

SMPSNY



**Presenters:**

**Dominick Ballesta**

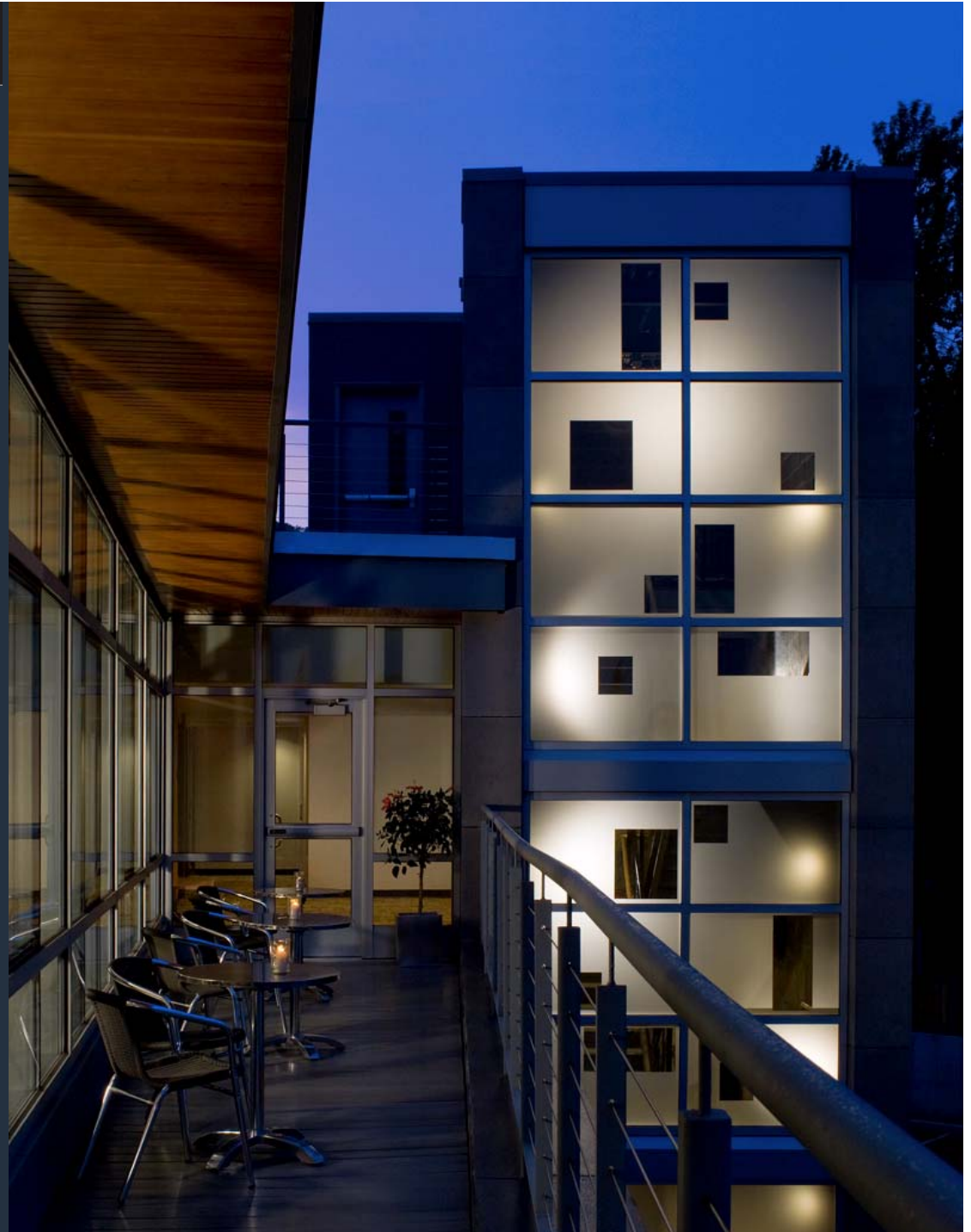
Managing Director  
Jacob Burns Film Center

**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

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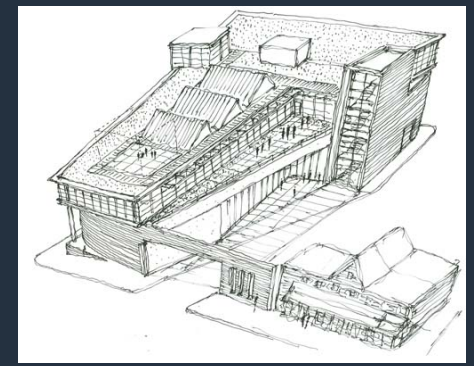
## Media Arts Lab Building

- Media Arts Lab Building envisioned to be a flagship for both 21<sup>st</sup> 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:*

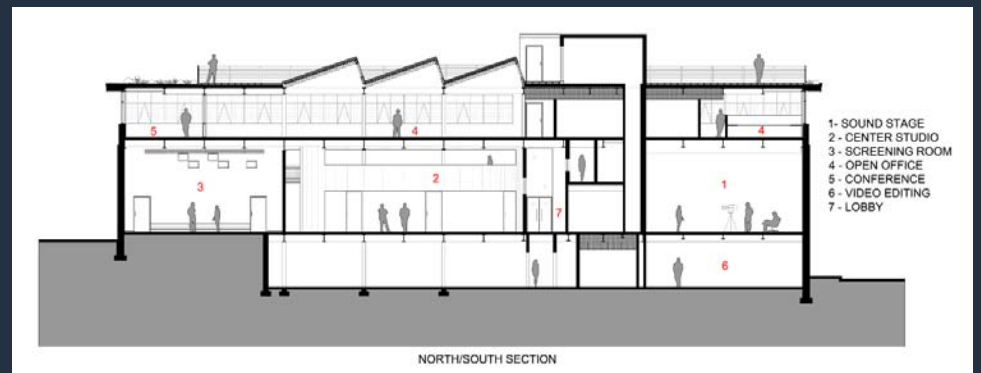
- **High performance envelope** (highly insulated, solar-reflective, low-e thermally broken, glazing system)
- **Local, Recycled content materials** – precast concrete panels
- **Natural ventilation** and day lighting – operable windows
- **Photovoltaic panels** – on-site electricity generation
- **Vegetative ‘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 -

