

NOTES FOR EOR:

(DO NOT INCLUDE ON CONSTRUCTION DRAWINGS)

USE OF THIS STANDARD:

1. READ THOUGH LIMITATIONS AND ENSURE APPLICATION MEETS REQUIREMENTS SPECIFIED. IF ANY LIMITATIONS APPLY, CONSULT A STRUCTURAL ENGINEER.
3. SHEET NO. ST-F1033-3 IS FOR USE WITH ENCLOSURES WEIGHING LESS THAN 100 LBS (SMALL). SHEET NO. ST-F1033-4 IS FOR USE WITH ENCLOSURES WEIGHING FROM 100 LBS TO 190 LBS (LARGE).
4. CONSULT THE LIST OF APPROVED ENCLOSURES (ST-F1033-2). THIS STANDARD ONLY APPLIES TO EQUIPMENT ON THE LIST AND/OR WITHIN THE RANGE OF ACCEPTABLE WEIGHTS AND DIMENSIONS AS SPECIFIED ON SHEET ST-F1033-2.
5. THIS STANDARD IS NOT APPLICABLE TO ENCLOSURES EXCEEDING 190 LBS OR OUTSIDE OF THE ACCEPTABLE WEIGHT AND/OR DIMENSION RANGE.
6. THIS STANDARD ONLY CONSIDERS CONNECTIONS OF ENCLOSURES TO WALLS, NOT THE WALL CAPACITY TO RESIST ENCLOSURE/OTHER IMPOSED LOADS. THE EOR SHALL ENSURE THAT THE WALL CAPACITY IN QUESTION IS ADEQUATE AND SHALL VERIFY ADEQUACY OF THE LOAD PATH FROM THE WALL IN QUESTION TO THE BUILDING'S FOUNDATION. EXTRA CAUTION IS WARRANTED PRIOR TO USING THIS STANDARD WITH A NON-LOAD-BEARING WALL/PARTITION.
7. THIS STANDARD SHALL NOT BE USED IF FIELD CONDITIONS WILL RESULT IN THE "VIOLATION" OF ANY LIMITATION, W/O DOCUMENTATION PREPARED BY THE EOR, AND, IF NECESSARY, MODIFICATION OF THIS DETAIL.

GENERAL CRITERIA:

1. THIS DESIGN MAY BE USED AS A STAND ALONE PACKAGE OR AS PART OF A LARGER DRAWING PACKAGE. ENGINEERING REVIEW AND APPROVAL SHALL BE OBTAINED FOR SITE-SPECIFIC CONDITIONS.
2. ANY DISCREPANCIES SHALL BE REPORTED TO THE RESPONSIBLE ENGINEER PRIOR TO CONSTRUCTION.
3. NEW CONSTRUCTION SHALL BE COORDINATED WITH EXISTING SITE CONDITIONS.
4. THE PROJECT SHALL TAKE ALL NECESSARY PRECAUTIONS TO LOCATE AND PROTECT CONCEALED CONDUITS, PLUMBING, OR OTHER UTILITIES.
5. WHERE DIMENSIONS SHOWN ON SHEETS ST-F1033-3 AND ST-F1033-4 ARE SPECIFIED AS MIN OR MAX, SUBCONTRACTOR SHALL MAKE NECESSARY FIELD MEASUREMENTS AND PROVIDE REQUIRED DIMENSIONS.
6. SHEET NUMBERING AND CALL-OUT REFERENCING WILL NEED TO BE UPDATED TO FOLLOW LANL STANDARDS AND INTEGRATE INTO DRAWING PACKAGES.

LIMITATIONS:

ALL WALL TYPES

1. EQUIPMENT MUST BE MOUNTED INDOORS.

COLD-FORMED STEEL STUDS

1. MIN. STUD GAUGE OF 20 (I.E., THICKNESS = 0.0341").

WOOD STUDS

1. MIN. SPECIFIC GRAVITY OF WOOD STUDS IS 0.42 (SPRUCE, PINE, FIR).
2. WOOD IS IN DRY CONDITIONS AT A TEMPERATURE LESS THAN 100°F.

