Project Management, Design, and Construction of Buildings Under OSHPD Jurisdiction

March 2006
Best Practices for

Project Management, Design, and Construction of Buildings Under OSHPD Jurisdiction

Funded by the
California HealthCare Foundation
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Preface

California hospital buildings are considered by many architects and engineers to be the most complex buildings in the world to construct. They are also among the most costly. Hospital buildings must be designed and built to provide care and service to the community 24 hours a day, seven days a week, regardless of environmental conditions that may impact the facilities or their staffs. California has developed rigorous hospital building standards and procedures to ensure that hospital facilities will be able to meet community needs. It takes considerable professional skill to understand these standards and implement these procedures. The California HealthCare Foundation has published *Best Practices for Project Management, Design, and Construction of Buildings Under OSHPD Jurisdiction* to aid in the design and review of hospital construction projects in California and to serve as a model for avoiding costly delays sometimes associated with large, complex construction projects.

With the sustained leadership of its senior vice president, Roger Richter, the California Hospital Association (CHA) in conjunction with the California Society for Healthcare Engineers (CSHE) and in cooperation with the Office of Statewide Health Planning and Development (OSHPD) assembled a Task Force assigned to establish "best practices" for the design, quality control, and construction of hospitals in the state. Three Panel Review Committees (Plan Design and Review, Inspection, and Hospitals) were formed to address several areas within the industry that could offer improvement and better service to the general public. Committee members were drawn from various disciplines and from both the private and public sectors. Each committee was led by a technical advisor: John Millsap for Plan Design and Review and Hospitals and Glenn Tong for Inspection. Roger Witalis served as meeting facilitator throughout the process. Editor David Couzens helped to convert a document written by multiple committees into a cohesive, complete, and coherent guide. This manual is the result of the substantial coordinated efforts of all of these individuals.

This "best practices" manual is current as of January 15, 2006, and should only be used as a general guideline and reference tool. It is to be used in conjunction with the contract documents and does not, in any way, supersede or alter specific requirements of the project contract, drawings, specifications, and enforceable codes.

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1 Introduction to the Office of Statewide Health Planning and Development

1.1 Office of Statewide Health Planning and Development Facilities Development Division

The Sylmar earthquake of 1971 caused the collapse of several hospital buildings, endangering the lives of patients in those hospitals at the time and rendering the hospitals incapable of providing emergency care to people injured in the earthquake. As a result, the California state legislature passed the Alfred E. Alquist Hospital Seismic Safety Act and, since 1973, all hospital construction has been governed by the provisions of that legislation. The Act’s title was changed to the Alfred E. Alquist Hospital Facilities Seismic Safety Act (HFSSA) in 1983. In essence, the state preempted local building departments to ensure statewide uniformity in health facility construction standards. The standards are intended to ensure that vulnerable patients are safe in an earthquake and that the facilities remain functional after such a disaster, thereby being capable of providing care for injured persons in the community.

Pursuant to the HFSSA, the Office of Statewide Health Planning and Development (OSHPD) is responsible for overseeing all aspects of the design and construction of general acute care hospital, psychiatric hospital, and multistory skilled nursing home and intermediate care facility construction in California. Its responsibilities include establishing building standards that govern construction of these types of facilities; reviewing the plans and specifications for new construction, alteration, renovation, or additions to health facilities; and observing construction in progress to ensure compliance with the approved plans and specifications.

In addition, OSHPD is responsible for establishing the building standards for freestanding licensed clinics, but plan review and construction observation functions are the responsibility of local building departments. For two types of clinics—dialysis clinics and surgical clinics—local building departments may defer these functions to OSHPD or the facility owner may request that OSHPD provide plan review and construction oversight services. Also, the governing authority of a hospital may request that OSHPD perform plan review and building inspection services for any licensed health facility building where outpatient clinical services are provided that is physically separated from a building in which hospital services are provided. If requested, OSHPD shall perform those services and charge an amount equal to its standard fee for the construction and alteration of hospital buildings.

OSHPD’s responsibilities under the HFSSA are carried out by its Facilities Development Division (FDD). The FDD construction oversight process entails the following: Construction drawings and specifications are submitted to the FDD and reviewed for code compliance by division architects; structural, electrical, and mechanical engineers; and fire and life safety personnel. Upon plan approval, a building permit is issued and construction begins. The facility owner hires an FDD-certified Inspector of Record (IOR), who works under the direction of the architect of record.
throughout the construction phase and reports to FDD field personnel and the owners on the progress of the construction. The IOR notifies FDD of discrepancies between approved plans and specifications and work in progress and ensures their resolution by the hospital design team. In addition, FDD field personnel make periodic visits to the construction site to ensure that the seismic, fire and life safety, and other requirements of the building code are being met. Once construction is completed and the Department of Health Services concurs that the project meets licensing requirements, FDD issues a certificate of occupancy.

FDD serves as a "one-stop shop" for all aspects of health facility construction. All geotechnical, structural, mechanical, electrical, and fire and life safety considerations for inpatient healthcare facility physical plants are handled by FDD. The California Department of Health Services Licensing and Certification Division ensures that the organization and operation of health facilities meet specified standards (e.g., staffing ratios and qualifications, quality of care protocols, and emergency action plans).

FDD staff members also play an important role in the aftermath of an earthquake, being dispatched to assess the extent of damage to health facilities in the affected communities. Based on these assessments, the facilities are cleared to continue providing care without interruption or, if the damage is severe enough, the facility may be closed. The results of these assessments are communicated to state and local emergency response personnel, so that they can route patients to safe facilities. FDD staff members also review and approve on-site construction required for mitigation of earthquake damage to the facility.

1.2 Authority of OSHPD FDD

OSHPD FDD oversees certain aspects of the integrity and safety of the built environment. These include the following:

- new construction;
- remodeling;
- all aspects of facility modification that affect architectural, electrical, mechanical, and structural systems and anything that affects fire and life safety conditions, including replacement of clinical and nonclinical equipment and installation of technology and communications systems; and
- compliance with the conditions and deadlines established by California Senate Bill 1953 (Chapter 740, Statutes of 1994) regarding seismic safety (also referred to as the hospital seismic mandate or the Hospital Seismic Retrofit Program).

The basis for OSHPD FDD’s authority is established by statute in the California HFSSA. The regulations enforced by OSHPD FDD are contained in the California Building Standards Code (CBSC), Title 24, California Code of Regulations.

- Part 1 of Title 24 is the California Building Standards Administrative Code and defines the administrative procedures necessary to implement the seismic retrofit requirements of the HFSSA.
- Part 2 of Title 24 governs all of the technical aspects of the built environment as well as sets out the architectural requirements for clinical services as defined in Division 5 of Title 22 (licensing regulations).
- Title 19 contains the fire and life safety requirements of the State Fire Marshal.

The responsibility for adopting the CBSC rests with the California Building Standards Commission. OSHPD is one of a number of state agencies that proposes amendments to the building code.
The scope of authority for OSHPD FDD extends to all health care buildings. It does not normally include medical office buildings, parking garages, or other nonhospital buildings on a campus unless those buildings contain necessary utilities that support the hospital building or have fire and life safety implications for the hospital building. Other elements of the medical campus such as the right to site an acute care facility, grounds and landscaping, parking lot construction, and the general aesthetics of the site remain in the domain of the local government. Site development may also come under the requirements of the California Environmental Quality Act (CEQA). Local health departments govern issues related to operation of food preparation areas in acute care buildings. Hospitals must recognize and account for local jurisdiction entitlements, design review, and site engineering approvals, which are completed outside of OSHPD jurisdiction but are required to be completed prior to release of an OSHPD permit. OSHPD requires proof of local jurisdiction approvals.

OSHPD FDD does not enforce regulations that are not adopted by the state of California. Hospital owners must ensure that the hospital’s design team is responsible for compliance with the Americans with Disabilities Act (ADA) or Medicare Conditions of Participation requirements when appropriate.

1.3 OSHPD FDD Structure

FDD staff are divided into six work groups defined as Regions, based on geographical assignments. Each region has both office and field staff assigned to it to provide plan review and field observation services. (See http://www.oshpd.cahwnet.gov/FDD/AboutUs/Organization.htm.)

1.4 FDD Region Duties

1.4.1 Plan Review

The Plan Review group is responsible for ensuring that all plans for work within a hospital building are properly prepared by licensed architects and engineers and that the plans conform to the requirements of the California Code of Regulations (CCR). Each regional plan review office is managed by a regional supervisor who oversees the work of a staff of plan reviewers comprising licensed architects and electrical, mechanical, and structural engineers as well as a fire and life safety officer.

1.4.2 Field Observation

The Field Observation group oversees the construction inspections of facilities within the geographic boundary of their respective region. This oversight enhances the construction quality of hospital facilities and fosters better lines of communication between OSHPD and the various architects, engineers, and contractors involved in hospital construction. A Regional Compliance Officer (RCO) supervises a staff comprising Area Compliance Officers (ACOs), District Structural Engineers (DSEs), and Fire and Life Safety Officers (FLSOs).

Details on working with OSHPD field staff can be found in Chapter 5 of this volume.
1.5 FDD Program Units

1.5.1 Seismic Retrofit Program Unit

Senate Bill 1953 (SB 1953) (Chapter 740, Statutes 1994) was enacted January 1, 1995. The bill was an amendment to and furtherance of the Alfred E. Alquist Hospital Facilities Seismic Safety Act of 1983 (Alquist Act). SB 1953 (Chapter 740, 1994) is now chaptered into statute in Sections 130000 through 130070 of the Alfred E. Alquist Hospital Facilities Seismic Safety Act and is part of the California Health and Safety Code. This statute resulted in the Seismic Retrofit Program Unit being formed within the FDD.

The Seismic Retrofit Program Unit comprises structural engineers and architects who review and approve the seismic evaluation reports and compliance plans as they are submitted to OSHPD. (See http://www.oshpd.ca.gov/FDD/SB1953/index.htm.)

1.5.2 Regulations Unit

The Regulations Unit develops proposed modifications to the CBSC. The group develops tools used for interpreting code called Code Application Notices (CANs) and Policy Intent Notices (PINs) that are used by designers and hospital personnel to better understand the affected regulations. (See http://www.oshpd.ca.gov/FDD/Regulations/index.htm.)

1.5.3 Hospital Building Safety Board

The Hospital Building Safety Board (HBSB) is appointed by the Director of OSHPD. The HBSB advises the Director on the implementation of the HFSSA and acts as a board of appeals in all matters of the administration and enforcement of building standards relating to the design, construction, alteration, and seismic safety of hospital building projects submitted to the FDD.

1.6 Enforcement

OSPHD FDD is responsible for determining whether a hospital is in compliance with the requirements of Titles 24 and 19 of the California Code of Regulations (CCR). Operating compliant facilities is a basic requirement of Title 22 of the CCR. Facility compliance is also a consideration for CMS/Medicare certification and for accreditation by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO).

If a hospital is found in violation of Title 24, OSPHD may take either formal or informal action. Informal action takes the form of instructions to correct the noncompliant condition. Formal actions are more severe and can have damaging effects on a hospital. Examples include

- a notice to Stop Work and
- a noncompliance letter for work performed without a permit (commonly referred to as "bootlegged" work or unauthorized construction).

Even if Licensing & Certification chooses not to take action as a result of a noncompliance condition cited by OSPHD FDD, there still remains heightened risk to the hospital from action by CMS that could materially affect the hospital’s Medicare payment or JCAHO accreditation.

Noncompliance matters should be taken very seriously.
2 Plan Design and Review Best Practices

2.1 Introduction

Hospitals by their nature are large, complex buildings and hence so are the construction projects to build them. Before any construction can commence, the Office of Statewide Health Planning and Development (OSHPD) must review and approve the various construction documents. Projects under $500,000 in construction cost make up the majority of project plans reviewed by OSHPD. Often construction documents prepared for these projects are produced by architects and engineers who may have limited experience in health care design. Submitting consistently formatted construction documents, applying quality review checklists, and following "Best Practices" in the construction phase all have the potential to simplify and accelerate plan review and construction activities. Clearly prepared construction documents will also facilitate the general contractor’s ability to efficiently construct projects. The design team should meet with OSHPD staff as needed during predesign and design phases to review and confirm design issues.

Although OSHPD cannot mandate the organization and style of construction documents, the guidelines outlined in this chapter should provide a consistent approach for preparation of construction documents that will facilitate the plan check review process. These guidelines represent minimum requirements; licensed design professionals and hospital representatives may want to go above and beyond the guidelines presented here.

Keep in mind that the "Best Practices" outlined in this chapter are only general guidelines meant to serve as a reference tool. They are to be used in conjunction with the contract documents and do not, in any way, supersede or alter specific requirements of the project contract, drawings, specifications, and enforceable codes.

2.2 Project Title Sheet

2.2.1 Purpose

The title sheet to a set of construction documents not only provides a general introduction to the project but also includes statements and descriptions for project-specific requirements, the basis of design for construction, and compliance with enforceable and applicable codes relevant to the project. Much of the information on the title sheet is general information for the contractors and presents the project scope and description, maps for location of the building, identification of the responsible design professionals and client, and general statements about the overall use of the documents. For small projects, or where room allows, it may also include an index to the drawings, site plans, and other overall drawings that help to describe the project scope and its setting, whether for a new building or for renovation of an existing building.
Chapter 2

For reviewers of the drawings, the title sheet is also the preferred location for descriptions of building occupancy classifications, sizes, construction type, number of stories, and other general features of the design, all of which convey the designers’ intent and provide a basis of review for compliance.

For projects involving buildings or portions of buildings that are not under OSHPD jurisdiction, there should be a clear delineation of what portions of the project are being submitted for review. An example would be a utility project in which the building that houses the utility is subject to OSHPD review but the building to be serviced by the utility is subject to local government entity review.

2.2.2 Content

2.2.2.1 General

The architect should be familiar with OSHPD’s Facilities Development Division Web page. References made to Code Application Notices (CANs), PINs (Policy Intent Notices), design checklists, and other documents, relevant to California’s healthcare construction review process, are available for viewing and download. See http://www.oshpd.ca.gov.

2.2.2.2 Title Block or Strip

Provide the proper name and address of the project, the facility, and the Architect of Record (AOR) or the Engineer of Record (EOR). Also provide OSHPD with the number or letter of each sheet, date of preparation and (if relevant) the date of revision, the scale, and the north point of reference. OSHPD strongly recommends that its project number, assigned at the time of application, be prominently noted on all sheets. The signed stamp of the AOR or EOR and the signature of the architect or engineer in general responsible charge must be clearly shown. A space should also be reserved for the OSHPD approval stamp, provided at the time of signing. When a submittal package is part of an approved incremental construction package, the title sheet should identify the increment represented by the package and a list all increments that make up the complete project.

2.2.2.3 Project Team

Provide the proper names of all firms responsible for the drawings and other design documents; include mailing addresses, phone numbers, and fax numbers for contact. Other contact information as shown on the application for plan review, such as names of individuals, e-mail addresses, and project Web sites, may be useful as determined by the AOR or structural engineer in responsible charge.

2.2.2.4 Project Information

Provide a general description of the work (e.g., new, renovation, or addition) as applicable for the project. Use CAN 2-34 for projects that include additions, alterations, or repairs. Include in table form and/or drawing format the following:

- the occupancy classification of the building or portions of the building, related to new work as well as existing buildings, in accordance with California Building Standards Code (CBSC) Chapter 3, and any specific use or occupancies in accordance with CBSC Chapters 4 and 4A;
- the date of construction of the original building (for addition and renovation projects);
- whether the building is fully or partially sprinklered or unsprinklered; if partially sprinklered, show boundaries or parts that are sprinklered;
- the type of fire alarm system within the building (i.e., full or partial smoke detection, etc.);
- the area of the building and number of stories and/or new construction, by occupancy and construction types, with a description of allowable increases, in accordance with CBSC Chapter 5;
- the construction type classifications in accordance with CBSC Chapter 6 and Table 6A;
- the location of the building by seismic zone in accordance with CBSC Chapter 16 (or reference to structural information);
- reference to OSHPD-accepted requests for alternate methods of compliance, alternate methods of protection, or program flexibility, in accordance with CBSC Section 104.2.8 and Section 420A.2 Exception 2; and
- reference to CAN 2-34 submittal and resulting letter of understanding where applicable.

2.2.2.5 Applicable Codes and Regulations

List all codes and regulations that the project is required to meet in its construction, including the specific state and local regulations. The OSHPD Fire Life Safety Officer has particular interest in specific National Fire Protection Association (NFPA) Codes and Standards, including applicable editions, pertinent to the project. Refer to CAN 1 for the current listing of enforceable codes. As part of the project’s General Notes, the following clause or one of similar meaning should be included in accordance with Part 1, Title 24, Section 7-125(b)2 of the CCR:

The intent of the plans and specifications is to reconstruct the hospital building (or this project) in accordance with California Building Standards Code, Titles 19 and 24, California Code of Regulations. Should any conditions develop not covered by the approved plans and specifications wherein the finished work will not comply with Title 24, Code of Regulations, a change order detailing and specifying the required work shall be submitted to and approved by the OSHPD FDD before proceeding with the work.

2.2.2.6 Fire-Resistive Schedule

Provide a listing or chart outlining the design of major building components and rated assemblies that correspond to the requirements listed in CBSC Table 6A. Each design element or assembly should have the intended specific item numbers from CBSC Tables 7A, 7B, or 7C or State Fire Marshal–approved testing agency numbers, such as Underwriters Laboratories (UL), Warnock–Hersey, Omega Point Laboratories, or other nationally recognized testing laboratories.

