

TABLE OF CONTENTS

1.0 Purpose.....2

2.0 Scope.....2

3.0 Applicability.....6

4.0 Chapter Organization8

5.0 Acronyms /Definitions8

6.0 Responsibilities and Duties9

7.0 Process Overview.....13

8.0 Qualification of Suppliers and Manufactured Products for Structural and other Work.....16

9.0 Temporary Facilities, Structures, and Building Systems & Components.....17

10.0 Sheds and Containers19

11.0 Deactivation, Decommissioning, and Demolition (D&D) (F30).....19

12.0 History of Revisions.....20

13.0 Attachments.....21

This mandatory functional series document is available online at <http://engstandards.lanl.gov>. It derives from P342, Engineering Standards, which is issued under the authority of the Associate Director of Nuclear and High Hazard Operations (ADNHHO) as part of the Conduct of Engineering program implementation at the Laboratory.

PLEASE CONTACT THE ESM IBC PROGRAM POC
for upkeep, interpretation, and variance issues

Section IBC-GEN	<u>IBC Program POC and Committee</u>
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<p>The LANL-adopted IBC edition is: 2009 See App A for additional details and amendments</p>

1.0 Purpose

- A. To establish the LANL building program (“IBC Program” or “Program”).
- B. *Drivers include the International Building Code (IBC), International Existing Building Code (IEBC), LANL amendments to them, other building codes and standards referenced by them, and other construction-related LANL Engineering Standard requirements.¹*
- C. *LANL is nearly unique in that it is responsible for both major IBC roles: the jurisdiction and the project owner. This chapter addresses both roles, establishing (1) code-related expectations for projects and (2) the authority and duties of the LANL Building Official (LBO). The LBO function is integral to enforcement of the Program, and the LBO² performs this enforcement through design reviews, permitting, and inspections primarily.*

2.0 Scope

- A. The IBC and IEBC apply to all LANL Management Levels (MLs; for quality etc.) of building work covered by their code scopes.
 - 1. *The IBC addresses the construction, use, and occupancy of new buildings and connected/attached appurtenances, building systems and components, and certain R&D, tenant, process, and standalone equipment and structures.³*
 - 2. *The IEBC addresses existing structure, system, and component (SSC) repair, alteration, change of occupancy, additions, relocation, and demolition of same.*
- B. LANL has three main system categories: (i) facility; (ii) utility, infrastructure, and environmental; and (iii) programmatic (tenant, R&D, or process). Of these, facility is always subject to the IBC while the other two may. See Tables IBC-GEN-1 & 2 for detailed rules and examples of work in the IBC Program scope.
- C. Facility Design Authority Representatives (FDARs) shall make day-to-day determinations as to (a) whether proposed work is subject to the IBC/IEBC within the rules and examples in Tables IBC-GEN-1 & 2 and (b) risk level per Figure 1, IBC Program Three-Tiered Approach Flowchart.
 - 1. If the FDAR has any uncertainty regarding these two decisions, they must either consult the Chapter 16 POC or utilize the Preliminary Project Determination (Form 1) process.
 - 2. All Moderate and Highest Risk FDAR determinations must be finalized through the Form 1 process.
 - 3. FDAR IBC Program decisions are subject to revision by the LBO.
- D. Exclusion from the IBC Program does not include exclusion from other applicable codes such as the NEC or ASME, nor exclusion from other requirements elsewhere in the ESM including [10CFR851](#) (pressure, fire, etc.) and required inspections based on ML level, written LANL policy, or otherwise.

¹ These codes are required by LANS Contract Appendix G through DOE O 420.1 and DOE-STD-1189. See ESM Ch 1 Z10.

² Those performing such work must be delegated by the LBO to act on the LBO's behalf

³ IBC's repair, alteration, etc. scope is superseded by the IEBC adopted by IBC-GEN App B, LEBC.

NOTE: In these tables, *installation* includes anchorage, other life-safety issues (location/egress, fire suppression, fire stopping), and building service hard-connections/tie-ins.

Table IBC-GEN-1 Work in IBC Program As Noted

Criteria (work scope)	Outside IBC Program	In IBC Program
Programmatic equipment installation, minor modification, or removal	NOT meeting any other criteria in Tables IBC-GEN-1 & 2. Examples: <ul style="list-style-type: none"> • Photocopiers • Small, table-top, plug-fed pieces of analytical equipment⁴ 	If meeting any other criteria in Tables IBC-GEN-1 & 2, then installation is in-Program. Examples: <ul style="list-style-type: none"> • New large beamline, transformer, motor, pump, etc.
Process systems being modified greater than 50% of their replacement value	None	Safety upgrades per IBC-GEN App B “50% Rule” for programmatic ⁵
Utilities or Environmental Program installed or owned equipment and civil structures ⁶	Electrical and other utility distribution, roads and retaining walls for same, wells, monitoring equipment, and flood control	Buildings, parking lots, retaining walls near pedestrians, some tanks, other structures that are IBC “U” occupancy, etc.
Gloveboxes & stands ⁷	Shell/stand and contents design/fab	installation
Rad protection systems ⁸	component design/fab	installation
Security systems ⁹	component design/fab and some Material Access Area features (e.g, PIDAS/ PIDADS)	installation
Telecom (unsecure or secure) in/on a building ¹⁰	component design/fab	installation

- E. For in-scope work, applicable code technical requirements must be met. LANL uses a three-tiered tailored approach for administrative control relative to permitting, inspection, etc. -- see Figure 1, IBC Program Three-Tiered Approach Flowchart below for graphical summary.

Table IBC-GEN-2 Work Always In IBC Program

Facility-owned building systems, building equipment, and building components , including those outside the building. Example: A remote boiler or emergency generator (equipment providing services to and owned by the facility)
Repair, alteration, change of occupancy, additions, relocation, and demolition of all in-scope SSCs (will be per IEBC)
Work listed at IBC-2009 105.2 as excluded from permitting, but still subject to the code. Examples: low fences, sidewalks and driveways, sheds/containers under 120 sq. ft., retaining walls that could affect a building or personnel if they failed, etc.

⁴ Based on the IBC and IEBC scope and purpose statements, code topics addressed, and typical use by jurisdictions.

⁵ So that older systems are brought up to current safety standards (seismic, mechanical, electrical, confinement, etc.).

⁶ Based on IBC 101.2 Scope -- and 105.2.3 which exempts public service agency utilities (UI acts in this capacity and controls utility and infrastructure work following other, non-IBC codes and standards, both national and LANL (ESM Ch 3 Civil, 7 Electrical). For electrical utilities, the IBC/IBC Program breakpoint is the UI ownership interface (normally the low voltage terminals of the secondary unit substation transformer, per Ch 7). Traditional LANL breakpoints for sewer, water, gas, and steam ownership by UI are the respective dividing points.

⁷ GBs are considered facility at some FODs but aren’t traditional building systems

⁸ Rad monitoring not a traditional building system but same issues as security systems above.

⁹ Security can be traditional building systems but many at LANL are specialized. Regardless, most interface with other building systems.

