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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: 2015 See Att A for additional details and amendments</p>
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1.0 Purpose

- A. To establish the LANL building program (“IBC Program” or “Program”).¹
- B. *LANL is unique in that it is responsible for both major IBC roles: the project owner and the jurisdiction. 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 risk management, 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 be; 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:
 1. Whether proposed work is subject to the IBC/IEBC within the rules and examples in Tables IBC-GEN-1 & 2;
 2. Whether work is “repair” or another (higher) work category per Preliminary Project Determination (Form 1) definitions.
 - a. All non-repair FDAR determinations must be validated through the Form 1 process.⁴
 - b. For repairs, FDAR determines risk level per Figure 1, IBC Program Three-Tiered Approach Flowchart.
 3. If the FDAR has any uncertainty regarding these decisions, they must either consult the Chapter 16 POC or utilize the Preliminary Project Determination (Form 1) process. FDAR 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

¹ 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. These codes are required by LANS Contract including Appendix G (DOE O 420.1 (rev C, Att 1, 1.c). See also ESM Ch.1 Z10.

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

³ Building repair, alteration, etc. scope is governed by the IEBC version adopted and amended by IBC-GEN Att B, LEBC

⁴ Determining code and other key design inputs prior to getting underway with design helps minimize rework. Failing to select correctly and/or communicate used to occur prior to form existence. Also helps ensure that changes in use or occupancy result in new Certificate of Occupancy per IBC-2015 111.1.

including [10CFR851](#) (pressure, fire, etc.) and required inspections based on ML level, written LANL policy, or otherwise.

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 equipment⁵ 	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.
Utilities or Environmental Programs installed or owned equipment and civil structures⁶	<u>Utilities</u> : Distribution of electrical and other services <u>Infrastructure</u> : Roads and roadway retaining walls, wells and monitoring equipment, flood control	Buildings, utility service laterals to buildings, parking lots, retaining walls near pedestrians, tanks, and other structures that are IBC 312 “U” occupancy, etc.
Gloveboxes and stands⁷	shell/stand and contents design/fab	installation
Rad protection systems⁸	component design/fab	installation
Security systems⁹	component design/fab and some Material Access Area features (e.g. PIDAS/PIDADS)	installation
Telecom (unsecure or secure) in/on a building¹⁰	component design/fab	installation

NOTE: “Installation” includes anchorage per ESM Ch 5 Section II, other life-safety issues (location/egress, fire suppression, fire stopping), and building service hard-connections/tie-ins.

- 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 (<u>will be per IEBC</u>)

⁵ Based on the IBC and IEBC scope and purpose statements, code topics addressed, and typical use by jurisdictions.

⁶ Based on IBC-2015 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, Ch. 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 in 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 Telecom is a utility but same issues as security systems above

Table IBC-GEN-2 Work Always in IBC Program, Con’t.

<p>Work listed at IBC-2015 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.</p>
<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 II 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 to control anchorage and hookup, both technically and administratively.</u></p>
<p>Geotechnical work: soils testing firm must be on LBO approval listing</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 II App A. These would be considered “structural” post-installed anchors per ESM [Chapter 5](#) Sections II & 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.

