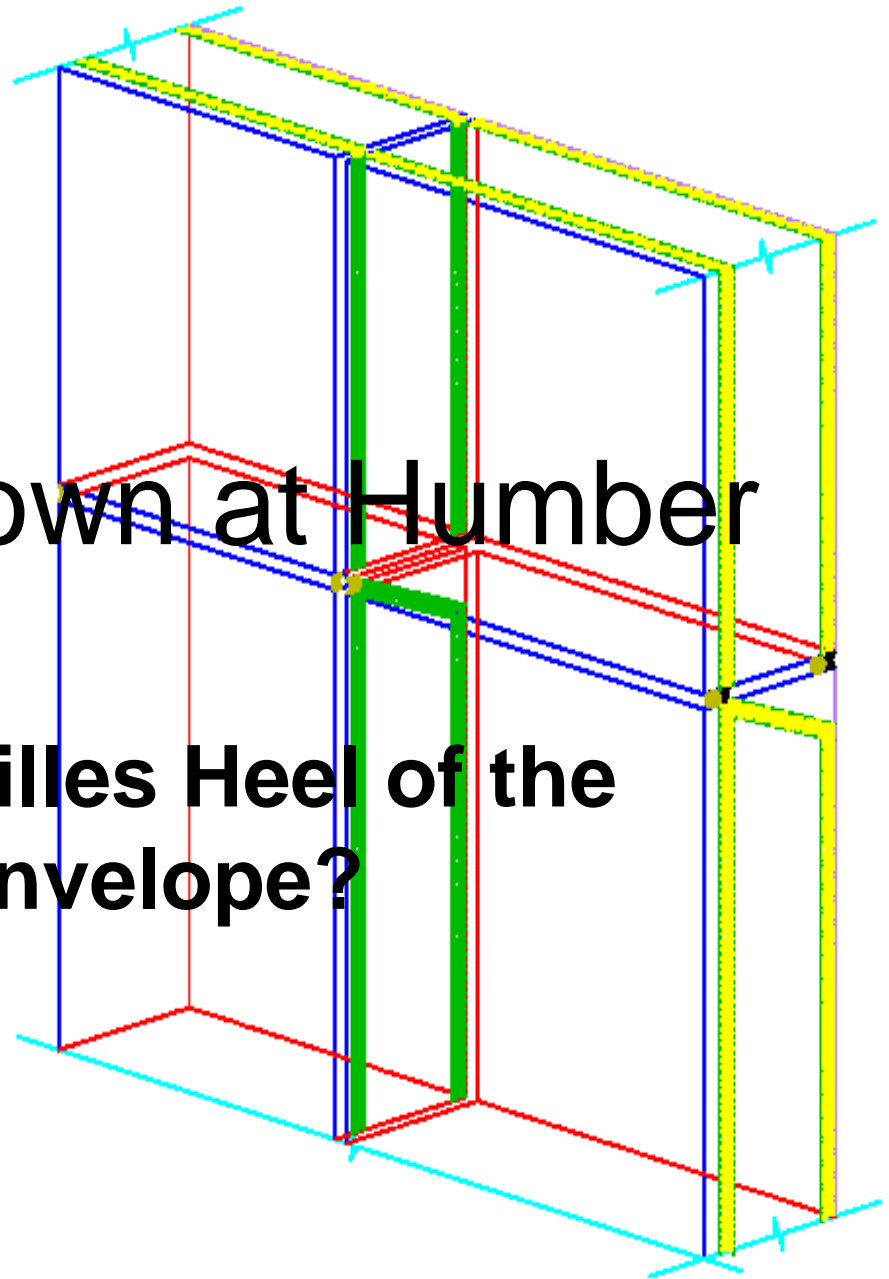


# Sealant Showdown at Humber

**Are they the Achilles Heel of the  
Building Envelope?**



# Sealant Showdown at Humber

- Many years ago

off the mark

www.offthemark.com

by Mark Parisi



# Sealant Showdown at Humber

- New buildings
- New technologies



# Sealant Showdown at Humber

- New infrastructure
- In need of new technologies



# Sealant Showdown at Humber

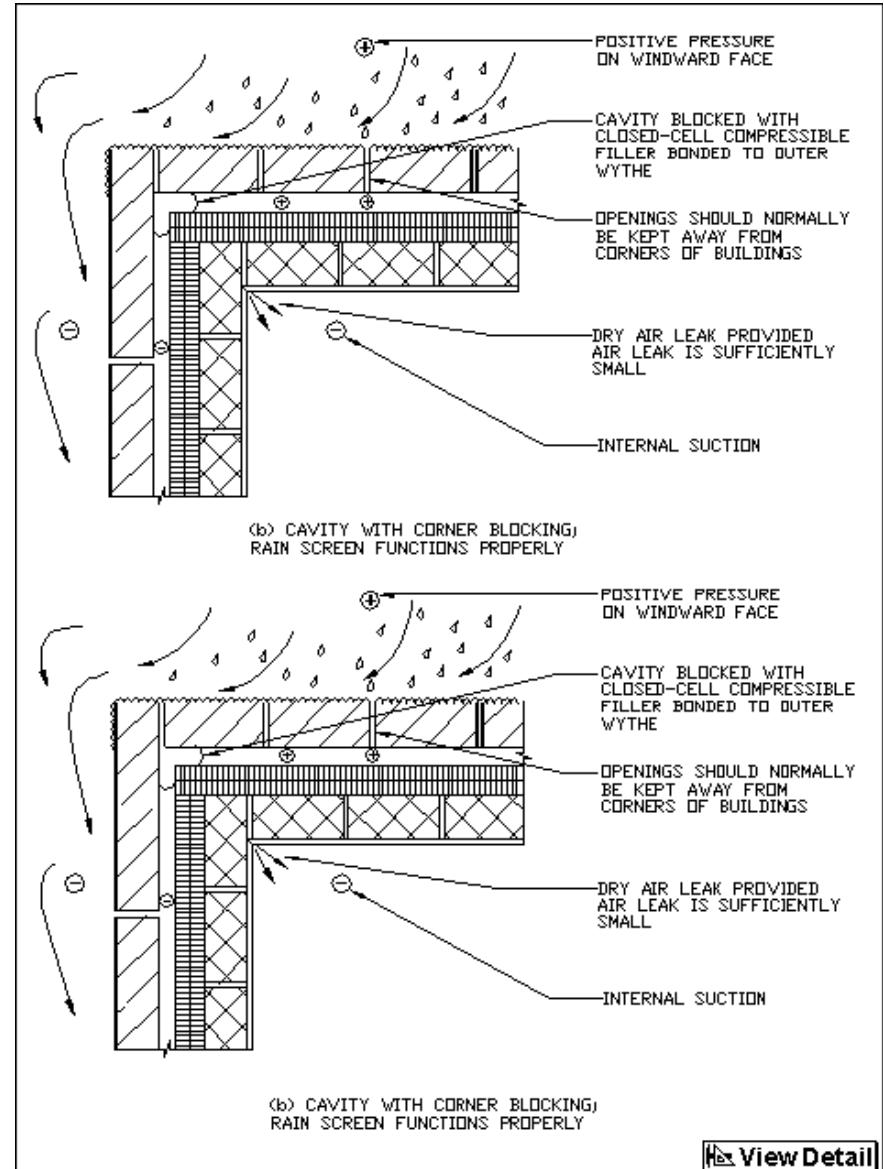
- Where have we been?
- NCR in Ottawa in the 60's and 70's
- K. Garden
- First discussions on building science relating to the building envelope



# Sealant Showdown at Humber

What did we learn?

