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Published by the National Roofing Contractors Association and Midwest Roofing Contractors Association

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Published 2010
Printed in the United States of America

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**Certified Roofing Torch Applicator
Recertification Program**

Torch-applied Roof System Safety

Recertification
Instructors Guide

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PROGRAM POLICIES AND PROCEDURES

Foreword

Congratulations! You played a major roll in the success of the new CERTA program as an authorized trainer. Since the new CERTA program was introduced in 2004, both the frequency and seriousness of roof fires have been greatly reduced. Thank you for your commitment to working safely in the roofing industry.

The new CERTA program has changed the way workers use torches. Roofing workers today are using torches more carefully than in the past. The decisions they make and the actions they take while using a roofing torch contribute to the safe and successful application of torch-applied roof systems. You may not realize it, but your commitment to being a great trainer has improved the professional image of the entire roofing industry.

Reading this manual means you were authorized as a CERTA trainer and you intend to continue certification and recertification training of roofing workers who use torches. Your authorized status was good for three years, and now it is time for you to renew.

Safety is the cornerstone of success for any roof system installation. The CERTA recertification program is designed to support your continuing efforts to work more safely and improve the roofing industry.

Using This Instructors Guide

The CERTA Recertification Instructors Guide is divided into six parts. Each part provides specific instructions about how to prepare for and facilitate a successful CERTA recertification training session. These instructions represent minimum activities and time allotments for conducting a full applicator training class. You are encouraged to modify the instructions provided, create your own ideas for training activities and spend more time on certain topics as trainees' needs require. The main goal is to ensure each trainee achieves the learning objectives in each section.

The first page of each scheduled classroom training event provides a Section Introduction that includes the section's learning objectives; timing breakdowns for each learning activity in the section; and a description of the materials and conventions required to facilitate the learning activities in the section.

You will find a Facilitation Guide for each section that provides detailed speaking notes, instructions for facilitating each learning activity and study questions designed to guide participants' learning. You may choose to develop your own questions based on your field experiences.

Program Description



The CERTA program is first and foremost a roofing industry safety program.

The CERTA program addresses the concerns of building owners, roofing contractors, the insurance industry, fire and code authorities, roofing material manufacturers, equipment manufacturers and fuel suppliers.

Upon successful completion of the training program, participants will be certified roofing torch applicators. CERTA identification cards will be issued to you to distribute to each participant who becomes certified, and certified applicators' names are maintained in a secure database. Certification is valid for three years. It may be rescinded at any time if a certified worker is observed performing unsafe work practices or behaviors. Certain recertification conditions and additional training

and testing are required at the end of each three-year period to maintain certification.

Upon successful completion of your trainer reauthorization, your status as an authorized CERTA trainer also will be extended an additional three years. You will be authorized to conduct the original CERTA certification training and the recertification training programs. These two programs are significantly different. Your completing your reauthorization class is an important component for the continuing industry success of the CERTA program.

Program Success

The number of serious roofing torch-related fire incidents has decreased significantly since 2004 when the new CERTA program was implemented in the roofing industry. The following data regarding losses paid for fire damage caused by improper use of roofing torches was shared by one major U.S. insurance underwriter that offers general liability coverage to roofing contractors.

Loss Year	Number of Claims	Loss Amount
2002	46	\$13,784,800
2003	23	\$7,822,500
2004	20	\$3,901,000
2005	13	\$3,717,500
2006	14	\$1,583,500
2007	10	\$287,800

The new CERTA program has had a significant effect on the safe use of roofing torches throughout the roofing industry.

Purpose

The purpose of the CERTA program is to provide roofing professionals with the necessary safety training to enhance professionalism and reduce personal injuries and property losses caused by the use of roofing torches.

Key Learning Objectives

Upon completing CERTA recertification training, participants will be able to:

- Apply roofing industry safety practices for installing torch-applied roof systems in given situations
- Identify common fire hazards encountered during roofing applications
- Prescribe application methods that reduce fire risks during roofing applications
- Demonstrate the safe use of a roofing torch

In addition to accomplishing these objectives, the recertification program provides information and reference resources that complement various topics addressed in the training. This information can be applied to all roofing work and used to enhance a company's safety program.

Training Session Requirements

Training Session Size

The number of participants for a single four-hour CERTA recertification session facilitated by one instructor is restricted to 20. One authorized instructor cannot safely observe more than 20 participants during a hands-on training session. A session size may be increased provided additional authorized instructors assist with the hands-on training portion of a program. The ratio of instructors to participants for the hands-on sections must remain 1:20.

Time

Conducting a CERTA recertification training session requires a minimum of two hours of classroom instruction plus a minimum of two hours of hands-on instructional activities for a full class of 20 trainees. Smaller class sizes may reduce these minimum allotted times. Detailed schedules for allotted minimum times can be found in each section of this instructors guide.

Training Session Registration

You will need to register each recertification training session in advance. The registration form on page 6 lists the session information you must provide. You may photocopy the form or print it from the trainer resource Web site, www.nrca.net/rp/education/nrca/certclasses.aspx. There are several ways to submit a completed registration form to NRCA:

- Fax it to (847) 299-1183.
- Mail it to CERTA Program Administration, 10255 W. Higgins Road, Suite 600, Rosemont, IL 60018-5607.
- Call NRCA at (800) 323-9545 and ask for Janice Davis.
- E-mail it to certaadmin@nrca.net.

The CERTA program administrator will confirm receipt of your training session and issue a unique training session number within one business day. You will receive a confirmation e-mail containing the session number and additional supporting session documents. You may conduct the training session at any time within seven business days after receiving your confirmation e-mail and session number. Do not proceed with a training class until you have received a valid session number from the CERTA program administrator. Training sessions conducted without first being registered will not be recognized.

Training Session Quality Control

The success of any training program depends on the quality of instruction. As a reauthorized CERTA trainer, you have accepted the responsibility of continuing to provide high-quality training that affects torching behaviors of roofing workers.

You received this instructors guide during your CERTA reauthorization training. This guide is designed to establish consistent, high-quality CERTA program instruction. Following the guide will help ensure your training efforts successfully meet the program objectives.

A comprehensive recertification program delivery for a full class of 20 participants requires a minimum of four hours to ensure all industry safety practices are reviewed and hands-on abilities confirmed. Condensing this program to fewer than four hours can jeopardize fire and life safety and is not recommended. Actual program delivery time will vary depending on the number of participants.

You are expected to make every effort to maintain high-quality instruction as an authorized CERTA recertification instructor. By accepting your role, you agree to allow the CERTA program administrator or insurance company representatives to randomly select and attend your recertification training sessions for quality-control auditing purposes only.

Additionally, you agree to grant the CERTA program administrator permission to provide your contact information to individuals, groups or organizations interested in receiving certification or recertification training. The CERTA program administrator will not provide this information to any person or organization for any other purpose. The CERTA program administrator is not obligated to promote any authorized trainer. These procedures will help ensure overall CERTA program quality.

Training Compliance

If at any time during your authorized CERTA trainer's term you fail to comply with the policies and procedures set forth in this instructors guide or behave inappropriately in your role as a trainer, the CERTA program administrator may take the following actions:

- Revoke your authorized status
- Revoke the certified status of all individuals you have trained

You, individuals you have certified and their employers will immediately be notified of these actions.

Trainer Resources

Authorized Trainer Database

The CERTA program administrator maintains a secure database of all current and past authorized CERTA trainers. It is the responsibility of all authorized trainers to update the CERTA program administrator with any changes to their contact information, including telephone and fax numbers, e-mail address and mailing address.

Occasionally, the CERTA program administrator needs to contact authorized trainers to provide them with program updates and revisions. You are required to confirm receipt of these program updates and revisions to maintain your authorized status. Training session registration numbers will not be issued to a trainer if he or she fails to confirm receipt of the most recent program updates and revisions.

Web Site

The CERTA program is supported by a Web site devoted to authorized trainers. The Web site allows you to download all

program material, including student manuals, the instructors guide, trainer administrative tools and other resources that can assist in your training efforts. The only documents not available on this Web site are the student final exam and answer key. The student final exam and answer key will be distributed via e-mail only to authorized trainers each time they register a training session. The Web site address is www.nrca.net/rp/education/nrca/certaclasses.aspx.

Certification Procedures

There are a few tasks you will need to complete after each training session to ensure your trainees get certified. These tasks include completing a session roster and submitting it to the CERTA program administrator within five business days and completing the trainer’s section of the payment form and submitting it to each trainee’s employer within three business days. Roofing workers will not be certified until completed rosters are received and payments made.

Certification Requirements

Participating in a CERTA recertification training session does not guarantee participants become recertified. There are two program requirements that must be satisfied before you may approve a participant for recertification. Participants must:

1. Pass a final exam with a score of 70 percent or higher
2. Pass a performance evaluation conducted by peers during the hands-on session of the program

Additionally, you may deny certifying a participant for actions you believe to be detrimental to or in conflict with any program objective. Examples would be:

- Unruly or disruptive behavior during a training session
- Causing injury to oneself or another participant, whether intentional or not; such an incident represents inadequate general safety training and a subsequent risk to the work force

Certification and Recertification Fees

Table 1 shows the fee structure for roofing contractor employees who successfully complete a CERTA training program.

