



National Fire Academy

**N0393 – Plans Review for Fire and Life Safety
Version: 3rd Edition, 2nd Printing, July 2019**

Quarter:

ACE Credit: Pending

IACET Continuing Education Units: 4.0

Length of Course: 6 Days (40 hr. contact hours, Monday – Friday)

Prerequisite: Yes

**Curriculum: Fire Protection: Technical
Training Specialist: Keith Heckler**

Instructor:

Instructor email/phone:

Classroom: J-

Meeting Time: 8 AM – 5 PM

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Course Description (Catalog)

N0393 – “Plans Review for Fire and Life Safety.” This six-day course will assist students in verifying that construction documents comply with applicable building and fire codes for fire protection and life safety requirements.

Subjects addressed in the course include:

- Site plan reviews for emergency apparatus access, water supply, and hydrants for fire protection.

- Review of architectural drawings for construction requirements, means of egress for life safety, and fire-resistive compartmentalization.
- Evaluation of heating, ventilation, and air conditioning.
- Evaluation of exit illumination and emergency power supplies.
- Assessment of the need for built-in fire protection systems and smoke control/management systems.

Student Qualifications (Primary and Secondary Audience)

The target audience for the “Plans Review for Fire and Life Safety” (PRFLS) course is building and fire code officials who are responsible for reviewing and approving submitted construction plan documents. Such officials include fire inspectors, deputy fire marshals, fire plans examiners, building officials, building plans examiners and building inspectors with at least one year of on-the-job experience.

Prior to the course, students should be familiar with building and fire codes and understand fire protection principles, fire behavior and the legal aspects of code enforcement. They should possess the ability to identify fire and building code discrepancies, read and interpret the codes, and communicate the discrepancies to the receiving party at a basic level. The students should also have a conceptual understanding of the role of fire and building codes in protecting the community and its occupants.

Course Scope (Goal)

1. Understand how building plans examination contributes to the overall community risk-reduction strategy in the built environment.
2. Apply a systematic approach for submitted construction documents in order to verify compliance with applicable codes.
3. Gain knowledge of how to review construction documents, and develop analytical skills to evaluate and verify compliance.
4. Gain an appreciation of the interdependency of various code provisions for construction and life safety.
5. Understand the safety principles and philosophies of the building code to protect the community, occupants and emergency responders.

An additional, non-content-related goal is to foster an environment that encourages discussion, collaborations and sharing of ideas, which provides students with an opportunity to build a professional network that can be beneficial when returning to their jobs.

Course Objectives (Course Learning Outcomes – TLOs)

After successfully completing this course, you will be able to accomplish the following:

- Evaluate if the code analysis shown in submitted plan documents, in conjunction with related building code, contains the required information to perform an adequate plans review process.
- Evaluate contractor submitted plan documents in conjunction with applicable building code requirements to determine if the information shown complies with fire protection feature requirements for fire department access, water flow and special hazards.
- Conclude if the information shown in the submitted plan documents, in conjunction with applicable building code requirements, complies with architectural fire protection feature requirements (for area, height, separation, assembly, resistance and bearing construction).
- Evaluate information shown in submitted plan documents, in conjunction with applicable building code requirements, for compliance with architectural life safety feature requirements (for occupant load, means of egress, vertical arrangements, interior finishes, and special uses and occupancies).
- Evaluate information shown in submitted plan documents, in conjunction with applicable building code requirements, for compliance with electrical life safety feature requirements, including illumination and markings.
- Determine if information shown in submitted plan documents complies with mechanical fire and life safety feature requirements, including fire and smoke dampers.
- Evaluate submitted plan documents, in conjunction with applicable building code requirements, to determine which type(s) of fire protection and life safety systems (sprinklers, standpipes, fire alarms, smoke or smoke management, and other extinguishing systems) are required.

