Building Plan Review (2024)

Course Plan

Course Details

Certification: Fire Plans Examiner

CTS Guide: Fire Plans Examiner (2024)

Description: This course provides the knowledge and skills that prepare a fire plans examiner to carry out administrative responsibilities associated with plan review services and evaluate plans for new buildings in accordance with applicable codes and standards and jurisdictional policies and procedures.

Designed For: Personnel preparing to pursue Fire Plans Examiner certification or anyone who performs the duties of a fire plans examiner within their agency

Prerequisites: None

Standard: Complete all activities and formative tests

Complete all summative tests with a minimum score of 80%

Hours (Total): 28

(18 lecture / 8 application / 2 testing)

Maximum Class Size: 30

Instructor Level: SFT Fire Plans Examiner Registered Instructor

Instructor/Student Ratio: 1:30 (lecture)

1:15 (application)

Restrictions: None

SFT Designation: CFSTES

Table of Contents

Required Resources

Instructor Resources

To teach this course, instructors need:

- One of the following texts
  - *Plan Review Manual* (ICC, based on the 2009 IBC)
  - *Plans Examiner for Fire and Emergency Services* (IFSTA, 2016)
- California Building Code (CBC) (CCR, Title 24, current edition)
- California Fire Code (CFC) (CCR, Title 24, current edition)
- NFPA 1030: Standard for Professional Qualifications for Fire Prevention Program Positions (current edition)
- Engineering scale
- Architectural scale

Online Instructor Resources

The following instructor resources are available online at https://osfm.fire.ca.gov/what-we-do/state-fire-training/professional-certifications:

- Activity 2-4 – Using Engineer and Architect Scales (FEMA)
- Effective Use of the IBC/CBC (2013)

Student Resources

To participate in this course, students need:

- California Building Code (CBC) (CCR, Title 24, current edition)
- California Fire Code (CFC) (CCR, Title 24, current edition)
- Engineering scale
- Architectural scale

Optional student resources:

- Text selected by instructor
- Laptop or tablet for viewing digital resources and plans (a second portable screen is also helpful)

Facilities, Equipment, and Personnel

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

- Standard learning environment or facility, which may include:
  - Writing board or paper easel chart
  - Markers, erasers
  - Amplification devices
  - Projector and screen
  - Laptop or tablet with presentation or other viewing software
  - Internet access with appropriate broadband capabilities

- A large room with tables to accommodate full-size plans for up to 30 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 Application activities)
    - One set for course activities
    - One set for testing

Timetable

Segment	Lecture	Application	Unit Total
Unit 1: Introduction			
Topic 1-1: Orientation and Administration	0.50	0.00	
Topic 1-2: Fire Plans Examiner Process	0.50	0.00	
Topic 1-3: Definition of Duties	1.00	0.00	
Unit 1 Totals	**2.00**	**0.00**	**2.00**
Unit 2: Administration			
Topic 2-1: Determining Applicable Codes and Standards	0.25	0.50	
Topic 2-2: Developing Plan Review Policies and Procedures	0.50	0.50	
Topic 2-3: Processing Plan Review Documents	0.25	0.00	
Topic 2-4: Navigating Plan Sets	0.50	0.50	
Topic 2-5: Verifying Product Listings	0.00	0.50	
Topic 2-6: Creating Plan Review Checklists and Forms	0.50	0.00	
Topic 2-7: Preparing Reports	0.25	0.00	
Topic 2-8: Resolving Deficiencies	0.50	0.00	
Topic 2-9: Participating in Legal Proceedings	0.25	0.00	
Unit 2 Totals	**3.00**	**2.00**	**5.00**
Unit 3: New Building Plan Review			
Topic 3-1: Verifying Occupancy Classification and Maximum Allowable Occupant Loads	1.00	1.00	
Topic 3-2: Verifying Construction Type	1.00	2.00	
Topic 3-3: Evaluating Fire Access Site Plans	1.00	0.00	
Topic 3-4: Evaluating the Need for Fire Protection and Life Safety Systems	2.00	0.50	
Topic 3-5: Evaluating Proposed Passive Fire Protection Elements	2.00	1.00	
Topic 3-6: Verifying Means of Egress Compliance	3.00	0.50	
Topic 3-7: Evaluating Building Service Equipment and Operations	1.00	1.00	
Topic 3-8: Evaluating Plans for Modifying Existing Occupancies	2.00	0.00	
Unit 3 Totals	**13.00**	**6.00**	**19.50**
Formative Assessments			
Determined by AHJ or educational institution	**0.00**	**0.00**	**0.00**
Summative Assessment			
Determined by AHJ or educational institution	**0.00**	**2.00**	**2.00**
Course Totals	**18.00**	**10.00**	**28.00**

