BALA

BALA CONSULTING ENGINEERS

STRUCTURES

FIRM INFORMATION

Bala's mission focuses on **People, Environment** and **Well-Being.** We are built on relationships first—Relationships with our staff, clients and business partners.

We believe sustainable design is essential design. As engineers and consultants we influence and change the path of design for the built environment. We educate our clients on optimal systems and solutions for their project's needs. The results are **efficient, safe and healthy facilities that sustain people.**

40+
YEARS IN BUSINESS

200+
EMPLOYEES

5
OFFICES

POINTS OF CONTACT

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STRUCTURAL AIA COURSES OFFERED

- Structural Considerations for Existing Buildings (1LU)
- Warehousing Structural Systems (1 LU)
- Mass Timber (1 LU)
- Office to Lab Conversions (1 LU)
- Climate Risk & Resilience (HSW)

EXPERTISE & MARKETS

Responsiveness is paramount to Bala's structural engineering team. The structure is intimately aligned with the architecture and client concepts, requiring careful communication and coordination with the design team and contractors. Bala's structural engineers focus on creative, efficient and cost effective design, fulfilling the architectural and owner design intents on every project.

Core Markets

- Senior Living
- Multi-Family & Mixed-Use
- Logistics Centers & Manufacturing
- Data Centers
- Lab Infrastructure Upgrades
- Rehabilitation/Preservation
- Corporate Renovations and Monumental Stairs
- Facade Inspections
- Due Diligence/Feasibility Studies

Structural Systems

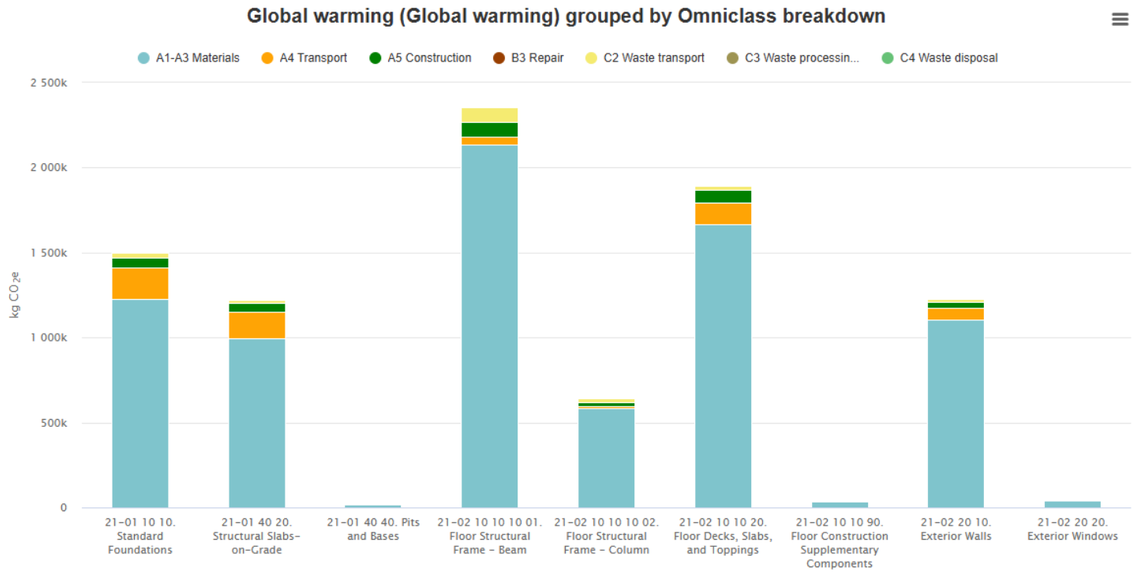
- Steel, Concrete, Masonry & Timber Structures
- Post Tension Concrete Framing
- Load Bearing CFMF and Wood Framed Structures
- Tilt-Up Concrete & Precast Panel Wall Construction
- Deep Foundation Systems
- Proprietary Systems
- Historic and Antiquated Materials and Structures
- Industrial Platforms
- CFD Wind Modeling

Structural engineering is the backbone of every building and on the front lines of design and construction in every project.

