

# Waterproofing Thoughts & Considerations

August 29, 2019

Robert Murray, P.E. & Shane Dunn  
Cornell University  
Facilities and Campus Services



# Brief Agenda

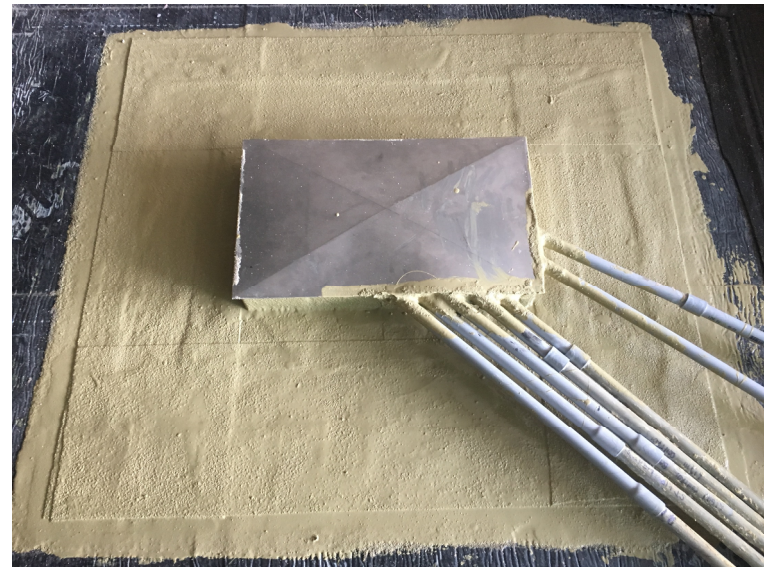
- Introductions
- Lessons Learned
  1. Plaza Waterproofing (Recent Repair Example)
  2. Roof Design Detailing
  3. Quality Assurance
  4. Green Roof Assemblies



# 1.) Plaza Waterproofing

- Existing slab penetration
- Issues:
  - Conduits installed close to deck
  - Pourable sealer

**Ensure qualified trade is installing waterproofing system**



## 2.) Roof Design Detailing

### Critical Details

- Skylights (41)
- Inverted roof
- Built-in gutters
- Complicated flashings

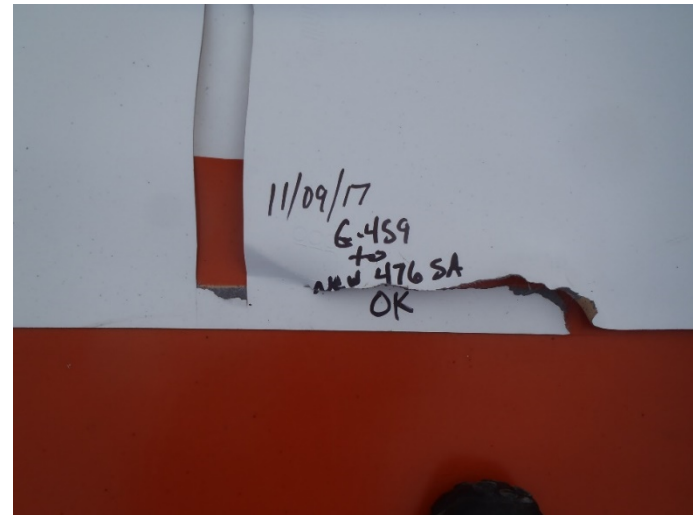
**Details required  
for all conditions  
QA is critical**



### 3.) Quality Assurance

- QA testing required by specifications can help identify problematic installation

**Owners should be educated by design team about required testing protocols**



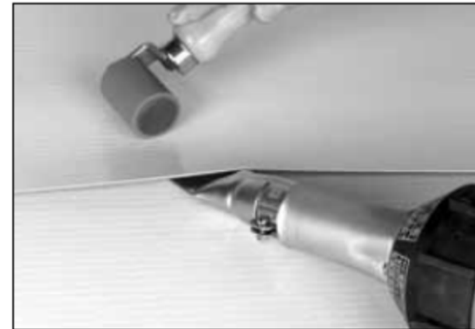
# 3.) Quality Assurance



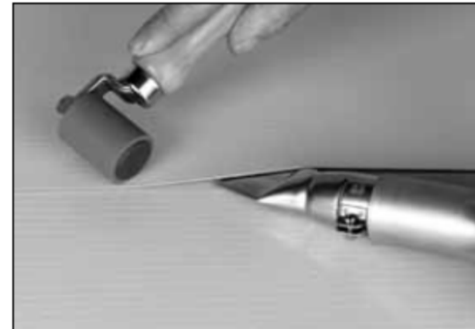
## Welding Hot-air Welding Of Lap Areas



Tack Weld (for detailing only)



Pre-Weld



Finish Weld

### A. General

1. All side and end lap joints shall be hot-air welded. Lap area shall be a minimum of 3 in. (77 mm) wide when machine welding, and a minimum of 4 in. (102 mm) wide when hand welding.
2. All mechanics shall have successfully completed a course of instruction provided by a Sika Sarnafil representative prior to welding.
3. All surfaces to be welded shall be clean and dry. No adhesives shall be present within the lap areas.

### B. Hand Welding

Hand welded seams shall be completed in two stages.

Equipment shall be allowed to warm up for at least one minute prior to the start of welding.

1. The back edge of the lap shall be welded with a thin, continuous pre-weld to prevent the loss of hot air during the final welding. Tack

welding not permitted on field sheets.

2. The nozzle shall be inserted into the seam at a 45° angle to the edge of the membrane. Once the proper welding temperature has been reached and the membrane begins to "flow", the hand roller is positioned perpendicular to the nozzle and pressed lightly. For straight seams, the 1-½ in. (40 mm) wide nozzle is recommended for use. For corners and compound connections, the ¾ in. (20 mm) wide nozzle shall be used.

## 4.) Green Roof Assemblies

- Difficult to maintain
  - Overburden makes membrane access difficult for maintenance
- Consider tray system
- Redundancy is important
- Purchase a premium warranty that includes overburden removal





Questions?