Timetable Key

1. The Timetable documents the amount of time estimated to deliver the content included in the course plan.

2. Time is documented using the quarter system: 15 min. = .25 / 30 min. = .50 / 45 min. = .75 / 60 min. = 1.0.

3. The Course Totals do not reflect time for lunch (1 hour) or breaks (10 minutes per each 50 minutes of instruction or assessment). It is the instructor's responsibility to add this time based on the course delivery schedule.

4. Application (activities, skills exercises, and formative testing) time will vary depending on the number of students enrolled. The Application time documented is based on the maximum class size identified in the Course Details section.

5. Summative Assessments are determined and scheduled by the authority having jurisdiction. These are not the written or psychomotor State Fire Training certification exams. These are in-class assessments to evaluate student progress and calculate course grades.

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. Determined by instructor

Application

1. Determined by instructor

Topic 1-2: Fire Plans Examiner Certification Process

Terminal Learning Objective

At the end of this topic a student will be able to identify the requirements for Fire Plans Examiner certification and describe the certification task book and examination process.

Enabling Learning Objectives

1. Identify the levels of certification in the Fire Plans Examiner certification track
2. Identify other Fire Prevention certification tracks
   - First Responder Inspector (2024) of Fire Inspector 1 (2014)
   - Fire Inspector (2024) or Fire Inspector 2 (2014)
   - Fire Marshal (2014 or 2024)
3. Identify the prerequisites for Fire Plans Examiner certification
   - None
4. Identify the course work required for Fire Plans Examiner certification
   - Fire Plans Examiner 1A: Building Plan Review (2024)
   - Fire Plans Examiner 1B: Fire Protection and Life Safety Systems Plan Review (2024)
   - Fire Plans Examiner 1C: Hazards and Special Operations Plan Review (2024)
   - Statutes and Regulations (SFT)
5. Identify the exams requirements for Fire Plans Examiner certification
   - Not applicable
6. Identify the task book requirements for Fire Plans Examiner certification
   - Fire Plans Examiner Certification Task Book (2024)
7. Identify the experience requirements for Fire Plans Examiner certification
   - Has a minimum of one (1) year full-time paid experience or two (2) years' volunteer or part-time paid experience in a recognized California fire agency in a fire prevention role with plan review as their primary responsibility
8. Identify the position requirements for Fire Plans Examiner certification
   - None
9. Describe the certification task book process
10. Describe the certification testing process
    - Not applicable
    - All formative and summative testing is completed in individual courses
    - Schedule skills evaluation test

Discussion Questions

1. Determined by instructor

Application

1. Determined by instructor

Topic 1-3: Definition of Duties

Terminal Learning Objective

At the end of this topic a student, given NFPA 1030; applicable codes, standards, and ordinances; and AHJ policies and procedures, will be able to carry out the administrative and plan review activities of a fire plans examiner in accordance with national, state, and local standards.

Enabling Learning Objectives

1. Identify the administrative duties of a fire plans 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 AHJ policy
   - Create forms and job aids
2. Identify the plans review duties of a fire plans 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 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 fire plans examiner verify that they have acted within the spirit of the law?
3. How can a fire plans examiner establish a positive working relationship with field personnel?
4. How might a fire plans examiner prioritize plans to be reviewed?

Application

1. Determined by instructor

Instructor Notes

1. The list for ELO 2 (review and approve plans) comes from the California Building Code, Volume 1. See Effective Use of the IBC/CBC (2013) (included in the Online Instructor Resources).

CTS Guide Reference: CTS 1-1

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, so that the proper document, edition, and section are referenced.

Enabling Learning Objectives

1. Describe applicable AHJ codes and standards
   - California Code of Regulations (CCR) Title 24 – California Building Standards Code
   - CCR Title 19 – Public Safety
   - Other recognized codes and standards
   - Local ordinances and standards
   - Published interpretations
   - Information bulletins
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
7. Make decisions

Discussion Questions

1. How can a fire plans examiner address a known hazard for which they are not the AHJ?
2. How does a fire plans examiner determine which codes, standards, and policies are applicable? Describe factors affecting this.