2.2.2.7 California Environmental Quality Act and the Local Jurisdiction

The Professional of Record (POR) is responsible for ensuring that the project conforms to the requirements of the California Environmental Quality Act (CEQA). Minor renovations normally do not trigger CEQA compliance, but a major addition or remodel might. New buildings will require CEQA compliance, even if it is declared not to have an impact to the environment (a negative declaration). Specific requirements and regulations for CEQA can be found at http://ceres.ca.gov.
The local jurisdiction is typically the lead agency in the CEQA process. OSHPD relies on the design professional to coordinate the local requirements with the project. In particular, any zoning and/or unique building code requirements imposed by a local jurisdiction need to be coordinated with the local agency. With a new building project especially, the site work will fall under the jurisdiction of the local agency. However, OSHPD will claim jurisdiction over the site fire water line as well as other jointly reviewed features and will ensure that there is a code-compliant path of travel to the public way at the property line and compliance with accessible parking requirements.

In addition to the local jurisdiction and OSHPD, many other allied agencies approve or permit a hospital project. OSHPD is the building permitting agency. The California Department of Health Services licenses these facilities and enforces codes that differ from OSHPD’s in some cases. For example, cafeterias require the local health department’s permitting, the use of a grease interceptor will require the review of the local water pollution agency, a storm water prevention plan might need to be filed, and an emergency generator or boiler might trigger an air quality review. This list is not comprehensive. The design professional ultimately takes full responsibility for working with the appropriate agencies. To avoid delays, the design professional must ensure that all appropriate approvals are obtained prior to a final permit being granted by OSHPD.

2.2.2.8 Deferred Approval

Often it is necessary to defer the submission of some aspects of the building design until after the approval of the main design documents. A deferred approval refers to a portion of construction that cannot be fully detailed on the approved plan because of variations in product design and manufacture. Such items include (but are not limited to) low-voltage electrical systems, elevators and other transportation systems, base isolation systems, shoring and underpinning, curtain wall systems, fire sprinklers, and oxygen and medical gas systems. OSHPD has the discretionary authority to allow the design of such systems to be reviewed as a deferred approval. All items being deferred by OSHPD to be submitted as deferred approvals should be listed on the project title sheet with numerical assignments for each system or construction component. An item that has all information available for design cannot be deferred.

This engineering specialty specification should list the performance requirements that the contractor is required to meet in preparing the documents and define the requirements of the California-licensed engineer(s) who the contractor needs to employ to prepare the documents for OSHPD review and approval. For design of structural work, the contractor shall provide a California-licensed structural engineer. The specification should describe in detail the process for submittal of documents to the design team for review prior to their being submitted to OSHPD for their review and approval. This specification section should also include a statement that the contractor shall not start any construction work on deferred items prior to OSHPD approval of the contractor’s design documents.

OSHPD permits any of the following approaches for submitting deferred approval documents:

- An independent, California-licensed architect or engineer prepares, signs, and stamps the documents, and the AOR or EOR concurs with a shop drawing stamp.
- The vendor has a California-licensed architect or engineer prepare, sign, and stamp the documents, and the AOR or EOR concurs with a shop drawing stamp.
- If neither the vendor’s designer nor an independent designer is licensed by the state of California, the AOR, EOR, or other appropriately licensed design professional must review, sign, and stamp the documents for OSHPD approval.
The deferred approval documents are then submitted to OSHPD for review and approval. It is recommended that one of the first two aforementioned options be chosen if possible. The AOR or EOR should consider licensing agency regulations regarding "responsible charge" before stamping and signing documents not prepared directly under the AOR or EOR’s control.

2.2.2.9 Other Information

Provide other general compliance information as appropriate for the project including, but not limited to,
- plumbing fixture counts for public, staff, and patients, in accordance with the California Plumbing Code requirements;
- project construction phasing or other work sequences that affect the project operations or impact code compliance;
- other work not included in the project and carried out under other permits if it affects the project;
- local zoning conditions of approval related to the project;
- parking counts, as needed for local acceptance and Title 24 accessibility; and
- a chemical inventory on small projects, if other than H occupancy, to show compliance with number of control areas and maximum allowable quantities of hazardous materials as listed in CBSC Tables 3D and 3E (see OSHPD PIN 8 for required information and suggested format).

It is recommended that a tabulation or matrix be provided for projects resulting in a change in the number of patient bedrooms, isolation rooms, operating rooms, dietetic storage and refrigeration, general storage, and perinatal unit space. Such a tabulation or matrix should include the number of existing items as well as the proposed items. Include a matrix of bed count and type.

2.2.3 Organization and Approach

The primary goal of the title sheet is to provide information in the clearest and most readable manner. The use of charts and outlines, simple descriptive phrases, and titled sections for each subject makes it easy for those who are not familiar with the project documents to find information relevant to their needs.

The actual organization may vary depending on the size and type of project, the amount of information needed, and the particular graphic approach used by the architect, including the size of the drawing sheet and any graphic requirements of the owner. Existing renovations and applicable phasing must be clearly documented through appropriate existing and phasing documents.

2.2.4 Nomenclature

When naming and describing spaces in the project drawings, use terms that are common to the industry and to the profession for uses, occupancies, procedures, diagnostics, and/or treatments. Important to OSHPD’s timely review is the proper application of terms and their definitions as specified in CBSC Chapter 420A and CMC Table 4-A. Also, it is important that naming of spaces comply with the definitions of terms provided in the CBSC, as listed in Chapter 2, and typically listed at the beginning of the other chapters.
Particular care should be taken when applying terms used for describing occupancies, including the following:

- Assembly,
- Business,
- Educational,
- Hazardous,
- Industrial Institutional,
- Labs or Mercantile Laboratory,
- Storage, and
- Utility.

Terms for uses and occupancies include

- Accessory,
- Atria or Atrium,
- Basement,
- Clinic,
- Clean Linen,
- Clean Utility,
- Court or Courtyard,
- Covered Mall or Mall,
- Food Court,
- High-rise,
- Hospital,
- Intermediate Care,
- Laundry,
- Mezzanine,
- Nursing Unit,
- Outpatient,
- Pedestrian Walkway,
- Platform,
- Skilled Nursing,
- Soiled Linen,
- Soiled Utility,
- Special Procedure, and
- Stage.

2.2.5 Existing Special Conditions

Projects that include additions and/or renovations of existing spaces within OSHPD-approved buildings present additional challenges to providing required documentation for approval of the project. To assist the reviewer in understanding how the new work does not conflict with required levels of safety provided by the existing facility, in many cases the drawings will need to fully describe adjacent uses and occupancies, existing construction, and prior approvals and documentation. Buildings or structures outside the scope of work, but proximate to the scope of work, should be identified by size, area, height, and building and construction type.

Often this information is unavailable from old drawings but needs to be ascertained by field investigation and measurement. The title sheet can only outline the existing conditions, occupancies, and construction to inform the reviewer of information that is presented in more detail with the plans and other drawings. However, in the brief descriptions of existing facilities, use of the same code-matching terminology is particularly important, and, whenever possible, drawings from previous OSHPD-approved projects for the existing facility and related work should be listed and attached (and specifically called out as reference only drawings).

2.2.6 Recommended Graphics and Symbols

Drawing A1 provides an approach to organize general project information and other information discussed. Some projects may require an area map showing the adjacent freeways, a vicinity map, and a project site map.
2.3 Fire and Life Safety Drawings

2.3.1 Purpose

The fire and life safety drawings are intended to depict the life safety code requirements and assist the OSHPD reviewer by providing a graphic view of fire and life safety compliance and egress compliance for the project. For new projects this will include identifying all components of the exit path and building features that provide fire protection and separation of individual occupancies. For renovation projects, these drawings will also include a description of existing exit paths, types and ratings of walls, and separations as well as indicate how the new work will maintain or modify the life safety requirements for compliance.

The drawings should include special graphic floor plans, coordinated with detailed information on the construction floor plans. For smaller projects, a combined drawing is acceptable. Showing fire-rated walls on all architectural, mechanical, electrical, and deferred approval drawings will facilitate the plan review process.

2.3.2 Content

Depending on the size and complexity of the project, the information provided on the fire and life safety drawings should provide a clear description of how the project complies with the various provisions of the CBSC. Some of the general information for the project may also appear on the drawing title sheet. Also, much of the specific information will be contained in the body of drawing details and schedules. It is not necessary to provide redundant information, but it is important to provide information that describes the basis of life safety design and is coordinated in a manner that is clear and complete. The following outlines the information that should be covered on the fire and life safety drawings.

2.3.2.1 Provisions of CBSC Chapter 3: Use or Occupancy

Include the following information:

- occupancy groups of building and spaces within building;
- occupancy separation location and rating;
- special provisions based on occupancy group, including construction, height, and areas;
- smoke compartment partition locations and calculations of areas as required for I occupancies, including length and width of smoke zones;
- location of building on property;
- required components of fire sprinkler and standpipe systems;
- required features of fire alarm and smoke detection systems;
- required components of egress signage;
- locations of and requirements for special hazards or hazardous materials that affect the occupancy classifications; and
- Part 1, Chapter 7 lists.
2.3.2.2 **Provisions of CBSC Chapter 4: Use and Occupancy**

Include the following information:
- requirements for atria spaces (when part of design) including
  - components of smoke control system,
  - separation of atria from other spaces, and
  - means of egress from and through atria;
- special requirements for high-rise buildings (over 75 feet tall) including
  - fire department access locations,
  - special alarm and communication features,
  - location and components of central control station,
  - special features of elevator design, and
  - special provisions for egress stairways including stairwell and vestibule.

2.3.2.3 **Provisions of CBSC Chapter 5: General Building Limitations**

Include the following information:
- requirements for building location on property, including exterior wall fire resistance, wall openings, and courtyard requirements;
- calculation of new building areas, or existing-plus-new areas, compared with allowable areas, including allowable increases;
- design heights of building(s) compared with maximum allowable height, including allowable increases;
- requirements for mezzanine spaces;
- description of fire-resistive substitutions, when applicable; and
- location of separation walls and area calculations for separations.

2.3.2.4 **Provisions of CBSC Chapter 6: Types of Construction**

Drawings should include requirements for fire-resistive construction of building, exterior walls, stairway enclosures, side yards, and separations for fire rating of existing walls and openings.

2.3.2.5 **Provisions of CBSC Chapter 10: Means of Egress**

Include the following information:
- identification of occupant loads and exit paths;
- calculation of design exit widths and required widths;
- means of egress identification: identify security barriers (e.g., locked doors) that may intervene in the path of travel and explain how they work to allow for free exiting in case of an emergency;
- location of doors and directions of door swings;
- locations of exit stairways and ramps;
- maximum exit travel distances;
- indications for minimum separation for two or more exits;
- calculations for horizontal exit refuge areas as required by CBSC 1005.3.5.4; and
- general indication of ratings for egress elements, including
  - corridors,
  - exit stairway enclosures,
  - stairway vestibules (for high-rise requirements),
  - exit passageways, and
  - horizontal exits.

2.3.2.6 Provisions of California Fire Code and NFPA Standards

The following information is required by the California Fire Code to comply with NFPA Standards:
- location of fire hose cabinets and connections;
- location of fire extinguisher cabinets;
- location of fire hydrants and fire department connections (FDCs);
- location of fire department alarm and/or notification panel (and subpanels where used);
- location of temporary walls needed to separate the occupied spaces from the construction zone to show how this will affect exiting and exiting width within the occupied areas of the building during construction;
- location of key box(es), when used; and
- suite locations along with size and travel distance from the most remote point within the suite to suite boundaries (CBSC Chapter 10).

2.3.2.7 Working with the Local Jurisdiction (in the Fire Life Safety Section)

The design professional is responsible for ensuring that the project conform to the local jurisdiction requirements as well as those enforced by OSHPD. Many jurisdictions have documents that supplement the requirements of the CBSC and in many of these cases the requirements are more restrictive. It is the POR’s responsibility to be knowledgeable of the unique requirements of the local jurisdiction. OSHPD should not be expected to coordinate the requirements of the local jurisdiction for the project.

OSHPD reviews fire sprinkler installations, for compliance with the minimum requirements of NFPA Standard No. 13-1994 and NFPA Standard No. 24-1992. OSHPD does not review projects for compliance with local fire flow, hydrant spacing, connection and control valve configuration, or location requirements. Review and approval by the local fire authority will be requested prior to final plan approval of the project.

Local Fire Authority Requirements

- The location of the FDC must be in accordance with NFPA Standard No. 24, Section 2-6.9 and Uniform Fire Code, Section 1003.1.1.
- The location and type of system control valve(s) must be in accordance with NFPA Standard No. 13, Section 4-6.1.1.1.
- Fire flow and hydrant spacing must be in accordance with the requirements of NFPA Standard No. 24, Section 4-2.1 (for new construction only).
Local Fire and Water Authority Requirements

The installation, location, and configuration of the cross-connection control device (detector check) must be in accordance with the requirements of NFPA Standard No. 13, Sections 4-6.1.1.5 and 4-6.1.1.8 and the requirements of the jurisdiction responsible for enforcement of Title 17, Sections 7583 through 7605 of the CCR.

Local Fire Authority Approval

The fire flow, hydrant spacing, FDC, and location and type of control valves must be in accordance with the requirements of this statutory fire authority.

OSHPD reviews fire sprinkler installations for compliance with NFPA Standards in accordance with CBSC Section 904.1.2. In addition to the specific requirements of the NFPA Standards, the location, configuration, and arrangement of fire mains, hydrants, FDCs, and control valves depend on site-specific conditions and the requirements of the local fire authority. To facilitate the review and approval process, the following performance standards should be considered when designing and preparing a fire sprinkler system for submittal:

- The FDC should be visible, accessible, and installed on the address side of the building.
- The FDC should be located at the public street as close to the curb face as possible. The distance from the FDC to the curb face should not exceed 25 feet.
- The FDC should be located within 150 feet of a public fire hydrant.
- The FDC should be located a minimum of 25 feet from the building. When this distance cannot be provided, a minimum two-hour fire-resistive wall should be provided.
- Each fire sprinkler system should have a main post indicator valve located at the public water valve connection.
- Each fire sprinkler riser should have an exterior control valve located above grade.
- The local water purveyor should be contacted for requirements pertaining to the installation of cross-connection backflow control devices (detector checks).
- The local fire jurisdiction should be contacted for requirements pertaining to fire flow and hydrant spacing. Requirements pertaining to fire flow, hydrant spacing, types of control valves, and the location of valves and connections vary from jurisdiction to jurisdiction and from facility to facility within each jurisdiction.

Adherence with the performance standards enumerated here does not necessarily assure compliance with local requirements. Documentation of local fire authority approval must be submitted to OSHPD prior to OSHPD approval.

To facilitate review and compliance with local requirements, submit a completed health care facility local fire authority fire sprinkler approval form with each fire sprinkler submittal for new construction and new fire sprinkler installations. Stamped Contract Documents clearly demonstrating local fire authority approval are also acceptable.

2.3.3 Organization and Approach

Floor plans specific to the life safety design should be provided, except in very small or simple projects, where information may be combined. All floor levels must be shown, even if they do not have an occupancy classification (e.g., roofs). The scale of the floor plan will depend on the building size and so will the amount of information legible on the plan.
Site plans are also recommended, even for small renovation projects, to assist in describing the context of the project and the compliance of the existing building to basic site requirements.

Building sections are usually needed when occupancy separations are present between floors, when the floors of the building do not stack, or when the site slopes significantly. Another reason to include building sections is because the maximum allowed building height in some occupancies may need to be shown. Building sections are required for new construction.

General notes are recommended to provide reference to other areas of the documents that provide additional life safety design and details needed for showing compliance. The following notes are recommended and must be coordinated with the project’s actual scope and organization:

- The fire rating of the partitions is shown diagrammatically.
- For construction of partitions see floor plans and partition construction drawings.
- These plans do not attempt to show all fire-rated ceilings and/or horizontal partitions (such as bottom of shafts, for example) present in the building. See reflected ceiling plans and enlarged stairs and elevator drawings for conditions not shown here.
- For location and type of exit signs see electrical drawings and specifications.
- For location and type of fire dampers see mechanical drawings and specifications.
- For location and type of rated access panels in walls see floor plans, plumbing drawings, and plumbing specifications.
- For location and type of fire-rated ceiling assemblies see reflected ceiling plans.
- For location of sprinkler system elements see reflected ceiling plans and plumbing drawings.
- For location of smoke detectors and other fire alarm devices see electrical drawings or fire alarm drawings.
- For security devices see security drawings.
- Unoccupied rooms must be designated for a use by the design professionals even if they are used for storage (e.g., clean utility, linen, medications, equipment, housekeeping, etc.); they may need to be constructed with a one-hour occupancy separation if they are in excess of 100 square feet. Similar one-hour occupancy separation should be given to electrical and tele/data (IT) rooms, regardless of size.

Typical checklist issues for the fire marshal and life safety officers should include the following:

- head of wall details that provide 100% Class II movement;
- resolution of the "T" rating requirement for through slab penetrations such as floor sinks, floor drains, piping not contained within walls, etc.;
- treatment of UL listed floor slab assemblies that use rebar in lieu of wire mesh;
- fire-rated details for edge of slab that match the UL listing; and
- doors that must open 180° because they open into an 8-foot corridor.

