



# Metal Roof Installation Manual

## Chapter 19: Installer Checklists

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BUILD LEGACIES  
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# Chapter 19: Installer Checklists

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19. INTRODUCTION

Checklists are invaluable tools for the Installer to use at any stage of a roof installation. By definition, a checklist is merely a list of items for comparison. Checklists may be created by anyone interested in documenting some aspect of the roof installation. (Figure 19-1)

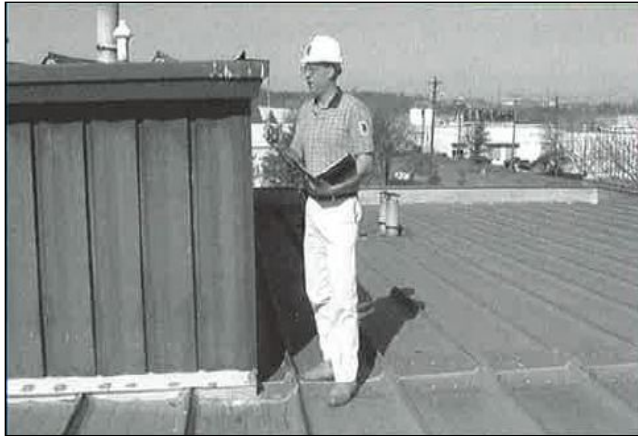


Figure 19-1  
Checklists Are a Valuable Tool During Any Stage of a Roof Installation

Roofing checklists may include installer activities such as receipt and inventory of materials, progress and completion of tasks, or inspection and evaluation of a roof (new or old).

Checklists help the installer to:

- ✓ **Ensure** the right materials, supplies, and tools are available and in the right quantity before attempting to perform a task.
- ✓ **Schedule** work which needs to be performed, and avoid delays by shifting or re-adjusting the installation based on the checklist information.
- ✓ **Document** key information; the "who, what, when, and where" of the job.
- ✓ **Provide** legal documentation (especially when signed, dated, and kept on file) of important information in the event of litigation.

**Installer Note**

Installers are free to develop their own checklists for any aspect of a job where they feel it will be a benefit. Such lists may be items to bring to the job site from the home office, documents to sign and verify at the end of the day, or items to bring "roof top" from the truck or ground level. Remember, when it gets written down, it gets harder to forget.

19.1 Pre-installation Checklists

An installation progresses much smoother when all the necessary tools, materials, and equipment are available in the right quantity and in the right location. Documents used during the job estimation and order processes are types of checklists, and usually evolve into what is commonly called the Bill of Materials, or BOM. This BOM is used to check the material, supplies, or special tools (those required to be bought, rented, or leased) required for the job. Be aware that the BOM may have part numbers unique to the distributor or manufacturer which make it difficult to identify some components. Often, the manufacturer provides checklists as shown in Figure 19-2 of tools, materials, and products necessary for the installation. This information, along with packing slips, installation instructions, and other important documentation is often shipped along with the material. The specific box containing this documentation is individually marked on the outside of the package.

5.0 ROOF INSTALLATION BASICS

5.1 Proper Tools

Before starting paneling, be sure that the proper equipment and tools are on hand. The tools must be in good operating condition and operators should adhere to safety precautions at all times. Improperly operating tools, too few tools, inadequate power source, or other equipment deficiencies slow down the installation process. The cost of inefficient working is usually greater than the cost of providing good equipment.

5.2 Equipment List

The following tools and equipment should be considered for efficient installation of the Metal Roofing Systems standing seam roof. Actual tools and equipment required may vary due to variations in building type and construction. This list should not be interpreted as a limitation to your inventory of installation equipment.

