

ENVIRONMENT SAFETY AND HEALTH DIVISION BUILDING INSPECTION OFFICE



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**ENVIRONMENT SAFETY AND HEALTH
DIVISION BUILDING INSPECTION OFFICE**

**Project Review and Authorization Manual
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BIO Review and Authorization Manual				
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See BIO Website for Review and Authorization Manual Full Revision History				
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19	1/27/25	D Stickney	Added text to 2.1 "Project documents submitted for review must be editable and searchable pdf format. It must not require the use of optical character recognition (OCR) or other document manipulation to make a document searchable."	5
19	1/27/25	D. Stickney	Added text to 5.2.1 "Project documents submitted for review must be editable and searchable pdf format. It must not require the use of optical character recognition (OCR) or other document manipulation to make a document searchable."	20
19	4.5.25	M. Matthews	Added Definitions "Stakeholder" and Project Stakeholder"	39
19	4/9/25	M. Matthews	Reword Section. 5.2.8.2 Project Submittal Register.	27
19	4.17.25	M. Matthews	Added 2 F&O Stamps to page	38
19	4.28.25	M. Matthews	Added Section 5.2.1.4 Project Size Determination.	20, 21
19	4.29.25	M. Matthews	Added Section 5.2.8.6 Means and Methods vs A Design Change.	28
19	5.28.25	M. Matthews	Revision / Rewrite to 4.104.11.1.&.2 exemption and equivalency process.	13, 14
19	5.28.25	M. Matthews	Update Adopted Codes	9

19	7.15.25	M. Matthews	5.1.1 & 5.1.2 Update electrical systems, Add Language relating to Generators.	17
19	9.25.25	M. Matthews	Added to Table 2 – California Existing Building Code, Added Appendix J, Added Wildland Urban Interface Code, Calgreen Code.	9
19	10.10.25	M. Matthews	4.101.0 Updated year for codes	10
19	10.10.25	M. Matthews	2.2 Added to Listings	6
19	10.10.25	M. Matthews	2.3 Updated Matrix Table	7
19	10.10.25	M. Matthews	4.103 added Explosives Safety AHJ	12
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19	10.10.25	M. Matthews	5.1.1 Updated wording Generators Update	17
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19	10.10.25	M. Matthews	Appendix A Add Project Stakeholder	38
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19	10.20.25	M. Matthews	5.2.3.9 & 10 Change Initial Review to 5 days all projects.	23
19	10/21/25	M. Matthews	4.101.1.2 Added statement for Davis Bacon Act.	10
19	10/22/25	M. Matthews	4.102.7.8 & 4.102.7.9 Existing Buildings Code Added Urban Wildland Interface Code added reference.	11
19	10/24/25	M. Matthews	5.3.6.2, 5.6.3, 5.6.11 wording update to match handout.	31
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Plan updates are to be communicated and/or distributed to the following, where relevant:

- ESH Website
- ESH Building Inspection Office Reviewers
- ESH Other Department Reviewers
- F&O DCS
- F&O Strategic Capital Planning
- SLAC ESH Coordinators
- SLAC Procurement
- Other Directorate Project Managers

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1. Overview

1.1 ESH Overview

The [ESH Building Inspection Office \(BIO\)](#) provides review and authorization for construction, modifications, renovations, deactivation, decommissioning, use, occupancy, alteration and retrofits of all buildings, structures and areas at SLAC. BIO draws its foundational requirements from 10 CFR 851 (“Worker Safety and Health Program”) as modified by the SLAC RWG and [DOE Order 420.1C](#) (“Facilities Safety”), thereby reinforcing SLAC's commitment to safeguard its employees, scientists, visitors, and infrastructure.

This document complies with the SLAC [ESH Project Review Procedure](#) for conventional (non-experimental) projects and / or conventional aspects of experimental projects. Refer to BIO triggers in sections 2 and 5 of this document.

When the ESH Project Review Procedure threshold review determines that there are conventional aspects of a proposed experimental activity, then the conventional aspects constitute a conventional project that is governed by section 3.3 of the procedure. This occurs, for example, when experimental equipment will be attached to a building structure or connected to one or more utilities or building systems (see [ESH Threshold Review Form](#)). The conventional aspects project is subject to the review and authorization requirements of this document.,

Section 4 of this document entitled “Administration” defines the administrative requirements of BIO. The format is loosely aligned with (unadopted) Chapter 1 requirements of the California Building Code. Five subsections of the administrative requirements are expanded in Section 5 to provide detailed information about the most important BIO processes and their requirements.

1.2 BIO Website The BIO Website can be found at <https://www-group.slac.stanford.edu/esh/groups/bio>. Many documents can now be found on the BIO Website. Click the specific button to see documents related to that specialty. Buttons are in the internal website and need SLAC Badge Access. The files listed on the left side of the website are public accessible documents.

1.3 Experimental Program now moved to the ESH Experimental Website.

2. Scope

2.1 ESH Building Inspection Office Review and Authorization

BIO review and authorization is required on all SLAC construction projects as described in section 5.1.1 and alternately work that does not require review and authorization is described in section 5.1.2. To determine whether a BIO review and authorization is required for a project, refer to the [BIO Review Triggers](#) and contact the Building Inspection Office (650-926-4363) for clarification or guidance.

The mechanism used to submit a project for Building Inspection Office review is the online [BIO Plan Review System](#), also known as PRS. Online tutorials for new users of PRS are located on the homepage of the system. Using this tool, projects are submitted for review by the requester, typically a Project Manager (PM) or their designee. Once the requester and the subject matter experts resolve all open comments, the project is authorized by the BIO Plan Review Coordinator. Project documents submitted for review must be editable and searchable in pdf format. It must not require the use of optical character recognition (OCR) or other document manipulation to make a document searchable.

NOTE: In this manual the term Project Manager or PM refers to a person who has been assigned project

manager responsibilities. This person's title or role could be *a responsible person, principal investigator, project manager*, or other. Individuals who perform duties on behalf of a project manager are also referred to as PMs in this manual.

2.2 Representative Functions of the Building Inspection Office

Oversees the BIO and ESH review of ESH Manual Chapter 1 Project Review Procedure for conventional (non-experimental) construction projects to provide reasonable assurance of compliance with required building codes and standards, and ESH external mandates. Reviews aspects (responsible organization):

- Title 24 California Building, Plumbing, Mechanical, Fire, & Energy Codes, the National Electrical Code, and NFPA 101 Fire Life Safety Code (BIO)
- Electrical Safety (ESH)
- Structural/Seismic (BIO)
- Sustainability (BIO and F&O)
- ADA (BIO)
- SLAC Structural Authority (F&O & BIO)
- Pressure Systems Safety (ESH)
- Industrial Safety (OSHA and Cal/OSHA) (ESH)
- Construction Safety (ESH)
- Industrial Hygiene (ESH)
- Air Quality (ESH)
- Hazardous Materials (ESH)
- Waste Management (ESH)
- Environmental Protection (ESH)
- Radiation Protection (ESH)
- NEPA (ESH)
- Plants/Wildlife (ESH)
- Wastewater and Storm Water (ESH)
- Spill Prevention Controls and Countermeasures (ESH)
- Environmental Restoration (ESH)
- Site Security (ESH)
- Explosive Safety (ESH)

Other Building Inspection Office Responsibilities:

- Perform Authority Having Jurisdiction (AHJ) operational responsibilities as assigned by the DOE Site Office Manager element and SLAC Director.
- Provide interpretations of required building codes and standards.
- Work with the SLAC Fire Marshal as fire protection and life safety AHJ to provide reasonable assurance of compliance with design and construction aspects of California Fire Code and other external mandates.
- Work in conjunction with SLAC Electrical Safety Officer as electrical safety AHJ to provide reasonable assurance of compliance with design and construction aspects of NFPA 70E.
- Work in conjunction with SLAC electrical installations AHJ to provide reasonable assurance of compliance with NFPA 70 NEC and the California Electrical Code, whichever is stricter.
- Work with the Explosive Safety AHJ in conjunction to provide reasonable assurance of compliance with design and construction aspects of California Fire Code and other external mandates.
- Conducts quality check of Statement of Work documents, as referred by Procurement, to verify alignment with BIO and ESH requirements.
- Work closely with SLAC CMs and PMs to provide progress inspections during various stages of construction for compliance with applicable building codes and construction standards.
- Provide final inspection and authorization for occupancy, in conjunction with SLAC Fire Marshal, the Explosives Safety AHJ, the SLAC electrical installations AHJ, and the SLAC Electrical Safety Officer AHJ.
- Keeps records of inspections and approvals for future use and accountability.

2.3 Project submittal review by SLAC BIO/ESH Subject Matter Experts (SMEs) review for code compliance with SLAC external mandates and internal policies, including various State and Federal regulations and ESH Manual Chapters. Primary reviewers and their specific compliance regulation responsibilities are Listed in Table 1 below. Other reviewers listed below oversee shared resource systems.

Table 1 – Building Inspection Office Plan Review Matrix

ENTITY PERFORMING REVIEW	NFPA CODES	CBC CPC CMC	NFPA 70 NEC	CA FIRE CODE	Access-ibility	29 CFR 1910, 1926 (OSHA)	CAL/OS HA CCR Title 8	OTHER REVIEW
BIO Plan Reviewers M. Matthews, K. Brenton, 4 Leaf SME	X	X	X	X	X	X		X ^{3,4,5,13,14}
Fire Marshal Office – R. Kerwin, S. Coleman, T. Bermudez, 4 Leaf SME,	X	X ¹	X	X	X ²			X ¹⁷
Explosives Safety Ian Evans	X	X		X		X		X ⁵
Electrical Systems – NFPA 70 D. Stickney, L. Primas			X			X		X ¹⁶
Electrical Safety Officer - NFPA 70E K. Jobe, L. Primus								X ¹⁶
Electrical Power Department QA/QC A. Krishna			X					X ¹⁶
Structural Review B. Brunette, 4 Leaf SME -K Chen		X ³						
Pressure Systems Program Manuel Gonzalez								X ^{4,15}
Construction and Industrial Safety G. Johnson,						X (1910 & 1926)	X	X ⁵
Industrial Hygiene M. McDaniel, R. Razik						X (1910 & 1926)	X	X ¹¹
Air Quality P. Cable, M. Coladonato								X ⁶ X ⁷
Hazardous Materials A. Alexiev				X				X ⁸
Waste Management A. Alexiev, A Leung	X			X				X ^{16,4,6,7,9}
Waste Minimization M. DeCamara, C. Daqiq								X ¹²
Environmental Compliance M. Coladonato, H. Benz								X ⁹
Radiation Protection H. Brogonia, J. Blaha, J. Liu								X ⁴
OSHA G. Johnson, R. Razik						X	X	
NEPA M. Grooms, M. Coladonato								X ¹⁸
Plants/Wildlife M. Coladonato								X
Wastewater and Storm Water (SWPPP) H. Beaz								X
Spill Prevention Controls and Countermeasures C. Daqiq								X ¹⁹

Biological Resource Protection A. Ng,									X
Security S. Ovrahim, B. Hernandez									X

Table 1 Notes:

1. Review limited to CBC Life Safety and Fire Protection considerations.
2. Review Limited to Accessibility requirements for Fire Alarm System components.
3. Review of Structural Plans, Specs, Calcs, for CBC compliance and for compliance with SLAC *Seismic Design Specification for Buildings, Structures, Equipment and Systems: 2023* (SLAC-I-720-0A24E-001-R007)
4. 10 CFR 851, as modified by RWG Contract
5. SLAC ESH Manual
6. National Emission Standards for Hazardous Air Pollutants (NESHAP)
7. Bay Area Air Quality Management District (BAAQMD)
8. SLAC ESH Manual Chapter 40 – Hazardous Materials
9. Spill, Hazard Material, PCB, Hazard Waste, Excavation and Storm water Chapter, Spill Prevention Controls and Countermeasures (SPCC) and the Storm Water Prevention Program (SWPPP). See SLAC ESH Manual Chapters 16, 17, 22, 26, 30 and 43.
10. Shared area or system managers. Divisional Safety Coordinators included-for advisory, review and coordination purposes.
11. CGA P-1 – 2000 Safe Handling of Compressed Gases in Containers
12. SLAC ESH Manual Chapter 22; DOE Orders 450.1A and 430.2B
13. Damage Assessment and California Safety Assessment Program (SAP)
14. Pressure Vessels, Process Piping, Vacuum Systems, ASME B31 series, SLAC ESH Manual Chapter 14
15. ANSI/IEEE C-2, National Electrical Safety Code (Underground 12kV) and NFPA 70E, Electrical Safety in the Workplace.
16. DOE-O-420.1C, Facility Safety, FSR Chapter 2, Fire Protection (See SLAC EHS Manual Chapter 12)
17. National Environmental Policy Act (NEPA) - 42 U.S.C. 4321 et seq. (see SLAC ESH Manual Chapter 22)
18. Spill Prevention, Controls, and Countermeasures (SPCC) - 40 CFR 112 (also see SLAC ESH Manual Chapter 16)

3. Adopted Codes and Standards

This manual describes acceptable methods for verifying construction project compliance with required building codes and standards, external mandates, and SLAC Policies. The purpose of this manual is to promote uniform plan review criteria and to guide the evaluation of SLAC construction projects for compliance with Users of this manual should bring-conflicts between overlapping codes to the attention of the SLAC Building Code Official, cognizant SLAC AHJ or responsible external mandate SME for interpretation and resolution. (In general, the more specific or stringent requirement shall be selected.)

