Session #4
“How to Succeed as an IOR”

July 1, 2020

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Agenda

- Sample IOR Exam questions
  - How to research the code? (Hint: table of contents)
  - How to read the plans?
- How to be a strong IOR
  - Know the code
  - Read Approved construction drawings and specifications
  - Communicate with hospital owner
  - Encourage pre-construction meetings
    - Identify IOR responsibilities during pre-construction
  - Construction & Inspection Schedules

Agenda

- How to be a strong IOR-Cont.
  - Know your inspection schedule
    - Level of commitment per job i.e. construction with differing times (morning concrete pour)
  - Non-material changes vs. material changes
  - How to review amended construction documents
- IORs and nonperformance
  - OSHPD field monitoring
  - IOR suspension or revocation (CAC 7-214)

Sample Questions

Sample Questions
How to research the code?
(Hint: table of contents)

Sample Questions

- Sample #1-CAC Question

In accordance with Section 7- 151(f) , or when required by the Office, who shall submit to the Office a verified compliance report, with their signature and based on their own personal knowledge:

a) the architect(s)
b) engineers(s)
c) inspector(s) of record (IORs)
d) approved agency
e) special inspector(s)
f) contractor or owner/builder
g) all the above

- **How to look for the response?** 

- **Sample #1-CAC**

Where VCR reference code is?

- CAC code has a TABLE OF CONTENTS

CHAPTER 1 ADMINISTRATIVE REGULATIONS OF THE CALIFORNIA BUILDING STANDARDS COMMISSION 1

CHAPTER 2 ADMINISTRATIVE REGULATIONS FOR THE DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT (HCD)..... 21

CHAPTER 3 ADMINISTRATIVE REGULATIONS FOR THE OFFICE OF THE STATE FIRE MARSHAL (SFM) [RESERVED] 23

CHAPTER 4 ADMINISTRATIVE REGULATIONS FOR THE DIVISION OF THE STATE ARCHITECT— STRUCTURAL SAFETY (DSA-SS) 25

CHAPTER 5 ACCESS TO PUBLIC BUILDINGS BY PERSONS WITH DISABILITIES..... 77

CHAPTER 6 SEISMIC EVALUATION PROCEDURES FOR HOSPITAL BUILDINGS 83

CHAPTER 7 SAFETY STANDARDS FOR HEALTH FACILITIES 149

CHAPTER 8 ADMINISTRATIVE REGULATIONS FOR THE CALIFORNIA DEPARTMENT OF PUBLIC HEALTH (CDPH) 189

CHAPTER 9 ADMINISTRATIVE REGULATIONS FOR THE OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD (OSHA) [RESERVED]..... 195

CHAPTER 10 ADMINISTRATIVE REGULATIONS FOR THE CALIFORNIA ENERGY COMMISSION (CEC) 197

CHAPTER 11 ADMINISTRATIVE REGULATIONS FOR THE DEPARTMENT OF FOOD AND AGRICULTURE (AGR) [RESERVED] 225

CHAPTER 12 ADMINISTRATIVE REGULATIONS FOR THE DEPARTMENT OF YOUTH AUTHORITY (YA) [RESERVED] 227

CHAPTER 13 ADMINISTRATIVE REGULATIONS FOR THE BOARD OF STATE AND COMMUNITY CORRECTIONS (BSCC)..... 229

CHAPTER 14 ADMINISTRATIVE REGULATIONS FOR THE DEPARTMENT OF EDUCATION (DOE) [RESERVED] 249

CHAPTER 15.1 ADMINISTRATIVE REGULATIONS FOR THE DEPARTMENT OF CONSUMER AFFAIRS (CA) BOARD OF ACCOUNTANCY [RESERVED] 251

CHAPTER 15.2 ACUPUNCTURE EXAMINING COMMITTEE [RESERVED]..... 251

CHAPTER 15.3 DIVISION OF ALLIED HEALTH PROFESSIONS [RESERVED]..... 251

CHAPTER 15.4 BOARD OF ARCHITECTURAL EXAMINERS [RESERVED]..... 251

CHAPTER 15.5 ATHLETIC COMMISSION [RESERVED] 251

CHAPTER 15.6 AUCTIONEER COMMISSION [RESERVED] 251

CHAPTER 15.7 BUREAU OF AUTOMOTIVE REPAIR [RESERVED] 252

CHAPTER 15.8 BOARD OF BARBER EXAMINERS [RESERVED]..... 252

CHAPTER 15.9 BOARD OF BEHAVIORAL SCIENCE EXAMINERS [RESERVED] 252

CHAPTER 15.10 CEMETERY BOARD [RESERVED] 252

CHAPTER 15.11 BUREAU OF COLLECTION AND INVESTIGATIVE SERVICES [RESERVED]..... 252

CHAPTER 15.12 CONTRACTORS' STATE LICENSE BOARD [RESERVED] 252

CHAPTER 15.13 BOARD OF COSMETOLOGY [RESERVED] 253

CHAPTER 15.14 BOARD OF DENTAL EXAMINERS [RESERVED] 253

CHAPTER 15.15 BUREAU OF ELECTRONIC AND APPLIANCE REPAIR [RESERVED]..... 253

CHAPTER 15.16 BOARD OF FUNERAL DIRECTORS AND EMBALMERS [RESERVED]..... 253

CHAPTER 15.17 BOARD OF REGISTRATION FOR GEOLOGISTS AND GEOPHYSICISTS [RESERVED]..... 253

CHAPTER 15.18 BOARD OF GUIDE DOGS FOR THE BLIND [RESERVED] 253

CHAPTER 15.19 HEARING AID DISPENSERS EXAMINING COMMITTEE [RESERVED]..... 254

CHAPTER 15.20 BUREAU OF HOME FURNISHINGS [RESERVED] ... 254

CHAPTER 15.21 BOARD OF LANDSCAPE ARCHITECTS [RESERVED] 254

CHAPTER 15.22 BOARD OF MEDICAL QUALITY ASSURANCE [RESERVED] 254

CHAPTER 15.23 BOARD OF NURSING HOME ADMINISTRATORS [RESERVED]..... 254

CHAPTER 15.24 BOARD OF OPTOMETRY [RESERVED]..... 254

CHAPTER 15.25 BUREAU OF PERSONNEL SERVICES [RESERVED] 255

CHAPTER 15.26 BOARD OF PHARMACY [RESERVED]..... 255

CHAPTER 15.27 PHYSICAL THERAPY EXAMINING COMMITTEE [RESERVED]..... 255

CHAPTER 15.28 PHYSICIAN'S ASSISTANT EXAMINING COMMITTEE [RESERVED] 255

CHAPTER 15.29 BOARD OF PODIATRIC MEDICINE [RESERVED] 255

CHAPTER 15.30 BOARD OF POLYGRAPH EXAMINERS [RESERVED] 255

CHAPTER 15.31 BOARD OF PROFESSIONAL ENGINEERS [RESERVED]..... 256

CHAPTER 15.32 PSYCHOLOGY EXAMINING COMMITTEE [RESERVED]..... 256

CHAPTER 15.33 BOARD OF REGISTERED NURSES [RESERVED]..... 256

CHAPTER 15.34 RESPIRATORY CARE EXAMINING COMMITTEE [RESERVED] 256

CHAPTER 15.35 BOARD OF CERTIFIED SHORTHAND REPORTERS [RESERVED] 256

CHAPTER 15.36 SPEECH PATHOLOGY AND AUDIOLOGY EXAMINING COMMITTEE [RESERVED]..... 256

CHAPTER 15.37 STRUCTURAL PEST CONTROL BOARD [RESERVED] 257

CHAPTER 15.38 TAX PREPARERS PROGRAM [RESERVED] 257

CHAPTER 15.39 BOARD OF EXAMINERS IN VETERINARY MEDICINE [RESERVED] 257

CHAPTER 15.40 BOARD OF VOCATIONAL NURSE AND PSYCHIATRIC TECHNICIAN EXAMINERS [RESERVED] 257

CHAPTER 7 SAFETY STANDARDS FOR HEALTH FACILITIES

- Where in this chapter there is information about VCR?

