

ICW USA INC.

TITAN AND ELITE WALL MOUNTS

DES. **J. ROBERSON**

JOB NO. **11-1532**

DATE **2/17/17**

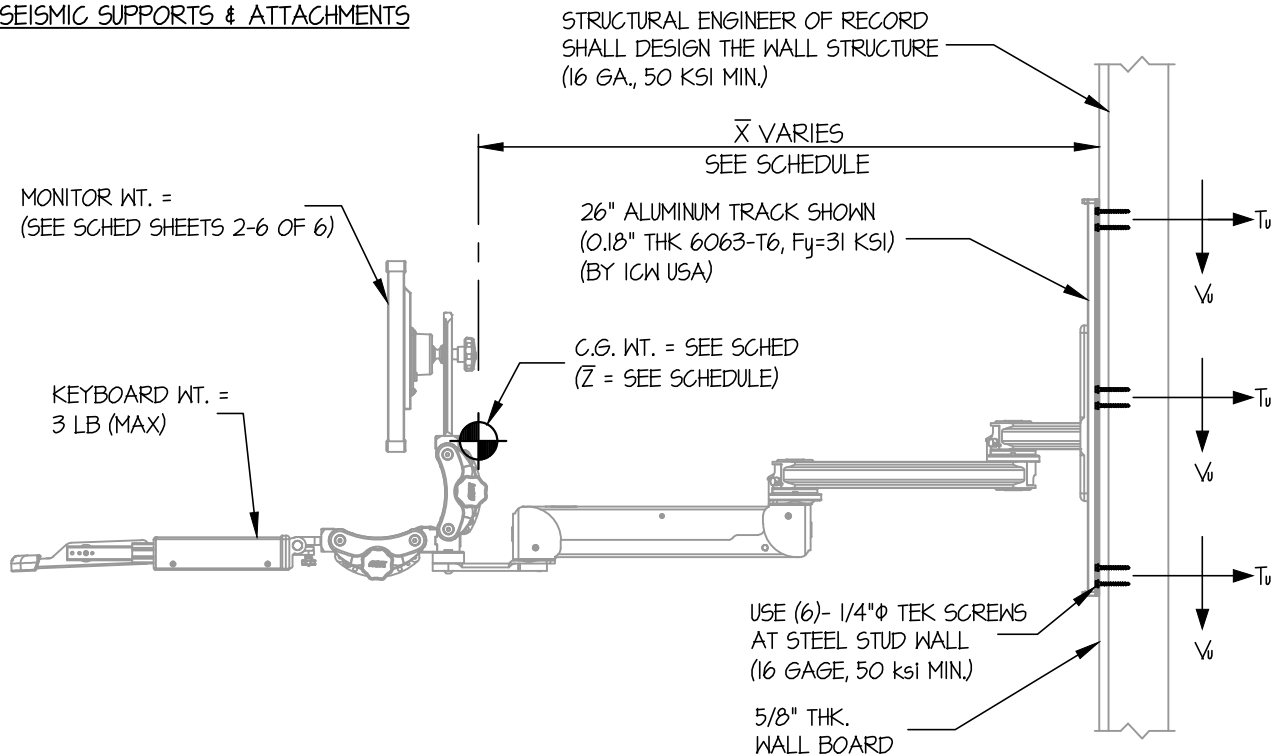
SHEET

1

OF **6** SHEETS

SEISMIC SUPPORTS & ATTACHMENTS

WALL MOUNTED



STEEL STUD WALL SECTION (T2EP-WT2-KWP-MD26 MODEL SHOWN)

NOTES:

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

HORIZONTAL FORCE (E_h) = $3.06 W_p$

VERTICAL FORCE (E_v) = $0.34 W_p$

- 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.



ICW USA INC.

