

# **Insulation Attachment, Bitumen, BUR, Flashings**

*Rooftop Quality Assurance*

AIA  
Continuing  
Education  
Provider

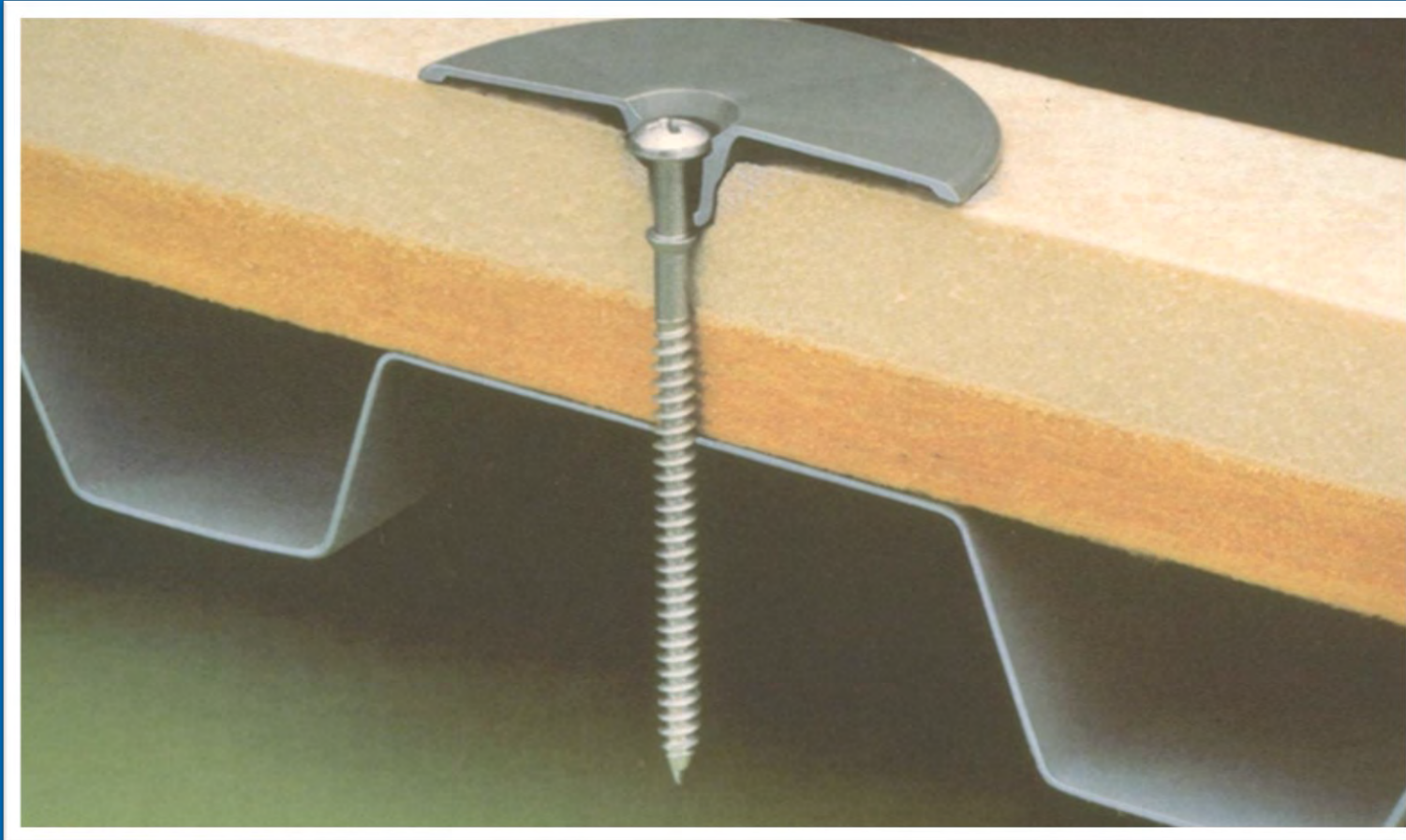
**8 IIBEC Continuing Educational Hours  
8 AIA Learning Units and HSW Credit**

**Version 09.19.05**

# Insulation Attachment

- Mechanical fasteners
- Asphalt
- Adhesives

# Mechanical Attachment



# Observer Items- Mechanical Attachment

## Fastener placement

- Fastener placement as well as type and number determine uplift resistance
- Make sure base layer thickness has not changed
- Fasteners must engage top flange (this requirement is waived for recover roofing by FM)

