Presenters:

Dominick Balletta  
Managing Director  
Jacob Burns Film Center

Erik A. Kaeyer, AIA, LEED AP  
Vice President  
Kaeyer, Garment & Davidson Architects & Engineers, PC

James Dolan, P.E. LEED AP  
Principal  
O’Dea Lynch Abbattista Consulting Engineers
The Media Arts Lab @ Jacob Burns Film Center

Media Arts Lab Building

- Media Arts Lab Building envisioned to be a flagship for both 21st Century literacy education and for sustainable construction in Westchester.
- The building and its features are another track of our educational programs – to de-mystify the techniques and technologies of sustainable construction for the general public.
- Owning a sustainable building is a commitment to the local community in which we live and work, both as an educational facility and as a cornerstone of the local and regional economy.
- The response to the community has been overwhelming with many groups taking advantage of our open tours to understand the choices made in creation.

Photos: David Lamb Photography
Early Design Process

- **Collaboration** - Teamwork, idea and knowledge sharing
- **Inspiration** - tours of new facilities in the region
- Decision at the beginning of the process to pursue USGBC - LEED Certification
- **Sustainable Design Charrettes** with owner - 5 categories site, water, energy, materials, indoor air quality
Sustainable Features - Site

Site and Urban Considerations:

- **Revitalization** of existing site – Existing building **deconstructed** / 87% of material diverted from landfill
- **Location** – public transportation and pedestrian access to downtown area
- Building oriented to maximize **daylight** but limit solar heat gain - deep roof overhangs
- Site lighting designed to minimize **light pollution**
- **Bicycle** storage – shower facilities
- JBFC has aided the **revitalization** of a suburban downtown - programs and enrichment for which the community would otherwise travel to NYC
Sustainable Features - Exterior

Energy Considerations:

- **High performance envelope** (highly insulated, solar-reflective, low-e thermally broken, glazing system)
- **Local, Recycled content materials** – precast concrete panels
- **Natural ventilation** and day lighting – operable windows
- **Photovoltaic panels** – on-site electricity generation
- **Vegetative ‘Green’ roof system** – Reduce stormwater and solar heat gain
- **Native, drought tolerant landscaping** - no irrigation after initial growth and local species habitat
Sustainable Features - Interior

*Interior Quality and Material Considerations:*

- **Day-lit spaces** with expansive views - overhangs, fritted glazing and perforated shades
- **Fresh air** - natural ventilation through operable windows and high level of outdoor air supply through HVAC system
- **Materials** used that will minimally outgas ensuring clean, safe, non-allergenic indoor air quality
Sustainable Features - Interior

*Interior Aesthetic*

- **Creative Industrial** style – honest, exposed building tectonics
- **Flexible Spaces** – ever changing ways for people to express themselves
Sustainable Features -

*Overall Aesthetic*
- Theatrical – *Flexible* – Dynamic
Sustainable Features

Interior Quality and Material Considerations:

- 51% of the wood products used came from certified, well-managed forests
- 21% (by value) of architectural materials in the building contain recycled content and 35% were manufactured regionally from raw materials sourced within a 500-mile radius of the building
Sustainable Features – Education

Water Efficiency Considerations:

- Water Conservation – low-flow fixtures with intelligent controls lead building to save 41% on volume of water used per year compared to a typical building of the same size and program

Educational Considerations:

- “Green Fact” signs throughout the building and a real-time kiosk in the lobby monitoring performance educate visitors about sustainable features
- JBFC offers monthly tours to the community
Sustainable Features - Systems

Energy Considerations:

- Ground-source heat pump - geothermal system for heating and air conditioning with high-efficiency condensing gas boiler backup
- Lighting efficiency: energy efficient fixtures & smart controls - daylight dimming and occupancy sensors
- Heat recovery of exhaust air stream
- Demand-controlled ventilation detects and reduces air flow when areas are not occupied
## LEED NC 2.2 Certification Points

<table>
<thead>
<tr>
<th>Category</th>
<th>Points Pursued</th>
<th>LEED NC 2.2 Point Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gold</strong></td>
<td>46</td>
<td>39-51</td>
</tr>
<tr>
<td><strong>Sustainable Sites</strong></td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td><strong>Water Efficiency</strong></td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td><strong>Energy &amp; Atmosphere</strong></td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td><strong>Materials &amp; Resources</strong></td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td><strong>Indoor Environmental Quality</strong></td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td><strong>Innovation &amp; Design Process</strong></td>
<td><strong>5</strong></td>
<td><strong>5</strong></td>
</tr>
</tbody>
</table>

- Busing program for students that would normally be driven
- Educational exhibit and film
- 100% green power for two years
- 40% water efficiency
- LEED APs on the team
Approach

- Optimized sizing by accounting for High Performance Walls, Roof and Glazing
- High Efficiency Heat Pump System that is “ground coupled”
- High Efficiency Condensing Boiler – Second Floor only
- Distributed Outside Air System (DOAS)
- Heat Recovery
- Demand Control Ventilation
- System Zoning
- Modulation of Systems
- Solar Power
- Optimized Lighting Power Density and utilize daylight strategies to turn off lighting
Why Geothermal?
Geothermal
Geothermal
Geothermal

Date 01-31-08
Heat Recovery and Distributed Outside Air

- Using Dedicated Outside Air helps ensure distribution of proper ventilation to each heat pump
- Heat recovery reduced energy and well field size and quantity
- System coupled with VFD’s optimizes part load performance
High Performance - Alternative Energy Systems

- Solar power offsets approximately 8 to 10% of the electrical energy for the building
High Performance - Lighting and controls

- Optimize LPD (Lighting Power Density)
- Utilized Daylighting
Design Challenges

- Complex Programming
- Stringent Acoustical Requirements
- Tight Floor to Floor Heights
- Thermal Comfort
Design Challenges
Design Challenges
Design Challenge - Acoustics

Design NC Level – 20
Design Challenge - Acoustics

Design NC Level -

Date 01-31-08
Thermal Comfort Component
Thermal Comfort Component

From Jim Dolan
Energy Use and Life Cycle Savings

- 214,400 kWh of electricity
- 73.6 kW of peak electric demand
- 3,924 Therms of natural gas
- 45 kBtu/ft² energy use intensity
- $46,300 annual energy cost ($1.93/ft²)
Building Tours

**Architectural Focus:**
Two groups lead by
Erik Kaeyer, AIA, LEED AP & Daniel Jaconetti, AIA, LEED AP

**Engineering Focus:**
Two groups lead by
Jim Dolan, P.E., LEED AP & Steve Abbattista, P.E., LEED AP

**Special Systems Focus:**
Along the tour:
Technical Design – Francis Manzella
Geothermal - Frank Vetere, Facilities Director, JBFC & Daniel Norval, P.E.
PV Installation – Mercury Solar & John Torre, P.E., LEED AP