¹⁰ Telcom is a utility but same issues as security systems above

<p>New buildings, transportables¹¹, sheds, and containers¹², and appurtenances regardless of ownership including parking lots, retaining walls near pedestrians, tanks, towers, and large signs and other structures that are IBC “U” occupancy.</p>
<p>Anchorage of programmatic equipment (R&D, process, or tenant), especially if required by ESM Ch 5 Structural Section I App A (e.g., meets any of the following¹³:</p> <ul style="list-style-type: none"> A. could prevent egress of occupants, or otherwise endanger personnel during an emergency, or prevent emergency responders from responding to a crisis (e.g., tipping or sliding) B. designed to confine or contain hazardous material whose release would endanger workers (e.g., gloveboxes, permacons, vessels) C. could interact with building systems that could then prevent egress D. its manufacturer recommends anchoring in order to perform its function (e.g., motor, centrifuge, etc.) E. needed for continued operation of an essential facility (e.g., a beamline) F. credited with performing safety function during or after an earthquake
<p>Programmatic equipment that could affect:</p> <ul style="list-style-type: none"> • Facility structural integrity (floor loading, etc.) • Fire/sprinklers/life safety/firestopping/means of egress¹⁴ (e.g., by normal location), or • Facility system performance. <p>Examples:</p> <ul style="list-style-type: none"> • adding electrical service or new, large loads¹⁵ or demands on other common utilities • glovebox location, anchorage, major use of building services • cubicle installation (e.g., egress) • modular rooms like cleanrooms, PERMACONS, etc.¹⁶ <p>NOTE: In above examples, the equipment itself might be outside the IBC’s scope (and thus IBC review and fab inspection), but <u>ESM Chapter 16, IBC Program must be used for installation to ensure life safety and control anchorage and hookup, both technically and administratively.</u></p>
<p>Geotechnical work (i.e., soils testing firm must be LBO-approved)</p>

¹¹ NMAC 14.12.2.8.E on manufactured housing requires that non-residential transportables/trailers follow NM Building Codes (versus HUD): “Any unit manufactured or installed after May 19, 1988, used for nonresidential, or commercial purposes must be constructed to the appropriate codes or standards as adopted by construction industries division. Construction industries division has full jurisdiction in approval and inspection of nonresidential manufactured units.” Modular units are also per IBC but because of NMAC 14.12.3, Modular Structures. IBC is N/A to RVs/trailers with license plates (governed by DOT).

¹¹ Based on the IBC and IEBC scope and purpose statements, code topics addressed, and typical use by jurisdictions. For electrical utilities, the interface is normally the low voltage terminals of the secondary unit substation transformer, per ESM Ch 7. LANL breakpoints for water, gas, and steam ownership by UI are usually at the meter or just outside the building.

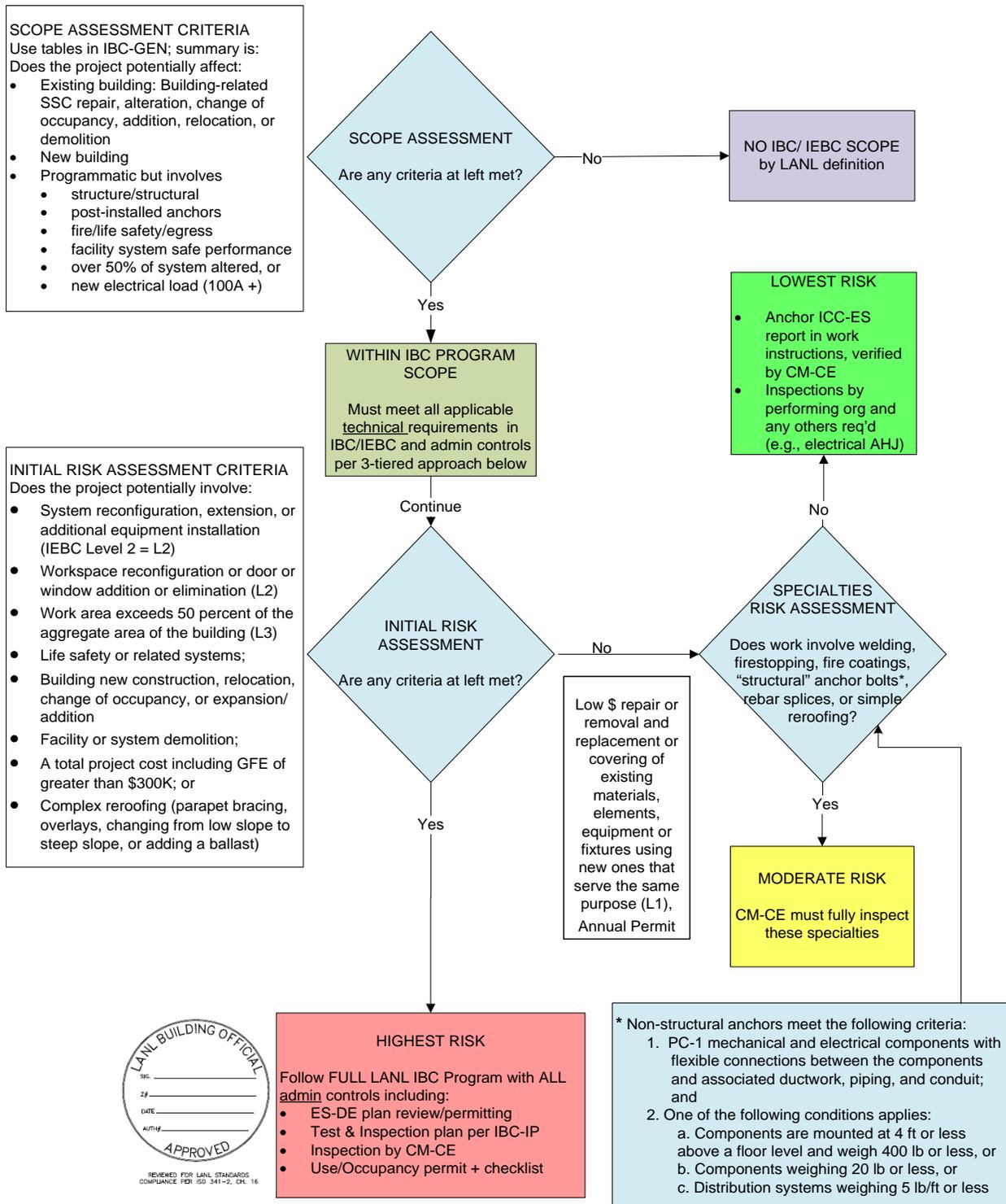
¹² IBC 105.2 is clear that even tiny sheds are subject to the code but are exempt from admin requirements (e.g, permitting)

¹³ Anchorage must comply with the IBC and ASCE 7 (check it for exceptions). From PC-2 definition of DOE-STD-1021-93 (r2002) and ESM Ch 5 Section I App A. These would be considered “structural” post-installed anchors per ESM [Chapter 5](#) Sections I-III (App A), installed per the LANL Master Specs on P-I anchors, and be subject to IBC Ch 17 special inspection.

¹⁴ An NFPA 101 egress evaluation is required before moving any equipment into a potential egress pathway

¹⁵ Large is 75KVA (~100A) and hardwired-in

¹⁶ Issues include egress, sprinklering, anchorage where structural calcs support floor loading in multi-stories. May not require structural calcs for seismic resistance. Ensures safety and controls anchorage and hookup.