Table 1: CERTA Program Fee Structure		
Category	Certification	Recertification
Employee of an NRCA member contractor at time of certification	\$120	\$80
Employee of an NRCA nonmember contractor at time of certification	\$160	\$120

The CERTA certification and recertification fees are the responsibility of each trainee’s current employer, roofing contractor or employee representative. After completing a training session, an authorized trainer is responsible for submitting a completed training roster to the CERTA program administrator within five business days and submitting an invoice/credit card payment form to each trainee’s employer within three business days. Only one payment form is necessary for multiple trainees from the same employer. *Employers must remit payment directly to NRCA.* Authorized trainers may charge and collect a separate fee for providing training services but may not collect payment from employers for attendees’ certification fees.

Training Session Roster Report

A session roster provides the CERTA program administrator the database information necessary to administrate the CERTA certification program. You are required to submit this information within five business days to ensure participants’ certification.

- Training session registration number
- Each participant’s personal information, including:
 - First and last name and middle initial
 - Home mailing address
 - Home telephone number
 - Personal e-mail address if available

- Employer's name at time of training (company name)
- Employer's address
- Employer's telephone number
- Final exam grade
- Hands-on performance test grade (pass/fail)

Complete a training session roster using the electronic Excel template, which you can download from the CERTA trainer resource Web site. Do not alter information field headings. Once you have entered all session information, save the file using a new file name. The original template file will not be lost. For example, if your session registration number is 04052601, your saved Excel file will be named 04052601.xls (see Figure 1).



Figure 1: 04052601.xls

Submit the completed session roster as an attached file by e-mail, or copy the roster to a CD and mail it to:

NRCA
CERTA Program Administration
10255 W. Higgins Road, Suite 600
Rosemont, IL 60018-5607

(800) 323-9545
Fax: (847) 299-1183
E-mail: certaadmin@nrca.net

You also may print the completed roster and then fax or mail it to the address above. **Training session rosters not containing a session registration number will not be accepted.** A credit card payment form is available on the CERTA trainer resource Web site to print and send to employers.

CERTA Identification Cards

Successful participants will receive updated personalized CERTA ID cards. CERTA ID Cards will be mailed to you to distribute to participants. The CERTA program administrator will mail participants' documents within two to four weeks after receiving your training session roster and payment. Submitting training session rosters as electronic files attached to an e-mail may speed up this process.

Participants do *not* have to wait for their documents to be certified. However, participants are only certified or recertified after:

- Successful completion of all training program requirements (see page 3 for certification requirements)
- NRCA has received the session roster
- NRCA has received full payment of fees

CERTA Recertification

All CERTA-certified applicators and authorized trainers will be notified of their pending certification expiration using the contact information provided at the time of their certification. A written notice will be mailed a minimum of six months prior to their certification expiration date providing detailed information, requirements and procedure instructions to recertify. Additional notices will be mailed at three months and one month prior to expiration.

Copyright Permission

Authorized CERTA trainers are granted permission to copy any part of the CERTA program materials, including the student manuals, instructors guide, teaching aids and administrative documents, for the sole purpose of performing their duties as authorized CERTA trainers. Commercial copy service companies often require written permission from the copyright holder to produce copies. A permission form, signed by a CERTA Program Administration representative, can be downloaded from the CERTA trainer resource Web site. You will need to print and complete this form prior to presenting program materials to be copied. CERTA program materials may not be transmitted electronically, changed, altered, modified, revised or amended in any way.

<h2 style="margin: 0;">CERTA</h2> <h3 style="margin: 0;">TRAINING SESSION REGISTRATION FORM</h3>															
(Check one) <input type="checkbox"/> This is a Certification training session <input type="checkbox"/> This is a Recertification training session															
Date of request (today's date):															
Anticipated training session date: (Training must be held within seven days after receipt of a session number from the CERTA program administrator)	This training session will take place between: _____, and _____ (Month) (Day) (Year) (Month) (Day) (Year)														
Authorized trainer(s) :	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Trainer name(s):</th> <th style="width: 40%;">Trainer ID number(s):</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">1.</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">2.</td> <td style="padding: 2px;"></td> </tr> <tr> <td colspan="2" style="padding: 2px;">Trainer e-mail address:</td> </tr> </tbody> </table>	Trainer name(s):	Trainer ID number(s):	1.		2.		Trainer e-mail address:							
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Anticipated number of participants:															
Session schedule:	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%; padding: 2px;">Start time: ____:____ (a.m./p.m.)</td> <td style="padding: 2px;">End time: ____:____ (a.m./p.m.)</td> </tr> </table>	Start time: ____:____ (a.m./p.m.)	End time: ____:____ (a.m./p.m.)												
Start time: ____:____ (a.m./p.m.)	End time: ____:____ (a.m./p.m.)														
Additional session information:															

E-mail or fax this completed CERTA Training Session Registration Form to:
 certaadmin@nrca.net or (847) 299-1183

CLASSROOM REQUIREMENTS AND TRAINING PROCEDURES

Classroom Setup

The classroom setup for conducting CERTA recertification training sessions is straightforward. Each participant requires a comfortable chair and a writing surface. Washroom facilities should be readily accessible to minimize downtime. You will need a flip chart, dry-erase board or chalkboard, as well as markers that draw lines large enough for all participants to see clearly. The room should be well-lit, relatively quiet, free of distractions and maintained at a comfortable temperature. Basic adult-learning research suggests that participants’ ability to learn is decreased when they are physically uncomfortable. You are encouraged to enhance the classroom setting with topical posters, sample equipment or other learning aids that support the program content.

Classroom Training Materials

Table 2 provides a list of materials and equipment required to conduct a comprehensive CERTA recertification training session.

Table 2: Required Classroom Training Materials—Recertification	
CERTA program instructors guide	
Student manual photocopy for each attendee (20 maximum)	
Flip chart, dry-erase board or chalkboard with appropriate markers	
Optional Classroom Training Materials	
1-inch three-ring binder for each student manual	
Name ID tent card for each attendee (20 maximum)	

Classroom Schedule

Table 3 provides guidelines for facilitating the classroom portion of the CERTA recertification training program. It does not include time for completing the hands-on training requirements. A schedule for the hands-on portion of this recertification training is provided in the Hands-on Training Requirements, Policies and Procedures section of this instructors guide. Taking breaks is encouraged but not shown in these schedules. The frequency and duration of breaks depend on many variables; therefore, break schedules are left to your discretion.

Table 3: Classroom Events Schedule		
Event	Event Name	Time Allotted
1	Program Introduction	30 minutes
2	Section 1: Safety Practices for Torch-applied Roof System Application	30 minutes
3	Section 2: Hazard Identification	30 minutes
4	Final Exam and Review	30 minutes
	Total Classroom Schedule	120 minutes (two hours)

Facilitation Skills

Preparation

Obtaining desired results from training requires communicating the program content in a clear and organized way that participants can understand. Effective facilitation can only occur if you spend enough time preparing. Preparation time is perhaps your single most important responsibility as a trainer.

Preparation includes:

- Studying the course materials
- Reviewing all parts of this instructors guide
- Practicing your presentation
- Practicing discussing the topics in front of friends or family and asking them to provide feedback on your style

Good facilitation skills are acquired through practice over time. They do not happen naturally for most individuals. The more time you spend preparing, the more comfortable you will be speaking in front of a class and the more effective you will be as an instructor.

The hands-on section of this program also requires full preparation. Photocopies of evaluation forms should be made ahead of time. Mock-ups should be constructed and base plies installed. Roofing membranes should be pre-cut and placed next to each workstation. You want the participants' time spent on using a roofing torch, not on developing cutting and fastening skills.

During your original Train-the-trainer course, you learned several basic adult-learning principles on which the CERTA program is built. The CERTA Trainer Reauthorization course is designed to further develop your facilitation skills.

Literacy issues often arise when training roofing workers. This is simply a fact that, as a facilitator, you need to be aware of. The objectives of a program may be difficult to achieve if a participant is not able to read or write well or if he or she cannot understand the materials for any reason. Participants may be too embarrassed in front of their peers to reveal they are struggling to understand the materials. Try to recognize trainees who are not comfortable, and work with them privately to make sure they learn the key concepts of this program. Don't discuss literacy issues in front of the group. Wait for a break, and discuss the issue privately with the individual. Assess as best you can a trainee's level of understanding. You may need to recommend he or she take home the student manual to study and then participate in a later session. Never ignore a problem and certify a trainee who cannot successfully fulfill all program requirements.

Questioning: Engaging Participants in Active Learning

A core skill all instructors need to increase participant engagement is the art of questioning. Questioning promotes thought, encourages participation and is perhaps the most critical skill a facilitator needs to master. Following are characteristics and helpful tips that will help you better understand and further develop your questioning skills.

The anatomy of a question:

1. A question is asked.
2. The instructor should pause a minimum of five to 10 seconds.
3. If a response is given:
 - a. If correct, the instructor affirms and validates.
 - b. If incorrect, the instructor provides positive comments and then goes on and tries again for a correct response.
4. If no response is given:
 - a. Restate the question.
 - b. Pause a minimum of five to 10 seconds.
5. If there is still no response, participants are either:
 - a. Embarrassed because of lack of ability or knowledge
 - b. Unwilling for other reasons
6. Provide answers only as a last resort.

Example: Consider the following exchange between Ted (the facilitator) and class participants.

Ted: Let's look at the picture on page 8 of your student manuals. What hazard is being shown in this example? (1. Ted asks a question, and 2. Ted pauses five to 10 seconds.)