Course Delivery Method

The National Fire Academy (NFA) offers specialized training courses and advanced management programs of national impact in an academic classroom environment [on campus at the National Emergency Training Center \(NETC\) in Emmitsburg, Maryland](#). This classroom course is designed for the national level fire service officer from State and local fire service organizations. During this 6-day delivery, students will reside in dormitories provided on campus with classes conducted in classrooms designed for critical student/instructor interaction. All course materials are designed for interactive classroom environments, in either paper notebook or electronic formats.

Course Schedule

The purpose of the course schedule is to give you, at a glance, the required preparation, activities, and evaluation components of your course.

DAY 1	DAY 2
Introduction	Unit 2: Site Plans: Emergency Access and Water Supply (cont'd) Activity 2.1: Fire Apparatus Access Roads
<i>Break</i>	<i>Break</i>
Introduction (cont'd)	Unit 2: Site Plans: Emergency Access and Water Supply (cont'd) Activity 2.2: Water Supply Evaluation
<i>Break</i>	<i>Break</i>
Unit 1: Code Analysis Information Activity 1.1: Evaluating a Code Permit Submittal	Unit 2: Site Plans: Emergency Access and Water Supply (cont'd) Activity 2.3: Site Plan Evaluation Practice
<i>Lunch Break</i>	<i>Lunch Break</i>
Unit 1: Code Analysis Information (cont'd) Activity 1.2: Identification and Communication of Deficiencies	Unit 3: Architectural Features: Fire Protection Activity 3.1: Occupancy Separations
<i>Break</i>	<i>Break</i>
Unit 2: Site Plans: Emergency Access and Water Supply	Unit 3: Architectural Features: Fire Protection (cont'd) Activity 3.2: Area and Height

Note: This schedule is subject to modification by the instructors and approved by the training specialist.

DAY 3	DAY 4
Unit 3: Architectural Features: Fire Protection (cont'd) Activity 3.3: Fire Walls	Unit 4: Architectural Features: Life Safety
<i>Break</i>	<i>Break</i>
Activity 3.3: Fire Walls (cont'd) Unit 3: Architectural Features: Fire Protection (cont'd)	Unit 4: Architectural Features: Life Safety (cont'd)
<i>Break</i>	<i>Break</i>
Unit 3: Architectural Features: Fire Protection (cont'd)	Unit 4: Architectural Features: Life Safety (cont'd) Activity 4.1: Means of Egress
<i>Lunch Break</i>	<i>Lunch Break</i>
Unit 3: Architectural Features: Fire Protection (cont'd) Activity 3.4: Fire-Resistance Ratings and Setbacks	Unit 4: Architectural Features: Life Safety (cont'd) Activity 4.2: Interior Finishes
<i>Break</i>	<i>Break</i>
Activity 3.4: Fire-Resistance Ratings and Setbacks (cont'd)	Unit 4: Architectural Features: Life Safety (cont'd) Activity 4.3: Life Safety and Fire Protection Concepts

DAY 5	DAY 6
Unit 5: Electrical Systems	Unit 7: Fire Protection System Requirements (cont'd)
<i>Break</i>	
Unit 5: Electrical Systems (cont'd)	Unit 7: Fire Protection System Requirements (cont'd) Activity 7.2: Passive and Active Fire Protection Systems
<i>Break</i>	<i>Break</i>
Unit 5: Electrical Systems (cont'd) Activity 5.1: Electrical Requirements Unit 6: Mechanical Systems	Turn in Completed Plans Review Checklist Turn in Final Project — Submittal Letter Final Examination (90 minutes)
<i>Lunch Break</i>	
Unit 6: Mechanical Systems (cont'd) Activity 6.1: Mechanical Systems	Course Evaluation and Graduation
<i>Break</i>	
Unit 7: Fire Protection System Requirements Activity 7.1: Active Fire Sprinkler Systems Course Review	

Course Resources (Instructional Materials)

In order to be fully prepared, obtain a copy of the required textbooks and other instructional materials prior to the first day of class.

Required Readings

The student must complete required readings during the course to be able to thoughtfully participate in discussions and activities.

None.

