

# Hospital Inspector of Record Session 2

## “How to Prepare for the IOR Exam”

June 03, 2020

JOE LABRIE, RCO



Inspection Services Unit

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

# Agenda

- Introduction
- What is the exam format?
- How can you best prepare for the exam?
- What happens after passing the exam?
- Who employs the IOR?
- What are the ABCs of the A, B, and C exam?
- What are an IORs Responsibilities?



# Poll questions

1. Have you taken the OSHPD IOR exam before?
  - Yes
  - No
  - No vote
2. Is your background in construction?
  - Yes
  - No
  - No vote
3. Did you register for all the IOR webinar sessions?
  - Yes
  - No
  - No vote
4. In which IOR Certification are you interested?
  - Class A
  - Class B
  - Class C
  - No vote
5. How familiar are you with OSHPD?
  - Very familiar
  - Normal familiar
  - Not so much familiar
  - No vote



# Poll questions

1. Have you taken the OSHPD IOR exam before?
  - Yes
  - No
  - No vote
2. Is your background in construction?
  - Yes
  - No
  - No vote
3. Did you register for all the IOR webinar sessions?
  - Yes
  - No
  - No vote
4. In which IOR Certification are you interested?
  - Class A
  - Class B
  - Class C
  - No vote
5. How familiar are you with OSHPD?
  - Very familiar
  - Normal familiar
  - Not so much familiar
  - No vote



# Poll questions

1. Have you taken the OSHPD IOR exam before?
  - Yes
  - No
  - No vote
2. Is your background in construction?
  - Yes
  - No
  - No vote
3. Did you register for all the IOR webinar sessions?
  - Yes
  - No
  - No vote
4. In which IOR Certification are you interested?
  - Class A
  - Class B
  - Class C
  - No vote
5. How familiar are you with OSHPD?
  - Very familiar
  - Normal familiar
  - Not so much familiar
  - No vote



# Poll questions

1. Have you taken the OSHPD IOR exam before?
  - Yes
  - No
  - No vote
2. Is your background in construction?
  - Yes
  - No
  - No vote
3. Did you register for all the IOR webinar sessions?
  - Yes
  - No
  - No vote
4. In which IOR Certification are you interested?
  - Class A
  - Class B
  - Class C
  - No vote
5. How familiar are you with OSHPD?
  - Very familiar
  - Normal familiar
  - Not so much familiar
  - No vote



# Poll questions

1. Have you taken the OSHPD IOR exam before?
  - Yes
  - No
  - No vote
2. Is your background in construction?
  - Yes
  - No
  - No vote
3. Did you register for all the IOR webinar sessions?
  - Yes
  - No
  - No vote
4. In which IOR Certification are you interested?
  - Class A
  - Class B
  - Class C
  - No vote
5. How familiar are you with OSHPD?
  - Very familiar
  - Normal familiar
  - Not so much familiar
  - No vote



# Introduction

- What is OSHPD's Inspection Services Unit (ISU)?
- Who are the people of ISU?
- How does OSHPD work with IORs?
  - Certification Examination
  - Recertification
  - Ongoing Training
  - Ongoing Monitoring
  - Corrective Measures
- How should IORs understand ISU?
- What are the Exam Sections?





# What is the exam format?

## Class A IOR Exam

- Open Book Exam
  - Code Knowledge:
    - 80 questions
    - To be answered in 4 hours
    - Weighted on Administrative Regulation and Structural Discipline
  - Plan Reading:
    - 80 questions
    - To be answered in 4 hours
    - Weighted on Structural Discipline



# What is the exam format?

## Class B IOR Exam

- Open Book Exam
  - Code Knowledge:
    - 80 questions
    - To be answered in 4 hours
    - Weighted on Administrative Regulation
  - Plan Reading:
    - 40 questions
    - To be answered in 2 hours
    - Not weighted on any one discipline



# What is the exam format?

## Class C IOR Exams

- Open Book Exam
  - 40 questions: 20 Admin and 20 Anchorage & Bracing
  - To be answered in 2 hours (1 hour for each)
  - Evenly weighed for Administrative Regulation and Anchorage and Bracing
- Plan Reading:
  - No questions



# What is the exam format?

## Sample Question - Administrative

In accordance with Section 7- 151(f),...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?** 



# Where VCR reference code is?

- CAC code has a TABLE OF CONTENTS

CHAPTER 1 ADMINISTRATIVE REGULATIONS OF THE CALIFORNIA BUILDING STANDARDS COMMISSION ..... 1	CHAPTER 11 ADMINISTRATIVE REGULATIONS FOR THE DEPARTMENT OF FOOD AND AGRICULTURE (AGR) [RESERVED] ..... 225	CHAPTER 15.7 BUREAU OF AUTOMOTIVE REPAIR [RESERVED] ..... 252	CHAPTER 15.18 BOARD OF GUIDE DOGS FOR THE BLIND [RESERVED] ..... 253	CHAPTER 15.31 BOARD OF PROFESSIONAL ENGINEERS [RESERVED] ..... 256
CHAPTER 2 ADMINISTRATIVE REGULATIONS FOR THE DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT (HCD) ..... 21	CHAPTER 12 ADMINISTRATIVE REGULATIONS FOR THE DEPARTMENT OF YOUTH AUTHORITY (YA) [RESERVED] ..... 227	CHAPTER 15.8 BOARD OF BARBER EXAMINERS [RESERVED] ..... 252	CHAPTER 15.19 HEARING AID DISPENSERS EXAMINING COMMITTEE [RESERVED] ..... 254	CHAPTER 15.32 PSYCHOLOGY EXAMINING COMMITTEE [RESERVED] ..... 256
CHAPTER 3 ADMINISTRATIVE REGULATIONS FOR THE OFFICE OF THE STATE FIRE MARSHAL (SFM) [RESERVED] ..... 23	CHAPTER 13 ADMINISTRATIVE REGULATIONS FOR THE BOARD OF STATE AND COMMUNITY CORRECTIONS (BSCC) ..... 229	CHAPTER 15.9 BOARD OF BEHAVIORAL SCIENCE EXAMINERS [RESERVED] ..... 252	CHAPTER 15.20 BUREAU OF HOME FURNISHINGS [RESERVED] ... 254	CHAPTER 15.33 BOARD OF REGISTERED NURSES [RESERVED] ..... 256
CHAPTER 4 ADMINISTRATIVE REGULATIONS FOR THE DIVISION OF THE STATE ARCHITECT— STRUCTURAL SAFETY (DSA-SS) ..... 25	CHAPTER 14 ADMINISTRATIVE REGULATIONS FOR THE DEPARTMENT OF EDUCATION (DOE) [RESERVED] ..... 249	CHAPTER 15.10 CEMETERY BOARD [RESERVED] ..... 252	CHAPTER 15.21 BOARD OF LANDSCAPE ARCHITECTS [RESERVED] .... 254	CHAPTER 15.34 RESPIRATORY CARE EXAMINING COMMITTEE [RESERVED] ..... 256
CHAPTER 5 ACCESS TO PUBLIC BUILDINGS BY PERSONS WITH DISABILITIES. .... 77	CHAPTER 15.1 ADMINISTRATIVE REGULATIONS FOR THE DEPARTMENT OF CONSUMER AFFAIRS (CA) BOARD OF ACCOUNTANCY [RESERVED] ..... 251	CHAPTER 15.11 BUREAU OF COLLECTION AND INVESTIGATIVE SERVICES [RESERVED] ..... 252	CHAPTER 15.22 BOARD OF MEDICAL QUALITY ASSURANCE [RESERVED] ..... 254	CHAPTER 15.35 BOARD OF CERTIFIED SHORTHAND REPORTERS [RESERVED] ..... 256
CHAPTER 6 SEISMIC EVALUATION PROCEDURES FOR HOSPITAL BUILDINGS ..... 83	CHAPTER 15.2 ACUPUNCTURE EXAMINING COMMITTEE [RESERVED] ..... 251	CHAPTER 15.12 CONTRACTORS' STATE LICENSE BOARD [RESERVED] ..... 252	CHAPTER 15.23 BOARD OF NURSING HOME ADMINISTRATORS [RESERVED] ..... 254	CHAPTER 15.36 SPEECH PATHOLOGY AND AUDIOLOGY EXAMINING COMMITTEE [RESERVED] ..... 256
<b>CHAPTER 7 SAFETY STANDARDS FOR HEALTH FACILITIES ..... 149</b>	CHAPTER 15.3 DIVISION OF ALLIED HEALTH PROFESSIONS [RESERVED] .... 251	CHAPTER 15.13 BOARD OF COSMETOLOGY [RESERVED] ..... 253	CHAPTER 15.24 BOARD OF OPTOMETRY [RESERVED] ..... 254	CHAPTER 15.37 STRUCTURAL PEST CONTROL BOARD [RESERVED] ..... 257
CHAPTER 8 ADMINISTRATIVE REGULATIONS FOR THE CALIFORNIA DEPARTMENT OF PUBLIC HEALTH (CDPH) ..... 189	CHAPTER 15.4 BOARD OF ARCHITECTURAL EXAMINERS [RESERVED] ..... 251	CHAPTER 15.14 BOARD OF DENTAL EXAMINERS [RESERVED] ..... 253	CHAPTER 15.25 BUREAU OF PERSONNEL SERVICES [RESERVED] ..... 255	CHAPTER 15.38 TAX PREPARERS PROGRAM [RESERVED] ..... 257
CHAPTER 9 ADMINISTRATIVE REGULATIONS FOR THE OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD (OSHA) [RESERVED] ..... 195	CHAPTER 15.5 ATHLETIC COMMISSION [RESERVED] ..... 251	CHAPTER 15.15 BUREAU OF ELECTRONIC AND APPLIANCE REPAIR [RESERVED] ..... 253	CHAPTER 15.26 BOARD OF PHARMACY [RESERVED] ..... 255	CHAPTER 15.39 BOARD OF EXAMINERS IN VETERINARY MEDICINE [RESERVED] ..... 257
CHAPTER 10 ADMINISTRATIVE REGULATIONS FOR THE CALIFORNIA ENERGY COMMISSION (CEC) ..... 197	CHAPTER 15.6 AUCTIONEER COMMISSION [RESERVED] ..... 251	CHAPTER 15.16 BOARD OF FUNERAL DIRECTORS AND EMBALMERS [RESERVED] ..... 253	CHAPTER 15.27 PHYSICAL THERAPY EXAMINING COMMITTEE [RESERVED] ..... 255	CHAPTER 15.40 BOARD OF VOCATIONAL NURSE AND PSYCHIATRIC TECHNICIAN EXAMINERS [RESERVED] ..... 257
		CHAPTER 15.17 BOARD OF REGISTRATION FOR GEOLOGISTS AND GEOPHYSICISTS [RESERVED] ..... 253	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 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.

