

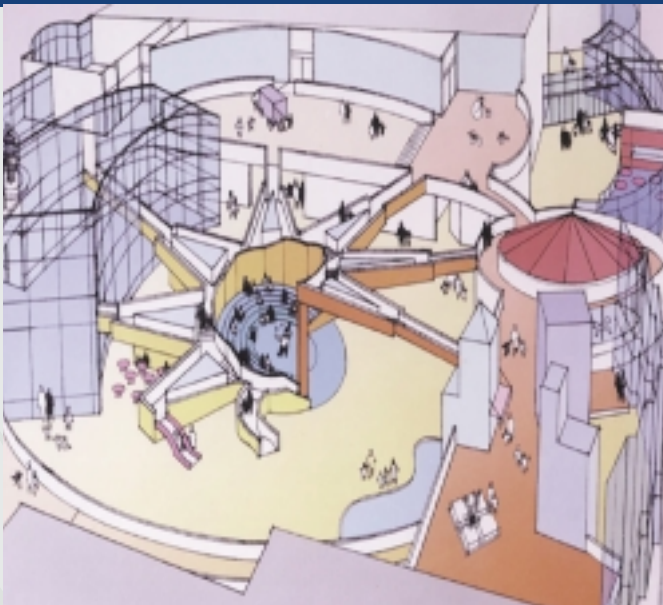
# BALANCE

NEWS FROM BALA CONSULTING ENGINEERS, INC.

*Practicing the Art of Engineering*

FALL, 1999 • VOL. 3

## Projects OF SPECIAL NOTE



Drawings by Santos Levy Architects

### PLEASE TOUCH MUSEUM PHILADELPHIA, PA

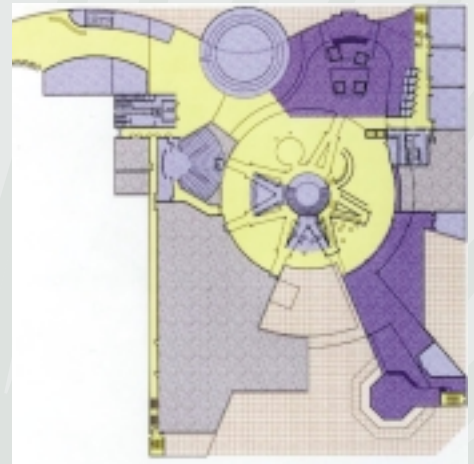
**D**escribed by the Philadelphia Inquirer as "A whimsical plan for the Please Touch Museum," the new facility will be an engineering feat as well.

The plans for a "hands on museum for children ages 1-7 where adults and children can learn and explore together," calls for an indoor-outdoor river, a carousel, interactive displays plus learning and teaching environments built atop a \$174 million entertainment complex on the Delaware River.

Designed by Santos Levy & Associates Architects, Bala Consulting Engineers has been given the challenge to design the mechanical, electrical and plumbing systems that parallel the creative, inquisitive design and provide flexibility for future exhibit modifications.

The extensive voice/data cabling design, which will provide advanced electronic capabilities to the exhibits, break out learning rooms and the backroom office operations, is being designed by Bala Technologies, an affiliate firm of Bala Consulting Engineers. The project's overall program manager is NorthStar Advisors.

The design includes a multi-level floor plan with a serpentine walkway and rambling river that presented challenges to the design of the Heating, Ventilation and Air Conditioning (HVAC) system. Distributing conditioned air and humidity control through out the eclectic shaped facility in an integrated manner required the use of an exposed network of textile "soft-sock" expandable duct or a PVC product that comes in a variety of vibrant, energetic colors. One advantage of the soft duct approach is the ability to vary or bend the system to compliment changes in the exhibit settings. Distribution of the air is engineered for linear diffusion along the length of the soft duct or through a series of small nozzle diffusers called a "Punkah Louver," which look similar to diffusers found on airplanes. All of the air handling mechanical units will be packaged and located on the roof to keep the equipment noise levels low in public spaces.



The electrical design faced similar challenges.

