



Arlington Public Schools

Wakefield High School

Arlington School Board
Design Development Update

24 September 2009

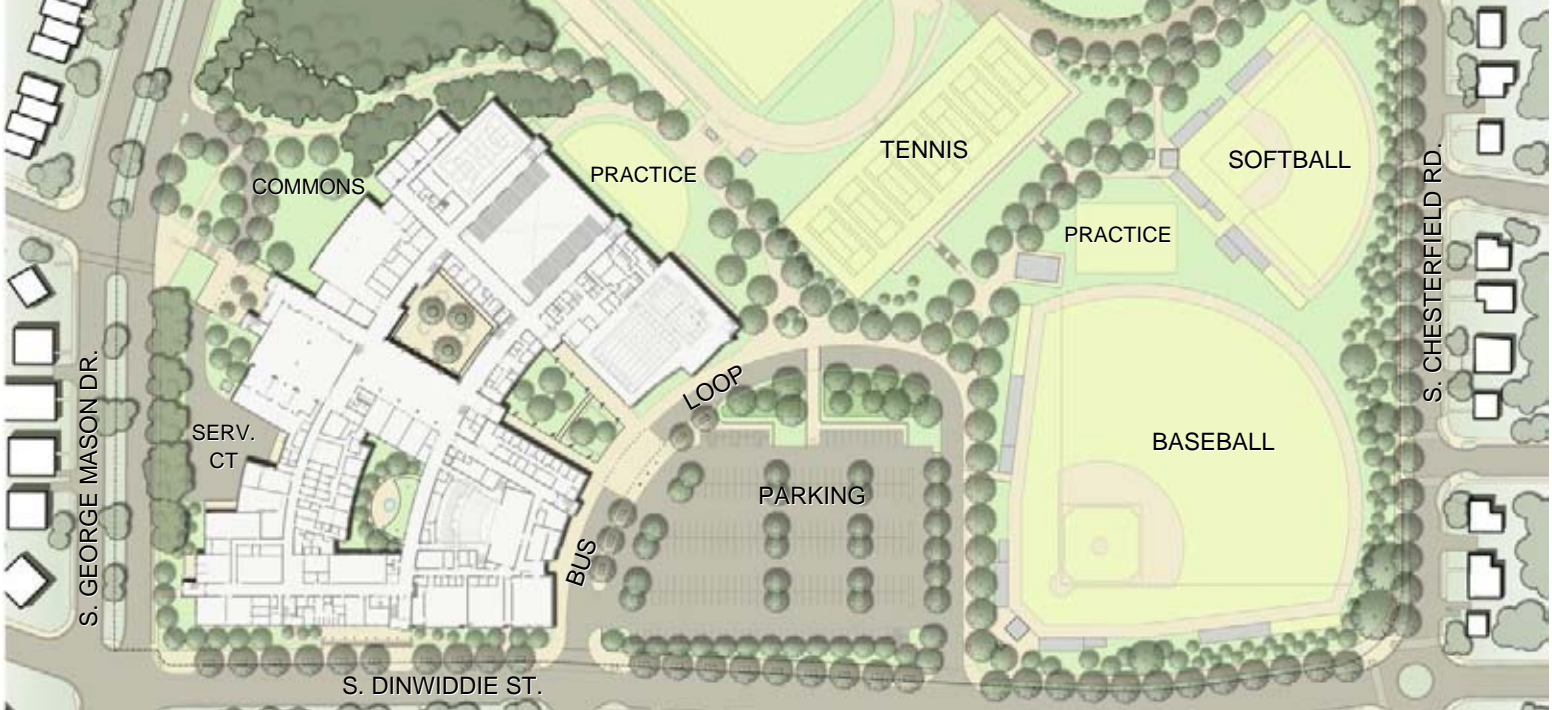
Bowie Gridley Architects



Process to date

- Meetings with:
 - County Inspection Services Division
 - County Fire Marshal to review design
- Coordination meetings with:
 - Structural & Mechanical, Electrical & Plumbing Engineers
 - Landscape Architect & Civil Engineer
- Ongoing materials and systems design
- Preparation of detailed energy model
- Developed and refined design in the following areas:
 - Town Hall
 - Theatre
 - Science Wing
 - Gymnasium
 - Aquatics
- Presented Design Development progress to the **BLPC**