2.3.4 Nomenclature

When describing spaces or components of egress, it is important to use the same terminology and definitions provided in the CBSC, particularly Chapter 420A, as well as those listed in CMC Table 4A. For special uses and occupancies such terms include the following:
For means of egress components use the following terms:

- Aisle
- Aisle Access Way
- Corridor
- Exit
- Exit Access
- Exit Courts
- Exit Discharge
- Exit Door
- Exit Passageway
- Exterior Exit Balcony
- Foyer
- Laundry
- Mezzanine
- Nursing Unit
- Outpatient
- Pedestrian Walkway
- Platform
- Skilled Nursing
- Soiled Linen
- Soiled Utility
- Special Procedure, and
- Stage
- Hall or Hallway
- Horizontal Exit
- Intervening Room Lobby
- Panic Hardware
- Ramp
- Reception
- Refuge Area
- Stairway
- Suite
- Vestibule, and
- Waiting or Waiting Area

### 2.3.5 Existing Special Conditions

The same information required for new project areas is also required for existing areas that are not part of the construction scope, when those areas are adjacent and/or may be affected by the new work. The life safety drawings then provide a complete picture of the building, with the new work incorporated, that demonstrates compliance to all code requirements. (See Drawing A2.)

### 2.3.6 Recommended Graphics and Symbols

The following charts provide recommended line types and uses for identifying rated components on the fire life safety plans and on the floor plans of all disciplines. The line types must be consistently used for all background plans showing mechanical, electrical, or other work that depends on partition ratings. Graphics and symbols must be readable, irrespective of the drawing size submitted to OSHPD.
Line Types and Symbols for Rated Walls Recommended for Fire Life Safety Plans

One-hour-rated occupancy separation wall with 60-minute-rated doors

Two-hour-rated occupancy separation wall with 90-minute-rated doors

Three-hour-rated occupancy separation wall with 3-hour-rated doors

Four-hour-rated occupancy separation wall with no openings allowed

One-hour-rated smoke partition with 20-minute-rated smoke doors

Two-hour-rated horizontal exit wall with 90-minute-rated doors

Two-hour-rated area separation wall with 90-minute-rated doors

Four-hour-rated area separation wall with 3-hour-rated doors

Fire Hose Cabinet

Fire Extinguisher Cabinet
Line Types and Symbols for Rated Enclosures Recommended for Fire Life Safety Plans

One-hour-rated exit corridor with 20-minute-rated doors and 45-minute-rated windows

Exit Stair Enclosures: One-hour enclosure with 60-minute-rated doors, OR two-hour enclosure with 90-minute-rated doors

Mechanical Shaft Enclosures: One-hour enclosure with 60-minute-rated openings or two-hour enclosure with 90-minute-rated openings

Elevator Shaft Enclosures: One-hour enclosure with 60-minute-rated doors, or two-hour enclosure with 90-minute-rated doors

Suite Enclosures: One-hour occupancy separation walls with 60-minute-rated doors
Line Types and Symbols for Rated Walls Recommended for Architectural, Mechanical, Plumbing, Electrical, and Fire Protection Plans

One-hour-rated walls for corridor, occupancy separations, shafts, and stair enclosure walls; appropriate door ratings to be noted on plans or in door schedule

Two-hour-rated walls for occupancy separations, shafts, and stair enclosure walls; appropriate door ratings to be noted on plans or in door schedule

Three-hour-rated walls for occupancy separations; appropriate door ratings to be noted on plans or in door schedule

Four-hour-rated walls for occupancy separation; no openings allowed

Two-hour-rated wall, as above, with "X" designation for horizontal exit; door openings shall be 90-min rated, providing maximum allowable temperature rise per UBC Standard 7-2.

One-hour and two-hour-rated walls, as above, with "S" for smoke partition function (similar for three and four-hour wall line types); appropriate door ratings, providing "smoke-draft" control, to be noted on plans or in door schedule

Two-hour and four-hour-rated walls, as above, with "A" for area separation function; appropriate door ratings to be noted on plans or in door schedule

Fire Hose Cabinet

Fire Extinguisher Cabinet
2.4 Accessibility Compliance Documentation

2.4.1 Purpose

OSHPD reviews design conformance with CBSC Chapter 11 for accessibility requirements. There are differences between this code and the Americans with Disabilities Act (ADA). The design professional is required to provide compliance to both the CBSC and the ADA. The owner is accountable for compliance to both the ADA and the CBSC accessibility requirements.

Drawings describing accessibility requirements provide the OSHPD reviewer with information that shows compliance to the provisions of CBSC Chapter 11B, as well as other related requirements applied to the project from federal and local agencies.

2.4.2 Content

Accessibility compliance review does not require the architect to prepare drawings dedicated to the topic. Instead, information may be dispersed throughout the set of architectural drawings. However, it is recommended to add a note to the general notations explaining where in the set the reviewer can find the information.

The type of information suggested for site plans, floor plans, and enlarged drawings is outlined next.

2.4.2.1 Site Plans

Include information on the exterior route of travel. When required, at least one accessible route shall be provided from public transportation stops, accessible parking and accessible passenger loading zones, and public streets or sidewalks to the accessible building entrance they serve. When applicable, at least one accessible route shall connect accessible buildings, facilities, elements, and spaces that are on the same site. The accessible route shall, to the maximum extent feasible, coincide with the route for the general public.

2.4.2.2 Floor Plans

- Include information on the accessible path of travel throughout facility or remodel project. If an area is not accessible, explain which one and why is it not accessible (e.g., Mechanical Penthouse—no accessibility required by code).
- Enlarged drawings to illustrate toilet accessibility are recommended but are not absolutely necessary, especially if a typical mounting heights sheet is being used.
- Label toilets by user group as "Patient," "Staff," or "Public" and indicate which serve the remodeled area on remodel projects.
- On remodel projects show a small-scale plan of the whole facility with a clear designation of the remodeled area and show the accessible path of travel to it, from the entrance into the building.
- On remodel projects show the location of all existing and new toilets, drinking fountains, and public telephones serving the remodeled area and indicate if they are accessible or not.
- Code-required signage must be described and located on drawings and/or specifications; this includes signage for stairs, elevators, evacuation, toilets, maximum occupancy, assistive listening, hazards, and accessible entrances.

2.4.2.3 Enlarged Drawings

Provide enlarged drawings for toilets and bathrooms, stairs, elevators, special public and staff areas (e.g., reception desks, waiting rooms, and lockers), and patient bedrooms. At a minimum, enlarged drawings should be twice the size of general floor plans.

2.4.3 Organization and Approach

It is the responsibility of the architect to design to code. By showing a code-required clearance on the drawings with the notation "minimum clear" the architect cannot transfer that responsibility to the contractor. Therefore the Contract Documents must show the actual dimensions, not code-required minimum or maximum dimensions.

Some reviewers may insist that the code-required dimensions be added to the drawings. A key note should clarify that the dimension added is for information only and that the contractor must build using the actual dimension shown.

Findings of equivalent facilitation by OSHPD for accessibility issues should be included in the drawings and should indicate where and how the equivalent facilitation is provided.

2.4.4 Nomenclature

The following terms typically used in the CBSC should also be used in the same context:
- Accessibility,
- Accessible,
- Accessible Route of Travel,
- Adaptability,
- Bathing Facilities,
- Cross Slope,
- Curb Cut,
- Curb Ramp,
- Detectable Warning,
- Equivalent Facilitation,
- Passage Door,
- Passenger Loading Zone,
- Pedestrian Ramp,
- Primary Entry Level,
- Sleeping Accommodations, and
- Walk.
Note that clarity on the accessibility requirements for hand washing sinks at nurse stations, patient rooms, etc. is necessary because California Access Compliance requirements often conflict with ADA requirements.

### 2.4.5 Existing Conditions

New additions and renovations to existing buildings may need additional information for accessibility that goes beyond the immediate scope of the project. This information may include the location of accessible toilets that serve the new addition or area of renovation; details of existing elevators, ramps, and stairways that provide access to the new addition or area of renovation; and exterior descriptions of the accessible route of travel from bus stops and dedicated parking stalls.

### 2.4.6 Recommended Graphics and Symbols

Drawing A2 illustrates one approach for providing typical accessibility information, in coordination with equipment identified on the drawings.

### 2.5 Door Schedule

#### 2.5.1 Purpose

The **door schedule** provides the essential information for the reviewers to determine compliance with required egress widths and rated assemblies, as well as detailed information for the contractors to coordinate the construction of walls, finishes, and hardware.

#### 2.5.2 Content

The door schedule must provide as its basic information the rating of the door and frame assembly commensurate with the wall rating and the door’s function. The function of the wall rating may be part of a one-hour corridor, a two-hour stair or exit passageway enclosure, a one-hour smoke compartment wall, or a rated occupancy separation wall. Rating requirements for openings in each of these wall conditions are provided in various sections of the CBSC.

In addition to the door rating in minutes (e.g., 20, 60, or 90 min), the schedule must indicate for the reviewer whether the door is required to be "tight-fitting smoke- and draft-control assemblies," typically with an "S" designation (e.g., 20S, 60S, etc.). Some doors may also be required to have a specified temperature rating, using a "T" designation in the door schedule. Other door features that may be indicated in the door schedule for the reviewer’s information include required door hardware such as panic devices, closers, view windows, etc.

The required width of the door is determined both by the occupant load assigned to pass through the door for exiting and by the specific requirements of its location within the hospital. Every door’s required width for egress, with an occupant load of 10 or more, is identified in CBSC Section 1003.3.1 as "of a size to permit the installation of a door not less than 3 feet" (1003.3.1.3) and such that a single door leaf "shall not exceed 4 feet in width." Additionally, for I occupancies, CBSC Table 10-B provides multipliers for determining the egress capacities of doors based on occupant loads. Hardware features and gap clearances for the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) should be incorporated.
Required widths based on I occupancies indicated in CBSC Section 1007.5 state, "The clear width of means of egress components in areas serving bed or litter patients shall be such to allow ready passage of beds, gurneys and similar equipment, but shall not be less than 44 inches." Given that the "clear" width at doors is measured inside the door stops, the 44-inch requirement is typically accommodated by 4-foot door leafs. Nonpatient areas may use a standard 3-foot door leaf; however, it should be carefully noted whether the door is located within the overall exit path from the patient room or area, as it continues through the building and into the exit stair enclosure, to arrive at its safe, exterior termination. Doors along the exit path must maintain the required exit width, which "shall not be reduced or otherwise diminished to less than the largest minimum width required to that point along the path of exit travel" (CBSC Section 1003.2.3.3).

2.5.3 Existing or Special Conditions

Existing exit pathways, opening ratings, or other projects that include modifications to existing conditions should include information on both new and existing doors where such information is needed to describe the maintenance of door functions required by the design. The architect or engineer must verify with OSHPD that projects requiring construction of temporary walls and doors to separate construction from occupied spaces meet the same requirements as permanent construction when providing protection for exit corridors, occupancy separations, and other rated conditions.

2.5.4 Organization and Approach

Traditionally there are several ways to document door information. One way includes providing width and ratings information directly on the plans; another includes referencing the door to a schedule or spreadsheet that lists all the pertinent information for the door types and hardware. Except in the smallest or simplest of projects, it is recommended that a schedule format be used.

2.5.5 Nomenclature

Typical terms, related to doors and rated openings, should be used in descriptions and notes as defined by the CBSC. These include the following:

- Door Leaf,
- Door Opening,
- Rated Assembly,
- Self-closing,
- Automatic-closing,
- Exit and Exit Door,
- Exit Access,
- Exit Discharge,
- Means of Egress, and
- Panic Hardware.
2.5.6 Recommended Graphics and Symbols

Drawing A3 provides one approach, appropriate to a new, medium-to-large hospital project, with the typical information needed for construction and review by OSHPD.

2.6 Equipment Anchorage

2.6.1 Purpose

Permanent equipment and other manufactured items used in the operation of the building are required to be anchored to the floor, wall, or roof construction. The anchorage requirements must meet minimum design requirements to resist lateral forces of seismic movement as defined in CBSC Section 1632A (Volume 2). The primary consideration here is to prevent the life safety of occupants from being affected by structural and nonstructural building elements during a seismic event and to allow continued operation of hospital buildings. Equipment within the building must resist forces caused by a seismic event, which vary based on equipment location in the building. These forces must be delivered to elements of the building structure capable of resisting them.

Although all permanent components, equipment, and elements of the structure must be anchored, the anchorage of some items need not be designed and detailed on the approved drawings. Chapter 7 of Part 1, Title 24 of the CCR provides exemptions as follows:

- equipment weighing less than 400 pounds supported directly on the floor or roof (containers must be assumed fully loaded);
- furniture (however, modular furniture that is hardwired, contains significant storage, or exceeds certain height and weight limits must be anchored—see Table 16A-0);
- temporary or movable equipment (although restraints for heavy equipment and equipment with utility connections may be required);
- equipment weighing less than 20 pounds supported by vibration isolators; and
- equipment weighing less than 20 pounds suspended from a roof or floor or hung from a wall.

In many instances the information needed to provide details for specific products may be lacking in a project. Sometimes, with OSHPD acceptance, equipment anchorage may be submitted as a deferred approval. However, it is generally more desirable to submit all equipment with the initial submission documents, than to separate the equipment details, to avoid delays in approval that might affect construction. This means that design decisions must be made in advance to allow the details to be completed, and as selections and procurement dictate changes, a Change Order (CO) must be issued for each final installation.

2.6.2 Content

Equipment may include medical, mechanical, plumbing, electrical, food service, or accessory items such as shelving and appliances. Equipment may be installed by the contractor, the owner, or special vendors. Regardless of who performs the installation, for the purposes of construction, all items need information on the drawings to describe their installation. Anchorage of standard items, such as ceilings and casework, is best covered in the drawings by typical details. These may include typical backing-plate requirements for wall framing and clip attachments to walls, counters, and floors for miscellaneous items found throughout the project in toilets, kitchens, treatment and exam
rooms, etc. Drawings may also cover the anchorage of items exempt from plan review (discussed in the preceding section). However, such details are subject to plan review, and changes from the approved drawings may generate a post approval document review.

For those pieces of equipment that exceed the criteria for exemptions, specific details designed by the EOR or provided by the manufacturer’s (California-registered) engineer are required on the drawings. Some manufacturers have engineered anchorage systems that have been submitted to OSHPD under its Anchorage Pre-Approval Program. Pre-approval is for anchorage only and does not include product approval. This program allows the use of drawings for equipment anchorage, in most cases, to show just the pre-approval number. However, in some cases, the actual details submitted by the manufacturer should be reproduced on the drawings for the reviewer to verify that the anchorage design is correctly applied to the project. If this is required, it will be stated in the pre-approval documents. The list of pre-approved anchorage for equipment is maintained by OSHPD and provided on its Web site for use by design professionals. If a pre-approved product or system is specified, it is vital that the design team review the actual pre-approval documents to confirm that they conform to the project requirements. (See http://www.oshpd.state.ca.us/fdd/PreApproval/index.htm.)

The acceptability of proprietary fastening systems should be confirmed with OSHPD. For attachment to concrete, Title 24 covers expansion-type and adhesive-type anchor systems. Other types of fasteners are subject to OSHPD approval. The use of some fasteners, such as shot pins and screw-type anchors, is limited by OSHPD FDD. Additional information in the form of CANs is available on the OSHPD Web site.

When equipment cannot be specified at the time of submittal, the design team may request that the item be deferred. Deferred items are to be listed in a schedule on the cover sheet of the drawings. However, assumptions should be made for equipment weights, location, and utility connections to allow the reviewers to check related items (such as the supporting structural framing) and to permit tracking of follow-up COs for anchorage details. The drawings and specifications must fully describe the performance and loading criteria for the deferred item.

2.6.3 Organization and Approach

On small projects the amount of equipment and anchorage details may be limited enough for direct reference of plan-noted equipment to the detail drawings. On larger or more complex projects, it is recommended that significant equipment be listed in a table or chart with detail references, equipment descriptions, and OSHPD pre-approval numbers provided for each appropriate item. The attached sample equipment schedule identifies the minimum amount of information needed for review. (See Drawing A4.)

Additional information may include room locations, manufacturer’s name and model numbers, responsibilities for supply and installation, and utility connection information.

Since anchorage details are specific to products and even particular manufacturers, a numbering system, either provided by the owner or created for the project, is important for tracking equipment and changes throughout the construction. When any object needs to be bolted to the floor, the owner should be asking questions about cleaning, maintenance access, etc.

2.6.4 Nomenclature

Detailed annotations and attachment descriptions should follow industry standards for identification of anchor bolts, screws, and welds. Often it is necessary to specify proprietary manufacturers of anchorage hardware and systems to complete the details. Whenever possible,
provide supporting test report numbers and specific alternate manufacturers on the drawings or in the specifications to avoid resubmittals and COs.

### 2.6.5 Existing Special Conditions

Additions and renovations in existing OSHPD-approved buildings need to be investigated adequately to ensure that structural components that receive attachments for new equipment have adequate strength and resistance to movement. Details should identify all components and configurations of existing construction. Supporting calculations from the structural engineer should confirm and match existing conditions.

### 2.6.6 Recommended Graphics and Symbols

Drawing A4 demonstrates one approach for providing typical equipment information, in coordination with equipment identified on the drawings.

