

Fluid-Applied Membrane Applications & Systems



Building Science Corp, Westford, MA

Marcy Tyler, Technical Applications Manager
Ed Retzbach, Project Manager, North America
www.tremcosealants.com


We're here to talk about:

- Industry Standards
- Component Testing
- Assembly Testing
- Coordination/Specification
- Project Applications

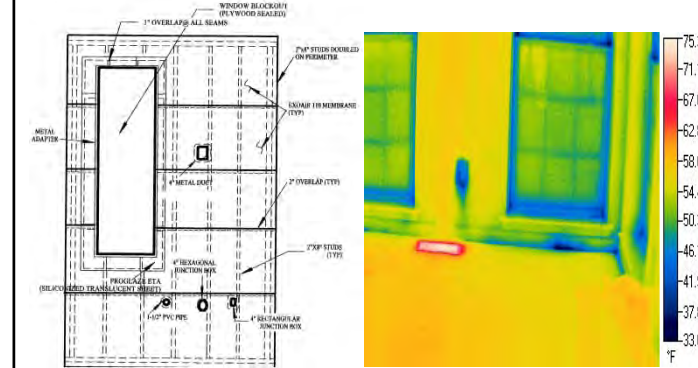




Air Barriers As:

- **Material**
 - the principal element installed to provide a continuous barrier to the movement of air through building enclosures. (**0.02 L/s/m² @ 75 Pa**)
- **Components**
 - transitional elements installed to provided a continuous barrier to the movement of air through building enclosures (refers to the material or product used to connect different air-barrier materials together as an assembly to make the air barrier continuous) (**0.20 L/s/m² @ 75 Pa**).
- **Assemblies**
 - a collection of air barrier materials and air barrier components installed to provide a continuous barrier to the movement of air through building enclosures. (**2.0 L/s/m² @ 75 Pa**).



Performance - Airtight

Performance - Continuous



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Performance – Structural Integrity



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Performance - Durable



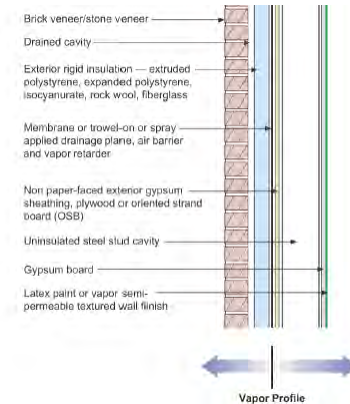
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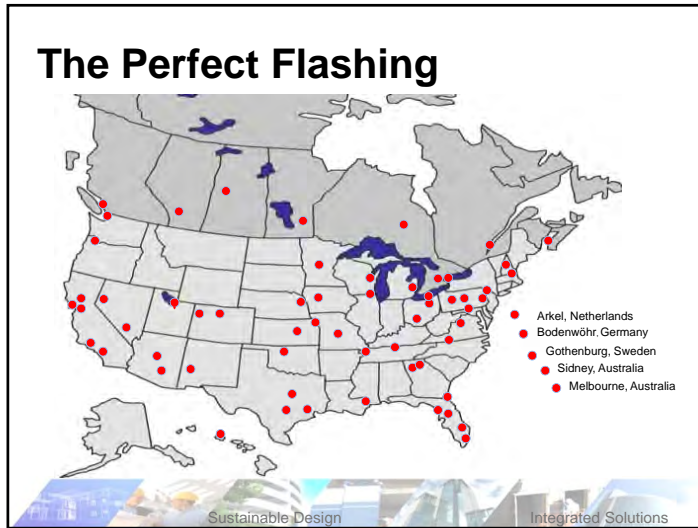
The Perfect Wall

BSI – 001: The Perfect Wall
By Joseph Lstiburek



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Requirements AAMA 711 vs AAMA 714

	Sheet	Fluid
▪ Tensile Strength	✓	✓
▪ Water Penetration Around Nails	✓	✓
▪ Peel Adhesion	✓	✓
▪ Accelerated Aging	✓	✓
▪ Elevated Temperature	✓	✓
▪ Thermal Cycling	✓	✓
▪ Cold Temperature Pliability	✓	✓
▪ Water Immersion	✓	✓
▪ Crack Bridging	✓	✓
▪ Compatibility	✓	✓

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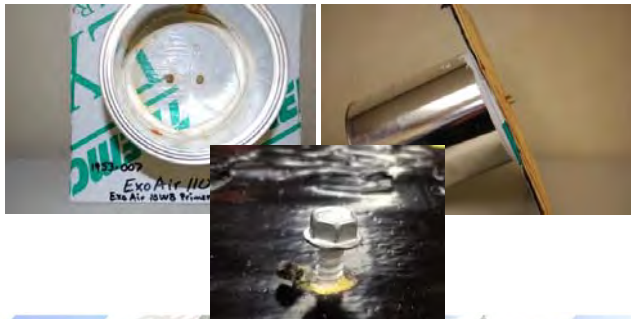


Cold Temperature Pliability

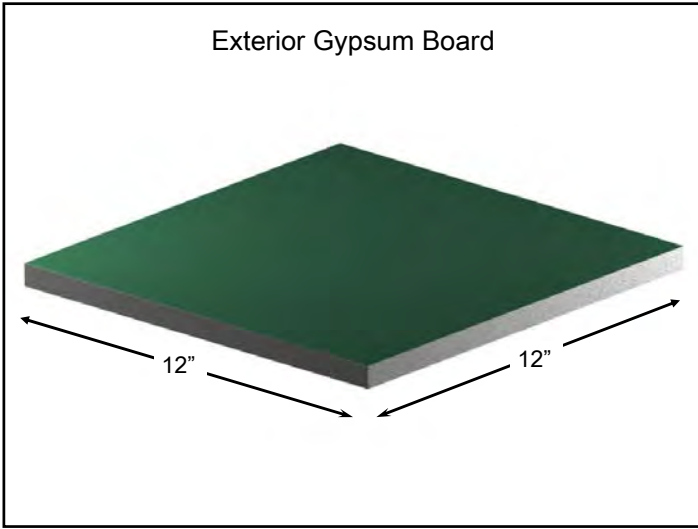
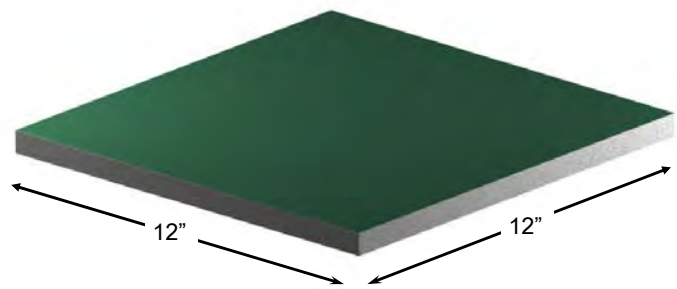


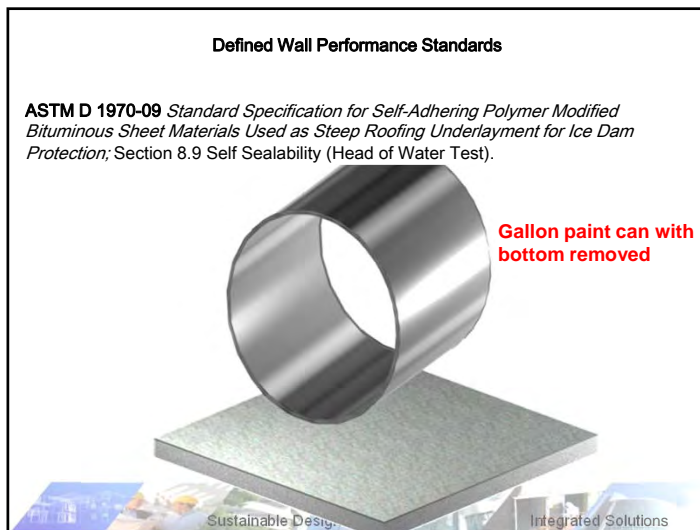
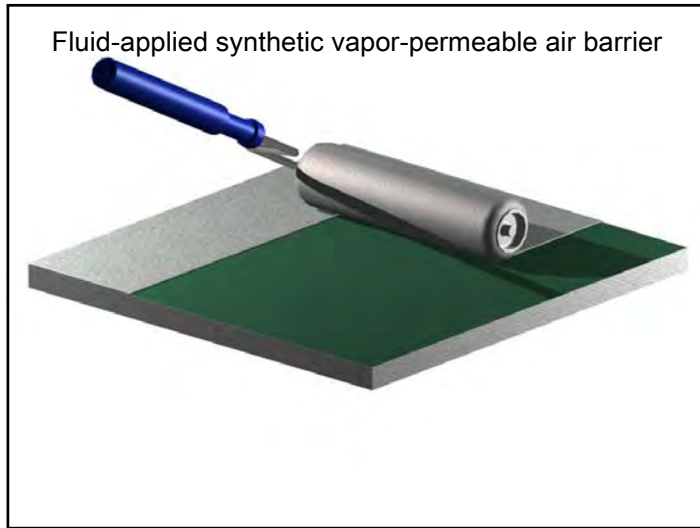
Nail Sealability

