi T}\right) + \left(\frac{V_u}{\phi V}\right) \leq 1.2$$

$$\left(\frac{581}{623}\right) + \left(\frac{121}{836}\right) = 1.08 \leq 1.2 \therefore \text{O.K.}$$

## PREMIER MOUNTS

## AM95 WALL MOUNT

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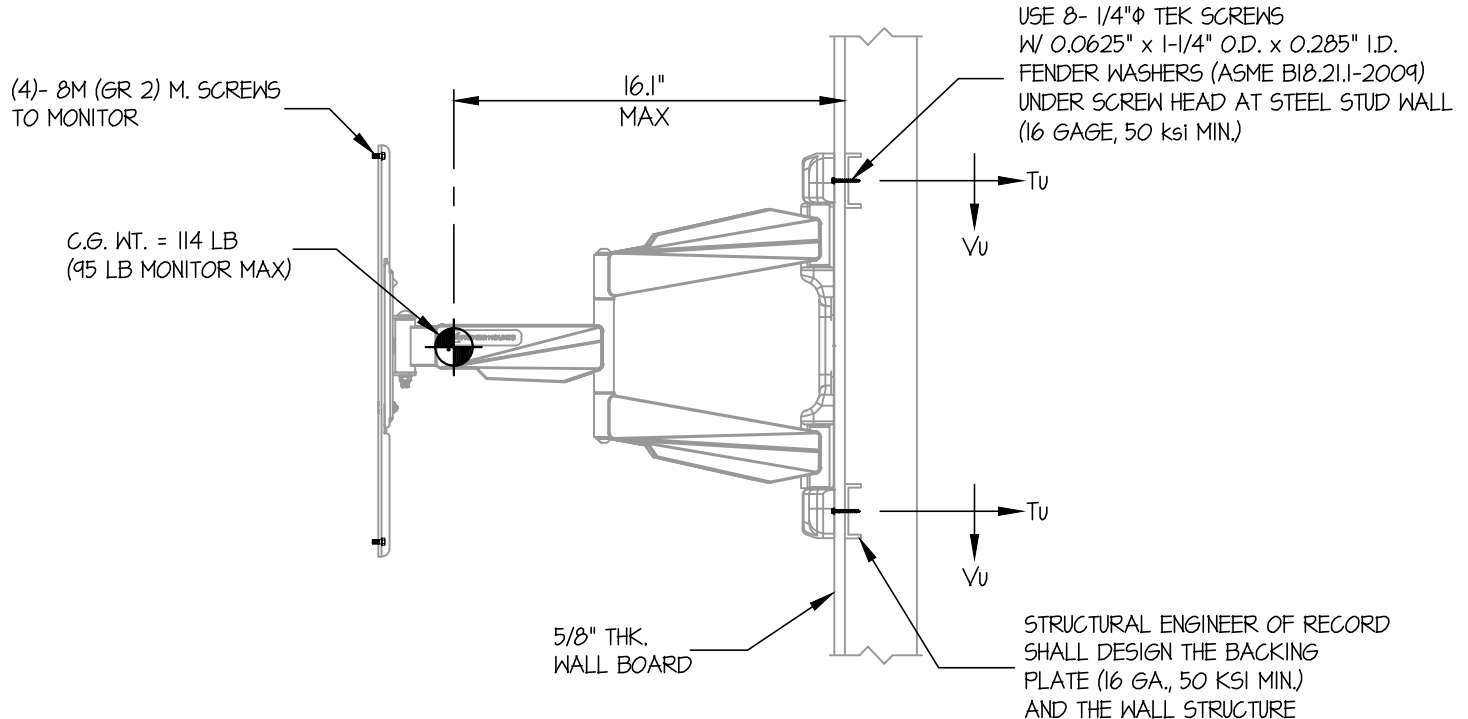
SHEET

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OF 8 SHEETS

### SEISMIC SUPPORTS & ATTACHMENTS

### WALL MOUNTED



### STEEL STUD WALL SECTION (AM95 MOUNT)

#### NOTES:

- FORCES ARE DETERMINED PER 2016 CALIFORNIA BUILDING CODE AND ASCE 7-10

STRENGTH DESIGN IS USED. ( $S_{DS} = 2.20$ ,  $a_p = 2.5$ ,  $I_p = 1.5$ ,  $R_p = 2.5$ ,  $\Omega_0 = 2.0$ ,  $z/h \leq 1$ )

HORIZONTAL FORCE ( $E_h$ ) =  $3.96 W_p$

HORIZONTAL FORCE ( $E_{mh}$ ) =  $7.92 W_p$  (FOR CONCRETE ANCHORAGE)

VERTICAL FORCE ( $E_v$ ) =  $0.44 W_p$

- CENTER OF GRAVITY (C.G.) AND WEIGHT ARE THE GOVERNING PARAMETERS FOR DESIGN. THIS PREAPPROVAL ENCOMPASSES ALL WEIGHTS UP TO THE MAXIMUM WEIGHT SHOWN.
- STRUCTURAL ENGINEER OF RECORD FOR THE BUILDING SHALL PROVIDE SUPPORT STRUCTURE DESIGNED TO SUPPORT WEIGHTS AND FORCES SHOWN IN COMBINATION WITH ALL OTHER LOADS THAT MAY BE PRESENT.