### 2.7 Drawings

Drawings A1 through A12 illustrate some of the topics discussed in this chapter. Note that these are to be used as examples only and do not constitute complete plans.
FIRE RESISTIVE SCHEDULE

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<th>DESCRIPTION</th>
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<th>NOTES/ASSUMPTIONS</th>
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<td>START FOOTAGE MILL</td>
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<tr>
<td>EXTERIOR WALL</td>
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</tr>
<tr>
<td>EXTERIOR WALL</td>
<td>9-HOUR</td>
<td>9-HOUR RATED CHIMNEY</td>
</tr>
<tr>
<td>EXTERIOR WALL</td>
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</tr>
<tr>
<td>FIRE WALL</td>
<td>2-HOUR</td>
<td>2-HOUR RATED CHIMNEY</td>
</tr>
<tr>
<td>FIRE WALL</td>
<td>NON-RATED</td>
<td>NO</td>
</tr>
<tr>
<td>CORE</td>
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</tr>
<tr>
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</tr>
<tr>
<td>CORE LOSS</td>
<td>9-HOUR</td>
<td>9-HOUR RATED CHIMNEY</td>
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<td>FIRE DOOR</td>
<td>90-MIN</td>
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<td>FIRE DOOR</td>
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</table>

APPLICABLE CODES

- The following schedule was developed in accordance with the California Building Code, Title 24, Part 6, Chapter 1, Section 1608.4, and the California Fire Prevention Code, Chapter 11, Section 1116.4.

PROJECT GENERAL NOTES

- All parts of the work, including materials, work, labor, and all necessary intermediate and final inspections, shall be performed in accordance with the provisions of the California Building Code, Title 24, Part 6, Chapter 1, Section 1608.4.

- The provisions of the California Building Code, Title 24, Part 6, Chapter 1, Section 1608.4, and the California Fire Prevention Code, Chapter 11, Section 1116.4, shall be adhered to and observed in the construction of the building.

- All parts of the work, including materials, work, and labor, shall be performed in accordance with the provisions of the California Building Code, Title 24, Part 6, Chapter 1, Section 1608.4, and the California Fire Prevention Code, Chapter 11, Section 1116.4.

PROJECT DESIGN TEAM

ARCHITECTS
- ARCHITECTS IN ASSOCIATION WITH+
  THE ROBERTS COMPANY, INC.
  13601 Ventura Blvd., Suite 100
  Sherman Oaks, CA 91423
  TEL: 818-896-3300

ENGINEERS
- STRUCTURAL ENGINEER
  PROTOTYPE STRUCTURAL ENGINEERS
  2904 Glencoe Avenue
  Los Angeles, CA 90065
  TEL: 323-466-0000

MECHANICAL/ELectrical
- MECHANICAL/ELectrical ENGINEER
  PROTOTYPE MECHANICAL/ELectrical ENGINEERS
  2904 Glencoe Avenue
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ELECTRICAL ENGINEER
- ELECTRICAL ENGINEER
  PROTOTYPE ELECTRICAL ENGINEERS
  2904 Glencoe Avenue
  Los Angeles, CA 90065
  TEL: 323-466-0000

ALT. METHODS OF COMPLIANCE, PROTECTION AND PROGRAM FLEX

- For all applications, the provisions of Title 24, Part 6, Chapter 1, Section 1608.4, and the California Fire Prevention Code, Chapter 11, Section 1116.4, shall be adhered to and observed in the construction of the building.

- All parts of the work, including materials, work, and labor, shall be performed in accordance with the provisions of the California Building Code, Title 24, Part 6, Chapter 1, Section 1608.4, and the California Fire Prevention Code, Chapter 11, Section 1116.4.
3 Inspector of Record Best Practices

3.1 Introduction

The actions of the Inspector of Record (IOR) on a project are based on the requirements outlined in Title 24, Part 1, Chapter 7 of the California Code of Regulations (CCR). The IOR
- works under the direction of the Architect of Record (AOR) and/or the Engineer of Record (EOR) (see Title 24, Part 1, Chapter 7, Section 7-145 of the CCR);
- is employed by the hospital governing board or authority; and
- is monitored by OSHPD for competence and adequately ensuring compliance (see Title 24, Section 7-213 of the CCR).

When questions arise the IOR should consult the owner and the AOR and/or the EOR. Also the appropriate OSHPD personnel associated with the project, including the Area Compliance Officer (ACO), Fire Life Safety Officer (FLSO), District Structural Engineer (DSE), and the Regional Compliance Officer (RCO) should be consulted as needed. The IOR should also consult the owner and the AOR and/or the EOR.

It takes much more than simply having an OSHPD certification to be an OSHPD inspector. Complex hospital construction requires the right kind of inspector with the right kind of background. Inspectors help make a project successful by doing their job properly and effectively without ever compromising their position. This chapter gives a general description of the duties and responsibilities of the IOR along with an overview of the necessary working relationships required for a successful project.

3.2 Conduct

In recognition of the responsibility of their position, the IORs should observe the following rules governing their personal conduct:
- Be patient, tactful, and respectful.
- Have no personal connection with nor, either directly or indirectly, accept a loan, gift, or gratuity from any individual, contractor, subcontractor, group, company, corporation, or public body that is in any way responsible for compliance with the terms and conditions of the contract.
- Never suggest or recommend for construction employment any particular person or persons or subcontractors. Nor should an IOR suggest or recommend the purchase of any specific material or product except insofar as the specifications may require.
- Do not give directions or instructions to the contractor or any subcontractor involving any change in the work other than to stop the work if it is not covered by or constructed in accordance with the approved documents. (Only OSHPD, not the IOR, can stop work.)
Do not discuss administrative problems connected with any project in public. Such discussion should only be held with appropriate personnel officially connected with the projects at appropriate times.

### 3.3 Knowledge

The IOR should be thoroughly familiar with the following:
- Contract Document requirements;
- project schedules;
- project contacts;
- applicable codes and standards;
- Policy Intent Notices (PINs) appropriate for the project;
- applicable Code Application Notices (CANs);
- approved submittals;
- all instructions or clarifications issued by the design Professional of Record (POR);
- requirements for testing and inspections;
- hospital procedures for notifications and special requirements;
- temporary barriers and egress requirements as appropriate for the project;
- infection control policies;
- the various parties involved with the project;
- emergency procedures;
- safety requirements for construction and the facility;
- all of the Authorities Having Jurisdiction (AHJs) associated with the project that require involvement through the project start-up, duration, close-out, and finalization;
- all associated design professionals as appropriate for the project;
- Part I, Chapter 7 of the Administrative Codes;
- the geotechnical services and special testing lab for the project and how to notify and schedule required inspections and other testing as appropriate for the project;
- the inspection request processes;
- approved program flexes;
- radiology physicist report;
- medical equipment; and
- engineering judgments.

### 3.4 Principal Duties

The IOR is required to have personal knowledge, obtained by continuous inspection, of the work of construction in all stages of progress. The general duties of the IOR are specified in Title 24, Part 1 of the CCR.

The IOR shall have or assume no other duties that would prevent him or her from performing required continuous inspections.
The IOR shall execute the required inspections, duties, and responsibilities specific to the project(s) to which he or she has been designated. These duties and responsibilities include, but are not limited to, the following:

- Have available, on the job, a full, current OSHPD-approved, stamped set of drawings and specifications and a set of applicable building codes and regulations provided by the AOR, all approved post approval documents, and related project correspondence. All documents shall be readily available at all times.
- Maintain project files. Files shall contain the IOR’s copies of deficiency lists, all submittals, approved shop drawings, and samples required by the approved plans and specifications. A file of all tests and inspections as required by the approved plans, specifications, and the approved Testing, Inspection and Observation (TIO) Program should be maintained. The IOR shall receive all submittals, approved shop drawings, and samples required by the approved plans and specifications.
- Continuously inspect all parts of the work of construction in all stages of its progress to ensure that the work is in accordance with the approved plans and specifications and applicable codes. Work such as concrete and masonry, which can only be inspected as it is placed or assembled, requires the constant presence of the IOR. Other types of work, which can be inspected after the work is installed, may be performed while the IOR is not present.
- Report all apparent inconsistencies, errors, or omissions in the approved plans and specifications to the architect or engineer in responsible charge of the design of construction. The IOR shall notify the office when work is started or resumed on the project, at least 48 hours before the time when foundation excavations will be complete and ready for forms, at least 48 hours before the first placement of concrete, and when work is, or is to be, suspended for more than two weeks.
- The IOR shall submit verified compliance reports (Form OSH-FD-123) as stated in the approved TIO Program. Note that a verified compliance report must always be submitted at the completion of the work.
- The IOR as well as the AOR or EOR should monitor the status of all post approval items and confirm compliance of approved construction changes in the field. The IOR is required to have approved documents at hand.
- Note that shop drawings that need to be approved by OSHPD but are not approved as a deferred submittal shall not be used by the IOR to conduct inspections of the work. However, the contractor may use them to facilitate the work. Unapproved shop drawings shall not be used to clarify any questions raised by the IOR.
- The IOR may serve as a special inspector when approved in the TIO Program. (See Chapter 4 of this volume for additional information on special inspections.)
- The IOR is responsible for assuring that all areas requiring special inspections are inspected and accepted by special inspectors.
- The IOR shall maintain on the job a file containing daily field reports for all special inspections.
- The IOR shall compile and maintain the verified compliance reports submitted by the special inspector(s) for the work performed.
For any deviations from the approved plans and specifications that are not immediately corrected, the IOR shall provide written notification to OSHPD, the contractor, the owner, and the design consultant.

The IOR should verify that all shop drawings, samples, and other submittals meet the Contract Documents requirements and are approved by the appropriate design professional before incorporation into the work. Responsibility shall rest with the AOR.

### 3.5 Additional Duties

There are numerous other duties that can fall under the IOR’s purview. This section outlines those that may be included as appropriate.

#### 3.5.1 Chronological Record

Keep a chronological record of the following:

- all inspections performed, including special inspections, geotechnical inspections, those done by system certifiers, verifications, observations by design professionals, project walk-throughs, and all project-related inspections;
- violations noted and how notifications were presented:
  - when notifying the contractor of noncomplying work use reasonable judgment and verbal notification when appropriate; when the contractor does not take immediate and appropriate action the IOR must comply with Title 24, Part 1, Chapter 7, Section 7-145(b) of the CBSC;
  - always document when and how notifications have been given (even when initial verbal notification has been given);
- all requests and notifications for the following:
  - clarifications,
  - interpretations,
  - Instructional Bulletins (IBs),
  - Change Orders (COs),
  - inspection requests,
  - noncomplying work,
  - notifications given to the contractor,
  - discussions and agreements made,
  - comments made by AHJs and/or needed corrections,
  - memos of concerns, and
  - inquiries to the AOR for document interpretations;
- visitors on the project;
- incidents affecting the hospital systems or accidents related to the project;
- schedule impacts;
- manpower;
- weather;
- any deficiencies in materials and installations;
- any direction given by the AOR and associated design professionals; and
- all photos taken for progress identification and problem documentation.
### 3.5.2 Plans and Specifications

- The IOR should have in his or her possession the following to safeguard the public by verifying that the hospital building(s) is constructed in accordance with the approved documents:
  - approved drawings and specifications;
  - all documents relating to changes (IBs and COs), deferred approvals, and Requests for Information (RFIs) for clarification of construction documents; and
  - the related building codes and standards as indicated by CAN 1 and the approved documents.
- The IOR shall maintain a record set of the approved documents:
  - The record set shall be a true representative of the work in place.
  - Realize that approved shop drawings are neither Contract Documents nor COs. They serve to clarify or show more detail, but the approved drawings and specifications prevail if there is a conflict.

### 3.5.3 Files, Records, and Reports

The IOR shall maintain the following files for the project as outlined in Title 24, Part 1, Chapter 7, Section 7-145 of the CBSC:

- IBs, COs, and deferred approvals;
- all inspections performed;
- inspection requests and logs;
- special inspection reports;
- certifications of all special inspectors used for the project;
- all project-related meetings;
- daily reports from the inspection group;
- test results from materials and certification of materials;
- approved concrete mix designs;
- welding procedures;
- all reports and documentation given by AHJs;
- all noncompliance notices issued and related notifications and communications that have had an impact on the documents’ progress;
- digital image or photos taken of the project; and
- all OSHPD field staff reports.

The IOR shall provide reports and notifications to OSHPD as indicated in Title 24, Part 1, Chapter 7, Sections 7-145, 7-151, and 7-152 of the CBSC.

### 3.5.4 Inspections and Types of Inspections Provided by the IOR

There are three types of inspection provided by the IOR:

- continuous inspections as outlined by Title 24, Part 1, Chapter 7, Section 7-145 of the CBSC,
inspections completed by the use of inspection requests, and
required inspections listed with the TIO Program as outlined by Title 24, Part 1, Chapter 7, Section 7-141 of the CBSC.

OSHPD should only allow the IOR to inspect the project consistent with what is provided in the permit documents. Construction and inspections should be limited to what has been permitted. If the project has a permit, then this indicates that there is adequate information contained in the documents to inspect. It is not the IOR’s responsibility to interpret code. The IOR should inspect what is installed and either confirm that it meets the requirements indicated in the permit documents or note the deficiencies in a daily report provided to the architect, owner, and contractor.

Inspection duties include the following:
- Conduct on-site continuous inspections of the work in progress to determine compliance with the Contract Documents.
- Report deficiencies observed to the contractor for immediate action. If action is not taken, provide written notification as described in Title 24, Part 1, Chapter 7, Section 7-145(b).
- Ensure proper notification to OSHPD personnel of deficient work, starting work, and stopping of work as outlined in Part 1, Chapter 7.
- Request further information if required for the proper inspection of the work.
- Communicate with the contractor to ensure understanding of the Contract Documents.
- Request the AOR’s or EOR’s interpretation or decision on all matters needing clarification, as described in Section 145(a)3.
- Request manufacturer’s literature or printed instructions if referenced and in doubt.
- Observe that the testing laboratory performs all tests and inspections required. Review test results and notify the contractor and architect of observed deficiencies.
- Consider suggestions or recommendations made by the contractor and refer them to the architect.
- Accompany the architect’s consultants when observing or inspecting the work. Observe actual progress in comparison with estimated progress. Record and report conditions that may cause a delay in completion of the work.

_The IOR should never authorize deviations from the Contract Documents nor should an IOR interfere with the work to be performed by the contractor nor assume any responsibility for the performance of the contractor’s work. It is not the role of the IOR to advise or issue directions relative to any aspect of construction means, methods, techniques, sequences, or procedures._

### 3.5.4.1 Inspection Requests

The inspection request is one of the few important tools an IOR has for documenting, tracking, organizing, verifying, and maintaining accountability and provability of inspections conducted on an OSHPD project. This tool also holds the IOR accountable for providing timely inspections and affords the contractor with a fair and responsible inspection process.

Inspection requests are required for the following:
- as outlined in the TIO,
- for all work needing inspections so that the IOR knows where the contractor is working,
- for utility shutdowns, and
- for AHJ requests.
The following outlines some basic rules for properly administering the request program.

### 3.5.4.2 Starting the Inspection Request Program

- Begin instruction of the request program at the first preconstruction meeting.
- Have a one-on-one meeting with the project contractor and let him or her know what you expect and need.
- At each pre-installation or pretask meeting review how the inspection request is initiated and what is required to initiate it.
- Review with the contractor’s project manager how and when the inspection requests are to be turned in.
- Be consistent in requesting inspection requests. Enforce the following policy: "If we looked at work in place and an inspection request was not initiated, it never happened." Insist that all work require an inspection request.

### 3.5.4.3 Rejecting Inspection Requests

Inspection requests can be rejected as often as is needed. It is a mistake for the IOR to consider an inspection request when the work is not complete or has not been started. If the work is not ready for inspection the IOR must reject that inspection request. If only a portion of the work is ready for inspection the IOR cannot give a partial approval. The request must be rejected and the IOR should ask the contractor to submit a new one when the completed work is ready for inspection.

The IOR should be familiar with the inspection request form. On the form, signatures are required by the contractor and the subcontractor requesting the inspection. By signing the form these individuals have indicated that they have verified that the work is complete and in compliance with plans, specifications, and building code requirements. There must be strict accountability and so the IOR must be diligent in the rejection process. This diligence also plays a key role in any potential litigation or arbitration. The inspection request log indicates the time frame in which inspections are done and is used often by the contractor in arbitration.

The IOR can be assured that every contractor can and will adapt to properly presenting inspection requests to the IOR provided the IOR is consistent in implementing the system.

### 3.5.4.4 Logging Inspection Requests

When an inspection request is received, it should be date-stamped and initialed by the IOR. The IOR keeps the original inspection request in a binder with a log showing the request, date received, date inspection requested, date executed, trade requesting, and approval or rejection. After updating the log the IOR shall make a copy and post it outside the IOR’s or contractor’s office for subcontractors and contractors to view.

After completing the inspection and filling out the form, the IOR makes a copy of the original and places it in the outgoing mail. If an inspection is rejected a copy of the rejection should be given to the contractor in person or by fax. The original is retained by the IOR in the binder.

### 3.5.5 Other Project-Related Duties

Other duties of the IOR include the following:

- Attend preconstruction meetings.
Sign pay applications and review percentages of work complete.

Attend various meetings as required.

Effectively communicate with contractor, OSHPD, the Structural Engineer of Record (SEOR), the AOR, and owners.

Keep in contact with the AHJs and notify them about all phases of the work and meetings that may require their presence at the site. Keep ahead of the work being performed so as to anticipate required inspections that might tend to interfere with the progress of the construction.

Do not assume responsibility for any safety procedures. Should hazards be observed, report conditions to the contractor, record them, and give a copy to the owner, architect, and contractor. If an emergency situation arises, contact the owner and governing authorities.

Do not stop the work. The IOR is not a safety engineer or a safety inspector. Job-site safety measures and procedures are the sole responsibility of the contractor and are normally so specified in the Contract Documents. Many safety aspects of a project under construction involve the adequacy of shoring in trenches or scaffolding or false work, which cannot be easily determined without an engineering analysis of size and placement of support members. The IOR should find out who the contractor has designated as its site safety engineer or representative-in-charge of site safety. Also, the IOR should determine who is second in charge in case the contractor’s safety representative is absent. These individuals are responsible for maintaining safe conditions at the job site for the workers, authorized visitors, and others who have a right to be on site, including the architect, consultants, AHJs, and the IOR.