HIGHEST RISK

Follow FULL LANL IBC Program with ALL admin controls including:

- ES-DE plan review/permitting
- Test & Inspection plan per IBC-IP
- Inspection by CM-CE
- Use/Occupancy permit + checklist

* Non-structural anchors meet the following criteria:

- PC-1 mechanical and electrical components with flexible connections between the components and associated ductwork, piping, and conduit; and
- One of the following conditions applies:
 - Components are mounted at 4 ft or less above a floor level and weigh 400 lb or less, or
 - Components weighing 20 lb or less, or
 - Distribution systems weighing 5 lb/ft or less

Figure 1. IBC Program Three-Tiered Approach Flowchart

3.0 Applicability

- A. LANL organizations and their Subcontractors are required to comply with this Chapter and to support the LBO and its activities in support of the IBC Program.
- B. Specialties: Inspections are always required for welding, firestopping, roofing, proprietary structural components (e.g., “structural” anchor bolts, rebar joints), fire-resistive coating work¹⁷ and other specialties governed by IBC Ch 17; however, a formal inspection plan and special inspections other than for specialty items listed above are not required when they meet the criteria for Annual Maintenance Permit work below.
- C. Annual Permit: WHEN PROPERLY CLASSIFIED BY IEBC DEFINITIONS, certain small, low- and moderate-risk facility maintenance and modification projects (see below) are exempt from the many design review/permitting and final inspection/permit requirements described by this chapter.¹⁸ Such work MUST, however, follow the technical requirements of the IBC and IEBC and LANL amendments to same, certain inspections (see Table IBC-GEN-3 below), as well as other requirements in the ESM, Conduct of Engineering, and elsewhere (including design review and QA appropriate to risk).
 - 1. May NOT perform under Annual Permit (full Program applies) if it:
 - a. Meets IEBC definitions of a Level 2 or 3 alteration;
 - b. Affects life safety or such systems¹⁹;
 - c. Is new construction, relocation, change of occupancy, or expansion/addition;
 - d. Has a total project cost including GFE of greater than \$300K²⁰; or
 - e. Involves complex reroofing (see flowchart)²¹
 - 2. When the above are not involved, personnel are authorized to perform certain repairs or maintenance on existing systems without LBO review/permitting. IEBC-driven requirements MUST be followed and CM-CE Inspection is still required when indicated in flowchart above. The intent is to allow:
 - a. Work necessary to maintain an established installation or to keep the installation operating in its function and configuration (low cost IEBC “Repairs”).
 - b. A like-for-like exchange of a portion or portions of an installation (many IEBC Repairs and Level 1 Alterations, except as noted above).

¹⁷ These items have history of benefitting significantly from inspection by CM-CE, and inspection is often required by the applicable codes and standards and/or ICC-ES report.

¹⁸ IBC provision for an annual permit (105.1.1). Also has basis in NMAC 14.5.2: “The scope of this permit is repair or maintenance performed on existing [electrical/mechanical/general] systems in [commercial/industrial] facilities. Repair and maintenance as used in the scope of this permit type means work that is necessary to maintain an established, approved...installation, which work is required to keep the installation operating in its approved function and configuration. Repair and maintenance includes a like-for-like exchange of a portion or portions of an approved...installation, but does not include work on systems that are generally considered in the industry to be related to be life safety systems, or work that entails new construction, relocation, expansion or alteration of an...installation or any portion thereof...”

¹⁹ As described by NFPA 101 Life Safety Code or otherwise designated by the LANL Fire Marshal

²⁰ Consistent with need for spec package per Z10 Att F. (\$500k is SD350 r7 GPP/IGPP lower limit). TPC includes design, construction, and any facility-type gov’t furnished equipment (GFE) such as chillers and furniture, but not process-typical GFE like analytical equipment. LBO or Deputy decides where uncertain and may waive this LANL requirement (e.g., when cost is spread over many buildings). Subdivision of a project into smaller ones within a fiscal year to avoid the high risk \$ limit is not allowed.

²¹ NMAC 14.5.2.8.A-2004 on permits requires permits & inspection for ALL reroofing; LANL allows simple reroofing with just inspection.

Table IBC-GEN-3 Flowchart Results
Per Figure 1, Three-Tiered Tailored Approach Flowchart

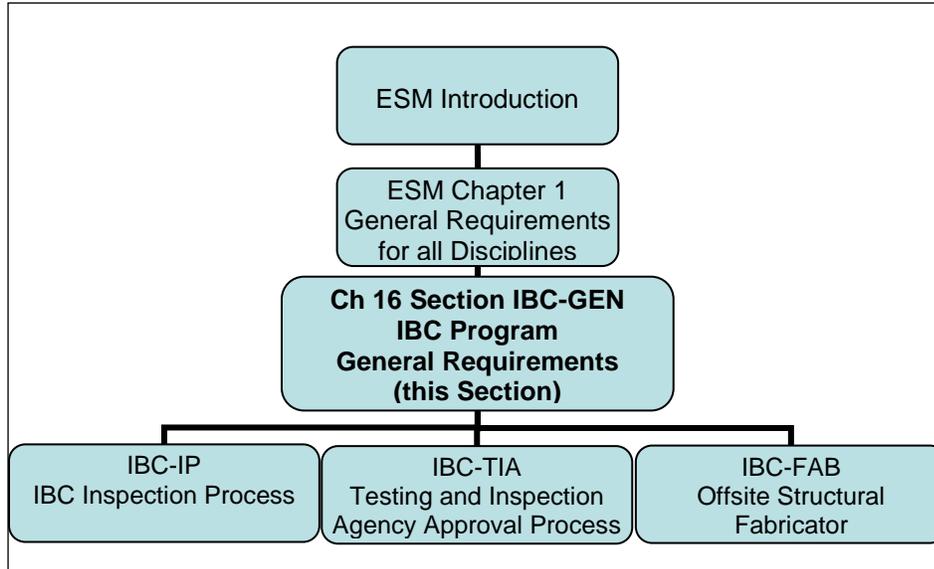
	Annual Permit		Full Admin Control
	Lowest Risk (Green)	Moderate Risk (Yellow)	Highest Risk (Red)
Meet code technical provisions	X	X	X
Administrative Requirements			
Inspection by constructing organization and others as required (e.g., electrical AHJ). Also, for non-structural anchors only, CM-CE must check IWD or work package to verify product usage.	X		
Preliminary Determination Form 1 Process		X	X
Plan review/permitting			X
Test & Inspection Plan (TIP or VIT) and/or Statement of Special Inspections (SSI) per IBC-IP	Note 1	Note 1	X
Routine inspections by CM-CE			X
Specialties inspection by CM-CE (Note 2)		X	X
Occupancy Checklist/Permit			X

Note 1. Nuclear system work must use these plans always; recommended elsewhere

Note 2. Includes welding, firestopping, roofing, “structural” components (e.g., “structural” anchor bolts, rebar joints), and fire-resistive coating work per IBC Ch 17

- D. Where the LANL Engineering Standards or any design for LANL refers to the IBC or IEBC, also refer to the LANL amendments in Attachments A and B of this document.
- E. Additional requirements are typical for ML-1 and ML-2 (nuclear) and ML-3 work; such higher-quality processes cannot reduce IBC levels of quality or inspections unless specifically authorized by the LBO in writing. *Guidance: ML-1, ML-2, and ML-3 work will normally require additional controls above the IBC-driven basics due to the nature of these projects.*