Table 2 – Codes and Standards Adopted by SLAC effective Jan 1, 2026

BIO Adopted Codes and Standards	Responsible Person	Edition
DOE Order 420.1.C DOE Order 420.1C, Facility Safety , Attachment II, Facility Safety Requirements, Chapter 2, Fire Protection ¹	S. Coleman	Chg. 3 (LtdChg) (11/14/2019)
DOE Standard 1066-2016, Fire Protection	S. Coleman	2016
California Building Code and Appendix J	M. Matthews	2025
California Existing Building Code	M. Matthews	2025
California Plumbing Code	M. Matthews	2025
California Mechanical Code	M. Matthews	2025
Architectural Barriers Act Accessibility Guidelines (ABA), Section 504 of the Rehabilitation Act of 1973, where applicable, Chapter 11 of CBC, 2010 ADA Standards for Accessible Design.	Kevin Brenton	2010 ADA & ABA & CBC Chapter 11
California Energy Code (aka T24 Energy standards)	R. Atapattu	2025
California Green Building Code	R. Atapattu	2025
California Electrical Code (see table note 5)	K. Jobe	2025
NFPA 70, National Electric Code	D. Stickney	2026
NFPA 70E, Electrical Safety in the Workplace	K. Jobe	2024
California Wildland Urban Interface Code	M. Matthews / S. Coleman	2025
California Fire Code	S. Coleman	2025
NFPA 1, Fire Code	S. Coleman	2024
NFPA 101, Life Safety Code	S. Coleman	2024
All Other NFPA Standards Concerning Fire Protection and Emergency Management table note 2. Does not include NFPA 70B	S. Coleman	Most recent published edition, up to 2023
Subset of Title 8 (Cal/OSHA Regulations), as per ESH Manual Chapters	ESH Division Director or Designee	Current
SLAC ESH Manual, with referenced standards ^{3,4}	Various Program Owners	Current
SLAC-1-720-0A24E-001 Seismic Design Specifications for Buildings, Structures, Equipment, And Systems	Bryson Brunette	Current

Table 2 Notes:

1. As contractually adopted through SLAC 2021 [Site Compliance Plan for Order 420.1C, Change 3](#). SLAC also operates directly under the legal requirements of [10CFR 851, as modified by the RWG contract](#).
2. NFPA Fire Protection and Emergency Management standards not listed above are applied as of the January 1st of the year of the Edition, except for NFPA 5000 (NFPA Building Code), which is not adopted by SLAC.
3. Applicable standards cited in the SLAC ESH Manual are included in the review process.
4. Note that referenced standards cited in CBC Chapter 35 are used at SLAC in addition to the ones cited in the SLAC ESH Manual (and this document). Where conflicts arise, the SLAC reference takes precedence.
5. NEC is primary and the California Electrical Code is secondary. The most stringent requirement shall apply.

Codes of Record. Editions of required building codes and standards in effect at SLAC at the time project design criteria are approved and determines the codes of record for that project. For long duration projects that bridge code cycles, more recent editions of specific codes can be substituted upon mutual agreement of SLAC

Building Official, the responsible AHJ, and the PM or Project Director. All other projects must meet the current codes and standards listed above.

The Building Official shall maintain a list of codes of record for major projects, including those for which the codes of record have been frozen. See the Project Codes of Record summary on [this webpage](#):

4. Administration

Administrative requirements. The following governing administrative requirements for BIO follow the format for Chapter 1, “Administration,” of the California Building Code. The CBC Chapter 1 Section numbers have been retained for ease of comparison, with the chapter number prefixed only before the major section headings. Sub-section titles have been changed only as necessary to reflect specific SLAC usage. CBC Chapter 1 sections that are inapplicable to BIO are retained but labeled as “Reserved.” Five sections requiring in-depth explanation of SLAC BIO procedures and requirements are referred to Chapter 5.

SECTION 4.101 GENERAL

4.101.1 Title. Based on operational responsibilities assigned to SLAC by the DOE SLAC Site Office Head through [DOE Order 420.1C, Change 3](#), SLAC has adopted the 2025 Edition of the California Building, Plumbing, Mechanical, Electrical, Fire, Existing Building, Wildland Urban Interface Code and Energy Codes as well as the 2026 Edition of National Electric Code and the 2024 Edition of the Fire Life Safety Code (NFPA 101). Chapter 1 of the California Building, Plumbing, Mechanical, Electrical, Existing Building, Wildland Urban Interface and Fire Codes have **not been** adopted. No parts of Title 24 other than those listed above have been currently adopted at SLAC.

4.101.1.2 Davis Bacon Act. Most work over \$2000 shall comply with the Davis Bacon Act. Contact SLAC Davis-Bacon compliance staff for further information.

4.101.2 Scope. The provisions of this manual shall apply to the construction, alteration, movement, enlargement, replacement of equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures.

4.101.2.1 Appendices. Provisions in the appendices of the building codes shall apply including Appendix J.

4.101.3 Intent. The purpose of this manual is to establish the minimum requirements to safeguard the public health, safety and general welfare through structural strength, means of egress facilities, stability, sanitation, adequate light and ventilation, energy conservation, and safety to life and property from fire and other hazards attributed to the built environment and to provide safety to firefighters and emergency responders during emergency operations.

4.101.4 Referenced Codes. The other codes listed in Sections 4.101.4.1 through 4.101.4.9 and referenced elsewhere in this manual shall be considered part of the requirements of this manual to the prescribed extent of each such reference.

4.101.4.1 Electrical. The provisions of the National Electric Code (NFPA 70) and the California Electrical Code (CEC) shall apply to the installation of electrical systems, including alterations, repairs, replacement, equipment, appliances, fixtures, fittings and appurtenances thereto. **Where NEC and CEC differ, the most stringent requirements shall apply.**

4.101.4.2 Gas. The provisions of the California Plumbing Code shall apply to the installation of gas piping from the point of delivery, gas appliances and related accessories as covered in this manual. These requirements apply to gas piping systems extending from the point of delivery to the inlet connections of appliances and the installation and operation of residential and commercial gas appliances and related accessories.

4.101.4.3 Mechanical. The provisions of the California Mechanical Code shall apply to the installation, alterations, and replacement of mechanical systems, including equipment, appliances, fixtures, fittings and/or

appurtenances, including ventilating, heating, cooling, air-conditioning and refrigeration systems, incinerators and other energy- related systems.

4.101.4.4 Plumbing. The provisions of the California Plumbing Code, shall apply to the installation, alteration, and replacement of plumbing systems, including equipment, appliances, fixtures, fittings, and appurtenances, and were connected to a water or sewage system and all aspects of a medical gas system.

4.101.4.5 Accessibility. Plans shall show all accessible elements as required in the governing accessibility codes. SLAC is a federally funded campus in which the Architectural Barriers Act (ABA) would be the primary code of record. Please contact the Building Inspection Office for further guidance.

4.101.4.6 Fire Prevention. The provisions of the California Fire Code and NFPA 1 shall apply to matters affecting or relating to structures, processes and premises from the hazard of fire and explosion arising from the storage, handling or use of structures, materials or devices; from conditions hazardous to life, property or public welfare in the occupancy of structures or premises; and from the construction, extension, alteration or removal of fire suppression and alarm systems or fire hazards in the structure or on the premises from occupancy or operation. NFPA Standard 241 also covers construction oversight and is jointly applicable with Fire Code requirements.

4.101.4.7 Sustainability Must be included in designs per SLAC Division 1 Section 018113 Sustainability Design Requirements. This section is enforced by the [F&O Sustainability Department](#).

4.101.4.7.1 Energy As required by DOE-O-430.2B, all major projects (>\$5 million) at SLAC shall meet or exceed a 30% energy reduction compared to ASHRAE 90.1, 2004. The reference for this standard is Sec. 109 Federal Building Inspection Standards, Sec 305(a) of the Energy Conservation and Production Act, 2005. This section is enforced by [F&O Sustainability Department](#).

4.101.4.7.2 Solar California energy code requires solar ready areas for new construction. Plans shall include information on solar locations and assemblies supporting solar. At a very minimum the area of solar panels shall be shown on the plans. Any piping from the arrays to the solar equipment shall include empty raceways as part of the roof area being solar ready. In Addition, [F&O Sustainability Department](#) requires a 7.5% renewable energy system above the California Code.

4.101.4.7.3 Electric Vehicle Charging, Plans shall include electrical vehicle charging as part of new projects and be evaluated in all other projects regardless of size. Contact the [F&O Sustainability Department](#) for specific guidance and means of compliance for each conventional project.

4.101.4.7.8 Existing Building. This code establishes what codes and standards exist AFTER the building is built and how it is maintained. This code is used with the California Building Code and other referenced codes above.

4.101.4.7.9 Wildland Urban Interface. Code establishes code restrictions on new buildings within an Urban Wildland Interaction Environment designated areas of San Mateo County.

SECTION 4.102 APPLICABILITY

4.102.1 General. Where, in any specific case, different sections of this manual specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable.

4.102.2 Other laws. The provisions of this manual shall not be deemed to nullify any provisions of local, state or federal law.

4.102.3 Application of references. References to chapter or section numbers, or to provisions not specifically identified by number, shall be construed to refer to such chapter, section or provision of this manual.

4.102.4 Referenced codes and standards. The codes and standards referenced in this manual shall be considered part of the requirements of this manual to the prescribed extent of each such reference. Where differences occur between provisions of this manual and referenced codes and standards, the provisions of this manual shall apply.

4.102.5 Partial invalidity. In the event that any part or provision of this manual is held to be illegal or void, this shall not have the effect of making void or illegal any of the other parts or provisions.

4.102.6 Existing structures. The authorized occupancy of any structure existing on the date of adoption of this manual shall be permitted to continue without change, except as is specifically covered in this manual, the NFPA 101 Life Safety Code, All California Building Codes, Existing Building Code the California Fire Code, or as is deemed necessary by the Building Code Official for the general safety and welfare of the occupants and the public.

SECTION 4.103 Building Inspection Office (BIO)

4.103.1 Creation of Enforcement Agency. BIO is an organization within SLAC operating primarily through the Code Compliance & AHJ Services (CCAS) group of the SLAC ESH Division. Its enforcement operational responsibilities are derived from the SLAC Building Code Official (BCO), Fire Marshal (FP-AHJ) and Electrical Safety Officer (ESO-AHJ), Electrical Safety Officer NFA70 E (ESO-AHJ) , Explosive Safety (AHJ) who receive those authorities from the head of DOE SLAC Site Office (SSO) through the SLAC Director under the provisions of DOE Order 420.1C. Additional responsibilities for enforcing other SLAC external ESH mandates are received through the SLAC Chief Safety Officer, who is also the head of the ESH Division. An alternate term for Building Code Official is Building Official (BO).

4.103.2 Reserved

4.103.3 Deputies. In accordance with the prescribed procedures of SLAC and with the concurrence of the DOE, BIO shall have the authority to appoint deputies, the related technical officers, inspectors, plan examiners and other employees. Such employees shall have powers as delegated either by the SLAC Chief Safety Officer, SLAC AHJs or by the CCAS head.

4.103.4 Approved Fabricators. The process of approving an “Approved Fabricator” there are times when a project wants to use Approved Fabricators instead of sending 3rd party special inspectors to different states to view work in progress. This would allow the fabricator to use their own certified special inspectors to verify compliance with the codes similar to 3rd party inspectors. To be approved they must follow the Approved Fabricators handout which details the process – located on the BIO website under Building.

SECTION 4.104 DUTIES OF BUILDING INSPECTION OFFICE (BIO)

4.104.1 General. BIO is authorized and directed by the SLAC Chief Safety Officer to enforce the provisions of this manual ([BIO R2A2](#)). BIO shall have the authority to render interpretations of this manual and to adopt policies and procedures in order to clarify the application of its provisions. Such interpretations, policies and procedures shall be in compliance with the intent and purpose of this manual. Such policies and procedures shall not have the effect of waiving requirements specifically provided for in this manual.

4.104.2 Submittals and construction authorization. BIO shall receive project submittals, review construction documents and provide construction authorization for the erection, alteration, addition, demolition and moving of buildings and structures. Inspect the premises for which such construction authorization has been issued and enforce compliance with the provisions of this manual.

4.104.3 Reserved

4.104.4 Inspections. The BIO inspector or approved designee (see Section 5.3.3) shall make all of the required inspections, or BIO shall have the authority to accept reports of inspection by approved agencies or individuals. Reports of such inspections shall be in writing and certified by a responsible officer of such approved agency or by the responsible individual. BIO is authorized to engage such expert opinion as deemed necessary to report upon unusual technical issues that arise, subject to the approval of the appointing authority.

4.104.5 Reserved

4.104.6 Reserved

4.104.7 Department records. BIO shall keep official records of project submittals received, construction authorization and certificates issued, reports of inspections, and notices and orders issued.

All documents uploaded to PRS are archived in the PRS database and remain available for future reference by anyone logged into the SLAC network.

Project Managers: If project documents need to be updated during BIO/ESH review (in response to reviewer comments, for example), the PM should add the word "SUPERSEDED" to the old document title and upload the new superseding document to PRS for BIO/ESH review.

BIO-stamped documents are legal documents that must not be modified or updated. If editorial, administrative, or other non-technical are required, the PM must supersede the original documents and submit the superseding documents to BIO for BIO/ESH review and re-authorization. This review ensures that require codes and ESH program requirements continue to be met.

- *Although there is a "Replace File" option in the PRS "Edit Project" tab, this function is for BIO Admin use only and should not be used by Project Managers or other PRS users.*
- *The PM should inform BIO if a fast turnaround is required. BIO will expedite the review if possible, however there may be circumstances in which the requested review date cannot be met.*

4.104.8 Liability. From the Stanford Employee Manual Section, the employees charged with the enforcement of the requirements of this manual are Stanford employees and are covered under Stanford employee indemnification policy while acting for SLAC in the performance of their duties. (See [indemnification](#).)

4.104.9 Approved materials and equipment. Materials, equipment and devices accepted by BIO shall be constructed and installed in accordance with such acceptance.

4.104.9.1 Used materials and equipment. Used equipment and devices shall not be reused unless accepted by BIO.

4.104.10 Modifications. Whenever there are practical difficulties involved in carrying out the provisions of this manual, BIO shall have the authority to grant routine modifications for individual cases provided that BIO shall first find that special individual reason makes the strict letter of this manual impractical and the modification is in compliance with the intent and purpose of provisions of this manual and that such modification does not lessen health, accessibility, life and fire safety, or structural requirements. The details of action granting modifications shall be recorded and entered in BIO files.

4.104.11 Alternative Means and Methods (AMM) are for materials, design and methods of construction and equipment. An alternative material, design or method of construction requires an equivalency request that shall be referred to the head of DOE SSO (SLAC Site Office using the process outlined below. All Equivalency or Exemption must be done using this process – SLAC BIO cannot approve without SLAC Site Office.

4.104.11.1 Equivalency. An equivalency is the use of alternate means and methods to comply with a required building code or standard

4.104.11.2 Exemption. An exemption is outright relief from a required building code or standard.

SLAC has established a formal process for submitting AHJ / BCO Equivalency or Exemption requests, SLAC will utilize an escalation framework through the Deputy Director for Operations office, which will be incorporated in this ESH procedure. The framework will encompass the high level steps below.