- Moisture / rain penetration mechanisms
- Capillary – need air gap between materials
- Gravity – need to slope and drain to outside
- Kinetic energy – need to stop a rain drop travelling horizontally through joint or crack
- Air transport – need to stop air vapour movement



# Sealant Showdown at Humber

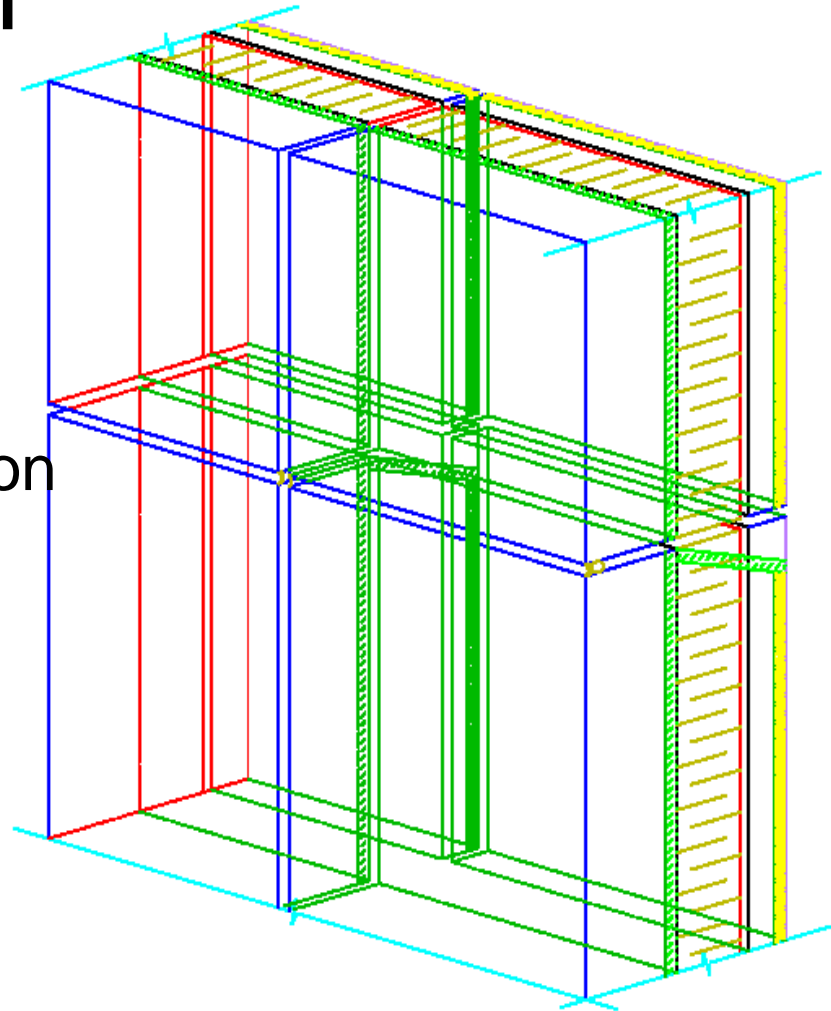
- From that we got words like:
  - Rain screen
  - Pressure equalization
  - Venting
  - Compartmentalization
  - Stack effect
  - Caulking became sealants



# Sealant Showdown at Humber

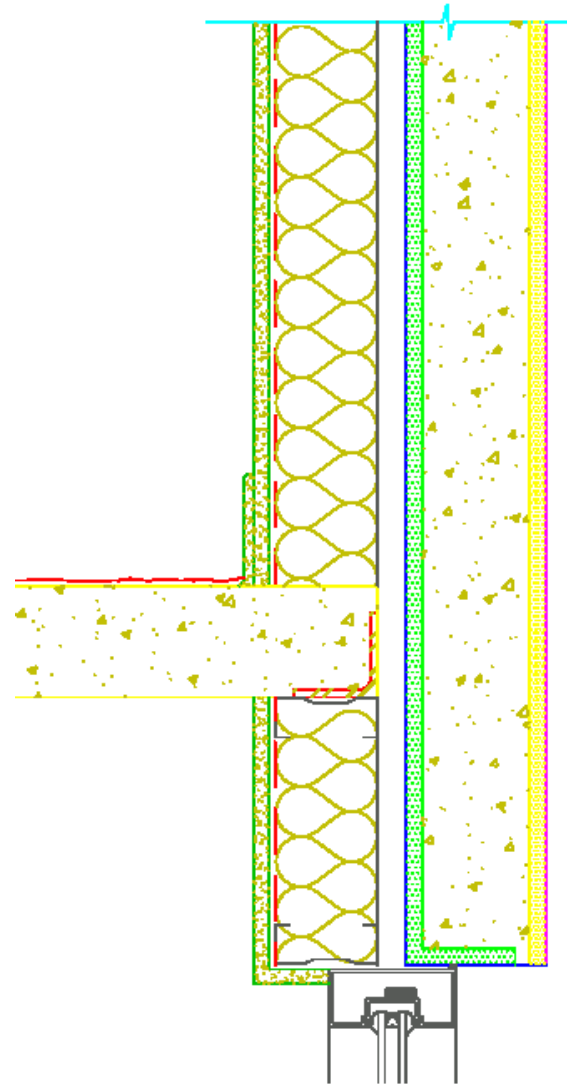
Are they the Achilles Heel of the Building Envelope?

- Only if we let it be!
  - Proper understanding
  - Proper design
  - Proper material selection
  - Proper installation



# Sealant Showdown at Humber

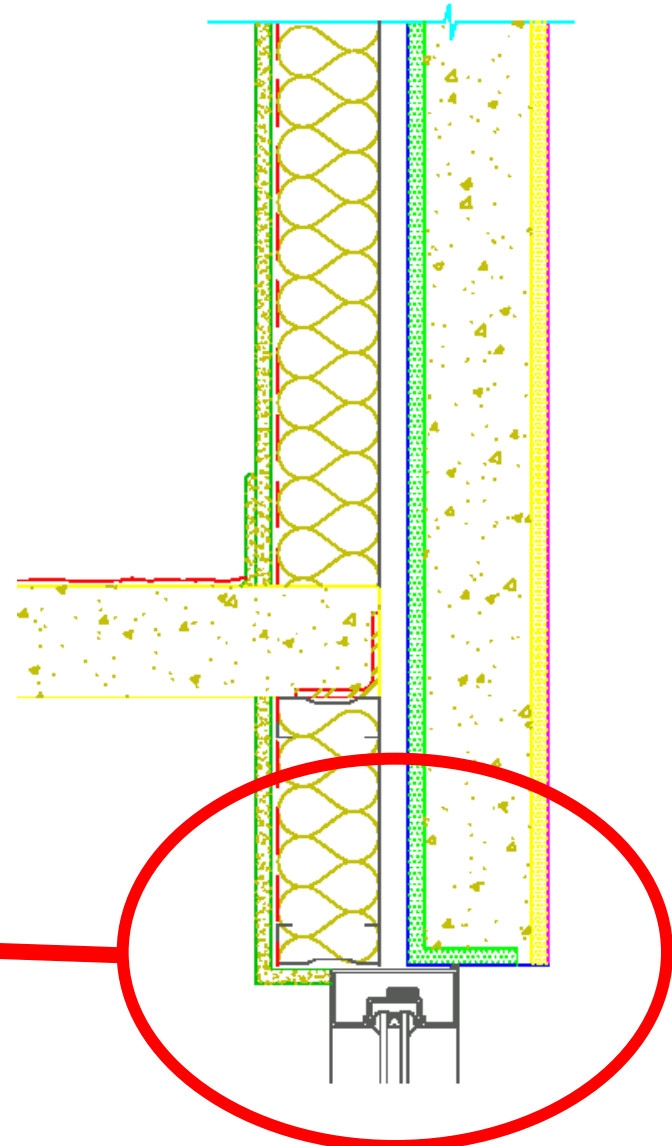
We have to understand that a building envelope is made up of a number of different materials and in a successful design, the integrating of these dissimilar materials where they abut one another is the job of the sealant



# Sealant Showdown at Humber

How to successfully seal architectural precast wall panels and the window inserted into the wall assembly

