AOstructures Inc.
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Carnelian Bay, CA 96140
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February 26, 2026

TO: Lunar Energy

SUBJECT: Lunar Battery Anchorage - California
Fully Wall Mounted System

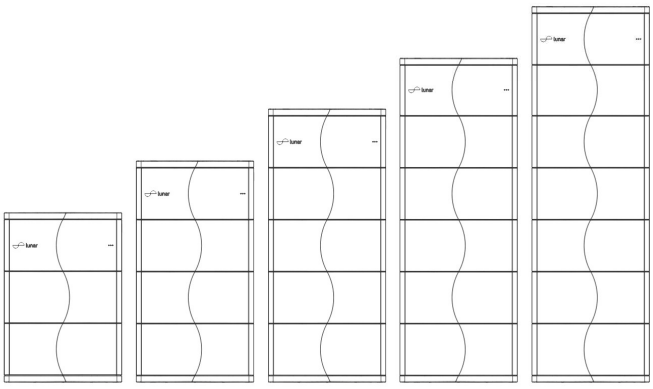
SCOPE OF WORK:
AOstructures, Inc. was asked to provide the structural anchorage design for a Lunar LFP Battery System. The installation method consists of a Lunar Battery System that is fully hung from an existing wall. The wall may be either of the following below conditions:

- Wood framed wall consisting of typical 2x4 (minimum) studs @ 16" o.c.
- Wood framed wall consisting of atypical 2x4 (minimum) stud spacing
- Concrete wall, 6" minimum thickness with f'c = 2,500 psi, min.
- CMU wall, fully grouted, normal weight CMU

The wall anchorage is designed to resist both the dead weight (downward load) of the equipment as well as the vertical and lateral seismic forces (vertical, horizontal and withdrawl).

ESS DESCRIPTION
The subject battery system consists of a modular design which includes (1) inverter and can include as few as (2) battery blocks (10kWh ESS) and as many as (6) battery blocks (30kWh ESS). Each of the modular elements are attached modularly to a wall mounting bracket provided by the manufacturer. The bottom wall mounting bracket is fastened to the wall using (4) fasteners with additional modular elements above clipped to the bracket below and fastened to the wall using (2) additional fasteners. For the 10kWh ESS, there are a total of (8) fasteners while the 30 kWh ESS utilizes (16) fasteners. See Mechanical properties of the modular battery system, below:

Mechanical	10 kWh	15 kWh	20 kWh	25 kWh	30 kWh
Dimensions (L x W x D)	34.8" x 24.4" x 13.5" (884 x 619 x 344mm)	45.5"x 24.4" x 13.5" (1156 x 619 x 344 mm)	56.1"x 24.4" x 13.5" (1425 x 619 x 344 mm)	66.8"x 24.4" x 13.5" (1696 x 619 x 344 mm)	77.4"x 24.4" x 13.5" (1967 x 619 x 344 mm)
	Inverter: 12" x 24.4" x 13.5" (305 x 619 x 344 mm) **Top + Bottom Cover:** 3" x 24.4" x 13.5" (75 x 619 x 344 mm)				
Inverter Mass	42 lb (19 kg)				
Total Assembly Mass (including brackets & covers)	305 lb (139 kg)	421 lb (191 kg)	540 lb (245 kg)	659 lb (299 kg)	778 lb (354 kg)
Mounting	Floor or wall mounted				



LIMITATIONS:
The scope of this report is strictly limited to the anchorage of the above specified wall mounting brackets to the existing wall framing only. No evaluation of the existing structure or any of the manufacturer provided elements (i.e. batteries/inverters/mounting brackets/clips/base/etc.) is included or implied in the scope of this report. The calculations that follow are designed with the following design criteria and are only applicable for sites with design criteria less than that specified below:

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DESIGN CRITERIA:

- Applicable Codes = 2025 CBC, ASCE 7-22
- Risk Category II
- Seismic: Sds = 2g, Ip = 1, Rμ = 1.3, Car =1, Rpo = 1.5

EQUIPMENT SPECIFICATIONS:

- Equipment:
  - (1) Lunar LFP Battery System (30kWh, max) - weighing no more than 778lb
- All equipment shall be installed per manufacturer specifications

CONCLUSIONS:

Anchorage to wood framed wall construction:

Each modular mounting bracket shall be attached to the existing framing using a minimum of (2) 1/4"Ø Lag Screw fasteners installed into (2) different existing 2x studs to suspend the equipment above grade. (4) fasteners shall be used for the bottom bracket. The fasteners shall be installed at manufacturer provided mounting holes and shall be installed within the middle 1/3 of the stud width with a minimum threaded embedment of 2.0" into the existing wood stud framing in the wall (See Detail S1.0).

This proposed mounting method assumes that only one ESS is mounted per pair of studs. In some cases, the contractor may consider mounting multiple ESS's per pair of studs. Examples of such conditions are provided below. In all cases, it is recommended that the contractor contact a licensed engineer to evaluate the proposed existing stud wall to assess it's suitabilty to support the weight of multiple ESS's.

- Walls < 10'-0 tall with 2x6 studs or larger
- Walls < 12'-0 tall with 2x8 studs or larger
- Bearing walls with minimal (i.e. < 8'-0") tributary area of loads.
- Walls that are sheathed with OSB or CDX plywood intended to resist lateral forces (shear walls)

In some conditions, such as irregular stud spacing or stud spacing that exceeds 16" o.c., the as-built stud spacing may not support the pre-drilled manufacturer mounting hole locations without a supplemental support. Details S2.0 and S2.1 are provided to propose an alternative mounting solution for such conditions and provide flexibility for the installation when preferred.

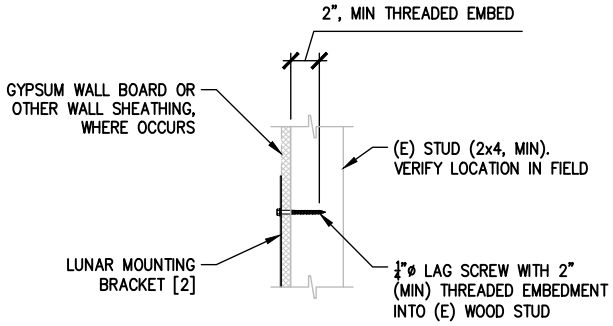
Anchorage to concrete or CMU wall construction:

Each modular mounting bracket shall be attached to the existing wall using a minimum of (2) 1/4 diameter Hilti Kwik HUS-EZ or Simpson Titen HD fasteners with a minimum embedment of 2" into the supporting concrete (See Detail S1.1) or CMU (See Detail S1.2) wall. The fasteners shall be installed at all manufacturer provided mounting hole locations. If mounted in an exterior or otherwise corrosive environment, the fasteners shall be galvanized or stainless steel. The fasteners shall maintain a minimum 6" edge and/or end distance from concrete and/or CMU wall ends/edges. Fasteners installed in CMU walls shall maintain a 2.5" separation from grout head joints.