Process for AHJ/BCO Equivalency and Exemption Requests

1. Identify the Requirement and Need for deviation
 - a. Based on the applicable code, standard or DOE Order, the SLAC AHJ/BCO provide justification for why the requirement cannot be met or why an alternative method is proposed,

2. Prepare the Request
 - a. Identify the type of request (equivalency or exemption).
 - b. Include directive citation, impact of facility or project, justification, and duration.
 - c. For equivalencies: describe alternate measures and include a vulnerability assessment demonstrating equivalent protection or performance
 - d. For Exemptions: include a risk assessment justifying any increased risk and outlining mitigation measures.
 - e. Define any applicable resolution milestones.
3. Internal Review and Coordination
 - a. The draft proposal will be routed through internal review channels, including relevant subject matter experts, ESH, legal, operational leadership and SSO for their consideration and input.
 - b. Secure endorsements by the Deputy Director for Operations.
4. Transmittal to Site Office
 - a. Submit a formal transmittal memo, with the complete request package, to the SLAC site Office from the office of the Deputy Director for Operations.
5. Review and Determination by Site Office
 - a. The Site Office will review the request and issue formal written approval or disapproval.
 - b. Approved requests will be retained in appropriate records and shared with stakeholders for implementation.

Although the laboratory anticipates infrequent use of this process (e.g., two documented instances in the past two years), a formalized and consistent approach ensures traceability, compliance and coordination with the SLAC Site Office.

It is the responsibility of the PM to prepare and submit to the Building Official the exemption request. For requests that are forwarded to the DOE secretarial program office, the Project Manager is responsible for responding to any questions or concerns from the DOE. Any changes to the request must be approved by the Building Official before resubmittal to DOE.

4.104.11.3 Research reports. Supporting data, where necessary to assist in the approval of materials or assemblies not specifically provided for in this manual, shall consist of valid research reports from approved sources.

4.104.11.4 Tests. Whenever there is insufficient evidence of compliance with the provisions of this manual, or evidence that a material or method does not conform to the requirements of this manual, or in order to substantiate claims for alternative materials or methods, BIO shall have the authority to require tests as evidence of compliance to be made at no expense to SLAC, ES&H or BIO. Test methods shall be as specified in this manual or by other recognized test standards. In the absence of recognized and accepted test methods, the building code official shall approve the testing procedures. Tests shall be performed by an approved agency. Reports of such tests shall be retained by BIO.

SECTION 4.105 CONSTRUCTION AUTHORIZATIONS

Refer to Section 5.1

SECTION 4.106 RESERVED

SECTION 4.107 SUBMITTAL REQUIREMENTS

Refer to Section 5.2

SECTION 4.108 TEMPORARY STRUCTURES AND USES

4.108.1 General. The Building Code Official is authorized to issue the construction authorization for temporary structures and temporary uses such as temporary tents and TCOs. Such construction authorization shall be limited as to time of service but shall not be certified for more than 180 days. BCO is authorized to grant extensions for demonstrated cause.

4.108.2 Conformance. Temporary structures and uses shall conform to the structural strength, fire safety, means of egress, accessibility, light, ventilation and sanitary requirements of this manual as necessary to ensure public health, safety and general welfare.

4.108.3 Temporary power. BIO is authorized to give permission to temporarily supply power, and to use power in part of an electric installation before such installation has been fully completed and the final certificate of completion has been issued. The part covered by the temporary certificate shall comply with the requirements specified for temporary power in NFPA 70 National Electrical Code.

4.108.4 Termination of approval. BIO is authorized to terminate such construction authorization for a temporary structure or use and to order the temporary structure or use to be discontinued.

4.108.5 Plancheck Submittal for Trailers, Conex and Conex w/ office. See BIO website for most current requirements.

4.108.6 Plan Check Submittal Handouts – See BIO website for current versions of all plancheck handouts.

SECTION 4.109 RESERVED

SECTION 4.110 INSPECTIONS

Refer to Section 5.3

SECTION 4.111 CERTIFICATES OF OCCUPANCY OR COMPLETION

Refer to Section 5.4

SECTION 4.112 SERVICE UTILITIES

4.112.1 Connection of service utilities. No person shall make connections from a utility, source of energy, fuel or power, or a waste system or sewer system to any building or system that is regulated by this manual, until BIO has accepted associated design work. The connection work shall be conducted by or directly overseen by Facilities and Operations.

4.112.2 Temporary connection. BIO shall have the authority to authorize the temporary connection of the building or system to the utility source of energy, fuel or power, or a water system or sewer system.

SECTION 4.113 DEACTIVATION AND DECOMMISSIONING

Refer to Section 5.5

SECTION 4.113 RESERVED

SECTION 4.114 RESERVED

SECTION 4.115 RESERVED

SECTION 4.116 UNSAFE STRUCTURES AND EQUIPMENT

4.116.1 Unsafe Conditions. Structures or existing equipment that are or hereafter become unsafe, insanitary or deficient because of inadequate means of egress facilities, inadequate light and ventilation, or which constitute a fire hazard, or are otherwise dangerous to human life or the public welfare, or that involve illegal or improper occupancy or inadequate maintenance, shall be deemed an unsafe condition. Unsafe structures shall be taken down and removed or made safe, as BIO deems necessary and as provided for in this section.

4.116.2 Record. BIO shall cause a report to be filed on an unsafe condition. The report shall state the occupancy of the structure and the nature of the unsafe condition.

4.116.3 Notice. If an unsafe condition is found, BIO shall provide the building manager, agent or person in control of the structure with a written notice that describes the condition deemed unsafe and specifies the required repairs or improvements to be made to abate the unsafe condition, or that requires the unsafe structure to be demolished.

4.116.4 BIO shall include the Excess Facility Program as part of the notice. Use of the program to remove or demolish a trailer or unsafe structure shall follow all steps in the excess Facility Program guidelines.

5. Review and Authorization Requirements

5.1. PROJECT AUTHORIZATION

All projects submitted to BIO follow the same review process, but the documents may be stamped (See Appendix C) differently. Projects that are submitted as feasibility studies, conceptual designs, preliminary designs, or any other progress submittals prior to procurement, or construction will receive a conditional authorization to proceed to the next phase. Projects submitted for procurement, fabrication, or construction will receive authorization to proceed.

5.1.1 Required. Prior to initiation of any project, the requester shall review the Building Inspection Office Review Process Triggers to confirm that an activity requires BIO/ESH review and authorization. BIO triggers are adapted from the CA Building Code Administrative Chapter 1 requirements for permit systems. A more detailed discussion of thresholds and exemptions may be found below in Sections 5.1.1 – 5.1.7.

Any requester who intends to construct, enlarge, alter, move, decommission, demolish, or change the occupancy of a building or structure, or to erect, install, enlarge, alter, remove, convert or replace any electrical, gas, mechanical or plumbing system, the installation of which is regulated by 10 CFR 851 (as modified by RWG Contract), shall first seek authorization from BIO.

The Review Process Triggers form provides the formal definitions of conventional construction threshold triggers. The following examples are offered as an additional aid for situations commonly encountered at SLAC.

Examples of facility changes and other activities that require BIO review & authorization:

- Construction of new buildings and facilities.
- Installation, modifications, alterations, additions, to any existing buildings, facilities, equipment, devices, or systems within the scope of the California Building Code, California Fire Code, National Electrical Code, California Plumbing Code, California Mechanical Code, California Energy Code, Accessibility ABA, ADA, CBC 11B, UFAS, NFPA, ASCE, ASTM, ASHRAE, ACI, SMACNA, ANSI, IAPMO, NRCA, AWS, or other referenced standard.
- The attachment/support and interface of scientific equipment and devices to building structures and building systems within the scope of the above codes e.g.: laser tables, Portable Clean Rooms, Racks, Pumps, etc.
- Initial installation or modification of piping or tubing used to deliver highly toxic or reactive (e.g., unstable, pyrophoric, water reactive, etc.) fluids (gaseous or liquid) from a source container to the process/research

equipment point of connection.

- Initial installation or modification of piping or tubing used to deliver compressed air, inert gases or other gases transferred through site utility systems to a process/research equipment point of connection.
- Deactivation or decommissioning of out-of-service equipment and/or facilities.
- Installation, modification, repair or relocation of trailers and mobile offices.
- Modification of conventional equipment installed to support buildings such as substations, boilers, industrial hoods, tanks, and cooling towers.
- Installation or major renovation of roofing systems (does not include minor patch work for maintenance).
- Replacement or new sidewalks and roadways (does not include patching or minor repair projects of less than 10 square feet).
- Installation or modifications to underground utilities.
- Installation of other civil engineering construction projects.
- Installation of temporary tents/structures
- Parking lot striping or restriping, roadway, or crosswalk striping
- Installation of temporary trailer, containers, office/storage containers
- Installation of temporary power on construction sites
- Subcontractor-provided fuel powered generators, light towers, welders or similar equipment used in a specific location for a duration exceeding Thirty (30) workdays. If the equipment is in service greater than 30 days, it must have a BIO Authorization. This equipment must be registered with the California Air Resources Board (CARB) under statewide portable equipment registration program (PERP) and such evidence shall be provided via email to the SLAC Air Quality Program Manager. Reporting and Record Keeping shall be as required in Chapter 30 of the ES&H Manual.
- Generators terminated by or observed by SLAC F&O Operations used for maintenance activities, for testing, or for mitigation of a utility failure do not require BIO Review unless they will be in service greater than 90 days. If the generator is NOT SLAC OWNED, it must be registered with the California Air Resources Board (CARB) under statewide portable equipment registration program (PERP) and such evidence shall be provided via email to the SLAC Air Quality Program Manager. Reporting and Record Keeping shall be as required in Chapter 30 of the ES&H Manual.
- Generators over the 30 Day and 90 Day limits outlined above will be required to be seismically anchored See F&O Engineering for help.
- Application of special coatings such as epoxy floor coatings.
- Installation of Solar Panels, Wind Generators, Electrical Storage Systems, etc.
- Electrical Vehicle Charging stations and underground electrical supplies.
- Office furniture over 5'-9", Pergolas, Hush Rooms, Meeting rooms or similar products shall show compliance with Accessibility Requirements and need a building authorization to install.
- Conventional aspects of science and experimental projects

5.1.2 Work Exempt from Building Inspection Office Review and Authorization. The following construction-related work does not trigger BIO review. Responsibility for compliance with SLAC ESH external mandates and internal policies remains with project or activity owner.

Construction authorization SHALL NOT be required for the following:

Building: Painting, papering, office cabinets, counter tops and similar finish work. Non-fixed moveable fixtures, cases, racks, office furniture, counters and partitions not over 5 feet 9 inches high. All office furniture, cubicles, etc. shall meet accessibility requirements regardless of size. **Exception:** Any change that affects, alters or impedes accessibility, exiting or life safety systems shall require BIO Review.

Electrical Systems: Repairs and maintenance: Minor repair work, including the replacement of lamps or the connection of approved portable electrical equipment to approved permanently installed receptacles. Construction Authorization shall not be required for the installation of any temporary system required for the testing or servicing of electrical equipment or apparatus.

Mechanical Systems: Related only to minor repair or maintenance such as leak repair, valve replacement, replacement of any part of a listed system that does not alter its listing approval. Self-contained refrigeration system containing 10 pounds (5 kg) or less of refrigerant and actuated by motors of 1 horsepower (746 W) or less.

Exception: Portable heating appliance, portable ventilation equipment, and portable cooling units owned by SLAC Facilities used for maintenance activities do not require BIO Review. All other portable mechanical systems (except desk fan or heater) require BIO/ESH Review and Construction Authorization.

Plumbing Systems: The stopping of leaks in drains, water, soil, waste or vent pipe. The clearing of stoppages or the repairing of leaks in pipes, valves or fixtures and the removal and reinstallation of water closets, provided such repairs do not involve or require the replacement or rearrangement of valves, pipes or fixtures.

Science and Experimental Equipment-related activities: Activities for which the ESH Chapter 1 Threshold Review determines that the proposed experimental activity does not require BIO review and authorization.

Like for Like Replacement: *Like for like* changes are minor in nature. “Minor” is defined as work that typically involves total project material cost of less than \$1,000. Contact BIO for guidance on “like for like” projects.\

5.1.3 Reviews for Required Building Codes and Standards and ESH Program Requirements Compliance.

Prior to March 2024, PMs could choose to perform project design review concurrent with BIO/ESH compliance review. These combined reviews were managed in the online **BIO Plan Review System (PRS)**. BIO would select **BIO/ESH SME reviewers** for the submittal, and PMs would select project **design reviewers**.

In **March 2024**, the ESH project review process was modified to require project design review to be performed **PRIOR** to submittal to PRS for BIO/ESH review. PMs must conduct project design reviews with appropriate project stakeholders at each level of design maturity prior to submittal of the project to PRS for BIO/ESH review. This requirement applies to various types of projects: issued for bid, procurement, fabrication, or construction.

Review aspects selected by the PMs for project design review may include:

- Building and area managers
- F&O engineering: electrical, architectural, controls, mechanical, civil/structural, sustainability
- F&O system stewards
- Project personnel
- Project constructability
- Lab or research equipment and systems owners
- Lab or research facility occupants

Submittal of a project to PRS for BIO/ESH review indicates that the required design review is complete, and the project is ready for BIO/ESH review. BIO and ESH SMEs will review the project for compliance with applicable building codes and standards and ESH program requirements.

BIO does not participate in design reviews. For BIO/ESH reviews, BIO will select review aspects and reviewers from the **Table 1 Building Inspection Office Plan Review Matrix**. The **ESH Chapter 1 Project Review Procedure** requires the ESH Coordinator to assist experimentalists and researchers navigate the project review process. ESH coordinators will be selected to participate in all BIO/ESH reviews.

5.1.4 Normal and Emergency Repairs. Notice to BIO is not required for normal equipment and system repairs that do not meet any BIO triggers. Where system or equipment repairs must be performed under emergency conditions, and the repairs would normally be subject to BIO review and authorization, BIO must be notified of the repair by the next working day, and a PRS submittal shall be provided at the earliest reasonable opportunity.

5.1.5 Underground Exploration. Where underground exploration is needed to determine the extent of underground repair work, BIO should be consulted to determine if BIO review and authorization is required. Pot holing and small excavations less than 1 square foot in area and less than 3 feet deep would typically not require BIO review and authorization, however, consult BIO for a final determination.

5.1.6 Other Work Activities That Require BIO Review. Work that involves cutting away of any wall, partition or portion thereof, the removal or cutting of any structural beam or load-bearing support; or the removal or change of any required means of egress, or rearrangement of parts of a structure affecting the egress requirements; addition to, alteration of, replacement or relocation of any standpipe, water supply, sewer, drainage, drain leader, gas, soil, waste, vent or similar piping, electric wiring or mechanical or other similar work. Any work which adds, redistributes, alters, induces, increases or combines any loads or forces to a building, structure, appurtenance, equipment, floor, roof, ceiling, wall, slope or embankment shall require BIO review.