Wakefield Design Development









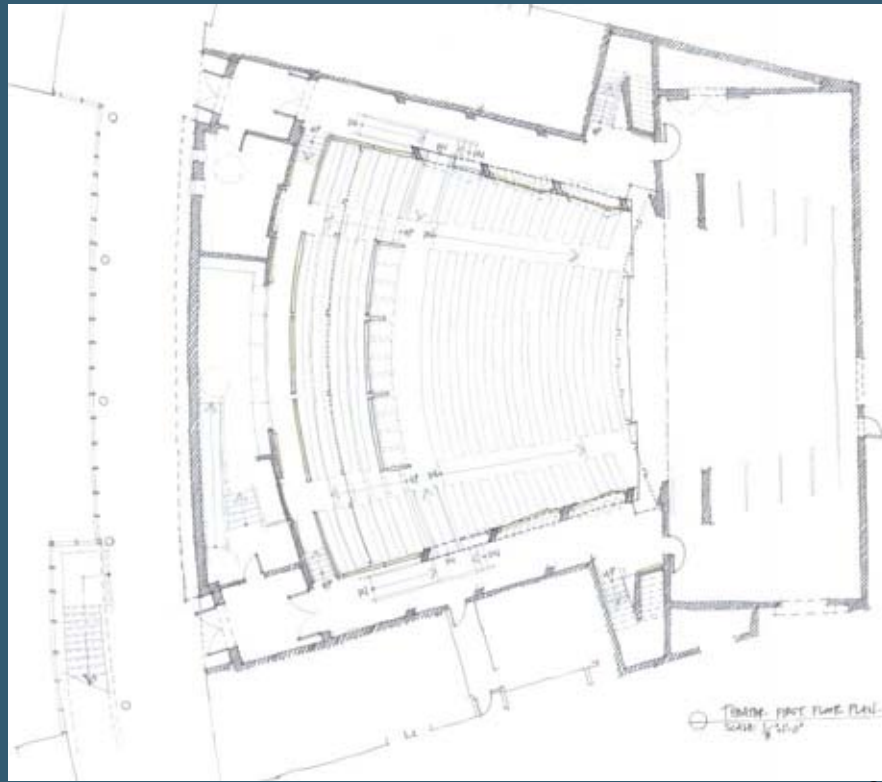
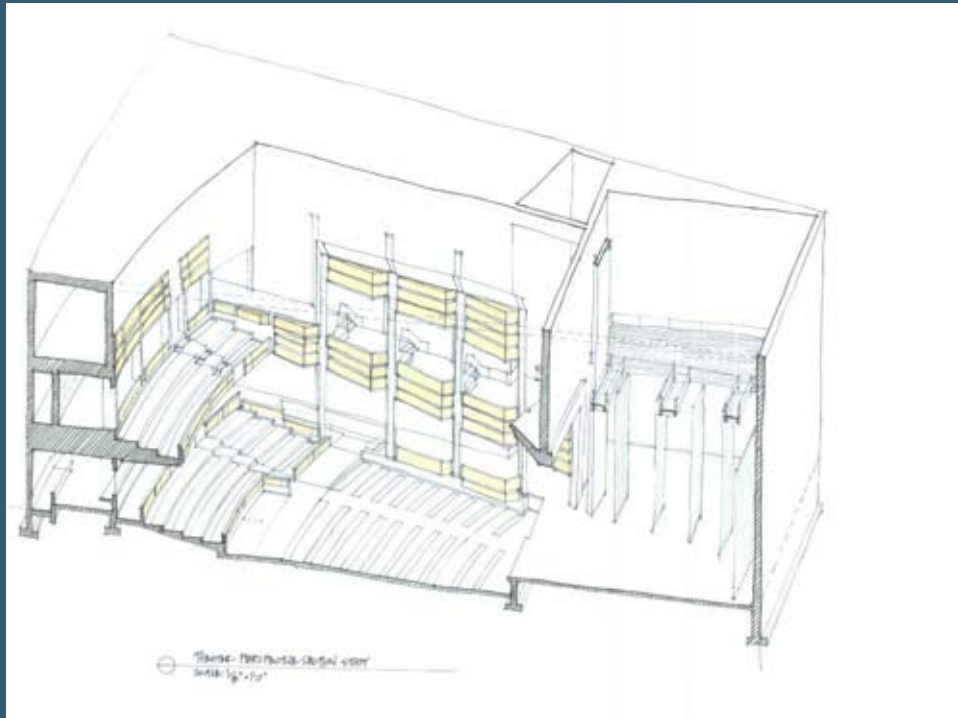
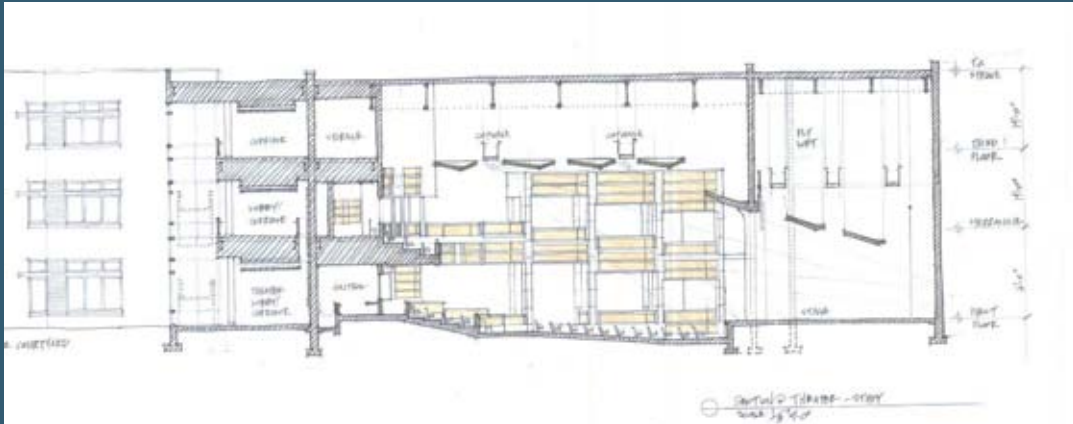
PERSPECTIVE – Dinwiddie Entrance



