



Building Plan Review

Course Plan

Course Details

Certification:	Plan Examiner
CTS Guide:	Plan Examiner (May 2015)
Description:	This course provides the knowledge and skills that prepare a plan examiner to carry out administrative responsibilities associated with plan review services and evaluate plans for new buildings in accordance with applicable codes and standards and jurisdictional policies and procedures.
Designed For:	Those desiring to become a plan examiner
Prerequisites:	None
Standard:	Complete all activities and formative tests Complete all summative tests with a minimum score of 80%
Hours:	Lecture: 18:00 Activities: 6:00 Testing: 2:00
Hours (Total):	26:00
Maximum Class Size:	25
Instructor Level:	Registered Primary Instructor
Instructor/Student Ratio:	1:25
Restrictions:	None
SFT Designation:	CFSTES

Required Resources

Instructor Resources

To teach this course, instructors need:

- *California Building Standards Code*
 - Publisher: International Code Council
 - Edition: edition currently adopted by the California Building Standards Commission
- *Plan Review Manual (Based on the 2009 IBC)*
 - Publisher: International Code Council
 - Edition: based on the 2009 International Building Code
- Engineers scale
- Architectural scale

Online Instructor Resources

The following instructor resources are available online at

<http://osfm.fire.ca.gov/training/resources>:

- Building Plan Review course plan

Student Resources

To participate in this course, students need:

- *California Building Code*
 - Publisher: International Code Council
 - Edition: edition currently adopted by the California Building Standards Commission
- *California Fire Code*
 - Publisher: International Code Council
 - Edition: edition currently adopted by the California Building Standards Commission
- Engineers scale
- Architectural scale

Facilities, Equipment, and Personnel

The following facilities, equipment, or personnel are required to deliver this course:

- A large room with tables to accommodate full-size plans for up to 25 students
- Internet access for instructor and students
- Two sets of plans, specifications and details for each student or student group (At a minimum documents should be sufficient to meet the objectives of the SFT-recommended Activities for topics 3-1, 3-2, 3-3, 3-5, and 3-7, as well as any other activities designed by the instructor)

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- One set for course activities
- One set for testing

Unit 1: Introduction

Topic 1-1: Orientation and Administration

Terminal Learning Objective

At the end of this topic, a student will be able to identify facility and classroom requirements and identify course objectives, events, requirements, assignments, activities, resources, evaluation methods, and participation requirements in the course syllabus.

Enabling Learning Objectives

1. Identify facility requirements
 - Restroom locations
 - Food locations
 - Smoking locations
 - Emergency procedures
2. Identify classroom requirements
 - Start and end times
 - Breaks
 - Electronic device policies
 - Special needs and accommodations
 - Other requirements as applicable
3. Review course syllabus
 - Course objectives
 - Calendar of events
 - Course requirements
 - Student evaluation process
 - Assignments
 - Activities
 - Required student resources
 - Class participation requirements

Discussion Questions

1. What is a formative test? What is a summative test?

Activities

1. To be determined by the instructor.

Topic 1-2: Plan Examiner Certification Process

Terminal Learning Objective

At the end of this topic, a student will be able to identify different levels in the Plan Examiner certification track and the courses and requirements for certification, and be able to describe the certification task book and testing process.

Enabling Learning Objectives

1. Identify the different levels of certification in the Plan Examiner certification track
2. Identify the courses required for Plan Examiner certification

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- Plan Examiner 1A: Building Plan Review
 - Plan Examiner 1B: Fire Protection and Life Safety Systems Plan Review
 - Plan Examiner 1C: Hazards and Special Operations Plan Review
3. Identify any other requirements for Plan Examiner certification
 4. Describe the certification task book process
 - Complete all prerequisites and course work
 - Submit application and fees to request certification task book
 - Complete all job performance requirements included in the task book
 - Must have identified evaluator verify individual task completion via signature
 - Must have Fire Chief or authorized representative verify task book completion via signature
 - Must be employed by a California Fire Agency in the position prior to submitting completed task book to State Fire Training
 5. Describe the certification testing process
 - Complete course work
 - Schedule online certification exam
 - Schedule skills evaluation test

Discussion Questions

1. How many levels are there in the Plan Examiner certification track? What are they?

Activities

1. To be determined by the instructor.

Topic 1-3: Definition of Duties

Terminal Learning Objective

At the end of this topic, a student, given AHJ policies and procedures, will be able to carry out the administrative and plan review activities of a plan examiner in accordance with state standards.

