EASE

EQUIPMENT ANCHORAGE & SEISMIC ENGINEERING
www.EquipmentAnchorage.com

ICW USA INC.

ULTRA II ARTICULATING WALL MOUNT

DES.	J. ROBERSON	SHEET 1
JOB NO.	11-1532	
DATE	2/17/17	OF 3 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS

WALL MOUNTED

26.91"

STRUCTURAL ENGINEER OF RECORD SHALL DESIGN THE WALL STRUCTURE

C.G. WT. = 110 LB

USE (8)- 1/4"⌀ TEK SCREWS AT STEEL STUD WALL (16 GAGE, 50 ksi MIN.)

T_u

T_u

T_u

36" ALUMINUM TRACK SHOWN (0.208" THK, 6063-T5 ALUMINUM F_y=21 KSI MIN)

T_u

V_u

19" TRACK (AWAY FROM WALL)
T_u = 227 LB/SCREW (MAX)
V_u = 87 LB/SCREW (MAX)

5/8" THK. WALL BOARD

19" TRACK (AGAINST WALL)
T_u = 156 LB/SCREW (MAX)
V_u = 221 LB/SCREW (MAX)

36" TRACK (AWAY FROM WALL)
T_u = 153 LB/SCREW (MAX)
V_u = 87 LB/SCREW (MAX)

36" TRACK (AGAINST WALL)
T_u = 145 LB/SCREW (MAX)
V_u = 154 LB/SCREW (MAX)

STEEL STUD WALL SECTION

NOTES:

1. FORCES ARE DETERMINED PER 2016 CALIFORNIA BUILDING CODE AND ASCE 7-10
   STRENGTH DESIGN IS USED. (S_{DS} = 1.70, a_p = 2.5, I_p = 1.5, R_p = 2.5, z/h ≤ 1)

   HORIZONTAL FORCE (E_h) = 3.06 W_p
   VERTICAL FORCE (E_v) = 0.34 W_p

2. CENTER OF GRAVITY (C.G.) AND WEIGHT ARE THE GOVERNING PARAMETERS FOR DESIGN. THIS PREAPPROVAL ENCOMPASSES ALL WEIGHTS UP TO THE MAXIMUM WEIGHT SHOWN.

3. 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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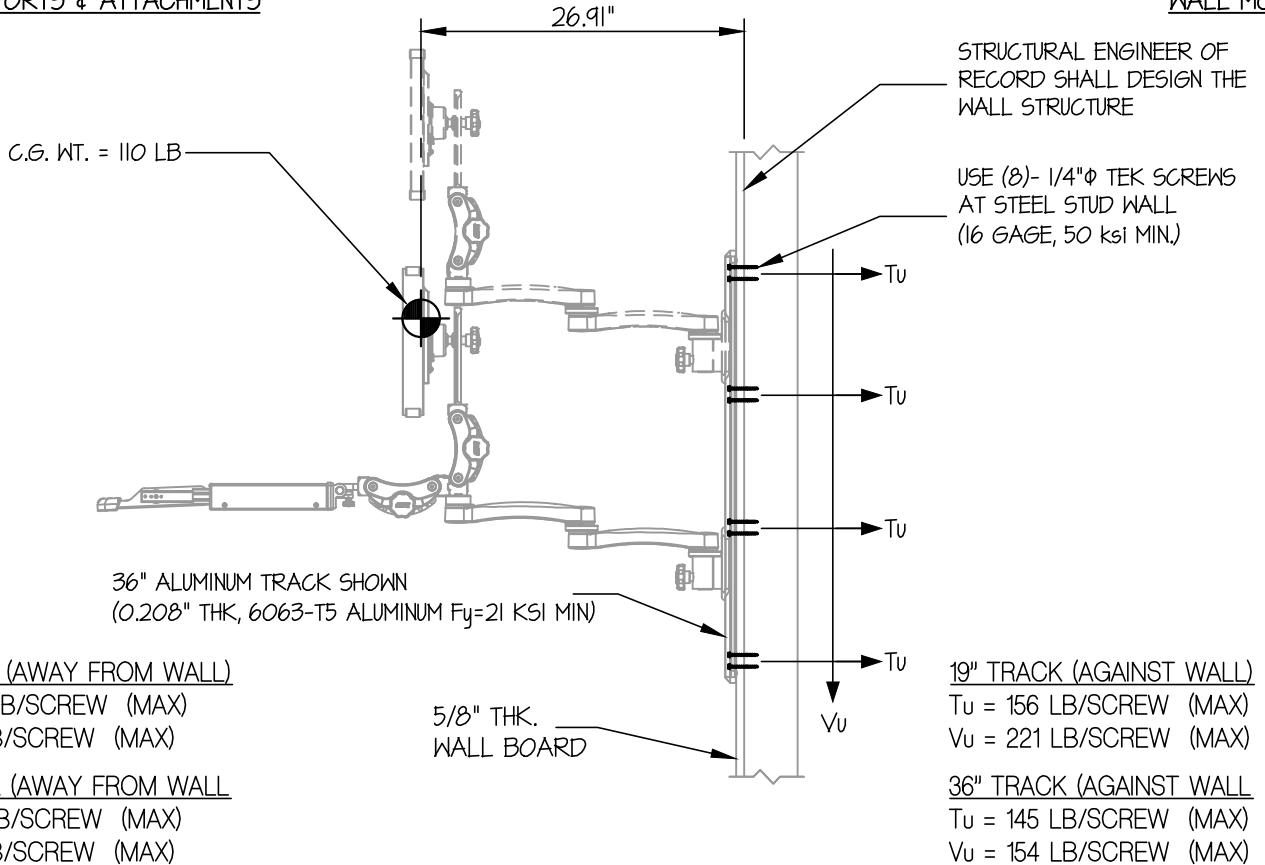|	
ICW USA INC.	DES. **J. ROBERSON**
	JOB NO. **11-1532**
ULTRA II ARTICULATING WALL MOUNT	DATE **2/17/17**

