

Metal Roofing

The Devil is in the Details – SSRLU3B

1 LU/HSW Hour



Best Practice Slide

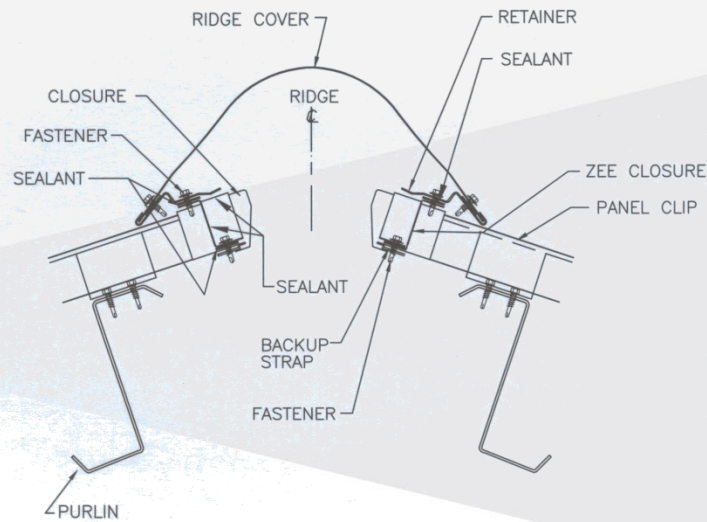
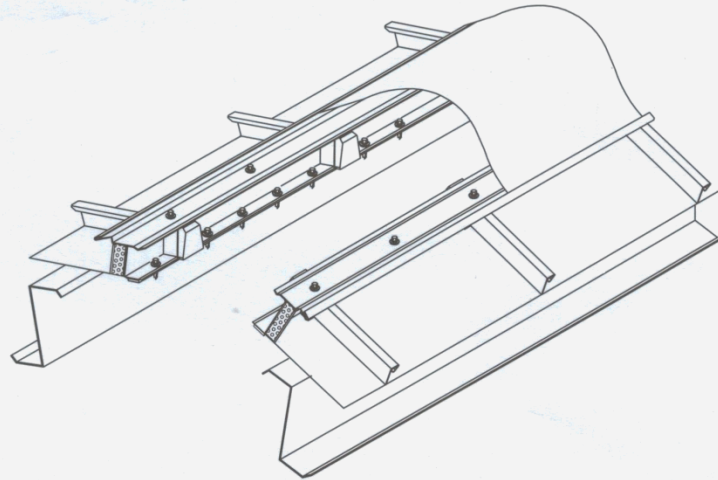
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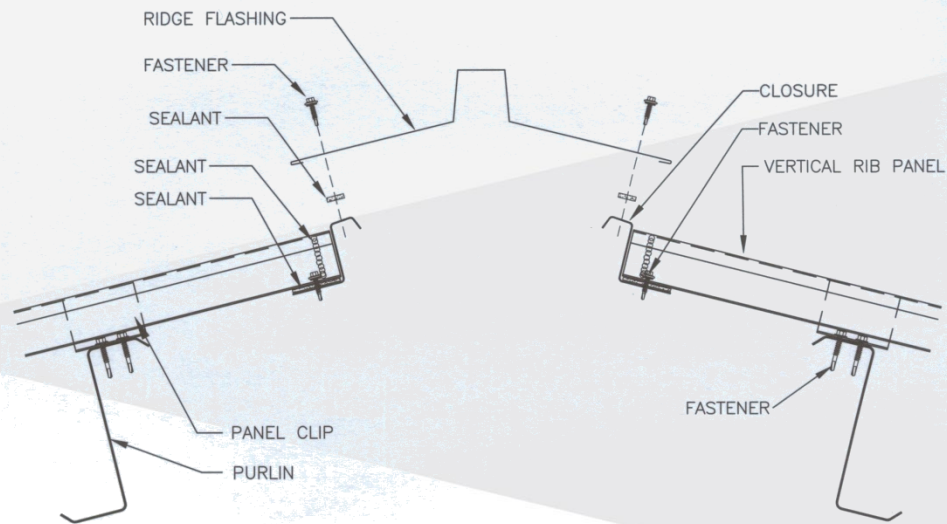
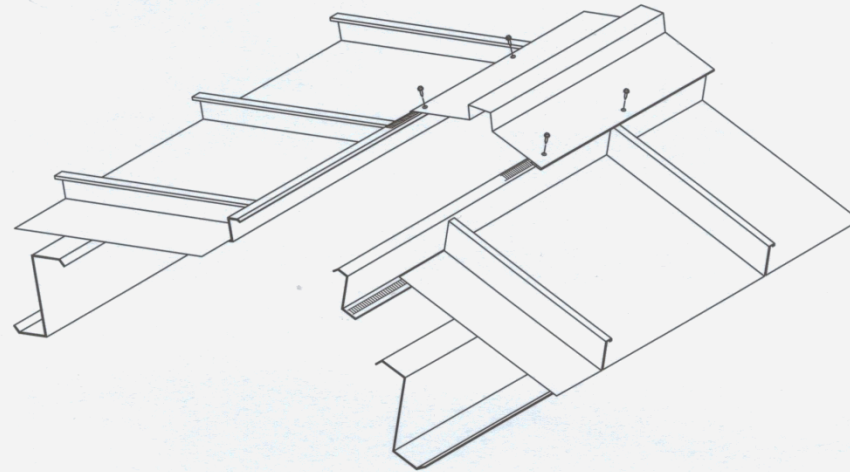
Learning Objectives

- ❖ Attendees will learn that long term roof system performance requires long term thinking when designing details incorporated into a metal roof system.
- ❖ Attendees will be visually exposed to both correct and incorrect details and conditions that are best avoided when possible.
- ❖ Attendees will learn how roof penetrations should be specified and installed to provide long term weathertightness.
- ❖ Attendees will learn about dissimilar metals and how they affect a roof's service life.

Ridge Detail

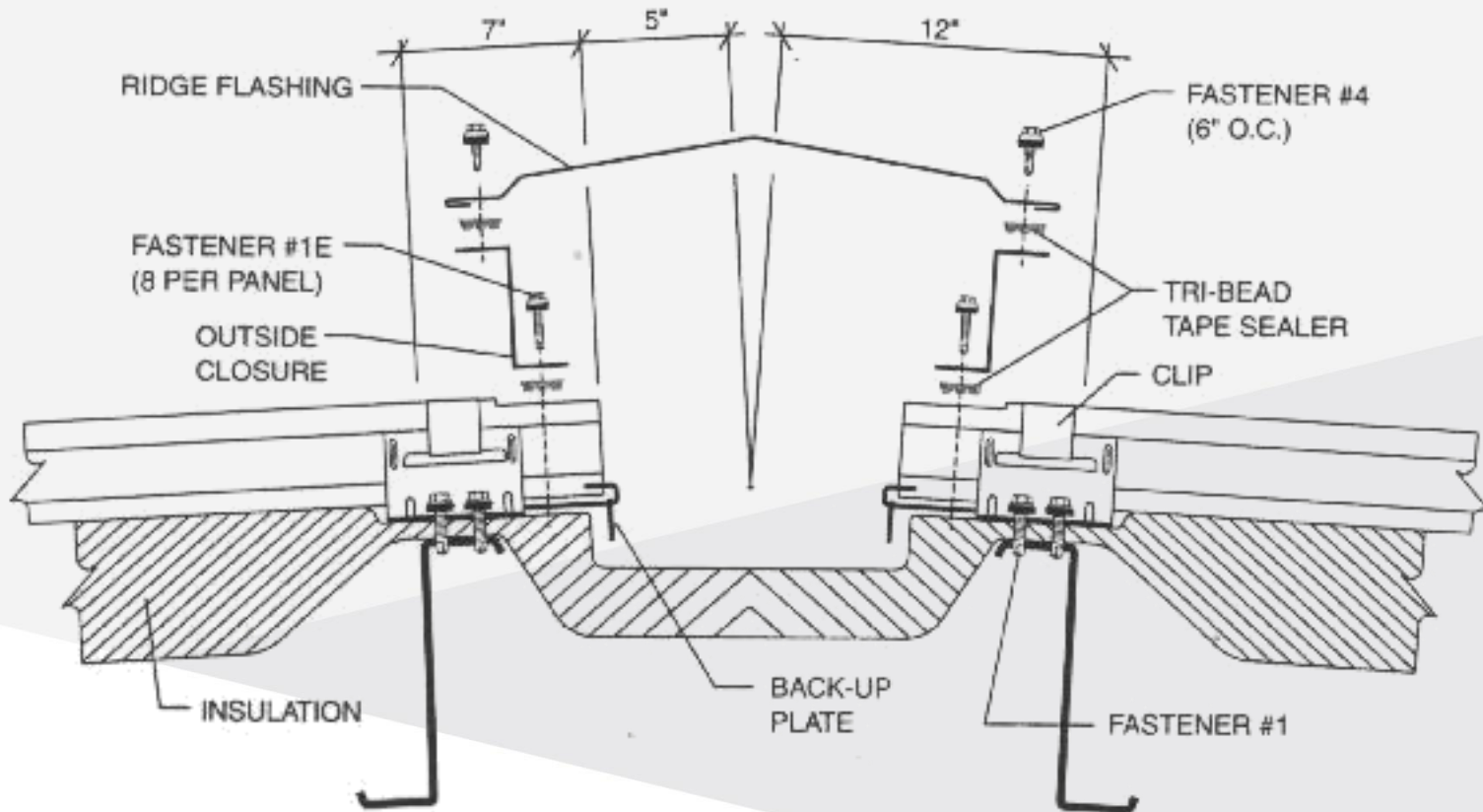


Ridge Detail



Ridge Detail

TRIM DETAILS RIDGE



Two Basic Principles

❖ Think Long Term (20 Years)

- Don't count on exposed sealant to be a long-term solution.
- Use trim, fasteners and accessories that will last as long as the roof.

Rusted Fasteners

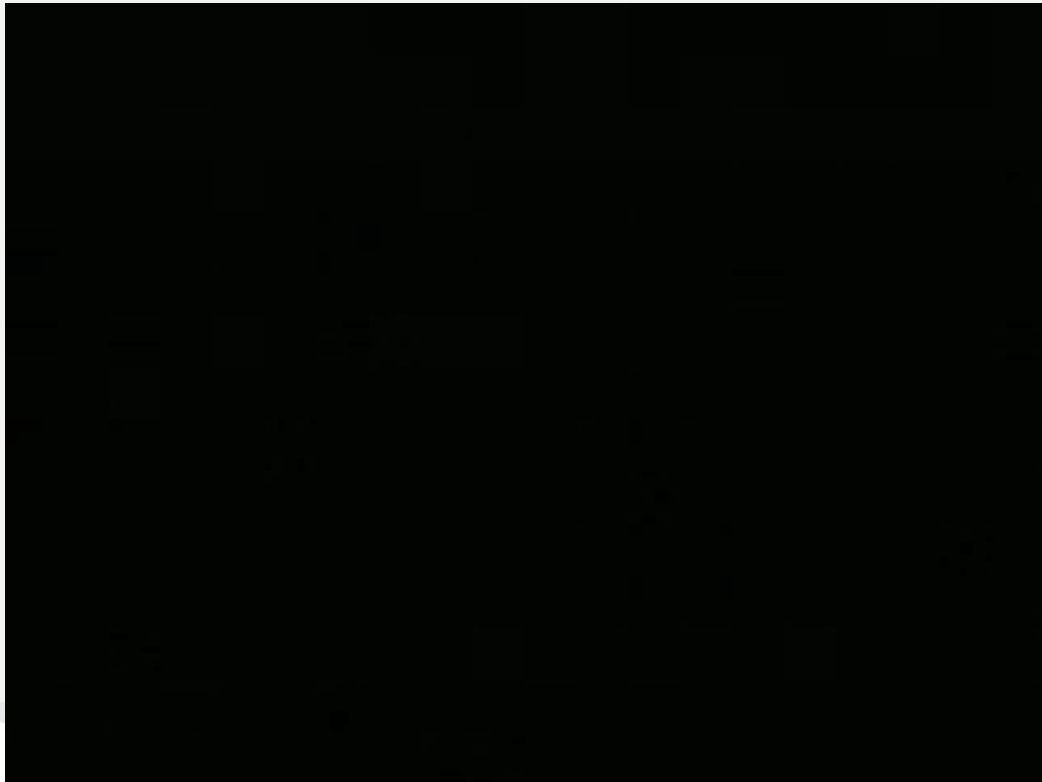


Rusted Valley Gutter



Rusted Flashing





Two Basic Principles

- ❖ Think 20 Years Down The Road
- ❖ The Harder You Make Something, The Less Chance It Will Be Done Right

Where Do Metal Roofs Leak?

