



**OFFICE OF THE STATE FIRE MARSHAL  
STATEWIDE TRAINING AND EDUCATION ADVISORY COMMITTEE  
DEPARTMENT OF FORESTRY AND FIRE PROTECTION**

PO Box 944246  
Sacramento, CA 94244-2460  
Phone: (916) 445-8444  
Website: [www.fire.ca.gov](http://www.fire.ca.gov)



**Date:** April 17, 2015

Attachment 5

**To:** Ronny J. Coleman, Chairman  
c/o State Fire Training  
1131 S. Street,  
Sacramento, California 95811

**From:** Mark Romer, Fire Service Training Specialist

**Subject/Agenda Action Item:** Plan Examiner Standards and Curriculum

**Recommended Actions:** Motion to Approve the 2014 Plan Examiner Curriculum

**Background Information:**

This is the third reading of this curriculum the first was in January 2014 and the second was in February 2014.

It was at the February 28<sup>th</sup> 2014 Plan Examiner was to be brought forward to STEAC for final approval but just prior to the meeting State Fire Training received a letter from Robert Marshal, Fire Marshal for Contra Costa County Fire, expressing some concerns about the proposed curriculum. STEAC voted not to approve the curriculum at that time and sent it back for additional review. In January 2015, a Cadre was reconvened to review the curriculum. The cadre consisted of Robert Marshal, and Howard Cooke. Review copies were sent to Mike Mentink and Randy Metz since they were part of the original cadre for review and comment.

The curriculum was reviewed and brought up to date with the most recent NFPA standard (1031 Professional Qualification for Fire Inspector and Plans Examiner 2014 Ed.) There was some rearranging of the curriculum that was done to ensure it had a better flow and more hours were added to ensure enough time to cover all of the materials. The program stayed in the original format of having three courses.

The Plans Examiner certification level was established in July 1997 prior to this time it was known as Fire Prevention Officer III. It is the third in a series of professional certification that lead to Certification as a Fire Marshal.

The Plans Examiner certification track requires that a person complete the course of study which consists of two courses

1. Fire Prevention 3A: Hydraulic Sprinkler Calculations
2. Fire Prevention 3B: Plan Checking

be a certified OSFM Fire Protection Specialist (which equals the new Fire Inspector II 2013) and hold a current Fire Code Inspector certification in the Fire Code adopted by the State of California.

In 2010 the whole Fire Prevention certification track went under a complete revision with the main emphasis on using NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner as the driving document for the new certification track. It was during this process that SFT decided to completely revamp the curriculum development process. During this time Plan Examiner was placed on the back burner while the new process was developed and finalized. Once that was completed Fire Inspector I and II were reformatted since they had already been brought through STEAC. Plan Examiner has now been reformatted and is up for consideration by STEAC.

**Analysis/Summary of Issue:**

Plan Examiner now becomes a standalone certification combining both level I and II together under the new system. In the NFPA Professional Qualification Standards under the general section you will find prerequisites, chapter 7, 7.1 states “The Plan Examiner I shall meet the Job Performance Requirements (JPRs) defined in sections 7.2 and 7.3 and for Level II Chapter 8, 8.1 the Plan Examiner II shall meet the JPRs defined in chapter 7 and sections 8.2 and 8.3”. You will note that there is no requirement for a Plan Examiner to first have been an Inspector.

Our new certification process for Plan Examiner will consist of the educational requirement that now consists of four courses, see attach course plans, and the California Statutes and Regulation course which is a FSTEP course through State Fire Training, the completion of a task book and in the future a certification examination that will consist of both a written exam and skills testing.

# Plan Examiner

## Certification Training Standards Guide [Month Year]



California Department of Forestry and Fire Protection  
Office of the State Fire Marshal  
State Fire Training

# Plan Examiner

## Certification Training Standards Guide [Month Year]

This CTS guide utilizes NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014) to provide the qualifications for State Fire Training's Plan Examiner certification.

State Fire Training coordinated the development of this CTS guide. Before its publication, the Statewide Training and Education Advisory Committee (STEAC) and the State Board of Fire Services (SBFS) recommended this CTS guide for adoption by the Office of the State Fire Marshal (OSFM).



Published by State Fire Training  
1131 S Street, Sacramento, CA 95811  
(916) 445-8200

Cover photo courtesy of [name, organization]

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# State Fire Training

## Mission

To enable the California Fire Service to safely protect life and property through education, training, and certification.

## The California Fire Services Training and Education System

The California Fire Service Training and Education System (CFSTES) was established to provide a single statewide focus for fire service training in California. CFSTES is a composite of all the elements that contribute to the development, delivery, and administration of training for the California fire service. The authority for the central coordination of this effort is vested in the Training Division of the California State Fire Marshal's Office with oversight provided by the State Board of Fire Services.

CFSTES facilitates, coordinates, and assists in the development and implementation of standards and certification for the California fire service. CFSTES:

1. Administers the California Fire Academy System
2. Provides accredited courses leading to certification and approved standardized training programs for local and regional delivery
3. Administers the national accreditation process in California
4. Publishes certification training standards, course plans, and a capstone task book for each certified level in the California fire service

CFSTES is a fire service system developed by the fire service, for the fire service. It is only as successful and effective as the people involved in it.

## Acknowledgments

State Fire Training appreciates the hard work and accomplishments of those who built the solid foundation on which this program continues to grow.

State Fire Training gratefully acknowledges the following individuals and organizations for their diligent efforts and contributions that made the development and publication of this document possible.

### CAL FIRE

**Ken Pimlott**

*Director, CAL FIRE*

**Tonya Hoover**

*State Fire Marshal*

**Mike Richwine**

*Assistant State Fire Marshal*

**Vacant**

*Chief, State Fire Training*

**Ron Coleman**

*Chair, STEAC*

### Cadre Leadership

**Mark Romer**

*Cadre Leader*

*Fire Service Training Specialist III, Office of the State Fire Marshal*

**Allison L. Shaw**

*Cadre Editor*

*Sacramento State*

### Cadre Members

**Howard Cooke**

*Retired Senior Fire Inspector, Sacramento City Fire Department*

**Robert Marshall**

*Fire Marshal, Contra Costa County Fire Protection District*

**Rocque Yballa**

*Fire Marshal, Central County Fire Department*

### Partners

State Fire Training also extends special acknowledgement and appreciation to the Conference and Training Services Unit with the College of Continuing Education at California State University, Sacramento, for its ongoing meeting logistics and curriculum development support, innovative ideas, and forward-thinking services. This collaboration is made possible through an interagency agreement between CAL FIRE and Sacramento State.

The development and publication of this CTS guide was funded in part by the Assistance to Firefighters Grant Program from the U.S. Department of Homeland Security. State Fire Training is grateful to the U.S. Department of Homeland Security for its financial contribution toward the completion of this project.

## How to Read a CTS Guide

State Fire Training develops a Certification Training Standards (CTS) Guide for a variety of job functions in the fire service such as firefighter, driver/operator, fire instructor, and company officer. The CTS guide lists the requisite knowledge and skills and the job performance requirements a person is expected to complete in order to become certified in a specific function. CTS guides are appropriate for fire service personnel and individuals in related occupations pursuing State Fire Training certification.

Each CTS guide serves as a foundation for the certification programs recommended for adoption by the Office of the State Fire Marshal. Any certification program must be based on job-related knowledge and measurable performance standards. To master the knowledge and skills needed for specialized operations, individuals will require additional training to augment the performance standards included in the CTS guide.