Joe: There's a lot of paper and trash lying around. (3-a. A correct response is given.)

Ted: Exactly. Good answer, Joe. And who can tell me why this might be a hazard?

(1. Another question is asked, and 2. Ted pauses again five to 10 seconds.)

Jim: Because you might not be able to find what you're looking for with all the junk on the roof. (3-b. An incorrect response is given.)

Ted: That might be, Jim. But perhaps that's more of an inconvenience than a hazard. What else might be a hazard about trash being on the roof? (3-b. Ted offers a positive comment and goes on.)

Jerry: Because the stuff could blow around and end up catching on fire? (3-a. A correct response is given.)

Ted: Exactly! You would not want that stuff swirling around the corner near a parapet wall if you just set your torch down to flop in a piece of flashing. So what would you do to eliminate this hazard? (3-a. Ted affirms and validates and then goes on.)

—OR—

Ted: Let's look at the picture on page 8 of your student manuals. What hazard is being shown in this example? (1. Ted asks a question, and 2. Ted pauses five to 10 seconds.)

No response from any participant is given.

Ted: Anybody? (1. A question is asked, and 2. Ted again pauses five to 10 seconds.)

Ted again gets no response.

Ted: OK, well then let's consider this again. What might happen if you just set your torch down to flop in a piece of flashing and the stuff you see in the picture started blowing around? (1. A question is asked, and 2. Ted pauses five to 10 seconds [requires patience].)

Jim: It might swirl around in the corner in front of where you just set the torch and start on fire, and the next thing you know it's blowing around and goes down into an air vent...

Ted: Right! Good answer, Jim. (3-a. A correct response is given.)

Please note that Ted did NOT simply give the answer to the question. Ted could have simply stated in the first step, "For example, the trash on the roof might blow around and catch fire," thinking he was giving a good example. But in fact, Ted would have been constructing the knowledge for the participants instead of allowing them to do it themselves. This would be an example of merely dumping information down to students. Instead, Ted demonstrates good facilitation and questioning skills by allowing participants to apply the knowledge they learned, engage in the learning process and construct their own understanding of the new information. This is an example of the power of good questioning skills.

Characteristics of good questions

- Concise

Good: How many nails are installed in a three-tab shingle: four or eight, and why?

Bad: Would you use nails or staples in four locations when installing a three-tab shingle?

- Contain only one idea

Good: How many nails are installed in a three-tab shingle: four or eight, and why?

Bad: How many nails and how far apart and how hard should you drive the nails installed in a three-tab shingle; four or eight, and why?

- Thought-provoking and interesting

Good: How many nails are installed in a three-tab shingle: four or eight, and why?

Bad: You should install how many nails in a three-tab shingle?

- Focus on important, relevant material

Good: How many nails are installed in a three-tab shingle: four or eight, and why?

Bad: If you install ice and water shield materials and install three-tab shingles, how many nails should you install in each shingle: four or eight?

- Stated in familiar language at the same level as learners

Good: How many nails are installed in a three-tab shingle: four or eight, and why?

Bad: If you are installing a fiberglass reinforced water-shedding steep-slope composition roof covering affixed with hot-dipped galvanized barb-shanked mechanical fasteners, would you consider the application be performed by incorporating the use of a relevant quantity of said fasteners, citing specifically the quantity as being four or eight, and why?

- Open-ended, requiring more than a “yes” or “no” answer

Good: How many nails are installed in a three-tab shingle: four or eight, and why?

Bad: You should install how many nails in a three-tab shingle: four or eight?

- Require reasoning to answer rather than memory

Good: How many nails are installed in a three-tab shingle: four or eight, and why?

Bad: You should install how many nails in a three-tab shingle?

- Challenging but “answerable”

Good: How many nails are installed in a three-tab shingle: four or eight, and why? (assuming the instructor knows the attendees are familiar with the nailing patterns and definition of three-tab shingles)

Bad: How many nails are installed in a three-tab shingle: four or eight, and why? (if asked to attendees who have no idea what the term “three-tab shingle” means)

Types of questions

There are four types, or “directions,” of questions:

- Direct questions—to a specific learner

Ted: Joe, you mentioned earlier you had experience with a roofing torch. Do you know how hot the open flame of a propane torch can be?

- Overhead questions—to the learners in general; anyone can answer

Ted: Joe mentioned earlier he had experience with a roofing torch. The open flame of a propane roofing torch is hot. Does anyone else know how hot this open flame can be?

- Relay questions—learners ask the instructor, but the instructor asks someone else to answer it

Jim: Ted, it looks in the picture like the modified bitumen needs to get pretty hot to get it to flow. When a roofing torch is used for this, how hot does the flame get?

Ted: That’s a great question, Jim. Joe mentioned earlier he had experience with a roofing torch. Joe, can you answer Jim’s question?

- Reverse questions—a learner asks the instructor, and the instructor returns it to the same learner

Joe: Ted, I’ve used a roofing torch a lot, and I’ve seen it do a lot of damage. I have an idea, but I’m not sure: How hot is that open flame?

Ted: Good question, Joe. How hot do you think it is?

The last two directions can be used effectively whether or not the instructor actually knows the answer.

Another type of question is called the “crossfire.” You facilitate question answering by referring—or cross-firing—questions and answers to others. This is similar to the concept of relay questions. The practice you should strive for is to not always answer all questions whether you know the answers or not.

Some good examples are:

- “How would you have answered that?”
- “Why do you think that?”
- “What do you think of that answer?”
- “What evidence do you have for that?”

- “Could you elaborate, please?”

Best practices in answering questions

Here are some techniques you can use when answering participants’ questions.

- When someone asks you a question, smile, take a step toward them and say “yes” as if you’re pleased to have a question.
- Check to be sure everyone heard and understood the question. If not, ask the person to repeat the question louder rather than the instructor repeating.
- Answer briefly, and state reasons for your answer.
- Tie your answer in to key points of your lesson whenever possible.
- If you don’t know the answer, admit it—never bluff! Ask whether anyone else knows the answer. If no one does, offer to research it later and get back to them. Then, do it as quickly as possible. You sometimes can make a phone call during the next break to find an answer. You will likely impress participants on their return when you provide the answer and state the resource where you found it.
- If someone asks a contentious question, give a direct and friendly answer. Never be provoked into a defensive or argumentative discussion.
- Create a “Parking Lot” flip-chart page, and post it on a wall. When someone asks a question you feel is not relevant and might lead the class off on a tangent, “park” the question on the flip-chart page and state if the class has time later it will be addressed.
- If someone asks a question that you will be addressing later, say: “That’s a good question. We will be covering that in a few minutes. Do you mind if I deal with it then?” (Seek agreement.)

TIP: Don’t repeat participants’ answers. When you do this, trainees may stop listening to one another. If a person’s answer was not loud enough for everyone to hear, ask the class, “Could everyone hear that?” Then, ask *the person* to repeat the answer.

Final Exam Procedures

The final exam not only provides an evaluation of how well participants retain information, but it also provides an evaluation of how well a facilitator communicated the information. Effective trainers know successful training is measured by the actual outcomes of their efforts. Successful participants leave training with new knowledge and skills they can apply in life. Therefore, it is important participants succeed in completing a final written exam that establishes whether the program objectives were met.

Most participants can complete the final exam in a written format at the end of the scheduled classroom session. However, some participants may have obstacles impairing their abilities to take a written exam. These obstacles could be a learning disability, comprehension or reading problems, or a language difficulty. The best way you can help these participants is to discuss these kinds of issues during the program introduction. First, let participants know they need to successfully complete a final written exam to become certified. Then, let them know you are aware these kinds of obstacles exist, you want them to succeed and you are willing to discuss with anyone ways to help complete an exam. Tell them to approach you during a break or during lunch to discuss an issue. Assure them you will keep their confidence and are willing to schedule an oral version of the exam with them at a different time. Do not let a participant fail because he or she cannot read well. The participant may comprehend the content well because you conducted an effective training session, but he or she may be unable to complete the certification through a written exam.

Conducting a Written Final Exam

The CERTA recertification final exam consists of 20 multiple-choice questions. Have participants clear their writing areas. Explain they are to read each question and circle what they think is the best answer even if it seems more than one answer may be correct. Also explain that cheating during the exam will result in an automatic failure. Distribute the exams, and let participants work. Do not allow discussion during the exam. Have students hand their completed exams directly to you when they are finished. Tell students if they finish early, it would be a good time to leave the room, if possible, and take a break.

Conducting an Oral Final Exam

It is recommended you schedule oral exams no later than three days after completing a classroom training session but preferably on the same day. Have participants clear their writing areas. Write on a flip chart or chalkboard an example of the four multiple-choice answers, explaining the top answer is A, second is B, third is C and bottom is D. Point out each letter symbol so they clearly see the sequence they need to recognize on their exams. Then, explain that you will be reading each question, followed by reading each answer. You will state the letter upfront as you read each answer. Tell participants to circle what they think is the best answer to that question. Participants may ask you to repeat the answers, but you should deny requests to clarify an answer or a question. Simply read the questions and answers as they are written.

Grading Exams

Written Final Exam

You should print and photocopy the exam as part of your preparation before each session. The written exam should be kept in a secure, out-of-sight place until you administer it.