- ❖ Penetrations
 - Roof Curbs

Roof Curbs

- ❖ Use curbs made from aluminum or stainless steel
- ❖ Use under/over curbs
- ❖ Require a minimum of 12” between the panel end and the diverter on the upslope end and 6” between the curb sides and panel seams
- ❖ Use rib-to-rib curbs
- ❖ Require roof contractor to supply and install curbs, not the HVAC contractor.

Roof Curb



Roof Curb



Roof Curb



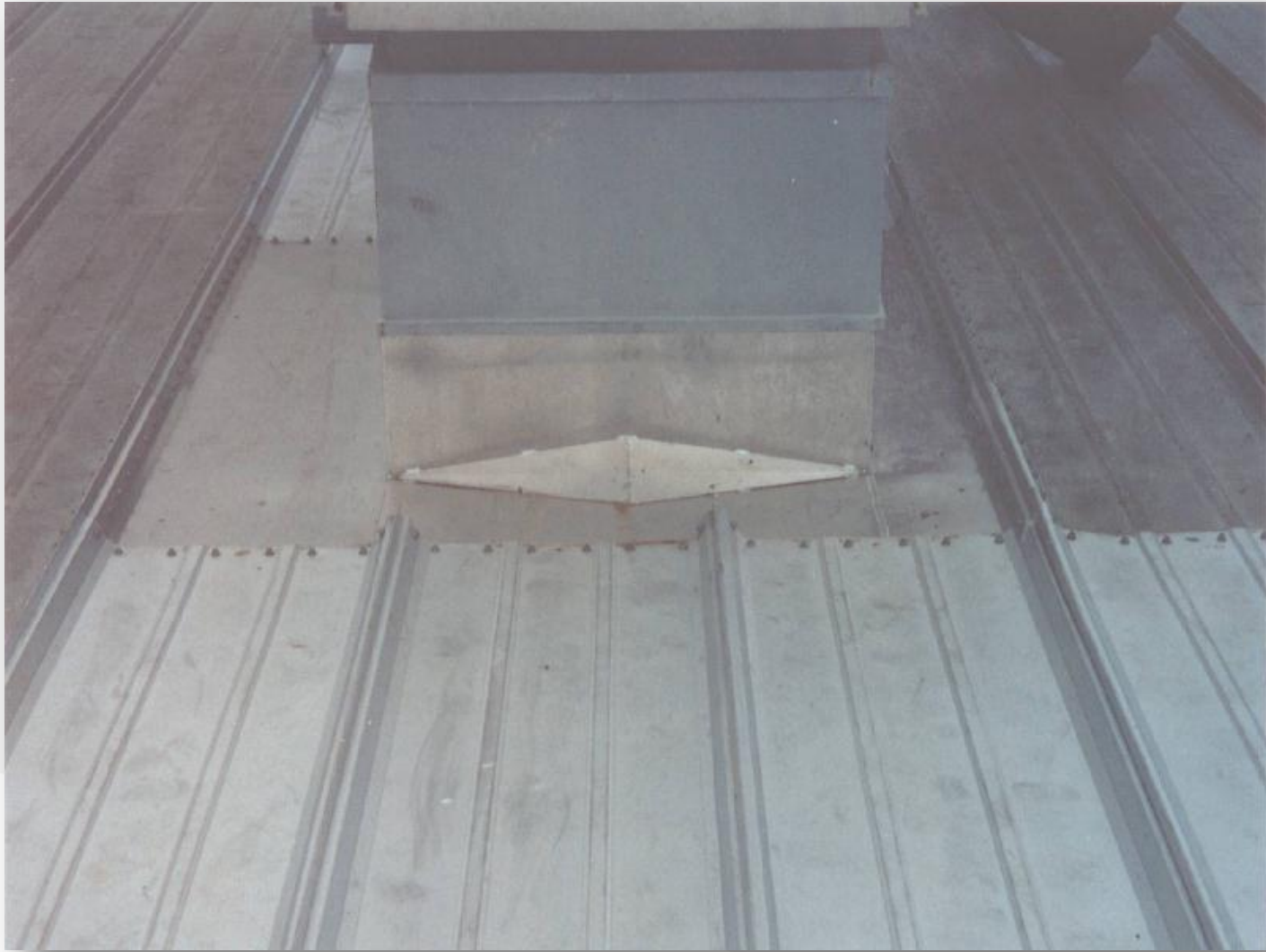
Roof Curb



Roof Curb



Roof Curb



Where Do Metal Roofs Leak?

❖ Penetrations

- Roof Curbs
- Pipes/Structural Members

Pipe/Structural Penetrations

- ❖ Do not use residential pipe jacks
- ❖ Do not penetrate the panel seam
- ❖ Do not block the flow of water
- ❖ Require the roofing contractor to install or supervise all pipe and structural penetrations