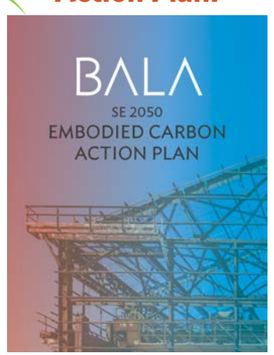
COMMITTING TO NET ZERO

SE 2050 Action Plan

With concrete and steel, comprising a significant portion of a building's total emissions, Structural Engineering plays an important role in addressing embodied carbon within the built environment. Bala is dedicated to transforming structural design and advancing towards a more sustainable future. Substantive embodied carbon reductions in the design and construction of structural systems will require a collaborative effort amongst engineers, manufacturers, contractors, and designers; and we are excited to be a part of advancing this multi-industry effort.



Explore our SE 2050 Action Plan!



We are creating lasting change and are committed to achieving net zero embodied carbon structures by 2050.

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MULTI-FAMILY

Given today's challenging market, characterized by a high demand for housing, elevated interest rates and construction costs, designing cost-efficient buildings is crucial.

Efficiency starts early, during the conceptual and schematic phases. Bala collaborates closely with architects and owners to develop the most appropriate structural system for each project. We have extensive experience designing a variety of structural systems, from cast in place/post-tensioned towers in dense urban settings to wood-framed suburban podium buildings. Our approach ensures the chosen system aligns with the project's intended use, desired flexibility, local market conditions, and overall program.

SYSTEM TYPES

- Wood Framing Type III and Type V
- Cast-In-Place
- PT Concrete
- Structural Steel
- Precast Plank
- Epicore and Ecospan

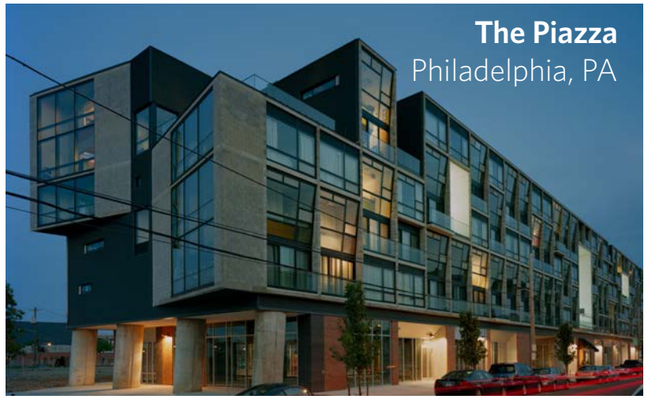
A smooth construction phase relies on high quality construction documents, which are a direct result of intimate team coordination. Bala possesses the expertise to coordinate diverse systems, including Type 2, 3A, 5, and PTAX, with the lateral team members.

We believe in a dynamic approach to every project, recognizing that there's no one-size fit's all solution. Creativity is vital for successful project delivery. To support this, Bala has developed best practices for common coordination items, which helps reduce requests for information (RFIs) and change orders.