DES. J. ROBERSON

SHEET

2

JOB NO. 11-1532

TITAN AND ELITE WALL MOUNTS

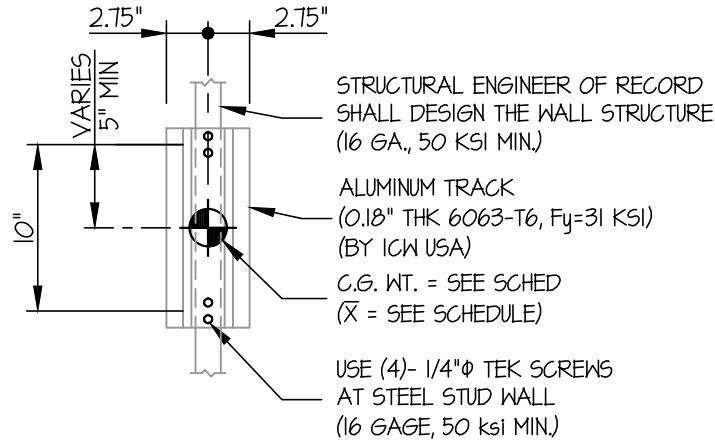
DATE 2/17/17

OF 6 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS

12" TRACK

WALL MOUNTED



ELEVATION AT WALL PLATE

MODEL	MONITOR WEIGHT (LB)	TOTAL LOAD (LB)	X̄ (in.)	(AFW) T _u (lb.)	(AFW) V _u (lb.)	(AW) T _u (lb.)	(AW) V _u (lb.)
UL182EV7-W3-KUS-MD26	32	61	31.57	195	52	87	197
ELP5220-WT-KUS-MD26	28	62	47.97	277	53	88	278
* T2EP-WT2-KWP-MD26	28	63	46.99	277	54	90	277
T2P2020-WT2-KPW-MD26	28	60	41.27	237	52	85	238
MDP18WMD-KPW-MD26	35	69	32.18	224	59	98	225

* THIS UNIT USED IN THE CALCULATION BELOW.

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

STRENGTH DESIGN IS USED (S_{ps} = 1.70, a_p = 2.5, l_p = 1.5, R_p = 2.5, z/h ≤ 1)

WEIGHT = 63 LB

HORIZONTAL FORCE (E_h) = 3.06 W_p = 193 LB

VERTICAL FORCE (E_v) = 0.34 W_p = 21 LB

SCREW SPEC: 1/4"Φ TEK SCREWS

ΦT = 418 LB/SCREW

ΦV = 362 LB/SCREW

SCREW FORCES:

TENSION (T) (AWAY FROM WALL (AFW))

$$T_{u \text{ VERTICAL}} = \frac{(12(63\#) + 21\#)(46.99")}{2 \text{ SCREWS}(10")} = 229 \text{ LB/SCREW}$$

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

$$T_{u \text{ PERP.}} = \frac{193\#}{4 \text{ SCREWS}} = 48 \text{ LB/SCREW}$$

$$T_{u \text{ MAX}} = 229\# + 48\# = 277 \text{ LB/SCREW (MAX)}$$

TENSION (T) AT SHEAR MAX (AGAINST WALL (AW))

$$T_{u \text{ VERTICAL}} = \frac{(12(63\#) + 21\#)(4")}{2 \text{ SCREWS}(10")} = 20 \text{ LB/SCREW}$$

$$T_{u \text{ PARALLEL}} = \frac{193\#(4")}{4 \text{ SCREWS}(2.75")} = 70 \text{ LB/SCREW}$$

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

$$T_{u \text{ MAX}} = 20\# + 70\# = 90 \text{ LB/SCREW (MAX)}$$

SHEAR (V)

$$V_{u \text{ AGAINST WALL}} = \sqrt{\left(\frac{(12(63\#) + 21\#)(46.99")}{2 \text{ SCREWS}(10")} + \frac{193\#}{4 \text{ SCREWS}}\right)^2 + \left(\frac{12(63\#) + 21\#}{4 \text{ SCREWS}}\right)^2} = 277 \text{ LB/SCREW (MAX)} \therefore \text{OK}$$

$$V_{u \text{ MAX @ T u MAX}} = \sqrt{\left(\frac{12(63\#) + 21\#}{8 \text{ SCREWS}}\right)^2 + \left(\frac{193\#}{4 \text{ SCREWS}}\right)^2} = 54 \text{ LB/SCREW (MAX)}$$

UNITY CHECK: (AGAINST WALL GOVERNS)

$$\left(\frac{T_u}{\Phi T}\right) + \left(\frac{V_u}{\Phi V}\right) \leq 1.0 \left(\frac{90}{418}\right) + \left(\frac{277}{362}\right) = 0.98 \leq 1.0 \therefore \text{OK}$$

ICW USA INC.

