



**The Midwest Roofing Contractors Association
Video Conference Based
Certified Roofing Torch Applicators (CERTA)
Roofing Torch Safety Training
and Evaluation Program Guide**

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Welcome to the MRCA's Certified Roofing Torch Applicator Video Conference-Based Training Program

Thank you for making the effort to participate in the new MRCA Certified Roofing Torch Applicator (CERTA) Video Conference-Based Training Program. CERTA has changed the way workers use torches. Roofing workers today are using torches more carefully thanks to the implementation of the safety practices learned in CERTA roofing torch safety classes. The decisions they make and actions they take while using roofing torches contributes to the safe and successful application of torch-applied roof systems.

This MRCA's Video Conference Based Training Program Guide provides specific instructions to prepare for and facilitate successful CERTA training sessions to certify torch users. These instructions outline the requirements for Video Conference Classrooms and for the practical Hands-On Evaluation required of each student in this program.

In 1986, the Midwest Roofing Contractors Association (MRCA), in conjunction with the Asphalt Roofing Manufacturers Association and the United Union of Roofers, Waterproofers and Allied Workers, developed a curriculum for training roofing workers in the safe application of torch-applied roof systems. This program was named the Certified Roofing Torch Applicator program, or CERTA.

In 2003, the insurance industry approached NRCA to address concerns about increasing incidents and losses occurring during torching activities by roofing contractors. NRCA recognized two things: Torching activities were, and will continue to be, a part of the roofing industry; and roofing workers traditionally have learned many skills, including torch use, through on-the-job techniques. This training method was not adequately addressing the safety concerns, and the need for focused training for safe torch use became apparent. NRCA adopted and revised the CERTA program to meet this need.

In 2020, the MRCA stepped up to create a video conference based program to meet the needs for live, in person training in the post COVID19 era. This program provides highly qualified instructors in a MRCA controlled framework to meet your training needs while permitting your employees to cohort with the same people that they work with and not be exposed to the risk of working in close quarters with people outside of your group.

The MRCA's program continues to provide the same safety practices and industry requirements for torching activities as before. The program includes classroom instruction, student manual, video and hands-on training. There is no comparable safety training program available in the roofing industry. Only MRCA authorized trainers will teach every CERTA class and preside over all hands-on evaluations.

Upon successful completion of CERTA certification training, all participants will be able to:

- List personal protective equipment (PPE) requirements for torching activities
- Describe basic first-aid procedures associated with torching injuries
- Explain proper steps and procedures for handling propane gas cylinders
- Identify components of a torch assembly
- Demonstrate safe assembly, lighting and use of torch equipment
- Identify the key elements of a comprehensive pre-job inspection
- Recognize hazardous areas for torching
- Prescribe hazard controls when torching near hazardous areas
- Demonstrate safe torching techniques near hazardous areas
- Explain post-job fire watch and other duties

Upon successful completion of each class participants will be Certified Roofing Torch Applicators. CERTA identification cards will be issued to those who become certified, and a list of certified applicators will be maintained in the NRCA database. This certification is valid for three years though it may be rescinded at any time if a certified worker is observed performing unsafe work practices.

MRCA Video Conference Based Certification Classroom requirements

For you or your company to successfully complete the MRCA's CERTA training program you must attend a video conference based classroom session and participate in a hands-on practical evaluation of your skills to demonstrate your understanding of the CERTA program's requirements.

There are two types of CERTA classes offered in the Video Conference format. Open classes have no restrictions upon who may register for the class and Private classes which are classes offered to a single contractor only who does not want to have other employer participants attending with his group. Classes are offered in English or Spanish and, while many native Spanish speakers are conversant in English, we have created Spanish only classes to provide dedicated services to this segment of the workforce.

Prior to the start of each class you will be required to submit a roster listing the name and home address for each participant. The CERTA program certifies individuals, not companies and each certification is valid for 3 years from the date of the class. CERTA identification cards will be issued to those who become certified, and a list of certified applicators will be maintained in the NRCA database.

Participating in a CERTA training session does not guarantee participants become certified roofing torch applicators. There are two program requirements that must be satisfied before participants can be approved for certification:

1. A 70 percent or higher score on the exam
2. Passing evaluations on a peer-rated performance evaluation for the hands-on portion of the class

Upon completion of the class you must re-submit a final roster with any adjustment in attendees, the complete exam grades, and hands-on performance evaluation results along with video documentation of your hands-on session. If there is a difference in the number of attendees, the MRCA will either bill or refund the credit card that you originally used to pay the fees for the session.

Each class begins with a review of the CERTA video produced by the NRCA. We will use this video to demonstrate the components of the roofing torch fire safety program. The video is followed by a videoconference based classroom presentation to explain the theory behind fire safety and the requirements of the mandatory fire safety inspections and fire watch program required by CERTA.

