



EASE
EQUIPMENT ANCHORAGE & SEISMIC ENGINEERING
5877 Pine Ave, Ste. 210
Chino Hills, CA. 91709
Phn: (909) 606-7622 Fax: (866) 801-4975

Sheet 1 of 6

Office of Statewide Health Planning and Development ANCHORAGE PRE-APPROVAL

OPA-2850-10

THIS PRE-APPROVAL CONFORMS TO THE 2010 CALIFORNIA BUILDING CODE

Equipment Manufacturer: GREATLAKES CASE & CABINETS

Equipment Type: GL "ES" Series Enclosure

GENERAL NOTES

1. EXPANSION ANCHORS:

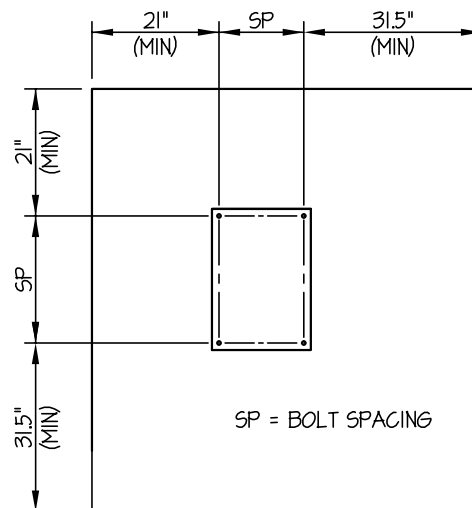
- (a) ATTACHMENT IS TO BE MADE WITH THE ANCHORS LISTED BELOW AND INSTALLED AS DESCRIBED IN THE CORRESPONDING ICC REPORT.

Anchor Diameter	Concrete Type	Min. f'c (psi)	Anchor Type	ICC Report No.	Min. Embed.	Min. Spacing	Min. Edge Dist.	Min. Conc. Thickness	Installation. Torque	Test Loads
5/8"	Hardrock	3000	Hilti Kwik Bolt TZ	ESR-1917	4"	5-1/2"	21"	6"	60 Ft-Lbs	Direct Pull Tension - 3310 lbs

- (b) THIS PRE-APPROVAL ALLOWS FOR UP TO A MAXIMUM OF 2 ADJACENT CONCRETE SLAB EDGES, 21" AWAY MINIMUM (i.e. - CORNER). SEE ADJACENT DETAIL FOR ADDITIONAL MINIMUM ALLOWABLE CONCRETE EDGE DISTANCES.

2. TESTING OF EXPANSION ANCHORS PER 2010 CBC, 1916A.7 : TENSION TESTING SHALL BE DONE IN THE PRESENCE OF THE SPECIAL INSPECTOR AND A REPORT OF THE TEST RESULTS SHALL BE SUBMITTED TO OSHPD

- (a) AFTER AT LEAST 24 HOURS HAVE ELAPSED SINCE INSTALLATION, DIRECT PULL TENSION TEST AT LEAST 50% OF THE ANCHORS.
- (b) ACCEPTANCE CRITERIA: THE ANCHOR SHOULD HAVE NO OBSERVABLE MOVEMENT AT THE TEST LOAD. A PRACTICAL WAY TO DETERMINE OBSERVABLE MOVEMENT IS THAT THE WASHER BECOMES LOOSE.
- (c) IF ANY ANCHOR FAILS, TEST ALL ANCHORS.



TYPICAL CONCRETE EDGE DETAIL





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Sheet 2 of 6

Office of Statewide Health Planning and Development
ANCHORAGE PRE-APPROVAL

OPA-2850-10

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Equipment Manufacturer: GREATLAKES CASE & CABINETS

Equipment Type: GL "ES" Series Enclosure

GENERAL NOTES (CONTINUED)

3. FORCES PER ASCE 7-05 SECTION 13.3.1, EQUATIONS 13.3-1, 13.3-2 & 13.3-3, WHERE $S_Ds = 2.00$, $a_p = 2.5$, $I_p = 1.5$, $R_p = 6.0$, $z/h = 0.0$ AT CONCRETE SLAB & $z/h \leq 1.00$ AT CONCRETE ON METAL DECK.
4. THIS PRE-APPROVAL CONFORMS TO THE 2010 CALIFORNIA BUILDING CODE.
5. THIS PRE-APPROVAL COVERS ONLY THE ANCHORAGE OF THE UNIT TO THE HOSPITAL BUILDING'S STRUCTURE.
6. ALL ANCHOR FORCES SHOWN ON THE DRAWINGS ARE FACTORED LOADS THAT SHALL BE USED FOR STRENGTH DESIGN.