Suggested Reading/Resources

Suggested readings and resources are not evaluated, but may enhance the student's understanding, serve as additional sources for citation and promote discussion of course material.

None.

Required Resources (Course Textbook)

Student Manual.

A copy (book or electronic) of your 2015 International Building Code and International Fire Code by the International Code Council.

Supplemental Resources (Supplemental Course Textbook)

None.

Grading Methodology (Evaluation Procedures)

The PRFLS course will employ multiple types of assessments, including a final examination. Various formats will be used in the assessments and provide a mimic of your responsibilities in the field.

Ungraded Class Component — Discussion Questions

Discussion questions will provide students with opportunities to share ideas, explore options, and recall or apply information presented. Due to the nature of discussion flexibility, these will be difficult for an instructor to assess and therefore will be ungraded.

Graded Assessment Overview:

Participation in group activities	10%
Individual activities	20%
Cumulative project	30%
Final examination	40%

Participation in Group Activities

Group activities will engage students in collaborative efforts to complete job-related tasks. After an activity, where specified, each group must choose a representative to present the group's answer and discuss their findings with the rest of the class. Instead of assessing individual contributions during an activity, which would be difficult and time-consuming, the instructor(s) will award participation points to the representative for each group at the end of an activity. Therefore, each student **must** take at least one turn as a representative for their group to receive a participation grade. The instructor(s) should explain at the beginning of the course that participation in group activities will be counted as 10% of the total grade.

Individual Activities

To ensure that students will be active participants in the course (rather than just passive members of a group), some activities will include a component that students must complete individually and turn in to the instructor(s). These individual activities will be worth 20% of the total grade. The individual activities that contribute to this percentage are the activity worksheets and Plans Review Checklist completion. Worksheets and sections of the checklist are completed each day, so instructors should plan to check for completion daily.

Cumulative Project and Final Examination

The final assessment will be used to assess cumulative student mastery of the learning objectives taught within the course. It will be comprised of two parts: a cumulative project and a final examination.

- The cumulative project will be a multipart submittal letter in response to a set of submitted construction plan documents for review. The students will complete sections of the letter as part of various unit activities. All sections of the submittal letter must be completed by the last unit and turned in before the final examination. This will be counted as 30% of the total grade.
- The final examination will be a 20-question, multiple-choice, practical examination based on the Canterbury submitted plan documents to measure each learning objective at the appropriate level of learning. This will be counted as 40% of the total grade.

EXAMINATION ADMINISTRATION PROCEDURES

Students will be given exams at the end of the class, and only the instructor will grade the exams. While the exams are being graded by the instructor, students will be asked to complete end-of-course evaluations.

Exams are to be completed individually and not as a group or a group activity, unless specifically directed within the instructor guide for the specific course. Students should use pencils to complete answer sheets if bubble sheets and a scoring key overlay are being used.

There should only be one answer for any given question marked by the student. A question with multiple answers is considered incorrect. Please mark number of incorrect answers on completed exam sheets, record score (percentage), and mark the appropriate letter grade.

Transfer the letter grades to the corresponding student name on the course roster.

If a student does not obtain a passing grade on the first attempt, the instructor will provide remediation¹ prior to a retest. Students who do not pass the first exam will be allowed to take one retest of a new exam before departing from the class. A second failure will result in a grade of “F” being recorded on the grade roster.

Once all exams have been graded, instructors should review the exam as a group.

In the event of unusual events (storm, fire response, family emergency) or early departure, the host agency or state representative may be asked to proctor the exam at a later date. The instructor is responsible to notify the Training Specialist as soon as practical of the situation and name of person responsible for the exams and testing process.

Required Reading Assignments

Student completion of reading assignments will be done via evaluation of their class participation and will not be a separately graded activity.

Suggested Readings

Suggested readings are not evaluated, but may enhance the student’s understanding and promote discussion of course material.

Course Outline

Introduction

Objectives

None.