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## *Overall Aesthetic*

- Theatrical – **Flexible** – Dynamic



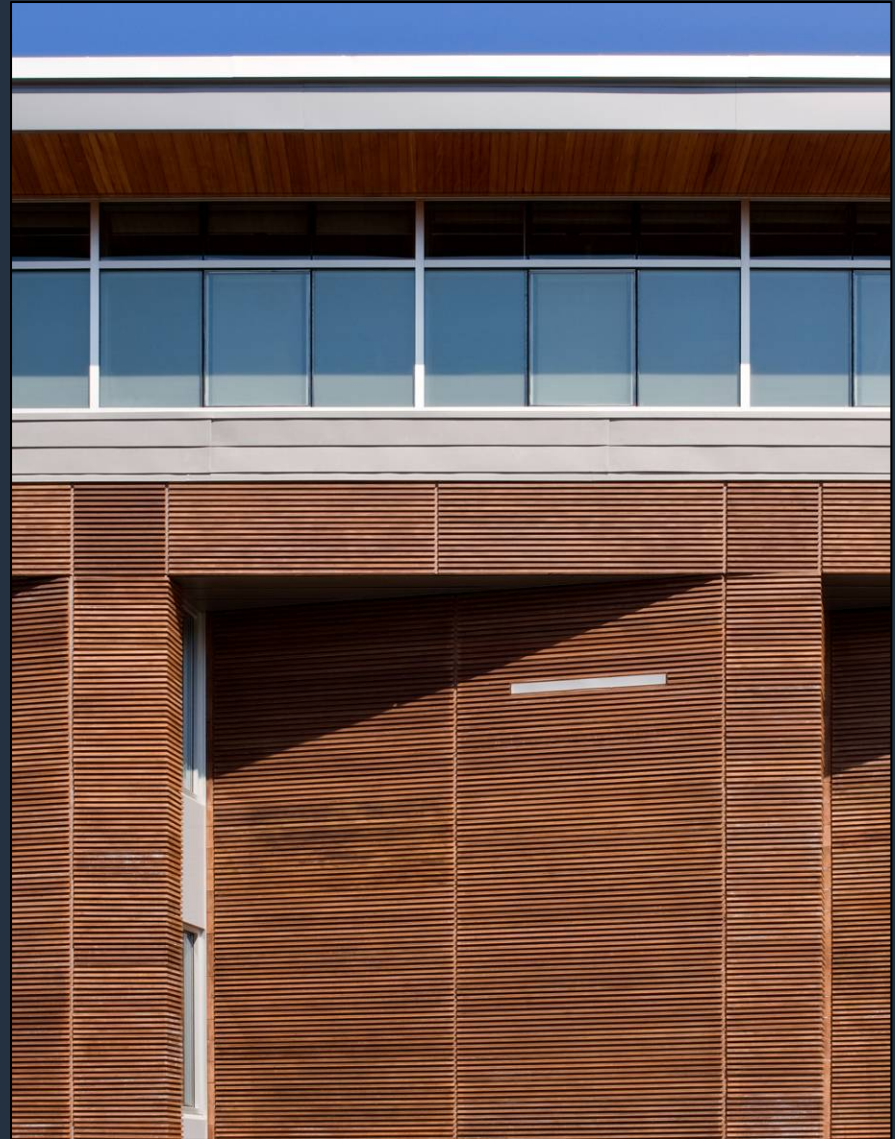


# Sustainable Features

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## *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