3.6 Checklists

Many books written on the subject of project inspection and administration of inspections include checklists. One such book is the Construction Inspection Manual. Many checklists have been developed.

As discussed in Chapter 4 of this volume, the TIO Program is a basic checklist of tests, inspections, and observation requirements. It is described in Title 24, Part 1, Chapter 7, Section 7-141 and illustrated by example and instruction in CAN 1-7-141(d)–(i). The TIO Program can be used as a guide for testing requirements and special inspections.

The most complete checklist of what needs to be verified and inspected would be the approved documents and the information contained therein. The building codes and standards are also applicable.

OSHPD has available a standard fire and life safety checklist on their Web site and comprehensive checklists can be purchased from a variety of sources. Specific checklists are not provided here because of the numerous items needed to be comprehensive and because the checklist would vary from project to project.

3.7 Coordination Concerns

Coordinating the work is usually the responsibility of the contractor. However, successful coordination requires all parties to communicate with each other so that construction can proceed in an orderly manner. Although verbal communication is used extensively, scheduling and legal procedures required during construction are best served by written correspondence, with proper distribution of copies to all concerned parties including the owner’s representative.
In addition to work coordination, various notifications and compliance with hospital facility in-house requirements must be met. These notices and compliances should be approved by the owner’s representative. Because lives are at stake in the hospital, procedures for notifications, barriers, infection control, and life and safety issues concerning the hospital need to be communicated to all parties of the construction group, AHJs, AOR, EOR, etc. The best times to review these issues are during preconstruction meetings. These should be held prior to every phase of construction or when a new group begins construction.

The IOR needs to have continuous knowledge of the construction progress and schedule and should be aware of how the work affects the operations of the hospital. Though the IOR may not be directly responsible for the execution of notifications and infection control practices he or she should be aware when procedures are not followed or forgotten and notify the appropriate personnel.

### 3.7.1 Preconstruction Meetings

A preconstruction meeting can be a powerful tool and help prevent much of the conflict that could develop in the field. The following individuals should attend the preconstruction meeting:

- general contractor;
- contractor (who exerts minimum, direct control and coordination of the subcontractor);
- project manager (who understands the contractual obligations of his or her subcontractors);
- project engineer (who understands the need and status of all submittals);
- project secretary (who records meeting attendees and provides meeting minutes);
- subcontractor (at least the foreman, project manager, or other representative);
- manufacturers’ representatives (who can provide information and guidelines);
- architect and engineer in responsible charge (when appropriate);
- hospital staff of affected areas (when appropriate);
- OSHPD personnel (who can advise on OSHPD’s expectations);
- project IOR (or all IORs if there are more than one);
- special inspector (if needed or required);
- consultants (when needed);
- facilities maintenance representatives (who normally will be invited to the preconstruction walk-through if there are areas of the hospital that may be affected); and
- infection control and safety officers.

The advantage of having the preconstruction meeting is that all of the key players will be in attendance and thus everyone will be apprised of their individual accountability. The IOR can provide advice on potential problems, OSHPD-required procedures, and the minimum requirements to satisfy code, approved documents, hospital procedural considerations, infection control enforcement, life and safety issues, and inspection procedures. Title 24, Part 1, Chapter 7 is very clear about the need for approved documents prior to commencing work.

Some projects will refer to a preconstruction meeting as a pre-installation meeting. Some project specifications may lack direction in defining when meetings are required, who will attend, and how it will be conducted. It is well within the bounds of the IOR to request a preconstruction meeting regardless of the specifications.
3.7.2 Preparation for the Preconstruction Meeting

Above all else, the IOR should be prepared. The IOR should have all information received from the owner and architect available and needs to review this prior to the meeting. This information should include

- approved drawings,
- project specifications,
- project schedule, and
- a copy of an inspection request.

The IOR should be familiar with the project schedule and the actual work taking place. If advanced notice of the preconstruction meeting is given at the owners meeting, it then becomes part of the meeting minutes and will be carried forward until the preconstruction meeting takes place.

3.7.3 During the Meeting

Meetings are usually run by the AOR, the EOR, the POR, or the general contractor. Participation by other contractors and subcontractors will vary based on their level of preparation and experience. During the pre-construction meeting the general contractor should be able to give assurances regarding personnel and materials to complete the work.

The OSHPD field staff will do the following:

- Establish and define lines of communication among subcontractors, contractors, design professionals, the IOR, and OSHPD field staff.
- Identify and review the requirements of the Hospital Seismic Safety Act of 1983 and Title 24, Part 1, Chapter 7 of the CCR.
- Summarize the overall duties, observation, and coordination functions of the AOR or SEOR as required by Title 24, Part 1, Chapter 7 of the CCR, including preparation of COs and verified reports, site visits to verify work, and certification and submittals to OSHPD.
- Summarize the overall duties of the IOR, reporting relationships, and the IOR’s responsibility to verify compliance with the plans, specifications, and applicable codes.
- Discuss required coordinated review of the project by OSHPD representatives (ACO, FLSO, and DSE).
- Identify specific and/or unusual code and project requirements.
- Explain code requirements for shop drawings, submittal, review, and approval. Outline procedures for meeting the requirements and how submittals will impact project schedule.
- Explain the procedures and requirements for approving IBs and final COs. Review the approved TIO Program.
- Discuss the schedule for submittal of deferred approval items to avoid delays in construction.
- Request scheduling requests from owners and contact information for the hospital representative.

The IOR should do the following:
• Ask how the contractors intend to accomplish the work and allow them to walk you through the construction process.

• Review the specifications. Frequently the subcontractor is unaware of the unique requirements of the project and may not have reviewed the specifications.

• Give a copy of the inspection request to all parties and review who looks at the work prior to inspection, reasons for rejection, how the IOR will notify them, and what the notification requirements are. It is important to stipulate the quality standards expected so that all responsible parties will adhere to the inspection requirements.

• Review the TIO Program requirements.

• Briefly review the noncompliance procedures.

• Review what the IOR wants to see and at what stage the IOR must perform inspections.

• Discuss material inspection upon arrival at the project.

• Ensure that contractors and subcontractors understand how facilities are coordinated through the IOR and the project manager.

• Make it clear to the contractor that the IOR is not responsible for reviewing the adequacy of the contractor’s safety program.

• If OSHPD field representatives are not present, describe AHJ involvement and review the requirements and procedures with contractors and subcontractors.

It is always a good idea to conduct a site assessment after the meeting to review the installation process and setup. This allows everyone to have a clear picture.

The preconstruction meeting is an opportune time to bring up fire stopping of penetrations and to inform the contractor that all penetrations will have to be completed per a listed testing agency such as Underwriters Laboratories (UL). Engineering judgments should only be used in extreme cases. Bringing such issues to the contractor’s attention early should mitigate potential problems.

Document all agreements made at the meeting and record who authorized them. Note if and what specifications were reviewed, who attended, and, in general, what was covered. This record can become a very useful tool should problems arise in the future. For example, the contractor and/or subcontractor needs to be aware of any special requirements, inspection requirements, OSHPD notifications, testing requirements, infection control requirements, notification requirements, shutdown procedures, submittal requirements, material samples, contact groups, emergency procedures, established travel paths inside and outside the building, material delivery procedures, and safety issues such as the need for egress maps during phased construction.

### 3.8 OSHPD Interaction

The IOR acts under the direction of the AOR or EOR. He or she represents the eyes and ears for various parties including the architect, structural engineer, AHJs, owners, and owners’ representatives.

It is important that the IOR prepare documentation representing the various inspections conducted on an OSHPD project to give evidence of compliance and that inspections are conducted continuously. This allows the ACO, DSE, FLSO, and RCO to observe the inspection process and to be assured that adequate and competent inspection is provided.

OSHPD staff members ensure that inspections are adequately and competently conducted and documented on the hospital project. It is not the responsibility of OSHPD to provide the inspections.
The IOR should be able to show an OSHPD representative the approved documents and the maintained record documents showing approved changes and a true representation of the project. The IOR should be able to show how inspections have been organized, discuss project progress, and describe any problems being faced in the field.

Normally the IOR will perform a walk-through of the project with the OSHPD representative. If the OSHPD representative has any concerns at that time, the inspector shall note it and ensure that the appropriate parties are notified via a copy of the OSHPD field staff report. The responsibility for inspection resides with the project inspector; OSHPD only observes that the process is working and that adequate and competent inspection is provided.

OSHPD representatives are also a valuable resource for the project inspector since they have a wealth of first-hand information regarding hospital construction practices and hence should be consulted as needed. OSHPD representatives encounter many problems as they visit various projects and could assist in preventing mistakes and advising the IOR. The IOR should use OSHPD visits to take advantage of the advice provided by its representatives.

The project inspector shall contact the various OSHPD representatives for special reviews of work and needed visits.

### 3.9 Concluding Remarks

An IOR needs to have good communication skills to minimize misunderstandings. By being consistent and providing organized documentation an IOR can assist in keeping a project on schedule. There are no skills, however, that can replace a well-produced set of approved documents and a contractor willing to comply with them. But with foresight and a thorough understanding of the process, an IOR can pace the project, complete timely inspections, and provide notifications and documentation that will keep a project moving and ensure that it complies with the approved documents, making for a smoother close-out process.
4 Test, Inspection, and Observation Best Practices

4.1 Introduction

This chapter is the result of discussions and studies conducted by the Inspection Review Panel regarding the current industry practices and how they can best be improved. Although a Test, Inspection, and Observation (TIO) Program is required by law for all hospital building projects in California, the use and application of these recommended "Best Practices" are voluntary and generally provide better project coordination and quality. The chapter is intended to be used as a guideline by design and construction professionals involved in new and remodel hospital building projects in California. For further reference see Title 24, Section 7-141 of the 2001 California Code of Regulations (CCR).

4.2 Purpose

These "Best Practice" guidelines serve the following purposes:

- to increase collaboration, accountability, and cooperation among those design and construction personnel responsible for new and remodel construction in California hospitals;
- to provide assistance for the efficient development and implementation of the state-required TIO Program;
- to clarify the roles and responsibilities of the parties involved in the design, inspections, testing, construction, and approval of hospital building projects in California; and
- to better define the testing, inspection, and observation requirements and the sequential milestones associated with projects through the course of the project development.

4.3 Maintenance and Administration

A TIO Program must be submitted with every plan review application and an essential element of its successful implementation is the ongoing effort by the project team through the construction process. It is particularly important for the Professional of Record (POR) to keep all aspects of the OSHPD-approved program current with evolving project conditions. Although these conditions will generally include tests, inspections, and milestones, they will almost certainly include information on responsible personnel as the project team members become known or as they change over the course of the project. The TIO is not a rarely referenced static program; rather, it constitutes a dynamic document that the entire project team must regularly reference as a benchmark for ongoing quality assurance.
Chapter 4

4.4 Format

Although OSHPD has developed and published TIO documents and forms that are available on the Web, these documents were designed to be used as tools or guides only. Hospitals with particular projects that involve working with unique groups of companies and individuals will almost certainly benefit from customizing TIO Programs by creating hospital-specific templates to best suit their specific conditions. Because of the repetitive nature of much of the information included on the TIO Program, particularly when the project team does not change dramatically from project to project, TIO Programs that are developed around the specific hospitals for which they apply offer a more user-friendly approach than those that have been based on the projects, design professionals, or OSHPD. Regardless of the preferred format, all TIO Programs should be created by design professionals who are thinking critically about the work scope and how to best preserve design intent and maintain construction quality.

4.5 Instruments

Traditionally the design PORs create and maintain TIO Programs using the standard OSHPD forms. Although this is acceptable, it does not reflect a best practice approach to the state’s requirements because of the concentrated involvement that is required for the ongoing TIO Program implementation over the course of the project. Depending on the size and nature of the construction projects, alternate means for developing and maintaining the integrity of the construction quality may offer better solutions for achieving the objectives of the TIO Program requirements. For example, TIO management consultants are available and can effectively augment the resources of the design POR for this purpose during construction. Furthermore, Web-based TIO Program applications also offer the depth of document and project data management needed to easily administer the TIO-related issues throughout the course of construction projects. In many cases, these Web-based tools are fully accessible to users at no cost.

4.6 Contract Drawings

Although including the TIO Program within the sheets of the OSHPD-approved and large-format construction drawings is possible, this approach is cumbersome to maintain. TIO Programs often change over the course of a project. Personnel, firms, tests, inspections, and milestones are dynamic because of the nature of the project. Keeping the TIO Program documentation current with dynamic conditions by changing the information on large-format construction drawings has proven to be time consuming and does not best serve the project progress. Rather, a stand-alone 8½ by 11 document that is approved separately from the rest of the project and can easily be transmitted to others on the team offers a more manageable approach.
4.7 Title Page

All TIO Programs should clearly identify the hospital and project for which it applies on a title page.

Example

TEST, INSPECTION AND OBSERVATION PROGRAM (TIO)
St. Elsewhere Memorial Hospital
111 Elsewhere Ave
Elsinor CA 11111

Sample Project
HS-999999

4.8 Table of Contents

The complete contents of the TIO Program should be shown at the front pages of the document. Each page of the document should include the hospital and project for which it is to be applied and the OSHPD project number.

Example

TABLE OF CONTENTS
TIO Instructions
Directory of Participants Section A
Tests–Documentation/Certification Required Section B
Special Inspections–Documentation/Certification Required Section C
Construction Observation and Reporting–Milestones Section D
TIO Program Approval Page Section E
Test and Special Inspection Documentation/Certification
Sample Tests

4.9 Instructions

Within the first few pages of the TIO Program should be a set of instructions to the project personnel for the proper implementation of the Program. Along with clarifying the expectations for its use, these instructions should clearly define the responsibilities of the project participants as they relate to the TIO Program.
**Example**

**Test, Inspection, and Observation Program (TIO)**

The TIO Program is a part of the OSHPD-approved Construction Documents. The "Professional of Record" (POR) shall be responsible for the development and administration of a project-specific TIO Program. This includes the identification of individuals and companies performing the required tests, inspections, and observations. The POR shall coordinate with all design professionals assigned to the project to establish the scope of the testing and inspections. He or she shall coordinate with the owner and the entire design team to identify the critical milestones (or intervals) of progress to verify construction compliance. The POR shall be responsible for the distribution and gathering of all required "Verified Compliance Reports" and "Test and Special Inspection Forms." He or she shall be responsible for compiling and submitting to OSHPD all of the required documentation necessary for the project close-out.

A copy of the approved TIO form will be distributed when the building permit and IOR application have been approved by OSHPD. A copy should be kept with the approved plans at the job site throughout construction. The original approved document will be maintained in the OSHPD office files. The OSHPD staff will initial the "Construction Acceptance" box in the approved TIO Program as the work is completed and accepted. The TIO Program is maintained at the project site by the IOR and serves as a "job card" throughout the course of construction.

Certifications of all special inspectors are required to be collected by the Inspector of Record (IOR). Once they have been collected, they become part of the project file. They will be reviewed and approved by the IOR and OSHPD field staff and will be forwarded to the OSHPD office by the IOR in accordance with Title 24, Part 1, Section 7-155(d).

All design professionals, the general contractor, and the project IOR must submit Verified Compliance Reports at the progress milestones identified in this TIO Program. Furthermore, each special inspector or (when acceptable to the office) an officer of the firm employing the special inspector(s) must submit "Test and Special Inspection" documents to the POR.

The firms and the individuals assigned to perform the tests and special inspections may not be fully identified in the program. In cases where not all names have been included in the TIO Program, the building permit and TIO Program can be approved by OSHPD with comments. Once the firms and individuals performing the tests and special inspections are identified, a revised TIO form must be submitted for field review and approval by the appropriate OSHPD field staff. OSHPD field staff will issue a Construction Advisory Report indicating the approval of the TIO Program.

When the field conditions disclose the need for additional tests, special inspections, or observations, the TIO Program may be amended by the POR. The new amended TIO must be submitted to the OSHPD FDD office. When a change order revises the scope of a project and additional tests are required, a revised TIO Program will be submitted with the change order by the design POR.

After the Approved TIO form is initialed by the IOR and OSHPD staff, it shall be submitted to the POR and will become part of the required project closure documentation.

### 4.10 Responsible Personnel

Successful projects include a full complement of required personnel, all of whom are fully engaged in the process and communicate often and deliberately regarding the various TIO issues. Included within this group are owners, design professionals, inspectors, OSHPD staff, and contractors. Each of these participants and their contact information should be clearly presented on
the TIO Program. Relative to the TIO Program, each must be responsible for certain aspects of the quality assurance and controls as described in the following subsections.

### 4.10.1 Owner

The owner is responsible for authorizing and funding the TIO Program. He or she is responsible for the general oversight of the project progress and performance of all others associated with the development and implementation of the TIO Program. The program is to be prepared and submitted by the architect or engineer or record in general responsible charge of the work. If the project lacks an architect or engineer in responsible charge, the program shall be prepared and submitted by the applicant.

For further details on the role of the owner see Chapter 6 of this volume.

### 4.10.2 OSHPD Staff

The OSHPD staff is responsible for the review and approval of the TIO Program. During construction staff members are responsible for the acceptance of the performance of the inspection personnel. Furthermore, they are responsible for the acceptability of tests and inspections as verified by the Inspector of Record (IOR) and reported in verified compliance reports.

For details on OSHPD’s role and structure see Chapter 1 of this volume.