Incorrect Pipe Jack



Incorrect Pipe Jack



Incorrect Installation



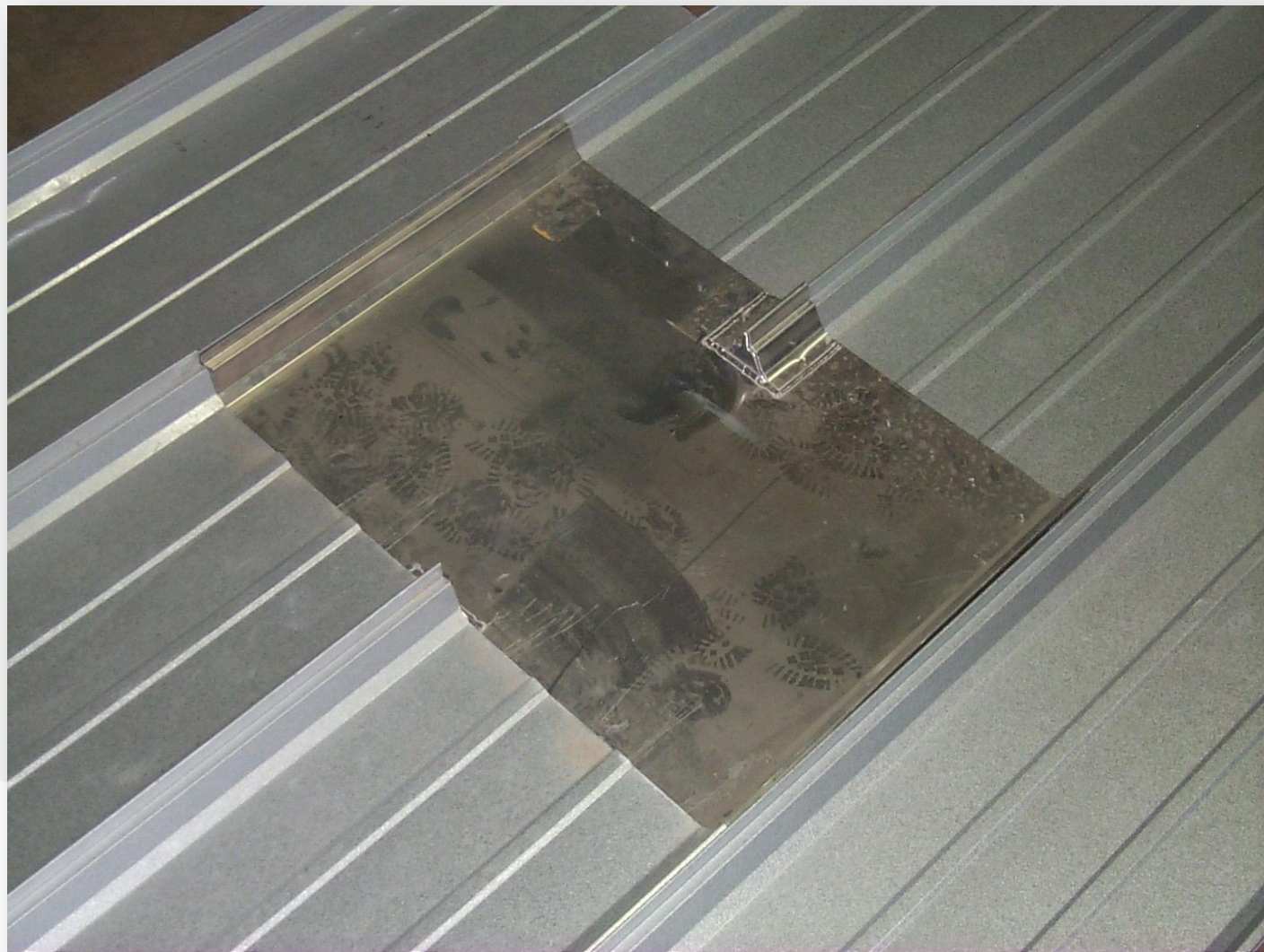
Correct Pipe Penetration



Incorrect Installation



Curb Base



Correct Pipe Penetration



Correct Pipe Penetration



Penetrations By Other Trades



Penetrations By Other Trades



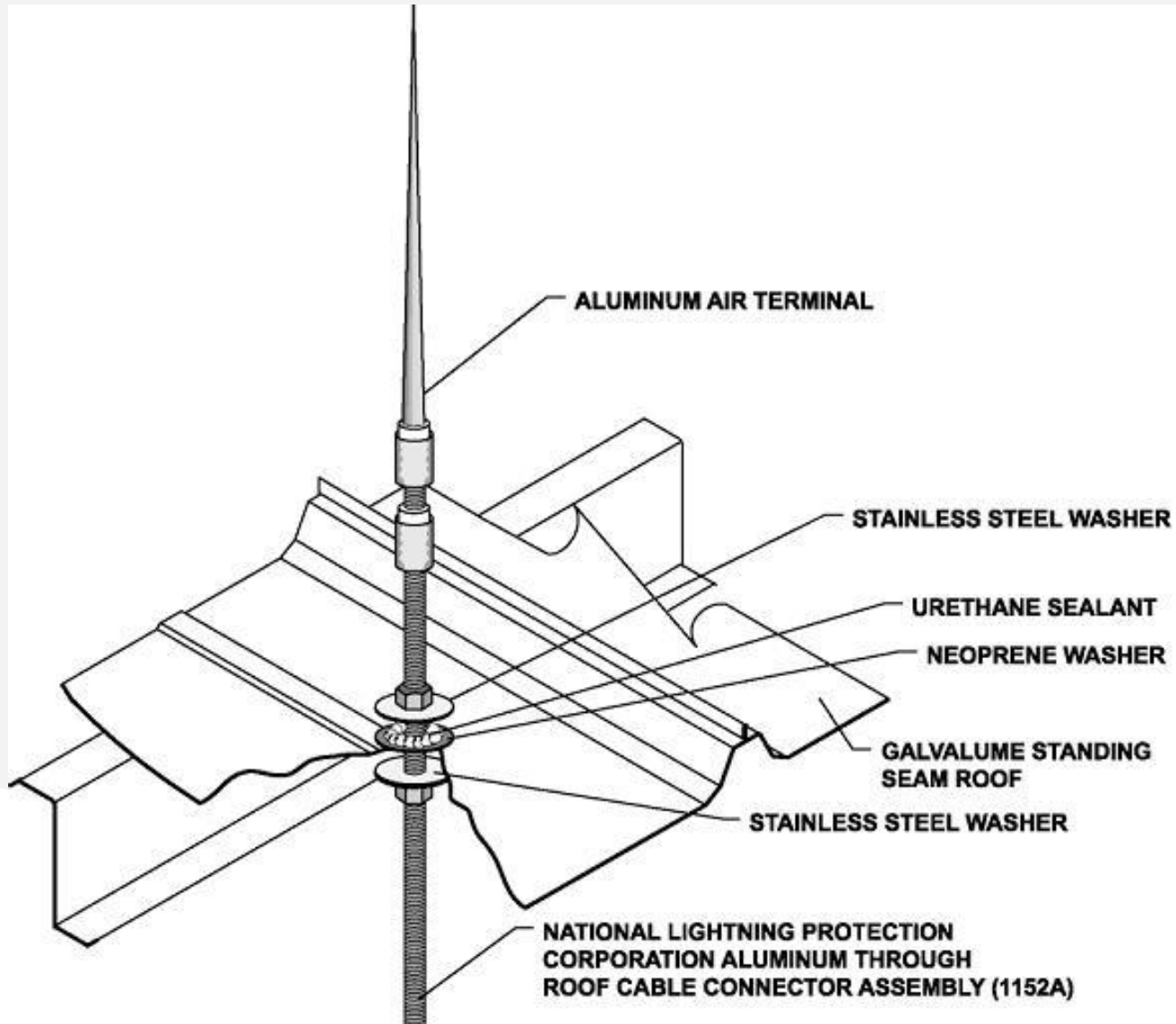
Penetrations By Other Trades



Penetrations By Other Trades



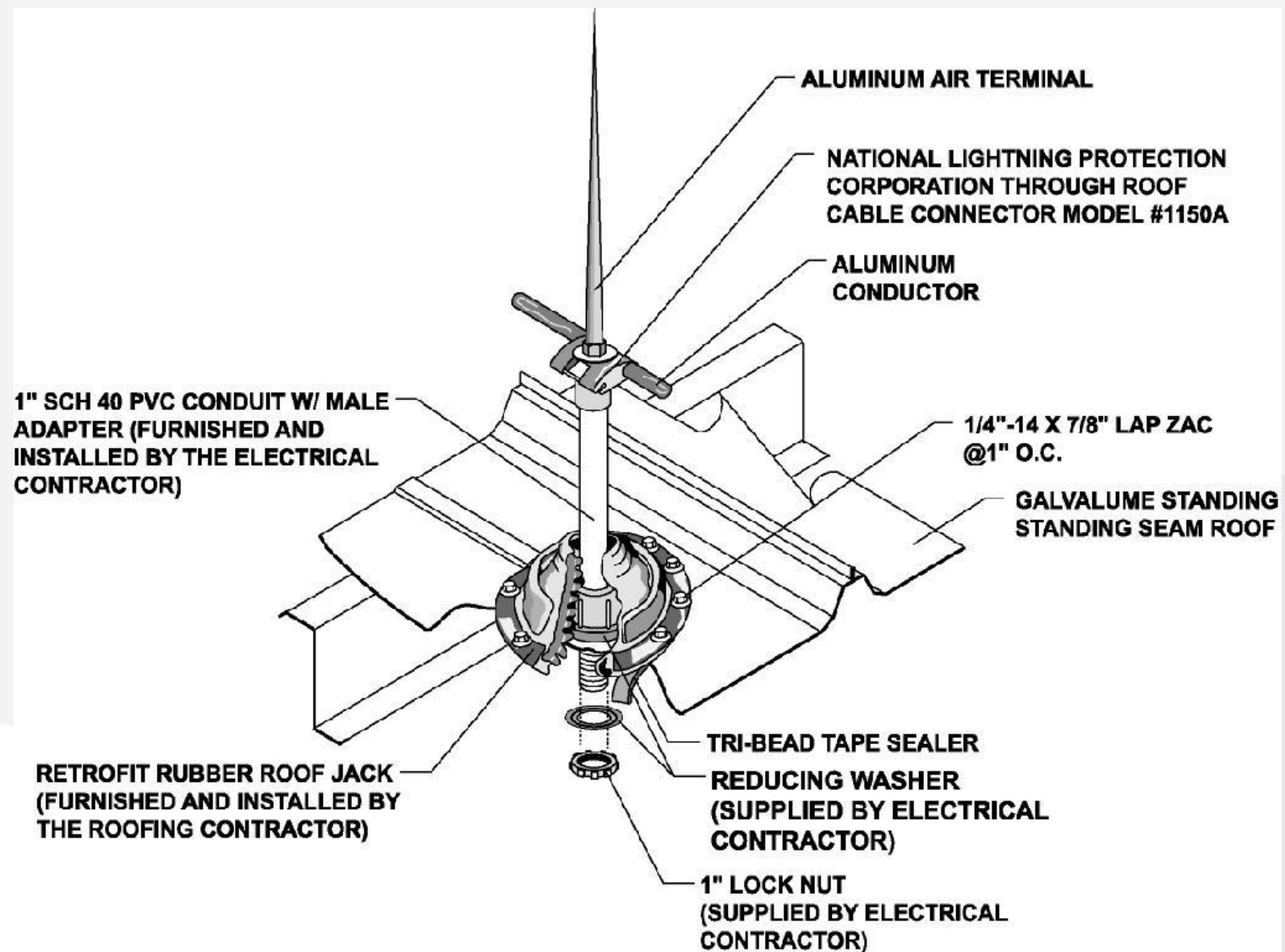
Penetrations By Other Trades



Penetrations By Other Trades



Penetrations By Other Trades



Penetrations By Other Trades



Penetrations By Other Trades



Where Do Metal Roofs Leak?

- ❖ Penetrations
- ❖ Details

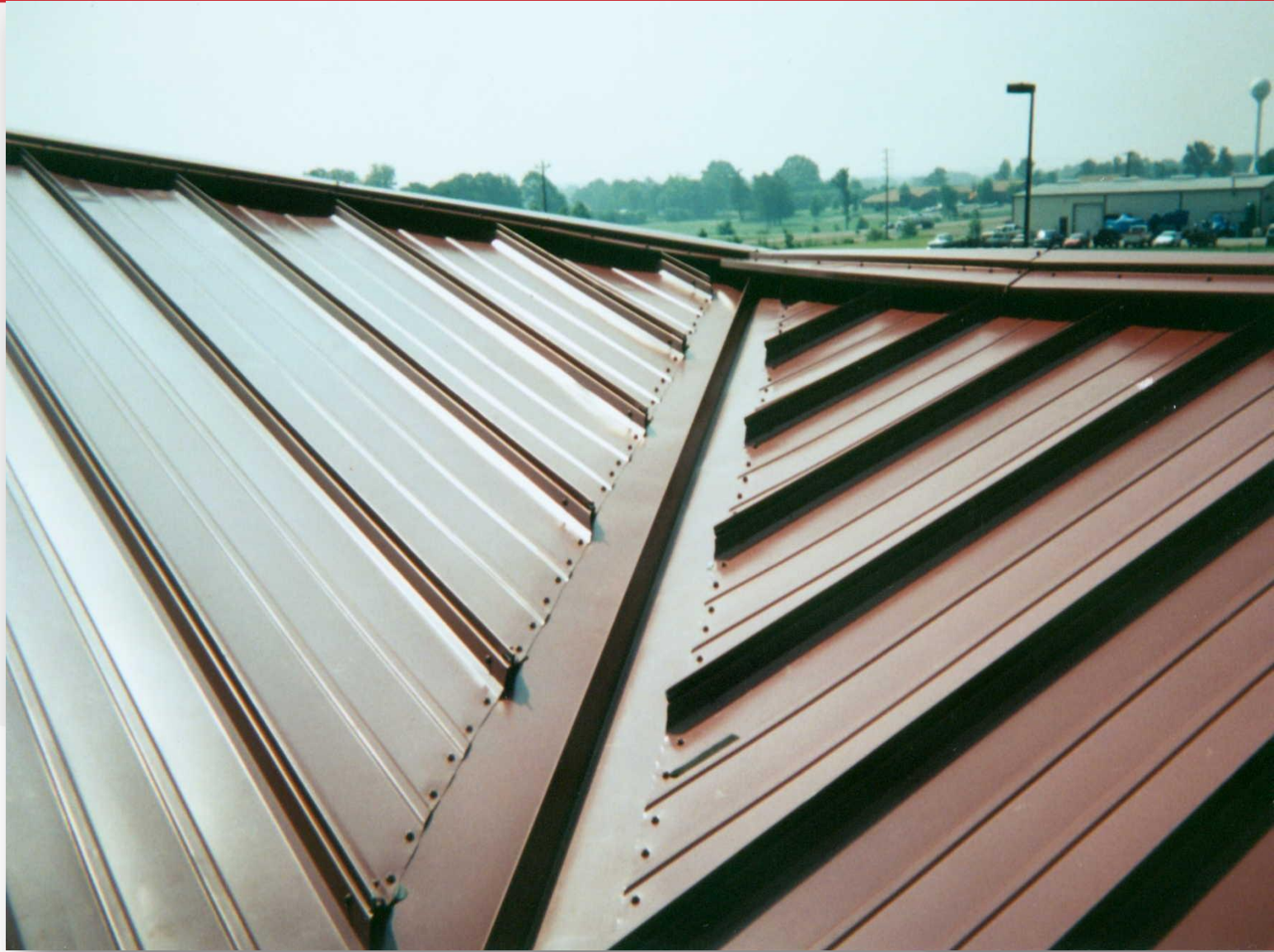
Details Valley

- ❖ Use a vertical leg SSR when possible
- ❖ Use a valley trim that is wide enough to handle the flow of water.
- ❖ At fixed eave valleys, use triple bead tape sealer and place fasteners at a close enough spacing to prevent “fish mouthing”
- ❖ Do not use offset cleat method on roofs with low pitches
- ❖ Seal the ends of the panel seams
- ❖ Never use a starter “J”

Incorrect Bevel Cutting



Correct Bevel Cutting



Vertical Rib Panel Installation



Offset Cleat



Trim Intersections

- ❖ Seal properly between trim pieces
- ❖ Shingle trim where required
- ❖ Make attachments “in the high” when you can

Valley Intersection At Upslope End Of Dormer



Valley Intersection At Upslope End Of Dormer



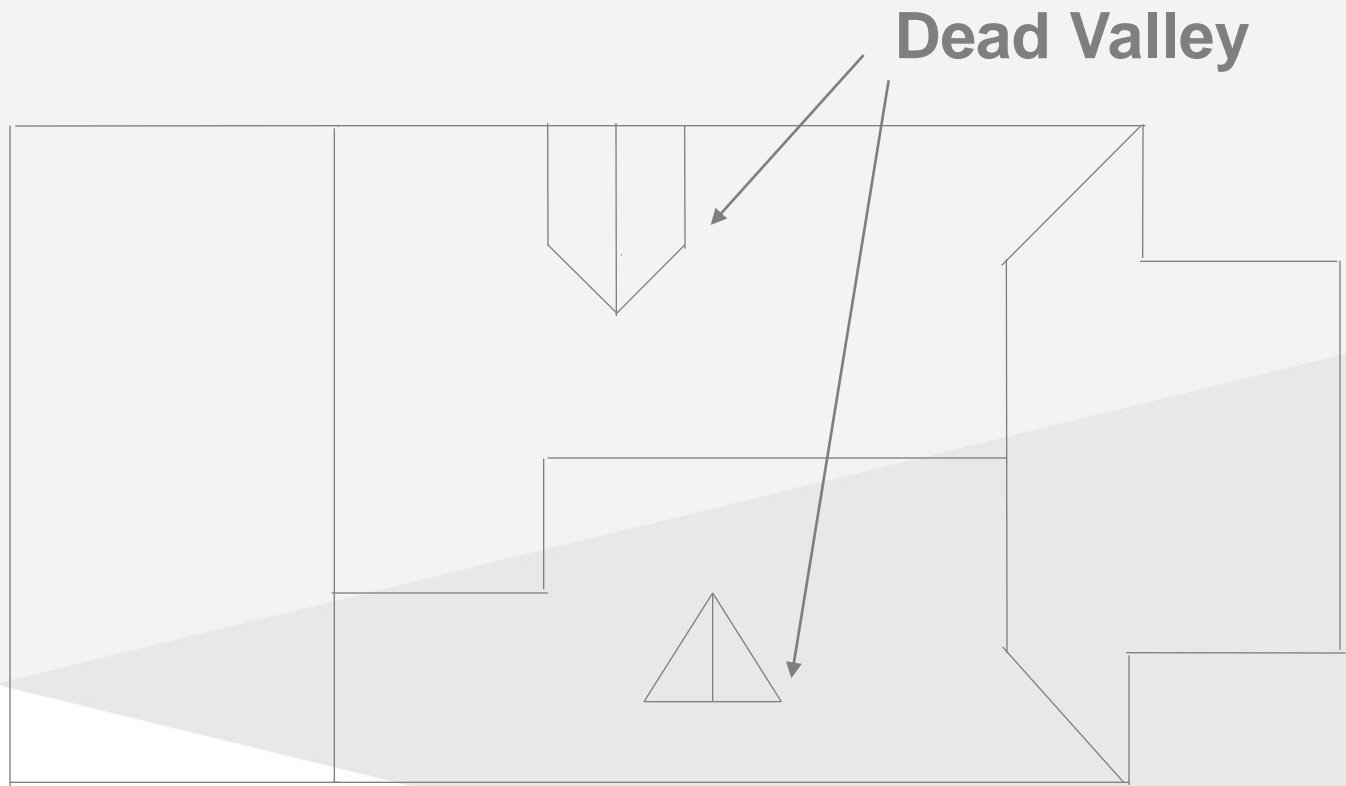
Valley Intersection At Upslope End Of Dormer