CONCRETE WALL

1. MIN. REQUIRED COMPRESSIVE STRENGTH OF CONCRETE IS 3000 PSI.
2. NORMAL WEIGHT CONCRETE.
3. MIN. WALL THICKNESS OF 4".
4. MIN. REQUIRED DISTANCE FROM ANCHOR TO EDGE OF WALL IS 12".

UNGROUTED MASONRY WALL

1. MIN. REQUIRED COMPRESSIVE STRENGTH OF MASONRY IS 1500 PSI.
2. MAX. ALLOWABLE COMPRESSIVE STRENGTH OF MASONRY IS 4000 PSI.

GROUTED MASONRY WALL

1. MIN. REQUIRED COMPRESSIVE STRENGTH OF MASONRY IS 1500 PSI.
2. MAX. ALLOWABLE COMPRESSIVE STRENGTH OF MASONRY IS 4000 PSI.
3. MIN. REQUIRED COMPRESSIVE STRENGTH OF GROUT IS 2000 PSI FOR 1500 PSI MASONRY.
4. FOR MASONRY STRENGTH > 1500 PSI, MASONRY STRENGTH ≤ GROUT STRENGTH ≤ 5000 PSI.
5. MIN. REQUIRED DISTANCE FROM ANCHOR TO EDGE OR TOP OF WALL IS 4".
6. MIN. REQUIRED DISTANCE FROM ANCHOR TO MORTAR HEAD JOINT IS 1.25".
7. MASONRY MUST BE UNCRACKED WHEN USING SCREW ANCHORS, AND THIS MUST BE PROVEN BY CALC.
8. CMU BLOCKS MUST CONFORM WITH ASTM C90 & 8"x8"x16" NOMINAL.

MATERIAL CRITERIA:

1. SELF-DRILLING METAL SCREWS
 - A. USE HILTI SELF-DRILLING SCREWS OR APPROVED EQUAL - S-MD 1/4"-14 X2 HHWH #3 IS BASIS OF CALC.
 - B. SELF-DRILLING METAL SCREWS SHALL BE INSTALLED IN COMPLIANCE WITH THE MANUFACTURER'S INSTALLATION GUIDELINES AND ICC REPORT (ESR 2196).
 - C. STANDARD INSTALLATION REQUIRES ANCHORING DIRECTLY INTO THE EXISTING WALL STUD.
 - D. DRYWALL SCREWS ARE NOT PERMITTED.
2. WOOD SCREWS
 - A. USE #8 STANDARD WOOD SCREWS AND, WHEN REQUIRED, 1/4" LAG SCREWS OR APPROVED EQUAL.
 - B. WOOD SCREWS SHALL BE INSTALLED IN COMPLIANCE WITH THE MANUFACTURER'S INSTALLATION GUIDELINES AND NDS.
 - C. STANDARD INSTALLATION REQUIRES ANCHORING DIRECTLY INTO THE EXISTING WALL STUD.
 - D. DRYWALL SCREWS ARE NOT PERMITTED.
3. POST-INSTALLED CONCRETE ANCHORS
 - A. USE HILTI KWIK BOLT TZ CARBON STEEL ANCHORS OR APPROVED EQUAL - 3/8" Ø IS BASIS OF CALC.
 - B. POST-INSTALLED ANCHORS SHALL BE INSTALLED IN COMPLIANCE WITH THE MANUFACTURER'S INSTALLATION GUIDELINES AND ICC REPORT (ESR-1917).
4. POST-INSTALLED MASONRY THRU-BOLTS
 - A. USE ASTM A307 GRADE A THRU-BOLTS OF GALVANIZED FINISH WITH ASTM F436 WASHERS AND HEAVY HEX NUTS OF GALVANIZED FINISH - 3/8" Ø IS BASIS OF CALC.
 - B. THRU-BOLTS SHALL BE INSTALLED IN COMPLIANCE WITH ASTM A307.
 - C. THRU-BOLTS MAY BE ENCASED IN HIT-SC 16 SLEEVES AND COATED IN HIT-HY 70 ADHESIVE TO DISTRIBUTE LOADING.
5. POST-INSTALLED MASONRY ANCHORS - 1/4" Ø X 1-5/8" EMBEDMENT
 - A. USE HILTI KWIK HUS-EZ (KH-EZ) CARBON STEEL SCREW ANCHORS FOR USE IN MASONRY OR APPROVED EQUAL.
 - B. ADHESIVE ANCHORS ARE NOT PERMITTED.
6. STRUT SYSTEM
 - A. USE COOPER B-LINE STRUT, NUTS, AND BOLTS (ASTM A307 1/4" Ø) OR APPROVED EQUAL.
 - B. STRUT SYSTEM SHALL ADHERE TO LANL MASTER SPEC FOR COLD-FORMED METAL FRAMING (SECTION 05 4000).
 - C. STRUT SYSTEM SHALL BE INSTALLED IN COMPLIANCE WITH THE MANUFACTURER'S INSTALLATION GUIDELINES.