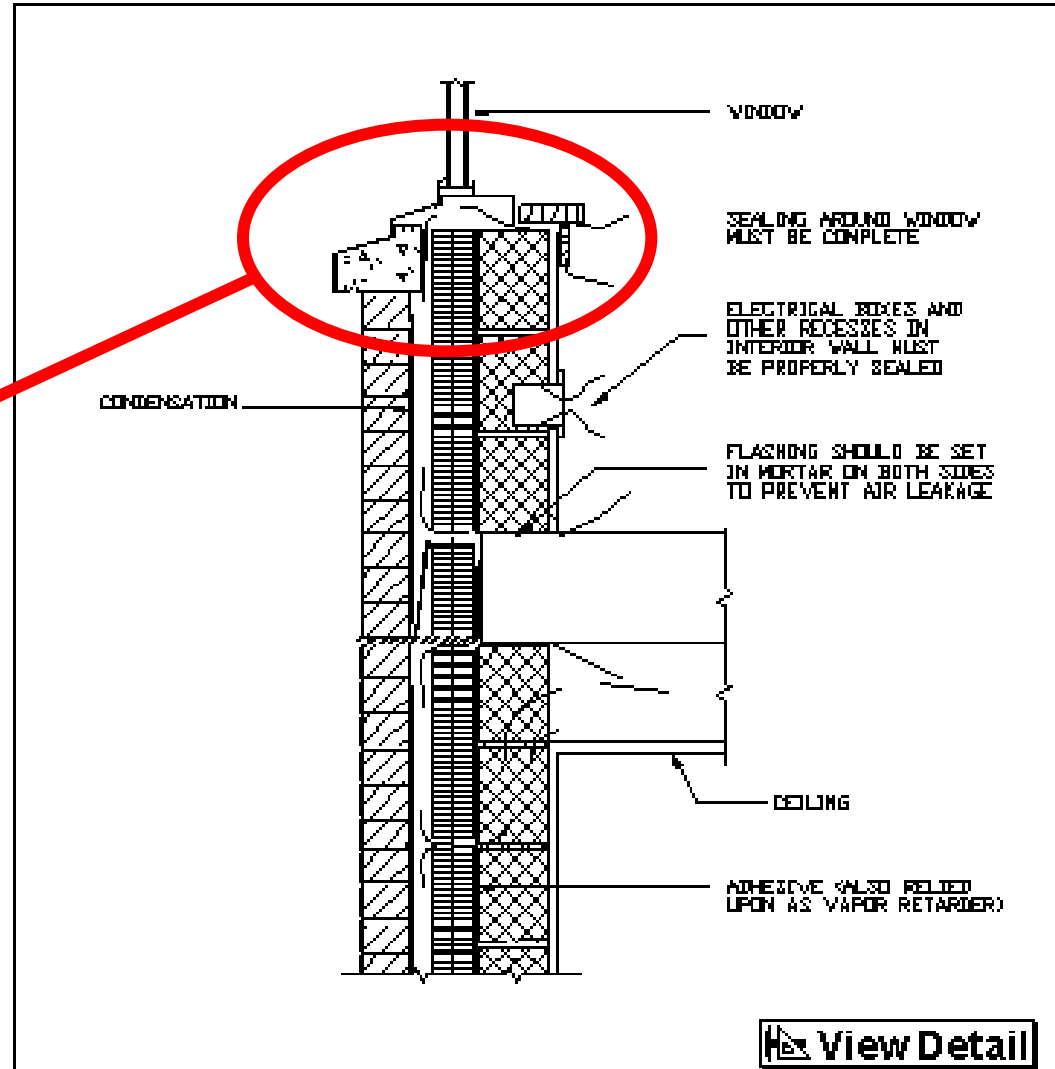
The weak link



# Sealant Showdown at Humber

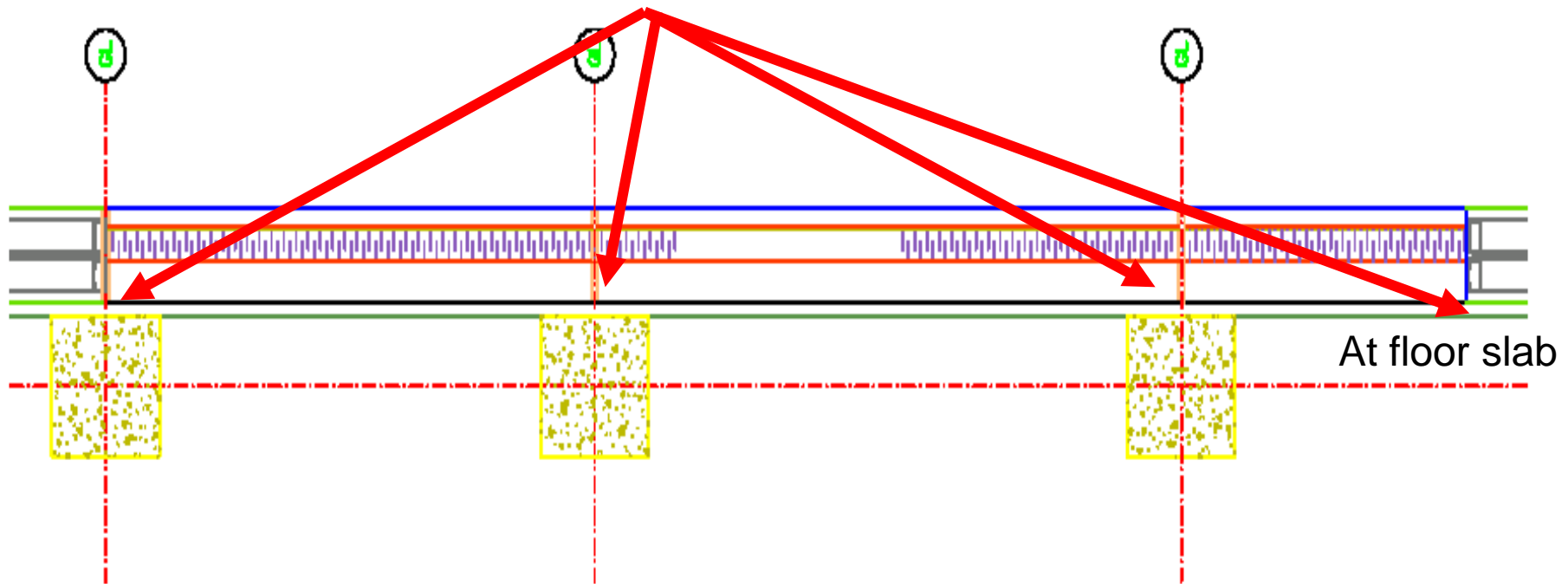
Each building envelope material presents its own design problems, in this case masonry cavity wall construction