RESPONSIBILITIES OF THE STRUCTURAL ENGINEER OF RECORD

7. VERIFY THAT THE COMBINATION OF S_Ds & z/h RESULT IN SEISMIC FORCES (E_h , E_v) THAT ARE NOT GREATER THAN THE VALUES ON THE DETAILS.
8. VERIFY THAT THE CONCRETE SLAB WHICH THE EQUIPMENT IS ANCHORED TO MEETS THE REQUIREMENTS OF THE APPLICABLE ICC ESR.
9. VERIFY THAT THE ANCHORS ARE AN ADEQUATE DISTANCE FROM ANY SLAB EDGES OR OPENINGS (SEE TYPICAL DETAIL ON SHEET 1).
10. VERIFY THAT ALL NEW OR EXISTING ANCHORS ARE AN ADEQUATE DISTANCE FROM THE ANCHORS SHOWN IN THIS PRE-APPROVAL. SEOR SHALL VERIFY THAT THERE IS NO ADVERSE INTERACTION WHERE OTHER ANCHORS ARE WITHIN 18" OR $6h_{ef}$ FROM THIS UNIT'S ANCHORS.
11. THE SEOR SHALL ALSO VERIFY THE ADEQUACY OF THE STRUCTURES (SUCH AS WALLS AND FLOORS) WHICH SUPPORT THE UNITS FOR THE LOADS IMPOSED ON THEM BY THE UNITS AS WELL AS ALL OTHER LOADS.
12. PROVIDE SUPPORTING STRUCTURE REQUIRED TO SUPPORT WEIGHTS AND FORCES SHOWN, IN ADDITION TO ALL OTHER LOADS.
13. VERIFY THAT THE INSTALLATION IS IN CONFORMANCE WITH THE 2010 CBC AND WITH THE DETAILS SHOWN IN THIS PRE-APPROVAL. VERIFY THAT THE ACTUAL EQUIPMENT'S WEIGHT, CG LOCATION, ANCHOR LOCATIONS, ANCHOR DETAILS AND THE MATERIAL AND GAGE OF THE UNIT WHERE ATTACHMENTS ARE MADE AGREE WITH THE INFORMATION SHOWN ON THE PRE-APPROVAL DOCUMENTS.