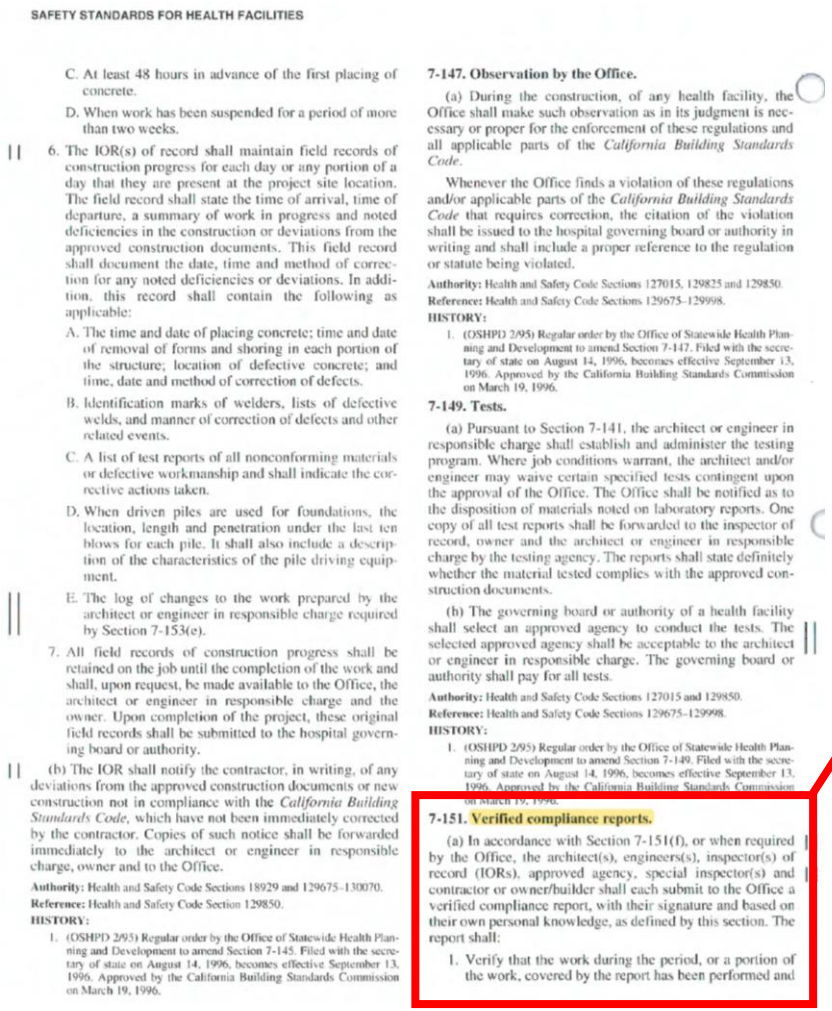
CHAPTER 7 SAFETY STANDARDS FOR HEALTH FACILITIES 149

Article

1 General 149
2 Definitions 150
3 Approval of Construction Documents 153
4 Construction 166
5 Appeals to the Hospital Building Safety Board . . . 172
5.5 Appeals to a Hearing Officer 173
6 Contracts. 174
7 Testing and Inspection 177
8 California Building Standards 177
19 Certification and Approval of Hospital Inspectors. 177
20 Repair of Damage after an Emergency 182
21 Plan Review, Building Inspection and Certification of Surgical Clinics, Chronic Dialysis Clinics and Outpatient Services Clinics. . . . 183

- Once in the Chapter 7, Article 4, read and find

The question is:
In accordance with Section 7- 151(f) , or when required by the Office, who shall submit to the Office a verified compliance report, with their signature and based on their own personal knowledge:



SAFETY STANDARDS FOR HEALTH FACILITIES

C. At least 48 hours in advance of the first placing of concrete.

D. When work has been suspended for a period of more than two weeks.

6. The IOR(s) of record shall maintain field records of construction progress for each day or any portion of a day that they are present at the project site location. The field record shall state the time of arrival, time of departure, a summary of work in progress and noted deficiencies in the construction or deviations from the approved construction documents. This field record shall document the date, time and method of correction for any noted deficiencies or deviations. In addition, this record shall contain the following as applicable:

A. The time and date of placing concrete; time and date of removal of forms and shoring in each portion of the structure; location of defective concrete; and time, date and method of correction of defects.

B. Identification marks of welders, lists of defective welds, and manner of correction of defects and other related events.

C. A list of test reports of all nonconforming materials or defective workmanship and shall indicate the corrective actions taken.

D. When driven piles are used for foundations, the location, length and penetration under the last ten blows for each pile. It shall also include a description of the characteristics of the pile driving equipment.

E. The log of changes to the work prepared by the architect or engineer in responsible charge required by Section 7-153(e).

7. All field records of construction progress shall be retained on the job until the completion of the work and shall, upon request, be made available to the Office, the architect or engineer in responsible charge and the owner. Upon completion of the project, these original field records shall be submitted to the hospital governing board or authority.

(b) The IOR shall notify the contractor, in writing, of any deviations from the approved construction documents or new construction not in compliance with the *California Building Standards Code*, which have not been immediately corrected by the contractor. Copies of such notice shall be forwarded immediately to the architect or engineer in responsible charge, owner and to the Office.

Authority: Health and Safety Code Sections 18929 and 129675–130070.
Reference: Health and Safety Code Section 129850.
HISTORY:
1. (OSHPD 2/95) Regular order by the Office of Statewide Health Planning and Development to amend Section 7-145. Filed with the secretary of state on August 14, 1996, becomes effective September 13, 1996. Approved by the California Building Standards Commission on March 19, 1996.

7-147. Observation by the Office.

(a) During the construction, of any health facility, the Office shall make such observation as in its judgment is necessary or proper for the enforcement of these regulations and all applicable parts of the *California Building Standards Code*.

Whenever the Office finds a violation of these regulations and/or applicable parts of the *California Building Standards Code* that requires correction, the citation of the violation shall be issued to the hospital governing board or authority in writing and shall include a proper reference to the regulation or statute being violated.

Authority: Health and Safety Code Sections 127015, 129825 and 129850.
Reference: Health and Safety Code Sections 129675–129998.
HISTORY:
1. (OSHPD 2/95) Regular order by the Office of Statewide Health Planning and Development to amend Section 7-147. Filed with the secretary of state on August 14, 1996, becomes effective September 13, 1996. Approved by the California Building Standards Commission on March 19, 1996.

7-149. Tests.

(a) Pursuant to Section 7-141, the architect or engineer in responsible charge shall establish and administer the testing program. Where job conditions warrant, the architect and/or engineer may waive certain specified tests contingent upon the approval of the Office. The Office shall be notified as to the disposition of materials noted on laboratory reports. One copy of all test reports shall be forwarded to the inspector of record, owner and the architect or engineer in responsible charge by the testing agency. The reports shall state definitely whether the material tested complies with the approved construction documents.

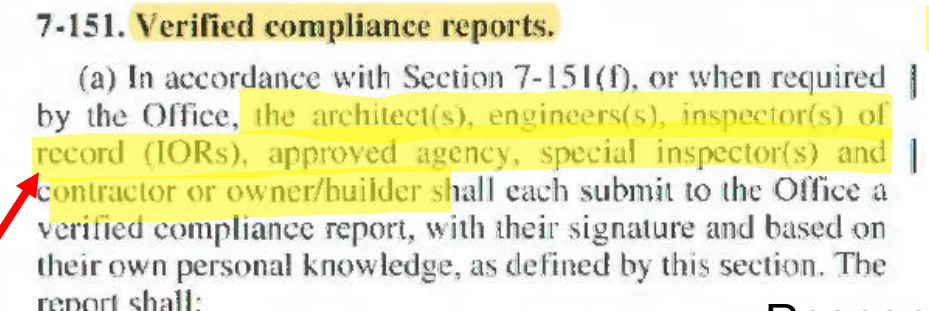
(b) The governing board or authority of a health facility shall select an approved agency to conduct the tests. The selected approved agency shall be acceptable to the architect or engineer in responsible charge. The governing board or authority shall pay for all tests.

Authority: Health and Safety Code Sections 127015 and 129850.
Reference: Health and Safety Code Sections 129675–129998.
HISTORY:
1. (OSHPD 2/95) Regular order by the Office of Statewide Health Planning and Development to amend Section 7-149. Filed with the secretary of state on August 14, 1996, becomes effective September 13, 1996. Approved by the California Building Standards Commission on March 19, 1996.

7-151. Verified compliance reports.

(a) In accordance with Section 7-151(f), or when required by the Office, the architect(s), engineers(s), inspector(s) of record (IORs), approved agency, special inspector(s) and contractor or owner/builder shall each submit to the Office a verified compliance report, with their signature and based on their own personal knowledge, as defined by this section. The report shall:

1. Verify that the work during the period, or a portion of the work, covered by the report has been performed and



7-151. Verified compliance reports.

(a) In accordance with Section 7-151(f), or when required by the Office, the architect(s), engineers(s), inspector(s) of record (IORs), approved agency, special inspector(s) and contractor or owner/builder shall each submit to the Office a verified compliance report, with their signature and based on their own personal knowledge, as defined by this section. The report shall:

Response:
a) the architect(s)
b) engineers(s)
c) inspector(s) of record (IORs)
d) approved agency
e) special inspector(s)
f) contractor or owner/builder
g) all the above

Sample Questions

- Sample #2-CBC Architecture Question

In Hospitals, which one of the following is not required to be included within a dressing room for a nuclear medicine space?

a) nurse call station

b) seat or bench

c) mirror

d) provisions for hanging clothes

- **How to look for the response?**

- **Sample #2- The question indicates nuclear medicine space**

INDEX

HOSPITALS – SUPPORT SERVICES
Administrative space 1224.21
Central sterile supply 1224.22
Employee dressing rooms and lockers 1224.25
Housekeeping rooms 1224.26
Laundry 1224.27
Morgue and autopsy facilities 1224.24
Storage 1224.23
HOSPITALS – SUPPLEMENTAL SERVICES
Emergency service 1224.33
Intensive care units 1224.29
Intermediate-care service space 1224.38
Nuclear medicine 1224.34
Obstetrical facilities (perinatal unit space) . . 1224.32
Outpatient service space 1224.39
Pediatric and adolescent unit 1224.30
Psychiatric nursing unit 1224.31
Rehabilitation therapy department 1224.35
Renal dialysis service space (acute and chronic) 1224.36
Respiratory therapy service space 1224.37
Skilled nursing service space 1224.40
Social service space 1224.41
Supplemental surgery services 1224.28
HOTEL (or MOTEL) (definition) 202
HURRICANE-PRONE REGIONS (see WIND LOADS) 202
HURRICANE SHELTER (see STORM SHELTER)
HURRICANE SHUTTERS 1609.2
HYDROGEN FUEL GAS ROOMS . . . . 421, Table 509
HYPERBARIC FACILITIES 425

AT THE CHAPTER 1224

1224.33.4.5 On-call room(s). *Provisions shall be made to accommodate on-call sleeping room(s) for physicians and/or medical staff within the Emergency Department.*

1224.33.4.6 Police and press room. *Provisions shall be made to accommodate police briefing/debriefing and press releases. This may be located outside the Emergency Department.*

1224.33.5 Other space considerations.

1224.33.5.1 Observation units. *Observation rooms for the monitoring of patients up to 24 hours may be provided as a distinct unit within, the emergency department. If provided the unit shall have the following:*