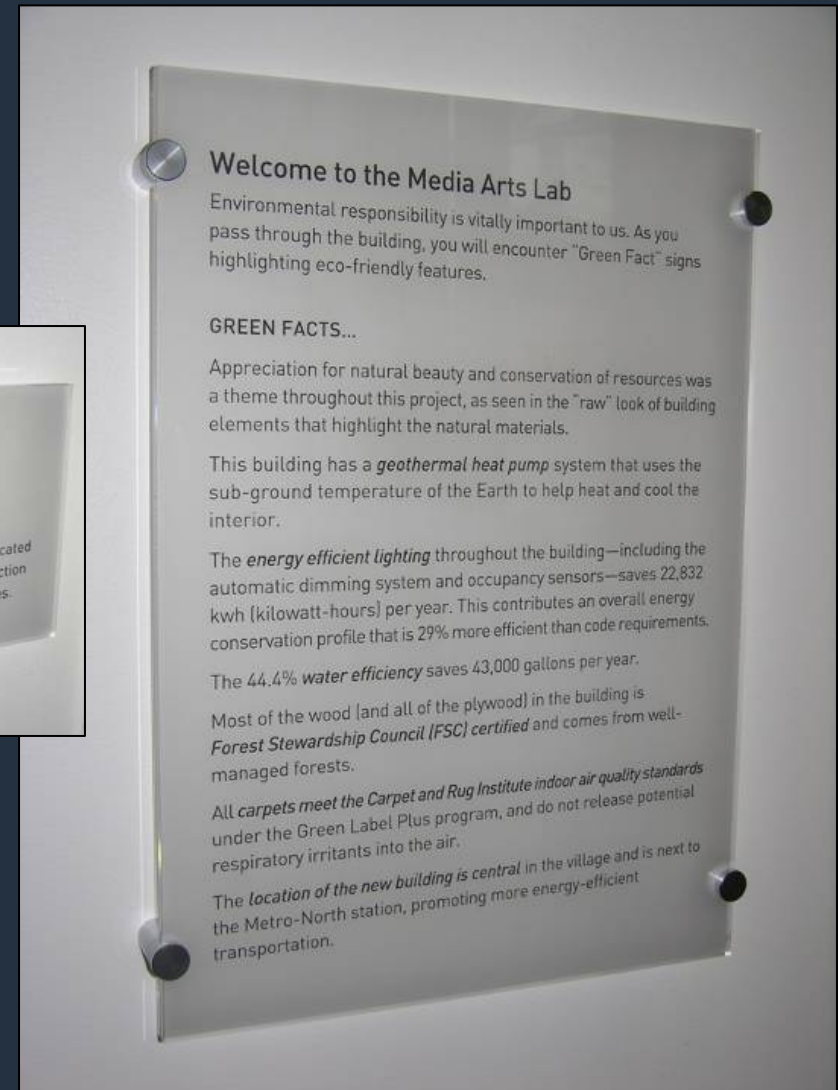
# Sustainable Features – Education

## 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



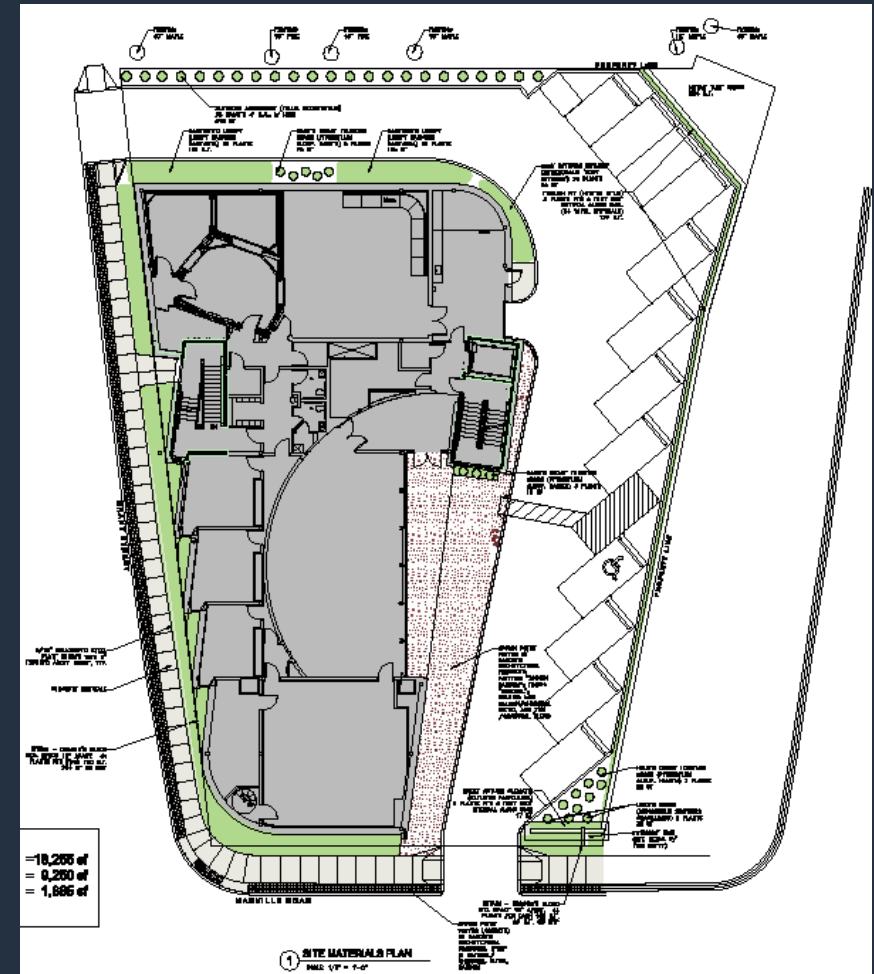
# LEED NC 2.2 Certification Points



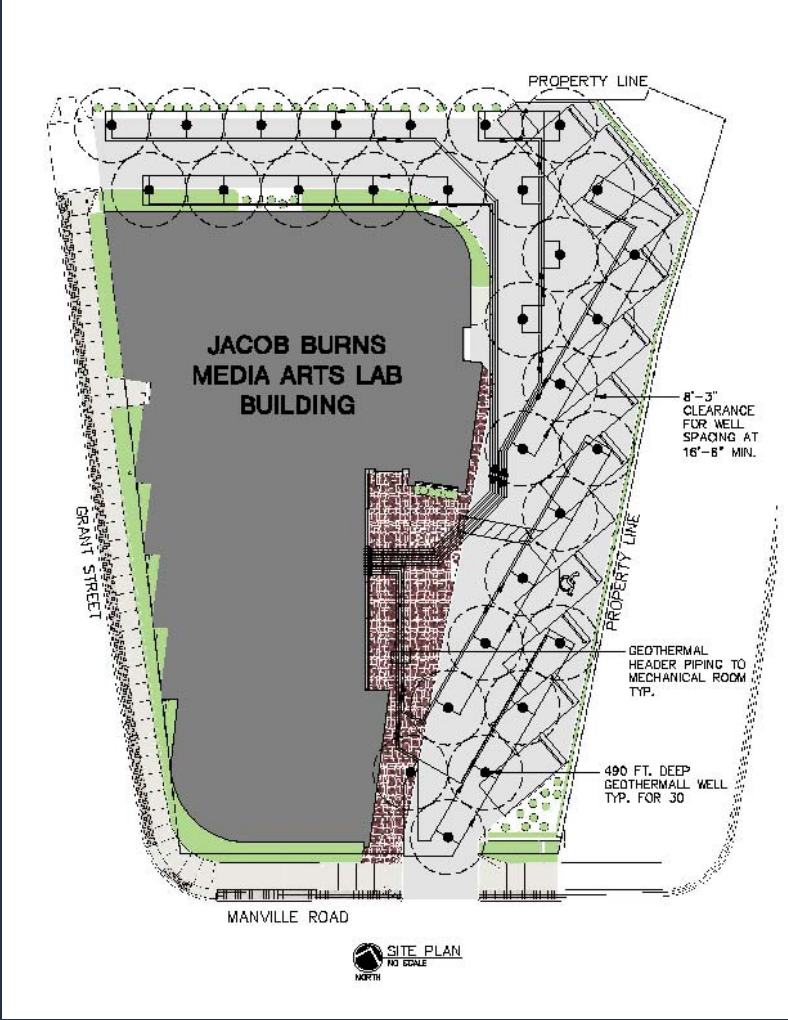
	Points Pursued	LEED NC 2.2 Point Range
<b>Gold</b>	<b>46</b>	<b>39-51</b>
Sustainable Sites	8	14
Water Efficiency	4	5
Energy & Atmosphere	10	17
Materials & Resources	7	13
Indoor Environmental Quality	12	15
<b>Innovation &amp; Design Process</b> <ul style="list-style-type: none"> <li>- Busing program for students that would normally be driven</li> <li>- Educational exhibit and film</li> <li>- 100% green power for two years</li> <li>- 40% water efficiency</li> <li>- LEED APs on the team</li> </ul>	5	5