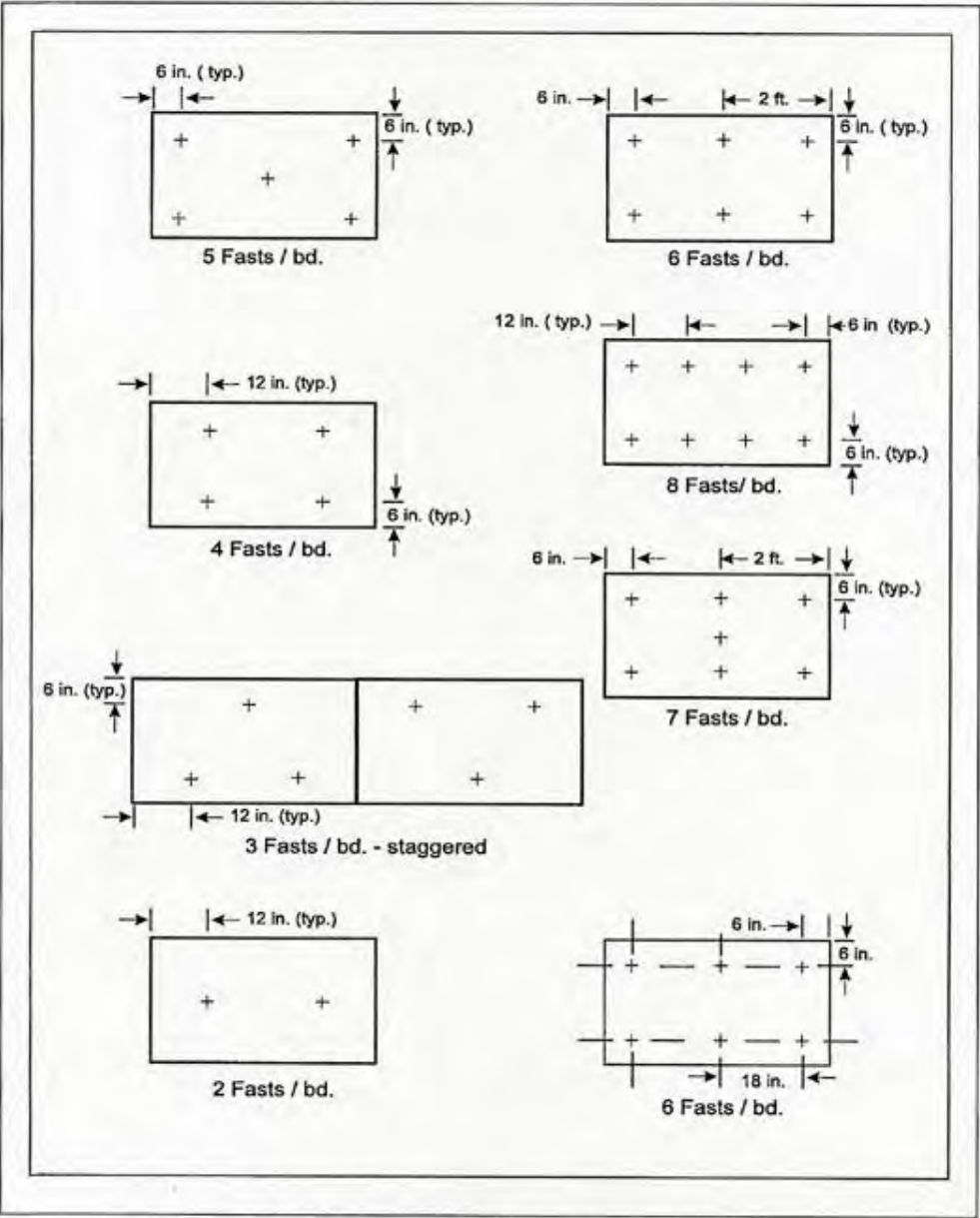


Fig. 3. Fastener placement 2 x 4 ft (0.6 x 1.2 m) boards.