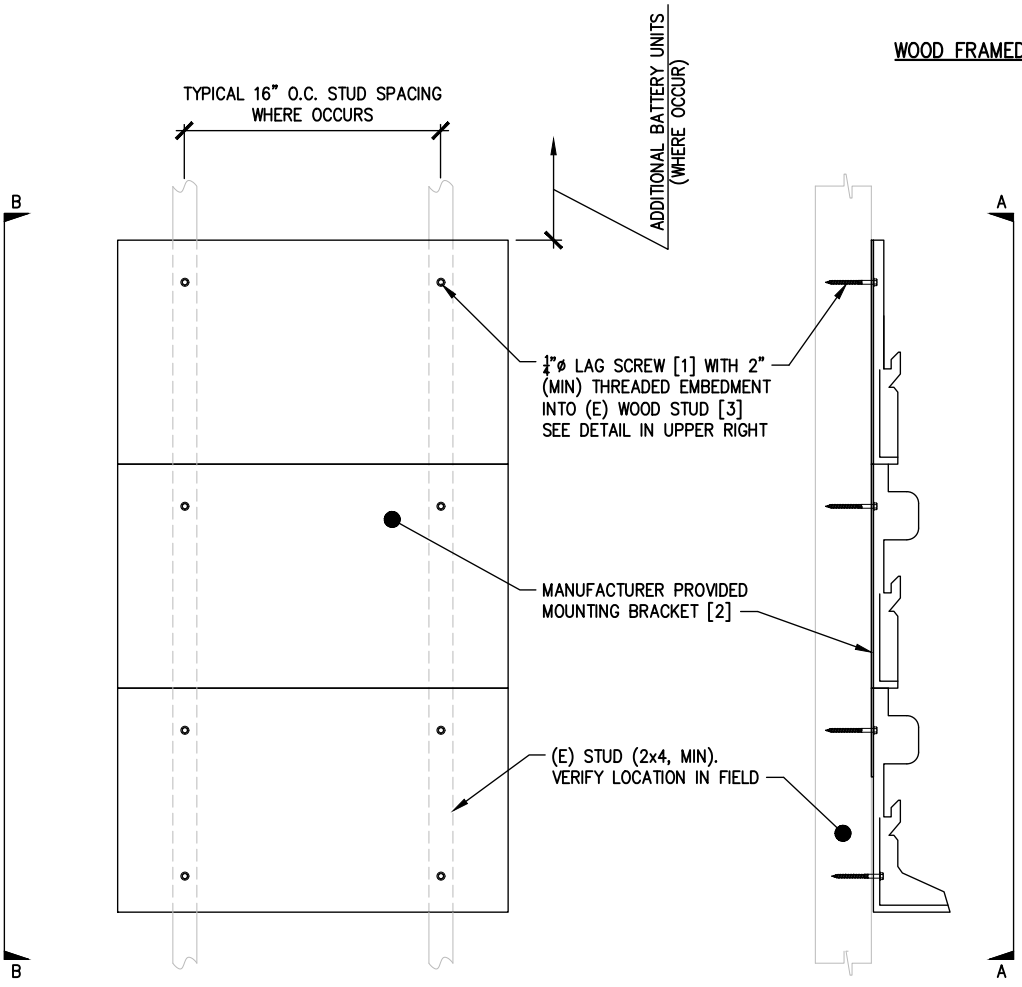
Please contact me with any further questions or concerns regarding this project.

Sincerely,





WOOD FRAMED WALL MOUNTING APPLICATION



ELEVATION A–A

SECTION B–B

NOTES: [#]
1. FOR EXTERIOR ENVIRONMENTS, USE STAINLESS STEEL FASTENERS & GALVANIZED STRUT
2. SEE MANUFACTURER INSTALLATION INSTRUCTIONS
3. WATERPROOFING BY CONTRACTOR