For all MRCA Safety Video Conference based training and certification sessions the following requirements must be met.

1. Participants must be registered in advance of the start of the class.
 - a. All participants must sign the final Roster provided by the proctor or group captain.
 - b. The Roster must include the Date, Location, Name, Home Address and Signature of each attendee.
 - c. Each class group shall have a designated Proctor assigned to monitor the class attendance and assist with the distribution of documents when required.
2. All class groups are required to attend the Video Conference based class in a classroom, conference room or office type setting.

- a. For each class group there must be a minimum of one laptop computer with broadband internet access.
 - b. The classroom must be equipped with at least one Video Camera, a Microphone and Speakers.
 - c. It is not acceptable to use cell phone video or dial in only services.
3. All Class Groups are required to utilize a video camera so that the participants can always be viewed by the instructor.
 - a. If occasionally the need arises for a participant to step away from the class, then the instructor and/or the proctor must be notified.
 - b. Absences for more than a total of 20 minutes per class session may cause the participant to fail.
4. Prior to the start of the class each group will be emailed a Video Conference meeting sign in link. Class video conferences will be held using MS Teams.
 - a. Each participant (or group) is encouraged to log into the MS Teams platform in advance to download any client software required.
 - b. All participants will be provided free access to the classroom so please do not buy an account unless you want to.
 - c. Complete instructions for First Time Video Conference users are included as a separate download in the package. Please take a few minutes in advance of the class to familiarize yourself with the process.
5. It is preferable that the computer system used be connected to a larger video screen so that all participants may view the presentations.
 - a. If you are using laptop computers only then we must limit the number of users per laptop to 4. For example, a class group of 10 people using only laptop monitors must use at least three laptops.
 - b. All Video Conference based training will be recorded for auditing purposes.
6. The MRCA requires training to be interactive and the failure of any participant to respond when questioned by the instructor may cause the participant to fail the training.

Certification Classroom Requirements

For each class group please arrange to have the following items available in advance of the class:

1. Student manuals – one copy for each participant
2. Smart monitor or computer screen large enough for everyone to see, connected to the internet with the Microsoft Teams client installed
3. Roofing materials, including two small samples pieces of each of the following:

<ol style="list-style-type: none"> a. Wood fiberboard roof insulation b. Polyisocyanurate insulation c. DensDeck® gypsum board d. Wood fiber cant strip e. SBS polymer-modified bitumen membrane 	<ol style="list-style-type: none"> f. APP polymer-modified bitumen membrane g. Heavy glass base sheet h. Type IV glass ply sheet i. Self-adhering, modified bitumen base sheet
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Additionally, there are several downloadable required documents that you must prepare and have ready for the class. The list of items is

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| <ul style="list-style-type: none"> • Roster & Sign in Sheet • The CERTA Student Manual - English • The CERTA Student Manual - Spanish • The Daily Inspection Checklist - English | <ul style="list-style-type: none"> • The Daily Inspection Checklist -Spanish • Exam – English & Spanish • Exam Answers – English & Spanish • Mockup Instructions |
|--|--|

A note about language:

As you know we have a large Spanish speaking installer base, many of which are conversant in English. While we prefer to provide instruction in only one language, we realize that this may not always be practical. We will make all attempts to assist native Spanish speakers in blended classes and we encourage you to print the student manuals and checklist for each of your Hispanic participants.

While certain classes will have bi-lingual instructors we wish to refrain from conducting bi-lingual classes because it takes away from the time given to the speakers of the primary language. You can check to see which of the Open Classes are being taught with a bilingual instructor or arrange a private class that suits your needs.

CERTA – Administrative Services Contact

There is a CERTA help line for all questions regarding administrative issues such as class registration and scheduling, rosters and payments please call **(937) 306-2132** or write CERTA.Info@mrca.org.

CERTA Hands-On Practice and Practical Evaluation

The MRCA has prepared a second video in support of the Video conferenced based training program that will show you how to set up and conduct the hands-on evaluation requirement of your CERTA training program. This video will show you each of the evaluation steps and what constitutes a poor, fair or excellent grade for each of the evaluations eight (8) steps.

A completed performance evaluation form for each participant must be submitted to the MRCA upon completion of this evaluation along with a simple video of the evaluation in progress. You can make this video with an ordinary cell phone. You will send the scanned evaluation forms and a copy of the video to the email address we have provided in your evaluation packet, and again at the end of this video.

Preparing for the hands-on evaluation

To begin the hands-on evaluation portion of the program, you will choose a group captain who will oversee managing the evaluation forms and the video of each participant.