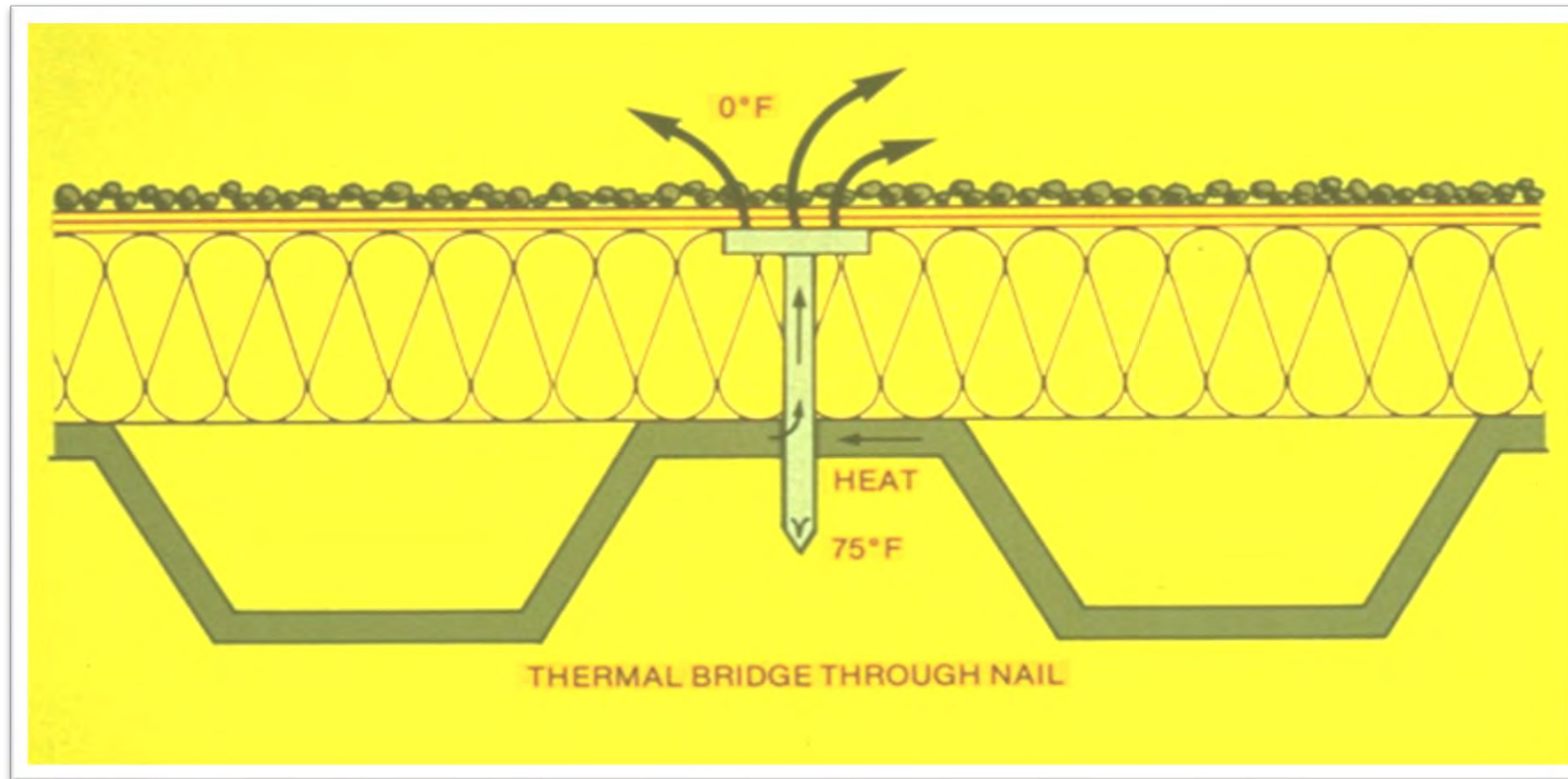
## **Observer Items**

### **Insulation Screws and Plates**

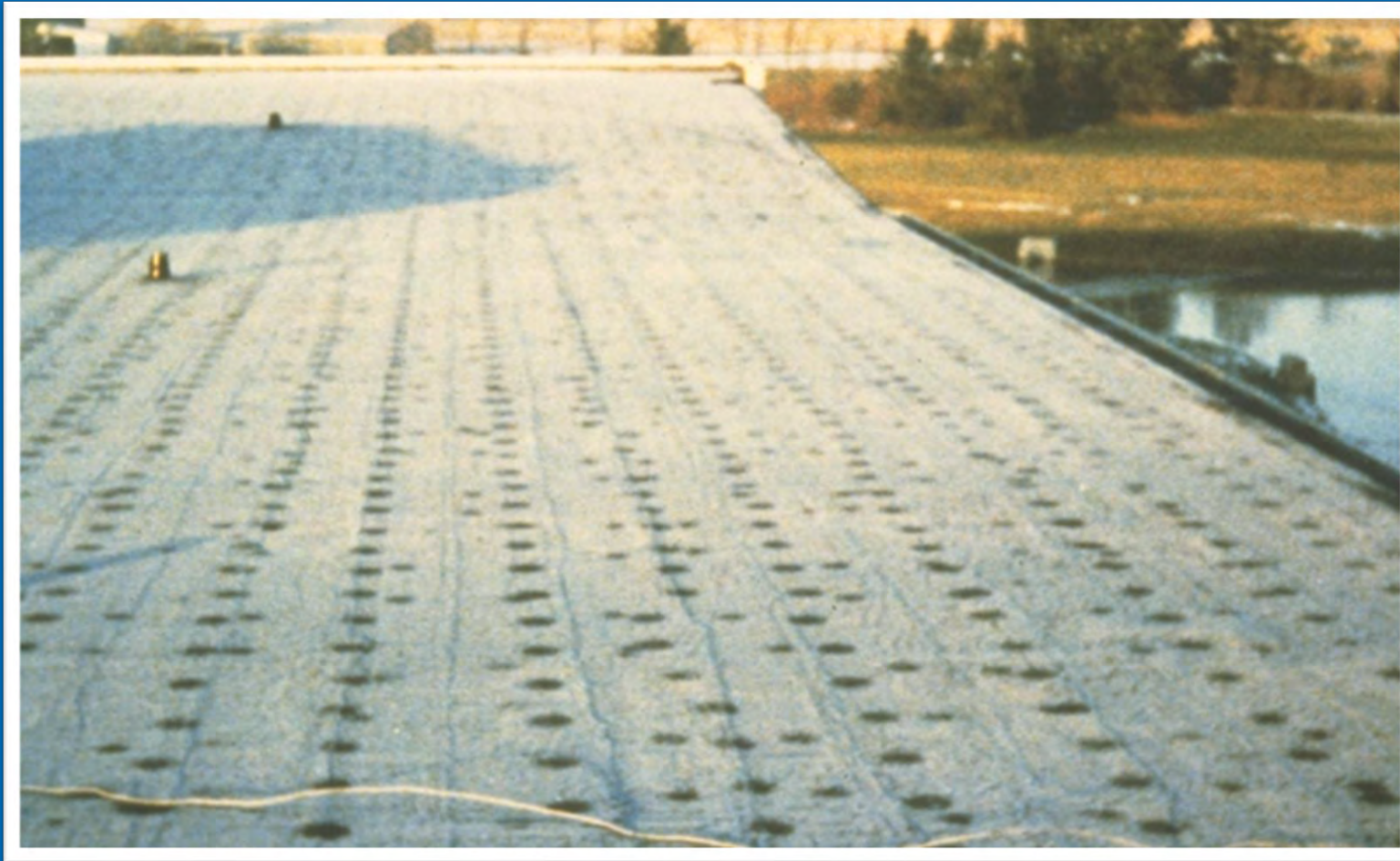
- Correct Manufacturer to achieve wind rating
- Should be driven with clutch controlled driver – make sure screws are not over or under driven



