

Exhibit R

Curriculum vitae



1. Frederick C. Baumbert, CCS, PE, Principal, Keast & Hood Structural Engineers



Selected Project Experience

Benham Gateway Building, Bryn Mawr College, Bryn Mawr, PA – An 18,000 square foot addition coupled with renovations to an existing 1880s Frank Furness residential building.

Beechwood Estate, Shipley School, Bryn Mawr, PA – Rehabilitation and restoration of an 1877 Queen Anne-High Victorian Gothic residence for use as offices and staff apartments. Stucco cladding was removed to reveal the architect's original polychromatic brick designs. Interior alterations were reversed to bring back the warmth and open circulation of the original house.

Mulberry Lofts, Scranton, PA – Conversion of a c.1920s Chamber of Commerce office building into 40 residential units with ground-floor retail. The project involved structural design for a new elevator, dunnage and penetrations for new HVAC, and support for a new spiral stair.

Education and Certifications

The Pennsylvania State University, B.S., Civil Engineering, 1980
Drexel University, Master of Science, Civil Engineering, 1989
Construction Documents Technologist, 1996
Certified Construction Specifier, 2004
Numerous seminars, symposia and conventions

Registered Professional Engineer

Delaware, Maryland, Pennsylvania

Professional Activities

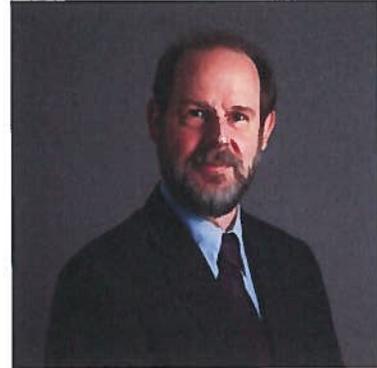
American Institute of Steel Construction
American Society of Civil Engineers: President for the Structural Engineering Institute Philadelphia Chapter
Association of Preservation Technology: Life Member
The Athenaeum of Philadelphia: Life Member
The Carpenters' Company of the City and County of Philadelphia
Construction Specifications Institute
Engineers' Club of Philadelphia

Community Service

Bryn Mawr College: Trustee Emeritus, Buildings & Grounds Committee
Community Learning Center: Board Member
Morris Arboretum: Physical Facilities Committee

Articles

"Emphasis on Aesthetics," Civil Engineering, July 2002
"Reengineering Tradition," Structure Magazine, March 2008



Profile

Fred Baumert's 34 years in engineering have encompassed design of new structures in steel, concrete, masonry and wood, as well as renovation and restoration of older and historic structures. He joined Keast & Hood in 1980, became a principal of the firm in 1989, and is currently Chairman of the Board.

Fred examines projects from both the engineering side and the owner's viewpoint. His dual perspectives on the project design process stem from his role as a former chair of the Buildings & Grounds committee of a local college. Wearing the "owner's hat" gives Fred a keen perspective on issues of material quality, long-term serviceability, and life-cycle costs.

Maintaining hands-on involvement in his projects, Fred imparts his dual perspectives to other members of the firm and the design team at large.

2. Jan Vacca, P.E., LEED AP, Vice President, The Harman Group, Inc. Structural Engineers



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Vice President



EDUCATION

University of Delaware
Bachelor of Science
Civil Engineering, 1978

PROFESSIONAL LICENSES

Professional Engineer: Pennsylvania, New Jersey, Delaware, Maryland, New York

LEED Accredited Professional

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers (ASCE)
American Concrete Institute (ACI)
Delaware Valley Association of Structural Engineers (DVASE)

PUBLICATIONS

"Making Up for Lost Time," Modern Steel Construction, January 2013
"Glass and Stainless Facade Renovation," STRUCTURE Magazine, February 2009
"Precision Procedure," Modern Steel Construction, February 2004

EXPERIENCE

The Harman Group, Inc., King of Prussia, PA:
Consulting Structural Engineers
2006-present: Vice President, Principal
2005: Senior Associate
2001-2004: Associate
2000-2001: Project Manager
1992-1999: Senior Project Engineer
Wirt-Vitabile Architects, Norristown, PA
1990-1992: Chief Structural Engineer

REPRESENTATIVE PROJECT EXPERIENCE

HOSPITALITY & GAMING

Revel Entertainment Hotel Casino Resort, Atlantic City, NJ

A 5.8 million sf, 61-story hotel casino resort in Atlantic City New Jersey. The project includes a 700-foot-tall casino hotel with provisions for a second residential tower of the same height and a 1.5 million sf gaming and entertainment facility.

The Borgata Hotel Casino & Spa, Atlantic City, NJ

A 4.1 million sf hotel/casino complex including a 1.53 million sf, 44-story, 2,000-room cast-in-place/post tensioned flat plate concrete hotel tower; a 1.22 million sf, 4-story, steel frame low-rise with 175,000 sf casino; a 1.53 million sf, eight-level, 5,300-car parking structure; and an attached three-story area houses central plant/mechanical space, loading dock, employee services/office space, and various support spaces.

Expansion

A three-phase expansion to the Borgata, including the following: Phase I - North Expansion, a two-story expansion containing 314,500 sf of floor area and renovation to 20,000 sf in the existing complex; Phase II - Food Court, renovation of 16,000 sf of the existing motor coach area into a food court; Phase III - Spa Expansion, renovation of 3,000 sf of existing housekeeping office area into expanded spa facilities.

Tower Expansion

An 831,000 sf, 39-story hotel tower providing 755 guest rooms and 45 suites, conference amenities, retail space, a spa, and three pools.

Multi-functional Ceiling Framing

A multi-functional ceiling framing system for the casino area of a 4.1 million sf hotel/casino complex to serve as decorative ceiling, support rigging loads, support chandeliers, and function as working platform for trades working in ceiling area.

PSFS/Loews Hotel, Philadelphia, PA

Renovations and Addition

Renovations and alterations to a 560,000 sf, 35-story existing steel frame historic office building for conversion into a 600-room hotel including suites. Structural alterations include revisions to the lateral load system addition of elevators, escalators and other modifications to floor framing. The project also includes a new 100,000 sf, 4½ story addition to the existing building.

Hyatt Regency Hotel at Penn's Landing, Philadelphia, PA

A 250,000 sf, 340-room on cast-in-place post-tensioned concrete and steel frame hotel including restaurant, meeting facilities and tower along with a 200,000 sf six-level precast concrete parking structure for 600 cars.

Ritz-Carlton Hotel Renovations, South Penn Square, Philadelphia, PA

Renovations, Alterations and Addition

Renovations and alterations to the former Girard Trust Bank facility for conversion into a 360,000 sf luxury hotel complex featuring a 350-room hotel and conference center. The project includes the renovation of an historic rotunda constructed between 1902 and 1905 that serves as the hotel's main lobby.

Trump Marina Hotel & Casino, Atlantic City, NJ

Tower Expansion

A 360,000 sf, six-story steel frame ballroom and 14-story, post-tensioned concrete hotel tower.

Philadelphia International Airport Marriott Hotel, Philadelphia, PA

A 289,000 sf, 14-story hotel with a two-story ballroom, restaurant and meeting facility.



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J.B. Vacca, Collegeville, PA
1989: Principal

Cagley & Harman, King of Prussia, PA
1987-1989: Project Manager

Ammann & Whitney, Philadelphia, PA
1985-1987: Structural Design Engineer

United Engineers & Constructors, Inc.,
Philadelphia, PA

1978-1985: Structural Design Engineer

Hotel Expansion, Dover Downs, Dover, DE

A 210,000 sf, ten-story hotel building expansion.

Newark Liberty International Airport Marriott Hotel, Newark, NJ

A 20,000 sf, one-story expansion to the existing hotel for a grand ballroom. The existing structure was modified at the transition to the expansion and in the lobby and meeting room.

HIGHER EDUCATION – CLASSROOM AND SUPPORT BUILDINGS

University of Pennsylvania, School of Architecture, Meyerson Hall Renovation, Philadelphia, PA

Renovations and expansion to an existing five-story, 82,000 sf concrete framed building constructed in 1968 including alterations to accommodate new mechanical systems, interior renovations and a new entry. The project is designed to obtain LEED Silver accreditation.

Drexel University, Philadelphia, PA

Dornsife Center

Renovation and adaptive reuse of three existing buildings (two of which are historically certified) into a neighborhood research and support service center.

Food Court

A one-story 5,000 sf architecturally exposed cast-in-place concrete structure, including a Dining Terrace and Food Court. This project is registered with the Green Globes system, which offers an industry standard assessment of construction projects to ensure environmental best practices are utilized. The system monitors key areas of design, construction and operation, including energy, water, resources, emissions and indoor environment.

Curtis Hall Renovations

Renovations and alterations to an existing three-story building to insert a new data center into the existing basement. Structural design included alterations for the new use and mechanical upgrades to the building.

Overbuild Feasibility Study, One Drexel Plaza

A feasibility study was performed to identify the extent of overbuild (number of additional stories) possible on the existing building located in Block 4 of One Drexel Plaza – 3001 Market Street. Evaluations included soils and material testing supplementing a comprehensive gravity and lateral analysis.

Villanova University, Villanova, PA

Falvey Memorial Library Renovation

Space planning overview and recommendations for reuse and renovations to a 138,000 sf library. Documentation of renovations for ADA accessibility were also completed.

Parking Garage

A multi-level, precast open parking garage, part of the Lancaster Avenue Housing project, which will create residential housing for 1,100 undergraduate students on its current main parking lots along Route 30/Lancaster Avenue. The parking spaces of the existing surface lots will be consolidated into the parking structure, freeing up land area for the other project buildings.

Dougherty Hall Renovation

Renovation to the dining hall and ADA accessibility.

Lackawanna Junior College, Classroom Facility, Scranton, PA

Rehabilitation of a 120,000 sf, three-story historic masonry and stone classroom facility.



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La Salle University, School of Business Building, Philadelphia, PA

A 78,000 sf, multi-tiered building housing the University's School of Business. The building features classrooms, flexible collaborative learning rooms, computer classrooms and simulation facilities; a sales training laboratory and a corporate style boardroom; a 300-seat auditorium; gathering areas and faculty offices; and a large atrium space.

Pennsylvania College of Podiatric Medicine, Health Center, Philadelphia, PA

A 75,000 sf post-tensioned concrete health center with 14-story overbuild capacity.

West Chester University, Recreation Center Building, West Chester, PA

The West Chester University Recreation Center is planned as a 1-2 story, 69,000 sf facility for exercise, fitness and recreational use.

University of Scranton, McGurrin Hall, Scranton, PA

A 81,000 sf, three-story steel frame classroom/office facility housing the College of Health, Education and Human Resources (CHEHR), containing 21 classrooms, 84 offices, 10 conference rooms, and 44 other rooms.

Monmouth University, Joan and Robert Rechnitz Hall, Long Branch, NJ

A three-story, 30,000 sf arts educational building, featuring a state-of-the-art visual arts space, classrooms, student lounge and faculty offices centered on a three-story gallery, as well as an archive storage area.

Cornell University, Teaching Dairy Barn and Large Animal Teaching Complex, Ithaca, NY

A teaching dairy barn for 80 cows featuring a milking and holding area and a training/observation area, stall area and a viewing/classroom space overlooking the milking area.

HIGHER EDUCATION – STUDENT HOUSING

University of Pennsylvania, The Radian, Student Residence, Philadelphia, PA

A 14-story, 237,000 sf student housing complex with approximately 163,000 sf residential floor area over first-floor retail and common space.

Pace University Student Housing, Pleasantville, NY

Two new student housing buildings on Pace's Westchester campus, featuring 4-5 levels of modular framing with post and beam construction, cold formed walls and floor. Building A is 99,000 sf and Building B is 66,000 sf.

Rutgers, The State University of New Jersey, 330 Cooper Residence Hall, Camden, NJ

Structural engineering services for a 12-story, 162,000 sf steel frame structure with a precast concrete floor system containing 150,000 sf of student residences above street level retail.