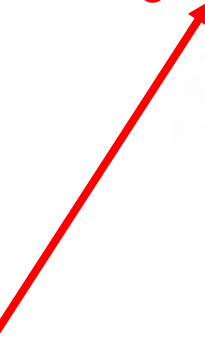
7-151. Verified compliance reports.

(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



# What is the exam format?

## Sample Question - Electrical

Utilization equipment weighing not more than \_\_\_\_\_ shall be permitted to be supported on other boxes or plaster rings that are secured to other boxes, provided the equipment or its supporting yoke is secured to the box with no fewer than two No. \_\_\_\_\_ screws.

- a) 5 lbs, 8 or larger
- b) 6 lbs, 6 or larger
- c) 6 lbs, 8 or larger
- d) 4 lbs, 6 or larger

How to look for the response?





# Where to look for Utilization Equipment and Boxes?

## CONTENTS

Contents		ARTICLE		ARTICLE	
ARTICLE		ARTICLE		ARTICLE	
89	General Code Provisions . . . . .	70-1	240	Overcurrent Protection . . . . .	70-99
90	Introduction . . . . .	70-21	Part I	General . . . . .	70-99
<b>Chapter 1 General</b>					
100	Definitions . . . . .	70-27	Part II	Location . . . . .	70-103
Part I	General . . . . .	70-27	Part III	Enclosures . . . . .	70-106
Part II	Over 1000 Volts, Nominal . . . . .	70-38	Part IV	Disconnecting and Guarding . . . . .	70-106
110	Requirements for Electrical		Part V	Plug Fuses, Fuseholders, and Adapters . . . . .	70-107
	Installations . . . . .	70-39	Part VI	Cartridge Fuses and Fuseholders . . . . .	70-107
Part I	General . . . . .	70-39	Part VII	Circuit Breakers . . . . .	70-108
Part II	1000 Volts, Nominal, or Less . . . . .	70-43	Part VIII	Supervised Industrial Installations . . . . .	70-109
Part III	Over 1000 Volts, Nominal . . . . .	70-46	Part IX	Overcurrent Protection Over	
Part IV	Tunnel Installations over 1000 Volts,			1000 Volts, Nominal . . . . .	70-111
	Nominal . . . . .	70-49	250	Grounding and Bonding . . . . .	70-111
Part VIII	Manholes and Other Electrical Enclosures		Part I	General . . . . .	70-111
	Intended for Personnel Entry . . . . .	70-50	Part II	System Grounding . . . . .	70-114
<b>Chapter 2 Wiring and Protection</b>					
200	Use and Identification of Grounded		Part III	Grounding Electrode System and	
	Conductors . . . . .	70-57		Grounding Electrode Conductor . . . . .	70-121
210	Branch Circuits . . . . .	70-59	Part IV	Enclosure, Raceway, and Service	
Part I	General Provisions . . . . .	70-59		Cable Connections . . . . .	70-126
Part II	Branch-Circuit Ratings . . . . .	70-64	Part V	Bonding . . . . .	70-127
Part III	Required Outlets . . . . .	70-67	Part VI	Equipment Grounding and Equipment	
215	Feeders . . . . .	70-71		Grounding Conductors . . . . .	70-131
220	Branch-Circuit, Feeder, and Service		Part VII	Methods of Equipment Grounding . . . . .	70-136
	Load Calculations . . . . .	70-74	Part VIII	Direct-Current Systems . . . . .	70-138
Part I	General . . . . .	70-74	Part IX	Instruments, Meters, and Relays . . . . .	70-139
Part II	Branch-Circuit Load Calculations . . . . .	70-74	Part X	Grounding of Systems and Circuits	
Part III	Feeder and Service Load Calculations . . . . .	70-76		of over 1000 Volts . . . . .	70-140
Part IV	Optional Feeder and Service Load		280	Surge Arresters, Over 1000 Volts . . . . .	70-143
	Calculations . . . . .	70-78	Part I	General . . . . .	70-143
Part V	Farm Load Calculations . . . . .	70-82	Part II	Installation . . . . .	70-144
225	Outside Branch Circuits and Feeders . . . . .	70-83	285	Surge-Protective Devices (SPDs),	
Part I	General . . . . .	70-83		1000 Volts or Less . . . . .	70-144
Part II	Buildings or Other Structures Supplied		Part I	General . . . . .	70-144
	by a Feeder(s) or Branch Circuit(s) . . . . .	70-86	Part II	Installation . . . . .	70-145
Part III	Over 1000 Volts . . . . .	70-88	<b>Chapter 3 Wiring Methods and Materials</b>		
230	Services . . . . .	70-89	300	General Requirements for Wiring Methods	
Part I	General . . . . .	70-89		and Materials . . . . .	70-159
Part II	Overhead Service Conductors . . . . .	70-91	Part I	General Requirements . . . . .	70-159
Part III	Underground Service Conductors . . . . .	70-92	Part II	Requirements for over 1000 Volts,	
Part IV	Service-Entrance Conductors . . . . .	70-92		Nominal . . . . .	70-169
Part V	Service Equipment — General . . . . .	70-95		Conductors for General Wiring . . . . .	70-171
Part VI	Service Equipment — Disconnecting		Part I	General . . . . .	70-171
	Means . . . . .	70-95	Part II	Installation . . . . .	70-171
Part VII	Service Equipment — Overcurrent		Part III	Construction Specifications . . . . .	70-181
	Protection . . . . .	70-97	312	Cabinets, Cutout Boxes, and Meter	
Part VIII	Services Exceeding 1000 Volts,			Socket Enclosures . . . . .	70-196
	Nominal . . . . .	70-98	Part I	Scope and Installation . . . . .	70-196
			Part II	Construction Specifications . . . . .	70-198
			314	Outlet, Device, Pull, and Junction Boxes;	
				Conduit Bodies; Fittings; and Handhole	
				Enclosures . . . . .	70-200
			Part I	Scope and General . . . . .	70-200
			Part II	Installation . . . . .	70-200
			Part III	Construction Specifications . . . . .	70-207
			Part IV	Pull and Junction Boxes, Conduit Bodies,	
				and Handhole Enclosures for Use on	
				Systems over 1000 Volts, Nominal . . . . .	70-208
			320	Armored Cable: Type AC . . . . .	70-209
			Part I	General . . . . .	70-209
			Part II	Installation . . . . .	70-209
			Part III	Construction Specifications . . . . .	70-210
			322	Flat Cable Assemblies: Type FC . . . . .	70-210
			Part I	General . . . . .	70-210
			Part II	Installation . . . . .	70-210
			Part III	Construction Specifications . . . . .	70-211
			324	Flat Conductor Cable: Type FCC . . . . .	70-211
			Part I	General . . . . .	70-211
			Part II	Installation . . . . .	70-212
			Part III	Construction Specifications . . . . .	70-213
			326	Integrated Gas Spacer Cable: Type IGS . . . . .	70-213
			Part I	General . . . . .	70-213
			Part II	Installation . . . . .	70-213
			Part III	Construction Specifications . . . . .	70-214
			328	Medium Voltage Cable: Type MV . . . . .	70-214
			Part I	General . . . . .	70-214
			Part II	Installation . . . . .	70-214
			Part III	Construction Specifications . . . . .	70-215
			330	Metal-Clad Cable: Type MC . . . . .	70-215
			Part I	General . . . . .	70-215
			Part II	Installation . . . . .	70-215
			Part III	Construction Specifications . . . . .	70-216
			332	Mineral-Insulated, Metal-Sheathed	
				Cable: Type MI . . . . .	70-217
			Part I	General . . . . .	70-217
			Part II	Installation . . . . .	70-217
			Part III	Construction Specifications . . . . .	70-218
			334	Nonmetallic-Sheathed Cable:	
				Types NM, NMC, and NMS . . . . .	70-218
			Part I	General . . . . .	70-218
			Part II	Installation . . . . .	70-218
			Part III	Construction Specifications . . . . .	70-220
			336	Power and Control Tray Cable:	
				Type TC . . . . .	70-221
			Part I	General . . . . .	70-221
			Part II	Installation . . . . .	70-221
			Part III	Construction Specifications . . . . .	70-222
			338	Service-Entrance Cable: Types SE	
				and USE . . . . .	70-222
			Part I	General . . . . .	70-222
			Part II	Installation . . . . .	70-222
			Part III	Construction Specifications . . . . .	70-223
			340	Underground Feeder and Branch-Circuit	
				Cable: Type UF . . . . .	70-223
			Part I	General . . . . .	70-223
			Part II	Installation . . . . .	70-223
			Part III	Construction Specifications . . . . .	70-224
			342	Intermediate Metal Conduit: Type IMC . . . . .	70-224
			Part I	General . . . . .	70-224
			Part II	Installation . . . . .	70-224
			Part III	Construction Specifications . . . . .	70-225
			344	Rigid Metal Conduit: Type RMC . . . . .	70-225
			Part I	General . . . . .	70-225
			Part II	Installation . . . . .	70-226
			Part III	Construction Specifications . . . . .	70-227
			348	Flexible Metal Conduit: Type FMC . . . . .	70-227
			Part I	General . . . . .	70-227
			Part II	Installation . . . . .	70-227
			350	Liquidtight Flexible Metal Conduit:	
				Type LFMC . . . . .	70-229
			Part I	General . . . . .	70-229
			Part II	Installation . . . . .	70-229
			Part III	Construction Specifications . . . . .	70-230
			352	Rigid Polyvinyl Chloride Conduit:	
				Type PVC . . . . .	70-230
			Part I	General . . . . .	70-230
			Part II	Installation . . . . .	70-230
			Part III	Construction Specifications . . . . .	70-232
			353	High Density Polyethylene Conduit:	
				Type HDPE Conduit . . . . .	70-232
			Part I	General . . . . .	70-232
			Part II	Installation . . . . .	70-233
			Part III	Construction Specifications . . . . .	70-233
			354	Nonmetallic Underground Conduit with	
				Conductors: Type NUCC . . . . .	70-234
			Part I	General . . . . .	70-234
			Part II	Installation . . . . .	70-234
			Part III	Construction Specifications . . . . .	70-235
			355	Reinforced Thermosetting Resin Conduit:	
				Type RTRC . . . . .	70-235
			Part I	General . . . . .	70-235
			Part II	Installation . . . . .	70-235
			Part III	Construction Specifications . . . . .	70-236
			356	Liquidtight Flexible Nonmetallic	
				Conduit: Type LFNC . . . . .	70-237
			Part I	General . . . . .	70-237
			Part II	Installation . . . . .	70-237
			Part III	Construction Specifications . . . . .	70-238
			358	Electrical Metallic Tubing: Type EMT . . . . .	70-239
			Part I	General . . . . .	70-239
			Part II	Installation . . . . .	70-239
			Part III	Construction Specifications . . . . .	70-240
			360	Flexible Metallic Tubing: Type FMT . . . . .	70-240
			Part I	General . . . . .	70-240
			Part II	Installation . . . . .	70-240
			Part III	Construction Specifications . . . . .	70-241

