Module 10 – Flashing, Trim and Gutters

Chapter 1

The quality of a metal building will be determined largely by both the quality of manufacturing and the craftsmanship of the installer. Flashing, trim and gutters can provide either a mediocre appearance or a first-class professional finish. An installer is responsible for the handling of these materials, proper alignment, and correct installation using the specified procedures and hardware. You need to remember if you take a shortcut at this stage everyone will most likely be able to see it.

During this module we will emphasize the importance of developing and following a fall protection plan as well as some vital rules for safety when installing flashing, trim and gutters. Safety on the job site is very important when you are working up on personnel lift equipment. You and your crew members should be in a constant state of training and retraining when it comes to safety. The first step toward safety begins before you ever arrive at the job site. Your supervisor had the responsibility to develop and provide to you a comprehensive safety and fall protection plan that can be thoroughly reviewed by the entire crew. You see, if just one of your crew team members is not aware of the plan or is not committed to following it he will not only be a danger to himself but also to the entire crew. In addition to good training it is vital that you have the proper safety equipment. This includes personal protective equipment as required by OSHA. It is also a good idea to wear leather gloves to keep your hands from being cut by sharp metal edges. To do a professional installation of these components it is also necessary that you have the right tools and lift equipment available on the job site for personnel and also materials. Of course these will vary with each job.

Some rules that must be followed include: Be sure you carefully inspect all of your personal safety equipment, tools, and lifting equipment on a daily basis prior to use. Also consider the current weather conditions as well as the forecast for your job site to be sure that precipitation or wind will not cause added safety hazards. All safety precautions referred to throughout this module required currently by OSHA as well as other statutory or customary practices must be followed carefully in order to maximize safety.

Chapter 2

Let's take a few minutes now to review the terminology associated with installing flashing, trim and gutters. Flashing is generally a piece of galvanized sheet metal that is used to prevent water from penetrating the building at a seam adjacent to a wall or roof panel. Flashing

can also be used as a termination or a transition between a wall and a roof. Flashing by and large is not visible from the ground to an observer once the building is completed.

Trim is used mostly for decorative purposes as well as to terminate a transition. Trim is also the most fragile of the metal building components. Great care needs to be used when handling and installing trim.

Gutters are used for gathering and diverting water from the roof to the downspout in a controlled manner. Downspouts are metal conduits used to carry water from the gutters to the ground in a controlled manner. Gutters and downspouts coupled together will help prevent erosion around your building.

The eave is the point at which the roof and sidewall intersect. On a single slope building the term “low eave” is used to describe the side that water flows to. This is where external gutters are installed, if the owner has required gutters. Gutters are never installed along the high eave.

The end walls of a metal building are also often called rake walls or gable walls. The end walls are recognized by the fact that they most often have wall sheeting that varies in height. An end wall can be found on double slope buildings and on single slope buildings. The end wall is always parallel to the rafters. You will never find a gutter on an end wall. However, the manufacturer will always provide gable trim for the top of the end wall where the wall sheets intersect with the roof. The rake is the plane at which the roof and an end wall intersect. The ridge is the high point of a double sloped roof. Most often but not always it will be at the center of the building and always runs perpendicular to the rafters.

Chapter 3

The first step, prior to installing any flashing, trim or gutters, is to review the building drawings and erection manual. You are looking for details that cover installing the specified flashing, trim, and gutters. Your installation crew should meet to discuss those requirements along with the needed tools and available lift equipment both for personnel and materials.

Next we need to identify all of the parts and materials we will need and confirm they are present in the storage area. If you are missing any of these items contact your supervisor immediately to make them aware of the shortage. During the following illustrations we will use these tools: a screw gun, a tape measure, a chalk box (be sure not to use the permanent type of chalk as this will cause staining), a square, a rivet gun, a drill with bits, extension cords, c-clamps, snips (left, right and center), power shears, power nibblers, duckbills, a caulking gun with skinning and non-skinning caulk, and a grease pencil.

Remember that a lead pencil should never be used to mark galvanized metal as it will cause the metal to rust. For personnel access we will use scissor lifts, and a Rustgo wagon. Next gather the components, sealants, and fasteners that are specified and that your crew will most likely install before the end of the work day.