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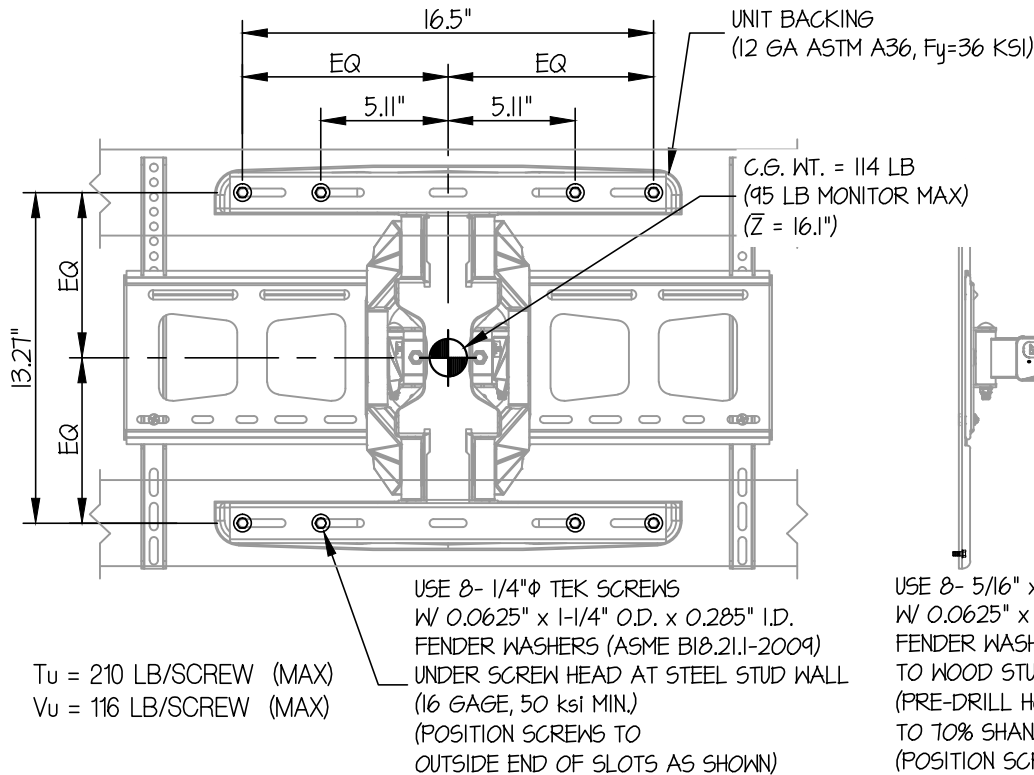
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OF 8 SHEETS

#### SEISMIC SUPPORTS & ATTACHMENTS



#### ELEVATION AT STEEL STUD WALL (AM95 MOUNT)

LOADS: PER 2016 CALIFORNIA BUILDING CODE AND ASCE 7-10.

STRENGTH DESIGN IS USED ( $S_{ds} = 2.20$ ,  $a_p = 2.5$ ,  $I_p = 15$ ,  $R_p = 2.5$ ,  $z/h \leq 1$ )

WEIGHT = 114 LB

HORIZONTAL FORCE ( $E_h$ ) = 3.96  $W_p = 452$  LB

VERTICAL FORCE ( $E_v$ ) = 0.44  $W_p = 50$  LB

#### SCREW FORCES:

##### TENSION (T)

$$T_{u \text{ VERTICAL}} = \frac{(12(114\#) + 50\#)(16.1")}{4 \text{ SCREWS}(13.27")} = 57 \text{ LB/SCREW}$$