Eleven33
Media, PA

Fairfax City Centre West
Fairfax, VA

Stable Lofts
Philadelphia, PA



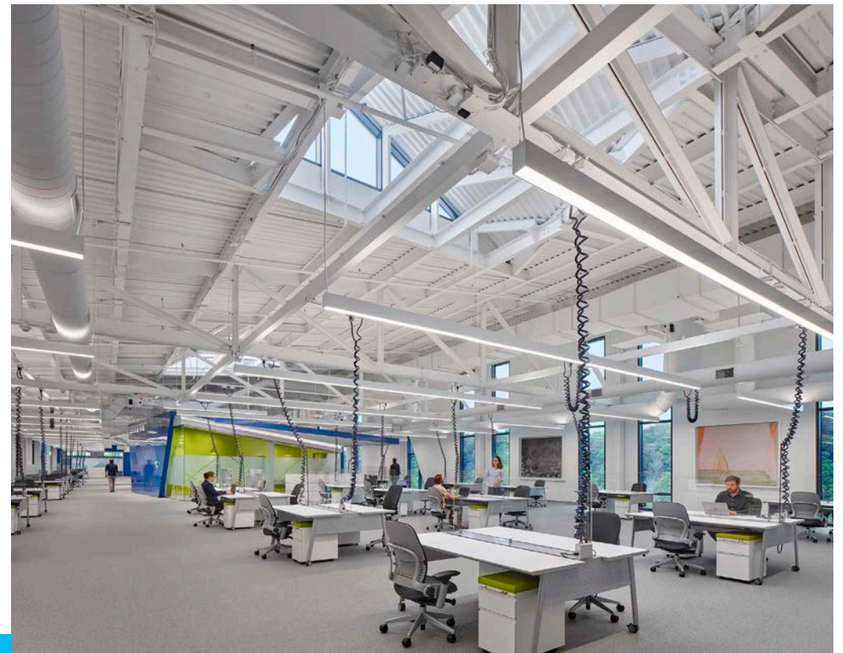
The Piazza
Philadelphia, PA

CORPORATE

The modern office environment, from sprawling corporate campuses to meticulously designed tenant improvement spaces, stands as a cornerstone of Bala's structural expertise. We're not just designing buildings; we're engineering the future of corporate environments, making them smarter, more energy-efficient, and structurally sound for the long haul.

Structural engineering plays a pivotal role in the life of a building. From the initial conceptualization, our team analyzes and designs the very bones of the building, ensuring its stability, safety, and resilience. This involves everything from selecting appropriate foundation systems to designing efficient framing, and considering how the building will interact with its environment. We understand that a robust and well-thought-out structural design is the root upon which all other innovations in a corporate space are built.

Our comprehensive services span all project phases. This includes early-stage involvement in site selection and space planning, through post-construction support to help maintain the integrity of the building throughout its life. Bala's structural engineering designs are crafted to support the evolving demands of the modern business world.



SEI
Oaks, PA

36 Hampshire Street

Cambridge, MA

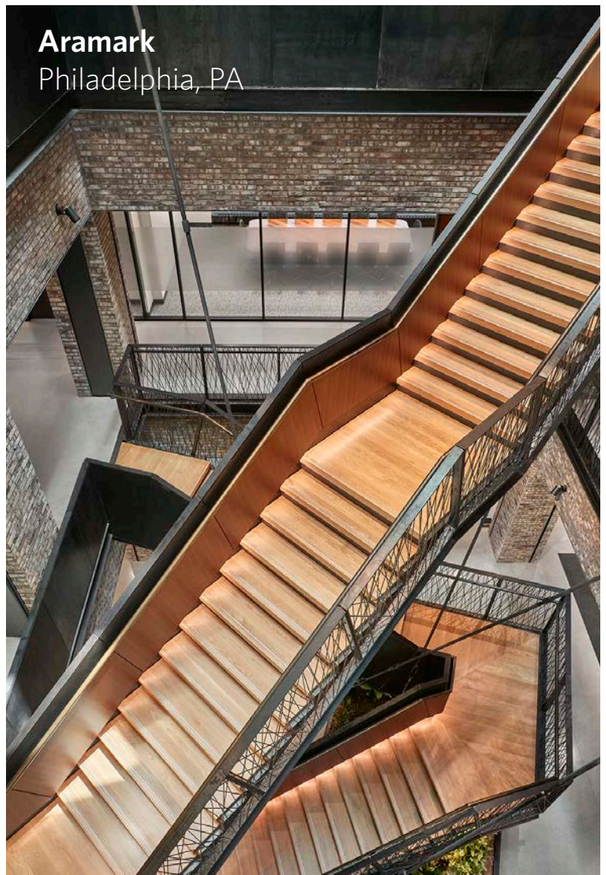
Bala delivered structural engineering design services for the new 4-story, 21,000 SF laboratory and office building, designed to accommodate life science tenants in Cambridge's thriving research innovation sector.