There are 20 questions on the final exam. Each exam question is worth five points. Check each incorrect answer, total the number of incorrect answers checked, multiply that number by five and then deduct this amount from 100. On the bottom of the last page of each exam, write the number of incorrect answers and the score. Then, report each participant's final exam score on the session roster sheet.

Hands-on Performance Evaluations

Participants can fail the hands-on evaluation for this course. They are being evaluated by their peers on how well they perform the prescribed torching operation following the listed criteria on the evaluation form. There are 66 individual items on the evaluation form. The hands-on performance evaluation is scored on a pass/fail basis. Authorized trainers will need to report a participant's score as either "P" for pass or "F" for fail. Criteria for scoring are found in the hands-on section of this instructors guide on page 28, part C-12.

Retesting

A trainee will not be certified if he or she fails either the final exam or hands-on performance evaluation. To become certified, he or she will need to participate in another registered training session conducted by you or another authorized trainer. The trainee only needs to participate in the portion of the training they previously failed and not necessarily the entire class. In this case, a trainer will need to designate in advance that an individual is participating only in the hands-on or classroom portion of the session. This is done by writing a participant's name in the comment section of the Training Session Registration Form on page 6 and either "exam retest" or "hands-on retest" alongside the name.

PROGRAM INTRODUCTION

SECTION INTRODUCTION

OBJECTIVES Upon completion of this introductory unit, participants will be able to:

1. Describe the workshop objectives
2. Describe the purposes of the CERTA program

TIMING This unit is divided into three parts:

- A. Welcome (5 minutes)
- B. Icebreaker (10 minutes)
- C. CERTA Trivia: Hit or Myth? (15 minutes)

Total Unit Time: 30 minutes

MATERIALS



Flip chart and markers



Student manuals




Loose coins



Small prize or candy for icebreaker winner (optional)

FACILITATION GUIDE

Sec.	Notes and Materials	Directions and Discussion
A	<p>Welcome (5 minutes) <i>Before starting the session, write the workshop objectives on flip-chart paper and post them in the front of the classroom.</i></p>	
		<p>Welcome participants to the class, and emphasize the importance of their active participation during the training.</p> <p>Introduce yourself, and provide your credentials and related industry experience.</p> <p>Provide the following administrative details:</p> <ul style="list-style-type: none"> • Review the overall workshop objectives listed on the flip chart. • Describe locations of restrooms and refreshments. • Explain the program start and stop times. • Explain your break schedule and classroom policies. • Request all class members turn off their pagers and cell phones or put them on vibrate mode. • Explain to all participants that to become recertified, they must pass a final written exam and a torching performance test during the hands-on portion of the program. <p>Explain that for a worthwhile and enjoyable learning experience to occur, students should:</p> <ul style="list-style-type: none"> • Ask a question when they have one • Feel free to share an experience that relates to a topic that is being taught • Request an example if a point is not clear • Approach you during lunch or a break to arrange an oral exam for a later time if they think they may have difficulties completing a final written exam
B	<p>Icebreaker (10 minutes) <i>Refer to Roofers Society of Truth and Lies to lead this icebreaker.</i></p>	
		<p>Direct the class to turn to page 3 (Spanish page 3) of the student manual to find the section titled Icebreaker: Roofers’ Society of Truth and Lies.</p> <p>Review instructions with the class, and facilitate the icebreaker. Instructions for this exercise are found on page 16 in this instructors guide.</p>
C	<p>CERTA Trivia: Hit or Myth Review Exercise (15 minutes)</p>	
		<p>Instruct students to turn to page 4 (Spanish page 4) of the student manual to find the exercise titled CERTA Trivia: Hit or Myth?</p> <p>Explain students have five minutes to review the five statements and answer the five questions.</p> <p>Tell students to stop writing after five minutes.</p> <p>Call on individual students to read one statement at a time, asking them to share their answers. Challenge students to further explain their responses.</p> <p>Progress through the entire list until all five have been reviewed.</p>

Icebreaker Facilitation Instructions: Roofers' Society of Truth and Lies

Each person takes a turn guessing if another person's story about using a roofing torch is the truth or a lie. If both players are correct, both advance. If both are incorrect, both advance. If only one player is correct and one is wrong, the incorrect person is out of the competition.

Facilitation instructions:

1. First, tell players they each will need a coin. If someone does not have one, lend one for this icebreaker.
2. Tell players to pair up with an initial partner, preferably someone they do not know well. One partner flips a coin and does not reveal the coin toss result to his or her partner.
3. Tell players if their coin reveals "heads," they tell the truth; if "tails," they make up a story, or lie.
4. Tell players they need to swap stories with their partner about an experience they had using a roofing torch. The first partner does not reveal if the story was true or a lie until both partners have told their stories. Each partner must then guess whether the other partner's story was true.
5. Tell players that if both partners guess correctly, they move on and each finds another partner. If both partners guess incorrectly, they also move on and each finds another partner. However, if one partner guesses correctly and one incorrectly, the person who guessed incorrectly is out.
6. Tell players to repeat steps one through three until only one person remains and is declared the winner.
7. Give the winner a prize, if desired.

Icebreaker activity provided courtesy of:
High-Energy, High-Impact, Business Training Solutions
© 2002 Business Training Works Inc.
9015 Katie Court
Port Tobacco, MD 20677
www.businesstrainingworks.com



Example Answers to CERTA Trivia: Hit or Myth?

Statement 1: When I follow the safety practices for installing torch-applied roof systems, the quality of my workmanship suffers.

True False

Why or why not?

High-quality workmanship can be attained when following the safety practices. If you are not used to installing torch-applied roof systems using these procedures, you may need to practice these skills to achieve quality workmanship, thus requiring more time at first to do installations. These skills also require more forethought during installation to avoid direct application of an open flame toward hazardous areas.

Statement 2: When I install torch-applied roof systems, I am more aware of potential fire hazards than I was before completing my CERTA training.

True False

Why or why not?

CERTA training provides an increased awareness of common hazardous areas and how fires start when using a roofing torch. And the training provides methods for using a roofing torch that help reduce the risk of fires.

Statement 3: I don't have to worry about fire hazards when using a roofing torch to dry an area of a roof.

True False

Why or why not?

Any time an open flame is directed toward a roof surface, a hazard is created. An open flame can react to blowing wind or negative building pressures and be sucked into openings and vents or other hazardous areas without being noticed, thus starting a fire.

Statement 4: Using the torch-and-flop method at flashing details and for installing field plies at edges and walls is an effective way to reduce risks of fire.

True False

Why or why not?

The best way to reduce the risk of starting a fire is to never direct a flame at edges, walls or flashing details.

Statement 5: I am a better roofing worker because of what I have learned in the new CERTA program.

True False

Why or why not?

Participants have an increased awareness of and can better recognize the hazardous areas where fires start when using a roofing torch. But more important, they learn what to do to avoid starting a fire when they recognize a hazard.

Section
1**SAFETY PRACTICES FOR TORCH-APPLIED
ROOF SYSTEM APPLICATION**

SECTION INTRODUCTION**OBJECTIVES**

Upon completing this section, participants will be able to:

1. Explain the purpose of each published safety practice
2. Identify the safety practice that best applies to given situations

TIMING

This section is divided into two parts:

- A. Review of published safety practices (15 minutes)
- B. Safety practices review exercise (15 minutes)

Total Unit Time: 30 minutes

MATERIALS

Student manuals

FACILITATION GUIDE

A Review of Published Safety Practices (15 minutes)



Tell students to turn to **page 5 (Spanish page 5)** of their student manuals.

Direct one student to read the first safety practice.


Ask the student to explain why the safety practice is important and how it helps reduce the risk of fire.

Continue having students read the remaining safety practices, one per student, until all safety practices have been read and discussed.

Expected student explanations and comments for each safety practice:

- 1.1. Completing a daily checklist helps identify possible hazards before starting work each day. Hazards can change from one day to the next, so completing the list at the start of every day is important.
 - 2.1.1. Reviewing possible hazards daily with the building owner provides an opportunity to identify combustible building components only the building owner may be aware of. It also provides an opportunity to let a building owner know what to do to eliminate a present hazard that a roofing contractor should not be responsible to correct.
 - 2.1.2. When combustible building components are identified, the checklist provides an opportunity to document the hazards and prescribe which best practice will help minimize or eliminate the hazards.
- 2.2. Having two 4A60BC fire extinguishers close at hand allows for an immediate response to extinguish a detected fire before it has a chance to increase in intensity. Two fire extinguishers will extinguish twice as much as a single fire extinguisher, and with two on hand, one can serve as a backup should the other extinguisher fail.
- 2.3. Knowing how to use a fire extinguisher is the best way to ensure its effectiveness. It is best for everyone to know because it could be anyone on the roof who first notices a fire.
- 2.4. Inspecting before using a torch in these areas helps prevent igniting combustible substances by providing an opportunity for someone to remove them.
- 2.5. If a fire occurs, stressful situations ensue that make it difficult to find a telephone and identify the number to call in case of an emergency.
- 2.6. Some state or local building codes and ordinances may require obtaining a burn permit; may not allow the storage of propane cylinders on a roof overnight; or may not allow propane cylinders on a roof under any circumstances. There may be other hazards on adjacent properties a roofing worker may not be aware of, so it is important to comply with these codes and ordinances.
- 2.7. Combustible substrates could mean a type of wood deck or a combustible type of roof insulation such as polyisocyanurate. Torching over these materials should never occur directly, even with a base sheet in place, without a thermal barrier to help reduce the risk of setting the combustible material on fire.
- 2.8. Combustible flashing components will always require some form of protection, or encapsulation, that prevents an open flame from coming in contact.
 - 2.8.1. Using the torch-and-flop method for installing flashings is an effective method because it significantly reduces the risk of exposing combustible components to direct contact with an open flame.
 - 2.8.4. Limited direct torching of flashing systems only is allowed using a single-burner, low-output (105k Btu or less) “detail” torch and providing a backer ply with sealed laps is first installed.
- 3.1. Insurance companies and building owners, as well as some local building code agencies, may require the CERTA certification to use a roofing torch for any purpose.
 - 3.2. Eliminating direct torching to any combustible material is an effective method because it reduces the chance of exposing combustible components to direct contact with an open flame.
 - 3.3. Some roofing jobs have areas of the roof that hide certain hazards—for example, openings under door thresholds or under metal siding, where an open flame could be drawn under and start a fire.
 - 3.4. Too often, roofing torches show up on job sites without a stand. Everyone wants to get a job done, but using a torch without a stand can damage a roof and potentially start a fire.
 - 3.5. Walking away from a lit torch is like walking away from a bomb with a lit fuse thinking you will get back in time to extinguish it before it explodes. Too many things can happen to an unattended lit torch: It can flop over on its own and start the roof membrane on fire; the flame can blow out, allowing raw gas to pour onto the work area

