EASE

EQUIPMENT ANCHORAGE & SEISMIC ENGINEERING
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CHATSWORTH PRODUCTS, INC.

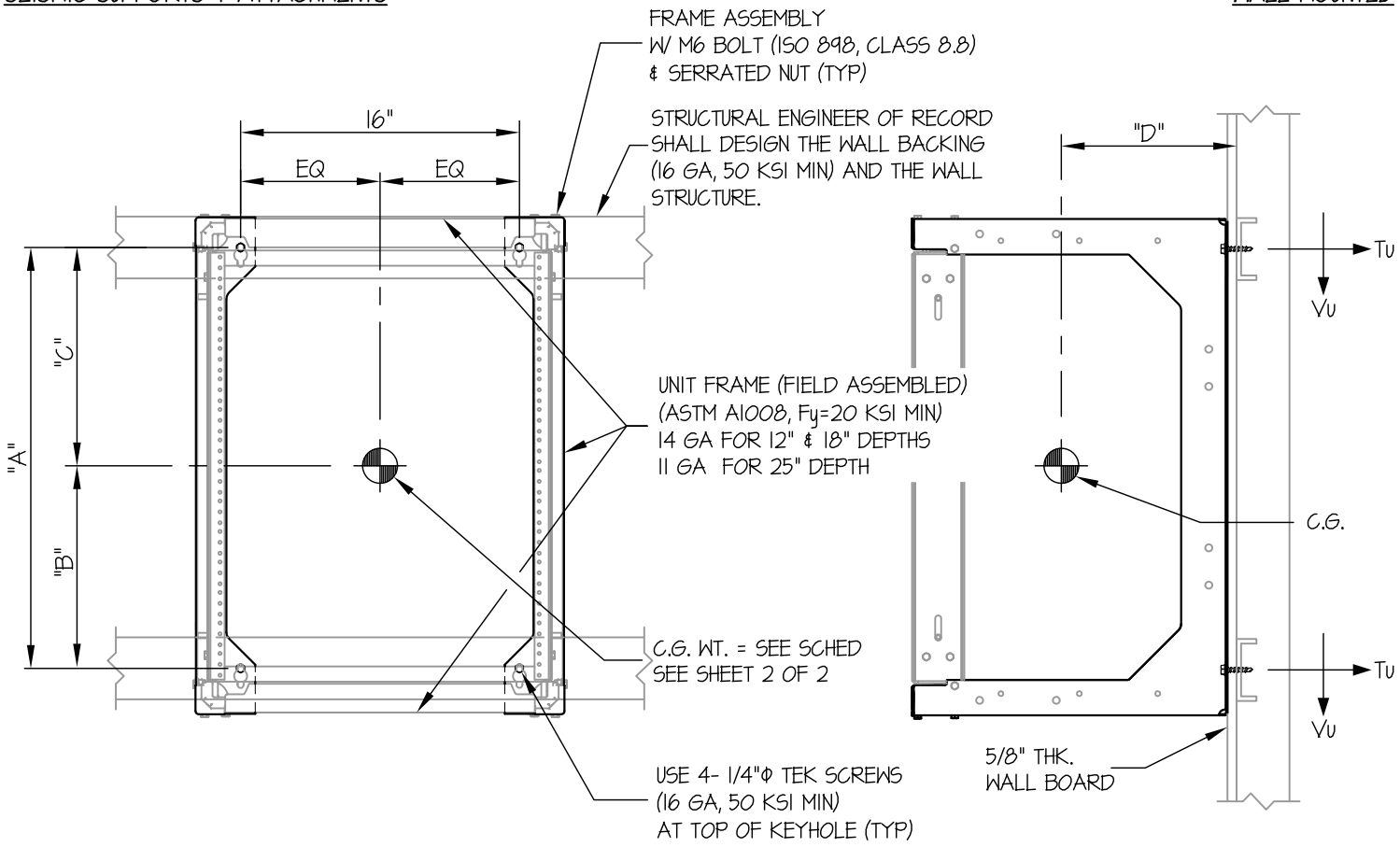
1179X & 11807 SERIES SWING GATE RACKS

DES.	J. ROBERSON
JOB NO.	11-1453
DATE	11/17/15

SHEET 1 OF 2 SHEETS

SEISMIC SUPPORTS & ATTACHMENTS

WALL MOUNTED



FRONT ELEVATION
(SEE SHEET 2 OF 2 FOR WEIGHTS AND DIMENSIONS)