Ridge/Hip/Hip Intersection



Plan Review



Details Dead Valley

- ❖ Create an endlap in the roof panel where the valley trim terminates
- ❖ Try to lay out panels so a panel seam does not hit at the valley termination point
- ❖ You may need to press break a special panel

Dead Valley



Dead Valley



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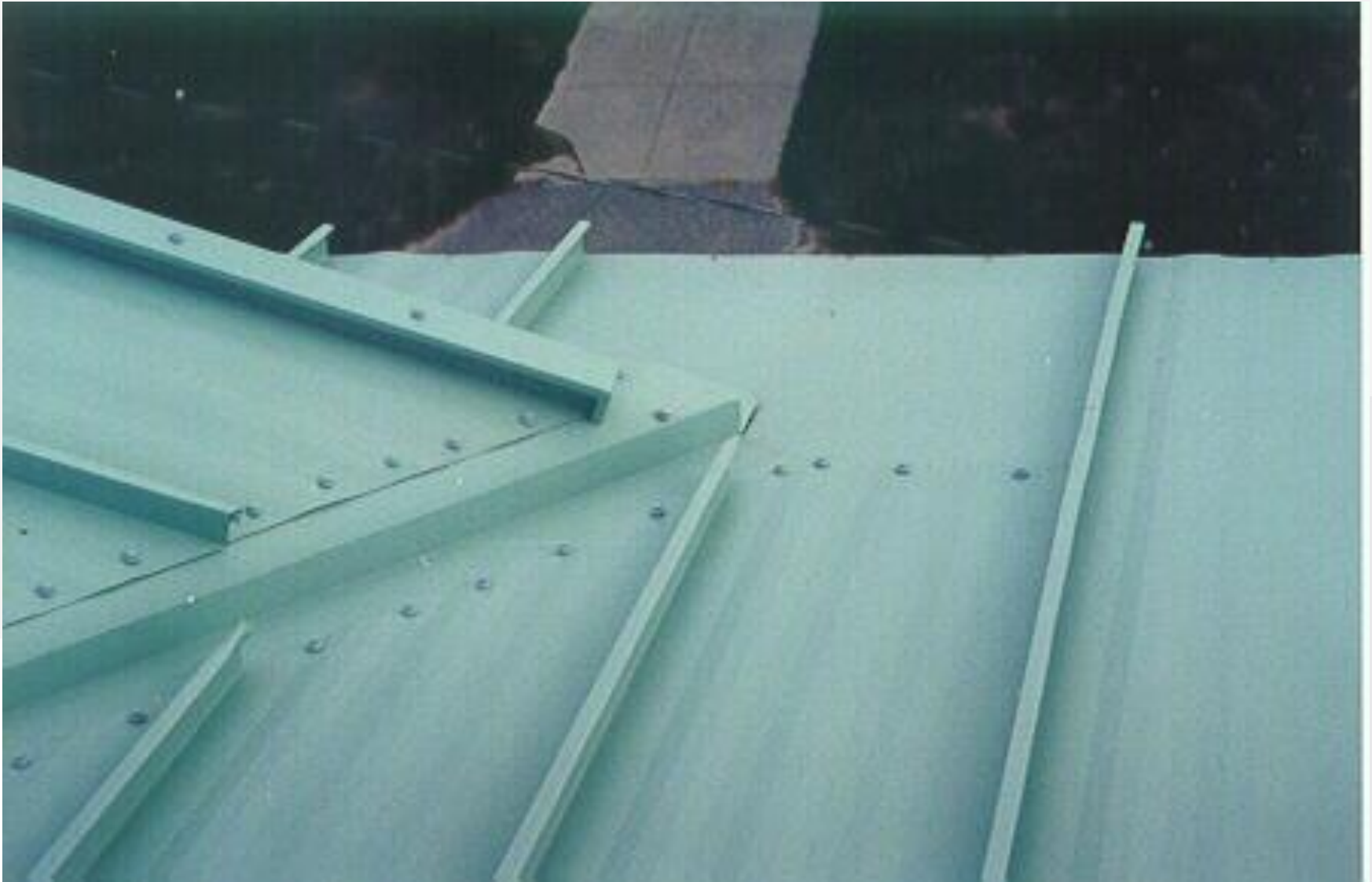
Dead Valley



Dead Valley



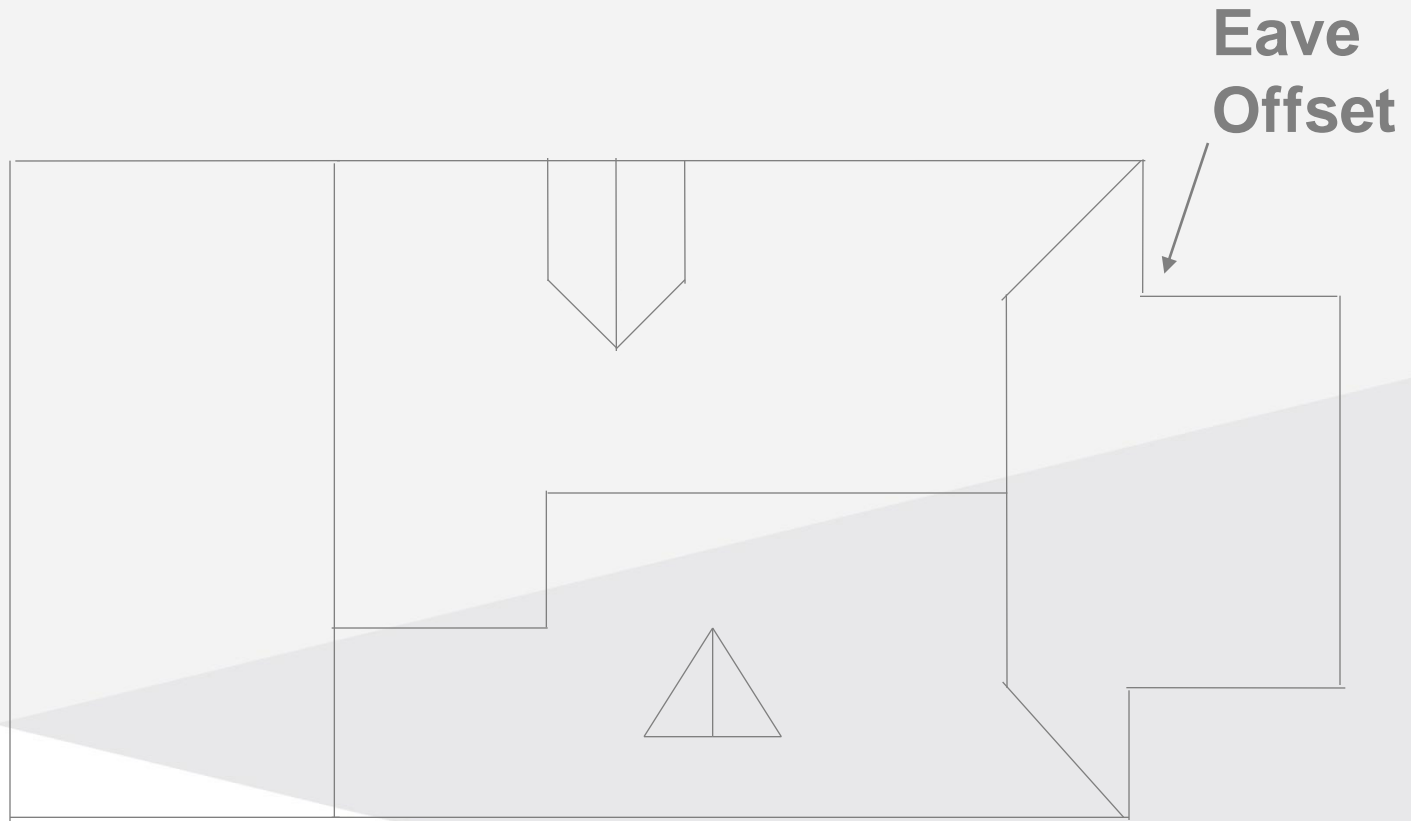
Dead Valley



Dead Valley



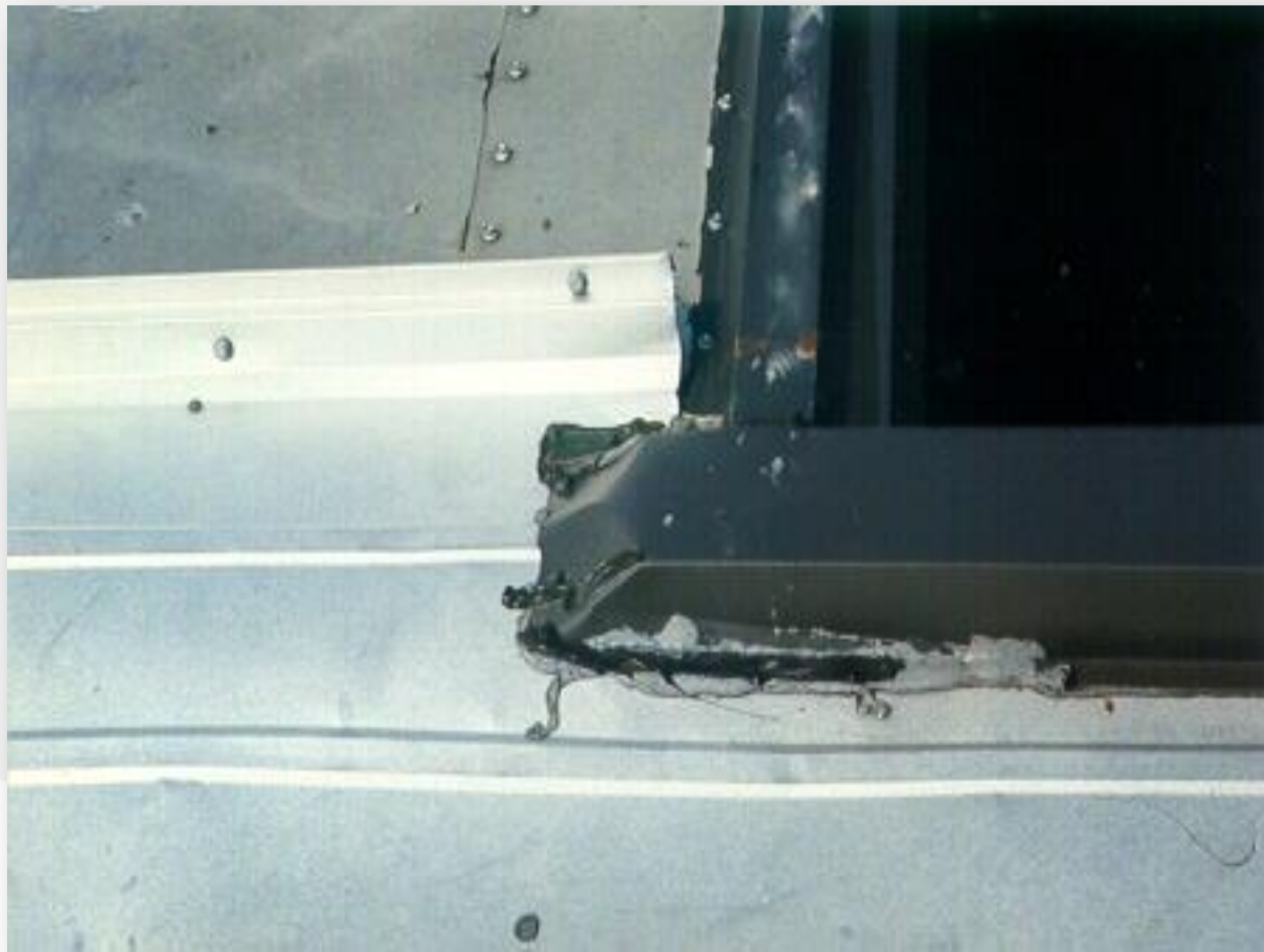
Plan Review



Details Eave Offset

- ❖ On short offsets, consider using gutter in lieu of rake trim
- ❖ On long offsets, install a slip joint to allow for the differential in thermal movement