The site was situated on an obtuse city block corner, wrapped on two sides by an 8-story masonry tower. Space was a limiting factor and all volume on the property had to be maximized. When a below grade parking level was proposed for the project, underpinning the adjacent building was costly and risky. Urban excavations in Boston often utilize secant pile construction in these applications.

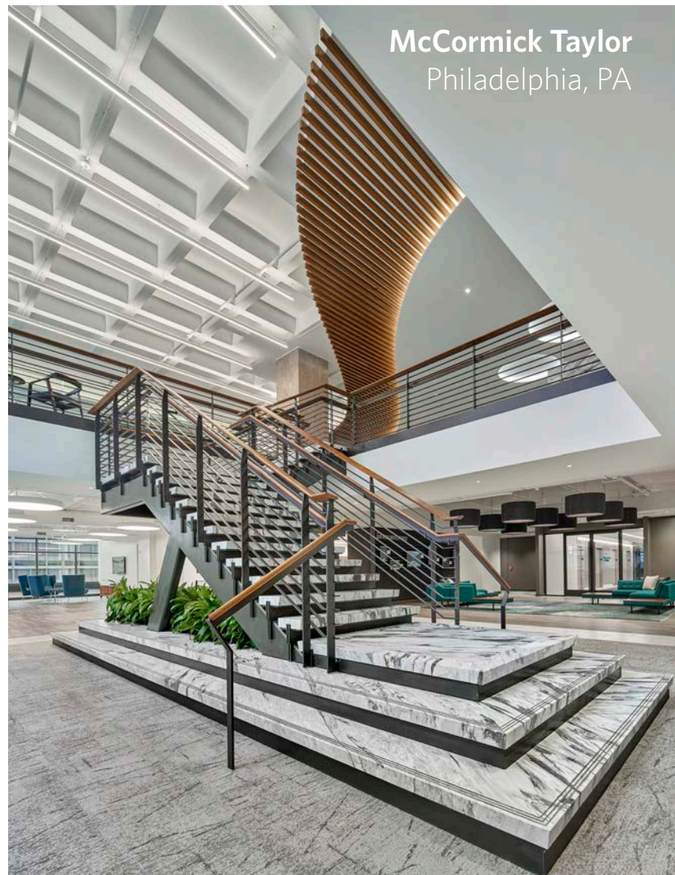
The use of secant pile construction serves as the support of excavation and the finished basement walls and exterior column supports. The advantages of a secant pile system are strong enough to resist surcharge from adjacent building foundations, hereby eliminating costly underpinning.

To save further space, the rainwater retention tank was removed and relocated on the roof, which was designed to collect rainwater.

Cencora
Conshohocken, PA



Aramark
Philadelphia, PA



McCormick Taylor
Philadelphia, PA

SENIOR LIVING

Senior Living communities offer a range of residential options from independent living to assisted living and memory care. Buildings housing memory care residents often fall into a higher risk category, requiring non-combustible structural framing, a mandate that varies by jurisdiction. Higher risk categories for buildings result in increased external loads on structural systems.