All groups will be broken up into smaller teams of 3 or 4 people to work on the various stations of the mockups. Your video will begin by showing an overview of your mockup area and equipment and you must show a view of the person or people being evaluated. It is ok to speak on the video, so please state the name of your company and the names of the people in the group so we know who you are. It will be helpful if you also write your session identification number on a piece of paper and record this at the beginning of your video.

It will be easiest if you appoint one person from each team to video the team and just send all the separate clips together with the evaluation forms. To summarize, at the beginning of the session you will distribute the evaluation forms found the instructions and at the end of the evaluation, you will submit both the completed evaluation forms and the video clips to the MRCA.

Documentation

To successfully complete the evaluation, you will be required to submit basic video clips of your hands-on evaluation. This can be easily accomplished using any ordinary cell phone with an integrated video camera.

Required Roof Detail Mockups

To prepare for the hands on evaluations you must create an evaluation area that provides for a simulated roof field, a roof edge, a high penetration (like a pipe), a curb or wall and a simulated drain. There are both standard and alternate mockup instructions in your evaluation package.

For those contractors who do not have dedicated training mockups we will accept the demonstration of the torching techniques on the alternate mockup. These instructions are provided in your registration package. If you would like to create a dedicated training area the standard mockup is recommended.

In our post COVID-19 world we want to make sure that all participants in the CERTA program are observing social distancing and are always using masks. We strongly suggest that you create enough space for participants to social distance and that you sanitize equipment between users.

Required Equipment – Propane Tanks

Once you have created your mockup, we will need to provide for the equipment that you must have to successfully complete this evaluation.

The first item required is a propane tank. A minimum 20lb DOT tank like you would find for a gas grill is sufficient, anything larger will do as well. This is a common DOT approved cylinder that has a POL valve, a protective collar, a body that is in good condition and a foot ring. You will need one tank for every four people participating in the evaluation.

Required Equipment - Fire Extinguishers

The CERTA program also requires that you have one extinguisher for every torch and one additional extinguisher near the exit to your work area. Remember to use at least 4A-60BC fire extinguishers. There are identifying icons on the label of each fire extinguisher indicating the type and the size of the extinguisher. This is usually found in the fine print on the extinguisher's label.

You must have your fire extinguishers placed within 10 feet of your torching activities and your fire extinguishers must be more than 10 feet apart from your propane tanks

Required Equipment - Roofing Torch Assembly

The next items you are required to have are a roofing torch and a detail torch. Many times, roofing field torches and detail torches are sold as combination kits. If you do not have a detail torch you can let us know and we will help you get one. The most important element of this program is the requirement to switch to detail torches when you must reduce the size of the flame over combustible substrate. It does not matter what brand of roofing torch you use, what is important is that you use the correct size torch for your activity.

Again, if you do not use a small detail torch for the direct torching required in the evaluation then we cannot allow you to successfully complete this portion of the class, so...please remember that this is also part of your evaluation.

Personal Protective Equipment

When conducting this evaluation all participants must wear personal protective equipment. This includes long sleeve shirts, long pants, work boots, gloves, and eye protection. All students are encouraged NOT to wear their good clothes, short pants or short sleeve shirts. Wearing short pants or short sleeve shirts puts the participant at risk for a burn injury. While we know that many roof mechanics will wear short sleeve shirts to work on warm days this practice must be discouraged and will cause the participant to receive a "poor" mark on the PPE section of your hands on evaluation.

Getting Started – The Hands-On Evaluation Form

Each evaluation requires that all members of your group have a copy of the evaluation form, included in your downloadable package. Everyone will be scored for each of the following steps.

1. Lighting a roofing torch
2. Flashing torch and flop techniques
3. Starting field membranes at roof edges or walls
4. Installing target sheets over roof drains
5. Installing the field membrane over the roof drain
6. Installing field membrane around pipe penetrations
7. Ending field membranes at roof edges or walls
8. And shutting off the torch

Organizing your evaluations

We will begin the hands on by separating your group into teams of four or less and each team will take turns completing the torching activity on each station. The group members not actively torching will grade the torch applicator on all aspects of torch use for each of the steps.

Each team will appoint a leader who will coordinate the group's activities and each member of the team will have an evaluation form. Each group will start at a different workstation.

As the group completes the work at each workstation they will rotate to the next station until all the steps have been completed.

Instructions for Scoring the Evaluations

At each step, each person gets a score on how well they perform each of the activities. Each item on the evaluation form gets scored on a scale from 1 to 3 and at the end of the evaluation your team will determine whether you have passed or failed. Your team will observe each torch operator as he or she performs each step of the exercise and will determine how well the operator performed on each step.