Drexel University, Philadelphia, PA

Millennium Student Housing

An 152,600 sf, 18-story architecturally significant residential building.

Race Street Residence, Student Housing

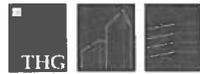
Design/build of a 120,000 sf, 12-story steel frame dormitory building.

State University of New York, Dutchess Community College, Conklin Hall Student Residences, Poughkeepsie, NY

Structural engineering services for the design of a four story, 135,000 sf cold formed steel, light frame modular structure that houses 465 beds in suites-style living with on-site dining, student lounge and activity facilities.

Hillside Commons Student Housing, SUNY Oneonta, NY

A four-story, 121,000 sf modular construction student housing development for the SUNY Oneonta campus. Located adjacent to the university's athletic fields and camp trails, the building is constructed with load-bearing cold formed walls with cold formed joists



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and plywood decking, and features one-, two- and three-bedroom rental apartments. Amenities include a fitness center, computer lounge, multi-media and game rooms, a café and lounge and a private courtyard.

Neumann College, Aston, PA

Student Housing – Phase II

A 103,000 sf, three-story load-bearing masonry/wood truss student housing/activity center.

Student Housing – Phase III

A 62,000 sf, four-story hollow core concrete slab and load bearing masonry student residence facility, attaching to Phase II building.

University of Delaware North Campus Student Housing, Newark, DE

A 93,000 sf, five-building complex consisting of two 28,000 sf, three-story precast concrete and masonry special interest housing facilities to house 112 students each and three 16,500 sf, two-story precast concrete fraternity houses for 35 students each.

Gwynedd Mercy College Student Housing, Lower Merion, PA

A 62,000 sf, four-story precast plank and masonry residential building. This is Phase III of a campus student housing project, and it connects to the Phase II building.

Iona College Classroom Building, New Rochelle, NY

Structural engineering design for a new 15,000 sf, three-level modular framed (structural steel post and beam with concrete slab floors) academic building. The building is designed for dual use as a student housing building for 115 students.

K-12 EDUCATION

The Philadelphia High School for Creative and Performing Arts, Philadelphia, PA

Renovations to an existing 60,000 sf, three-story iron and brick arch historic building, and a 100,000 sf, five-story steel frame addition including classrooms, studios, workshops, offices, and an acoustically designed 320-seat theater and stage area.

Bala Middle School Addition and Renovation, Bala Cynwyd, PA

Renovation of 160,000 sf existing middle school and a 4,800 sf addition including gymnasium, cafeteria, and support spaces.

Various Buildings (8 Total), Father Ryan High School, Nashville, TN

A 160,000 sf high school campus facility, including 31,000 sf, two-story masonry bearing wall/wood truss/heavy timber cloister and chapel building; a 20,000 sf, two-story bearing wall/precast concrete deck/wood truss classroom building; a 33,500 sf, one-story gymnasium building; and site structures including two bridges and a reinforced concrete dam.

Cynwyd Elementary School Classroom/Gymnasium Addition, Bala Cynwyd, PA

A 60,000 sf addition to an historic two-story elementary school, including gymnasium, classroom, and parking.

Delbarton School Science Pavilion, Morristown, NJ

A new 27,000 sf, three-story steel frame classroom and laboratory facilities.

Merryhill Country School, Multiple Locations: Calvine Road, CA; Stockton, CA; Sacramento, CA; South Natomas, CA

A 14,500 sf, one-story wood frame structure including classrooms and offices.

Millbrook Country Day School, Millbrook, NC

An 8,000 sf, one-story wood frame structure including classrooms, day care center and offices.

Chesterbrook Academy, Multiple Locations: Springfield, IL; Mallard Creek, Charlotte, NC; Washington Township, NJ; Great Falls, Loudoun County, VA; Portland, OR

An 8,000 sf, one-story wood frame structure including classrooms, day care center and offices.



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Carefree Learning Center, Multiple Locations: Birmingham Township, PA; New Britain, PA; Exton, PA; Limerick, PA; Audubon, PA; Maple Township, PA

An 8,000 sf, one-story wood frame structure including classrooms, day care center and offices.

Lower Moreland Library, Lower Moreland, PA

A 7,500 sf, one-story steel frame addition to an existing 9,000 sf, four-story 1820s school building; includes interior renovations and alterations.

HEALTHCARE/PHARMACEUTICAL

Children's Hospital of Philadelphia, Philadelphia, PA

Expansion – Phase II

A 10-story, 332,000 sf South Tower expansion to the existing building and interior renovations to 35,000 gsf of the existing structure above the expansion. The project includes vertical expansions and complicated connections to existing buildings, complex transfer trusses, suspended floors, and the reconfiguration to and expansion of an existing below-grade parking structure as well as seismic upgrades to the existing structure.

Expansion – Phase III

Phase III consists of two buildings – the nine-story Southwest Tower and the 12-story Northwest Tower – totaling 460,000 sf. Both feature complex transfer trusses, suspended floors, and complicated connections to the existing structure. The Northwest Tower has seven floor suspended from trusses above. Phase III also includes seismic upgrades to the existing structure and the relocation of the helipads.

Children's Hospital of Philadelphia (CHOP) Princeton Special Care Center, Princeton, NJ

A 25,000 sf, single story steel framed medical office building. The building is designed to accommodate both a future second story and 25,000 sf of horizontal expansion. The Project is pursuing LEED silver certification for all phases.

St. Barnabas Medical Center, Livingston, NJ

Structural Engineering services for a 180,000 sf new addition and parking structure to the hospital's west wing, which will include an outpatient surgery suite, an expansion to the current NICU unit, administrative services, as well as associated campus upgrades. The facility is being designed for future horizontal and vertical expansion.

John L. Deaton Medical Center, Baltimore, MD

A 160,000 sf; six-story cast-in-place concrete frame medical center.

Schering Plough

S-11 Renovation, Summit, NJ

The project consists of a renovation to an existing two-story research building containing approximately 113,500 gsf of floor area.

Fitness Center Study, Kenilworth, NJ

Studies for new construction or renovation for a 17,000 sf fitness center on the Kenilworth campus.

Pennsylvania College of Podiatric Medicine Health Center, Philadelphia, PA

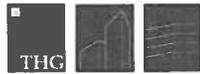
A 75,000 sf post-tensioned concrete health center with 14-story overbuild capacity.

Frankford Hospital Cancer Center/Medical Offices, Philadelphia, PA

A 60,000 sf, three-story structural steel cancer center and medical office building.

St. Mary Hospital Gigliotti Pavilion, Langhorne, PA

A 40,000 sf, two-story steel frame expansion to the existing facility containing patient floors and ancillary services.



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Chestmont Building, Pottstown, PA

MRI Feasibility Study

Feasibility study for support of a new MRI in existing Chesmont Building.

CONTINUED CARE

Deptford Park Housing, Deptford, NJ

A 112,000 sf, seven-story precast concrete hollow core slab/load-bearing masonry apartment building for senior citizens on pile foundations.

Berkshire Manor, Exeter Township, PA

A 76,000 sf, two-story steel frame nursing facility.

Sanatoga Manor, Pottsgrove Township, PA

A 73,000 sf, three-story steel frame assisted living facility.

Manatawny Manor, Pottstown, PA

A 72,000 sf, two-story steel frame nursing facility.

Lehigh Manor, Lower Macungie Township, PA

A 72,000 sf, two-story steel frame nursing facility.

Assisting Living Facility

A 64,000 sf, two-story steel frame assisted living building.

Countryside Manor, Glen Burnie, MD

A 58,000 sf, three-story steel frame assisted living facility.

Berkshire Manor, Exeter Township, PA

A 56,000 sf, two-story steel frame assisted living building.

Orwigsburg Manor, Orwigsburg, PA

A 50,000 sf, two-story structural steel nursing home facility.

RESIDENTIAL

Hudson Lights Mixed Use Development, Fort Lee, NJ

This 756,800 sf mixed-use development consists of eight floors of residential apartments over three levels of parking with spaces for 858 cars, and a 175,000 sf ground floor retail space. Additional retail space and a movie theater are located in the adjacent two-story building.

Residential Complex, Greenspring/Beazer Homes, MD

A 1.17 million sf complex featuring six identical buildings. Each building is 156,000 sf, four-story non-combustible wood frame structure over 39,000 sf of parking, for a total of 195,000 sf.

Waterfront Square Towers, Philadelphia, PA

Structural engineering services for Tower 3, a 23-story, 207,000 sf cast-in-place concrete tower, and parking garage, as well as a 25,000 sf spa and fitness center, as part of a residential complex consisting of three towers encircling a garden terrace on nearly ten acres of parks, gardens and riverwalks.

Rock Hill Road Condominiums, Lower Merion Township, PA

A residential complex totaling 650,000 sf, including three four-story buildings of wood framed construction over two levels of concrete parking.

Rodin Square, Philadelphia, PA

A complex 520,000 sf mixed-use project featuring 293 luxury residential apartments with amenities including a hotel-style lobby with a 20-foot-tall glass facade; a fitness center; shared gathering spaces; and a 35,000 sf rooftop Sky Park with an infinity edge pool and a green roof feature. The 85,000 sf ground floor retail includes a 60,000 sf Whole Foods



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Market, a CVS pharmacy and space for Thomas Jefferson University Hospital. Rodin Square will also include below-grade and above-grade structured parking (five tiers) for 490 cars.

East Market Mixed Use Development, Philadelphia, PA

A 494,000 sf mixed use development consisting of parking, retail and apartments contained on two podiums. The east podium contains a 15-story residential tower located above and along the north and east edges of the retail portion, which consists of one level of below grade parking with a loading dock, and two floors of retail space. The roof level of the retail section will serve as a landscaped exterior space for residents. The west retail podium will have provisions for a future tower overbuild project.

3601 Market Street, Philadelphia, PA

A 434,000 sf, 27-story mixed use residential building, including 50,000 sf of below grade parking, 38,000 sf of public amenities, 46,000 sf of terrace and gardens, and 300,000 sf of multi-unit residential space.

Annapolis Town Center, Annapolis, MD

A 394,000 sf, 12-story residential building with a 2,000 sf connecting bridge to the adjacent parking structure.

Edgewater Apartments, Philadelphia, PA

A twelve-story, 320,000 sf apartment building over a one-story, 36,000 sf parking deck. Also includes independent five-level, 146,000 sf precast concrete parking structure, surrounded on two sides by four-story residential buildings totaling 43,000 sf.

Waterford Town Homes, Philadelphia, PA

A 315,000 sf, five-story townhouse complex constructed on top of a 212,400 sf, 575-car, two-level parking structure with plaza floor area.

Avera Station/Hunter's Branch, Fairfax, VA

A 475,000 sf residential complex featuring a four-story wood frame building over two levels of parking.

Symphony House, Philadelphia, PA

A 31-story, 290,000 sf residential condominium building with adjacent 31,000 sf performing arts theater and six-level, 153,000 sf parking structure.

The Condominiums at 2 Liberty Place, Philadelphia, PA

Adaptive reuse of 12 upper floors of the existing Two Liberty office building for 111 residential condominiums. Floor 38 was utilized as an amenity space. Modifications were also made to the ground floor lobby for elevators, floor infill and canopy.

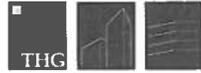
Landings at Harborside, Perth Amboy, NJ

Block 140B

One component of a new 55-acre waterfront residential, commercial and recreational community, Block 140B is comprised of a four-story townhouse complex and two five-to seven-story multi-unit apartment buildings constructed on top of a two-level, below-grade parking structure. It encompasses 175,000 sf of residential floor area, 16,000 sf of supported plaza area, and 70,000 gsf of structured parking floor area including at grade parking within the structure.