# Single Layer Attachment



# Heat Loss through Fasteners





## Observer Items Cover Board

- Correct type, thickness
- Observe staggered joints, both directions

# Asphalt Attachment



## **Observer Items Asphalt Attachment**

- Correct type of bitumen, Type III or IV
- Place in hot bitumen
- Walk in and walk in again
- 4' x 4' maximum size limitations with many insulations

# Adhesive Attachment





# Observer Items Adhesive Attachment

- Size of beads
- Bead spacing
- Lineal feet of bead per board
- Manufacturer's warranty requirements
- 4' x 4' maximum board size limitations with many insulations





# Membrane

- Built-up membrane (BUR)
- Single-ply
- Modified bitumen
- Metal roofing
- Polyurethane foam (PUF)



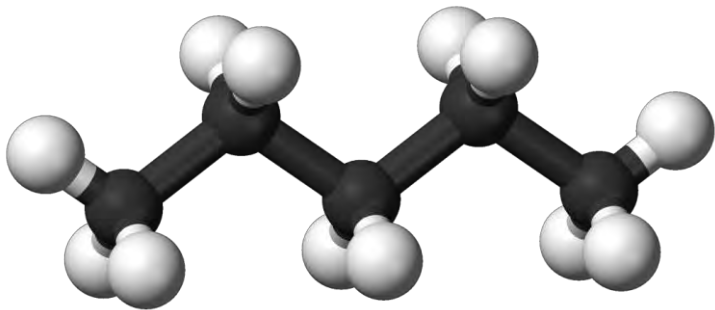
# Built-Up Membrane

- Bitumen
- Roofing felts or reinforcements
- Cold-applied BUR systems

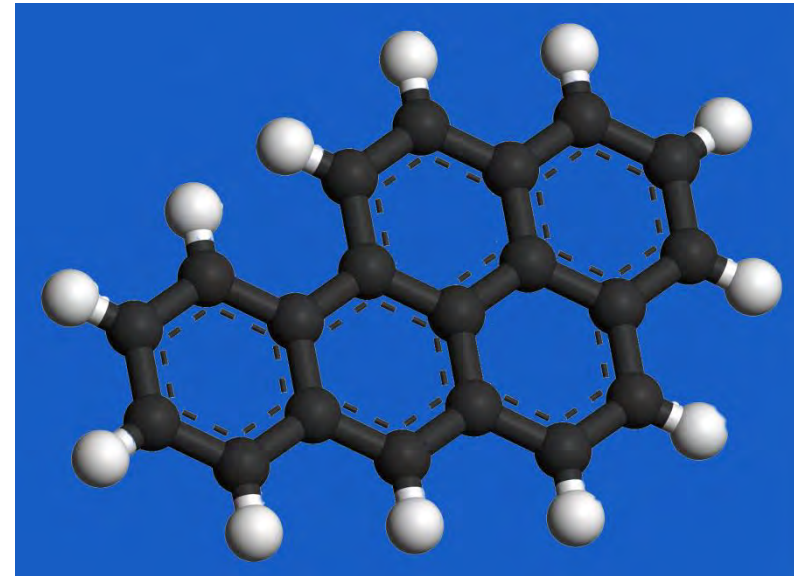
# Bitumen

- Asphalt
- Coal tar
- Rubberized (modified) asphalt
  - APP
  - SBS
  - SEBS
- Cold applied asphalt

# Bitumens



Asphalt



Coal Tar

# Identifying Asphalt versus Coal Tar Pitch

- Solvent test – mineral spirits
- Asphalt floats in saltwater
- Smell while burning or when fresh