Eave Offset



Eave Offset



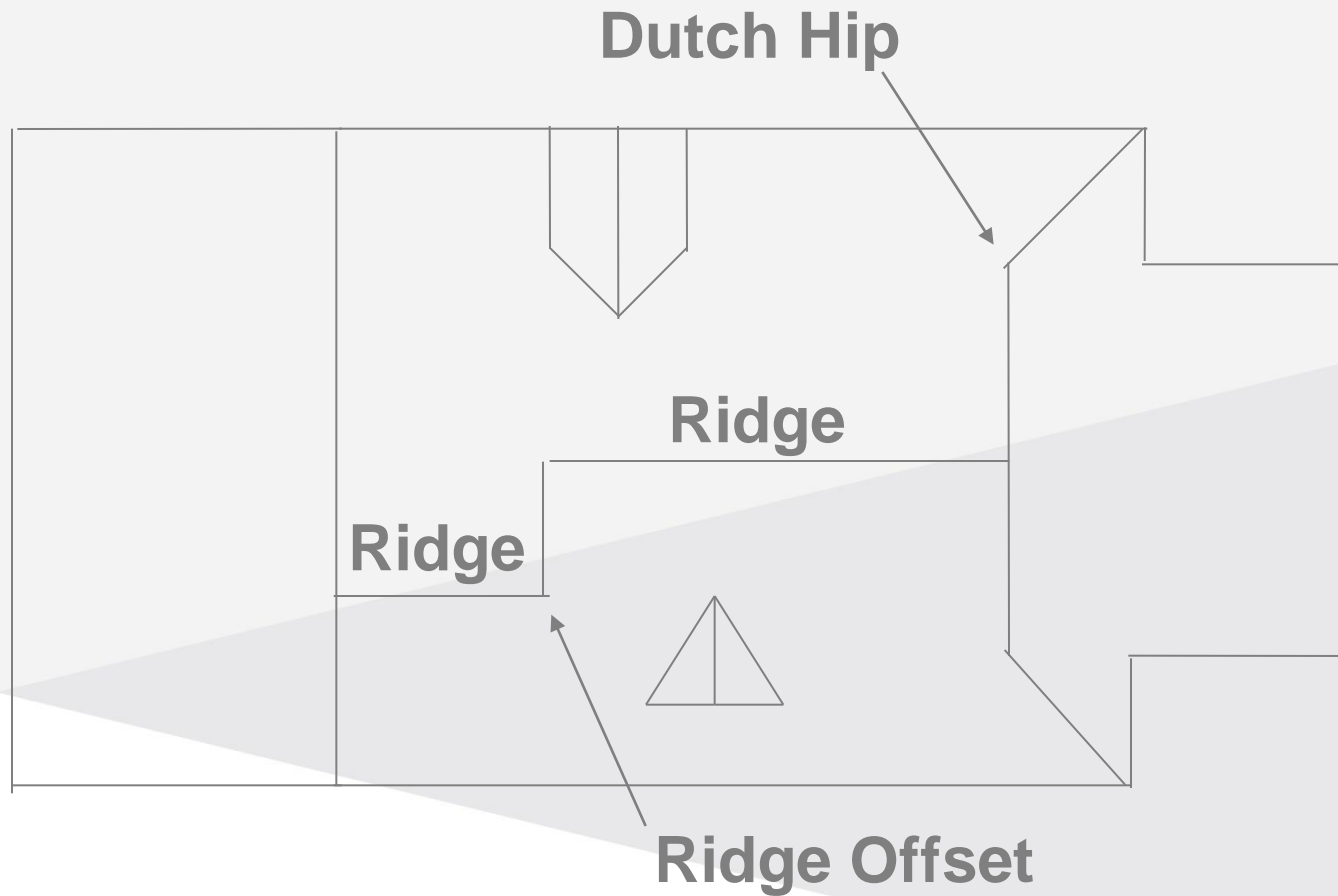
Eave Offset



Eave Offset



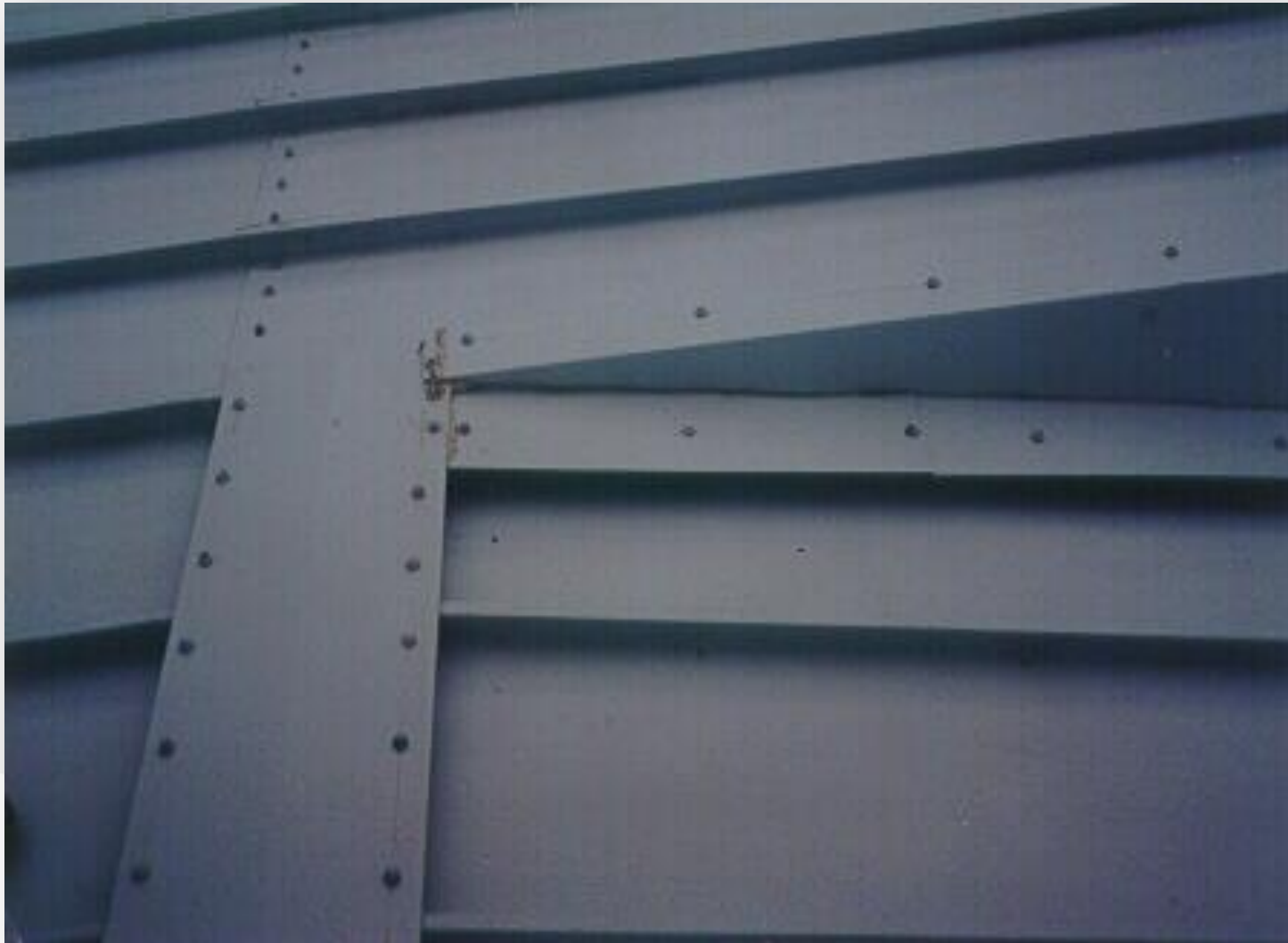
Plan Review



Details Ridge Offset

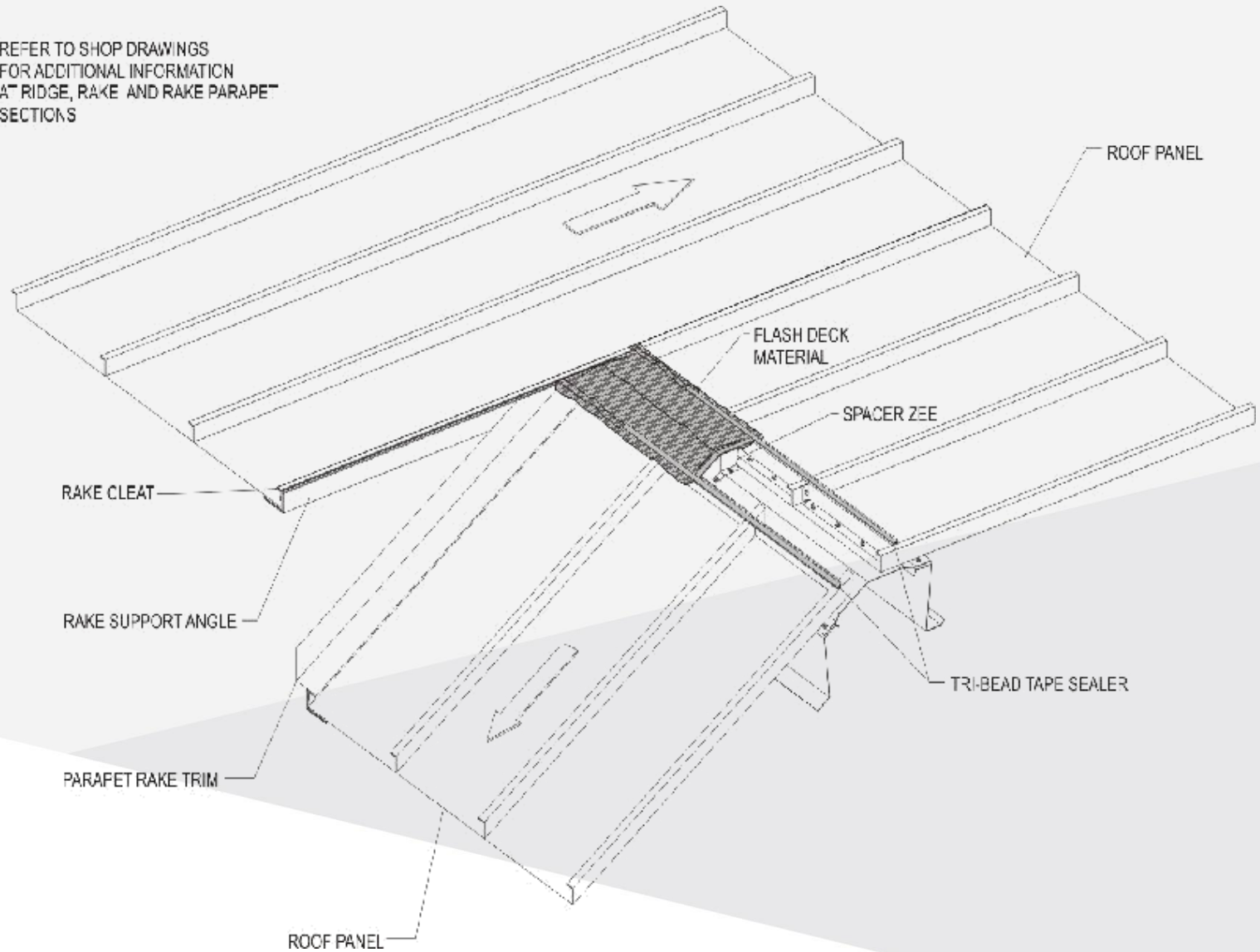
- ❖ Where possible, fix the roof at the ridge and use a simple ridge flash
- ❖ Install an EPDM membrane under the trim intersection at the ridge