AO structures

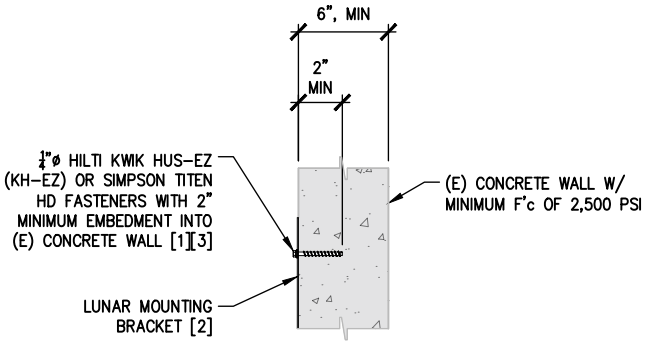
PROJECT:
LUNAR LFP BATTERY ANCHORAGE

SHEET TITLE:
WOOD STUD WALL MOUNTING DETAIL

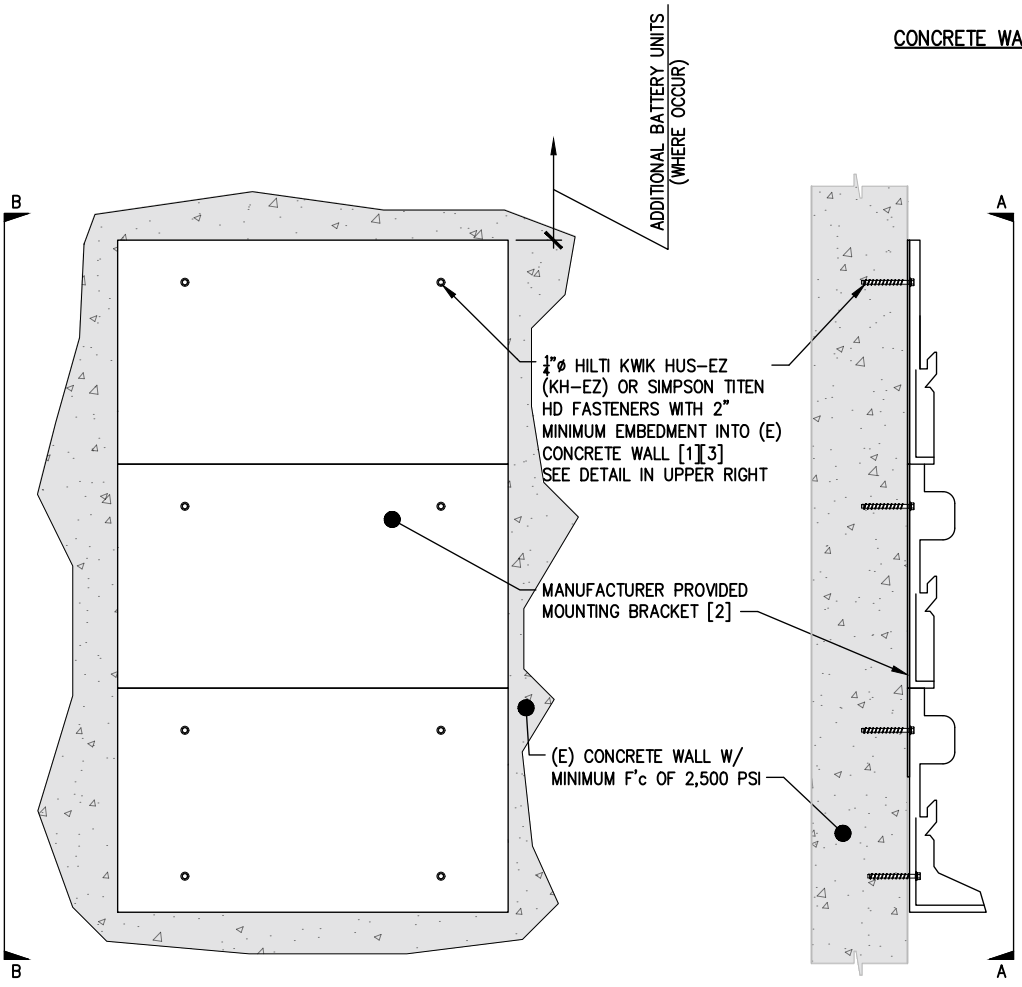
DATE:
2/11/26

SHEET NUMBER:
S1.0

NOTE: SPECIAL INSPECTIONS MAY BE REQUIRED
FOR POST INSTALLED ANCHORS. VERIFY WITH AHJ.



CONCRETE WALL MOUNTING APPLICATION



ELEVATION A–A

SECTION B–B

NOTES: [#]
1. FOR EXTERIOR ENVIRONMENTS, USE STAINLESS STEEL FASTENERS & GALVANIZED STRUT
2. SEE MANUFACTURER INSTALLATION INSTRUCTIONS
3. WATERPROOFING BY CONTRACTOR

AO structures

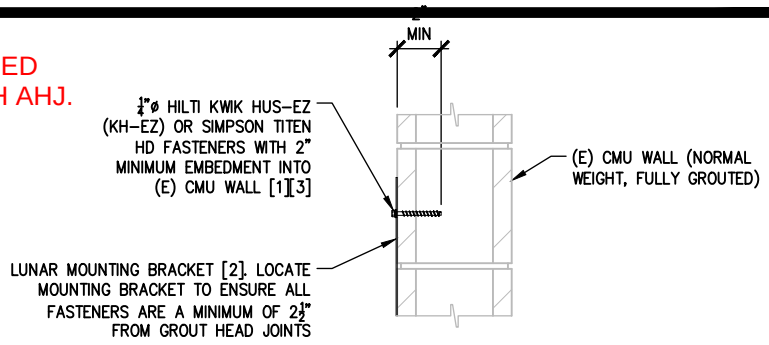
PROJECT:
LUNAR LFP BATTERY ANCHORAGE

SHEET TITLE:
CONCRETE WALL MOUNTING DETAIL

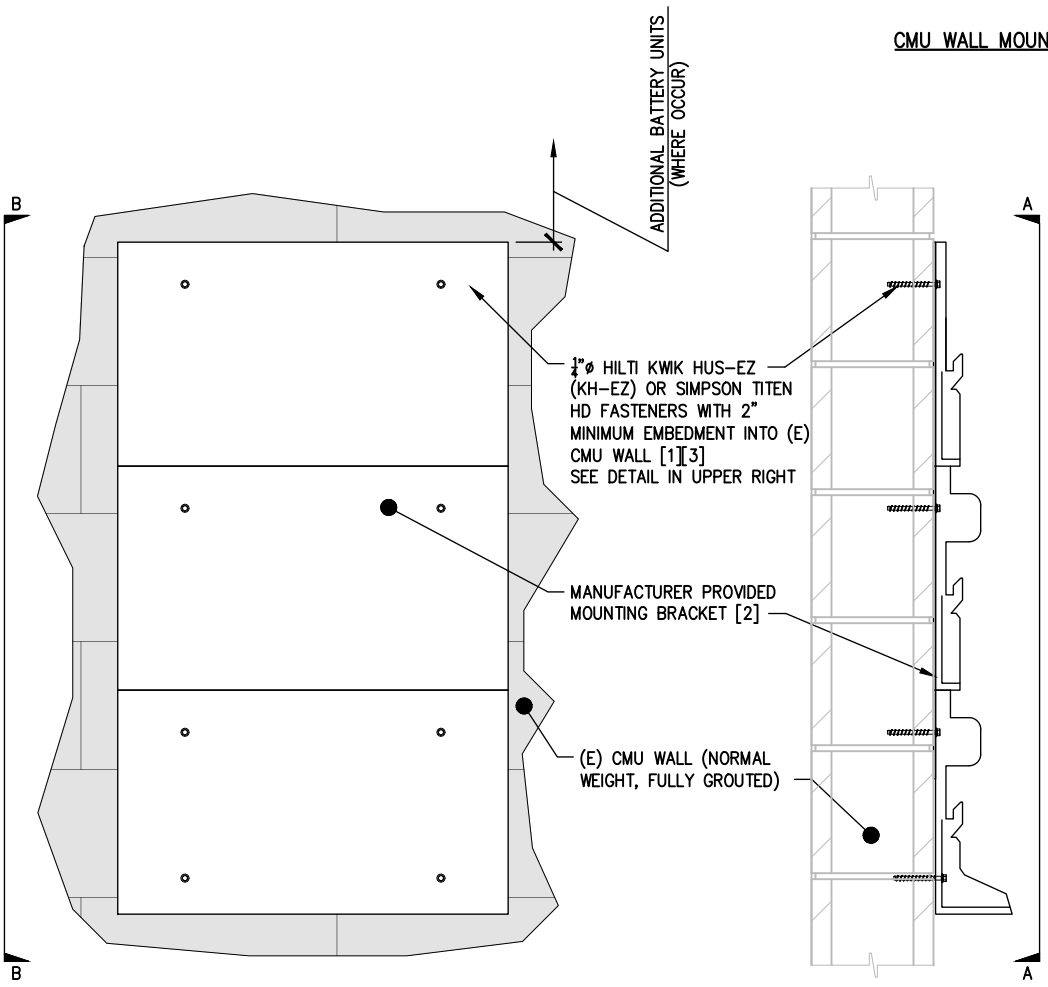
DATE:
2/11/26

SHEET NUMBER:
S1.1

NOTE: SPECIAL INSPECTIONS MAY BE REQUIRED FOR POST INSTALLED ANCHORS. VERIFY WITH AHJ.



