

CONTENTS

FIRM PROFILE 2

Public Agency Experience:

County of Montgomery - Norristown Parking Garage – Norristown, PA.....4

Berks County Courthouse (1931) – Reading, PA5

Morristown Parking Authority – Morristown, NJ6

City of Trenton – HVAC System & Control Replacement.....6

New Jersey Performing Arts Center & Military Park – Newark, NJ7

Rowan University Parking Garage Design, Glassboro Township, NJ.....8

Cape Liberty Cruise Terminal Parking Garage – Bayonne, NJ9

New York City Housing Authority – Exterior Wall Repairs 10

West Point Military Academy – West Point, NY 11

National Institute of Health – Building #10 Exterior Wall and Plaza Repairs 12

National Institute of Environmental Health Sciences –Morrisville, NC..... 13

Reagan Building – Washington, DC 14

Cannon Air Force Base – New Mexico..... 15

Federal Thrift Building – Washington, DC..... 15

Tinker Air Force Base Roof Consulting – Oklahoma City, OK..... 16

Danbury Federal Correction Institute – Danbury, Connecticut..... 16

Reading School District – Reading, PA 17

Philadelphia Parking Authority - Airport Garages..... 19

Buena Vista Parking Garage and Office Space – Yonkers, NY 20

Dayton Municipal Parking Garage – Dayton, OH..... 21

Ashburton Parking Structure – Yonkers, NY..... 21

Municipal Parking Lot Restoration – Yonkers, NY..... 22

New Rochelle Municipal Garage – New Rochelle, NY 22

Wylie Natatorium – Maple Heights, OH..... 22

Seneca County Museum, Tiffin, OH 23

McAllen Independent School District, McAllen, TX..... 23

FIRM PROFILE

O&S Associates, Inc. (O&S) is a full-service engineering firm specializing in restoration and design. Our services include restoration, building consulting, and facility renewals as well as parking consulting and design. This includes building envelopes and façade law inspections, roofing, windows, plazas and public spaces, waterproofing, energy studies and retro-commissioning, HVAC assessments and design, fire protection, lighting design, paving and site civil restoration.

O&S has provided restoration services on more than 2,500 projects, including more than 1,200 parking structures. Most of our projects include in-depth construction administration and construction management due to our unique delivery system. Over the past 5 years, we have provided construction services to support an average construction volume of more than \$65M per year. Our clients include Local, State and Federal Government agencies and authorities, Schools, Universities, Industrial and Institutional clients, parking authorities and companies, healthcare clients, developers, office properties, and many more.



O&S Associates, Inc. has worked with the following entities:

Public Agency Experience:

Federal

- United States Government Office of Thrift Supervision/Department of Treasury
- Reagan Building (GSA)
- Commerce Building (GSA)
- EPA West Building (GSA)
- US Army – West Point
- US Airforce Cannon Air Force Base (NM) & Tinker Air Force Base (Oklahoma City, OK)
- US Department of Veterans Affairs (Hospitals throughout US)
- National Institute of Health
- National Institute of Environmental Health Sciences
- Danbury Prison & Correctional Institute (Danbury, CT)

State

- New Jersey Performing Arts Center (NJPAC)
- Rowan University (Glassboro Township, NJ)
- NJ Dep't of Property Mgmt. & Construction
- New Jersey Turnpike Authority
- New York/New Jersey Port Authority

Municipal

- City of Morristown, NJ
- Morristown Parking Authority (NJ)
- City of Trenton
- Hoboken Parking Authority
- New York City Housing Authority (NYCHA)
- City of Yonkers (NY)
- City of New Rochelle (NY)
- City of Dayton (OH)
- Philadelphia Parking Authority (PA)
- New Smithtown, NY

County

- Mercer County Improvement Authority (NJ)
- Union County, NJ
- Morris County, NJ (2015 IDIQ Elevator Consulting)
- Montgomery County (Norristown, PA)
- Reading School District 18 Schools (Reading, PA)
- Berks County, PA Courthouse
- McAllen Independent School District (McAllen, TX)
- Maple Heights City School District (Maple Heights, OH)
- Seneca County Museum (Tiffin, OH)