TITAN AND ELITE WALL MOUNTS

DES. J. ROBERSON

JOB NO. 11-1532

DATE 2/17/17

SHEET

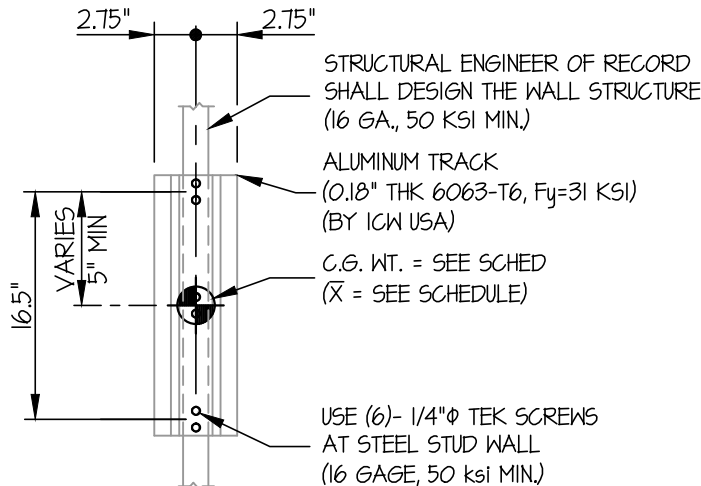
3

OF 6 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS

19" TRACK

WALL MOUNTED



VERTICAL 4 x STUD MIN.
(DOUGLAS-FIR LARCH
NUMBER 2 MIN.)
(DESIGNED BY STRUCTURAL
ENGINEER OF RECORD)

USE (6)- 1/4"Φ X 4"
WOOD SCREWS TO
WOOD STUD OR BLKG.
(PRE-DRILL HOLES
TO 70% SHANK DIAMETER)

5/8" THK.
WALL BOARD

NOTE:
MIN EDGE DISTANCE = 1"
MIN END DISTANCE = 2"

WOOD STUD WALL SECTION

ELEVATION AT WALL PLATE

MODEL	MONITOR WEIGHT (LB)	TOTAL LOAD (LB)	$\bar{X}$ (in.)	(AFW) T_u (lb.)	(AFW) V_u (lb.)	(AW) T_u (lb.)	(AW) V_u (lb.)
UL182EV7-W3-KUS-MD26	32	61	31.57	121	49	57	138
ELP5220-WT-KUS-MD26	28	62	47.97	171	50	58	187
* T2EP-WT2-KWP-MD26	28	63	46.99	170	51	59	187
T2P2020-WT2-KPW-MD26	28	60	41.27	146	49	56	162
MDP18WMD-KPW-MD26	35	69	32.18	139	56	64	158

* THIS UNIT USED IN THE CALCULATION BELOW.

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 = 63 LB

HORIZONTAL FORCE (E_h) = 3.06 $W_p = 193$ LB

VERTICAL FORCE (E_v) = 0.34 $W_p = 21$ LB

SCREW FORCES:

TENSION (T) (AWAY FROM WALL (AFW))

$$T_{u \text{ VERTICAL}} = \frac{(12(63\#) + 21\#)46.99"}{2 \text{ SCREWS}(16.5")} = 138 \text{ LB/SCREW}$$

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

$$T_{u \text{ PERP.}} = \frac{193\#}{6 \text{ SCREWS}} = 32 \text{ LB/SCREW}$$

$$T_{u \text{ MAX}} = 138\# + 32\# = 170 \text{ LB/SCREW (MAX)}$$

TENSION (T) AT SHEAR MAX (AGAINST WALL (AW))

$$T_{u \text{ VERTICAL}} = \frac{(12(63\#) + 21\#)4"}{2 \text{ SCREWS}(16.5")} = 12 \text{ LB/SCREW}$$

$$T_{u \text{ PARALLEL}} = \frac{193\#(4")}{6 \text{ SCREWS}(2.75")} = 47 \text{ LB/SCREW}$$

