

Thank you for participating in the MRCA's Certified Roofing Torch Applicator video conference based training program!

In order to effectively provide training in both the classroom and the practical hands-on training 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. This guide will provide you with the lists of materials and equipment required to complete both the classroom and the Hands-on Evaluation components of the MRCA's CERTA Training Program.

Classroom Training Materials

For each MRCA CERTA video conference based training program please have available the equipment and materials listed below.

1. For each class group four people there must be a minimum of one laptop computer with broadband internet access. (see the instructions for joining meetings with MS Teams)
2. The classroom must be equipped with at least one Video Camera, a Microphone and Speakers.
3. Student manuals – one copy for each participant
4. Roofing materials, including two small samples pieces of each of the following:
 - Wood fiberboard roof insulation
 - Polyisocyanurate insulation
 - DensDeck® gypsum board or equal
 - Perlite or Wood fiber cant strip
 - SBS Modified Bitumen Membrane
 - APP Polymer-Modified Bitumen Membrane
 - Heavy glass base sheet
 - Type IV glass ply sheet
 - Self-adhering, smooth base sheet

Hands-on Training Mockup Materials

For each video conference based training session you are required to perform a hands-on training and evaluation. To standardize training and facilitate the evaluations the MRCA recommends the fabrication of standard roofing mockups. Many companies already have these mockups as part of their on going training activities, others do not. If you do not have these mockups and desire to create a permanent training area in your company then please follow the mockup instructions below. If you do not desire to retain permanent mockups the MRCA has approved the use of a more basic set up that is disposable, those instructions follow.

Standard mockup materials

Quantity	Unit	Materials
192	Sq. ft.	1/4-inch fiberglass mat-faced gypsum core panel
3	sheets	4-foot by 8-foot by 1/2-inch CDX plywood
15	Each	2 x 4 dimensional lumber, 45-inch length
6	Each	2 x 4 dimensional lumber, 8-foot length
2	Each	2- by 12- or 14-inch construction-grade dimensional lumber, 12-foot length
150	Each	1 1/4-inch general-purpose screws
100	Each	16-penny nails
50	Each	3/4-inch tin-capped roofing nails
2	Each	9-inch metal pie tins, large coffee cans or galvanized tall cone flashings
2	Each	4-inch diameter steel pipe, 10- or 12-inch length
2	Each	1/2-inch plywood circles cut to 4-inch O.D. pipe size
2	Each	12-inch wood screws



For each session of 20 people please supply the following Hands-on Training installation materials.

Roofing Materials, per 20 participants	Quantity	Unit
Heavy fiberglass base sheet (#75-type)	1	Roll
Self-adhering polymer-modified base sheet	1	Roll
APP polymer-modified bitumen membrane—smooth or granulated	9	Rolls
Wood fiber cant strips—3-foot lengths (optional)	8	Each
Arrow T-50 staples for staple gun (or equivalent)	1	Box
Hooked blades for roofing knives	10	Each
Liquid soap (for leak detection)	1	Bottle

Hands-on Training Equipment

Safety

Item	Quantity	Unit
4A-60BC fire extinguishers – up to date & sealed	1 for each torch set	
Type A first-aid kit	1	Each
Clean plastic 5-gallon pail (for water)	1	Each
Small plastic squirt bottle	1	Each
ANSI ZX-97 goggles (eye protection)	1 for each participant	
Leather-palmed heavy work gloves (hand protection)		

Roofing Torches and Hand Tools

Roofing Equipment per 20 Participants	Quantity	Unit
20-pound vapor liquid petroleum (LP) gas cylinders	4	Each
Pressure regulators	4	Each
Pressure gauges	4	Each
25-foot UL-listed hoses	4	Each
Swivel-type connectors for torch assemblies	4	Sets
Propane roofing torches—detail application size not to exceed 105K Btu	2	Each
Propane roofing torches—field application size	2	Each
Spark-type igniters	4	Each
Adjustable wrenches	2	Each
Flat-blade screwdriver (for changing knife blades)	1	Each
Utility-type roofing knives	4	Each
Arrow T-50 staple gun (or equivalent)	1	Each
Large round-nosed trowels	4	Each

