

LANGAN STADIUM & ARENA EXPERIENCE



Technical Excellence Practical Experience Client Responsiveness

NEW JERSEY NEW YORK CONNECTICUT MASSACHUSETTS PENNSYLVANIA OHIO VIRGINIA FLORIDA TEXAS ARIZONA COLORADO
WASHINGTON CALIFORNIA ATHENS CALGARY DUBAI LONDON PANAMA



METLIFE STADIUM

Location: East Rutherford, NJ
Architect: 360 Architects, Ewing Cole
Partner: Skanska USA, Thornton Tomasetti
Services: Site/Civil, Geotechnical, Environmental, Traditional Surveying,
Natural Resources & Permitting, Traffic & Transportation,
Landscape Architecture

OVERVIEW

Home to the New York Giants and Jets, MetLife Stadium is an 82,000-seat, open-air stadium constructed within the Meadowlands Sports Complex. The project was challenged by poor subsurface conditions, numerous existing site utilities, proximity to the existing stadium and racetrack, and the need to construct the proposed stadium while operating the existing Giants Stadium and utility infrastructure that serves the Meadowlands Sports Complex. The expertise of several Langan disciplines was called upon to facilitate design and construction of the stadium and maintain the project schedule. Langan provided geotechnical, site/civil, environmental, traffic engineering, surveying, permitting, and landscape architecture services for MetLife Stadium - working with the owners, design-build contractor, and a diverse team of architects and designers.

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BARCLAYS CENTER AT ATLANTIC YARDS

Location: Brooklyn, NY
Client: Forest City Ratner Companies
Architect: SHoP Architects, AECOM Ellerbe Becket
Partner: Thornton Tomasetti, WSP
Services: Geotechnical, Earthquake/Seismic

OVERVIEW

The Atlantic Yards project consists of the redevelopment of six city blocks in the Prospect Heights section of Brooklyn, NY and includes the Barclays Center, an entertainment center and new home arena of the Brooklyn Nets. Langan served as the geotechnical engineer for the arena and high-rise structures at the Vanderbilt Yard. In addition, Langan's site-specific seismic study resulted in a favorable seismic designation, thus avoiding unnecessary seismic detailing and connections, and more importantly, foundation ties - which saved millions of dollars.

AWARDS

2014 American Council of Engineering Companies New York, Engineering Excellence Awards

Diamond Award

2013 Engineering News Record, Best Projects Winner (Sports/Entertainment)

2013 Engineering News Record, Best Projects Winner (Airports/Transit, Infrastructure Improvements to Barclays

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Awards for Neighborhood Catalyst

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MERCEDES-BENZ STADIUM

Location: Atlanta, GA
Client: Darden & Company
Architect: HOK (360 Architecture), Goode Van Slyke Architecture,
Stanley Beaman & Sears, tvsdesign
Partner: ICON Venue Group
Services: Geotechnical, Environmental

OVERVIEW

Langan was retained as the environmental and geotechnical engineer of record for Mercedes-Benz Stadium, home of the Atlanta Falcons. The 1.8-million-SF multi-purpose, 71,000-seat retractable roof stadium opened for the 2017 NFL Season. As the geotechnical and environmental consultant on the project, Langan continued its role throughout construction by providing asbestos abatement oversight, monitoring and testing of excavated soils to comply with the environmental soils management plan, underground storage tank closure management, storage tank closure assessments, vibration monitoring within the Marta Tunnel structure and geotechnical oversight of various foundation and ground improvement systems.

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CHASE CENTER

Location:	San Francisco, CA
Client:	Golden State Warriors
Architect:	Manica Architecture, Kendall/Heaton Associates
Partner:	Magnusson Klemencic Associates, Mortenson Clark Joint Venture
Services:	Environmental, Geotechnical, Earthquake/Seismic, Site/Civil

OVERVIEW

Chase Center, the new state-of-the-art home of the Golden State Warriors, provides seating for 18,000 fans including a view deck and two public plazas, 580,000 square feet of office space, retail, restaurants, and underground parking. Some of Langan's key services included coordinating regulatory approvals for removal of hazardous materials and soil management, modeling groundwater for design and dewatering during construction, and addressing poor soil conditions by recommending the most appropriate foundations, shoring systems, and construction methods.