Block 236

One component of a new 55-acre waterfront residential, commercial and recreational community, Block 236 consists of a four-story residential complex constructed on top of a two level parking structure. It contains approximately 106,200 sf of residential floor area, 20,000 sf of supported plaza area, 20,000 sf of retail, and 77,000 sf of structured parking floor area including at grade parking within the structure.



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Mixed Use Residential Development, Philadelphia, PA

A mixed-use development featuring a 356,000 sf multi-unit residential complex containing three-story townhouses and a 30-story residential tower; a 24,000 sf, two-story Meetinghouse including chapel, meeting and teaching facilities; and two levels of underground parking totaling 106,000 sf.

Residential Complex, Asbury Park, NJ

A 345,000 sf residential complex comprised of three residential buildings of varying height from three to eight stories over structured parking, including a 23,000 sf structured plaza area and a 33,000 sf structured pool in the upper parking level.

Hunter Village, Vienna, VA

A 342,000 sf, three-story wood frame residential complex.

Lowe's Retreat, Loudoun County, VA

A 342,000 sf, five-building complex featuring 4/5 story split wood frame structure.

Corinthian Condominiums, Bala Cynwyd, PA

A 323,000 sf, six-story cast-in-place Filigree concrete residential condominium building over 1½ levels of parking.

Tivoli Condominiums, Philadelphia, PA

A 240,000 sf cast-in-place Filigree concrete condominium complex with varying heights of five and ten stories.

Wanaque Reserve, Wanaque, NJ

A 225,000 sf residential complex comprised of a 160,000 sf, four-story Hambro frame concrete slab system over a 47,000 sf parking garage; also includes a 19,300 sf clubhouse.

Stonegate at Bellefair, Rye Brook, NJ

A 212,000 sf, three-story independent living facility.

The Granary Apartments, Philadelphia, PA

A 199,200 sf, nine-story concrete framed residential building. The project features 227 luxury apartments, over 20,000 sf of retail space, a fitness center, club room with an outdoor terrace, business center and underground parking for 87 cars.

The Village at Annen Woods, Pikesville, MD

An 180,000 sf, seven-story, masonry bearing wall/precast concrete plank and masonry bearing wall housing facility.

3737 Chestnut Mixed-Use Development, Philadelphia, PA

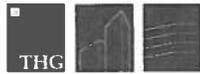
A 150,000 sf, 28-story high-rise mixed-use development adjacent to the Episcopal Cathedral in Philadelphia, PA, featuring residential apartments, office, ground floor retail, additional facilities for the cathedral, and one floor of underground parking.

2040 Market Street Apartments, Philadelphia, PA

A 120,000 sf, eight-story vertical expansion over a six-story former office building which is being renovated into 282 units of one- and two-bedroom residential apartments with ground-level retail. The basement of the existing building has been converted into an underground parking garage to serve the building tenants. Two speed ramps were built to connect the streets with the garage below. The high ceilings of the basement level allow for the use of vertical car stackers to increase the number of spaces. The project also includes an adjacent 68,000 sf, 14-story horizontal expansion.

Deptford Park Housing, Deptford, NJ

A 112,000 sf, seven-story precast concrete hollow core slab/load-bearing masonry apartment building for senior citizens, on pile foundations.



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Seapointe Center, Wildwood Crest, NJ

A 96,440 sf, seven-story precast concrete apartment building including grade level parking.

The Sansom, Philadelphia, PA

A 91,500 sf, eight-story residential building featuring 104 residential apartments and ground floor retail.

Sturbridge Waugh Chapel II, MD

A 71,000 sf, three-building residential complex comprised of three identical four-story wood frame buildings over parking. Contains 56,600 sf of residential space and 14,200 sf of parking.

Victoria Falls, Prince Georges County, MD

A 56,000 sf, four-story, 18-unit residential building featuring non-combustible concrete slab structural system (Hambro). Six identical units are planned for the site.

Orwigsburg Manor, Orwigsburg, PA

A 50,000 sf, two-story structural steel nursing home facility.

Sanatoga Manor, Sanatoga, PA

A 50,000 sf, two-story structural steel nursing home facility.

Centex King's Farm, Rockville, MD

A 28,000 sf, four-story wood frame residential building, comprised of three residential floors and lower level parking.

Westrum Townhouses, Philadelphia, PA

A 24,300 sf, three-story, 16-unit townhouse building.

Bradford Walk, Farmington, VT

A 22,500 sf, two-story, five-unit wood frame residential complex with walk-out basement and 2,400 sf clubhouse.

Calton Homes, Franklin Township, NJ

A three-story wood frame residential complex.

Stewart Terrace, New Windsor, NY

A residential complex comprised of four units and two building types, featuring eleven buildings including a one-story, 3,375 sf clubhouse and one-story maintenance building.

The Shores at Waters Edge, Belcamp, MD

A three-building residential complex comprised of identical four-story Hambro/wood frame walls over parking.

Clifton Corporate Suites, Clifton, NJ

Design and documentation of the Level 1 concrete Filigree structure supporting the four-story wood framed building above, as well as peer review of existing drawings.

OFFICE

Vanguard Corporate Centre, Valley Forge, PA

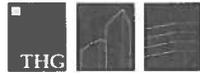
A 1.2 million sf corporate headquarters containing multiple three- and four-story composite steel frame buildings and multiple concrete parking facilities for 2,700 cars.

Four Falls Corporate Center, Conshohocken, PA

A 700,000 sf, 12-story mixed-use project; post-tensioned flat plate, cast-in-place concrete including 300,000 sf of parking for 1,000 cars.

Rose Tree Office Park, Phase II, Media, PA

A 275,000 sf, six-story precast concrete and structural steel office building over a 300-car parking facility.



THE HARMAN GROUP
structural engineering

JANIS B. VACCA, PE, LEED AP
Vice President

100 Tice Boulevard, Bergen County, NJ

A 275,000 sf, three-story office building with basement.

Bahamas Financial Centre, Nassau, Bahamas

A 270,000 sf, six-story post-tensioned concrete office building with integral parking for 250 cars.

Princeton Overlook II, Princeton, NJ

A four-story steel frame office building with one story of below-grade parking, enclosing approximately 182,000 gsf of office space and 36,500 sf of parking space.

1000 Continental Office Building, Upper Merion, PA

A 192,000 sf, six-story office building with basement.

Commonwealth Plaza, Williamsport, PA

A 150,000 sf steel frame office building.

Bristol-Myers Squibb, Lawrenceville, NJ

A 130,000 sf, three-story, steel frame office building with a 20,000 sf, one-story corridor.

Three Country View, Malvern, PA

A 100,000 sf three-story steel frame office building.

The Trooper Building, Trooper, PA

A 100,000 sf, three-story steel frame office building.

Rossmoyne, Lower Allen Township, PA

A 80,000 sf, three-story steel frame office building.

Pennsylvania College of Podiatric Medicine, Philadelphia, PA

A 75,000 sf, one-story (with 14-story overbuild capacity) post-tensioned concrete office building.

Woodcrest Pavilion, Woodcrest, NJ

A 52,000 sf, four-story oval-shaped composite joist steel frame office building.

Fentell, Voorhees, NJ

A 40,000 sf, two-story steel frame office building.

NKS Distributors Corporate Headquarters, DE

A 40,000 sf, two-story steel frame office building.

Cancer Center of Georgia, Atlanta, GA

A 17,000 sf, two-story steel frame cancer diagnostic and treatment center.

INDUSTRIAL/WAREHOUSE

NKS Distributors, New Castle, DE

A 113,000 sf, one-story steel frame office/warehouse building.

440 Creamery Way Flex Building, Exton, PA

A 60,000 sf steel joist/masonry bearing wall facility.

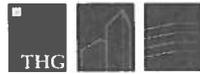
RETAIL

Sears at Eastland Center Mall, Harper Woods, MI

Retrofit of an existing (circa 1975) 172,000 sf, two-story plus basement department store into a two-story Sears retail facility with an integral six-bay automotive center facility.

Sears at Mills Mall, Pittsburgh, PA

A 164,000 sf, one-story steel frame retail building.



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JANIS B. VACCA, PE, LEED AP
Vice President

Deptford Crossing, Deptford, NJ

A 110,000 sf, one-story steel frame retail center.

Tweeter, Conshohocken, PA

A one-story, 3,200 sf addition and structural modifications to remaining existing masonry walls.

RENOVATION/REHABILITATION

The Philadelphia School for Creative and Performing Arts Renovations and Addition, Philadelphia, PA

Renovations and addition to existing 60,000 sf, three-story iron and brick arch historic building and a 100,000 sf, five-story steel frame addition including classrooms, studios, workshops, offices, and an acoustically designed 320-seat theater and stage area.

2040 Market Street Apartments, Philadelphia, PA

A 120,000 sf, eight-story vertical expansion over a six-story former office building which is being renovated into 282 units of one- and two-bedroom residential apartments with ground-level retail. The basement of the existing building has been converted into an underground parking garage to serve the building tenants. Two speed ramps were built to connect the streets with the garage below. The high ceilings of the basement level allow for the use of vertical car stackers to increase the number of spaces. The project also includes an adjacent 68,000 sf, 14-story horizontal expansion.

The Stegmaier Building Renovations and Alterations, Wilkes Barre, PA

Renovations to a 60,000 sf 1890s historic brewery building and a 60,000 sf addition. This project is a creative reuse of the former Stegmaier Brewery buildings.

Lackawanna Junior College Classroom Renovations, Scranton, PA

Rehabilitation of an historic 120,000 sf, three-story masonry and stone classroom facility.

Phoenixville Foundry Restoration and Alterations, Phoenixville, PA

Renovations and alterations to an existing one-story historic industrial building for a 25,000 sf enclosure.

Lower Moreland Library Addition and Alterations, Lower Moreland, PA

A 7,500 sf, one-story steel frame addition to an existing 9,000 sf, four-story 1820s school building; includes interior renovations and alterations.

Unionville-Chaddsford Bus Maintenance Facility, East Marlorborough Township, PA

A 7,300 sf, one-story pre-engineered metal building with an attached two-story office/dispatch building; constructed with multiple phone contacts.

Kimmel Center Dorrance K. Hamilton Rooftop Garden Enclosure, Philadelphia, PA

A 6,200 sf glass enclosure addition and renovations for acoustics and MEP to the rooftop garden at the Kimmel Center.

Montgomery Hospital, Norristown, PA

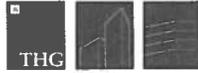
Survey and report of six building façades to determine potential causes of distressed the deterioration and cracking of the brick and stone façades.

Trenton Fire House, Trenton, NJ

Survey of existing conditions with recommendations for the repair and review of loading capacities for an historic firehouse in downtown Trenton, New Jersey.

Mutual Assurance Co., Wistar Cadwalder Building, Philadelphia, PA

Field investigation, evaluation and design for an historically significant building dating to 1740; rehabilitation and reinforcing of timber floor framing to support file storage loading, new floor openings and a new elevator.



THE HARMAN GROUP
structural engineering

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Vice President

Free Library of Philadelphia, Philadelphia, PA

Various Branch Renovations

Renovations to various branch locations.

Façade Survey

Façade survey of Walnut Street West branch.

Gentex Optical, Inc., Carbondale, PA

Investigation, survey, analysis and design of reinforcing for existing wood truss and beam/column structure.

PARKING

The Borgata Hotel Casino & Spa, Atlantic City, NJ

5,300-Car Parking Structure

A 1.533 million sf, eight-level, 5,300-car, precast concrete parking structure as part of 4.1 million sf hotel/casino complex.

Trump Marina Hotel & Casino, Atlantic City, NJ

3,500-Car Parking Structure

A 3,500-car, 1,000,000 sf, eight-level post-tensioned concrete parking structure.

Vanguard Corporate Center, Valley Forge, PA

2,700-Car Parking Structure

A 2,700-car, 900,000 sf multiple post-tensioned concrete parking structures.