What is important here is that this is a roofing torch safety class. We are not so much concerned with how pretty your work is as we are with the way you handle a roofing torch. We know that each person in your team will have a different skill level and experience. We are here to teach torch safety so if you do not do something right it's also ok to do it again. Good torch work takes time to learn and practice will always help you improve.

Keep in mind that everyone uses a torch differently, so please only base your scores on the way each step is described. You will score each step on a scale of 1 to 3 for each participant. The evaluation starts with each person wearing proper PPE.



**CERTA Hands-on
Performance Evaluation Form**

Instructions for Evaluating Torch Operators



In this exercise you will observe each roofing torch operator as he or she performs each step of the exercise. Circle the number you feel represents how well the operator performed on each step. Keep in mind that everyone uses a torch differently, so please only base your scores on the way each step is described.

Torch Operator's Name: _____ Date: _____

Scoring			You will score a 1 or a poor score if your teammate's work does not meet the CERTA standards for safety. Score your teammate a 2 or give him a fair mark if he has accomplished the task but there was room for improvement. Your teammate will score a 3 or excellent because he is practicing all the safety elements that the CERTA program requires
1	2	3	
Poor	Fair	Excellent	

Evaluation Step	Scoring		
Step 1 – Lighting a torch			
1. Wears proper PPE	1	2	3
2. Closes all valves and opens regulator	1	2	3
3. Points torch away from himself or herself and others	1	2	3
4. Slowly opens cylinder valve	1	2	3
5. Slowly opens pilot valve	1	2	3
6. Uses a spark lighter	1	2	3
7. Adjusts torch valve(s)	1	2	3
8. Tests torch operation using trigger	1	2	3
Step 2 – Flashing box stations 1 and 2; flashing torch and flop			
9. Wears proper PPE	1	2	3
10. Measures and pre-cuts flashing strips	1	2	3
11. Positions cut flashing strip upside down away from box curb	1	2	3
12. Evenly heats back of flashing strips without damage to substrate	1	2	3
13. Lifts flashing strip with trowel, grips it and flops it into place	1	2	3
14. Presses flashing firmly into place	1	2	3
15. Never touches the flashing box with use of high output torch	1	2	3
Step 3 – Field mock-up stations 3 and 4; starting field membranes at roof edges or walls			
1. Wears proper PPE	1	2	3
2. Rolls membrane out 6 to 10 feet and positions in place	1	2	3
3. Stands on roll and flops membrane back	1	2	3
4. Evenly heats back of membrane without damage to substrate	1	2	3
5. Lifts membrane with trowel, grips it and flops it into place	1	2	3
6. Steps membrane in place and trowels lapped seam	1	2	3
7. Never touches the wall or edge with a flame	1	2	3
Step 4 – Field mock-up stations 3 and 4; installing target sheet at drain			
1. Wears proper PPE	1	2	3
2. Measures and pre-cuts target sheet including finger cuts	1	2	3
3. Positions cut target sheet upside down away from drain opening	1	2	3
4. Evenly heats back of target sheet without damage to substrate	1	2	3
5. Lifts target sheet with trowel, grips it and flops it into place	1	2	3
6. Presses target sheet firmly into place with trowel	1	2	3
7. Never touches the roof drain with a flame	1	2	3

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Scoring your Evaluations

You will score a 1 or a poor score if your teammate's work does not meet the standard for safety that we have outlined in the classroom portion of the program. You will score your teammate a 2 or give him a fair mark if he has accomplished the task but there was room for improvement and finally, your teammate will score a 3 or excellent because he's practicing all of the safety elements that the CERTA program requires.

Always remember that appropriate clothing is part of the required PPE. A person wearing a short sleeve shirt but has all the other required PPE should be scored a "2". Any person wearing short pants or open toed shoes should not be allowed to participate in the evaluation. You are responsible for determining how well your teammates are performing and for being respectful of people who have lesser skills is important. Also please always remember that safety is EVERYONE's responsibility

Step 1 Igniting the torch

Each man must ignite the torch correctly using the proper sequence of actions.

1. First, the participant must have all his Personal Protective Equipment.
2. You begin with all valves, from the tank to the pilot control valve on the torch, closed.
3. One at a time you will open the valves starting with the tank then the regulator then the pilot control valve on the torch. Make sure the pilot control valve is only opened enough to permit a trickle of gas to the burner.
4. Using a striker, ignite the torch and then test the trigger to make sure the torch is working correctly

Step 1 Do Not...

We need you to know that there are a few things you are not permitted to do on the video. Please make sure that you do not show any horsing around or unsafe behavior. Please do not leave a torch unattended or set the torch down on anything other than its stand and PLEASE...do not light anything on fire!