AWARDS

- 2020 CalGeo Outstanding Project
- 2020 DFI Outstanding Project

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LINCOLN FINANCIAL FIELD STADIUM EXPANSION

Location: Philadelphia, PA
Client: WLS Consulting, LLC, Philadelphia Eagles
Architect: Gensler
Services: Site/Civil, Geotechnical, Environmental, Traditional Surveying,
Terrestrial Scanning/BIM

OVERVIEW

Lincoln Financial Field, home stadium of the Philadelphia Eagles, seats 69,000. Langan was retained to assist with stadium improvements, including seating expansion, suite and amenity enhancements, exterior plaza and gate enhancements. We designed two new stormwater bioretention areas which manage over 1,800 CF of stormwater, and a new 15,000-SF pedestrian plaza paved with porous pavement, as part of a strategy to implement green stormwater management.

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AVAYA STADIUM

Location: San Jose, CA
Client: Wolff Urban Development, LLC
Architect: HOK
Services: Geotechnical, Environmental, Earthquake/Seismic

OVERVIEW

Home to the Major League Soccer's San Jose Earthquakes, Avaya Stadium was built on the site of the FMC Corporation's Central Plant facility. The stadium features a European roof design that covers all 14,000 seats. Langan recommended shallow foundations for support of the stadium, providing significant cost savings compared to deep foundations. Our environmental team assisted with the Soil Management Plan, worked with the California Department of Toxic Substances Control to recycle concrete from the former FMC facility, evaluated potential vapor intrusion risks from residual volatile organic compounds, which demonstrated that a sub-slab vapor mitigation system was unnecessary, and prepared the site closure report.

AWARDS

2015 Phoenix Award for Excellence in Brownfield Development, US Environmental Protection Agency

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PPL CENTER

Location: Allentown, PA
Client: Hammes Company Sports Development, Allentown
Commercial and Industrial Development Authority
Architect: Sink Combs Dethlefs
Services: Geotechnical

OVERVIEW

The PPL Center is a new arena that is part of the redevelopment of a five-acre city block in downtown Allentown. The 8,500-seat arena will host the Lehigh Valley Phantoms, an American Hockey League affiliate of the NHL's Philadelphia Flyers. Langan provided geotechnical services in support of the project.

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AMERICAN AIRLINES ARENA

Location: Miami, FL
Client: The Miami Heat
Architect: Arquitectonica, HOK
Services: Geotechnical, Environmental

OVERVIEW

A former ship docking facility is the site for the home of the Miami Heat. This 19,000-seat, state-of-the-art arena overlooks Biscayne Bay and downtown Miami. Langan provided subsurface investigations to identify the conditions of the site and based upon this information new foundation recommendations were developed.

AWARDS

2000 Deep Foundation Institute, Outstanding Project Award Programs, Special Recognition Award
1998 American Institute of Architects, Miami Award, Excellence in Architecture

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PRUDENTIAL CENTER

Location: Newark, NJ
Architect: Populous
Partner: Gilbane
Services: Geotechnical, Site/Civil, Natural Resources & Permitting,
Environmental

OVERVIEW

In the heart of downtown Newark, The Prudential Center is home to the New Jersey Devils, Seton Hall University Pirates, and an exciting venue for major concerts and events. Langan provided preliminary site/civil, geotechnical and environmental engineering services for project. The site was complicated by old building foundations and remnants of a rail yard that once existed over a large portion of the site.

AWARDS

2008 New York Construction News Magazine, Project of the Year
2008 American Council of Engineering Companies New Jersey and National, Engineering Excellence Awards

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HARD ROCK STADIUM & ADDITIONS

Location: Miami Gardens, FL
Client: Miami Dolphins Limited
Architect: HOK, Arquitectonica
Partner: Hunt Construction Group, Stiles Construction, Bliss & Nyitray, Thornton Tomasetti
Services: Geotechnical, Site/Civil

OVERVIEW

Langan was the geotechnical engineer for the original stadium construction and all subsequent additions, including the most recent canopy structure. For this recent addition, Langan also provided site/civil engineering and permitting services for the improvements at the stadium, which is home of the Miami Dolphins. Geotechnical services have included subsurface investigations, foundation designs, and construction oversight during the original surcharge site-improvement program, footing subgrade preparation, and installation of high-capacity deep foundations for support of the state-of-the-art, open-air canopy. The site/civil scope involved redesigning site drainage to address flooding in parking lots and designing the proposed roof drainage conveyance system. Other tasks included designing improvements associated with the reconfiguration of internal access road and planned amenities surrounding the stadium.