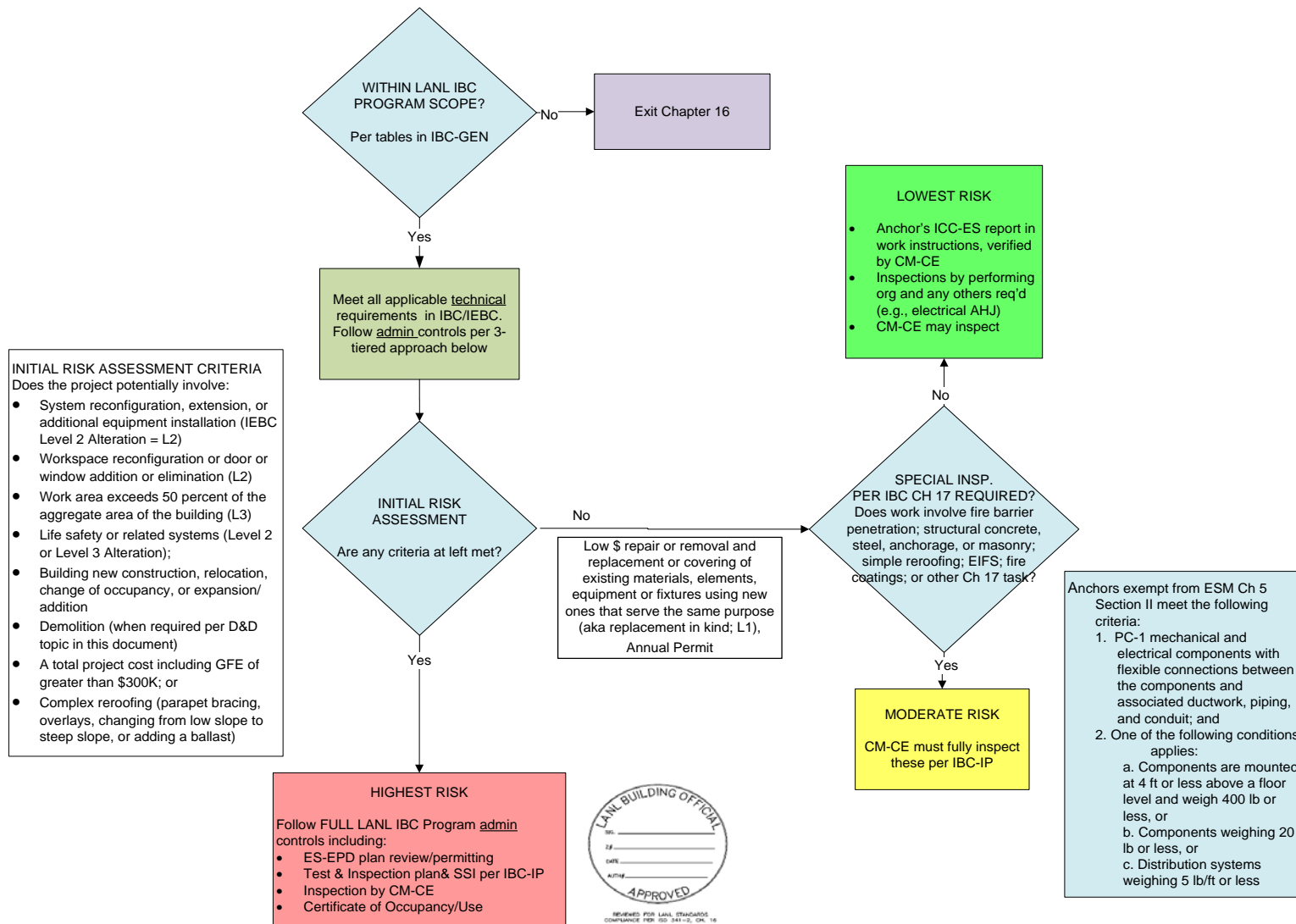


Figure 1. IBC Program Three-Tiered Admin Approach Flowchart

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. Special Inspection: This is always required for such things as structural steel, concrete, masonry, and anchorage; firestopping; roofing,¹⁷ and other work governed by IBC Ch. 17; however, a formal statement of special inspection is not required when job is Moderate Risk (i.e., 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. Is new construction, relocation, change of occupancy, or expansion/addition;
 - c. Has a total project cost including GFE of greater than \$300K¹⁹; or
 - d. Involves complex reroofing (see flowchart)²⁰
 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 (2015: 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...” ICC document “2009 IEBC Q&A” 1-15 suggests annual permit is not an exemption from inspection, thus moderate/SI gets CM-CE, low risk is self/etc.

¹⁹ \$300k is threshold 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.

²⁰ NMAC 14.5.2.8.A-2004 requires permits & inspection for ALL reroofing; LANL allows simple reroofing with just inspection.

