

# LEED-ing The Way!

Energy Efficient and  
Sustainable Roof Coatings

# Course Outline

- Program Objectives
- Scope of Presentation
- A Primer on Roof Coatings
- Energy Efficiency & Roof Coatings
- Sustainability & Roof Coatings
- LEED-ing The Way!
  - Earning LEED Point with Energy Efficient and Sustainable Coatings
- Summary & Questions!
- Resources & Special Thanks

# Program Objectives

- **Provide a primer on the roof coatings industry and the products key benefits**
- **Identify roof factors that drive Sustainability and Energy Efficiency in a building, such as reflectivity, emissivity, thermal shock, renewable resources, heat island effect, geographic location etc.**
- **Educate participants on driving factors that are influencing energy efficient and sustainable coatings including ASTM, Energy Star's Roofing Program, Cool Roof Rating Council and US Green Building Council's Leadership in Energy Efficient Design**
- **Understand "Cool Roofing" and its benefits to the building, the environment, the community and the owner**
- **Leverage your knowledge and earn LEED Points for roof coatings when using roof coatings**

# Scope of Presentation

- Low slope roofing applications for commercial and multi-family residential
- Commercial Building Consume 46% of US Total Energy use and 76% of Electricity Consumption
- 44% of a building consumption goes to heating and cooling

# Roof Coatings

- Define
- Produced how
- Types: Solvent or Water Based
  - Solvent: Typical Applications
  - Water-based: Typical Applications

# Types of roofing coatings!

- White & Pigment Coatings
  - Acrylic
  - SBS
  - Silicone
  - Urethane
  - Poly-Urea
  - Bio-based
- Bituminous Coatings
  - Aluminum
  - Include some picture on this page.

# Roofing Types & Coating Applications

- Insert Brian Anthony Chart
- Include Disclaimer about checking with Manufacturer

# Applying Roof Coatings

- Ease of Installation
  - Roll
  - Spray
- Things to consider

# Benefits of Roof Coatings

- Extend the functional life of a roofing system
  - New
  - Maintenance Program
- Energy Efficient
  - Reduce energy consumption for cooling loads
- Environmentally Friendly
  - Reduce tear-off
- Additional protection for the roofing system
  - redundant layer for moisture penetration
  - Protection from UV damage

# Energy Efficiency

- Energy Efficiency via Reflectivity

# Energy Efficiency via Reflectivity

- Defined as “Cool Roofing”
- Goal of “Cool Roofing”
- Attributes of a “Cool Roof”
- Benefits of a “Cool Roof”

# Cool Roofing Defined

- Solar Reflectance and Emittance
- Use CRRC and US EPA Energy Star Program Definition and References
- Place Cool Roof Graphic Here

# Cool Roofing Defined

- SRI Calculations
- Need to use the DOE Calculator and Model definitions
- Pro's/Con's of SRI

# Goals of Cool Roofing

- Mitigate Heat Gain within a structure
  - Reduce energy consumption
- Mitigate Urban Heat Island Effect
  - Definition of UHIE
  - Insert diagram of weather effects
- Sustain Roofing System
  - Eliminate thermal shock
- Others

# Benefits of Cool Roofing

- Reduce thermal shock
- Lower ambient air temps
  - Better air quality
  - Less smog formation
- Examples of cost savings
  - Re-roof verses Coat
  - Potential additional years
- Examples of energy savings
  - Show climate zones for various types of coatings

# Typical Attributes of a “Cool Roof”

- White-pictures
- Pigmented-pictures
- Aluminum-pictures

# Caveats of Cool Roofing

- Climate Specific
- Building Envelop Specific
- 3-year aged values max 20% reduction in reflectivity
- Include ashrae climate zone map

# State's Reflectance Requirements

- Endorsing “Cool Roofing”
  - California Title 24
  - EPA Energy Star Program
  - LEED
  - Department of Energy
  - ASHRAE

# How Products Are Rated

- Test Methodologies

# Who Rate Products

- Cool Roof Rating Council
- US EPA's Energy Star Roofing Program
- Others

# Sustainability Defined by:

- ASTM-E2129
  - "the maintenance of ecosystem components and functions for future generations." This definition and others like it bring into play elements such as energy conservation, environmental responsibility, waste management and the maximized and effective use of natural resources and raw-materials.
- RCMA

# Determining Sustainability

- International Organizations
  - ISO
- US Organizations
  - NGO
    - NAHB
    - ASTM
  - GO
    - California State
    - US GBC
- Private Business
  - Walmart
  - IKEA
- RCMA's Sustainability Council

# Life Cycle Analysis

# LEED-ing the Way!

- Sustainable Sites
  - Heat Island Effect
- Energy & Environment
  - Optimized Energy Performance
- Materials & Resources
  - Building Re-use
  - Recycled Content
  - Regional Materials
- Indoor Environmental Quality
  - Low Emittance Materials
  - Sealants



# Site Sustainability

# Energy & Environment

# Materials & Resources

# Indoor Environmental Air Quality

# USGBC Resources

# Program Summary

# Additional Resources

- Energy Star Roof Prg. - [http://www.energystar.gov/index.cfm?c=revisions.roofs\\_spec](http://www.energystar.gov/index.cfm?c=revisions.roofs_spec)
- CRRC – [www.coolroofs.org](http://www.coolroofs.org)
- UL – [www.UL.com](http://www.UL.com)
- FM – [www.fmglobal.com](http://www.fmglobal.com)
- DOE – [www.doe.gov](http://www.doe.gov)
- Heat Islands - LBL Labs – <http://eetd.lbl.gov/HeatIsland/>
- LEED - <http://www.usgbc.org/DisplayPage.aspx?CategoryID=19>
- Roof Energy Calculator –
  - D - <http://www.ornl.gov/sci/roofs+walls/facts/CoolCalcEnergy.htm>
- RCMA – [www.roofcoatings.org](http://www.roofcoatings.org)
- National Roofing Contractors Association – [www.nrca.net](http://www.nrca.net)
- CA Title 24 – <http://www.energy.ca.gov/title24/2005standards/index.html>
- Calif. Cool Roof Prog. - <http://www.consumerenergycenter.org/coolroof/index.html>
- Dsireusa (Rebate Info. For U.S.) <http://www.dsireusa.org/>

# Special Thanks

- RCMA Sustainability Council
- RCMA Solar Reflective Coatings Council
- Reflective Roof Coatings Council
- National Roof Contractors Association
- EPA Energy Star Program
- Cool Roof Rating Council
- US Green Building Council
- Karnack Corporation and
- RCMA Task Force Members: Tim Nelligan, Steve Heinje, and XXXX?