# Where to look for Utilization Equipment and Boxes?

314.28 ARTICLE 314 — OUTLET, DEVICE, PULL, AND JUNCTION BOXES; CONDUIT BODIES; FITTINGS; AND HANDHOLE ENCLOSURES

(C) **Boxes at Ceiling-Suspended (Paddle) Fan Outlets.** Outlet boxes or outlet box systems used as the sole support of a ceiling-suspended (paddle) fan shall be listed, shall be marked by their manufacturer as suitable for this purpose, and shall not support ceiling-suspended (paddle) fans that weigh more than 32 kg (70 lb). For outlet boxes or outlet box systems designed to support ceiling-suspended (paddle) fans that weigh more than 16 kg (35 lb), the required marking shall include the maximum weight to be supported.

Where spare, separately switched, ungrounded conductors are provided to a ceiling-mounted outlet box, in a location acceptable for a ceiling-suspended (paddle) fan in one-family, two-family, or multifamily dwellings, the outlet box or outlet box system shall be listed for sole support of a ceiling-suspended (paddle) fan.

(D) **Utilization Equipment.** Boxes used for the support of utilization equipment other than ceiling-suspended (paddle) fans shall meet the requirements of 314.27(A) for the support of utilization equipment.

Exception: Utilization equipment weighing not more than 3 kg (6 lb) shall be permitted to be supported on other boxes or plaster rings that are secured to other boxes, provided the equipment or its supporting yoke is secured to the box with no fewer than two No. 6 or larger screws.

(E) **Separable Attachment Fittings.** Outlet boxes required in 314.27 shall be permitted to support listed locking support and mounting receptacles used in combination with compatible attachment fittings. The combination shall be identified for the support of equipment within the weight and mounting orientation limits of the listing. Where the supporting receptacle is installed within a box, it shall be included in the fill calculation covered in 314.16(B)(4).

**314.28 Pull and Junction Boxes and Conduit Bodies.** Boxes and conduit bodies used as pull or junction boxes shall comply with 314.28(A) through (E).

Exception: Terminal housings supplied with motors shall comply with the provisions of 430.12.

(A) **Minimum Size.** For raceways containing conductors of 4 AWG or larger that are required to be insulated, and for cables containing conductors of 4 AWG or larger, the minimum dimensions of pull or junction boxes installed in a raceway or cable run shall comply with 314.28(A)(1) through (A)(3). Where an enclosure dimension is to be calculated based on the diameter of entering raceways, the diameter shall be the metric designator (trade size) expressed in the units of measurement employed.

(1) **Straight Pulls.** In straight pulls, the length of the box or conduit body shall not be less than eight times the metric designator (trade size) of the largest raceway.

(2) **Angle or U Pulls, or Splices.** Where splices or where angle or U pulls are made, the distance between each raceway

entry inside the box or conduit body and the opposite wall of the box or conduit body shall not be less than six times the metric designator (trade size) of the largest raceway in a row. This distance shall be increased for additional entries by the amount of the sum of the diameters of all other raceway entries in the same row on the same wall of the box. Each row shall be calculated individually, and the single row that provides the maximum distance shall be used.

Exception: Where a raceway or cable entry is in the wall of a box or conduit body opposite a removable cover, the distance from that wall to the cover shall be permitted to comply with the distance required for one wire per terminal in Table 312.6(A).

The distance between raceway entries enclosing the same conductor shall not be less than six times the metric designator (trade size) of the larger raceway.

When transposing cable size into raceway size in 314.28(A)(1) and (A)(2), the minimum metric designator (trade size) raceway required for the number and size of conductors in the cable shall be used.

(3) **Smaller Dimensions.** Listed boxes or listed conduit bodies of dimensions less than those required in 314.28(A)(1) and (A)(2) shall be permitted for installations of combinations of conductors that are less than the maximum conduit or tubing fill (of conduits or tubing being used) permitted by Table 1 of Chapter 9.

Listed conduit bodies of dimensions less than those required in 314.28(A)(2), and having a radius of the curve to the centerline not less than that indicated in Table 2 of Chapter 9 for one-shot and full-shoe benders, shall be permitted for installations of combinations of conductors permitted by Table 1 of Chapter 9. These conduit bodies shall be marked to show they have been specifically evaluated in accordance with this provision.

Where the permitted combinations of conductors for which the box or conduit body has been listed are less than the maximum conduit or tubing fill permitted by Table 1 of Chapter 9, the box or conduit body shall be permanently marked with the maximum number and maximum size of conductors permitted. For other conductor sizes and combinations, the total cross-sectional area of the fill shall not exceed the cross-sectional area of the conductors specified in the marking, based on the type of conductor identified as part of the product listing.

Informational Note: Unless otherwise specified, the applicable product standards evaluate the fill markings covered here based on conductors with Type XHHW insulation.

(B) **Conductors in Pull or Junction Boxes.** In pull boxes or junction boxes having any dimension over 1.8 m (6 ft), all conductors shall be cabled or racked up in an approved manner.

(C) **Covers.** All pull boxes, junction boxes, and conduit bodies shall be provided with covers compatible with the box or conduit body construction and suitable for the conditions of use. Where used, metal covers shall comply with the grounding requirements of 250.110.

Exception: Utilization equipment weighing not more than 3 kg (6 lb) shall be permitted to be supported on other boxes or plaster rings that are secured to other boxes, provided the equipment or its supporting yoke is secured to the box with no fewer than two No. 6 or larger screws.



The question is:

Utilization equipment weighing not more than \_\_\_\_\_ shall be permitted to be supported on other boxes or plaster rings that are secured to other boxes, provided the equipment or its supporting yoke is secured to the box with no fewer than two No. \_\_\_\_\_ screws.

Responses:

- a) 5 lbs, 8 or larger
- b) 6 lbs, 6 or larger
- c) 6 lbs, 8 or larger
- d) 4 lbs, 6 or larger



# What is the exam format?

## Sample Question - Plumbing

Test gauges used during pressure testing of plumbing systems shall have a pressure range not exceeding \_\_\_\_\_ the test pressure applied.

- a) Twice
- b) Three times
- c) Four times
- d) Six times

**How to look for the response?**



# Where to look for Pressure Range?

312.6	Freezing Protection	.50	401.1	Applicability	.57
312.7	Fire-Resistant Construction	.50	401.2	Quality of Fixtures	.57
312.8	Waterproofing of Openings	.50	401.3	Water-Conserving Fixtures and Fittings	.57
312.9	Steel Nail Plates	.50		Installation	.57
312.10	Sleeves	.50	402.0	Cleaning	.57
312.11	Structural Members	.50	402.1	Joints	.57
312.12	Rodentproofing	.50	402.2	Securing Fixtures	.57
313.0	Hangers and Supports	.51	402.3	Wall-Hung Fixtures	.57
313.1	General	.51	402.4	Setting	.57
313.2	Material	.51	402.5	Flanged Fixture Connections	.57
313.3	Suspended Piping	.51	402.6	Supply Fittings	.58
313.4	Alignment	.51	402.7	Installation	.58
313.5	Underground Installation	.51	402.8	Design and Installation of Plumbing Fixtures	.58
313.6	Hanger Rod Sizes	.51	402.9	Slip Joint Connections	.58
Table 313.6	Hanger Rod Sizes	.51	402.11	Future Fixtures	.58
313.7	Gas Piping	.51	402.10	Accessible Plumbing Facilities	.58
314.0	Trenching, Excavation, and Backfill	.51	403.0	General	.58
	Trenches	.51	403.1	Fixtures and Fixture Fittings for Persons with Disabilities	.58
314.1	Trenching and Driving	.51	403.2	Exposed Pipes and Surfaces	.58
314.2	Open Trenches	.51	403.3	Waste Fittings and Overflows	.58
314.3	Excavations	.51	403.4	Waste Fittings	.58
314.4	Joints and Connections	.51	404.0	Overflows	.58
315.0	Unions	.51	404.1	Prohibited Fixtures	.58
315.1	Prohibited Joints and Connections	.51	404.2	Prohibited Water Closets	.58
315.2	Increases and Reducers	.52	405.1	Prohibited Urinals	.58
316.0	General	.52	405.2	Miscellaneous Fixtures	.58
317.0	Food-Handling Establishments	.52	405.3	Special Fixtures and Specialties	.58
317.1	General	.52	406.0	Water and Waste Connections	.58
Table 313.3	Hangers and Supports	.52	406.1	Special Use Sinks	.59
318.0	Test Gauges	.53	406.2	Special Use Fixtures	.59
318.1	General	.53	406.3	Zinc Alloy Components	.59
318.2	Pressure Tests (10 psi or less)	.53	406.4	Lavatories	.59
318.3	Pressure Tests (greater than 10 psi to 100 psi)	.53	407.0	Application	.59
318.4	Pressure Tests (exceeding 100 psi)	.53	407.1	Water Consumption	.59
318.5	Pressure Range	.53	407.2	Limitation of Hot Water Temperature for Public Lavatories	.59
319.0	Medical Gas and Vacuum Systems	.53	407.3	Transient Public Lavatories	.59
	General	.53	407.4	Waste Outlet	.59
319.1	General	.53	407.5	Overflow	.59
320.0	Rehabilitation of Piping Systems	.53	407.6	Showers	.59
320.1	General	.53	408.0	Application	.59
321.0	Essential Plumbing Provisions	.53	408.1	Water Consumption	.59
322.0	Psychiatric Services	.53	408.2	Individual Shower and Tub-Shower Combination	.59
			408.3	Control Valves	.59
CHAPTER 4	PLUMBING FIXTURES AND FIXTURE FITTINGS	.55	408.4	Waste Outlet	.60
401.0	General	.57			

joints and shall be installed to connect to the nearest adequately sized vertical stack with the provisions as follows:

- (1) Openings through floors over such areas shall be sealed watertight to the floor construction.
- (2) Floor and shower drains installed above such areas shall be equipped with integral seepage pans.
- (3) Soil or drain pipes shall be of an approved material as listed in Table 1701.1 and Section 701.2. Materials shall comply with established standards. Cleanouts shall be extended through the floor construction above.
- (4) Piping subject to operation at temperatures that will form condensation on the exterior of the pipe shall be thermally insulated.
- (5) Where pipes are installed in ceilings above such areas, the ceiling shall be of the removable type or shall be provided with access panels to form a ready access for inspection of piping.

### 318.0 Test Gauges.

**318.1 General.** Tests in accordance with this code, which are performed utilizing dial gauges, shall be limited to gauges having the following pressure graduations or increments.

**318.2 Pressure Tests (10 psi or less).** Required pressure tests of 10 pounds-force per square inch (psi) (69 kPa) or less shall be performed with gauges of 0.10 psi (0.69 kPa) incrementation or less.

**318.3 Pressure Tests (greater than 10 psi to 100 psi).** Required pressure tests exceeding 10 psi (69 kPa) but less than or equal to 100 psi (689 kPa) shall be performed with gauges of 1 psi (7 kPa) incrementation or less.

**318.4 Pressure Tests (exceeding 100 psi).** Required pressure tests exceeding 100 psi (689 kPa) shall be performed with gauges incrementated for 2 percent or less of the required test pressure.

**318.5 Pressure Range.** Test gauges shall have a pressure range not exceeding twice the test pressure applied.

### 319.0 [Not permitted for OSHPD 1, 1R, 2, 3, 4 & 5] Medical Gas and Vacuum Systems.

**319.1 General.** Such piping shall be in accordance with the requirements of Chapter 13. The Authority Having Jurisdiction shall require evidence of the competency of the installers and verifiers.

### 320.0 Rehabilitation of Piping Systems.

**320.1 General.** Where pressure piping systems are rehabilitated using an epoxy lining system, it shall be in accordance with ASTM F2831.

### 321.0 Essential Plumbing Provisions. [OSHPD 1, 1R, 2, 3 (surgical clinics), 4 & 5] During periods of power outages essential electrical power shall be provided for the following equipment:

- (1) Domestic water booster pumps.
- (2) Domestic hot water circulating pumps.

- (3) Sewage ejector pumps.
- (4) Sump pumps and drainage pumps.
- (5) Domestic water heating equipment and their controls.
- (6) Fuel pumps.
- (7) Grease removal devices requiring electrical power.

**322.0 Psychiatric Services [OSHPD 1, 1R, 2, 4 & 5].** For projects associated with provision of psychiatric services in acute psychiatric hospitals, general acute-care hospitals, and special treatment program service units in skilled nursing facilities, special design considerations for injury and suicide prevention shall be given to shower, bath, toilet, and sink plumbing fixtures. Shower heads shall be of flush-mounted design to minimize anchor points.

**318.5 Pressure Range.** Test gauges shall have a pressure range not exceeding twice the test pressure applied.

The Question is:  
Test gauges used during pressure testing of plumbing systems shall have a pressure range not exceeding \_\_\_\_\_ the test pressure applied.

- Twice ✓
- Three times
- Four times
- Six times



# What is the exam format?

## Sample Question – Plan Reading

In Detail 16, Sill Detail at openings, for openings between 8'-3" and 12'-0" which is the size of the SMS?

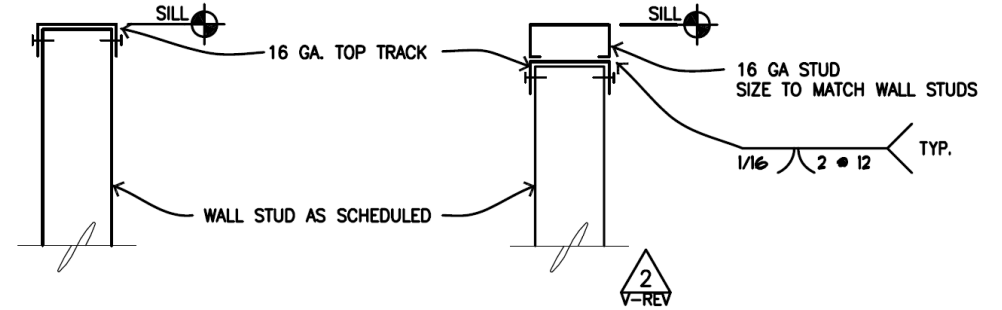
- a) #2
- b) #4
- c) #8
- d) #10

**How to look for the response?**



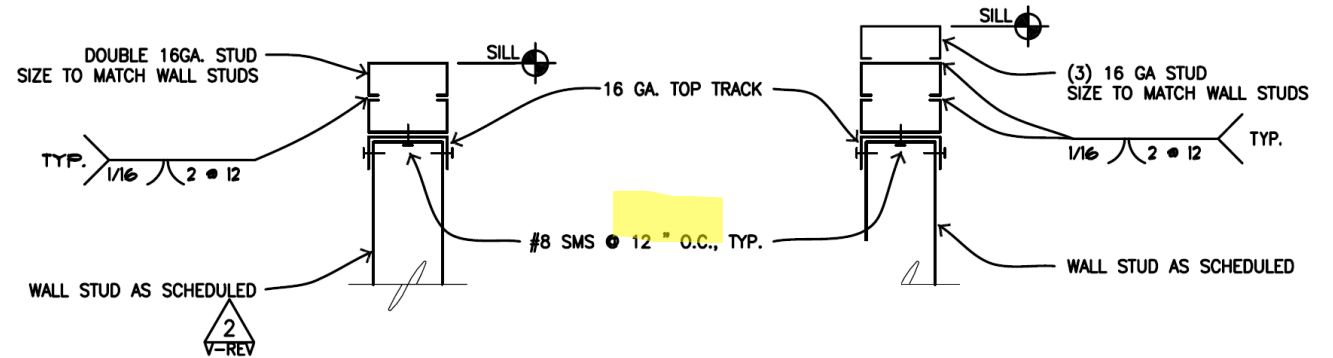
In Sill Detail at openings, for openings between 8'-3" and 12'-0" which is the # of the SMS?