1. *Handwashing stations shall be provided in each patient room and for each four treatment stations, and for each major fraction thereof. These shall be uniformly distributed to provide equal access from each patient station. Handwashing stations shall be directly accessible to nurse stations and patient care areas.*
2. *Each patient station shall have a minimum of 120 square feet (11.15 m²) of clear floor area including space at each bedside for visitors and provision for visual privacy from casual observation by other patients and visitors.*
3. *One toilet room shall be provided for each six treatment stations and for each major fraction thereof.*
4. *An administrative center/nurse station, in compliance with Section 1224.4.4.2, positioned to allow staff to observe each patient care station or room.*
5. *A nourishment area in compliance with Section 1224.4.4.5.*

1224.34 NUCLEAR MEDICINE

1224.34.1 General. *If nuclear medicine is provided, the following shall be provided:*

1224.34.1.1 Radiation protection. *A certified physicist shall specify the type, location and amount of radiation protection to be installed in accordance with final approved department layout and equipment selection. Radiation protection requirements shall be incorporated into the construction documents and comply with Chapter 31C and the requirements of California Radiation Control Regulations, California Code of Regulations, Title 17, Division 1, Chapter 5, and Subchapter 4.*

1224.34.1.2 Nuclear medicine room. *Shall be sized to accommodate the equipment and a gurney.*

When provided, the following facilities shall meet the requirements below:

1224.34.1.2.1 Scintigraphy (Gamma Camera) Facilities. *Shall include the following:*

1. *Scanner room. The scanner room shall provide a minimum clearance of 4 feet (1218 mm).at each side and the foot of the table.*
2. *Handwashing stations shall be provided throughout the gamma camera suite at locations of patient contact and at locations where radiopharmaceutical materials are handled, prepared, or disposed of.*

1224.34.1.2.2 Positron Emission Tomography (PET). *Shall include the following:*

1. *Scanner room shall provide a minimum clearance of 4 feet (1218 mm) at each side and the foot of the table. Additional space shall be provided when PET is combined with CT, and include compliance with Section 1224.18.3 and shielding requirements in Section 1224.34.1.1.*
2. *Cyclotron room. Where radiopharmaceuticals are prepared on-site, a cyclotron shall be provided. Cyclotron facilities shall be located in access-restricted areas. Shielding requirements for cyclotron facilities shall comply with Section 1224.34.1.1.*
3. *Control room. A control room shall be provided with a full direct view of the patient in the PET scanner.*
4. *Patient uptake/cool-down room. A shielded room with access to a dedicated patient toilet, to accommodate radioactive waste, and lavatory shall be provided.*
5. *Handwashing stations shall be provided throughout the PET suite at locations of patient contact and at locations where radiopharmaceutical materials are handled, prepared, or disposed of.*
6. *Pre-procedure patient care and recovery area shall be provided to accommodate at least two stretchers. This area shall comply with Section 1224.34.2.6.*
7. *Computer equipment room shall be provided in support of the equipment provided.*
8. *Contaminated (hot) soiled holding shall be provided and operationally integrated to minimize incidental exposure to ionizing radiation.*

1224.34.1.2.3 Single-Photon Emission Computed Tomography (SPECT) Facilities. *When provided shall include the following:*

1. *Scanner room. Scanner room shall provide a minimum clearance of 4 feet (1218 mm) at each side and the foot of the table.*

2. *Control room. A control room shall be provided with a full direct view of the patient in the SPECT scanner.*
3. *Computer equipment room shall be provided in support of the equipment provided.*
4. *Handwashing stations shall be provided throughout the SPECT suite at locations of patient contact and at locations where radiopharmaceutical materials are handled, prepared, or disposed.*

1224.34.1.3 Radiopharmacy. *If radiopharmaceutical preparation is performed, an area adequate to house a radiopharmacy shall be provided with appropriate shielding. This area shall include adequate space for storage of radionuclides, chemicals for preparation, dose calibrators, and record keeping. If prepreparated materials are used, storage and calculation area may be considerably smaller than that for on-site preparation. Space shall provide adequately for dose calibration, quality assurance, and record keeping. The area may still require shielding from other portions of the facilities.*

1224.34.2 Support areas for nuclear medicine services. *Nuclear medicine area when operated separately from the imaging department shall provide the following:*

1224.34.2.1 Entrance. *Space shall be adequate to permit entry of gurneys, beds, and able to accommodate imaging equipment, electronic consoles, and if present, computer terminals.*

1224.34.2.2 Cleanup. *Provisions for cleanup shall be located within the service space and be readily accessible. They shall include a service sink or floor receptacle as well as storage space for equipment and supplies.*

1224.34.2.3 Consultation. *A consultation area may be provided.*

1224.34.2.4 Waiting. *Waiting areas shall be provided out of traffic, under staff control. If the department is routinely used for outpatients and inpatients at the same time, separate waiting areas shall be provided with screening or visual privacy between the waiting areas.*

1224.34.2.5 Dose administration area. *Provide a dose administration area that is immediately accessible to the preparation area. Since as much as several hours may elapse for the dose to take effect, the area shall provide for visual privacy from other areas.*

1224.34.2.6 Pre-procedure/holding area. *A pre-procedure/holding area for patients on gurneys or beds shall be provided out of traffic and under control of staff and may be combined with the dose administration area with visual privacy between the areas.*

1224.34.2.7 Patient dressing rooms. *Patient dressing rooms shall be immediately accessible to the waiting area and procedure rooms. Each dressing room shall include a seat or bench, a mirror, and provisions for hanging patients' clothing and for securing valuables.*

In Hospitals, which one of the following is not required to be included within a dressing room for a nuclear medicine space?

1224.34.2.7 Patient dressing rooms. *Patient dressing rooms shall be immediately accessible to the waiting area and procedure rooms. Each dressing room shall include a seat or bench, a mirror, and provisions for hanging patients' clothing and for securing valuables.*

Response:

a) nurse call station
b) seat or bench
c) mirror
d) provisions for hanging clothes

Sample Questions

- Sample #3-CMC Mechanical Question

In Fuel Gas Piping, per Pressure Testing and Inspection, The minimum test pressure and test duration for a hospital with fuel gas piping at house pressure shall be not less than:

a) 3 psi for 30 minutes
b) 5 psi for 15 minutes
c) 10 psi for 15 minutes
d) 5 psi for 30 minutes

- **How to look for the response?** 

- **Sample #3- in CMC where is Fuel Gas Piping?**

FORMAT OF THE UNIFORM MECHANICAL CODE

The format of the *Uniform Mechanical Code* (UMC) arranges each chapter in accordance with a specific subject matter. However, Chapter 3 is dedicated to general requirements that are applicable to every chapter. The subject matters are divided as follows:

CHAPTERS	SUBJECTS
1	Administration
2	Definitions
3	General Regulations
4	Ventilation Air
5	Exhaust Systems
6	Duct Systems
7	Combustion Air
8	Chimneys and Vents
9	Installation of Specific Appliances
10	Boilers and Pressure Vessels
11	Refrigeration
12	Hydronics
13	Fuel Gas Piping
14	Process Piping
15	Solar Energy Systems
16	Stationary Power Plants
17	Referenced Standards
Appendix A	Residential Plan Examiner Review Form for HVAC System Design
Appendix B	Procedures to be Followed to Place Gas Equipment in Operation
Appendix C	Installation and Testing of Oil (Liquid) Fuel-Fired Equipment
Appendix D	Fuel Supply: Manufactured/Mobile Home Parks and Recreational Vehicle Parks
Appendix E	Sustainable Practices
Appendix F	Sizing of Venting Systems and Outdoor Combustion and Ventilation Opening Design
Appendix G	Example Calculation of Outdoor Air Rate

1310.2 Installation of Piping . . . 259
Table 1310.2.4.1 Support of Piping . . . 260
1310.3 Concealed Piping in Buildings . . . 260
1310.4 Piping in Vertical Chases . . . 261
1310.5 Maximum Design Operating Pressure . . . 261
1310.6 Appliance Overpressure Protection . . . 261
1310.7 Gas Pipe Turns . . . 261
1310.8 Drips and Sediment Traps . . . 262
1310.9 Outlets . . . 262
1310.10 Branch Pipe Connection . . . 262
1310.11 Manual Gas Shutoff Valves . . . 262
1310.12 Prohibited Devices . . . 262
1310.13 Systems Containing Gas-Air Mixtures Outside the Flammable Range . . . 263
1310.14 Systems Containing Flammable Gas-Air Mixtures . . . 263
1311.0 Electrical Bonding and Grounding . . . 264
1311.1 Pipe and Tubing other than CSST . . . 264
1311.2 Bonding of CSST Gas Piping . . . 264
1311.3 Grounding Conductor of Electrode . . . 264
1311.4 Lightning Protection System . . . 264
1311.5 Electrical Circuits . . . 264
1311.6 Electrical Connections . . . 264
1312.0 Appliance Connections to Building Piping . . . 264
1312.1 Connecting Appliances and Equipment . . . 264
1312.2 Suspended Low-Intensity Infrared Tube Heaters . . . 264
1312.3 Use of Gas Hose Connectors . . . 265
1312.4 Injection (Bunsen) Burners . . . 265
1312.5 Connection of Portable and Mobile Industrial Appliances . . . 265
1312.6 Appliance Shutoff Valves and Connections . . . 265
1312.7 Quick-Disconnect Devices . . . 265
1312.8 Gas Convenience Outlets . . . 265
1312.9 Sediment Trap . . . 265
1312.10 Installation of Piping . . . 266
1312.11 Liquefied Petroleum Gas Facilities and Piping . . . 266
1313.0 Pressure Testing and Inspection . . . 266
1313.1 Piping Installations . . . 266
1313.2 Test Preparation . . . 266
1313.3 Test Pressure . . . 266
1313.4 Detection of Leaks and Defects . . . 267
1313.5 Piping System Leak Test . . . 267
1313.6 Purging Requirements . . . 267
Table 1313.6.1 Size and Length of Piping . . . 267
1314.0 Required Gas Supply . . . 268
1314.1 General . . . 268
1314.2 Volume . . . 268
1314.3 Gas Appliances . . . 268
1314.4 Size of Piping Outlets . . . 268
1315.0 Required Gas Piping Size . . . 268
1315.1 Pipe Sizing Methods . . . 268
1315.2 Tables for Sizing Gas Piping Systems . . . 269
1315.3 Sizing Equations . . . 269
Table 1315.3 Cr and Y for Natural Gas and Undiluted Propane at Standard Conditions . . . 269
1315.4 Sizing of Piping Sections . . . 269
1315.5 Engineering Methods . . . 269
1315.6 Variable Gas Pressures . . . 269
Table 1315.2(1) Schedule 40 Metallic Pipe . . . 271
Table 1315.2(2) Schedule 40 Metallic Pipe . . . 272
Table 1315.2(3) Schedule 40 Metallic Pipe . . . 273
Table 1315.2(4) Schedule 40 Metallic Pipe . . . 274
Table 1315.2(5) Schedule 40 Metallic Pipe . . . 275
Table 1315.2(6) Schedule 40 Metallic Pipe . . . 276
Table 1315.2(7) Semi-Rigid Copper Tubing . . . 277
Table 1315.2(8) Semi-Rigid Copper Tubing . . . 278
Table 1315.2(9) Semi-Rigid Copper Tubing . . . 279
Table 1315.2(10) Semi-Rigid Copper Tubing . . . 280
Table 1315.2(11) Semi-Rigid Copper Tubing . . . 281
Table 1315.2(12) Semi-Rigid Copper Tubing . . . 282
Table 1315.2(13) Semi-Rigid Copper Tubing . . . 283
Table 1315.2(14) Corrugated Stainless Steel Tubing (CSST) . . . 284
Table 1315.2(15) Corrugated Stainless Steel Tubing (CSST) . . . 285
Table 1315.2(16) Corrugated Stainless Steel Tubing (CSST) . . . 286
Table 1315.2(17) Corrugated Stainless Steel Tubing (CSST) . . . 287
Table 1315.2(18) Corrugated Stainless Steel Tubing (CSST) . . . 288
Table 1315.2(19) Polyethylene Plastic Pipe . . . 289
Table 1315.2(20) Polyethylene Plastic Pipe . . . 290
Table 1315.2(21) Polyethylene Plastic Pipe . . . 291