Within the CTS guide, it is impossible to capture the different policies and procedures of each organization in the California fire service. Individuals aspiring to meet State Fire Training's certification training standards must do so in accordance with the codes, standards, regulations, policies, and standard operating procedures applicable within their own departments or jurisdictions.

### Format

Each certification training standard included in the CTS guide includes the following:

#### Section Heading

The section heading describes a general category for a group of training standards. For example, the Fire Marshal CTS includes the following sections: Administration, Risk Management, Community Relations, Professional Development, Regulatory Programs, Fire and Life Safety, and Investigation. Each section contains one or more individual training standards.

#### Training Standard Title

The training standard title provides a general description of the performance requirement contained within the standard.

#### Authority

The CTS guide references each standard with one or more paragraphs of the corresponding National Fire Protection Association (NFPA) Professional Qualifications. This ensures that each fire service function within California's certification system meets or exceeds NFPA standards.

When California requirements exceed the NFPA standard, the CTS guide cites the Office of the State Fire Marshal as the authority and prints the corresponding information in *italics*.

### **Given**

This section lists the objects, equipment, materials, or facilities an individual needs in order to acquire the requisite knowledge and skills or to accomplish the job performance requirement(s) within a training standard.

### **Requisite Knowledge and Skills**

This section lists the knowledge and skills that an individual must acquire in order to accomplish the job performance requirement(s) within a training standard.

This section does not include NFPA requisite knowledge or skills that are too general to teach or that individuals should develop through life experiences. For example, a training standard would not list “communicate orally and in writing” or “ability to relate interpersonally” unless they specifically apply to a job performance requirement about acquiring communication skills or developing interpersonal relationships.

### **Job Performance Requirements**

This section includes one or more written statements that describe a specific job-related task and define measurable or observable outcomes. After an individual completes all coursework and requisite requirements, the capstone task book process verifies completion of job performance requirements.

## **Content**

In addition to the individual certification training standards, the CTS guide also includes State Fire Training Revisions and Errata pages.

### **State Fire Training Content**

Located at the back of the CTS guide, this table documents any significant revisions made by State Fire Training to the NFPA standards in the development of this CTS guide. This table is used to justify content additions and advise the course plan development team.

### **Errata**

Located at the back of the CTS guide, this page documents any changes made to the CTS guide outside of the five-year NFPA revision cycle.

# **Plan Examiner I**

## **Section 1: Definition of Duties**

### **1-1: Definition of Duties for Plan Examiner I**

#### **Authority**

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 7.2
  - Paragraph 7.3

#### **Given**

1. There are no givens identified for this training standard

#### **Requisite Knowledge and Skills**

2. Identify the administrative duties of a Plan Examiner I
3. Identify the plan review duties of a Plan Examiner I

#### **Job Performance Requirements**

There are no job performance requirements identified for this training standard.

## Section 2: Administration

### 2-1: Preparing Reports

#### Authority

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 7.2.1

#### Given

1. Observations from a plan review

#### Requisite Knowledge and Skills

1. *Describe* legal requirements for plan review reports
2. *Discuss* accepted *report preparation* practices, policies, and procedures of the jurisdiction
3. Conduct code-related research
4. Write reports

#### Job Performance Requirements

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.

## 2-2: Resolving Deficiencies During a Plan Review

### Authority

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 7.2.2

### Given

1. A *plan* submittal
2. Established policies and procedures of the jurisdiction

### Requisite Knowledge and Skills

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

### Job Performance Requirements

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.

## 2-3: Processing Plan Review Documents

### Authority

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 7.2.3
2. Office of the State Fire Marshal

### Given

1. *A submittal package*

### Requisite Knowledge and Skills

1. *Describe* plan review policies and procedures of the jurisdiction
2. *Identify conditions that require permits in accordance with the authority having jurisdiction*
3. Review *submittal package* for completeness

### Job Performance Requirements

Process plan review documents, resulting in the issuance of required permits in accordance with the policies of the jurisdiction.

## 2-4: Determining Applicable Codes and Standards

### Authority

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 7.2.4

### Given

1. A fire protection *or life safety* issue

### Requisite Knowledge and Skills

1. *Discuss* applicable codes and standards adopted by the jurisdiction
2. *Describe the* format of codes and standards
3. *Describe the* interrelationship of codes and 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

### Job Performance Requirements

Determine the applicable code or standard, referencing the proper document, edition, and section.

## Section 3: Plan Review

### 3-1: Identifying Requirements for Fire Protection or Life Safety Systems

#### Authority

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 7.3.1

#### Given

1. A set of plans

#### Requisite Knowledge and Skills

1. *Identify applicable codes and standards for fire and life safety requirements*
2. Read basic plans or shop drawings
3. Identify the symbols used *on a set of plans*
4. Apply codes and standards

#### Job Performance Requirements

Identify the requirements for fire protection or a life safety system by identifying, documenting, and reporting deficiencies in accordance with jurisdictional policies and procedures.

### **3-2: Verifying an Occupancy Classification and Maximum Allowable Occupant Loads**

#### **Authority**

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 7.3.2
  - Paragraph 7.3.4
2. Office of the State Fire Marshal

#### **Given**

1. A set of plans
2. Specifications
3. A description of a building and its intended use
4. *Measuring tools*

#### **Requisite Knowledge and Skills**

1. *Identify occupancy classifications and their intended uses*
2. Describe how to calculate occupant loads for uses
3. Calculate occupant loads
4. Identify occupancy factors related to various occupancy types
5. Use measuring tools

#### **Job Performance Requirements**

1. Verify an occupancy classification in accordance with the applicable codes and standards and the policies of the jurisdiction.
2. Verify that a maximum allowable occupant load is in accordance with applicable codes and standards.

### 3-3: Verifying Construction Type

#### Authority

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 7.3.3

#### Given

1. A set of plans, including the occupancy classification area *and* height, number of stories, and location

#### Requisite Knowledge and Skills

1. *Describe* types of construction
2. *Discuss* fire-rated construction components
3. *Describe* typical building construction methods and materials
4. *Discuss* code requirements related to construction types
5. Determine construction types
6. Conduct code-related research

#### Job Performance Requirements

Verify that a building's construction type is in accordance with applicable codes and standards by identifying, documenting, and reporting deficiencies.

### 3-4: Verifying Egress Provision

#### Authority

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 7.3.5
2. Office of the State Fire Marshal

#### Given

1. A set of plans
2. *An area's identified use*
3. An occupant load

#### Requisite Knowledge and Skills

1. *Describe* applicable code requirements for means of egress elements
2. *Discuss* occupancy egress requirements
3. *Discuss* the relationship between fixed fire protection systems and egress requirements
4. Determine egress requirements based on occupant load
5. Research codes

#### Job Performance Requirements

Verify the provision of required egress, ensuring all egress elements have been provided, and identifying, documenting, and reporting deficiencies in accordance with jurisdictional policies.