# Approach

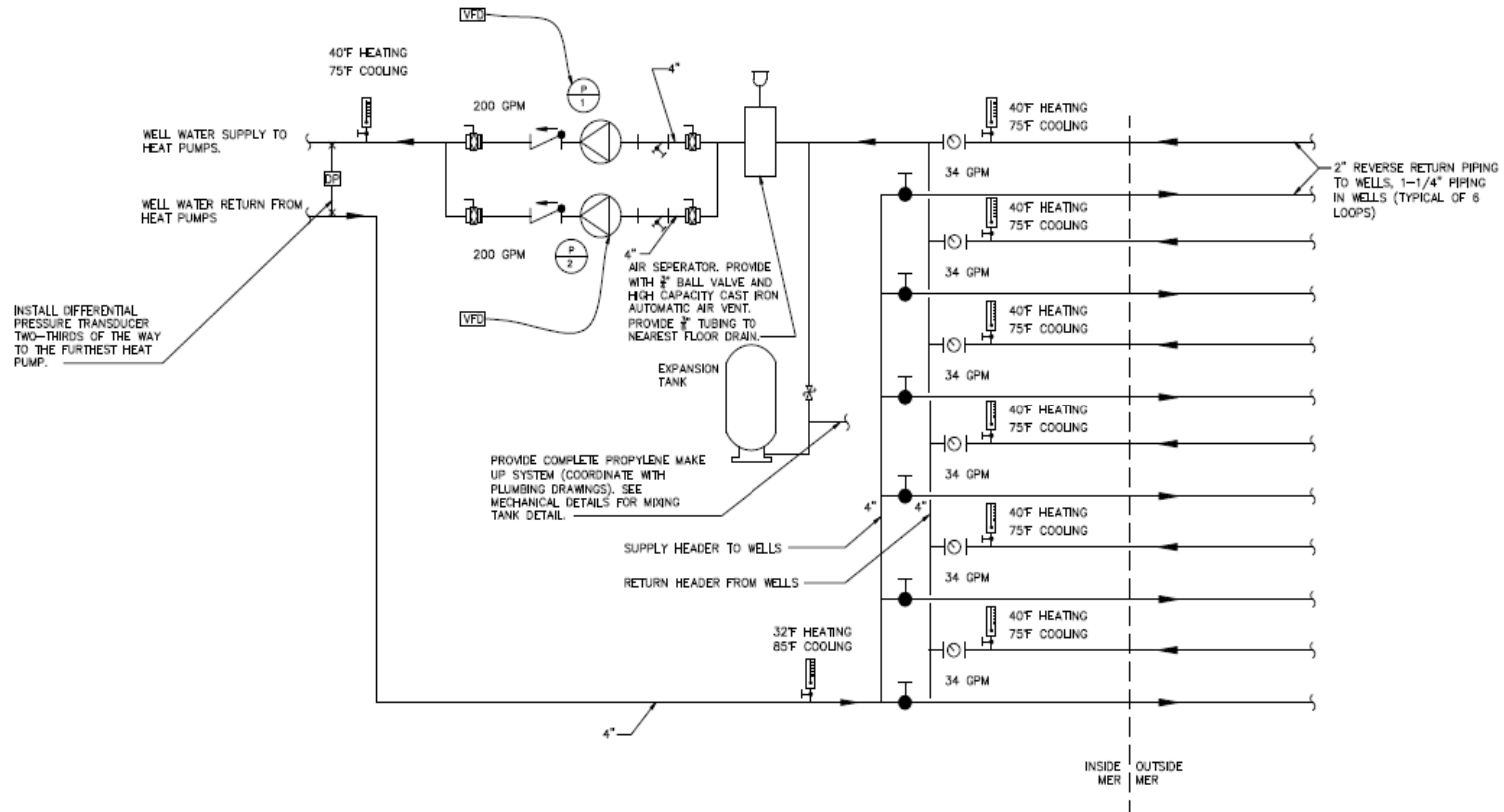
- Optimized sizing by accounting for High Performance Walls, Roof and Glazing
- High Efficiency Heat Pump System that is “ground coupled”
- High Efficiency Condensing Boiler – Second Floor only
- Distributed Outside Air System (DOAS)
- Heat Recovery
- Demand Control Ventilation
- System Zoning
- Modulation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