Enabling Learning Objectives

1. Identify the administrative duties of a plan examiner
 - Review plans
 - Prepare correspondence and plan review reports
 - Communicate with fire inspectors and emergency response personnel
 - Handle complaints
 - Maintain records
 - Participate in legal proceedings
 - Identify when additional expertise is required
 - Be familiar with procedures used by the jurisdiction to evaluate alternative methods
 - Research
 - Interpret codes
 - Implement policy
 - Create forms and job aids

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2. Identify the plan review duties of a plan examiner
 - Review and approve plans for fire protection and life safety issues, including:
 - Occupancy type
 - Construction type
 - Fire protection systems
 - Access and water supply
 - Height and area limitations
 - Special occupancy requirements
 - Passive fire protection elements
 - Interior finishes
 - Means of egress
 - Building service equipment and operations
 - Identify the requirements for fire protection and life safety systems and permits
 - Analyze and approve plans, specifications, and construction documents for:
 - Buildings
 - Processes
 - Operations
 - Fire protection and life safety systems and equipment
3. Identify the laws, codes, and ordinances that give fire agencies authority to conduct plan review

Discussion Questions

1. Why is it important to establish good communications with the building and planning departments?
2. How can a plan examiner verify that they have acted within the spirit of the law?
3. How can a plan examiner establish a positive working relationship with field personnel?
4. How might a plan examiner prioritize plans to be reviewed?

Activities

1. To be determined by the instructor.

Instructor Note

1. The list for ELO 2 (review and approve plans) comes from: California Building Code, volume 1, Effective Use of the IBC/CBC

CTS Guide Reference: CTS 1-1, CTS 4-1

Unit 2: Administration

Topic 2-1: Determining Applicable Codes and Standards

Terminal Learning Objective

At the end of this topic, a student, given a fire protection or life safety issue, will be able to determine the applicable code or standard, referencing the proper document, edition, and section.

Enabling Learning Objectives

1. Discuss the applicable codes and standards adopted by a jurisdiction

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- California Code of Regulations (CCR) Title 24 – California Building Standards Code
 - CCR Title 19
 - Other recognized codes and standards
 - Local ordinances and standards
2. Describe the format of codes and standards
 3. Describe the interrelationship of codes and standards
 - Building standards versus non-building standards
 4. Describe procedures adopted by the organizations responsible for promulgating state and local regulations
 5. Conduct code-related research
 6. Apply codes and standards

Discussion Questions

1. How can a plan examiner address a known hazard for which they are not the authority having jurisdiction?
2. How does a plan examiner determine which codes are applicable? Describe factors affecting this.

Activities

1. Given a fire protection or life safety issue, have students research and identify applicable codes and standards.

CTS Guide Reference: CTS 2-4

Topic 2-2: Recommending and Developing Plan Review Policies and Procedures

Terminal Learning Objective

At the end of this topic, a student, given management objectives, will be able to recommend, develop, and define policies and procedures for delivering plan review services in accordance with the jurisdiction's legal obligations.

Enabling Learning Objectives

1. Discuss plan review policies and procedures of a jurisdiction
2. Describe the legal requirements that affect a plan examiner's duties
3. Describe various government systems and processes that affect a plan examiner's duties
4. Identify jurisdictional requirements and information sources used to develop policies and procedures
5. Identify technical information resources related to fire protection and life safety
6. Describe technical assistance used in the development of policies and procedures

Discussion Questions

1. What types of issues need to be addressed in a plan review program's policies and procedures?
2. When is it appropriate to seek legal counsel while reviewing proposed policies?
3. What kinds of ethical issues might be addressed in policies and procedures?

