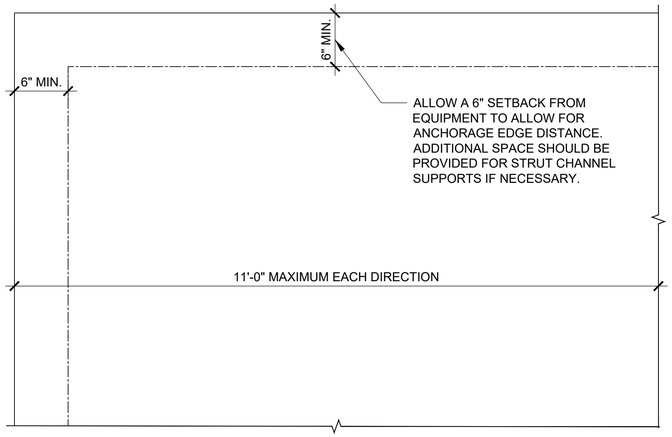
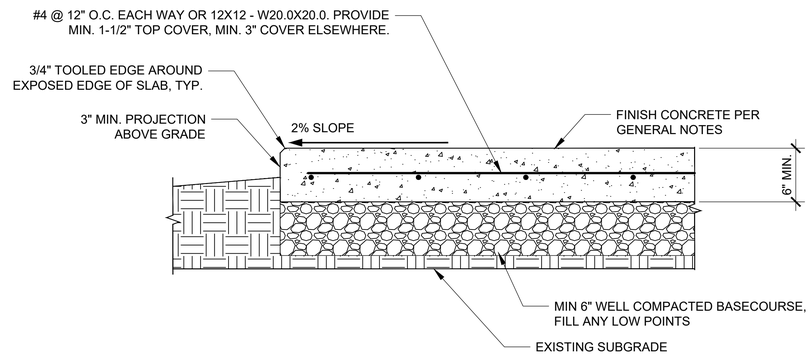


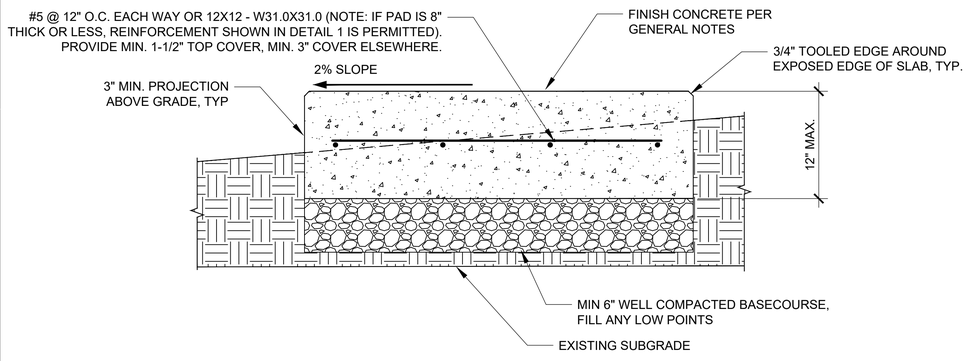
CONCRETE PAD PLAN VIEW

SCALE: NONE



1 S-XXXX CONCRETE PAD DETAIL

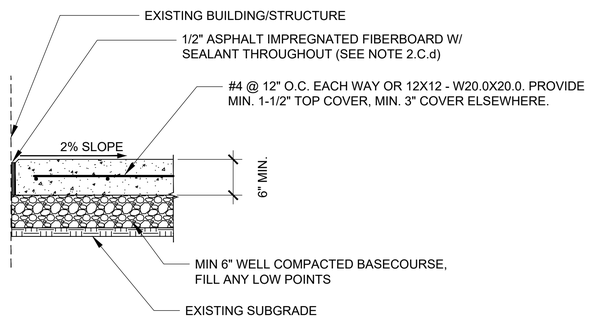
SCALE: NONE



2 S-XXXX CONCRETE PAD DETAIL ON SLOPED GRADE

SCALE: NONE

*NOTE: THIS DETAIL IS TO BE USED WHEN THERE IS A DIFFERENCE IN GRADE OF 6" OR LESS BETWEEN OPPOSITE EDGES OF THE SLAB.