# Asphalt Checks

- Proper type, slope requirements
- EVT temperature
- Handling characteristics

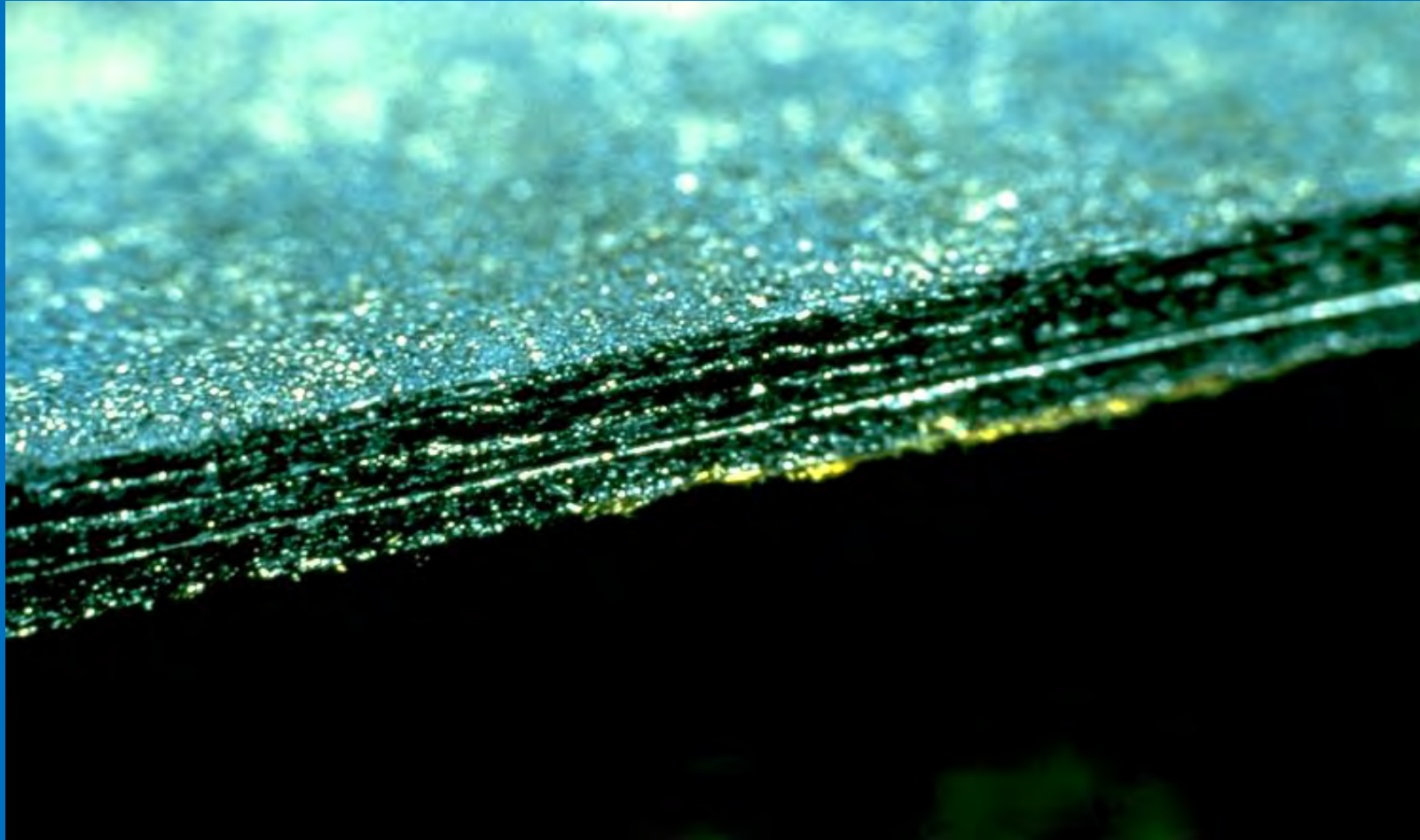
# EVT

- EVT application of +/- 25°F (13.9 °C), batch specific
- Provides uniform coverage and adhesion
- Do Not Exceed Flash Point
- Do not hold at 500°F (260°C) for more than 4 hours
- ASTM D312 – Standard specification for Asphalt used in Roofing

# Roofing Felts

- Asphalt saturated organic felt
- Coal tar saturated organic felt
- Asphalt impregnated glass felt
- Coal tar-impregnated glass felt
- Nonwoven Polyester felt