O&S ASSOCIATES, INC - FACTS AT A GLANCE

<p>Form of Legal Entity: NY S Corporation</p> <p>Date of Formation: 2/28/1996</p> <p>Size: 50 Employees</p> <p>EIN# 22-3429552</p> <p>NYC Special Inspection Agency: # 002753*</p> <p>DUNS: 004008608</p> <p># 002753*</p>	<p>NEW YORK CITY</p> <p>505 8th Avenue Suite 804 New York, NY 10018 T: (646) 736-0699 "O&S Engineers and Architect, PC" EIN 22-3493517</p> <p>CHICAGO</p> <p>17 N. State Street Suite 1700 Chicago, IL 60602 T: (312) 462-1717 Cert Auth. 1325800322</p> <p>WASHINGTON, D.C.</p> <p>7406 Alban Station Court Suite A110 Springfield, VA 22150 T: (202) 400-3533</p>	<p>SERVICES PROVIDED:</p> <p>PARKING STRUCTURES</p> <p>Parking Structure Restoration Parking Structure Design Parking Studies PARCS Design Condition Assessments</p> <p>EXTERIOR WALLS & ROOFING</p> <p>Çaçade Law Compliance Leak Investigations Energy Upgrades and Reskin Inverted Roofs and Decks Window Replacement</p> <p>BUILDING CONSULTING AND RENEWALS</p> <p>Reserve Studies Property Condition Assessments Facility Condition Index Energy Audits Retro-Commissioning Benchmarking Co-gen, Solar, Wind, and Alt. Energy</p> <p>HVAC & MEP/FP</p> <p>Boilers Chillers and Cooling Towers Plumbing Fire Protection Water Treatment Switchgear and Distribution Ventilation</p> <p>ARCHITECTURAL</p> <p>Lobbies Mailrooms Lighting Design Green Roofs Plaza's and Public Spaces</p> <p>SITE CIVIL</p> <p>Paving Grading and Drainage</p> <p>POST-CONSTRUCTION and EXPERT WITNESS</p> <p>Warranty Evals Const. Claims.</p>	<p>SPECIAL INSPECTION QUALIFICATIONS:</p> <p>Chimneys Mastic and Intumescent Fire-Resistant Coatings Sprayed Fire-Resistant Materials Fire-Resistant Penetrations and Joints (Firestop)</p> <p>Structural Cold-Formed Steel Structural Steel – Details Concrete - Cast-In-Place, Precast, Prestressed Wood - Installation of High-Load Diaphragms Wood - Installation of Metal -Plate-Connected Trusses Masonry Structural Stability - Existing Buildings Vertical Masonry Foundation Elements/Piers Post-Installed Anchors</p> <p>Exterior Insulation and Finish Systems (Eifs) Wall Panels, Curtain Walls, and Veneers Mechanical Demolition</p> <p>Heating Systems Sprinkler Systems Mechanical Systems Smoke Control Systems Emergency & Standby Power Systems (Generators) Fuel-Oil Storage and Fuel-Oil Piping Systems</p>
<p>Office Locations</p> <p>Pennsylvania</p> <p>1710 Walton Road Suite 105 Blue Bell, PA 19422 T: (610) 628-9400 "O&S Engineering" PA Approval # 003599 Phila 3702-642583</p> <p>New Jersey</p> <p>145 Main Street Hackensack, NJ 07601 T: (201) 488-7144 Cert. Authorization 24GA279043200</p> <p>Ohio</p> <p>471 E. Broad Street Suite 910 Columbus, OH 43215 T: (614) 469-1988 Lic. No 1099278</p> <p>Florida</p> <p>110 East Broward Blvd. Suite 1700 Ft Lauderdale, FL 33301 T:305.676.9888 Cert #813A00012793</p> <p>Memberships and Affiliations</p> <p>American Concrete Inst. (ACI) Int'l Concrete Repair Inst. (ICRI) ASCE International Parking Inst. (IPI) NCEES Campus Parking & Transportation Association</p>	<p>MBE/DBE Status:</p> <p>(NAIC 541330) PennDOT DBE #14579 NJ DOT /UCP DBE NJ MBE #65410-23 NY Empire State Dev. MBE</p> <p>Community Assoc. Inst. (CAI) American Society of Healthcare Engineers (ASHE) ASHRAE Nat'l Parking Assoc. (NPA) American Institute of Architects Int'l Facility Manager's Assoc. Int'l City/County Mgr's Assoc. (ICMA)</p>	<p>www.oandsassociates.com</p>	

County of Montgomery - Norristown Parking Garage – Norristown, PA



O&S Associates, Inc. was retained by Montgomery County to continue an assessment on the pre-cast, double tee parking structure and prepare a rehabilitation plan for the structure. The structure has 5 supported levels, 2 stair towers and 2 major elevators. The condition assessment was based on a review of the existing plans and testing reports, visual observations of the site, and exploratory work and material testing. These tests included chain drag and hammer sounding as well as exploratory openings of the structure.



Due to lack of maintenance, the garage had deteriorated extensively and required extensive repairs. Work included full and partial depth repairs, replacement of expansion joints, repair of pre-cast tee-to-tee connections, replacement of connections between parapet sections, and installing of a new traffic bearing membrane and joint sealants. O&S prepared drawings and specifications for the structural repair and waterproofing of the garage and provided bidding and construction administration services.