- \*UL Rib Clamp — Minimum of (4) required
  - \*UL Seam Clamp — Minimum of (2) required
  - \*UL Motorized Seaming Machine
  - \*ESE #812 Manual Seaming Tool
  - 20 amp UL Motorized Seaming Machine
  - Screw Guns — Designed for use with self-drilling screws
  - Socket Extensions — 6" extension for screw gun
  - Hex Socket Heads — 5/16" and 3/8", magnetic
  - Drill Motor — 1/4" capacity
  - Drill Bits — Assortment
  - Sheet Metal Cutter — or power shears or nibbler
  - "C" Clamps — vise grip, with swivel pads
  - Pop Rivet Tool — 1/8" capacity
  - Sheet Metal Shears — left and right cut
  - Steel Measuring Tape — 12', 50', 100'
  - Nylon String
  - Chalk Line — (No Red Chalk)
  - Brooms
  - Marking Pen — (No Lead Pencil)
  - Caulk Guns — for 1/10 gallon sealant tubes
  - Power Source and Extension Cords — capable of handling the total equipment requirements, including 20-amp seamer machine, without power drop due to extension cord length.
- \*These tools are specifically designed for Metal Roofing Systems Roof Panel and are available from Metal Roofing Systems.

19.2 Checklists During Installation

Checklists used during the installation most often check and track activities, progress, and communication items. Each log should include the date and names or initials of key people. This includes not only the person completing the checklist, but also the person(s) performing specific tasks, such as sealing, gutter cleaning, or other trades performing work on the roof. Examples of detailed items a daily checklist may include are:

- Install underlayment
- Squares installed = \_\_\_\_\_
- Remove protective film from installed panels
- Check and clean gutters
- Notify electrician
- Notify/schedule HVAC reconnect
- Cover and secure stage material
- Store ladders and lock gate
- Photos
- Clean-up

When such checklists are completed on a regular, or even a daily basis, then filed, a comprehensive record of the installation is created without any additional effort.

A useful, but often overlooked, item to include on a daily log is the addition of a section for random notes of significance. Such notes would include key factors like weather and jobsite conditions, delays, or injuries, of any nature.

19.3 Post-installation / Inspection / Maintenance Checklists

Checklists do not stop when the installation is completed. A checklist at this stage of the roof installation will help ensure that for new installations:

## PRODUCT INFORMATION

### PRODUCT CHECKLIST

<p><b>Panel</b></p> <p style="text-align: right;">AG-202 <input type="checkbox"/></p>	<p><b>Ridge/Hip</b></p> <p style="text-align: right;">AG-202 <input type="checkbox"/></p>	<p><b>Valley</b></p> <p style="text-align: right;">AG-292 <input type="checkbox"/></p> <p style="text-align: right;">AG-296 <input type="checkbox"/></p>
<p><b>Rake Trim</b></p> <p style="text-align: right;">AG-250 <input type="checkbox"/></p>	<p><b>Drip Edge</b></p> <p style="text-align: right;">AG-279 <input type="checkbox"/></p>	<p><b>Box Gutter</b></p> <p style="text-align: right;">AG-242 <input type="checkbox"/></p>
<p><b>Eave Trim</b></p> <p style="text-align: right;">AG-248 <input type="checkbox"/></p>	<p><b>Outside Closure</b></p> <p style="text-align: right;">HW-462 <input type="checkbox"/></p>	<p><b>Tri-Bead Tape Sealer</b></p> <p style="text-align: right;">HW-504 <input type="checkbox"/></p>
<p><b>Continuous Cleat</b></p> <p style="text-align: right;">FL-338 <input type="checkbox"/></p>	<p><b>Urethane Tube Sealant</b></p> <p style="text-align: right;">White HW-540 <input type="checkbox"/></p>	<p><b>Fastener #9</b> 10 x 1 1/2" Long Life Woodgrip <input type="checkbox"/></p> <p><b>Fastener #13</b> 10 x 1" Pancake Head <input type="checkbox"/></p> <p><b>Fastener #4</b> 14 x 5/8" Long Life Lap Tek <input type="checkbox"/></p> <p><b>Fastener #14</b> 14 x 5/8" Pop Rivet Stainless Steel <input type="checkbox"/></p>

SUBJECT TO CHANGE WITHOUT NOTICE EFFECTIVE DATE APRIL 10, 2005 FOR THE MOST CURRENT INFORMATION PAGE V-6

Figure 19-2 Example of Manufacturer Tool, Equipment, and Product Checklists

- ✓ The new roof is in its best condition for the customer and sign-off on the job.
- ✓ The jobsite is left in an acceptable manner; clean, neat, and secured.
- ✓ There are no tools, equipment, or material left on the roof, or at the jobsite.