Table IBC-GEN-3 Flowchart Summary
 Per Figure 1, Three-Tiered Admin Approach Flowchart

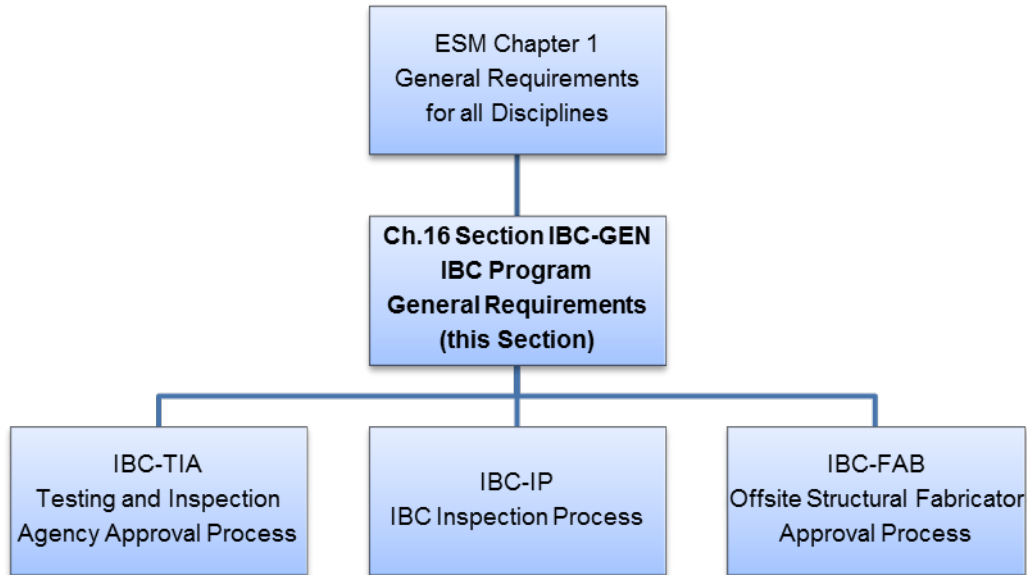
	Annual Permit		Full Admin Control
	Lowest Risk (Green)	Moderate Risk (Yellow)	Highest Risk (Red)
Technical Requirements -- Meet code and ESM	X	X	X
Administrative Requirements			
Preliminary Determination Form 1 Process when more extensive than Repair definition	X	X	X
Test & Inspection Plan (TIP or VIT) per IBC-IP Att I	Note 1	Note 1	X
Statement of Special Inspections (SSI) per IBC-IP and its Att B when required by IBC 1704.3			X
Plan review/permitting			X
Routine inspections by CM-CE			X
Special inspection by CM-CE		X	X
Self-inspection by constructing organization (and by others as required, e.g., electrical AHJ). Also, for post-installed anchors, CM-CE must check IWD or work package to verify ESR/product usage.	X		
Building/System Final Inspection Checklist and Certificate of Occupancy Form 5			X ²¹

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

- 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.*

²¹ For mods, an occupancy permit is “an official record of any changes to the building that are impacted by the code” per 2009 IEBC Q&A document [9-1]

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 Att 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-2015 107.3.4.
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, concrete, etc 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., Att 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.
ML	management level, from LANL’s 4-tiered graded approach to rigor per AP-341-502 on management level determination
PRID (internal only)	Permits Requirements Identification (PRID). 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; not facility, utility, or infratructure
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.
Special inspection	A process of inspection, testing, and reporting by approved special inspectors and testing agencies 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. Described by the Statement of Special Inspections (see IBC-IP and its Att B)
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 approve 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

Note: A building department organization chart is maintained on the Chapter 16 webpage, directly [here](#).

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

²² Much of this Chapter’s material is derived from IBC Chapters 1 and 17. For qualification, IBC-GEN Att A LBC amendments to IBC 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.