5.1.7 Validity of Construction Authorization. The issuance of the Construction Authorization shall not be construed to violate or cancel any provisions of this manual, or of any required codes, policy, or standards. The issuance of the Construction Authorization based on construction documents and other data shall not prevent BIO from requiring the correction of errors or omissions in the construction documents and other data. BIO is also authorized to prohibit occupancy or use of a structure when in violation of the provisions of this manual or of any other code, SLAC Policy or Standard.

5.1.8 Expiration. Every Construction Authorization issued shall be subject to potential expiration of the design package approval if the authorization is more than 180 days old at the time of Construction Authorization. At the discretion of BIO, such designs may be subject to a formal BIO re-review to ensure that code requirements remain up to date. PMs who place a project “on the shelf” after receiving construction authorization should closely coordinate with BIO prior to reactivating such projects to avoid delays in Statement of Work and project documents approval.

Construction Authorized projects shall work continuously and obtain BIO inspection every 180 days or less. If a project exceeds the 180-day inspection rule, then the project may be required to go back through BIO review.

Large Projects that take multiple years to build. Construction authorization shall not expire so long as the project continues to completion. If a large project Stops progressing, then the 180-day rule may apply based on reason for stoppage.

5.1.9 Suspension or Revocation. BIO is authorized to suspend or revoke Construction Authorization issued under the provisions of this manual wherever the Construction Authorization is issued in error or on the basis of incorrect, inaccurate or incomplete information, or in violation of any ordinance or regulation or any of the provisions of codes cited in this manual.

5.1.10 Changes or Modifications to Approved Plans or Documents. Any additions, deletions, modifications, changes, omissions, or alterations from approved construction documents shall be submitted for review to BIO PRS. Once approved, the project may make revision or changes that have been approved. Any work done without this approval is considered at risk, and the project may need to make changes to become complying at no risk to BIO or its ESH SME’s. See 5.2.8.5 Revisions to Approved Plans for more information.

BIO SUBMITTAL REQUIREMENTS

5.2.1 Charge Number. The requester shall provide the Building Inspection Office with a direct bill charge number prior to the commencement of a BIO plan review. Upon request by the PM, the Building Code Official will provide a cost estimate for ESH SME effort prior to starting any work. This estimate will include input from SME’s performing the review. As a general guideline, cost estimates equal or greater than 100 labor-hours will be in the form of a spreadsheet. This cost estimate DOES NOT cover the cost of NON-ESH SME reviewers. The project is responsible for obtaining those estimates.

Large Project Charge Numbers, Due to the number of submittals it is requested that large projects provide a DEDICATED PA Number for BIO use for all Plan Reviews. Inspections may have the same PA Number or a Dedicated BIO Inspection PA number. These two numbers take away the difficulty of knowing which PA number to use for the reviews and inspection and will simplify your project accounting.

Single vs multiple building submittals. When submitting PRS projects the number of PRS project submittals shall be based on the descriptions below.

5.2.1.1 Stand Alone Buildings. This type of building contains only 1 building number. IE 41, 53, 660, etc. One submittal for each building.

5.2.1.2 Single Structure with Multiple Building Numbers. This type of building contain two or more building numbers in a single building i.e., 750 & 751. One Submittal for each set of building numbers.

5.2.1.3 One Continuous Building. This type of building include Bldg. 1 & 2 - Sector 0 to 30. It **does not** include BSY to B999 as they have separate building numbers even though they are connected. This submittal could be one submittal or broken down into multiple submittals.

5.2.1.4 Project Size Determination. In the Building Inspection Office, “project size” refers to the overall scope, complexity and scale of a project. It’s a way to categorize projects based on factors like construction costs, description of project, duration, resources, and the number of stakeholders involved. Project size helps determine the appropriate level of formality and resources needed by the Building Inspection Office. The Building Code Official shall make the project size determination for a project.

All types of projects, ie, Alterations, Remodel, Repair, Replacement, Addition, New, will fall in one of three categories of project sizes listed below.

Small Projects:

Characterized by a low budget: Usually \$0 to \$250,00

Number of Stakeholders / Subject Mater Experts: 5 or less

Complexity: Low complexity, Easily understood problem and solution, solution easily achievable

Low Effort: Less than 100 hours of plancheck and inspections

Duration: Small time frame, 0-6 months

Plancheck: Usually 1 Initial Plancheck within 5 days and each Backcheck up to 5 days for EACH resubmittal (See 5.2.3.9)

Medium Projects:

Characterized by a medium budget: Usually \$250,001 to \$2 Million

Number of Stakeholders / Subject Mater Experts: usually 6-12

Complexity: Moderate design/technical complexity, Problem is difficult to understand or Solution in unclear or difficult to achieve

Medium Effort: 100-200 hours of plancheck and inspections

Duration: Medium time frame, 3-12 months

Plancheck: Usually 1 Initial Plancheck within 5 days and each Backcheck up to 5 days for EACH resubmittal (See 5.2.3.9)

Large Projects:

Characterized by a high budget: Usually over 2 Million

Number of Stakeholders / Subject Mater Experts: 12 or more

Complexity: Very High design /technical complexity, Problem & solution are undefined AND difficult to achieve

High Effort: Greater than 200 hours of Plancheck and Inspections

Duration: Large time frame, 12 months or more

Plancheck: Usually 1 Initial Plancheck within 5 days and each Backcheck up to 5 days for EACH resubmittal (See 5.2.3.9)

This requirement is separate from the Procurement process and projects must work with Procurement on any financial documents.

5.2.2 PRS Project Submittal Process

5.2.2.1 Entering a Project into PRS. Documents are required to be submitted to the Building Inspection Office if the project meets the threshold criteria described in Appendix A, Reference Link 1, “BIO Review Process Triggers.” The PM is responsible for submitting all design documents, statements of special inspection requirements, and other pertinent information into the ESH BIO PRS. Project documents submitted for review must be editable and searchable in pdf format. It must not require the use of optical character recognition (OCR) or other document manipulation to make a document searchable. Where special conditions exist, BIO is

authorized to require additional and/or supplemental construction documents to be prepared. For guidance on submitting requests for code and standards alternatives such as equivalencies or AMMRs, please contact BIO.

To enter a project into PRS, the PM will provide basic information and upload relevant documents in PRS. A new project will be created in “draft” status. The statement of work entry must provide a general description of the project in sufficient detail to include all of the major elements and systems of the experiment/project. This statement should also include any significant hazards associated with the experiment/project (examples are radiation, laser, pressure, cryogenic, and hazardous materials). Provide supporting documentation as applicable, including drawings and specifications, equipment layout, cut sheets, etc. If available, include projected starting and ending dates for each phase of the project/experiment.

5.2.2.2 Proceeding to Submitted Status. Once the submittal draft is complete, PRS notifies the Area / Building Manager and Requestor’s Department Head for necessary (electronic) design package internal review and approval. When these approvals are completed, this confirms that the package represents a complete submittal and shifts status from DRAFT to SUBMITTED. If the submittal is incomplete the coordinator contacts the PM/project Point of Contact (POC) and requests missing documents or approvals. Incomplete submittals will be rejected until necessary documents are received. Uploading all necessary or requested documents is the responsibility of the project PM or PM designee.

5.2.2.3 Completing the BIO Review Process. The package, once verified complete, is processed by the coordinator. BIO compliance reviewers and other technical SME reviewers are assigned by the coordinator in consultation with the BIO Triggers list, and the submittal advances to IN REVIEW status. The change to IN REVIEW status generates a unique project number for the review that includes both a two-digit year designator and a three-digit sequential project designator (for example, #20-172 for the 172nd project released for review in 2020). PRS sends an email from BIO-admin@slac.stanford.edu to all selected reviewers, requesting comment by the review due date.

Reviewers enter comments and concerns in PRS for their assigned aspect. Each reviewer must provide reasonable assurance of compliance for their review aspect.

It is the responsibility of the PM or designee to respond directly to individual comments entered into the PRS. PMs and reviewers are encouraged to communicate directly to resolve comments and concerns. SMEs are expected to complete a prompt back check. Once comments are resolved, the reviewer accepts the PM response in PRS.

The PM is responsible for following up with the non-ESH reviewers to ensure they complete their review in a timely fashion. The assigned ESH coordinator should assist the PM as requested.

A SLAC Windows account is required to use PRS. When external reviewers or PM designees are not SLAC employees, it is the responsibility of the PM to obtain an account for them.

5.2.2.4 Obtaining Authorization. Once reviewers have accepted all PM comments, the coordinator authorizes the project via e-mail notification to the PM and other stakeholders stating that the project is authorized. If applicable, the authorization email will contain the following attachments: inspection request form, construction authorization and inspection record (also referred to a permit log), anchor checklist and any other pertinent information relating to the project review. If any SME comments become conditions of approval that may require action before/during the completion of the project, these comments will be listed in the email. All pertinent documents are stamped (manually or electronically) and signed by the BIO Coordinator, BIO Inspector or Building Code Official. **For information on stamps currently used by BIO, consult Appendix B.**

If hard copies are submitted, one set of the final construction documents is kept by BIO. The other set is returned to the PM to be kept at the construction site for redlining (included in the Work Integration Plan). This set shall be made accessible for review by BIO or a duly authorized representative. The authorization email will notify the PM when the authorized final documents are available for pick up. If the documents are approved electronically, it is the responsibility of the PM or CM to ensure a hard copy is kept at the construction site as outlined above.

5.2.2.5 Approval of Construction Documents. When review is complete with no open issues BIO will authorize

(approve) the project to proceed to the next step. If the project consists of construction documents, then the project is authorized for construction (commonly referred to *issued-for-construction* or IFC). BIO will issue a Construction Authorization and Inspection Record (i.e. a *permit*) for the project.

BIO will retain pdfs of all construction documents and will provide copies of the same pdfs to the PM. Electronic or hard copies of approved construction documents shall be kept on site and shall be available for inspection by the Building Official, Building Inspector or authorized representative.

5.2.2.6 BIO Stamp Approvers. BIO stamps shall only be approved by the Building Code Official, Plans Coordinator, Building Inspector or Building Code Official Designee.

5.2.2.7 Phased Approval. The Building Inspection Office is authorized to issue an authorization (permit) for the construction of foundations or any part of a building or structure before the construction documents for the whole building or structure have been submitted, provided that adequate information and detailed statements have been filed complying with pertinent requirements of the code. The applicant of such authorization (permit) for the foundation or other parts of a building or structure shall proceed at the applicants own risk with the building operation and without assurance that an authorization (permit) for the entire structure will be granted.

5.2.3 Special PRS Submittal Process Topics

5.2.3.1 In Review Status. Means the project is in review and waiting for comments.

5.2.3.2 Conditionally Authorized status. BIO has the ability to issue Construction Authorization for Portions of Construction i.e., foundations or any other part of a building or structure before the construction documents for the whole building or structure have been submitted, provided that adequate information and detailed statements have been filed complying with pertinent requirements of relevant codes. The PM requesting such Construction Authorization for the foundation or other parts of a building or structure shall proceed at the PM's own risk with the building operation and without assurance that authorization for the entire structure will be granted.

5.2.3.3 Authorized Status. A project is authorized when all comments have been closed and accepted. Project is ready for issuance.

5.2.3.4 Hold Status. The maximum time allowed for a project submittal which has been placed on HOLD is guaranteed no change in code of record status is 180 days (6 months) from the date the project was originally entered into PRS. Once the 180-day limit is reached, a design package being returned from hold to active status may require at the discretion of the Building Code Official—updating or resubmittal to address the effect of any code requirement changes or other changed conditions.

Upon PM Direction projects that are in review and have open comments may be placed on hold. BIO cannot close in progress BIO reviews. When the project wants to restart the review, all previously open comments must be addressed and a narrative of the changes provided.

5.2.3.5 Void Status. Projects that do not complete the review status after 180 Days may be closed and marked as void or at the request of the submitter may be void. Once a project is void a new submittal and review process is required.

5.2.3.6 Rejected Status. Projects that do not provide the correct information ie. plans, specifications, cut sheets, etc. may be rejected until such time they supply the correct information.

5.2.3.7 Expired Status. Projected that do not complete the review process or never start work within 180 Days or stop work for more than 180 days may be put into expired status. A new project will need to be started. Caution if this happens you may need to go back through plancheck as the code books may have changed. Consult BIO with questions.

5.2.3.8 Withdrawn Status. Project may place a project in withdrawn status if the project will not move forward and no further review should take place. All funding will stop when the project is placed in Withdrawn.

5.2.3.9 Expected Review Times. BIO will make every effort to ensure that ESH SME reviewers have entered

their comment into PRS in the allotted time as dictated by the size of the project. All other SME reviewers need to be monitored by the Project Manager to ensure they complete their review in time. The time allocated for **initial** plan review comments entered into PRS is: five (5) working days from Accepted by the Building Manager for all projects. Back checks will be done in a prompt manner. The PM will be notified of any delays.

5.2.3.10.1 ES&H & BIO Reviewers only are selected for these reviews. The BIO Coordinator will select reviewers as described in section 5.2.. All comments should be entered in PRS within the allotted review time.

All ES&H and BIO reviewers are expected to review each project for code compliance in the shortest time possible. DO not wait until the last day to approve.

5.2.3.10.2 Dual Plan Review. BIO is working with F&O and PMO on a dual review process in which F&O and BIO do their planchecks at the same time. In order for this to happen plan reviewers will need to use a system like Bluebeam or equal so comment can be seen on the plans and specifications and responses can be made quickly by PMO. This should reduce plan review time and reduce duplicate comments during plancheck.

5.2.3.10.3 Plan Review Comment formatting. BIO plan reviewers shall format their comments in the following way.

Mandatory Comments. Any PRS comments that references a) a specific code section. b) an ESH program requirement or c) an established SLAC or Departmental policy.

Must include the exact citation or policy reference in the comment entry. These comments carry compliance weight and are required to be addressed before project approval.

Recommendation Comments that do not fall under code, ESH, or policy requirements will be treated as recommendations. To avoid confusion, begin these comments with the word **Recommendation:** Example: Recommendation: consider adjusting layout to improve accessibility beyond minimum requirements.

Role of Code SME's Code Subject Matter Experts shall not provide design guidance. Their responsibility is to verify compliance with applicable codes, policies, standards, and program requirements. Design decisions remain the responsibility of the Project Manager, the design Team, or their designated representatives.