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

$$T_{u \text{ MAX}} = 12\# + 47\# = 59 \text{ LB/SCREW (MAX)}$$

SHEAR (V)

$$V_{u \text{ AGAINST WALL}} = \sqrt{\left(\frac{(12(63\#) + 21\#)(46.99")}{2 \text{ SCREWS}(16.5")} + \frac{193\#}{4 \text{ SCREWS}}\right)^2 + \left(\frac{12(63\#) + 21\#}{6 \text{ SCREWS}}\right)^2} = 187 \text{ LB/SCREW (MAX)} \therefore \text{OK}$$

$$V_{u \text{ MAX @ } T_{u \text{ MAX}}} = \sqrt{\left(\frac{12(63\#) + 21\#}{6 \text{ SCREWS}}\right)^2 + \left(\frac{193\#}{4 \text{ SCREWS}}\right)^2} = 51 \text{ LB/SCREW (MAX)}$$

UNITY CHECK: (AGAINST WALL GOVERNS)

$$\left(\frac{T_u}{\Phi T}\right) + \left(\frac{V_u}{\Phi V}\right) \leq 1.0 \left(\frac{59}{418}\right) + \left(\frac{187}{362}\right) = 0.66 \leq 1.0 \therefore \text{OK}$$

UNITY CHECK: (WOOD SCREW)

$$\left(\frac{59}{596}\right) + \left(\frac{187}{275}\right) = 0.77 \leq 1.0 \therefore \text{OK}$$

ICW USA INC.

DES. J. ROBERSON

SHEET

4

JOB NO. 11-1532

DATE 2/17/17

OF 0 SHEETS

6

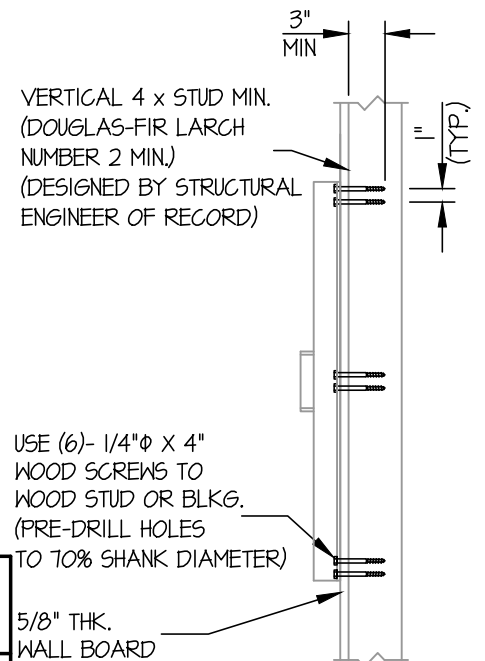
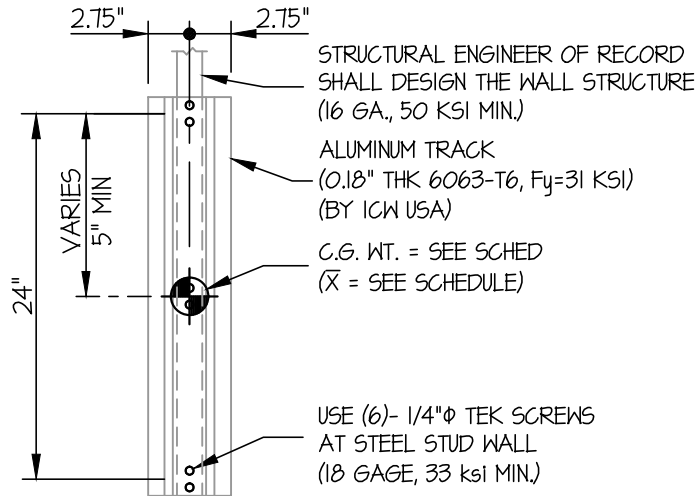
SHEETS

TITAN AND ELITE WALL MOUNTS

SEISMIC SUPPORTS & ATTACHMENTS

26" TRACK

WALL MOUNTED



ELEVATION AT WALL PLATE

MODEL	MONITOR WEIGHT (LB)	TOTAL LOAD (LB.)	$\bar{X}$ (in.)	(AFW) T_u (lb.)	(AFW) V_u (lb.)	(AW) T_u (lb.)	(AW) V_u (lb.)
UL182EV7-W3-KUS-MD26	32	61	31.57	93	49	53	110
ELP5220-WT-KUS-MD26	28	62	47.97	127	50	54	144
T2EP-WT2-KWP-MD26	28	63	46.99	127	51	55	144
T2P2020-WT2-KPW-MD26	28	60	41.27	110	49	52	126
MDP18WMD-KPW-MD26	35	69	32.18	107	56	60	125

* THIS UNIT USED IN THE CALCULATION BELOW.