- subcontracts (or work packages)²³. Require the Design Professional's and construction constructor's (e.g., prime Subcontractor) compliance with the LANL Engineering Standards.
- B. Assure that the project/job or any other designated work under IBC Program purview does not commence until they have obtained LBO approval. In addition, they are responsible for assuring compliance to the IBC and/or IEBC 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 PRID system when required to ensure such projects are tracked and properly reviewed; proof of appropriate 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 other matters using Form 1, Preliminary Project Determinations associated with this document; communicate input to design agency in design agreement.
 - 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 time of first design review, and if ever the DPIRC changes, using Form 3.²⁴

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) when required by IBC 1704.3, and test and inspection plan (TIP or VIT); see Section IBC-IP.
- C. Submit required structural observations²⁵ 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 the same company as the prime Subcontractor,²⁶ and LBO must approve observation performance by persons other than the structural EOR.

²³ Work packages when self-performing.

²⁴ Required by NMAC 14.5.2.10.G-2004 on permits

²⁵ IBC-2015 104.7 and 1704.6. This is expected to be required in under half of all IBC jobs (e.g., when high occupancy, critical buildings, and/or hazardous contents).

²⁶ 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

- 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 Program; 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, 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. Designate deputies, chief inspectors, and other key staff through maintenance of an organization chart on the chapter webpage.
- E. Chair program staff meetings (*nominally 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., MAs).²⁷ *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/*
 - 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

- 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

always protect government's interests.

²⁷ DOE O 414.IC Quality Assurance includes criterion for management self-assessment. See also PD328, Assessment Program.

by the ESM. *The listing of LANL Chief Inspectors is on both the Chapter 16 organization [chart](#) and the 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, and acting as subject matter experts (SMEs). Duties are further described in other ESM Chapter 16 sections.
- C. CM-Construction Engineering Group is responsible for oversight of all inspections of IBC Program work. SSI-required testing by third-party LBO-Approved agencies shall be at the constructor's expense. 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. CE Chief Inspector may, in writing, delegate or authorize other qualified organizations (Special Inspection Agencies) to perform such SI within the qualification limitations imposed by the Program.

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 building codes as amended by the LANL Standards rests with the ES-EPD Group Leader (EPD GL).
 - 1. EPD GL may rely on other organizations for aspects of such reviews, including 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.
 - 3. EPD GL delegates review assignment responsibility to team leaders.
 - a. *Guidance: A listing of approved (including deployed) reviewers is posted on the [Ch.16](#) and ES-Div webpages (SME Listing), Internal Only*
 - b. *Review assignments should be made to persons with the following knowledge and skills:*
 - i. *Knowledgeable in the ESM, adjunct LANL documents, and*

- ii. *building codes in the areas of review assigned*
- iii. *Knowledgeable in the specific area(s) of design or analysis involved*
- iv. *Capable of performing similar design or analysis*
- v. *Have the proper security clearance for access to sufficient information to perform the review;*
- vi. *Did not participate in development of the design;*
- vii. *Did not specify a singular design approach; and*
- viii. *Did not rule out certain design and analysis considerations*

This approach should also be used by FP-DO.

- 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 code-reviewing organizations, when granting permits for construction, and should do so for non-code reviewing organizations (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
CM-CE	LANL’s construction engineering (inspection) group
PE	LANL 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	Obtain FDAR initial determination on (1) whether the work is in IBC Program per Tables IBC-GEN-1 and 2, (2) whether repair or a higher work category per Preliminary Project Determination (Form 1) definitions, and (3) risk level per Figure 1 flowchart.	X	X	X
2	RE or PE	Complete Form 1 process for all non-repair work.	WP	WP	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 policy mandated (e.g., PRID) reviewers for LBO review per IBC Permitting Process (e.g., EPD desk instruction DI-ES-EPD-001, future) ²⁸	AR	X	X

²⁸ Ref. ESM Chapter 1 Section Z10 including Att C, 30-60-90% Deliverables. Also, Moderate Risk tasks normally require design per applicable ICC-ESR.