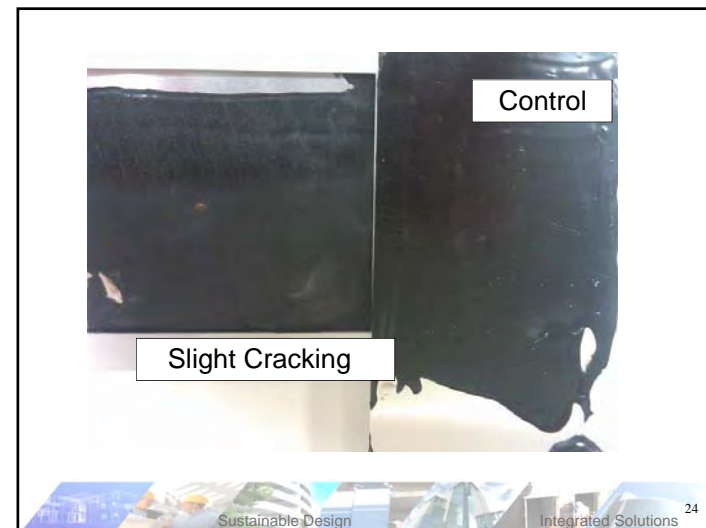
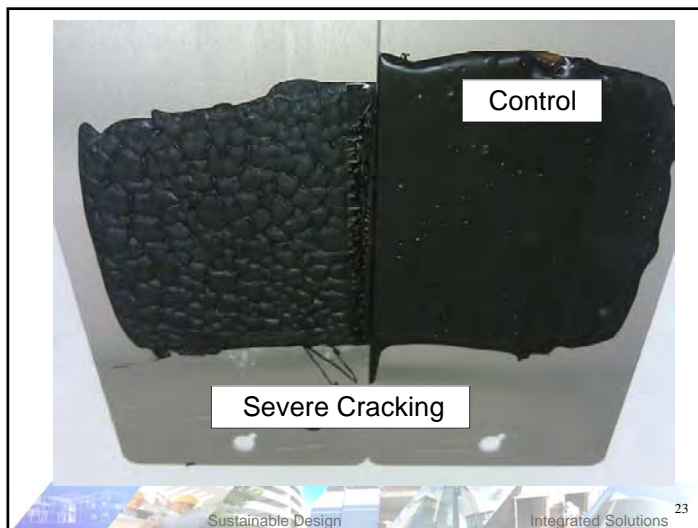
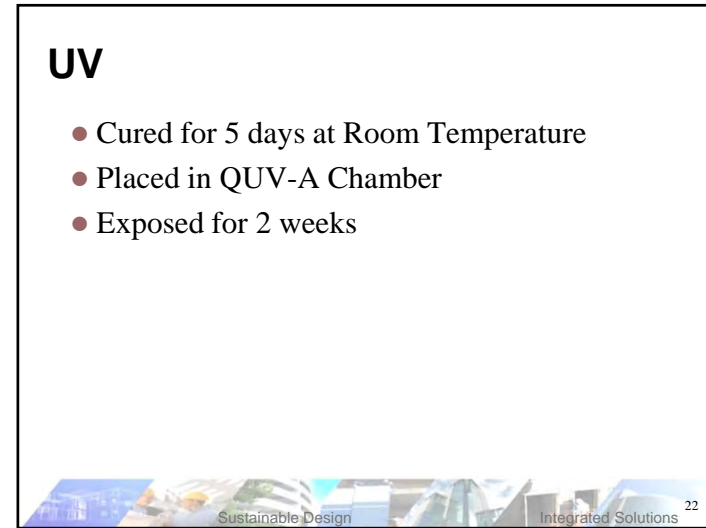
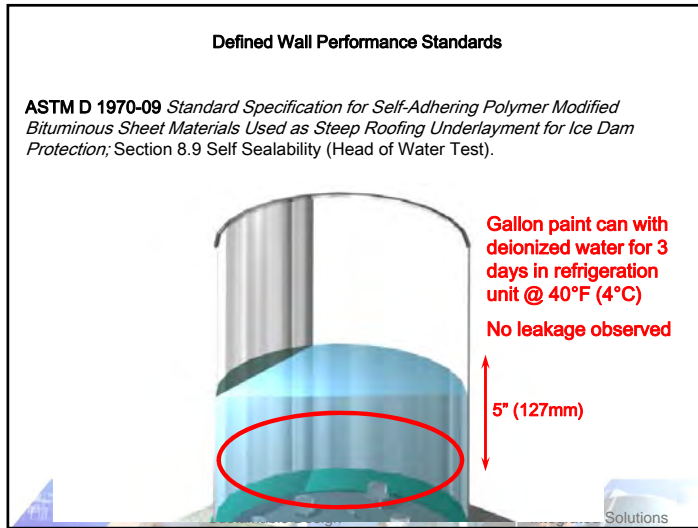
- D1970 (8.9) Self Sealability (Head of water test)

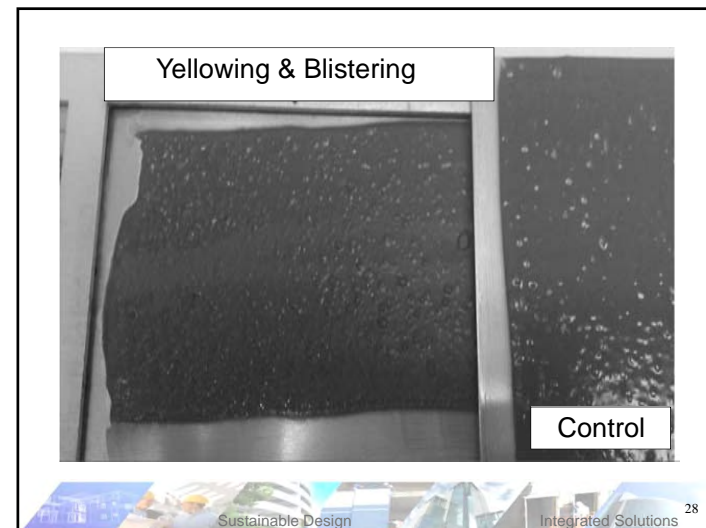
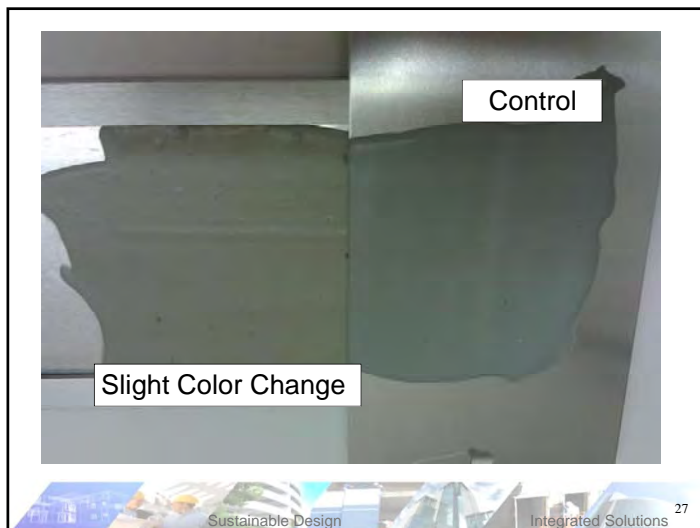
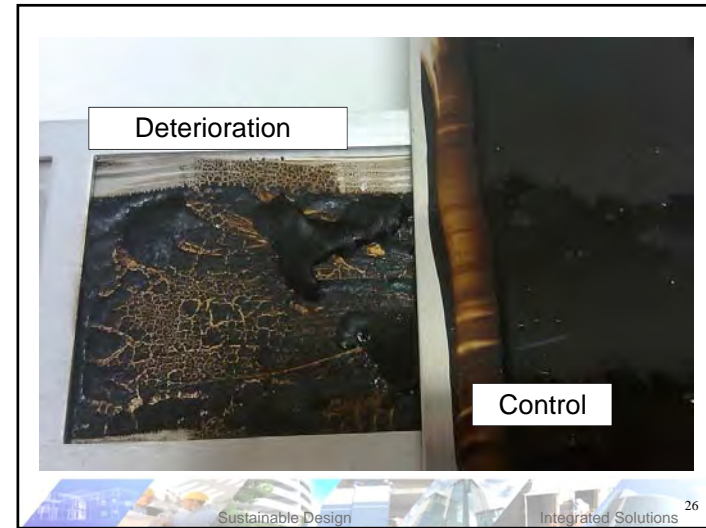
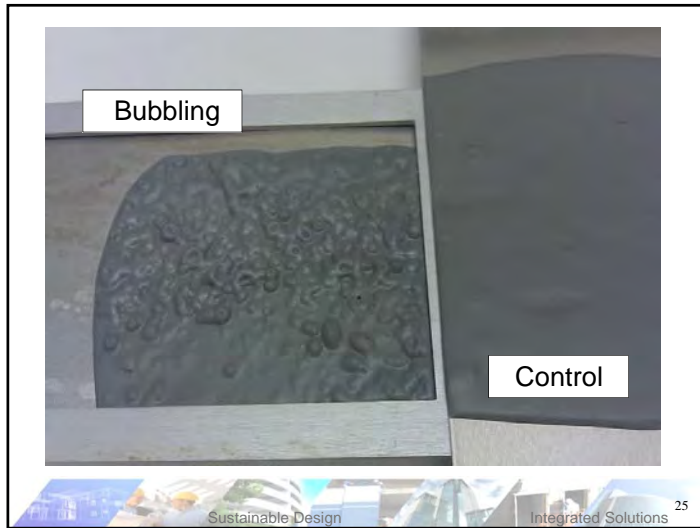