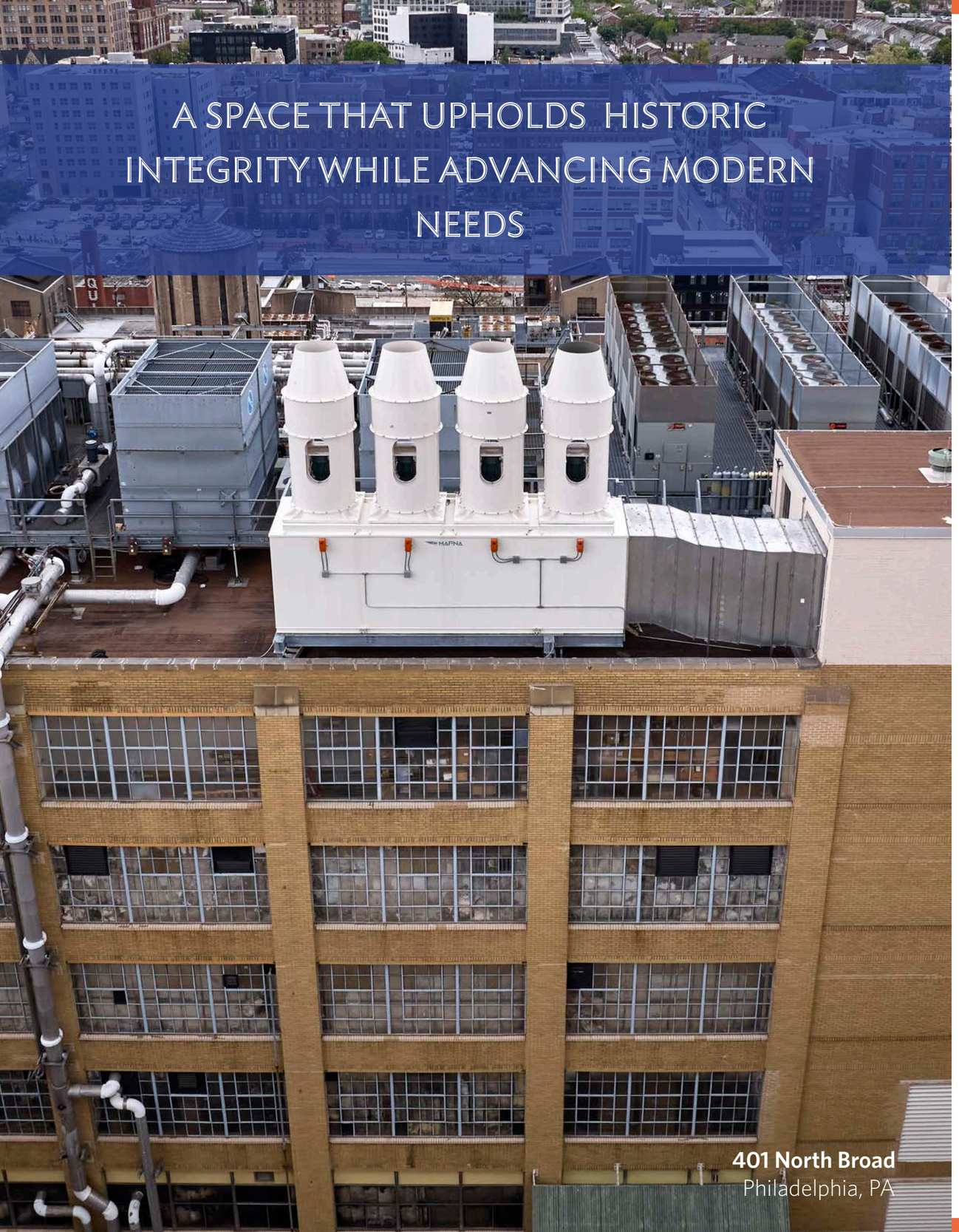
Common structural systems include load-bearing walls, constructed from wood framing or cold-formed steel, that support wood framed floors, slabs on deep deck, slabs on deck with open-web joists, or hollow-core plank, to name a few! Pre-engineered wood or cold-formed steel roof trusses are common at the roof level. Proprietary systems, such as Comslab, Hambro or Delta Beam, can be employed to help with mechanical coordination and achieve desired ceiling heights in the building. Lateral Force Resisting Systems (LFRS) will vary, but typically consist of shear walls or braced frames embedded in stair tower, corridor or unit demising walls.

Capitol Seniors Housing
Arbor Terrace
Morris Plains, NJ

SELECT CLIENTS

- ACTS
- Medford Leas
- State of Delaware
- Capitol Seniors Housing
- Benchmark Senior Living
- Stonegates
- CareOne
- Shelbourne Healthcare Development Group

The Chelsea at Greenburgh
White Plains, NY



A SPACE THAT UPHOLDS HISTORIC INTEGRITY WHILE ADVANCING MODERN NEEDS

401 North Broad
Philadelphia, PA

ADAPTIVE REUSE

The most sustainable building is the one that already exists! Adaptive reuse not only reduces building materials, embodied carbon and energy consumption but it also revives communities. Bala has been involved in several adaptive-reuse projects that prioritize ***minimal environmental impacts and breath new life into old structures.*** These projects create new opportunities to ***bring people together*** for new purposes.