New Jersey State House Annex Parking Garage, Trenton, NJ

1,100-Car Parking Structure

An 1,100-car, three-level, below grade post-tensioned parking structure to support New Jersey government's State House; atop the garage is a park/plaza for public use. This project also included the design and construction of a central utilities complex to support the entire Capital Complex. Due to highly sensitive nature of building, security measures were vital to successful design of structure.

Four Falls Corporate Center, Conshohocken, PA

1,100-Car Parking Structure

A 1,100-car, 300,000 sf, six-level post-tensioned concrete flat slab parking structure for an adjacent office complex.

Convention Center Shops & Garage at Filbert Street, Philadelphia, PA

1,000-Car Parking Structure

A 1,000-car, 320,000 sf, eight-level concrete parking structure with pedestrian level retail and provisions for vertical and horizontal expansion. Features pay-on-foot entry/exit.

Chestnut Street Garage Replacement, West Chester, PA

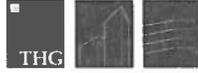
800-Car Parking Structure

An 800-car multi-level parking structure within the Historic District of West Chester Borough. Parking studies were performed within a multi-block radius in conjunction with monthly business commitments to confirm demands. Scope of services included a high level of public neighborhood meetings and distribution of information to the public via the Business Improvement District website.

Schmidt's Urban Renewal, Philadelphia, PA

700-Car Parking Structure

A 281,000 sf, six-story structure featuring five levels of parking for 700 cars and ground floor commercial retail space as well as a three-story fitness center along the southwest edge of the building.



THE HARMAN GROUP
structural engineering

JANIS B. VACCA, PE, LEED AP
Vice President

Avenue of the Arts Shops & Garage at 15th & Spruce, Philadelphia, PA

660-Car Parking Structure

A 660-car, 240,000 sf, nine-level post-tensioned concrete parking structure with ground level retail. Features pay-on-foot entry/exit.

Hyatt Regency Hotel at Penn's Landing, Philadelphia, PA

600-Car Parking Structure

A 250,000 sf, 340-room on cast-in-place post-tensioned concrete and steel frame hotel including restaurant, meeting facilities and tower along with a 200,000 sf six-level precast concrete parking structure for 600 cars.

Fisher's Restaurant, Bensalem, PA

560-Car Parking Structure

A 560-car, 180,000 sf, two-level post-tensioned concrete parking structure.

Philadelphia College of Podiatric Medicine, Philadelphia, PA

455-Car Parking Structure

A 455-car, 100,000 sf, three-level post-tensioned concrete parking structure.

Six Penn Center Renovations, Philadelphia, PA

450-Car Parking Structure

A new 450-car, 82,000 sf, nine-level parking structure ramp. Project also includes renovations and alterations to an existing 400,000, 18-story steel frame office building, including complete internal demolition of walls and exterior walls.

Matlack Street Garage, West Chester, PA

453-Car Parking Structure

A 453-car, three-level, 149,000 sf precast concrete parking structure.

Sharpless Street Garage, West Chester, PA

415-Car Parking Structure

A 415-car, 3.5-level, 140,000 sf precast concrete parking structure.

Bicentennial Garage, West Chester, PA

375-Car Parking Structure

A 375-car, six-level cast-in-place parking structure with five levels of parking and ground level retail.

Rittenhouse Hotel/Condominiums, Philadelphia, PA

326-Car Parking Structure

A 326-car, 100,000 sf six-level post-tensioned concrete parking structure.

Rose Tree Office Park, Phase II, Media, PA

300-Car Parking Structure

A 275,000 sf, six-story precast concrete and structural steel office building over a 300-car parking facility.

SPECIAL INSPECTION

Vanguard Corporate Centre, Malvern, PA

Inspection of rebar and post-tensioning tendon placement and composite steel and stud placement for a 1.2 million sf corporate headquarters containing multiple three- and four-story composite steel frame buildings and multiple concrete parking structures for 2,700 cars.

Four Falls Corporate Center, Conshohocken, PA

A 700,000 sf, 12-story office building with 1,100-car parking structure. Included inspection of reinforcing steel and post-tensioning tendon replacement.



THE HARMAN GROUP
structural engineering

JANIS B. VACCA, PE, LEED AP
Vice President

Trump Marina Hotel & Casino Tower Expansion, Atlantic City, NJ

Inspection of reinforcing steel and post-tension tendon placement for a 350,000 sf, 14-story hotel tower and six-story steel frame ballroom/convention area.

Pennsylvania College of Podiatric Medicine, Philadelphia, PA

A 7,000 sf, one-story (with 14-story overbuild capacity) post-tensioned concrete structure. Included inspection of reinforcing steel and post-tensioning tendon placement.

Montgomery Hospital, Norristown, PA

Survey and report of six building façades to determine potential causes of distressed deterioration and cracking of the brick and stone façades.

Trenton Fire House, Trenton, NJ

Survey of existing conditions with recommendations for repair and review of loading capacities for historic firehouse in downtown Trenton, New Jersey.

West Chester University, West Chester, PA

Survey and report of 13 building façades to determine potential causes of distressed the deterioration and cracking of the brick and stone façades.

New Hope Elementary School, New Hope, PA

Condition appraisal and recommendations for truss bracing after partial collapse of trusses during erection.

Engines 39 and 50, Philadelphia, PA

Visual structural condition assessment to determine compliance with contemporary codes related to the building structural systems.

Phoenixville Foundry, Phoenixville, PA

Condition appraisal of an existing 1800s foundry building.

Bryn Mawr Fire House, Bryn Mawr, PA

Condition appraisal of the balcony and fire escape.

GlaxoSmithKline, Building 8 - Blast Containment Facility, Upper Merion, PA

Condition review and strength assessment of existing concrete structure.

1234 Market Street, Philadelphia, PA

Condition appraisal of four-level, underground, steel frame concrete deck parking structure.

Avenue of the Arts Parking Structure, Philadelphia, PA

Post-tensioning inspection of multi-story parking structure.

Colonial Theater, Phoenixville, PA

Condition appraisal of wood-bearing brick, wood truss theater.

Eight-Story Building, Broad & Federal Streets, Philadelphia, PA

Condition appraisal of eight-story concrete framed building.

Holiday Inn – Independence Mall, Philadelphia, PA

Condition appraisal of seven-level, post-tensioned concrete parking structure.

3. Calogero Patti, P.E., Partner, and James Callahan, PE, LEED AP, Electrical Project Engineer, Edwards and Zuck Consulting Engineers, D.P.C.



CALOGERO PATTI, P.E.
PARTNER

Mr. Patti is a Partner and Senior Electrical Engineer at Edwards & Zuck. He is responsible for coordinating conceptual designs, strategic planning, construction, and commissioning for the various tier levels of electrical systems to be used in 24/7 mission critical systems. His responsibilities include supervising the work of the design team. Required tasks include client interface, design direction, construction administration, scheduling, inspections, commissioning plans and procedures, testing, startups, acceptance, plant operations, and the equipment/systems training programs. Mr. Patti incorporates innovative redundancy and modularity concepts studies, risk assessment, feasibility studies, reliability studies, and cost analysis for the construction and upgrading of critical infrastructures.

Mr. Patti is directly involved in all aspects of a project including preparation of design calculations, design concept, lease negotiations, coordination with all parties and following the project through to construction and commissioning.

Education:

*B.S. Electrical Engineering
Magna Cum Laude
New York Institute of Technology, 1991*

Professional Affiliations:

IEEE, NSPE, Eta Kappa Nu, IES

Registration

Professional Engineer in NY State, Arizona, Hawaii, Washington DC, Colorado, Georgia, Tennessee, NCEES

Career Experience:

*2000-Present
Edwards and Zuck
1993-2000
Lehr Associates
1991-1993
Laszlo Bodak Engineers, P.C.*

PROJECT EXPERIENCE

TISHMAN SPEYER PROPERTIES-Principal-in-Charge of our projects with this prestigious developer. In 2014, Edwards & Zuck designed a new 3,000KW, 4,160V Emergency Generator on behalf of the Landlord. The new generator serves Mission Critical systems for various tenants in the Building. The project included development of Landlord-Tenant lease agreements for emergency power and future allocations. Our other project experience include drawing reviews, tenant fitout, corporate headquarter relocations, building infrastructure upgrades, and repositioning projects at various buildings including 30 Rock, 200 Park, 45 Rock, 1230 Avenue of the Americas, 405 Lexington, 641 5th Avenue and 620 Fifth Avenue.

CREDIT SUISSE-1 MADISON AVE 14TH FLOOR DATA CENTER-NEW YORK, NY – Principal in charge for a new data center located within an existing high-rise building. The data center has a N+1 paralleled emergency generators and UPS back-up systems.

DEPOSITORY TRUST & CLEARING CORP-JERSEY CITY, NJ-Project Principal in Charge of this headquarter relocation project. Scope included engineering design of their new office premises, incorporating technology, tech room requirements: normal, new generators, generator and UPS power distribution systems, fuel tank systems, communications cabling, interior and site security including bollards, vault design, training and town hall rooms including AV systems, food service with seating, workstations, offices, office equipment and general office space requirements.

NBC – ROCKEFELLER CENTER, NY – Partner-in-Charge of our projects for NBC. Including feeder replacement project. Scope of work consists of replacing 90 existing antiquated electrical feeders that served NBC Studios, offices and support functions.

4 NEW YORK PLAZA -NEW YORK- Principal in Charge of the E&Z team that played a critical role on the crisis-management team, with devising temporary means to restore power and vital services to this office building in downtown Manhattan after superstorm Sandy. After the temporary services were provided, permanent systems needed to be designed.

CONFIDENTIAL CLIENT- Principal in Charge on this fast track project that included all commissioning and testing including primary injection testing of rack out circuit breakers, secondary injection of all large bolt in circuit breakers, and testing of ground resistance, CRAC (critical room air conditioners), UPS module, PDUs, STSs (static transfer switch), generator, chiller plant, fire protection system, insulation resistance and VFDs (variable frequency drive). The design services included a 800-ton air cooled chiller plant.

SIMONE PROPERTIES-Partner-in-Charge of several projects designed Medical Suites in Manhattan. The scope of work included all new MEP infrastructure for exam rooms, consulting suites, x-ray rooms and blood centers

CON EDISON, NEW YORK, NY – Principal in charge for a new floor including server farm, UPS room, office space, and utility spaces.

SIRIUS/XM-NEW YORK, NY-Principal-in-Charge of all our E&Z's SiriusXM critical systems design services projects. The projects have alleviated many of the single points of failures present in their existing mission critical electrical and mechanical systems and have strengthened their existing systems. Two sites are the New York City office at 1221 Avenue of the Americas; and the Vernon, New Jersey facility at 24 Vernon Crossing Road. Edwards & Zuck is also providing services for the 5 Penn Plaza location.



JAMES CALLAHAN, P.E.
LEED AP
ELECTRICAL ENGINEER

Mr. Callahan is an Electrical Project Engineer, with Edwards and Zuck, D.P.C., responsible for electrical project design from conceptual phase through completion of construction. He has broad project engineering experience in design of electrical systems for residential and commercial projects. His experience covers all phases of engineering services, performing design calculations and establishing design concepts, selecting engineering systems and equipment, designing and laying out systems, coordinating with other engineering disciplines and consultants, construction supervision of projects, commissioning of systems, and other design and construction activities.

Education:

*Fairfield University
B.S. Electrical Engineering-2008*

Professional Engineering Licenses:

*New York
LEED Accredited Professional-NY*

Career Experience:

*April-Present
Edwards & Zuck, D.P.C.
August 2013-March 2014
Vanderweil LLP
June 2010-July 2013
Syska Hennessy Group
June 2008-May 2010
Kohler Ronan LLC*

PROJECT EXPERIENCE

TIAA-CREF-730 3rd AVENUE-NYC-Project Manager and lead Electrical Engineer on several restack projects at this NYC location.

EILEEN FISHER-111 5th AVENUE-Electrical Engineer for this project with this lead clothing design company. The Creative Design Center occupies three floors and is now taking on two additional floors at 111 5th Avenue, New York, NY for approximately six years. This project involves complete renovation of the two new floors and partial renovation at the existing three floors.