4.0 Chapter Organization



5.0 Acronyms /Definitions

ACRONYM/TERM	DESCRIPTION
ASTM	ASTM International
Building services	Plumbing, heating, electrical, ventilating, air conditioning, refrigerating, controls, fire alarm and suppression, elevators, boilers, pressure vessels, telcom/data, building security systems, and other mechanical and electrical systems or components required to make a facility fully functional for the required occupancy.
Chief Inspectors	Selected individuals delegated by LBO to oversee program day-to-day. They are typically in a QA role or the Construction Engineering Group of Construction Management Division, with the CM-CE Group Leader being the primary Chief Inspector.
Contractor	The LANL Managing and Operating organization (e.g., LANS)
CQAP	Construction Quality Assurance Plan
Deputy Building Officials	Individuals delegated total or partial authority to act for the LBO. The ES Division Engineering Project Delivery Group Leader is delegated as a Deputy to act in the LBO’s absence. The LANL Fire Marshal is delegated as Deputy acting for fire and life-safety related matters. [IBC-GEN App A (LBC) 103.3]
DPIRC or RDPIRC	(registered) design professional in responsible charge; the engineer or architect of record; the person(s) sealing (stamping) the documents [note: professional registration is normally not required for LANS designers (see ESM Ch 1 Z10 Design Output section), but DPIRC must be appointed by the project/Engineering Manager] and IDed to LBO per Form 3. DPIRC term from IBC 106.3.4.
EOR	Engineer of record. Often the same as DPIRC but term may also be used for the designer for a portion of the whole (e.g., structural).
EPD	Engineering Project Delivery Group of Eng Services Division of LANL
ESM	Engineering Standards Manual
Fabricator	For this chapter only, the firm fabricating structural steel or prefab concrete offsite
FDAR	Facility Design Authority Representative. A delegate of the Site Chief Engineer [PD340]
IAS	International Accreditation Service, a subsidiary of ICC
IBC	International Building Code, published by ICC. Internal link via IHS.
ICC	International Code Council
ICC-ESR	Evaluation Service Report issued by ICC-ES Subsidiary of ICC.

IEBC	International Existing Building Code, a product of ICC. Internal link via IHS.
LANL Inspector	A direct-hire (i.e., LANS) or subcontractor employee performing duties approved by the LANL Chief Inspector. May be written simply as inspector.
LBC	LANL Building Code; the IBC as amended by LANL (i.e., App A of this Section IBC-GEN). Where the LANL Standards including this chapter invoke the IBC, interpret to mean the LBC (except in obvious references to the source document; the term “IBC” is used at this time due to higher recognition).
LBO	LANL Building Official. The Division Leader of Engineering Services or successor, as delegated to LANS by NNSA.
LEBC	LANL Existing Building Code. Amendments to the IEBC for buildings and systems including R&D and programmatic systems.
ML	management level, from LANL’s 4-tiered graded approach to rigor per AP-341-502, Management Level Determination.
PRID	Permits Requirements Identification system, a LANL intranet-based project planning tool that provides interactive communication among project participants and institutional Subject Matter Experts (SMEs). Its objective is to identify institutional, state, and/or federal requirements early in the planning phase of a project, facilitate SME communication and review, and to document compliance with requirements. [P 351]
Process	Manufacturing, process, or production equipment of tenant organizations, as distinguished from utilities or building services equipment.
Programmatic	Work or equipment that is tenant, R&D, or process; neither facility nor utility
Project	Any type of work/job/task/or any other terminology that is subject to IBC’s scope regardless of funding source or facility arrangement.
R&D	See PD 370 , Conduct of Engineering for Research and Development (R&D)
Routine Inspection (or Inspection)	Inspections done by LANL or LANL’s agent for general conformance to the design and LANL Standards, including those required by the IBC, but not a special inspection.
Special Inspection	A process of inspection, testing, and reporting by approved special inspectors to assure the LBO that the construction of critical elements, materials, and life safety systems is being performed in accordance with the approved construction documents and IBC Ch 17.
Special Inspection Agency (SIA)	Organization providing Special Inspectors and managing their training and qualification in accordance with this Chapter. Also known as Inspection Agency. This is LANL or subcontractors it may hire expressly to perform this work
Special Inspector (SI)	Individual who has specialized knowledge, training, experience, and certification(s) for one or more of the types of construction subject to special inspection
Subcontractor	Firm hired by LANS, who is DOE’s Prime Contractor.
Testing Agency	A firm providing independent, certified test results.

6.0 Responsibilities and Duties²²

6.1 LANL Project and Maintenance Management, Project Engineering, and facility personnel that manage work

- A. Through Acquisition Services Management (ASM; Procurement and the Contract Administrator), assure that proper ESM (including this program) direction is included in subcontracts (or work packages)²³. Require the Design Professional’s and constructor’s

²² Much of this Chapter’s material is derived from IBC 2006 Chapters 1 and 17. For qualification, LBC amendments to IBC App A govern along with this subsection. Other source materials for this Chapter are from “Model Program for Special Inspection,” ICC Item 1035S4 and “2006 IBC Special Inspections: Understanding and Developing a Special Inspection Program,” ICC Item 1045S06. Also consulted: Clark Co, NV Building Development program Technical Guidelines etc.

²³ Work packages when self-performing.

- constructor (e.g., prime Subcontractor) compliance with the LANL Engineering Standards.
- B. Assure that the project/job or any other designated work under IBC and/or IEBC purview does not proceed until they have obtained LBO approval. In addition, they are responsible for assuring compliance to the IBC (and IEBC when applicable) on the project.
 - C. Have necessary programs and procedures in place to address the controls and process within their organization to assure that IBC and IEBC requirements are fully implemented. This includes instructing personnel and passing-down necessary controls to sub-tier levels on a project and assuring that the LBO Chief Inspector will be properly notified of non-conforming conditions on any IBC-related work.
 - D. Use the PRID system to ensure such projects are tracked and properly reviewed; proof of use/reviews is necessary to receive LBO approval to construct.
 - E. For new buildings and existing building modifications, obtain LBO staff determination (from ES-EPD C/S/A Team) of IEBC Alteration Level, occupancy category, seismic category, and need for seismic upgrade²⁴ and communicate to design agency in design agreement using Form 1, Preliminary Project Determinations associated with this document.²⁵
 - F. For new buildings and existing buildings changing chemical inventory, complete Form 2, HazMat Determination, as required (see Forms 1 and 2).
 - G. Notify the LBO Chief Inspector as soon as possible when non-LBO-permitted or sub-standard construction has occurred on the project (including work by testing agency or in fabrication/manufacturing shops).
 - H. Designate the Registered Design Professional in Responsible Charge and submit at permitting (better: at time of first design review), and if ever the DPIRC changes, using Form 3.²⁶

6.2 Constructor (e.g., Prime Subcontractor or LANL)

- A. Perform as described by subcontract with LANL.
- B. Follow requirements specific to IBC and quality primarily in Project Specification Section 01 4000, Quality Requirements.

6.3 Design Professional in Responsible Charge (DPIRC)

- A. Develop the design.
- B. Develop statement of special inspections (SSI) and test and inspection plan; see Section IBC-IP.
- C. Submit required structural observations²⁷ to the LANL Lead Chief Inspector. Structural observations are the responsibility of the structural engineer of record (EOR) unless otherwise stated in the Subcontract. EOR must subcontract observations if he/she is in

²⁴ NIST GCR 11-917-12 Standards of Seismic Safety for Existing Federally Owned and Leased Buildings -- ICSSC Recommended Practice 8 (RP 8)], which is required by EO 12941 (referenced by DOE-STD-1020)

²⁵ Multiple examples of failing to select correctly and/or communicate have resulted in inadequate designs.

²⁶ Required by NMAC 14.5.2.10.G-2004 on permits

²⁷ IBC-2006 104.7 and 1709.1. This is expected to be required in under half of all IBC jobs (e.g., when high occupancy, critical buildings, and/or hazardous contents).

the same company as the prime Subcontractor,²⁸ and LBO must approve observation performance by persons other than the structural EOR.

