

## MASDEC MEETING MINUTES

TO: Minnesota ASHRAE Sustainable Design Committee  
FROM: Betti Iwanski, Gausman & Moore  
RE: **Minutes of October 26, 2004 Meeting held at Gausman & Moore**  
DATE: November 9, 2004

ATTENDEES: Betti Iwanski, Todd Courneya, Dan McCarty, Luann Nelson, Brian Shablow, Jim Keller, David Williams, Leighton Deer; and Barry Bridges

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### MISSION STATEMENT

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**PURPOSE:** To advance the energy and environmental performance of buildings through the creation, exchange, and application of timely information about the art and science of heating, ventilation, air conditioning, and refrigeration.

**SCOPE:**

1. Energy conscious design and operation of heating, ventilation, air conditioning, and refrigeration systems.
2. Water conservation practices.
3. Indoor environmental quality control practices.
4. Ambient environmental quality control practices.
5. Materials use strategies.
6. Adaptive reuse of buildings strategies.
7. Information and technology transfer via published position statements, product directories, technical papers, lectures, and demonstration projects.

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#### **1. Old Business:**

- USGBC – UMN has lots of research projects. City of Minneapolis is committed to environmental stewardship. Mayor discussed Green Roof support and new central library as an example.
- KFI Tour – See attached handouts. 8 MASDEC and 12 COTE attendees. Discussion points are attached. It is a great looking building: gas radiant heaters (ceiling) in office, geothermal heat pumps, displacement ventilation. Testing waterless urinal and high velocity hand dryer. Energy costs are \$0.77/ft<sup>2</sup>.
- Todd accessed MN ASHRAE website and went to MASDEC Committee which has contacts, minutes, and green survey. Group gave Todd a list of local (MN) links to add. MBO is also on website ([www.mnashrae.org](http://www.mnashrae.org)).
- ASPE – See Green Roofs (vegetative). Peter MacDonagh of Kestrel Design was a knowledgeable presenter. Roof saves energy, roof on 90° day is 92-94°F, captures 60-70% of storm water, extends life of roof at least two times, and can be used for cooling the building with irrigation.

#### **2. Action Items:**

- 1-5 were completed.
- 6 – Leighton reported on green presentations for life safety, refrigeration, and education seminars: alternative refrigerants and filtration and UV products to mitigate mold.
- 7 – Dunwoody is using KFI office for HVAC design student projects on heat pumps and hydronic heating. Students will also be getting information on LEED certification and its relationship to HVAC design.

**3. New Business:**

- AIA has invited MASDEC to share a booth at the AIA-MN convention, November 2-4, 2004. Six volunteers will be able to display MASDEC poster and discuss green ideas during their time at the booth.
- Life Safety Seminar Booth – Todd will add MASDEC information at the MMS booth – November 9<sup>th</sup>.

**4. Presentation:**

- David Williams gave a Power Point presentation and showed a video on displacement ventilation. LHB tested flow rates and diffusers with a heated floor at Price Labs in Winnipeg.

**5. Next Meeting:**

- Tuesday, January 25th  
 12:00 – 1:15 Jim Keller: ASHRAE National Meeting Report
- No meetings in November and December

**6. Future Meetings:**

- 4th Tuesday of the Month, every other month  
 March 22nd 12:00 – 1:15 Leighton Deer: Dedicated Outdoor Air Systems  
 May 24th 12:00 – 1:15 Matt Branson: Control Strategies and LEED

**7. Networking:**

- **USGBC – Mississippi Headwaters Chapter**  
 Recap of Green Build Conference, November 10-12, Portland, OR  
 Date and location, TBD – January
- **AIA MN Convention**  
 Minneapolis Convention Center, November 2-5, 2004  
 MASDEC Volunteers at COTE booth.

<b>ACTION ITEMS - COMPLETED</b>		<b>Caretaker</b>	<b>Due</b>	<b>Done</b>
1.	Book meeting times at Green Institute	B. Iwanski	7/22	9/09
2.	Review Green Surveys Received	J. Keller	7/22	9/09
		T. Courneya	7/22	
3.	Approval to post Green Products on website	B. Shablow	7/22	9/04
4.	Decide way to include Green Products in Directory	B. Shablow	7/22	9/04
5.	Send Roster of MASDeC to MN Chapter	B. Iwanski	7/22	9/04
6.	Gather materials, make poster for AIA/COTE booth and MN ASHRAE Life Safety Seminar.	B. Iwanski	11/1	11/2
		B. Shablow		

<b>ACTION ITEMS – IN PROCESS</b>		<b>Caretaker</b>	<b>Due</b>	<b>Done</b>
1.	Info on Refrigeration for Chapter Seminar	L. Deer	9/21	9/14
2.	Get info and presenter possibilities to Chapter	L. Deer	Ongoing	
3.	Info on applying for TEGA award	J. Fields	9/21	
4.	Find Green Project for Dunwoody Students	B. Iwanski	Ongoing	9/1
5.	Contact UMN student group.	B Iwanski	12/5	
6.	Update Green Product Directory.			
	Notice to contacts to update.	D. McCarty	11/12	
	Update Information.	B. Iwanski	12/12	
		T. Courneya		

c: All Attendees and Members

Distribution:

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# AIA – Committee On The Environment / ASHRAE – Sustainable Design Committee

## How Architects And Engineers Can Work Together Using The LEED Process

Tuesday, September 21<sup>st</sup>, 2004

Architects – how much square footage for me  
Engineers – integrate with architects  
More collaboration when design is conceptual

1. Architects
  - a. Start prior to contracts
  - b. MER – pump room, penthouse, closet
  - c. Location of MER
  - d. Workshops (green) – need to be productive
  - e. Qualified sub-contractors
2. How can the engineer get on board prior to contract/concept phase
  - a. Rules of thumb
  - b. Software program – architects would like square foot in program for engineers “rules of thumb” requirements
  - c. Engineers – spaces in the right place
3. New paradigm
  - a. Typical design process versus using alternative systems/materials – requires “what-if” scenarios to determine impact, which requires a collaborative effort between the architect and engineer
  - b. Mechanical engineer wants early input (especially for the above)
  - c. Change traditional roles – architect in “control”
  - d. Building materials – the energy efficient
4. Down sized buildings
  - a. No incentives in fees
  - b. Paid for knowledge (new concept)
5. Early involvement (structural, contractors, etc..)
  - a. Schematic occurring during development of delivery method
  - b. Getting owner “educated” about the process
  - c. Owners budget sets scope
  - d. Evaluation

# GREEN ROOFS

L. Peter MacDonagh

VP – Kestrel Design Group, Inc.

Presented at October ASPE meeting

## History

1950's – replace destroyed landscape

1970's – oil embargo, energy efficiency (higher roof R factor)

1980's – Life cycle cost – roof replacement cost avoidance

1990's – Storm water control

2000's – Heat island – higher storm water temperatures ecological impact

## Types of Systems

Intensive – heavy, thick (12" or so) soil needing structural support

Extensive – started in Germany (in 1970's FLL developed standards), thin (up to several inches), light, no soil

## How to Apply

Tray

Roll Out

Modified Layer System

## Local Projects

Older – Hubert Humphrey Institute and U of M Architect Building used 12" to 15" deep top soil, modified intensive system with goal of energy savings. Loading and leakage was an issue.

New – Minneapolis Library using an extensive system

## Why?

- During the last century, the average temperature in Minneapolis increased from 43.9F to 44.9F, mostly since 1961
- The river and lake ice cover seasons has shortened by approximately two weeks
- Precipitation has increased in the state, including the Twin City metro area by 20%
- The larger rain events occur more often

## EXTENSIVE SYTEMS

- 1 week rain event is an average of 1.25". The typical 2.5" green roof is designed to contain this. A storm water system is still needed for the greater than 1.25" rain event.
- Slower discharge into water systems, allows the storm water to be filtered and cooled
- Plants about 18" tall (Perennial type) – life expectancy of 50 to 100 years
- Minimal maintenance
  - o Cut grass
  - o Replace dead plants
  - o Remove tree seedlings
- Designed for 5 to 6 passes per year
- Roof loading
  - o Thinnest system about 9#/sq ft – gravel roof designs see 10#/sq ft minimum to 25#/sq ft
  - o For a typical system about \$1.0 to \$1.5 per sq ft additional structural costs
- 90F ambient day, gravel roof ranges from 120F to 140F, asphalt up to 170F – green roof about 94F
- Up to 1/3 pitch, but Peter like more of a 1/2 maximum pitch
- Irrigation needed for first 2 years to establish plant root system
  - o Small roofs – water systems
  - o Large roofs – integrated weep system (better option, promotes roots to “grow” towards water, deeper root system)
  - o Plants need 1" of water per week (June, July, August)
- Leakage detection
- Benefits
  - o Rain water containment
  - o Lower storm water temperatures
  - o Higher roof insulation factor
    - R19 versus R40
    - Reduce HVAC load by 35%, HVAC system size reduction by 30%
  - o Roof lasts longer – typical roof replaced 2 or 3 times before “green” roof replaced
  - o Sound insulation
  - o Improves air quality
  - o Aesthetic improvement
- Disadvantages
  - o Potentially higher construction costs
  - o Potentially higher initial maintenance costs

### How To Pay For The Green Roof?

1. Building total construction costs
  - a. Lower roof insulation costs
  - b. Lower HVAC costs
2. Life cycle cost
  - a. Lower energy usage (lower kW draw from smaller HVAC system and better roof insulation)
3. Rebates/operating charges
  - a. Xcel rebate program
  - b. Local municipal – lower storm water charges