Unit 1: Code Analysis Information

Objectives

Terminal Objective

The students will be able to:

- 1.1 Evaluate if the code analysis shown in submitted plan documents, in conjunction with related building code, contains the required information to perform an adequate plans review process.

Enabling Objectives

The students will be able to:

- 1.1 Determine if the provided code analysis in the submitted plan documents contains the required information to complete an adequate plans review.
- 1.2 Compose requests for clarification in business letter format to the applicant and professional designer regarding identified deficiencies noted during the plans review of the code analysis information.

Unit 2: Site Plans: Emergency Access and Water Supply

Objectives

Terminal Objective

The students will be able to:

- 2.1 Evaluate contractor submitted plan documents in conjunction with applicable building code requirements to determine if the information shown complies with fire protection feature requirements for fire department access, water flow and special hazards.

Enabling Objectives

The students will be able to:

- 2.1 Evaluate civil (site) submitted plan documents for compliance with requirements for fire department access, water flow requirements and the presence of special hazards.
- 2.2 Compose requests for clarification in business-letter format to the applicant and the professional designer regarding identified deficiencies noted during the plans review of the emergency access and water supply information.

Unit 3: Architectural Features: Fire Protection

Objectives

Terminal Objective

The students will be able to:

- 3.1 Conclude if the information shown in the submitted plan documents, in conjunction with applicable building code requirements, complies with architectural fire protection feature requirements (for area, height, separation, assembly, resistance and bearing construction).

Enabling Objectives

The students will be able to:

- 3.1 Decide if submitted plan documents comply with applicable area and height requirements.
- 3.2 Evaluate submitted plan documents for compliance with separated and nonseparated uses and hazard requirements.
- 3.3 Determine the differences between bearing and nonbearing structural elements, and identify such on architectural and structural drawings.
- 3.4 Conclude whether architectural and structural submitted plan documents comply with requirements for fire-resistance rated construction.
- 3.5 Compose requests for clarification in business letter format to the applicant and professional designer regarding identified deficiencies noted during the plans review of the architectural fire protection information.
- 3.6 Verify the occupancy classification with the characteristics of a code specified use.

Unit 4: Architectural Features: Life Safety

Objectives

Terminal Objective

The students will be able to:

- 4.1 Evaluate information shown in submitted plan documents, in conjunction with applicable building code requirements, for compliance with architectural life safety feature requirements (for occupant load, means of egress, vertical arrangements, interior finishes, and special uses and occupancies).

Enabling Objectives

The students will be able to:

- 4.1 Evaluate if architectural submitted plan documents comply with the requirements for occupant load.
- 4.2 Determine if architectural submitted plan documents comply with the requirements for means of egress.
- 4.3 Determine the building code requirements that establish the provisions for vertical-opening arrangements and protection.
- 4.4 Evaluate architectural submitted plan documents for compliance with the requirements for interior finishes.
- 4.5 Determine the building code applications for special uses and occupancies.
- 4.6 Compose requests for clarification in business letter format to the applicant and professional designer regarding identified deficiencies noted during the plans review of the architectural life safety features information.

Unit 5: Electrical Systems

Objectives

Terminal Objective

The students will be able to:

- 5.1 Evaluate information shown in submitted plan documents, in conjunction with applicable building code requirements, for compliance with electrical life safety feature requirements, including illumination and markings.

Enabling Objectives

The students will be able to:

- 5.1 Evaluate the submitted plan documents for compliance with fire protection and life safety systems.
- 5.2 Evaluate the submitted plan documents for compliance with egress illumination and markings.

- 5.3 Compose requests for clarification in business letter format to the applicant and professional designer regarding identified deficiencies noted during the plans review of the electrical systems information.

Unit 6: Mechanical Systems

Objectives

Terminal Objective

The students will be able to:

- 6.1 Determine if information shown in submitted plan documents complies with mechanical fire and life safety feature requirements, including fire and smoke dampers.

