GENERAL CRITERIA:

1. THIS DESIGN MAY BE USED AS A STANDALONE PACKAGE OR AS PART OF A LARGER DRAWING PACKAGE. ENGINEERING REVIEW AND APPROVAL SHALL BE OBTAINED FOR SITE-SPECIFIC CONDITIONS.
2. USE OF THIS DESIGN IS THE DESIGN AGENCY'S OPTION. ALTERNATE DESIGNS MEETING CURRENT CODE REQUIREMENTS ARE ACCEPTABLE.
3. PLAN AND SECTIONS ARE SHOWN ON SHEETS ST-B1081-2. DETAILS ARE SHOWN ON SHEET ST-B1081-3.
4. ADDITIONAL ENGINEERING IS REQUIRED FOR LANDING HEIGHTS EXCEEDING THE MAXIMUM SHOWN ON SHEET ST-B1081-2.
5. ANY DISCREPANCIES SHALL BE REPORTED TO THE RESPONSIBLE ENGINEER PRIOR TO CONSTRUCTION.
6. DO NOT SCALE DRAWINGS TO DETERMINE DIMENSIONS.
7. NEW CONSTRUCTION SHALL BE COORDINATED WITH EXISTING SITE CONDITIONS.
8. THE PROJECT SHALL TAKE ALL NECESSARY PRECAUTIONS TO LOCATE AND PROTECT CONCEALED CONDUITS, PLUMBING, OR OTHER UTILITIES.
9. WHERE DIMENSIONS SHOWN ON SHEETS ST-B1081-2 ANDST-B1081-3 ARE SPECIFIED AS MIN OR MAX, SUBCONTRACTOR SHALL MAKE NECESSARY FIELD MEASUREMENTS AND PROVIDE REQUIRED DIMENSIONS.
10. THE STRUCTURE IS DESIGNED AS A STABLE UNIT AFTER ALL STRUCTURAL COMPONENTS ARE IN PLACE AND PROPERLY CONNECTED. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY BRACING AS REQUIRED TO ENSURE VERTICAL AND LATERAL STABILITY OF THE STRUCTURE DURING CONSTRUCTION.
11. SHEET NUMBERING AND CALL-OUT REFERENCING WILL NEED TO BE UPDATED TO FOLLOW LANL STANDARDS AND INTEGRATE INTO DRAWING PACKAGES.

DESIGN CRITERIA:

1. APPLICABLE CODES AND STANDARDS:
   - A. INTERNATIONAL BUILDING CODE (IBC) 2009
   - B. AMERICAN SOCIETY OF CIVIL ENGINEERS – MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES 2005 (ASCE 7-05).
   - C. AMERICAN CONCRETE INSTITUTE – BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318-08).
   - D. AISC STEEL CONSTRUCTION MANUAL – 13TH EDITION.
   - E. LANL ENGINEERING STANDARDS MANUAL STD-342-100.
   - F. INTERNATIONAL EXISTING BUILDING CODE (IEBC) 2009 ALTERATION LEVEL [1 OR 2]
2. THIS DESIGN IS FOR ML-4. FOR ML-1, ML-2, AND ML-3, ADDITIONAL REQUIREMENTS MAY BE REQUIRED.
3. STRUCTURE PERFORMANCE CATEGORY: PC-2
4. CALCULATIONS:

   CAL-12-00-0000-0012-S-R-0
5. DESIGN LOADS:
   - A. DEAD LOADS: SELF-WEIGHT OF ALL MATERIAL SHOWN ON SHEETS ST-B1081-2 AND ST-B1081-3.
   - B. LIVE LOADS:

	UNIFORM	CONCENTRATED
STAIRS	100 PSF	300 LBS
HANDRAILS	50 PLF	200 LBS

   - C. SNOW LOADS:
     GROUND SNOW LOAD 16 PSF
   - D. SEISMIC DESIGN BASED ON LANL ESM CHAPTER 5 SECTION II REV 6. SEISMIC DESIGN PARAMETERS:

     S_{DS} = 0.75g
     I = 1.5
     R = 1.25
   - E. WIND DESIGN BASED ON ASCE 7-05 CHAPTER 6 ANALYTICAL PROCEDURE. WIND DESIGN PARAMETERS:

     BASIC WIND SPEED = 90 MPH
     EXPOSURE C
     I = 1.15

FOUNDATION NOTES:

1. ALLOWABLE SOIL BEARING PRESSURE = 1500 PSF
2. SITE PREPARATION PER LANL MASTER SPEC FOR EARTH MOVING.

MATERIAL CRITERIA:

1. STRUCTURAL STEEL:
   - A. STRUCTURAL STEEL PER LANL MASTER SPEC FOR STRUCTURAL METAL FRAMING
   - B. CHANNELS, ANGLES, AND PLATES PER ASTM A36.
   - C. HOLLOW STRUCTURAL SECTIONS (HSS) PER ASTM A500 GRADE B, Fy = 46 KSI.
   - D. STEEL PIPES PER ASTM A53 GRADE B.
   - E. STEEL SHALL BE PAINTED WITH TWO-COATS OF ALKYD ENAMEL PAINT OVER PRIMER. PAINTING PER LANL MASTER SPEC FOR PAINTING.
   - F. OWNER'S OPTION: HOT-DIPPED GALVANIZED STEEL.
   - G. PIPE AND TUBE RAILING PER LANL MASTER SPEC.
   - H. ALL WELDS SHALL BE SHOP WELDS. OFFSITE WELDING PER LANL MASTER SPEC FOR OFFSITE WELDING AND THE AWS STRUCTURAL WELDING CODE.
   - I. BOLTS SHALL CONFORM TO ASTM A325.
   - J. WHERE PRETENSIONED JOINTS ARE REQUIRED, BOLTS SHALL BE INSTALLED USING TURN-OF-NUT PRETENSIONING METHOD IN COMPLIANCE WITH THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS (RCSC) SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS.
   - K. ERECTION TOLERANCES SHALL COMPLY WITH THE AISC CODE OF STANDARD PRACTICE.
2. CONCRETE:
   - A. CONCRETE WORK PER LANL MASTER SPEC FOR REINFORCED CONCRETE.
   - B. CONCRETE COMPRESSIVE STRENGTH (28 DAY): f'c = 4000 PSI
   - C. ALL CONCRETE SHALL BE REINFORCED.
   - D. REINFORCING STEEL SHALL BE ASTM A615 GRADE 60.
   - E. REINFORCING STEEL SHALL BE CONTINUOUS U.N.O.
3. FIBER REINFORCED POLYMER (FRP) STAIR TREADS:
   - A. SOLID RISERS SHALL BE PROVIDED AT IBC OCCUPANCY CATEGORY A AND B BUILDINGS. WHERE SOLID RISERS ARE REQUIRED, SUBCONTRACTOR SHALL PROVIDE 1/4" MAXIMUM DRAINAGE HOLE.
   - B. COVERED STAIR TREADS SHALL BE MANUFACTURED BY FIBERGRATE COMPOSITE STRUCTURES INC., DALLAS, TX OR APPROVED EQUAL. PRODUCT SUBSTITUTION PER LANL MASTER SPEC FOR SUBSTITUTION PROCEDURES.
   - C. THE SUBCONTRACTOR SHALL FURNISH MANUFACTURER'S SHOP DRAWINGS SHOWING MATERIAL SIZES, TYPES, STYLES, PART OR CATALOG NUMBERS, COMPLETE DETAILS FOR THE FABRICATION AND ERECTION OF COMPONENTS INCLUDING, BUT NOT LIMITED TO, LOCATION, LENGTHS, TYPE AND SIZES OF FASTENERS, CLIP ANGLES, MEMBER SIZES, AND CONNECTION DETAILS.
   - D. THE SUBCONTRACTOR SHALL SUBMIT THE MANUFACTURER'S PUBLISHED LITERATURE INCLUDING STRUCTURAL DESIGN DATA, STRUCTURAL PROPERTIES DATA, GRATING LOAD/DEFLECTION TABLES, CORROSION RESISTANCE TABLES, CERTIFICATES OF COMPLIANCE, TEST REPORTS AS APPLICABLE, CONCRETE ANCHOR SYSTEMS AND THEIR ALLOWABLE LOAD TABLES, AND DESIGN CALCULATIONS FOR SYSTEMS NOT SIZED OR DESIGNED IN THE CONTRACT DOCUMENTS.
   - E. FRP TREADS SHALL HAVE NON-SLIP SURFACING.
   - F. FRP TREAD DEFLECTION IS NOT TO EXCEED L/240 (TOTAL LOAD) AND L/360 (LIVE LOAD).
   - G. FRP TREADS SHALL BE TIED DOWN WITH APPROPRIATE ANCHORS OR CLIPS. MANUFACTURER TO PROVIDE OPENINGS, HOLES, AND BOLTS WHERE LOCATED ON THE DRAWINGS.
   - H. BOLTS OR CLIPS SHALL NOT PROJECT BEYOND THE WALKING SURFACE. SUBCONTRACTOR TO PROVIDE COUNTERSUNK BOLTS AS REQUIRED.
   - I. FRP TREADS SHALL BE SHOP FABRICATED TO DIMENSIONS SHOWN ON DRAWINGS. DO NOT FIELD CUT.
4. POST-INSTALLED ANCHORS:
   - A. POST-INSTALLED ANCHORS PER LANL MASTER SPEC(S) FOR NORMAL CONFIDENCE POST-INSTALLED ANCHORS.
   - B. POST-INSTALLED ANCHORS SHALL BE INSTALLED IN COMPLIANCE THE MANUFACTURER'S INSTALLATION GUIDELINES AND ICC REPORT.
   - C. EMBEDMENTS SHOWN ON THE DRAWINGS ARE MINIMUM EMBEDMENT DEPTHS.
   - D. POST-INSTALLED ANCHORS SHALL NOT CONFLICT OR DAMAGE CONCRETE REBAR.

NO	DATE	CLASS REV	ADC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP

ENGINEERING STANDARDS PROGRAM

ENGINEERING STANDARDS MANUAL

METAL STAIRS – GENERAL NOTES
OPTIONAL USE

BLDG : XXXX TA-XX

DRAWN	H. ESCOBEDO
DESIGN	H. ESCOBEDO
CHECKED	S. KOTHARI
DATE	4-16-12

SUBMITTED: D. VOLKMAN
APPROVED FOR RELEASE: STANDARDS MANAGER: TOBIN ORUCH

Los Alamos NATIONAL LABORATORY
PO Box 1663
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SHEET 1 OF 3

CLASSIFICATION: UNCLASSIFIED
REVIEWER: ED SEAWALT
DATE: 4-18-12

PROJECT ID: CHAPTER 3
DRAWING NO: ST-B1081-1
REV: 0

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