Mockup Design, Construction and Setup

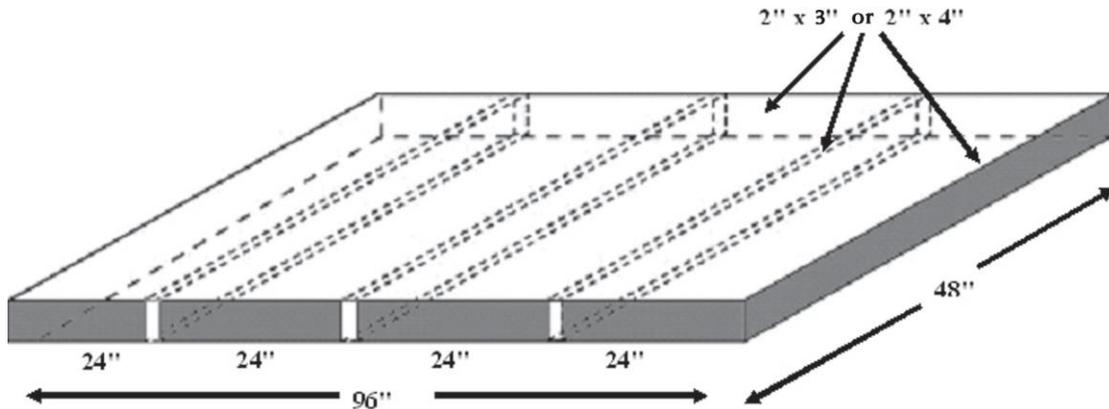
The drawings below represent mockups to construct before conducting the hands-on training portion of this program.

Flat Deck Design

Construct a basic flat deck using 2 x 3 or 2 x 4 dimensional lumber secured with 16-penny nails as shown above. Install one layer ½-inch minimum CDX plywood to deck over the 2 x 4 frame, secured 8 inches on center with 1¼-inch general purpose screws. Install two layers of ¼-inch fiberglass mat-faced gypsum core panel secured with ¾-inch tin capped nails over the plywood. You will need to construct three basic flat deck mockups to

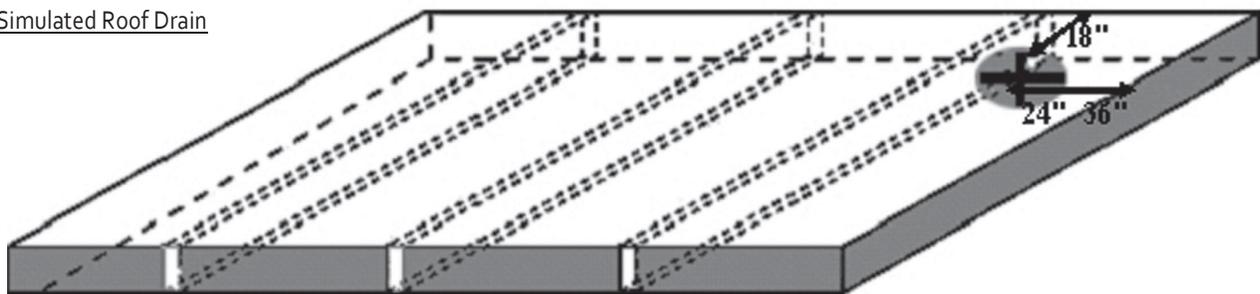


conduct the hands-on training exercise. To create a simulated roof drain, cut a hole 18 inches from one side and 18 to 24 inches from one end in two of the three basic flat deck mockups. Use a 9-inch metal pie tin, large coffee can or an inverted galvanized steel "tall cone" flashing cut to height to simulate a roof drain opening.