### 3-5: Evaluating Fire Flow Compliance

#### Authority

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 7.3.6

#### Given

1. A plan
2. Codes and standards
3. Fire flow test results

#### Requisite Knowledge and Skills

1. *Identify* standard civil engineering symbols
2. *Describe* types of water supply and distribution systems
3. *Describe* water distribution system test methods
4. *Discuss* characteristics of public and private water supply systems, water meters, backflow prevention, and other devices that can impact fire flow
5. *Analyze* the effects of friction loss and elevation on water flow
6. *Discuss the* potential impact of state health regulations on fire flow
7. *Describe* applicable codes and standards related to fire flow in the jurisdiction
8. Interpret fire flow test results
9. Determine fire hydrant locations and spacing
10. Read fire flow graphs

#### Job Performance Requirements

Evaluate code compliance for required fire flow and hydrant location and spacing to *verify* correct hydrant location and determine required fire flow by identifying, documenting, and reporting deficiencies in accordance with jurisdictional policies and procedures.

### 3-6: Evaluating Emergency Vehicle Access

#### Authority

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 7.3.7

#### Given

1. A plan

#### Requisite Knowledge and Skills

1. *Identify* applicable codes and standards pertaining to emergency access *and water supply*
2. *Discuss* operating *capabilities of* fire department apparatus
3. *Identify* planning and zoning requirements
4. Interpret and use plan scale

#### Job Performance Requirements

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.

### 3-7: Recommending Plan Review Policies and Procedures

#### Authority

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 7.3.8

#### Given

1. Management objectives

#### Requisite Knowledge and Skills

1. *Discuss* plan review policies and procedures of the jurisdiction
2. *Identify* sources of detailed and technical information related to fire protection and life safety
3. Identify construction methods and materials related to fire safety
4. Read and interpret construction plans and specifications

#### Job Performance Requirements

Recommend policies and procedures for delivering plan review services conducted in accordance with jurisdictional policies and due process of the law.

### 3-8: Participating in Legal Proceedings

#### Authority

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 7.3.9

#### Given

1. The findings of a plan review
2. Consultation with legal counsel

#### Requisite Knowledge and Skills

1. *Describe* legal requirements pertaining to evidence rules in the legal system
2. *Identify* types of legal proceedings
3. *Describe appropriate* courtroom demeanor
4. Differentiate facts from opinions

#### Job Performance Requirements

Participate in legal proceedings, giving accurate testimony and with appropriate demeanor.

### 3-9: Reviewing Plans for Installing Fire Protection and Life Safety Systems

#### Authority

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 7.3.10
2. Office of the State Fire Marshal

#### Given

1. A plan submittal

#### Requisite Knowledge and Skills

1. *Describe* basic physical science as it relates to fire behavior and fire suppression
2. *Discuss* applicable codes and standards for fire protection *and life safety* systems
3. *Identify* basic system design criteria
4. *Describe* material listing requirements *and* specifications
5. *Describe* installation techniques
6. *Describe* acceptance inspection *and* testing of completed installations
7. *Identify* construction types and *features*
8. *Identify hazards associated with* occupancy classifications
9. Review specifications
10. Classify occupancies
11. Apply standards

#### Job Performance Requirements

Evaluate plans for the installation of fire protection and life safety systems, including pre-engineered systems and equipment, identifying, documenting, and reporting deficiencies in accordance with jurisdictional policies and procedures.

### **3-10: Evaluating Community or Wildland Urban Interface Plans**

#### **Authority**

1. Office of the State Fire Marshal

#### **Given**

1. *A set of landscape plans for a development or community in a fire hazard severity zone*
2. *A set of landscape plans for a wildland urban interface area*

#### **Requisite Knowledge and Skills**

1. *Describe basic wildland fire behavior*
2. *Describe wildland urban interface fire progression*
3. *Define wildland urban interface zones*
4. *Describe codes and standards related to public areas or a development or community landscape plan*
5. *Describe codes and standards related to a wildland urban interface landscape plan*
6. *Describe infrastructure considerations for grading and improvement plans*
7. *Identify and evaluate design and maintenance standards for open space areas adjacent to new development projects*
8. *Describe how to evaluate a vegetation management plan for buildings in a wildland urban interface*
9. *Coordinate with applicable building and planning departments*

#### **Job Performance Requirements**

*Evaluate landscape plans for a development, community, or a wildland urban interface, ensuring compliance with applicable codes and standards and identifying, documenting, and reporting deficiencies according to jurisdictional policies and procedures.*

### **3-11: Evaluating Plans for Existing Occupancies**

#### **Authority**

1. Office of the State Fire Marshal

#### **Given**

1. *A set of plans for an existing building or portion of a building*
2. *Building records*

#### **Requisite Knowledge and Skills**

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*
4. *Describe the requirements for modifying the fire protection or life safety systems in an existing building*
5. *Describe the requirements, codes, and standards for historic buildings under repair or renovation*
6. *Describe the requirements for demolition and fire safety during construction*
7. *Coordinate with applicable building and planning departments*

#### **Job Performance Requirements**

*Evaluate a proposed modification or change in occupancy for a building or portion of a building, ensuring compliance with applicable codes and standards, and identifying, documenting, and reporting deficiencies in accordance with jurisdictional policies and procedures.*

## **Plan Examiner II**

### **Section 4: Definition of Duties**

#### **4-1: Definition of Duties of Plan Examiner II**

##### **Authority**

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 8.2
  - Paragraph 8.3

##### **Given**

1. There are no givens identified for this training standard

##### **Requisite Knowledge and Skills**

1. Identify the administrative duties of a Plan Examiner II
2. Identify the plan review duties of a Plan Examiner II

##### **Job Performance Requirements**

There are no job performance requirements identified for this training standard.

## Section 5: Administration

### 5-1: Creating Plan Review Checklists and Forms

#### Authority

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 8.2.1

#### Given

1. Applicable codes and standards
2. Departmental policies and procedures

#### Requisite Knowledge and Skills

1. *Describe* plan review elements required by codes, standards, policies, and procedures of the jurisdiction
2. Design checklists

#### Job Performance Requirements

Create plan review checklists and forms that address key issues and clearly express jurisdictional code requirements.

## **5-2: Developing Plan Review Policies and Procedures**

### **Authority**

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 8.2.2
2. Office of the State Fire Marshal

### **Given**

1. Management objectives

### **Requisite Knowledge and Skills**

1. *Describe* legal requirements that affect a plan examiner's duties
2. *Describe* various government systems *and processes* that affect a plan examiner's duties
3. *Identify* jurisdictional requirements and information sources *used to develop policies and procedures*
4. *Describe* technical assistance used in the development of policies and procedures

### **Job Performance Requirements**

Develop and define policies and procedures for administering plan review functions in accordance with the jurisdiction's legal obligations.

## Section 6: Plan Review

### 6-1: Evaluating Design Concepts

#### Authority

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 8.3.1

#### Given

1. A preliminary design presentation

#### Requisite Knowledge and Skills

1. *Describe* fire protection *and* life safety construction features
2. *Describe the jurisdiction's* preliminary plan review procedures
3. *Discuss* the approval process for alternative fire protection methodologies
4. Evaluate code compliance of conceptual designs

#### Job Performance Requirements

Evaluate a proposed design concept to verify that it meets the intent of applicable codes and standards and is in accordance with jurisdictional policies and procedures.

## 6-2: Evaluating Proposed Passive Fire Protection Elements

### Authority

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 8.3.2

### Given

1. A set of plans and specifications for a building or facility

### Requisite Knowledge and Skills

1. *Describe* fire protection construction features, such as rated assemblies, fire stops, draft stopping, draft curtains, and other passive protection features
2. *Discuss* fire test methods
3. Verify the rating of an assembly using reference materials

### Job Performance Requirements

Evaluate proposed passive fire protection elements of a building or portion of a building, verifying that the protection provided for the facility is in accordance with applicable codes and standards, and identifying, documenting, and reporting deficiencies in accordance with jurisdictional policies.