The weak link



# Sealant Showdown at Humber

- Biggest problem
- Access for installation of sealant at the interior side



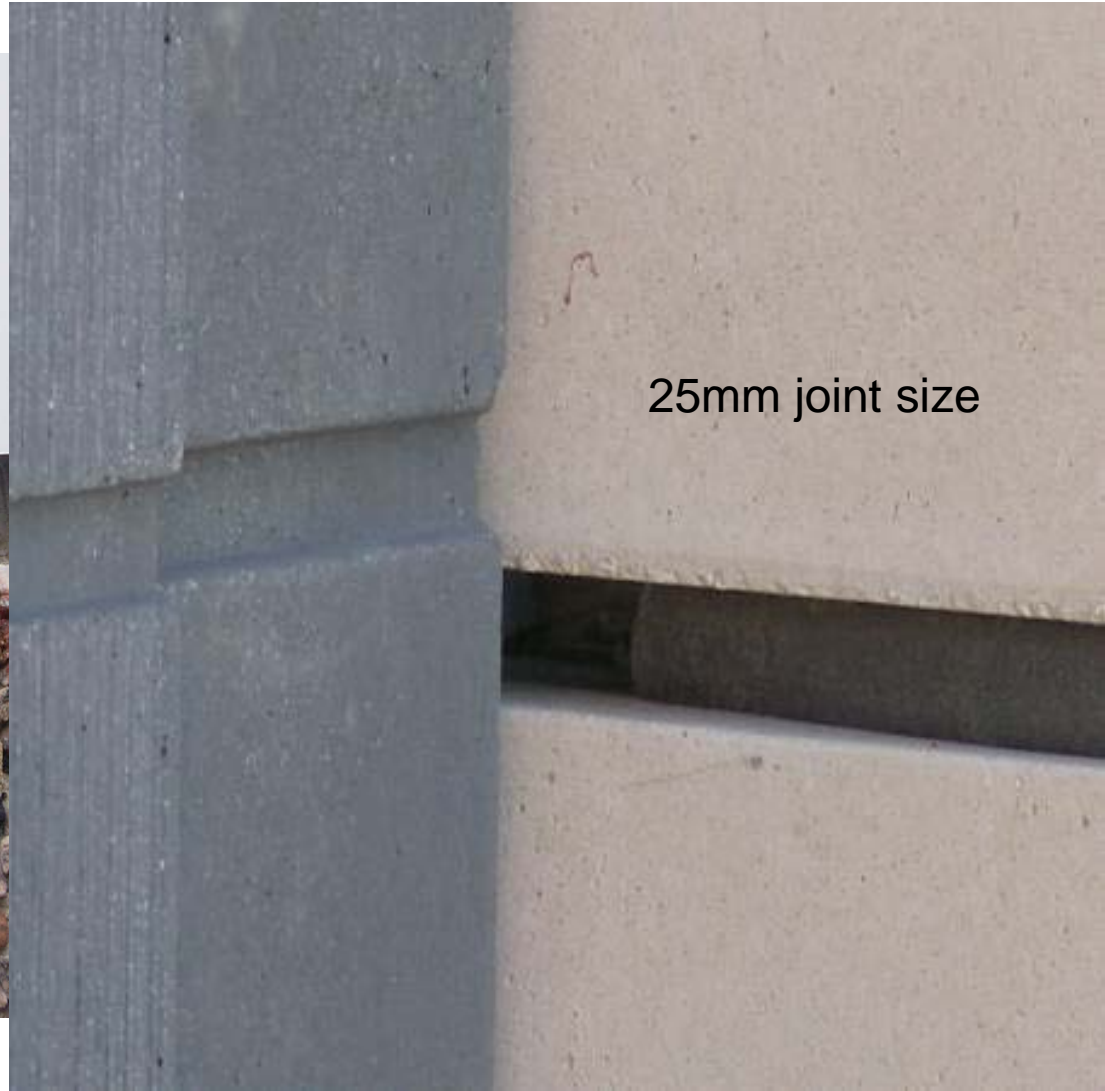
# Sealant Showdown at Humber

Joint size does matter



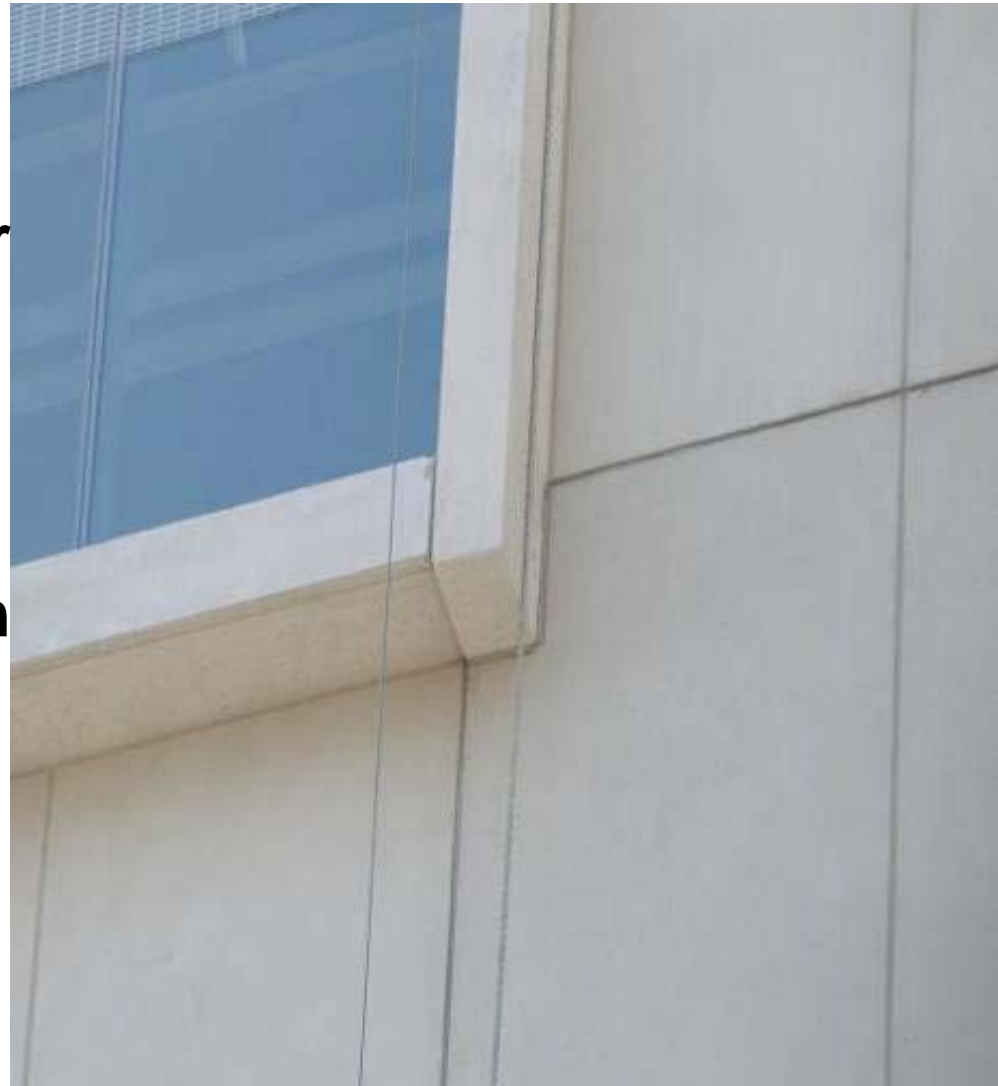
# Sealant Showdown at Humber

Joint size does matter

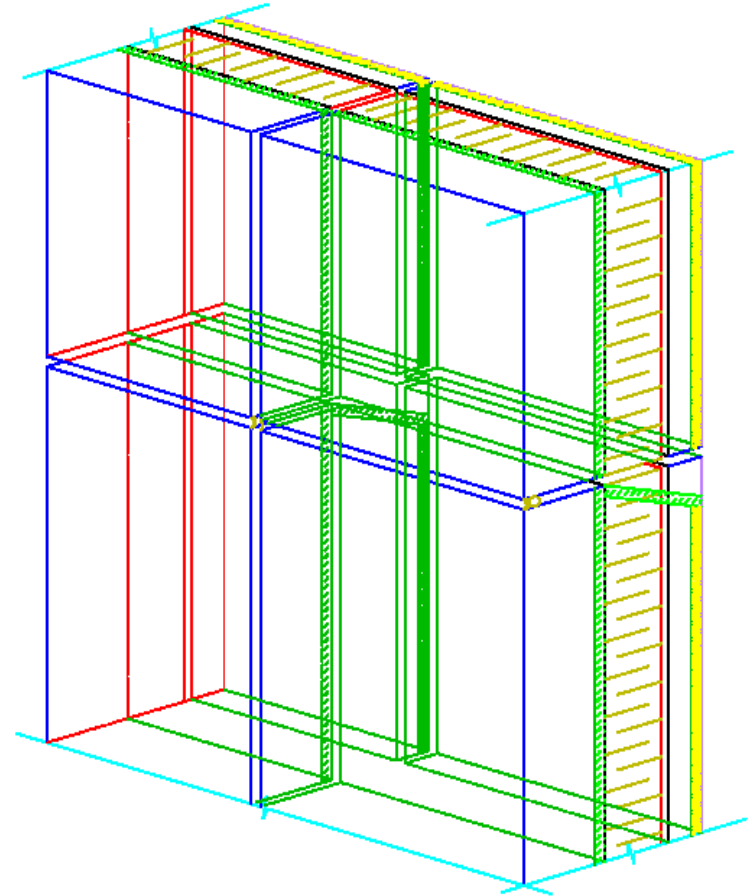
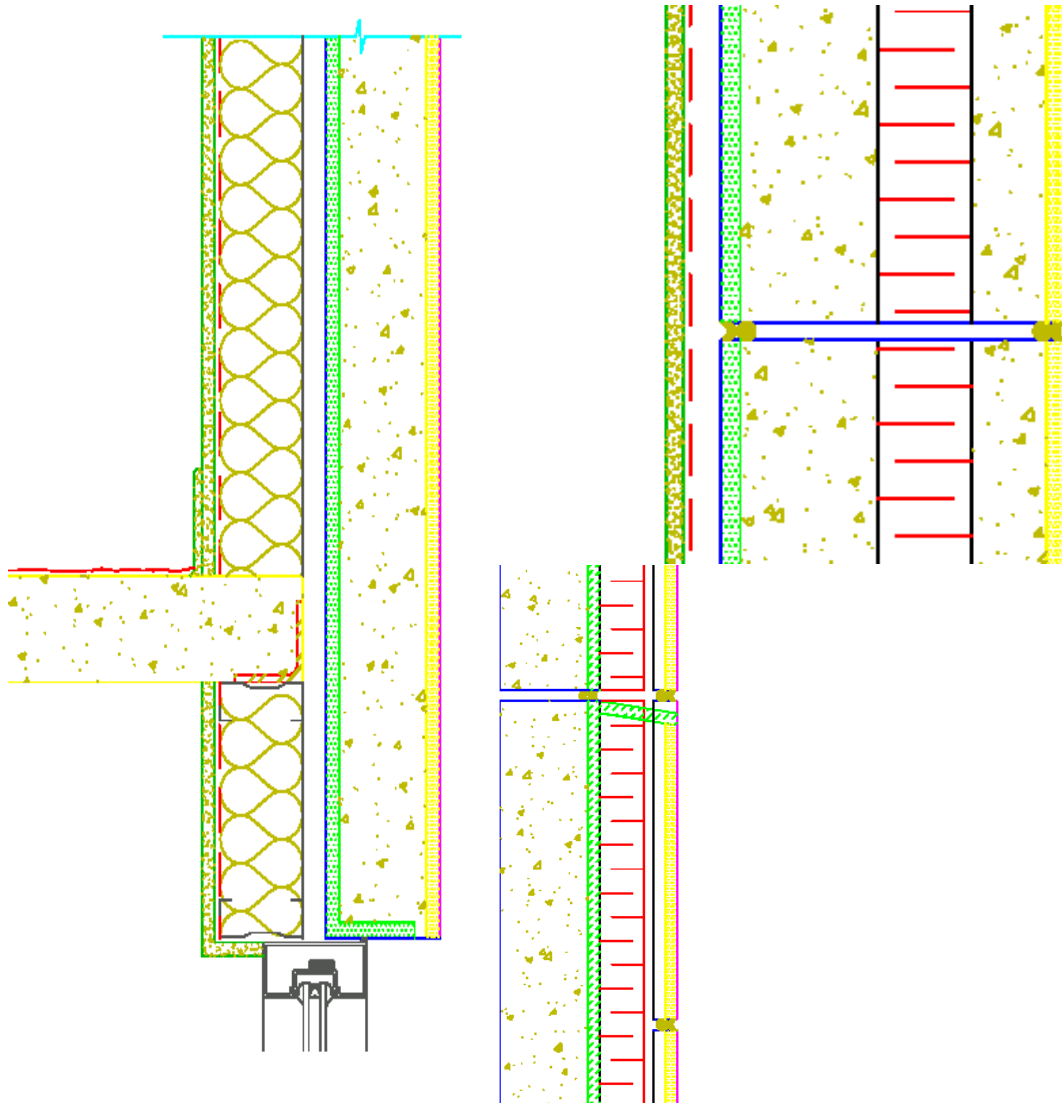