Remember: You must always put the torch down on its stand. Do not lay the torch on its side, lay it over the edge of the mockup or place a lit torch on top of the propane tank. If you do this it will cause you to fail this step in the evaluation

Scoring Step 1

Each person will receive a score on how well they perform the following activities. The evaluation includes the following items and each person must:

1. Wear proper PPE
2. Make sure that all torch valves are closed and open regulator
3. Points torch away from himself or herself and others
4. Slowly opens cylinder valve and then slowly opens pilot valve on the torch
5. Use a spark lighter to ignite the torch, adjusts torch valve(s) and test torch operation using trigger

Each item is scored 1, 2 or 3 for each participant bearing in mind that long pants and a long sleeve shirt are required PPE.

Step 2: flashing torch and flop on a curb or a wall

Each person must demonstrate the torch and flop technique when installing flashings. The steps are as follows:

1. First, precut enough flashing pieces for each person in your team.
2. Using a field torch, you will lay the flashing piece down on a noncombustible substrate, like a piece of dens deck or steel decking.
3. Heat the flashing piece until the asphalt begins to flow.
4. Use a roofing trowel to pick up the flashing piece and set it in place on the curb.
5. You must then switch to a detail torch to finish flashing the box. Finish the detail making sure that the flashing piece is fully adhered to the substrate.

The most important take away from this exercise is that you must switch to the 105 thousand BTU detail torch on all flashings that require direct torching. You are NEVER to point a field torch directly at a combustible substrate or penetration in the roof.

A word of caution – Failure to use a detail torch on all flashings that require direct torching will cause you to fail the practical evaluation.

Step 2 Do Not...

There are a few things that you must not do while flashing. You must not use a field torch to complete the detail. If you point the field torch at the detail your score must automatically be 1.

The rules are that you must only point your torch at the roofing membrane, and you cannot point your flame anywhere where you cannot see it.

Remember – the only thing that your torch flame will touch is the modified bitumen membrane and you must always be able to see the torch flame. Again, be sure to set your torch down on its stand.

Scoring Step 2 flashing torch and flop

Scoring is as follows, again one is poor, two is fair and three is excellent

1. Each participant will receive a score of 1, 2 or a 3 for each activity related to the torch and flop technique that is itemized below:
2. You will score each teammate for wearing proper PPE
3. Each teammate must then receive a score measuring and pre-cut flashing strips
4. Score each person as they position the cut flashing strip upside down away from box curb and evenly heat back of flashing without damage to substrate.
5. Continue scoring as they lift flashing strip with trowel, grips it and flops it into place, pressing the flashing firmly into place and finishing with a detail torch.
6. Lastly score your teammate for never touching the flashing box with use of high output torch

You will receive a score of 1 if you do not change torches to a detail torch or if you place your torch behind the flashing to heat the membrane.

You receive a score of 2 if your flashing is ugly and a score of 3 if your flashing is cut cleanly, laid up squarely and fully adhered.

Step 3 Field mock-up stations 3 and 4: starting field membranes at roof edges or walls

In this section we are going to review and evaluate the starting of field membranes at roof edges or walls.

1. First, make sure that you are wearing proper PPE.
2. You will open a roll of modified bitumen and cut it into 3 or 4 equal pieces depending upon the number of people in your team.
3. Lay out the piece of modified on your simulated deck and back roll the first piece of modified leaving approximately 12 to 18 inches loose at the start of the roll.
4. With a field torch you will start by torching down the back rolled section of the roll. Heat the bitumen until the asphalt flows and then advance the roll. You will repeat this until you have 12 to 18 inches of the roll remaining.

Please note that while heating the roll your movement from right to left should be smooth and consistent. Many people need to move just a little bit slower than they think. You should make one smooth movement across the roll, letting the torch do the work. You will see that the roll is ready to advance when the modified bitumen begins to move.

The roll is not hot enough if you have simply melted the polyethylene separator sheet off the back. A smooth, consistent movement across the roll and up the seam is necessary to create a fully adhered lap with a consistent bleed of bitumen out of the seam.

You may torch the roll walking forwards or walking backwards however, if you are walking backwards, please be aware that OSHA has specific safety requirements for this type of activity. Sometimes it is better and safer to walk to the side of the roll and push the roll forward with your roll hook. Either way, you must always watch your step.

5. As you get to the end of the roll you will stop and fold the last 12 to 18 inches of the roll back on itself.
6. Using a Field torch, you may heat the end of roll with the flame pointing away from the roof edge or wall on the piece of membrane that has been folded back.
7. Evenly heat the back of the membrane without damage to substrate. Always remember to protect the underlying membrane.
8. Lift membrane with trowel, grips it and flop it into place.
9. Step in the membrane and trowel the lapped seam. To finish the roll at a roof edge or vertical detail you must switch to a detail torch.
10. Never touch the wall or edge with an open flame.