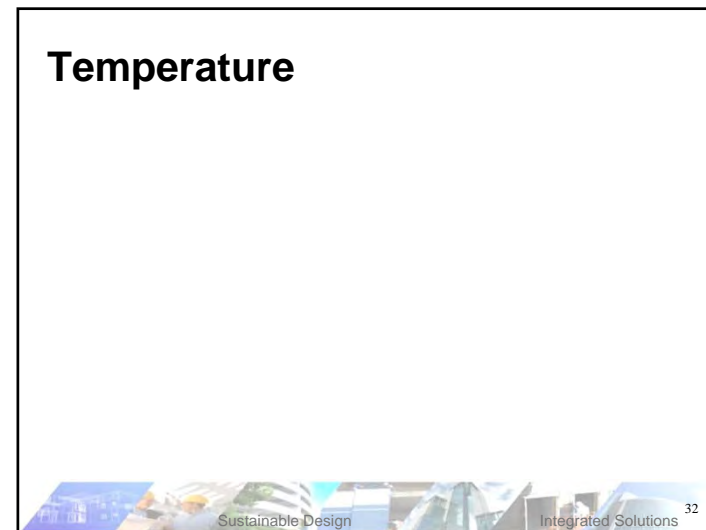
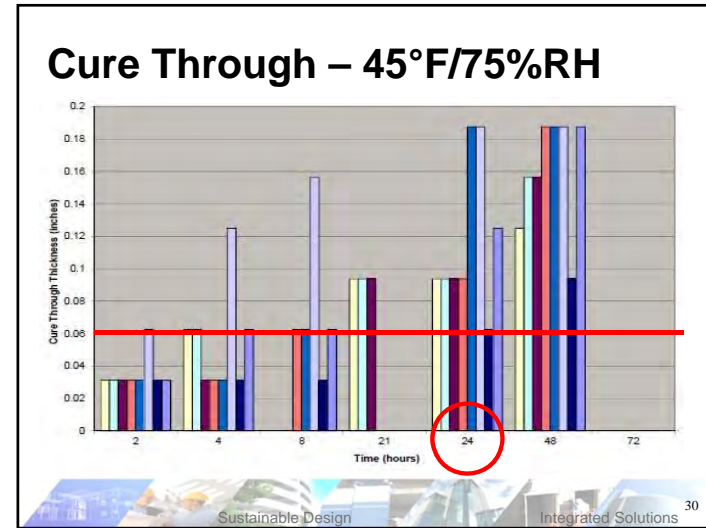
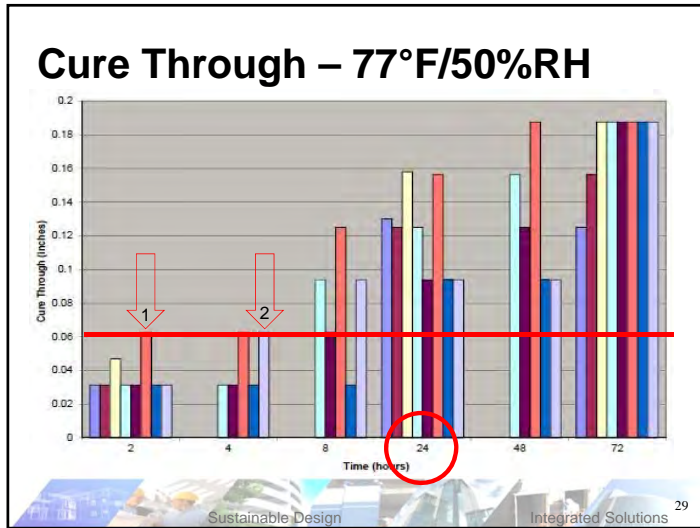
Exterior Gypsum Board

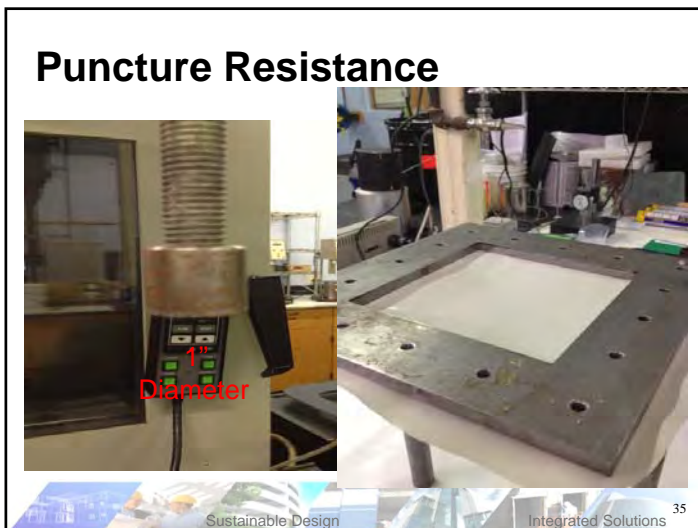
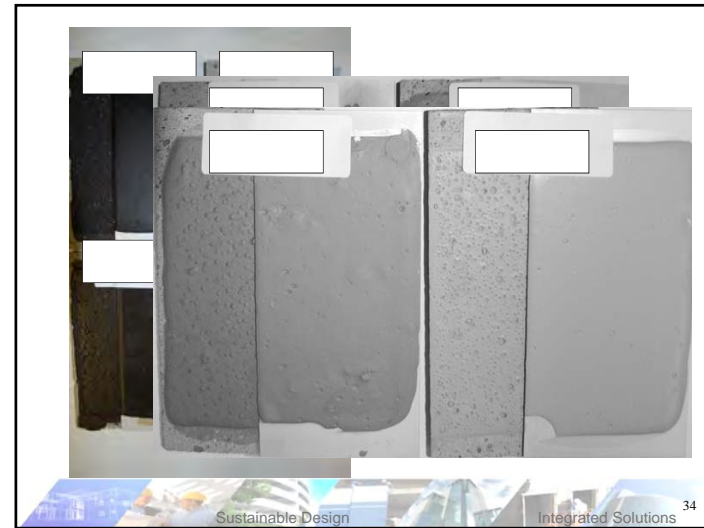
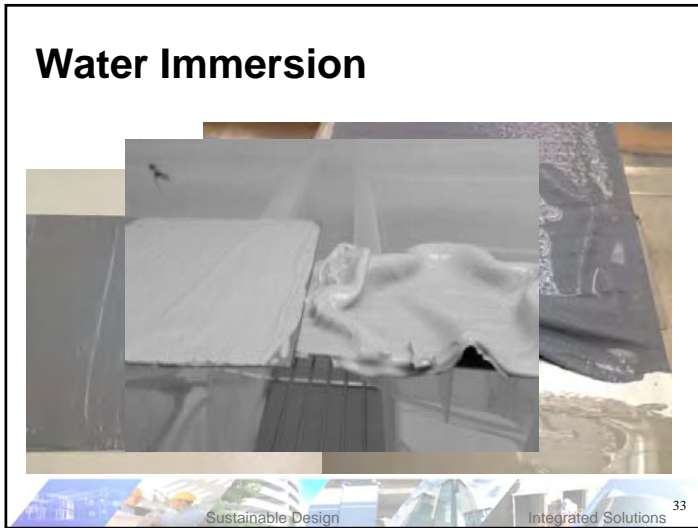