# Sealant Showdown at Humber

- **17mm (3/4") has been a standard**
- **12mm (1/2") has been demanded by architects for aesthetics, to match false joint!!!**
- **Need to allow 6mm (1/4") construction tolerance**
- **If you lose 6mm on a 12mm joint, you have a problem**
- **Lose 6mm on a 17mm joint you are OK!**

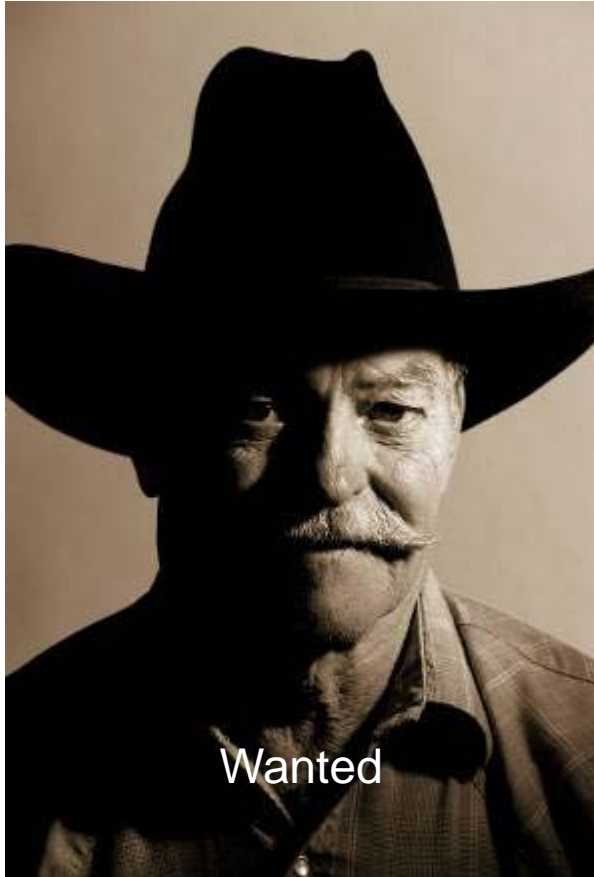


# Sealant Showdown at Humber



You need to think 3D

# Sealant Showdown at Humber



Gord Crix - Tremco

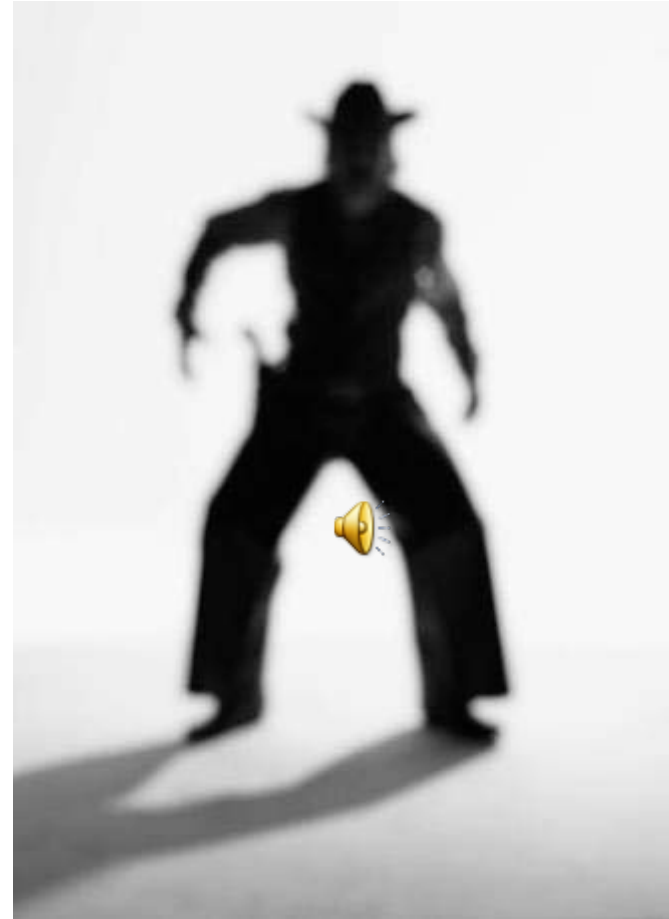


Bob Cuggy - Sika



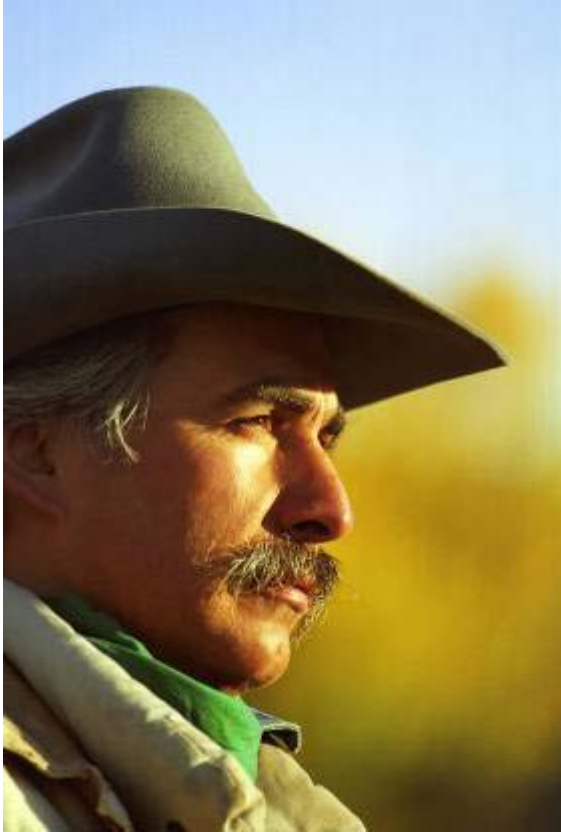
Rick Morgan – Momentive  
Joint Materials (GE)

# Sealant Showdown at Humber

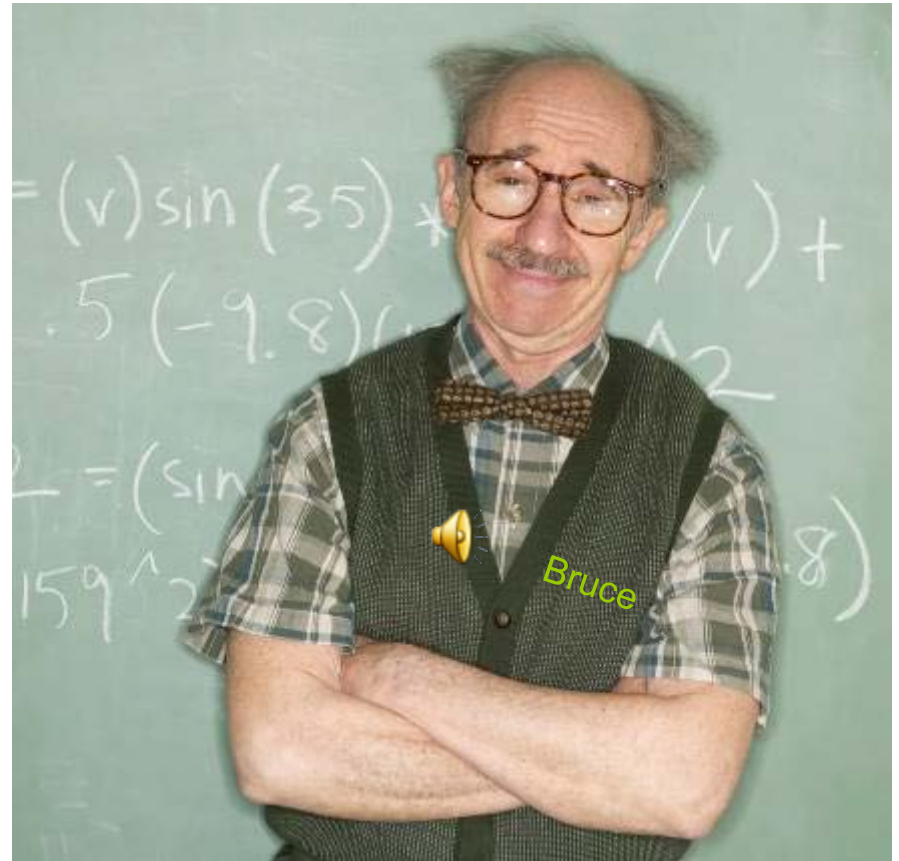


Questions from our OBEC Panel!