GREATLAKES CASE & CABINETS

GL "ES" SERIES ENCLOSURE

DES. J. ROBERSON

JOB NO. 11-1211

DATE 1/16/13

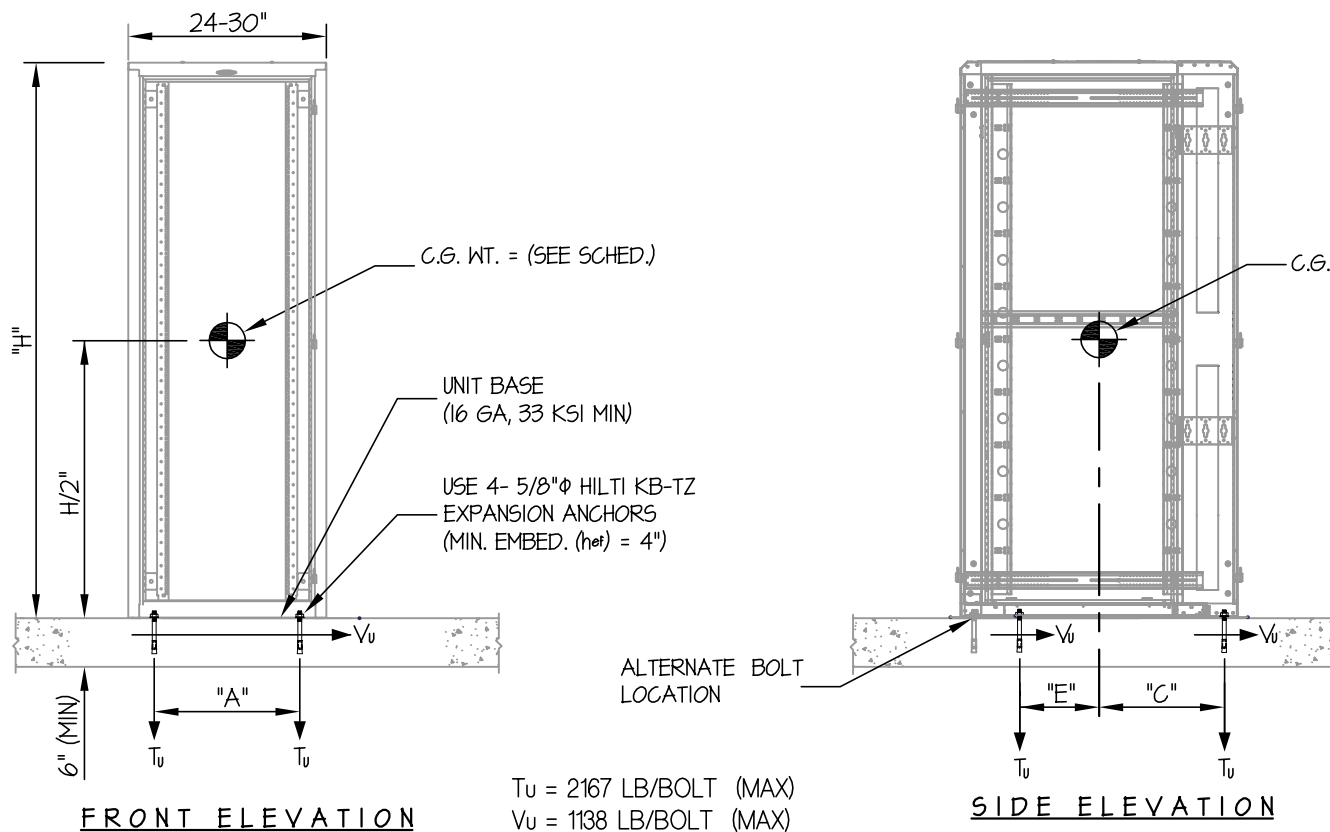
SHEET

3

OF 6 SHEETS

SEISMIC ANCHORAGE

CONCRETE SLAB



NOTES:

1. ANCHORAGE DESIGN PER 2010 CALIFORNIA BUILDING CODE AND ASCE 7-05. STRENGTH DESIGN IS USED.

HORIZONTAL FORCE (E_h) = $0.90 W_p (S_{DS} = 2.0, a_p = 2.5, I_p = 1.5, R_p = 6.0, z/h = 0.0)$

VERTICAL FORCE (E_v) = $0.40 W_p$

2. CENTER OF GRAVITY (C.G.) WEIGHT IS A MAXIMUM. THIS PRE-APPROVAL 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 ADDITION TO ALL OTHER LOADS.
4. SEE GENERAL NOTES: SHEET 1 & 2



GREATLAKES CASE & CABINETS

GL "ES" SERIES ENCLOSURE

DES. J. ROBERSON

JOB NO. 11-1211

DATE 1/16/13

SHEET

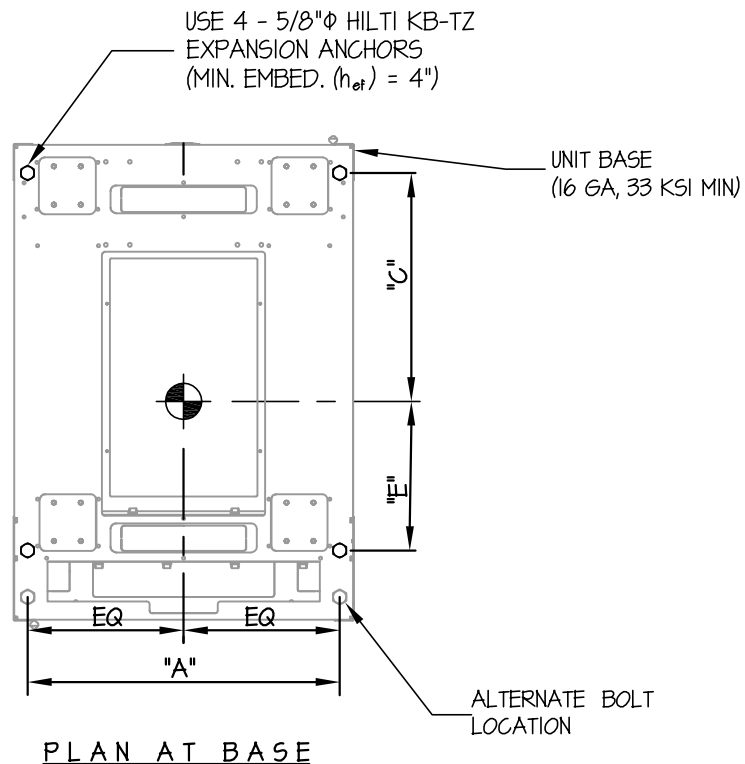
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OF