1313.3 Test Pressure. This inspection shall include an air, CO_2, or nitrogen pressure test, at which time the gas piping shall stand a pressure of not less than 10 psi (69 kPa) gauge pressure. Test pressures shall be held for a length of time satisfactory to the Authority Having Jurisdiction but in no case less than 15 minutes with no perceptible drop in pressure. For welded piping, and for piping carrying gas at pressures in excess of 14 inches water column (3.5 kPa) pressure, the test pressure shall be not less than 60 psi (414 kPa) and shall be continued for a length of time satisfactory to the Authority Having Jurisdiction, but in no case for less than 30 minutes. For CSST carrying gas at pressures in excess of 14 inches water column (3.5 kPa) pressure, the test pressure shall be 30 psi (207 kPa) for 30 minutes. These tests shall be made using air, CO_2, or nitrogen pressure and shall be made in the presence of the Authority Having Jurisdiction. Necessary apparatus for conducting tests shall be furnished by the permit holder. Test gauges used in conducting test shall be in accordance with Section 1303.3.3.1 through Section 1303.3.3.4.

Response:

a) 3 psi for 30 minutes
b) 5 psi for 15 minutes
c) 10 psi for 15 minutes
d) 5 psi for 30 minutes

Sample Questions

- Sample #4-CEC Electrical Question

In ELEVATORS, DUMBWAITERS, ESCALATORS, MOVING WALKS, PLATFORM & STAIRWAY CHAIRLIFTS, A sump pump located in an elevator hoistway shall be permitted to be cord connected. The cord shall be a hard usage oil-resistant type of a length not to exceed _____ and shall be protected from physical damage.

a) 3 ft
b) 6 ft
c) 8 ft
d) 10 ft

- **How to look for the response?** 

- **Sample #4- in CEC where is** ELEVATORS, DUMBWAITERS, ESCALATORS, MOVING WALKS, PLATFORM & STAIRWAY CHAIRLIFTS**?**

ARTICLE

550 Mobile Homes, Manufactured Homes, and Mobile Home Parks . . . 70-530
Part I General . . . 70-530
Part II Mobile and Manufactured Homes . . . 70-531
Part III Services and Feeders . . . 70-537
551 Recreational Vehicles and Recreational Vehicle Parks . . . 70-539
Part I General . . . 70-539
Part II Combination Electrical Systems . . . 70-540
Part III Other Power Sources . . . 70-540
Part IV Nominal 120-Volt or 120/240-Volt Systems . . . 70-541
Part V Factory Tests . . . 70-548
Part VI Recreational Vehicle Parks . . . 70-548
552 Park Trailers . . . 70-551
Part I General . . . 70-551
Part II Low-Voltage Systems . . . 70-551
Part III Combination Electrical Systems . . . 70-552
Part IV Nominal 120-Volt or 120/240-Volt Systems . . . 70-553
Part V Factory Tests . . . 70-560
553 Floating Buildings . . . 70-560
Part I General . . . 70-560
Part II Services and Feeders . . . 70-561
Part III Grounding . . . 70-561
555 Marinas, Boatyards, and Commercial and Noncommercial Docking Facilities . . . 70-561
590 Temporary Installations . . . 70-564

Chapter 6 Special Equipment

600 Electric Signs and Outline Lighting . . . 70-577
Part I General . . . 70-577
Part II Field-Installed Skeleton Tubing, Outline Lighting, and Secondary Wiring . . . 70-581
604 Manufactured Wiring Systems . . . 70-583
605 Office Furnishings . . . 70-585
610 Cranes and Hoists . . . 70-586
Part I General . . . 70-586
Part II Wiring . . . 70-586
Part III Contact Conductors . . . 70-587
Part IV Disconnecting Means . . . 70-589
Part V Overcurrent Protection . . . 70-589
Part VI Control . . . 70-590
Part VII Grounding . . . 70-591
620 Elevators, Dumbwaiters, Escalators, Moving Walks, Platform Lifts, and Stairway Chairlifts . . . 70-591
Part I General . . . 70-591
Part II Conductors . . . 70-593
Part III Wiring . . . 70-594
Part IV Installation of Conductors . . . 70-597
Part V Traveling Cables . . . 70-597

ARTICLE

Part VI Disconnecting Means and Control . . . 70-598
Part VII Overcurrent Protection . . . 70-600
Part VIII Machine Rooms, Control Rooms, Machinery Spaces, and Control Spaces . . . 70-600
Part IX Grounding . . . 70-600
Part X Emergency and Standby Power Systems . . . 70-601
625 Electric Vehicle Charging System . . . 70-601
Part I General . . . 70-601
Part II Equipment Construction . . . 70-602
Part III Installation . . . 70-603
Part IV Wireless Power Transfer Equipment . . . 70-606
626 Electrified Truck Parking Spaces . . . 70-606
Part I General . . . 70-606
Part II Electrified Truck Parking Space Electrical Wiring Systems . . . 70-607
Part III Electrified Truck Parking Space Supply Equipment . . . 70-608
Part IV Transport Refrigerated Units (TRUs) . . . 70-610
630 Electric Welders . . . 70-611
Part I General . . . 70-611
Part II Arc Welders . . . 70-611
Part III Resistance Welders . . . 70-612
Part IV Welding Cable . . . 70-613
640 Audio Signal Processing, Amplification, and Reproduction Equipment . . . 70-613
Part I General . . . 70-613
Part II Permanent Audio System Installations . . . 70-616
Part III Portable and Temporary Audio System Installations . . . 70-617
645 Information Technology Equipment . . . 70-618
646 Modular Data Centers . . . 70-622
Part I General . . . 70-622
Part II Equipment . . . 70-625
Part III Lighting . . . 70-625
Part IV Workspace . . . 70-626
647 Sensitive Electronic Equipment . . . 70-626
650 Pipe Organs . . . 70-628
660 X-Ray Equipment . . . 70-629
Part I General . . . 70-629
Part II Control . . . 70-630
Part III Transformers and Capacitors . . . 70-630
Part IV Guarding and Grounding . . . 70-630
665 Induction and Dielectric Heating Equipment . . . 70-630
Part I General . . . 70-630
Part II Guarding, Grounding, and Labeling . . . 70-631
668 Electrolytic Cells . . . 70-632
669 Electroplating . . . 70-634
670 Industrial Machinery . . . 70-635
675 Electrically Driven or Controlled Irrigation Machines . . . 70-636
Part I General . . . 70-636
Part II Center Pivot Irrigation Machines . . . 70-638

Part VII. Grounding

610.61 Grounding. All exposed non–current-carrying metal parts of cranes, monorail hoists, hoists, and accessories, including pendant controls, shall be bonded either by mechanical connections or bonding jumpers, where applicable, so that the entire crane or hoist is a ground-fault current path as required or permitted by Article 250, Parts V and VII.

Moving parts, other than removable accessories, or attachments that have metal-to-metal bearing surfaces, shall be considered to be electrically bonded to each other through bearing surfaces for grounding purposes. The trolley frame and bridge frame shall not be considered as electrically grounded through the bridge and trolley wheels and its respective tracks. A separate bonding conductor shall be provided.

ARTICLE 620
Elevators, Dumbwaiters, Escalators, Moving Walks, Platform Lifts, and Stairway Chairlifts

Part I. General

620.1 Scope. This article covers the installation of electrical equipment and wiring used in connection with elevators, dumbwaiters, escalators, moving walks, platform lifts, and stairway chairlifts.

Informational Note No. 1: For further information, see ASME A17.1-2013/CSA B44-13, *Safety Code for Elevators and Escalators*.