Exhibits today require not only power but data capabilities. In addition, the requirement of constant exhibit changes, special displays and a centerpiece carousel, required Bala to design a flexible distribution/outlet plan to accommodate the unknown future.

There were several complicating physical obstacles to sup-

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## VERTICALNET Designing at the speed of e-business.

One of Bala's recent challenges was designing space for the internet's leading creator and operator of vertical trade communities, VerticalNet. Bala had 60 days from date of award to client move-in to convert a 45,000 sq. ft. warehouse space into a fun yet professional office environment. In April, Bala began working with Drew Christy and Gene Godick of VerticalNet, Stevie Crum of Collaborative Design and John Shields from Shields Construction on this fast-track design/build project. The move-in date was July 15th and the clock was ticking.

Bala's role in the project was both the Owner's Representative and engineer. With no time for design development, the project went straight from Site Survey to Schematic Design to Construction Documents. Bala issued performance specifications for all disciplines (mechanical, electrical, plumbing and fire protection) and reviewed all design build documents. Bala's affiliate firm, Bala Technologies, provided the design and installation of the voice/data systems. The building was also re-skinned, adding more windows, to give every employee the benefit of natural light.

The warehouse space was challenging to design within the budget and schedule parameters, but was clearly the space that best suited VerticalNet. The organizational structure of the company is mostly horizontal and thrives on teamwork. The warehouse offered the best environment for teams to work together and still have room to grow. The facility includes numerous team working rooms, coffee bars, an exercise room and even a game room. These areas are all essential parts of VerticalNet's fun professional environment and encourages their employees to communicate frequently.

In order to keep the feel of a higher space, ceilings were only installed along the perimeter of the building. The areas without ceilings used painted steel and round ductwork to maintain the fun atmosphere. Concerns about acoustics were resolved with the help of Metropolitan Acoustics.

All move-in dates were met. Everyone involved on this job is very pleased with the new facility and the team is currently working on the next 12,000 sq. ft. expansion.

## ARMSTRONG WORLD INDUSTRIES, INC. ENGINEERING A GREEN BUILDING

Bala is proud to have engineered the new 120,000 square foot, "green," international headquarters for Armstrong World Industries, located in Lancaster, PA. Armstrong is a founding member of the San Francisco based U.S. Green Building Council. Their headquarters is one of the first buildings to carefully follow a new rating system, developed by the council, to define environmentally geared design.

Armstrong's facility utilizes strategically located exterior sunscreens, interior light

shelves, and a highly reflective ceiling to maximize the use of ambient lighting. If the occupant desires more light he or she has the option to turn on the lights, but once the office is left unoccupied for 15 minutes, occupancy sensors automatically shut them off. Bala also designed a "direct-indirect" lighting system that keeps overall lighting power between 1 and 1.5 watts per square foot.

In complying with the Council's rating system's water conservation standards,

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## The Please Touch Museum continued from page one

supplying emergency electrical power to the museum, which will be located atop a multi-level parking structure. To overcome this, Bala designed a system independent from its surroundings yet accessible for installation and service.

Simulating a river five stories above the Delaware River also posed interesting engineering challenges. The river flow and expression of concepts for fluid design are integrated into the museum interior landscape and created a need for adjustable MEP services.

All of the engineering systems have been put through a series of economic cost models to meet the Please Touch Museums' requirements for low operating costs.

The efforts have resulted in a design that received unanimous approval by the Art Commission, a major milestone in developing large, significant projects in Philadelphia. "I do love it," says commissioner Art Kaplan. A sentiment echoed by Bala's design team.

For more information about this project please contact **Paul McGurl**, [pmc@bala.com](mailto:pmc@bala.com).

## WIMBLEDON@BALA



*Left to Right: Bill Cochran, Erik Fay, Victor Antes, Don Harris*

While Wimbledon raged on in England, Bala kicked off the first Wimbledon@Bala tennis event at the Merion Cricket Club. A great time was had by all attendees, clients, and colleagues. The 1st and 2nd place winners (pictured above) received engraved crystal awards from Tiffany's. Bala plans on making this an annual event. Please contact **Suzanne Taylor**, [smt@bala.com](mailto:smt@bala.com), if you're interested in participating.