### 4.10.3 Design Professional of Record

The POR shall be responsible for the development and ongoing administration of project-specific TIO Programs. This includes the identification of individuals and companies performing the required tests, inspections, and observations. He or she shall coordinate with all design professionals assigned to the project to establish the scope of the testing and inspections and determine which (if any) of the tests, inspections, and milestones must be observed by OSHPD field staff. The POR shall coordinate with the owner, OSHPD staff, and the entire design team to identify the critical milestones of progress to verify construction compliance. Furthermore, he or she shall be responsible for the distribution and gathering of all required verified compliance reports and test and special inspection forms.

### 4.10.4 Inspector of Record

The POR is responsible for the overall quality assurance of the project; however, the IOR can assist in ensuring quality through continuous inspection. The IOR is responsible for coordinating, reporting, and validating the work done by the testing laboratory and special inspectors and for gathering, maintaining, and validating related test and inspection documentation. Such documentation should include credentials of special inspectors, collection of OSHPD test and special inspection forms, and distribution of OSHPD staff field reports to the owner, the contractor, and the POR. The IOR is responsible for validating and reporting on the quality of the work done by the contractor. He or she is further responsible for submitting verified compliance reports to the POR at the predefined progress milestones as prescribed on the OSHPD-approved TIO Program and for keeping records relative to the status of sign-off by those responsible for performing, verifying, and accepting the prescribed tests and inspections during construction.

For further details on the role of the IOR see Chapter 3 of this volume.
4.10.5 Contractors

The contractor is responsible for control of construction means, methods, techniques, sequences, and procedures; for providing a safe place to work; for constructing the project in accordance with the OSHPD-approved construction documents; and for controlling the quality of construction. The contractor is also responsible for providing safe access to those elements that require tests and inspections by inspectors, OSHPD staff, design professionals, and the owner. He or she is further responsible for submitting verified compliance reports to the POR at the predefined progress milestones as prescribed on the OSHPD-approved TIO Program.

4.10.6 Special Inspectors

The special inspectors are generally employed by the testing laboratory. They have specific qualifications and certifications that demonstrate experience with particular types of construction. They are responsible for special inspections and related documentation as prescribed in the OSHPD-approved TIO Program.

4.10.7 Design Professionals

The design professionals are responsible for identifying and coordinating with the POR all of the necessary testing and inspections within their respective design discipline. They are further responsible for conducting field visits to observe and report on conditions relative to their design specifications. Each design professional is responsible for submitting a verified compliance report to the POR at the predefined progress milestones as prescribed on the OSHPD-approved TIO Program.

Example

St. Elsewhere Memorial Hospital
Sample Project
HS-999999

<table>
<thead>
<tr>
<th>Directory</th>
<th>Section A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role</td>
<td>Name</td>
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<tr>
<td>OB</td>
<td>Hospital Sample Elsinor</td>
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<tr>
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<td>IOR</td>
<td>Joe Ior Quality City</td>
</tr>
<tr>
<td>SI</td>
<td>Joe Lab Testing City</td>
</tr>
</tbody>
</table>
4.11 Tests

The TIO Program should clearly identify the required building elements and systems to be tested for the entire project scope. Each test should be properly named and referenced to the pertinent code and/or guideline. It should present a brief description of the test requirements and the discipline of construction to which it applies. The TIO Program should identify the progress status and persons responsible to perform the tests, verification that the tests were conducted in conformance with building code standards, and the acceptability of the tests results.

*Example*

**St. Elsewhere Memorial Hospital**

**Sample Project**

**HS-999999**

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Code Reference</th>
<th>Test Type</th>
<th>Responsible</th>
<th>Verification</th>
<th>Acceptance</th>
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<td></td>
<td>Cement</td>
<td>SI</td>
<td>IOR</td>
<td>DSE</td>
</tr>
</tbody>
</table>

4.12 Inspections

The TIO Program should clearly identify the building construction processes that require special inspection. Each inspection should be properly named and referenced to the pertinent code and/or guideline. It should present a brief description of the inspection requirements and the discipline of construction to which it applies. The TIO Program should identify inspection progress status and persons responsible to perform the inspections, verify that the inspections are conducted in conformance with building code standards, and ensure the acceptability of the special inspection process.

*Example*

**St. Elsewhere Memorial Hospital**

**Sample Project**

**HS-999999**

<table>
<thead>
<tr>
<th>Discipline</th>
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<td>SI</td>
<td>IOR</td>
<td>DSE</td>
<td></td>
</tr>
</tbody>
</table>

4.13 Milestones

The TIO Program should clearly identify all required progress milestones throughout the duration of the construction. Each milestone should be properly named and sequentially numbered. Each should include a brief description of the relevant elements of construction that are to be completed within it. Although the TIO Program must identify the progress status and participants responsible for submitting verified compliance reports at each of these progress steps, it is left to the discretion of the owner to decide whether assigning expected dates for reaching such milestones is beneficial.
Chapter 4

Example

St. Elsewhere Memorial Hospital
Sample Project
HS-999999

Construction Observation and Reporting–Milestones

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Name</th>
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4.14 Samples

TIO Programs that include samples of tests, inspections, observation reports, certifications, and other related documents can often further clarify the expectations for compliance with the requirements for TIO Programs.

4.15 Approval

The TIO Program should include an "Approval Page" (see the Example on the next page) that clearly documents the certification by the POR and the approval by OSHPD. It should identify all relevant codes and any notes that will clarify its application.

4.16 Conclusion

Regardless of the specific approach used to develop and maintain TIO Programs, strong leadership of the team throughout the process is of paramount importance. Leadership by the design POR must include open communication and persistent monitoring of the TIO progress. Project quality can best be assured by teams of design, construction, and inspection professionals committed to excellence through critical thinking that is properly exercised to specific conditions of the project to which they apply.
Example

St. Elsewhere Memorial Hospital
Sample Project
HS-999999

TIO Program Approval: Section E

Notes:
Samples of test and inspection reports are attached: yes  no
Required test and inspection reports shall be prepared and submitted to OSHPD FDD within 7 days of the completion of all tests and inspections.

Enforceable Codes:
2001 California Building Standards Administrative Code (Part 1, Title 24, CCR)
1997 UBC and 2001 California Amendments (01 California Building Code Part 2, Title 24, CCR)
2002 NEC and 2004 California Amendments (01 California Electrical Code Part 3, Title 24, CCR)
2000 UMC and 2001 California Amendments (01 California Mechanical Code Part 4, Title 24, CCR)
2000 UPC and 2001 California Amendments (01 California Plumbing Code Part 5, Title 24, CCR)
2000 UFC and 2001 California Amendments (01 California Fire Code Part 9, Title 24, CCR)

THIS PROGRAM HAS BEEN PREPARED AND SUBMITTED FOR AN OSHPD 1 PROJECT BASED ON THE ENFORCEABLE CODES ABOVE:

PREPARED BY:

OSHPD PLAN APPROVAL:

Professional of Record Date Name Date

PRINT NAME:

OSHPD PERMIT APPROVAL:

Name Date
5 Best Practices in Working with OSHPD FDD Field Staff

5.1 Introduction

After the plans and specifications for a hospital project have been approved and the building permit has been issued, OSHPD’s responsibility passes to the OSHPD FDD field staff. As noted in Chapter 1 of this volume, the Field Observation group comprises a Regional Compliance Officer (RCO), Area Compliance Officers (ACOs), District Structural Engineers (DSEs), and the Fire and Life Safety Officers (FLSOs). This chapter presents a description of their duties and offers suggestions on how to develop an efficient and professional working relationship that will maximize the effectiveness of the construction process from a regulatory perspective.

The regulatory requirements and authority are specified in the Building Standards Administrative Code (Part 1, Title 24, CCR), Administrative Regulations for the Office of Statewide Health Planning and Development, Chapter 7, Safety Standards for Health Facilities. Chapter 6 contains the Seismic Evaluation Procedures for Hospital Buildings.

OSHPD FDD field staff are responsible for ensuring that hospital buildings are constructed per the approved plans and specifications. OSHPD FDD shall make such observations that in its judgment are necessary or proper for the enforcement of the regulations and all applicable parts of the California Building Standards Code (CBSC).

The construction of hospitals in California is a complex and demanding process that requires effective management and cooperation of the various stakeholders involved. The needs and requirements of each stakeholder must be taken into consideration:

- Contractors may want to make changes to material specifications or change the design to improve construction efficiencies, or they may find details that cannot be constructed.
- The design team wants the project constructed in compliance with the approved documents. However, designers may tend to consider any deviations to be "means and methods," but any such deviations are considered to be changes and require OSHPD FDD approval.
- The owner would like a quality building constructed on time and within budget.
- California law requires that OSHPD approval be obtained before any construction is performed.

5.2 Overview of the Process

The contractor begins construction per the approved plans and specifications. The Inspector of Record (IOR), who is the primary liaison with OSHPD FDD, continuously inspects the construction as long as segments of work are proceeding and maintains records of the activities, as described in Chapter 3 of this volume. The OSHPD FDD field staff makes scheduled and unscheduled visits to the project to observe the execution of the construction by conducting a
construction site review and audit of the Testing Inspection and Observation (TIO) Program (see Chapter 4 of this volume) and project construction documentation with the IOR. The ACO triages requested changes and either approves the changes in the approved construction documents or directs that the design professional forward the documents to the OSHPD FDD Plan Review group for review and approval. (See Chapter 2 of this volume for detailed best practices for plan review.) The architects and engineers make periodic visits to observe the construction to ensure work is compliant with the design.

In an ideal project, the plans and specifications would be followed exactly, the contractor would build the structure in strict compliance with the plans, the IOR would perform continuous inspection, and the OSHPD FDD field staff would visit the project as frequently as needed. Unfortunately, there are no perfect projects. Critical elements must be managed carefully to ensure that

- changes are only made when they are absolutely required and
- all construction is approved by OSHPD FDD.

Comprehensive control of all documents, including change orders (COs), inspection records, and reports, is key to the success of a project.

5.3 Problems and Recommendations

A number of potential problems and issues may be encountered on a project. These are outlined in the following along with "Best Practice" recommendations.

5.3.1 Contractor

Contractors will inevitably want to make changes to improve their efficiencies or because of material substitutions. Sometimes changes are made in the field because the construction details on the plans cannot be constructed owing to on-site conditions or insufficient clearances. *Any changes to plans and specifications require OSHPD FDD approval prior to the execution of the work.* (Review Title 24, Part 1, Section 7-153: Addenda, Change Orders, and Deferred Approvals.) If unapproved changes are found during construction by the IOR or OSHPD FDD field staff then work will be halted until appropriate approvals have been obtained. This is a major source of project delays and contract COs.

The following practices are recommended for contractors:

- Do not approve changes for convenience. The project manager should communicate this with the contractor(s) during the preconstruction meeting. Rarely do contractor-recommended changes actually save money for the project because of the ensuing delay for the modification of the approved plans and the approval of OSHPD FDD.

- Include the IOR inspection program as part of the contract. Inspections by the IOR are required by the regulations and must be performed. This process will increase the cost to the contractor and should be included in the contract. Failure to clarify the roles of the IOR and contractor will create schedule delays. Establishing the inspection program early and managing it daily will facilitate coordination with OSHPD and optimize the time spent on the project by OSHPD FDD field staff.

- On larger projects it may be beneficial to have the general contractor superintendent or other project representative(s) accompany the IOR and OSHPD FDD staff during their scheduled walk-throughs of the construction. This allows the contractor to see how the
process works and therefore better accommodate OSHPD FDD requirements. OSHPD FDD staff may request that they be allowed to conduct site reviews and audits with the IOR independently. OSHPD FDD audits the performance of the IORs and it is occasionally necessary to have performance discussions with the IOR in private.

5.3.2 Design Team

It is virtually impossible to prepare construction plans that are perfect; changes will inevitably be necessary. Unforeseen conditions, bid alternates, product substitution, owner changes, defective plans and specifications, and errors or deficiencies in the construction that must be brought into code compliance will all require that the plans and specifications be changed. Changes to these documents must be approved by OSHPD FDD and are documented using the OSHPD FDD post approval form.

OSHPD FDD COs are not to be confused with contractor COs. OSHPD COs are changes to the construction documents and are prepared by the design professional in responsible charge. The approval process for COs can range from one day for field-reviewed and approved COs to several months for FDD Plan Review group review and approval depending on size and scope. Change orders shall include the change to the contract amount unless alternate methods have been approved by OSHPD FDD for confirming construction cost changes. Construction cannot proceed until OSHPD FDD approves the CO.

Instruction Bulletins (IBs), prepared by the design professional in responsible charge, are used to prevent undue delay. Only after preliminary approval of an IB by OSHPD FDD can any CO construction commence.

- FDD field staff needs to evaluate the IB for its construction delay potential.
- If the IB is rejected, it can be submitted as a CO.
- An IB should be converted to a CO within 30 days.

The following practices are recommended for the design team:

- Avoid making changes to the approved documents. COs and IBs can number into the hundreds depending on the quality of the construction documents and contractor-requested changes that are approved by the owner representative. Although the argument is often made that a change will improve the schedule and reduce cost, such is rarely the case when delays and work coordination issues are factored in.
- Maintain a management file for IBs and COs that tracks the status of each and assigns responsibility for required completion.
- Maintain a Request for Information (RFI) or similar instruments of service file that identifies any required changes resulting from the directive of the design team. The IOR should review each RFI to ensure that the necessary CO documentation is provided by the design team.
- The architect should accompany the IOR and OSHPD FDD field staff during observation of the construction work. Many issues can be resolved immediately on site, thereby avoiding COs and IBs. If a CO is required, the designer can discuss the issue with the OSHPD FDD staff and mutually agree upon the specific details that the CO should address. This simple process can avoid many costly delays.
5.3.3 Owner

Project management varies from owner to owner. Some owners have staff dedicated to projects and some depend largely on consultants. Because owner changes are one of the major factors associated with project delays and associated problems, once the project permit is issued owners should resist the urge to make changes.

The following practices are recommended for the owner:

- Examine requests for changes by owner stakeholders carefully. Changes create project delay and increase costs. Evaluate whether any change is really needed or simply reflects a preference. Often new staff or new technology can stimulate the "need" for change by owners, but these should not be sufficient motivation. Determine whether the changes can be made later, after the project is complete. Often the cost of making changes during construction will be significantly greater than if the changes are made as a separate follow-on project.

- Consider administrative support for the IOR program. The IOR, the primary interface with OSHPD FDD and the project, conducts inspections, assists the design team with COs and IBs, acts as the on-site representative for OSHPD FDD, and keeps the owner informed about progress and problems. Consequently, allocating IOR resources is one of the critical elements of success for any project. Hire competent IORs and ensure a sufficient number to serve the project. Any weakness in the IOR program will lead to project delays, contractor claims, and general chaos. The IOR is the primary interface with OSHPD FDD and the project.

- Schedule OSHPD FDD field staff time efficiently. OSHPD FDD’s available time at the project site is limited. The owner, through the IORs, should ensure that priorities are established and that all parties are ready when ACOs, DSEs, or FLSOs are on site so that their time is efficiently utilized.

- Follow OSHPD FDD’s process for resolution of problems should they arise. These processes are detailed on OSHPD’s Web site. The first step on any issue is to meet with the ACO and explain the issue. Many times the owner does not have all the pertinent details and a discussion with the ACO could save the owner time and possible embarrassment.

Other owner-related issues are discussed in detail in Chapter 6 of this volume.

5.4 Summary

The major problems associated with construction project delays are the following:

- work executed not in conformance with the approved construction documents,
- post approval changes, and
- delays in processing deferred approvals and CO documents.

Changes will undoubtedly be required for any project but the key to success is to minimize these changes. Quality construction documents form the basis for any successful project. Keep in mind that just because OSHPD FDD approves the documents does not mean that they are quality documents. Plans and specifications need to be completely and thoroughly checked by the responsible architect or engineer before they are submitted to OSHPD. Plans and specifications that are incomplete or incorrect will be returned to the applicant. (See Title 24, Part 1, Section 7-125: Final Review of Plans and Specifications.)
- Construction documents should be reviewed for constructability and appropriate changes should be made before they are submitted to OSHPD FDD.
- All construction documents (architectural, structural, mechanical, electrical, and plumbing plans) should be coordinated. Qualified consultants can take the construction plans and, using computer systems, build the systems graphically to determine whether they can be built as designed. This effort can identify problems that would otherwise not be found until construction.
- The design team should be encouraged to follow the recommendations presented in Chapter 2 of this volume.

Unrealistic expectations can cause difficulties and delays. OSHPD FDD field staff can only perform their duties within the rules as stipulated in the code; expecting anything else is irrational and costly. It is incumbent upon owners and owner representatives, contractors, and designers to become knowledgeable with OSHPD FDD procedures and processes and to manage the construction project process to maximize the effectiveness of OSHPD FDD policies and procedures.
6 Best Practices for Hospitals in Working with OSHPD

6.1 Purpose

The purpose of this chapter is to provide hospital chief executive officers and other hospital personnel responsible for hospital construction and renovation projects with a basic understanding of the role of the Office of Statewide Health Planning Facilities Development Division (OSHPD FDD) as the building official for acute care facilities and to present "Best Practices" that can assist in ensuring that hospital projects in California are designed, plan reviewed, and constructed in an expeditious manner.

California hospital buildings are considered by many architects and engineers as the most complex buildings in the world to construct. Very few buildings as complex as hospitals are expected to continue operation following ground movement. California hospitals are also required to meet additional fire and life safety and access compliance requirements beyond those required by other hospitals in the United States.