111 Wall Street - New York, NY **Project Type: Office**

Originally built in the 1960's under the 1968 building code, this office building underwent major renovations. Bala economically performed renovations to the building without requiring a costly level 3 alteration that would have mandated a full lateral building upgrade. The comprehensive project encompassed carving out two new lobbies, a complete building reskin, and a full MEP system upgrade.

451 D Street - Philadelphia, PA **Project Type: Lab**

Tasked with the complex strategic conversion of a historic office building to core and shell lab space, Bala leveraged our expertise to analyze the terracotta floor systems for high level vibration and loading criteria. The multi-year infrastructure upgrades also involved the support of mechanical penthouses, AHUs, and Strobic fans.

Mill 19 - Pittsburgh, PA **Project Type: Corporate**

An abandoned steel factory, Bala surveyed the steel structure and worked with the owner and architect to materialize the vision of repurposing the skeleton as a historical element with several 3-story office building structures within the skeleton.

401 North Broad - Philadelphia, PA **Project Type: Data Center**

This robust structure, originally a train depot and later adapted for wartime warehousing, now serves as a critical hub for the Northeast transatlantic fiber optic transmission line. As the engineer of record, Bala consistently designs and modify's its infrastructure to accommodate colocation data center tenants, conducts facade inspections, and provides support for parking garage improvements.

1813 Howard Street - Philadelphia, PA **Project Type: Multi-Family**

Bala tackles the most daunting conditions in an aging timber and brick building. Whether for assessments, feasibility studies, or full renovation designs, Bala can pinpoint distressed areas to effectively repurpose these structures for multi-family living.

DESIGN THAT REVITALIZES

"A powerful reminder of what we can achieve when public, private, civic and community partners come together to fuel innovative discovery and broaden opportunity."

- FARNAM JAHANIAN, Carnegie Mellon President

EDUCATION

DESIGN TO INSPIRE THE FUTURE

Educational facilities span all possibilities, from classrooms and laboratories, to performing arts and television studios. Conventional is a word not often used in designing these spaces, and engineering has evolved to accommodate the new learning environment. From adapting an existing or historic building to function in a new world, with networked classrooms and campus wide connectivity, to designing new facilities from the ground up, we have the necessary experience. Bala utilizes design philosophies in our projects as good design practice or to achieve LEED Certification. Colleges and Universities, technical schools, and private preparatory schools are all part of our educational portfolio.

Project Types

- [ ] Academic Facilities
- [ ] Administrative Facilities
- [ ] Libraries
- [ ] Campus Infrastructure
- [ ] Athletic Centers
- [ ] Residence Halls
- [ ] Student Centers
- [ ] Research Facilities
- [ ] Performing Arts Centers