6

SHEETS

SEISMIC ANCHORAGE



UNIT NUMBER	WEIGHT (lb.)	CG (in)	"H" (in)	"A" (in)	"C" (in)	"E" (in)	T _u (lb.)	V _u (lb.)
GL840ES-3048	2245	42	84	28.12	16.944	22.25	1719	1147
GL840ES-2448	2228	42	84	22.12	16.944	22.25	2167	1138
GL840ES-3042	2210	42	84	28.12	17.053	19.25	1627	1055
GL840ES-2442	2197	42	84	22.12	17.053	19.25	2042	1048
GL780ES-3042	2201	39	78	28.12	17.053	19.25	1484	1050
GL780ES-2442	2187	39	78	22.12	17.053	19.25	1868	1044
GL480ES-2442	2144	24	48	22.12	17.053	19.25	1017	1023



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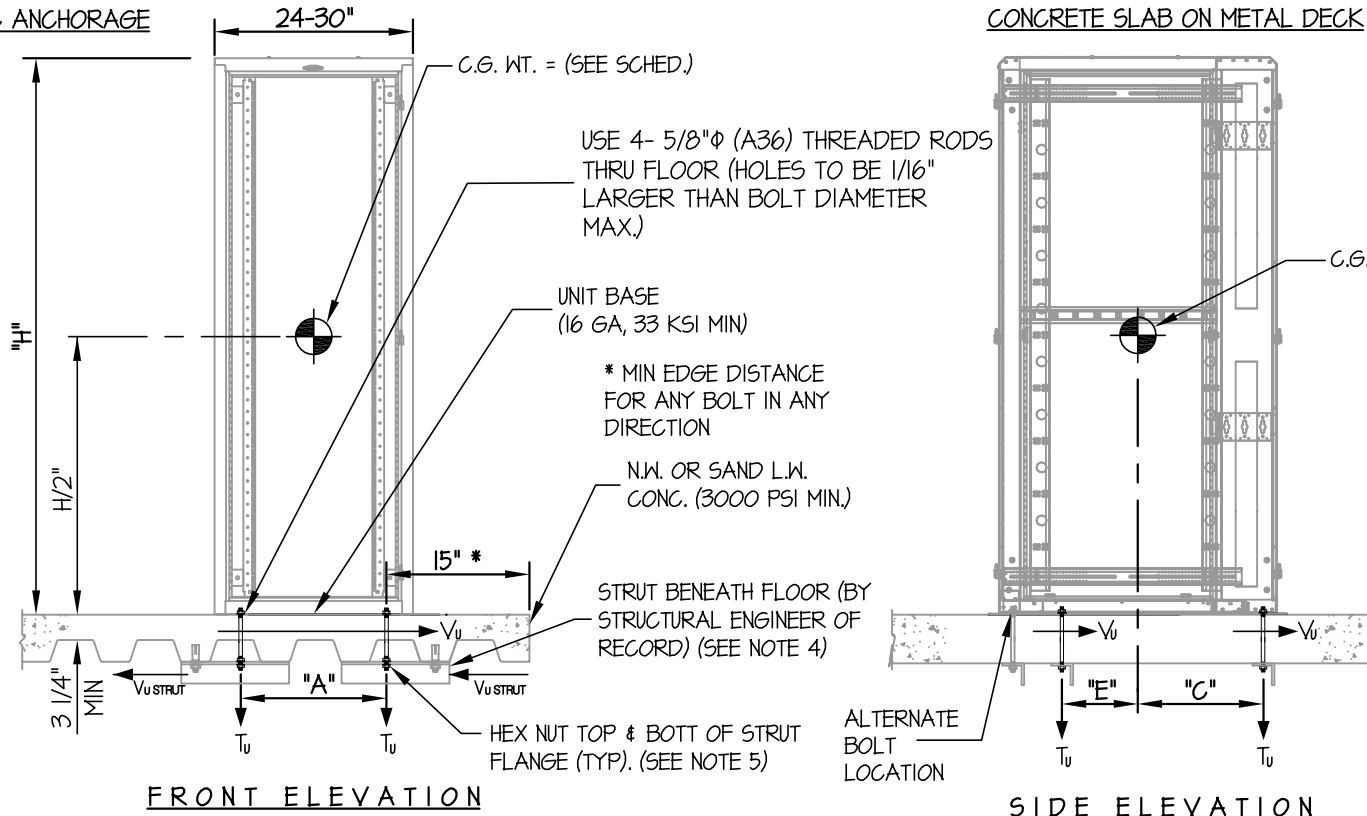
SHEET

5

OF 6 SHEETS

SEISMIC ANCHORAGE

CONCRETE SLAB ON METAL DECK



NOTES:

- FORCES ARE DETERMINED PER 2010 CALIFORNIA BUILDING CODE AND ASCE 7-05. STRENGTH DESIGN IS USED.