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 = 63 LB

HORIZONTAL FORCE (E_h) = $3.06 W_p$ = 193 LB

VERTICAL FORCE (E_v) = 0.34 W_p = 21 LB

SCREW FORCES:

TENSION (T) (AWAY FROM WALL (AFW))

$$T_u \text{ VERTICAL} = \frac{(1.2(63\#) + 21\#)46.99"}{2 \text{ SCREWS}(24")} = 95 \text{ LB/SCREW}$$

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

$$T_{u \text{ PERP.}} = \frac{193\#}{6 \text{ SCREWS}} = 32 \text{ LB/SCREW}$$

$$T_{II\text{ MAX}} = 95\# + 32\# = 127 \text{ LB/SCREW (MAX)}$$

SHEAR (V)

$$V_u \text{ AGAINST WALL} = \sqrt{\left(\frac{(12(63\#) + 21\#)(46.99'')}{2 \text{ SCREWS}(24'')} + \frac{193\#}{4 \text{ SCREWS}}\right)^2 + \left(\frac{12(63\#) + 21\#}{6 \text{ SCREWS}}\right)^2} = 144 \text{ LB/SCREW (MAX)} \therefore \underline{\text{OK}}$$

$$V_{u \text{ MAX @ } T_{u \text{ MAX}}} = \sqrt{\left(\frac{12(63\#) + 21\#}{6 \text{ SCREWS}}\right)^2 + \left(\frac{193\#}{4 \text{ SCREWS}}\right)^2} = 50 \text{ LB/SCREW (MAX)}$$

UNITY CHECK: (AGAINST WALL GOVERNS)

$$\left(\frac{T_u}{\Phi T}\right) + \left(\frac{V_u}{\Phi V}\right) \leq 1.0 \quad \left(\frac{55}{418}\right) + \left(\frac{144}{362}\right) = 0.52 \leq 1.0 \quad \therefore \text{OK}$$

1/4"Ø WOOD SCREWS

$$\Phi_T = 596 \text{ LB/SCREW}$$
$$\Phi V = 275 \text{ LB/SCREW}$$

SCREW SPEC: 1/4"Ø TEK SCREWS

$$\Phi T = 418 \text{ LB/SCREW}$$
 $\Phi V = 362 \text{ LB/SCREW}$

TENSION (T) AT SHEAR MAX (AGAINST WALL (AW))

$$T_{u \text{ VERTICAL}} = \frac{(1.2(63\#) + 21\#)4''}{2 \text{ SCREWS}(24'')} = 8 \text{ LB/SCREW}$$

$$T_{u \text{ PARALLEL}} = \frac{193\#(4'')}{6 \text{ SCREWS}(2.75'')} = 47 \text{ LB/SCREW}$$

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

$$T_{U, MAX} = 8\# + 47\# = 55 \text{ LB/SCREW (MAX)}$$

UNITY CHECK: (WOOD SCREW)

$$\left(\frac{76}{596}\right) + \left(\frac{63}{275}\right) = 0.36 \leq 1.0 \therefore \underline{\text{O.K.}}$$

ICW USA INC.