Activities

1. Have students identify topics that should be covered by plan review process policies or procedures.

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CTS Guide Reference: CTS 3-7, CTS 5-2

Topic 2-3: Processing Plan Review Documents

Terminal Learning Objective

At the end of this topic, a student, given a submittal package, will be able to process plan review documents, resulting in the issuance of required permits in accordance with the policies of the jurisdiction.

Enabling Learning Objectives

1. Describe the plan review policies and procedures of a jurisdiction
2. Identify conditions that require permits in accordance with an AHJ
3. Describe how to research existing information or files for a given property
4. Review submittal package for completeness
 - Required information
 - Required submittals

Discussion Questions

1. What should a plan examiner do with an incomplete submittal?
2. What are “approved plans with conditions”?
3. What are “deferred submittals”? When are they appropriate?

Activities

1. To be determined by the instructor.

CTS Guide Reference: CTS 2-3

Topic 2-4: Creating Plan Review Checklists and Forms

Terminal Learning Objective

At the end of this topic, a student, given applicable codes and standards and departmental policies and procedures, will be able to create plan review checklists and forms that address key issues and clearly express jurisdictional code requirements.

Enabling Learning Objectives

1. Describe plan review elements required by codes, standards, policies, and procedures of the jurisdiction
2. Identify forms and checklists commonly used to support jurisdictional plan review policies and procedures
3. Identify basic form components
 - Agency identification
 - Informational content
 - User/applicant identification
 - Fees (if applicable)
4. Identify common checklist and form formats
 - Paper
 - Digital
5. Design checklists and forms

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Discussion Questions

1. What is the purpose of a form?
2. What should appear on a checklist?

Activities

1. Given a data set, have students create an appropriate form or checklist.

CTS Guide Reference: CTS 5-1

Topic 2-5: Preparing Reports

Terminal Learning Objective

At the end of this topic, a student, given observations from a plan review, will be able to prepare clear and concise reports that reflect the findings of a plan review in accordance with applicable codes and standards and jurisdictional policies and procedures.

Enabling Learning Objectives

1. Describe the legal requirements and policies and procedures of a jurisdiction for plan review reports
2. Discuss the accepted report preparation practices of a jurisdiction
 - Reflect findings
 - Cite codes and standards
 - Identify deficiencies
 - Use clear and concise language
 - Active voice
 - Complete sentences
3. Write reports

Discussion Questions

1. When is it appropriate to indicate deficiencies directly on the plan or submitted documents?
2. Why should a plan examiner cite code sections and related deficiencies on a report?

Activities

1. To be determined by the instructor.

CTS Guide Reference: CTS 2-1

Topic 2-6: Resolving Deficiencies During a Plan Review

Terminal Learning Objective

At the end of this topic, a student, given a *plan* submittal and established policies and procedures of a jurisdiction, will be able to facilitate the resolution of deficiencies identified during a plan review by identifying, documenting with applicable references to codes and standards, and reporting to the plan submitter any deficiencies identified during a plan review.

Enabling Learning Objectives

1. Identify the policies and procedures of the jurisdiction regarding the communication of discrepancies
2. Describe the appeals process

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Discussion Questions

1. How can a plan examiner resolve discrepancies on a plan to avoid multiple resubmittals?
2. When might it be appropriate to terminate a plan review?
3. How much consultation can a plan examiner provide to a designer to assist with achieving plan approval?
4. How can pre-formatted comments expedite the plan review process?

Activities

1. To be determined by the instructor.

CTS Guide Reference: CTS 2-2

Topic 2-7: Participating in Legal Proceedings

Terminal Learning Objective

At the end of this topic, a student, given the findings of a plan review and consultation with legal counsel, will be able to participate in legal proceedings, giving accurate testimony and with appropriate demeanor.