On maintenance or re-roof installations:

- ✓ Documentation of changes, damage, or modifications since the initial installation or last inspection.
- ✓ Areas requiring cleaning.
- ✓ Areas requiring touch-up or resealing, such as terminations and masonry interfaces.

A checklist designed for the inspection or maintenance of a roof which has already been installed and in service for a period of time will have sections containing historical information to help the installer evaluate the current roof situation. As shown in the following examples, this type of checklist will include sections documenting:

- ✓ General roof information (Figure 19-3)
- ✓ Roof specification information (Figure 19-4)
- ✓ A roof plan grid (Figure 19-5)
- ✓ Building owner maintenance inspection checklist (completed by owner or owner maintenance members) (Figure 19-6)
- ✓ Inspection Checklist (completed by roofing professional) (Figure 19-7)

<b>ROOF ASSEMBLY HISTORICAL RECORD</b>	
All information and records pertinent to this roof assembly should be part of the historical record file (e.g., meeting minutes, copies of repair records, etc.).	
<b>GENERAL INFORMATION</b>	
Building:	_____
Location:	_____
Owner:	_____
Architect/Consultant:	_____
General Contractor:	_____
Address/Telephone:	_____
Roofing Contractor:	_____
Address/Telephone:	_____
Metal Roof Assembly Manufacturer:	_____
Address/Telephone:	_____
Roof Area: sq. ft.	_____
Building Height:	_____
Tenant:	_____
Contact:	_____
Telephone:	_____
Building Use/Occupancy:	_____
Date Installed:	_____
Warranty Terms:	_____
Warranty Number:	_____
Warranty Coverage Period:	_____
Roof Access:	<input type="checkbox"/> Fixed Ladder <input type="checkbox"/> Hatch <input type="checkbox"/> Penthouse <input type="checkbox"/> Portable Ladder

Figure 19-3  
General Roof Information on  
a Roof Maintenance Checklist

**Specification Information**

Construction:  
 Type:  New  Tear-off  Re-cover  
 If a re-cover, describe the existing roof assembly:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Insulation: Manufacturer: \_\_\_\_\_  
 Type: \_\_\_\_\_  
 Thickness: \_\_\_\_\_  
 Attachment: \_\_\_\_\_  
 Number of Layers: \_\_\_\_\_

Metal Panels: Manufacturer: \_\_\_\_\_  
 Type: \_\_\_\_\_  
 Thickness: \_\_\_\_\_  
 Width: \_\_\_\_\_  
 Attachment: \_\_\_\_\_  
 Seam Type: \_\_\_\_\_  
 Seam Height: \_\_\_\_\_

If a re-cover, was a moisture survey performed?  
 Yes  No

Roof Deck/Substrate:  
 Open Purlins  Plywood/OSB  Tongue-and-groove Wood  
 Structural Concrete  Steel, gauge \_\_\_\_\_  Precast Concrete  
 Plank Gypsum  Cement-wood Fiber  Composite, describe: \_\_\_\_\_  
 Other, describe: \_\_\_\_\_

Vapor Retarder:  
 None  Bituminous  Kraft Paper  Membrane Underlayment  Other, describe: \_\_\_\_\_

Drainage: Areas of Inadequate Drainage:  
 Slope: \_\_\_\_\_ inches/foot  Yes, locate on roof plan sketch  
 No

Describe drainage system, including drains, plumbing, scuppers, gutters, downspouts and sumps, if any: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Finish:  
 None  
 Prefinished—type: \_\_\_\_\_  
 Galvalume™  
 Liquid-applied coating—type: \_\_\_\_\_  
 Other, describe: \_\_\_\_\_

Figure 19-4  
 Roof Specification Information on a Roof Maintenance Checklist

**Roof Plan Grid**

No. \_\_\_\_\_

For use in conjunction with the Building Owner Maintenance Inspection Checklist

Building: \_\_\_\_\_ Inspection Date: \_\_\_\_\_  
 Location: \_\_\_\_\_ Inspector: \_\_\_\_\_  
 Scale: 1"= \_\_\_\_\_

Figure 19-5  
 Roof Plan Grid on Checklist

**BUILDING OWNER MAINTENANCE INSPECTION CHECKLIST**

Provide the roof plan using the Roof Plan Grid \_\_\_\_\_ indicate the location of observed conditions keyed to this inspection report. Use the item codes to show location.