Berks County Courthouse (1931) – Reading, PA

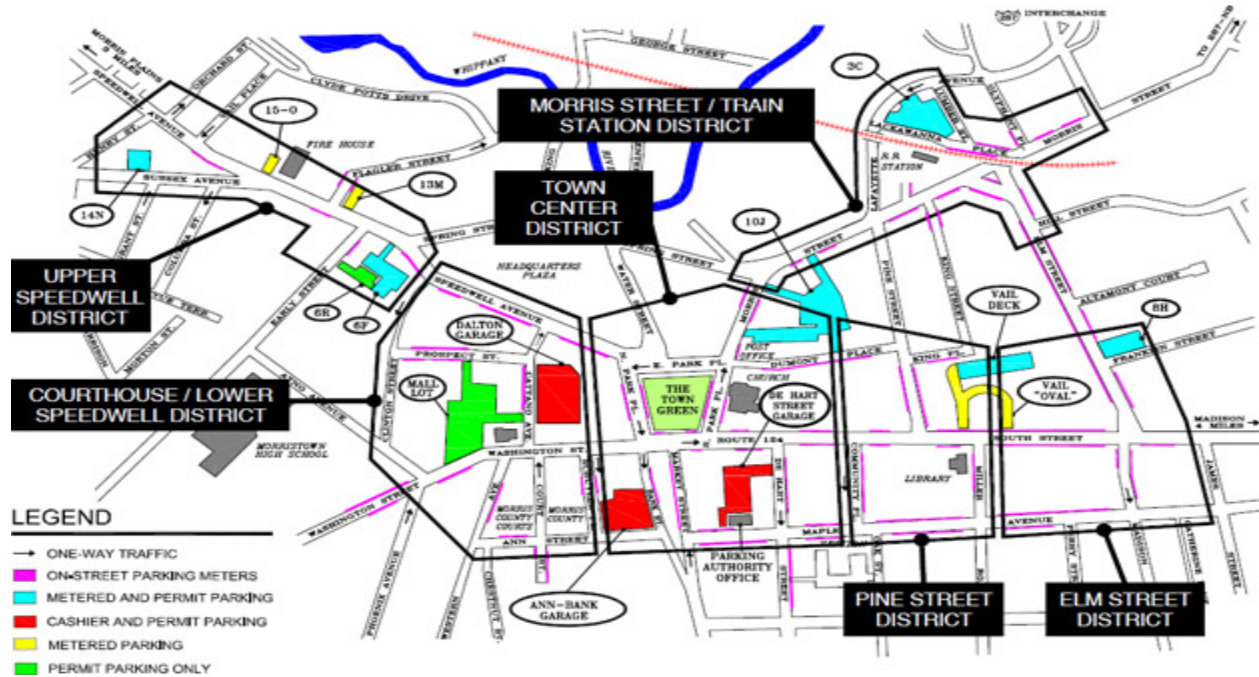


O&S Associates, Inc. was retained to troubleshoot an exterior wall repair project that was being completed under a Guaranteed Energy Savings Agreement. The project was budgeted at \$6.0M however an additional \$2.3M was being proposed by the project team. The County Commissioners retained O&S Associates, Inc. to perform a 3rd party peer review of the project in order to assess the condition of the walls and opine on the value of remaining work. O&S was later retained to take over the project based on our success to reduce the value of additional work by properly assessing the condition of the exterior walls.



O&S increased the scope of repairs and reduced the change order amount by \$700K.

Morristown Parking Authority – Morristown, NJ



O&S Associates, Inc. performed an examination of three parking garages and thirteen surface lots for the Morristown Parking Authority to determine their conformance with the current and applicable provisions of the Americans with Disabilities Act (ADA). Areas of ADA that were being reviewed included:

- Total number of handicap parking stalls
- Types of handicap parking stalls
- Placement of handicap parking stalls
- Handicap parking access aisles
- Access Routes
- Curbs, ramps, and appropriate signage

O&S Associates, Inc. identified non-conforming areas and determined whether changes to comply with ADA were achievable or “not readily achievable.” For areas where changes were “not readily achievable” alternate strategies were developed for improved ADA compliance.

City of Trenton – HVAC System & Control Replacement at Fire Headquarters & Fire House #9

O&S Associates, Inc. was hired by Trenton, NJ to replace the obsolete Staeffa HVAC control system for the city's Fire Headquarters and Fire House #9. The City also needed the new system be integrated with the monitoring/control system located within the City Hall building. O&S performed an assessment of the existing system and controls and prepared engineering plans and specifications for the modification, removal and replacement of systems and controls.