5.2.3.11 Closing Comments. The project must respond to all comments. Reviewers must promptly backcheck updated documents for comment closure when they become available.

5.2.3.12 If No Comments are Entered. Reviewers with no comments will receive system emails requesting them to complete their review or to accept the package with no comment. If the reviewer does not respond, the BIO coordinator will send an email reminding them of their responsibility to review the project. The BIO coordinator will include the reviewer's department head or supervisor in this notification. If the reviewer does not respond, the BIO Coordinator will close the comment and mark it as non-responsive.

5.2.4 Construction design document requirements. All projects shall follow the Conduct of Engineering policy which requires use of verified up-to-date Teamcenter/ SEDA documents for design projects.

Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed. All drawings must comply with SLAC drawing standards and title block format requirements. Project design packages that contain more than 5 separate plan sheets shall have a table of contents on the Title Sheet listing the drawings included in the submittal for the specific project. Plans must include plot or vicinity plan, architectural, structural, mechanical, plumbing, electrical, and fire alarm/ fire protection systems as applicable. Plans shall clearly state applicable codes, building number, area of work and shall be dated. See BIO Website for plan submittal handouts for more detailed information.

Plan required information

- BIO Project Submittal Information Worksheet
- BIO Plan Submittal - Accessibility Standards Submittal Requirements Forms
- Scope of Work (SOW) or Description of Work

- Civil drawing for new buildings.
- Site/plot plan drawn to scale. Dimensions of all lot lines and setback distances to all structures.
- Include on the cover page of the plans, suite/room and building number, designer, or person responsible for design (B&P code 5536.1, 5536.2), type of construction, complete scope of work, deferred submittals, and special inspections, structural observations.
- Provide use or occupancy of the project and the adjacent rooms or areas. List of all current applicable codes.
- Architectural plans (floor, elevations, sections, and details. (Roof plan if applicable) Reflected ceiling plan.
- Structural plans with foundation, soils report, framing details and calculations (if applicable)
- Plumbing plans (single line or isometric) with calculations
- Mechanical plans
- Title 24 Energy Compliance Documentation, envelope, mechanical, and electrical. Electrical Power Plan with a minimum of the following, controlled DCR document (If applicable), complete and accurate one-line diagram, site plan with locations of panel/equipment, load calculations for all panels with altered loads, location of all panels, main switchboards, and transformers included on the project, panel schedules for all panels included with the project, floor plans with equipment and panel locations, lighting plan and Photometric plan for outdoor lighting.
- Vendor equipment documents to technical information necessary to perform BIO/ESH review
- Electrical drawings shall be prepared and approved by electrical engineers. Plans shall include single line drawings, plan view drawings, panel drawings, details, calculations, based off the vendors equipment document, etc.
- NEC working space for new electrical equipment and nearby existing electrical equipment must show working space rectangles on the plan view drawings.

5.2.4.1 Initial documentation formatting requirements. All Plans and submittals are done using electronic format. All documents and plans shall be done in an editable, searchable pdf format. It must not require the use of optical character recognition (OCR) or other document manipulation to make a document searchable. This includes plans, specifications, letters, cut sheets, SOW and any other documents needed for the review of the project. Do not lock changes or the PRS Coordinator cannot stamp the documents, plans, SOW, and other project documents.

5.2.4.2 Final documentation formatting requirements. Once the project review process is complete and the project is ready to be authorized, a flattened stamped pdf copy of all documents and plans shall be provided to the PM by BIO.

If a PM wishes to have hard copies the PM shall have the plans, Specification and any other documents printed and delivered to BIO with a request to please stamp and approve the hard copies. Project bears the costs associated with this request including time for BIO to hand stamp the hard copies.

The following specific requirements for information are required to be shown on the applicable documents:

5.2.4.3.1 Fire Protection System Shop Drawings. Shop drawings for the fire protection system(s) shall be submitted to indicate conformance with the provisions of the codes cited in this manual and the construction documents. Shop drawings shall contain all information as required by the referenced installation standards in Chapter 9 of the CBC and applicable sections of adopted NFPA Codes. **FMO** prefers fire protection components such as fire suppression or fire alarm system components to be shown in color for clarity against background details.

5.2.4.3.2 All Other Shop Drawings. Shop Drawings for structural, electrical, mechanical, plumbing, etc. systems shall be submitted to indicate conformance with the provisions of the codes cited in this manual and the construction documents. Shop drawings shall contain all information as required by the referenced installation standards in applicable Codes.

5.2.4.4 Means of Egress. The construction documents shall show in sufficient detail the location, construction, size and character of all portions of the means of egress in compliance with the provisions of codes cited in this manual. For tenant improvement projects, the construction documents shall designate the number of occupants to be accommodated on every floor, and in all rooms and spaces per CBC Chapter 10.

5.2.4.5 Exterior Envelope. Construction documents for all buildings shall describe the exterior envelope in sufficient detail to determine compliance with the provisions of code cited in this manual. The construction documents shall provide details of the exterior envelope as required, including flashing, intersections with dissimilar materials, corners, end details, control joints, intersections at roof, eaves or parapets, means of drainage, water-resistive membrane and details around openings. The construction documents shall include manufacturer's installation instructions that provide supporting documentation that the proposed penetration and opening details described in the construction documents maintain the weather resistance of the exterior envelope. The supporting documentation shall fully describe the exterior wall system. Which was tested, where applicable, as well as the test applicable national standard used.

5.2.4.6 Site plan. The construction documents submitted for authorization shall be accompanied by a site plan showing to scale the size and location of new construction and existing structures on the site, the proposed finished grades and, as applicable, flood hazard areas, floodways, and design flood elevations. In the case of demolition, the site plan shall show construction to be demolished and the location and size of existing structures and construction that are to remain on the site or plot. BIO is authorized to waive or modify the requirement for a site plan when the project is for alteration or repair or when otherwise warranted. The plan shall show all accessible features, routes, parking, signage and paths.

5.2.4.7 Industrial Equipment Access Stairs. Industrial equipment access stairs shall be explicitly identified, preferably through drawing notes. Once identified, such stairs are reviewed for egress design compliance per Cal/OSHA and NFPA 101. Stairs not so identified will be reviewed per CBC Chapter 10 egress requirements.

5.2.4.8 Structural Calculations. Structural calculations must be submitted to BIO for review and authorization prior to installation of the associated equipment or structure. Calculations must contain a sufficient level of detail to allow an SSA structural SME to determine compliance with the Building Code, ASCE-7, and any other applicable structural codes and standards.

5.2.4.9 Accessibility-Related Modifications

1. A registered design professional must determine which accessibility standards and regulation apply to a project. Accessibility requirements source documents must be listed on the cover page of the design package (e.g., ADA, ABAAS, CBC Chapter 11)
2. The registered design professional must prepare detailed architectural drawings and specifications that comply with the relevant accessibility standards.
3. Design packages must identify any new or changes to existing:
 - Accessible routes
 - Entrances and exits
 - Restrooms
 - Signage
 - Parking
 - Elevators and lifts
 - Telephones
 - Drinking fountains
4. The registered design professional must provide a narrative or written description of the accessibility features and compliance strategies.
5. Complete the required application form provided by the Building Inspection office.
6. When the proposed project is seeking 20% disproportionality exemption, PM provides justification with the following documentation:
 - If the cost of the alterations to provide full accessibility is deemed disproportionate (i.e., exceeds 20% of the overall cost of the remodel), submit documentation demonstrating this calculation.
 - Include a detailed cost analysis showing the total cost of the project and the cost of the proposed

accessibility improvements.

- Provide a prioritized list of accessibility improvements that will be implemented to the maximum extent feasible within the 20% budget.

5.2.4.10 Electric Vehicle Charging (EVC). Plans shall be provided showing existing and proposed EVC charger Locations, single line electrical plans, Panel Schedules, details as needed.

5.2.4.11 Photovoltaic (Solar) Electric. New Projects and Projects adding Photovoltaic shall show location, proposed panel, plans, details, cut sheets, electrical one line from main panels to photovoltaic system.

5.2.5.1 Issue for Procurement (IFP) or Issue for Bid (IFB). Projects submitted for procurement authorization shall be identified as such in the PRS submittal title. As required by joint BIO/Procurement policy, or as voluntarily requested by PM, BIO shall review Procurement Statements of Work for construction projects to evaluate the document for design direction or scope instructions affecting code compliance. Upon completion of the review, BIO authorization will be granted for procurement and stamped as such. An inspection card will not be issued for these types of reviews.

Procurement may grant NTP for contractors for field design/verification activities based on BIO procurement authorization. Construction documents shall be submitted to BIO in one or more separate child submittals and approved prior to start of any construction work. Any changes to previously authorized design documents that occur during the project procurement process require additional BIO compliance review and a separate authorization for construction. The Procurement department will not grant a construction NTP without BIO-approved Issue for construction documents.

5.2.6 BIO Interface with SLAC Procurement Office

5.2.6.1 Scope of Work has been returned to Procurement . BIO no longer reviews or stamps Scope Of Work (SOW) unless it is contained in a project submission.

5.2.6.2 Notice to Proceed. A Notice to Proceed (NTP) authorization is issued by Procurement. There are various types, such as the NTP for a design-build contractor to conduct design-related activities versus an NTP for actual construction work to begin. In general, for work designed under the purview of BIO, Procurement will typically not issue an NTP for actual construction work until they have received design documents with BIO “authorized for construction (IFC)” stamp.

5.2.7 Design Professional in Responsible Charge

Where it is required that documents be prepared by a registered design professional or by a SLAC Design Professional, the SLAC Building Code Official shall be authorized to require the PM to designate on the building permit application to be a Registered Design Professional or SLAC design professional who shall act as the registered design professional in responsible charge.

If the circumstances require, the PM shall designate a substitute registered design professional or SLAC design professional in responsible charge who shall perform the duties required of the original registered design professional or engineer of record in responsible charge. The Building Code Official shall be notified in writing by the Owner or the Owner’s authorized agent if the registered design professional or SLAC design professional in responsible charge is changed or is unable to continue to perform the duties.

The registered design professional or SLAC design professional of record in responsible charge shall be responsible for reviewing and coordinating submittal documents prepared by others, including phased and deferred submittal items, for compatibility with the design of the building.

5.2.8 Submittals Following Initial Construction Authorization

5.2.8.1 Deferred submittals. Deferred submittals contain design content and must be submitted in a timely manner for BIO review and authorization. PMs must identify all proposed deferred submittals in the parent project on the drawing package cover sheet or first general notes sheet. BIO will review and concur with the list of

deferred submittals. PMs must include deferred submittal requirements in the project specifications.

Documents for deferred submittals must first be accepted by the PM or registered design professional in responsible charge, who shall forward them to BIO with a notation confirming that the deferred submittal documents have been reviewed and found to be in general conformance to the previously authorized design. The items covered in a deferred submittal shall not be incorporated into construction until the submittal has been reviewed and authorized by BIO.

1.2.8.2 Project Submittal Register. When project submittal registers are used, PM shall submit a copy to BIO for consistency review of PRS-required submittals. BIO will take the Submittal Register which contain a list of all submittals. BIO and ESH will review the register and highlight those product or process submittals it would like to review for conformance with the project documents before they are ordered.

5.2.8.3 RFI and ASI Submittals. Request for Information (RFI) and Architect Supplemental Information (ASI) are documents that occur throughout a project as changes and issues arise. RFI & ASI documents requiring BIO formal design approval shall be put into the PRS system as a child project. The project shall keep the BIO Inspector informed of these submittals and changes.

5.2.8.4 Proposed Change Order (PCO) Submittals. Procurement may require a project to submit to BIO any PCO that contain changes to the plans, specifications or products to ensure code compliance. Once BIO approves the PCO, it is returned to PM and Procurement.

5.2.8.5 Revisions to Approved Plans. When plans are changed and become revised, they need to go through the BIO review process. Revised plans need to contain only those items that are in the proposed revision – no extra notes, items, etc. The following shall be done on each page that is revised.

The revision box in the upper right corner shall identify the delta number and a revision note. CLOUD the proposed revisions. Only clouds for this revision should be shown. Add a delta triangle with a number inside it in the next sequential number pattern. Leave old revision notes, delta numbers, for past reference. The revision is not approved unless it has a BIO approved for construction stamp with the Revised Notation. Also see the revision to approved documents handout “Revising Approved Documents” located on the BIO website under the “building” button.

5.2.8.6 Means and Methods vs A Design Change. Means and Methods refer to how a contractor decides to execute the work. In most cases, we have a clearly defined scope of work and approved plans that specify how the contractor is required to perform the work.

A Design Change occurs when approved plan, specifications, or the original design intent are modified after they have been reviewed and approved by BIO and issued for construction.

These changes shall additionally comply with California Building Code sections 107.2.1 and 107.4

5.2.9 Previous Work Approvals the BIO Project Review and Authorization process shall not require changes in the construction documents, construction or designated occupancy of a structure for which a BIO Construction Authorization has been already issued or otherwise authorized. However, a Construction Authorization that has been issued may require subsequent review, if the building or work authorized has not commenced within 180 days from the date of such authorization, or if the work authorized is suspended or abandoned at any time after the work commenced for a period of 180 days, as per section 5.1.6.

5.2.10 Deviations from Approved Construction Documents During Construction. Work shall be completed in accordance with the authorized construction documents. Deviations from the approved drawings, specifications, and submittals shall be reviewed and accepted by BIO prior to incorporation into construction. The method of submittal and approval depends on the scope of the change. The Building Inspector, PM, Field Construction Manager (CM), and subcontractor will review the issue and determine if it is a minor or major change. A minor change does not have a significant effect on the plans, specifications, engineering requirements, code compliance and constructability. However, a major change would impact one or more of these items. Minor change examples include, using cadweld vs. crimp connections, locating a transformer at a different location within the same room and using a larger ground cable. Major change examples include, moving a wall, adding a dozen or more light

fixtures to an area; specifying a different size of transformer or type of switchgear; or changing the egress plan.

5.2.10.1 Redline / As-Built Markup Drawings For minor changes during construction, the Building Inspector, PM, CM, and subcontractor will review the necessary changes, and agree on a compliant solution.

Original Drawing and Specifications: BIO will not unlock approved BIO approved documents. If the project wants to add modified pages or specifications. The project will submit plan pages or specifications WITHOUT the BIO approved stamp and BIO will review and stamp the new pages and add a new date of approval to those pages. Bio will return those new pages back to the project. Process is similar for specifications.

Revised or As-Built drawings or Specifications the following steps will need to be followed.