- D. Submit proposed occupancy and use categories [and IEBC alteration level(s) for existing building modifications] per Form 1 through LANL Project personnel.
- E. Delegated design: The DPIRC is ultimately responsible for delivering all engineering products required by the ESM/Subcontract to the LBO, even those specialties that are delegated [exception: design by constructing firm's subtiers (e.g., fire protection), in which case such design is accepted by DPIRC] . When retained for engineering services during construction, this includes managing change control, as-built construction documents (where required by contract), etc.; see also this topic below under Process (7.0.A).
- F. Edit LANL Master Specification Section [01 4000](#), Quality Requirements and include in Project Specification.

6.4 LANL Building Official (or Designee)

- A. Implement this chapter and the activities and duties herein.
- B. Enforce the IBC/IEBC; take action on non-permitted or significant life safety affecting nonconforming work by interacting with project owners/managers (see Form 4, LBO Notice of Violation).
- C. Approve field and laboratory test agencies and inspection agencies and offsite structural element fabricators to preclude in-shop special inspections (per ESM Ch 16 Section IBC-FAB).
 - 1. List of approvals is on ESM Chapter 16 [webpage](#).
- D. Approve special inspection program submitted by the DPIRC when acceptable (see IBC Section 1704.1) and may require a preconstruction conference to review the program with all applicable members of the construction team; this is accomplished through design review process. The inspection program is further discussed in Section IBC-IP, IBC Inspection Process.
- E. Chair Program staff meetings at least quarterly (*ideally monthly*). *Invitees should include Deputy Building Officials, ESM Chapter POC/Alternate, Chief Inspectors, permitting stamp holders, quality assurance, project engineering, and project management representatives. The agenda should include a safety topic, relevant building safety and quality incidents, and ongoing and new issues/business. Notes should be taken.*
- F. Perform program self-assessments (e.g., MSAs)²⁹. *Possible criteria for self-assessment can be found in IAS [AC251](#), Accreditation Criteria for Building Departments/Code Enforcement Agencies, including the applicable sections of ISO/IEC Standard 17020, General Criteria for the Operation of Various Types of Bodies Performing Inspection. http://www.iasonline.org/Accreditation_Criteria/*

²⁸ Ibid. SER best understands design, load path, and critical fabrication issues, so is best person to perform observations. Clark County, NV does not consider it a conflict of interest for SER to perform observations ([TG100-2008](#) 7.4), nor does Phoenix as of Apr 2008 (latter cautioned against SER who is in same company as builder). N/A when LANL self-performs since LANL will always protect government's interests.

²⁹ DOE O 414.IC Quality Assurance includes criterion for management self-assessment. See also [PD328](#), Assessment Program.

1. *In addition to self-assessments, LBO may consider external assessments. These could include assessment of plan review effectiveness through occasional use of contracted plan reviewers (e.g., advertisers in ICC publications). LBO may also consider an outside assessment of overall program effectiveness via IAS accreditation to AC251 or the ISO Building Code Effectiveness Grading Schedule (BCEGS) program.*

6.5 LANL Chief Inspectors and staff personnel

- A. Must be assigned and designated by the LBO to administer parts of the program including the specific electrical, mechanical, and plumbing codes adopted and amended by the ESM. The listing of LANL Chief Inspectors is on the Chapter 16 contacts webpage [here](#).
- B. Delegated by the LBO, Chief Inspectors act on behalf of the LBO to perform duties of evaluating testing and offsite structural fabrication agencies and managing or performing oversight of inspection and welding personnel who work onsite -- their training and certification, evaluating their performance, performing surveillances related to IBC work on site, developing related LANL inspection procedures, acting as subject matter experts (SMEs). Duties are further described in other ESM Chapter 16 sections.
- C. CM-Construction Engineering Group is responsible for all inspections of IBC Program work. CE Chief Inspector may, in writing, delegate or authorize other qualified organizations (Special Inspection Agencies) to perform such inspections within the qualification limitations imposed by the Program. CE Chief Inspector also approves Special Inspectors (SIs) to perform the duties specified by the Code, this ESM Chapter, and approved Inspection Plans developed for individual projects/jobs; and revoke approvals as warranted.

Note: CM-Construction Engineering Group responsibility for construction inspection may extend beyond the IBC Program scope through Construction Management Procedure CMP 282, *Construction Acceptance Inspection and Testing*, and other policies or agreements. Two examples of this are ASME B31.3 piping inspections and certain "tenant improvement" type work where the majority of the work is not IBC-related but aspects affect the facility to the extent the work is subject to the overall IBC Program as discussed above under Scope.

- D. Inspect (as necessary) the premises for compliance and enforce compliance with the provisions of the ESM. Exceptions:
 1. Fire system inspections are delegated to the Fire Marshal (a Deputy Building Official) or Fire Group as applicable.
 2. Security and telecom/data is inspected by LANL groups responsible for those systems.
 3. Others as recognized or delegated by the LBO.
- E. Keep all related records required by the IBC for the period required per the LANL Records Inventory and Disposal Schedules (RIDS).

6.6 LANL Design (Plan) Reviewers

- A. Responsibility for reviews against the LANL Standards and building codes rests with the ES-EPD Group Leader (EPD GL).
 1. EPD GL will rely on other organizations for aspects of such reviews when they are authorized by LANL policy (thus reflected in PRID) to do so (e.g., Fire Protection Group reviews).

2. EPD GL may subcontract review activity to outside firms (i.e., third parties), or may augment EPD staff by, in writing, appointing other qualified LANL or outside individuals to perform review functions.
- B. The LBO further delegates to ES-EPD GL the role of ensuring compliance with the applicable design review procedures, including complete resolution of comments, on behalf of all reviewing organizations, when granting permits for construction (see procedure steps later). *Guidance: Those procedures include the Conduct of Engineering APs, PD1220 Fire Protection Program, and others. Such procedures require that designs be reviewed by others as needed per PRID including Fire Protection Group, the Fire Marshal, Security & Safeguards, Utilities, and others including ESH&Q, Rad Protection Engineering, etc.*

7.0 Process Overview

This table reflects major steps or the administrative program all risk levels; some steps are not necessary for low or moderate risk activities as noted. See Figure 1 flowchart and Table IBC-GEN-3 for details on risk approach.

AR = as required by subcontract or elsewhere in ESM
 PE = LANS person performing project engineer functions
 RE = responsible engineer
 WP = When present (e.g., if applicable/required or used optionally)

Step	Responsible Person	Action	Lowest Risk	Moderate Risk	Highest Risk
Pre-Permit					
1	RE or MSS Work Control	Obtain FDAR initial determination on (1) whether the work is in IBC Program and (2) risk level per Figure 1 flowchart.	X	X	X
2	RE or PE	Complete Preliminary Project Determination (Form 1) process.	WP	X	X
3	DPIRC	Develop design (may be phased/multiple packages). Submit to LANS person acting as PE, who then submits to CM-CE, ES-EPD reviewers, and other PRID-indicated reviewers for LBO review per LBO Permitting Procedure (e.g., ES-DE-400). ³⁰	AR	X	X
4	LBO reviewers	Review and comment on design (e.g., at 30 and 60% completion). Return comments to DPIRC via PE.	WP	WP	X
5	DPIRC	Develop inspection plan(s) delineating the degree of test, inspection, and Statement of Special Inspections (SSI, when required) for the work being done. Produce Test and Inspection Plan (TIP or VIT) unless specifically directed to NOT produce TIP by LANL subcontract. See Chapter 16 Section IBC-IP, IBC Inspection Process, for details. Submit to LANL person acting as Project Engineer	AR	AR	X

³⁰ Ref. ESM Chapter 1 Section Z10 including Att C, 30-60-90% Deliverables. Also, Moderate Risk specialties normally require design per applicable ICC-ESR.