# Sealant Showdown at Humber



Brain Shedd – McBride Sons



Professor Bruce Taylor – Humber College

## Questions from our OBEC Panel!

# Sealant Showdown at Humber

Size does matter!

- What are the minimum joint sizes one would ever use?
- What is the maximum joint size one would use?
- Are the sealant materials joint size sensitive?



# Sealant Showdown at Humber

Dissimilar Materials!

- What problems would you be concerned with looking at this picture



# Sealant Showdown at Humber

Low rise vs. high rise with significantly higher wind pressures!

What are the concerns with sealants and specifying the correct sealant on high rise towers

- For precast to precast?
- For glass curtain wall?
- For window to precast?



# Sealant Showdown at Humber

In real life the interior sealant is the air/vapour barrier, the most critical part of the joint assembly

- What do you see sealant contractors doing incorrectly
- What do you see sealant contractors doing correctly

Inside view of joint yet to be caulked



Outside view of neatly caulked joint



# Sealant Showdown at Humber

- Do mock-ups serve any purpose?

The curtain wall industry quite often is required to do dynamic testing, wind and water are thrown at an assembly by a stationary aircraft prop and engine

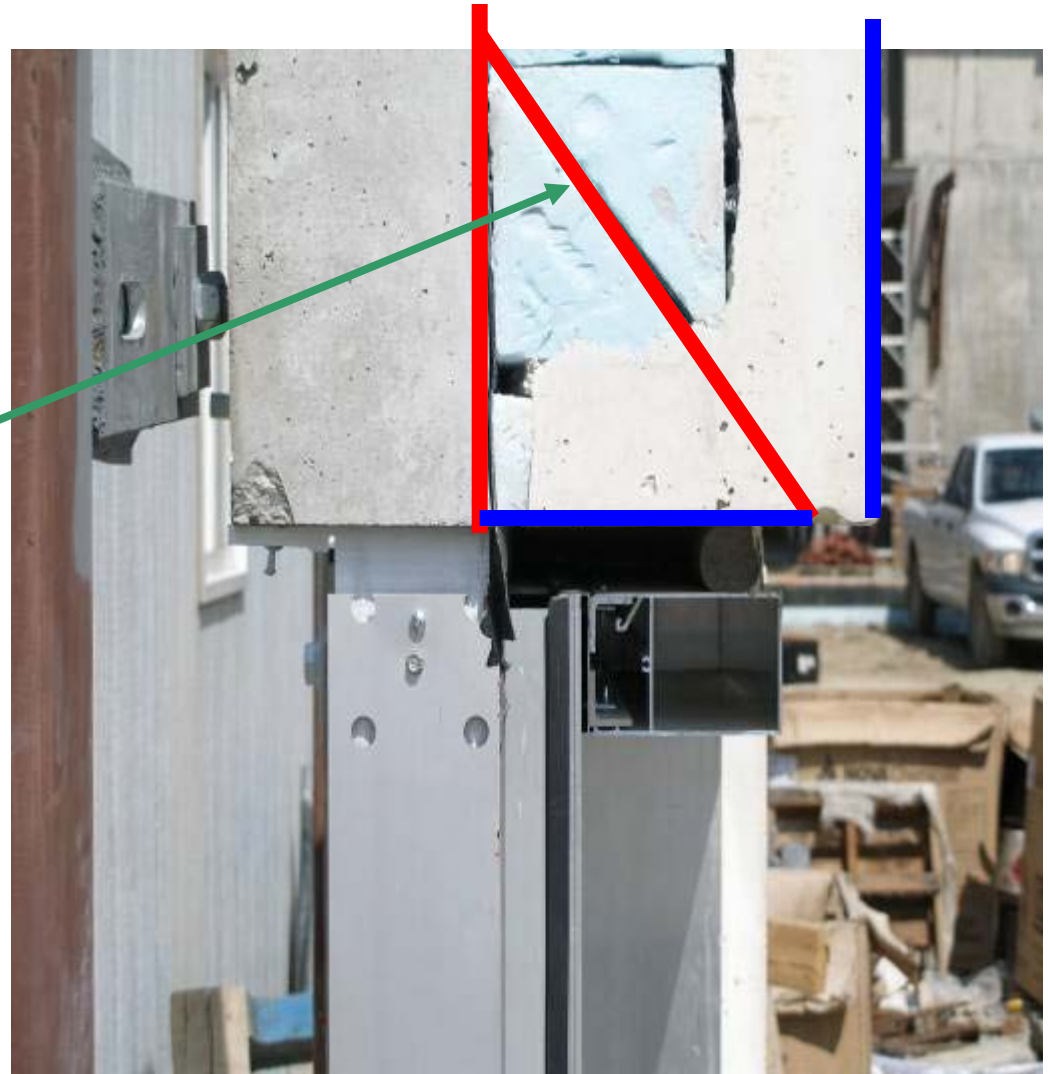
- Are leaks corrected by redesign or by adding more sealant?



# Sealant Showdown at Humber

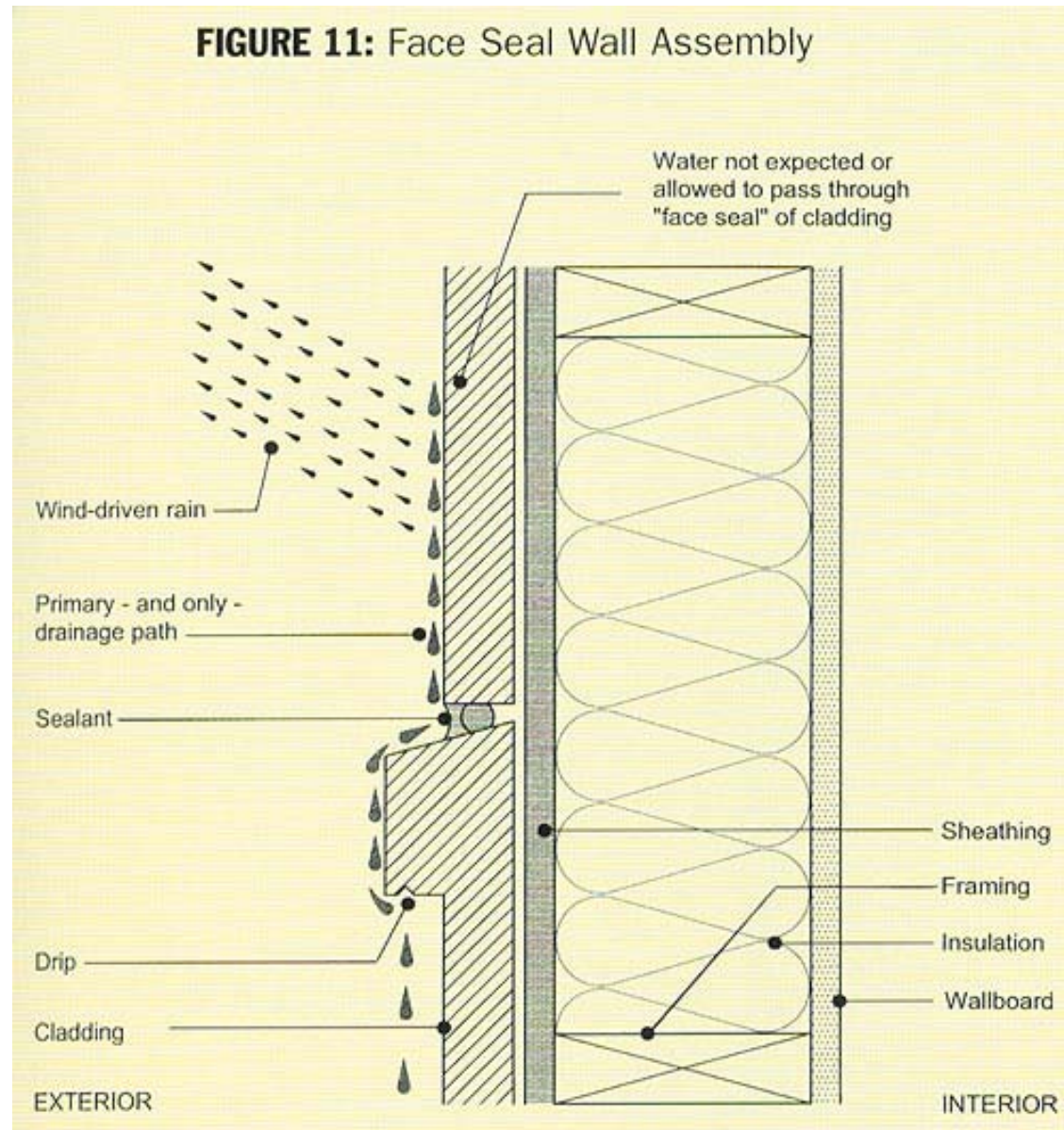
Proper design would require a transfer bead of sealant to be installed in the vertical joint to drain the joint cavity.