Enabling Objectives

The students will be able to:

- 6.1 Evaluate if the submitted plan documents comply with the code requirements for fire and smoke dampers.
- 6.2 Evaluate if the submitted plan documents comply with the code requirements for smoke detector systems control in air distribution systems.
- 6.3 Evaluate if the submitted plan documents comply with the code requirements for the protection of commercial cooking equipment.
- 6.4 Compose requests for clarification in business letter format to the applicant and professional designer regarding identified deficiencies noted during the plans review of the mechanical systems information.

Unit 7: Fire Protection System Requirements

Objectives

Terminal Objective

The students will be able to:

- 7.1 Evaluate submitted plan documents, in conjunction with applicable building code requirements, to determine which type(s) of fire protection and life safety systems (sprinklers, standpipes, fire alarms, smoke or smoke management, and other extinguishing systems) are required.

Enabling Objectives

The students will be able to:

- 7.1 Determine which type of fire protection and life safety systems are required based on the submitted plan documents.
- 7.2 Compose requests for clarification in business letter format to the applicant and professional designer regarding identified deficiencies noted during the plans review of the fire protection systems information.

Policies

Class Attendance and Cancellation Policy

Attendance

- You are required to attend all sessions of the course. If you do not, you may not receive a certificate, and your stipend may be denied.
- If you need to depart campus early and miss any portion of the course and/or graduation, you must make the request in writing to the NFA training specialist. The training specialist, in collaboration with the superintendent, may waive the attendance requirement in order to accommodate you with extraordinary circumstances as long as you complete all course requirements. If you receive approval for departing early, you must forward the approval to the Admissions Office so your stipend reimbursement is not limited.

Student Substitutions

Substitutions for NFA courses are made from waiting lists; your fire department can't send someone in your place.

Cancellations or No-Shows

NFA's mission for delivery of courses is impaired significantly by cancellations and no-shows. It is very difficult and costly to recruit students at the last minute. Currently there is a two-year ban on student attendance for students who are no-shows or cancel within 30 days of the course start date without a valid reason. If you receive such a restriction, your supervisor needs to send a letter to our Admissions Office explaining the cancellation/no-show.

Course Failure

If you fail an on-campus course, you will not be issued a stipend for that course. You can reapply for the failed course or any other NFA course and go through the random selection process. You don't have to successfully complete the failed course before attending another NFA course.

Student Code of Conduct Policy

Students, instructors and staff are expected to treat each other with respect at all times. Inappropriate behavior will not be tolerated and may result in removal from campus and denial of stipends.

Writing Expectations

Student writing will conform to the generally accepted academic standards for college papers. Papers will reflect the original work of the student and give appropriate credit through citations for ideas belonging to other authors, publications or organizations. Student written work should be free of grammatical and syntax errors, free of profanity or obscene language or ideas, and reflect critical thinking related to the course subject matter.

Citation and Reference Style

Attention Please: Students will follow the APA, Sixth Edition as the sole citation and reference style used in written work submitted as part of coursework to NFA. Assignments completed in a narrative essay, composition format, abstract, and discussion posts must follow the citation style cited in the APA, Sixth Edition.

Late Assignments

Students are expected to submit classroom assignments by the posted due date (11:59 p.m. EDT/EST) and to complete the course according to the published class schedule. As adults, students, and working professionals, you must manage competing demands on your time. Discussion board postings submitted within 3 days after the submission deadline will receive up to a 20% deduction. Those that do not submit their discussion board postings within this timeline will receive a “0” grade for the week. Final assignment papers will not be accepted after the deadline. Any paper submitted after the deadline will receive a “0” grade for that assignment.

Netiquette

Online learning promotes the advancement of knowledge through positive and constructive debate – both inside and outside the classroom. Forums on the Internet, however, can occasionally degenerate into needless insults and “flaming.” Such activity and the loss of good manners are not acceptable in a professional learning setting – basic academic rules of good behavior and proper “Netiquette” must persist. Remember that you are in a place for the rewards and excitement of learning which does not include descent to personal attacks or student attempts to stifle the forum of others.