# Why Geothermal?

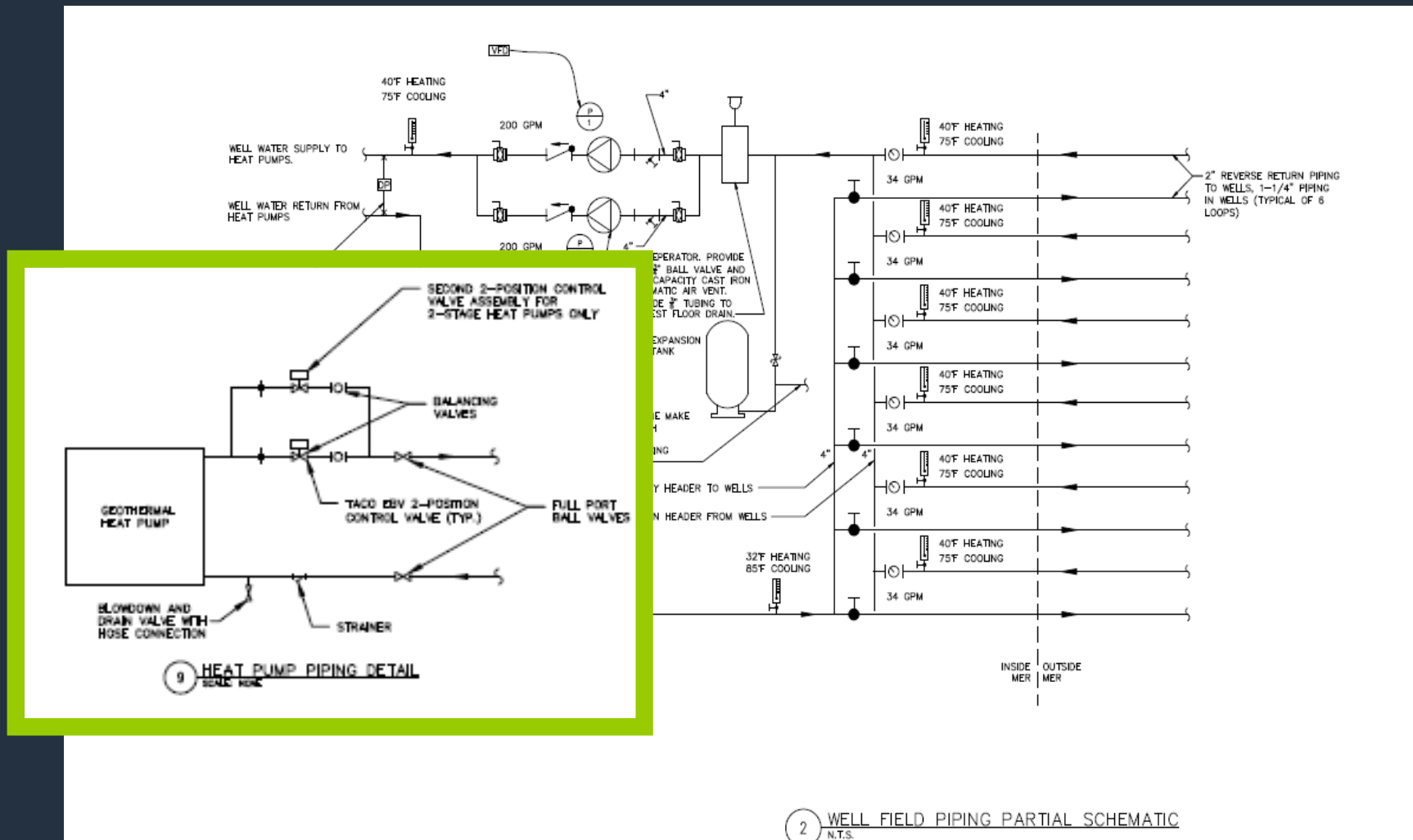


# Geothermal



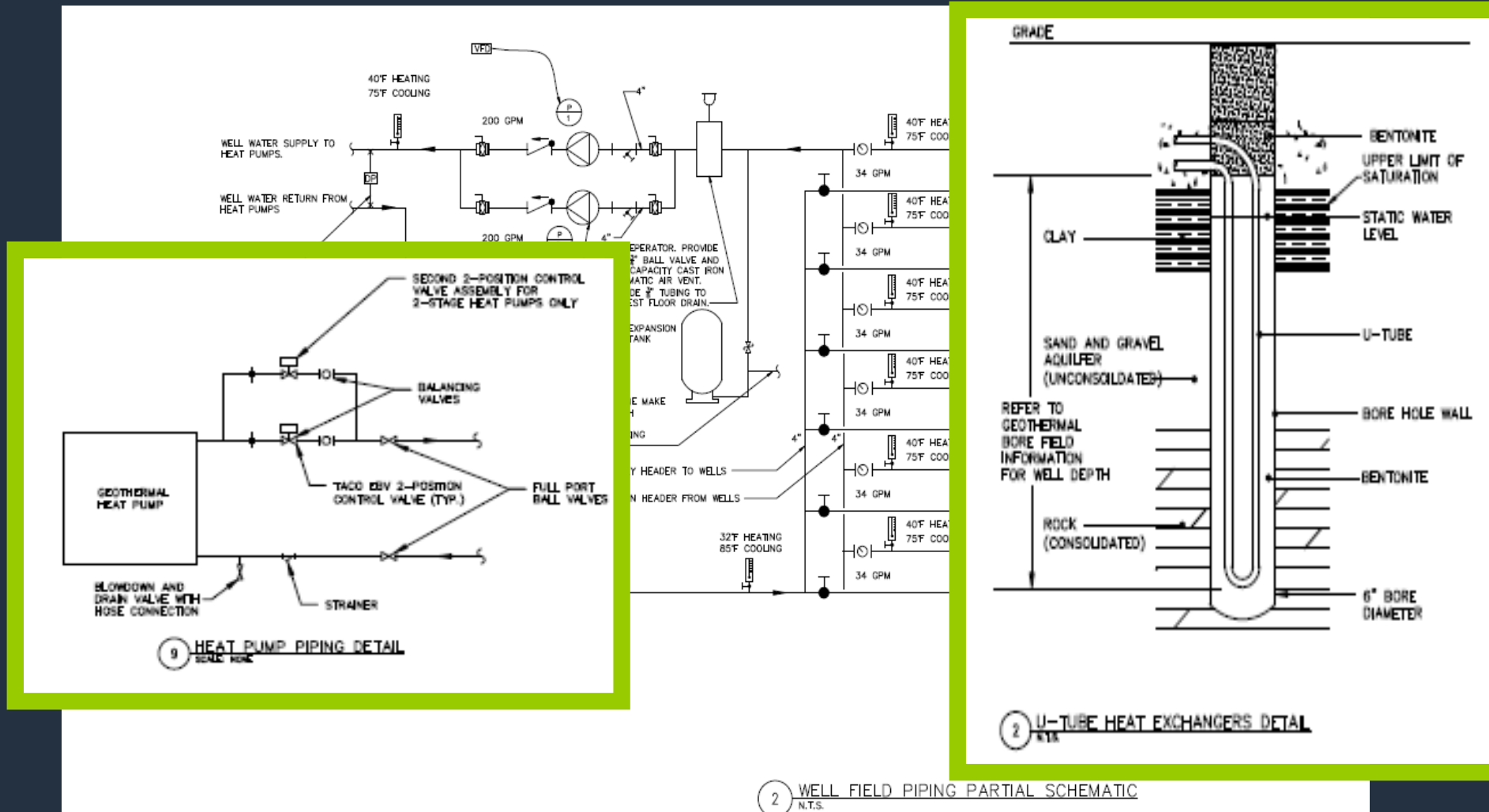
2 WELL FIELD PIPING PARTIAL SCHEMATIC  
N.T.S.