- 1) **DO NOT MARK UP** the original approved plans.
- 2) If you are going to create a redline or As-Built marked up set of plans these will need to be on a COPIED set of the approved plans.
- 3) The words “**As-Built**” in 18 Font, in red ink will need to be stamped on all pages and specifications Sections.
- 4) Cross out the existing approved stamp with an “X” through it.
- 5) Once that’s done, now markups can be done to the Plans, Specifications, RFI and ASI attachment to plans, etc. remember to date and initial all changes. Significant changes will need to be submitted and approved by BIO.
- 6) *Upon project completion, pdfs of the final as-built drawings, RFI’s, and ASI’s must be submitted to the BIO coordinator. The coordinator will upload the documents to PRS for archiving.*

5.2.11 Modification to Approved Scope. The PM shall notify BIO when the scope of a project has been modified significantly. A discussion between the PM and BIO will determine a path forward which may result in a requirement that a new project be entered into PRS as a child to the parent project for formal review.

5.3 INSPECTIONS

5.3.1 General. Work for which Construction Authorization is required shall be subject to inspection by BIO inspectors or other designated inspection personnel (see Section 5.3.3). Construction shall remain accessible and exposed for inspection purposes until released by approval of the designated BIO Inspector. Approval of an inspection shall not be construed to be an approval of a violation of the provisions of SLAC external ESH mandates, including BIO-adopted codes and standards. Inspections purporting to give authorization to violate or cancel such requirements shall not be valid.

5.3.2 Preliminary inspection. Before issuing a Construction Authorization, BIO is authorized to examine or cause to be examined buildings, structures and sites for which an application has been filed.

5.3.3 Alternate Inspector Authorization. The Building Inspection Office may authorize other inspectors (CMs, F&O technicians, other SLAC subject matter experts, third party licensed professionals or other third-party special inspectors) for specific inspection activities if the individuals provide evidence as to their pertinent experience in construction methods, trade knowledge, code knowledge and the application thereof. Inspection Certification by ICC or other national recognized code authority is recommended.

5.3.4 Required Inspections. Upon notification required inspectors from BIO, FMO, EP, WM, RP, IH, Security, shall make the inspections listed in Sections 5.3.4.1 through 5.3.4.15. These are in addition to project engineers’ inspections.

5.3.4.1 Footing and foundation inspection. Footing and foundation inspections shall be made after excavations for footings are complete and any required reinforcing steel is in place. For concrete foundations, any required forms shall be in place prior to inspection. Materials for the foundation shall be on the job, except where concrete is ready mixed in accordance with ASTM C 94, the concrete need not be on the job.

5.3.4.2 Underground Utilities Inspection of underground utilities, i.e.: electrical, plumbing, fire sprinkler, HVAC, etc. shall occur prior to covering up with dirt, slurry, etc. Slurry covering electrical conduits will be red in

color. Pressure testing of completed underground systems shall be observed and approved by a pressure system qualified inspector.

5.3.4.3 Concrete slab and under-floor inspection. Concrete slab and under-floor inspections shall be made after all in-slab or under-floor reinforcing steel and building service equipment, conduit, piping accessories and other ancillary equipment items are in place, but before any concrete is placed or floor sheathing installed, including the sub-floor.

5.3.4.4 Frame inspection. Framing inspections shall be made after the roof deck or sheathing, all framing, fire - blocking and bracing are in place and pipes, chimneys and vents to be concealed are complete.

5.3.4.5 Electrical, plumbing and mechanical inspections. Construction site temporary power shall be inspected prior to first energization. Inspections shall be made when the rough and final electrical, plumbing, heating wires, pipes and ducts are complete. BIO will issue a numbered decal for electrical systems approval.

Note: Scheduling electrical energization readiness reviews is a project manager or construction manager responsibility. These reviews require coordination with F&O electrical power department and the BIO building inspector.

5.3.4.6 Compressed gases and air. Inspection shall be made when all piping, valves, etc. are roughed in and when complete. Pressure testing of completed systems shall have a pressure test plan and be observed and approved by a pressure system qualified inspector who will complete the pressure test record per chapter 14.

5.3.4.7 Fire protection systems. Inspections shall be made as fire protection systems are roughed in but not yet concealed. A final inspection shall be made when systems are complete.

5.3.4.8 Lath and gypsum board inspection. Lath and gypsum board inspections shall be made after lathing and gypsum board, interior and exterior, is in place, but before any plastering is applied or gypsum board joints and fasteners are taped and finished.

5.3.4.9 Fire-resistant penetrations. Protection of joints and penetrations in fire-resistance-rated assemblies shall not be concealed from view until inspected and approved.

5.3.4.10 Energy Efficiency. Inspection of insulation in walls, and on process and heat carrying piping, ducts, etc.

5.3.4.11 Oxygen Deficiency Monitors (ODM). Inspection of the ODM system shall be made once the system is complete and has been formally commissioned as per the FAC-ODM Installation and Commissioning Procedures.

5.3.4.12 Other inspections. In addition to the inspections specified above, BIO authorized inspectors in EP, RP, WM, IH, & Security to make inspections of any work associated with Construction to ascertain compliance with the provisions of the codes cited in this manual and other measures that are enforced by SLAC.

5.3.4.13 Special inspections. For special inspections see Chapter 17 of the CBC. This would include Concrete Testing, Soil Density Testing, Anchor install, Anchor torque, welding, etc.

5.3.4.14 Commissioning (Cx). BIO participates in Cx activities as needed. Copies of Cx documents / final report shall be forwarded to BIO for addition to PRS as a reference document.

5.3.4.15 Final inspection. The final inspection shall be made after all work required by the construction authorization is completed. Final inspection includes, but not limited to, representatives of Fire Marshal Office, Electrical Safety Office, Building Inspection Office, and Facilities & Operations.

5.3.4.16 Other Agency Reports. BIO is authorized to accept reports of approved inspection agencies, geotechnical or soils engineers, acoustic engineers, San Mateo County Environmental Health, Bay Area Air Quality Management District, etc., provided such agencies or persons satisfy the requirements as to qualifications and reliability of the inspecting personnel.

5.3.4.17 Final Reports / Letters. Projects shall submit final reports and/or letters of completion from the

Architect, Structural Engineer, Electrical Engineer, Mechanical Engineer, Plumbing Engineer, Landscape Engineer, Civil Engineer, Fire Protection Engineer, Third Party Inspection Companies, EEIP, NRTL reports, and other documents as determined by the Building Code Official.

5.3.5 Inspection Process. Prior to requesting an inspection, the Subcontractor, Authorization Holder or CM shall use their internal QA/QC process to ensure that the work being inspected is ready for inspection and matches the approved plans.

The BIO /FMO inspection department is not a substitute for the Subcontractor's QA or QC Inspection process. The BIO inspector reviews primarily for code compliance.

5.3.6 Inspection Requests. Required inspections and hold points are documented on the Construction Authorization Record Card. Inspection requests must be submitted through the email request system at one of 6 different email request addresses. See the Building Inspection Request Handout on the BIO Website for detailed instructions. This email shall include the following:

- BIO PRS number
- Project Building Number, Room Number(s) or specific location on project site
- Description of Inspection Requested– Be specific if more than one notice group is included in email
- Desired Date (be Specific)
- Desired Time (be Specific)
- Where will we meet for inspection
- If Pressure Test, Include approved test plan and duration of preparation and test time.
- Contact Name, Phone number and email address
- Copy the appropriate CM

Hours for Inspection:

- Normal work hours M-F 7:30 am to 3:30 pm – 24 Hour Notice
- Extended Hours 6:30 to 7:30 am and 3:30 to 5:00 pm – 48 Hour Notice
- After Hours 5:00 pm to 6:30 am - Weekdays – 72 Hour Notice
- Holidays and Weekends – 84 Hour Notice
- Winter Down Time – Special Approvals are needed to work during this time.

Requests must be submitted as listed above to ensure you receive your inspection on the date and time desired.

Requests received 18 to 24 hours before the desired date and time may occur (schedule permitting) on the desired day BUT the time cannot be guaranteed until confirmed by email. Inspection requests less than 18 hours prior to the event may not occur until the following business day due to previously scheduled inspection staff commitments. (In the event short notice inspection requests are required due to unforeseeable circumstances, the BIO / FMO inspectors will do their best to accommodate the request.) Requests must be by e-mail to bio-inspection. *No verbal or phone call inspection requests will be accepted.*

5.3.6.1 Request Received. Once BIO, FMO, EP, IH, WH, RP or Security office receives an inspection request, the request is then forwarded to the appropriate department who will confirm your inspection. CM shall coordinate and schedule all those inspections not listed above. Examples are Special Inspection, Facilities, Engineer, etc.

5.3.6.2 Request Confirmed. Once the Appropriate Department ~~BIO inspector~~ receives the request, they shall acknowledge the request with a return email. ~~Any changes to the request (time or day) will be discussed between the inspector and inspection requester.~~ Any changes to an approved request (time or day) must go back through the request process to ensure your update is confirmed. Confirmed inspections are posted on the BIO-Inspections calendar. In this way any inspection requests left in the main email folder will indicate request(s) not assigned to an inspector and follow up is needed.

5.3.6.3 Requested Time Needs Changing. If the requested time is not available, BIO shall suggest a minimum of 2 other times the project can meet. The requester shall respond with the alternate date and the BIO will confirm

date and time. BIO / ESH to be aware of PAMM days as these cannot move and may need to be rescheduled.

5.3.6.4 Inspection of Work. Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the BIO inspector.

5.3.6.5 Approved Work. The BIO inspector, upon notification, shall make the requested inspection(s) and shall either indicate the portion of the construction that is approved as completed,

5.3.6.6 Not Approved Work. Work that is not per the code or plans shall be considered Not Approved. In such cases, the BIO Inspector shall notify the Contractor or Authorization holder and CM that the inspection failed to comply with the code or the approved drawings and specifications.

5.3.6.7 Incomplete Work. Work not completed at the time of inspection shall be considered incomplete and automatically require re-inspection.

5.3.6.8 Re-inspection. Any portions of work that do not comply with code or the approved plans shall be corrected and left uncovered and unconcealed until reinspected by the BIO / FMO inspector and approved as complete.

5.3.6.9 Repeat Inspections. Repeat inspections for the same work will require longer notification times, to be determined by BIO ~~the inspector~~. Alternatively, a meeting between the CM, PM, Procurement and ~~Inspector~~ BIO will be held to review the Subcontractors internal QA/QC process to determine the root cause of repeated inspections and follow up actions that shall be required by the Subcontractor to correct QA/QC process deficiencies.

5.3.6.10 No Show. No show inspections are requested inspections but there is no one on site to enable inspections. Inspectors will try to locate individuals if not then inspection will be canceled, and a reinspection is needed.

5.3.6.11 Canceled Inspections & No Shows. If cancelled on the same day, less than 4 hours, The project will be charged the inspection time requested. Inspections canceled 4 to 8 hours before inspection will incur charges for the time requested or at a minimum 1 hour time

5.3.6.12 Flow Chart for Inspections. See BIO Website for current flow charts.

5.3.6.13 Construction Inspectors. The BIO, FMO, EP, RP, WM, IH or Security inspectors or their approved designees (see 5.3.3) shall perform the inspection(s) and record the results including signature and date performed.

5.3.6.14 Inspection Documentation. Inspections shall be recorded on the 1) Field copy of the Construction Authorization Record Card and 2) Entered into the PRS Inspection log for the permit identified for this job.

Inspection reports shall be filed by the CM or PM and made available to BIO upon request. Examples may include special inspection reports and final letters, engineer, or architect field inspection reports and final letters, compliance documents, as-builts, etc. Completion of the inspection reports is important as they will become the basis for the BIO preparation of a Certificate of Occupancy (if one is issued).

5.4 CERTIFICATES OF OCCUPANCY OR CERTIFICATE OF COMPLETION

5.4.1 Certificate of Occupancy (C of O). No building or structure that is new or has been vacated for remodeling shall be used or occupied, and no change in the existing occupancy classification of a building or structure or portion thereof shall be made until BIO has issued a certificate of occupancy. Issuance of a certificate of occupancy or completion shall not be construed as an approval of a violation of the provisions of code cited in this manual or of other BIO requirements.

When requested by the PM, the Building Inspection Office will review the files and previously recorded inspections to assure that all safety items required in the 10 CFR 851 (as modified by RWG Contract) have been met and approved. After BIO inspects the building or structure and finds no violations of the provisions of this manual or other regulations that are reviewed by BIO, then BIO in conjunction with the FMO will issue a certificate of occupancy that contains the following:

1. The construction authorization number.
2. The building number of the structure.
3. The occupancy group and type of construction.
4. The designed occupant loads.
5. A description of that portion of the structure for which the certificate is issued.
6. A statement that the described portion of the structure has been inspected for compliance with the requirements of this manual for the occupancy and division of occupancy and the use for which the proposed occupancy is classified.
7. The name and signatures of the current Building Code Official, Fire Marshal, and Electrical Safety Officer.
8. The effective date of the permit.
9. Statement on the existence of fire sprinklers.
10. Any special stipulations and conditions of the building permit.

5.4.2 Temporary Certificate of Occupancy (TCO). BIO is authorized to issue a temporary certificate of occupancy (Appendix A, Reference Link #3) before the completion of the entire work covered by the permit, provided that such portion or portions shall be occupied safely. BIO shall set a time period during which the temporary certificate of occupancy is valid.

5.4.3 Certificate of Completion (C of C). When requested by a PM, a certificate of completion is issued by BIO to document acceptance of the construction work contained in a specific BIO project submittal package. For situations in which work will be completed and released in phases, the PM should coordinate in advance with BIO for special arrangements.

5.4.4 Temporary Equipment Acceptance (TEA) When Equipment is brought into a building in phases a TEA shall be granted when the equipment is connected to services and is ready for commissioning or use prior to the remaining equipment being completed. A certificate shall be issued which lists the equipment, time frame of temporary equipment acceptance, any restrictions for each piece in a phased approval process. This section is to be used in conjunction with 4.112 of this manual.

5.4.5 Revocation. BIO is authorized to, in writing, suspend or revoke a certificate of occupancy or completion issued under the provisions of this manual wherever the certificate is issued in error, or on the basis of incorrect information supplied, or where it is determined that the building, structure or portion thereof is in violation of any regulation or any of the provisions of the codes cited in this manual.

5.5 DEACTIVATION AND DECOMMISSIONING AKA SLAC EXCESS FACILITIES PROGRAM

5.5.1 Scope of Section. The business process of building deactivation and decommissioning is owned by the SLAC Facilities and Operations (F&O) Division, Building and Space Management (BSM) Department. See [Excess Facility Program](#) document on the CDMS F&O Administrative Program documents at <https://docs.stlac.stanford.edu/sites/pub/pages/facilities.aspx> for details of this process.