Step 3 Do Not...

A few words of caution - always pay attention to the torch flame. The only thing that your flame should touch is the back of the roll of modified bitumen. Do not overheat or scorch the membrane underneath the end of the roll.

Use only one field roofing torch to heat the roll. You are not permitted to use two torches, one in each hand. If it is cold, or you want to speed production, you will need to have 2 installers to operate 2 torches.

Again, we cannot over emphasize the importance of always being careful when you walk backwards. If you use warning lines and a safety monitor you must remember to check the rules in states that have State OSHA

Plans. There are some states where the rules for safety monitors are different than the Federal OSHA requirements.

Lastly, when you approach a roof edge or penetration remember to switch to a side- hand torching technique. Do not move with your back turned to the edge.

Scoring Step 3

Remember, it is up to you to evaluate your teammates performance so remember to be respectful. Not everyone has the same level of experience so if it takes more than one attempt to get it right, that's OK. As before, a score of one is Poor, a score of 2 is Fair and a score of 3 is Excellent. You will score your teammates on the following topics:

1. First, your teammate must wear proper personal protective equipment.
2. Next, he must roll out the membrane and position it in place
3. You will score him on how well he evenly heats back of membrane without damage to substrate.
4. You will score him on how well he torches and flops the first and last pieces of the roll into place. Remember, if necessary, he must switch to a detail torch and trowel the lap into place
5. MOST IMPORTANTLY – you must judge that he never touches the wall or edge with a with an open flame from a field torch.

This is a safety class and not an installation class so does not matter if your teammates' work is not perfectly straight or square, what is important is that he handles the torch safely.

Step 4 Installing target sheet at the drains.

This part of the exercise is to demonstrate your understanding of creating flashings using the torch and flop method. For this section we will create a target patch over a drain. It's ok to precut all the pieces of flashing before you start.

1. First place your flashing over the drain cold. Press the membrane over the penetration to dry fit the flashing and mark the profile of the drain on the membrane.
2. Lay the flashing piece down on a noncombustible substrate, like a piece of dens deck or steel decking and finish cutting the opening, leaving fingers to fit under the drain's clamping ring as you would in the field.
3. With a field torch, you will heat the flashing piece until the asphalt begins to flow. Always point the torch flame AWAY from the drain.
4. Use a roofing trowel to pick up and place the target piece in its place over drain.
5. Turn off the field torch and disconnect the field torch from the hose using the quick connectors. If you do not have quick connectors then it will be faster if you simply connect your detail torch to a separate tank.
6. Ignite detail torch using a striker and finish the detail making sure that it is fully adhered to the substrate.

Step 4 Do Not...

The point of this exercise is that you must not use a field torch to complete the detail. If you point the field torch at the drain your score must automatically be 1. You must only point your torch at the roofing membrane, and you cannot point your flame at any penetration or anywhere where you cannot see it.

Scoring Step 4

Scoring utilizes the same format as the previous steps, one is poor, two is fair and three is excellent. Each participant will be evaluated for the following activities:

1. You will measure and pre-cut the target sheet, including finger cuts. Some people prefer to make their finger cuts after they set the membrane into place, this is fine because the important part here is that you do not use a field torch to heat fingers into place.
2. You must position the cut target sheet upside down away from drain opening, if you do not your score must be 1
3. You must evenly heat back of target sheet without damage to substrate
4. You lift target sheet with trowel, grip it and set it into place
5. You press target sheet firmly into place with trowel and you never touch the roof drain with the flame from a field torch

If you touch the drain penetration with your flame or do not switch to a detail torch you will receive a 1 for a score. Again, it is not important how the detail looks, what is important is that your teammate handles the torch safely.

Step 5 Field mock-up stations 3 and 4: installing field membrane over drain

The purpose of this exercise is to again show indirect and direct torching technique while you complete a detail. There is more than one way to lay out your membrane and this step is to show that you can correctly handle the torching of a field sheet as you continue the sheet across the drain. In the field, some people will cut a separate piece to extend across the drain a few feet in either direction, either way is acceptable but for this exercise we want you to lay out a roll a few feet before the drain and torch the first foot or so into place.

1. Lay out a roll a few feet in front of the drain, roll the membrane across the drain cold and mark and cut your drain opening. Fold the membrane back and lay it on a piece of decking or dens deck.
2. Heat the flashing piece with a field torch, pointing the torch away from the penetration.
3. You will then lift piece into place, pat it firmly into place and switch to detail torch to finish the detail.

A word about ergonomics. If you are the person that does the detail work then it is easier on your lower back to kneel rather than bend over. If you choose to kneel, you will want to use a torch with a shorter wand and knee pads to protect your knees.