A	<p>Review of Published Safety Practices (continued)</p> <p>and create an explosion hazard; another person may not see the open flame and walk directly into it, causing severe burns. Never leave a lit torch unattended.</p> <p>4.1. A competent person—that is, someone trained on the specific hazards and skills needed to conduct a fire watch—must always stay on the roof for a minimum of two hours after the last torch is shut off, regardless of the time of day or night. Many smoldering fires can take this long before they burst into flame or even longer if it is windy or the roof is constructed of old materials.</p>
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B	Safety Practices Review Exercise (15 minutes)	
		<p>Tell students to turn to page 7 (Spanish page 7) of their student manuals.</p> <p>Direct one student to read the first statement and then choose the safety practice listed that best matches the statement.</p> <p>Tell all students to write the correct answer in the line next to each statement.</p> <p>Continue having students read the remaining statements, one per student, until all statements have been read and answered.</p> <p>Discuss each student’s response to the extent time allows.</p> <p>The correct answers are provided on the next page.</p>

Safety Practices Review Answer Key

- A. 2.7.1. I am installing a new roof using a roofing torch. The deck is made of plywood. I know I need to install a thermal barrier first.
- B. 3.3 I need to torch a small piece of flashing under a door threshold, but I cannot see what is under the door or siding. I should not use a torch. Instead, I will install the flashing using the proper cold-applied adhesive.
- C. 2.1.1 Before we started working today, our foreman talked with the building owner. It is a good thing he did because the owner's warehouse guys stored some flammable solvent on a shelf against a wall right under where we were planning to torch today. That could have been a disaster!
- D. 2.4 We pulled an old exhaust fan off a curb so the new flashing material would fit under its flange. When we pulled off the fan, we found three old bird nests under the hood. They could have caught fire had we not found them.
- E. 2.6 Our superintendent stopped by the torching job this morning and posted a city burn permit on the door leading out to the roof.
- F. 2.3 A small fire started smoldering under an eave where a gutter ran into a chimney. It was easy to put out the fire with a fire extinguisher. There was no damage, and we only had to clean off the white powder. I'm glad we knew how to use a fire extinguisher and we avoided a big fire!
- G. 3.4 The stand was broken off the torch my foreman gave me to use. I fixed the stand before relighting the torch.
- H. 3.1 My boss is able to get good insurance to do torching work, and I can get more work because I got certified in the CERTA program.
- I. 1.1 Before we started working today, our foreman walked over the section of the roof he was planning to do and filled out some important paperwork. I know it is important to go over this checklist every day because conditions can change from one day to the next.
- J. 2.8.4.1 I am installing flashings on a parapet wall. There is a wood nailer in the brick near the old wood deck. I know I need to cover this flashing area first with an approved backer ply.
- K. 3.5 My foreman told me to go down to the truck and bring up a box of tin-capped nails so we can nail the flashings. I will do this to my torch before I go down to the truck.
- L. 2.5 My foreman told the crew he programmed the telephone number of the local fire department into his cell phone in case there is an emergency.
- M. 3.2 I have to torch materials over a concrete wall. There is a louvered vent coming out of the wall where I have to work. I will cover the entire vent using a fire blanket to make sure no flames get into the opening.
- N. 2.1.2 I found an old unused wood curb hidden under a metal counterflashing in an area where everything else was metal. I will address this hazard by removing the old wood curb before using a torch.
- O. 4.1 My company put me through special training to help identify hidden fires that sometimes smolder under a roof. I call these areas "hot spots." I stay on a roof at least two hours after we shut off the last torch. I watch for hot spots, smoke or other clues a fire might be smoldering.
- P. 2.2 I am working with a crew of six to install torch-applied flashings near the northwest corner of a roof. When we are working close together, we need two fire extinguishers present. But when I work alone on another area of the roof, I need two fire extinguishers just for my torch.
- Q. 2.8.4.2 I am installing torch-applied flashings around an air-conditioner curb. The curb is metal. I installed a backer ply (either hot-mopped or self-adhered) with sealed laps. I now can carefully install the flashing strips onto the curb using a small detail torch and the direct-torching method.

Section
2

HAZARD IDENTIFICATION

SECTION INTRODUCTION

OBJECTIVES

Upon completing this unit, participants will be able to:

1. Identify common fire hazards encountered during roofing applications
2. Prescribe application methods that reduce fire risk when torching near hazardous areas

TIMING

This unit consists of three sections:

- A. Student Hazard Identification Exercise (10 minutes)
- B. Class Review of Hazard Identification Exercise (20 minutes)
- C. Set Up Participants for Hands-on Exercise (6 minutes)

Total Unit Time: 36 minutes

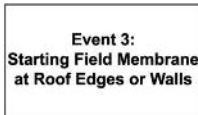
MATERIALS



Student manuals



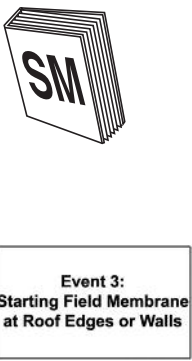


Clock with second hand, or stopwatch



One event card for each participant

FACILITATION GUIDE

Sec.	Notes and Materials	Directions and Discussion
A Student Hazard Identification Exercise (10 minutes)		
		<p>Direct the students to turn to page 8 (Spanish page 8) of their student manuals.</p> <p>Explain that there are 20 pictures. Students are to look at each picture; identify what they think is the fire hazard being represented; and write a brief description of the hazard on the lines next to each picture.</p> <p>Direct students also to write what they think they should do to reduce the fire hazard.</p> <p>Ask a student to review and read the first example picture and answer given on page 8 (Spanish page 8).</p> <p>Confirm their understanding of the exercise by asking if anyone has a question about the instructions.</p> <p>Tell students they have 10 minutes to complete the exercise and you will time the exercise. Do not mention that you will be conducting a review of their answers.</p> <p>Time the exercise. Call out STOP when the 10 minutes has elapsed.</p>
B Class Review of Hazard Identification Exercise (20 minutes)		
		<p>Tell a student to read his or her answer to picture No. 2.</p> <p>Ask the student to explain why the course of action described in his or her answer could reduce the fire hazard.</p> <p>Use good questioning skills when conducting this type of review.</p> <p>Continue around the room, having the rest of the students read the remaining answers, one per student, until all pictures and descriptions have been read and discussed.</p>
C Set Up Participants for Hands-on Exercise		
		<p>Photocopy, cut out and stack the event cards (one for each participant) into a deck. Event cards are found on page 36 of this instructors guide. Shuffle the cards to create a random order of events.</p> <p>Tell participants they each will be required to complete four hands-on exercises, including:</p> <ol style="list-style-type: none"> 1. Lighting a torch (Event 1) 2. Flashing torch and flop (Event 2) 3. An event card assignment 4. Shutting off the torch (Event 8) <p>Direct participants to pages 21 and 22 (Spanish pages 21 and 22) in the appendix of their student manuals and have them remove the Hands-on Performance Evaluation Form.</p> <p>Tell participants to write their name as the torch operator and the training date at the top of the evaluation form.</p> <p>Instruct students to each draw one card from the deck. This provides each student with an event assignment. One or two students may receive an Event Wild Card. Allow these students to choose the event they wish to perform, only allowing them to choose between events three through seven.</p>

		<p>Tell students to write their event number at the top of the evaluation form.</p> <p>Count off students and break them into four teams numbered 1 through 4. For a 20-person session, the result will be four teams of five people.</p> <p>Remind students to remember their team number.</p>
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HANDS-ON TRAINING REQUIREMENTS, POLICIES AND PROCEDURES

SECTION INTRODUCTION

The hands-on section of this CERTA recertification program is essentially the same as the original CERTA applicator program. The only significant difference is that students will be required to perform only four torch-and-flop exercises, randomly chosen, whereas they were required to perform eight exercises in the original program.