- a) 2
- b) 4
- c) 8
- d) 10



A. UP TO 4'-0" OPENING

B. 4'-1" TO 8'-3" OPENING



C. >8'-3" TO 12'-0" OPENING

D. 12'-1" TO 16'-0" OPENING

16 SILL DETAIL AT OPENINGS  
NTS

SILL DETAIL

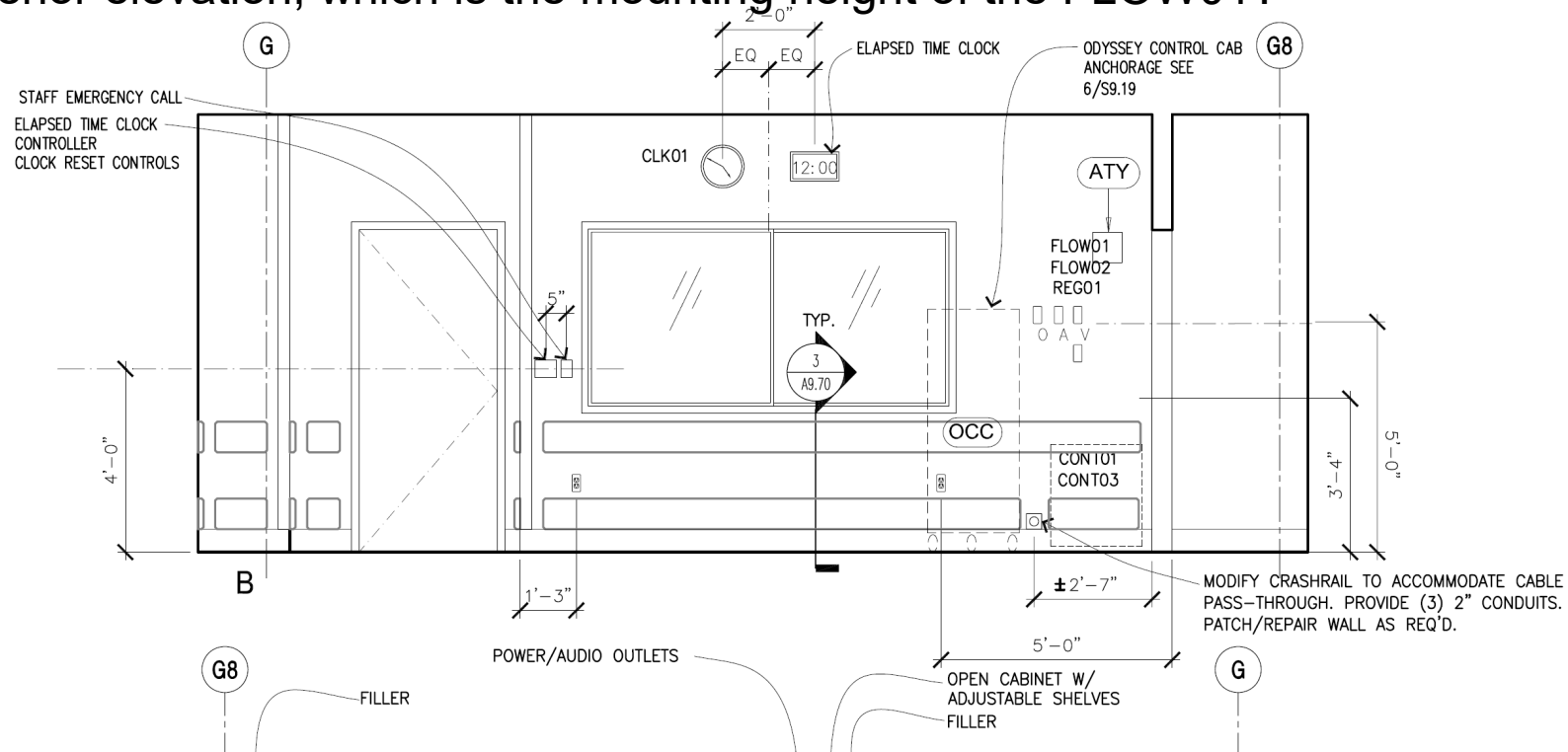


# What is the exam format?

## Sample Question – Plan Reading

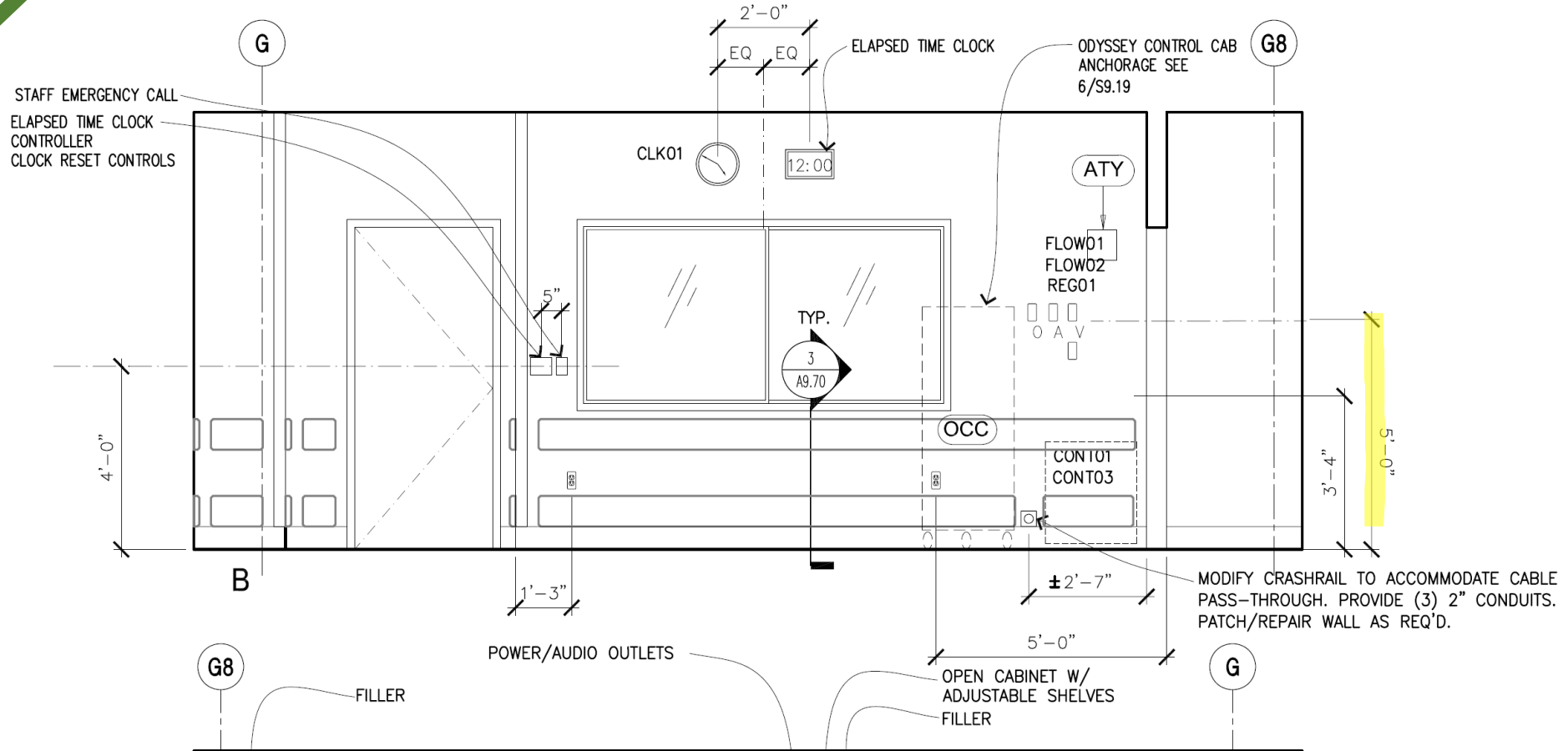
At the provided interior elevation, which is the mounting height of the FLOW01?

- a) 3' – 4"
- b) 2' – 7"
- c) 5' – 0"
- d) 1' – 3"



At the provided interior elevation, which is the mounting height of the FLOW01?

- a) 3' - 4"
- b) 2' - 7"
- c) 5' - 0" ✓
- d) 1' - 3"

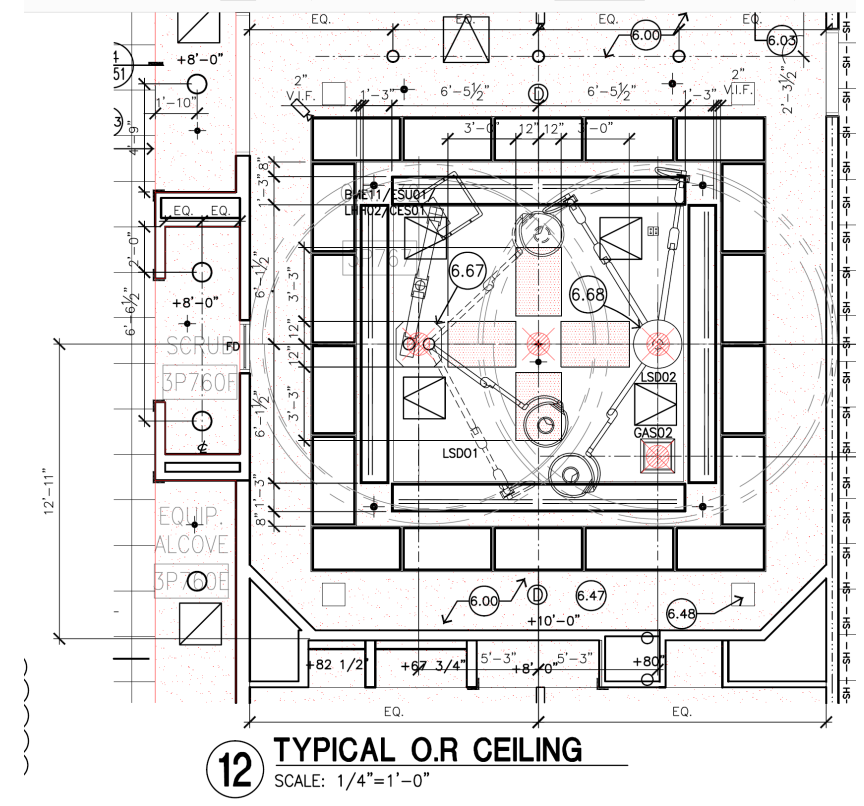




# Sample Question – Plan Reading

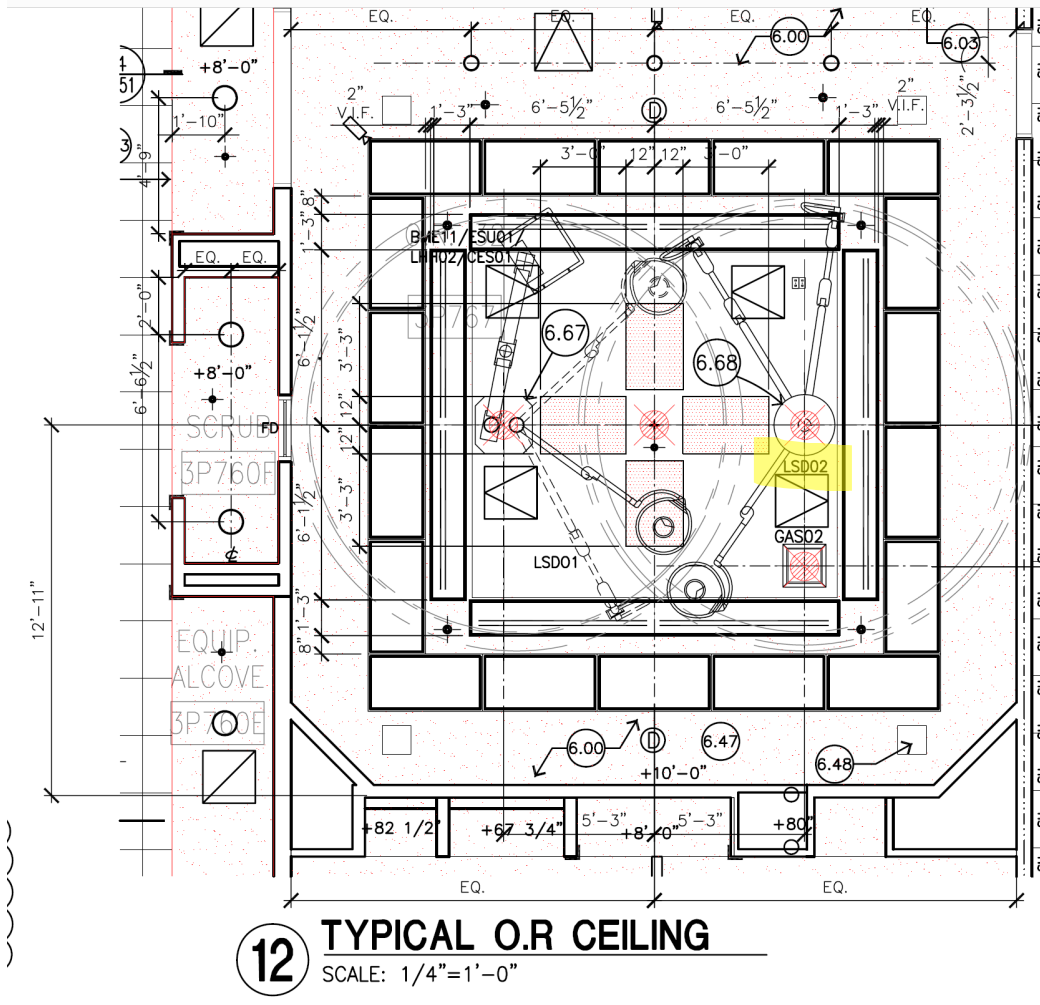
In the Typical O.R. Ceiling, in which note is there information for the LSD02?