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LEVI'S STADIUM

Location: Santa Clara, CA
Client: San Francisco 49ers
Architect: HNTB
Services: Geotechnical, Earthquake/Seismic

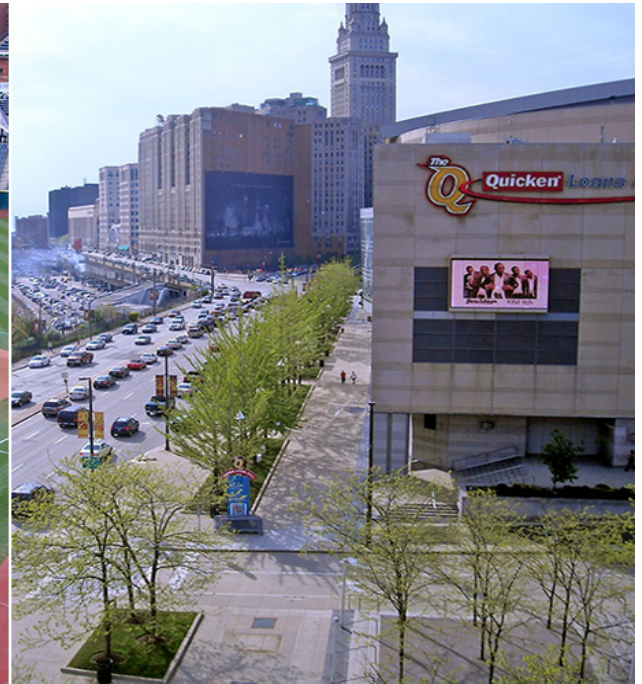
OVERVIEW

The San Francisco 49ers Stadium is a 68,500-seat, open-air NFL stadium with an elevated pedestrian walkway at plaza level, retaining walls, interior and exterior concrete masonry unit walls, mechanical and electrical equipment pads, and three pedestrian bridges across the San Tomas Aquino Creek. Langan developed geotechnical, foundation, and seismic design criteria, including site-specific response spectra, for the project. We observed geotechnical aspects during the stadium's construction. Langan took a creative approach to solving issues as they arose and consulted on an alternative foundation system of more than 3,000 drilled displacement piles. This system proved to be cost-effective and was successfully completed within the aggressive construction schedule.

AWARDS

2016 American Council of Engineering Companies, Engineering Excellence Award

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CLEVELAND INDIANS & CAVALIERS - GAME DAY PARKING & TRAFFIC

Location: Cleveland, OH
Client: Cleveland Indians and Cavaliers
Services: Traffic & Transportation

OVERVIEW

The Cleveland Indians and Cavaliers retained Langan to review their traffic and parking operations at two site-related garages during multiple events at Quicken Loans Arena and Progressive Field. The Langan team conducted observations during three events, the Bruce Springsteen Concert, and two occasions when the Indians and Cavaliers were playing at the same time. Langan made recommendations on how to improve ingress and egress into the two parking garages, Gateway North and East, that serve the sports facilities.

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ORACLE PARK

Location: San Francisco, CA
Client: San Francisco Giants
Architect: HOK
Partner: Thornton Tomasetti, Hunt Construction Group
Services: Geotechnical, Earthquake/Seismic

OVERVIEW

Langan performed a geotechnical investigation and a probabilistic seismic hazard analysis for the Oracle Park baseball stadium. The stadium includes a playing field, seating area for 42,000 people, and stadium support facilities. The site, originally part of San Francisco Bay, was reclaimed by a series of fills that occurred between 1860 and the 1920s. Our engineers developed earthquake design criteria and participated in development of the environmental impact report. We also assisted with the structural evaluation of the existing 900-foot-long, 50-foot-high bulkhead retaining structure along China Basin Channel.

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RED BULL ARENA

Location: Harrison, NJ
Client: New York Red Bulls
Services: Traffic & Transportation

OVERVIEW

Langan provided transportation/parking management services prior to and during the inaugural season of play at the Red Bull Arena. Langan was called upon for a variety of traffic, parking, and pedestrian issues that needed to be addressed and coordinated between the New York Red Bulls (Major League Soccer) and various agencies and stakeholders. Tasks included an existing conditions assessment, which included a thorough review of all existing data on attendance and trends for Red Bulls events at Giants Stadium. Langan also prepared a Transportation and Parking Plan that documented recommendations regarding access, circulation, and parking for all modes of transportation.

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HEINZ FIELD OPERATIONS AND TRANSPORTATION PLAN UPDATE

Location: Pittsburgh, PA
Client: Pittsburgh Steelers
Services: Traffic & Transportation

OVERVIEW

Langan's experienced team of stadium traffic and parking engineers were asked to develop a Standard Operations Plan from gameday observations, and to prepare a revised Transportation Master Plan for development along the North Shore in Pittsburgh. The goal of the study was to improve gameday operations following peak Heinz Field events, and determine roadway and parking needs to support project development along the North Shore.

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