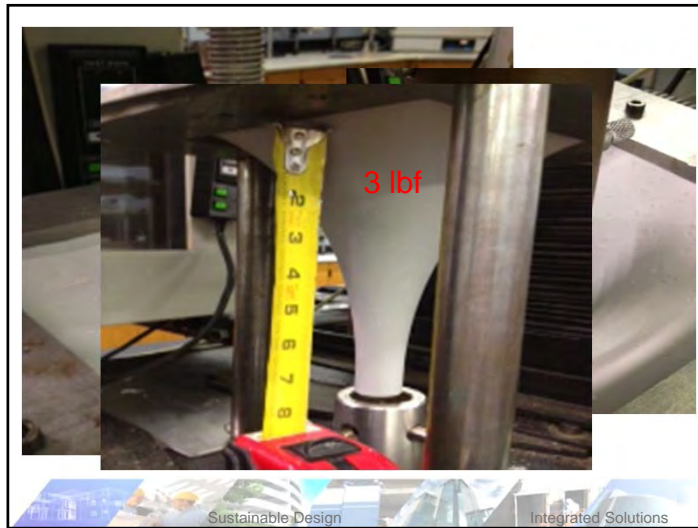













Air Barriers As:

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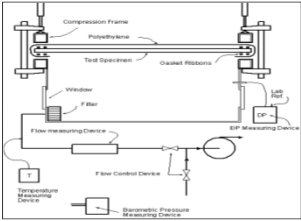
Material - Testing - Air Barrier Evolution

Testing of Air Barrier Materials



Designation: E 2178 - 03


Standard Test Method for Air Permeance of Building Materials¹



MATERIAL must have an air permeance of less 0.02 L/s m² @ 75 Pa

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Assembly

Next Logical Step Forward 


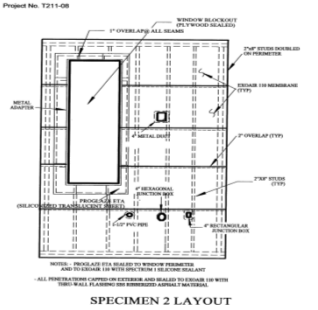
Test Assemblies vs. Component Materials

ASTM E2357-05
Standard Test Method for Determining Air Leakage of Air Barrier Assemblies

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Air Barrier Evolution


ASTM E 2357
Air Leakage of Air Barrier **ASSEMBLIES**

Project No. T211-06

NOTE: MEASURY TAPE NOT USED.


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Air Barrier Evolution

ASTM E 2357
Air Leakage of Air Barrier
ASSEMBLIES



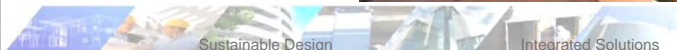


ASTM E 331 Water Leakage



Test Facility


- Air Leakage Testing
- Water Spray Testing
- Connectivity of adjacent enclosure systems
 - Roof to Wall
 - Window to Wall
 - Above-grade to Below-grade

Assembly Testing



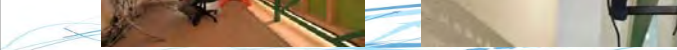
The Challenge

Provide an air barrier assembly that will perform behind stucco, with a seismic joint at the head of the window and a sill pan



Assembly Testing

- ASTM E283
 - Measure air leakage of an assembly.
- ASTM E2357
 - Measure air barrier system durability
 - Measure deflection to determine structural soundness.

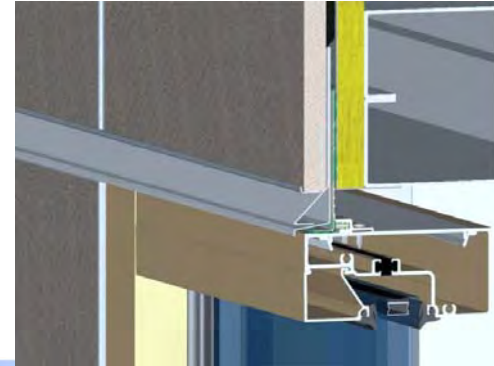
Assembly Testing

- ASTM E331
 - Determine resistance for water leakage
 - Variable durations and pressure requirements.



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Assembly Testing



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Assembly Construction



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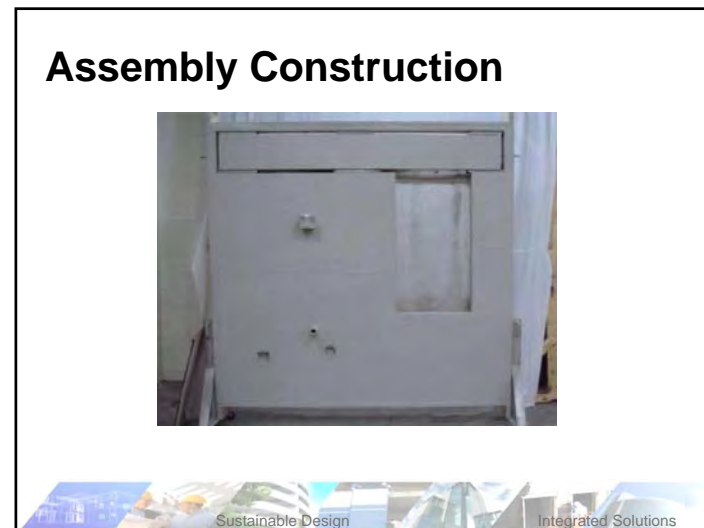
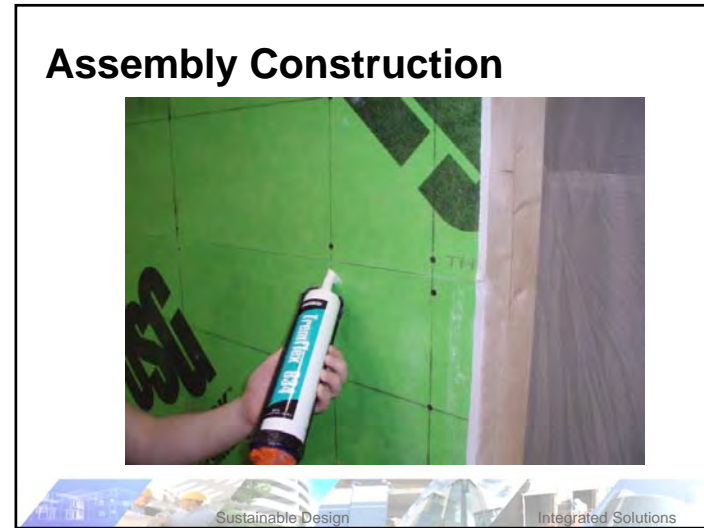
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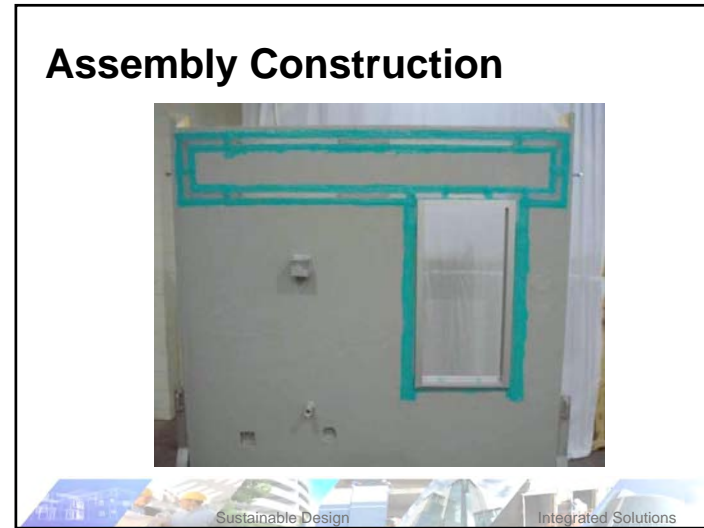
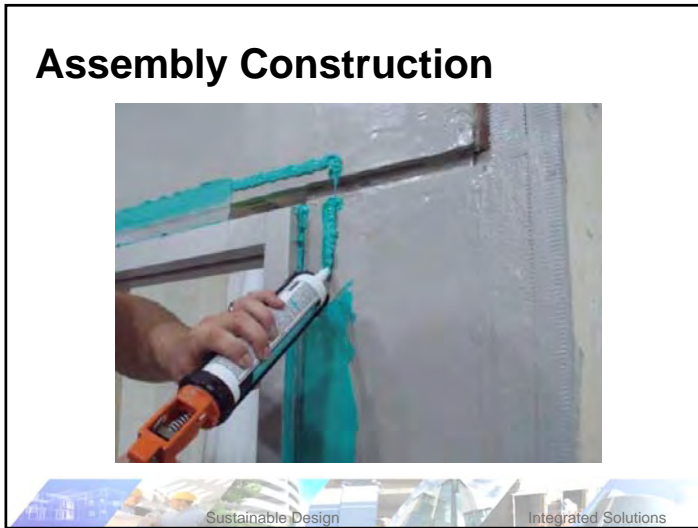
Assembly Construction