- a) 6.00
- b) 6.34
- c) 6.67
- d) 6.68



In the Typical O.R. Ceiling, in which note is there information for the LSD02?

- a) 6.00
- b) 6.34
- c) 6.67
- d) **6.68**



### SHEET NOTES

- 6.00 GYPSUM BOARD CEILING OVER METAL FRAMING
- 6.01 CEILING MOUNTED CURTAIN TRACK
- 6.03 EDGE OF GYPSUM BOARD SOFFIT
- 6.06 SURGICAL LIGHT SUPPORT, REFERS TO <sup>14</sup>A12.09
- 6.07 MED. GAS DEVICE SUPPORT, REFERS TO <sup>17</sup>A12.09
- 6.13 24" X 24" ACCESS DOOR, REFER TO <sup>17</sup>A9.51
- 6.29 START POINT FOR CEILING GRID SYSTEM. CENTER PANEL IN ROOM AS SHOWN AND CONTINUE GRID AS SHOWN.
- 6.31 FOR TYPICAL EXAM ROOM DIMENSIONS SEE DETAIL <sup>7&8</sup>A6.20
- 6.34 CEILING MOUNTED CAMERA
- 6.38 FOR TYPICAL GROUND LEVEL RESTROOM DIMENSIONS SEE DETAIL <sup>4</sup>A6.20
- 6.39 FOR TYPICAL RESTROOM DIMENSIONS SEE DETAIL <sup>11</sup>A6.20
- 6.43 36" WALL MOUNTED LIGHT FIXTURE @ 7'-0" A.F.F.. CENTER OVER SINK.
- 6.47 FOR TYPICAL O.R. DIMENSIONS SEE DTL <sup>12</sup>A6.20
- 6.48 CEILING MOUNTED SPEAKER
- 6.49 SUPPLY AIR DIFFUSER, SEE MECH.
- 6.50 RETURN AIR DIFFUSER, SEE MECH.
- 6.54 FOR TYPICAL RECOVERY ROOM DIMENSIONS SEE DTL <sup>17</sup>A6.20
- 6.67 24"x24" TANDEM EQUIPMENT SUPPORT PLATE. S.S.D.
- 6.68 EQUIPMENT (LSD02) SUPPORT PLATE. S.S.D.**



# How can you best prepare for the exam?

- Code Knowledge
  - High level study of the Codes.
    - Gather all of the applicable code books and reference materials you will need.
    - Review table of contents to familiarize yourself with how to find different areas of interest quickly
    - Highlight key code section titles that include a health facilities content
    - Tab each code book for quick and easy navigation to key sections related to health facilities
    - Talk with others that have taken the test to understand what to expect
    - Use the TIO template as a guide for important items to know
    - Commit time and energy to study for the exam every day



# How can you best prepare for the exam?

- Plan Reading
  - Understand the general organization of plans
    - Study the organization of plans from projects on which you have worked
    - Familiarize yourself with the Table of Contents on the Title Sheet
    - Understand the meaning of project symbols and abbreviations
    - Ask questions of others about any areas of plan reading that you need to strengthen
    - Commit time and energy to study plan reading every day to prepare for the exam

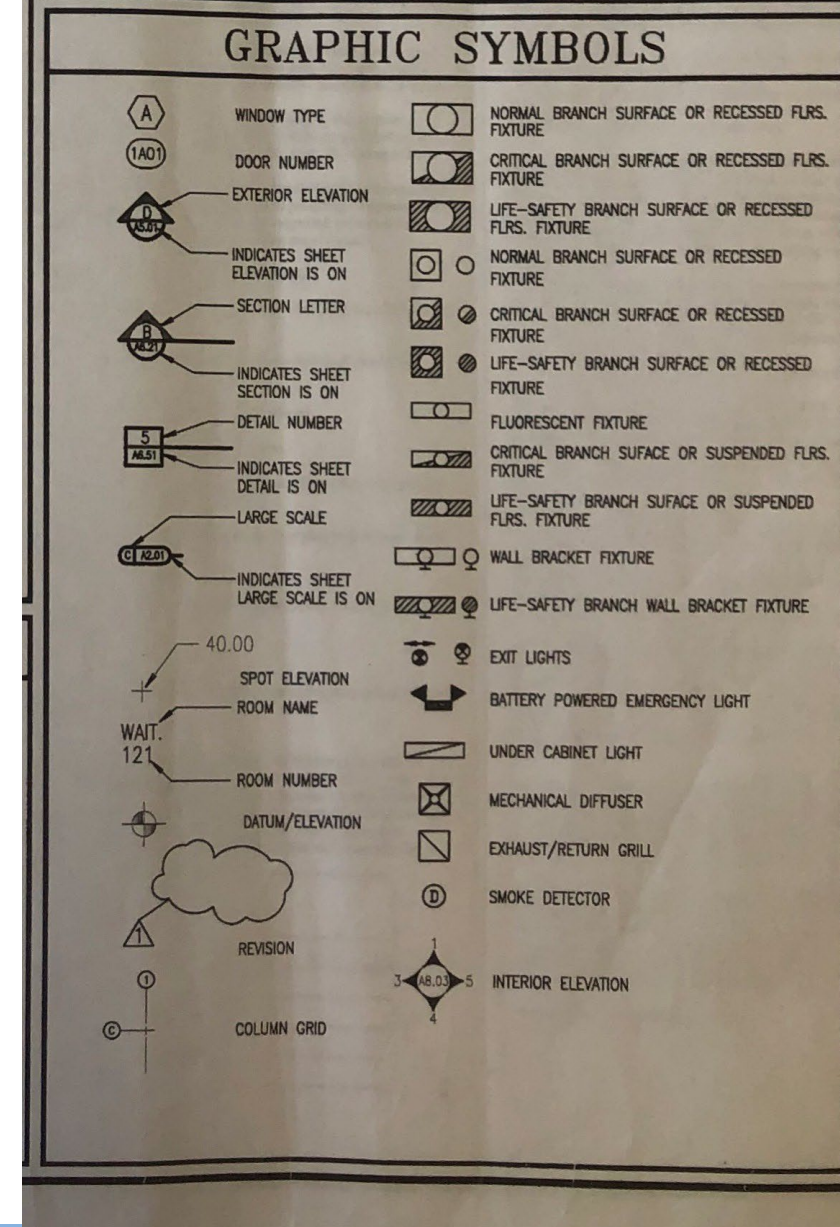


# How can you best prepare for the exam?

## Know the Symbols

Each sheet has different symbols i.e.:




























- Cover sheet
- Elec. Mech. Plumb. Struc....
- Door / window schedules
- Fire Prevention etc.



# How can you best prepare for the exam?

Know Material Designations.

Like prior slide, each trade has their own different symbols

MATERIAL DESIGNATIONS		
	<u>ELEVATION/PLAN</u>	
TENER		
NOT	 CERAMIC TILE/ QUARRY TILE	 BRICK
DOT	 CONCRETE/PLASTER	 GLAZING
ICH		 CONCRETE BLOCK
		<u>CEILING</u>
	 LAY IN ACOUSTICAL TILE	 GYPSUM
	 CLEAN ROOM TYPE LAY IN TILE	
		<u>SECTION</u>
	 EARTH	 MARBLE
	 ROCK	 GRANULAR FILL
	 WOOD BLOCKING	 BRICK
	 FINISHED WOOD	 TERRAZZO
	 BATT INSULATION	 LIGHTWEIGHT CONCRETE
	 CONCRETE BLOCK	 STRUCTURAL CONCRETE
	 CUT STONE	 RIGID INSULATION
	 METAL (LARGE SCALE)	 PLYWOOD (LARGE SCALE)
	 PARTICLE BD.	 GYPSUM BD./ PLASTER/STUCCO
	 EXTERIOR INSUL.	



# How can you best prepare for the exam?

Know the abbreviations.