OBJECTIVES Upon completing this unit, instructors will be able to:

1. Set up mock-up stations, materials and equipment for hands-on exercises
2. Conduct hands-on exercise demonstrations
3. Supervise and evaluate participants' performance of hands-on exercises
4. Conduct an overall program wrap-up review

TIMING This unit is divided into four sections:

- A. Hands-on workstation setup
- B. Instructor demonstrations
- C. Participant exercises
- D. Program wrap-up

Total Unit Time: 120 minutes (2 hours)

MATERIALS



Scheduled materials and equipment checklists



Torching equipment (from checklist), circular saw, hammer, carpenter's square, screw gun

Hands-on Exercises Schedule		
Event		
8	Hands-on Instruction: Instructor Demonstrations of Torch Lighting	4 minutes
	8-1: Lighting Procedures	2 minutes
	8-2: Shutting Down Torch	2 minutes
9	Hands-on Instruction: Instructor Demonstration of Applying Self-adhering Base Ply	5 minutes
10	Hands-on Instruction: Instructor Demonstration of Flashing Torch and Flop	10 minutes
11	Hands-on Instruction: Instructor Demonstration of Field Torch-and-flop Applications	20 minutes
	11-1: Starting Rolls at Roof Edges or Walls	5 minutes
	11-2: Interior Roof Drain	6 minutes
	11-3: Penetration	5 minutes
	11-4: Finishing Rolls at Roof Edges or Walls	4 minutes
12	Hands-on Instruction: Participant Torch Exercise Rotation and Evaluation	76 minutes
	12-1, Station 1 and 2: Flashing Torch and Flop	38 minutes
	12-2, Station 3 and 4: Field Applications Torch and Flop	38 minutes
13	Program Wrap-up	5 minutes
	Total Hands-on Exercises Scheduled Time	120 minutes (2 hours)

FACILITATION GUIDE

A	Hands-on Workstation Setup (Prepare before conducting training session.)	
<div style="border: 2px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p>Materials and Equipment Lists</p> </div> <div style="display: flex; justify-content: center; gap: 10px; margin-top: 10px;"> <div style="width: 20px; height: 15px; background-color: #ccc; border: 1px solid #000;"></div> <div style="width: 20px; height: 15px; background-color: #ccc; border: 1px solid #000;"></div> <div style="width: 20px; height: 15px; background-color: #ccc; border: 1px solid #000;"></div> <div style="width: 20px; height: 15px; background-color: #ccc; border: 1px solid #000;"></div> </div>	<p>Identify the training location, and be sure it will meet all the safety requirements (e.g., ventilation, fire protection).</p> <p>Gather all materials, tools and equipment together for the training session. Use the table provided at the end of this section.</p> <p>Decide on mock-up locations, taking into consideration all safety requirements. Weather permitting, always try to conduct hands-on exercises outdoors, but have a backup location identified in case the weather does not cooperate.</p> <p>Build mock-ups. You will provide four fully equipped mock-up stations for students to perform hands-on training exercises. Refer to mock-up drawings on pages 32 to 35 of this section.</p> <p>Basic roof deck mock-ups are constructed using 2x4 dimensional lumber, ½-inch plywood and high-density wood fiberboard roof insulation. Flashing boxes are constructed of 2- by 12-inch or 2- by 14-inch dimensional lumber.</p>	

**Materials
and
Equipment
Lists**





Roll out heavy fiberglass base sheets to protect concrete floors. Extend the sheets a minimum of 3 feet beyond each side of where the roof deck and flashing box mock-ups will be set after the sheets are laid. Place propane cylinders a minimum of 10 feet from each workstation. Place two 4A60BC fire extinguishers centrally located near the mock-up stations.


Prepare all torching equipment. Assemble torch assemblies, and test them for leaks. Or, if you decide to extend the shop time, you may have participants do the assembling and leak testing under your supervision.

Distribute all roofing materials at each workstation. Pre-cut enough base plies and flashing strips before a session. There will only be time for participants to do this as part of their exercise if you extend the time. Cutting flashing membranes is not a skill this program addresses.

B Conduct Hands-on Exercise Demonstrations
Total 40 minutes

Have students read aloud the step-by-step instructions to you during your demonstration. The instructions can be found in the evaluation checklist on pages 21 and 22 (Spanish pages 21 and 22) of the student manual.

8		<p><i>Event 8 (4 minutes)</i></p> <p>8-1: 2 minutes: Demonstrate proper torch-lighting procedures.</p> <p>8-2: 2 minutes: Demonstrate proper torch shutdown procedures.</p>
9		<p><i>Event 9 (5 minutes) (stations 1 or 2)</i></p> <p>Demonstrate proper application of self-adhering base ply with a focus on ensuring sealed laps, using the flashing box mock-up.</p>
10		<p><i>Event 10 (10 minutes) (stations 1 or 2)</i></p> <p>Demonstrate flashing torch-and-flop application using the flashing box mock-up.</p>
11		<p><i>Event 11 (20 minutes) (stations 3 or 4)</i></p> <p>11-1: Demonstrate proper starting of field membrane rolls at roof edges or walls.</p> <p>11-2: a. Demonstrate the proper torch-and-flop method for going around a pipe penetration. b. Demonstrate the proper torch-and-flop method for installing a target flashing sheet around an interior drain.</p> <p>11-3: Demonstrate the proper torch-and-flop method for installing field sheet over the drain penetration.</p> <p>11-4: Demonstrate the proper torch-and-flop method for ending field membranes at roof edges or walls.</p>

<p>C</p>	<p>Supervise and Evaluate Participants' Performance of Hands-on Exercises Total 75 minutes (1 hours, 15 minutes)</p>	
<p>12</p>	 <div data-bbox="250 617 441 863" style="border: 1px solid black; padding: 5px; text-align: center; margin-top: 20px;"> <p>Hands-on Exercise Evaluation Forms</p> </div>	<p>Explain to participants they can fail the hands-on part of this course. They are being evaluated by their peers on how well they perform their torching events following the listed criteria on the evaluation form. Although there are 66 individual listed items, <i>each participant only needs to complete the items listed for the following events:</i></p> <ol style="list-style-type: none"> 1. Lighting a torch (Event 1—nine items) 2. Flashing torch and flop (Event 2—seven items) 3. An event card assignment (number of items varies) 4. Shutting off the torch (Event 8—five items) <p>Explain Reasons for Failure.</p> <p>Reasons for automatic failure include:</p> <ol style="list-style-type: none"> 1. Smoking within 50 feet of a propane cylinder 2. Scoring a 1 on any one of the seven “never touches the _____ with a flame” items 3. Injuring himself or herself or another participant, whether intentional or not 4. Engaging in unruly behavior or misconduct as determined by the authorized instructor <p>A participant also fails this hands-on evaluation if he or she scores a 1 on 12 or more items.</p> <p>Position each team at one of the four workstations. Field mock-ups will use field-sized torch assemblies, and flashing box mock-ups will use detail-sized torch assemblies.</p> <p>Explain that each team has 38 minutes to complete the events at the workstation. That means for a team of five, each participant has about seven and one-half minutes to perform his or her events for that workstation.</p> <p>Rotate participants at their workstation until all team members have finished their events.</p> <p>Tell students to evaluate one another in a positive and constructive manner, providing feedback to the torch operator. Remind them they should not inject personal opinions about ways they were taught or shortcuts they may know nor should they suggest that their experience is a better way to do a task. Remind each team that feedback needs to be objective, constructive and positive in tone.</p> <p>Monitor each group’s evaluation feedback to ensure positive, constructive feedback is being given. You may also add your own feedback.</p>

		<p>Explain to the evaluators they need to agree on a performance grade for the torch operator for each item and circle the appropriate number for each item listed. If an operator performs poorly, discuss with the other team members how to assist the operator as time allows. The objective here is to teach operators safe torching habits.</p> <p>Keep a close eye on all exercises, and maintain order. Do not allow horseplay or other inappropriate behavior.</p>
<p>12-1</p>		<div style="border: 1px solid black; padding: 10px; text-align: center; background-color: #f0f0f0;"> <p>Station 1 and 2: Flashing torch-and-flop exercise with flashing boxes— 38 minutes simultaneous with event 12-2</p> </div> <p>Participant 1—performs the flashing torch-and-flop application by following the step-by-step instructions on the evaluation form. This will include properly lighting and shutting down a torch assembly.</p> <p>Participant 2—performs fire-watch duty while others are torching. Performs no other duties during the fire watch. This person has the authority to stop an exercise if a fire risk is observed.</p> <p>Participants 3, 4 and 5—observe that participant 1 is performing the torching sequence properly following the step-by-step instructions on the evaluation form. This includes never allowing a flame to touch a flashing box.</p> <p>At the end of the first 38-minute exercise, groups exchange places with workstations 3 and 4 to begin the second round of simultaneous exercises.</p>
<p>12-2</p>		<div style="border: 1px solid black; padding: 10px; text-align: center; background-color: #f0f0f0;"> <p>Stations 3 and 4: Field mock-up exercise for starting and ending rolls and installing around penetrations using flat field mock-ups— 38-minute exercise simultaneous with 12-1</p> </div> <p>Participant 1—performs only the torch-and-flop field application tasks listed on the event card, following the step-by-step instructions provided on the evaluation forms.</p> <p>These tasks include:</p> <ul style="list-style-type: none"> • Starting rolls at a roof edge or wall • Installing a target sheet over the roof drain area • Installing the field membrane over the roof drain area • Installing the field membrane around a pipe penetration • Ending the roll at a roof edge <p>Participant 2—performs same fire-watch duty as described in 12-1.</p> <p>Participants 3, 4 and 5—conduct evaluations as described in 12-1.</p>