SHEET 2 OF 3 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS   WALL MOUNTED

19" TRACK
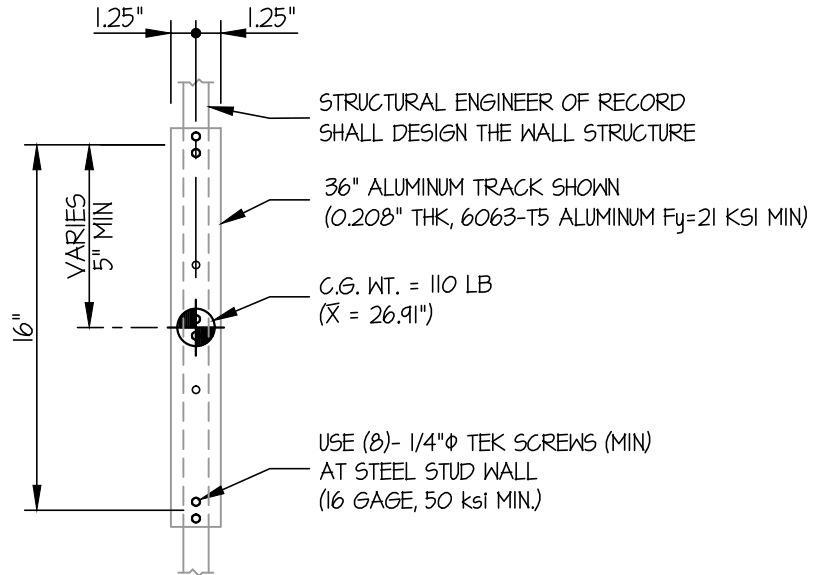
1.25"   1.25"

STRUCTURAL ENGINEER OF RECORD
SHALL DESIGN THE WALL STRUCTURE

36" ALUMINUM TRACK SHOWN
(0.208" THK, 6063-T5 ALUMINUM Fy=21 KSI MIN)

C.G. WT. = 110 LB
($\bar{X}$ = 26.91")

USE (8)- 1/4"⌀ TEK SCREWS (MIN)
AT STEEL STUD WALL
(16 GAGE, 50 ksi MIN.)

VARIES 5" MIN

16"

ELEVATION AT WALL

<u>LOADS:</u> PER 2016 CALIFORNIA BUILDING CODE AND ASCE 7-10.