By their nature, California hospital buildings take longer to design, obtain building permits, and construct and therefore are more expensive to build than nonhospital buildings of equivalent size. Maintaining the appropriate seismic and fire and life safety standards postconstruction also requires a higher level of compliance with regulations, so that even the most minor of modifications come under state control. This chapter describes OSHPD FDD and recommends best practice strategies that are intended to minimize delays, control budgets, and protect healthcare programs.

Working on a hospital construction project can be either a frustrating experience or a simple one. To make it a simple one follow these basic guidelines:

- Require your project team to communicate with OSHPD.
- Submit a geotechnical report to OSHPD at least six months prior to submitting the project.
- Ensure that your design team produces quality documents.
- Do not allow your design team to blame OSPHD for its own shortcomings.
- Resolve conflicts by using existing processes and formal appeals.
- Ensure that your contractor adheres to the approved plans.
- Avoid owner-driven Change Orders (COs).

Proper execution of these and the other best practices outlined in this chapter will ensure that a project is put together in such a way as to allow it to navigate efficiently through the OSHPD process.
6.2 Basic OSHPD Processes

The basic processes of OSHPD FDD are focused on the central mission of the agency: to assure that hospital buildings are safe. The process is as follows:

- Plans developed by a licensed architect or structural engineer are submitted to OSPHD for review and approval.
- Approved plans become eligible for a building permit.
- Construction of permitted plans is performed by a licensed contractor under the continuous inspection of an Inspector of Record (IOR) and is observed by OSHPD field staff.
- OSHPD field observation staff accepts the work as complete when fully finished and certifies it as being compliant, allowing Licensing & Certification to license the construction for healthcare operations.

As simple as it sounds, there are enough opportunities for missteps along the path that can grossly escalate costs, delay occupancy, and force changes in scope.

6.3 Best Practices

To avoid the pitfalls inherent in any complex construction process, hospital owners can adopt best practices in their project planning and delivery that anticipate the causes of budget, schedule, and scope impact and prepare to resolve them proactively.

Best practice strategies are used most effectively when applied to the appropriate phase of the overall project program. The phases used here are as follows:

- project selection and identification phase,
- project planning phase,
- design phase,
- permit phase,
- construction phase, and
- closeout phase

6.3.1 Project Selection and Identification Phase

*Best Practice 1: Understand and communicate clearly what you want to accomplish*

Whether the project is as simple as introducing a new piece of equipment into your facility or as complicated as replacing an entire acute care campus, all subsequent strategies for working with OSHPD stem from how clearly and unambiguously you understand what you want to accomplish.

Develop an overall Master Facilities Plan and Program. Some hospitals are currently incurring additional expense in meeting the seismic mandate because over the years construction and renovation projects took place without a Master Facilities Plan. Therefore, in meeting the seismic mandate some seismic compliant buildings and systems need to be modified or replaced while conducting seismic retrofits of noncompliant buildings. A Master Facilities Plan can assist in predicting when a proposed project may trigger upgrades of mechanical, electrical, plumbing, and structural systems as well as assist in determining where additional sources of power are required.

To assist hospitals in interpreting clinic building code requirements OSHPD developed Code Application Notice (CAN) 1-7-2100 (see http://www.oshpd.ca.gov/FDD/Regulations/CANS/1-7-
This CAN will assist hospitals in determining which building authority has responsibility for a clinic project and to what code it is designed and reviewed.

OSHPD reports that some local jurisdictions and clinic owners and design professionals have experienced confusion regarding which clinics and outpatient facilities are subject to the clinic requirements (OSHPD 3) found in the California Building Standards Code (CBSC). This results in a lack of consistency in application of the model code and OSHPD 3 requirements to clinic facilities as well as uncertainty regarding the roles of the local building department and OSHPD in the plan review, certification, and construction inspection processes.

Also, the hospital seismic mandate provides compliance options for nonconforming buildings. Such buildings shall (a) be retrofitted; (b) be closed, demolished, or replaced; or (c) have their acute care services removed and be converted to non-acute-care use. Over the next few years, over one-third of all hospital buildings could be converted from general acute care hospitals to other uses. Therefore, OSHPD issued CAN 2-3405, which clarifies the CBSC for Section 3405 (Change of Use) and Section 420A.2 (the application).

Best Practice 2: Be realistic about the preliminary budget and length of time needed to achieve your goal

Be prepared to invest the necessary time and resources. Project cost estimates must take into consideration needed equipment, inflation, the project design, plan review schedule, and construction time. Being realistic will minimize delays that arise when plans are in OSHPD review. Develop and validate current project concept budgets, with contingencies, that concur with defined scope. Value engineering should be addressed and applied during the design development phase.

6.3.2 Project Planning Phase

Best Practice 3: Contact an Area Compliance Officer to determine whether or not a permit is needed for a remodeling project

If a hospital owner is unsure whether a permit is needed, a hospital representative should check with the OSHPD region’s Area Compliance Officer (ACO). If a hospital owner proceeds without a permit to construct a project that requires one, it is considered unauthorized construction (sometimes referred to as a "bootlegged project"). Unauthorized construction can have serious ramifications, including noncompliance with licensing and certification requirements, validation survey citations, and noncompliance with Medicare Conditions of Participation and JCAHO standards. Following a disaster, a damaged hospital that has unauthorized construction may not be eligible for Federal Emergency Management Agency (FEMA) assistance. Many OSHPD problems that arise with projects can at times be traced back to related unauthorized construction. OSHPD will require correction of all unauthorized construction and insist that the new work to be performed under a building permit and designed to code.

Best Practice 4: Assign project management duties to qualified people who can handle the expected workload

Obtaining a good outcome requires active management. Assignment is scalable; whereas installation of equipment may be managed by a single staff member, a hospital replacement project may require a team of managers. Remember, the design team vendors and contractors may not have the same interests in the well-being of a hospital as that of its management team. Management control of the process is essential to minimize problems as the work proceeds through the OSHPD process.
Assign a project manager to each project submitted to the FDD. The project manager is responsible for the overall coordination required to ensure a successful project. The project manager ensures that all players know their roles. FDD experiences indicate the following potential problems related to project management:

- Some hospitals do not use project managers and expect all project participants (architect, engineers, IOR, contractor, etc.) to communicate and coordinate among themselves and with OSHPD. This coordination and communication often does not occur without a project manager.
- Some hospitals believe the IOR serves as the project manager. The IOR has a defined role and it does not include project management. (See Chapter 3 of this volume.)
- On occasion, a hospital will subcontract with an architect, engineer, or contractor on a project to also serve as the project’s manager. These individuals have a conflict of interest in serving as a project manager.
- In some cases, a hospital employee who has full-time responsibilities is asked to pick up project manager responsibilities under "other duties as assigned." Because of the time required to perform quality project management, this scenario does not usually work.

**Best Practice 5: Choose planning and design consultants who have a demonstrated knowledge and understanding of California regulations and of the type of project you need delivered**

Nothing bogs down the OSHPD process more than architects and engineers who do not understand the demanding requirements of hospital architecture and how hospital requirements are different under the CBSC, OSPHD operations, or the legislative intent that created them. Architects and engineers interviewed to provide services should prove that they have demonstrated knowledge of California hospital design and can work constructively in the OSHPD environment. They must be licensed in California and should have had success with similar OSHPD projects.

This best practice is also pertinent to selection of equipment vendors and technology systems providers.

**Best Practice 5a: Require that the architect and/or engineer contract contain a provision of the basic services and code-compliant drawings to ensure there are no extra charges for backchecks; and ensure that the hospital will receive timely copies of OSHPD’s plan review comments**

Retain a design team that is knowledgeable about the workings of the FDD and understands the CBSC.

Obtain references for architects and engineers.

- References are needed for both the architecture or engineering firm and for the individuals who will perform the work. Interview the specific design team individuals proposed for your project.
- Review recent similar projects the firm submitted to OSHPD to determine the quality of its work and the firm’s ability to design to code (e.g., look at type of OSHPD comments and number of backchecks).
- Require the design professional to perform written code reviews by qualified internal staff or a qualified outside code consultant.
- The hospital should obtain an independent review of the architectural and/or engineering plans prior to submitting them to OSHPD. Although this entails additional cost it can
ultimately save both time and money. It will enhance quality design, facilitate plan review, and help in determining the cause of any delays that may occur during the plan review process.

- Retain a designer based on factors other than just a presentation by a firm’s marketing representative. If any team members working on your project leave the design team during your project, stipulate in your contract that the replacement will have similar design and OSHPD experience and that the hospital owner has final sign-off on a replacement being assigned to your project.

**Best Practice 5b: Develop a full understanding of the regulatory environment that affects your project**

OSHPD has control of your acute care building and certain aspects outside of it, but it is not the only public agency involved. Determine with the assistance of your consultants the entire breadth of regulatory involvement with your project. City, county, licensing, and other state agencies may have influence over the delivery of a project. No land in California is zoned for hospital use. All hospitals require a Conditional Use Permit if new construction or additions are planned. OSHPD cannot issue a building permit for construction, even with approved plans, until the requirements of all other jurisdictions are met. Ensure that there are no regulations that render your project infeasible and that the timing of non-OSHPD entitlements coincide with the OSHPD process. OSHPD is not responsible for environmental impact reports (EIRs). The owner of a hospital should ensure that an EIR is obtained when needed and that adequate time is allowed to complete it. In some cases, EIR approval takes more time than a plan review. Failure to navigate smoothly through the OSPHD FDD process creates substantial risks for hospitals and their senior management. Delays in plan review and permitting or in construction can result in delays in project delivery, which in turn leads to increased budgets that can shrink a program and deleteriously affect the services needed by the communities served by the hospital. Many of the delays experienced by hospitals are avoidable. To minimize these risks, senior hospital management should approach the work with a proactive plan for steering through the OSPHD process.

**Best Practice 6: Determine your project scope and phasing**

Use your staff and consultants to fully define all of the project’s characteristics. Understand the type of approval required and the documentation needed for review. This is a more detailed function than Best Practice 1 and is a necessary precursor to Best Practice 7. Adding, deleting, or changing services to be included in the project will add cost and time.

**Best Practice 7: Determine whether your project is feasible**

Use your management staff and consultants to determine whether what you want to do can be accomplished. The following substrategies are needed to ensure feasibility:

**Best Practice 7a: Determine whether there are physical limitations that will prevent achieving your intended outcome**

There are limits to the built environment that can make a project infeasible. Physical feasibility may also be affected by existing conditions of the target location or by adjacent conditions. In applying regulations, OSHPD can require changes that either increase cost or result in project abandonment if physical feasibility is not properly evaluated. Accurate as-built drawings and physical evaluation of existing conditions are essential in determining feasibility for remodel or
addition projects. Drawings should include all disciplines (e.g., architectural, electrical, mechanical, and plumbing).

**Best Practice 7b: Determine the financial feasibility of the project**

Whether you start with a target budget or target outcome, make certain that the total project budget and the scope of the project match. Careful planning at this stage of the process is the most important determinant of project success. Inaccurate or unrealistic budgets are the most common drivers of change throughout the project duration. Any corresponding changes in the scope of the project must be addressed in the project’s budget. Distinguish between the budget and construction costs. Make sure adequate contingencies are defined to accommodate unforeseen hospital impacts.

### 6.3.3 Design Phase

**Best Practice 8: Require that your design team of architects and engineers design to the current California Building Code**

Experience has shown that there are common problems arising from design that seriously impact the satisfactory completion of the OSPHD process. These include

- designing to a code other than the appropriate provisions of the CBSC;
- designing to out-of-date codes;
- using room designations or other nomenclature on plans that are not consistent with the CBSC;
- failure to make best use of PINs and CANs published by OSPHD; and
- failure to follow CAN 2-34, which provides flow diagrams for use in planning the scope and boundaries of remodel projects.

**Best Practice 9: Submit a geotechnical report, when needed, in a timely manner**

Some projects require geotechnical reports except as noted in Section 1637A of the CBSC. Approval for a geotechnical report takes a long time. Owners should plan for this and submit the report at least six months ahead of the preliminary submittal.

OSHPD believes the key to receiving approved geotechnical and engineering geologic reports in a timely manner is to use experienced firms and to submit the reports early in the process. Consequently, the geotechnical report for the selected project site should be submitted prior to the preliminary review if possible. The approved report will establish the foundation and structural design criteria necessary for the structural engineer to design preliminary submittal data.

**Best Practice 10: Ensure OSHPD is contacted for interpretation or clarification of all code issues that require clarification**

OSHPD expects the licensed design professional to know and follow the code in the preparation of design. The code itself is somewhat flexible and open to interpretation. When designers have questions or require clarity as to the meaning of specific code issues, or need validation of their interpretation, they are encouraged to seek clarifications through the various channels OSHPD provides.

- The designer may contact the Regulations group for clarification of specific aspects of the code to determine their applicability.
Design teams may present concepts to a regional plan review staff on an appointment basis in Pre-application Conferences to validate specific design issues or to clarify project scope (CAN 2-34 Conference).

Design teams should clarify which aspects of their design may not adhere to the specifics of the code. These issues include

- alternate means of compliance for architectural, electrical, mechanical, and structural conditions;
- alternate methods of protection for fire and life safety issues; and
- program flexibility, which affects the relationship between architecture codes and the specific needs of different care delivery models.

The resources of the SB 1953 office can be used to ensure that the designer understands his or her obligations under the Seismic Safety Act and is including the scope needed in the project to further compliance needs.

Plans can be submitted for a preliminary review by OSHPD. The purpose of the preliminary review is to obtain written comments that validate or correct the basics of the architectural and fire and life safety elements of design. A preliminary review can mitigate potentially gross errors in the documents submitted for permitting. To get the most out of the process, plans should be submitted at about the 50 percent Design Development (DD) stage. Architects and engineers should sequence for the intended results. OSHPD preliminary review comments should be included by the architect or engineer at the end of the DD phase and the comments can then be incorporated into the construction documents. The preliminary review submittal date will also fix the date of applicable codes to which the project will be designed.

Best Practice 11: Determine during the design process whether you want to have early permits for portions of the work

OSHPD allows larger new construction projects to have complete phases of construction broken out into incremental submittals for permitting. Typical incremental submittals might be foundations and structure in one package and the building skin and interior build-out in a second package. Incremental project permits can sometimes allow for an earlier start to new construction than would occur if a permit for the entire building had to be obtained first. The decision for increment submittals should be included in preliminary submittals. However, although incremental submittals may reduce time frames they may also add cost and complexity.

Best Practice 12: Begin production of the construction documents only upon receipt of design development sign-offs

Once construction documents are completed, adding, deleting, or changing programs and services will add cost and result in delays because OSPHD will need to review the program again. A hospital gains the maximum benefit of OSHPD services prior to completion of construction documents. Obtain all design development sign-offs before producing the construction documents. Upon completion of documents, an independent plan reviewer should be retained to ensure the design meets code and to minimize the number of OSHPD backchecks.

Best Practice 13: Avoid deferred approvals

Designers in California sometimes ask OSHPD to allow the submittal of designs for various building systems to be delayed until after the project has been approved and permitted. Deferrals are requested by the design team and it is up to OSHPD to determine whether they will be granted. At
one time, it was seen as a courtesy to the design team to allow deferred approvals; however, this practice has led to designs that are poorly coordinated. Review of deferred approval applications can take as long as the review for the initial application and can cause delays if not managed properly. Modern design management supports early coordination of all building elements to be designed together. Insist on there being no deferred approvals that cannot be otherwise avoided.

Deferred approvals may be used by hospitals for large or technologically sensitive pieces of clinical equipment when there will be long periods of time between design and installation. Because in a new hospital five years may elapse between preparation of construction documents and the completion of construction, use of the deferred approval method will allow the hospital owner to select the most current technology for installation without having to change a prior design. A hospital owner must recognize that some deferred approvals are common unless a subcontractor or manufacturer has been selected early enough to incorporate the necessary details and calculations into the OSHPD submittal documents.

**Best Practice 14: Ensure that the application for plan review is complete**

Design professionals are customarily responsible for preparing the OSHPD plan review application. However, mistakes are frequently made. The hospital representative should review the application to ensure that:

- the right forms and all applicable forms are used and are completed correctly and thoroughly as well as signed by the appropriate parties (e.g., projects with incremental submittals and permits will require a special form);
- an appropriate hospital official with adequate OSHPD knowledge is named as the facility representative (who will receive copies of OSHPD correspondence that would otherwise go only to the designers);
- the boxes on the form describe how this work furthers fulfillment of your SB 1953 Compliance Plan (although almost all work does, most goes uncredited);
- the hospital owner will pay 1.64% of construction costs (excluding designer’s fees and other "soft" costs) to OSHPD as their fee for service; and
- OSHPD has deemed the plan complete owing to no defects or omissions.

An applicant is expected to be as accurate as possible in estimating construction costs and there will be adjustments made at the end of the project

### 6.3.4 Permit Phase

**Best Practice 15: Keep track of the plan review process through OSHPD**

Plan review follows a predictable course through the OSHPD process. Documents submitted are triaged by OSHPD plan review staff for completeness and are accepted or sent back. Once completed, the documents are returned as approved documents or with comments that must be corrected before they can be approved. Revised documents are submitted for additional review called a backcheck. The backcheck cycle repeats until the plans can be approved. OSHPD sets target durations for each phase of review.

Hospital leadership should closely monitor the progress of the plan review process.

- Receive an explanation from the design team if drawings are returned by OSHPD during triage.
- The hospital project manager should track OSHPD performance during review cycles to maintain an understanding of the status of the plan review. All OSHPD plan reviews can
be observed in real time using the OSHPD Web site. Raise your concerns over missed target dates with your design team and ask them to seek clarification from OSHPD plan review managers.