### 6-3: Evaluating Plans for a Process or Operation

#### Authority

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 8.3.3

#### Given

1. Plans and specifications

#### Requisite Knowledge and Skills

1. *Describe the* hazards of various *processes and* operations used in commercial and industrial occupancies
2. *Identify* applicable standards for arrangement and protection of various *processes and* operations used in commercial and industrial occupancies
3. *Describe* basic physical science as it relates to fire behavior and fire suppression, including mathematics, physics, and chemistry
4. *Identify* reference materials related to hazard properties of liquids, gases, and solids
5. Interpret codes and standards

#### Job Performance Requirements

Evaluate plans for a process or operation, reviewing the process or operation for compliance with applicable codes and standards, and identifying, documenting, and reporting deficiencies in accordance with applicable codes and standards and jurisdictional policies and procedures.

## 6-4: Evaluating Plans for Storage, Handling, and Use of Hazardous Materials

### Authority

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 8.3.4
  - Paragraph 8.3.8
2. Office of the State Fire Marshal

### Given

1. Plans and specifications

### Requisite Knowledge and Skills

1. *Describe* properties of *hazardous materials*
2. *Discuss* applicable standards for the handling, storage, arrangement, and protection of *hazardous materials*
3. *Identify* reference materials related to hazardous materials
4. *Verify* the classification of *hazardous materials* using reference materials

### Job Performance Requirements

Evaluate plans for storage, handling, and use of *hazardous materials for compliance*, by identifying, documenting, and reporting deficiencies in accordance with applicable codes and standards and jurisdictional policies and procedures.

## 6-5: Evaluating Plans for Installing Fire Protection and Life Safety Systems

### Authority

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 8.3.5

### Given

1. A plan submittal

### Requisite Knowledge and Skills

1. *Identify* applicable codes and standards for fire protection *and* life safety systems
2. *Describe engineering calculations for fire suppression and life safety systems*
3. *Identify* construction types and *features that impact system design*
4. *Identify building* material listing requirements and specifications
5. Review specifications and read plans
6. Classify occupancies
7. Interpret codes and standards
8. Verify *engineering* calculations

### Job Performance Requirements

Evaluate 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.

## 6-6: Evaluating a Proposed Alternative Method for Compliance

### Authority

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 8.3.6
2. Office of the State Fire Marshal

### Given

1. Supporting documentation *for a proposed alternate method of compliance*

### Requisite Knowledge and Skills

1. *Describe* how a building should perform under adverse conditions, including the objectives and performance requirements reflecting the *equivalent* level of safety required by the jurisdiction or other performance-based regulation for a process or operation
2. Evaluate alternative proposals to prescriptive codes and standards

### Job Performance Requirements

Evaluate a proposed alternative method for compliance with applicable codes and standards to ensure that the design meets the intent of applicable codes and standards.

## **6-7: Evaluating Systems Integration**

### **Authority**

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 8.3.7

### **Given**

1. A plan submittal
2. A life safety report
3. A sequence of operations report
4. Testing criteria

### **Requisite Knowledge and Skills**

1. *Explain* the fire and life safety objectives
2. *Describe* fire protection and life safety systems and their integration
3. Evaluate system integration

### **Job Performance Requirements**

Evaluate the integration of life safety, fire protection, security, and building service systems by ensuring that the integration of proposed systems meets the requirements or intent of applicable codes and standards and the fire and life safety objectives of the jurisdiction, and identifying, documenting, and reporting deficiencies in accordance with jurisdictional policies.

## **6-8: Verifying Egress System and Elements**

### **Authority**

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 8.3.9
2. Office of the State Fire Marshal

### **Given**

1. A plan of a building or portion of a building

### **Requisite Knowledge and Skills**

1. *Describe how to evaluate a means of egress system for compliance*

### **Job Performance Requirements**

Identify and verify the provision of all egress elements, identifying, documenting, and reporting deficiencies in accordance with applicable codes and standards and jurisdictional policies.

## 6-9: Evaluating a Plan with Special (*High-piled Combustible*) Storage Arrangements

### Authority

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 8.3.10

### Given

1. A plan with *special (high-piled combustible) storage arrangements*

### Requisite Knowledge and Skills

2. *Discuss* application of codes and standards adopted by the jurisdiction for special (*high-piled combustible*) storage arrangements
3. Determine commodity types and storage arrangements

### Job Performance Requirements

Evaluate a plan with special (*high-piled combustible*) storage arrangements, identifying, documenting, and reporting deficiencies in accordance with adopted codes and standards and jurisdictional policies.

## **6-10: Evaluating Building Service Equipment and Operations**

### **Authority**

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 8.3.11

### **Given**

1. Plans and specifications

### **Requisite Knowledge and Skills**

1. *Describe* types, installation, maintenance, and use of building service equipment
2. *Describe* installation, maintenance, and use of equipment for special processes and operations
3. *Identify* applicable codes and standards adopted by the jurisdiction
4. Apply, read, and interpret HVAC plans

### **Job Performance Requirements**

Evaluate heating, ventilation, air conditioning, and other building service equipment and operations, verifying that the systems and other equipment are designed in accordance with applicable codes and standards, and identifying, documenting, and reporting deficiencies in accordance with jurisdictional policies.

## 6-11: Evaluating Performance-Based Design Concepts

### Authority

1. NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner (2014)
  - Paragraph 8.3.12

### Given

1. A preliminary design presentation

### Requisite Knowledge and Skills

1. *Describe* the approval process for alternative performance-based fire protection methodologies
2. *Discuss* performance-based concepts
3. *Describe* development of appropriate input values based on building type and anticipated use
4. *Identify* jurisdictional and code requirements
5. Recognize deviations from the prescriptive code
6. Recognize and interpret performance-based proposals
7. Determine and present appropriate design input values and parameters based on building type and anticipated use

### Job Performance Requirements

Evaluate a performance-based design concept to ensure that the proposed concept meets the intent of applicable codes and standards in accordance with jurisdictional policies and procedures.

## State Fire Training Content

### Code Key

**Blocks**

- G = Given
- RKS = Requisite Knowledge and Skills
- JPR = Job Performance Requirements
- NCTS = New certification training standard

**Sources**

### Certification: Plan Examiner

CTS	Block	Addition	Justification	Source/Reference
2-3	G	A submittal package	There are more components than just the plans and specifications needed to accomplish the JPR	
2-3	RKS	Identify conditions that require permits in accordance with the authority having jurisdictions	Permits are pervasive enough that plan examiners need to know the conditions under which permits are required.	
3-2	G	Measuring tools	The JPR can't be accomplished without them.	
3-2	RKS	Identify occupancy classifications and their intended uses	It's required for the 7.3.2 JPR but wasn't included in the NFPA Requisite Knowledge. You can't verify occupancy classifications if you don't know what they are.	
3-4	G	An area's identified use	Clarifies the application of occupant load specific to a use consistent with applicable codes and standards.	
3-10	NCTS	Evaluating Community or Wildland Urban Interface Plans	Wildland urban interface material added under state mandate.	Title 14, Division 1.5, Chapter 7, Subchapter 2, Articles 1-5

**State Fire Training Content**

<b>CTS</b>	<b>Block</b>	<b>Addition</b>	<b>Justification</b>	<b>Source/Reference</b>
3-11	NCTS	Evaluating Plans for Existing Occupancies	Covers some California requirements not included in NFPA.	California Building Code (International Code Council, 2013 edition, ISBN: 9781609834579)  California Fire Code (with Title 19 excerpts) (International Code Council, 2013 edition, ISBN: 9781609834609)
6-4	NCTS	Merged NFPA paragraphs 8.3.4 and 8.3.8.	They have identical JPR, G, and RKS content and 8.3.4 (flammable and combustible solids, liquids, and gases) are a subset of 8.3.8 (hazardous materials).	
6-5	RKS	Describe engineering calculations for fire suppression and life safety systems	Replaced “hydraulic” calculations, which was too limiting. This is more encompassing of the range of calculations required of a plan examiner.	
6-8	RKS	Describe how to evaluate a means of egress system for compliance	Required by state law, mandates compliance with state fire marshal regulations for exiting and egress.	Health and Safety Code 13145 and 13146 California Building and Fire Codes.