CMU WALL MOUNTING APPLICATION



ELEVATION A–A

SECTION B–B

NOTES: [#]
1. FOR EXTERIOR ENVIRONMENTS, USE STAINLESS STEEL FASTENERS & GALVANIZED STRUT
2. SEE MANUFACTURER INSTALLATION INSTRUCTIONS
3. WATERPROOFING BY CONTRACTOR

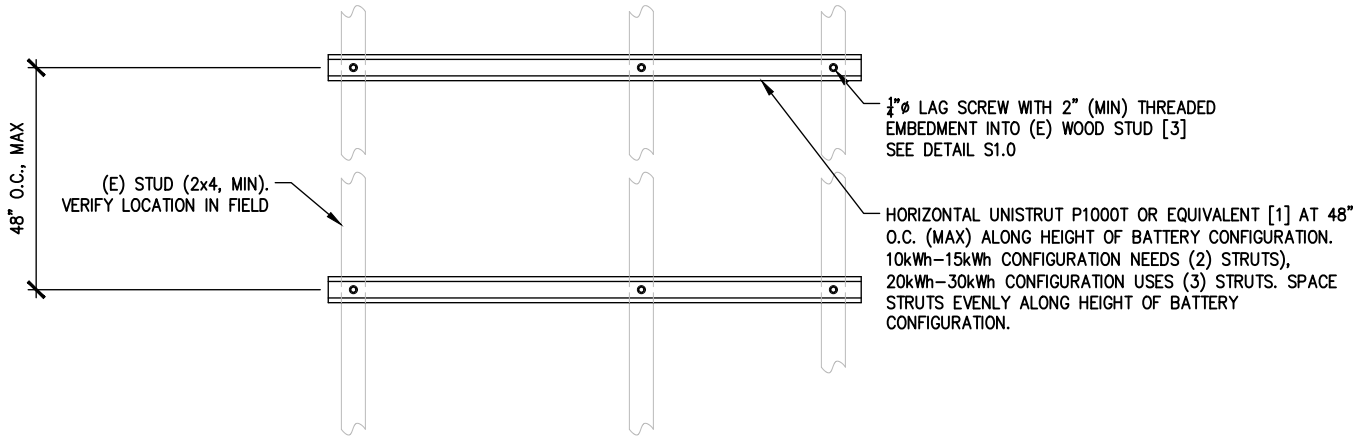
AO structures

PROJECT:
LUNAR LFP BATTERY ANCHORAGE

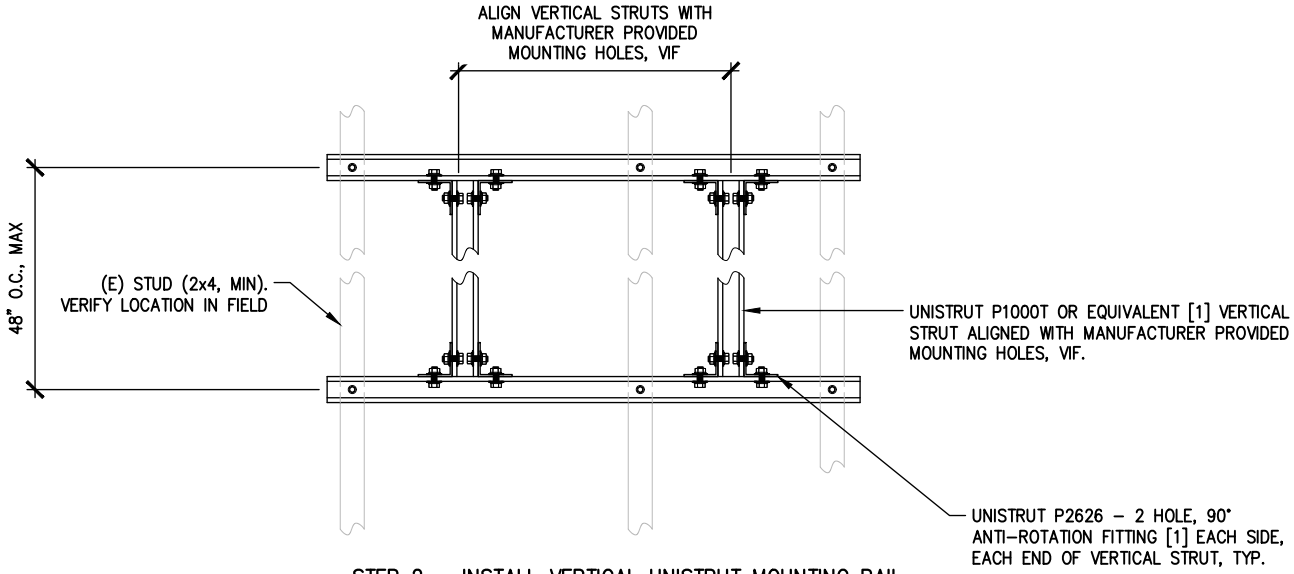
SHEET TITLE:
CMU WALL MOUNTING DETAIL

DATE:
2/11/26

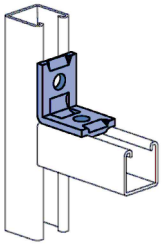
SHEET NUMBER:
S1.2



STEP 1 – INSTALL HORIZONTAL UNISTRUT SUPPORT RAIL



STEP 2 – INSTALL VERTICAL UNISTRUT MOUNTING RAIL



STEP 3 – SEE DETAIL S2.1

NOTES: [#]
1. FOR EXTERIOR ENVIRONMENTS, USE STAINLESS STEEL FASTENERS & GALVANIZED STRUT
2. SEE MANUFACTURER INSTALLATION INSTRUCTIONS
3. WATERPROOFING BY CONTRACTOR