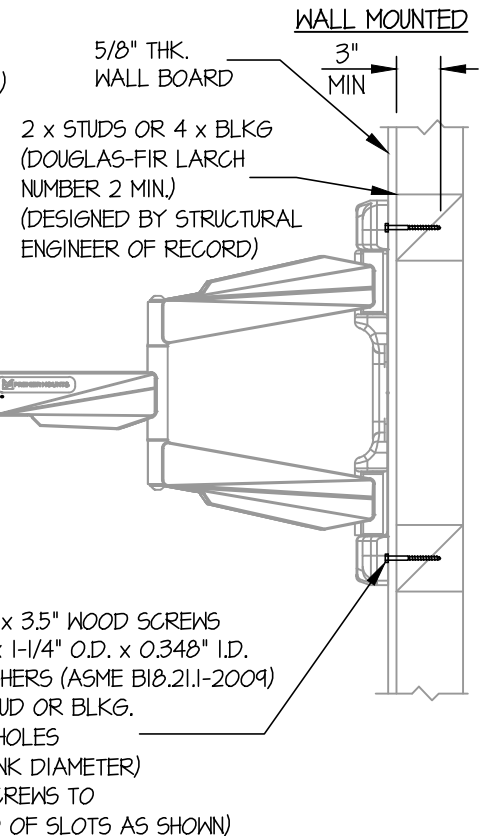
$$T_{u \text{ PARALLEL}} = \frac{452\#(16.1")}{4 \text{ SCREWS}(13.36")} = 136 \text{ LB/SCREW}$$

$$T_{u \text{ PERP.}} = \frac{452\#}{8 \text{ SCREWS}} = 57 \text{ LB/SCREW}$$

$$T_{u \text{ MAX}} = 57\# + (0.3)(57\#) + 136\# = 210 \text{ LB/SCREW (MAX)}$$

##### SHEAR (V)

$$V_{u \text{ MAX}} = \sqrt{\left(\frac{12(114\#) + 50\#}{8 \text{ SCREWS}}\right)^2 + \left(\frac{452\#}{4 \text{ SCREWS}}\right)^2} = 116 \text{ LB/SCREW (MAX)}$$



#### WOOD STUD WALL SECTION (AM95 MOUNT)

#### SCREW SPEC: 1/4" $\phi$ TEK SCREWS

$\phi T = 418$  LB/SCREW

$\phi V = 362$  LB/SCREW

#### UNITY CHECK:

$$\left(\frac{T_u}{\phi T}\right) + \left(\frac{V_u}{\phi V}\right) \leq 1.0$$

$$\left(\frac{210}{418}\right) + \left(\frac{116}{362}\right) = 0.83 \leq 1.0 \therefore \text{O.K.}$$

#### SCREW SPEC: 5/16" $\phi$ WOOD SCREWS

$\phi T = 724$  LB/SCREW

$\phi V = 234$  LB/SCREW

$\phi V = 216$  LB/SCREW (DUE TO BENDING)

#### UNITY CHECK:

$$\left(\frac{T_u}{\phi T}\right) + \left(\frac{V_u}{\phi V}\right) \leq 1.0$$

$$\left(\frac{210}{724}\right) + \left(\frac{116}{212}\right) = 0.87 \leq 1.0 \therefore \text{O.K.}$$