# Geothermal





# Geothermal

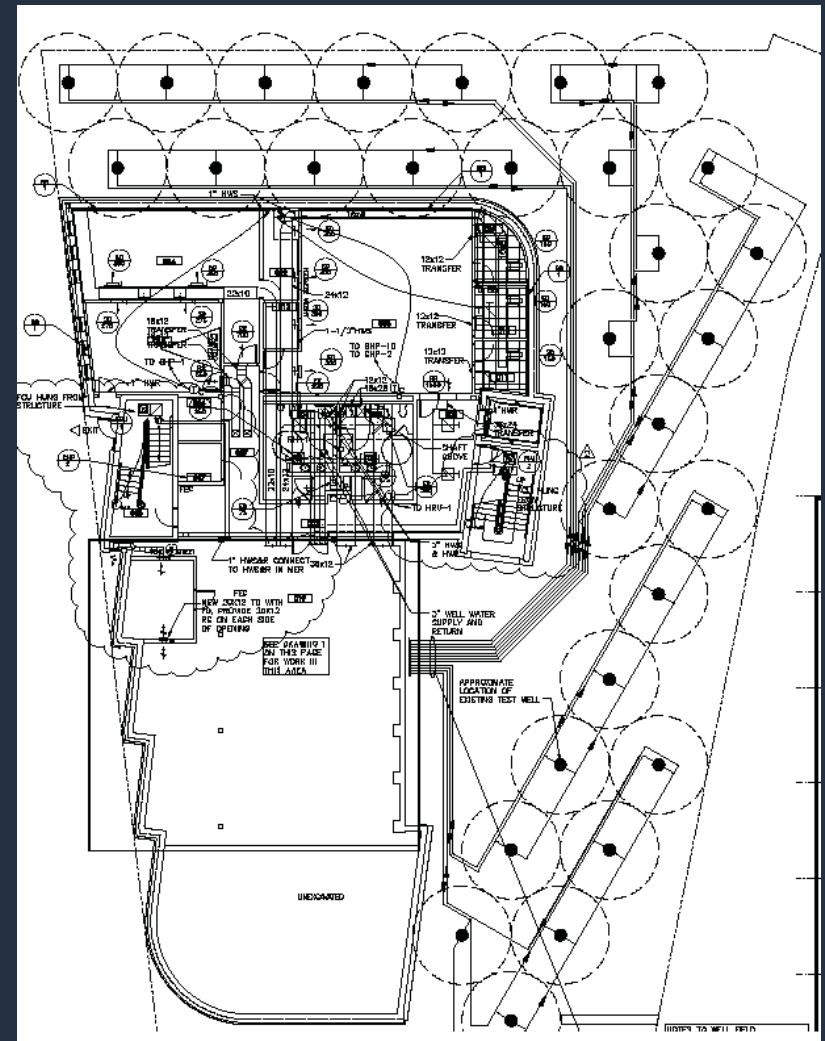


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# Geothermal

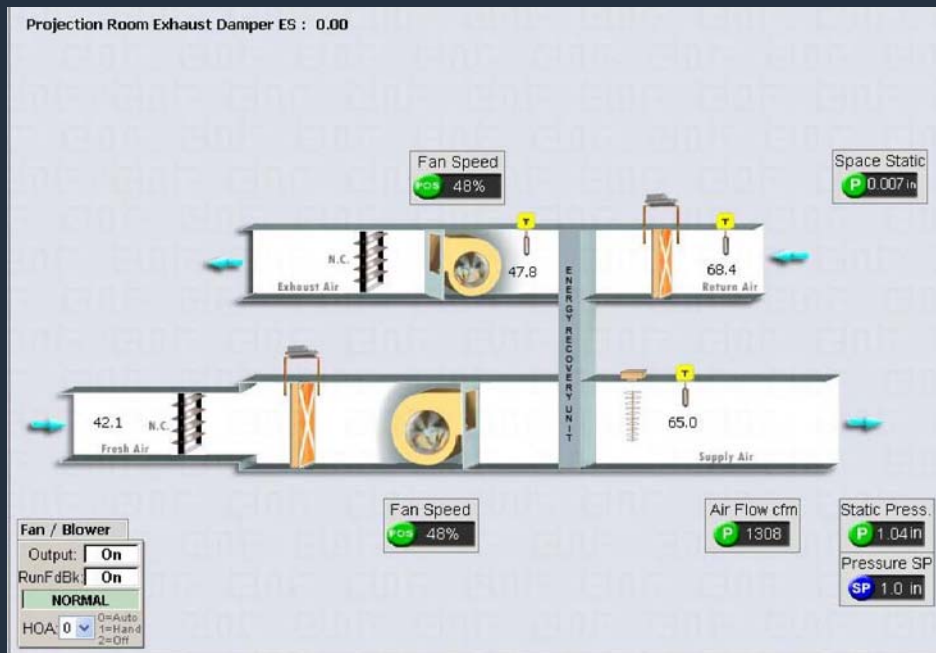


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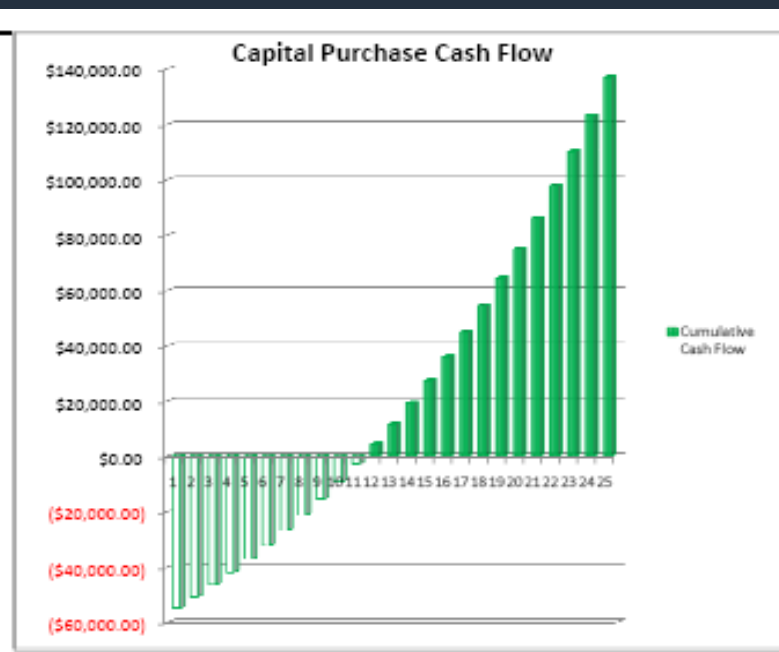
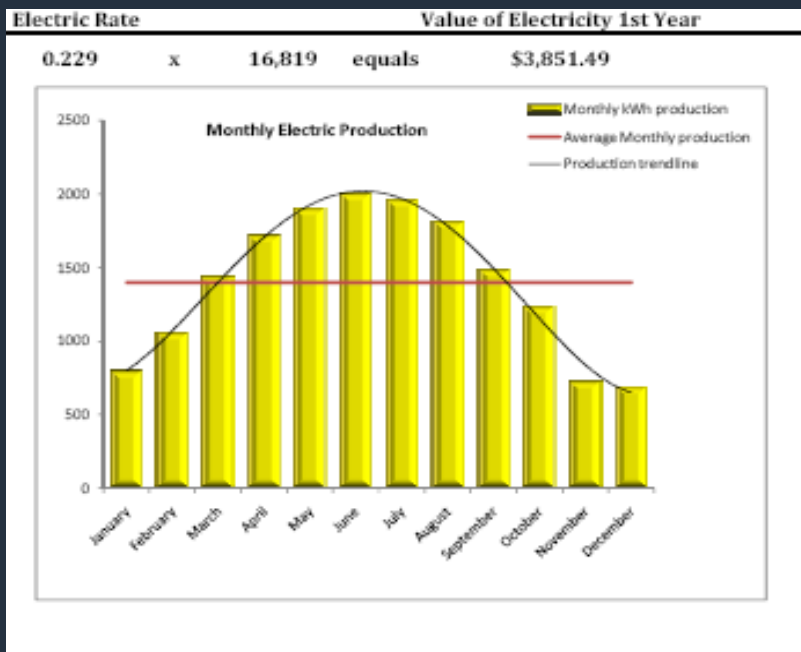
# Heat Recovery and Distributed Outside Air

- 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

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- Optimize LPD (Lighting Power Density)
- Utilized Daylighting



