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Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.





Doing it Right the Second Time

Minimally Invasive, Cost-Effective Solutions for Window Repair vs. Replacement

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Taking the Lab to the Field

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Learning Objectives

- 1. Simple jobsite testing can prevent many window leaks before they occur.
- 2. The availability of better performing windows increases the potential for water and air leakage.
- Early intervention with minimally invasive repairs may avoid the need for more extensive, costly repairs.





NUNN

Windows Types Punched Openings

Extruded Vinyl Wood Frame Aluminum Fiberglass Other





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Owner / Developer define "High Performance" as: ✓ Full Occupancy ✓ Easily Maintained





Growing popularity of Energy Efficient Windows



Increasing Windowto-Wall Ratio









Modern multi-family structures have higher window-towall ratios.







The problem:Windows leak











18-20% of new windows received on a jobsite will fail a simple sill track test.





Sill Track Test (AAMA 511-08 4.2.1.2.1)

- 1. Block weep system
- 2. Fill sill frame with water
- 3. Wait 15 minutes to detect any drop in water level.











Corroded Fasteners

Decayed Sheathing & Structural Members





The problem:

- Windows leak
- 20% leak rate upon delivery



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SUDCAT,



The problem:

- Windows leak
- 20% leak rate upon delivery
- Additional leakage due to handling/installation

Continuous, waterproof, vapor-permeable flashing membrane.






AAMA 502 recognizes that damage from transport, handling and install is so likely that **post**installation warranty and confidence testing should be limited to 2/3 of the window's design pressure.







GREEN CONSTRUCTION EXISTING BUILDING CODE



NOBODY IS MORE COMMITTED TO WINDOW AND DOOR PERFORMANCE THAN WEARE.





Some water leakage is acceptable when windows are exposed to wind-driven rain that exceeds 15% of the design load.

Acceptable?





The problem:

- Windows leak
- 20% leak rate upon delivery
- Additional leakage due to handling/installation
- Increasing Window-to-Wall ratios
- Performance expectations are too low

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Window Replacement

Installed Costs – Puget Sound Region 5 X 5 EV, energy efficient horizontal slider, low-e glass: \$385 - \$600









Window Replacement

Installed Costs – Puget Sound Region 5 X 5 EV, energy efficient horizontal slider, low-e glass: \$385 - \$600

> \$250 materials + \$135-\$350 labor

Add 50% for double hung, 90% for casement or awning.







Item/Task per window	Labor (minutes)	Matl. \$	Equipt \$
Set up and protection	10	1.50	-
Drill hole in jamb	5		1.00
Install WRS	15	35.00	.50
Clean-up	5	.50	
Miscellaneous	5	.25	
TOTAL	40	37.25	1.50





40 min. labor @ sell rate of \$75 per hour = \$50.00 Materials + Equipment = \$38.75 X 120% = \$46.50

Total per window repair price = \$96.50





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Cost for 250 window repair project = \$24,125.00









Pacific NW Condominiums: Problem – Leaky windows **Originally Proposed** Repair – Total window replacement. **Original Estimate -**\$1,200,000. Window Repair Solution -\$130,000 Savings to the Owners of \$1,070,000

Bellevue Condominiums:



Bellevue Condominiums:

Problem - Water infiltration through the wall assembly.
Proposed Repair – Strip, re-clad, window replacement.
Original Repair Estimate - \$4.5 million.
Window Repair Solution - \$850,000
Savings to Owner - \$3,650,000


North Seattle Apartments:

Problem – Leaky windows.
Proposed Repair – Strip, re-clad, window replacement.
Original Estimate - \$3.2 million.
Window Repair Solution - \$775,000
Savings to the Owners - \$2,425,000



The Seattle Building Problem – Leaky windows Proposed Repair - Strip and re-clad, window replacement Original Repair Estimate - \$2.8 Million Window Repair Solution - \$625,000 Savings to the Owners - \$2,175,000



South Seattle Apartments: Problem – Leaky windows OriginallyProposed Repair – Total Window replacement. Original Repair Estimate - \$1,350,000 Window Repair Solution - \$550,000 Savings to the Owners - \$725,000



The beneficiaries:

- Residents
- Businesses







The beneficiaries:

- Residents
- Businesses
- The Constructors
- Property Owners
- The Insurance Company







The obstacles:

- Opportunistic contractors / Associates
- Window manufacturers





The obstacles:

- Opportunistic contractors / Associates
- Window manufacturers
- Ambulance chasers
- Financial institutions





The opportunity:

- Repeat business
- Negotiated work
- Better margins





The opportunity:

- Repeat business
- Negotiated work
- Better margins
- Referrals
- A good night's sleep





The solution:

 Inject appropriate sealant into leakprone areas.







The solution:

 Inject appropriate sealant into leakprone areas. ✓ Odorless ✓ Solvent Free ✓ Primerless Moisture tolerant Adheres to EV, AI, etc Flowable **Fast Setting** Durable







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