Informational Note No. 2: For further information, see CSA B44.1-11/ASME-A17.5-2014, *Elevator and Escalator Electrical Equipment*.

Informational Note No. 3: The term *wheelchair lift* has been changed to *platform lift*. For further information, see ASME A18.1-2014, *Safety Standard for Platform Lifts and Stairway Chairlifts*.

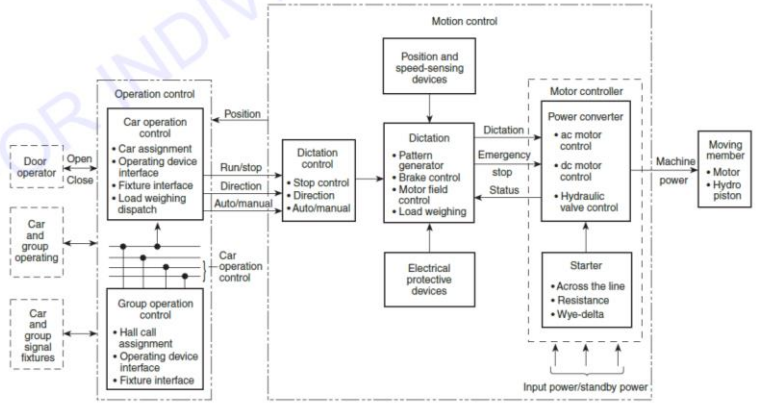
620.2 Definitions.

Informational Note No. 1: The motor controller, motion controller, and operation controller are located in a single enclosure or a combination of enclosures.

Informational Note No. 2: Informational Note Figure 620.2, No. 2 is for information only.

Control Room (for Elevator, Dumbwaiter). An enclosed control space outside the hoistway, intended for full bodily entry, that contains the elevator motor controller. The room could also contain electrical and/or mechanical equipment used directly in connection with the elevator or dumbwaiter but not the electric driving machine or the hydraulic machine.

Control Space (for Elevator, Dumbwaiter). A space inside or outside the hoistway, intended to be accessed with or without full bodily entry, that contains the elevator motor controller. This space could also contain electrical and/or mechanical equipment used directly in connection with the elevator or dumbwaiter but not the electrical driving machine or the hydraulic machine.



INFORMATIONAL NOTE FIGURE 620.2, NO. 2 Control System.

to be cord connected… means look into Wiring Method Section

Informational Note: Some elevator motor currents, or those motor currents of similar function, exceed the motor nameplate value. Heating of the motor and conductors is dependent on the root-mean square (rms) current value and the length of operation time. Because this motor application is inherently intermittent duty, conductors are sized for duty cycle service as shown in Table 430.22(E).

(B) Conductors Supplying a Single Motor Controller. Conductors supplying a single motor controller shall have an ampacity not less than the motor controller nameplate current rating, plus all other connected loads. Motor controller nameplate current ratings shall be permitted to be derived based on the rms value of the motor current using an intermittent duty cycle and other control system loads, if present.

(C) Conductors Supplying a Single Power Transformer. Conductors supplying a single power transformer shall have an ampacity not less than the nameplate current rating of the power transformer plus all other connected loads.

Informational Note No. 1: The nameplate current rating of a power transformer supplying a motor controller reflects the nameplate current rating of the motor controller at line voltage (transformer primary).

Informational Note No. 2: See Informative Annex D, Example No. D10.

(D) Conductors Supplying More Than One Motor, Motor Controller, or Power Transformer. Conductors supplying more than one motor, motor controller, or power transformer shall have an ampacity not less than the sum of the nameplate current ratings of the equipment plus all other connected loads. The ampere ratings of motors to be used in the summation shall be determined from Table 430.22(E), 430.24, and 430.24, Exception No. 1.

Informational Note: See Informative Annex D, Example Nos. D9 and D10.

620.14 Feeder Demand Factor. Feeder conductors of less ampacity than required by 620.13 shall be permitted, subject to the requirements of Table 620.14.

TABLE 620.14 Feeder Demand Factors for Elevators

Number of Elevators on a Single Feeder	Demand Factor*
1	1.00
2	0.95
3	0.90
4	0.85
5	0.82
6	0.79
7	0.77
8	0.75
9	0.73
10 or more	0.72

*Demand factors are based on 50 percent duty cycle (i.e., half time on and half time off).

620.15 Motor Controller Rating. The motor controller rating shall comply with 430.83. The rating shall be permitted to be less than the nominal rating of the elevator motor, when the controller inherently limits the available power to the motor and is marked as power limited.

Informational Note: For controller markings, see 430.8.

N **620.16 Short-Circuit Current Rating.**

(A) Marking. Where an elevator control panel is installed, it shall be marked with its short-circuit current rating, based on one of the following:

(1) Short-circuit current rating of a listed assembly
(2) Short-circuit current rating established utilizing an approved method

Informational Note: UL 508A-2013, Supplement SB, is an example of an approved method.

(B) Installation. The elevator control panel shall not be installed where the available short-circuit current exceeds its short-circuit current rating, as marked in accordance with 620.16(A).

Part III. Wiring

620.21 Wiring Methods. Conductors and optical fibers located in hoistways, in escalator and moving walk wellways, in platform lifts, stairway chairlift runways, machinery spaces, control spaces, in or on cars, in machine rooms and control rooms, not including the traveling cables connecting the car or counterweight and hoistway wiring, shall be installed in rigid metal conduit, intermediate metal conduit, electrical metallic tubing, rigid nonmetallic conduit, or wireways, or shall be Type MC, MI, or AC cable unless otherwise permitted in 620.21(A) through (C).

Exception: Cords and cables of listed cord- and plug-connected equipment shall not be required to be installed in a raceway.

(A) Elevators.

(1) Hoistways and Pits.

(a) Cables used in Class 2 power-limited circuits shall be permitted, provided the cables are supported and protected from physical damage and are of a jacketed and flame-retardant type.

(b) Flexible cords and cables that are components of listed equipment and used in circuits operating at 30 volts rms or less or 42 volts dc or less shall be permitted, provided the cords and cables are supported and protected from physical damage and are of a jacketed and flame-retardant type.

(c) The following wiring methods shall be permitted in the hoistway in lengths not to exceed 1.8 m (6 ft):

(1) Flexible metal conduit
(2) Liquidtight flexible metal conduit
(3) Liquidtight flexible nonmetallic conduit
(4) Flexible cords and cables, or conductors grouped together and taped or corded, shall be permitted to be installed without a raceway. They shall be located to be protected from physical damage and shall be of a flame-retardant type and shall be part of the following:

a. Listed equipment
b. A driving machine, or
c. A driving machine brake

Exception 620.21(A)(1)(c)(1), (2), and (3): The conduit length shall not be required to be limited between risers and limit switches, interlocks, operating buttons, and similar devices.

(d) A sump pump or oil recovery pump located in the pit shall be permitted to be cord connected. The cord shall be a hard usage oil-resistant type, of a length not to exceed 1.8 m (6 ft), and shall be located to be protected from physical damage.

(2) Cars.

(a) Flexible metal conduit, liquidtight flexible metal conduit, or liquidtight flexible nonmetallic conduit of metric designator 12 (trade size ⅜), or larger, not exceeding 1.8 m (6 ft) in length, shall be permitted on cars where so located as to be free from oil and if securely fastened in place.

Exception: Liquidtight flexible nonmetallic conduit of metric designator 12 (trade size ⅜), or larger, as defined by 356.2(2), shall be permitted in lengths in excess of 1.8 m (6 ft).

(b) Hard-service cords and junior hard-service cords that conform to the requirements of Article 400 (Table 400.4) shall be permitted as flexible connections between the fixed wiring on the car and devices on the car doors or gates. Hard-service cords only shall be permitted as flexible connections for the top-of-car operating device or the car-top work light. Devices or luminaires shall be grounded by means of an equipment grounding conductor run with the circuit conductors. Cables with smaller conductors and other types and thicknesses of insulation and jackets shall be permitted as flexible connections between the fixed wiring on the car and devices on the car doors or gates, if listed for this use.

(c) Flexible cords and cables that are components of listed equipment and used in circuits operating at 30 volts rms or less or 42 volts dc or less shall be permitted, provided the cords and cables are supported and protected from physical damage and are of a jacketed and flame-retardant type.

(d) The following wiring methods shall be permitted on the car assembly in lengths not to exceed 1.8 m (6 ft):

(1) Flexible metal conduit
(2) Liquidtight flexible metal conduit
(3) Liquidtight flexible nonmetallic conduit
(4) Flexible cords and cables, or conductors grouped together and taped or corded, shall be permitted to be installed without a raceway. They shall be located to be protected from physical damage and shall be of a flame-retardant type and shall be part of the following:

a. Listed equipment
b. A driving machine, or
c. A driving machine brake

(3) Within Machine Rooms, Control Rooms, and Machinery Spaces and Control Spaces.

(a) Flexible metal conduit, liquidtight flexible metal conduit, or liquidtight flexible nonmetallic conduit of metric designator 12 (trade size ⅜), or larger, not exceeding 1.8 m (6 ft) in length, shall be permitted between control panels and machine motors, machine brakes, motor-generator sets, disconnecting means, and pumping unit motors and valves.

Exception: Liquidtight flexible nonmetallic conduit of metric designator 12 (trade size ⅜) or larger, as defined in 356.2(2), shall be permitted to be installed in lengths in excess of 1.8 m (6 ft).

(b) Where motor-generators, machine motors, or pumping unit motors and valves are located adjacent to or underneath control equipment and are provided with extra-length terminal leads not exceeding 1.8 m (6 ft) in length, such leads shall be permitted to be extended to connect directly to controller terminal studs without regard to the carrying-capacity requirements of Articles 430 and 445. Auxiliary gutters shall be permitted in machine and control rooms between controllers, starters, and similar apparatus.