### Armstrong continued from page two

Bala specified a hot-water circulation loop to ensure that hot water is constantly available at every sink in the building. In addition, all pumps and fans were installed with high-efficiency motors and variable frequency drives.

To address indoor-air-quality, Bala specified a variable air volume (VAV) chilled-water system with the capacity of using up to 100 percent outdoor air for free cooling. A CO<sub>2</sub> sensor was used to maintain the correct outside air quantities at partial airflows. The system measures CO<sub>2</sub> levels in the outside, return, and supply airstreams to ensure that the proper outside air quantities are always provided.

The Direct-Digital Control System is also integrated with the HVAC system, incorporating smart logic, occupancy sensors and a unique stand-by mode to further reduce HVAC energy consumption. One Fan powered VAV box serves up to four (4) offices, and is connected to individual temperature sensors in each office. When each office requests to change the air temperature this unique "democratic control system," averages out the requests and adjusts accordingly.

The control system utilizes occupied, unoccupied and stand-by modes to set back the space temperatures when the HVAC demands are low. For example, once a room is left unoccupied for 15 minutes, the occupancy sensors activate the system's stand-by mode. This will increase the temperature a few degrees in the summer and lower it in the winter to reap additional energy savings. The Control System also permits the space to experience a faster recovery once the occupant re-enters the space.



Photo by John Hornberger



Photo by John Hornberger

The distinctive all-glass facility was an engineering challenge that Bala was eager to conquer. Every system in the building aims to achieve the highest levels of energy conservation, waste management, and cost efficiency. For more information about this design please contact **Charles B. Kensky, cbk@bala.com**

## Projects OF SPECIAL NOTE

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### Andersen Consulting

Renovation and fit-up of 70,000 square feet in the Wannamaker Building for office space and a data center.

### Vornado Real Estate

Gut and renovation of a 5-story, 47,000 s.f. office space.

### The Quantum Group

Renovation of 20,000 square feet of their existing facility, including HVAC and electrical system upgrades.

### West Chester School District

Survey, calculations, equipment specifications and construction administration of the mechanical systems for the Spellman Administration Bldg.

### Philadelphia School District

Laboratory and Restroom upgrades and MEP System renovations for various schools and administration buildings.

### Vertical Net

Acted as owner's representative and reviewed all drawings for each engineering discipline for the design-build process of this 45,000 s.f. facility.

### Booz, Allen, & Hamilton

Design and documentation of a 10,000 s.f. law office expansion in 1818 Market Street.

### White & Williams

Tenant fit-up design of a 11,707 square foot law office in One Liberty Place including the extension of an existing connecting stair.

### Morgan Lewis Bockius

Tenant fit-up of a 15,000 s.f. of law office including kitchen area, conference/board rooms and a UPS system.

### Princeton e-Com

Tenant fit-up of 42,000 s.f. of office and data center space in Princeton Forrestal Village Center.

### Merrill Lynch

Continuing engineering services for various locations in PA, NJ, & NY.

### Ganes Chemical

Adding 3 new centrifuges and providing complete cGMP upgrades to the related rooms for this manufacturer of Pharmaceutical Chemical Products.

### Delaware Biotechnical Institute

Structural design for three two-story Science/Lab Buildings. A portion of one building is being constructed separately to isolate it from vibrations.

### De Lage Landen

Tenant fit-out of 178,000 square feet of office space for new US Headquarters.

### Coelacanth

Construction was recently completed for a new chemical research laboratory.



*Although our name might not always be penned/recognized in the paper, our clients, projects, and people have made an impact locally and nationally.*

The **Milton Hershey School** recently appeared in a cover article of the Wall Street Journal discussing the school's charter. Currently, Bala is designing a new student housing building which will be used as a prototype for 13 more student housing facilities on their existing campus.

For the second year in a row, Michael Hayko, Vice President and Department Head of Structural Engineering, was a judge for the annual **Associated Builders and Contractors, Inc.'s** (ABC) Merit Construction Award of Excellence program.