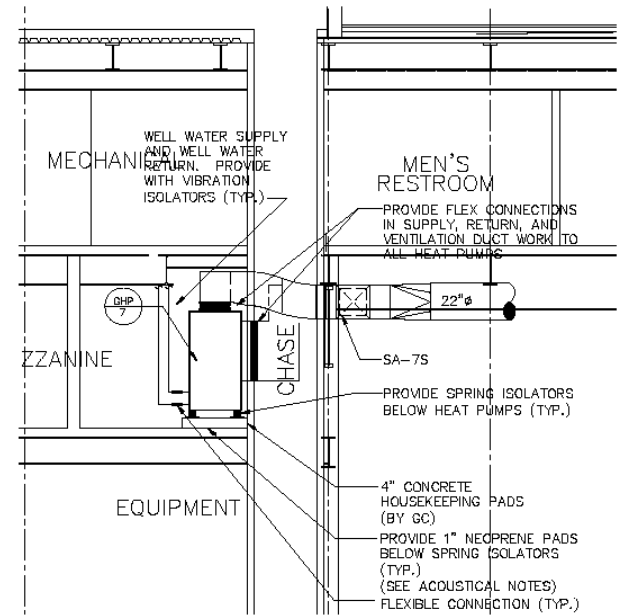
# Design Challenges

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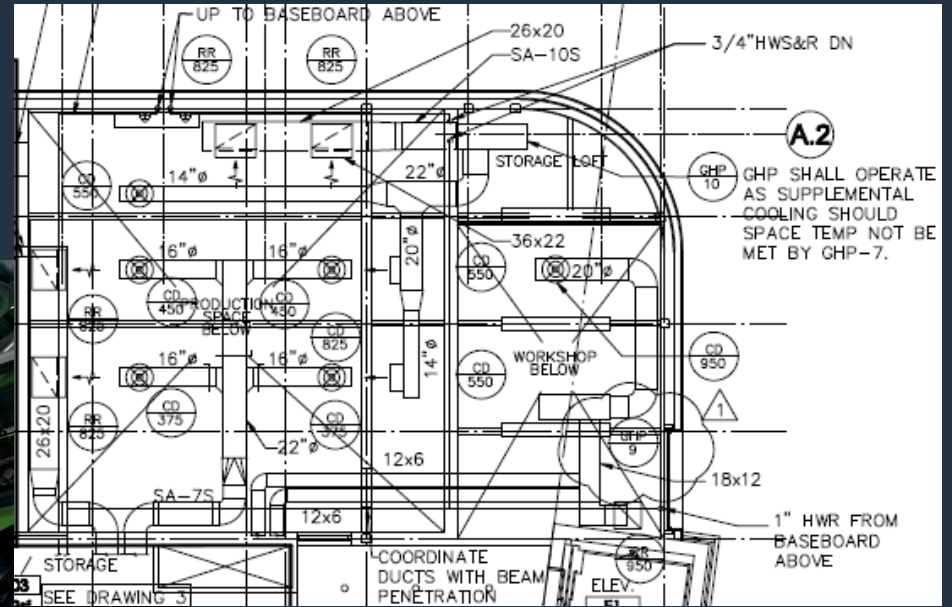
- Complex Programming
- Stringent Acoustical Requirements
- Tight Floor to Floor Heights
- Thermal Comfort

