PROJECT: OVERCOAT
Steve Schirber
612-787-5716
steve@cocoon-solutions.com
Purpose

1. Solution to Ice dams and related problems associated with Story and half Homes
2. Test the Exterior Thermal Moisture Management System (ETMMS) as a roof only approach roof-only approach for maximizing opportunities for insulation, air sealing, and roof deck ventilation
3. Compare the ETTMS Approach to current methods
What is a Story and a Half (SAAH)?
Why Story and a Half

1. Represents common building type
2. Typically has performance issues
3. Difficult to retrofit
What are the problems with the Story and a Half?

1. Durability
2. Ice Dams
3. Comfort
4. Air Quality
5. Moisture Issues
6. Utility Costs
WHY ARE SAAH’S A PROBLEM?
Why are SAAHs a Problem?

Boundary Conditions!
Why are SAAHs a Problem?

1. Attics are not intended to be finished
2. Desire to maximize space
3. Using the roof for a wall
4. Creating confused spaces
5. The devil is in the details
Retrofit Performance Goals

1. Air Leakage reduction
2. Moisture Management
3. Increase R-Value
4. Minimize Thermal Bridging
5. Appropriate Ventilation (IAQ)
6. Combustion Safety
Overcoat: Case 1
What is an Overlay?
What is an Overlay?
What is an Overlay?
What is an Overlay?
What is an Overlay?
What is an Overlay?
What is an Overlay?
Planning

1. Identify areas affected by elevating roof deck 6”
Planning
Planning
Planning

1. Identify areas affected by elevating roof deck 6”
2. Eliminate roof penetrations
Planning
Planning

1. Identify areas affected by elevating roof deck 6"
2. Eliminate roof penetrations
3. Sequence Tear off and Dry-in
Remove Existing Attic Insulation
Demo
Air/Vapor Control
Air/Vapor Control
Air/Vapor Control
Air/Vapor Control
Air/Vapor Control
Air/Vapor Control

Air Test!
Air/Vapor Control
Insulation Details
New Soffit/Eave Detail
New Soffit/Eave Detail
Insulation
Insulation
Insulation
Frame Venting Sleepers
Frame Venting Sleepers
Frame Venting Sleepers
Soffit Venting
Soffit Venting
Soffit Venting
Roofing
Roofing
Finished!
Results

Overcoat: Case 1

<table>
<thead>
<tr>
<th>MEASUREMENT</th>
<th>PRE TEST</th>
<th>POST TEST</th>
<th>REDUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Leakage (CFM50)</td>
<td>2371</td>
<td>1880</td>
<td>491 CFM50</td>
</tr>
<tr>
<td>Air Changes (ACH50)</td>
<td>4.93</td>
<td>3.9</td>
<td>1.0 ACH50</td>
</tr>
</tbody>
</table>
CASE 1
Existing House
Existing House
Existing Upper Level
Existing Insulation
Demo
Membrane
Membrane
Membrane
Air Test
Air Test Again!
Framing New Soffit/Eave Detail
Framing New Soffit/Eave Detail
Insulation
Insulation
Insulation
Frame Gable Rakes
Frame Gable Rakes
Frame Venting Sleepers
Frame Venting Sleepers
Roofing
Roofing
Finished!
Results

Overcoat: Case 2

<table>
<thead>
<tr>
<th>MEASUREMENT</th>
<th>PRE TEST</th>
<th>POST TEST</th>
<th>REDUCTION</th>
<th>% REDUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Leakage (CFM50)</td>
<td>2925 CFM</td>
<td>1289 CFM</td>
<td>1636 CFM</td>
<td>56%</td>
</tr>
<tr>
<td>Air Changes (ACH50)</td>
<td>7.02</td>
<td>3.09</td>
<td>3.93 ACH</td>
<td>56%</td>
</tr>
</tbody>
</table>
RESULTS

1. Thermal imaging done in conjunction with blower doors suggests very effective air sealing method
2. Eliminated ice dam formation (as a result of heat loss)
3. Occupants reported significant comfort changes
4. Comparative effectiveness for air leakage is not readily available without knowing percent of leakage from treated surface area
5. Assume equal leakage per square foot of surface area
CANDIDATE FOR OVERLAY

1. Finished attic space
2. House has heat loss performance issues
3. Needs new roof
4. Needs Eave and Cornice work
5. Client can afford it!
THANK YOU!