# Building Plan Review

## Course Plan

### Course Details

<b>Certification:</b>	Plan Examiner
<b>CTS Guide:</b>	Plan Examiner ([Month Year])
<b>Description:</b>	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.
<b>Designed For:</b>	Those desiring to become a plan examiner
<b>Prerequisites:</b>	None
<b>Standard:</b>	Complete all activities and formative tests Complete all summative tests with a minimum score of 80%
<b>Hours:</b>	Lecture: 18:00 Activities: 6:00 Testing: 2:00
<b>Hours (Total):</b>	26:00
<b>Maximum Class Size:</b>	25
<b>Instructor Level:</b>	Registered Primary Instructor
<b>Instructor/Student Ratio:</b>	1:25
<b>Restrictions:</b>	None
<b>SFT Designation:</b>	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/instructorresources.php>:

- Not applicable

#### 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)

- One set for course activities
- One set for testing

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### 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

## Plan Examiner 1A

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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

## Plan Examiner 1A

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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

## Plan Examiner 1A

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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.

**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

## Plan Examiner 1A

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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

## Plan Examiner 1A

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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

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?

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

- 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?

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

**Activities**

1. To be determined by instructor.

**CTS Guide Reference:** CTS 3-11

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## Plan Examiner 1A

### Time Table

Segment	Lecture Time	Activity Time	Total Unit Time
<b>Unit 1: Introduction</b>			
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	
<b>Unit 1 Totals</b>	<b>2:00</b>	<b>0:00</b>	<b>2:00</b>
<b>Unit 2: Administration</b>			
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	

## Plan Examiner 1A

Segment	Lecture Time	Activity Time	Total Unit Time
<b>Unit 2 Totals</b>	<b>2:30</b>	<b>1:45</b>	<b>4:15</b>
<b>Unit 3: New Building Plan Review</b>			
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	
<b>Unit 3 Totals</b>	<b>13:30</b>	<b>4:15</b>	<b>17:45</b>
<b>Lecture, Activity, and Unit Totals:</b>	<b>18:00</b>	<b>6:00</b>	<b>24:00</b>

### Course Totals

## Plan Examiner 1A

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Total Lecture Time (LT)	18:00
Total Activity Time (AT)	6:00
Total Testing Time (TT)	2:00
<b>Total Course Time</b>	<b>26:00</b>

DRAFT



# Fire Protection and Life Safety Systems Plan Review

## Course Plan

### Course Details

<b>Certification:</b>	Plan Examiner
<b>CTS Guide:</b>	Plan Examiner ([Month Year])
<b>Description:</b>	This course provides the knowledge and skills that prepare a plan examiner to evaluate fire flow compliance and identify requirements and review installation plans for fire protection and life safety systems.
<b>Designed For:</b>	Those desiring to become a plan examiner
<b>Prerequisites:</b>	Plan Examiner 1A: Building Plan Review
<b>Standard:</b>	Complete all activities and formative tests Complete all summative tests with a minimum score of 80%
<b>Hours:</b>	Lecture: 18:30 Activities: 7:30 Testing: 1:00
<b>Hours (Total):</b>	27:00
<b>Maximum Class Size:</b>	25
<b>Instructor Level:</b>	Primary Instructor
<b>Instructor/Student Ratio:</b>	1:25
<b>Restrictions:</b>	None
<b>SFT Designation:</b>	CFSTES

### Required Resources

#### Instructor Resources

To teach this course, instructors need:

- *California Building Code*
  - Publisher: International Code Council (ICC)
  - Edition: edition currently adopted by the California Building Standards Commission (CBSC)
- *California Fire Code*
  - Publisher: ICC
  - Edition: edition currently adopted by the CBSC
- *Fire Detection and Suppression Systems*
  - Publisher: International Fire Service Training Association (IFSTA)
  - Edition: 4<sup>th</sup> edition
- NFPA 13: Standard for the Installation of Fire Sprinkler Systems
  - Publisher: National Fire Protection Association (NFPA)
  - Edition: edition currently adopted by the CBSC
- NFPA 14: Standard for the Installation of Standpipe and Hose Systems
  - Publisher: NFPA
  - Edition: edition currently adopted by the CBSC
- NFPA 17A: Standard for Wet Chemical Extinguishing Systems
  - Publisher: NFPA
  - Edition: edition currently adopted by the CBSC
- NFPA 20: Standard for the Installation of Stationary Pumps for Fire Protection
  - Publisher: NFPA
  - Edition: edition currently adopted by the CBSC
- NFPA 24: Standard for the Installation of Private Fire Service Mains and Their Appurtenances
  - Publisher: NFPA
  - Edition: edition currently adopted by the CBSC
- NFPA 72: National Fire Alarm and Signaling Code
  - Publisher: NFPA
  - Edition: edition currently adopted by the CBSC
- Engineers scale
- Architectural scale
- Calculator

#### Online Instructor Resources

The following instructor resources are available online at

<http://osfm.fire.ca.gov/training/instructorresources.php>:

- Not applicable

### Student Resources

To participate in this course, students need:

- *California Building Code*
  - Publisher: International Code Council (ICC)
  - Edition: edition currently adopted by the California Building Standards Commission (CBSC)
- *California Fire Code*
  - Publisher: ICC
  - Edition: edition currently adopted by the CBSC
- NFPA 13: Standard for the Installation of Fire Sprinkler Systems
  - Publisher: National Fire Protection Association (NFPA)
  - Edition: edition currently adopted by the CBSC
- NFPA 14: Standard for the Installation of Standpipe and Hose Systems
  - Publisher: NFPA
  - Edition: edition currently adopted by the CBSC
- NFPA 17A: Standard for Wet Chemical Extinguishing Systems
  - Publisher: NFPA
  - Edition: edition currently adopted by the CBSC
- NFPA 72: National Fire Alarm and Signaling Code
  - Publisher: NFPA
  - Edition: edition currently adopted by the CBSC
- Engineers scale
- Architectural scale
- Calculator

### 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 2-1, 3-1, and 3-2 as well as any other activities designed by the instructor)
  - 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
  - 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 and 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

## Unit 2: Fire Flow

### Topic 2-1: Evaluating Fire Flow Compliance

#### Terminal Learning Objective

At the end of this topic, a student, given a plan, codes and standards, and fire flow test results, will be able to evaluate code compliance for required fire flow and hydrant location and spacing, verifying correct hydrant location, determining required fire flow, and identifying, documenting, and reporting deficiencies in accordance with jurisdictional policies and procedures.