HORIZONTAL FORCE (E_h) = $150 W_p$ ($S_Ds = 2.00$, $a_p = 2.5$, $I_p = 15$, $R_p = 6.0$, $z/h \leq 1.0$)

VERTICAL FORCE (E_v) = $0.40 W_p$

- CENTER OF GRAVITY (C.G.) WEIGHT IS A MAXIMUM. THIS PRE-APPROVAL ENCOMPASSES ALL WEIGHTS UP TO THE MAXIMUM WEIGHT SHOWN.
- STRUCTURAL ENGINEER OF RECORD SHALL PROVIDE STRUCTURE TO SUPPORT WEIGHTS AND FORCES SHOWN IN COMBINATION WITH ALL OTHER LOADS THAT MAY BE PRESENT.
- STRUCTURAL ENGINEER OF RECORD SHALL DESIGN THE STRUT(S) AND ITS ATTACHMENTS TO RESIST A LOAD NOT LESS THAN $V_{U \text{ STRUT}}$ IN COMBINATION WITH ALL OTHER LOADS THAT MAY BE PRESENT, WHERE $V_{U \text{ STRUT}} = 0.6 V_u \times$ (NO. OF ANCHORS ENGAGED BY STRUT) (MIN)
- AT CONDITIONS WHERE NUT CANNOT BE PROVIDED AT TOP SIDE OF STRUT, PROVIDE TAPPED HOLE THROUGH STRUT FLANGE.

$T_u = 3822 \text{ LB/BOLT (MAX)}$

$V_u = 948 \text{ LB/BOLT (MAX)}$



GREATLAKES CASE & CABINETS

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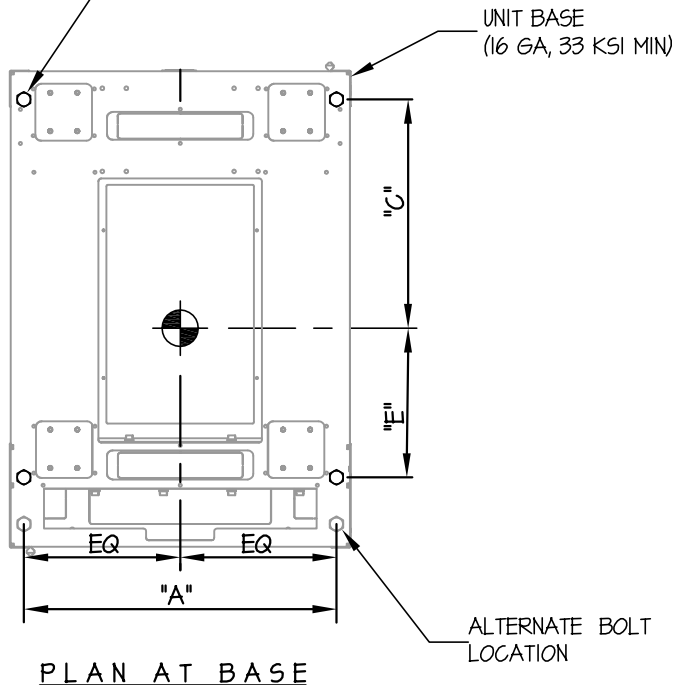
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OF 6 SHEETS

SEISMIC ANCHORAGE

CONCRETE SLAB ON METAL DECK

USE 4- 5/8"φ (A36) THREADED RODS
THRU FLOOR (HOLES TO BE 1/16"
LARGER THAN BOLT DIAMETER
MAX.)



UNIT NUMBER	WEIGHT (lb.)	"H" (in.)	CG (in.)	"A" (in.)	"C" (in.)	"E" (in.)	T _u (lb.)	V _u (lb.)
GL840ES-3048	2245	84	42	28.12	16.944	22.25	3077	956
GL840ES-2448	2228	84	42	22.12	16.944	22.25	3822	948
GL840ES-3042	2210	84	42	28.12	17.053	19.25	2908	879
GL840ES-2442	2197	84	42	22.12	17.053	19.25	3598	874
GL780ES-3042	2201	78	39	28.12	17.053	19.25	2668	875
GL780ES-2442	2187	78	39	22.12	17.053	19.25	3306	870
GL480ES-2442	2144	48	24	22.12	17.053	19.25	1885	853

