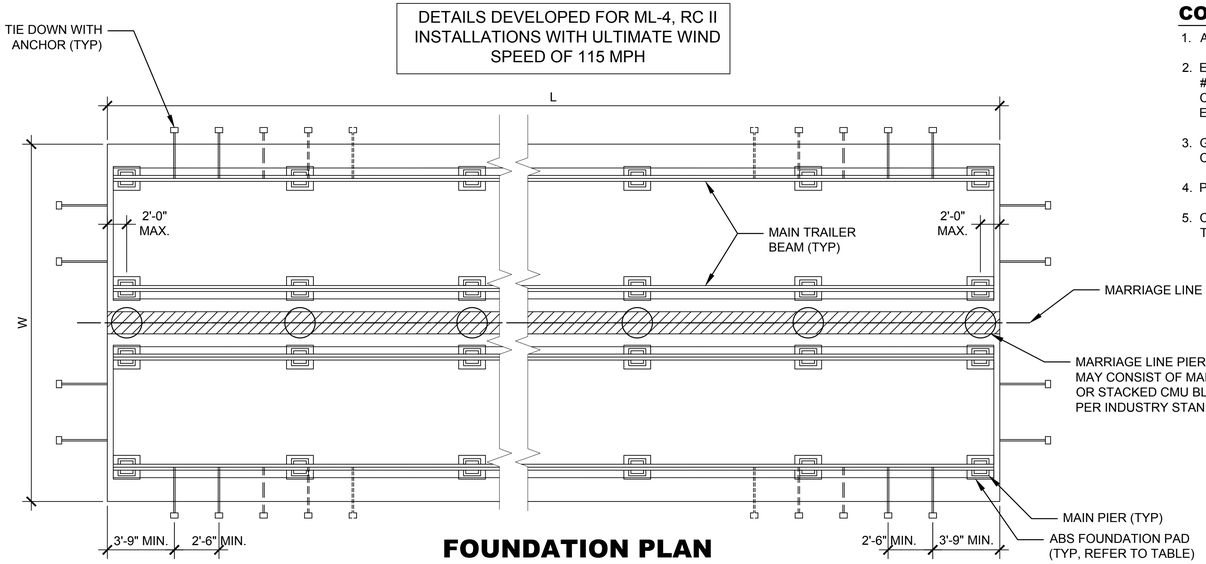
DETAILS DEVELOPED FOR ML-4, RC II INSTALLATIONS WITH ULTIMATE WIND SPEED OF 115 MPH



FOUNDATION PLAN

* **REGARDLESS OF THE NUMBER OF MAIN PIERS, MARRIAGE LINE PIERS MUST BE INCLUDED.**

CONSTRUCTION CRITERIA:

1. AS INDICATED IN THE DETAIL, THE GROUND ANCHORS CAN BE VERTICAL OR IN-LINE.
2. EACH OF THE TIE-DOWN AND PIER COMPONENTS PROVIDED (REF. DESIGN CRITERION #3) SHALL BE IDENTIFIED BY PART/MODEL NUMBER FROM MHII (REF. DESIGN CRITERION #4), OR APPROVED BY A CERTIFICATION STAMP THAT INCLUDES TIE-DOWN ENGINEERING, OR APPROVAL EQUAL.
3. GRADE UNDER EACH FOUNDATION PAD SHALL BE LEVEL, SMOOTH AND EVENLY COMPACTED. THE DEFLECTION OF THE CENTER OF A PAD SHALL NOT EXCEED 3/8".
4. PLACE EACH FOUNDATION PAD WITH GRID SIDE UP/SMOOTH SIDE DOWN.
5. CENTER THE SUPPORT PIERS ON THEIR RESPECTIVE PADS, AND ENSURE THAT ALL TIE-DOWN STRAPPING IS TAUGHT.

DESIGN CRITERIA:

THIS STANDARD DRAWING (ST-Z1052-2) INCLUDES A FOUNDATION SUPPORT SYSTEM FOR TEMPORARY (PER LANL ESM CH. 16 SECT. IBC-GEN PARA 9.0), DOUBLE-WIDE, WOOD-FRAMED, PREMANUFACTURED-BUILDING UNITS. EACH BUILDING UNIT IS SUPPORTED BY AN EIGHT FOOT WIDE, STRUCTURAL STEEL, TRAILER.