# Multiple Plies



# **Observer Items**

## **Bitumen Displacement**

Caused by displacing bitumen between plies

- Traffic on membrane while bitumen is hot
- Setting hot bucket on BUR

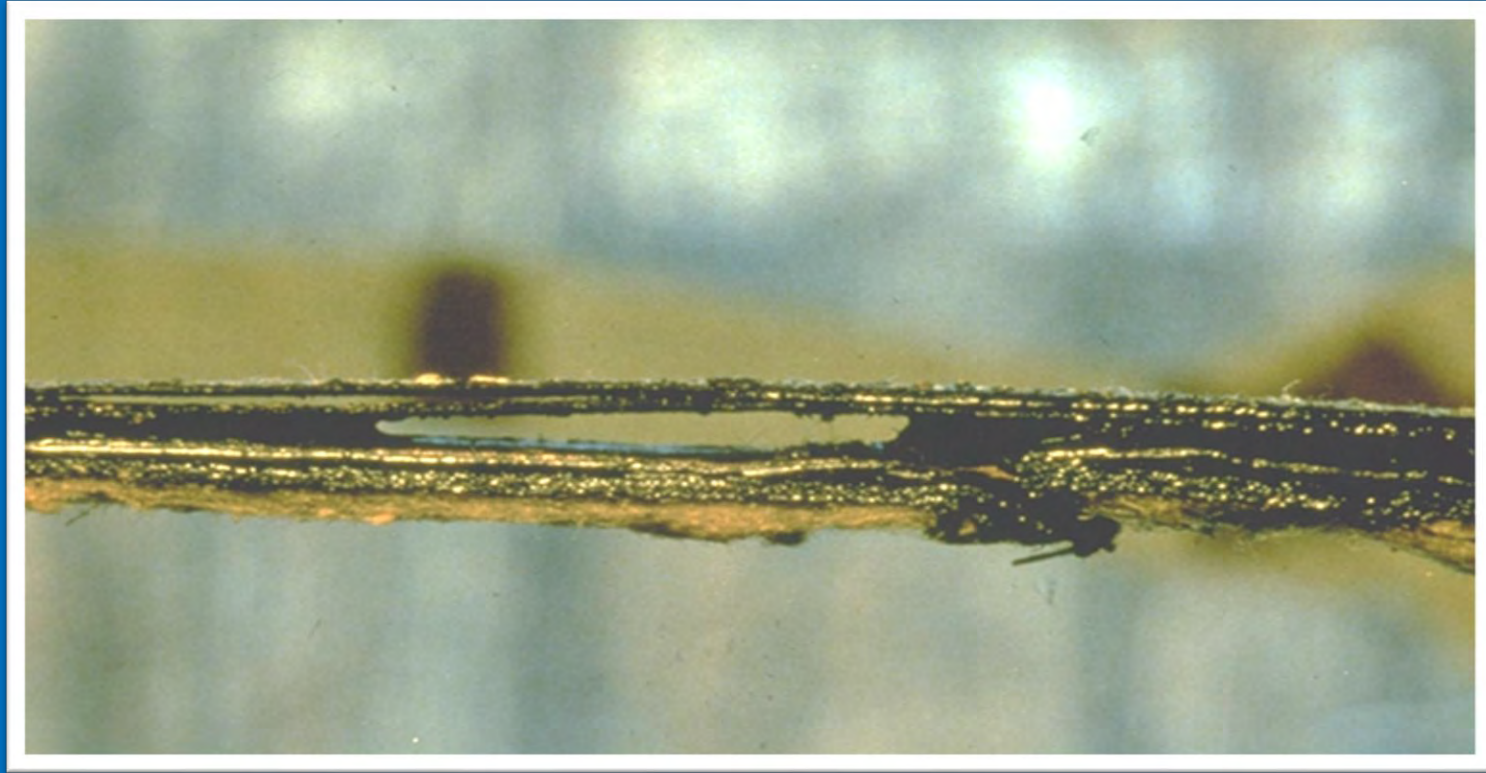
Most prevalent with glass felts because of stiffness



# Bitumen Displacement



# Bitumen Displacement Results





# Stay Off the Felts



# Mechanical Installation





# Assure Adhesion/Embedment



# Assure Adhesion/Embedment





# BUR Membrane

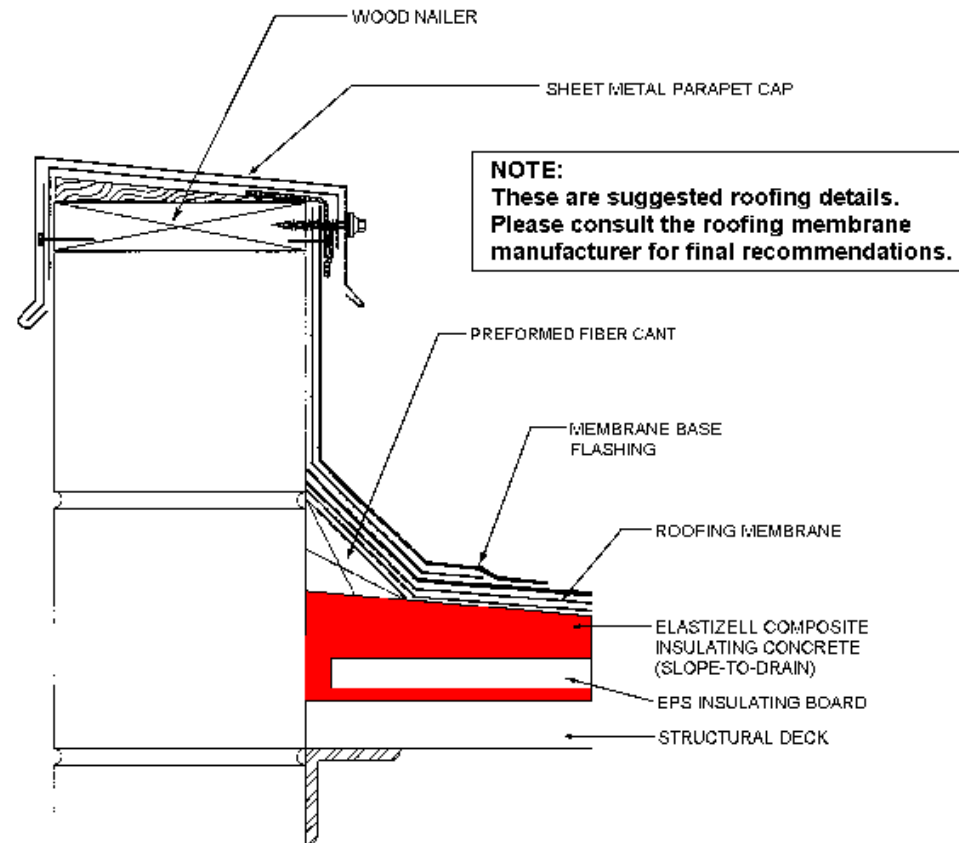


# Flashing

- Membrane baseflashing
- Metal flashing / Counterflashing
- Flashing details are integral
- Flashing materials must be
  - Flexible
  - Compatible
  - Resistant to traffic and natural damage
  - Durable and weather resistant