Application

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

Instructor Notes

1. None

CTS Guide Reference: CTS 2-5

Topic 2-2: Developing Plan Review Policies and Procedures

Terminal Learning Objective

At the end of this topic a student, given management objectives, will be able to develop policies and procedures for administering plan review functions so that policies are defined and are in accordance with the AHJ's legal obligations.

Enabling Learning Objectives

1. Describe AHJ plan review policies and procedures
2. Describe the legal requirements that affect a fire plans examiner's duties
3. Describe government systems and processes that affect a fire plans 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 to develop policies and procedures
7. Describe how to develop 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 are the differences between policies and procedures?
4. What kinds of ethical issues might be addressed in policies and procedures?

Application

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

Instructor Notes

1. Fire marshals typically develop policies and procedures. Cover this at the awareness level so a fire plans examiner understands the general process.

CTS Guide Reference: CTS 3-9

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 so that required permits are issued in accordance with AHJ policies and procedures.

Enabling Learning Objectives

1. Describe AHJ plan review policies and procedures
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 drawings
    - Specifications
    - Deferred submittal documentation

Discussion Questions

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

Application

1. Determined by instructor

Instructor Notes

1. ELO 4 – See California Building Code 107 and California Fire Code 3303.

CTS Guide Reference: CTS 2-4

Topic 2-4: Navigating Plan Sets

Terminal Learning Objective

At the end of this topic a student, given a submittal package and plan review tools, will be able to navigate plan sets so that plans are read and reviewed in accordance with plan review best practices.

Enabling Learning Objectives

1. Describe types of plans
    - Demolition
    - Civil
    - Landscape
    - Architectural
    - Structural
    - Mechanical/HVAC
    - Plumbing
    - Electrical
    - Fire protection/life safety
    - Other
    - Supplemental documentation
2. Describe the role of a fire plans examiner
    - As an educator
    - As a good communicator
    - As an active listener
3. Describe how to read plans
    - Introductory pages
        - Code analysis
        - General notes
        - Sheet index
        - Code summary
        - Vicinity map
        - Scope of work
        - Stamp
    - Other pages
        - T-24 energy calculations
        - E/M/P plans
        - Floor plans
        - Elevations
        - Site plans
        - Egress plans
        - Wall details
        - Ceiling plans
        - Door schedules
        - Window schedules

    - Grids, sections, details
4. Identify plan review tools
    - Scales
        - Architectural
        - Engineering
        - Rulers or tapes
        - Some wheels
    - Compass/divider
    - Highlighters
    - Tabs/Post-its
    - Magnifying glass/lamp
5. Read plans
6. Use plan review tools

Discussion Questions

1. At what point in the plan review process should a fire plans examiner communicate with the applicant or applicant's team?
2. How would you know if plan submittal is complete (has all of the necessary components)?
3. If a permit application is submitted with incomplete building plans, when is it appropriate to return them without conducting a review due to their incompleteness

Application

1. Activity 2-4: Using Engineer and Architect Scales (FEMA)

Instructor Notes

1. None

CTS Guide Reference: CTS 3-28

Topic 2-5: Verifying Product Listings

Terminal Learning Objective

At the end of this topic a student, given specific product information, will be able to verify that a product is listed, so that the product is installed correctly and provides the required fire protection for life safety.

Enabling Learning Objectives

1. Describe "listing" and why it matters
   - Listed = Certified by a Nationally Recognized Testing Laboratory (NRTL)
   - Product tested to meet established safety standards
   - Included on a published list of certified products
   - Bears a label/mark (e.g., UL Listed, ETL Listed, etc.)
     - Code will usually reference Listing AND labels
     - All listed equipment needs a label whether the code says so or not
       - Some things can't have a mark put on them, (i.e. gaskets) In those cases, a listing document is acceptable, as is the label on the packaging
2. Identify common NRTLs and listing marks
   - UL (Underwriters Laboratories)
   - Intertek (ETL Listed)
   - CSA (Canadian Standards Association)
3. Identify why listings are required
   - Required for code compliance (IFC, NFPA 855, NEC)
   - Ensures:
     - Fire and electrical safety
     - Consistent manufacturing quality
     - Acceptance by AHJ
4. Describe testing standards vs. listing standards
   - UL 9540- Listing Standard
   - UL 9540A- Testing Standard
     - Supports listing but does not equal being listed
5. Identify code requirements for listings
   - IFC, IBC, NFPA Standards all require listings for various things
     - Sprinkler heads
     - Energy Storage Systems
     - Extension Cords
     - Flammable Liquid Storage Tanks
     - Safety Cans
     - Others
   - Listing is often a prerequisite for:
     - Permits
     - Installation approvals
   - Testing is often required for:
     - Hood and duct extinguishing systems (UL 300)