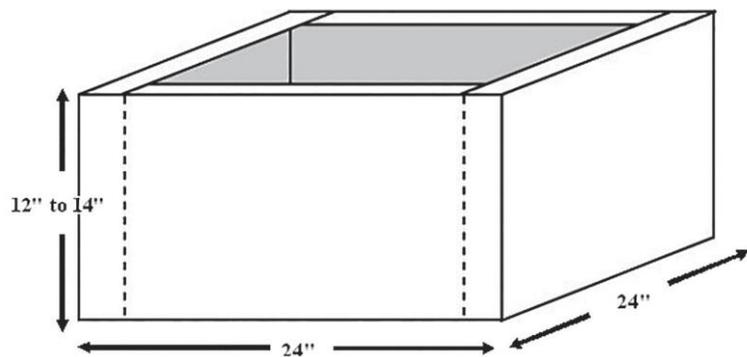
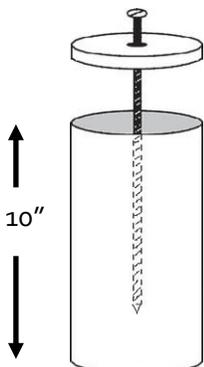


Secure the simulated roof drain in the hole.

Simulated Roof Drain

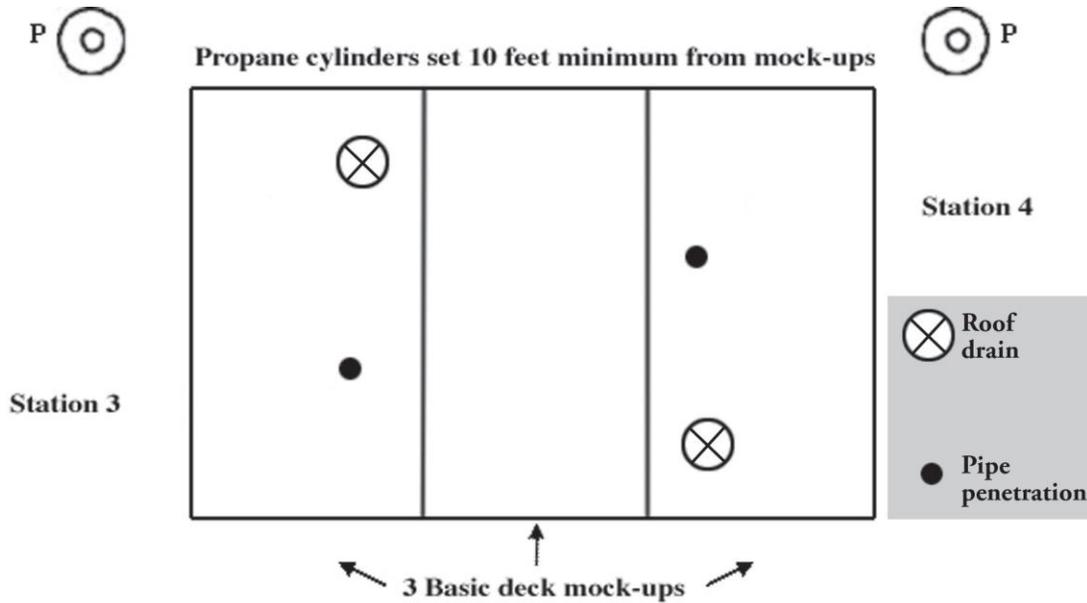


Next, construct a basic pipe penetration mockup using a minimum 10-inch length of 3- or 4-inch pipe, a circular plywood disk cut to size of the outer pipe diameter and a screw 2 inches longer than the pipe length. Drill a hole near the center of the plywood disk to accept the screw. Secure the basic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