#### Enabling Learning Objectives

1. Identify standard civil engineering symbols
2. Describe the types of water supply and distribution systems
3. Discuss components of public and private water supply systems, including:
  - Water meters
  - Backflow prevention
  - Fire hydrants
  - Valves and pipes
  - Other devices that can impact fire flow

4. Describe water distribution system test methods
5. Analyze the effects of friction loss and elevation on water flow
6. Discuss the potential impact of state health regulations on fire flow
7. Identify applicable codes and standards related to fire flow in the jurisdiction
8. Interpret fire flow test results
9. Determine fire hydrant locations and spacing
10. Read fire flow graphs

### Discussion Questions

1. How should fire flow be distributed through multiple hydrants?
2. How do fire flow requirements vary in rural versus urban areas and/or commercial versus residential buildings?

### Activities

1. Given civil drawings and the *California Fire Code*, have students determine compliance for fire flow hydrants along fire apparatus access.

**CTS Guide Reference:** CTS 3-5

## Unit 3: Fire Protection and Life Safety Systems

### Topic 3-1: Identifying Requirements for Fire Protection or Life Safety Systems

#### Terminal Learning Objective

At the end of this topic, a student, given a set of plans, will be able to identify the requirements for a fire protection or life safety system, identifying, documenting, and reporting deficiencies in accordance with jurisdictional policies and procedures.

#### Enabling Learning Objectives

1. Identify applicable code requirements for:
  - Life safety systems
    - Fire alarm
    - Smoke control
  - Fire extinguishers
  - Fire protection systems
    - Sprinkler (with and without foam)
      - Wet
      - Dry
      - Pre-action
      - Deluge
    - Standpipe
    - Engineered and pre-engineered
      - Clean agent
      - Dry chemical
      - Dry powder
      - Wet chemical
      - CO<sub>2</sub>

- Water wash
  - Mist
  - Fire pumps
2. Identify the symbols used on a set of plans
  3. Identify the components of basic plans or shop drawings
    - Title page
    - Legend
    - General notes
    - Cut sheet
    - Listing sheet
    - Specifications
    - Calculations
  4. Apply codes and standards

### Discussion Questions

1. How much contact should a plan examiner have with a designer during the review process?

### Activities

1. Given a set of plans, have students evaluate the scope.

**CTS Guide Reference:** CTS 3-1

## Topic 3-2: Reviewing Fire Protection and Life Safety System Installation Plans

### Terminal Learning Objective

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

### Enabling Learning Objectives

1. Describe basic physical science as it relates to fire behavior and fire suppression
2. Identify basic system design criteria and applicable codes and standards for life safety systems
  - Fire alarm
  - Smoke management
  - Communication
3. Identify basic system design criteria and applicable codes and standards for fire protection systems
  - Fire underground
  - Fire pumps
  - Fire sprinklers
  - Standpipes
  - Engineered and pre-engineered
4. Describe material listing requirements and specifications
5. Identify installation components of fire protection and life safety systems

- Fire alarm
  - Initiation device
  - Notification device
  - Control panel
  - Annunciators
  - Backup power
  - Conductors/wire
  - Communicators
- Smoke management
  - Controllers
  - Dampers
  - Annunciators
  - Interlocks
  - Fans
  - Exhaust
  - Initiation device
- Communication
  - Firemen phones
  - Refuge area communication
  - Repeaters
    - External
    - Internal
  - Public address
- Fire underground
  - Pipe
  - Thrust block
  - Valves
  - Fire department connection
  - Cathodic protection
    - Mastic
    - Wrap
- Fire pumps
  - Controllers
  - Fuel system
  - Prime movers
  - Hangers and braces
  - Pressure maintenance (jockey) pump
- Fire sprinkler
  - Pipe
  - Hangers
  - Braces
  - Heads

- Valves
  - Standpipes
    - Pipe
    - Valves
      - Pressure reducing
      - Restrictor plates
      - Outlets
    - Hangers and braces
    - Hose
    - Nozzles
    - Fire department connection
  - Engineered and pre-engineered
    - Pipe
    - Valves
    - Nozzles
    - Heads
    - Hangers and braces
    - Interlocks
    - Fire alarm initiation device
    - System notification device
    - Abort switch
    - Agent
    - Agent container
    - Mixer/proportioner
6. Describe engineering calculations for fire suppression and life safety systems
7. Describe acceptance inspection and testing of completed installations
8. Verify calculations
- Engineering
  - Battery
  - Voltage drop
  - Seismic
  - Thrust block
9. Review specifications
10. Classify occupancies for fire suppression systems
- Light hazard
  - Ordinary hazard
  - Extra hazard
  - Special occupancy hazard
11. Classify commodity classes
- I
  - II
  - III

- IV
- High hazard commodities
- Plastics
  - Group A
  - Group B
  - Group C
- Mixed Commodities

12. Interpret and apply codes and standards

### Discussion Questions

1. What should be considered when specifying the location of fire department connections (FDCs)?
2. How does occupancy classification influence the need for fire protection and life safety systems?

### Activities

1. Given shop drawings for a fire alarm system, a fire sprinkler system, and a pre-engineered system, have each student evaluate each system for compliance with the minimum codes and standards.

**CTS Guide Reference:** CTS 3-9

**Time Table**

Segment	Lecture Time	Activity Time	Total Unit Time
<b>Unit 1: Introduction</b>			
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	
<b>Unit 1 Totals</b>	<b>1:00</b>	<b>0:00</b>	<b>1:00</b>
<b>Unit 2: Fire Flow</b>			
Topic 2-1: Evaluating Fire Flow Compliance			
Lecture	1:30		
Activity 2-1: Recommended by SFT		1:00	
<b>Unit 2 Totals</b>	<b>1:30</b>	<b>1:00</b>	<b>2:30</b>
<b>Unit 3: Fire Protection and Life Safety Systems</b>			
Topic 3-1: Identifying Requirements for Fire Protections and Life Safety Systems			
Lecture	1:00		
Activity 3-1: Recommended by SFT		00:30	
Topic 3-2: Reviewing Fire Protection and Life Safety System Installation Plans			
Lecture	15:00		
Activity 3-2: Recommended by SFT		6:00	
<b>Unit 3 Totals</b>	<b>16:00</b>	<b>6:30</b>	<b>22:30</b>
<b>Lecture, Activity, and Unit Totals:</b>	<b>18:30</b>	<b>7:30</b>	<b>26:00</b>

**Course Totals**

Total Lecture Time (LT)	18:30
Total Activity Time (AT)	7:30
Total Testing Time (TT)	1:00
<b>Total Course Time</b>	<b>27:00</b>



# Hazards and Special Operations Plan Review

## Course Plan

### Course Details

<b>Certification:</b>	Plan Examiner
<b>CTS Guide:</b>	Plan Examiner
<b>Description:</b>	This course provides the knowledge and skills that prepare a plan examiner to evaluate plans associated with new construction, systems integration, alternative compliance, wildland urban interface areas, and special operations including hazardous materials and high-piled combustible storage.
<b>Designed For:</b>	Those desiring to become a plan examiner
<b>Prerequisites:</b>	Plan Examiner 1A Plan Examiner 1B
<b>Standard:</b>	Complete all activities and formative tests Complete all summative tests with a minimum score of 80%
<b>Hours:</b>	Lecture: 20:00 Activities: 6:30 Testing: 1:30
<b>Hours (Total):</b>	28:00
<b>Maximum Class Size:</b>	25
<b>Instructor Level:</b>	Primary Instructor
<b>Instructor/Student Ratio:</b>	1:25
<b>Restrictions:</b>	None
<b>SFT Designation:</b>	CFSTES