    - Energy storage system spacing (UL 9540A)
6. Describe how to verify if a product is listed
    - Look for NRTL mark or label
    - Ask for one of the following:
        - Listing certificate (Authorization to List)
        - UL file number
        - Check product submittals and spec sheets
    - AHJ should require applicant to provide verification

Discussion Questions

1. Can you accept a device that does not carry a listing?

Application

1. Determined by instructor

Instructor Notes

1. ELO 2: A list of approved NRTL's can be found on OSHA's website.
2. Use Underwriters Labs "Product IQ" (www.ul.com/PIQ) to show the difference between listings and standards.
3. All listing and testing standards are generally available on the listing company's website (i.e., UL listing standards are available on UL's website).

CTS Guide Reference: None

Topic 2-6: Creating Plan Review Checklists and Forms

Terminal Learning Objective

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

Enabling Learning Objectives

7. Describe plan review elements required by AHJ codes, standards, policies, and procedures
8. Identify forms and checklists commonly used to support AHJ plan review policies and procedures
9. Identify basic form components
    - Agency identification
    - Informational content
    - User/applicant identification
    - Fees (if applicable)
10. Identify common checklist and form formats
    - Paper
    - Digital
11. Identify advantages and disadvantages of checklists and forms
12. Organize, communicate, and design checklists and forms

Discussion Questions

2. What is the purpose of a form?
3. What should appear on a checklist?
4. What are the advantages of checklists? What are the disadvantages?

Application

2. Determined by instructor

Instructor Notes

4. See Effective Use of the IBC/CBC (2013) in the Online Instructor Resources.

CTS Guide Reference: CTS 2-2

Topic 2-7: 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 AHJ policies and procedures.

Enabling Learning Objectives

1. Describe codes and standards
2. Describe legal requirements and AHJ policies and procedures for plan review reports
3. Describe accepted AHJ report preparation practices
    - Reflect findings
        - Cite codes and standards
        - Identify deficiencies
    - Use clear and concise language
        - Active voice
        - Complete sentences
4. Describe how to write an effective comment to minimize resubmittals
    - Where is the deficiency located (specific document and element)
    - What is problem (clearly explain the problem)
        - What is the requirement (citation or reference)
    - What is the solution (how to resolve the problem)
5. Conduct code-related research
6. Write reports
7. Determine plan status
    - Approved
    - Approved with comment
    - Resubmittal required
    - On hold

Discussion Questions

1. What elements make up a complete plan review comment?
2. Why should a fire plans examiner cite code sections and related deficiencies on a report?
3. What does it mean when a set of plans is “approved”? How might this influence your approach during inspections or construction oversight?

Application

1. Determined by instructor

Instructor Notes

1. This topic covers the general process. How to properly document specific deficiencies should be covered in more detail in their review section.
2. Students will apply this in other application activities in the course.

CTS Guide Reference: CTS 2-1

Topic 2-8: Resolving Deficiencies

Terminal Learning Objective

At the end of this topic a student, given a plan submittal and established AHJ policies and procedures, will be able to facilitate the resolution of deficiencies identified during a plan review so that deficiencies are identified, documented, and reported to the plan submitter with applicable references to codes and standards.