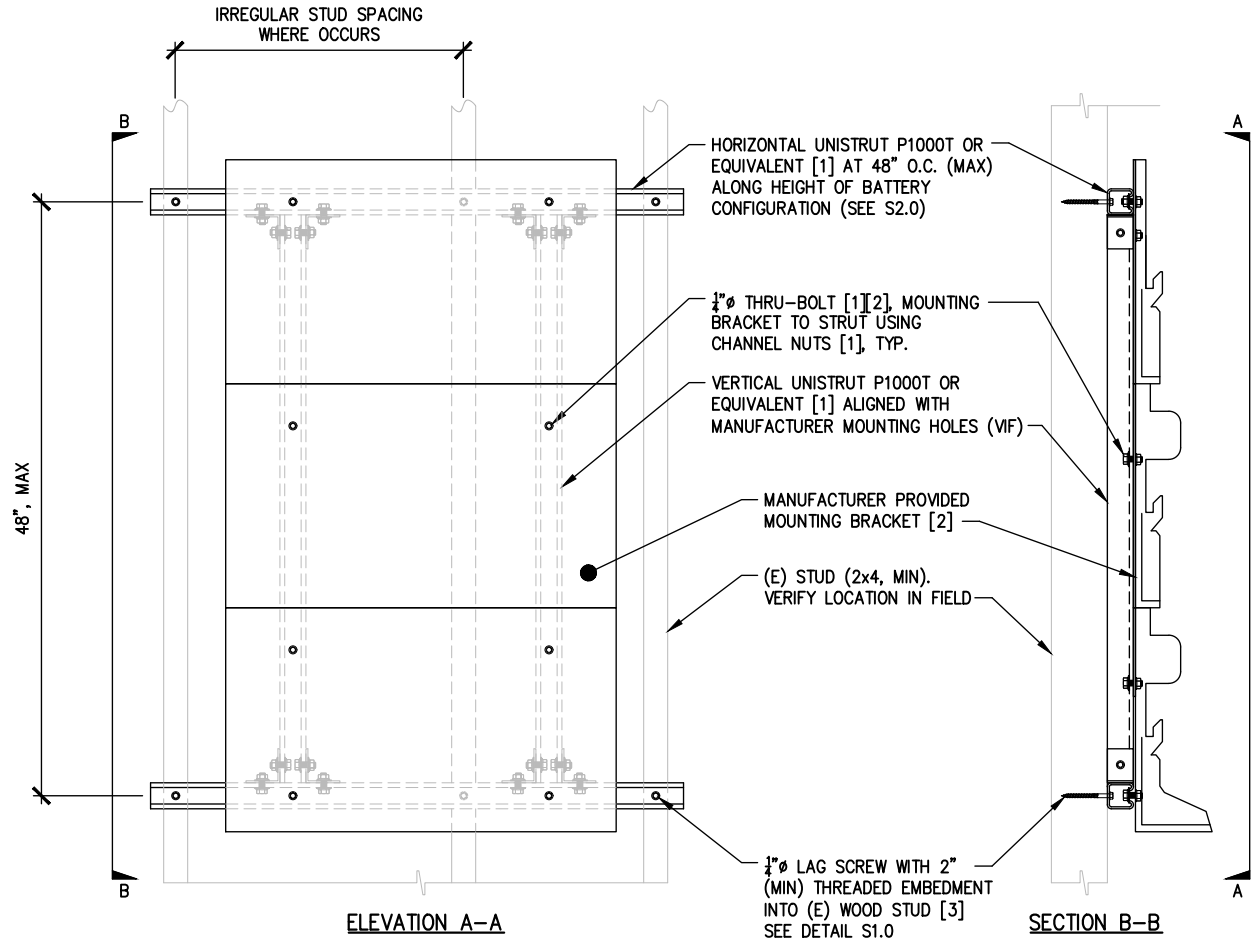
AO structures

PROJECT:
LUNAR LFP BATTERY ANCHORAGE

SHEET TITLE:
WOOD STUD WALL MOUNTING DETAIL AT (3) STUD CONDITION

DATE:
2/11/26

SHEET NUMBER:
S2.0



STEP 3 – INSTALL MANUFACTURER MOUNTING BRACKET/BATTERY ASSEMBLY

NOTES: [#]
1. FOR EXTERIOR ENVIRONMENTS, USE STAINLESS STEEL FASTENERS & GALVANIZED STRUT
2. SEE MANUFACTURER INSTALLATION INSTRUCTIONS
3. WATERPROOFING BY CONTRACTOR

AO structures

PROJECT:
LUNAR LFP BATTERY ANCHORAGE

SHEET TITLE:
WOOD STUD WALL MOUNTING DETAIL AT (3) STUD CONDITION

DATE:
2/11/26

SHEET NUMBER:
S2.1

AOstructures Inc.
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Seismic Anchorage of Wall Mounted Equipment - Lunar LFP Battery - 10kWh

Input Variables

Per ASCE 7-22, Chapter 13		
Fp - Wall Mounted Equipment		
Equipment Label	1	
Equipment Name	Lunar LFP Battery - 10kWh	
Sds =	2.00 g	(Section 11.4.5)
Importance Factor (Ip) =	1.00	(Section 13.1.3)
z/h =	0.50	
Hf =	2.25	(13.3.1.1)
Rμ =	1.30	(13.3.1.2)
Car =	1.0	(Table 13.6-1)
Rpo =	1.5	(Table 13.6-1)
Equipment Weight (Wp) =	305 lb	

Seismic Design Force

Fp = $= 0.4 * S_{DS} * I_P * W_P * \left[\frac{H_f}{R_\mu}\right] * \left[\frac{C_{AR}}{R_{po}}\right]$ (13.3-1)

= 282 lb **Governs**

Fp (max) = 1.6 * Sds * Ip * Wp (13.3-2)

= 0,976 lb

Fp (min) = 0.3 * Sds * Ip * Wp (13.3-3)

= 183 lb

Fp = 282 lb (ultimate)

Seismic Forces Required for Anchorage to Concrete/Masonry

Ωo = 2.0 (Used for anchorage to concrete)

Ωo Fp = 0,563 lb (ultimate)

Seismic Design Force (Vertical Load)

Fp (vert) = 0.2* Sds * Wp

= 122 lb

Fp (vert) = 122 lb (ultimate)

Note: Use 244 lb for anchorage forces at concrete/masonry

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Fastener (to Wood Framed Wall) Capacity Check - Shear and Withdrawl - Lunar LFP Battery - 10kWh

Demand Loads					
Equipment Weight =	305 lb				(Per manufacturer)
Vertical Seismic Force Demand =	122 lb				(See Fp Calcs)
Lateral Shear Demand =	282 lb				(See Fp Calcs)
1.0D + 0.7 Ev + 0.7Eh =	391 lb	vertical	198 lb	horizontal	
0.6D - 0.7 Ev + 0.7 Eh =	98 lb	vertical	198 lb	horizontal	

Fastener Selection			
Fastener =	1/4"Ø Lag Screw		
Number of Fasteners =	8		
Stud Width =	1.500 in	in	
Required Edge Distance =	0.625 in	in	(2.5 * d as per NDS)
2x Edge Distance + Fastener Diameter =	1.500 in	in	≤ stud width, OK!

Fastener Withdrawl Capacity Check (Seismic force away from the wall)		
Withdrawl Shear Force =	198 lb	(ASD)
Embedment Depth =	2.0 in	
Pullout Capacity Per Inch =	173 lb	(G = 0.42 - per NDS)
Group Fastener Withdrawl Capacity =	2768 lb	
w/ Cd of 1.6 =	4429 lb	
4429 lb capacity > 198 lb demand	**Therefore, OK**	4.5% stress

Fastener Shear Capacity Check (Left Right Force)		
Lateral Shear Demand =	198 lb	
Individual Fastener Shear Capacity =	120 lb	(Z⊥ per NDS w/ 12 gage mounting bracket)
Group Fastener Shear Capacity =	960 lb	
Group Shear Capacity w/ Cd = 1.6 =	1536 lb	
1536 lb capacity > 198 lb demand	**Therefore, OK**	12.9% stress

Fastener Shear Capacity Check (Up Down Force)		
Vertial Shear Demand =	391 lb	(1.0D + 0.7 Ev)
Individual Fastener Shear Capacity =	160 lb	(Z‖ per NDS w/ 12 gage mounting bracket)
Group Fastener Shear Capacity =	1280 lb	
Group Shear Capacity w/ Cd = 1.6 =	2048 lb	
2048 lb capacity > 391 lb demand	**Therefore, OK**	19.1% stress

Check Combined Loading	
Withdrawl Stress =	5%
Max Shear Stress =	19%
Combined Stress =	20%

Results: (8) 1/4"Ø Lag Screw(s) have a combined stress ratio of 20%, OK!