### Required Resources

#### Instructor Resources

To teach this course, instructors need:

- *California Building Code*
  - Publisher: International Code Council (ICC)
  - Edition: edition currently adopted by the California Building Standards Commission (CBSC)
- *California Fire Code*
  - Publisher: ICC
  - Edition: edition currently adopted by the CBSC
- *California Wildfire Landscaping*
  - Author: Maureen Gilmer
  - Publisher: Taylor Publishing Company
  - Edition: 1994
- *Plan Review Manual (Based on the 2009 IBC)*
  - Publisher: International Code Council
  - Edition: based on the 2009 International Building Code
- *International Code Council Performance Code for Buildings and Facilities*
  - Publisher: ICC
  - Edition: 2009
- NFPA 13: Standard for the Installation of Fire Sprinkler Systems
  - Publisher: National Fire Protection Association (NFPA)
  - Edition: edition currently adopted by the CBSC
- Engineers scale
- Architectural scale
- Calculator

#### Online Instructor Resources

The following instructor resources are available online at <http://osfm.fire.ca.gov/training/instructorresources.php>:

- Not applicable

#### Student Resources

To participate in this course, students need:

- *California Building Code*
  - Publisher: International Code Council (ICC)
  - Edition: edition currently adopted by the California Building Standards Commission (CBSC)

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- *California Fire Code*
  - Publisher: ICC
  - Edition: edition currently adopted by the CBSC
- *International Code Council Performance Code for Buildings and Facilities*
  - Publisher: ICC
  - Edition: 2009
- NFPA 13: Standard for the Installation of Fire Sprinkler Systems
  - Publisher: National Fire Protection Association (NFPA)
  - Edition: edition currently adopted by the CBSC
- Engineers scale
- Architectural scale
- Calculator

### 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 2-2, 4-1, 5-1, 5-2, and 5-3 as well as any other activities designed by the instructor)
  - 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

## Plan Examiner 1C

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2. Identify the courses required for Plan Examiner certification
  - 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 and 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

## Unit 2: Design and Systems Integration

### Topic 2-1: Evaluating Design Concepts

#### Terminal Learning Objective

At the end of this topic, a student, given a preliminary design presentation, will be able to evaluate a proposed design concept to verify that it meets the intent of applicable codes and standards and is in accordance with jurisdictional policies and procedures.

#### Enabling Learning Objectives

1. Describe a jurisdiction's preliminary plan review procedures
2. Identify the approval process for alternative fire protection methodologies
3. Evaluate code compliance of conceptual designs
  - Construction
  - Exits and egress
  - Access and water supply
  - Fire protection and life safety systems

#### Discussion Questions

1. What other departments should a plan examiner consult during a design concept evaluation?

2. What are some design features or issues that could render a preliminary design unacceptable?
3. How are the design concept review and the adoption cycles for state and local codes and standards interrelated?

### Activities

1. To be determined by the instructor

### Instructor Notes

1. For more information on this topic, see *Guidance Document for Incorporating Risk Concepts into NFPA Codes and Standards* (Rose, Flamberg, and Leverenz / [www.nfpa.org](http://www.nfpa.org))

**CTS Guide Reference:** CTS 6-1

## Topic 2-2: Evaluating Systems Integration

### Terminal Learning Objective

At the end of this topic, a student, given a plan submittal, a life safety report, a sequence of operations report, and testing criteria, will be able to evaluate the integration of life safety, fire protection, security, and building service systems, ensuring that the integration of proposed systems meets the requirements or intent of applicable codes and standards and the fire and life safety objectives of the jurisdiction, and identifying, documenting, and reporting deficiencies in accordance with jurisdictional policies.

### Enabling Learning Objectives

1. Describe the fire and life safety objectives of a jurisdiction
  - Building and property protection
  - Life safety
    - Protection
    - Evacuation
  - Building protection vs. life safety
2. Describe fire protection and life safety systems and their integration
  - Construction
  - Separation
  - Egress
  - Fire protection and life safety systems
3. Evaluate system integration

### Discussion Questions

1. What fire and life safety concerns apply to security systems?
2. How might the fire and life safety objectives of a fire agency differ from those of a property owner? Or the public?

### Activities

1. Given a high-rise plan, have students review the integrated systems to determine how the construction, fire protection and life safety, and building service systems work together to promote building and occupant survivability.

CTS Guide Reference: CTS 6-7

### Unit 3: Alternative Compliance

#### Topic 3-1: Evaluating Performance-Based Design Concepts

##### Terminal Learning Objective

At the end of this topic, a student, given a preliminary design presentation, will be able to evaluate a performance-based design concept, ensuring that the proposed concept meets the intent of applicable codes and standards in accordance with jurisdictional policies and procedures.

##### Enabling Learning Objectives

1. Discuss performance-based concepts
2. Describe the approval process for alternative performance-based fire protection methodologies
3. Describe the development of appropriate input values based on building type and anticipated hazards and use
4. Identify jurisdictional and code requirements
5. Recognize deviations from the prescriptive code
6. Recognize and interpret performance-based proposals
7. Research professional reports and engineer evaluations
8. Determine and present appropriate design input values and parameters based on building type and anticipated hazards and use

##### Discussion Questions

1. What is the goal of performance-based design?
2. In what circumstances or building types might a plan examiner be more likely to encounter a performance-based design concept?

##### Activities

1. To be determined by the instructor

##### Instructor Notes

1. Please bring in examples of performance-based design from your jurisdiction.

CTS Guide Reference: CTS 6-11

#### Topic 3-2: Evaluating a Proposed Alternative Method for Compliance

##### Terminal Learning Objective

At the end of this topic, a student, given supporting documentation for a proposed alternate method of compliance, will be able to evaluate a proposed alternative method for compliance with applicable codes and standards, ensuring that the design meets the intent of applicable codes and standards.

##### Enabling Learning Objectives

1. Describe how a building should perform under adverse conditions, including the objectives and performance requirements reflecting the equivalent level of safety

required by the jurisdiction or other performance-based regulation for a process or operation

2. Evaluate alternative proposals to prescriptive codes and standards

### Discussion Questions

1. When should performance-based design be considered?
2. What liabilities can accepting alternate means of protection create?

### Activities

1. To be determined by the instructor

**CTS Guide Reference:** CTS 6-6

## Unit 4: Wildland Urban Interface Areas

### Topic 4-1: Evaluating Development/Community or Wildland Urban Interface Landscape Plans

#### Terminal Learning Objective

At the end of this topic, a student, given a set of development/community landscape plans and a set of wildland urban interface area landscape plans, will be able to evaluate those plans, ensuring compliance with applicable codes and standards and identifying, documenting, and reporting deficiencies according to jurisdictional policies and procedures, resulting in the issuance of required or applicable permits.

#### Enabling Learning Objectives

1. Describe basic wildland fire behavior
2. Describe wildland urban interface fire progression
3. Define wildland urban interface zones
  - Moderate fire hazard severity zone
  - High fire hazard severity zone
  - Very high fire hazard severity zone
  - Designated wildland urban interface areas
4. Describe codes and standards related to public areas of a development/community landscape plan
5. Describe codes and standards related to a wildland urban interface area landscape plan
6. Describe the infrastructure considerations for grading and improvement plans
7. Identify and evaluate design and maintenance standards for open space areas adjacent to new development projects
8. Describe how to evaluate a vegetation management plan for buildings in a wildland urban interface area
9. Coordinate with applicable building and planning departments

#### Discussion Questions

1. At what point in a development or design process should wildland urban interface protection methods be identified?
2. What resources can a plan examiner use when evaluating wildland fuel hazards?