Enabling Learning Objectives

1. Describe the legal requirements pertaining to evidence rules in the legal system
2. Identify types of legal proceedings
 - Depositions
 - Administrative hearings
 - Court proceedings
 - Formal appeals
3. Describe appropriate courtroom demeanor
4. Differentiate facts from opinions
 - Fact-based testimony
 - Expert testimony

Discussion Questions

1. In an administrative hearing, can the governing body produce a ruling less than the minimum code? Why or why not?

Activities

1. To be determined by the instructor.

CTS Guide Reference: CTS 3-8

Unit 3: New Building Plan Review

Topic 3-1: Verifying Occupancy Classification and Maximum Allowable Occupant Loads

Terminal Learning Objective

At the end of this topic, a student, given a set of plans, specifications, a description of a building and its intended use(s), and measuring tools, will be able to verify an occupancy

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classification and a maximum allowable occupant load in accordance with the applicable codes and standards and policies of the a jurisdiction.

Enabling Learning Objectives

1. Identify applicable codes and standards
2. Identify occupancy classifications and their intended uses
3. Identify occupancy factors related to various occupancy types
4. Describe how to calculate occupant loads for uses
5. Use measuring tools
6. Calculate occupant loads
 - Square footage
 - Fixed seating

Discussion Questions

1. What is the difference between occupancy classification and use?
2. How are occupancy loads used?

Activities

1. Given a plan and measuring tools, have students calculate the occupant load of a building.

CTS Guide Reference: CTS 3-2

Topic 3-2: Verifying Construction Type

Terminal Learning Objective

At the end of this topic, a student, given a set of plans, including the occupancy classification area and height, number of stories, and location, will be able to verify that a building's construction type is in accordance with applicable codes and standards by identifying, documenting, and reporting deficiencies.

Enabling Learning Objectives

1. Identify applicable codes and standards
2. Describe types of construction
3. Discuss fire-rated construction components
4. Describe typical building construction methods and materials
5. Discuss code requirements related to construction types
 - Minimum type
 - Maximum height
 - Maximum area
 - Location/property line
 - Height and area increases
 - Maximum number of openings
6. Determine construction types

Discussion Questions

1. How does fire separation distance impact building construction?
2. What is an imaginary property line?
3. What is the relationship between a building's size and its construction type?

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4. How does the presence of an automatic sprinkler system impact construction type?

Activities

1. Given a plan and applicable codes, have students answer questions related to construction type and maximum allowable height and area.

CTS Guide Reference: CTS 3-3

Topic 3-3: Evaluating Emergency Vehicle Access

Terminal Learning Objective

At the end of this topic, a student, given a plan, will be able to evaluate emergency vehicle access to ensure access is provided in accordance with applicable codes and standards, identifying, documenting, and reporting deficiencies in accordance with jurisdictional policies.

Enabling Learning Objectives

1. Identify applicable codes and standards pertaining to:
 - Emergency access
 - Water supply
2. Discuss operating capabilities of fire agency apparatus
3. Identify planning and zoning requirements
4. Describe how to determine fire flow
5. Describe how to determine fire hydrant locations and spacing
6. Interpret and use plan scale

Discussion Questions

1. What is the maximum distance a fire hydrant may be from a structure?
2. How can parking designations impact fire apparatus access?
3. When would a plan examiner require more than 20 feet for a fire lane?
4. How are fire lanes identified? Is it the same in every jurisdiction?

Activities

1. To be determined by instructor.

CTS Guide Reference: CTS 3-6

Topic 3-4: Evaluating Plans for Installing Fire Protection and Life Safety Systems

Terminal Learning Objective

At the end of this topic, a student, given a plan submittal, will be able to evaluate the submitted plans for the installation of fire protection and life safety systems, reviewing equipment and identifying, documenting, and reporting deficiencies in accordance with applicable codes and standards and jurisdictional policies and procedures.

Enabling Learning Objectives

1. Identify applicable codes and standards for fire protection and life safety systems
2. Identify construction types and features that impact system design
3. Review specifications and read plans
4. Classify occupancies and identify use(s)

Discussion Questions

1. How does the presence of fire protection or life safety systems impact construction or construction features?
2. What types of plan sheets are impacted by the introduction of fire protection and life systems?
3. If a designer wishes to avoid installing a fire protection or life safety system, how can they adapt their plans?