1. THIS STANDARD DETAIL ONLY APPLIES IF ALL ROOFS AND FLOOR MARRIAGE JOINTS ARE LAG-BOLTED NO MORE THAN 4' APART AND ONLY IF BEAM SUPPORT BLOCKING IS PROVIDED.
2. THE INTENDED USE OF THE BUILDING(S) MUST BE SUCH THAT CATEGORIZATION UNDER IBC RISK CATEGORY I OR II IS APPROPRIATE (e.g., MINOR STORAGE FACILITY, BUSINESS-OFFICE BUILDING, ETC).
3. THE FOUNDATION SUPPORT SYSTEM CONSISTS OF "TIE-DOWNS" AND "PIERS". EACH TIE-DOWN AND PIER IS COMPRISED OF THE FOLLOWING COMPONENTS FROM TIE DOWN ENGINEERING (WWW.TIEDOWN.COM),OR APPROVED EQUAL:

   a.) TIE-DOWN: CERTIFIED GALVANIZED STRAPPING; HUD-APPROVED GROUND ANCHOR; ANCHOR-STABILIZER PLATE (FOR VERTICAL ANCHOR OPTION); AND HARDWARE TO CONNECT THE STRAPPING TO THE TRAILER, AND THE STRAPPING TO THE GROUND ANCHOR. CAPACITY = 4125 LB OR 3150 LB WORKING LOAD W/A 1.5 FACTOR OF SAFETY.

   b.) PIER: STEEL SUPPORT PIER, PIER HEAD, AND ACRYLONITRILE BUTADIENE STYRENE (ABS) FOUNDATION PAD.

   c.) COMPONENT CAPACITIES INDICATED IN THE DRAWING ARE IN TERMS OF "WORKING (VS. ULTIMATE) LOAD."
4. SOME OF THE TERMINOLOGY USED IN THE DRAWING COMES FROM THE TIE-DOWN ENGINEERING PUBLICATION MANUFACTURED HOUSING INSTALLATION (MHII, 5/7/2015), AND THE REST COMES FROM THE SYSTEMS BUILDING RESEARCH ALLIANCE (FORMERLY MHRA) PUBLICATION GUIDE TO FOUNDATION AND SUPPORT SYSTEMS FOR MANUFACTURED HOMES.
5. USE THE TABLE ON DRAWING ST-Z1052-4 TO DETERMINE THE TOTAL NUMBER OF TIE-DOWNS AND PIERS, AND THEIR RESPECTIVE LOCATIONS/SPACING.

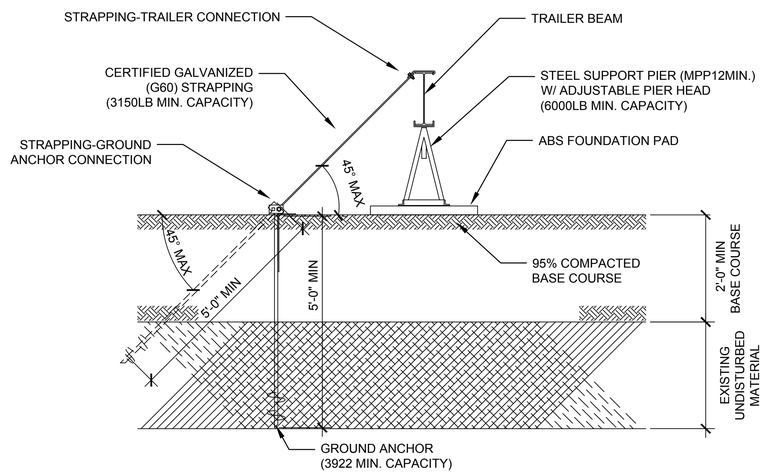
   a.) TIE-DOWNS MUST BE SEPARATED BY A MINIMUM OF 6'-0" IN ANY DIRECTION.

   b.) IF REQUIRED BY THE BUILDING MANUFACTURER'S INSTALLATION INSTRUCTIONS, INCREASE THE NUMBER OF PIERS.
6. SOIL CLASS AND BEARING CAPACITY (SC &BC): SELECTION OF THE PART/MODEL NUMBER OF TIE-DOWN GROUND ANCHOR, AND THE NUMBER OF PIERS, SHALL BE BASED ON EITHER THE DETERMINATION OR THE ASSUMPTION OF SC & BC IN ACCORDANCE WITH A AND B BELOW.

   a.) TIE-DOWN
   i.) IF SC & BC ARE DETERMINED THEN THE GROUND-ANCHOR MODEL SELECTED SHALL BE THAT OF A HUD-APPROVED GROUND ANCHOR PERMITTED FOR USE WITH THE PARTICULAR SC (PER MHII, OR APPROVED EQUAL).

   ii.) IF SC & BC ARE ASSUMED THEN THE GROUND-ANCHOR MODEL SELECTED FOR USE SHALL BE M607 (FROM MHII), OR APPROVED EQUAL.

   b.) PIER
   i.) IF SC & BC ARE DETERMINED THEN THE NUMBER OF PIERS SELECTED FOR USE SHALL BE BASED ON ANY OF THE FOUR ABS FOUNDATION PAD SIZES, AND BC=1500 PSF, OR 3000 PSF, WHICHEVER IS COMMENSURATE WITH THE ACTUAL BC.
   ii.) IF SC & BC ARE ASSUMED THEN THE NUMBER OF PIERS SELECTED FOR USE SHALL BE BASED ON ANY OF THE FOUR ABS FOUNDATION PAD SIZES AND BC=1500 PSF.