Chapter 4

It would be impossible for us to show you a sample of every way that a particular piece of trim or flashing might be used on a metal building. But let's cover a few tips that will help you in installing these various components in a professional manner. Always measure twice and cut once. This will save you time and your employer money. It will also provide a professional-looking job. Be sure to round off your corners and clean off any burrs that might be along an edge. Whenever possible you should cover up your field cuts and leave the factory cuts exposed. Whenever possible lap your material so that it is not visible from the primary view of the normal customer access. For instance, if the front door of the building will be the most heavily trafficked then you should be able in most cases to keep the laps hidden from people approaching that entrance. In the following chapters of this module we will show you several common situations that you are most likely to run into when you're working in the field.

Chapter 5

In this chapter we will look at a common flashing application you will find on most metal buildings which is installed at the eave. We have erected a special frame shown here for demonstration purposes. Keep in mind that it stands less than 5 feet off the ground. So our installers are compliant with OSHA regulations. Here we will measure and mark the first flashing piece for alignment at the eave. This flashing will keep water from getting under the end of the roof panel at the eave. Here a clamp is placed at the end of the flashing aligned at the rake. Next the flashing is measured and marked for fastener location. Fasteners must not interfere with the standing seam roof components. Now the fasteners are installed on the marks as shown for the first piece of flashing. When you reach the other end of the eave the last flashing piece will be measured, marked, and cut using power nibblers as shown.

Remember that a hot saw should never be used to cut flashing because the temperature will destroy the protective galvanized coating and the metal will rust. The last flashing piece is then clamped to the eave and aligned as shown. The same sequence of fasteners can then be installed.

Chapter 6

In this chapter we'll cover the installation of a common eave trim which most manufacturers call for installing before the roof panels are installed. The installer first locates the specified eave trim piece from the storage area. Be sure to check the label on the trim to confirm that it's the right component called for in the specs. Here a Rustgo wagon is leveled and positioned for use in installing the eave trim along the front canopy overhang. The eave trim is now handed up to the installer on the Rustgo wagon and placed into position aligned with the rake.

Here, temporary structural fasteners are installed in the center of the flashing. These will be removed in the following steps. Now a clamp is positioned on top of the trim at the rake to secure the trim for fastening. Be sure and measure to confirm alignment. Here a temporary structural fastener is installed securing the rake and the eave trim in place. Now the eave trim should be marked for the specified fastener locations. This is vital to assure that the fastener heads will not interfere with the rest of the components yet to be installed. At this time the temporary fasteners are removed. Then the structural fasteners called for are installed on your marks. Be sure to install all of the eave trim fasteners specified.

Now the clear protective covering on the eave trim can be removed. It should be noted that the plastic coating will interfere with the mastics and sealants and should be removed prior to applying these.

Chapter 7

In this chapter we will look at the installation of rake flashing and a rake end cap. Here mastic is applied to the first piece of rake flashing along the inside edge that will contact the roof panel. Press down firmly on the protective cover to assure a good seal. Now the flashing is marked at the specified intervals for fastener location. Next a chalk line is snapped along the rake wall at the required height to align the bottom edge of the rake support flashing. Now a chalk line is snapped from the eave to the ridge on the roof panel for aligning the top edge of the rake flashing. Now the rake flashing is positioned along the roof panel chalk line. Then fasteners are installed along the marks made on the rake flashing into the roof panel. Be sure to avoid hitting a purlin by at least an inch and a quarter. If you attach a fastener to a purlin the roof will leak after expansion and contraction. When you come to a lap seam for the rake flashing you will need to install mastic as shown. This mastic will help to prevent water from being blown up under the flashing and causing a leak.

Now the next piece can be positioned over the first and secured with fasteners. Next the manufacturer calls for a rake support flashing component that will carry the bottom of the rake flashing. This is fastened through the wall panel and into an outside closure behind the panel for added support. The rake flashing needs to be tabbed onto the standing seam metal eave closure and also tabbed to receive the rake cap. We now apply 3/4 inch mastic to all the tabs on the rake flashing. Next butyl caulk is applied as shown. This will provide a seal between the rake flashing and the last ridge closure. This is done on both sides of the ridge. At the ridge this 2” x 8” notch in the rake flashing provides clearance for the rake cap at the peak as shown. Then with fasteners, attach the rake flashing to the last ridge closure on both sides of the ridge. Butyl caulk is then applied over the rake flashing tabs and over the last six inches of the ridge closures.

Now the rake cap is positioned and fastened securely. Notice how the butyl caulk will ooze out slightly when the fasteners are installed. The bottom of the rake cap is supported by a small piece of rake support flashing cut to a custom fit.