Activities

1. Given a set of plans, have the students evaluate which fire protection and/or life safety systems are required.

CTS Guide Reference: CTS 6-5

Topic 3-5: Evaluating Proposed Passive Fire Protection Elements

Terminal Learning Objective

At the end of this topic, a student, given a set of plans and specifications for a building or facility, will be able to evaluate proposed passive fire protection elements of a building or portion of a building to verify that the protection provided for the facility is in accordance with applicable codes and standards, identifying, documenting, and reporting deficiencies in accordance with jurisdictional policies.

Enabling Learning Objectives

1. Describe fire protection construction features, such as:
 - Rated assemblies
 - Structural protection
 - Floor/ceiling/roof
 - Wall
 - Fire stops/penetration
 - Opening protective
 - Doors
 - Windows
 - Shutters
 - Dampers
 - Draft stop/fire block
 - Draft curtains
 - Other passive fire protection features
2. Identify fire test methods
3. Verify the rating of an assembly using reference materials

Discussion Questions

1. From which testing laboratories might a plan examiner accept technical reports?
2. How is the use of fire caulks verified for installation and plan review processes?

Activities

1. Given a plan detail and reference materials, have the students evaluate element ratings.

Instructor Notes

1. Have the students watch a video on materials testing for ASTM E84 or ASTM E119.

CTS Guide Reference: CTS 6-2

Topic 3-6: Verifying Means of Egress Compliance

Terminal Learning Objective

At the end of this topic, a student, given a set of plans for a building or portion of a building, an area's identified use(s) and an occupant load, will be able to identify and verify the provisions of required means of egress and egress elements, ensuring all egress elements have been provided, identifying, documenting, and reporting deficiencies in accordance with applicable codes and standards and jurisdictional policies.

Enabling Learning Objectives

1. Discuss occupancy egress requirements
2. Describe the components of a means of egress
3. Describe impact of interior finishes on egress components
4. Describe applicable code requirements for a means of egress
5. Discuss the relationship of fixed fire protection systems to egress requirements
6. *Verify* egress requirements based on occupant load

Discussion Questions

1. Other than a public way, where are occupants considered safe?
2. Is a corridor part of exit access or exit?

Activities

1. To be determined by the instructor.

CTS Guide Reference: CTS 3-4, 6-8

Topic 3-7: Evaluating Building Service Equipment and Operations

Terminal Learning Objective

At the end of this topic, a student, given plans and specifications, will be able to evaluate heating, ventilation, air conditioning (HVAC), and other building service equipment and operations to verify that the systems and other equipment are designed in accordance with applicable codes and standards, identifying, documenting, and reporting deficiencies in accordance with jurisdictional policies.

Enabling Learning Objectives

1. Describe types of building service equipment
 - HVAC system
 - Boilers
 - Ducts
 - Elevators/escalators/dumbwaiters
 - Fuel systems
 - Medical gas
2. Identify occupancies with unique building service requirements
 - Institutional occupancies

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- Fixed guideway transit systems
 - Wine caves
 - Atriums
 - Highrises
 - Malls
3. Identify applicable codes and standards adopted by the jurisdiction
 4. Describe installation, maintenance, and use(s) of building service equipment
 5. Read, and interpret mechanical, electrical, and plumbing plans

Discussion Questions

1. Should the smoke detector for automatic HVAC shutdown be put in the supply or the return? Why? Should it generate a supervisory or a fire alarm condition upon activation?
2. In lieu of using a shaft with a grease duct, what options are available?

Activities

1. Given a set of plans, have students evaluate opening protection of fire rated walls penetrated by mechanical ducts.

CTS Guide Reference: CTS 6-10

Topic 3-8: Evaluating Plans for Existing Occupancies

Terminal Learning Objective

At the end of this topic, a student, given a set of plans for an existing building or portion of a building and building records, will be able to evaluate a proposed modification or change in occupancy for a building or portion of a building, ensuring compliance with applicable codes and standards, identifying, documenting, and reporting deficiencies according to jurisdictional policies and procedures.