# Base Flashing

Metal Parapet Cap (Coping and Base Flashing)



# Base Sheet Flashing

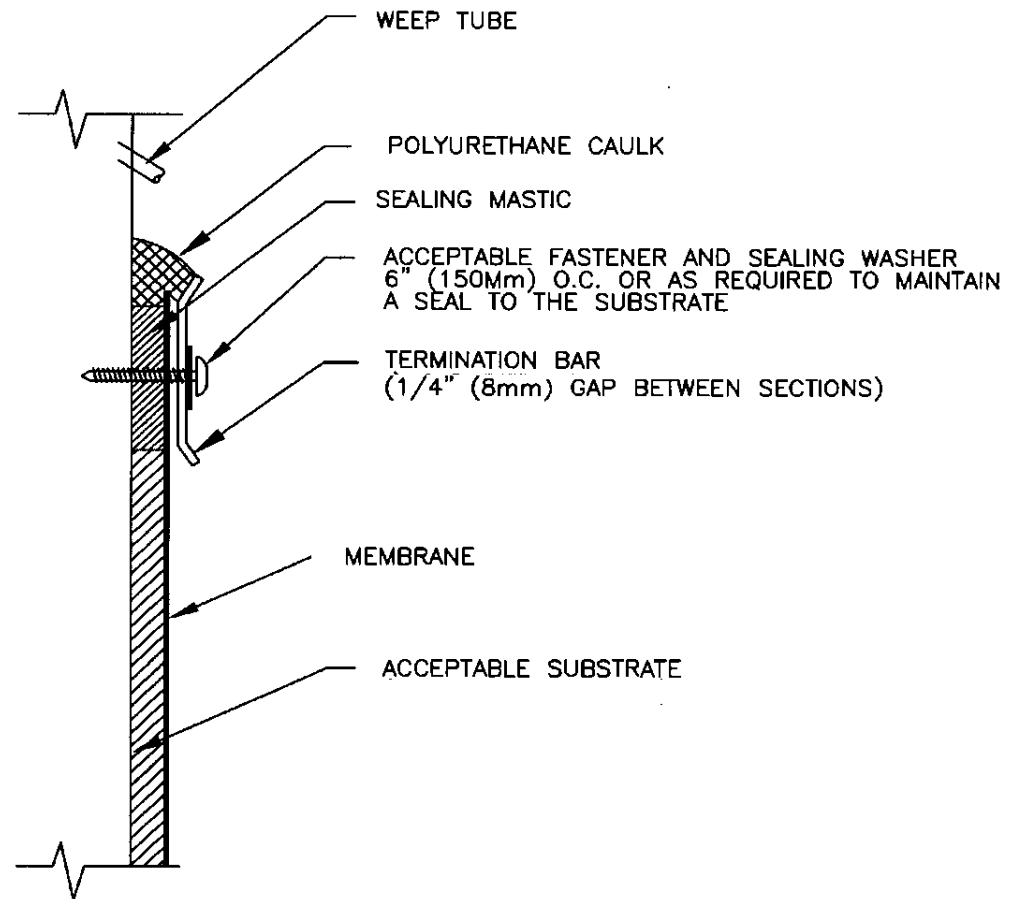




# Cap Sheet Flashing



# Termination Bar

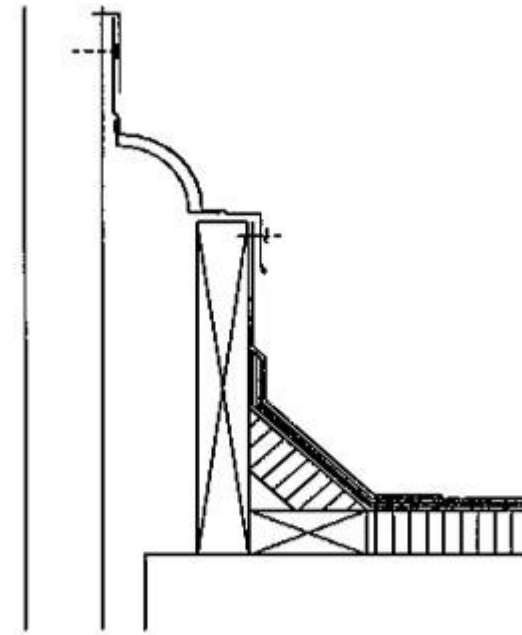
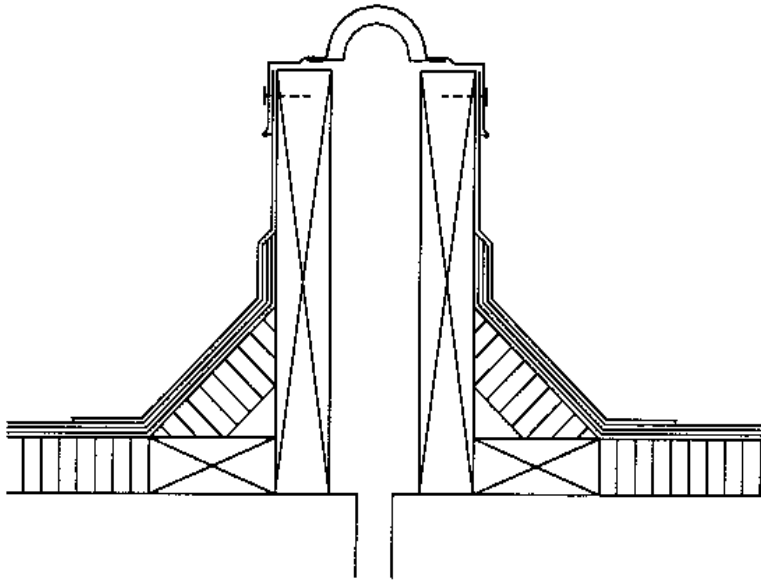