Step	Responsible Person	Action	Lowest Risk	Moderate Risk	Highest Risk
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 by IBC 1704.3) 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
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 and inspection plans(s) per LBO Permitting Procedure and checklist. This may also require (a) DPIRC designation Form 3, (b) a PRID printout or other document showing the required reviews, and (c) evidence of having satisfied those reviews (“no comment” statements, Design Review Record [DRR] document comment resolutions initiated by reviewers, or equivalent). ²⁹	WP	WP	X
9	LBO Permit Stamp Holder (ES-EPD)	Approve 100%, correct submission for approval to construct by applying approval stamp). ³⁰ Return one set of materials to project. Note: Documents must be sealed by the DPIRC before LBO approval. <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 in-shop special inspection/expense, then submitting a Certificate	X	X	X

²⁹ Building Dept approval ensures compliance with engineering change control procedures and municipal practice. Also, LANL Construction Inspection needs to be able to determine approved design quickly.

³⁰ 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
		of Conformance. Submit any requests to LANL; CM-CE requires two (2) weeks lead time.			
11	Constructor	Ensure only LBO-approved third party testing agencies are used (listing on ESM Ch.16). If the testing agencies they prefer to use are not on that list they may submit the necessary data to the LBO for evaluation (see IBC-TIA). Submit any requests to LANL; CM-CE requires two (2) weeks lead time.	X	X	X
12	Constructor	Begin work when authorized. 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. (Exceptions: grading, excavation, and storm water protection can proceed ³¹). Note: Only the LBO may authorize construction at risk by approving a variance with sufficient justification. ³² Project must follow the approved inspection plan(s), and Subcontractors submit “Statements of Responsibility with respect to Special Inspection” per IBC-IP App H.	X	X	X
13	CM-CE	Conduct or oversee inspections per Section IBC-IP, IBC Inspection Process.	Limited; see Figure 1 flowchart	X	X
14	PE	Route Form 5, Final Inspection Checklist and Certificate of Occupancy, to completion	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-2015 107.3.4)

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, 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 including Test & Inspection Plan, 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:
 - a. It is the DPIRC’s responsibility to communicate applicable requirements of this and other sections of the ESM to the delegated subcontractor

³¹ These activities are not normally inspected by LANL, while compaction, formwork, are rebar installation are. See ESM Ch. 1 Section Z10 for in-house design sealing exceptions.

³² Helps ensure safety of construction workers, limits LANL risk with unacceptable work.

though drawing notes and/or specifications to assure that the requirements are implemented in the subcontractor's design submittal.
Guidance: Many times exact details of implementation are based on the brands selected. The delegated sub-tier subcontractor is typically guided by the specification and drawings for the project, not the entire ESM.

- b. 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. Include TA and building regardless.
- c. 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). As with any design, they must be sealed by a registered engineer when required by ESM Ch.1 Section Z10 (“Design Outputs” article)].
- d. The DPIRC is also responsible for revising the submittal summary, Test & Inspection Plan, and the SSI as necessary to match the deferred design, then submitting these revised documents with the deferred design.
- e. Submissions must be reviewed/approved by the LBO prior to fabrication and installation. *Guidance: LBO reviewers will comment using a special delegated design review form attached to Spec Section 01 3300; 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) do or could affect code compliance including but not limited to fire, life safety, and/or egress; (b) change the scope; or (c) result in revised or new construction documents (i.e., are extensive enough to necessitate a Statement of Special Inspections revision, Design Revision Notice, DCF/DCP/ECN (change traveler) 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.³³
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.*

³³ IBC-2015 107.4. LBO re-approval for code impact because that is a primary purpose of the LBO review and 2009 IEBC Q&A document 1-19 suggests so; re-approval for new work documents because inspectors require work be performed to LBO-approved documents. LBO approval not required for every FCR/FCN incorporation or record drawing updating or as-built that occurs after work is complete.

