



# 1010 Avenue of the Arts

## New School & Performing Arts Theater

*1001 South 15<sup>th</sup> Street Associates* LLC

David Colman  
Steve Gendler

U.S. Department of Energy  
Geothermal Technologies Program Peer Review  
May 20, 2010

This presentation does not contain any proprietary, confidential or otherwise restricted information.





# 1010 AVENUE OF THE ARTS – OVERVIEW

## Project Schedule:

**Design & Construction – *May 2010 to January 2012***

**Monitoring & Marketing – *February 2012 to January 2014***

## Project Budget:

**Total Project Budget – \$3,365,840      DOE Share - \$1,662,920**

**FY 2010 DOE Funding – \$750,000 *estimated***

**FY 2011 DOE Funding – \$750,000 *estimated***

## Barriers – Potential Sources of Project Delays:

**School District Approval Process for User**

**Federal & State Approval Process for Historic Tax Credits**

**Poor Soil Conductivity**

## Partners:

***MIS* Capital LLC – Developer**

**Alderson Engineering – Mechanical Engineer**

**Duffield Associates – Civil Engineer**

**Sullivan Company – Construction Manager**



***MIS* Capital LLC**





# 1010 AVENUE OF THE ARTS – PROJECT OBJECTIVES

Owner: **1001 South 15<sup>th</sup> Street Associates** LLC

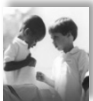
Developer: **M / S** Capital LLC

The Installation of a **Ground Source Heat Pump system** will achieve **three major objectives**:

- **Demonstrate the feasibility of using geothermal energy at a historically certified urban educational and arts institution.**
- **Create a replicable financing model for using geothermal technology at educational and non-profit institutions throughout the region.**
- **Serve as a catalyst for promoting the transformation of historically valuable buildings into models of energy efficiency.**



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# 1010 AVENUE OF THE ARTS – PROJECT OBJECTIVES

**Historic Philadelphia, Wilmington & Baltimore Railroad Train Shed:  
61,000 SF Renovation & Addition for New School & Theater**



*An architectural gem: the building's column-free volume and high Victorian engineering structure present a terrific opportunity to link and transform Philadelphia's industrial past with future excellence in education and the arts.*



MIS Capital LLC



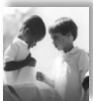


# 1010 AVENUE OF THE ARTS – PROJECT OBJECTIVES

## State-of-the-Art Energy Production on Avenue of the Arts: **Significant Visibility on Regional Center for Arts & Tourism**



*Premier location: the Avenue of the Arts is one Philadelphia's signature economic development initiatives and is home to cultural attractions such as The Academy of Music, Kimmel Center for the Performing Arts and the Creative and Performing Arts High School.*



MIS Capital LLC





# 1010 AVENUE OF THE ARTS – PROJECT OBJECTIVES

Catalyst for Change: **Model for Teaching Sustainable Design**



*1010 Avenue of the Arts will foster environmental awareness and substantially lower the school's long-term operating costs and greenhouse gas production by incorporating renewal energy sources.*



MIS Capital LLC





# 1010 AVENUE OF THE ARTS– PROJECT SCOPE

**1001 South 15<sup>th</sup> Street Associates** LLC will use the following technological and business innovations to reach its project objectives:

1. Rehabilitation of a historically significant train shed into a new 61,000 SF educational and performing arts facility.
2. Private ownership structure that combines Historic Tax Credits, New Markets Tax Credits, and energy tax credits to reduce the overall cost of development and construction.
3. Installation of a 206 ton Ground Source Heat Pump (GSHP) system using a closed loop piping network of 74 drilled boreholes, each 497 feet deep. *The majority of the well field will be drilled within the building's footprint.*



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# 1010 AVENUE OF THE ARTS– PROJECT SCOPE

**1001 South 15<sup>th</sup> Street Associates** LLC will use the following technological and business innovations to reach its project objectives:

4. Use of a hybrid system, a 20 ton dry cooler, to improve the efficiency and life cycle effectiveness of the GSHP system by seasonally rebalancing the ground temperature. *A unique strategy of pre-cooling the borefield with a dry cooler prior to the traditional cooling season will be implemented to optimize performance and cost savings.*
5. Design and installation of a user-interfaced building management system to provide energy use data that will be incorporated in the school's curriculum.
6. Install display monitors and interactive building management software to demonstrate the benefits of geothermal energy.



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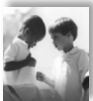




# 1010 AVENUE OF THE ARTS– PROJECT SCOPE

**1001 South 15<sup>th</sup> Street Associates** LLC will use the following technological and business innovations to reach its project objectives:

7. Design and installation of an energy saving LED ‘marquee’ sign to publicize real time energy and cost savings achieved by the GSHP system.
8. Public display of educational signage explaining how the GSHP system works and its long-term benefit to the community.
9. Integrate the study of the energy, cost and environmental impact of the GSHP system into the Science, Technology, Environmental and Math courses in the School curriculum.



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# 1010 AVENUE OF THE ARTS— PHASE 1

*Phase 1 planning for the GSHP system includes:*

*Phase 1 Budget: \$109,058*

*Schedule: May to Sept 2010*

- 1. Mechanical Engineering Feasibility Study:** Development of energy models and life cycle cost reports in conjunction with overall building envelope and systems design.  
*Payback for the GSHP system is anticipated to take 7.6 years.*
- 2. Well Field Design:** A test bore-hole will be drilled to full well depth and a conductivity monitor will be used to determine soil conductivity. *Sonar drilling technology will be used to reduce spoils.*
- 3. Civil Engineering:** Soil infiltration and geotechnical testing will be conducted to determine stormwater management and structural design criteria.



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# 1010 AVENUE OF THE ARTS– PHASE 1

*Phase 1 planning for the GSHP system includes:*

*Phase 1 Budget: \$109,058*

*Schedule: May to Sept 2010*

- 4. Environmental Testing & Removal Certification:** Residual soils from the test bore hole will be tested to determine if these materials can be reused on site.
- 5. Phase II ESA:** A limited evaluation of sub-surface conditions, including soil testing at the new theater addition and well field.
- 6. Historic Preservation Consulting:** Preparation of a historic impact assessment which serves as the basis for the historic tax credit application process for the property.



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# 1010 AVENUE OF THE ARTS— PHASE 2

*Phase 2 implementation of the GSHP system includes:*

*Phase 2 Budget: \$3,205,286*

*Schedule: Oct 2010 to Jan 2012*

- 1. Installation of Closed Loop Geothermal Well Field:** The Construction Manager will coordinate the installation of the vertical borehole well field.
- 2. Installation of HVAC System:** The Construction Manager will coordinate the installation of the GSHP system.
- 3. Installation of Building Management System:** The Construction Manager will coordinate the installation of a Direct Digital Controlled (DDC) Building Automation (BAS) and a Central Energy Monitoring system that will integrate HVAC, Lighting and Security system controls.



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# 1010 AVENUE OF THE ARTS– PHASE 3

*Phase 3 operation, monitoring and marketing of the GSHP system includes:*

*Phase 3 Budget: \$51,516*

*Schedule: Feb 2012 to Jan 2014*

- 1. GSHP System Educational Program Development.**
- 2. Teaching and Support for the GSHP Education Curriculum**
- 3. Geothermal Energy Savings Tracking, Documentation and Software Maintenance.**



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Developer: **M / S** Capital LLC



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# REAL ESTATE DEVELOPMENT

*1001 South 15<sup>th</sup> Street Associates* LLC

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