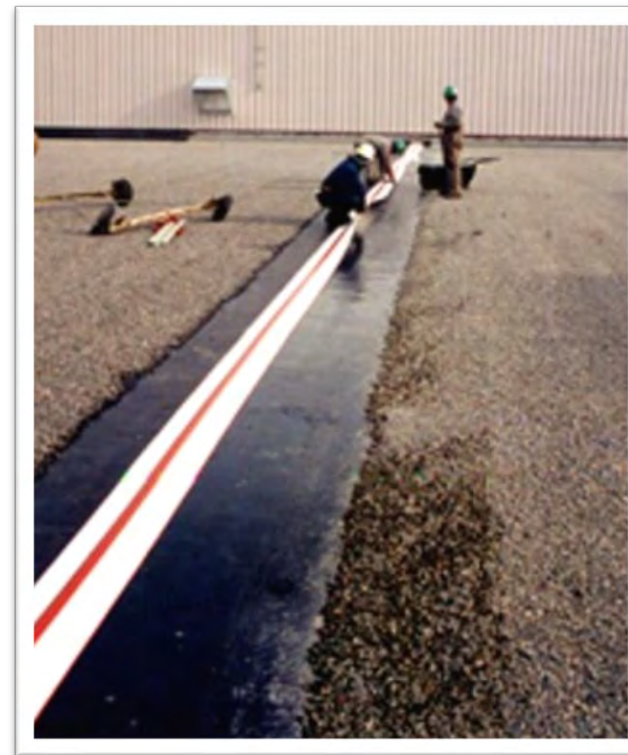
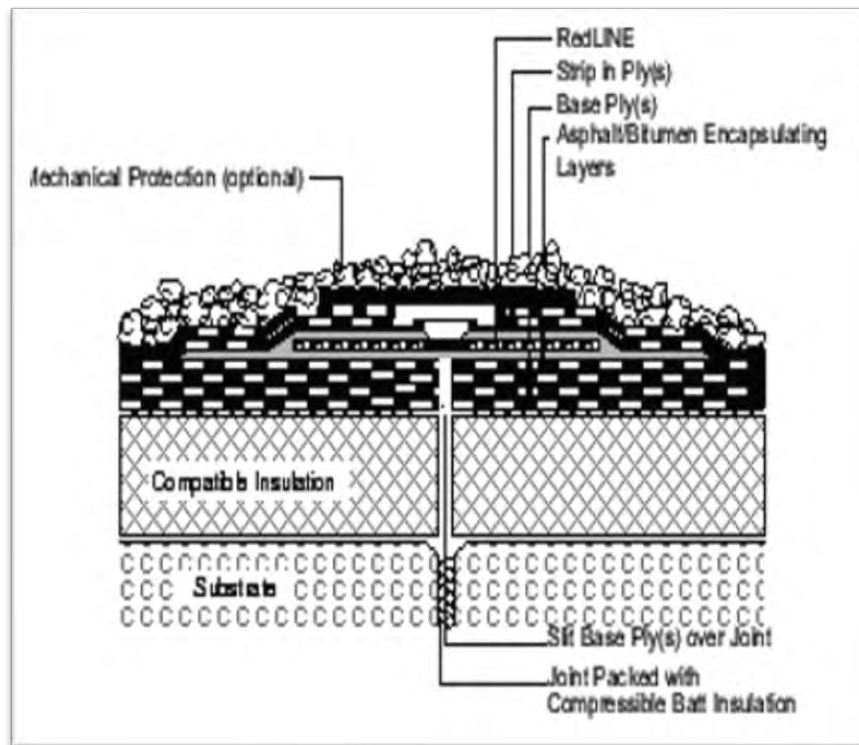
# Metal Counterflashing



# Expansion Joints Raised Profile



# Expansion Joints Zero Profile





# Expansion Joints Zero Profile





# Questions and Discussion