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Assembly Testing



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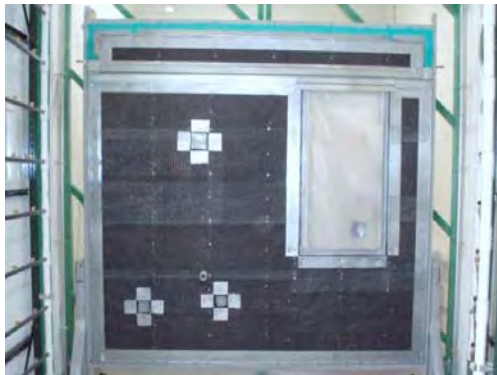
Assembly Construction



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Assembly Testing



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Assembly Construction



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Test Results Breakdown

Wall Configuration	Air Flow Condition	Leakage Rate Test Area	ABAA Requirements	Leakage Rate Test Area	ABAA Requirements
		(L/s*m ²)		(L/s*m ²)	(cfm/ft ²)
Opaque Pre Cond	Exfiltration	0.009	0.20	0.002	0.040
Opaque Post Cond	Infiltration	0.009	0.20	0.002	0.040
Penetration Pre Rack	Exfiltration	0.011	0.20	0.002	0.040
Penetration Post Rack	Exfiltration	0.012	0.20	0.002	0.040
Penetration Post Cond	Exfiltration	0.013	0.20	0.003	0.040

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Test Results – What does this mean?

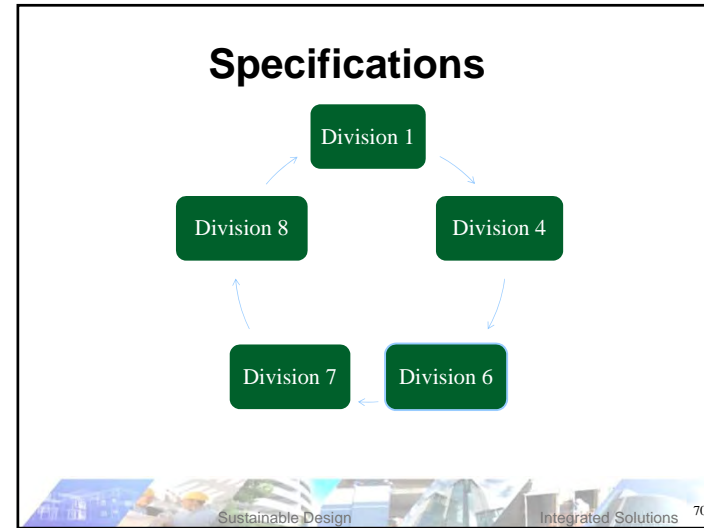
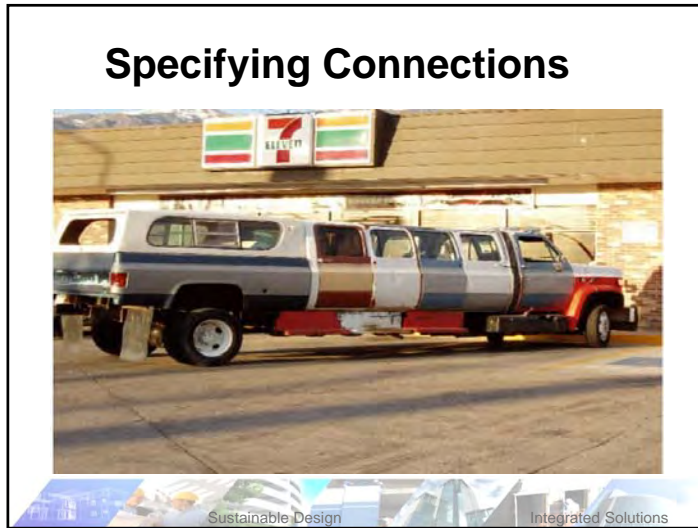
- ASTM E283
 - Results indicate the Air Barrier Assembly Leakage to be 0.003 cfm/ft²
- ASTM E2357
 - No damage to the system during wind conditioning

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Test Results – What does this mean?

- ASTM E331
 - Tests were performed modified to meet the requirements of California Building Code
 - Increase spray duration from 15 minutes to 2 hours.
 - Increase pressure differential from 137 Pa (2.86 psf) to 300 Pa (6.24 psf)
 - Requirements – No water may penetrate into the wall cavity.
- The Stucco Wall System passed the 2 hour water exposure with no water leakage into the assembly for the duration of the test.

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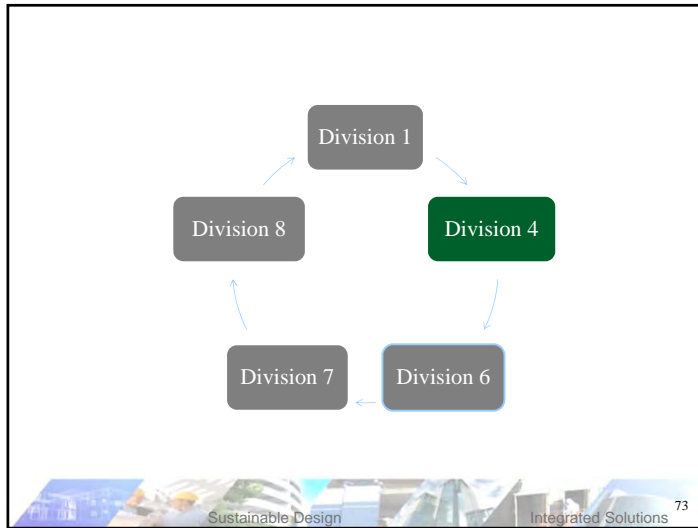


Division 1 General Conditions

Section 01 43 39 Mockups
 Section 01 83 16 Exterior Enclosure Performance Requirements
 Section 01 91 17 Exterior Enclosure Commissioning
 Section 01 93 13 Exterior Enclosure Maintenance Procedures

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- ### Pre-construction Meeting
- The air barrier pre-construction meeting should cover at least the following activities:
 - Reviewing all project drawings to determine if the proposed details can be constructed as intended by the designer.
 - Review the system specifications
 - Declaration by each trade of their selection of materials and a subsequent analysis of compatibility issues
 - Review of construction details, including tie-in areas
 - Sequencing the work of all trades working on the project with a comprehensive construction schedule
 - Discussing project-specific considerations
- Sustainable Design Integrated Solutions 72

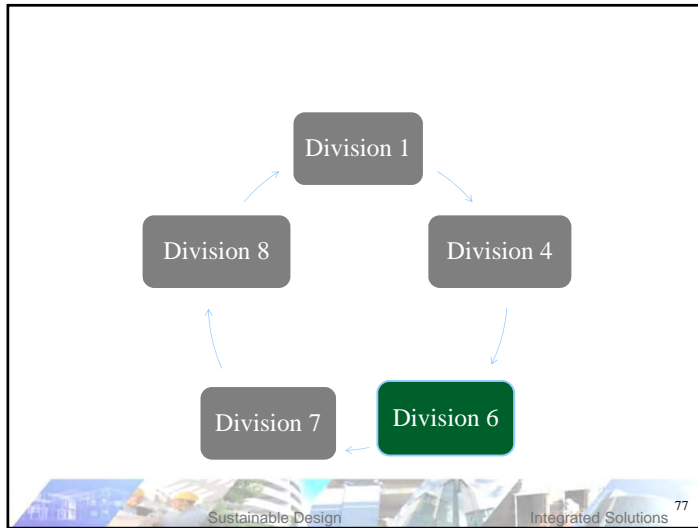


Division 4 Masonry

- Struck Flush Joints
- Holes filled
- Mortar Droppings Cleaned
- No sharp or large changes in plane
- Protected before/after application
- Reference AB in Masonry section so mason knows the surface will receive a membrane
- Sequence wall to roof connection
- Recommend fluid vs. sheet on CMU
- Thru-wall flashing