TITAN AND ELITE WALL MOUNTS

DES. J. ROBERSON

JOB NO. 11-1532

DATE 2/17/17

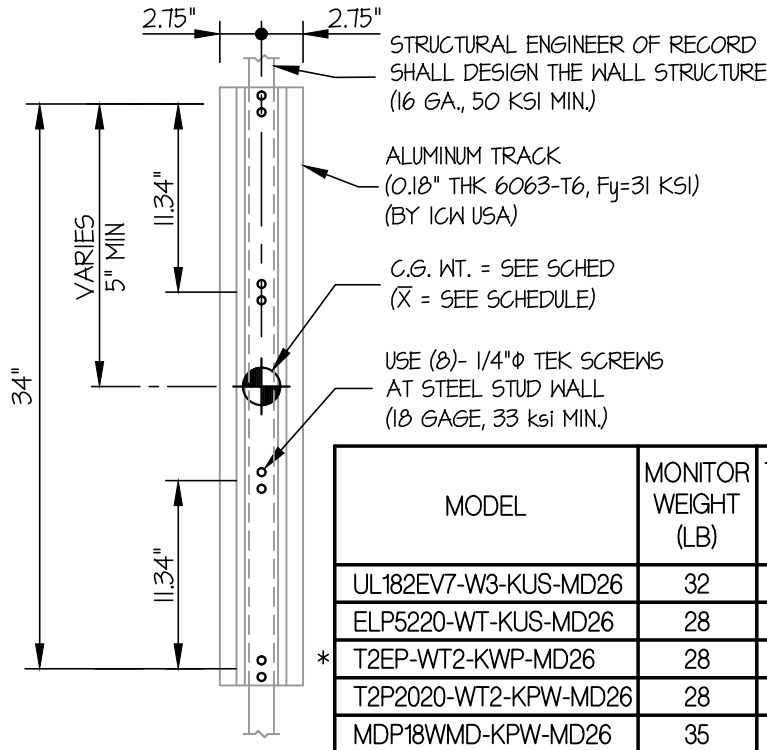
SHEET

5

OF 6 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS

36" TRACK



MODEL	MONITOR WEIGHT (LB)	TOTAL LOAD (LB)	X̄ (in.)	(AFW) T _u (lb)	(AFW) V _u (lb)	(AW) T _u (lb)	(AW) V _u (lb)
UL182EV7-W3-KUS-MD26	32	61	31.57	66.9	48	40	91
ELP5220-WT-KUS-MD26	28	62	47.97	91	49	40	115
* T2EP-WT2-KWP-MD26	28	63	46.99	91	50	41	116
T2P2020-WT2-KPW-MD26	28	60	41.27	79	47	39	103
MDP18WMD-KPW-MD26	35	69	32.18	77	55	45	104

* THIS UNIT USED IN THE CALCULATION BELOW.

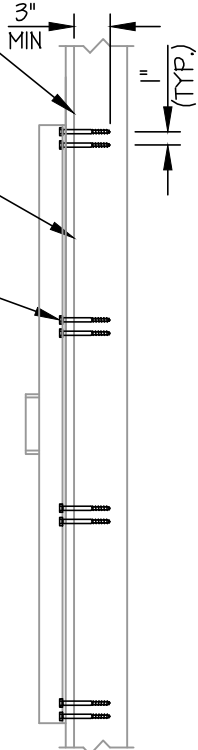
VERTICAL 4 x STUD MIN. (DOUGLAS-FIR LARCH NUMBER 2 MIN.) (DESIGNED BY STRUCTURAL ENGINEER OF RECORD)

5/8" THK. WALL BOARD

USE (8)- 1/4"Φ x 4" WOOD SCREWS TO WOOD STUD OR BLKG. (PRE-DRILL HOLES TO 70% SHANK DIAMETER)

NOTE:
MIN EDGE DISTANCE = 1"
MIN END DISTANCE = 2"

WALL MOUNTED



ELEVATION AT WALL PLATE

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 ≤ 1)

WEIGHT = 63 LB

HORIZONTAL FORCE (E_h) = 3.06 W_p = 193 LB

VERTICAL FORCE (E_v) = 0.34 W_p = 21 LB

SCREW FORCES:

TENSION (T) (AWAY FROM WALL (AFW))

$$T_{u \text{ VERTICAL}} = \frac{(12(63\#) + 21\#)(46.99")}{2 \text{ SCREWS}(34")} = 67 \text{ LB/SCREW}$$

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

$$T_{u \text{ PERP.}} = \frac{193\#}{8 \text{ SCREWS}} = 24 \text{ LB/SCREW}$$

$$T_{u \text{ MAX}} = 67\# + 24\# = 91 \text{ LB/SCREW (MAX)}$$

SHEAR (V)

$$V_{u \text{ AGAINST WALL}} = \sqrt{\left(\frac{(12(63\#) + 28\#)(46.99")}{2 \text{ SCREWS}(34")}\right)^2 + \left(\frac{193\#}{4 \text{ SCREWS}}\right)^2} + \left(\frac{12(63\#) + 21\#}{8 \text{ SCREWS}}\right)^2 = 116 \text{ LB/SCREW (MAX)} \therefore \text{OK}$$

$$V_{u \text{ MAX @ } T_{u \text{ MAX}}} = \sqrt{\left(\frac{12(63\#) + 21\#}{8 \text{ SCREWS}}\right)^2 + \left(\frac{193\#}{4 \text{ SCREWS}}\right)^2} = 50 \text{ LB/SCREW (MAX)}$$