DN
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ANCHORAGE OPTIONS

NOTES FOR EOR

(DO NOT INCLUDE ON CONSTRUCTION DRAWINGS)

1. PROVIDE THE TABULATED TIE-DOWN QUANTITIES FROM ST-Z1052-4 ASSOCIATED WITH THE APPLICABLE VALUE OF THE TOPOGRAPHIC FACTOR, K_{ZT}. IF PROJECT SPECIFIC K_{ZT} VALUE DOES NOT MATCH A TABLE VALUE, USE THE TABLE WITH A HIGHER K_{ZT}.
2. PROVIDE THE TIE-DOWN AND PIER SPACING. ALSO, IF NECESSARY, EDIT THE 5'-0" GROUND-ANCHOR LENGTH AND THE 3922-LB MIN. CAPACITY (FOR M607) STATED IN THE "OPTION DETAILS".
3. THE CONTENT OF THE TABLE IN THE DRAWING IS BASED ON LANL CALCULATION CAL-11-00-000-0009 REV 1.
4. OTHER THAN THE 6'-0" MIN. TIE-DOWN SPACING (REF. DESIGN CRITERION #5.a), THE DIMENSIONS INDICATED ON THE FOUNDATION PLAN FOR TIE-DOWN AND PIER LOCATIONS ARE HISTORICAL RECOMMENDATIONS.
5. THE BASIS FOR THE CONTENT OF THE DESIGN CRITERIA PERTAINING TO SC & BC IS, IN SHORT, A RESULT OF THE FOLLOWING FACTORS:
   a.) PER MHII, THE CAPACITY OF A GIVEN FOUNDATION-PAD SIZE IS BASED ON THREE VALUES FOR BC; HENCE, AS INDICATED IN THE TABLE, A BC VALUE IS REQUIRED IN ORDER TO DETERMINE THE NUMBER OF PIERS THAT MUST BE INSTALLED.

   b.) PER MHII, THE CAPACITY OF A GIVEN GROUND-ANCHOR SIZE IS BASED ON FIVE VALUES OF SC.

   c.) THE BASIS FOR THE 5 VALUES OF SC- A TABLE IN 24 CFR PART 3285- HAS A DIFFERENT "RELATIONSHIP" WITH BC THAN THAT OF IBC TABLE 1806.2.

   d.) A STANDARD DETAIL THAT INVOLVES SOIL IS MOST USABLE/USER FRIENDLY IF IT'S APPLICABLE TO PROJECTS THAT DON'T REQUIRE/WANT A GEOTECHNICAL INVESTIGATION.
6. MANUFACTURED BUILDINGS/TRAILERS MUST BE DESIGNED/BUILT TO MEET LANL REQUIREMENTS, ESPECIALLY ESM CHAPTERS 5 AND 16.
7. THIS DETAIL IS LIMITED TO THE USE OF A *SINGLE* DOUBLE-WIDE TRAILER. THIS STANDARD DETAIL DOES NOT COVER THE ANCHORAGE OF MULTIPLE DOUBLE-WIDE TRAILERS STACKED SIDE-BY-SIDE.

00% REVIEW
NOT FOR CONSTRUCTION

NO	DATE	CLASS REV	DC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
2	6-28-18	UNCLASS	DY	MOVED TABULAR DATA TO NEW DRAWING ST-Z1052-4. UPDATED DETAIL TO MEET LANL ESM CH. 5 SECT. II REV. 10. ADDRESSED TRAILER MARRIAGE LINE SUPPORT.	BW	BW	GP	GP	TO
1	10-24-16	UNCLASS	ES	UPDATED TABLE TO CORRECT ERRORS FROM ORIGINAL CALC; ADMIN. CHANGES TO CAD MANUAL REV#5 FORMAT.	SR	GP	AM	GP	TO

ENGINEERING STANDARDS

FOUNDATION SUPPORT SYSTEM FOR TEMPORARY TRAILERS

DOUBLE WIDE TRAILER REQUIREMENTS FOR IN-SITU SOIL FOUNDATION PLAN AND ANCHOR DETAILS

TA-XX BLDG XXXX

DRAWN	R.MARTINEZ
DESIGN	A.MOSIMANN
CHECKED	K.SOUZA
DATE	3-7-12

SUBMITTED: DOUG VOLKMAN

APPROVED FOR RELEASE: STANDARDS MANAGER: TOBIN ORUCH

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SHEET 1 OF 2

D.C.: UNCLASSIFIED | REVIEWER: TOBIN ORUCH | DATE: 3-7-12

PROJECT ID: CHAPTER 5

DRAWING NO: ST-Z1052-2

REV: 2