STRENGTH DESIGN IS USED (S_{DS} = 1.70, a_p = 2.5, I_p = 1.5, R_p = 2.5, $z/h \leq 1$)

WEIGHT = 110 LB

HORIZONTAL FORCE (E_h) = 3.06 W_p = 337 LB

VERTICAL FORCE (E_v) = 0.34 W_p = 37 LB

SCREW SPEC: 1/4"⌀ TEK SCREWS
ΦT = 418 LB/SCREW
ΦV = 362 LB/SCREW

<u>SCREW FORCES:</u>

TENSION (T) (AWAY FROM WALL)

$$T_{u\ VERTICAL} = \frac{(1.2(110\#) + 37\#)26.91"}{2_{SCREWS}(16")} = 143\ LB/SCREW$$

$$T_{u\ PARALLEL} = 0\ LB \quad (FREE\ TO\ ROTATE)$$

$$T_{u\ PERP.} = \frac{337\#}{4_{SCREWS}} = 84\ LB/SCREW$$

$$T_{u\ MAX} = 143\# + 84\# = 227\ LB/SCREW\ (MAX)$$

TENSION (T) AT SHEAR MAX (AGAINST WALL)

$$T_{u\ VERTICAL} = \frac{(1.2(110\#) + 37\#)4"}{2_{SCREWS}(16")} = 21\ LB/SCREW$$

$$T_{u\ PARALLEL} = \frac{337\#(4")}{8_{SCREWS}(1.25")} = 135\ LB/SCREW$$

$$T_{u\ PERP.} = 0\ LB \quad (FREE\ TO\ ROTATE)$$

$$T_{u\ MAX} = 21\# + 135\# = 156\ LB/SCREW\ (MAX)$$

SHEAR (V)

$$V_{u\ AGAINST\ WALL} = \sqrt{\left(\frac{(1.2(110\#) + 37\#)(25")}{2_{SCREWS}(16")} + \frac{337\#}{4_{SCREWS}}\right)^2 + \left(\frac{1.2(110\#) + 37\#}{4_{SCREWS}}\right)^2} = 221\ LB/SCREW\ (MAX) \therefore \underline{OK}$$

$$V_{u\ MAX\ @\ T_{u\ MAX}} = \sqrt{\left(\frac{1.2(110\#) + 37\#}{8_{SCREWS}}\right)^2 + \left(\frac{337\#}{4_{SCREWS}}\right)^2} = 87\ LB/SCREW\ (MAX)$$

<u>UNITY CHECK:</u> (AGAINST WALL GOVERNS)

$$\left(\frac{T_u}{\Phi T}\right) + \left(\frac{V_u}{\Phi V}\right) \leq 1.0 \quad \left(\frac{156}{418}\right) + \left(\frac{221}{362}\right) = 0.98 \leq 1.0 \quad \therefore \underline{O.K.}$$

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ULTRA II ARTICULATING WALL MOUNT

DES.	J. ROBERSON	SHEET 3
JOB NO.	11-1532	
DATE	2/17/17	OF 3 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS

WALL MOUNTED

36" TRACK
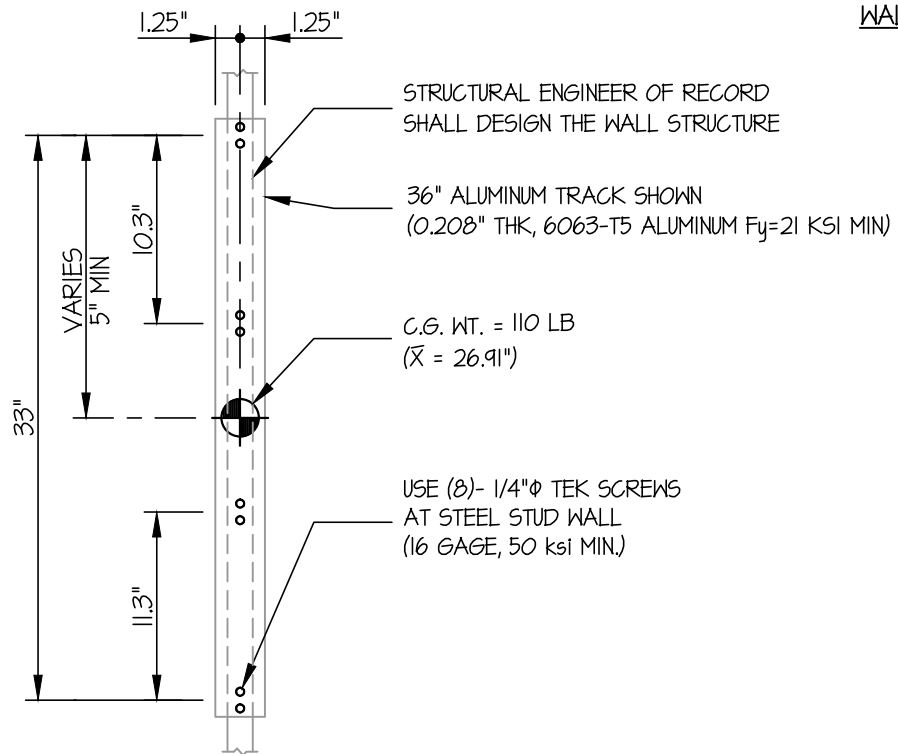
1.25"   1.25"