NBC-ENGLEWOOD CLIFFS, NJ-Electrical Engineer on the project to assist NBC with the renovation of the existing Mechanical and Electrical infrastructure. The project goal was to provide new infrastructure that is more efficient, reliable, and higher capacity.

MOUNT SINIA HOSPITAL – James was the lead electrical engineer for a variety of projects at the Mt. Sinai Campus in NYC. Projects ranged from a Con-Edison service transformer replacement to a pathology laboratory restoration and renovation. James regularly sized and designed UPS systems and standby generator systems for the school of medicine as well as the main hospital. Electrical distribution systems to support MRI, CT Scanner, and various other types of imaging systems were designed amongst several buildings on campus.

HSBC-452 5TH AVE, 11 W 39th ST – A great deal of Hurricane Sandy remediation work was required to be performed across the two buildings leased / owned by HSBC in New York City. James worked as lead electrical engineer to specify new ATS line-up to serve emergency power to all electrical loads in Bank Branch on main level, two levels of vaults, and various trading floors throughout the two buildings. James worked closely with HSBC and the land lord to develop a load shedding scheme and prioritization for each new ATS. Existing paralleling gear was modified to accept control of these new ATS's throughout the two buildings.

HSBC – 330 MADISON AVENUE – HSBC acquired two floors of 330 Madison Avenue. James assisted HSBC with lease negotiations to have the two floors backed up by an existing base-building generator system. An existing data center and chiller plant was re-configured to serve HSBC upon signing of lease. James was also lead electrical engineer who designed about 80K square foot of renovation, and N+1 redundant UPS configuration to serve the new data center. The project also required a short-circuit, selective coordination, and arc-flash study be conducted on all existing and proposed infrastructure located throughout HSBC's leased space.

AIG EXECUTIVE FLOORS – AIG renovated the existing AIG executive floors at 175 Water Street in New York, NY. James was the lead electrical engineer and project manager for MEP/FP trades. The project included a new commercial kitchen, AIA elevator, and executive private office and conference room layout.



4. Clara Wineberg, Associate Principal, AIA, LEED AP BD+C, Solomon Cordwell Buenz Architects





CLARA WINEBERG, AIA, LEED AP BD+C

Associate Principal

As a recognized leader within SCB, Clara informs the vision and strategy for ongoing success both within the Studio she directs and in overall firm and practice efforts. Clara works with SCB's partners, developing and maintaining a creative, collaborative, productive, and positive studio environment that consistently delivers excellence and targeted financial goals.

Clara successfully builds current client relationships to secure future opportunities while anticipating and proactively managing new and current project opportunities that impact the performance of the firm and market sector. As a public face of SCB, Clara assists in pursuits has a proven record of attaining commissions and ensures that commitments made by the firm are honored with entrepreneurial energy and foresight.

Education

Tulane University
Bachelor of Architecture
Master of Architecture

Registrations

Registered Architect - Illinois

Affiliations/ Activities

American Institute of Architects
USGBC
Urban Land Institute (ULI)
Evanston Zoning Board
Presiding Member on the Wilmette
Historic Preservation Board

Residential Projects

Rittenhouse Square

Philadelphia, Pennsylvania
700,000 sf, 50-story, mixed-use
development with 325-apartment units,
100-condo units and 50,000 sf retail

700 Peachtree

Atlanta, Georgia
745,000 sf, 28-story, residential tower
with 350-apartment units and 55,000 sf
retail and office

Houston Medical Towers

Houston, Texas
1,000,000 sf, 41-story, 400 units, 480,000
sf residential, 200,000 sf hospitality with
190-keys, 10,000 sf retail, 300,000-parking
spaces

River Oaks

Houston, Texas
39 story, 370-unit apartment tower,
686 parking spaces, and 12,500 SF
restaurants/retail

Buckhead Village

Atlanta, Georgia
350-unit apartment complex

Cine Ermita

Mexico City, Mexico
445-Unit, 505,365 sf, 72,000 sf Retail,
6 Sub-basements of parking

3400 Montrose Residential

Houston, Texas
294-Unit, 1 below grade and 6 levels of
above grade parking for 480-cars

Northshore

Austin, Texas
920,000 gsf, 27-Story, mixed-use
development with 524 apartment units
and 50,000 gsf retail, targeted LEED
Silver

Post Oak

Houston, Texas
697,000 sf, 29 Story, 355-Unit

Ashton Post Oak

Houston, Texas
38-Story, 236 Unit, 675,000 sf

Loyola University Chicago Station Apartments

Chicago, Illinois
41,426 sf, 41-Unit Apartment Building
15,00 sf retail

CityFront Square

San Jose, California
414 Condominium units, 245 Rental
Mixed-Use Development

One Rincon Hill

San Francisco, California
390 Unit, 55 Story, 765,000 sf

150 N. Riverside Plaza

Chicago, Illinois
2 Tower Mixed-Use Development

Kinzie Park Tower

Chicago, Illinois
34-Story, 600,000 sf Condominium Tower

160 E. Illinois

Chicago, Illinois
36-Story, 700,000 gsf
Rental Tower with Garage Podium

* Denotes projects completed prior to joining SCB.

Education Projects

Drexel University

The Summit

Philadelphia, Pennsylvania

529,647 sf mixed-use retail/graduate

and undergraduate high-rise

1300-bed community center & dining

In partnership with American Campus Communities

Loyola University Chicago

Joseph J. Gentile Center

Chicago, Illinois

45,500 sf addition including training

rooms, exhibition space, student work

space and locker rooms

LEED Silver

Case Western Reserve University

Cleveland, Ohio

123,500 sf, 5-story, 290-bed residence hall

with learning commons, targeted LEED

Gold

Nazareth Academy

LaGrange Park, Illinois

Performing Arts Addition

Loyola University

Halas Student Recreation Center

Chicago, Illinois

70,000 sf Addition and Renovation

LEED Silver

St. Xavier University

Chicago, Illinois

35,000 sf Student Welcome Center/

Campus Center

Loyola University

20-24 E. Chicago Ave.

Classroom and Retail Building

Chicago, Illinois

36,000 sf Classroom/Retail/Office

Illinois College

Jacksonville, Illinois

45,000 sf New Student Center

Loyola University Chicago

Norville Center for Intercollegiate

Athletics

Chicago, Illinois

75,000 sf arena addition including

basketball arena, natatorium, and meeting

space. LEED Silver

Francis W. Parker School*

Chicago, Illinois

Gymnasium Addition/Renovation

The University of Chicago*

Chicago, Illinois

Residential Dorm Feasibility Study

Loyola University

Arnold J. Damen, S.J. Student Center

Chicago, Illinois

106,000 sf new building including dining,

worship spaces, retail, and movie theater.

The University of Chicago*

Chicago, Illinois

Kovler Gymnasium Addition

* Denotes projects completed prior to joining SCB

5. **William F. Schmidt, PE, Associate Vice President, and R. Alan Lloyd, CIH, CSP, Safety and Industrial Hygeine Division Manager, Pennoni Associates Inc.**

William F. Schmidt, PE

Environmental Engineering

EDUCATION

M.S., Villanova University, Water Resources and Environmental Engineering, (1998)

B.S., Rutgers University, Civil Engineering, College of Engineering (1990)

CERTIFICATION

AED/ CPR/ First Aid Certified

Ground Penetrating Radar

OSHA 40-Hr Health and Safety

Troxler Nuclear Density Gauge Certification

PROFESSIONAL REGISTRATIONS/CERTIFICATIONS

Professional Engineer: PA

Professional Engineer: NJ

EXPERIENCE SUMMARY

Mr. Schmidt, Associate Vice President and Philadelphia's Environmental Division Manager, has over 25 years of experience in Environmental and Geotechnical Engineering. His experience includes remedial design, hazardous waste site assessments, remedial investigations/ feasibility studies (RI/ FS), underground storage tank management, soil/ groundwater sampling/ analysis and monitoring, construction management oversight, subcontractor monitoring and project cost control, site safety monitoring, soil inspection, subgrade compaction and inspection, concrete testing and inspection, steel inspection and landfill closures. Mr. Schmidt has experience with federal, state and local regulatory agencies and has managed projects involving Pennsylvania's Land Recycling Program (Act 2) and storage tank corrective action process. Mr. Schmidt serves as Associate Vice President for Environmental Services and the Corporate Health and Safety Officer for Pennoni Associates. He is responsible for the growth and success of the Environmental division in Philadelphia.

REPRESENTATIVE PROJECTS

Resource Conservation and Recovery Act (RCRA) Audit; Philadelphia, PA

Project Manager, Responsible for management of a comprehensive RCRA audit to assess the City- operated facility and operations for compliance with applicable local, state and federal environmental regulations, specifically targeting RCRA requirements dealing with the handling, storage, transport, and disposal of hazardous waste streams. Tasks included information gathering/ records review, an environmental site investigation including the completion of audit checklists for various operations, and a technical report of our findings. In support of this objective, information was collected, analyzed and interpreted about the facility's operations and instances of regulatory non- compliance were identified. The audit team developed corrective action plans for each identified violation or potential violation, including time and cost estimates for implementation of the proposed corrective actions. The project also included the preparation of a waste minimization plan and pollution prevention recommendations.

Phase I Environmental Site Assessments; Various Locations

Performed Phase I environmental site assessments in accordance with ASTM standards and due diligence requirements for numerous clients. The Phase I tasks included research of property history and land use, database and regulatory agency records review, geologic and hydrogeologic profiles, insurance/ industrial map and aerial photograph review, chain-of-title review, report preparation, correspondence with appropriate agencies and on- site/ adjacent property inspections to identify possible environmental concerns. Sites included residential, agricultural, commercial, and industrial facilities, as well as properties with historical significance. Complex and difficult sites included former CERCLA sites, ROD sites, and sites of historic significance.

Act 2 Philadelphia Navy Yard: Former Fire Training Unit/ Brig Area; Philadelphia, PA

Project Manager, Prepared a Supplemental Environmental Baseline Report under the Special Industrial Area standards of Act 2 for a 15- acre portion of the Philadelphia Navy Yard, formerly utilized to train firefighters and detain military personnel. Numerous underground storage tanks and aboveground storage tanks were previously located on the site in order to store fuel for fires created for training purposes at the site. Remedial activities were previously undertaken at this site to address releases of petroleum products to soils and groundwater and an environmental baseline survey was completed by others for the site.



William F. Schmidt, PE

Environmental Engineering

Subsurface soil investigations including the advancement of soil borings and test pits, as well as the collection of soil samples and the installation and sampling of groundwater monitoring wells, were conducted to further evaluate the environmental condition of the site. Also prepared a site- specific health and safety plan for this site to outline the proper procedures that must be followed to protect construction workers during redevelopment of this site.

Industrial Park Facility; Delaware County, PA

Project Manager and Environmental Coordinator, Responsible for environmental coordination and compliance at a 135- acre complex industrial park property in Delaware County, Pennsylvania. On- site coordination efforts required approximately 20 hours per week. Responsibilities included hazardous waste reporting and management, implementation and compliance with an existing Soil Management Plan, periodic inspections of storage tanks/ petroleum storage areas, developing and maintaining environmental filing program, assistance with underground storage tank issues, coordination of environmental issues/ concerns between tenants, property manager, owner, and regulatory agencies, environmental sampling, and other miscellaneous environmental oversight activities.

Act 2 Remedial Investigation; Philadelphia, PA

Project Manager, Developed a Remedial Investigation Work plan (for submission to the PA DEP in accordance with Act 2) regarding a property formerly used as a landfill of ash and cinders generated from local incinerators. Upon receipt of approval, implemented the remedial investigation which included the collection of soil and groundwater samples and the preparation of a Non- use Aquifer Determination. Through soil and groundwater investigations, successfully demonstrated attainment of Site Specific Standards and obtained Chapter Five release of liability protection for the property.