New Jersey Performing Arts Center & Military Park – Newark, NJ



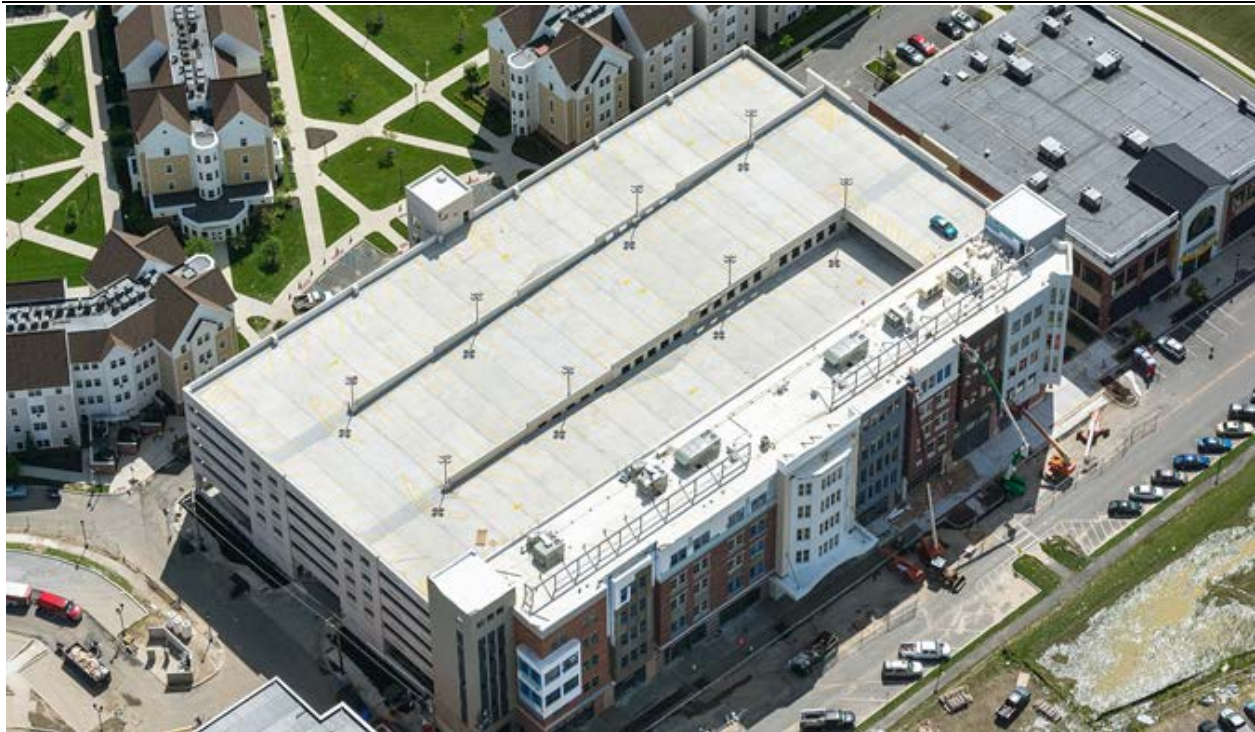
The renovation consisted of structural concrete repairs, new lighting system, structural modifications to accommodate a new elevator/escalator pavilion, new mechanical ventilation system, new plumbing systems, refurbishing the existing sprinkler system, new carbon monoxide monitoring system, new stair and exhaust/air intake kiosks in the park and renovation of sidewalks, new stone retaining walls and landscaping of the Park and new sidewalks in the Military Park.



Several design innovations were implemented on the project. First, since the garage was underground lateral bracing was an important consideration. A comprehensive structural analysis was conducted to arrive at a demolition sequence which minimized the bracing required but maintained the lateral stability of the perimeter retaining walls. **Hydrodemolition** was used for the controlled partial depth demolition. Second, a fully bonded, fiber reinforced concrete overlay was designed to restore the supported structural slabs. Special considerations were used to increase bond and minimize cracking. The construction of the new elevator/escalator pavilion required cutting a large opening through the 24" thick plaza slab and 12" thick parking floors. Large reinforced concrete bracing beams were designed for the walls and hidden beams in the floor were used to reinforced perimeter of openings.



Rowan University Parking Garage Design, Glassboro Township, NJ



As part of the \$300 million Rowan Boulevard Redevelopment Project, O&S Associates, Inc. provided architectural and engineering services for the parking garage. Through a public/private partnership between Glassboro Township, Rowan University and Nexus Properties the garage is designed to serve the parking needs of both the town and the university.

O&S redesigned existing plans for the garage and eliminated over 2 1/2 levels of structured parking while maintaining the required car count. This new design created a cost savings of over 30% to the project and made the financing for the project viable. This portion of the redevelopment project also included the “E1” classroom building which is directly adjacent to the garage and separated from the garage by a precast firewall.

The garage is a 1,200 space, three bay structure using a single center ramp with two-way traffic and a one-way traffic pattern on the outside bays creating two side by side helixes for the vertical circulation up and down the facility. The garage is directly connected to the adjacent “E-1” Building through two stair elevator cores at both ends of the garage. These stair / elevator towers serve both the building and the garage. Additionally, a third stair elevator tower is provided at Bulldog Way Street. The garage is a six level garage designed with the capacity of an added future floor. O&S Associates, Inc. provided architectural, structural, and MEP Design services for this project.



Cape Liberty Cruise Terminal Parking Garage – Bayonne, NJ



Royal Caribbean in partnership with the Port Authority of New York and New Jersey is working to revitalize and expand the Cape Liberty Cruise Port in Bayonne, NJ. The public-private partnership between Royal Caribbean and the Port Authority is called Cape Liberty Cruise Port, LLC. The partnership is developing this \$55 million project, which includes construction of a state-of-the-art guest terminal, 900-car parking garage, and pier improvements.

The new terminal will be the home for Royal Caribbean's next generation of cruise ships, Quantum of the Seas and Anthem of the Seas, which begin service in November 2014 and 2015 respectively.