Enabling Learning Objectives

1. Identify ways to communicate deficiencies and when to use them
   - Plan review report
   - Email
   - Phone call
   - Meeting (virtual or in person)
   - Site visit
2. Identify ways to resolve plan deficiencies
   - Note on plans
   - Design change
   - Additional information or details in plan
   - Clarification to verify or confirm a question
   - Removing unnecessary details
   - AMMR (alternate means and methods request)
   - Use exceptions already in codes
   - Engage other agencies, subject matter experts, and/or stakeholders
3. Identify AHJ policies and procedures regarding communication of discrepancies
4. Describe the appeals process
5. Identify codes and standards
6. Communicate orally and in writing

Discussion Questions

1. How can a fire plans examiner resolve discrepancies on a plan to avoid multiple resubmittals?
2. How much consultation can a fire plans examiner provide to a designer to assist with achieving plan approval?
3. Is it ever appropriate to suspend or discontinue a plan review? Why or why not?
4. How can pre-formatted comments expedite or challenge the plan review process?

Application

1. Determined by instructor

Instructor Notes

1. None

CTS Guide Reference: CTS 2-3

Topic 2-9: 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 so that testimony is factual and appropriate to the proceedings.

Enabling Learning Objectives

1. Describe 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. Maintain a professional demeanor
5. Listen
6. 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?

Application

1. Determined by instructor

Instructor Notes

1. Appeals processes differ by AHJ. Make sure you are familiar with the AHJ requirements applicable to the audience.

CTS Guide Reference: CTS 3-10

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 submittal package, specifications, a description of a building and its intended use(s), and measuring tools, will be able to verify an occupancy classification and occupant load so that the classification is made, and the maximum allowable occupant load is, in accordance with applicable codes and standards and AHJ policies and procedures.

Enabling Learning Objectives

1. Identify applicable codes and standards
2. Describe code requirements, regulations, operational features, and fire hazards presented by various occupancies
3. Identify occupancy classifications and their intended uses
4. Identify occupancy factors related to various occupancy types
5. Describe how to calculate occupant loads for an occupancy for building use
6. Use measuring tools
    - Physical (architectural vs. engineering scale)
    - Digital
7. 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?

Application

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

Instructor Notes

1. None

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

Topic 3-2: Verifying Construction Type

Terminal Learning Objective

At the end of this topic a student, given a submittal package, including the occupancy classification area, height, number of stories, and location, will be able to verify a building's construction type so that the building is in accordance with applicable codes and standards and deficiencies are identified, documented, and reported.

Enabling Learning Objectives

1. Identify applicable codes and standards
2. Describe building elements
    - Primary structural frame
    - Secondary structural members
    - Floor construction
    - Roof construction
    - Interior and exterior bearing walls
    - Interior and exterior nonbearing walls
3. Describe types of construction
    - New
    - Legacy
4. Describe fire-rated construction components
5. Describe typical building construction methods and materials
6. Describe code requirements related to construction types
    - Maximum height and area
    - Location/property line
    - Height and area increases
        - Fire protection systems
        - Fire walls
        - Frontage
    - Allowable number of openings
7. Read plans
8. Determine construction types
9. Conduct code-related research

Discussion Questions

1. How does fire separation distance from a property line 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 can a fire wall affect types of construction?
5. How does the presence of an automatic sprinkler system impact construction type?

Application

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

Instructor Notes

1. ELO3 – Cover all construction types including Type IV HT and Type IV A, B, and C.

CTS Guide Reference: CTS 3-4

Topic 3-3: Evaluating Fire Access Site Plans

Terminal Learning Objective

At the end of this topic a student, given a submittal package, will be able to evaluate fire access site plans so that emergency vehicle, water supply, and site access is provided in accordance with applicable codes and standards and deficiencies are identified, documented, and reported in accordance with AHJ policies and procedures.

Enabling Learning Objectives

1. Identify applicable codes and standards pertaining to:
   - Emergency vehicle access
   - Water supply
2. Describe operating capabilities of fire agency apparatus
   - Pump capacity
   - Resource type
   - Turn radius
   - Approach/departure angles
3. Describe site considerations
   - Building/site address
   - Fire department key boxes
   - Fire protection and life safety equipment
   - Fire command center
   - Dead ends
4. Identify planning and zoning requirements
5. Describe how to determine fire flow
6. Describe how to determine fire hydrant locations and spacing
7. 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 fire plans examiner require more than 20 feet for a fire lane?
4. How are fire lanes identified? Is it the same in every jurisdiction?
5. How do multiphase building construction projects affect the evolution of fire apparatus access?