Like prior slides, each discipline has their own different abbreviations

ABBREVIATIONS					
AB	ANCHOR BOLT	FD	FLOOR DRAIN	P	PAINT
ACT	ACOUSTICAL CEILING TILES	FDN	FOUNDATION	P LAM	PLASTIC LAMINATE
A/C	AIR CONDITIONING	FE	FIRE EXTINGUISHER	PAF	POWER ACTUATED FASTENER
ADDN	ADDITIONAL	FEC	FIRE EXTINGUISHER CABINET	PL	PLATE
ADH	ADHESIVE	FF	FINISHED FLOOR	PLBG	PLUMBING
ADJ	ADJUNCT	FHC	FIRE HOSE CABINET	PLF	POUNDS PER LINEAL FOOT
ADJT	ADJUSTABLE	FIN	FINISH	PLYWD	PLYWOOD
AFT	ABOVE FINISH FLOOR	FL	FLOOR	PR	PAIR
AFF	AIR HANDLING UNIT	FLG	FLOOR FLANGE	PROJ	PROJECTION
ALUM	ALUMINUM	FLR	FLOOR	PSF	POUNDS PER SQUARE FOOT
ALT	ALTERNATE	FND	FOUNDATION	PSI	POUNDS PER SQUARE INCH
ANCH	ANCHORAGE, ANCHOR	FO	FINISH OPENING	PT	PRESSURE TREATED
APFD	APPROVED	FRMG	FRAMING	PT	POLYVINYL CHLORIDE
ARCH	ARCHITECT, (URAL)	FT	FOOT, FEET	QTC	QUARRY TILE
AUX	AUXILIARY	FTB	FOOTING	QR	QUARRY TILE
		FUR	FURRING		
		FV	FIELD VERIFY	R	RISER
B-	BOTTOM OF	FVC	FIRE VALVE CABINET	R/W	REINFORCED WITH
B/B	BACK TO BACK	FWC	FABRIC WALL COVERING	RD	ROOF DRAIN
B/O	BY OTHERS			REF	REINFORCING BAR
BD	BOARD	CA	GALVE	REF	REFERENCE
BIT	BITUMINOUS, BITUMASTIC	GALV	GALVANIZED	REFG	REFRIGERATOR
BLDG	BUILDING	GC	GENERAL CONTRACTOR	REINF	REINFORCEMENT
BLKG	BLOCKING	GL	GLASS	REQ'D	REQUIRED
BL	BORROWED LIGHT	GYP	GYP-SUM	RET	RETURN
BM	BEAM			REV	REVISION
BOT	BOTTOM	HC	HANDICAPPED	RM(S)	ROOM(S)
BRDC	BRIDGING	HK	HOOK	RO	ROUGH OPENING
BRG	BEARING	HM	HOLLOW METAL	RP	RADIUS POINT
BLK	BLOCK	HORIZ	HORIZONTAL	RT	RIGHT
BTWN	BETWEEN	HP	HIGH POINT	RTU	ROOF TOP UNIT
BSMT	BASEMENT	HSB	HIGH STRENGTH BOLT		
		HT	HEIGHT	S	SOUTH DIAMETER
C	CHANNEL	ID	INSIDE DIAMETER	SA	SLAB BOLSTER
CAB	CABINET	IF	INSIDE FACE	SB	SLEEVE ANCHOR
CANT	CANTILEVER	IN	INCH	SCHED	SCHEDULE
CEN	CENTER, ED	INCL	INCLUDE, ING	SECT	SECTION
C/C	CENTER TO CENTER	INCL	INSULATE, D, 10N	SF	SQUARE FEET
CHAM	CHAMFER	INT	INTERIOR	SHT	SHEET
CIRC	CIRCULAR	INT	INTERMEDIATE	SIM	SIMILAR
CJ	CONTROL JOINT	INT	INTERMEDIATE	SPEC	SPECIFICATIONS
CL	CLOSET	JST	JOIST	SP	SPACING
CLG	CEILING	JT	JOINT	SQ	SQUARE
CLR	CLEAR			SSL	SHORT SLOTTED HOLES
CMU	CONCRETE MASONRY UNITS			SS	STANDARD
COL	COLUMN	K	KIP	STD	STIFFENERS
CONC	CONCRETE			STL	STEEL
CONN	CONNECTION	LAM	LAMINATE	STRUCT	STRUCTURAL
CONST	CONSTRUCTION	LAW	LAWATORY	SUSP	SUSPEND / SUSPENDED
CONT	CONTINUOUS	LB	POUND	SYMM	SYMMETRICAL
CONTR	CONTRACTOR	LG	LONG		
COORD	COORDINATE	LL	LONG LEG		
CPT	CARPET	LL	LONG LEG HORIZONTAL	T	TREAD
CPYL	CARPET TILE	LLH	LONG LEG HORIZONTAL	t	THICKNESS
CSJ	CONSTRUCTION JOINT	LLV	LONG LEG VERTICAL	T/O	TOP OF
CT	CERAMIC TILE	LKR	LOCKER	T&B	TOP AND BOTTOM
CTRD	CENTERED	LONG	LONGITUDINAL	TO	TO
		LP	LOW POINT	T&B	TIE COLUMN
D	DEPTH, DISTANCE	LSH	LONG SLOTTED HOLES	TEMP	TEMPERED
DBA	DEFORMED BAR ANCHOR	LT	LIGHT	TERM	TERMINATE
DBL	DOUBLE	LTWT	LIGHTWEIGHT	TLT	TOILET
DBS	DOWEL BAR SPLICER			TOL	TOLERANCE
DEMO	DEMOLITION	MAS	MASONRY	TRAN	TRANSVERSE
DTL	DETAIL	MAX	MAXIMUM	TS	TUBE STEEL
DIA	DIAMETER	MB	MACHINE BOLT	TYP	TYPICAL
DIAG	DIAGONAL	MECH	MECHANICAL	UNO	UNLESS NOTED OTHERWISE
DIM	DIMENSION	MEZZ	MEZZANINE	UL	UNDERWRITERS LABORATORIES
DL	DEAD LOAD				
DN	DOWN	MFR	MANUFACTURER		
DR	DOOR	MID	MIDDLE	VCT	VINYL COMPOSITION TILE
DSGN	DESIGN	MIN	MINIMUM	VERT	VERTICAL
DW	DRYWALL	MISC	MISCELLANEOUS	VWC	VINYL WALL COVERING
DWC(S)	DRAWING(S)	MJ	MASONRY JOINT	VP	VISION PANEL
DWL	DOWEL	MO	MASONRY OPENING		
		MR	MOISTURE RESISTANT	W	WIDTH, WEST, WIDE FLANGE
E	EAST	MTG	MOUNTING	W/	WITH
EA	EACH	MTL	METAL	W/O	WITHOUT
EB	EXPANSION BOLT			WD	WOOD
EE	EACH END	N	NORTH	WP	WORKING POINT
EF	EACH FACE	NA	NOT APPLICABLE	WS	WATERSTOP
EJ	EXPANSION JOINT	NIC	NOT IN CONTRACT	WSCOT	WAINSCOT
EL	ELEVATION	NO	NUMBER	WT	WEIGHT
ELEV	ELEVATOR	NTS	NOT TO SCALE	WWF	WELDED WIRE FABRIC
ENGR	ENGINEER				
EP	ELECTRIC PANEL	O/O	OUT TO OUT		
EQ	EQUAL	OC	ON CENTER		
EQUIP	EQUIPMENT	OD	OUTSIDE DIAMETER		
ES	EXPOSED STRUCTURE	OF	OUTSIDE FACE		
EW	EACH WAY	OPNG	OPENING		
EWC	ELECTRIC WATER COOLER	OPP	OPPOSITE		
EXH	EXHAUST	OSL	OUTSTANDING LEG		
EXP	EXPANSION	OVS	OVERSIZE HOLES		
EXIST	EXISTING				
EXT	EXTERIOR				







# What happens after passing the exam?

- COMBINED Score for Code Knowledge and Plan Reading must be greater than 75% per Section
- Notification of Exam results available within 4 to 6 weeks from exam date
- Failure of more than one discipline (combined score) requires reapplication and exam after 6 months
- Only One Section Exam Retake is allowed.



# What happens after passing the exam?

- Retake Exam includes Code Knowledge and Plan Reading
- Retake Exam to be completed within two weeks of notification
- Review of completed Exams are not allowed
- Only Exam score of each section is available upon notification of Exam results

We regret to inform you that you were not successful in obtaining a passing score in the Class A Hospital Inspector Certification Examination. A minimum score of 75% for each section of the exam is required for certification. Your final scores are as follows:

	Code %	Plans %	Total %
Administrative	75	N/A	75
Architectural	50	81	68
Structurale	48	42	45
Mechanical-Plumbing	75	69	71
Electrical	67	69	68
Fire and Life Safety	75	50	61

You will be eligible to take a new examination no sooner than six months from this examination. If you choose to retake the examination, you may submit a **complete and updated application with current information and the term "Retest" written on top of the front page.** An examination fee must also be submitted with your application. The examination schedules for **OCTOBER 2019** are currently posted on the Office's website [www.oshpd.ca.gov](http://www.oshpd.ca.gov).



# What happens after passing the exam?

- Successful examinee will be requested to email a picture for their official badge
- Badges will be sent out to successful examinees within a week or two from day of notification
- Successful examinees are eligible to become an IOR immediately at the time of notification
- Certified Hospital Inspectors Credentials are immediately available for verification by the public on OSHPD Website



# Who employs the IOR?

- Healthcare facility owners may employ:
  - IORs directly
  - IORs who employ other IORs
  - Firms that employ IORs
- NOT Construction Contractors
- NOT Manufacturers
- NOT OSHPD

## 7-144. Inspection.

(a) The hospital governing board or authority shall provide for competent, adequate and continuous inspection by one or more inspectors of Record (IOR) satisfactory to the architect or structural engineer or both, in responsible charge of the work, or the engineer in responsible charge of the work and the Office.



# What are the ABCs of the A, B, and C exam?

- **Class A Inspector Exam**  
May inspect all areas of construction; including structural.
  - The A Exam emphasizes Structural and Administrative Knowledge.
- **Class B Inspector Exam**  
May inspect all areas of construction; excluding structural
  - The B Exam emphasizes Administrative Knowledge.

## ARTICLE 19 CERTIFICATION AND APPROVAL OF HOSPITAL INSPECTORS

### 7-200. Administration of hospital inspector examination and certification.

(a) The Office shall test and certify inspectors in one or more of the following classes:

1. **Class "A"** Hospital Inspector may inspect all areas of construction, including: architectural, mechanical, plumbing, electrical, fire and life safety, and structural elements.
2. **Class "B"** Hospital Inspector may inspect only the following areas of construction: architectural, mechanical, plumbing, electrical, fire and life safety, and anchorage of nonstructural elements.
3. **Class "C"** Hospital Inspector may inspect one or more areas of construction specialty, including but not limited to the areas listed in Section 7-204(c)l, but may not inspect the complete scope of construction authorized for "A" or "B" inspectors.