- Monitor the passage of time between the date that OSHPD releases drawings with comments to be corrected and the date that your design team resubmits. Do not blame OSHPD for a slow "turnaround" by the designers. Projects that take longer than six months in turnaround waste the hospital’s resources and could result in being treated by OSHPD as abandoned projects.

- Keep track of the number of review cycles. Three cycles are not unusual: first review and two backchecks. Continued comments by OSPHD plan review staff after the second backcheck may be an indication of a problem with design or inappropriate response to OSHPD comments by the design team. Hold your design team accountable for the satisfactory outcome of the OSPHD process.

- Request the design team to provide complete schedules with committed response times and list of critical issues requiring hospital input as well as dates required for hospital data to be provided so that the data can be completely integrated into the documents.

OSHPD has a goal of 60 days to review an initial G, S, or I project with 30 days for each backcheck. OSHPD will want to schedule a meeting of interested parties if there are still plan review comments after three backchecks. More than three backchecks indicates that there are problems with the project and hospital owners would want to schedule such a meeting as quickly as possible.

OSHPD is open to negotiating timelines on longer H, I, and S projects.

All documents sent to OSHPD are triaged. Any document that can be handled in less than a half hour is acted upon immediately. OSHPD uses over-the-counter review for projects that do not require more than two hours for structural review and no more than one hour of review for other disciplines.

OSHPD lists the status of each project on its Web site. A hospital owner or representative can reach the Web site using the hospital’s facility number or the project number. This tracking system can be used by the hospital leadership to track the status of a project.

OSHPD reports that the chief reasons for project delays are the following:

- defects or omissions in plans,

- failure to promptly reply to OSHPD plan review comments,

- project changes during the review process, and

- project changes during construction.

Although a project is complete and a building permit is issued, a CO can result in a delay of a project during construction. On a number of occasions, OSHPD has observed a contractor informing a hospital representative that considerable money can be saved during construction using an alternate means. What the owner is not told is that many times the alternate means can hold up construction while it is plan reviewed and the delay costs may be more than the savings from using the alternate means.

It is essential that hospital representatives understand that code is minimal. On some occasions, designers may attempt to use an alternate means to achieve less than code. Any alternate means must be equivalent or greater than code.
Best Practice 16: Obtain all needed OSHPD forms off the OSHPD Web site to ensure they are current

OSHPD forms change from time to time. To make sure you are using the most current form, obtain it off the OSHPD Web site. Using an outdated form could result in a delay.

Best Practice 17: Never let your permit lapse

Construction must start within one year of permit issuance. Failure to do so will cause the permit to expire and with it the approval of the plans. Prior to a building permit lapsing, an extension can be requested. Once a permit is allowed to lapse, proceeding with the project entails starting the OSHPD process from the beginning. If the building codes have been revised in the meanwhile, the design process must be based on the new code.

Best Practice 18: Use established channels in resolving disputes with OSHPD FDD

Comment and Process Review

The decision of OSHPD plan review and field staff as it relates to interpretation of the CBSC may be appealed by a hospital or its design team or contractors if it is felt that the interpretation is in error. There are both informal and formal processes for appeals, each with its own timing and mechanisms.

The Comment and Process Review (CPR) mechanism is established by OSPHD as a method for an hospital owner or its consultants to have persons of increasing authority review code interpretations made by first-line plan reviewers and field personnel. This informal process is as follows:

Step 1: Review with the Comment Originator

The plan review staff and field staff are responsible for rendering judgments regarding applicability of the building code. If the hospital or design team object to an interpretation of the code as expressed through the comments made by OSHPD staff, the first step of the process is to discuss the difference of opinion with the staff person who originated the interpretation. This allows for disputes to be resolved at the lowest level.

Step 2: Appeal to the Supervisor

If the matter is not resolved satisfactorily with the staff member, the issue may be appealed to the Regional Supervisor or the Regional Compliance Officer who supervises the originator of the code interpretation. The Supervisor may uphold, overturn, or modify the interpretation as is determined to be appropriate. The Supervisor’s ruling then becomes effective.

Step 3: Appeal to the Division Chief

If the matter is not resolved satisfactorily with the supervisor, the issue may be appealed to the Division Chief over the region involved in the dispute. The Division Chief may uphold, overturn, or modify the interpretation and may seek guidance from other supervisory personnel who serve as subject-matter experts over the disciplines in question or from other OSHPD staff as appropriate. The decision of the Division Chief marks the end of the informal appeal process.
Hospital Building Safety Board

Once the informal process has been exhausted, the issue may enter the formal appeal process by being submitted for judgment to the Hospital Building Safety Board (HBSB). The HBSB, a statutory body appointed by the governor, serves two purposes:

- to advise the Director of OSHPD on the administration of the Hospital Facilities Seismic Safety Act and
- to act as a board of appeals with regard to seismic safety and fire and life safety issues relating to hospital facilities.

The hearing process is a formal action of the state of California and the outcome is binding. Refer to the OSHPD Web site for details.

If the appellant has been adversely affected by the decision of the HBSB, the appellant may further appeal the issue for resolution by the California Building Standards Commission (Health & Safety Code Section 18945).

Considerations for Appeals

Applicants have an undisputed right to appeal without retaliation. Before engaging in appeals, the hospital owner should consider the following points:

- Ensure that your professional design consultant or contractor has a winning argument. Codes can be open to interpretation and OSHPD’s orientation of interpretation is toward the greatest degree of safety. Be ready to show that the code unambiguously allows the design being proposed and that the application of code does not appreciably reduce safety.
- Ensure that your project can endure the time it takes to appeal a comment. The informal CPR process is intended to be fairly quick, whereas the formal HBSB process can take up to a year for resolution. Projects in the plan review stage can often pursue the CPR process but may be set back substantially by an HBSB appeal. Costly delays in construction may occur from even the simple steps of the CPR process.

6.3.5 Construction Phase

Best Practice 19: Hire an IOR appropriate for the project

The California Building Standards Administrative Code requires that all hospital construction be observed continuously by an OSHPD-certified IOR. The IOR is selected and hired by the hospital owner.

An OSHPD-certified IOR is required to perform inspection of all alterations, modifications, and additions to existing hospital buildings and new hospital facility construction. OSHPD certifies inspectors for three levels of inspection defined as follows:

- Class A IORs may inspect all phases of construction, including architectural, mechanical, electrical, fire and life safety, and structural elements. Note that this class includes major structural construction.
- Class B IORs may inspect only the following phases of construction: architectural, mechanical, electrical, fire and life safety, and anchorage of nonstructural elements.
- Class C IORs may inspect only specific disciplines of construction currently being defined in regulations. CAN 1-7-204c details the role of the Class C IOR.
See Chapter 3 of this volume for a comprehensive review of IOR roles and responsibilities. Depending on the size and complexity of a project, OSHPD may require more than one IOR.

**Best Practice 20: Discuss your phased occupancy plans with OSHPD field staff before construction begins**

Large projects sometime require that occupancy is requested for portions of the construction before all of the work is finished. Discuss your early occupancy needs with OSHPD field staff before construction begins.

**Best Practice 21: Avoid deviations from approved plans to minimize change orders**

Change orders are one of the chief reasons for project delays and cost overruns. Change orders are sometimes generated to meet the needs of medical staff after a project receives a building permit or originate from a contractor who has an alternative means of constructing the project (not approved by OSHPD) to save the hospital money. A building permit is issued for a specific plan reviewed project. All COs need to be reviewed by OSHPD and thus cost time and money. Hospital owners should determine the actual cost implications of a CO prior to requesting it.

**Best Practice 22: Require that the contractor obtain both the hospital’s and OSHPD’s approval before deviating from the approved plans**

Ensure that your contract for services with the contractor requires the contractor to adhere to the requirements of the approved plans without deviation. Any work not performed to exact specifications can be ordered removed by OSHPD field staff at any time. If that happens, hold the contractor responsible for costs and lost time resulting from such deviations. Hold the general contractor (GC) responsible for understanding, complying, and building per the OSHPD-approved documents. The GC should be involved with the project early and must work with designers and the hospital to resolve construction issues prior to construction starting. Owner-driven COs are common in the rapidly changing healthcare industry, since needs and services needs often change. As experienced professionals, the hospital owner, designer, and contractor team must assume responsibility for managing and anticipating some of these changes and incorporate flexibility into the design and construction schedules to mitigate COs.

**Best Practice 23: Ensure that your architects and contractors are ready for OSHPD field staff visits**

Each OSHPD field staff member has a large geographical territory to cover with numerous hospitals to visit. Scheduling field staff visits well in advance of the need for an on-site visit is the norm; however, the trip will be wasted and the construction will face costly delays if the contractor and design team are not properly prepared for the visit. Ensure that your project team understands its responsibility and the ramifications of not being prepared. Typically, the IOR schedules OSHPD staff visits.

### 6.3.6 Close-Out Phase

**Best Practice 24: Be prepared for the final OSHPD review**

OSHPD field staff must approve the work before issuing a certificate of occupancy for the construction. Ensure that the observation will be successful by making certain that the work is ready for the review and that all required verified reports, testing and inspection reports, and COs have been approved before the final inspection.
Best Practice 25: Do not attempt to use any building or equipment or provide any service until the building is approved by OSHPD for a certification of occupancy

The hospital has no right to use the finished work until OSHPD has issued the certificate of occupancy. Normally use is restricted until Licensing & Certification has licensed the construction or equipment for use following the receipt of the certificate of occupancy.

Best Practice 26: Ensure the project is closed with compliance

Approval by OSHPD is often assumed to be the end of the journey. Before OSPHD will log a project as being Closed With Compliance (CLSD) the following needs to occur:

- OSHPD shall schedule a final state agency inspection of the work subsequent to the receipt of the responsible architect or engineer’s statement that the contract is performed or substantially performed.
- The final approval of the construction shall be issued by OSHPD when
  - all work has been completed in accordance with the approved plans and specifications,
  - the required verified compliance reports and test and inspection reports have been filed with OSHPD, and
  - all remaining fees have been paid to OSHPD.
- Final approval shall be confirmed by a letter sent to the Department of Health Services with a copy to the applicant. The letter shall state that the work has been constructed in accordance with CBSC, Title 24, California Code of Regulations.
- Upon completion of the project, all copies of construction procedure records as required by Section 7-145(a)6 shall be transmitted to OSHPD. These shall include final verified reports by the AOR, various EORs (e.g., Electrical, Mechanical, and Structural), the IOR, and the contractor as well as written notice from the hospital asking that the project be closed and certification of the final construction cost and cost of radiology equipment installed.

Projects are classified as Closed Without Compliance (CLWC) typically for two reasons:

- Work was abandoned after it began.
- The closing paperwork was not properly filed.

Projects that are logged into the OSPHD database as CLWC do not disappear with the passage of time. They require resolution of the conditions that resulted in the assigned status. Future work may be severely impacted by the existence of CLWC projects when the new projects have to rely on conditions that were created under the CLWC project. The CLWC status can be cleared retroactively but often with great effort.
Glossary

ACO  Area Compliance Officer; employed by OSHPD and assigned to a given geographical location

ADA  Americans with Disabilities Act

AHJ  Authority Having Jurisdiction

Alteration  Any change in an existing building that does not increase and may decrease the floor or roof area or the volume of enclosed space

AOR  Architect of Record; a person who is registered with the state of California and holds a valid license under Chapter 3 (commencing with Section 5500), Division 3, of the Business and Professions Code and is in general responsible charge of the work for a given project. AORs shall sign and stamp drawings, specifications, or reports that are prepared under their responsible charge.

Approved Drawings and Specifications  All drawings, specifications, addenda, change orders, and deferred approvals that have the written approval of OSHPD and the Hospital Governing Board

Architect in Responsible Charge  See AOR

Building Permits

G Permits  Annual building permits for one or more projects with an aggregate construction value no greater than $50,000

S Permits  Permits for remodel projects that do not alter the existing structural frame for hospital and skilled nursing facilities and for construction projects of single-story, wood-frame, or light steel frame for skilled nursing or intermediate care facilities

H Permits  Permits for new construction and remodel projects that alter the existing structural frame other than single-story, wood-frame, or light steel frame for skilled nursing or intermediate care facilities

I Permits  Permits for construction or alteration projects complying with the requirements of Section 7.131; incremental projects are divided into increments to allow for phased review and construction

CAN  Code Application Notice

CBC  California Building Code; the state’s adoption of the Uniform Building Code with State Amendments for Part 2 of Title 24, which includes structural, architectural, and fire and life safety code
Glossary

CBSC  California Building Standards Code; the state’s entire adopted Code (i.e., the CBC, CEC, CMC, CPC, and any other adopted Building Code or Standard); also commonly referred to as Title 24 and includes all parts of Title 24

CCR  California Code of Regulations

CEC  California Electrical Code; the state’s adoption of the National Electrical Code with State Amendments

CEQA  California Environmental Quality Act

CFC  California Fire Code; the state’s adoption of the model Fire Code with State Amendments

CHCF  California HealthCare Foundation

CLSD  Closed With Compliance

CLWC  Closed Without Compliance

CMC  California Mechanical Code; the state’s adoption of the model Mechanical Code with State Amendments

CMS  Centers for Medicare & Medicaid Services; a federal agency within the U.S. Department of Health and Human Services

CO  Change Order; instrument through which changes or alterations of the OSHPD-approved Contract Documents are made after a contract or similar instrument of agreement has been awarded

Continuous Inspection  An inspection conducted on an ongoing basis for those components of a project that are in progress

CPC  California Plumbing Code; the state’s adoption of the Uniform Plumbing Code with State Amendments

CPR  Comment and Process Review

DD  Design Development

Deferred Approvals  Those portions of the construction that cannot be detailed fully on the approved drawings because of variations in product design and manufacture; usually a performance specification

DSE  OSHPD District Structural Engineer

EIR  Environmental Impact Report

Engineer in Responsible Charge  Engineer of Record (see AOR)

EOR  Engineer of Record; a person who is registered with the state of California and holds a valid license under the Business and Professions Code Chapters 3 and 7, Division 3 and who is stipulated in the California Building Standards Title 24, Chapter 7, Administrative Code
FDC  Fire Department Connection

FDD  Facilities Development Division; the division within OSHPD that serves as the building department for California hospitals

FEC  Fire Extinguisher Cabinet

FEMA  Federal Emergency Management Agency

FHC  Fire Hose Cabinet

Field Confirmation  A process performed by the field staff in communication with the plan review AOR and the IOR

Field Review  Projects that can be reviewed in the field under provisions in the FREER Manual

FLSO  OSHPD Fire Life Safety Officer

FREER  Field reviewed projects, exempt projects, and expedited review projects as outlined in OSHPD’s FREER manual

GC  General Contractor

HFSSA  Alfred E. Alquist Hospital Facilities Seismic Safety Act

HBSB  Hospital Building Safety Board

Health Facility  Any facility, place, or building that is organized, maintained, and operated for the diagnosis, care, prevention, and treatment of human illness, physical or mental, including convalescence and rehabilitation and including care during and after pregnancy, or for any one or more of these purposes, for one or more persons, for which such persons are admitted for a 24-hour stay or longer

Hospital Building  Any building defined by Section 129725, Article 1, Chapter 1, Division 107 of the Health and Safety Code; note that a skilled nursing facility or intermediate care facility of single story, wood frame, or light steel frame construction is not considered a hospital building

IB  Instruction Bulletin; defined under Title 24, Part 1, Section 7-153 to prevent undue delay; changes may be commenced following preliminary approval of an IB by OSHPD

Intermediate Care Facility  A health facility that provides the following basic services: 24-hour care to residents who have a recurring need for skilled nursing supervision and need supportive care, but who do not require availability of continuous skilled nursing care

IOR  Inspector of Record; an individual who is (a) an OSHPD-certified hospital inspector, pursuant to the provisions of these regulations, (b) selected and employed by the licensed facility’s owner or representative to inspect and observe the construction of any given project for which a building permit has been issued by OSHPD, (c) approved by the architect and/or
engineer in responsible charge and OSHPD as being satisfactory to inspect a specified construction project, and (d) tasked with safeguarding the public by verifying that the hospital is constructed per the approved documents

**JCAHO**  Joint Commission on Accreditation of Healthcare Organizations

**NEC**  National Electrical Code

**NFPA**  National Fire Protection Association

**OSHPD**  Office of Statewide Health Planning and Development

**PIN**  Policy Intent Notice

**POR**  Professional of Record; a person who is registered with the state of California and holds a valid license under the Business and Professions Code Chapters 3 and 7, Division 3, and who is stipulated in the California Building Standards Title 24, Chapter 7, Administrative Code

**Post Approval Document**  OSHPD document that includes change orders, instruction bulletins, deferred items, and addenda after the plans are approved

**RCO**  Regional Compliance Officer; employed by OSHPD to supervise a field observation unit

**RFI**  Request for Information

**SB**  Senate Bill

**SEOR**  Structural Engineer of Record

**Shop Drawings**  Detailed drawings developed by the subcontractor to facilitate construction (e.g., duct work)

**Skilled Nursing Facility**  A health facility that provides the following basic services: skilled nursing care and supportive care to patients whose primary need is for availability of skilled nursing care on an extended basis

**TIO Program**  Testing, Inspection, and Observation Program as outlined in CAN 1-7-141(d)–(i)

**UBC**  Uniform Building Code

**UFC**  Uniform Fire Code

**UL**  Underwriters Laboratories

**UMC**  Uniform Mechanical Code

**UPC**  Uniform Plumbing Code
References