3 S-XXXX CONCRETE PAD DETAIL AT BUILDING FACE

SCALE: NONE

GENERAL NOTES:

1. REQUIREMENTS BELOW MUST BE MET FOR USE OF THIS STANDARD DETAIL. IF REQUIREMENTS ARE NOT MET CONSULT A STRUCTURAL ENGINEER:
   - A. FOR PADS WITH A WIDTH GREATER THAN OR EQUAL TO 4'-0": EQUIPMENT WEIGHT SHALL NOT EXCEED A 250 PSF AREA LOAD, A 3,000 LB POINT LOAD WITH A MINIMUM BEARING AREA OF 36 IN^2, OR 10,000 LB TOTAL. EQUIPMENT SHALL NOT EXCEED 10'-0" IN LENGTH AND WIDTH, AND 8'-0" IN HEIGHT.
   - B. FOR PADS WITH A WIDTH LESS THAN 4'-0": EQUIPMENT WEIGHT SHALL NOT EXCEED A 125 PSF AREA LOAD, A 3,000 LB POINT LOAD WITH A MINIMUM BEARIING AREA OF 36 IN^2, OR A 5,000 LB TOTAL. EQUIPMENT SHALL NOT EXCEED 10'-0" IN LENGTH, AND 5'-0" IN HEIGHT.
   - C. THIS DETAIL SHALL ONLY BE USED IN AREA WITH ADEQUATE DRAINAGE.
   - D. INCREASE IN PAD THICKNESS DUE TO SLOPE SHOULD NOT CREATE A PAD THICKNESS GREATER THAN 12".

2. CAST-IN-PLACE CONCRETE (EXPOSED TO FREEZING AND THAWING):
   - A. CONCRETE MIX: USE LANL PRE-APPROVED EXTERIOR CONCRETE MIX 4,500 PSI PER ESM CHAPTER 16 LISTING OF LBO-APPROVED IBC FABRICATORS; TESTING, NDE, AND INSPECTION AGENCIES; AND PRODUCTS OR APPROVED EQUAL. CONSULT A STRUCTURAL ENGINEER FOR CONDITIONS THAT MAY REQUIRE A HIGHER STRENGTH.
     MINIMUM COMPRESSIVE STRENGTH, F'C = 4,500 PSI @ 28 DAYS
     SLUMP = 4"
     AIR CONTENT = 6%
   - B. FIELD VERIFICATIONS:
     a. SUBGRADE SHALL BE WELL COMPACTED. DENSITY TESTING IS NOT REQUIRED.
     b. VERIFY FORMS ARE SET TO REQUIRED GRADE AND ALIGNMENT AND EXTEND TO THE REQUIRED DEPTH.
     c. RECORD TEMPERATURE OF CONCRETE IN ACCORDANCE WITH ASTM C1064. NORMAL TEMPERATURE CONDITIONS ARE WITHIN THE RANGE OF 55°F- 95°F. IF TEMPERATURE FALLS ABOVE OR BELOW THIS RANGE, REFER TO ACI 305R (GUIDE TO HOT WEATHER CONCRETING) OR ACI 306R (GUIDE TO COLD WEATHER CONCRETING).
     d. PERFORM SLUMP TEST IN ACCORDANCE WITH ASTM C143.
     e. PERFORM AIR CONTENT TEST IN ACCORDANCE WITH ASTM C231, PRESSURE METHOD.
   - C. PLACING CONCRETE:
     a. PER ACI 301, PLACE CONCRETE CONTINUOUSLY AND AS NEAR AS PRACTICABLE TO THE FINAL POSITION. PLACE CONCRETE IN ONE POUR.
     b. ENSURE THAT REINFORCEMENT, INSERTS, EMBEDDED PARTS, FORMED JOINT FILLERS, JOINT DEVICES, AND FORMWORK ARE NOT DISTURBED DURING CONCRETE PLACEMENT.
     c. CONSOLIDATE CONCRETE BY VIBRATION. CONSOLIDATE CONCRETE AROUND REINFORCEMENT, EMBEDDED ITEMS, AND INTO CORNERS OF FORMS. DO NOT USE VIBRATORS TO MOVE CONCRETE IN A MANNER THAT WILL RESULT IN SEGREGATION. SPACING OF IMMERSION VIBRATORS SHALL NOT EXCEED 1-1/2 TIMES THE VIBRATOR'S RADIUS OF ACTING IN CONCRETE BEING CONSOLIDATED.
     d. EXPANSION JOINT MATERIAL SHALL CONFORM TO ASTM D1751 AND JOINT SEALANT SHALL CONFORM TO ASTM C920. JOINT SEALANT SHALL BE INSTALLED AT THE EXPANSION JOINT IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS.
   - D. FINISHING CONCRETE:
     a. PROVIDE A BROOM FINISH PER ACI 301.
   - E. CURING AND PROTECTION
     a. CURE AND PROTECT CONCRETE PER ACI 301, UNLESS NOTED OTHERWISE. FOR HOT WEATHER CONCRETE APPLICATION, FOLLOW GUIDANCE PER ACI 305R; FOR COLD WEATHER APPLICATION, FOLLOW GUIDANCE PER ACI 306R.
     b. FORMWORK MAY BE REMOVED AFTER CUMULATIVELY CURING AT NOT LESS THAN 50°F (MEASURED WITH A CALIBRATED DEVICE) FOR 24 HOURS AFTER PLACING CONCRETE. CONCRETE HAS TO BE HARD ENOUGH TO NOT BE DAMAGED BY FORM-REMOVAL OPERATIONS, AND CURING AND PROTECTION OPERATIONS NEED TO BE MAINTAINED.