<p>D</p>	<p>Program Wrap-up (5 minutes)</p>	
<p>13</p>		<p>Instruct participants to fill out the program evaluation form found on pages 23 and 24 (Spanish pages 23 and 24) in the appendix of their student manuals. Encourage participants to fill out these forms and mail them to NRCA.</p> <p>Confirm you have all the personal information you will need to complete your roster sheet.</p> <p>Inform participants you will distribute their recertification cards as soon as you receive them. Remember the tasks you need to do: Grade their exams, tabulate their torching performance evaluation forms, submit the session roster, and wait two to four weeks for NRCA to process and mail the recertification cards to you.</p> <p>Thank everyone for participating.</p>

Equipment and Materials Requirements

Hands-on Training Mock-up Construction Materials

√	Quantity	Unit	Description
			Mock-up Construction
	192	Square feet	½-inch high-density wood fiberboard roof insulation
	3	Sheets	4-foot-by-8-foot-by-½-inch CDX plywood
	15	Each	2x4 dimensional lumber by 45-inch length
	6	Each	2x4 dimensional lumber by 8-foot length
	2	Each	2- by 12- or 14-inch construction-grade dimensional lumber by 12-foot length
	150	Each	1¼-inch general purpose screws
	100	Each	16 penny nails
	50	Each	1½-inch tin-capped roofing nails
	2	Each	9-inch metal pie tins, large coffee cans or galvanized tall cone flashing
	2	Each	4-inch-diameter steel pipe by 10- or 12-inch length
	2	Each	½-inch plywood circles cut to 4-inch O.D. pipe size
	2	Each	12-inch wood screws

Hands-on Training Roofing Materials

			Roofing Materials: 20 participants
	1	Roll	Heavy fiberglass base sheet (#75-type)
	1	Roll	Self-adhering smooth-surfaced polymer-modified base sheet
	3-4	Rolls	APP polymer-modified bitumen membrane—smooth or granulated
	8	Each	Wood-fiber cant strips—3-foot lengths
	1	Box	Arrow T-50 staples for staple gun (or equivalent)
	10	Each	Hooked blades for roofing knives
	1	Bottle	Liquid soap (for leak-detecting solution)

Hands-on Training Roofing Equipment

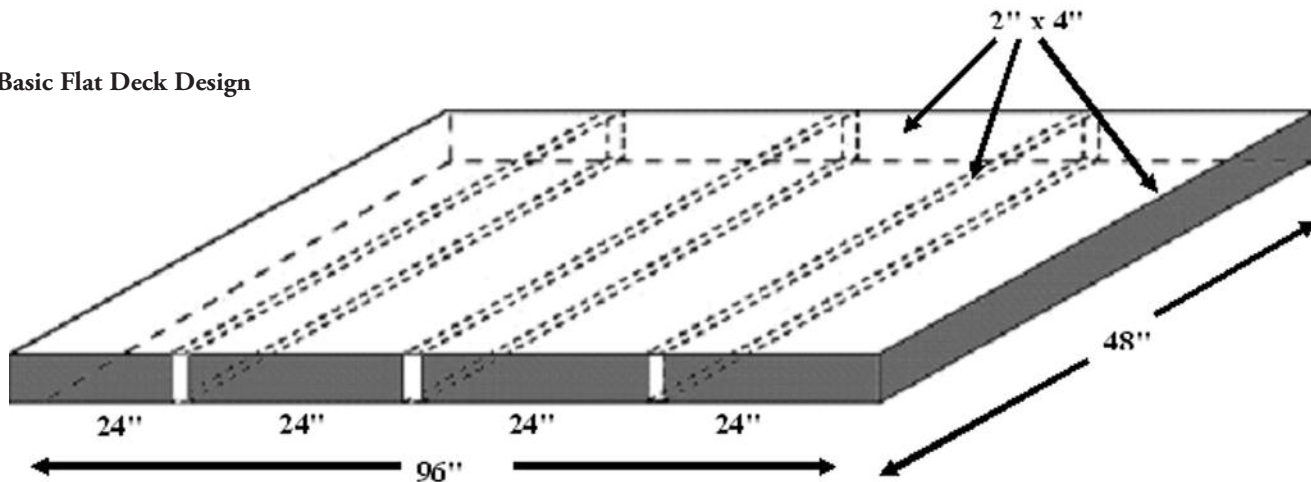
√	Quantity	Unit	Description
	4	Each	20-pound vapor LP gas cylinders
	4	Each	Pressure regulators
	4	Each	Pressure gauges
	4	Each	25-foot UL-listed hoses
	4	Sets	Swivel-type connectors for torch assemblies

√	Quantity	Unit	Description
	2	Each	Propane roofing torches—detail application size not to exceed 105K Btu
	2	Each	Propane roofing torches—field application size
	4	Each	Spark-type igniters
	2	Each	Adjustable wrench
	1	Each	Flat-blade screwdriver (for changing knife blades)
	4	Each	Utility-type roofing knives
	1	Each	Arrow T-50 staple gun (or equivalent)
	4	Each	Large round-nosed trowels
	2	Each	4A60BC fire extinguishers, fully charged, with updated inspection tags and intact plastic seals
	1	Each	Comprehensive first-aid kit
	1	Each	Clean plastic 5-gallon pail (for water)
	1	Each	Small plastic squirt bottle
	5	Each	ANSI Z-87 goggles (eye protection)
	5	Pair	Leather-palmed heavy work gloves (hand protection)

Mock-up Design, Construction and Setup

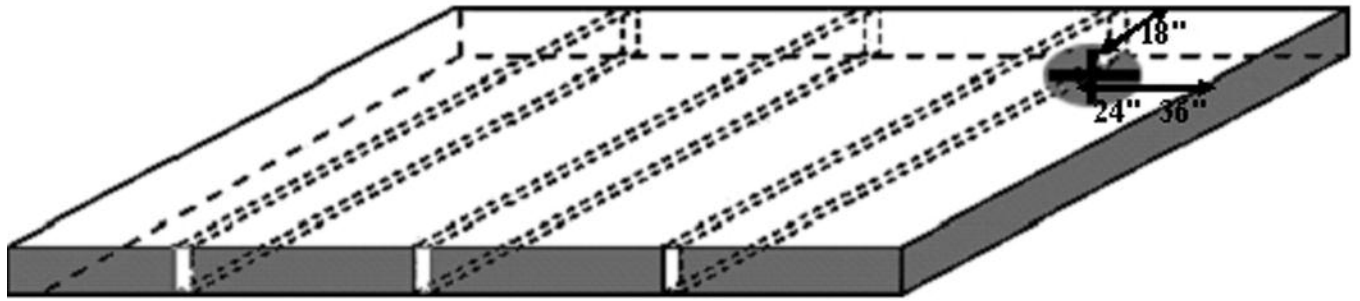
These drawings represent mock-ups you will need to construct before conducting the hands-on training for this program. These mock-up designs are the same used for the original CERTA applicator training program.

Basic Flat Deck Design



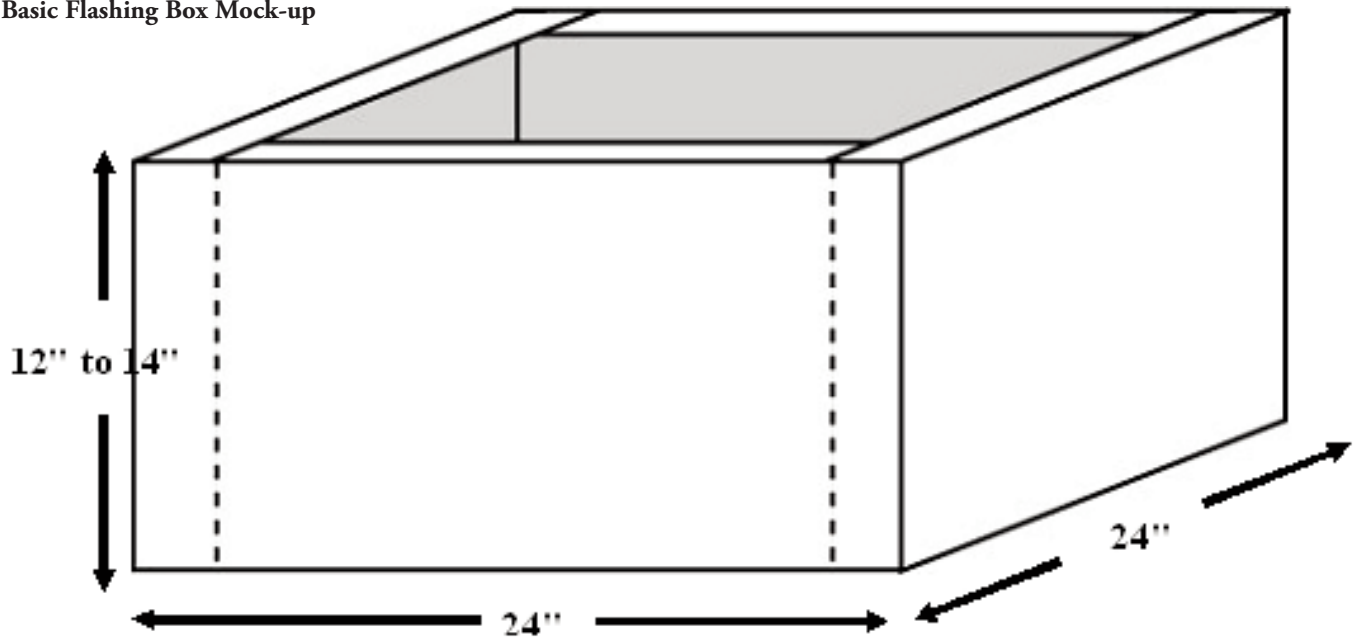
Construct basic flat deck using 2x4 dimensional lumber secured with 16d nails as shown here. Install one layer ½-inch minimum CDX plywood to deck over the 2x4 frame, secured 8 inches on center with 1¼-inch general purpose screws. Install two layers of ½-inch high-density wood fiberboard roof insulation secured with 1½-inch tin-capped nails over the plywood. You will need to construct three basic flat deck mock-ups to conduct the hands-on training exercise.