Application

1. Determined by instructor

Instructor Notes

1. None

CTS Guide Reference: CTS 3-8

Topic 3-4: Evaluating the Need for Fire Protection and Life Safety Systems

Terminal Learning Objective

At the end of this topic a student, given a building plan submittal, will be able to evaluate the need for fire protection and life safety systems, so that the systems and equipment are identified and deferred submittals are identified, documented, and requested in accordance with applicable codes and standards and AHJ policies and procedures.

Enabling Learning Objectives

1. Identify occupancy classification and use
2. Identify fire protection system requirements
   - Sprinklers
   - Standpipes
   - Alternative fire extinguishing systems
   - Fire pumps
3. Identify life safety system requirements
   - Fire alarm and detection
   - Emergency alarms
   - Smoke control
   - Smoke and heat removal
   - Carbon monoxide detection
4. Identify emergency responder communication system requirements
5. Identify mass notification system requirements
6. Review specifications and read plans
7. Classify occupancies and identify use(s)
8. Identify applicable code requirements for interior finishes
9. Interpret codes and standards

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?
4. How do sprinklers, egress, or higher-hazard occupancies impact interior finishes?

Application

1. Given a submittal package, have students evaluate which fire protection and/or life safety systems are required.

Instructor Notes

1. This topic addresses where systems are required by California Fire Code/California Building Code, Chapter 9. Evaluating those systems in covered in Fire Plans Examiner 1B: Fire Protection and Life Safety Systems Plan Review (2024).

CTS Guide Reference: CTS 3-1, CTS 3-16

Topic 3-5: Evaluating Proposed Passive Fire Protection Elements

Terminal Learning Objective

At the end of this topic a student, given a submittal package for a building or facility, will be able to evaluate proposed passive fire protection elements of a building or portion of a building so that the protection provided for the facility is in accordance with applicable codes and standards and deficiencies are identified, documented, and reported in accordance with AHJ policies and procedures.

Enabling Learning Objectives

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

Discussion Questions

1. From which testing laboratories might a fire plans examiner accept technical reports?
2. How is fill-void cavity material use verified for installation and plan review processes?

Application

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 UL 263 or ASTM E119.
2. Discuss the relevance of ASTM E84 in today's construction environment.

CTS Guide Reference: CTS 3-26

Topic 3-6: Verifying Means of Egress Compliance

Terminal Learning Objective

At the end of this topic a student, given a submittal package for a building or portion of a building, an area's identified use(s) and an occupant load, will be able to verify that egress elements are provided so that egress elements are provided, and deficiencies are identified, documented, and reported in accordance with applicable codes and standards and AHJ policies and procedures.

Enabling Learning Objectives

1. Identify standard symbols used in plans
2. Describe the components of a means of egress
   - Exit access
   - Exit
   - Exit discharge
3. Describe how door hardware impacts means of egress
4. Describe the impact of interior finishes on egress components
5. Describe applicable AHJ codes and standards for a means of egress
6. Describe the relationship of fixed fire protection systems to egress requirements
7. Describe field verification practices
8. Describe occupancy egress requirements
9. Verify egress requirements based on occupant load
10. Read plans
11. Research codes

Discussion Questions

1. Other than a public way, where are occupants considered safe?
2. Is a corridor part of exit access or exit?
3. Working in the field, how would you determine whether something is a corridor or an exit passageway?
4. How does protection from an active shooter impact exit design?

Application

1. Given a means of egress plan for a multistory building, have students identify and label means of egress components.

Instructor Notes

1. ELO 3 - Follow CBC/CFC chapter 10 to cover the necessary components.
2. ELO 3 – For "exist access", follow CBC/CFC chapter 7, section 708.4 (exceptions).

CTS Guide Reference: CTS 3-6

Topic 3-7: Evaluating Building Service Equipment and Operations

Terminal Learning Objective

At the end of this topic a student, given a submittal package, will be able to evaluate heating, ventilation, air conditioning (HVAC), and other building service equipment and operations so that the systems and other equipment are designed in accordance with applicable codes and standards and deficiencies are identified, documented, and reported in accordance with AHJ policies and procedures.