ST. JOSEPH'S UNIVERSITY


BALDWIN SCHOOL

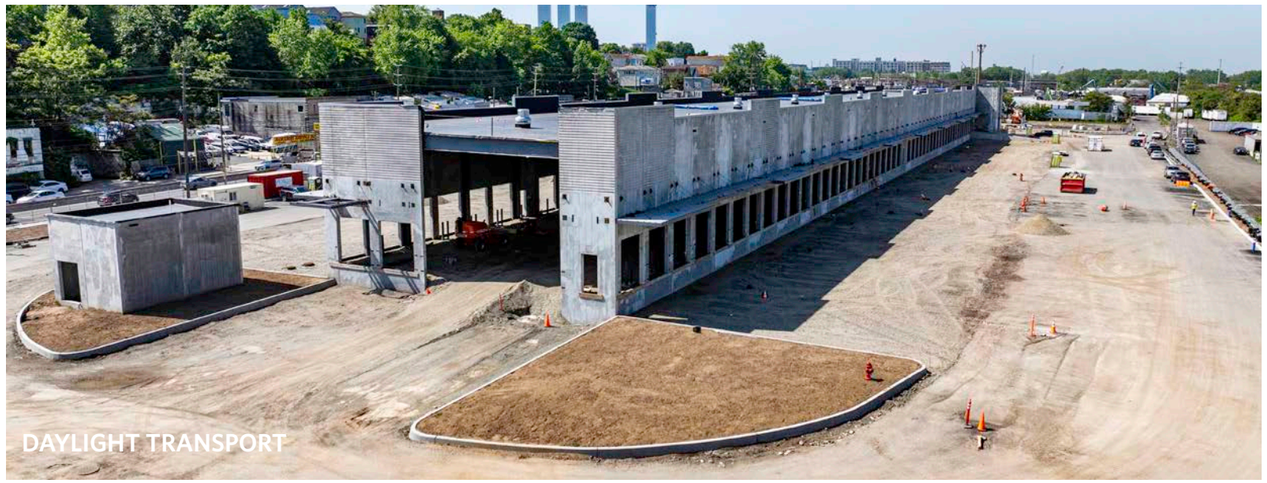

DAVIDSON COLLEGE

RUTGERS UNIVERSITY


MALVERN PREPARATORY


401 N. BROAD


NETRALITY


DAYLIGHT TRANSPORT

URBN WAREHOUSE

INDUSTRIAL

Designing the structural framework for critical facilities demands a deep understanding of complex and dynamic loads, environmental factors, and rapidly evolving technologies, playing a crucial role in the performance of the building.

MISSION CRITICAL

Bala has been at the forefront of providing critical and technologically advanced engineering for mission critical facilities. We have a rich project history of solving complex engineering challenges and specialize in working on "live" facilities to upgrade or implement infrastructure systems while maintaining ongoing operations.

Technology is rapidly changing the way critical infrastructure and data centers are designed and utilized. Bala's expertise lies in engineering solutions that adapt leading technology to specific project demands. These solutions are designed to efficiently deliver, monitor, and control power utilization, sustain critical operations, and minimize risk, cost, and construction chaos.

WAREHOUSE

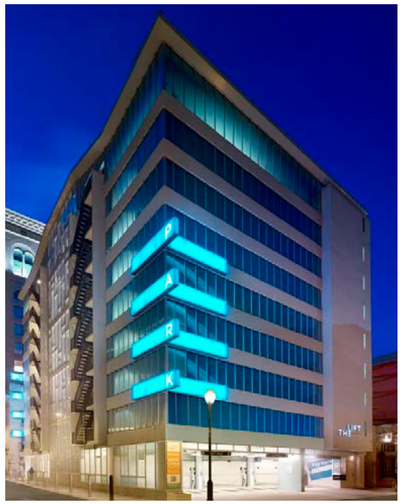
Warehousing Operations are typically the key factor in the success or failure of a business's supply chain. Understanding the importance of optimized facilities, more companies are building better warehouses across the world. Bala consistently pushes the envelope for clear heights, larger speed bays and effective slab on-grade designs using the latest technologies in order to meet developer and end-user demands to maximize the utility of space, equipment and efficiency of operations.

Project Types

- Production Warehouses
- Furniture Warehouses
- Automated Facilities
- Cold Storage Warehouses
- Pharmaceutical Warehouses
- Logistic Centers
- Food Storage Warehouses
- Omni Channel Distribution Centers

ADDITIONAL MARKETS

PARKING GARAGE



Project Types

- Precast Garages
- Cast in Place Garages
- Below Grade and Podium Garages
- Automated Parking Facilities
- Condition Assessments
- Repair Documentation

ENTERTAINMENT

Manufacturers' Golf & Country Club
Fort Washington, PA

To expand their event and clubhouse space, a new two-story height addition was added. The space features a new bar with a glass curtain wall offering views of the golf course. Other design elements include large openings in existing walls, foundation reinforcement, new retaining walls for the patio, and exposed structural steel columns.

LUCKEY CLIMBERS

Our structural team has worked all over the world on these three dimensional children's play structures, unique to each location around the world. They are not only works of art, but platforms for children to express their imagination.

Tailored engineering solutions focused on User Experience, Sustainability, Equity, Integration, and Evolution.

BALA

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