O&S Associates, Inc. designed the 900-space parking garage as a three bay precast structure using a single center ramp with two-way traffic and a one-way traffic pattern on the outside bays creating two side by side helixes for the vertical circulation up and down the facility. Garage features include two stair and elevator towers, five lanes of ingress and egress, and PARCS revenue control system. The garage is a five level facility garage designed with the capacity for a future horizontal expansion.

O&S Associates, Inc. provided prime design services from conception through construction. O&S performed site analysis, functional design, architectural, structural, and MEP design services for this project.



New York City Housing Authority – Exterior Wall Repairs



In 2014, the New York City Housing Authority (NYCHA) engaged O&S Associates, Inc. for a second consecutive time to provide Architectural & Engineering and Construction services in a 5-year IDIQ contract. O&S Associates, Inc. has already provided design and construction services for more than 300 NYCHA buildings. Our first Task Order was to provide comprehensive structural evaluations of the facades, windows, and roofing of 80 buildings and then recommend required repairs, estimate construction costs, produce specifications and construction drawings, and provide construction administration. O&S also filed all required documents with the NYC Department of Buildings. Project funding was provided by the Department of Housing and Urban Development (HUD) and thus was subject to very strict A/E and construction requirements. It was also highly time-sensitive and O&S Associates, Inc. was immediately responsive to any changes or revisions that were required to complete the project.

For our second Task Order, O&S Associates, Inc. was engaged to perform Local Law 11 Inspections for 220 buildings throughout New York. New York City law requires that all buildings over 6 stories be inspected by an A/E professional every 5 years. Our services will include a complete visual inspection of the entire façade and roofs of these buildings including a close-up inspection using a suspended scaffold (swing stage). We will also provide repair designs, cost estimates, and construction drawings and specifications to rectify unsafe structural conditions

Special Features: The Scope of Work for this contract is extremely large with many buildings requiring service concurrently. The design schedule was compressed to meet HUD funding and Bond Requirements. The initial 90% set including the multi-discipline design for more than \$125M was performed in 3 months. 220 building inspections subject to NYC Local Law 11 were provided in 12 months. In order to manage the huge volume of work successfully, O&S Associates, Inc. developed and implemented new and more efficient inspection, design, and quality control procedures. NYCHA staggered the schedule for inspection, design, and construction of each development, so we utilized multiple teams to meet the deliverable schedule.



Construction Costs: \$125,000,000 at 70 buildings in 11 developments.

West Point Military Academy – West Point, NY



West Point Military Academy required a comprehensive structural assessment and exterior envelope renovation of the following buildings:

- Building 639
- Water Treatment Plant
- Scott Barracks
- Eisenhower Barracks
- The Fire House
- Library Building.

O&S Associates, Inc. Was selected to study the exterior envelope of several buildings at West Point Military Academy and develop a repair program for a multiyear renovation project. The buildings had ornate stone façade, cornices, and copings stones that needed careful design and construction. Some of the existing windows were replaced with energy efficient windows and glazing which will help in achieving the goal of energy savings and sustainability. O&S provided the assessment, and developed a repair program. O&S also prepared permit drawings, technical specifications and made periodic observations of construction.

Total cost of restoration \$14.2 million.



National Institute of Health – Building #10 Exterior Wall and Plaza Repairs



O&S Associates, Inc. was selected to provide restoration engineering services for the restoration of exterior envelope, restoration of a plaza and a new green roof for Building No.10. Building No.10 is the single largest masonry brick clad building in United States. The construction value is \$20.4M

O&S also performed structural investigation of the three multi-level parking (MLP) garages MLP 6, MLP 7 and MLP 8 and developed repair programs. All projects were completed within budget and on schedule.

The most critical issue for the restoration of garages is finding alternate parking for the displaced garages. O&S with the NIH management studied the parking usage at several facilities and optimized parking usage without affecting overall parking during construction.



National Institute of Environmental Health Sciences –Morrisville, NC



O&S Associates, Inc. provided Engineering Services to the **National Institute of Environmental Health Sciences** for the renovation of the plaza and the restoration of the exterior façade.



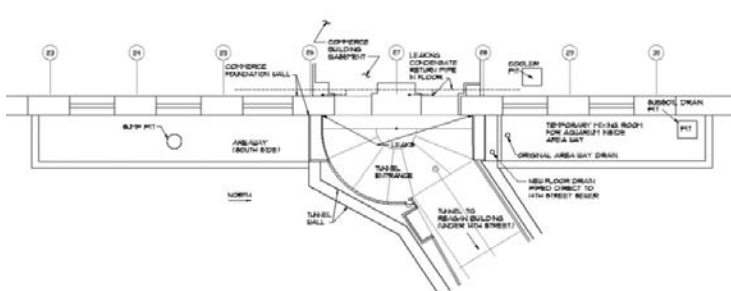
The Plaza work consisted of the removal of existing topping, waterproofing of the plaza slab and placing stamped concrete topping.