(c) Flexible cords and cables that are components of listed equipment and used in circuits operating at 30 volts rms or less or 42 volts dc or less shall be permitted, provided the cords and cables are supported and protected from physical damage and are of a jacketed and flame-retardant type.

(d) On existing or listed equipment, conductors shall also be permitted to be grouped together and taped or corded without being installed in a raceway. Such cable groups shall be supported at intervals not over 900 mm (3 ft) and located so as to be protected from physical damage.

(e) Flexible cords and cables in lengths not to exceed 1.8 m (6 ft) that are of a flame-retardant type and located to be protected from physical damage shall be permitted in these rooms and spaces without being installed in a raceway. They shall be part of the following:

(1) Listed equipment
(2) A driving machine, or
(3) A driving machine brake

(4) Counterweight. The following wiring methods shall be permitted on the counterweight assembly in lengths not to exceed 1.8 m (6 ft):

(1) Flexible metal conduit
(2) Liquidtight flexible metal conduit
(3) Liquidtight flexible nonmetallic conduit
(4) Flexible cords and cables, or conductors grouped together and taped or corded, shall be permitted to be installed without a raceway. They shall be located to be protected from physical damage, shall be of a flame-retardant type, and shall be part of the following:

a. Listed equipment
b. A driving machine, or
c. A driving machine brake

(d) A sump pump or oil recovery pump located in the pit shall be permitted to be cord connected. The cord shall be a hard usage oil-resistant type, of a length not to exceed 1.8 m (6 ft), and shall be located to be protected from physical damage.

Response:

a) 3 ft
b) 6 ft
c) 8 ft
d) 10 ft

Sample Questions
How to read the plans

How to read the plans (applicable only for Class A and B)

Class **A** will have questions for:

- Architecture
- Structural
- Anchorage/Bracing
- Mechanical/Plumbing
- Electrical
- Fire and Life Safety

Class **B** will have questions for:

- Architecture
- Anchorage/Bracing
- Mechanical/Plumbing
- Electrical
- Fire and Life Safety

What is/are generally shown on the drawings (plans)?

- General: Symbol, legend, abbreviations, general notes
- Plans
- Elevations
- Sections
- Large Scale Drawings: plans, elevations, sections (NOT details)
- Details
- Schedules and Diagrams

Sample Questions

Sample #1-Architectural Plan Question:

- In the OR Room, the height of SS Wainscot is ___

a) 5’– 0”

b) 3’–2”

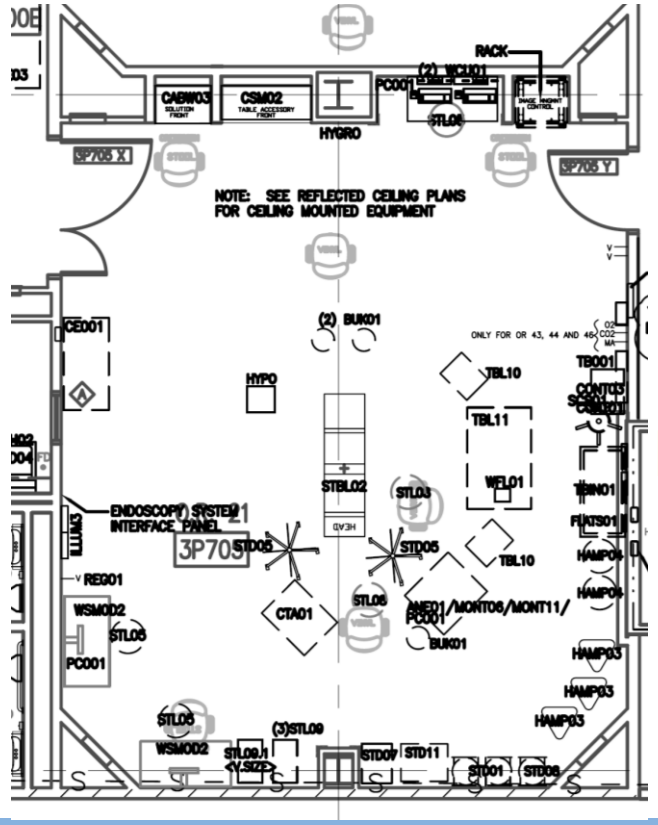
c) 4’ – 6”

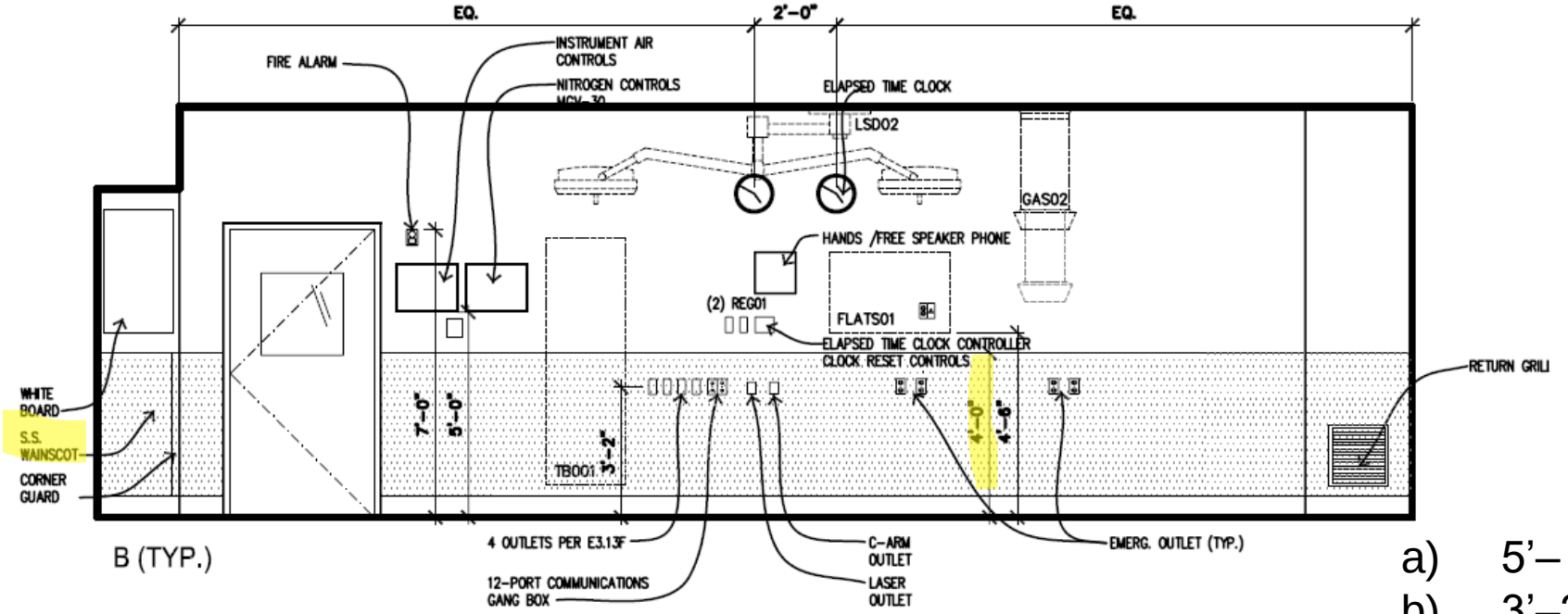
d) 4’ – 0”

- **How to look for the response?** 

Where to find internal wall height?

- In the floor plan you cannot find the height.
- Interior elevation shows the height





a) 5'– 0"
b) 3'–2"
c) 4' – 6"
d) 4' – 0"

Poll question

Can IOR Class B inspect and approve structural elements?

- Yes
- No

Poll question

Can IOR Class B inspect and approve structural elements?

- Yes
- No

How to be a strong IOR
IOR strengths & weaknesses

- How to be a strong IOR- IOR strengths & weaknesses
  - Know the code
  - Read Approved construction drawings and specifications
  - Communicate with hospital owner
  - Encourage pre-construction meetings
    - Identify IOR responsibilities during pre-construction
  - Construction & Inspection Schedules
  - Know your inspection schedule
    - Level of commitment per job i.e. construction with differing times (morning concrete pour)
  - Non-material changes vs. material changes
  - How to review amended construction documents

- **Know the code**
  - How to look in the code.
  - CAC, CBC, CMC, CPC, CEC, ACI, NFPA.
  - On Site, don't rush a response.

• Meaning of Symbols in California Code:

Symbols in the margins what indicate?

I I This symbol indicates that a change has been made to a California amendment.

> This symbol indicates deletion of California amendment language.

I This symbol indicates that a change has been made to ICC model code language.

 This symbol indicates deletion of ICC model code language.

* Text or table has been relocated to elsewhere in code. See pages v - vi.

** Text or table has been relocated from elsewhere in the code. See pages v - vi.

Conflicting Provisions between Codes and Standards

- 102.1 Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable.
- 102.4 Referenced Codes and Standards. The *codes* and *standards referenced* in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections 102.4.1 *through 102.4.4*.
- 102.4.1 Conflicts. Where conflicts occur between *provisions of this code* and referenced codes and standards, the provisions of this code shall apply.
- 102.4.2 Provisions in Referenced Codes and Standards. Where the extent of the reference to a referenced code or standard includes subject matter that is within the scope of this code or the International Codes listed in Section 101.4, the provisions of this code or the International Codes listed in Section 101.4, as applicable, shall take precedence over the provisions in the referenced code or standard.

Poll question

Where there is a conflict between a general requirement and a specific requirement, which requirement shall be applicable?