### Activities

1. Given landscape drawings for a residence in a very high fire hazard severity zone, have students evaluate the drawings for compliance with applicable codes and standards.

**CTS Guide Reference:** CTS 3-10

## Unit 5: Special Operations

### Topic 5-1: Evaluating Plans for Storage, Handling, and Use of Hazardous Materials

#### Terminal Learning Objective

At the end of this topic, a student, given plans and specifications, will be able to evaluate plans for storage, handling, and use of hazardous materials for compliance, identifying, documenting, and reporting deficiencies in accordance with applicable codes and standards and jurisdictional policies and procedures.

#### Enabling Learning Objectives

1. Describe properties of hazardous materials
2. Discuss applicable standards for the storage, handling, and use of hazardous materials
3. Identify reference materials related to hazardous materials
4. Verify the classification of hazardous materials using reference materials

#### Discussion Questions

1. How are the storage requirements for flammable liquids in a mercantile display different from storage requirements in a laboratory?
2. What hazards are associated with the resale of flammable compressed gas in a mercantile occupancy?
3. How would a plan reviewer address the use of hazardous materials or flammable liquid storage cabinets during the plan review process?

#### Activities

1. Given applicable codes and standards and a list of occupancy types and use(s) with associated hazardous materials management plans (HMMP), have students research and identify the thresholds for maximum allowable quantities of hazardous materials in multiple occupancies.

**CTS Guide Reference:** CTS 6-4

### Topic 5-2: Evaluating Plans for a Process or Operation

#### Terminal Learning Objective

At the end of this topic, a student, given plans and specifications, will be able to evaluate plans for a process or operation, reviewing the process or operation for compliance with applicable codes and standards and identifying, documenting, and reporting deficiencies in accordance with applicable codes and standards and jurisdictional policies and procedures.

### Enabling Learning Objectives

1. Describe the hazards of various operations used in commercial and industrial occupancies
  - Aerosol products
  - Amusement buildings
  - Assemblies
  - Aviation facilities
  - Battery systems
  - Carnivals and fairs
  - Christmas tree lots
  - Combustible fiber storage
  - Commercial rubbish handling operation
  - Dry cleaning plants
  - Dust-producing operations
  - Exhibits and trade shows
  - Fireworks, pyrotechnics, special effects
  - Fueled vehicles or equipment in assembly buildings
  - Hazardous materials
  - High-piled combustible storage
  - Live audiences
  - Lumber yards
  - Open burning
  - Ovens, industrial baking, drying
  - Parade floats
  - Production facilities
  - Refrigeration equipment
  - Spraying and dipping operations
  - Tents, temporary membrane structures
  - Tire storage
  - Welding and other hot work operations
  - Wood products
2. Identify applicable standards for arrangement and protection of various processes and operations used in commercial and industrial occupancies
3. Interpret and apply codes and standards

### Discussion Questions

1. How does your jurisdiction handle operational permits?
2. What operations create significant hazards for firefighters and response personnel?

### Activities

1. Given a plan, an application to perform a special process or operation, and applicable codes and standards, have students evaluate for compliance with applicable codes and standards.

CTS Guide Reference: CTS 6-3

### Topic 5-3: Evaluating a Plan with Special (High-piled Combustible) Storage Arrangements

#### Terminal Learning Objective

At the end of this topic, a student, given a plan with special (high-piled combustible) storage arrangements, will be able to evaluate a plan with special (high-piled combustible) storage arrangements, identifying, documenting, and reporting deficiencies in accordance with adopted codes and standards and jurisdictional policies.

#### Enabling Learning Objectives

1. Discuss codes and standards adopted by the jurisdiction for special (high-piled combustible) storage arrangements
2. Determine commodity types and storage arrangements
  - I
  - II
  - III
  - IV
  - High hazard commodities
  - Plastics
    - Group A
    - Group B
    - Group C
  - Mixed Commodities

#### Discussion Questions

1. How can a plan examiner address firefighter safety regarding high-piled combustible storage?
2. When is storage limited to six feet in height?

#### Activities

1. Given a plan (that includes high-piled combustible storage), measuring tools, and applicable codes and standards, have students classify commodities and identify additional building requirements to permit storage above 12 feet.

CTS Guide Reference: CTS 6-9

**Time Table**

Segment	Lecture Time	Activity Time	Total Unit Time
<b>Unit 1: Introduction</b>			
Topic 1-1: Orientation and Administration			
Lecture	0:30		
Activity 1-1: To be determined by instructor		0:00	
Topic 1-2: Plan Examiner Certification Process			
Lecture	0:30		
Activity 1-2: To be determined by instructor		0:00	
<b>Unit 1 Totals</b>	<b>1:00</b>	<b>0:00</b>	<b>1:00</b>
<b>Unit 2: Design and Systems Integration</b>			
Topic 2-1: Evaluating Design Concepts			
Lecture	2:00		
Activity 2-1: Determined by instructor		0:00	
Topic 2-2: Evaluating Systems Integration			
Lecture	1:00		
Activity 2-2: Recommended by SFT		1:00	
<b>Unit 2 Totals</b>	<b>3:00</b>	<b>1:00</b>	<b>4:00</b>
<b>Unit 3: Alternate Compliance</b>			
Topic 3-1: Evaluating Performance-Based Design Concepts			
Lecture	1:00		
Activity 3-1: Determined by instructor		0:00	
Topic 3-2: Evaluating a Proposed Alternative Method for Compliance			
Lecture	1:00		
Activity 3-2: Determined by instructor		0:00	
<b>Unit 3 Totals</b>	<b>2:00</b>	<b>0:00</b>	<b>2:00</b>
<b>Unit 4: Wildland Urban Interface Areas</b>			
Topic 4-1: Evaluating Development/Community or Wildland Urban Interface Landscape Plans			
Lecture	3:00		
Activity 2-5: Recommended by SFT		1:00	
<b>Topic 4 Totals</b>	<b>3:00</b>	<b>1:00</b>	<b>4:00</b>
<b>Unit 5: Special Operations</b>			

## Plan Examiner 1C

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Segment	Lecture Time	Activity Time	Total Unit Time
Topic 5-1: Evaluating Plans for Storage, Handling, and Use of Hazardous Materials			
Lecture	8:00		
Activity 5-1: Recommended by SFT		2:00	
Topic 5-2: Evaluating Plans for a Process or Operation			
Lecture	1:00		
Activity 5-2: Recommended by SFT		1:30	
Topic 5-3: Evaluating a Plan with Special (High-piled Combustible) Storage			
Lecture	2:00		
Activity 5-1: Recommended by SFT		1:00	
<b>Unit 5 Totals</b>	<b>11:00</b>	<b>4:30</b>	<b>15:30</b>
<b>Lecture, Activity, and Unit Totals:</b>	<b>20:00</b>	<b>6:30</b>	<b>26:30</b>

### Course Totals

Total Lecture Time (LT)	20:00
Total Activity Time (AT)	6:30
Total Testing Time (TT)	1:30
<b>Total Course Time</b>	<b>28:00</b>