Act 2 Remedial Investigation; Philadelphia, PA

Project Manager, Developed a Remedial Investigation Work plan (for submission to the PA DEP in accordance with Act 2) regarding an industrial property formerly used as a transfer station along the railroad. Upon receipt of approval, implemented the remedial investigation which included the collection of soil and groundwater samples and the preparation of a Final Remedial Investigation Report. Through soil and groundwater investigations, successfully demonstrated attainment of Site Specific Standards and obtained Chapter Five release of liability protection for the property.

Act 2 Site Characterization/ Remedial Investigation/ Risk Assessment; Former Grace Mine Facility, New Morgan Borough, PA

Project Manager, Responsible for conducting a site characterization and remedial investigation of the former Grace Mine Facility, which encompasses approximately 700 acres of land and includes a building complex (presently known as the New Morgan Corporate Center), subsurface mining features, a mine subsidence area, wetlands areas, a mill pond, and a tailings pond. Prepared and implemented PA DEP- approved work plans to comply with and fulfill a Consent Order and Agreement. Through compliance with the COA attainment of a combination of Act 2 Non- Residential Statewide Health Standards (SHS) and Site-Specific Standards (SSSs) for soil, groundwater, sediment, and surface water on and down- gradient of the site was demonstrated through sampling and ecological and human health risk assessments. Successful demonstration of attainment of selected Act 2 remediation standards provided Chapter Five release of liability protection for the Property and extended liability protection to current and subsequent owners of the Property.

Act 2 Site Characterization/ Remedial Investigation/ Remedial Action; Upper Gwynedd, PA

Project Manager, Responsible for conducting a site characterization, remedial investigation, and remedial action at a property formerly used as a truck repair and maintenance facility. Initially characterized the property through soil and groundwater sampling. Through implementation of the sampling plan, encountered numerous unregistered underground storage tanks, arsenic, and benzene contamination in subsurface soils and chlorinated hydrocarbon contamination in shallow and deep groundwater beneath the site. Closed the identified tanks through removal, excavated impacted soils, and remediated impacted groundwater through the injection of a hydrogen releasing compound (HRC). Prepared a final report demonstrating attainment of Statewide Health Standards for soil and the site specific standards for groundwater in accordance with Act 2.

Act 2 Site Characterization/ Remedial Investigation; Allentown, PA



William F. Schmidt, PE

Environmental Engineering

Project Manager, Responsible for conducting a site characterization and remedial investigation at an industrial property formerly used to manufacture fertilizer. Initial site characterization included sampling surface and subsurface soils, groundwater, surface water from an adjacent creek, and creek sediments. Based upon results of the soil sampling, installed vapor wells and performed soil gas sampling. Performed fate and transport modeling of the soil and groundwater contaminants detected above the statewide health standards to determine potential impact to the adjacent creek. Prepared remedial investigation report presenting site specific standards for soil and groundwater with recommendations for quarterly groundwater monitoring to confirm attainment.

Act 2 Site Characterization/ Remedial Investigation; Philadelphia, PA

Project Manager, Responsible for conducting a site characterization and remedial investigation at an industrial property, which formerly manufactured sugar. Initial site characterization included sampling surface and subsurface soil and groundwater at the property. Based upon results of the groundwater sampling, demonstrated attainment of the statewide health standards. Based upon the results of the soil samples, prepared a Non- Use Aquifer Determination for submittal to the PA DEP. If the Non- Use Aquifer Designation is accepted by the PA DEP, soils onsite would meet non-residential, non- use aquifer standards and a final report will be prepared for submittal to the PA DEP.

Act 2 Site Characterization/ Remedial Investigation; Philadelphia, PA

Project Manager, Responsible for conducting a site characterization and remedial investigation at a former gas station that was being redeveloped for mixed residential and commercial use. Initial site characterization included sampling surface and subsurface soil, and groundwater at the property. Based upon results of the groundwater sampling demonstrated attainment of the statewide health standards. Based upon the results of the soil samples, demonstrated attainment of site specific standards using pathway elimination as a form of engineering control. Submitted a final report to the PA DEP, which was approved and liability protection under Act 2 was granted.

Act 2 Site Characterization/ Remedial Investigation; Philadelphia, PA

Project Manager, Responsible for conducting a site characterization and remedial investigation at a former industrial site since the turn of the century that was being redeveloped for mixed residential and commercial use. Initial site characterization included sampling surface and subsurface soil and groundwater at the property. Performed fate and transport modeling of the soil and groundwater contaminants detected above the statewide health standards to determine potential impact to the adjacent Schuylkill River. Prepared remedial investigation report presenting site specific standards for soil and groundwater with recommendations for quarterly groundwater monitoring to confirm attainment. Collected four quarterly rounds of groundwater samples and submitted final report demonstrating attainment of site specific standards. Submitted a final report to the PA DEP that was approved and liability protection under Act 2 was granted.

Act 2 Baseline Remedial Investigation Under Specialized Industrial Area; Philadelphia, PA

Project Manager, Prepared a baseline remedial investigation work plan to investigate a portion of an Amtrak maintenance yard that was to be redeveloped for office space. Work plan submitted to the PA DEP for approval. Upon approval completed soil and groundwater investigations in order to demonstrate attainment of statewide health standards under a Specialized Industrial Area. Submitted Remedial investigation report to the PA DEP, which was ultimately approved and liability protection was granted under Act 2.

Groundwater Recovery and Remediation Design, Installation, and Operation; Philadelphia, PA

Project Engineer, Responsible for the design, installation, and operation of a groundwater recovery system designed to recover toluene from the shallow aquifer beneath a former manufacturing facility. Based upon completion of a delineation program the groundwater contamination extended offsite toward an adjacent creek and public park. The groundwater remediation system included the installation of a series of recovery wells as well as the use of granular activated carbon units for total volatile organic compound removal. Upon system start up, was responsible for developing an operation and maintenance program to monitor recovery effectiveness. System has been in operation for 12 months with only one minor shutdown to repair a groundwater recover pump.



William F. Schmidt, PE

Environmental Engineering

Act 2 Baseline Remedial Investigation; Philadelphia, PA

Project Manager, Responsible for conducting a remedial investigation at a property formerly used as a landfill of ash and cinders generated from local incinerators. Initially developed a Remedial Investigation Work plan (for submission to the PA DEP in accordance with Act 2) based upon a review of previous investigations performed at the property. Performed fate and transport modeling of the soil and groundwater contaminants detected above the statewide health standards to determine potential impact to the adjacent Schuylkill River. Prepared Remedial Investigation Report presenting site specific standards for soil and groundwater with recommendations for quarterly groundwater monitoring to confirm attainment.

Act 2 Baseline Remedial Investigation; Philadelphia, PA

Project Manager, Responsible for conducting a remedial investigation at an industrial property formerly used as a transfer station along a railroad. Initially developed a Remedial Investigation Work plan (for submission to the PA DEP in accordance with Act 2) based upon a review of previous investigations performed at the property. Performed fate and transport modeling of the soil and groundwater contaminants detected above the statewide health standards to determine potential impact to the adjacent Schuylkill River. Prepared Remedial Investigation Report presenting site specific standards for soil and groundwater with recommendations for quarterly groundwater monitoring to confirm attainment.

Act 2 Baseline Remedial Investigation; Allentown, PA

Project Manager, Responsible for conducting a remedial investigation at an industrial property, which formerly manufactured acetylene gas and sterilization chemicals for hospitals. Initially developed a Remedial Investigation Work plan (for submission to the PA DEP in accordance with Act 2) based upon a review of previous investigations performed at the property. Performed fate and transport modeling of the soil and groundwater contaminants detected above the statewide health standards to determine potential impact to the adjacent Little Lehigh River. Prepared Remedial Investigation Report presenting site specific standards for soil and groundwater with recommendations for quarterly groundwater monitoring to confirm attainment.

Groundwater and Soil Remediation System Design/ Build/ Operate, Miller Brewing Company; Fulton, NY

Project Engineer, Responsible for overall construction management of a \$3.5- million design/ build/ operate contract for a soil and groundwater remediation system. This project included: preparation of plans and specifications to implement a soil vapor extraction and groundwater recovery and treatment system for impacted soils and groundwater with complex organics; the installation of dual phase groundwater and vapor recover wells; the review and approval of all shop drawings and design submittals; preparation and submittal of a NPDES application for the discharge of treated effluent to the Oswego River; and the operation and maintenance of the treatment system during the first month of operation. In addition, Mr. Schmidt was the technical manager during the first year the system was in operation.

Groundwater Treatment Design and Operation; South Plainfield, NJ

Project Engineer, Responsible for managing a turnkey operation for a four- million dollar project requiring the design and operation of a 45- GPM groundwater recovery, treatment, and reinjection system. The treatment system included implementation of innovative extraction techniques to shorten the recovery and treatment time period.

Remedial Design for Groundwater Contamination; Franklin Township, Franklin, NJ

Project Engineer, Responsible for the design and technical development of a groundwater remediation system for a subsurface gasoline spill. The remediation involved subsurface drain designs, for extracting contaminated groundwater, and an activated carbon treatment system.

Asbestos Landfill Closure; Thorofare, NJ

Construction Manager and Field Engineer, Responsible for the closure of an asbestos solid waste landfill in a wetlands area located in Thorofare, New Jersey. Responsible for design and implementation of the closure plan of an asbestos and municipal waste landfill. As Construction Manager, Mr. Schmidt managed the installation of the landfill cap to the requirements of the closure plan including installation of riprap along sidewalls of the cap that were exposed to a tidally- influenced drainage ditch. Mr. Schmidt was also responsible for developing as-built drawings and final record documents.

Remedial Investigation, Barnes Air National Guard Base (ANGB); Westfield, MA



William F. Schmidt, PE

Environmental Engineering

Project Engineer, Field Team Leader, and Health and Safety Officer for the implementation of a Remedial Activity Field Investigation at three of the seven areas of concern at an active Air National Guard facility. Assisted in the preparation of the Remedial Investigation Work Plan and the Sampling and Analysis Plan for six additional areas of environmental concern to be investigated. Conducted surface sampling, monitored soil boring advancement and well installation, conducted "rising head" hydraulic testing, and sampled monitor wells.

In addition, served as Field Team Leader supervising the preparation of plans and specifications for the excavation and vapor extraction/ bioremediation treatment of the contaminated soil at two of the seven sites deemed potentially contaminated with hazardous materials/ waste. Assisted in the coordination of the surface/ subsurface groundwater investigations, data evaluation and risk assessment of said sites. Supported in the preparation of a closure report to document the removal actions in accordance with the Massachusetts Department of Environmental Protection guidelines.

Methane Investigation, Fox Run Apartments; Bear, DE

Project Manager of a Subsurface Investigation in a 500- unit Apartment Complex after explosive levels of methane gas were observed in an adjacent condominium complex. Activities included the delineation of multiple areas of buried vegetative debris through a ground penetrating radar survey, soil gas survey, and the advancement of over 100 soil borings and 30 test pits.

Discharge Prevention, Containment and Countermeasure Plan, Confidential Client, Tinicum Industrial Park; Lester, PA

Assisted in the preparation of a Discharge Prevention, Containment and Countermeasure Plan (DPCC) for an undisclosed client located in the Tinicum Industrial Park located in Lester, Pennsylvania. Provided management support and pertinent information relative to the guidelines and procedures to be followed by all persons in the event of a discharge of a hazardous substance at the aforementioned site.

Plans and Specifications, Hazardous Waste Remedial Actions Program (HAZWRAP), Kellogg ANGB; Battle Creek, MI

Assisted in the design of soil treatment, capping, and stormwater management at a former coal storage area at the Kellogg ANGB. Prepared plans, specifications, and cost estimates for the stabilization of several acres of land previously used for the storage of coal.