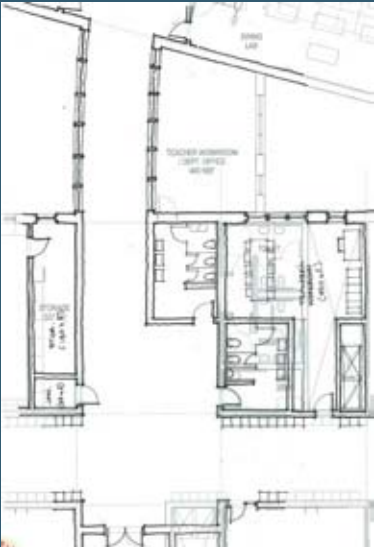
Plan, Ground Level

Wakefield Design Development



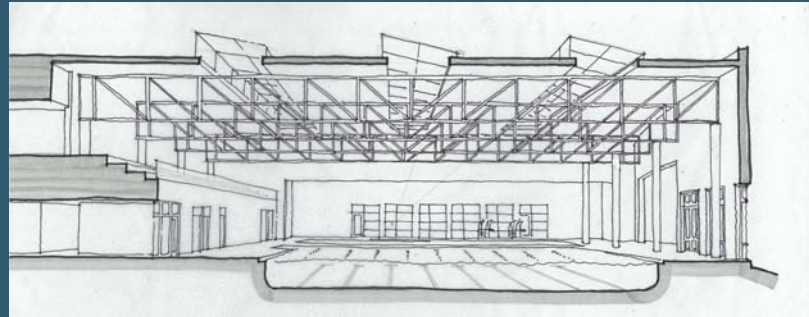
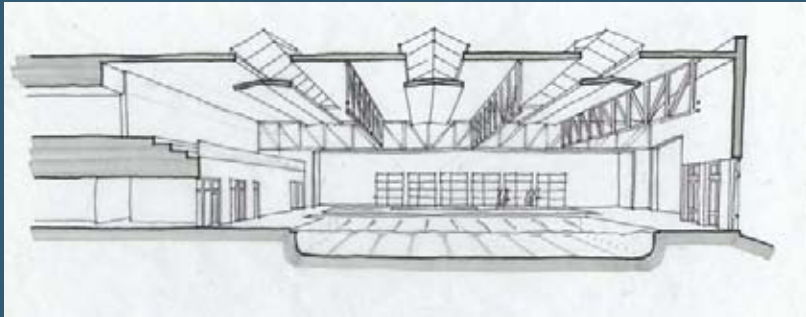