The Exterior Façade Envelope consisted of:

- Patch repairs of existing precast panels, cast-in-place façade concrete and masonry façade.
- Replacement of existing joint sealants at precast panels, façade control joints, cove joints and other existing sealed location on the façade.
- Existing backer rods shall be removed and replaced. Substrate surface shall be cleaned to the satisfaction of the sealant manufacturer.
- Replace existing sealants at window frame/concrete. Replace window glazing sealants.
- Pressure-wash cleaning of entire façade.
- Penetrating sealer on precast panels, CIP walls, masonry walls and other cementitious surfaces.



Reagan Building: Commerce Tunnel Leak Investigation & Tile Drain Moisture Infiltration



PLAN VIEW OF TUNNEL ENTRANCE INTO COMMERCE BUILDING



The scope of work was to determine the causes of the leaks and to propose remedies for repairing the leaks into the subject areas. The scope of work included an investigation of the leaking into the commerce tunnel that connected the Brand New Reagan Building with the 1900's Commerce Building. The work also included assessing the moisture that was infiltrating the basement slab from beneath as a result of an overwhelmed sub-soil tile drain system.

The Reagan Tunnel connects the Reagan Building to the basement of the Commerce Building. The tunnel runs beneath 14th St and is completely below grade with the exception of the Are Way Entrance to the Commerce Building. The tunnel is exposed where it intersects the Commerce Building at the Area Way or "Moat" that is one story below grade. This work included incidental repairs to many building systems including:

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Civil / Site Systems <ol style="list-style-type: none"> a. Ground Water Infiltration b. Storm Water Runoff c. Sewer Leaks (Storm & Sanitary) 2. Plumbing Systems <ol style="list-style-type: none"> a. Steam Condensate Lines b. Floor Drains (Are Way and Aquarium Mixing Room) | <ol style="list-style-type: none"> c. Floor Drains or Rain Leaders from 3rd Floor Portico d. Aquarium Pits 3. Waterproofing <ol style="list-style-type: none"> a. Counter Flashing b. Caulking (Area Way) |
|---|--|

Cannon Air Force Base – New Mexico

O&S Associates, Inc. was retained by the United States Air Force to provide restoration consulting services to the Cannon Air Force Base in New Mexico. The project consisted of replacing existing curtain wall system with a new blast resistant curtain wall system and renovating all exterior precast concrete façade elements. The project was performed as a Design-Build Project. O&S performed the field inspections, prepared a detailed cost proposal and scope work.



O&S prepared construction drawings and specifications for the selected scope of work consisting of the following:

- Replacement of existing curtain wall assembly with blast resistance curtain wall assembly
- Concrete repairs to precast panels
- Repair of penthouse chimney
- Replacement of windows
- Sealing of all joints in precast façade
- Installing new flashing
- Application of a water repellent surface sealer

Federal Thrift Building – Washington, DC

O&S Associates, Inc. Was retained by the Department of the Treasury to provide an assessment of the Federal Thrift Building in Washington, DC. The assessment included the exterior walls, roof, and parking garage. O&S also provided construction documents, bidding services, and construction services during the repairs. The total cost for construction was approximately \$5.5 M.



Tinker Air Force Base Roof Consulting – Oklahoma City, OK

O&S Associates, Inc. Was retained to provide a roofing assessment at the Tinker Air Force Base in Oklahoma City, Oklahoma. The roof was leaking in multiple locations, including in an area that protects electronic equipment. The assessment included the mechanical equipment, along with an assessment of the roof drains, the building expansion joints, and the exterior walls of the building. O&S also assessed the damage to the equipment and walls on the interior of the building. The U.S. Government desired to have a repair program that was phased out over a five-year period, with more necessary repairs being completed during the first year. The total size of the roof spanned about 200,000 square feet, and the estimated cost for construction is \$1.7 million.



Danbury Federal Correction Institute – Danbury, Connecticut

The Danbury Prison and Correctional Institute project was comprised of replacing the existing roofing of 14 buildings with new cold applied built up roofing and renovation of all exterior concrete façade elements.

The restoration of the exterior façade repairs encompassed repair of delaminated concrete on the façade and parapet walls, sealing of all expansion joints, caulking of all window perimeters and coating of the entire concrete façade with new waterproof coating, replacement of cracked and deteriorated brick masonry, the addition of epoxy grouted masonry ties, tuck-pointing of deteriorated mortar joints, caulking of selected windows and installation of temporary sidewalk protection/bridge. The total cost of the façade repair and roof replacement work was approximately \$6.0M. This was a multi-year phased project.



Reading School District – Plaza, Exterior Wall, and Parking Garage Repairs and Waterproofing



The Reading School District had two school courtyards or plazas over occupied space that had leaked for decades despite repeated attempts at repairs. The first was the Reading High School Esplanade. The second was the Reading Middle School Courtyard. The key to the success of the projects was a careful assessment that required invasive exploratory openings since the structures had many unknowns surrounding their 1926 and 1924 construction, respectively and repeated repair attempts.



O&S was also hired to triage the Reading School District's 18 schools after emergency repairs were made to the Northeast Middle School Elevator Bulkhead due to collapsing sheaves, and the partial collapse of the precast adornments at the Glenside Elementary School. O&S prioritized and designed a hazard mitigation program for 9 of the schools, which were built between 1924 and 1935. O&S recommended a hazard mitigation program with a budget of \$3.0M that was ultimately completed for \$1.9M.