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Seismic Anchorage of Wall Mounted Equipment - Lunar LFP Battery - 30kWh

Input Variables

Per ASCE 7-22, Chapter 13		
Fp - Wall Mounted Equipment		
Equipment Label	1	
Equipment Name	Lunar LFP Battery - 30kWh	
Sds =	2.00 g	(Section 11.4.5)
Importance Factor (Ip) =	1.00	(Section 13.1.3)
z/h =	0.50	
Hf =	2.25	(13.3.1.1)
Rμ =	1.30	(13.3.1.2)
Car =	1.0	(Table 13.6-1)
Rpo =	1.5	(Table 13.6-1)
Equipment Weight (Wp) =	778 lb	

Seismic Design Force

Fp = $= 0.4 * S_{DS} * I_P * W_P * \left[\frac{H_f}{R_\mu}\right] * \left[\frac{C_{AR}}{R_{po}}\right]$ (13.3-1)

= 718 lb **Governs**

Fp (max) = 1.6 * Sds * Ip * Wp (13.3-2)

= 2,490 lb

Fp (min) = 0.3 * Sds * Ip * Wp (13.3-3)

= 467 lb

Fp = 718 lb (ultimate)

Seismic Forces Required for Anchorage to Concrete/Masonry

Ωo =	2.0	(Used for anchorage to concrete)
Ωo Fp =	**1,436 lb**	(ultimate)

Seismic Design Force (Vertical Load)

Fp (vert) = 0.2* Sds * Wp

= 311 lb

Fp (vert) = 311 lb (ultimate)

Note: Use 623 lb for anchorage forces at concrete/masonry

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Fastener (to Wood Framed Wall) Capacity Check - Shear and Withdrawl - Lunar LFP Battery - 30kWh

Demand Loads				
Equipment Weight =	778 lb			(Per manufacturer)
Vertical Seismic Force Demand =	311 lb			(See Fp Calcs)
Lateral Shear Demand =	718 lb			(See Fp Calcs)
1.0D + 0.7 Ev + 0.7Eh =	996 lb	vertical	503 lb horizontal	
0.6D - 0.7 Ev + 0.7 Eh =	249 lb	vertical	503 lb horizontal	

Fastener Selection			
Fastener =	1/4"Ø Lag Screw		
Number of Fasteners =	16		
Stud Width =	1.500 in	in	
Required Edge Distance =	0.625 in	in	(2.5 * d as per NDS)
2x Edge Distance + Fastener Diameter =	1.500 in	in	≤ stud width, OK!

Fastener Withdrawl Capacity Check (Seismic force away from the wall)		
Withdrawl Shear Force =	503 lb	(ASD)
Embedment Depth =	2.0 in	
Pullout Capacity Per Inch =	173 lb	(G = 0.42 - per NDS)
Group Fastener Withdrawl Capacity =	5536 lb	
w/ Cd of 1.6 =	8858 lb	
8858 lb capacity > 503 lb demand	**Therefore, OK**	5.7% stress

Fastener Shear Capacity Check (Left Right Force)		
Lateral Shear Demand =	503 lb	
Individual Fastener Shear Capacity =	120 lb	(Z⊥ per NDS w/ 12 gage mounting bracket)
Group Fastener Shear Capacity =	1920 lb	
Group Shear Capacity w/ Cd = 1.6 =	3072 lb	
3072 lb capacity > 503 lb demand	**Therefore, OK**	16.4% stress

Fastener Shear Capacity Check (Up Down Force)		
Vertial Shear Demand =	996 lb	(1.0D + 0.7 Ev)
Individual Fastener Shear Capacity =	160 lb	(Z‖ per NDS w/ 12 gage mounting bracket)
Group Fastener Shear Capacity =	2560 lb	
Group Shear Capacity w/ Cd = 1.6 =	4096 lb	
4096 lb capacity > 996 lb demand	**Therefore, OK**	24.4% stress

Check Combined Loading	
Withdrawl Stress =	6%
Max Shear Stress =	24%
Combined Stress =	26%

Results: (16) 1/4"Ø Lag Screw(s) have a combined stress ratio of 26%, OK!

Company:		Page:	1
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	Lunar ESS - Concrete Anchorage	Date:	1/20/2026
Fastening point:			

Specifier's comments:

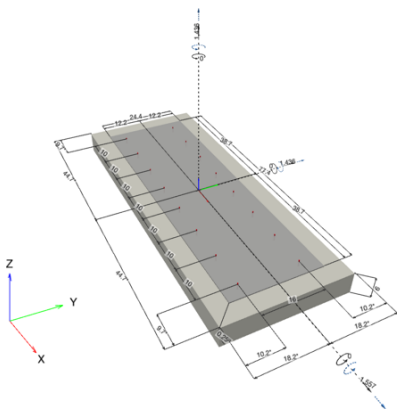
1 Input data



Anchor type and diameter:	**KWIK HUS-EZ (KH-EZ)-SS316 1/4 (1 5/8)**
Item number:	2245630 KH-EZ SS316 1/4"x2"
Specification text:	Hilti ∅ 1/4 in KWIK HUS-EZ (KH-EZ)-SS316 with 1.625 in nominal embedment depth per ICC-ES ESR-3027 , Hammer drill bit installation per MPII
Effective embedment depth:	$h_{ef,act}$ = 1.190 in., h_{nom} = 1.625 in.
Material:	AISI 316
Evaluation Service Report:	ESR-3027
Issued I Valid:	12/1/2023 | 12/1/2025
Proof:	Design Method ACI 318-19 / Mech
Shear edge breakout verification:	Row closest to edge (Case 3 only from ACI 318-19 Fig. R.17.7.2.1b)
Stand-off installation:	e_b = 0.000 in. (no stand-off); t = 0.250 in.
Anchor plate[R] :	l_x x l_y x t = 77.400 in. x 24.400 in. x 0.250 in.; (Recommended plate thickness: not calculated)
Profile:	no profile
Base material:	cracked concrete, 2500, f_c' = 2,500 psi; h = 6.000 in.
Installation:	**Hammer drilled hole, Installation condition: Dry**
Reinforcement:	tension: not present, shear: not present; no supplemental splitting reinforcement present edge reinforcement: none or < No. 4 bar
Seismic loads (cat. C, D, E, or F)	Tension load: yes (17.10.5.3 (d)) Shear load: yes (17.10.6.3 (c))

[R] - The anchor calculation is based on a rigid anchor plate assumption.