Also for the second year in a row, Daniel J. Tisak, Bala's Validation Manager, spoke at the annual **ISPE** national meeting in New Orleans. Dan presented a workshop for GAMP 3, the current version of Guidelines for Good Automated Manufacturing Practices. What are the latest guidelines? Find out now, contact Dan at [djt@bala.com](mailto:djt@bala.com).

One of Bala's newest employees, Dr. Richard Pavlotsky, recently had an article published in A<sup>2</sup>C<sup>2</sup>, on one of his electronics cleanroom design projects for AZ Electronic Materials, a business unit of **Clariant Corporation**. The project required the conversion of office/warehouse space to state-of-the-art semiconductor fabrication unit. For more information on this project or other cleanroom design experience contact Dr. Pavlotsky at [rvp@bala.com](mailto:rvp@bala.com).

This year's national **APPA** conference featured Henry Hudson, and Michael Oliver of Bala, teaming up with Lisle & Nalls Architects, The Design Partnership of Cambridge, Inc., Comprehensive Facilities Planning and Burgess & Niple to present on the classrooms of tomorrow. Copies of the presentation and calculation spreadsheets are available on our website, [www.bala.com](http://www.bala.com).

Michael W. Oliver, Chief Mechanical Engineer at Bala, also presented a workshop on HVAC designs to **The Vanguard Group**. Bala is interested in performing more of these educational seminars, if you are interested in having an educational engineering seminar at your offices please contact Mike at [mwo@bala.com](mailto:mwo@bala.com) or [smt@bala.com](mailto:smt@bala.com).

Related to an article in our last issue (The Truth About Lower GPF), it seems that consumers are not happy with the new ultra low flush (ULF) toilets, according to an article from USA Today. Until congress does something about the amendment requiring contractors to install ULF toilets in all new homes and remodeling jobs, consumers will have to go to travel to Canada for relief or wait for manufacturers to redesign the toilets with more powerful flushing motors.

## NEW EMPLOYEES/PROMOTIONS

### **Charles B. Kensky, PE promoted to Vice President, Commercial Division**

As an officer in the company, Chuck will assume more project executive, marketing, and operational responsibilities, in addition to managing key clients. Chuck's recent projects have included Headquarters Facilities for Armstrong World Industries and SmithKline Beecham and Wawa Inc.'s capital expansion program.

### **Edward J. Lynch, PE promoted to Operations Manager**

Ed's new role will require him to oversee Bala's Commercial Division's mechanical, electrical, and plumbing departments. Ed has been director of our electrical department, overseeing many successful projects including numerous data centers, corporate office and healthcare facilities.

**Paul McGurl:** As a new Project Manager in the Commercial Division, Paul brings extensive experience in the healthcare industry from both the owner's and the design firm's perspective. He has a technical background in both mechanical and electrical engineering.

**Victor F. Pronesti:** Also a new Project Manager in the Commercial Division, Victor's background is in the municipal, commercial and pharmaceutical industries. His technical background is in mechanical engineering.

**Lori J. Sullivan:** Bala's new Regional Sales Director. Lori has over 14 years of experience in the construction and engineering industries and is a Penn State AE graduate.

**David W. Frenze, PE:** Bala's new Director of Business Development in the Pharmaceutical/Industrial Division. A mechanical engineer (Ohio State) and project manager for over 15 years in the Pharmaceutical industry, David brings a unique perspective to our sales force.

**Scott T. Kupper, PE:** Joins Bala's Commercial Division Electrical Engineering Team as an Electrical Engineer. Scott holds a BS in Electrical Engineering and a Master of Engineering Science from Penn State.

**James Geraghty:** Also joins Bala's Commercial Division Electrical Engineering Team as an Electrical Designer.

**Kerri C. Giguere:** Bala's new Process Engineer in the Pharmaceutical/Industrial Division. Kerrie is a Chemical Engineering graduate of the University of Rhode Island.

**Lisa Noch:** Joins Bala's Pharmaceutical/Industrial Division as a Word Processor.