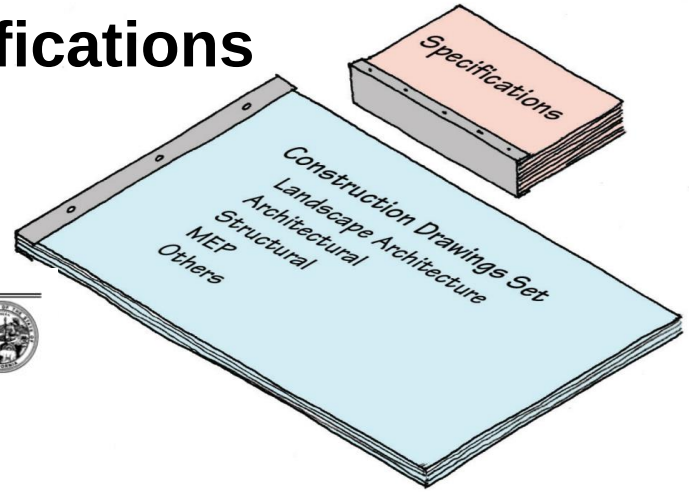
- General requirement
- Specific requirement

Poll question

Where there is a conflict between a general requirement and a specific requirement, which requirement shall be applicable?

- General requirement
- Specific requirement

• Read Approved construction drawings and specifications



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355 South Grand Avenue, Suite 1900, Los Angeles, CA 90071 Phone (213) 897-0166 FAX (213) 897-0168

CHECK LIST FOR OSHPD PLAN APPROVAL

- Name of facility, index of drawings, project scope and definition of limits of work.
- Project location plan showing project location in relation to site with building setbacks and adjacent buildings shown.
- Drawing scale and north arrows provided on plans.
- Demolition plans.
- Architectural, structural, mechanical, and electrical specifications, are required.

ARCHITECTURAL REQUIREMENTS

- Site plan and floor plan showing handicapped parking, access and travel path to the project area.
- Floor plans drawn to scale showing room names and numbers. Rooms and corridors fully dimensioned, door and window dimensions shown or scheduled.
- Reflected ceiling plans showing ceiling types and ceiling construction details and ceiling heights in all areas.
- Finish schedule.
- Building sections and exterior elevation drawings.
- Interior elevation drawings
- Wall sections showing finishes, fire rating, stud size and spacing, stud gauge, and wall attachment to supporting structure.
- Details of cabinets, windows, doors ceilings and architectural features.
- Area and fire separations shown for horizontal and vertical assemblies.

STRUCTURAL REQUIREMENTS

- Expansion anchor testing schedule.
- Deferred approval list – shown on plan set cover sheet and o a separate 8 ½ X 11 sheet.
- Anchorage details for pipes, ducts and conduits or appropriate pre-approval reference.
- Cabinet anchorage details showing fastener size and spacing.
- Grab bar anchorage details.
- Shower seat anchorage details.
- Television bracket anchorage details, calculations required to justify the adequacy of non preapproved television brackets,

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- Backing plate details – minimum 6" X 16 gage required unless calculations are to justify a smaller size and/or gauge.
- Equipment anchorage schedule – showing all hospital, mechanical, electrical and other equipment, equipment weight, dimensions and appropriate anchorage detail reference.
- Equipment anchorage details and calculations. Locations of seismic separations identified, details of service lines at these locations.

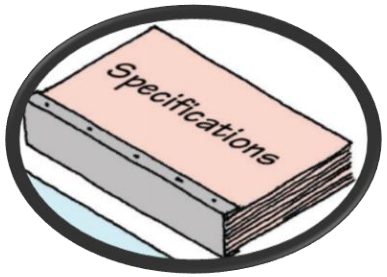
MECHANICAL REQUIREMENTS

- Mechanical and plumbing drawings including equipment schedules listing all mechanical equipment including filters, plumbing fixtures and trim
- Mechanical and plumbing (M / P) legends and symbols.
- Mechanical sections and elevations provided where necessary for clarity. Large-scale plans provided for congested areas such as mechanical rooms.
- Ductwork and piping shown and sized.
- Location and size of soil, waste and vent stacks with connections to house drains, fixtures and equipment.
- Size and location of domestic and HVAC hot and cold water, waste, and vent piping, including branches and risers. (Provider riser diagrams for multi-story buildings).
- Medical gas systems identified, sized and specified.

ELECTRICAL REQUIREMENTS

- Emergency power system.
- Single-line diagram.
- Panel schedules with tabulated loads.
- Power plans, lighting plans, signal plans.
- Load calculations
- Symbol and fixture schedules with wattage.

Really also specifications?



7-115. Preparation of construction documents and reports.

(a) All construction documents or reports, except as provided in (c) below shall be prepared under an architect or engineer in responsible charge. Prior to submittal to the office, the architect or engineer in responsible charge for a project shall sign every sheet of the drawings, and the title sheet, cover sheet or signature sheet of specifications and reports.

Which is the specification's format?

Specifications included in the Construction Drawings

For small projects, sheet specifications are a great alternative to the standard bound project manual.

Options:
Option 1: Locating all specification information in a single location within a drawing set.
Option 2: Locating specification information within the portion of a drawing set applicable to a particular design discipline.

Stand alone Project Manual

- Division 1: General Requirements
- Division 2: Existing Conditions
- Division 3: Concrete
- Division 4: Masonry
- Division 5: Metals
- Division 6: Wood, Plastics and Composites
- Division 7: Thermal and Moisture Protection
- Division 8: Openings
- Division 9: Finishes (interior finishes)
- Division 10: Specialties (for example, signs, toilet accessories)
- Division 11: Equipment (for example, kitchen equipment)
- Division 12: Furnishings
- Division 13: Special Construction (for example, greenhouses)
- Division 14: Conveying Equipment (elevators, escalators, lifts)
- Division 21: Fire Suppression
- Division 22: Plumbing
- Division 23: Heating, Ventilating and Air Conditioning
- Division 26: Electrical
- Division 27: Communications
- Division 28: Electronic Safety and Security
- Division 31: Earthwork
- Division 32: Exterior Improvements
- Division 33: Utilities

Poll question

What is part of the construction document?

- Construction drawings
- Specifications
- Construction drawings and Specifications

Poll question

What is part of the construction document?

- Construction drawings
- Specifications
- Construction drawings and Specifications

- **Communicate with hospital owner**

Who hires you? The Hospital Owner

- **7-212. Approval of hospital inspector of record for construction projects.**
- (a) It is incumbent upon the hospital governing board or authority and the architect or structural engineer, or both, in responsible charge of the work, or the engineer in responsible charge of the work, to **select the appropriate inspector(s) for a project**.

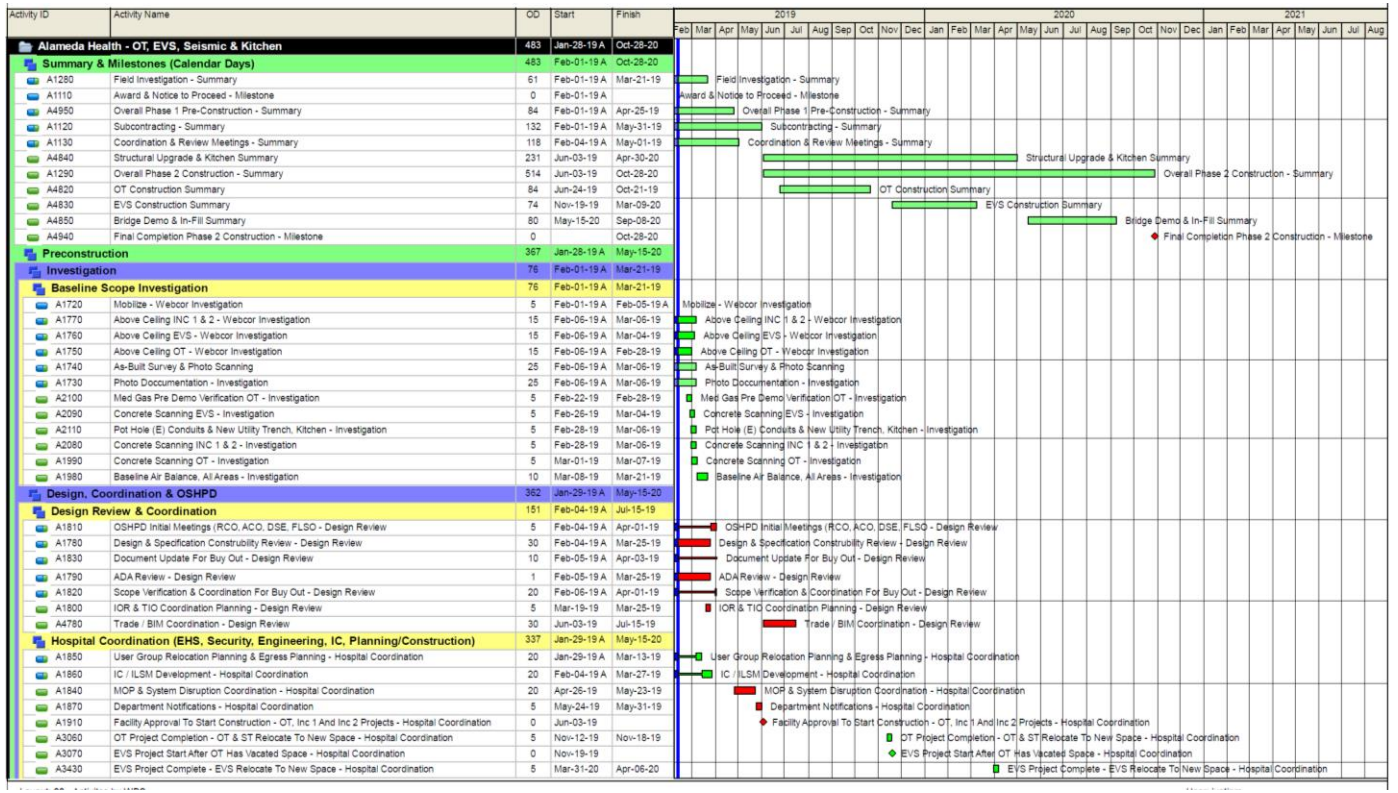
The hospital governing board or authority shall submit to the Office an application for each Hospital Inspector of Record proposed to perform construction inspection on a specified hospital construction project. The hospital governing board or authority shall obtain Office approval of proposed Hospital Inspector(s) of Record prior to commencement of the hospital construction project