The iconic success of the project is demonstrated by a water test that was held for several days to prove to the doubtful BOE and public that these old buildings could be saved.

O&S Associates, Inc. was then tasked with the design of the long term exterior wall repairs for 18 of about 25 schools. 8 of the schools were also provided with the design of window replacements. The following spreadsheets comprise a case study for our work with the exterior wall repairs for the schools.



Citadel - Before & After



Reading School District Citadel Garage

The Reading School District knew O&S for our building envelope services and our success in solving difficult projects. When the Citadel project ran into problems, Reading contacted us for help. The garage repair project, designed and managed by others, was originally contracted for \$600K. There were already \$2million+ change orders, and neither the Construction Manager nor the Architect could tell the school district what the final cost would be.

O&S reviewed the scope and realized it was inappropriate for the school district's long-term ownership and recommended a scope of work that would cost between \$2.0 to \$3.0 Million dollars.

Reading authorized us to re-design of the garage reconstruction and publically bid the work to see if our conclusions were correct. The results were successful so the Reading School District terminated the Architect, Contractor, and Construction Manager for this portion of the project, and awarded the work to O&S and the successful low bidder. O&S was retained as both the engineer of record and the Construction Manager because it was the most cost-effective means to implement the work.

Our strategies included providing more accurate details and a restructured unit price contract commensurate with industry standards.



Philadelphia Parking Authority - Airport Garages



O&S performed a site wide repair of Philadelphia International Airport's five garages in 2009.

- **A West Garage**
Constructed in 2000. Seven supported floors. Pre-topped precast concrete construction. Approximately 1,500 spaces (500,000 square feet)
- **A East – B Garage**
Constructed in 1988. Five supported floors. Field topped precast concrete construction. Approximately 3,000 spaces (1,050,000 square feet).
- **C Garage**
Constructed in 1974. Five supported floors. Field topped precast concrete construction. Approximately 1,800 spaces (625,000 square feet). Assessment recommended \$6 Mil of repairs plus additional \$6 Mil of recommended optional enhancements
- **D Garage**
Constructed in 1974. Five supported floors. Field topped precast concrete construction. Approximately 1,650 spaces (575,000 square feet).
- **E-F Garage**
Constructed in 2000. Seven supported floors. Pre-topped precast concrete construction. Approximately 3,500 spaces (1,250,000 square feet).



Buena Vista Parking Garage and Office Space – Yonkers, NY



O&S Associates, Inc. with GRAD Associates designed the 600 car Buena Vista parking structure for the City of Yonkers. This self-park, public parking facility was designed with a long span (column free parking bays) and an attractive exterior façade, which blended into the historic waterfront area in Yonkers. The \$9.0 million dollar Buena Vista parking facility was also designed to meet the budgetary constraints of the City.

Our firm was selected to redesign and value engineer the Buena Vista Parking Garage for the City of Yonkers to reduce the cost of construction by 1.5 million dollars. Our firm completed the value engineering study and redesigned the parking garage and the garage is currently under construction.



O&S designed and is currently supervising the construction of the 602 car Parking Structure and 5,000 square feet of new office space for the Yonkers Parking Authority in Yonkers, New York. The cost per car for this new parking structure was about \$12,450.00 per space including site work, foundation, structural steel framing, concrete floors, ornate architectural precast concrete façade, concrete stairs, fire protection system, mechanical ventilation for below grade level, lighting interior/exterior and revenue control equipment.



Exterior Façade Design: The Buena Vista parking structure is located in the historic waterfront of downtown Yonkers. Therefore, a critical component of the design was the blending of the exterior façade with the nearby historic brick masonry and limestone buildings. The exterior building façade incorporated the following detailing:

- Brick Masonry Inlay Precast Concrete Panels.
- Ornamental Precast Concrete Pilasters.
- Precast Concrete Cornices at the Roof.
- Perimeter Ornamental Railings.

Parking Management Techniques: The following parking management techniques were incorporated working closely with the Yonkers Parking Authority:

- Revenue Control System integrated with the YPA computer system.
- Pay on Foot Stations
- Card Access System for Monthly Parkers

Dayton Municipal Parking Garage – Dayton, OH

O&S provided engineering and parking consulting services for the complete structural restoration and preventive waterproofing of a 9 story double helix, post-tensioned parking garage. The parking facility had experienced significant corrosion related & freeze-thaw deterioration. Lack of and failure of waterproofing measures exacerbated the deterioration.



O&S Associates, Inc. provided a condition assessment and delivered a comprehensive restoration program. In 2010, the city implemented Phase one, a \$750,000 structural restoration and partial waterproofing program. O&S was retained as design professional and technical supervisor for the project. In addition to comprehensive concrete repairs, consisting of vertical, overhead, and partial depth patch repairs, the project required 25+ Post Tensioning cable repairs. We provide repairs at dead ends, stressing ends, at intermediate anchors, and at mid spans of cables. O&S scheduled waterproofing membrane application at “key” floors; the remainder of the garage is scheduled to receive waterproofing measures throughout during Phase 2. Phase One also consisted of façade restoration of the south, street elevation of the parking garage, which included repairs at precast plank façade members and a façade waterproofing coating.