DESIGN CRITERIA:

1. APPLICABLE CODES AND STANDARDS:
 - 1.1. INTERNATIONAL BUILDING CODE 2015 (IBC)
 - 1.2. AMERICAN SOCIETY OF CIVIL ENGINEERS - MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES 2010 (ASCE 7)
 - 1.3. NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS 2012 EDITION (ANSI-NAS-S100-2012)
 - 1.4. AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPEC. (AISC 360)
 - 1.5. NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION 2015 (NDS)
 - 1.6. AMERICAN CONCRETE INSTITUTE - BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE 2014 (ACI 318)
 - 1.7. THE MASONRY SOCIETY - BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES 2013 (TMS 402)
 - 1.8. LANL ENGINEERING STANDARDS MANUAL STD-342-100
2. MANAGEMENT LEVEL: ML-4. FOR ML-1, ML-2, AND ML-3, ADDITIONAL REQUIREMENTS ARE LIKELY APPLICABLE.
3. STRUCTURE RISK CATEGORY: RC II-IV
4. CALCULATIONS:
 - 4.1. WALL MOUNTED ENCLOSURES STANDARD CAL-12-00-0000-0015-S
5. DESIGN LOADS:
 - 5.1. DEAD LOADS: SELF WEIGHT OF ENCLOSURES (UP TO 190 LBS)
 - 5.2. SEISMIC DESIGN BASED ON LANL ESM CHAPTER 5 SECTION II REV 10. SEISMIC DESIGN PARAMETERS:

$$S_{Ds} = 0.75g$$

$$I_p = 1.5$$

$$R_p = 6.0$$


$$a_p = 2.5$$

$$\Omega_0 = 2.5$$

DRAWING DEVELOPED FOR ML-3/ML-4 PROJECTS. FOR ML-1/ML-2, ADDITIONAL REQUIREMENTS AND QA REVIEWS ARE REQUIRED. (REMOVE THIS NOTE WHEN INSERTED INTO A DRAWING PACKAGE)

1	12/19/17	UNCLASS	DY	UPDATED TO COMPLY W/ ESM CH. 5 REV. 10 & CAD STDS MANUAL REV 5, CHANGED SHEET # FROM S-0001.	BW	BW	GP	GP	TO
NO	DATE	CLASS REV	DC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP

ENGINEERING STANDARDS

STRUCTURAL				DRAWN	K.SOUZA
NOTES				DESIGN	K.SOUZA
				CHECKED	A.MOSIMANN
TA-XX				DATE	06-04-14
SUBMITTED DISCIPLINE POC: J.WEAMER				APPROVED FOR RELEASE STANDARDS MANAGER: T.ORUCH	
				PO Box 1663 Los Alamos, New Mexico 87545	
				1 OF 4	
D.C.: UNCLASSIFIED		REVIEWER: E.SEAWALT		DATE: 06-02-14	
PROJECT ID		DRAWING NO		REV	
CHAPTER 5		ST-F1033-1		1	