3. REINFORCING STEEL:
   - A. USE ASTM A615 GRADE 60 REINFORCING STEEL OR ASTM A1064 GRADE 65 PLAIN WELDED WIRE REINFORCEMENT.
   - B. REFER TO ACI 318-19 APPENDIX B "WRI STANDARD WIRE REINFORCEMENT" TABLE FOR ALTERNATIVE WIRE SIZES BASED ON AVAILABILITY. THE MINIMUM REQUIRED AREA OF STEEL IS 0.20 IN^2.
   - C. ALL REINFORCING SHALL BE CONTINUOUS. STAGGER SPLICES WHERE POSSIBLE. MAINTAIN A 30" MINIMUM CLASS B SPLICE FOR REINFORCING STEEL UP TO #5 BARS. MAINTAIN A 15" MINIMUM SPLICE FOR WELDED WIRE REINFORCEMENT IDENTIFIED ON THIS DRAWING.
   - D. CLEAR COVER NOTED ON THE STRUCTURAL DETAILS IS TO THE NEAREST SURFACE OF THE REINFORCING STEEL.
   - E. TIE WIRE TO BE MINIMUM 16 GAUGE ANNEALED TYPE.

4. SOIL CONDITIONS
   - A. IDENTIFY REQUIRED CONTOURS AND DATA. NOTIFY LANL STR 15 WORKING DAYS PRIOR TO STARTUP OF CONSTRUCTION TO HAVE LANL'S MAPPING AND LOCATING GROUP IDENTIFY KNOWN UNDERGROUND UTILITIES AND STAKE AND FLAG LOCATIONS. IF A CONFLICT EXISTS BETWEEN LOCATION OF SUCH OBSTACLES AND PROPOSED WORK, PROMPTLY NOTIFY LANL STR AND ARRANGE FOR RELOCATIONS.
   - B. REMOVE DEBRIS AND LOOSE MATERIAL FROM EXCAVATION. COMPACT SUBGRADE UNTIL WELL COMPACTED. CONFIRM COMPACTION IS SATISFACTORY BY VISUAL INSPECTION (NO COMPACTION REQUIRED IF THE SUBGRADE IS TUFF). NO DENSITY TESTING REQUIRED.
   - C. IF DESIRED LOCATION CONFLICTS WITH EXISTING ASPHALT, SAWCUT AND REMOVE THE CONFLICTING ASPHALT COMPLETELY FOR PAD TO BE SUPPORTED ON THE SUBGRADE.