Step	Responsible Person	Action	Lowest Risk	Moderate Risk	Highest Risk
6	PE	Submit 90% design/inspection package as per Step 3.	AR	AR	X
7	LBO reviewers	Review and comment on design and inspection plans. Ensure the inspection plans are aligned to the drawings and specifications. Return comments to DPIRC via PE.	WP	WP	X
8	PE	Once all “C” comment comments are successfully resolved, submit 100% design/inspection per LBO Permitting Procedure. This may include: (1) two copies of the design, (2) DPIRC designation Form 3, (3) a PRID printout showing the required reviews, and (4) evidence of having satisfied those reviews (“no comment” statements, Design Review Record [DRR] document comment resolutions initialed by reviewers, or equivalent). ³¹	WP	WP	X
9	LBO Permit Stamp Holder (ES-EPD)	Approve 100%, correct submission for approval to construct by applying approval stamp). ³² Return one set of materials to project. <i>Guidance: Projects with both IBC and non-IBC work will generally be LBO-stamped throughout; non-IBC projects may receive an “Accepted by LANL Engineering” stamp</i>	WP	WP	X
Post-Permit					
10	Constructor	Follow the Offsite Structural Fabricator Approval Process (Ch 16 Section IBC-FAB) for seeking approval of fabricators to perform certain IBC work without mandatory LANL in-shop special inspection/expense, then submitting a Certificate of Conformance. Submit any requests to LANL; Chief Inspector requires two (2) weeks lead time.	X	X	X
11	Constructor	Ensure only LBO-approved third party testing agencies are used (listing on ESM Ch 16 webpage). If the testing agencies they prefer to use are not on that list they may submit the necessary data to the LBO for evaluation and approval (see IBC-TIA). Submit any requests to LANL; Chief Inspector requires two (2) weeks lead time.	X	X	X
12	Constructor	Begin work. Construction work including offsite structural element fabrication work must not start until authorized by the LBO after evaluating that the project has complied with all necessary IBC and LBO requirements. Note: Documents must be sealed by the DPIRC	X	X	X

³¹ Building Dept approval ensures compliance with engineering change control procedures, the LIR-driven requirement to use the PR-ID, and municipal practice. Also, LANL Construction Inspection needs to be able to determine approved design quickly.

³² This process is LANL equivalent to obtaining plan reviews for a building permit. Site placarding is not used. In the case of pre-engineered buildings, structures, and transportable, the preferred approach is one-time submittal of complete design including shop and foundations drawings; in any case, shop drawings must be approved before purchase, lease, or installation.

Step	Responsible Person	Action	Lowest Risk	Moderate Risk	Highest Risk
		before construction begins [see ESM Ch. 1 Section Z10 for sealing exceptions (e.g., in-house and “Grading, excavation, and storm water protection can proceed ³³ . LBO may authorize construction-start at risk prior to sealing. ³⁴ ”)] Project must follow the approved inspection plan(s), and Subcontractors submit “Statements of Responsibility with respect to Special Inspection” per IBC-IP App H			
13	CM-CE	Conduct inspections per Section IBC-IP, IBC Inspection Process.	Limited; see Figure 1 flowchart	X	X
14	PE	Route Form 5 Final Inspection Checklist and seek LBO Occupancy Permit using Forms 5 & 6	WP	WP	X

A. Delegated and/or Deferred Design:

Note: Delegated refers to design activities performed by those other than the DPIRC. Deferred refers to design performed after permit is granted (ref. IBC-2009 107.3.4.2)

1. The LBO normally permits construction start with a package that lacks final design for specialties such as structural detailing, HVAC, fire alarm and suppression, instrumentation and controls, and equipment anchorage (i.e., this detail submission is deferred).
2. For such a permit to be issued, the permit package shall have sufficiently detailed performance requirements that intent can be reviewed, and shall clearly identify what design will be furnished later. Notes regarding deferred design shall be stated on both the affected construction documents and, if present, the Statement of Special Inspections (SSI).
3. Deferred design submissions shall follow the same workflow as the permit package but at a later time, and with the following differences:
 - i. Drawings need not follow the LANL Drafting Manual, but must be legible. Submit electronic media in AutoCAD or compatible with third party conversion. Conformance to the National CAD Standard/Uniform Drawing System is desirable as is use of the LANL title block.
 - ii. When not produced by the DPIRC: As with any delegated design, submissions must first be reviewed/approved by the DPIRC to ensure acceptability (including interdisciplinary reviews as appropriate).
 - iii. As with any design, they must be sealed by a registered engineer when required by ESM Ch 1 Section Z10 (“Design Outputs” article)].
 - iv. The DPIRC is responsible for revising the Exhibit I submittal summary and the SSI as necessary to match the deferred design, then submitting the revised SSI with the deferred design.

³³ These activities are not normally inspected by LANL, while compaction, formwork, rebar installation are.

³⁴ Helps ensure safety of construction workers, limits LANL risk with unacceptable work. Seal not required for LANS-produced design per ESM Ch 1 Z10.

- v. Submissions must be reviewed/approved by the LBO prior to fabrication and installation. *Guidance: LBO may treat first submission as a 60% document from a review maturity standpoint (ESM Ch 1 Section Z10 Att C) and may comment using a design review-type form rather than the typical submittal review form; becomes 100% upon LBO approval.*

B. Changes to previously-LBO-approved design:

1. Re-approval by LBO (application of stamp) is required when the changes (a) affect fire, life safety, and/or egress, (b) change the scope, or (c) result in new construction documents – i.e., are extensive enough to necessitate a Statement of Special Inspections revision, Design Revision Notice, DCF/DCP/ECN action, recalculation, or drawing revision.
 - LBO stamping not required for every FCR and FCN when used within the AP-341-519 limits, only when individually or cumulatively meeting criterion above.³⁵
2. Even where LBO re-approval is not required per criteria above, the design change must be acceptable to the affected original or equivalent reviewer(s).
3. *Guidance: The project may request or receive LBO stamping even when not necessary by change.*

8.0 Qualification of Suppliers and Manufactured Products for Structural and other Work³⁶

- 8.1. On IBC and IEBC projects, the requirement for LBO approval of agencies and fabricators is summarized as follows (details are elsewhere in this Chapter):
 - **Testing agencies:** A list of LBO-approved agencies is available on the ESM Chapter 16 [webpage](#). New requests should be sent to Chief Inspectors per IBC-TIA.
 - **Offsite Structural Shop Fabricator approval** when conditions associated with IBC Section 1707 and 1704 are applicable. Contact a LANL [Chief Inspector](#) to request fabricator approval; if the project's choice is to use in-shop special inspectors, contact CM-CE Group Leader.
 - **Special inspection and inspectors:** CM-CE Group Leader retains the approved list and evaluates potential special inspectors and compensatory measures.
- 8.2. Under 104.9, 104.11, and the Special Cases section of the IBC (1704.15), **proprietary products** must be approved by the LANL Building Official (LBO). The products requiring approval are those types of products³⁷ for which an ICC-ES Report exists. Examples are post-installed adhesive anchors and reinforcing steel splices/couplers.