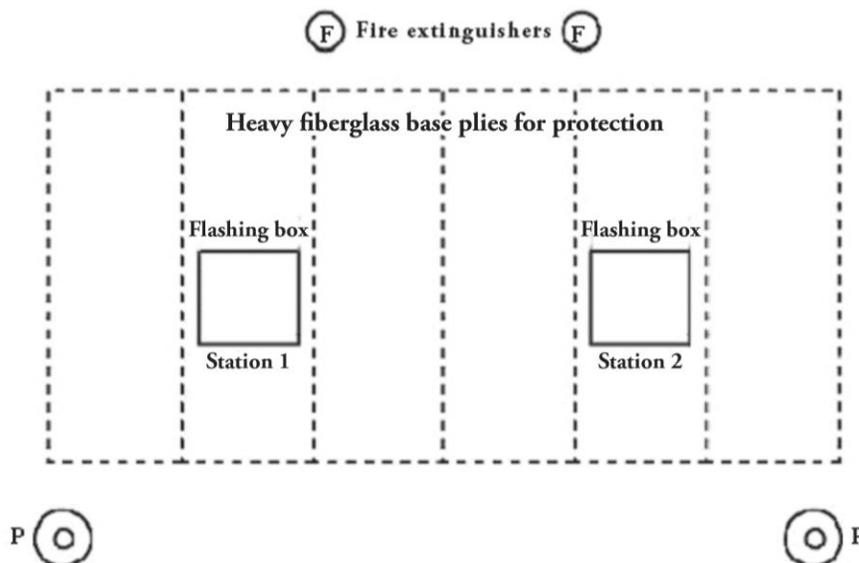


Begin your session by laying the three deck mockups side by side with the two drain openings at opposite ends. Cover the entire deck mockup layout with a heavy fiberglass base ply sheet stapled into place.



To facilitate the Evaluation Steps that require you to simulate roof edges or walls, on the floor or parking lot of your workspace use the following mockup layout:

1. Lay 2 layers of fiberglass base ply ground protection for stations 1 and 2 at the flashing box areas.
2. Set flashing boxes approximately 8 to 10 feet apart.
3. Install cant strips around flashing boxes.
4. Cover the flashing boxes and cant strips with heavy fiberglass base ply sheets stapled securely in place.
5. Set two 20-pound fire extinguishers between the workstations.
6. Set 20-pound propane tank a minimum 10 feet away from each workstation.





MRCA-CERTA Basic Mockups

For those contractors who do not have a dedicated training area or a small crew to train the MRCA will approve the use of an abbreviated mockup that is simpler to build and disposable. Your crew will still be required to demonstrate the safety concepts taught in the classroom portion of this program.

MRCA-CERTA Basic Mockup materials

Materials

For every group of 8 to 10 people please provide the following materials.

Item	Quantity	Unit
4 x 8 Dens Deck Fiberglass Faced Gypsum 1/4"	1	
4 x 8 CDX Plywood 1/2" - (SCRAP is OK) plus a small quantity of cap nails (10 pieces x 1.5")	1	
3 Square roll #28 Fiberglass Base Sheet	1	
1 Square Roll 4 MM Smooth Modified Bitumen- Firestone APP 160 or Equal	4	
2" x 12" x 8' Cut into 4 x 24" pieces to create 2 x 90° angle wood 1/2 curbs	2	
4" Aluminum pipe flashing with min. 4" flanges	2	
1 additional 1 Square Roll 4 MM Smooth Modified Bitumen for every 4 additional trainees		

On an open area of any concrete floor - lay out 2-3 layers of #28 glass base sheet to cover an area approximately 6' wide by 15' long to protect the floor. Lay out a roll of APP Modified Bitumen and cut it into 3 pieces approximately 11 feet long each. Back roll all 3 pieces and remove 2 from the area. On this base sheet each participant can torch down a section of the APP roll, practicing both starting and ending the roll and practicing a smooth, consistent torching rhythm to evenly heat the sheet and create a bleed out of the seam.

After all participants have completed the starting and finishing of a roll, on top of the base sheet lay out the 2 x 90° angle wood 1/2 curbs. Your crew can then practice the indirect and direct torching technique on inside and outside corners. This will substitute for the drain detail.

When the inside/outside corner practice is complete, remove the half curbs and attach the pipe flashing to the Modified Bitumen using a 24" x 24" target piece. Each participant can then cycle through the pipe flashing details.

Simultaneously, in an area adjacent to your "field" area, lay the piece of scrap plywood against a wall or any surface that will support the plywood in a vertical position. You can finish a roll and practice the torch and flop techniques to install a wall flashing.

For any questions regarding technical issues or regarding the Hands-On Evaluation process please feel free to call at any time for support to (937) 306-2132 or email to CERTA.Eval@mrca.org