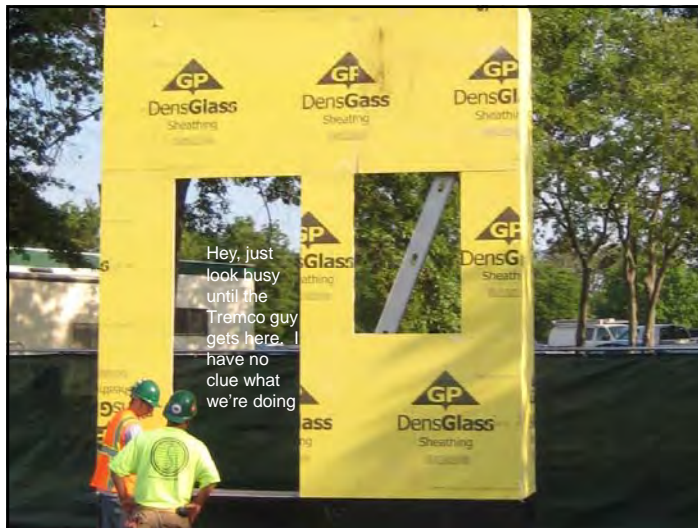
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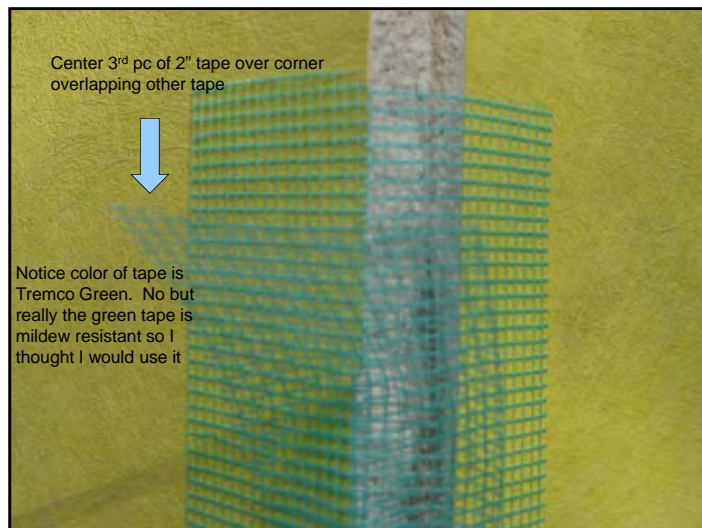
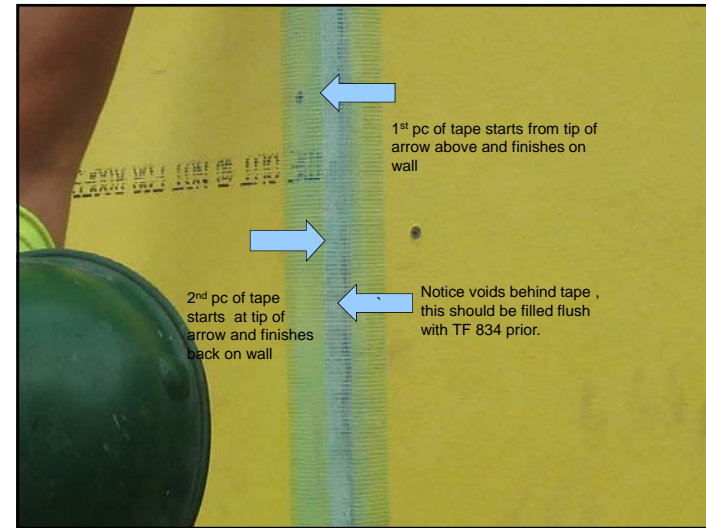


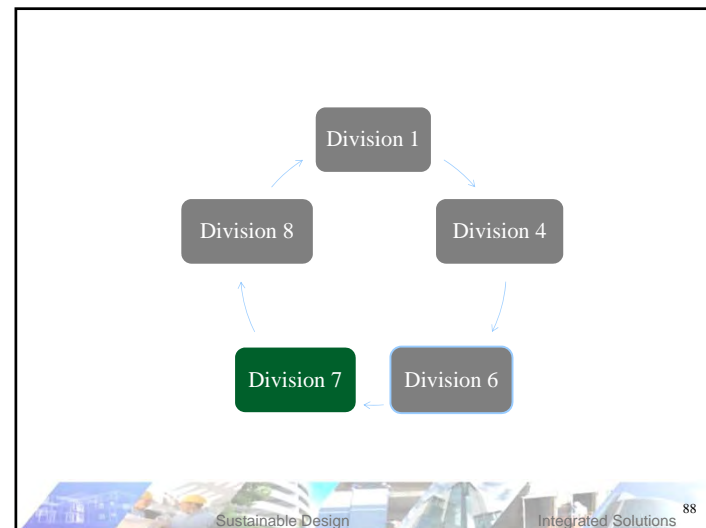
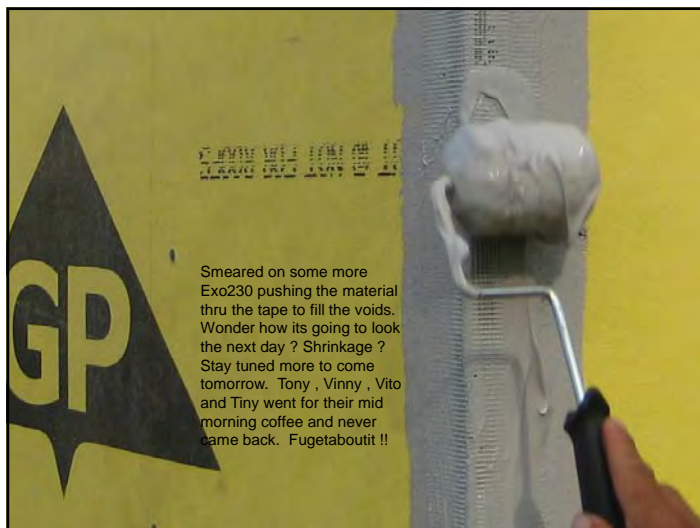
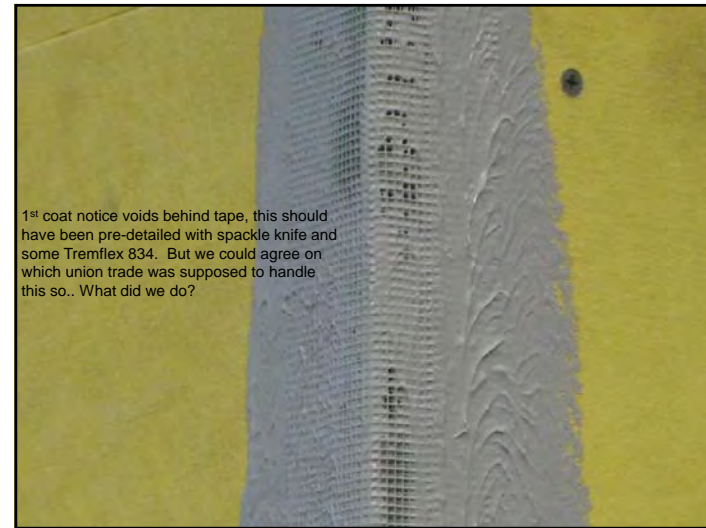


Division 6 Wood, Plastics & Composites

- Joints Tight
- Sheeting Must be secured
- Broken Edges must be repaired
- Penetrations in before Air Barrier
- Pre-construction meeting must be prior to sheeting install
- Make sure you get AB manufacturer has tested on sheeting substrate






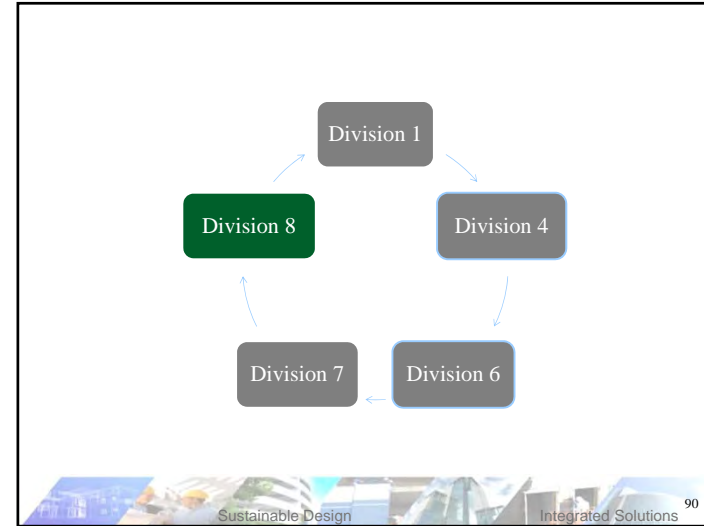


Division 7 Thermal & Moisture Protection

- **SECTION 072500 WEATHER BARRIERS** - Building paper and building wrap weather-resistive barriers and flexible flashing.
- **SECTION 072713 MODIFIED BITUMINOUS SHEET AIR BARRIERS** - Vapor-retarding, modified bituminous sheet type.
- **SECTION 072726 FLUID-APPLIED MEMBRANE AIR BARRIERS** - Elastomeric, modified bituminous and synthetic polymer membranes about 40 mils (1.0 mm) and thicker; vapor retarding and vapor permeable types.
- **SECTION 072729 AIR-BARRIER COATINGS** - Elastomeric, modified bituminous, and synthetic polymer coatings about 20 mils (0.5 mm) and thinner; vapor retarding and vapor permeable types.