NOTES FOR EOR:
(DO NOT INCLUDE ON CONSTRUCTION DRAWING)

1. DRAWING DEVELOPED FOR ML-4 PROJECTS. FOR ML-1/ML-2/ML-3 PROJECTS, ADDITIONAL REQUIREMENTS AND QA REVIEWS MAY BE REQUIRED.
2. EDIT TO BE PROJECT SPECIFIC.
3. COMPLY WITH CURRENT EDITION OF LANL CAD STANDARDS MANUAL.
4. ASSIGN AN APPROPRIATE SHEET & DRAWING NUMBER PER THE CURRENT LANL CAD STANDARDS MANUAL.
5. CONCRETE PER LANL MASTER SPEC SECTION 03 3001 REINFORCED CONCRETE.
6. THE BASIS FOR DETAIL LIMITATIONS (GENERAL NOTE 1) IS CALCULATION NO. CAL-99-MULT-1434: STRUCTURAL SLAB ON GRADE. CALCULATION INPUTS, PER ESM CHAPTER 5 SECTION II, WERE:

A.	BASIC WIND SPEED:	V = 104 MPH
B.	EXPOSURE CATEGORY:	C
C.	DESIGN SPECTRAL RESPONSE ACCELERATION (SHORT PERIODS):	S_{DS} = 0.68g
D.	DESIGN SPECTRAL RESPONSE ACCELERATION (LONG PERIODS):	S_{D1} = 0.68g
E.	SEISMIC DESIGN CATEGORY	D

THE CALCULATION CHECKS THE DEMAND TO CAPACITY RATIOS FOR FLEXURE AND SHEAR FOR THE SLAB PER ACI 318-19. STABILITY CHECKS FOR FOUNDATION (SLIDING AND OVERTURNING) DUE TO SEISMIC AND WIND LOADS WERE CHECKED. THE CALCULATION ALSO CHECKS THE MAXIMUM POINT LOAD FOR AN UNREINFORCED SLAB PER ACI 360R-10. THE CALCULATION IS AVAILABLE UPON REQUEST; CONTACT COE OR STRUCTURAL POC.

LBO-DESIGN PACKAGE REVIEWER	N/A			
APPROVED FOR RELEASE T.ORUCH	TOBIN ORUCH (Affiliate)	Digitally signed by TOBIN ORUCH (Affiliate) Date: 2025.03.31 10:34:52 -06'00'		
SUBMITTED C. CORONADO	CARLOS CORONADO RESTREPO (Affiliate)	Digitally signed by CARLOS CORONADO RESTREPO (Affiliate) DN: C=US, E=ccoronado@lanl.gov, O=CARLOS CORONADO RESTREPO (Affiliate), cn=CARLOS CORONADO RESTREPO (Affiliate) Date: 2025.03.27 11:23:24 -06'00'		
VERIFIED E. STARRETT	Emma Starrett	Digitally signed by Emma Starrett DN: C=US, E=estarrett@lanl.gov, O=Emma Starrett Reason: I have reviewed this document Date: 2025.03.31 10:02:52 -06'00'		
DESIGNED N. LUJAN	NICHOLAS LUJAN (Affiliate)	Digitally signed by NICHOLAS LUJAN (Affiliate) DN: C=US, E=nlujan@lanl.gov, O=NICHOLAS LUJAN (Affiliate), OU=Department of Energy, OU=U.S. Government, C=US Date: 2025.03.27 16:12:39 -06'00'	Posted 3/31/2025	CHRISTINA SALAZAR-BARNES (Affiliate) Digitally signed by CHRISTINA SALAZAR-BARNES (Affiliate) Date: 2025.03.31 11:45:20 -06'00'
DRAWN N. LUJAN	NICHOLAS LUJAN (Affiliate)	Digitally signed by NICHOLAS LUJAN (Affiliate) DN: C=US, E=nlujan@lanl.gov, O=NICHOLAS LUJAN (Affiliate), OU=Department of Energy, OU=U.S. Government, C=US Date: 2025.03.27 16:12:54 -06'00'	0	INITIAL ISSUE 03/31/2025
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ENGINEERING STANDARDS

STRUCTURAL

STRUCTURAL SLAB ON GRADE

TA XX | BLDG XXXX

Los Alamos NATIONAL LABORATORY
PO Box 1663
Los Alamos, New Mexico 87545

SHEET 1 OF 1

PROJECT ID	DRAWING NO	REV
CHAPTER 5	ST- A1032-1	0