Building: \_\_\_\_\_ Inspection Date: \_\_\_\_\_  
 Location: \_\_\_\_\_ Inspector: \_\_\_\_\_  
 Contact: \_\_\_\_\_ Finish: \_\_\_\_\_  
 Substrate (if known): \_\_\_\_\_

Has the occupancy or use of the building changed since the last inspection?  
 No  Yes If yes, how? \_\_\_\_\_

Have any changes, additions or new penetrations been made to the roof since the last inspection?  
 No  Yes If yes, indicate on roof plan and describe: \_\_\_\_\_

Has there been leakage?  
 No  Yes If yes, under what conditions?  Light Rain  Heavy Rain  Snow  
 Wind-driven Rain  Leaks Continuously (Indicate where leaks occurred on roof plan.)

Were emergency repairs performed?  No  Yes If yes, describe: \_\_\_\_\_

Figure 19-6  
 Owner Maintenance Inspection Checklist

**Inspection Checklist**

Perform an initial general building inspection; conditions may indicate a roof assembly problem. Note the location for investigation on the roof:

ITEM	CONDITION SEVERITY:			ACTION TAKEN OR RECOMMENDED
	G	F	P	
<b>ROOF ASSEMBLY CONDITION</b>				
<b>GENERAL</b>				
Debris				
Walkways				
Substrate/Purlins				
Contaminants				
Leaks				
<b>DRAINAGE</b>				
Roof Drains				
Scuppers				
Gutters				
Downspouts				
Ponding				
<b>METAL ROOF PANELS</b>				
Seams/Joints				
Loose Panels				
Worn Panels				
Damaged Panels				
Fasteners and Washers				
Fastener Holes				
<b>METAL WALL PANELS</b>				
Seams/Joints				
Loose Panels				
Worn Panels				
Damaged Panels				
Fasteners and Washers				
Fastener Holes				
<b>FINISH</b>				
Worn Spots				
Exposed or Corroded Metal				
Adhesion				
Cracks				
Pinholes				
<b>FLASHINGS</b>				
Roof-to-wall Flashings				
Base Flashings				
Counterflashings				
Coping				
Ridge Caps				
Hips Caps				
Valleys				
Expansion Joints				
<b>PENETRATIONS</b>				
Pipes				
A/C Units				
Vents				
Skylights				
Access Hatch				
Ducts				
<b>OTHER</b>				
General Remarks:				

Figure 19-7  
 Inspection Checklist (General)



Such checklists provide the installer with additional income opportunities, and allow preventative, scheduled maintenance rather than costly, emergency repairs. When such a checklist *does* reveal a need for work to be done, it also becomes the basis for developing a list of materials and the information necessary to develop a job quotation for the customer.

## 19.4 Inspection Procedures

Each inspection should follow a prescribed routine that enables the person performing the inspection to examine each visible component of a roof system and identify areas requiring attention.

The following procedures can be used for both new and re-roof installations. However, some items may not be as applicable to some roof designs, or certain jobs.

**Note**

The following photos show examples an installer may typically find during an inspection. Some photos show areas that are in need of repair or correction, while others show areas that do not require additional attention.

### 19.4.1 Building Interior (Figure 19-8)

The starting point of any roof inspection should be on the ground, actually inside the building. A thorough inspection should check the interior for leaks and signs of water and staining. This includes:

- Interior walls
- Ceilings
- Insulation



Figure 19-8  
Roof Inspections Should Begin Inside the Building

If any suspicious areas are found, a floor plan and/or roof plan (Figure 19-5) should be developed from this interior inspection, and indicate where there may be problems at the roof level.

After inspecting the interior, the exterior walls and overhangs should be inspected for moisture, cracks, and signs of movement.