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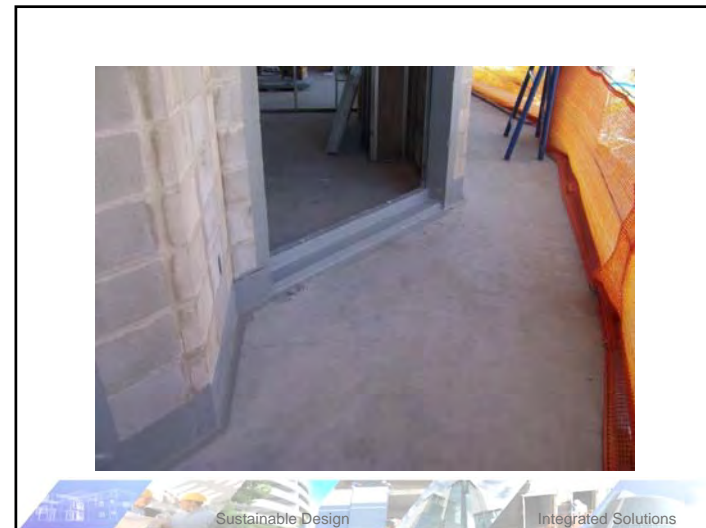
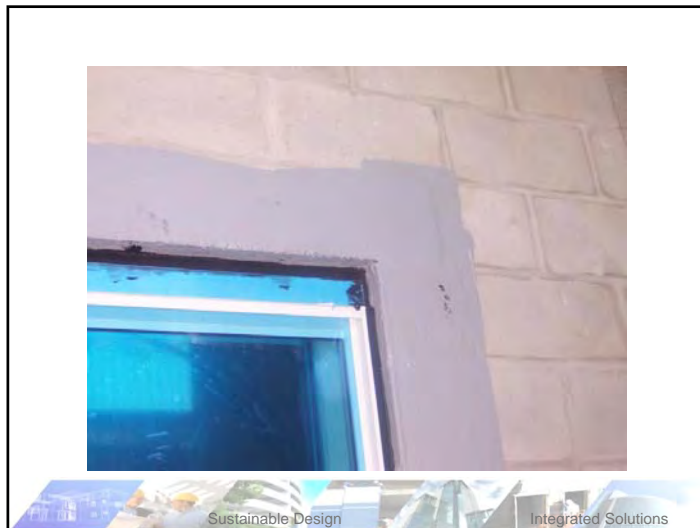
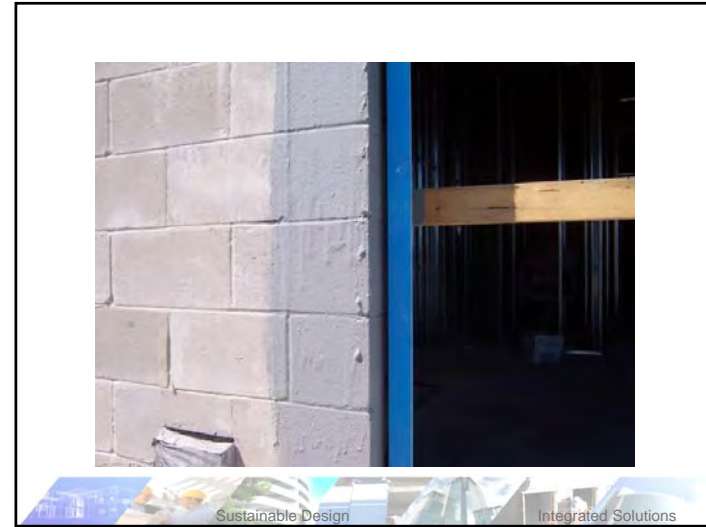
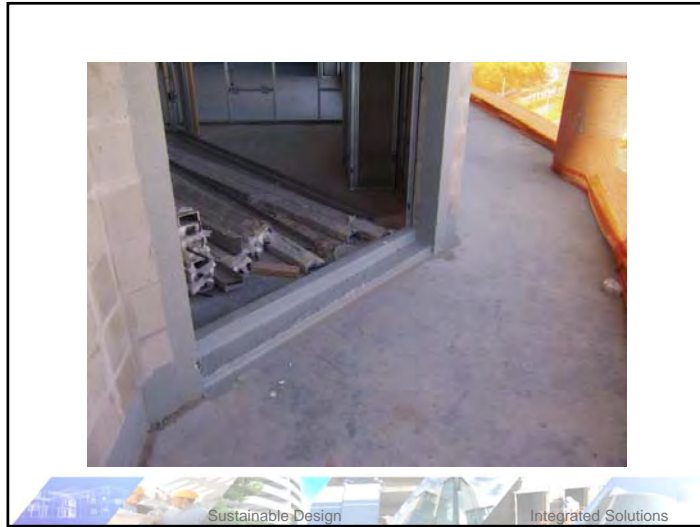
Division 8 Openings

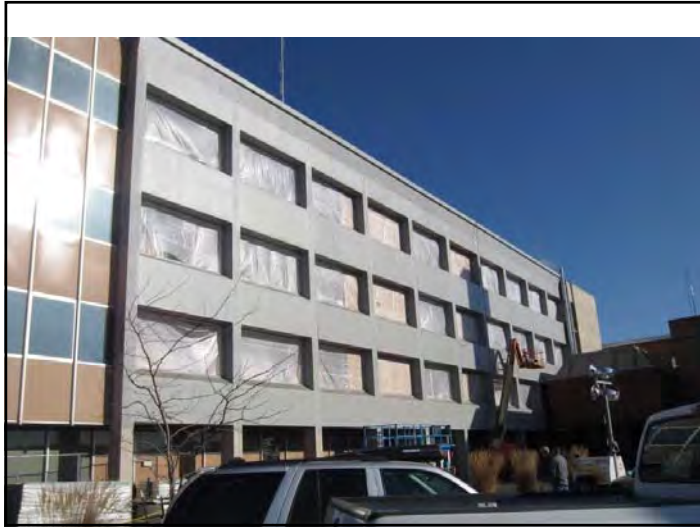
- Air Barrier Perimeter Seal to Windows, Doors, Curtain-wall and Storefront Systems:



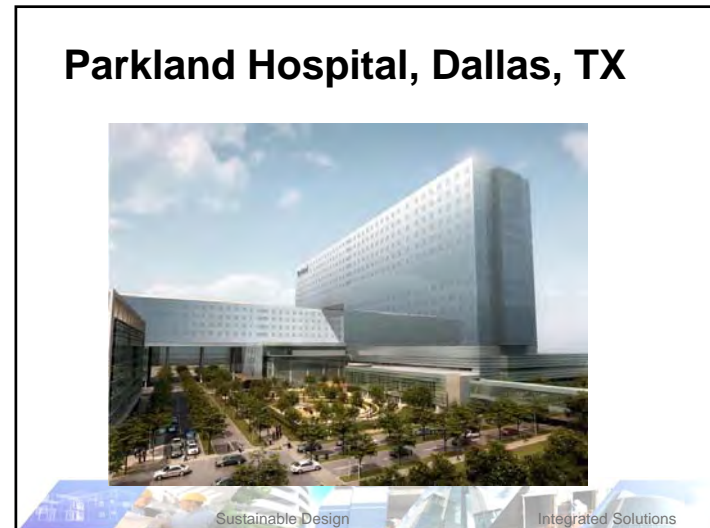
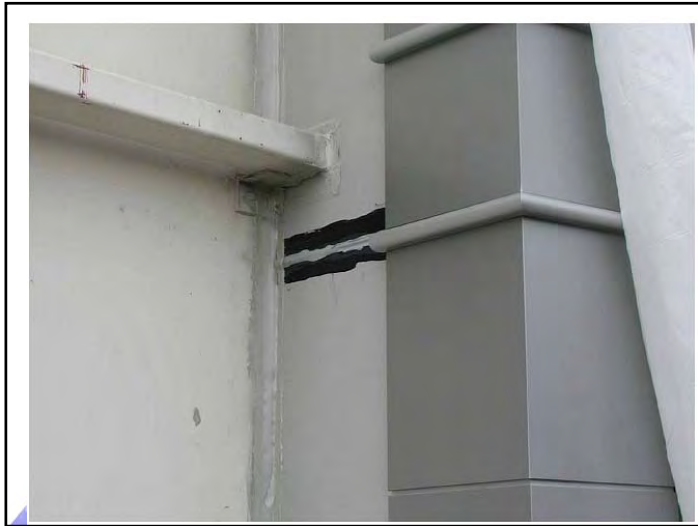
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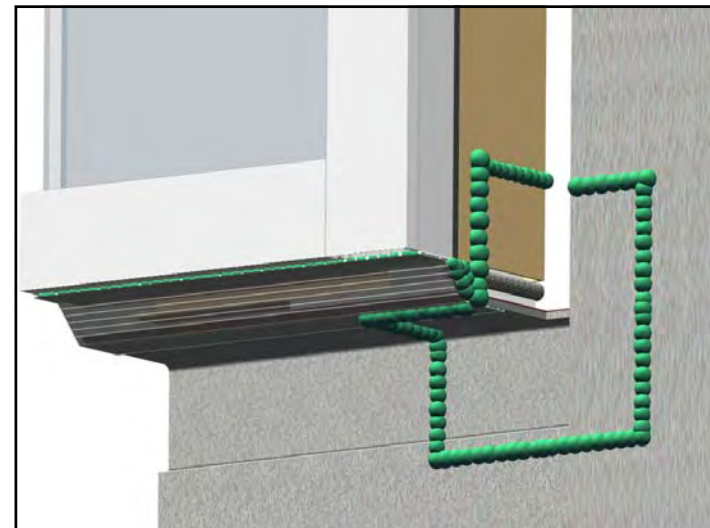
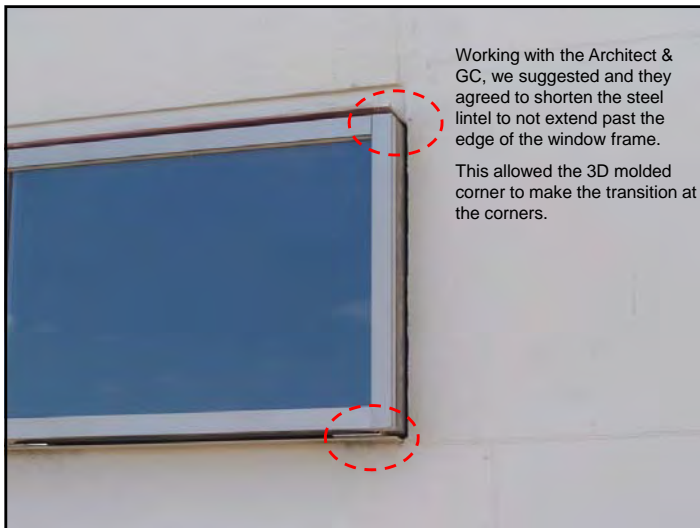