- **Encourage pre-construction meetings**

  - Once Building Permit is obtained, Kickoff meeting should be scheduled. At the Kickoff meeting, design team, including OSHPD, IOR, Owner, CM (if it is part of the project) should attend the meeting
  - Review/Discuss Project Scope
  - Review/Discuss Construction Schedule,
  - Review/Discuss Inspection Schedule
  - Identify IOR responsibilities during pre-construction
  - Goals

- **Construction & Inspection Schedules**
  - Construction milestone
  - **Know your inspection schedule**
    - Level of commitment per job

    i.e. construction with differing times (morning concrete pour)
  - Construction phases



Activity ID	Activity Name	OD	Start	Finish
	Alameda Health - OT, EVS, Seismic & Kitchen	483	Jan-28-19 A	Oct-28-20
	Summary & Milestones (Calendar Days)	483	Feb-01-19 A	Oct-28-20
A1280	Field Investigation - Summary	61	Feb-01-19 A	Mar-21-19
A1110	Award & Notice to Proceed - Milestone	0	Feb-01-19 A	
A4950	Overall Phase 1 Pre-Construction - Summary	84	Feb-01-19 A	Apr-25-19
A1120	Subcontracting - Summary	132	Feb-01-19 A	May-31-19
A1130	Coordination & Review Meetings - Summary	118	Feb-04-19 A	May-01-19
A4840	Structural Upgrade & Kitchen Summary	231	Jun-03-19	Apr-30-20
A1290	Overall Phase 2 Construction - Summary	514	Jun-03-19	Oct-28-20
A4820	OT Construction Summary	84	Jun-24-19	Oct-21-19
A4830	EVS Construction Summary	74	Nov-19-19	Mar-09-20
A4850	Bridge Demo & In-Fill Summary	80	May-15-20	Sep-08-20
A4940	Final Completion Phase 2 Construction - Milestone	0		Oct-28-20
	Preconstruction	367	Jan-28-19 A	May-15-20
	Investigation	76	Feb-01-19 A	Mar-21-19
	Baseline Scope Investigation	76	Feb-01-19 A	Mar-21-19
A1720	Mobilize - Webcor Investigation	5	Feb-01-19 A	Feb-05-19 A
A1770	Above Ceiling INC 1 & 2 - Webcor Investigation	15	Feb-06-19 A	Mar-06-19
A1760	Above Ceiling EVS - Webcor Investigation	15	Feb-06-19 A	Mar-04-19
A1750	Above Ceiling OT - Webcor Investigation	15	Feb-06-19 A	Feb-28-19
A1740	As-Built Survey & Photo Scanning	25	Feb-06-19 A	Mar-06-19
A1730	Photo Documentation - Investigation	25	Feb-06-19 A	Mar-06-19
A2100	Med Gas Pre Demo Verification OT - Investigation	5	Feb-22-19	Feb-28-19
A2090	Concrete Scanning EVS - Investigation	5	Feb-26-19	Mar-04-19
A2110	Pot Hole (E) Conduits & New Utility Trench, Kitchen - Investigation	5	Feb-28-19	Mar-06-19
A2080	Concrete Scanning INC 1 & 2 - Investigation	5	Feb-28-19	Mar-06-19
A1990	Concrete Scanning OT - Investigation	5	Mar-01-19	Mar-07-19
A1980	Baseline Air Balance, All Areas - Investigation	10	Mar-08-19	Mar-21-19
	Design, Coordination & OSHPD	362	Jan-28-19 A	May-15-20
	Design Review & Coordination	151	Feb-04-19 A	Jul-15-19
A1810	OSHPD Initial Meetings (RCO, ACO, DSE, FLSO - Design Review	5	Feb-04-19 A	Apr-01-19
A1780	Design & Specification Construbility Review - Design Review	30	Feb-04-19 A	Mar-25-19
A1830	Document Update For Buy Out - Design Review	10	Feb-05-19 A	Apr-03-19
A1790	ADA Review - Design Review	1	Feb-05-19 A	Mar-25-19
A1820	Scope Verification & Coordination For Buy Out - Design Review	20	Feb-06-19 A	Apr-01-19
A1800	IOR & TIO Coordination Planning - Design Review	5	Mar-19-19	Mar-25-19
A4780	Trade / BIM Coordination - Design Review	30	Jun-03-19	Jul-15-19
	Hospital Coordination (EHS, Security, Engineering, IC, Planning/Construction)	337	Jan-29-19 A	May-15-20
A1850	User Group Relocation Planning & Egress Planning - Hospital Coordination	20	Jan-29-19 A	Mar-13-19
A1660	IC / ILSM Development - Hospital Coordination	20	Feb-04-19 A	Mar-27-19
A1840	MOP & System Disruption Coordination - Hospital Coordination	20	Apr-26-19	May-23-19
A1870	Department Notifications - Hospital Coordination	5	May-24-19	May-31-19
A1910	Facility Approval To Start Construction - OT, Inc 1 And Inc 2 Projects - Hospital Coordination	0	Jun-03-19	
A3060	OT Project Completion - OT & ST Relocate To New Space - Hospital Coordination	5	Nov-12-19	Nov-18-19
A3070	EVS Project Start After OT Has Vacated Space - Hospital Coordination	0	Nov-19-19	
A3430	EVS Project Complete - EVS Relocate To New Space - Hospital Coordination	5	Mar-31-20	Apr-06-20

Poll question

Are Construction schedule and Inspection Schedule the same?

- Yes
- No

Poll question

Are Construction schedule and Inspection Schedule the same?

- Yes
- No

Non-material changes vs. material changes

Architect's Supplemental Instruction(ASI) not materially alter the work

1. Clarification of plans and specifications
2. Construction means and methods
3. Substitution of equipment, products, or materials.
4. New details that are based on other approved details
5. Final routing configurations
6. Dimensional changes to rooms that do not affect code
7. Relocation of doors, windows, electrical switches and outlets, plumbing fixtures, etc., that do not require additional changes
8. Relocation or reconfiguration of cabinetry that does not affect code required

Non-material changes vs. material changes

Amended Construction Documents (ACD) materially alter the work

CAC 7-153 (a) Only changes that materially alter the work shall be submitted to the Office for review and approval as amended construction documents

1. Amended construction documents. Changes or alterations of the approved construction documents

Always compare the approved document with the ASI and ACD. See the difference

Poll question

Which document needs to be issued for Material changes?

- Architect's Supplemental Instruction(ASI)
- Amended Construction Documents (ACD)

Poll question

Which document needs to be issued for Material changes?

- Architect's Supplemental Instruction(ASI)
- Amended Construction Documents (ACD)

IORs and nonperformance

- OSHPD field monitoring
- IOR suspension or revocation (CAC 7-214)

IOR Knowledge

The IOR should be thoroughly familiar with the following:
Part I, Chapter 7 of the Administrative Codes
Policy Intent Notices (PINs) appropriate for the project
Applicable Code Application Notices (CANs)
Contract Document requirements
Project schedules
Project contracts
Applicable codes and standards
Approved submittals
All instructions or clarifications issued by the design Professional of Record
Requirements for testing and inspections
Hospital procedures for notifications and special requirements
Temporary barriers and egress requirements as appropriate for the project

IOR Knowledge

Infection control policies and work practices to reduce risk of exposure to infectious organisms during demolition, remodel, and construction
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
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
Engineering judgments

IOR Duties

7-145. Continuous inspection of the work.
The general duties of the IOR shall be as follows:

1. The IOR shall have personal knowledge
2. Continuous inspection
3. The IOR shall work under the direction DPOR…. in conformity with the approved construction documents.
4.The IOR shall maintain a file of approved construction documents on the job at all times including all reports

5. The IOR shall notify the Office:
A. work is started or resumed
B. At least 48 hours before completed foundation trenches
C. At least 48 hours before the first placing of concrete.
D. When work has been suspended for more than 2 weeks.
6. The IOR shall maintain field records
7. Keep All field records until completion
(b) The IOR writing deviation to GC

7-147 Observation by the Office

(a) During the construction, of any health facility, the Office shall make such observation as in its judgment is necessary or proper for the enforcement of these regulations and all applicable parts of the *California Building Standards Code*. Whenever the Office finds a violation of these regulations and/or applicable parts of the *California Building Standards Code* that requires correction, the citation of the violation shall be issued to the hospital governing board or authority in writing and shall include a proper reference to the regulation or statute being violated.

OSHPD Field Monitoring

7-213. Monitoring of the hospital inspector of record's performance. When the Office determines that a Hospital Inspector of Record has violated a provision of these regulations or that the inspector is not competently or adequately providing inspection of a facility to ensure the hospital construction is in compliance with the construction documents, the Office will notify that inspector, the hospital governing board or authority, and the architect and/or engineer in responsible charge. The written notification will include the Office's findings, reference to the statute and/or regulation being violated, and statement of the Office's intent to issue a "stop work" order unless the violation ceases and is rectified immediately.

IORs and nonperformance

IOR suspension or revocation (CAC 7-214)

- **7-214. Suspension or revocation of certification.**

(a) A hospital inspector of record certification, issued by the Office, may be suspended or revoked…A certification may be suspended or revoked

(b) **Grounds for suspension and/or revocation.**

(c) **Process for suspension and/or revocation.**

(d) **Suspension**

(e) **Revocation**

(f) **Appeal.**

IORs Good performance

- Be Responsible
- Be respectful
- Know the Code
- Know the project
- Know your duties
- Be collaborative/good communication with Owner Rep, OSHPD Field Staff, CM, GC, Designers
- Guide for Working on Projects Under OSHPD Jurisdiction

Guest IOR
David Karina

Questions