³⁵ IBC 106.4. LBO re-approval for life safety because that is a primary purpose of the LBO review; re-approval for new work documents because inspectors require work be performed to LBO-approved documents. LBO approval not required for FCR/FCN incorporation or record drawing updating or as-built that occurs after work is complete.

³⁶ LBO approval is required for all non-code-prescribed work per IBC 104.11, but LANL has these additional requirements for structural. [Per 104.11, any new "material, design and methods of construction and equipment" must be provided to the LBO in writing using the 2176 Form, including what is it designed for or to do and what documentation, testing or other objective evidence shows it will perform as expected to support the design. This must be reviewed by the appropriate chief engineer before submitting to LBO.]

³⁷ That is, if similar products have ES listings, then the SPECIFIC product in question requires LBO approval if not listed by ES.

- A. Such components are automatically approved by the LBO if:
 - 1. The components chosen are IBC-compliant-labeled (has been accepted by the most recent ICC report from ICC-ES [valid for the code edition in use or newer edition whichever is more stringent]) AND
 - 2. The design and installation complies with the conditions of use and restrictions specified in the ICC report (in addition to and including following manufacturers instructions, particularly where more stringent). Installation must be verified by special inspector(s) when required by ICC ES Report and/or IBC Ch 17 on special inspection
- B. Products accepted by Los Angeles Building Dept (see index) are also acceptable at LANL except where specifically limited by the LANL Standards and Master Specs.³⁸
- C. Other special case components not automatically approved as noted above must be submitted to the ES-EPD Structural Team which will broker LBO approval prior to use³⁹.
Guidance: This may involve derating; e.g., to stay well within elastic region.

9.0 Temporary Facilities, Structures, and Building Systems & Components

- A. The term “**structures**” includes buildings and facilities. Wherever this subsection discusses structures, the same holds for facility systems and components.

Exception: At time of writing, temporary lighting protection impairment due to “temporary” railings was limited to 90 days (after which impairment must cease).⁴⁰
- B. **Temporary** is defined as three years or less for LANL structures (includes facilities).⁴¹
 - 1. Structures intended for less than 3 years are **not** required to meet those IBC or LANL Standards requirements that ensure long-life cost effectiveness of permanent structures such as long-lasting materials, energy efficiency meeting ESM Ch 14, or having formal drawings (sketches are adequate).
 - 2. All safety requirements must be met.⁴² Also, see additional requirements below.
- C. Structures includes temporary (relocatable) trailers, prefabricated buildings, tents, sheds, containers, and similar structures. This includes LANL- and Subcontractor-owned structures including leased and owned trailers.
 - 1. At time of writing, relocations and new installations of relocatables also require PADCAP prior approval.⁴³

³⁸ LADBS Information Bulletin (IB) P/BC-2011-119 — *Alternate Building Materials/Products Approval Requirements* LADBS website

³⁹ This was done for Drillco anchors and approval is reflected on LBO agency and product approval listing. *In addition to this requirement to obtain LBO approvals, it is important to note that the general focus of ML-1/2 is primarily a quality assurance evaluation of the manufacturer’s or supplier’s quality program. The focus of IBC Ch 17 is to assure that proper independent testing has been accomplished.*

⁴⁰ NEC/NFPA 70 uses 90 days for temporary limit for power, for example.

⁴¹ 3-year timeframe allows construction project trailers to be sited temporarily and cost-effectively. Most other transportables tend to remain much longer than originally planned (often 25+ years) and, as such, are to meet life-cycle cost requirements. App A LBC of this document, Section 107 allows a 1 year permit with extensions (to 3 years) based on NMAC 14.5.2.17 allowing 1 year with extensions for good cause and NMAC 14.12.3 Manufactured Housing Section, Off-Site Conventionally Built Modular-Manufactured Unit Standards that allows 1 year. Subsection 14.12.3.18 (2-16-2003) states: "A. Modular units may be installed on a temporary foundation for a period of up to one year. Units installed as temporary and remaining in place after the one-year period must be placed on a permanent foundation. B. Modular units installed as temporary shall meet all requirements of these standards except the permanent foundation requirement."]. The NEC limit of 90 days does not require permanent power for transportables.

⁴² From IBC-2006 Section 107, “...conform to the structural strength, fire safety, means of egress, accessibility, light, ventilation and sanitary requirements of this code as necessary to ensure public health, safety and general welfare...”

- D. Temporary structures are required to meet all DOE contractual requirements including the suite of NM building codes and worker safety-related amendments in IBC-GEN Attachment A LANL Building Code⁴⁴ and elsewhere in ESM, primarily:
1. Clearances/Siting: Get siting approval per [P 941](#), Site Planning. Comply with underground utilities and overhead power line right-of-way requirements in ESM Civil and Electrical Chapters (see Chpt 3 Civil G30 part 9.0 and 10.0).
 2. Signage: As described in ESM Chapter 4 Architectural, structure number signs are required.
 3. Fire: If there will be adjacent structures, follow ESM Fire Chapter 2 for exposure acceptance criteria (e.g., [DOE-STD-1088](#), *DOE Standard on Fire Protection for Relocatable Structures* — placement in accordance with Table in Section 6.1, a simplification of NFPA 80A techniques [the primary concern from these are the fire exposure they pose to more permanent and valuable structures]; Section 6.2 provides rules of thumb about placement; etc.) Meet DOE G 420.1-3 and DOE-STD-1066 (2012 editions, when issued).
 4. Civil: Include necessary utilities (generally tied-in by LANL).
 5. Structural: Permanent foundation is not required. Foundations provided must be able to resist gravity loads and the forces, including overturning, caused by wind loads⁴⁵ determined in accordance with ESM [Chapter 5](#) Section II. Seismic forces for most temporary trailers do not need to be considered for anchorage.⁴⁶ When soil augers are used, design to IBC soil data unless project-specific geotechnical data is available and provided (see ESM Ch 5 Section II). See Standard Detail [ST-Z1052](#).
 6. Electrical: Following NFPA (NEC/NFPA 70, etc.) is sufficient.
 7. Bonding: Electrical bonding to a ground system (as is done with fences/gates) is suggested for personnel safety reasons should lightning strike nearby.
 8. IBC: Meet IBC including Section 107 for safety and LANL IBC Program requirements (primarily design review, associated inspections, and LBO Certificate of Occupancy).
 9. Hazard: Relocatable installations other than ordinary business and industrial facilities (that present extraordinary hazards) must follow the ESM Chapter 1 Section Z10 article on Design Goals: Safety.
 10. Non-occupied Subcontractor structures in an approved project lay-down area generally only need to meet Code as amended by LANL.

⁴³ Per [PD902](#), Space Management

⁴⁴ ICC staff 12/2010 opined that office trailers are addressed by the IRC; in NM, the NMAC section invoking IRC points to NMAC for manufactured housing; that (NMAC 14.12.1.10.E) points to CID authority and building code (now IBC).

⁴⁵ http://www.youtube.com/watch?v=EsKb17_pVJk&feature=player_embedded

⁴⁶ For single- and double-wide trailers, generic calculations (Goen 2010, EMRef TBD) indicate that, for anchorage only wind loads are the more severe loading condition when compared to seismic loads for up to 5 years. No further evaluation of seismic loads is required with anchorage.