- What are the implications of the sealant being adhered to the rigid insulation found in a precast insulated panel



# Sealant Showdown at Humber

If as a designer we were to delete the interior bead of sealant but spend top dollar on your best product for a face seal only, are we going to save money?

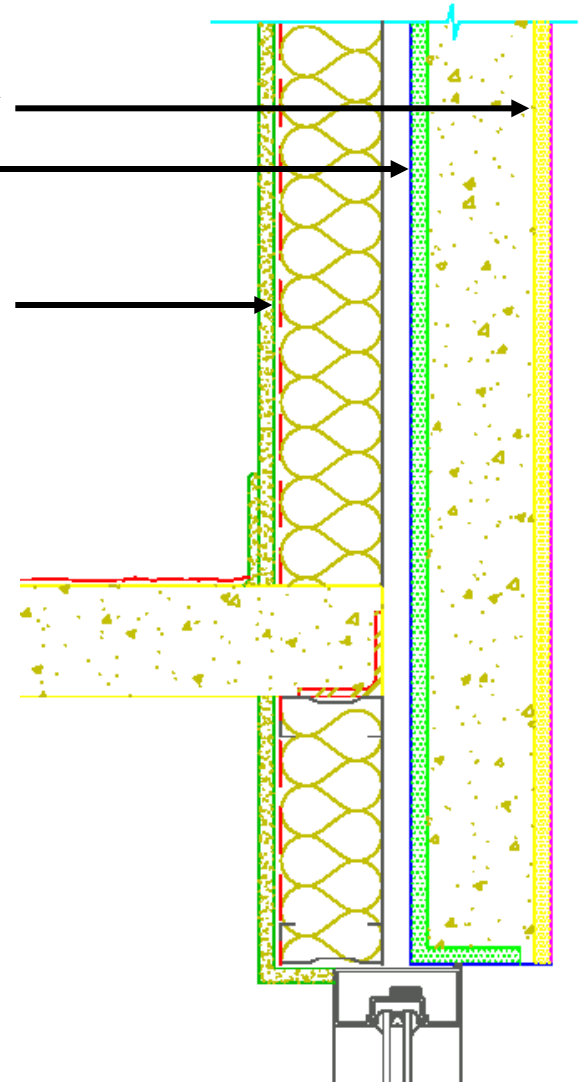


# Sealant Showdown at Humber

In this precast concrete panel section, an exterior weather seal is shown, and interior air/vapour sealant bead is shown, air space, insulation with an additional air/vapour barrier on the warm side of the insulation.

Building science says you should not have two air/vapour barriers in your wall assembly.

- Why is this practice done especially on condominiums?



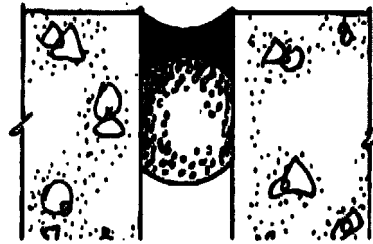
# Sealant Showdown at Humber

## Silicone Staining and dirt pick up

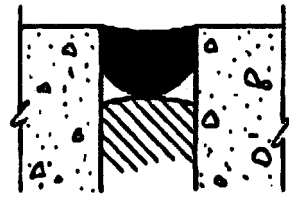
- What has the sealant industry done to correct this problem?



# Sealant Showdown at Humber

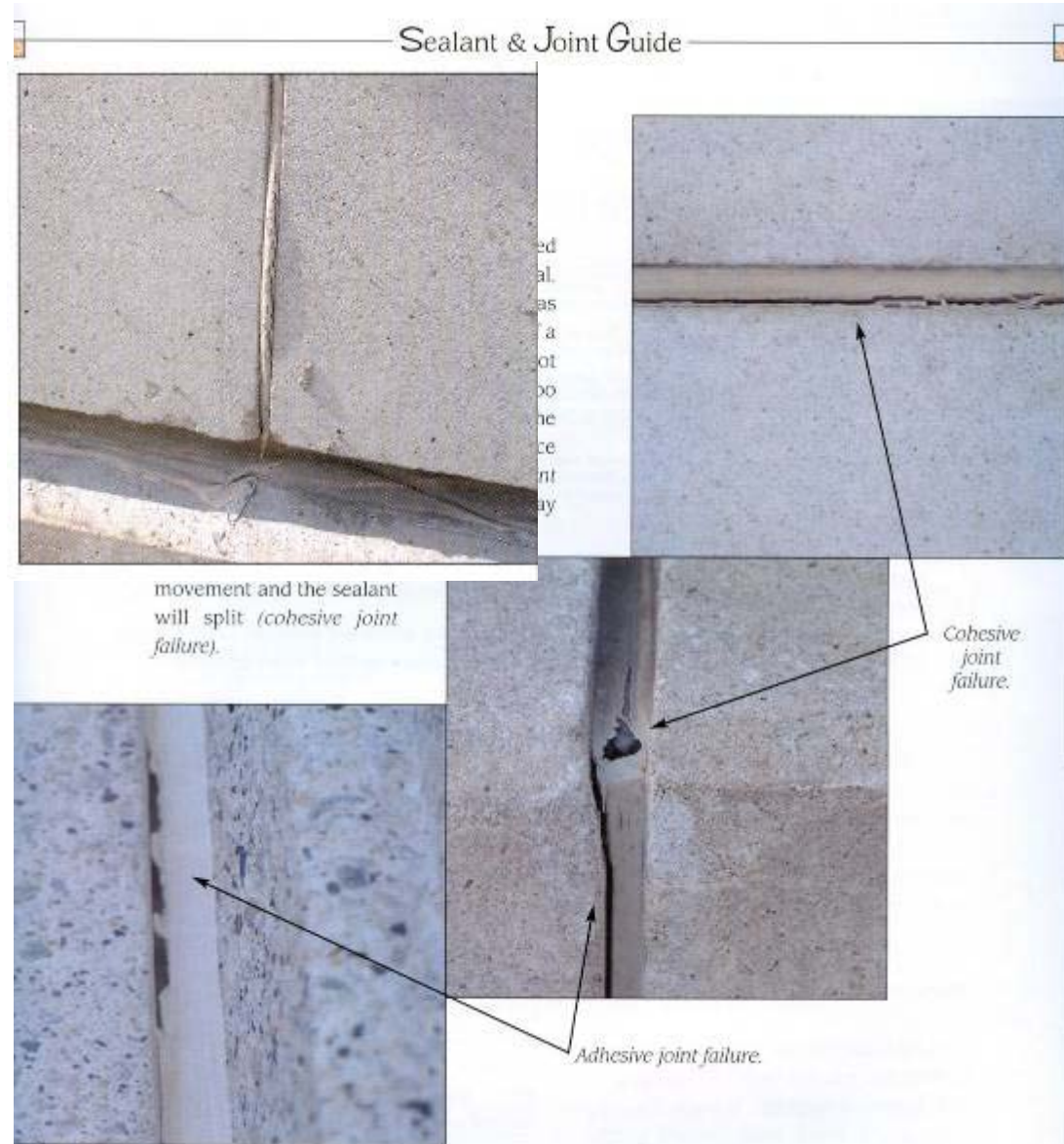


WELL FORMED SEALANT BEAD



POORLY FORMED SEALANT BEAD

What are the probable causes of these joint failures?



# ...from the OAA Practice Guide

What caution do you recommend;

- When sealants are used on EIFS?
- When EIFS comes in contact with a dissimilar material?