UNITY CHECK: (AGAINST WALL GOVERNS)

$$\left(\frac{T_u}{\Phi T}\right) + \left(\frac{V_u}{\Phi V}\right) \leq 1.0 \left(\frac{41}{418}\right) + \left(\frac{116}{362}\right) = 0.42 \leq 1.0 \therefore \text{OK}$$

WOOD STUD WALL SECTION

1/4"Φ WOOD SCREWS

ΦT = 596 LB/SCREW

ΦV = 275 LB/SCREW

SCREW SPEC: 1/4"Φ TEK SCREWS

ΦT = 418 LB/SCREW

ΦV = 362 LB/SCREW

TENSION (T) AT SHEAR MAX (AGAINST WALL (AW))

$$T_{u \text{ VERTICAL}} = \frac{(12(63\#) + 21\#)(4")}{2 \text{ SCREWS}(34")} = 6 \text{ LB/SCREW}$$

$$T_{u \text{ PARALLEL}} = \frac{193\#(4")}{8 \text{ SCREWS}(2.75")} = 35 \text{ LB/SCREW}$$

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

$$T_{u \text{ MAX}} = 6\# + 35\# = 41 \text{ LB/SCREW (MAX)}$$

UNITY CHECK: (WOOD SCREW)

$$\left(\frac{41}{596}\right) + \left(\frac{116}{275}\right) = 0.49 \leq 1.0 \therefore \text{OK}$$

ICW USA INC.

DES. J. ROBERSON

SHEET

6

JOB NO. 11-1532

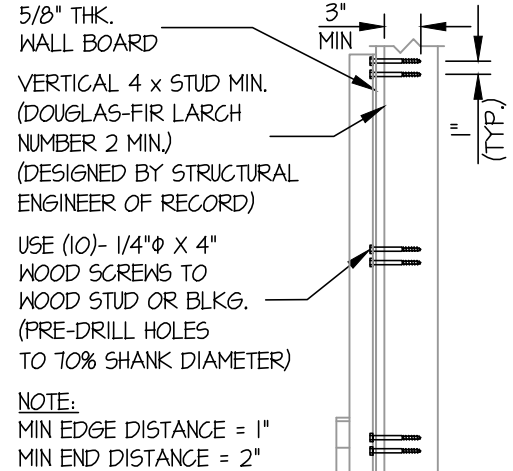
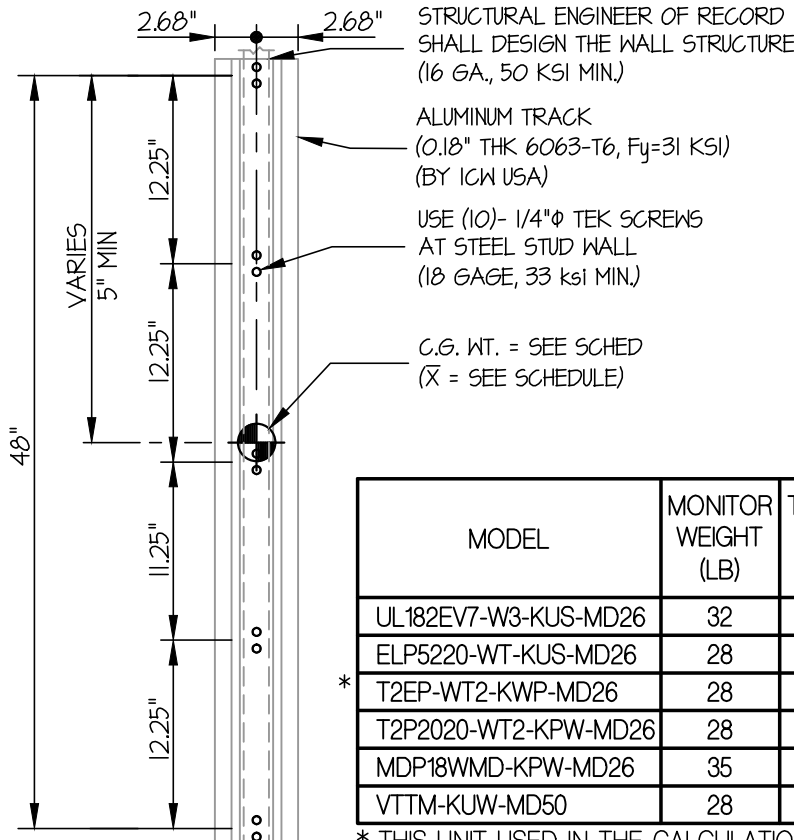
DATE 2/17/17