# What are the ABCs of the A, B, and C exam?

- Class C Inspector Exam
  - May not inspect the complete scope of construction
  - May inspect one or more areas of construction specialty as certified
  - The C Exam emphasizes Administrative Knowledge



# What are the ABCs of the A, B, and C exam?

This is not on the Class C IOR Exam. Refer to 2019 CAC

- Mechanical – IAPMO Certification
- Concrete – ICC Certification
- Masonry – ICC Certification
- Steel – ICC, Structural Steel Certification
- Welding – AWS Certification
- Framing and Drywall – ICC
- CBIC Roofing – NRCA
- Architectural - Certification to be administered by the Office



# Poll questions

1. What is the minimum % for passing the IOR exam?
  - 60%
  - 75%
  - No vote
2. Failure of more than one discipline (combined score) requires reapplication and exam. A candidate may reapply after \_ months?
  - 4
  - 6
  - No vote
3. What should you know prior to taking the IOR exam?
  - Code knowledge
  - Plan reading
  - Code knowledge and Plan reading
  - No vote
4. Who employs the IOR?
  - Healthcare facility owners
  - Construction Contractors
  - Manufactures
  - OSHPD
  - No vote
5. Can IOR Class B inspect and approve structural elements?
  - Yes
  - No
  - No vote





# Poll questions

1. What is the minimum % for passing the IOR exam?
  - 60%
  - 75%
  - No vote
2. Failure of more than one discipline (combined score) requires reapplication and exam. A candidate may reapply after \_ months?
  - 4
  - 6
  - No vote
3. What should you know prior to taking the IOR exam?
  - Code knowledge
  - Plan reading
  - Code knowledge and Plan reading
  - No vote
4. Who employs the IOR?
  - Healthcare facility owners
  - Construction Contractors
  - Manufactures
  - OSHPD
  - No vote
5. Can IOR Class B inspect and approve structural elements?
  - Yes
  - No
  - No vote



# Poll questions

1. What is the minimum % for passing the IOR exam?
  - 60%
  - 75%
  - No vote
2. Failure of more than one discipline (combined score) requires reapplication and exam. A candidate may reapply after \_ months?
  - 4
  - 6
  - No vote
3. What should you know prior to taking the IOR exam?
  - Code knowledge
  - Plan reading
  - Code knowledge and Plan reading
  - No vote
4. Who employs the IOR?
  - Healthcare facility owners
  - Construction Contractors
  - Manufactures
  - OSHPD
  - No vote
5. Can IOR Class B inspect and approve structural elements?
  - Yes
  - No
  - No vote



# Poll questions

1. What is the minimum % for passing the IOR exam?
  - 60%
  - 75%
  - No vote
2. Failure of more than one discipline (combined score) requires reapplication and exam. A candidate may reapply after \_ months?
  - 4
  - 6
  - No vote
3. What should you know prior to taking the IOR exam?
  - Code knowledge
  - Plan reading
  - Code knowledge and Plan reading
  - No vote
4. Who employs the IOR?
  - Healthcare facility owners
  - Construction Contractors
  - Manufactures
  - OSHPD
  - No vote
5. Can IOR Class B inspect and approve structural elements?
  - Yes
  - No
  - No vote



# Poll questions

1. What is the minimum % for passing the IOR exam?
  - 60%
  - 75%
  - No vote
2. Failure of more than one discipline (combined score) requires reapplication and exam. A candidate may reapply after \_ months?
  - 4
  - 6
  - No vote
3. What should you know prior to taking the IOR exam?
  - Code knowledge
  - Plan reading
  - Code knowledge and Plan reading
  - No vote
4. Who employs the IOR?
  - Healthcare facility owners
  - Construction Contractors
  - Manufactures
  - OSHPD
  - No vote
5. Can IOR Class B inspect and approve structural elements?
  - Yes
  - No
  - No vote



# What are an IORs Responsibilities?

The responsibility for inspection resides with the project Inspector of Record; OSHPD only observes that the process is working and that adequate and competent inspection is provided.

Adequate and competent inspection is gained through continuous and periodic inspections. (see next slides)



# What are an IORs Responsibilities?

CAC 7-145(a)2. Continuous inspection of the work.

Continuous inspection means:

- complete inspection of every part of the work. i.e. concrete or masonry work which can be inspected only as it is placed or assembled.



# What are an IORs Responsibilities?

Periodic inspection of the work.

Periodic inspection means:

- types of work which can be completely inspected after the work is installed while the IOR is not present and prior to cover-up i.e. rough elec., mech. plumb.

In no case shall the IOR have or assume any duties which will prevent continuous inspection.



# What is the IOR's responsibility? - IORs Interaction with the DPOR?

- IOR shall work under the direction of the DPOR
- Report all inconsistencies in approved construction documents to the DPOR for interpretation and instructions
- The DPORs instructions shall not cause the work to be done not in conformity with the approved construction documents.





# What is the IOR's responsibility? - Files on the Jobsite

- Approved construction documents
- Reports of tests and inspections required by the approved construction documents
- TIO Program
- All codes and regulations referenced in the approved construction documents
- Specifications
- Referenced Research Reports and Manufacturers Installation Instructions.



# What is the IOR's responsibility? - Files on the Jobsite

IOR(s) 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 files shall include:

- Time of arrival
- Time of departure
- A summary of work in progress
- Noted deficiencies in construction or deviations
- Date, time, and method of corrections for deficiencies



# What is the IOR's responsibility? - IOR Notifications to the OSHPD

- When the work is started or resumed on the project.
- At least 48 hours in advance of the time when foundation trenches will be complete, ready for footing forms.
- At least 48 hours in advance of the first placing of concrete.
- When work has been suspended for a period of more than two weeks.



# SUCCESS CHECKLIST ITEMS

- **Daily Reports:** Completed by the IOR and submitted to the Design Professional of Record (DPOR)
- **Test Laboratory Qualifications:** Approved by the DPOR with concurrence from OSHPD
- **Special Inspector's Qualifications:** Approved by the DPOR with concurrence from OSHPD
- **TIO Field Maintenance:** Only as coordinated and directed by the DPOR



# SUCCESS CHECKLIST ITEMS

- **Directive or Change Log with Supporting Documents:** Maintained by the DPOR and kept in the field by the IOR. It must include both material and non-material alterations.
- **Verified Compliance Reports (VCRs):** Maintained by the DPOR and kept in the field by the IOR.
- **Submittal / Shop Drawing Log:** Maintained by the DPOR and kept in the field by the IOR. Shop drawings are not part of the approved construction documents



# SUCCESS CHECKLIST ITEMS

- **Approved Design Documents including Deferred Approvals and ACDs:** Held in the field by the IOR.
- **Architect and Engineers of Record Observation Reports:** Maintained by the DPOR and kept in the field by the IOR.
- **Outstanding Items List (OIL) / Deviation or Discrepancy List:** Maintained in the field by the IOR.



# SUCCESS CHECKLIST ITEMS

- **General Contractor QC Program:** Provided by the General Contractor, this program should be coordinated in the field by the GC with the IOR and the DPOR.
- **Notice of Non-Compliance Log:** Maintained in the field by the IOR.
- **Special Inspectors Reports:** Distributed to the DPOR and IOR and maintained in the field by the IOR.
- **Discrepancy Correction Reports**



# SUCCESS CHECKLIST ITEMS

- **Test Reports:** Distributed to the DPOR and IOR and maintained in the field by the IOR.
- **Identification of Seeming Errors:** Reported to the DPOR by the IOR for follow up action.
- **Witness Qualification / Acceptance of Performance Tests of Building Systems:** Responsibility of the IOR.





# IORS and Special Inspections - What does an IOR have to do if they want to be a Special Inspector on the Job?

- Be approved by the DPOR
- Have the appropriate knowledge and/or certification
- Have the time and desire (report meeting CBC 1704A.2.4)
- Have the required tools
- OSHPD RCO must confirm IOR's workload



# Poll questions

1. Does the IOR work under the direction of the DPOR?
  - Yes
  - No
  - No vote
2. Does the IOR manage the TIO?
  - Yes
  - No
  - No vote
3. IOR(s) shall maintain field records of construction progress for each day or any portion of a day that they are present at job?
  - True
  - False
  - Only if requested
  - No vote
4. Are the Verified Compliance Reports (VCRs) maintained by the IOR ?
  - Yes
  - No
  - No vote
5. What does an IOR have to do if they want to be a Special Inspector on the Job?
  - Be approved by the DPOR
  - Be hired by Construction Contractors
  - No vote



# Poll questions

1. Does the IOR work under the direction of DPOR?
  - Yes
  - No
  - No vote
2. Does the IOR manage the TIO?
  - Yes
  - No
  - No vote
3. IOR(s) shall maintain field records of construction progress for each day or any portion of a day that they are present at job?
  - True
  - False
  - Only if requested
  - No vote
4. Are the Verified Compliance Reports (VCRs) maintained by the IOR ?
  - Yes
  - No
  - No vote
5. What does an IOR have to do if they want to be a Special Inspector on the Job?
  - Be approved by the DPOR
  - Be hired by Construction Contractors
  - No vote



# Poll questions

1. Does the IOR work under the direction of DPOR?
  - Yes
  - No
  - No vote
2. Does the IOR manage the TIO?
  - Yes
  - No
  - No vote
3. IOR(s) shall maintain field records of construction progress for each day or any portion of a day that they are present at job?
  - True
  - False
  - Only if requested
  - No vote
4. Are the Verified Compliance Reports (VCRs) maintained by the IOR ?
  - Yes
  - No
  - No vote
5. What does an IOR have to do if they want to be a Special Inspector on the Job?
  - Be approved by the DPOR
  - Be hired by Construction Contractors
  - No vote



# Poll questions

1. Does the IOR work under the direction of DPOR?
  - Yes
  - No
  - No vote
2. Does the IOR manage the TIO?
  - Yes
  - No
  - No vote
3. IOR(s) shall maintain field records of construction progress for each day or any portion of a day that they are present at job?
  - True
  - False
  - Only if requested
  - No vote
4. Are the Verified Compliance Reports (VCRs) maintained by the IOR ?
  - Yes
  - No
  - No vote
5. What does an IOR have to do if they want to be a Special Inspector on the Job?
  - Be approved by the DPOR
  - Be hired by Construction Contractors
  - No vote



# Poll questions

1. Does the IOR work under the direction of DPOR?
  - Yes
  - No
  - No vote
2. Does the IOR manage the TIO?
  - Yes
  - No
  - No vote
3. IOR(s) shall maintain field records of construction progress for each day or any portion of a day that they are present at job?
  - True
  - False
  - Only if requested
  - No vote
4. Are the Verified Compliance Reports (VCRs) maintained by the IOR ?
  - Yes
  - No
  - No vote
5. What does an IOR have to do if they want to be a Special Inspector on the Job?
  - Be approved by the DPOR
  - Be hired by Construction Contractors
  - No vote



# Questions