STEEL STUD WALL SECTION

NOTES:

1. **FORCES ARE DETERMINED PER 2013 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 = 6.0, $z/h \leq 1$)

   HORIZONTAL FORCE (E_h) = 1.65 W_p
   VERTICAL FORCE (E_v) = 0.44 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.

REGISTERED PROFESSIONAL ENGINEER
JONATHAN ROBERSON
No. 4197
EXP. 6-30-2016
11/17/15
STRUCTURAL
STATE OF CALIFORNIA

CHATSWORTH PRODUCTS, INC.

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DES. J. ROBERSON
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SEISMIC SUPPORTS & ATTACHMENTS — WALL MOUNTED

	MODEL NO.	** WEIGHT (lb.)	"A" (in.)	"B" (in.)	"C" (in.)	"D" (in.)	Tu (lb.)	Vu (lb.)
	11790-X12	124	24.20	11.55	12.65	9.63	121	74
	11790-X18	126	24.20	11.55	12.65	14.13	173	75
*	11790-X25	137	24.20	11.55	12.65	19.43	251	82
	11791-X12	128	38.20	18.55	19.65	9.63	108	76
	11791-X18	130	38.20	18.55	19.65	14.13	153	77
	11791-X25	142	38.20	18.55	19.65	19.43	224	84
	11807-X12	131	48.70	23.80	24.90	9.63	104	77
	11807-X18	133	48.70	23.80	24.90	14.13	148	78
	11807-X25	146	48.70	23.80	24.90	19.43	216	86
	11792-X12	138	73.20	36.05	37.15	9.63	102	81
	11792-X18	140	73.20	36.05	37.15	14.13	143	82
	11792-X25	156	73.20	36.05	37.15	19.43	212	91

* UNIT USED IN CALCULATION BELOW
** WEIGHT = UNIT WT + CONTENTS (100 lb MAX)

LOADS: PER 2013 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 = 6.0, $z/h \leq 1.0$)
WEIGHT = 137 LB
HORIZONTAL FORCE (E_h) = $1.65W_p$ = 226 LB
VERTICAL FORCE (E_v) = $0.44W_p$ = 60 LB

SCREW FORCES: (CALCULATION IS CONSERVATIVE)

#14 TEK SCREWS TO 16 GAGE, 50 KSI
ϕT = 418 LB/SCREW
ϕV = 362 LB/SCREW

TENSION (T)

$$T_{u\ VERTICAL} = \frac{(1.2(137\#) + 60\#)19.43''}{2\ SCREWS(24.2'')} = 90\ LB/SCREW\ (TOP\ SCREW)$$

$$T_{u\ PARALLEL} = \frac{226\#(19.43'')(12.65'')}{1\ SCREW\ (16'')(24.2'')} = 143\ LB/SCREW\ (BOTTOM\ SCREW)$$

$$T_{u\ PERP.} = \frac{226\#(12.65'')}{2\ SCREWS(24.2'')} = 59\ LB/SCREW\ (BOTTOM\ SCREW)$$

$$T_{u\ MAX} = 90\# + (0.3)(59\#) + 143\# = 251\ LB/SCREW\ (MAX)$$

UNITY CHECK:

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

$$\left(\frac{251}{418}\right) + \left(\frac{82}{362}\right) = 0.83 \leq 1.0 \ \therefore \text{ O.K.}$$

SHEAR (V)

$$V_{u\ MAX} = \sqrt{\left(\frac{1.2(137\#) + 60\#}{4\ SCREWS}\right)^2 + \left(\frac{226\#(12.65'')}{2\ SCREWS(24.2'')}\right)^2} = 82\ LB/SCREW\ (MAX)$$