Ridge Offset



Ridge Offset

REFER TO SHOP DRAWINGS
FOR ADDITIONAL INFORMATION
AT RIDGE, RAKE AND RAKE PARAPET
SECTIONS



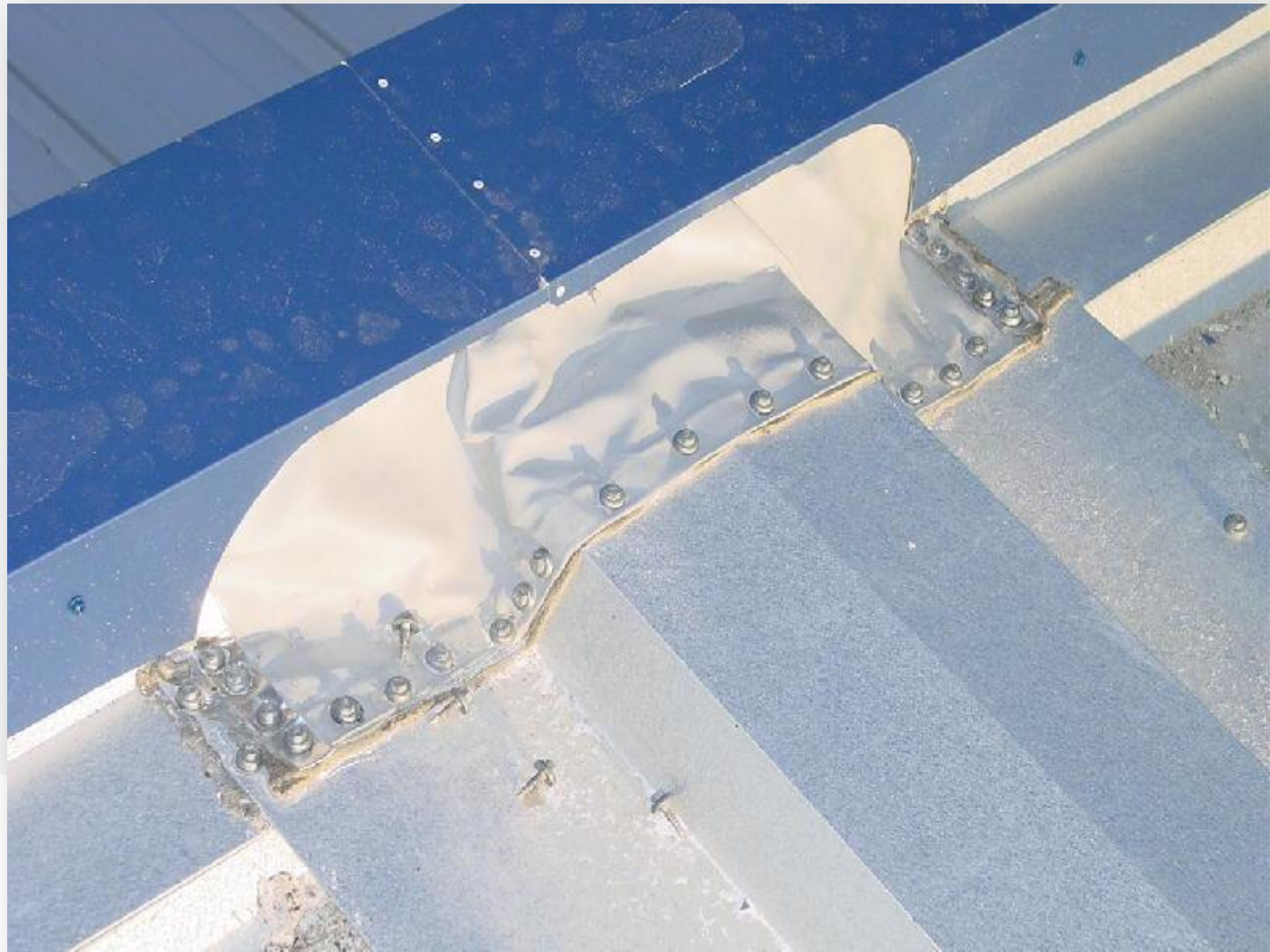
Details Parapet Walls

- ❖ Allow for thermal movement
- ❖ Surface mount counter flashing is the least likely method to stay watertight
- ❖ Build in redundancy at “less than perfect conditions”
- ❖ Use welded aluminum crickets and other appurtances where needed

Ridge/Parapet Intersection



Ridge/Parapet Intersection



High Eave/Parapet Intersection



High Eave/Parapet Intersection



Low Eave/Parapet Intersection



Parapet Offset



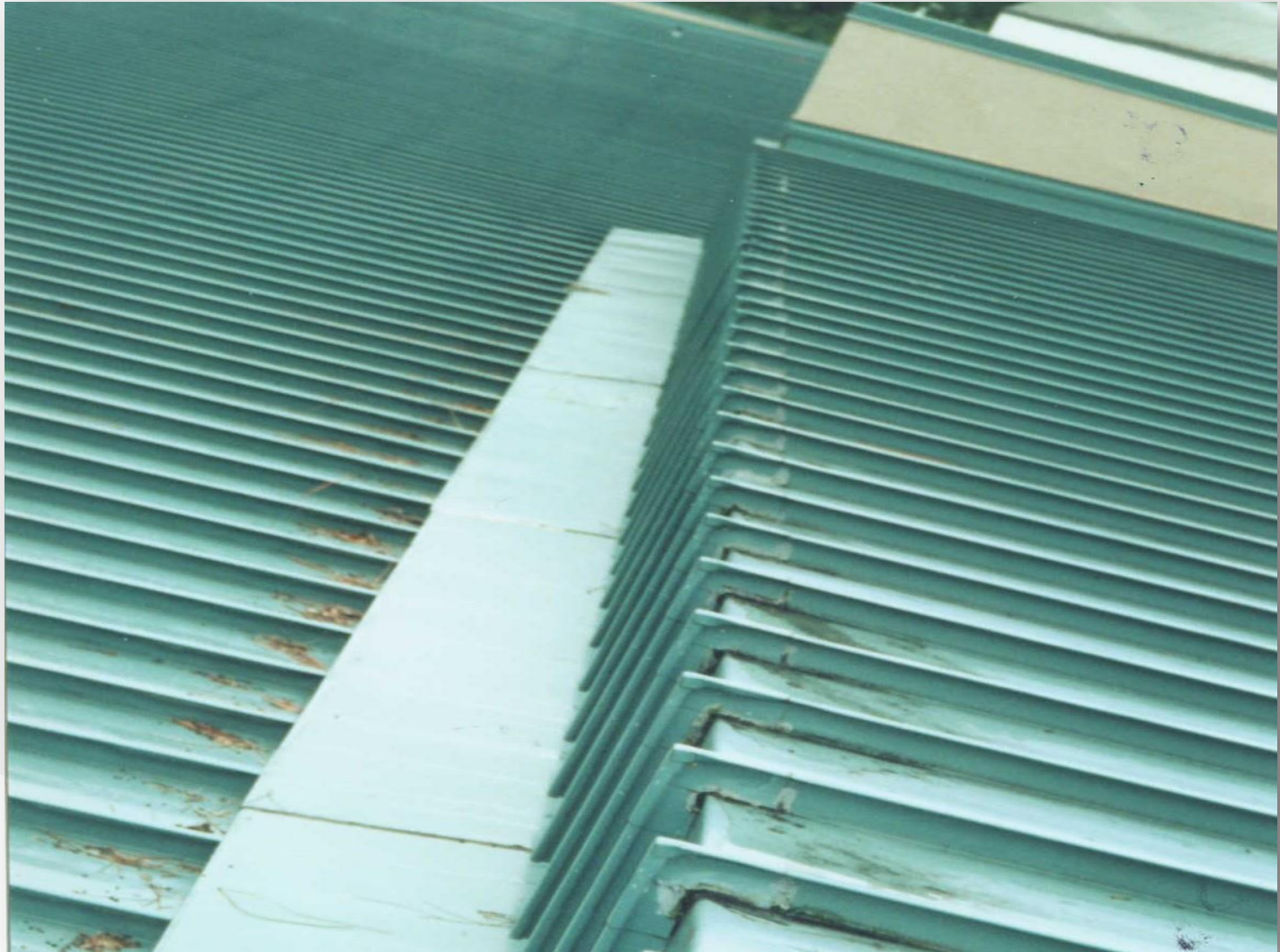
Parapet Offset



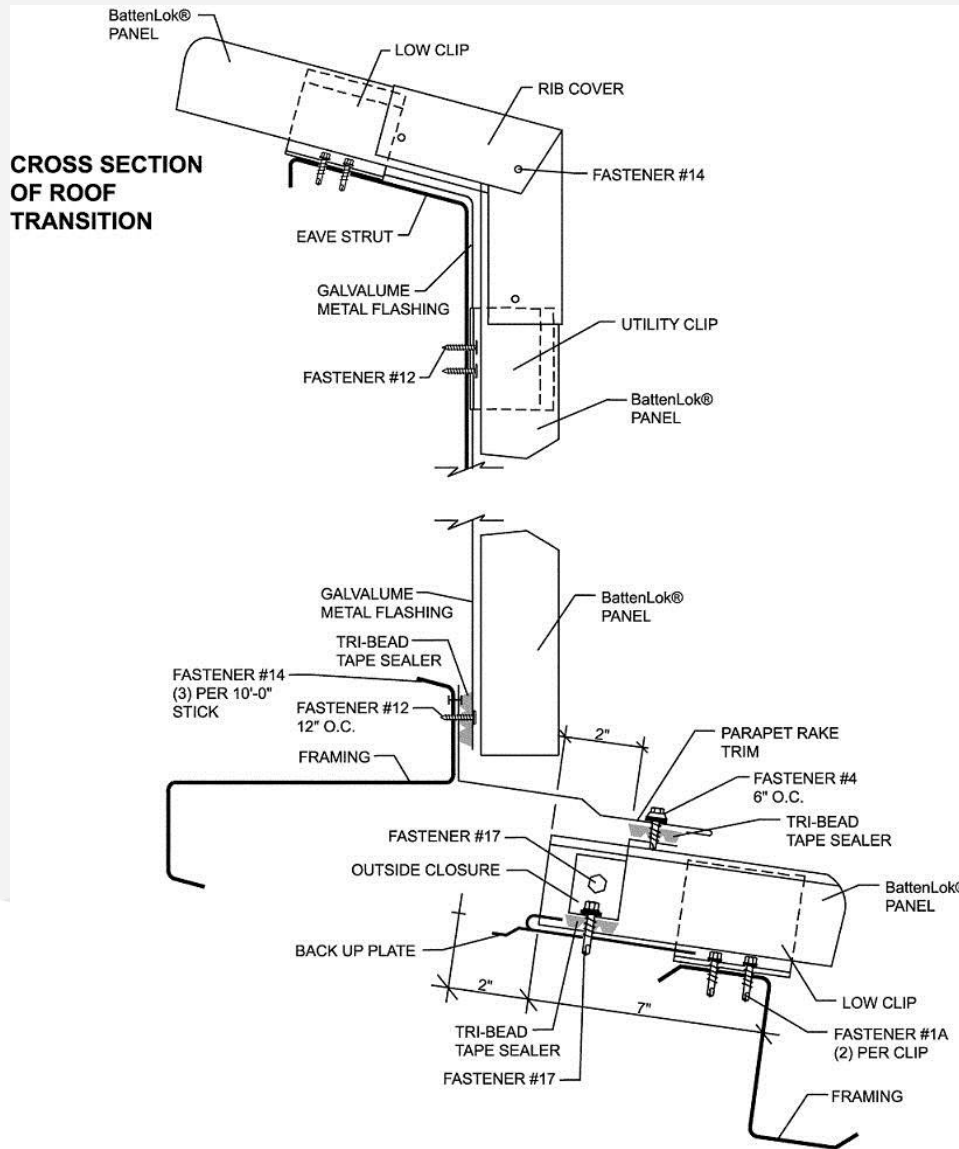
Details Roof Transitions

- ❖ Try to keep transitions outside the building envelope
- ❖ If this is not possible, seal the wall area with metal or a waterproof membrane before installing the roof
- ❖ Use with caution in areas that experience heavy ice and snow