Enabling Learning Objectives

1. Describe types of building service equipment
    - HVAC system
    - Boilers
    - Ducts
    - Elevators, dumbwaiters, laundry and trash chutes
    - Escalators
    - Fuel systems
    - Energy storage systems
    - Medical gas
2. Identify occupancies with unique building service requirements
    - Institutional occupancies
    - Fixed guideway transit systems
    - Wine caves
    - Atriums
    - High-rises
    - Malls
    - Laboratories
    - Other
3. Describe applicable AHJ codes and standards
4. Describe installation, maintenance, and use(s) of building service equipment
5. Read, and interpret mechanical, electrical, and plumbing plans

Discussion Questions

1. How does an HVAC system impact exiting?
2. In lieu of using a shaft with a grease duct, what options are available?
3. When can escalators be used as a legal means of egress?

Application

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

Instructor Notes

1. Teach ELOs 1 and 2 at an awareness level.

CTS Guide Reference: CTS 3-21

Topic 3-8: Evaluating Plans for Modifying Existing Occupancies

Terminal Learning Objective

At the end of this topic a student, given a submittal package 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 so that the modification or change complies with applicable codes and standards and deficiencies are identified, documented, and reported in accordance with AHJ policies and procedures.

Enabling Learning Objectives

1. Describe how to evaluate a proposed tenant improvement or change in occupancy classification
   - Change of occupancy
   - Change of use
   - Change of height and/or area
2. Describe applicability of code provisions as they relate to existing and modified spaces
3. Describe requirements for determining damage repair
4. Describe the application process to repair or restore a building to its permitted use(s)
5. Identify when to apply specific parts of CCR Title 24 beyond Parts 2 and 9
   - Existing Building Code
   - Wildland Urban Interface Code
   - Historic Building Code
   - Others
6. Describe requirements for modifying fire protection or life safety systems in an existing building
7. Describe requirements for demolition and fire safety during construction
   - Protecting occupants during construction
8. 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 fire plans examiner address in plan review for buildings that will remain occupied during construction?
4. Under what conditions does the Historic Building Code apply?

Application

1. Determined by instructor

Instructor Notes

1. ELO 7 – Refer to both CBC and CFC chapter 33 and NFPA 241 (current edition).

CTS Guide Reference: CTS 3-25

How to Read a Course Plan

A course plan identifies the details, logistics, resources, and training and education content for an individual course. Whenever possible, course content is directly tied to a national or state standard. SFT uses the course plan as the training and education standard for an individual course. Individuals at fire agencies, academies, and community colleges use course plans to obtain their institution's consent to offer course and provide credit for their completion. Instructors use course plans to develop syllabi and lesson plans for course delivery.

Course Details
The Course Details segment identifies the logistical information required for planning, scheduling, and delivering a course.

Required Resources
The Required Resources segment identifies the resources, equipment, facilities, and personnel required to deliver the course.

Unit
Each Unit represents a collection of aligned topics. Unit 1 is the same for all SFT courses. An instructor is not required to repeat Unit 1 when teaching multiple courses within a single instructional period or academy.

Topics
Each Topic documents a single Terminal Learning Objective and the instructional activities that support it.

Terminal Learning Objective
A Terminal Learning Objective (TLO) states the instructor's expectations of student performance at the end of a specific lesson or unit. Each TLO includes a task (what the student must be able to do), a condition (the setting and supplies needed), and a standard (how well or to whose specifications the task must be performed). TLOs target the performance required when students are evaluated, not what they will do as part of the course.

Enabling Learning Objectives
The Enabling Learning Objectives (ELO) specify a detailed sequence of student activities that make up the instructional content of a lesson plan. ELOs cover the cognitive, affective, and psychomotor skills students must master to complete the TLO.

Discussion Questions
The Discussion Questions are designed to guide students into a topic or to enhance their understanding of a topic. Instructors may add to or adjust the questions to suit their students.

Application
The Application segment documents experiences that enable students to apply lecture content through cognitive and psychomotor activities, skills exercises, and formative testing. Application experiences included in the course plan are required. Instructors may add additional application experiences to suit their student population if time permits.

Instructor Notes
The Instructor Notes segment documents suggestions and resources to enhance an instructor's ability to teach a specific topic.

CTS Guide Reference
The CTS Guide Reference segment documents the standard(s) from the corresponding Certification Training Standard Guide upon which each topic within the course is based. This segment is eliminated if the course is not based on a standard.

Skill Sheet
The Skill Sheet segment documents the skill sheet that tests the content contained within the topic. This segment is eliminated if the course does not have skill sheets.