OF 6 SHEETS

TITAN AND ELITE WALL MOUNTS

SEISMIC SUPPORTS & ATTACHMENTS

50° TRACK



MODEL	MONITOR WEIGHT (LB)	TOTAL LOAD (LB)	$\bar{X}$ (in.)	(AFW) T_u (lb.)	(AFW) V_u (lb.)	(AW) T_u (lb.)	(AW) V_u (lb.)
UL182EV7-W3-KUS-MD26	32	61	31.57	50	48	31	78
ELP5220-WT-KUS-MD26	28	62	47.97	67	49	32	96
* T2EP-WT2-KWP-MD26	28	63	46.99	67	50	32	97
T2P2020-WT2-KPW-MD26	28	60	41.27	58	47	31	86
MDP18WMD-KPW-MD26	35	69	32.18	57	54	35	89
VTTM-KUW-MD50	28	84	16.66	48	66	43	88

* THIS UNIT USED IN THE CALCULATION BELOW.

ELEVATION AT WALL PLATE

WOOD STUD WALL SECTION

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 = 63 LB

HORIZONTAL FORCE (E_h) = 3.06 $W_p = 193$ LB

VERTICAL FORCE (E_v) = 0.34 $W_p = 21$ LB

SCREW FORCES:

TENSION (T) (AWAY FROM WALL (AFW))

$$T_{u \text{ VERTICAL}} = \frac{(12(63\#) + 21\#)46.99''}{2 \text{ SCREWS}(48'')} = 48 \text{ LB/SCREW}$$

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

$$T_{u \text{ PERP.}} = \frac{193\#}{10 \text{ SCREWS}} = 19 \text{ LB/SCREW}$$

$$T_{u \text{ MAX}} = 48\# + 19\# = 67 \text{ LB/SCREW (MAX)}$$

TENSION (T) AT SHEAR MAX (AGAINST WALL (AW))

$$T_{u \text{ VERTICAL}} = \frac{(12(63\#) + 21\#)4''}{2 \text{ SCREWS}(48'')} = 4 \text{ LB/SCREW}$$

$$T_{u \text{ PARALLEL}} = \frac{193\#(4'')}{10 \text{ SCREWS}(2.75'')} = 28 \text{ LB/SCREW}$$

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

$$T_{u \text{ MAX}} = 4\# + 28\# = 32 \text{ LB/SCREW (MAX)}$$

SHEAR (V)

$$V_{u \text{ AGAINST WALL}} = \sqrt{\left(\frac{(12(63\#) + 21\#)(46.99'')}{2 \text{ SCREWS}(48'')} + \frac{193\#}{4 \text{ SCREWS}}\right)^2 + \left(\frac{12(63\#) + 21\#}{10 \text{ SCREWS}}\right)^2} = 97 \text{ LB/SCREW (MAX)} \therefore \text{OK}$$

$$V_{u \text{ MAX @ } T_{u \text{ MAX}}} = \sqrt{\left(\frac{12(63\#) + 21\#}{10 \text{ SCREWS}}\right)^2 + \left(\frac{193\#}{4 \text{ SCREWS}}\right)^2} = 49 \text{ LB/SCREW (MAX)}$$

UNITY CHECK: (AGAINST WALL GOVERNS) (TEK SCREWS)

$$\left(\frac{T_u}{\phi T}\right) + \left(\frac{V_u}{\phi V}\right) \leq 1.0 \left(\frac{32}{418}\right) + \left(\frac{97}{362}\right) = 0.34 \leq 1.0 \therefore \text{OK}$$

UNITY CHECK: (WOOD SCREW)

$$\left(\frac{32}{596}\right) + \left(\frac{97}{275}\right) = 0.40 \leq 1.0 \therefore \text{OK}$$