8.0 Qualification of Suppliers and Manufactured Products for Structural and other Work³⁴

- 8.1. Under 104.9, 104.11, and the Special Cases section of the IBC (1705.1.1), proprietary products must be approved by the LANL Building Official (LBO). Structural examples are anchor channels and mechanical reinforcing steel splices/couplers.
- 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 ES report from ICC-ES or ER report from IAPMO valid for the code edition in use or newer edition³⁵) 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 footnote) are also acceptable at LANL except where specifically limited by the LANL Standards and Master Specs.³⁶
1. *LADBS and ICC reports (and others) are aggregated at ApprovalZOOM.com*
- 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 use³⁷. *Guidance: This may involve derating; e.g., using less tension and/or shear capacity than documented for a concrete anchor /embedding, using a mechanical rebar splice /coupler capacity that results in the final assembly 'performing' only within elastic region, etc.*

³⁴ 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 standards POC before submitting to LBO.]

³⁵ When a given product's research report isn't compliant with the applicable IBC edition, contact ESM POC for guidance

³⁶ LADBS Information Bulletin (IB) P/BC-2011-119 — *Alternate Building Materials/Products Approval Requirements* [LADBS IB website](#)

³⁷ 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.*

9.0 Temporary Facilities, Structures, and Building Systems & Components (Z1050)

- A. **Temporary** is defined as three years or less for LANL structures (includes facilities).³⁸
1. Exception: At time of writing, lighting protection impairment due to “temporary” roof railings was limited to 90 days (after which impairment must cease).³⁹
 2. 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).
 3. All safety requirements must be met.⁴⁰ Also, see additional requirements below.
- B. The term “**structures**” includes buildings and facilities. Wherever this subsection discusses structures, the same holds for facility systems and components.
- 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.⁴¹
- 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 Att. A LANL Building Code⁴² and elsewhere in ESM, primarily:
1. Siting: Get siting approval per [P 941](#), Site Planning when required.
 2. Clearances: Comply with underground utilities and overhead power line right-of-way requirements in ESM Civil and Electrical Chapters (also see Chapter 3 Civil Section G30 *part 9.0 and 10.0*).
 3. Signage: As described in ESM Chapter 4 Architectural, structure number signs are required when structure number is required above.
 4. Fire: If there will be adjacent structures, follow ESM Fire Chapter 2 for exposure acceptance criteria (e.g., [DOE-STD-1066-2012](#), *Fire Protection Appendix C*).
 5. Utilities meet governing codes but not amendments in ESM.

³⁸ 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. Att A LBC of this document, Section 108 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.

³⁹ NEC/NFPA 70 uses 90 days for temporary limit for power, for example.

⁴⁰ IBC-2015 3103.11, "...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."

⁴¹ Per PD902, Space Management

⁴² 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 (NMCBC based on IBC).

6. Structural: Foundations and anchorage must be provided and able to resist gravity loads and the forces, including overturning, caused by wind loads⁴³ determined in accordance with ESM Chapter 5 Section II. (Seismic forces for most temporary trailers do not need to be considered for anchorage.⁴⁴). Follow Standard Detail ST-Z1052 for soil augers (or provide plan and anchorage acceptable to LANL structural engineering); 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).
7. Electrical: Following NFPA (NEC/NFPA 70, etc.) is sufficient.
8. *Bonding: Electrical bonding to a ground system (as is done with fences/gates) is suggested for personnel safety reasons should lightning strike nearby.*
9. IBC technical: Meet IBC including Sections 108 and 3103, Temporary Structures.
10. IBC administrative: Meet requirements of Figure 1 flowchart.
11. Hazard: Relocatable installations other than ordinary business and industrial facilities (that present extraordinary hazards) must follow the ESM Chapter 1 Section Z10 (on *Design Goals: Safety*).
12. Non-occupied Subcontractor structures in an approved project lay-down area generally only need to meet Code as amended by LANL.