Simulated Roof Drain



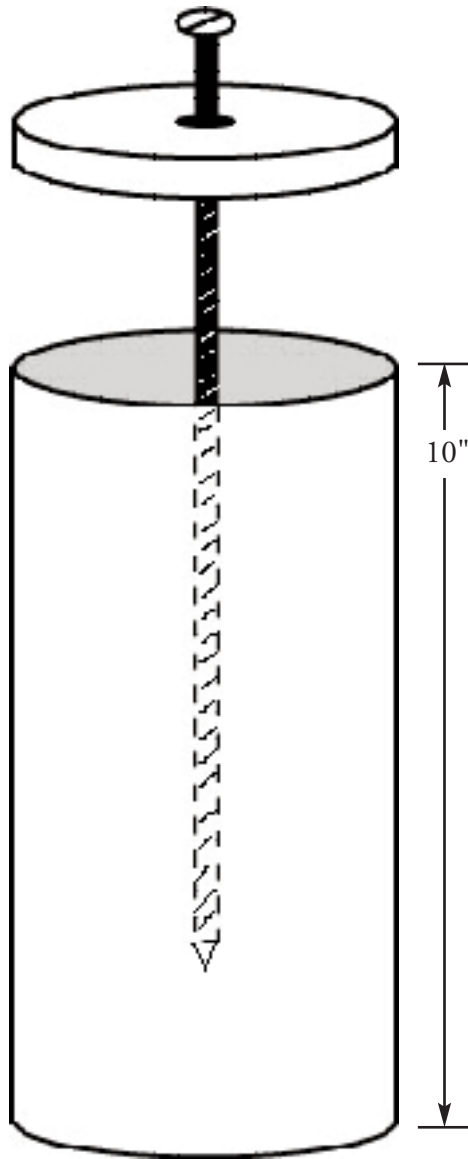
Cut a hole 18 inches from one side and 18 to 24 inches from one end in two of the three basic flat deck mock-ups. Use a 9-inch metal pie tin, a large coffee can or an inverted galvanized steel tall cone flashing cut to height to simulate a roof drain opening. Secure the simulated roof drain in the hole.

Basic Flashing Box Mock-up



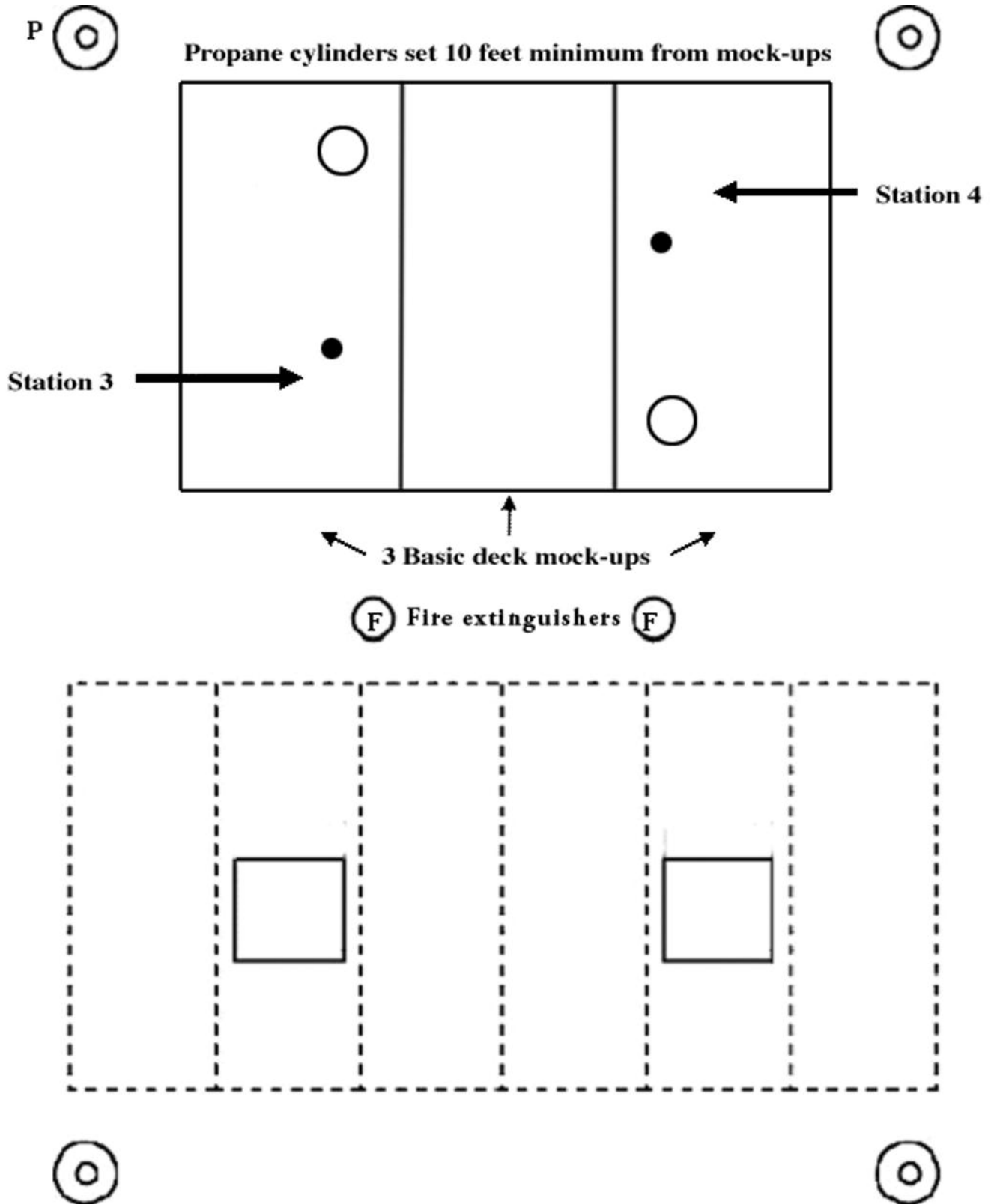
Construct basic flashing box mock-up using four pieces of 2- by 12- or 14-inch dimensional lumber nailed together using 16d nails. Add new cant strips for each training session.

Basic Pipe Penetration Mock-up



Construct basic pipe penetration mock-up using a minimum 10-inch length of 3- or 4-inch pipe, a circular plywood disk cut to the size of the outer pipe diameter and a screw 2 inches longer than the pipe length. Drill a hole near the center of the plywood disk to accept the screw. Secure the basic pipe penetration mock-up at the opposite end of the basic deck mock-up approximately 18 inches from one side and 24 inches from the end. The basic pipe mock-up can easily be removed for storage.

Mock-up Station Layout Plan



Lay the three basic deck mock-ups side by side with the two drain openings at opposite ends. Cover over entire basic deck mock-up layout using heavy fiberglass base ply sheet stapled into place. Lay fiberglass base ply ground protection for Stations 1 and 2 flashing box areas. Set flashing boxes approximately 8 to 10 feet apart. Install cant strips around flashing boxes. Cover flashing boxes and cant strip using heavy fiberglass base ply sheets stapled securely in place. Set two 4A60BC fire extinguishers between the workstations. Set a 20-pound propane tank a minimum of 10 feet away from each workstation.

**EVENT 3:
Starting field
membranes at roof
edges or walls**

**EVENT 4:
Installing target
sheet at drain**

**EVENT 5:
Installing field
membrane over
drain**

**EVENT 6:
Installing field
membrane around
pipe penetration**

**EVENT 7:
Ending field
membranes at roof
edges and walls**

**Event Wild Card
EVENT ____:
You get to choose!**

<p>EVENT 4: Installing target sheet at drain</p>	<p>EVENT 6: Installing field membrane around pipe penetration</p>	<p>Event Wild Card EVENT ___: You get to choose!</p>
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<p>EVENT 3: Starting field membranes at roof edges or walls</p>	<p>EVENT 5: Installing field membrane over drain</p>	<p>EVENT 7: Ending field membranes at roof edges and walls</p>
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**EVENT 3:
Starting field
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<p>EVENT 4: Installing target sheet at drain</p>	<p>EVENT 6: Installing field membrane around pipe penetration</p>	<p>Event Wild Card EVENT ___: You get to choose!</p>
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<p>EVENT 3: Starting field membranes at roof edges or walls</p>	<p>EVENT 5: Installing field membrane over drain</p>	<p>EVENT 7: Ending field membranes at roof edges and walls</p>
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