# Design Challenges



2 BUILDING SECTION - AA  
1/4" = 1'-0"

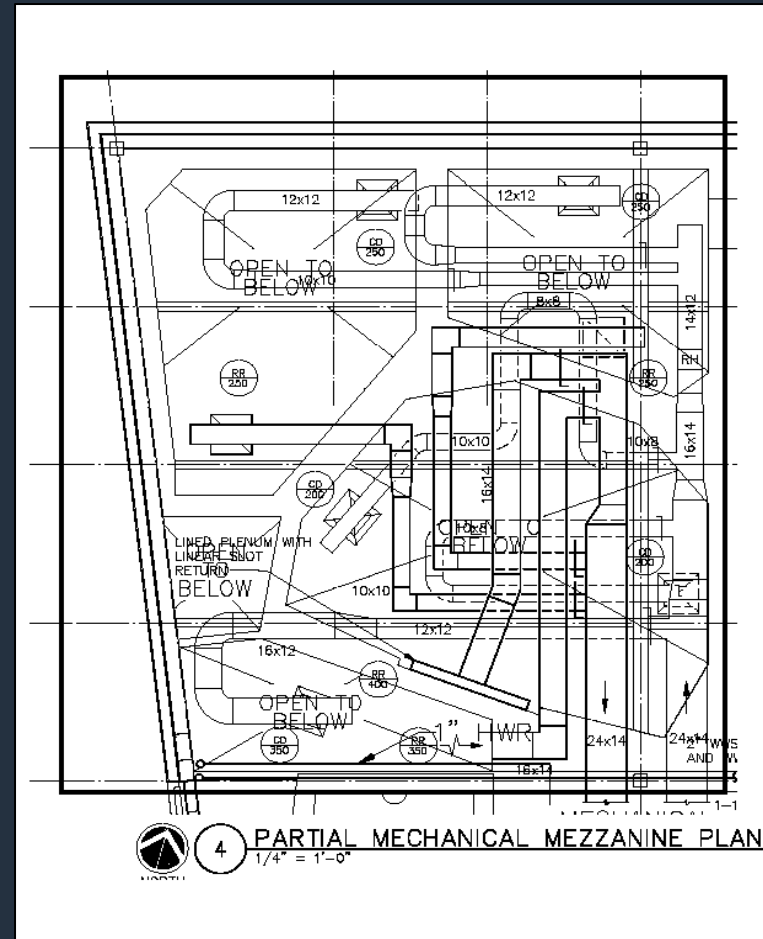
# Design Challenges





# Design Challenge - Acoustics

Design NC Level – 20



# Design Challenge - Acoustics

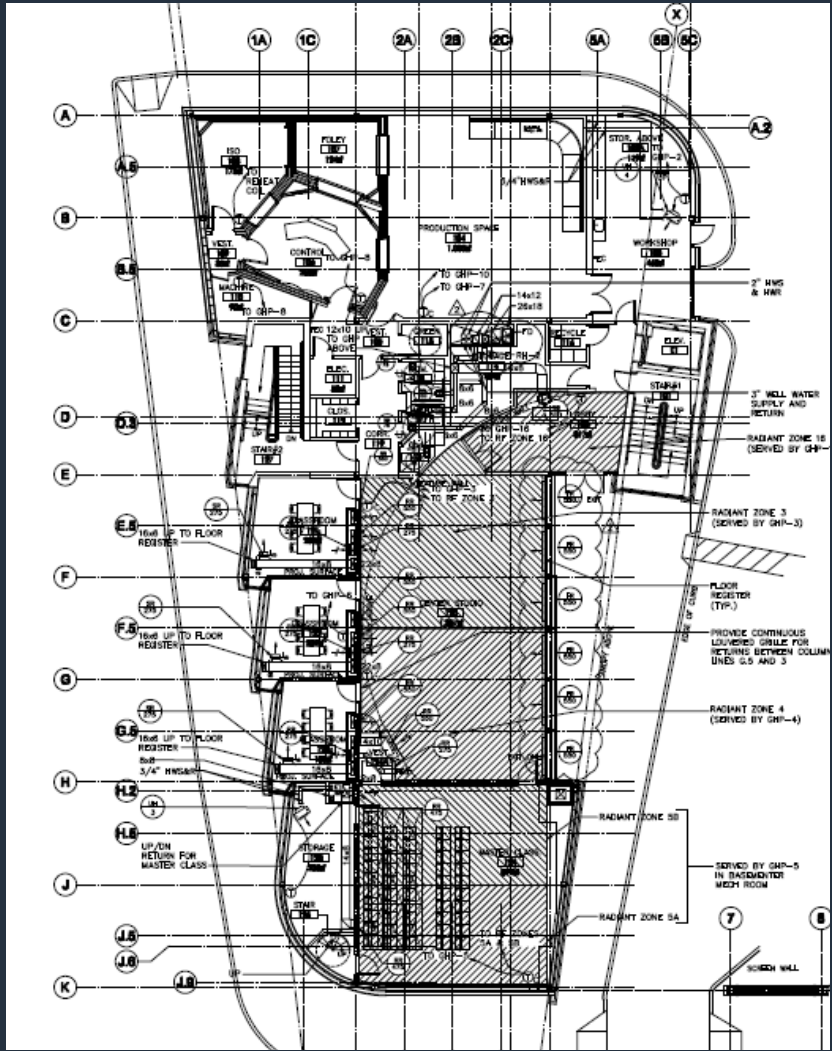
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Design NC Level -



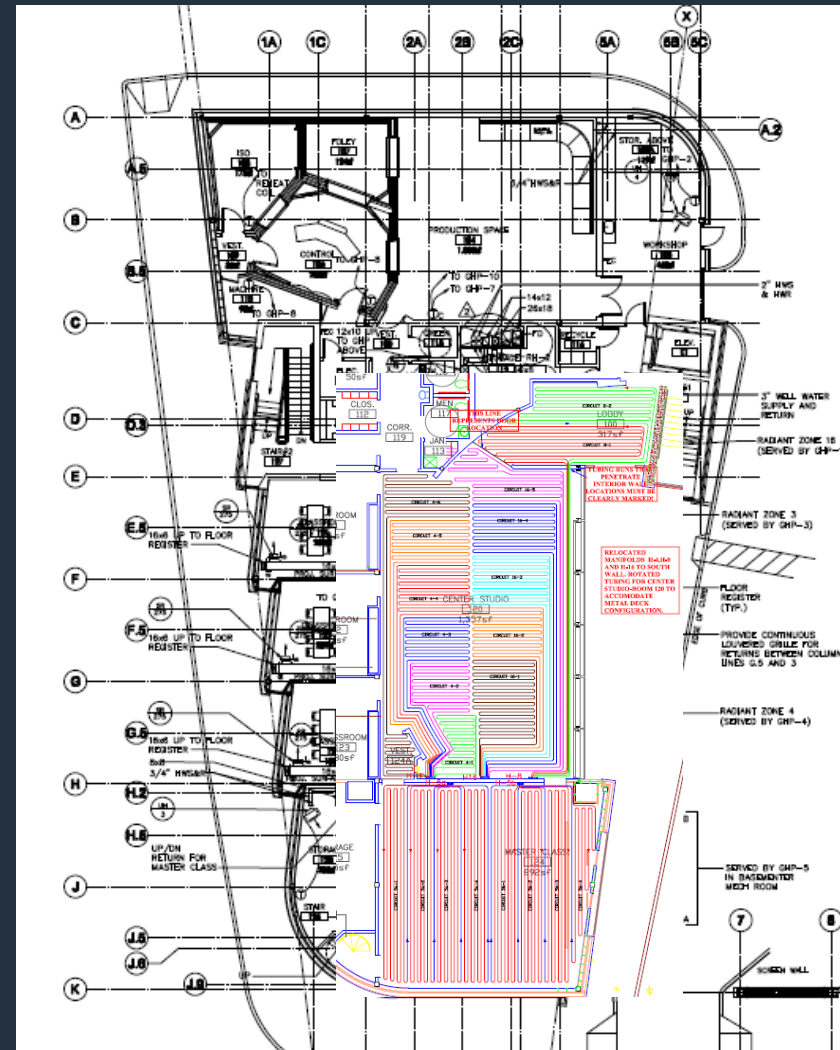
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# Thermal Comfort Component



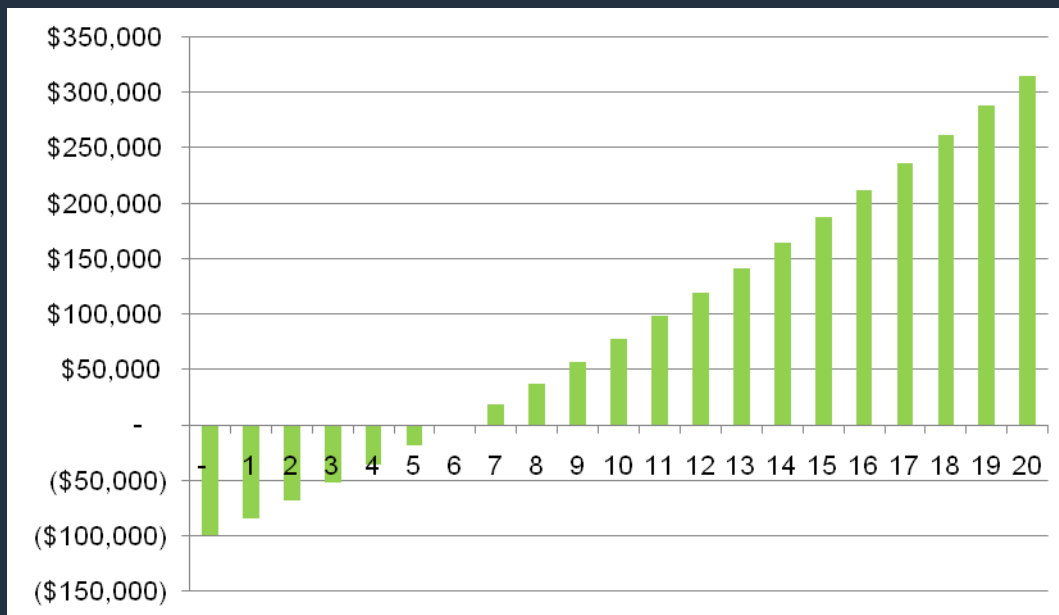
# Thermal Comfort Component

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/ft<sup>2</sup> energy use intensity
- \$46,300 annual energy cost (\$1.93/ft<sup>2</sup>)



# Building Tours

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## **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