STRUCTURAL ENGINEER OF RECORD
SHALL DESIGN THE WALL STRUCTURE

36" ALUMINUM TRACK SHOWN
(0.208" THK, 6063-T5 ALUMINUM Fy=21 KSI MIN)

10.3"

VARIES 5" MIN

33"

C.G. WT. = 110 LB
($\bar{X}$ = 26.91")

USE (8)- 1/4"φ TEK SCREWS
AT STEEL STUD WALL
(16 GAGE, 50 ksi MIN.)

11.3"

E L E V A T I O N   A T   W A L L

LOADS: PER 2016 CALIFORNIA BUILDING CODE AND ASCE 7-10.
    STRENGTH DESIGN IS USED (S_{DS} = 1.70, a_p = 2.5, I_p = 1.5, R_p = 2.5, z/h $\leq$ 1)
WEIGHT = 110 LB
HORIZONTAL FORCE (E_h) = 3.06 W_p = 337 LB
VERTICAL FORCE (E_v) = 0.34 W_p = 37 LB

SCREW FORCES:

TENSION (T) (AWAY FROM WALL)

$$T_{u\,VERTICAL} = \frac{(1.2(110\#) + 37\#)26.91''}{2\,SCREWS\,(33'')} = 69\ LB/SCREW$$

$$T_{u\,PARALLEL} = 0\ LB \quad (FREE\ TO\ ROTATE)$$

$$T_{u\,PERP.} = \frac{337\#}{4\,SCREWS} = 84\ LB/SCREW$$

$$T_{u\,MAX} = 69\# + 84\# = 153\ LB/SCREW\ (MAX)$$

TENSION (T) AT SHEAR MAX (AGAINST WALL)

$$T_{u\,VERTICAL} = \frac{(1.2(110\#) + 37\#)4''}{2\,SCREWS\,(33'')} = 10\ LB/SCREW$$

$$T_{u\,PARALLEL} = \frac{337\#(4'')}{8\,SCREWS\,(1.25'')} = 135\ LB/SCREW$$

$$T_{u\,PERP.} = 0\ LB \quad (FREE\ TO\ ROTATE)$$

$$T_{u\,MAX} = 10\# + 135\# = 145\ LB/SCREW\ (MAX)$$

SHEAR (V)

$$V_{u\,AGAINST\,WALL} = \sqrt{\left(\frac{(1.2(110\#) + 37\#)(25'')}{2\,SCREWS\,(33'')} + \frac{337\#}{4\,SCREWS}\right)^2 + \left(\frac{1.2(110\#) + 37\#}{4\,SCREWS}\right)^2} = 154\ LB/SCREW\ (MAX)\ \therefore\ \underline{OK}$$

$$V_{u\,MAX\,@\,T_{u}\,MAX} = \sqrt{\left(\frac{1.2(110\#) + 37\#}{8\,SCREWS}\right)^2 + \left(\frac{337\#}{4\,SCREWS}\right)^2} = 87\ LB/SCREW\ (MAX)$$

UNITY CHECK: (AGAINST WALL GOVERNS)

$$\left(\frac{T_u}{\phi T}\right) + \left(\frac{V_u}{\phi V}\right) \leq 1.0 \quad \left(\frac{145}{418}\right) + \left(\frac{154}{362}\right) = 0.77 \leq 1.0 \quad \therefore\ \underline{O.K.}$$