5.5.2 BIO Authorization. BIO authorization is not required to deactivate or decommission a facility, unless those activities involve discrete construction activities that meet BIO threshold triggers. This process if addressed through a separate documented process overseen by F&O Building and Space Management. The F&O BSM authorization process ensures that the deactivated asset provides protection to workers, public health and safety, and the environment.

Separate BIO authorization is required for the demolition or removal of a structure that has been deactivated and decommissioned, with the exception of leased construction trailers that are not supplied with site mechanical utilities.

The signed Deactivation and Decommissioning (D&D) checklist should be provided as a reference document for the demolition or removal submittal package.

5.5.3 Submittals. All submittals shall be uploaded into the PRS, under Start New Project tab, as outlined above. Typical submittals for deactivation and decommissioning include:

- Scope of Work
- Location map showing facility to be worked on.
- Locations of existing utilities to the facility.
- Utility Isolation Plan, which shows how and where utilities will be terminated on the outside of the building. This may require going back to a manhole, pull box, or valve box.

5.5.4 Deactivation Activities. This section lists typical related activities that are expected to be performed before deactivation authorization is granted. These features are covered under the F&O Excess Facility Program and are listed here for reference only. These include:

- The sprinkler system remains active.
- Fire alarm system monitoring sprinklers (if present) remains active.
- Building secured against unauthorized entry.
- Fire extinguishers removed.
- Fire department notified of building status. Signage of this status posted on entry doors to the building for emergency responder information.
- The building was inspected for possible fire hazards.
- All conditions verified by Fire Marshal Office for completion.
- All types of hazardous materials and hazardous waste, Universal waste and Class II waste must be identified, removed, and disposed per ESH requirements
- ESH Industrial Hygiene conducts a survey of the building to identify any existing chemical, biological or other health related (example lead or asbestos) items that must be addressed prior to deactivation. All electrical and mechanical equipment and services must be placed in a safe state in accordance with the requirements of ESH Chapter 51
- As-built drawings that clearly depict the deactivation status of all facility systems and equipment must be prepared
- RP conducts radiological surveys in accordance with FO #33, "Search and Survey Procedure", until 100% of contents are removed and surveyed.
- RP to complete necessary property control forms for offsite transfer of materials (salvage, excess, loan, etc.)
- Radioactive Material to be removed and managed per ESH requirements
- RP to retrieve any area dosimeters

5.5.5 Decommissioning Activities. This section lists typical ESH related activities that are expected to be performed before decommissioning authorization is granted by F&O BSM:

Obtain BAAQMD (Bay Area Air Quality Management District) demolition permit. A copy of the approved J number permit should be uploaded into the PRS system

Develop management plan for asbestos containing materials, lead, and any PCBs.

Develop removal plan of the fire life safety systems and seek approval from the Fire Marshal.

Develop other decommissioning design documents as appropriate and submit to BIO via PRS for review and authorization.

5.5.6 Issuance of Certificate of Building Deactivation. After BIO authorization is given to deactivate a facility and all necessary actions are taken, BIO will issue a Certificate of Building Deactivation. This certificate includes:

- A BIO Authorization Number.
- The building number of the facility.
- A description of the status of the facility.
- The name of the Building Manager, Building Landlord, Space Planning, Facility Operations and Maintenance Manager.
- The name and signature of the current Building Code Official, Fire Marshal, Electrical Safety Officer, Security
- Manager, Radiation Protection Manager, and Waste Management Manager.

5.5.7 Revocation. If at any time SLAC decides to reoccupy a deactivated or decommissioned building, a new Certificate of Occupancy will be required – see section 5.4 for details.

5.5.8 CONTROL OF HAZARDOUS ENERGY IN OUT OF SERVICE EQUIPMENT

5.5.8.1 Guideline for Control of Hazardous Energy in Out of Service Equipment. Separate BIO Authorization is required as it pertains to the conditions of Out of Service Equipment left in a Disconnected State or a Mitigation of Hazardous Energy State. For more information view the document in the BIO Website under electrical. Out-of-service equipment energy isolation BIO highlighted 6.26.23 This section applies to all hazardous energy systems including electrical, pressure systems, compressed air, process water systems, gas cylinder systems, cryogenic systems, etc.

Appendix A –Definitions and Acronyms

The following words and terms are used in this manual as defined below:

[#]	10 CFR 851	An act of the US Congress that defines the worker safety and health requirements for contractors at Department of Energy sites. For SLAC, the 10 CFR 851 requirements have been modified under the RWG (Revolutionary Working Group) contract.
[A]	Acceptance	SME acceptance of a review aspect in PRS signifies that the reviewer has reasonable assurance that the aspect design element(s) comply with required codes and standards. A Reviewer who has no comment indicates acceptance of the submittal for the assigned review aspect. Otherwise, a reviewer indicates their overall acceptance of their review aspect by accepting project responses for each of their review comments. At the project level the stamping of submittal documents by the BCO/BO signifies that all reviewers have accepted the submittal. This overall process denotes authorization of the submittal. (see entry for “Authorization”)
	AHJ	Authority Having Jurisdiction. For Building Code and National Fire Protection Association (NFPA) codes and standards, the person or entity is empowered to interpret the code and judge conditions as compliant or non-compliant with requirements. The AHJ for approving code alternatives is the DOE Site Office head. The DOE Site Office head assigns operational responsibilities for code administration and routine interpretation to three SLAC positions—SLAC Building Code Official (BCO), SLAC Fire Protection AHJ (FP-AHJ, or Fire Marshal), and SLAC Electrical AHJ (E-AHJ or Electrical Safety Officer) through the SLAC Director. Personnel designated by the SLAC Director with these titles are assigned operational responsibilities only. Requests for alternatives and/or exemptions to managed codes or orders must be referred to DOE for disposition. The DOE Site Office Head or other designated DOE representative retains final approval authority for these requests.
	AMM	Alternate Methods and Materials (AMM) request (AMMR) for Building Code family documents. This is a type of code alternative similar to an equivalency. (Also see entry for “Equivalency.”)
	Approval	Building Code term for the process of BCO/BO acceptance of a construction submittal. The complete term for BIO’s “authorization” (see Entry for Authorization”) The term is sometimes used informally at SLAC as a synonym for authorization.
	Aspect	Term for the SME external mandate technical discipline or shared area or resource interest being represented by an individual reviewer. (see entry for “reviewer”) Applicable aspects are documented in the plan review system for each submittal.
	Authorization	The process by which BIO confirms that a design package has been accepted by compliance reviewers (see Acceptance) and is therefore authorized to proceed to the next step in the review process. Authorization is normally documented by a disposition in PRS and by stamps on the reviewed documents. Most authorizations are related to design and construction submittals; examples of some common construction authorization points include for bid, for procurement, preliminary (30% or 60%) design, 90% design, 100% design, and issue for construction. Commonly approved construction documents that require authorization include the basis of design documents, specification sets, design drawings and calculations. See Appendix C for examples of authorization stamps currently used by BIO.
[B]	BCO	Building Code Official. This is the DOE-O-420.1 term for the assigned responsibility role most closely resembling the position known by municipal and state entities as the Building Official. Note that a SLAC BCO, unlike a municipal BO, is not granted the

		authority to approve building code AMMRs. The terms are used interchangeably at SLAC. (See BO entry.)
	BOC Beneficial Occupancy	Term used to indicate that a building, structure or portion thereof is ready to be authorized for use by the SLAC project owner, which is typically a line organization. Authorization for beneficial use is typically recognized by the granting of a Certificate of Occupancy or a Certificate of Completion issued by BIO. Conditional or partial use authorization may be granted by a temporary certificate of occupancy
	BIO	Building Inspection Office. An entity within SLAC ESH CCAS Group.
	BO	Building Official. Terms used in the California Building Code. This term is recognized in DOE Standard 1066 as interchangeable with the DOE-O-420.1 term “Building Code Official” or BCO. (See BCO entry.)
[C]	CA	Construction Authorization After reviewing of application and plans, BIO authorizes a project to be constructed.
	CA-SAP	California Safety Assessment Program (CA-SAP) SLAC Participates in the California Safety Assessment program to inspect and tag buildings based on their condition
	CBC	California Building Code. Also, it may be used generically to refer to the codes of the Title 24 Code set as adopted by SLAC, excluding administrative requirements.
	CCAS	Abbreviation for SLAC ESH Code Compliance and AHJ Services Group. BIO exists within CCAS, and the CCAS supervisor is considered the BIO head.
	Child Project	A PRS project submittal classified as subsidiary to a parent (primary) project submittal
	CM	Construction Manager, previously referred to as Field Construction Manager (see FCM)
	CMC	California Mechanical Code
	COR Codes of Record	Editions of required building codes and standards in effect at SLAC at the time project design criteria are approved contract are the codes of record for that project. More recent editions of specific codes can be substituted upon mutual agreement of SLAC Building Official, the responsible AHJ, and the PM or Project Director. All other projects must meet current codes and standards.
	COC	Certificate of Completion. A SLAC-specific document used to track completion of BIO project submittals for phased construction and other special circumstances.
	COO or CO	Certificate of Occupancy. At SLAC, this BIO-issued document certifies that a new building or area is suitable for occupancy or that a fully renovated building or area is suitable for re-occupancy. Also used as an umbrella document in conjunction with COCs to track phased construction and other special circumstances for which occupancy is not a consideration.
	Coordinator	In this document, shorthand for Building Inspection Office Plan Review Coordinator, a BIO core staff position. This term is not to be confused with ESH Coordinator
	CPC	California Plumbing Code
[D]	DOE-O-420.1C	DOE Order for Facility Safety.
	Deactivation (equipment)	To place out-of-service equipment in a safe stable condition by eliminating hazardous energy in accordance with ESH Manual Chapter 51, Control of Hazardous Energy. The condition must be protective of workers, the public, and the environment, and economical to maintain for an extended period until the final removal of the equipment.

	Deactivation (facilities)	The process of placing a facility in a stable condition to minimize exiting risks and the associated life-cycle cost of the Surveillance and Maintenance program that is protective of workers, the public, and the environment
	Decommissioning	The process of closing and securing an excess facility for disposal or demolition with adequate regard for the health and safety of workers and the public, and protection of the environment following deactivation. Includes surveillance, maintenance, precautionary hazardous material/liquid removal, decontamination, and/or dismantlement.
	Design Professional in Responsible Charge	Previously termed, architect of record or engineer of record. Member of design team tasked with taking ultimate responsibility for coordination, integration, accuracy and completeness of the technical aspects of a project design.
	Dismantlement	The disassembly or demolition and removal of any structure, system, or component during decommissioning and satisfactory interim or long-term disposal of the residue from all or portions of a facility
[E]	Equivalency	A request for an alternative to a DOE or NFPA standards requirement. An equivalency requires DOE Site Office head or Site Office designee approval. Also see AMM for the comparable building code document.
	EP	SLAC ESH Environmental Protection Department
	ESH	SLAC Environmental Safety and Health Division
	ESH Coordinator	SLAC staff position for an ESH specialist who acts as liaison to provide ESH services to a SLAC Division or Directorate.
	External Mandates	Codes, standards and other regulatory requirements involved at SLAC through the DOE Prime Contract with Stanford. ESH Requirements are primarily flowed down through ESH Manual chapters.
	Exemption	Outright relief from a required building code or standard. Exemption requests must be approved at the DOE under-secretarial level. SLAC does not ordinarily pursue exemption requests, but a small number of approved fire protection exemptions to DOE sprinkler requirements do exist from the time of the lab's original establishment.
	Experimental	Experimental – Typically used for science projects.
[F]	FCM	Facility Construction Manager, currently referred to as Construction Manager (see CM)
	FMO	Fire Marshal Office
[I]	ICC	International Code Council
	IH	SLAC ESH Industrial Hygiene Department
[N]	NEC	NFPA 70 National Electric Code
	NFPA	National Fire Protection Association
	NTP	Notice to Proceed. This is a written notice from SLAC Procurement that releases a contractor to begin construction activities on a specified date, thus beginning execution of a construction contract.

[O]	Owner	As used in this manual, the lowest level line manager is directly responsible for funding and setting criteria for a construction project, or their designated Responsible Person.
[P]	Parent Project	An initial or primary submittal that has one or more subsidiary Child submittal(s). The parent project may be an actual primary project, or it may be a “dummy” project used only to provide an umbrella for a collection of closely related submittals.
	PM	PM. As used in PRS, the person who submits and manages a PRS project. For large construction projects, this is typically a full time F&O PM, but the term also covers engineers, responsible people, and others who submit and manage projects in PRS.
	Project	As used for PRS, a project consists of the contents of a single PRS submittal and is used interchangeably with the self-evident term “submittal.” While this may directly correspond to the PMs definition of project for small construction, it is usually only a sub-project for the PM. BIO uses the term “Parent Project” to refer to the overarching identification number that references all related PRS project submittals to a single construction project. (See Parent Project.)
	Project Stakeholders	<p>(SLAC Conduct of Engineering) In (systems) engineering, A stakeholder is commonly defined as someone who has a stake in the project – That is, someone who is affected by the system in some way or can affect the system in some way.</p> <p>Non-ESH Stakeholders</p> <p>Anyone with an interest in the project’s success who is not in Environmental Safety and Health, ie Accelerator Directorate, Stanford Synchrotron Lightsource, Personal Protection Systems, Facilities and Operations, Project Management Office, Etc.</p> <p>ESH Stake Holders</p> <p>Anyone with an interest in the project’s success who is in Environmental Safety and Health, ie Building, Fire, Electrical Safety, Environmental Protection, Security, Industrial Hygiene, Waste Management, Radiation Protection etc.</p>
	PRS	Plan Review System. Name of in-house SAP-based electronic system to track BIO project submittal review and approval.
[R]	Requester	As used during PRS submittal, the requestor of the project
	RP	SLAC ESH Radiation Protection Department
	Responsible Person	Representative designated by line management to oversee line needs for a construction project. This person is most often a scientist or line engineer who is overseeing a project that requires PRS review to interface science equipment with conventional infrastructure. Also see “Owner” and “Requester.” PMs from a specific subcategory of Responsible Persons who oversee conventional construction projects.
	Reviewer	<p>Applies to a project BIO/ESH review. A reviewer is a BIO or ESH SME selected by the BIO plan review coordinator to review a particular aspect of the PRS submittal.</p> <p>Not to be confused, persons selected by a PM to perform project design review prior to submitting the project to BIO for BIO/ESH review.</p>
[S]	Security	SLAC ESH Security Department
	SLAC Site Office (SSO)	As used in this manual, this term refers to the Department of Energy SLAC Site Office, commonly referred to by the acronym SSO.
	SME	A subject matter expert who is responsible for providing reasonable assurance of compliance with project submittals with required codes and standards and external mandates as addressed in various SLAC ESH programs.