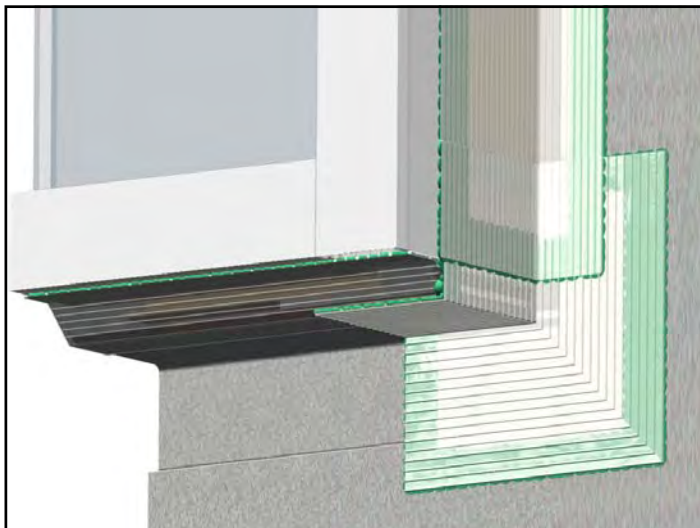
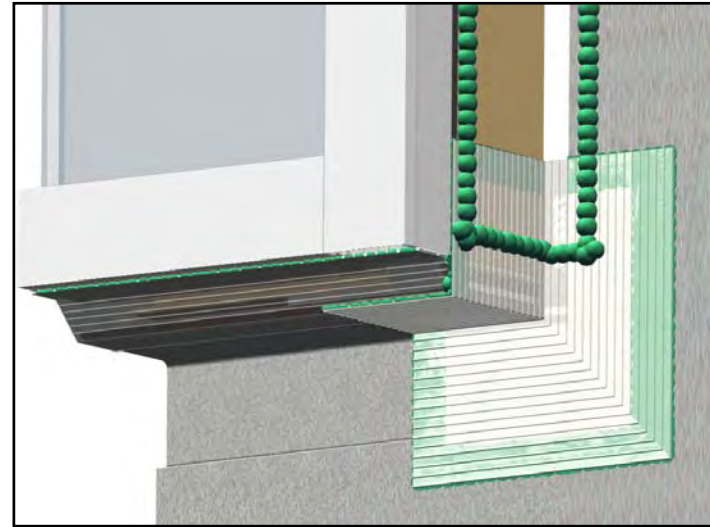
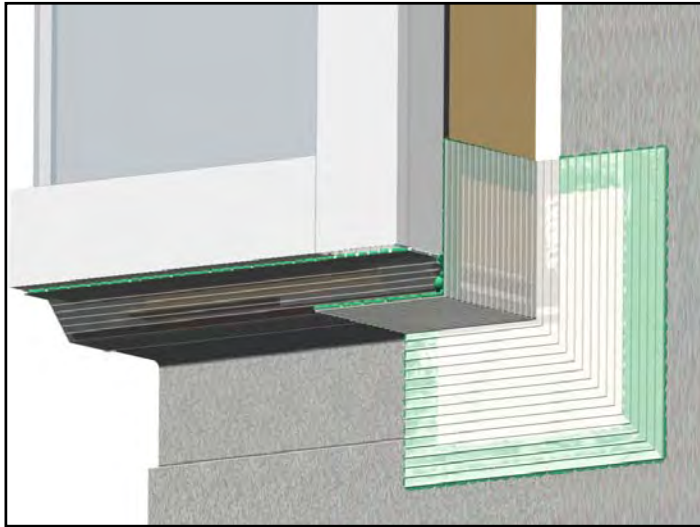












Field Quality Control & Inspection

- Pre-Construction Mock-Up & Testing
- Troubleshooting Opportunity
- Installer Training



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Field Quality Control & Inspection

- Visual Inspection
 - Sealing Engineered Transition Assembly Elements
 - Priming Where Required
 - Membrane Continuity
 - Proper Lapping & Detailing



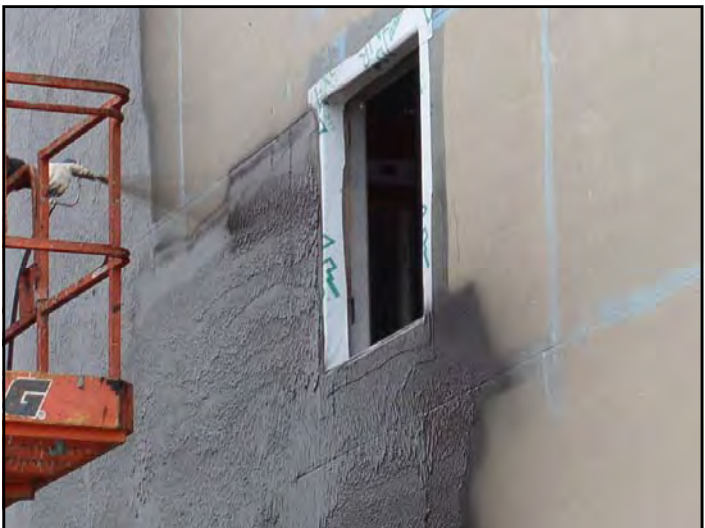
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Field Quality Control & Inspection

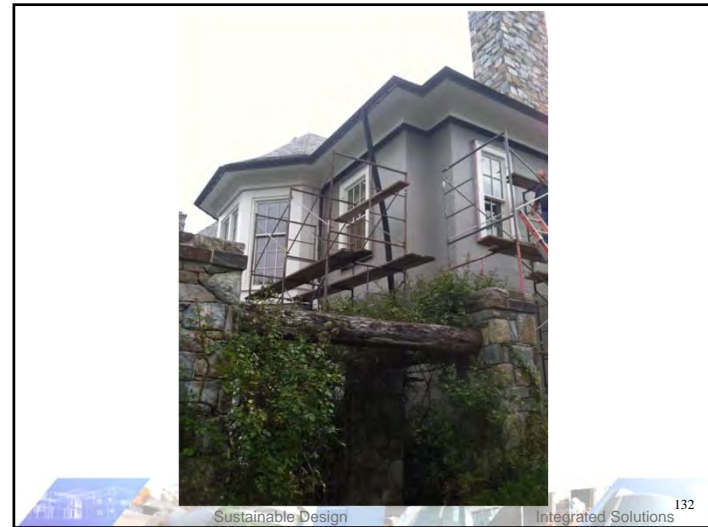
- Adhesion Testing
 - ASTM D4541
- System Pressurization
 - ASTM E1186
 - Looks for leaks at the details & transitions



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Questions

Thank you

A decorative footer for slide 135, featuring a blue background with architectural images and the text "Sustainable Design" and "Integrated Solutions". The number "135" is also present in the bottom right corner of the footer area.

Sustainable Design Integrated Solutions 135