Geometry [in.] & Loading [lb, in.lb]



Input data and results must be checked for conformity with the existing conditions and for plausibility!
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Company:		Page:	2
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	Lunar ESS - Concrete Anchorage	Date:	1/20/2026
Fastening point:			

1.1 Unfactored loads

	Sustained load factor	Load factor f_1 or f_2	V_x [lb]	V_y [lb]	N [lb]	M_x [in.lb]	M_y [in.lb]	M_z [in.lb]
D (Dead)	1.000	-	778	-	-	-	-	-
F (Fluid)	1.000	-	-	-	-	-	-	-
T (Temperature)	1.000	-	-	-	-	-	-	-
L (Live)	1.000	0.500	-	-	-	-	-	-
H (Lateral)	1.000	-	-	-	-	-	-	-
L_r (Roof live)	1.000	-	-	-	-	-	-	-
S (Snow)	1.000	0.200	-	-	-	-	-	-
R (Rain)	-	-	-	-	-	-	-	-
W (Wind)	-	-	-	-	-	-	-	-
E (Earthquake)	-	-	623	1,436	1,436	-	-	-

1.2 Load combination and design results

1.2.1 Load combination

Load case	Load combination
Equation (16-1)	1.4 (D + F)
Equation (16-5)	1.2 (D + F) + 1.0 (E) + f_1L + 1.6 (H) + f_2S
Equation (16-7)	0.9 (D + F) + 1.0 (E) + 1.6 (H)

1.2.2 Design results

Case	Description	Forces [lb] / Moments [in.lb]	Seismic	Max. Util. Anchor [%]
Equation (16-1)	1.4 (D + F)	N = 0; V_x = 1,089; V_y = 0; M_x = 0; M_y = 0; M_z = 0;	yes	27
Equation (16-5)	1.2 (D + F) + 1.0 (E) + f_1L + 1.6 (H) + f_2S	N = 1,436; V_x = 1,557; V_y = 1,436; M_x = 0; M_y = 0; M_z = 0;	yes	72
Equation (16-7)	0.9 (D + F) + 1.0 (E) + 1.6 (H)	N = 1,436; V_x = 1,323; V_y = 1,436; M_x = 0; M_y = 0; M_z = 0;	yes	68

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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Company:		Page:	3
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	Lunar ESS - Concrete Anchorage	Date:	1/20/2026
Fastening point:			

2 Proof I Utilization (Governing Cases)

		Design values [lb]		Utilization	
Loading	**Proof**	**Load**	**Capacity**	**β_N / β_V [%]**	**Status**
Tension	Pullout Strength	90	161	56 / -	OK
Shear	Concrete edge failure in direction x+	2,118	4,061	- / 53	OK

Loading	**β_N**	**β_V**	**ζ**	**Utilization $\beta_{N,V}$ [%]**	**Status**
Combined tension and shear loads	0.558	0.521	5/3	72	OK

3 Warnings

- Please consider all details and hints/warnings given in the detailed report!

Fastening meets the design criteria!

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	Masonry - Jan 20, 2026	Date:	1/20/2026
Fastening point:			

Specifier's comments:

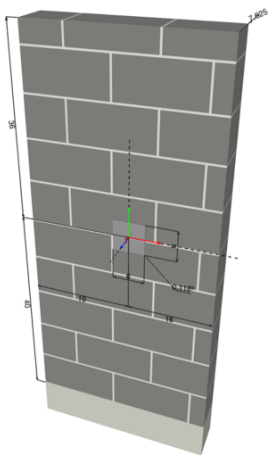
1 Input data



Anchor type and diameter:	**KWIK HUS-EZ (KH-EZ)-SS316 1/4 (2 1/2)**
Item number:	2245632 KH-EZ SS316 1/4"x2-1/2"
Specification text:	Hilti ∅ 1/4 (2 1/2) KWIK HUS-EZ (KH-EZ)-SS316 with 1.93 in nominal embedment depth per ICC-ES ESR-3056 , Hammer drilled installation per MPII
Effective embedment depth:	h_{ef} = 1.930 in.
Material:	AISI 316
Evaluation Service Report:	ESR-3056
Issued I Valid:	10/1/2024 | 10/1/2025
Proof:	Design Method LRFD (AC01) Masonry + ACI 318-19
Stand-off installation:	e_b = 0.000 in. (no stand-off); t = 0.118 in.
Anchor plate[R] :	l_x x l_y x t = 6.000 in. x 6.000 in. x 0.118 in.; (Recommended plate thickness: not calculated)
Profile:	no profile
Base material:	uncracked Grout-filled CMU, f=1500, f = 1,500 psi, L x W x H: 16.000 in. x 8.000 in. x 8.000 in.; Solid Head Joint: no; open ended unit: no Joints: vertical: 0.375 in.; horizontal: 0.375 in.
Installation:	Face installation, Drill hole: Hammer drilled, Installation condition: Dry
Seismic loads (cat. C, D, E, or F)	Tension load: yes (17.10.5.3 (d)) Shear load: yes (17.10.6.3 (c))

[R] - The anchor calculation is based on a rigid anchor plate assumption.

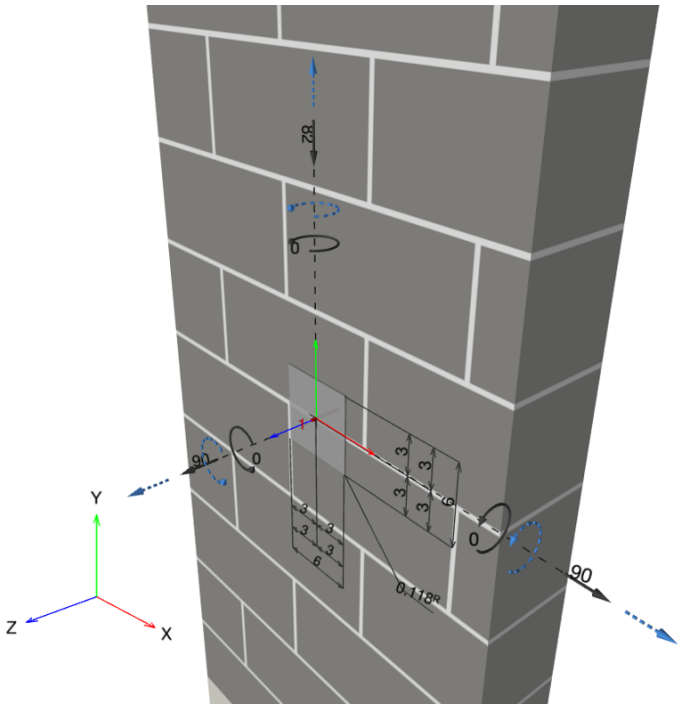
Geometry [in.]



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Geometry [in.] & Loading [lb, in.lb]



1.1 Unfactored loads

	Sustained load factor	Load factor f_1 or f_2	V_x [lb]	V_y [lb]	N [lb]	M_x [in.lb]	M_y [in.lb]	M_z [in.lb]
D (Dead)	1.000	-	-	-48	-	-	-	-
F (Fluid)	1.000	-	-	-	-	-	-	-
T (Temperature)	1.000	-	-	-	-	-	-	-
L (Live)	1.000	0.500	-	-	-	-	-	-
H (Lateral)	1.000	-	-	-	-	-	-	-
L_r (Roof live)	1.000	-	-	-	-	-	-	-
S (Snow)	1.000	0.200	-	-	-	-	-	-
R (Rain)	-	-	-	-	-	-	-	-
W (Wind)	-	-	-	-	-	-	-	-
E (Earthquake)	-	-	90	-39	90	-	-	-

1.2 Load combination and design results

1.2.1 Load combination

Load case	Load combination
Equation (16-1)	1.4 (D + F)
Equation (16-5)	1.2 (D + F) + 1.0 (E) + f_1L + 1.6 (H) + f_2S
Equation (16-7)	0.9 (D + F) + 1.0 (E) + 1.6 (H)