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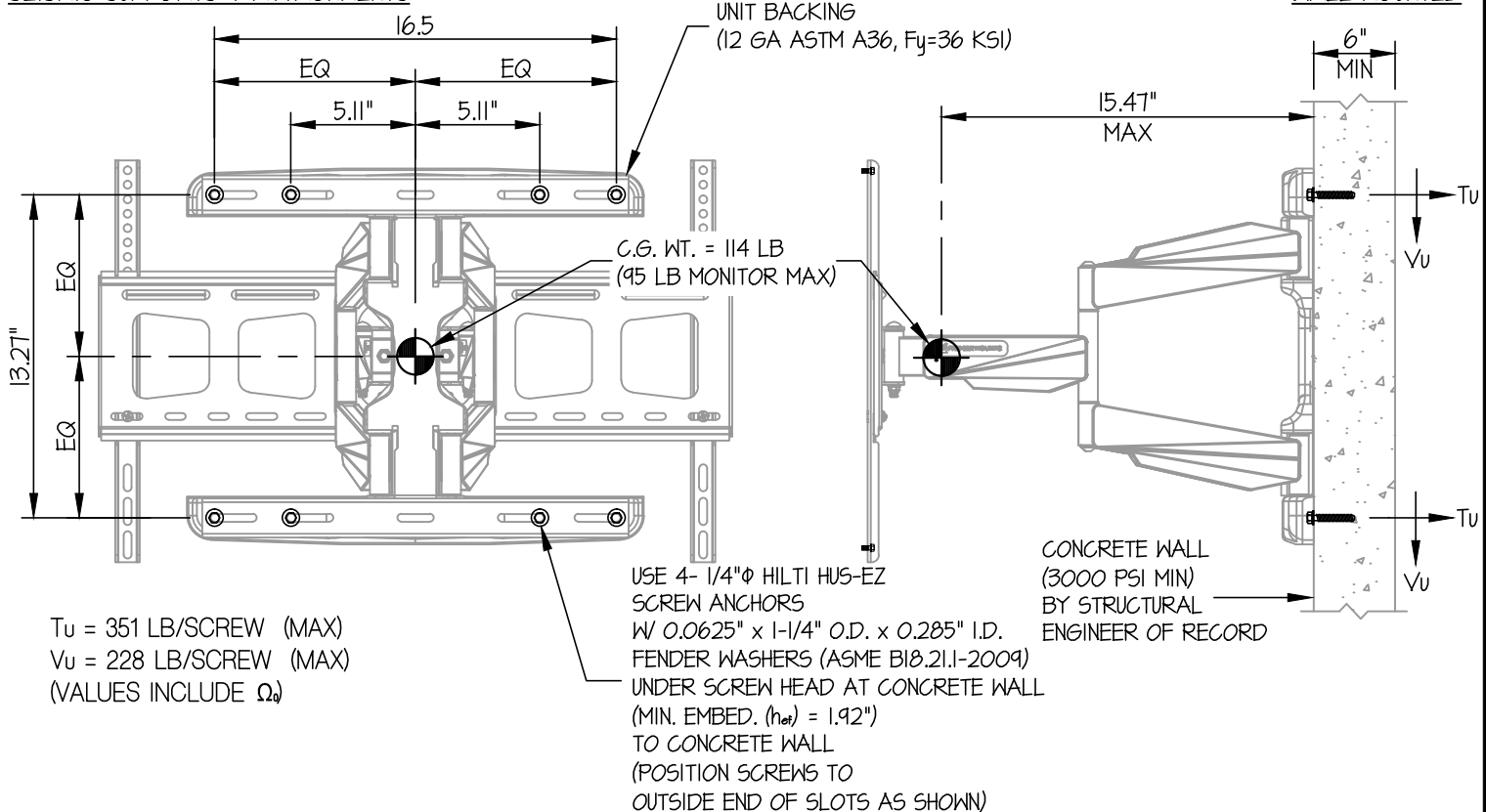
SHEET

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#### SEISMIC SUPPORTS & ATTACHMENTS

#### WALL MOUNTED



#### ELEVATION AT CONCRETE WALL (AM95 MOUNT)

#### CONCRETE WALL SECTION (AM95 MOUNT)

LOADS: PER 2016 CALIFORNIA BUILDING CODE AND ASCE 7-10.

STRENGTH DESIGN IS USED ( $S_{ds} = 2.20$ ,  $a_p = 2.5$ ,  $I_p = 15$ ,  $R_p = 2.5$ ,  $z/h \leq 1$ )

WEIGHT = 114 LB

HORIZONTAL FORCE ( $E_h$ ) = 396 W<sub>p</sub> = 452 LB

HORIZONTAL FORCE ( $E_{mh}$ ) = 7.92 W<sub>p</sub> = 904 LB

VERTICAL FORCE ( $E_v$ ) = 0.44 W<sub>p</sub> = 50 LB

#### SCREW FORCES:

##### TENSION (T)

$$T_{u \text{ VERTICAL}} = \frac{(12(114\#) + 50\#)(15.47")}{4 \text{ SCREWS}(13.27")} = 55 \text{ LB/SCREW}$$

$$T_{u \text{ PARALLEL}} = \frac{904\#(15.47")}{4 \text{ SCREWS}(13.36")} = 262 \text{ LB/SCREW}$$

$$T_{u \text{ PERP.}} = \frac{904\#}{8 \text{ SCREWS}} = 113 \text{ LB/SCREW}$$

$$T_{u \text{ MAX}} = 55\# + (0.3)(113\#) + 262\# = 351 \text{ LB/SCREW (MAX)}$$

##### SHEAR (V)

$$V_{u \text{ MAX}} = \sqrt{\left(\frac{12(114\#) + 50\#}{8 \text{ SCREWS}}\right)^2 + \left(\frac{904\#}{4 \text{ SCREWS}}\right)^2} = 228 \text{ LB/SCREW (MAX)}$$

#### BOLT SPECS: 1/4" $\phi$ HILTI HUS-EZ

$\phi T = 0.75 \phi N_n = 623 \text{ LB/SCREW (TENSION)}$

$\phi V = \phi V_n = 836 \text{ LB/SCREW (SHEAR)}$

#### UNITY CHECK:

$$\left(\frac{T_u}{\phi T}\right) + \left(\frac{V_u}{\phi V}\right) \leq 1.2$$

$$\left(\frac{351}{623}\right) + \left(\frac{228}{836}\right) = 0.84 \leq 1.2 \therefore \text{O.K.}$$