10.0 Sheds and Containers

- A. **Sheds** include storage buildings, garages, and carports made by Morgan, Tuff Shed, etc. **Containers** include intermodal transportainer⁴⁷ and similar steel cargo/freight/shipping boxes. Both are subject to the following requirements for customization and installation.
- B. In addition to above required even for temporary structures, meet the following additional requirements for permanent sheds and containers:
- **Anchorage:** Tie sheds down with wind straps or other anchorage approved by LANL ES-EPD Civil/Structural Team Leader. Transportainers placed directly on a flat surface (ground, pad) normally do not require anchorage for PC-1 wind or seismic.⁴⁸
 - **Hazardous Material Storage:** Generic sheds and containers must not be used for this; instead; use lockers or cabinets designed for safe storage (and containment if appropriate) and labeled for the purpose (e.g., NFPA 704 diamond); see also ESM Ch 10.⁴⁹
 - **Lightning Protection:** This is typically not required because sheds and containers are normally used for low-value goods; follow ESM Electrical Chapter Section [D5090](#) requirements for making a needs determination (uses NFPA 780 exposure and importance criteria).
 - **Occupancy:** Ordinary, unmodified sheds and shipping containers must not serve as occupied work areas. They are intended by design for storage or shipping purposes only. Personnel time inside must be infrequent, of short duration, and controlled – and comply with basic life safety issues such as asphyxiation/confined space entry, stability of stacked materials, and IBC egress pathway. Structures must conform to the IBC for that specific occupancy type.

11.0 Deactivation, Decommissioning, and Demolition (D&D) (F30)

D&D projects must brief the Facility Design Authority Representative regarding scope and anticipated impacts of the project. Depending on scope and rigor required for project execution, the DAR may request the project prepare a Conceptual Plan. The DAR, after consultation with the Chief Structural Engineer, will then make a determination⁵⁰ as to which projects warrant formal design and approval by LBO due to unique circumstances associated with removal of the structure.

These unique design aspects may include controlled structural collapse, demolition sequencing, special equipment or technologies, means and methods for demolition, or any construction aspects of a D&D project that require formal design (e.g., finishing adjacent facility edifices impacted by the D&D project).

These unique circumstances may be driven, as determined by the DAR, by protection of adjacent facilities and workers, disruption of adjacent programmatic operations, and security or environmental concerns.

⁴⁷ aka SeaLand, SeaTrain, etc., generally built to ISO 1496

⁴⁸ Volkman to Exner, 10/14/2010, "Copy of Approved MDA-B Cargo Container Anchor Calculations"

⁴⁹ Hazardous material and chemical storage is subject to management requirements of LANL's RCRA Permit - Module VIII, Section B.1, of the Laboratory's Hazardous Waste Facility Permit (NM0890010515-1) as of 6/2008

⁵⁰ An LBO-delegated function that may be overruled by same

- A. When required by the DAR or LBO, develop a D&D package that satisfies the LBO reviewers. This will typically include (1) the scope of work/plan for structural demo⁵¹ (otherwise, describe work boundaries), (2) demolition and demolition sequencing, (3) measures to protect adjacent facilities and workers (barriers, fencing, signage), (4) site boundary and access control, (5) site end-state configuration and stabilization, (6) utility de-energizations and locations⁵² and temporary utilities (including lighting and power), (7) traffic management, and (8) waste segregation and management.⁵³ (9) Generate any structural calculations requested by LBO⁵⁴. LBO approval of (1)-(5) above and, if required, (9) prior to work initiation will generally be required.⁵⁵
- B. As appropriate, further describe D&D work using drawings or sketches. *Guidance: Use clouding or other methods as described by the LANL Drafting Manual. The addition of photos in the drawings is a common and helpful technique for helping to describe the work.*
- C. Plan for proper identification and disposal of toxic or other controlled substances such as PCBs which may be present. *See also AP-350-300.*
- D. For electrical demolition refer to ESM Electrical Chapter 7 and LMS Section 02 4115, *Electrical Demolition.*
- E. *Guidance: The LANL Fire Marshal will likely require the following regarding fire protection/egress: Description of how the structure will be disconnected from the fire loop and/or how fire alarm/fire suppressions systems interfaces with adjacent building will be managed.⁵⁶ Address means of egress (NFPA 101/ IBC Chapter 10 egress evaluation or compliance statement).*
- F. *Guidance: There is D&D information at the EFCOG Deactivation & Decommissioning and Facility Engineering (DD/FE) Working Group webpage.*

12.0 History of Revisions

Rev	Date	Description	POC	RM
0	10/27/06	Initial issue. Also includes IBC and IEBC requirements formerly in Ch 1 Section Z10.	Tobin Oruch, <i>CENG-OFF</i>	Kirk Christensen, <i>CENG-OFF</i>
1	6/19/07	Added approval of certain design changes and special structural product qual section; organization and ML level changes; minor clarifications.	Tobin Oruch, <i>CENG-OFF</i>	Kirk Christensen, <i>CENG-OFF</i>
2	7/21/08	Clarified scope, Chief Inspector duties, design review duties, need for control of concrete prefab, occupancy. Removed IAS automatic pathway for testing agencies. Minor changes to Att 1 and 2 related to beneficial occupancy and App A and B.	Tobin Oruch, <i>CENG-OFF</i>	Kirk Christensen, <i>CENG-OFF</i>
3	9/15/09	Revised applicability to reduce work scope excluded	Tobin Oruch,	Gary Read,

⁵¹ IEBC 106.2

⁵² Also follow [O&M Criterion](#) 303, Utility Disconnects

⁵³ There are the major engineering-type controls; LANL ES&H may have additional admin requirements (e.g., asbestos and other hazardous materials, storm and construction water management plan) but these need not be submitted to LBO (and are not, preferably).

⁵⁴ E.g., protection of adjacent structures from shock, supporting mobile equipment on buildings

⁵⁵ Satisfies LANL Building Official review requirement of IBC 105.1 and 3303.

⁵⁶ Often several small buildings will use the same riser and a transponder panel that connects to a main panel

		from the full program.	<i>CENG-OFF</i>	<i>CENG-OFF</i>
4	3/1/10	Clarified scope and applicability, LBO approved listing on chapter webpage versus IESL (4.1.h); revised regarding SI for seismic-resisting (5.3).	Tobin Oruch, <i>CENG-OFF</i>	Larry Goen, <i>CENG-OFF</i>
5	8/25/10	Revised screening criteria, added flowchart. Fabricator approval again includes seismic-resisting inspections. Added and revised temporary facility and shed requirements formerly in Ch 1 Z10. Added end date on occupancy permit. Final Inspection Certificate renamed and made mandatory for all IBC projects.	Tobin Oruch, <i>CENG-OFF</i>	Larry Goen, <i>CENG-OFF</i>
6	6/20/11	2009 adoption; clarified scope (new tables); added DPIRC designation form 01 and previous FM1&2 became 2&3; SSI need not include other inspections; transportainer anchorage; D&D moved in from Z10.	Tobin Oruch, <i>CENG-OFF</i>	Larry Goen, <i>CENG-OFF</i>
7	9/24/13	Added project determination and hazmat forms as FM1 and FM2, NOV as FM4. Clarified scope, phasing, process, delegated and deferred design, change processing. Updated App A & B. FM1 became FM3, FM2&3 became 5&6.	Tobin Oruch, <i>ES-DO</i>	Larry Goen, <i>ES-DO</i>

13.0 Attachments

- Form 1, Preliminary Project Determinations
- Form 2, HazMat Determination
- Form 3, Registered Design Professional in Responsible Charge Designation (Sample)
- Form 4, LBO Notice of Violation
- Form 5, Building/System Final Inspection Checklist (Sample)
- Form 6, Occupancy Certificate (Sample)

- Attachment A LANL Building Code (LBC)
- Attachment B LANL Existing Building/System Code (LEBC)