Resource Conservation and Recovery Act (RCRA) Facility Closure, Confidential Client; Guayanilla, PR

Project Engineer, Field Team Leader and Health and Safety Officer for the implementation of a Sampling and Analysis Program at 19 areas of concern at a decommissioned polyvinyl chloride manufacturing facility. Conducted soil screening and sampling, container storage inventory, and RCRA waste classification sampling in the 19 areas of concern under the direct supervision of the Puerto Rico Environmental Quality Board and United States Environmental Protection Agency (USEPA). Currently analyzing data to assist in the preparation of a Sampling Plan Report.

ISRA Closure and Remediation, US Filter Company; Marlboro, NJ

Project Engineer for an Industrial Site Recovery Act (ISRA) compliance project involving the investigation and remediation of seven areas of environmental concern at a 22- acre facility. Activities included review of a General Information Submission and Site Evaluation Submission, preparation of a Remedial Investigation Work Plan, delineation of surface soil contamination in each of the areas of concern, and preparation of a Remedial Investigation Report. Identified volatile organic and semi- volatile organic contaminated soils were remediated through soil excavation and recycling, and a Remedial Alternative Analysis was completed to identify an appropriate alternative to remediate over 4,500 cubic yards of inorganic contaminated soil.

Salem County Landfill, Salem County; Salem County, NJ

Field Engineer responsible for contractor oversight relative to the closure of two cells in a municipal landfill. Nuclear density testing and shelly tube sampling were performed on the clay liner prior to placement of the refuse, as well as on the clay cap after closure to ensure the density and permeability of the clay liner and cap were within design specifications.

R. Alan Lloyd, CIH, CSP

EDUCATION

MS, Western Washington University,
Environmental Management and
Planning (2000)

BA, University of Delaware, Geography
(1998)

Continuing Education, Rutgers
University – School of Public Health,
Industrial Hygiene Courses

CERTIFICATIONS

Certified Industrial Hygienist

EPA AHERA Building Inspector

Asbestos Building Inspector PA/NJ/VA

Asbestos Safety Technician/NJ

Asbestos Project
Inspector/Philadelphia

Asbestos Investigator/Philadelphia

EPA/NJ Lead Inspector/Risk Assessor

Radioactive Materials Training

OSHA 40 hour HAZWOPER

PROFESSIONAL AFFILIATIONS

American Industrial Hygiene
Association (AIHA)

Delaware Section of the AIHA, Past
President

EXPERIENCE SUMMARY

Mr. Lloyd, a Certified Industrial Hygienist, has over 16 years of experience in industrial hygiene and environmental remediation throughout the United States. He has been responsible for conducting asbestos building surveys, abatement oversight and air monitoring, Indoor Air Quality Investigations (including mold assessments), air permitting, noise assessments, health and safety oversight and Phase I, II and III environmental site assessments. In addition to performing as a reliable and competent field technician, responsibilities have also included on-site project management, proposal development, maintaining client relationships and report writing. Mr. Lloyd is the Chair of the Health and Safety Committee for Pennoni Associates.

REPRESENTATIVE PROJECTS

Health and Safety Plan Development, Philadelphia, PA

Updated and expanded the Health and Safety Plan for the Philadelphia Airport under the Division of Aviation. Using City of Philadelphia health and safety directives as well as OSHA regulations, the health and safety plan was created to meet the Department of Risk Management's requirements.

Workplace Hazard Assessment, Statewide, DE

Developed a scientific study to identify exposures to hazards in the workplace throughout the private and public sectors in the State of Delaware. Working with the Department of Health's Occupational Health Program, Pennoni assisted in the development and implementation of a state wide survey of workplaces. Using the results of the hazard assessment inspections, the State of Delaware will be able to determine if public outreach and education is needed to help reduce workplace exposures to hazardous materials.

Chemical Exposure Assessments, Various Locations

Completed various exposure assessment studies for private and public entities throughout the Philadelphia region. Assessments have included sampling for airborne exposures to welding fumes, chlorine, PCBs, fluoride gas, oil mists and other hazardous substances.

Hazardous Materials Survey and Abatement Design, Philadelphia Navy Yard, PA

Completed a comprehensive hazardous materials survey of various wharfs and piers in the Philadelphia Navy Yard in preparation for a substantial renovation project. The Survey included an assessment for asbestos containing materials, lead-based paint, PCB-containing equipment and other hazardous materials. Also prepared remediation design documents for the removal of the material prior to renovation activities.

Asbestos Abatement and Mold Investigation, Rowan University, NJ

Completed various projects with SORA Holdings at Rowan University related to asbestos and mold consulting activities. Conducted a comprehensive mold investigation of a newly constructed dormitory building due to ongoing leaks. Documented the location of known mold growth and also oversaw remediation activities. Also monitored the removal of asbestos-containing transite pipe from the exterior of the building.

Asbestos Survey and Abatement Design, Kean University, NJ

Completed a comprehensive hazardous materials survey of the Green Lane building in preparation for building demolition. The Survey included an assessment for asbestos containing materials. Also prepared remediation design documents for the removal of the

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material prior to demolition activities.

On-Call Industrial Hygiene Consulting Services, Rider University, NJ

Completed dozens of industrial hygiene and/or environmental related projects for Rider University over the course of a few years. Services included asbestos surveys, remediation design, abatement oversight, indoor air quality investigations, drinking water sampling, air permitting, spill prevention and control plans, safety training and consulting as well as various other projects.

Hazardous Materials Survey and Abatement Design, Portsmouth Naval Yard, NH

Completed a comprehensive hazardous materials survey of various buildings in the Portsmouth Naval Yard in preparation for a substantial renovation project. The Survey included an assessment for asbestos containing materials, lead-based paint, PCB-containing equipment and other hazardous materials. Also prepared remediation design documents for the removal of the material prior to renovation activities.

Hazardous Materials Survey, Abatement Design, and Infection Control Risk Assessment, Philadelphia VA Hospital, PA

Completed a comprehensive hazardous materials survey of the Building 29 Research Laboratory in preparation for building renovation. The Survey included an assessment for asbestos containing materials, lead-based paint, PCB-containing equipment and other hazardous materials. Also prepared remediation design documents for the removal of the material prior to renovation activities. An Infection Control Risk Assessment was performed to limit patient exposure to construction debris during renovation activities.

Macy's Stores, Various Locations, Northeast United States

Conducted semi-annual Operations and Maintenance inspections for asbestos containing materials. Also performed asbestos air sampling throughout the various stores. Asbestos containing materials were labeled if necessary. Updated Operations and Maintenance reports as well as Asbestos Containing Materials Plans.

Environmental Building Survey for Asbestos/Hazardous Materials, Pascack Valley Hospital, Westwood, NJ

Performed building inspection and sampling for various hazardous materials including asbestos, lead-based paint, metals in drinking water, VOCs, and airborne culturable microbiological contaminants for State recertification license of hospital. Assisted with development and interpretation of analytical results for reporting purposes and recommendations for future remediation, if warranted.

Environmental Building Survey for Asbestos/Hazardous Materials, Henderson Hall Marine Base, Arlington, VA

Performed building inspection and sampling for various hazardous materials including asbestos, lead-based paint, PCBs, ozone depleting substances, and mercury-containing equipment at two Marine Base buildings scheduled for demolition. Assisted with development and interpretation of analytical results for reporting purposes and recommendations for remediation prior to demolition.

Vapor Barrier Design and Installation Oversight, Philadelphia, PA

Completed the design of a vapor barrier system for approximately eleven (11) commercial buildings in a new shopping center in south Philadelphia. The design was completed in cooperation with the Pennsylvania Department of Environmental Protection as required due to extensive groundwater contamination underlying the property and subsequent threat of methane infiltration into the buildings.

Site Remediation/Asbestos Abatement, Camden, NJ

On-site project manager and asbestos building inspector for building remediation activities for the revitalization of the former RCA facility ("Nipper Building") along the Camden Waterfront. Areas of concern included metal and chlorinated solvent contamination in soil, chlorinated solvent contamination in groundwater, PCB contamination in building components, hazardous material removal, and asbestos abatement. The remediation costs for this project have been in excess of \$6,000,000.

Various Indoor Air Quality Investigations, Philadelphia Region



R. Alan Lloyd, CIH, CSP

Completed IAQ investigations at dozens of private and public facilities. Investigations were generally initiated by employee or occupant complaints concerning odors or physical reactions to supposed indoor air quality problems. Performed sampling for potential contaminants of concern, which included molds, bacteria and dust mites. Interpreted data received from sampling and prepared report findings and evaluation summary.

Various Preliminary Site Assessments and Phase I Assessments, Philadelphia Region

Performed environmental site assessments for various commercial and industrial properties. Assessments included the research of property history and land use, a database and agency review, a geologic and hydrogeologic profile, Sanborn Map and aerial photograph review, current property owner interviews, and on-site and adjacent property inspections. After compiling the information from various sources, reports were generated following the EPA's AAI and the 2005 ASTM standards.

Asbestos Building Inspector, Springfield Elementary School Environmental Abatement Plans and Specifications and Abatement Monitoring, Springfield, PA

Assisted in developing plans for the proper abatement of ACMs. Coordinated and supervised the abatement of ACMs in accordance with appropriate federal and state regulations.

Asbestos Building Inspector, Long Branch High School Site Investigation and Environmental Abatement Plans and Specifications, Long Branch, NJ

Verified the presence or absence of ACMs in an occupied school in New Jersey. Assisted in developing plans for the proper abatement of ACMs in accordance with appropriate federal and state regulations.

Onsite Project Manager and Asbestos Building Inspector, Former RCA Facility Building 8 Abatement Monitoring, Camden, NJ

Verification of the presence or absence of asbestos-containing materials (ACMs) in an abandoned industrial building. Assisted in developing plans for the proper abatement of ACMs. Coordinated and supervised the abatement of ACMs in accordance with appropriate federal and state regulations.

Asbestos Building Inspector, Center for Family Services Asbestos Building Inspections, Various commercial and residential buildings, NJ

Verified the presence or absence of ACMs in various commercial and residential buildings throughout southern New Jersey.

Asbestos Building Inspector, Borough of Berlin Asbestos Building Inspections and Environmental Abatement Plans and Specifications, Various Buildings, Berlin, NJ

Verified the presence or absence of ACMs in various municipal buildings in Berlin, New Jersey. Assisted in developing plans for the proper abatement of ACMs in accordance with appropriate federal and state regulations.

Asbestos Building Inspector, KRAVCO Asbestos Building Inspections, Various Shopping Centers

Verified the presence or absence of asbestos-containing materials in shopping malls and centers in NJ, PA, FL, NY, ME, CT, and IN.

Asbestos Building Inspector; Former RCA Facility Building 17 Abatement Monitoring, Camden, NJ

Coordinated and supervised the abatement of ACMs in accordance with appropriate federal and state regulations.

Air Permitting, Mt. Holly, NJ

Completed required synthetic minor air permit for a medical packaging facility in Mt. Holly, New Jersey. Permitting included the transfer of existing permits into the NJDEP Radius program and modifying existing permits into one comprehensive air permit for the facility.

Indoor Air Quality Investigation, Cherry Hill, NJ

Performed IAQ investigation at two business office buildings. Investigations were initiated by employee or occupant complaints concerning odors or physical reactions to supposed indoor air quality problems. Performed sampling for potential contaminants of concern, which included molds, bacteria and dust mites. Interpreted data received from sampling and prepared report findings and evaluation summary.



R. Alan Lloyd, CIH, CSP

Preliminary Site Assessment and Investigation, Camden, NJ

Performed an environmental site assessment and investigation of a former industrialized area. A background study reconstructed site conditions and waste disposal practices back to the late 1800's when the original building was constructed. The site has been utilized for the Former RCA Corporation, manufacturing radios and related materials, and is currently used for parking. Based on the investigation, a Phase II investigation was performed to investigate potential soil contamination.