Chapter 8

Whenever you have a corner on a metal building with wall sheeting the manufacturer will supply corner caps to cover the exposed edges of the wall sheeting. This trim piece is also vital to keep water out of the building. The installer will locate the trim in the storage area. Most trim pieces are shipped with a clear plastic protective material that will protect the surface from dirty hands and scratches. Since it is a hot day the plastic protective layer is removed to prevent it from bonding to the trim due to the high temperature. In normal temperatures you can remove this coating immediately after the fasteners have been installed. Here the piece is measured and marked for fastener location. Next the installer can measure and mark the corner trim for length. Using snips the trim has been cut to length. In this case the wall sheeting needs to be cut off with power shears so that the corner cap trim will nest properly. Now position the trim. And attach it to the wall sheeting with stitch fasteners on the marks for proper spacing.

Chapter 9

Next we will demonstrate the installation of trim on a typical prehung personnel door. Using a square the trim piece is marked for cut length. Here the door jamb trim is being cut to size using snips. The trim is aligned for this side of the jamb and also aligned at the header trim as shown. Then the specified fasteners are installed. Note that the door header trim is cut and bent down over the side trim as shown. This keeps the water from going down the inside of the jamb along the door. Remember the wall sheeting will cover this area of the trim connection.

Chapter 10

Now let's look at a common type of window trim. First trim away the excess insulation around the window frame that may interfere with the proper nesting of the window trim. Then measure to determine the trim depth needed for a proper fit. The manufacturer molds the trim with grooves at the varying depths. Now measure your trim and establish the groove you will use as a guide. Then use a set of duckbills to snap the trim for a proper fit. Now install one side of the trim in the window track and snap it securely into place. Finally repeat the same process for the other side trim piece. Be aware that some manufacturers will call for foam closures to be installed around windows. Refer to your erection guide for details.

Chapter 11

Before installing gutters and downspouts be sure to read the manufacturer's specifications carefully. First we will install the near end gutter bracket, being careful to place

this hanger for the correct setback from the roof edge. Now temporarily clamp it into position. With a screw gun and the appropriate fasteners attach the bracket to the standing seam. Then remove your clamp. The same process is repeated at the far end with the second hanger bracket. A string is clamped to the outside edge of both brackets as shown. This string will be used to align the rest of the gutter hanger brackets in between the near and far end.

Now we can install the gutter spacer brackets at the designed intervals. And the specified fasteners are installed as shown. Here the gutter end dam is installed using fasteners as shown. Then the caulking is installed around the inside of the gutter dam as shown. Now the outside edge of the dam is also sealed with caulking. Next measure and mark for the downspout opening in the gutter. Lines are drawn from corner to corner as shown.

Next using a vari-bit, drill a center hole to use for inserting your snips. Now cut along the lines to the corners of the downspout opening. Here duckbills are used to bend the tabs outward. These tabs will be used to secure the gutter to the downspout on all four sides. This will also aide in keeping the water directed down the downspout. Now raise the gutter into position aligning the brackets to come under the front lip of the gutter as shown. Clamp the back edge of the gutter to the roof panel. With a specified fastener attach the gutter to the bracket. Now install fasteners in the remaining brackets. At the back edge of the gutter fasteners are installed through the roof panel into the gutter as shown.

Chapter 12

Now let's look at the steps for installing a downspout. First measure the downspout to determine the location for the downspout hanger brackets to be mounted on the wall. Next mark the wall sheeting for the correct placement of the downspout hanger brackets. Remember to align the marks so the downspout will hang straight down. Now with the specified fasteners attach the downspout hanger bracket to the wall sheeting.

After all of the downspout hanger brackets are installed position the downspout for installation. The downspout is then connected to the gutter with the tabs on the inside of the downspout. Stitch fasteners are installed between the downspout and the gutter tabs. Now attach the hanger brackets to the downspout using the required number and type of fasteners at the correct spacing. Up in the gutter at the connection to the downspout, caulking is applied at the four corners as shown.

Chapter 13

After completing the installation of any flashing, trim, gutter or downspout component take some time to inspect the finished work. Be sure to remove all metal shavings on the roof, at the base and on any trim, including the gutters and downspouts. If there is any extra flashing, trim, gutters, or downspouts still in storage or the boneyard area, careful attention should be given to determine if they are in fact extras, not needed, or were overlooked in the installation process. If they are not needed on your job remove them from the job site and place them in the company’s spare parts inventory.

This concludes the module on flashing, trim and gutters. This presentation was created by the Metal Buildings Institute and is one of several training modules available to metal building erectors. We hope that it has helped you in understanding the basics of installing flashing trim and gutters.