Ashburton Parking Structure – Yonkers, NY

O&S Associates, Inc. was retained by Yonkers Parking Authority to provide a condition assessment and repair program for the Ashburton Parking Structure.

The Structure was in need of emergency repairs for a range of structural conditions. Our condition survey of the facility found deterioration of floor slabs, stair landings, treads and risers, deterioration of CMU walls surrounding the stairs, stairs on grade, and asphalt. Some minor corrosion related damage was observed on steel structural framing. Comprehensive structural repairs would be required to restore the structure to an acceptable condition. O&S performed structural repairs work, Waterproofing, electrical and other needed miscellaneous repairs in three phases.



- Phase I** - all stair repairs, first & second floor slab repairs at selected locations
- Phase II** - Remaining Slab repairs, Steel Repairs and first floor waterproofing
- Phase III** - remaining Waterproofing Work, façade repairs, asphalt repairs etc.

Municipal Parking Lot Restoration – Yonkers, NY



O&S Associates, Inc. was retained by Yonkers Parking Authority to provide a condition assessments and restoration design for various lots from 1999 – 2003. O&S provided Paving/ Appurtenance Assessments for these lots and over saw their restoration. We provided service to the following:

- | | | |
|---------------------------|---------------------------|-----------------------------|
| Pond Road Parking Lot | Park Hill Parking Lot | Highland Avenue Parking Lot |
| Lawrence Parking Facility | Dock Street Parking | Hudson Street Parking Lot |
| Lockwood Ave. Parking Lot | Harriman Parking Facility | Radford parking Lot |

New Rochelle Municipal Garage – New Rochelle, NY

O&S Associates, will provide Architectural and Engineering consulting services to the City of New Rochelle for the design of the City of New Rochelle Municipal Parking Facility.

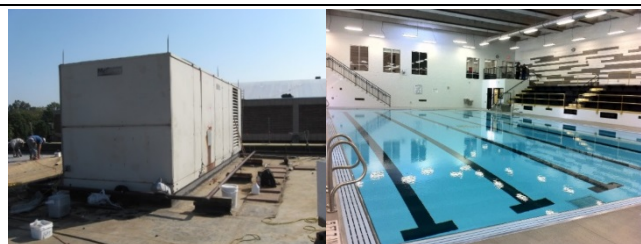


A brief description of the scope of services performed by O& S Associates, include; Planning of level of service, parking controls, safety requirements, ceiling heights, lighting level requirements, placement of elevator and stair towers, etc.; Review of traffic study and roadway interface for co-ordination with road traffic; functional design; establishing ingress and egress areas based on functional efficiency; parking striping plans and locating ADA parking spaces; layout of stairs and elevator towers, layout of interior vehicular ramp.

Architectural services preformed include preparing a complete set of architectural drawings, including floor plans, elevations, parking striping plans, wall sections, ramping details, stairs and elevator enlarged plans and sections, signage and graphics and complete set of project specifications.

Wylie Natatorium – Maple Heights, OH

O&S Associates, Inc. provided mechanical consulting for the City of Maple Heights for their public pool. O&S designed the replacement of their packaged heat units and consulted with the natatorium dehumidification system. (\$3M MEP lighting, HVAC, Solar, 40% onsite electric generation, LEED



Seneca County Museum, Tiffin, OH

The Seneca County Museum required a comprehensive building assessment of the exterior façade. O&S performed a thorough investigation which revealed extensive failure of existing sealants, resulting in water infiltration problems and corrosion of structural steel connection assemblies, which support the exterior precast concrete panels. The exterior balconies and terraces are exhibiting signs of concrete spalling and leakage resulting in water damage that need repaired and waterproofed. The enclosed parking garage has extensive areas of corrosion related structural deterioration, which results in the need of structural repairs and a concise waterproofing program to assure safety and long term durability. The building’s exterior elevated parking deck and tennis court show signs of leakage and deterioration and requires repairs and resurfacing.



McAllen Independent School District, McAllen, TX



O&S Associates, Inc. Was retained by the McAllen School District to perform an Engineering Assessment for the roofing system of five school buildings. To commence with the project, O&S performed an inspection of the following roofing elements:

- Flashings
- Metal Copings
- Metal Roofing
- Building Expansion Joints
- EPDM Gutter Liners
- Building Sealants
- Curtain Wall Gaskets
- Roof Drains

O&S developed projected construction costs for the district to evaluate the budget impacts for the required work. The School District desired to bundle the five independent projects and complete the task in their entirety at one time.

As a result, O&S developed a construction drawings and a phasing plan to accommodate the expedient completion of the project. O&S also supplied construction administration services to ensure the proper application of products and materials specified and confirmed the transfer of all warranty documents to the school district.

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