Exceptions for tents under 400 ft²: These are “Low Risk” in Figure 1 flowchart. They are exempt from the siting, clearances, and signage requirements above.⁴⁵ In lieu of IBC Ch 16 wind requirements (e.g., 1609), tents may be anchored against wind in accordance with the manufacturer’s recommendations (as a compensatory measure, they must be evacuated in high winds and following such events the anchorage must be inspected and loose or damaged anchorage repaired or replaced).

10.0 Sheds and Containers

- A. **Sheds** include storage buildings, garages, and carports made by Morgan, Tuff Shed, etc. **Containers** include intermodal transportainer⁴⁶ 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

⁴³ http://www.youtube.com/watch?v=EsKb17_pVJk&feature=player_embedded

⁴⁴ 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. Permanent foundation is not required because of temporary nature; when for many (5+) years, the benefits of a permanent foundation (full perimeter, etc.) including stability/frost heave, energy, rodent exclusion, etc. may exceed the initial cost.

⁴⁵ Tent size basis is that IBC waives permits up to 120 ft²; LANL wind conditions and care allow this larger size for these low-risk, low occupancy, very temporary structures. The formality of siting, clearances, and signage is impractical. Re the structural requirements, the use of tents, and therefore the occupancy in high winds is limited. In some cases (e.g., Environmental Programs), procedures prohibit work when high winds are present. Low Risk negates IBC admin requirement.

⁴⁶ aka SeaLand, SeaTrain, etc., generally built to ISO 1496

flat surface (ground, pad) normally do not require anchorage for PC-1 wind or seismic.⁴⁷

- 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.10.⁴⁸
- 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 determination⁴⁹ 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.

- 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 demo⁵⁰ (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 locations⁵¹ and temporary utilities (including lighting and power), (7) traffic management, and (8) waste segregation and management.⁵² (9) Generate any

⁴⁷ Volkman to Exner, 10/14/2010, "Copy of Approved MDA-B Cargo Container Anchor Calculations"

⁴⁸ 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

⁴⁹ An LBO-delegated function that may be overruled by same

⁵⁰ IEBC-2015 106.2.5

⁵¹ Also follow O&M Criterion 303, Utility Disconnects

⁵² 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).

structural calculations requested by LBO⁵³. LBO approval of (1)-(5) above and, if required, (9) prior to work initiation will generally be required.⁵⁴

- 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.⁵⁵ Address means of egress (NFPA 101/ IBC Chapter 10 egress evaluation or compliance statement).*
- F. *Guidance: There may be D&D information on the EFCOG webpage.*

12.0 History of Revisions

Rev	Date	Description	POC	RM
0	10/27/06	Initial issue. Included IBC and IEBC requirements formerly in Ch.1 Section Z10 rev. 3 and previous.	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 from the full program.	Tobin Oruch, <i>CENG-OFF</i>	Gary Read, <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 certificate. Final inspection form renamed, 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	Tobin Oruch, <i>CENG-OFF</i>	Larry Goen, <i>CENG-OFF</i>

⁵³ E.g., protection of adjacent structures from shock, supporting mobile equipment on buildings

⁵⁴ Satisfies LANL Building Official review requirement of IBC 105.1 and 3303.

⁵⁵ Often several small buildings will use the same riser and a transponder panel that connects to a main panel

		became 2&3; SSI need not include other inspections; transportainer anchorage; D&D moved in from Z10.		
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 Att A & B. FM1 became FM3. FM2&3 became 5&6, only required for Highest Risk.	Tobin Oruch, <i>ES-DO</i>	Larry Goen, <i>ES-DO</i>
8	5/22/14	Revised criteria for project determination, put in form; added reviewer qual guidance; combined checklist and CoO forms; addressed tents; other minor changes	Tobin Oruch, <i>ES-DO</i>	Larry Goen, <i>ES-DO</i>
9	3/30/15	Adopted 2015 I-codes. Refined in-scope definitions and High and Moderate Risk criteria. Added IAPMO ER use. Revised FM1 and 5. Other minor wording changes.	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 and Certificate of Occupancy

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