Roof Transition



Roof Transition





Other Areas Of Concern

- ❖ Corrosion
 - Cutting Metal Panels

Corrosion From Improper Cutting Of Panels



Rust Debris From Cutting Panles On Roof

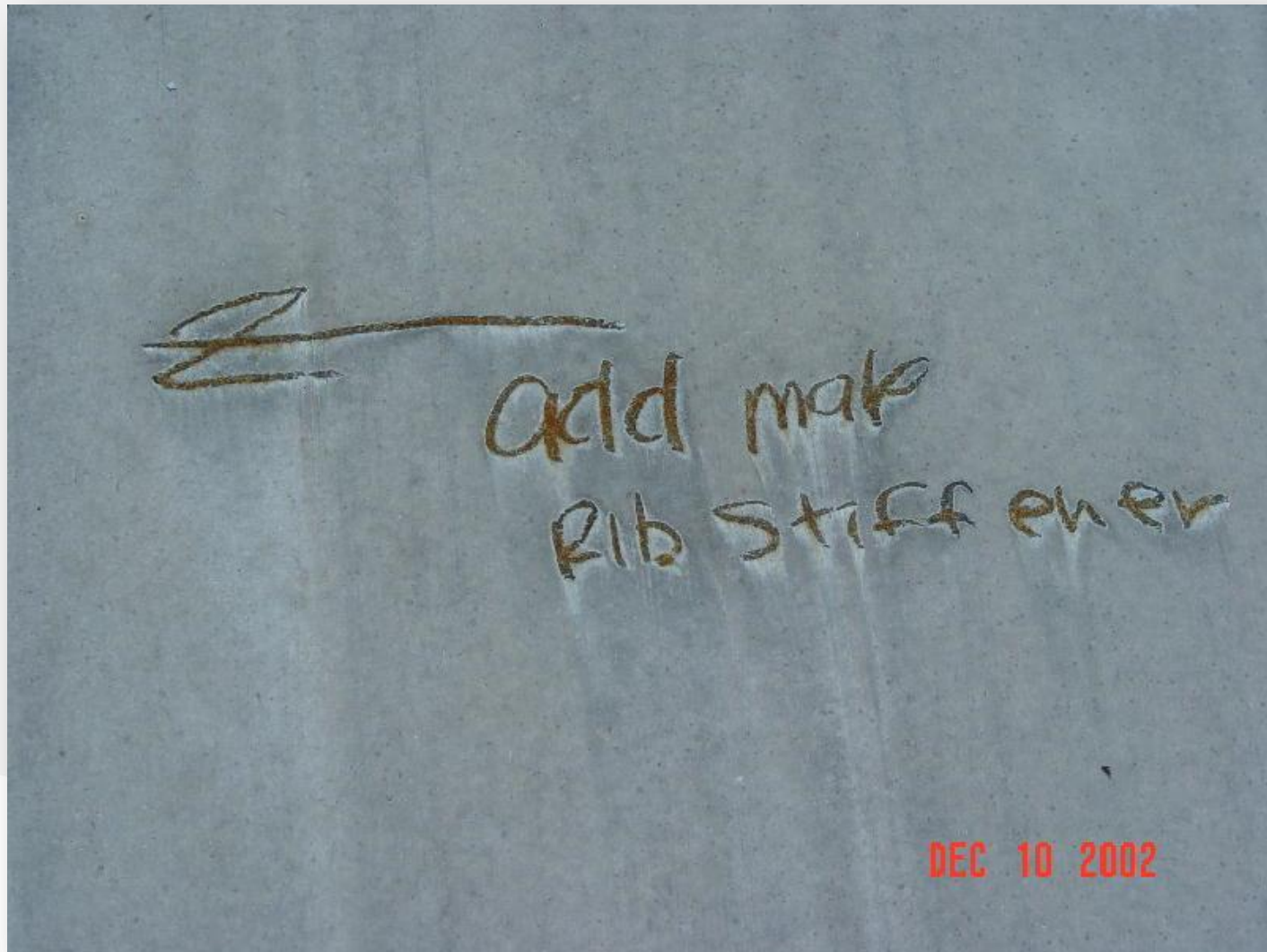


- ❖ Corrosion
 - Cutting Metal Panels
 - Dissimilar Metals

Lead Roof Jack



Graphite On Roof



Copper Lightning Cable



Copper



AC Condensate



AC Condensate



Treated Wood



Treated Wood



S-5! Clamps



Other Areas Of Concern

❖ Corrosion

- Cutting Metal Panels
- Dissimilar Metals

❖ Underlayments

Felt Underlayment



Felt Underlayment



Felt Underlayment



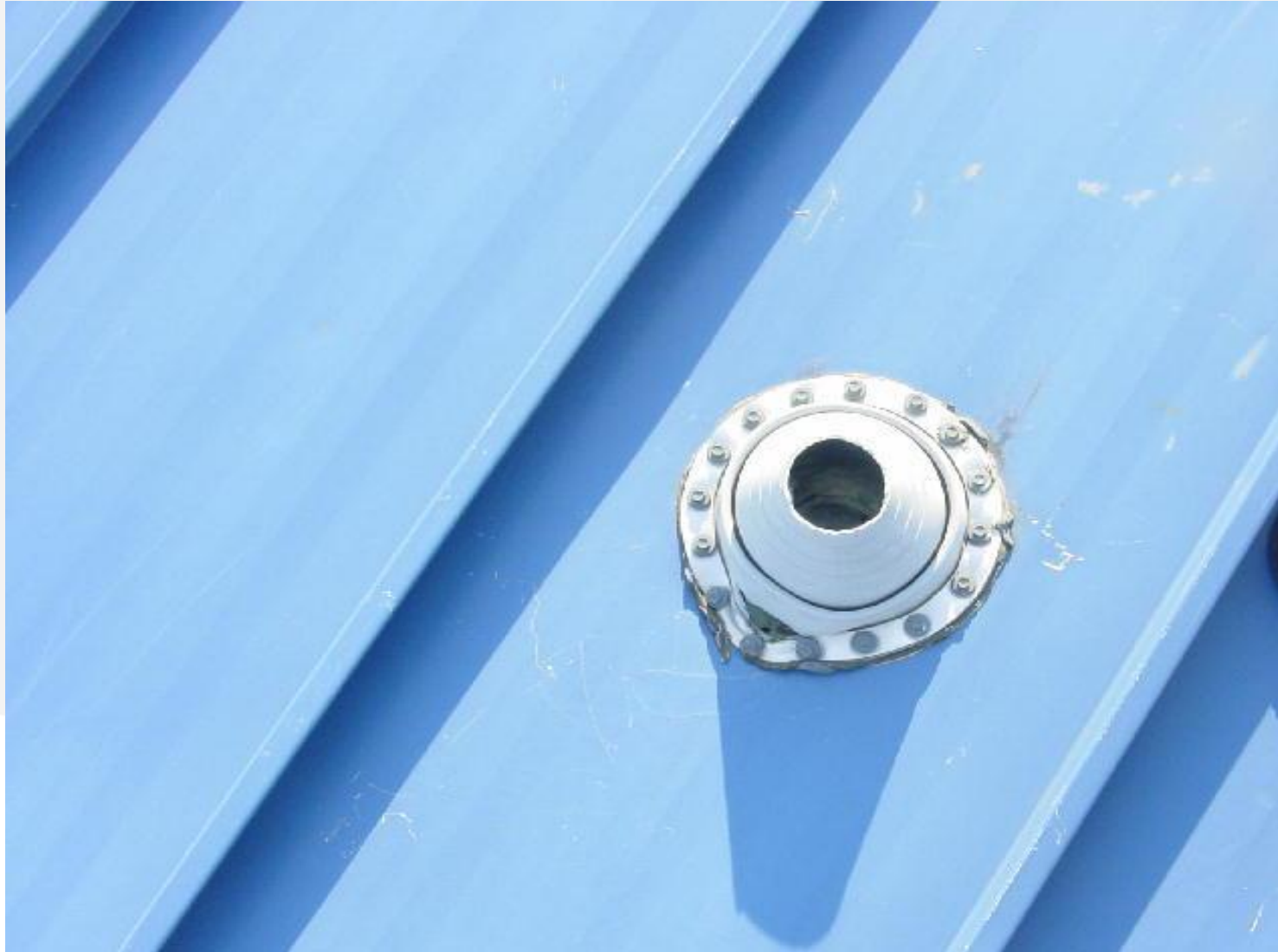
Other Areas Of Concern

- ❖ Corrosion
 - Cutting Metal Panels
 - Dissimilar Metals
 - Improper Repairs
- ❖ Ice And Snow