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1.2.2 Design results

Case	Description	Forces [lb] / Moments [in.lb]	Seismic	Max. Util. Anchor [%]
Equation (16-1)	1.4 (D + F)	N = 0; V_x = 0; V_y = -67; M_x = 0; M_y = 0; M_z = 0;	yes	8
Equation (16-5)	1.2 (D + F) + 1.0 (E) + f_1L + 1.6 (H) + f_2S	N = 90; V_x = 90; V_y = -97; M_x = 0; M_y = 0; M_z = 0;	yes	65
Equation (16-7)	**0.9 (D + F) + 1.0 (E) + 1.6 (H)**	**N = 90; V_x = 90; V_y = -82; M_x = 0; M_y = 0; M_z = 0;**	**yes**	**65**

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2 Proof I Utilization (Governing Cases)

		Design values [lb]		Utilization	
Loading	**Proof**	**Load**	**Capacity**	**β_N / β_V [%]**	**Status**
Tension	Pullout	90 [lb]	90 [lb]	64 / -	OK
Shear	Steel	122 [lb]	122 [lb]	- / 13	OK

Loading	**β_N**	**β_V**	**α**	**Utilization $\beta_{N,V}$ [%]**	**Status**
Interaction	0.642	0.133	1.667	51	OK

3 Warnings

- Please consider all details and hints/warnings given in the detailed report!

Fastening meets the design criteria!

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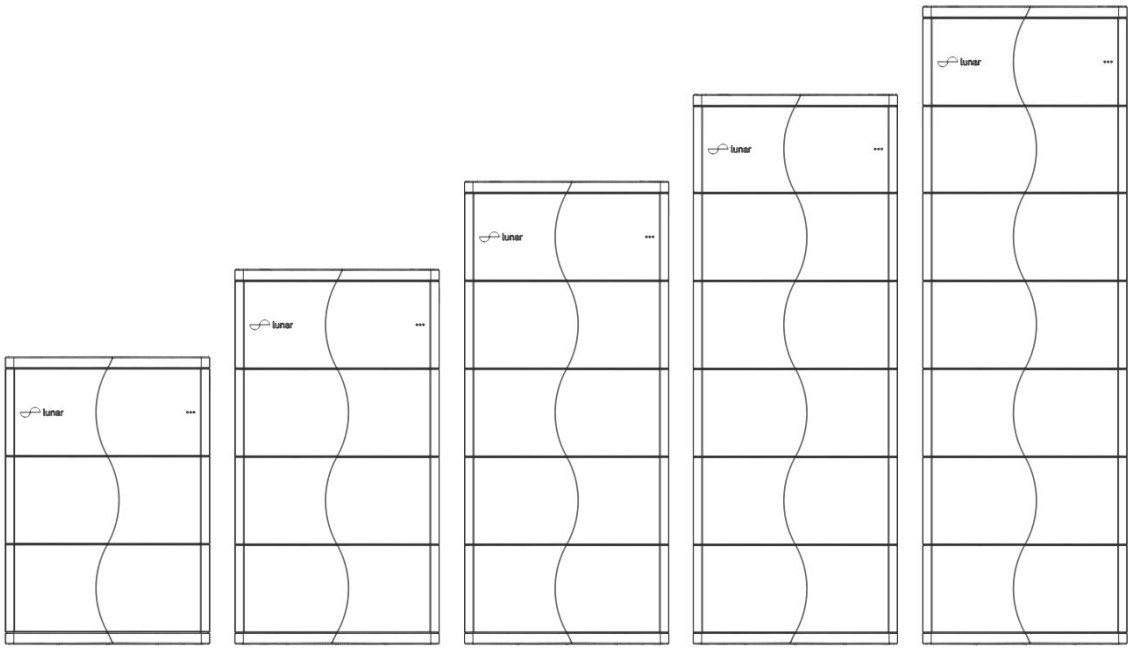
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AOstructures Inc.
PO Box 413
Carnelian Bay, CA 96140
916.541.8586
www.AOstructures.com

Appendix A: Manutacurer Specifications

Mechanical	10 kWh	15 kWh	20 kWh	25 kWh	30 kWh
Dimensions (L x W x D)	34.8" x 24.4" x 13.5" (884 x 619 x 344mm)	45.5"x 24.4" x 13.5" (1156 x 619 x 344 mm)	56.1"x 24.4" x 13.5" (1425 x 619 x 344 mm)	66.8"x 24.4" x 13.5" (1696 x 619 x 344 mm)	77.4"x 24.4" x 13.5" (1967 x 619 x 344 mm)
	Inverter: 12" x 24.4" x 13.5" (305 x 619 x 344 mm) **Top + Bottom Cover:** 3" x 24.4" x 13.5" (75 x 619 x 344 mm)				
Inverter Mass	42 lb (19 kg)				
Total Assembly Mass (including brackets & covers)	305 lb (139 kg)	421 lb (191 kg)	540 lb (245 kg)	659 lb (299 kg)	778 lb (354 kg)
Mounting	Floor or wall mounted				



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Appendix B: General Notes

GENERAL

- The contractor shall verify all dimensions, property setbacks, AHJ/HOA CC&R's, elevations and site conditions before starting work and shall notify AOstructure, Inc, (AOstructures) of any discrepancies.
- All report conclusions represent AOstructures, Inc.'s best professional judgment based upon industry standards.
- Resolve any conflicts on the drawings with AOstructures, Inc before proceeding with construction.
- The design criteria used for this project & listed on the first page of the report is based on the engineers best judgement and/or provided by the ATC council. AHJ specific requests may differ. Please contact our team if the design criteria needs to be modified.
- AOstructures is not responsible for enforcing safety measures or regulations. The contractor shall design, construct, and maintain all safety devices including shoring and bracing, and shall be solely responsible for conforming to all local, state and federal safety and health standards, laws and regulations. The contractor shall take necessary precautions to maintain and insure the integrity of the structure during construction. If a lawsuit is filed by one of the contractor's or subcontractor's employees, or any one else, the contractor will indemnify, defend and hold the owner and aostructures, inc harmless of any and all such claims.
- Any and all waterproofing shall be provided by the contractor. AOstrctures is not responsible for waterproofing.
- All hardware shall be installed per manufacturer specifications and within specified design limitations. AOstructures, Inc. assumes no responsibility for incorrectly installed hardware or hardware installed outside of the manfacturer specifications.
- Unless otherwise noted, construction material shall be evenly distributed if placed on framed floors or roofs. Loads shall not exceed the allowable loading for the supporting members and their connections.
- All members and hardware shall be either galvanized and/or stainless steel to resist corrosion due to the exterior environment they are intended to be installed in.

USER RELIANCE

- AOstructures was engaged by Lunar Energy (Client) to perform this assessment. This report and the information therein, are for the exclusive use of the Client. This report has no other purpose and shall not be relied upon, or used, by any other person or entity without the written consent of AOStructures. Third parties that obtain this report, or the information within shall have no rights of recourse or recovery against AOstructures, it's officers or employees.