### 19.4.2 Gutters (Figure 19-9)



Figure 19-9  
Gutters Need Cleaned and Inspected Regularly

Gutters, whether they are hung at the eaves or hidden, should provide positive drainage. This is one component that should be inspected most rigorously, and several times, during the installation. Look for the following:

- Loose or missing fasteners
- Displaced or loose joints in the metal

- Corrosion of metal components
- Debris and vegetation growth
- Attachment at eaves, broken or loose gutter straps, and brackets
- Sealants or solder displaying signs of cracking, weathering or aging at all joints and connections
- A secondary drainage system that is operational (e.g., front edge overflow)

**19.4.3 Downspouts (Figure 19-10)**



Figure 19-10

Clogged or Damaged Downspouts Create Problems

Downspouts and/or interior roof drains provide drainage for the gutter system. They should be checked for the following:

- Outlets are sealed properly and not clogged
- Elbows / miters are open and free-flowing
- Attachment is in place, secure and effective
- Joints are properly sealed and not leaking
- Downspouts are not damaged / crushed so as to impede the flow of water
- Downspouts and connections are not blocked or clogged

**19.4.4 Edge and Rake Metal (Figure 19-11)**



Figure 19-11  
Edge and Rake Inspection

Edge and rake metal is used to terminate, waterproof, and provide wind-uplift protection for a roof system's edges. Proper installation and maintenance will prevent water damage to a building's structural components, insulation, and interior. Carefully look for the following:

- Loose or missing fasteners
- Missing or displaced metal sections, joint covers or closures
- Open ends, or lap joints and covers
- Exposed sealants, displaying gaps, or signs of cracking, weathering, or aging; or new sealant which is missing, smeared, or misapplied.
- Signs of expansion/contraction
- Corroded metal
- Cleat securement



**19.4.5 Hips and Ridges**  
(Refer to Figure 19-12 below)

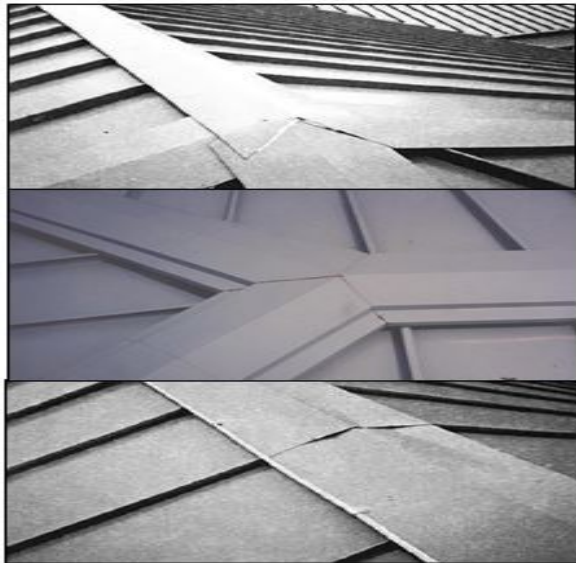


Figure 19-12  
Hip and Ridge Inspections

Hips and ridges are terminations. Either non-vented, or vented; these terminations are used to close off the top of a panel system. They are located at the peak or high end of a metal panel roof system. When inspecting hip and ridge covers, check for the following:

- Loose or missing fasteners
- Cleat securement
- Open ends, or lap joints and covers
- Loose or displaced closures and baffles
- Damage from foot traffic
- Damage from expansion and contraction
- Sealants displaying gaps, or signs of cracking, weathering or aging; or new sealant which is missing, smeared, or misapplied.
- Corroded metal
- Slippage of hip covers (downslope)

**19.4.6 Valleys**  
(Refer to Figure 19-13 below)



Figure 19-13  
Valley Issues Affect Water Flow and Drainage

Valleys allow for water flow and drainage from a metal roof system and should be checked for the following:

- Loose or missing fasteners
- Open ends, or lap joints and covers
- Exposed sealant, tape, and mastics displaying gaps, or signs of cracking, weathering, or aging; or new sealant which is missing, smeared, or misapplied.
- Metal panels improperly secured or misaligned at valley edges
- Damage from foot traffic
- Obstructions blocking water now
- Corroded metal
- Signs of expansion and contraction

**19.4.7 Roof-to-Wall Flashings**  
(Refer to Figure 19-14 below)



Figure 19-14  
Roof to Wall Flashings Vary Widely

Roof-to-wall flashings (counterflashings) are roof panel terminations generally located at walls and curbs. Because of the many conditions that require flashings, a variety of problems may occur at these vulnerable locations. When inspecting flashings, check for the following:

- The top terminations are secure and sealed
- Loose or missing fasteners
- Open ends, or lap joints and covers
- Loose or displaced closures
- Damaged metal flashings from foot traffic
- All inside and outside corners are properly sealed
- Roof panels and flashings move independently
- Corroded metal

**19.4.8 Penetrations**  
(Refer to Figure 19-15 below)

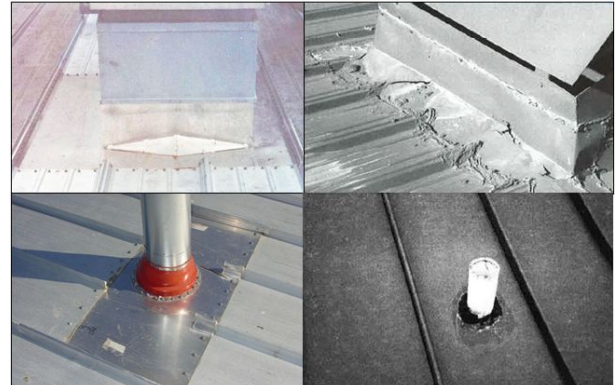


Figure 19-15  
Inspection of Roof Penetrations

Penetrations are pipes, curbs, and other items that penetrate a roof panel. Penetrations must be flashed properly to ensure a watertight roof system. Any inspection should examine the following to ensure that:

- Pipe flashings have a weathertight seal at the panel surface
- The tops of the pipe flashings have weathertight seals at the pipes
- Penetrations are secure (i.e., not prone to movement)
- Curbs are properly flashed, particularly at the corners
- Curbs and penetrations are properly crickets to allow for positive drainage
- Skylight domes/panels are not deteriorated
- Penetrations do not impede the flow of water
- Metal is not corroded
- Fasteners are not loose or missing
- Corners are properly sealed or soldered with no gaps

**19.4.9 Metal Panels and Seams**  
(Figure 19-16)

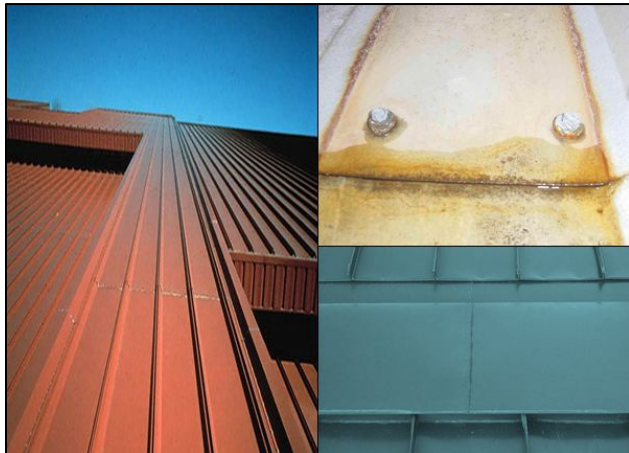


Figure 19-16  
Panel and Panel Seam Inspections

The metal panel is a one piece item and is easily damaged. Metal panels make up the field, or surface membrane, of a metal panel roof system; seams provide the watertight integrity of a metal panel roof system. Panels and seams should be examined closely for the following:

- Dust, dirt, and any surface or finish damage (new panels)
- Open, damaged, loose, or improper laps
- Open, damaged, loose, or bent seams
- Improperly sealed seams
- Loose seam caps
- Loose fasteners (e.g., from oversized holes) that may require replacing with oversized fasteners; and / or encapsulated with the appropriate sealant
- Missing fasteners
- Surface rust, corrosion of metal components and seams
- Loose debris or vegetation growth
- Physical damage from traffic, snow removal, bullets, etc.

- Damage from contamination
- Adequate drainage
- Loose or unsecured snow guards

**Summary**

Any tool that can save the installer time, money, and make the job easier is a valuable tool. The checklist is such a tool. Whether used to check material upon arrival, daily progress of the job, quality of the completed installation, or roof condition during a yearly inspection, this simple tool documents the important information.

If there is information, or details, materials, and activities that cannot be overlooked during the installation, creating a simple checklist will reduce the risk of overlooking the necessary items.

**Notes:**

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