Step 5 Do Not...

There are a few things that you must not do during this step in the evaluation. Just as with the target before, you must not use a field torch to install the membrane over the drain. You must switch to a detail torch to complete the detail. The only thing that you should point your torch at is the roof membrane and remember, do not point the torch anywhere you cannot see the flame. Pointing your torch flame directly at the drain penetration will cause you to receive a "poor" score for this step.

Scoring Step 5 - the installation of a field membrane over a drain.

Again, using the scoring scale of 1, 2 or a 3 for each activity, score your team mates on how well they install target sheets on drains for the following activities.

1. First, you wear the correct PPE.

2. Second, you stop advancing roll before reaching drain then you roll the membrane over drain without heating; you mark, and cut your drain opening
3. Then you pull the roll back to expose bottom of membrane and You evenly heat the membrane without damaging the substrate and you lift the roll and flop the heated membrane over the drain and into place.
4. You will step the membrane into place and using a detail torch you finish with a trowel around the drain and the lapped seam.
5. Lastly, you never touch the roof drain with a flame

Remember, you will receive a score of 1 if you do not switch from the field to a detail torch or if you point the field torch directly at the detail. You will score a 2 or 3 if you correctly switch from field to detail torch and install your membrane correctly over the detail. It is not important how pretty your drain detail is, what is important is that you have handled the torch and the membrane correctly.

Step 6 Field mock-up stations 3 and 4: installing field membrane around pipe penetration

The purpose of this evaluation step is to reinforce your understanding of the indirect and direct torching technique.

There is more than one way to lay out your membrane and this step is to show that you can correctly handle the torching of a field sheet as you continue the sheet past a vertical penetration, in this case a pipe. In the field some people will cut the roll long enough so that it extends past the pipe then fit the membrane around the pipe and others will cut the membrane at the pipe, notch the pipe from the following piece and put a target over the top to seal the cuts. Either way is acceptable but for this exercise we want you to lay out a roll to go past the pipe and a few feet before the pipe. You will torch the first foot or so into place.

1. First roll the membrane across the pipe cold and mark and cut your pipe opening. Fold the membrane back and lay it on a piece of decking or dens deck.
2. Heat the flashing piece with a field torch, pointing the torch away from the penetration.
3. You will then lift membrane into place and switch to the small torch to finish the detail.

Step 6 Do Not...

Again, please remember there are a few things you cannot do when torching around a pipe penetration. If you are flashing a plumbing vent you must plug the top of the pipe to prevent any methane gas escaping into the air adjacent to your torching activity.

DO not ever light the exhaust gas on fire. If you can smell an odor then there is methane gas in the line.

As with all details, the only thing that you should point your torch at is the roof membrane and do not point the torch anywhere you cannot see the flame

Scoring Step 6

Each participant will receive a score of 1, 2 or a 3 for each activity related to installing field membrane around pipe penetrations. The activities upon which you are scored are as follows:

1. You wear proper PPE
2. You must stop advancing roll before reaching pipe then unroll enough membrane from the roll to extend beyond pipe.

3. Extend the membrane a foot or two beyond the pipe without heating it and cut the roll.
4. Lay the first sheet up against pipe, cut and dry-fit membrane tightly around the pipe, then pull membrane back and lay it upside down away from the penetration.
5. You are scored for evenly heating the membrane without damaging the substrate and lifting the heated membrane into place around pipe.
6. Immediately step the heated membrane into place and trowel the lapped seams.
7. You must never touch the pipe with the flame from your torch.

You can heat the membrane away from the pipe with a field torch but you will receive a score of 1 if you do not switch from the large field torch to the small detail torch to finish the detail or if you point the torch directly at the pipe. You will score a 2 or 3 if you correctly switch torches and install your membrane safely and correctly over the detail.

Step 7 Field mock-up stations 3 and 4: ending field membranes at roof edges and walls

This is the torching detail where you will finish a roll of modified at a roof edge or wall. We are going to use a roof edge for this example. You will start by laying out a roll of modified several feet from the edge of your mockup.

1. Back roll the roll then heat the first piece of the roll into place. Stop 1 or 2 feet before reaching the edge.
2. Roll the membrane the rest of the way to the edge and cut the membrane to length. Fold the unheated membrane back to the point where it is fully bonded to the deck and then protect the underlying membrane with a piece of dens deck or decking.
3. Evenly heat the last piece of the membrane without damaging the substrate using a field torch then lift the heated membrane using a trowel and flop it into place.
4. Step the end of the roll into place and trowel the lapped seam if necessary. Make sure that you never touch the edge of the deck with a flame. Remember, the only thing your flame should touch is the roofing membrane itself.