Wakefield Design Development



Lab Wing- Development

Wakefield Design Development



Wakefield Design Development

Schematic Design Add Alternates June 16, 2009

Sustainable Alternates:

Geothermal System Alternate	\$ 4,412,000
Solar Water Heating Alternate	\$ 517,000
Green Roof Alternate	\$ 334,000

Geothermal

Utilizes the earth as a heat sink to provide heating and cooling

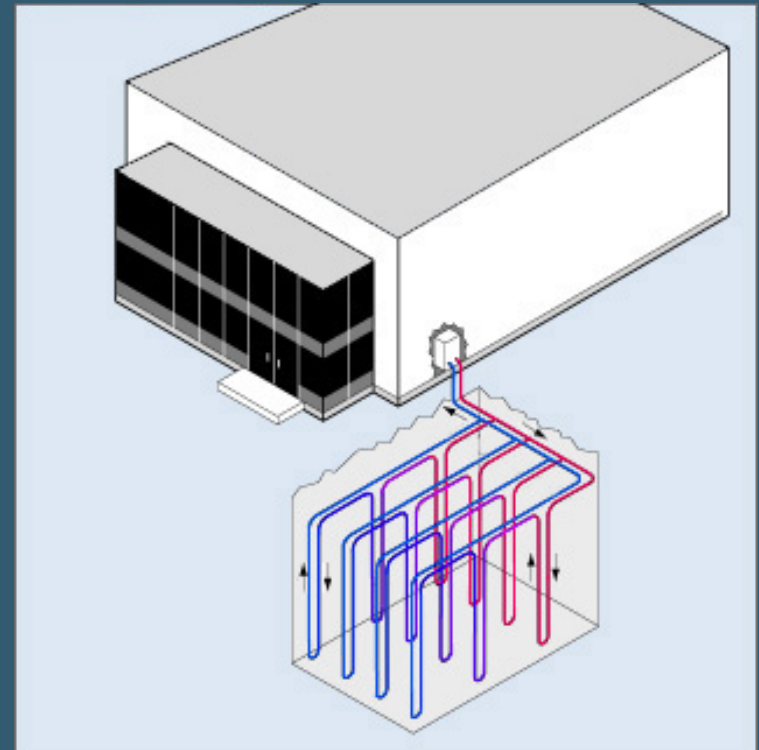
- Underground wells are drilled to depths of approximately 300 feet
- A water based solution passes through the pipes, which is heated or cooled by contact with the earth
- A Heat Exchanger is used to add or remove heat from the water based solution to control building temperature

Pros & Cons

- Extremely Efficient system
- Higher First Cost than base design HVAC system
- Payback period ranges from 10 to 50 years due to unknown sub-surface ground conditions

Cost

- \$1.3 to \$3.7 million



Solar Hot Water Heating

Utilizes the sun to heat domestic hot water

- Solar Collectors are panels which allow the sun's rays to heat a liquid passing through the collectors.
- A Glycol based liquid is passed through the pipes and is heated by the sun. It is then pumped to a Heat Exchanger.
- The Heat Exchanger is used to transfer heat from the Glycol to the potable water, where the Glycol is then pumped back to the Solar Collectors to be re-heated.

Pros & Cons

- Extremely Simple and Efficient
- Building design has good southern exposure
- Approximately 15 years payback

Cost

- Approximately \$500,000



Green Roof

Utilizes a shallow substrate and vegetation to cover a roof

- Accessible for maintenance only
- Proposed locations over library, main administrative offices, and surrounding the town square

Pros & Cons

- Covers and Protects roofing membrane
- Decreases heat gain of roof, thereby reducing the cooling load of the building
- Reduces and slows storm water runoff
- Improves visibility of roof
- Provides habitat for birds

Cost

- Approximately \$350,000





Process Overview

- Design Meetings with BLPC & PFRC (2 meetings each)
- Meetings with Faculty & Staff ongoing-Sept-Oct
- Construct Geothermal Test Wells
- Refine Sustainability/LEED Approach
- Apply for Use Permit
- Perform Acoustical Analysis
- Selection of Construction Manager
- Complete Design Development Documents
- Prepare Updated Construction Cost Estimate
- Presentation (Information) to School Board in February 2010