- **Technology Limitations.** While you should feel free to explore the full-range of creative composition in your formal papers, keep e-mail layouts simple. The NFA Online classroom may not fully support MIME or HTML encoded messages, which means that bold face, italics, underlining, and a variety of color-coding or other visual effects will not translate in your e-mail messages.

- Humor Note. Despite the best of intentions, jokes and especially satire can easily get lost or taken seriously. If you feel the need for humor, you may wish to add “emoticons” to help alert your readers: ;-), :), ☺ .

Disclaimer Statement

Course content may vary from the outline to meet the needs of this particular group.

Grading

Please review the following rubrics that explain how grades will be awarded.

Students who do not complete the entire course will be awarded an Incomplete (I) grade. In accordance with National Fire Academy academic policies, an Incomplete (I) grade must be removed by the end of the next semester following the course, or it automatically becomes a Failing (F) grade.

If you fail an on-campus course, you will not be issued a stipend for that course. You can reapply for the failed course or any other NFA course and go through the random selection process. You don't have to successfully complete the failed course before attending another NFA course.

http://www.usfa.fema.gov/training/nfa/admissions/student_policies.html

Academic Honesty

Students are expected to exhibit exemplary ethical behavior and conduct as part of the NFA community and society as a whole. Acts of academic dishonesty including cheating, plagiarism, deliberate falsification, and other unethical behaviors will not be tolerated.

Students are expected to report academic misconduct when they witness a violation. All cases of academic misconduct shall be reported by the instructor to the Training Specialist.

If a student is found to have engaged in misconduct and the allegations are upheld, the penalties may include, but are not limited to one or a combination of the following:

- expulsion,
- withholding of stipend or forfeiture of stipend paid,
- exclusion from future classes for a specified period; depending on the severity it could range from 1-10 years, and/or
- forfeiture of certificate for course(s) enrolled in at NETC.

Refer to NFA-specific Standard Operating Procedure 700.1 – *Academic Code of Conduct and Ethics* for more information.

Grading Rubric

CUMULATIVE PROJECT SUBMITTAL LETTER GRADING RUBRIC

Plans Review Letter: Each student can earn 30 points with the submittal of a plans review letter that contains at least 15 requests for clarification regarding the submitted plans. The letter is graded on its professional quality and completeness.

Criteria	6	5	4	3
Number of Questions	The letter contains at least the required number of questions.	The letter is missing no more than three of the required questions.	The letter is missing no more than five of the required questions.	The letter is missing more than five of the required questions.
Sentences	Sentences are complete and well-constructed. Most words are spelled correctly.	Most sentences are complete and well-constructed, and a few words are spelled incorrectly.	Most sentences are complete, but several words are spelled incorrectly.	Many fragment and/or run-on sentences, and many words are spelled incorrectly.
Ideas	Ideas are clearly expressed and well-organized. Sentences are easy to understand.	Ideas are organized and expressed in a clear manner, but the wording could be improved.	Ideas are organized to a degree but not very clear. It takes multiple readings to figure out several sentences.	Ideas are not organized, and most sentences are very difficult to understand.
Content Accuracy	Each request for clarification contains the discrepancy, code requirement, code section, and requested correction.	Most of the requests for clarification contain the discrepancy, code requirement, code section, and requested correction.	Half of the requests for clarification are missing the discrepancy, code requirement, code section, or requested correction.	Most of the requests for clarification are missing the discrepancy, code requirement, code section, or requested correction.
Letter Format	Letter contains the heading (agency name and address, date), name and address of receiver, subject line, salutation, body of letter, closing, and signature.	Letter contains all but one or two of the parts of a business letter: the heading (agency name and address, date), name and address of receiver, subject line, salutation, body of letter, closing, and signature.	Letter contains most of the parts of a business letter: the heading (agency name and address, date), name and address of receiver, subject line, salutation, body of letter, closing, and signature.	Letter contains at least half of the parts of a business letter: the heading (agency name and address, date), name and address of receiver, subject line, salutation, body of letter, closing, and signature.