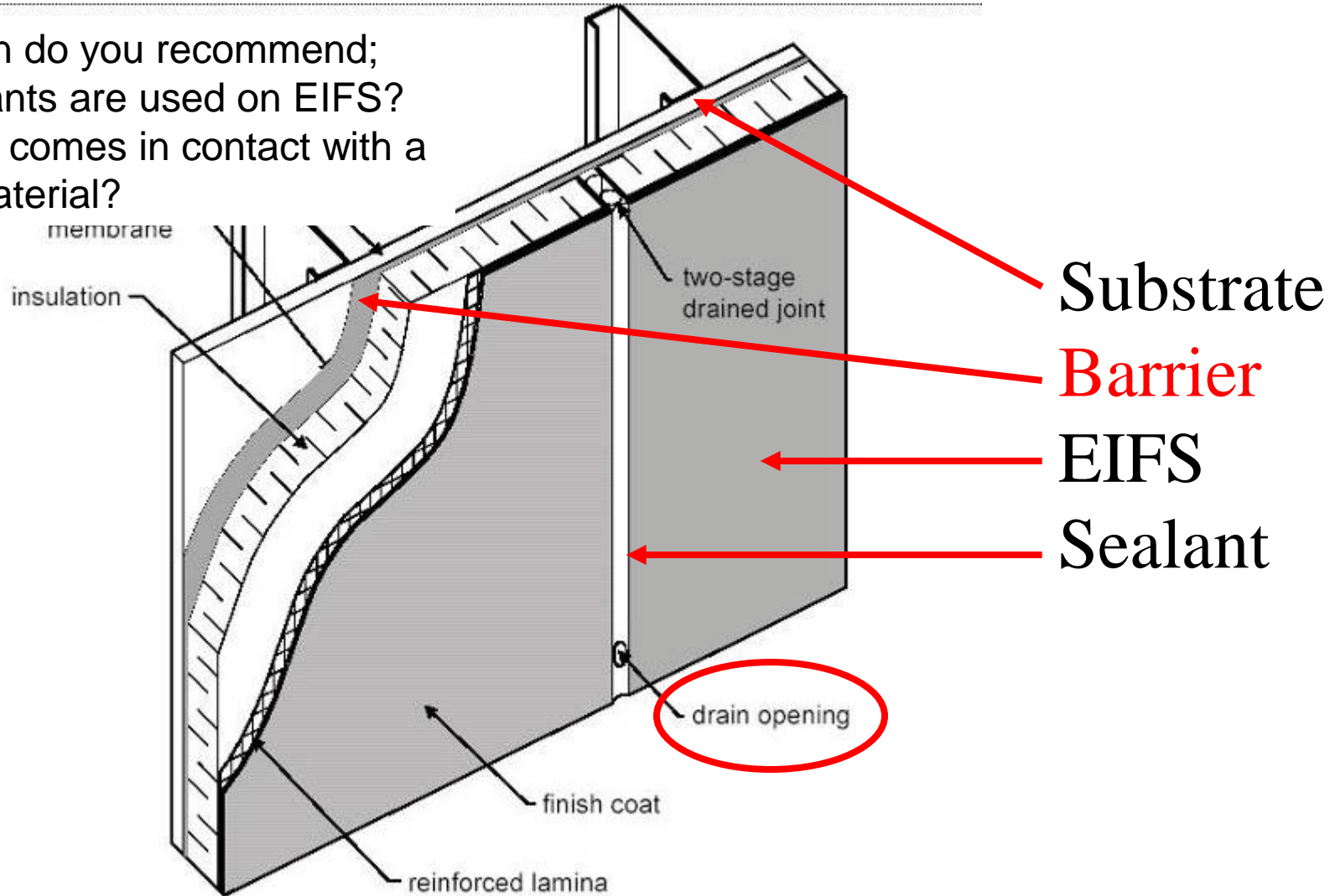
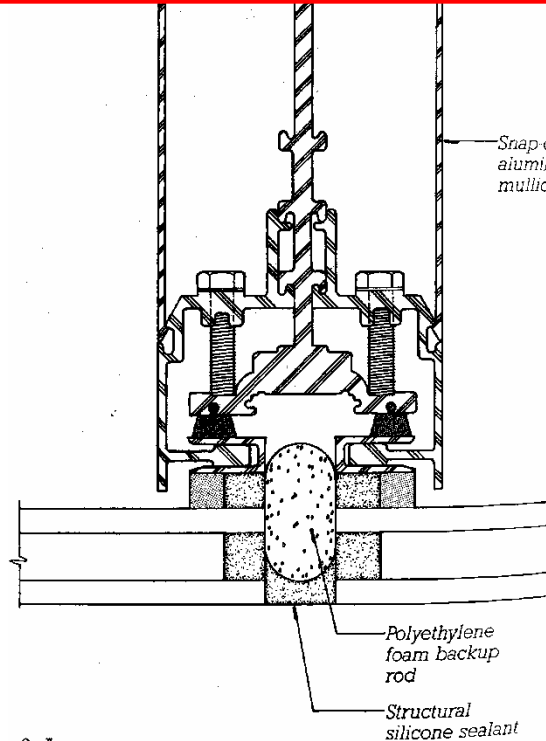
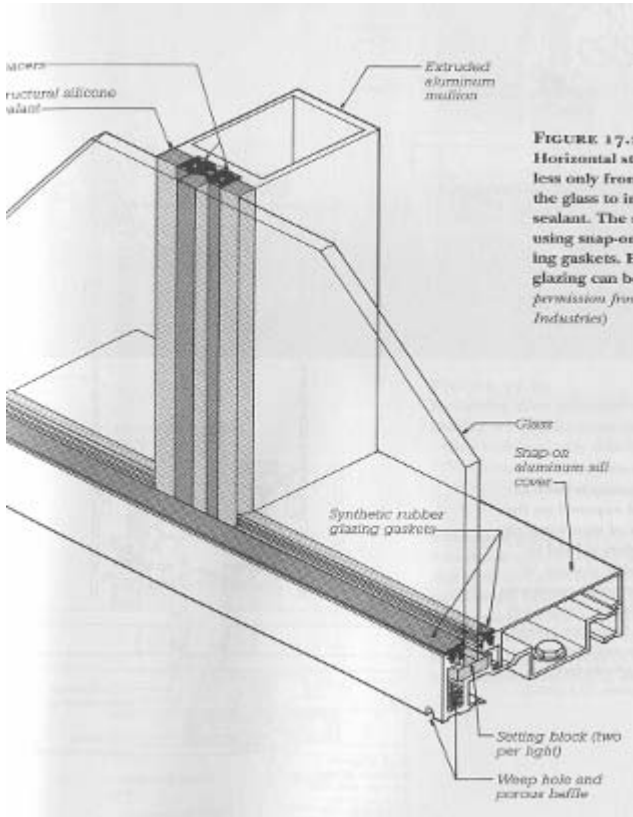


Figure 20: Representative Dual Barrier System with Drained Joints

# Sealant Showdown at Humber

**Butt Glazed Curtain Wall**  
 - structural silicone is used to hold window lite in place



3. A snap-on mullion cover



All sealants have a life expectancy.

- What are the implications with butt glazed window systems?

## Sealant Showdown at Humber

- Who's Sealants are really the best and Why?
- How do you stand behind your Products?
- If you could work for any of your competitors, who would it be?
- How can Sealant be properly sold without a BSSO® on you staff?

# Sealant Showdown at Humber

This is a sealant joint at a brick self angle.

- Does the joint profile concern you?
- How could this have been better designed?



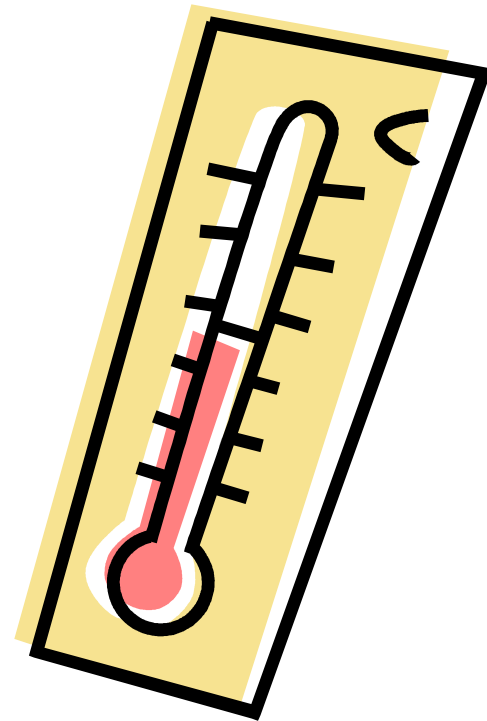
# Sealant Showdown at Humber

- Here, sealant has been applied directly over existing sealant. What are the problems and limitations when applying sealant this way?



# Sealant Showdown at Humber

- How does temperature effect the installation of sealants?
- What guidelines should one follow when installing sealant in extreme temperatures or weather?



# Sealant Showdown at Humber

- Is there specialized training available for sealant applicators?
- Does each manufacturer deal with this separately or is there a governing body that deals with this?