Step 7 Do Not...

As with all of the steps before, there are some things that you should not do. Do not overheat the membrane and do not use a bare hand to grip the membrane. Never touch the wall or edge with a flame and never use a field torch to finish the edge, remember that if you use a field torch to finish the roll at the edge of the deck you will fail the step.

Scoring Step 7

Each participant receives a score of 1, 2 or a 3 for the different activities related to ending field membranes at roof edge.

1. As always, we start with you wearing PPE.
2. You will score your teammate appropriately if he stops heating the roll before reaching edge. He must next extend the roll without heating it to roof edge and cut it to length.
3. He is then scored for pulling back the unheated membrane, laying it on a piece of dens deck or decking. He must evenly heat the membrane without damaging the substrate – if you are using granule surfaced membrane this includes scorching the top of the granules.

4. Your teammate must lift the heated membrane using a trowel and flops it into place.
5. Last, he steps the membrane into place and trowels the lapped seams if necessary.

Any torching at the edge of the membrane must be done with a detail torch and make sure that he never touches edge with a flame. You must score your teammate a score of 1 if he damages the underlying membrane or if he does not switch to a detail torch. He also scores a 1 if he points the flame directly at the edge. You will score your teammate a 2 or 3 if he correctly switches torches and installs the end of the membrane correctly.

Step 8 Shutting off the torch

In this final step you are required to safely shut down your roofing torch. This is how:

1. Set the lit torch down on its stand away from propane cylinder.
2. Walk over to cylinder and closes the valve tightly
3. Return to torch and squeeze the trigger to burn out remaining gas from the hose and regulator.
4. Close all valves on the torch.

Burning off the gas remaining in the hose is especially important on hoses that have quick connectors attached. Disconnecting the torch with gas remaining in the hose is not only unsafe but will cause you to fail this section of the evaluation.

Step 8 Do Not...

As with the other steps there are some things you must not do. Do not release unburned gas into the atmosphere when you bleed the hose, it must be burned off and do not leave pilot control valves on the torch open – this will cause unburned gas to escape the hose the next time it is connected to a propane tank

Another word of caution, bleeding off propane from the hose rather than burning it off is an EPA violation in that it is a deliberate release of a Volatile Organic Compound into the air. Bleeding off gas will cause you to fail this step of the evaluation. If you are using quick connectors and disconnect the torch from the hose without burning off the gas then you will leave the hose full. This is also going to cause you to fail this step of the evaluation.

Scoring Step 8

Each participant will receive a score of 1, 2 or a 3 for each activity related to shutting off the torch.

1. Set the lit torch down on its stand away from propane cylinder then walk over to cylinder and close the valve tightly.
2. Return to the torch and squeeze the trigger to burn out the remaining gas from hose.
3. Close the torch's pilot control valve and put the torch down.

You will receive a 1 if you do not burn off the gas from your hose or leave any of the valves open after you close the tank valve. You will receive a 2 or a 3 if you burn all the gas out of the line and close the pilot control valve on the torch.

This completes the hands on evaluation activities. At this point you may clean your mock up area and put all of your equipment away.

Cycling Through the Evaluation Stations and Completing the evaluation form.

Each participant must cycle through all 8 steps of the evaluation, regardless of the step he or she begins with. Observe the torch operator as he or she performs each step of the exercise. Circle the number you feel represents how well the operator performed on each step. Keep in mind that everyone uses a torch differently and everybody has different levels of experience, so please only base your scores on the way each step is described.

When you have completed all the evaluation steps please check your evaluation forms to ensure that you have the participants name on each page and that you have scored each section.

Return the evaluations to your group captain who will record the results of the evaluations on the final roster report and send it back to the MRCA.

CERTA – Technical Services Hands on Help Line Contact Information

For any questions regarding the conduct and video documentation of the evaluations or assistance during the evaluation process you can contact us by Text, Voice Call or Facetime consult at any time between the hours of 07:00 to 19:00 EST with your questions.

The MRCA's CERTA Technical Services Contact telephone number is **(937) 306-2132**.

You may also email questions or send photos to CERTA Technical Services email at: certa.eval@mrca.org

Finalizing your Training Program

Upon completion of the class you must re-submit your final class roster report with any adjustment in attendees, the completed exam grades and your hands-on performance evaluation results along with video documentation of your hands-on session and sent by email to: certa.eval@mrca.org.

All forms and video clips must be submitted within 14 days of your course date and please remember to include your session number in the subject line of your email.

One final note, we are always looking for ways to improve our services. We hope that if you have any criticisms, comments or suggestions that you will feel free to call or write to **(937) 306-2132** or certa.info@mrca.org .