	SOW	Statement of Work. A Procurement/Supply Chain Management contract document used to obtain design, engineering, construction and other project-related services. The term SOW is short for Scope of Work. The PRS submittal description of work is sometimes referred to as a Scope of Work.
	SSA	SLAC Structural/Seismic Authority (SSA). A Person in the SLAC Facilities & Operation (F&O) Division that is an authority on structural and seismic issues. The SSA shall be a Structural Engineer Licensed by the State of California. The SSA shall provide the BO/BCO with guidance, regulations, design review and/or recommendations pertaining to structural and/or seismic engineering issues.
	SC	Substantial Completion is a term used outside of BIO to indicate that contracted construction work has been completed to the point where a contractor is entitled to full or nearly full payment. For a BIO-authorized design package, the PM may request BIO to provide a certificate of completion to support that substantial completion requirements have been met.
	Stake Holder	See Project Stakeholder above.
[T]	TCO	Temporary Certificate of Occupancy. A TCO is issued to allow a specified interim occupancy state. TCOs are most often issued to allow a contractor to move furniture or equipment into a facility prior to full building completion, or to allow phased occupancy of a building that is being accepted in stages.
	TI	Tenant Improvements. A construction project remodel of an existing building space to accommodate the specific needs of one or more users. These may include (but are not limited to) the installation of interior walls, structural modifications, plumbing, wiring, mechanical, fire alarm and fire protection systems, flooring, and lighting.
[U]	UTR	An archaic term for a Field Construction Manager (FCM, also archaic) or Construction Manager (CM, the term currently in use).
[W]	WM	Refers to the SLAC ESH Waste Management Department

Appendix B – BIO Approved Stamps

BIO uses electronic stamps to signify authorization of approved design documents and for other purposes. The following entries show each stamp currently in use and explains its purpose.

Construction Authorization (IFC) This stamp marks design documents that have been reviewed for code compliance and Construction Authorization (Issued for Construction- IFC) can occur based on the designs. Each sheet of a drawing is stamped. Scope of work, specifications, calculations and reports are typically only stamped on their covers.

SLAC BUILDING INSPECTION OFFICE	
CONSTRUCTION AUTHORIZATION (IFC)	
By: _____	
DATE: _____	PRS #: _____
Revised Authorization ___ No ___ Yes	
These plans have been reviewed for compliance with applicable building codes and standards, and ESH program requirements.	
<i>The authorization of these plans shall not be construed to be a permit or an approval for violation of any applicable codes, standards, or ESH programs.</i>	
THESE PLANS SHALL BE KEPT ON THE JOB SITE FOR ALL CONSTRUCTION INSPECTIONS.	

Reviewed for Code Compliance – Review of Documents This stamp is used for multiple purposes based on the type of submittal received. This stamp is for all reviews **except** Construction Authorization (IFC). Usage includes:

- CDR Conceptual Design Report
- PDR Preliminary Design Report
- FDR Final Design Report
- Issue for Bid (IFB)
- Issue for Procurement (IFP)
- Design stages (as determined by the PM):
30%, 50%, 60%, 75%, 90%, 100%
- Fabrication drawings
- Architect Supplemental Information (ASI)
- Requests for Information (RFI)

SLAC BUILDING INSPECTION OFFICE	
Reviewed for compliance with applicable building codes and standards, and ESH program requirements.	
BY: _____	
DATE: _____	PRS#: _____
<input checked="" type="checkbox"/> APPROVED	<input type="checkbox"/> REJECTED
DRAWING SET: _____	
REVISION #: _____	RFI #: N/A
SUBMITTAL #: N/A	
OTHER #: N/A	

Special Note: Project Management Approval Stamps – These are NOT BIO Approved Stamps.

In most contracted project designs, there are several submittals that are stamped by the PM or their designee for their internal approval process. Some documents going through this internal review process may also require a BIO review; many do not. These stamps are unrelated to BIO approvals. When BIO approval is required, the project management approval stamp does not stand in for that requirement. Examples of such project management stamps are shown below, for information only.

Example of Facilities and Operations and Design and Construction internal review stamps.

THESE ARE NOT BIO APPROVAL STAMPS.

SLAC U.S. DEPARTMENT OF **ENERGY**

Facilities and Operations

APPROVED

APPROVED AS NOTED

REVISE AND RESUBMIT

REJECTED

FOR INFORMATION ONLY

Date: _____

Submittal No. _____

SLAC U.S. DEPARTMENT OF **ENERGY**

Design and Construction Services

APPROVED

APPROVED AS NOTED

REVISE AND RESUBMIT

REJECTED

FOR INFORMATION ONLY

Date: _____

Submittal No. _____

SLAC U.S. DEPARTMENT OF **ENERGY**

F&O Engineers Drawing Review

REVIEWED REVISE AS NOTED REVISE AND RESUBMIT

REVIEWER/S: Sudheera Sivakumar

DATE: _____ SIGNATURE: _____

The above items have been reviewed for general compliance with project requirements and industry standards within the reviewer's area of expertise. This review does not constitute final approval or acceptance of the submittal. The contractor remains responsible for ensuring accuracy of dimensions, field conditions, and coordination with other trades.

SLAC U.S. DEPARTMENT OF **ENERGY**

F&O ELECTRICAL POWER DEPARTMENT

REVIEWED

REVISE AND RESUBMIT

REVIEWER: _____

Date: _____

Appendix C – BIO Staff R2A2

Roles	Responsibilities	Accountability	Authorities
<p>Building Inspection Office (BIO)</p>	<p>The ESH Building Inspection Office (BIO) performs building code compliance review of design projects for construction of new facilities and modifications to existing facilities. Applicable building codes and standards include:</p> <ul style="list-style-type: none"> • Title 24 California Building, Plumbing, Mechanical, Fire, and Energy Codes • NFPA 70 National Electric Code • NFPA 101 Fire Life Safety Code • Architectural Barriers Act (ABA), ADA, CBC Chapter 11 <p>BIO code compliance reviews are performed in accordance with ESH Manual Chapter 1 Project Review Procedure.</p> <p>BIO code compliance responsibilities flow down from DOE Order 420.1C, Chg. 3 (LtdChg) Facility Safety. The SLAC Site Compliance Plan (SCP) for Order 420.1C describes how the laboratory complies with the Order. SCP Attachment 1, Section 1.c. provides requirements for building code compliance.</p> <p>Order 420.1C invokes Fire Protection Standard DOE-STD-1066, which provides requirements for design review of fire protection systems, assignment of AHJ responsibilities from the DOE SLAC Site Office (SSO) to SLAC, and management of equivalencies and exemptions to required building codes and standards. The SCP states that BIO building code compliance responsibilities apply from conceptual design through project completion.</p> <p>SLAC’s authority having jurisdiction (AHJ) responsibilities are assigned by DOE SSO to the SLAC Director. These responsibilities are further assigned by the SLAC Director to BIO personnel:</p> <ul style="list-style-type: none"> • SLAC Building Code Official (BCO or BO) • SLAC AHJ – Fire Protection • SLAC AHJ – Electrical Installations <p>The assigned AHJ operational responsibilities include <i>code interpretation</i> and <i>code enforcement</i>.¹</p>	<p>CCAS Department Head is accountable to the ESH Director</p> <p>The roles of Building Official, AHJ Fire, and AHJ Electrical are accountable to DOE SSO via the SLAC CSO and SLAC Deputy Director of Operations.</p> <p>The roles of Plans Examiner-Building Inspector and the BIO Project Coordinator are accountable to the Building Official.</p> <p>All CCAS members report administratively to the CCAS DH.</p>	<p>The Building Official, Plans Examiners, Building Inspectors, and AHJs have the authority to:</p> <ul style="list-style-type: none"> • interpret building codes and standards. • deem project documents compliant or not compliant. • provide advice or guidance on proposals to achieve compliance. • inspect work in progress. • deem field conditions compliant or not compliant. • request rework of noncompliant installations. <p>The Building Official has the authority to:</p> <ul style="list-style-type: none"> • enforce building code compliance. • stamp compliant project documents and authorize projects to proceed to the next step (procurement, bid, fabrication, or construction, as applicable) • prepare and approve certificates of completion or certificates of occupancy when needed.

¹ Requests for *equivalencies to or exemptions from* required codes and standards *are not* within the assigned responsibilities of SLAC AHJs. These requests must be forwarded to DOE SSO for disposition.

Roles	Responsibilities	Accountability	Authorities
Building Inspection Office (BIO)	<p>BIO Code Compliance and ESH Requirements Review (BIO/ESH Review)</p> <p>The BIO Plan Review System (PRS) is the on-line tool used to manage BIO/ESH review². <i>Project Managers (PMs) or responsible persons</i>^{3,4} upload design packages to PRS for review.</p> <p>When a project is uploaded to PRS and approved for review by the PM, BIO assigns <i>subject matter expert (SME) reviewers</i> for <i>required building codes and standards, and ESH requirements</i>, and releases the project for review.</p> <p>Reviews aspects (responsible organization):</p> <ul style="list-style-type: none"> • Title 24 California Building, Plumbing, Mechanical, Fire, and Energy Codes, the National Electrical Code, and NFPA 101 Fire Life Safety Code (BIO) • Structural/Seismic (BIO) • Sustainability (BIO and F&O) • ADA (BIO) • SLAC Structural Authority (F&O) • Pressure Systems Safety (AD and ESH) • Industrial Safety (OSHA and Cal/OSHA) (ESH) • Construction Safety (ESH) • Industrial Hygiene (ESH) • Air Quality (ESH) • Hazardous Materials (ESH) • Waste Management (ESH) • Environmental Protection (ESH) • Radiation Protection (ESH) • NEPA (ESH) • Plants/Wildlife (ESH) • Wastewater and Storm Water (ESH) • Spill Prevention Controls and Countermeasures (ESH) • Environmental Restoration (ESH) 	(see page 1)	<p>Authorities Having Jurisdiction (AHJ) have the authority to:</p> <ul style="list-style-type: none"> • enforce building code compliance. • review and determine if requests for equivalencies and exemptions have merit and should be forwarded to DOE SSO for disposition. • request rework or redesign if a request for an equivalency or exemption is not forwarded to DOE SSO for disposition.
		<p>Note: It is important that BIO personnel do not directly participate in design development. They must remain independent from the design team except to provide advice or guidance on proposals to achieve compliance. The Building Official and AHJs appointment memos contain this expectation:</p> <p style="text-align: center;"><i>AHJs and BCO are responsible for enforcing the requirements of a code or standard, and approving equipment, materials, installation, or procedures. It is expected that the assigned AHJs and BCO (BO) be <u>completely independent from decisions being reviewed and shall not have any relationship to design or organizations creating designs ...</u></i></p>	

² BIO code compliance and ESH requirements review is abbreviated as BIO/ESH review in this document.

³ Responsible person is defined in **ESH Manual Chapter 1 General Policy and Responsibilities**: *The principal investigator, project manager, or other individual with overall responsibility for an experimental or conventional project.*

⁴ PM or responsible person in abbreviated as PM in this document.

Roles	Responsibilities	Accountability	Authorities
Building Inspection Office (BIO)	<p>Building <i>codes of record</i> for each design package are established by BIO at commencement of project design. An up-to-date <i>code of record</i> table is available to project stakeholders on the BIO website or upon request.</p> <p>Experimental Project Review</p> <p>BIO review of installations of science and experimental (non-conventional) projects is limited to attachment of the equipment to building structures and building systems. Seismic anchorage of science and experimental equipment, fire protection and egress requirements, and electrical equipment working space, accessibility, and grounding are included in the BIO review.</p> <p>Conventional Project Design Review</p> <p>The ESH Project Review Procedure requires <u><i>all equipment and operational aspects of projects</i></u> to be reviewed by <u><i>key organizational stakeholders</i></u>. These reviews are managed by PMs.</p> <ol style="list-style-type: none"> 1) <i>BIO does not perform design reviews and does not manage design reviews performed by others.</i> Project design reviews are the responsibility of the PM. 2) <i>BIO/ESH review is required at each stage of a project (e.g. 30/60/90/100% design).</i> Project Design reviews must be complete <i>with all key stakeholder comments incorporated into project documents</i> before the PM submits the project to PRS for BIO/ESH review. Unresolved and open comments which have been deferred by the PM to the next stage of design development must be included in the design package submitted to PRS for BIO/ESH review. 	(see page 1)	(see pages 1 and 2)

Roles	Responsibilities	Accountability	Authorities
Building Inspection Office (BIO)	<p>Building Inspection Office Project Review and Authorization Manual</p> <p>BIO operations are governed by the BIO Project Review and Authorization Manual (RAM).</p> <ul style="list-style-type: none"> • Scope of BIO authority: ... <i>review, oversight, and authorization for construction, modifications, renovations, deactivation, decommissioning, use, occupancy, alteration and retrofits of all buildings, structures, and areas ...</i> <p>BIO Responsibilities:</p> <ul style="list-style-type: none"> • Provide reasonable assurance of compliance with the required building codes and standards. • Comply with the ESH Project Review Procedure. • Review and authorize for construction project design documents. • Perform inspections based on authorized for construction documents. • Perform assigned AHJ operational responsibilities. • Provide interpretation and clarification of code requirements. • Enforce requirements of required building codes and standards. • Maintain a plan review matrix that identifies SMEs for all building code and ESH review aspects. Work with SLAC safety program managers, AHJs, and ESH reviewers to ensure comprehensive review of design projects⁵: <ul style="list-style-type: none"> ○ Fire Protection ○ Electrical Safety ○ Pressure Safety ○ Structural/Seismic Safety ○ Radiation Safety ○ Environmental Protection • Review <i>Statement of Work</i> documents upon request to verify compliance with required building codes and standards and ESH requirements. • Perform in-progress and final inspections. • Prepare certificates of completion or certificates of occupancy in coordination with SLAC Fire Marshal, Electrical Safety Officer, PM, building managers, and building occupants. • Keep records of all BIO/ESH reviews and construction inspections. 	(see page 1)	(see pages 1 and 2)

⁵ This is a partial list of review aspects – see the plan review matrix for the complete list.