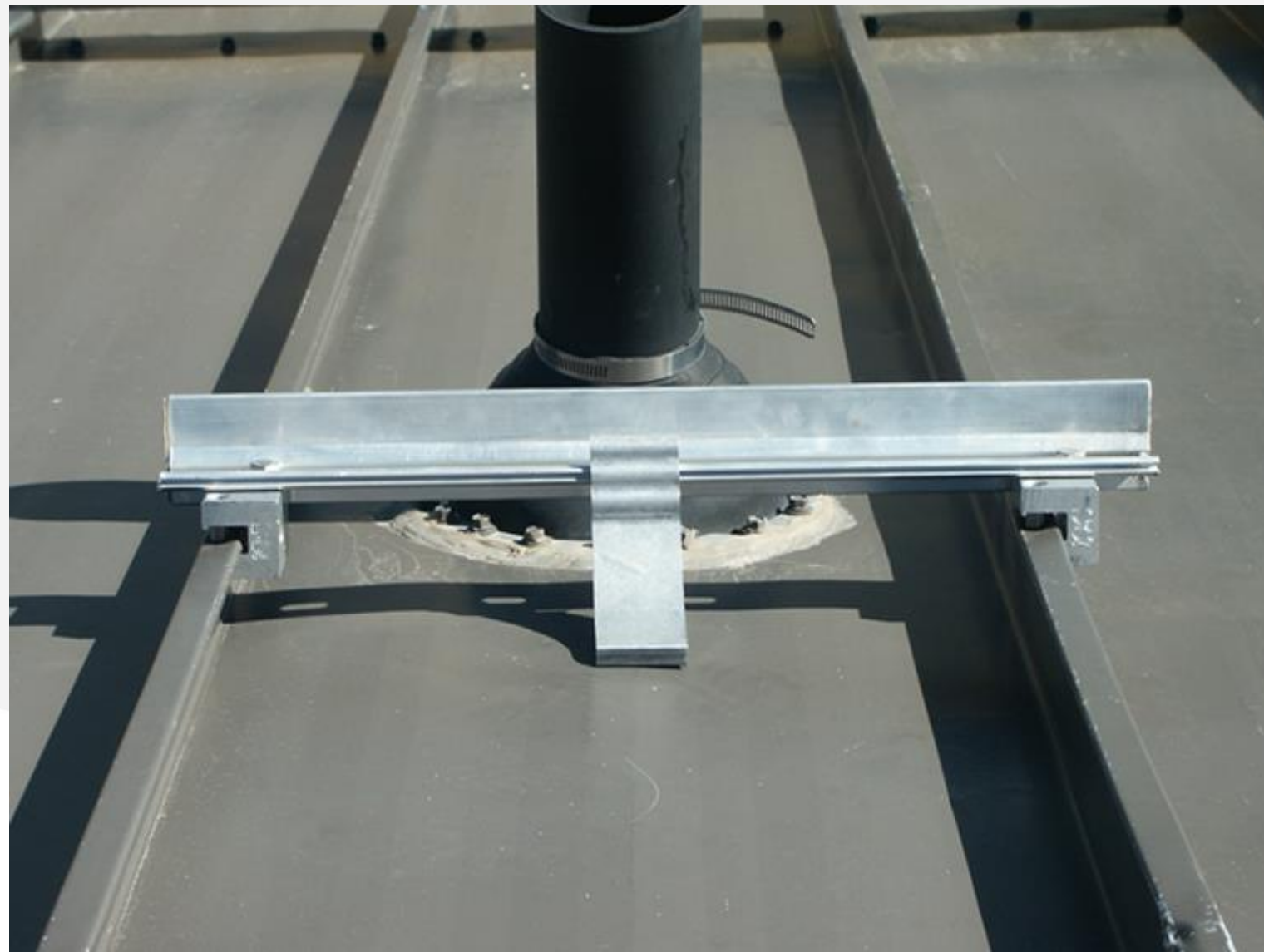
Ice and Snow



Ice and Snow



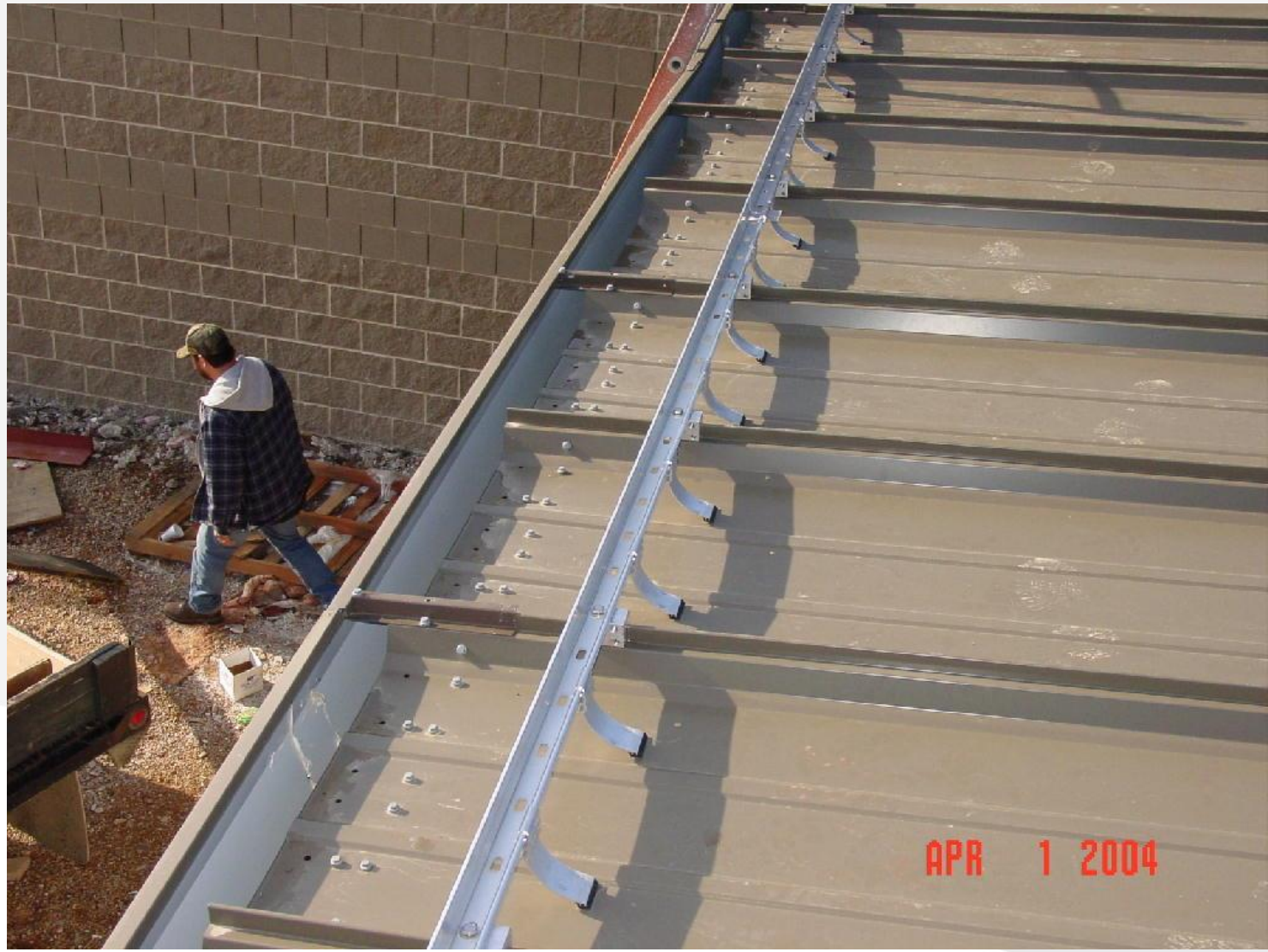
Ice and Snow



Ice and Snow



Ice and Snow



Ice and Snow



Ice and Snow





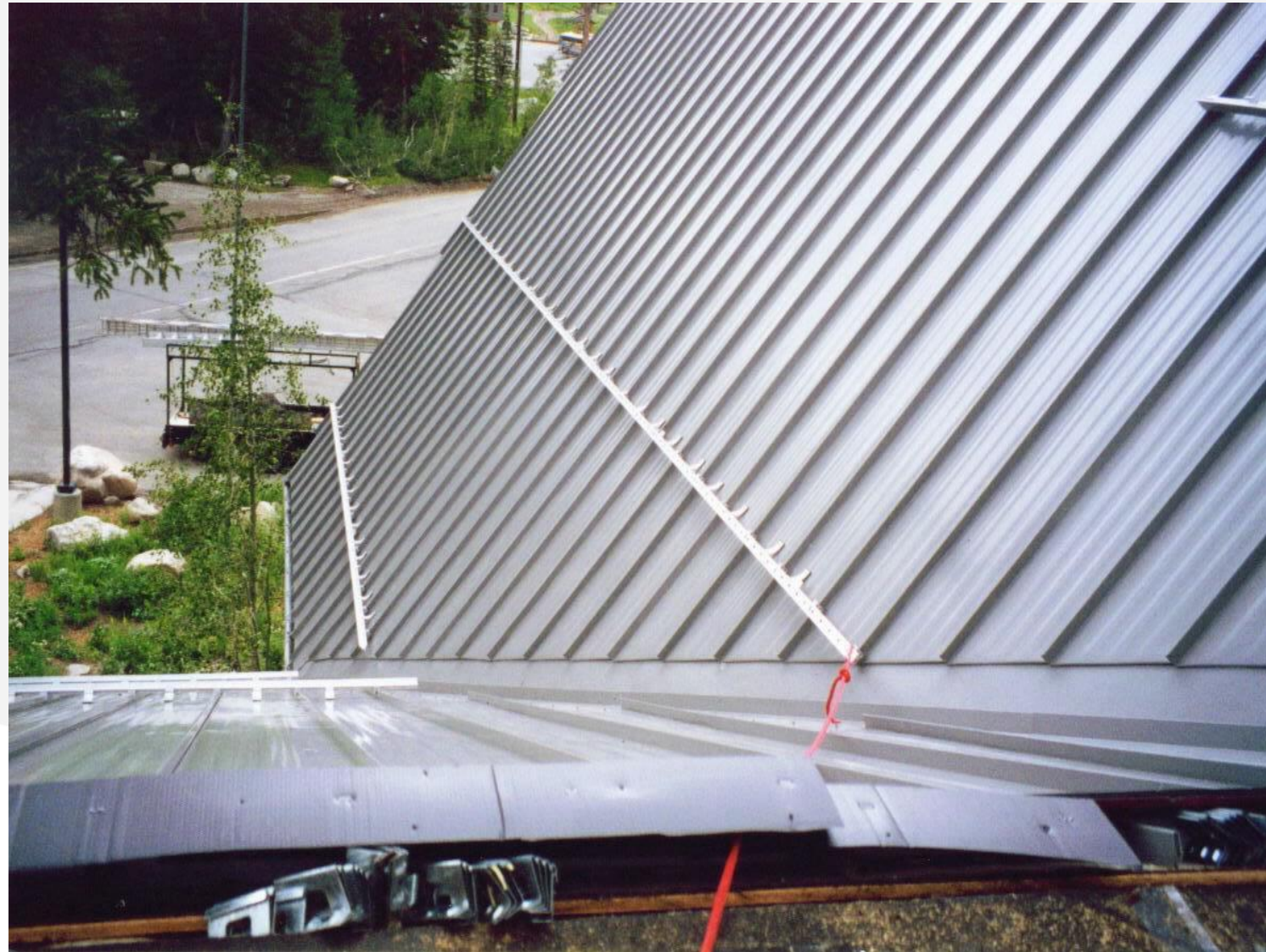
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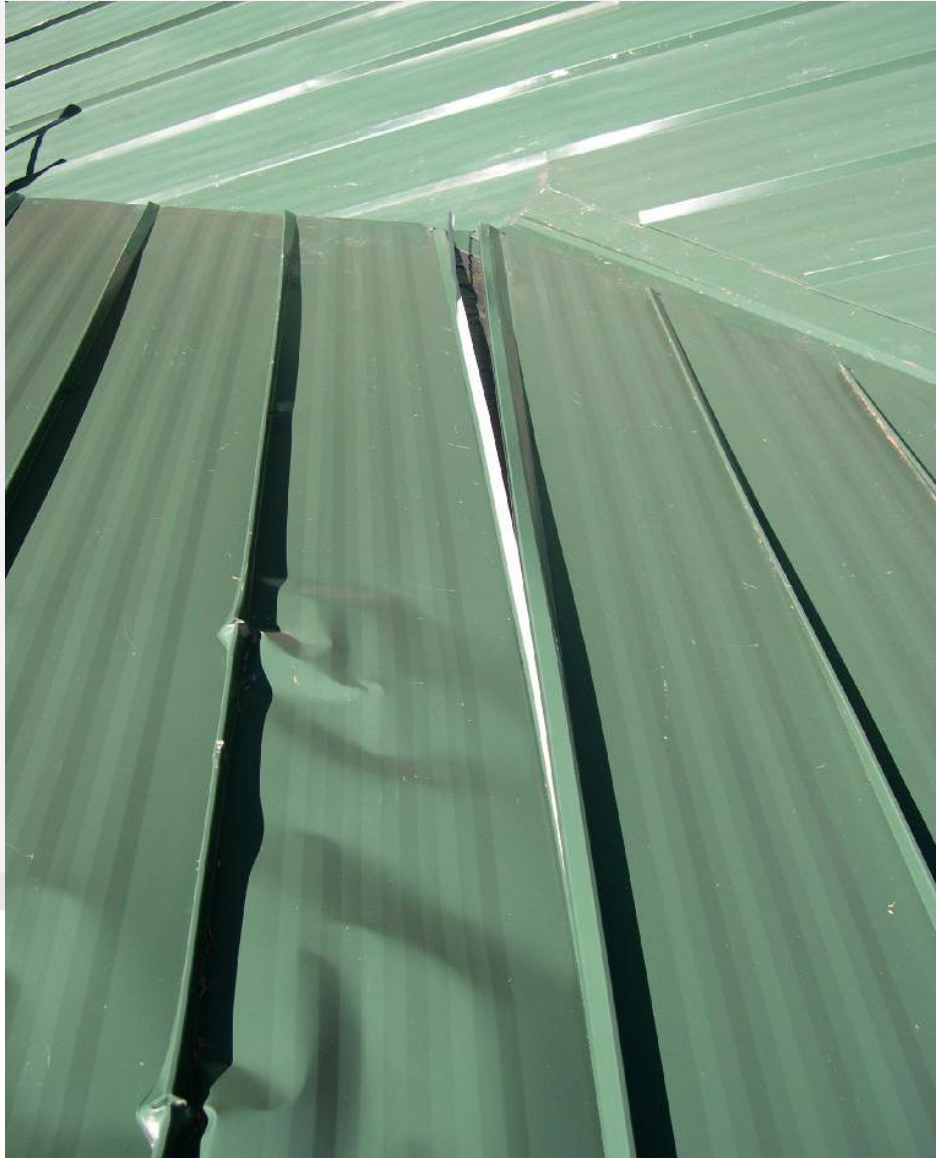
Ice and Snow



Ice and Snow



Ice and Snow



Ice and Snow



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QUESTIONS?

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Other AIA Presentations Available

- ❖ Standing Seam Metal Roof Seminar - 1 Hr
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- ❖ Insulated Metal Panels – 1Hr
- ❖ Retrofit Roof Systems – 1 Hr
- ❖ Retrofit Metal Roof Systems-Ensuring A Successful Project – 3 Hr
- ❖ A Review Of Metal Panel Warranties – 1 Hr