Enabling Learning Objectives

1. Describe how to evaluate a proposed tenant improvement or change in occupancy classification
2. Describe the requirements for determining damage repair
3. Describe the application process to repair or restore a building to its permitted use(s)
4. Describe the requirements for modifying fire protection or life safety systems in an existing building
5. Describe the requirements, codes, and standards for a historic building under repair or renovation
6. Describe the requirements for demolition and fire safety during construction
7. Coordinate with applicable building and planning departments

Discussion Questions

1. How does code applicability change when there is a change in use but not a change in occupancy classification?
2. How does code applicability change when there is a change in occupancy classification but not a change in use?
3. What considerations should a plan examiner address in plan review for buildings that will remain occupied during construction?

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4. Under what conditions does the Historic Building Code apply?

Activities

1. To be determined by instructor.

CTS Guide Reference: CTS 3-11

Time Table

Segment	Lecture Time	Activity Time	Total Unit Time
Unit 1: Introduction			
Topic 1-1: Orientation and Administration			
Lecture	0:30		
Activity 1-1: Determined by instructor		0:00	
Topic 1-2: Plan Examiner Certification Process			
Lecture	0:30		
Activity 1-2: Determined by instructor		0:00	
Topic 1-3: Definition of Duties			
Lecture	1:00		
Activity 1-3: Determined by instructor		0:00	
Unit 1 Totals	2:00	0:00	2:00
Unit 2: Administration			
Topic 2-1: Determining Applicable Codes and Standards			
Lecture	0:15		
Activity 2-1: Recommended by SFT		0:30	
Topic 2-2: Recommending and Developing Plan Review Policies and Procedures			
Lecture	0:30		
Activity 2-2: Recommended by SFT		0:30	
Topic 2-3: Processing Plan Review Reports			
Lecture	0:15		
Activity 2-3: Determined by instructor		0:00	
Topic 2-4: Creating Plan Review Checklists and Forms			
Lecture	0:30		
Activity 2-4: Recommended by SFT		0:45	
Topic 2-5: Preparing Reports			
Lecture	0:15		
Activity 2-5: Determined by instructor		0:00	
Topic 2-6: Resolving Deficiencies During Plan Review			
Lecture	0:30		
Activity 2-6: Determined by instructor		0:00	
Topic 2-7: Participating in Legal Proceedings			
Lecture	0:15		
Activity 2-7: Determined by instructor		0:00	

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Segment	Lecture Time	Activity Time	Total Unit Time
Unit 2 Totals	2:30	1:45	4:15
Unit 3: New Building Plan Review			
Topic 3-1: Verifying Occupancy Classification and Maximum Allowable Occupant Loads			
Lecture	1:00		
Activity 3-1: Recommended by SFT		1:00	
Topic 3-2: Verifying Construction Type			
Lecture	1:00		
Activity 3-2: Recommended by SFT		2:00	
Topic 3-3: Evaluating Emergency Vehicle Access			
Lecture	1:00		
Activity 3-3: Determined by instructor		0:00	
Topic 3-4: Evaluating Plans for Installing Fire Protection and Life Safety Systems			
Lecture	2:00		
Activity 3-4: Recommended by SFT		0:30	
Topic 3-5: Evaluating Proposed Passive Fire Protection Elements			
Lecture	2:00		
Activity: Determined by instructor		0:00	
Topic 3-6: Verifying Means of Egress Compliance			
Lecture	3:00		
Activity 3-6: Determined by instructor		0:00	
Topic 3-7: Evaluating Building Service Equipment and Operations			
Lecture	1:30		
Activity 3-7: Recommended by SFT		0:45	
Topic 3-8: Evaluating Plans for Existing Occupancies			
Lecture	2:00		
Activity 3-8: Determined by instructor		0:00	
Unit 3 Totals	13:30	4:15	17:45
Lecture, Activity, and Unit Totals:	18:00	6:00	24:00

Course Totals

Segment Type	Time
Total Lecture Time (LT)	18:00
Total Activity Time (AT)	6:00
Total Testing Time (TT)	2:00
Total Course Time	26:00