Indoor Air Quality Investigation, Trenton, NJ

Performed IAQ investigation at a catholic charity building. Investigations were initiated by employee or occupant complaints concerning odors or physical reactions to supposed indoor air quality problems. Performed sampling for potential contaminants of concern, which included molds, bacteria and dust mites. Interpreted data received from sampling and prepared report which evaluated the sampling results as they compare to established guidelines and regulatory exposure levels.

Asbestos Building Inspection, Bala Cynwyd, PA

Performed a building inspection of a municipally owned gymnasium to identify potential ACMs. Using results of inspection, sampling and analysis plans were formulated to collect and analyze representative bulk samples of the potential ACM for determination of asbestos content. Following review of the analytical results, conclusions and recommendations were provided regarding the proper procedures for handling ACM.

Historic Fill Investigation, Camden, NJ

Investigated quality and characteristics of soils related to a state-owned aquarium expansion. Historic fills were suspected due to proximity to the Delaware River and past industrial uses. Work performed included determining sample locations, sample depths, soil logs and report writing.

6. Dr. George E. Thomas, Ph.D., Member, Civic Visions LP

GEORGE E. THOMAS, PH.D.

Professional Practice

George E. Thomas is a cultural and architectural historian practicing with Susan Nigra Snyder in CivicVisions, a consulting practice based in Philadelphia. They use research, analysis, and design to create urban and institutional identity for communities and colleges. Dr. Thomas's research investigates how regional history is expressed in contemporary life. He also teaches at the University of Pennsylvania where his courses in Urban Studies and Historic Preservation seek understanding the interconnection between history and patterns of modern life. In 1995 he was awarded the University's Provost's Award for Distinguished Teaching.

Dr. Thomas has written and lectured widely on nineteenth and early twentieth century American architecture with a particular focus on post- Civil War cultural history including *Cape May: Queen of the Seaside Resort* (Philadelphia: 1975) and *Drawing Toward Building: American Architectural Graphics 1732-1986* (Philadelphia: 1986). His research on post-Civil War American commercial and industrial architecture has broadened our understanding of the origins of modern design in the work of Pennsylvania architects serving industrial clients. In 1991 he was the principal author of *Frank Furness: The Complete Works* (Princeton Architectural Press) which reintroduced that vigorous Victorian to the American profession. His *Building America's First University: An Architectural and Historical Guide to the University of Pennsylvania* (University of Pennsylvania Press, 2000' with David Brownlee) places Philadelphia's university in the context of the industrial culture. His *William L. Price: From Arts and Crafts to Modern Design* (Princeton Architectural Press, 2000) extends this research into the twentieth century forging a link between the better-known modernism of the mid-west and the progressive architecture of the east coast that was rooted in the industrial culture.

Dr. Thomas's work on the region's history has been represented in numerous architectural exhibits beginning in 1973 with the Philadelphia Museum's "The Architecture of Frank Furness" and has continued in multiple books and exhibits including "William L. Price: Arts and Crafts to Modern Design" that traveled to the National Building Museum in 2001 and 2002. His own writing has as its central thesis the culture of innovation that was initiated by William Penn's open society and continued in the great industrial culture of the late 19th and early 20th century that culminated in the invention of ENIAC, the first computer in 1945. In 2000, Mr. Thomas was asked to organize a team to prepare the first comprehensive architectural and cultural guide to eastern Pennsylvania under the aegis of the Society of Architectural Historians Buildings of the United States series. *Buildings of the United States: Philadelphia and Eastern Pennsylvania* examines the role of Philadelphia and Eastern Pennsylvania in shaping the early nation while developing the theoretical frame of the ecological relationship between culture and design. That book was published in 2010.

Mr. Thomas has been active in the field of historic preservation since the early 1970s where he helped develop the role of the research team as an adjunct to architectural and planning professionals. Mr. Thomas was founding partner of the Clio Group, Inc. in 1977 and served as its president until 1988. There he directed a multi-disciplinary team of archaeologists, urban, architectural and landscape historians, materials conservators, and photographers. Working independently, and in conjunction with many of the region's premier architects, this team directed the preservation of many of the landmarks of the mid-Atlantic region including 30th Street Station and the University of Pennsylvania's Fisher Fine Arts Building. In 1978 he was a co-founder of the University of Pennsylvania's graduate program in Historic Preservation and in 2011 reprised that role with his colleague Susan Snyder, offering the introductory courses to Harvard University's Program in Critical Conservation. In 2013 they became

CivicVisions LP

co-directors of the Critical Conservation post-graduate program.

Dr. Thomas has supervised a Getty Grant for the restoration of the historic core buildings of Haverford College and serves as the historical consultant for the University of Pennsylvania and Haverford and Bryn Mawr College. Other recent college work includes: Bryn Mawr College Historic Resources Survey and Inventory, 2001; University of Pennsylvania, campus survey and inventory, 1989- present; Haverford College Historic Resources Survey and Inventory, 1999.

At CivicVisions, Ms. Snyder and Mr. Thomas's early work in Las Vegas was featured in an exhibit: *"East Fremont Street: Problem or Opportunity?"* and received broad newspaper, television and radio coverage. They have lectured together at the Yale University, University of Nevada and at Syracuse University in an architectural lecture series sponsored by the S.I. Newhouse School of Public Communications. Their work at Haverford College was summarized in an exhibit that they designed: *Place, Paint, and People: Four Eras of Haverford's Campus Identity*, funded by a Getty Foundation College Heritage Grant. Their session on *"Learning from Las Vegas in the Media Age"* was selected as one of the top 25 speakers at the American Institute of Architects' 2005 national convention. In December 2005 they were the keynote speakers for the Community and Economic Development Track of Creating Pennsylvania's Future: A Higher Education and Community Development Summit.

Founding Partner, CivicVisions LP 2002-present

Founding Principal, George E. Thomas Associates, 1992- 2002

Founding Partner, Clio Group, Inc. 1977; President, 1977-1988

Director of Historic Research, 1977 - 1992 with responsibility for: 30 National Register Historic District Nominations; over 100 individual National Register Nominations.

Historic Sites Surveys for the Pennsylvania Historic and Museum Commission: Center City, West Philadelphia, South Philadelphia, North Philadelphia, 1979 - 81: Atlantic City Historic Sites Survey, with Steven Izenour, for the Office of New Jersey Heritage, 1982: Cape May Point Historic Sites Survey for the Office of New Jersey Heritage, 1987.

Principal-in-Charge: Furness Building Historic Structures Report for the University of Pennsylvania, 1985-1990 with Venturi, Scott Brown Associates.

Principal-in-Charge: University of Pennsylvania Historic Resources Survey, 1989-90

Teaching

Harvard University, Harvard Graduate School of Design, Department of Architecture: Lecturer 2011 - ff.

University of Pennsylvania: Lecturer 1975-1976, 1979-present, Historic Preservation; Urban Studies; Architecture and City and Regional Planning; Teaching Fellow 1967-1969.

Education

Ph.D., University of Pennsylvania, History of Art, 1975, Samuel H. Kress Fellow, 1971-1972.

B.A., Dickinson College, 1966.

Professional Honors

2014, Adaptive Re-Use and Restoration of the American Chemical Heritage Foundation Storage Facility, Preservation Alliance Award for Adaptive Re-Use

2006, Restoration of the Hotel Fauchère, Milford, Pa PHMC Awards

2003, Lower Merion Conservancy Award for Bryn Mawr Student Village with Buell-Kratzer, Powell.

2002, AIA honor award for adaptive reuse of Bryn Mawr College's Frank Furness-designed Charles Perkins House, for adaptive reuse as the new Admissions Office, with Buell Kratzer, Powell.

2001, Lower Merion Conservancy Award for Charles Perkins House with Buell-Kratzer, Powell.

2001, Preservation Alliance Award, Perelman Quadrangle, with Venturi, Scott Brown and Associates, for the University of Pennsylvania.

1998, Preservation Service Award, Mid-Atlantic Center for the Arts, Cape May, NJ.

1995, Provost's Award for Distinguished Teaching, University of Pennsylvania.

1992, Advisory Council for Historic Preservation, President's Award for Furness Building, University of Pennsylvania, principal-in-charge, with Venturi, Scott-Brown and Associates.

1992, A.I.A. Honorary Mention, Frank Furness: The Complete Works (New York: Princeton Architectural Press, 1991), with Jeffrey A. Cohen, Michael J. Lewis and Robert Venturi, 1991, Pennsylvania Historic and Museum Commission, special award, Furness Building Restoration, principal-in-charge.

1991, Pennsylvania Historic and Museum Commission, special award, Old Economy Village Report, principal-in-charge, 1988-1990.

1988, Pennsylvania Society of Architects, "Service to the Profession" award.

Institutional Development

2003 Grant of \$250,000.00 from Getty College Heritage program for physical analysis of historic core buildings of Haverford College.

2003 Grant of \$250,000.00 from Getty College Heritage program for institutionalizing preservation practices at Bryn Mawr College.

2002 Grant of \$15,000.00 from Pennsylvania Historical and Museum Commission for Milford City Hall, Milford, PA.

2000 Grant of \$20,000.00 from Philadelphia Intervention Fund to assist 19th Street Baptist Church in emergency heater repairs.

2000 Grant of \$100,000.00 from Pennsylvania Historical and Museum Commission for roof restoration of 19th Street Baptist Church.

2000 Grant of \$290,000.00 from William B. Dietrich Foundation for exterior restoration of Frank Furness's Undine Barge Club

1999 Grant of \$60,000.00 from William B. Dietrich Foundation for architectural exhibition, "William L. Price: From Arts and Crafts to Modern Design."

CivicVisions LP

Publications

Books:

Forthcoming: *The Poetry of the Present: Frank Furness' Architecture in the Age of the Great Machines.*

Bischof, Libby and Susan Danly. *Maine Moderns: Art in Seguinland, 1900-1940*, New Haven, Yale University Press, 2011. With Susan Nigra Snyder, Special Photography & Maps

Buildings of the United States: Philadelphia and Eastern Pennsylvania, With Patricia Likos Ricci, Richard Webster, Bruce Thomas, Lawrence Newman and Robert Janasov. Charlottesville, VA, University of Virginia Press, 2010.

The University of Pennsylvania Campus Guide. New York, Princeton Architectural Press, 2002.

William L. Price: From Arts and Crafts to Modern Architecture. New York: Princeton Architectural Press, 2000.

Building America's First University: an architectural and cultural history and guide to the University of Pennsylvania. With David B. Brownlee. Philadelphia: University of Pennsylvania Press, 2000.

American Architectural Masterpieces of the Twentieth Century. With Michael J. Lewis. Reprint of Lewis Mumford and Oliver Reagan, *American Architecture of the Twentieth Century* (New York: 1927) and Hoak and Church, *Masterpieces of American Architecture*, (New York, 1931). Princeton Architectural Press, 1992.

Frank Furness: The Complete Works. With Michael J. Lewis and Jeffrey A. Cohen. New York: Princeton Architectural Press, February 1991, revised edition, 1996.

The Book of the School - 100 Years. With Ann Strong. Philadelphia: University of Pennsylvania Graduate School of Fine Arts, 1990.

Drawing Towards Building: Philadelphia Architectural Graphics 1732 - 1986. With James F. O'Gorman, Jeffrey A. Cohen, and G. Holmes Perkins. Philadelphia: University of Pennsylvania Press, 1986.

Cape May: Queen of the Seaside Resorts. With Carl E. Doebley. Philadelphia: Art Alliance Press, 1975; revised and enlarged, 1995.

William L. Price: Builder of Men and of Buildings. Ph.D. dissertation, University of Pennsylvania, 1975.

The Architecture of Frank Furness. Principal essay by James F. O'Gorman. Philadelphia: Philadelphia Museum of Art, 1973.

Articles & Chapters

With Susan Nigra Snyder, "From Ruskin to Pleasantville: Color as an Instrument of Social (dis)Agreement," *New Geographies 3: Urbanisms of Color*, Gareth Doherty, ed., Harvard University Graduate School of Design, (2011).

"From a Side Pew: Meditations on the Saints of St. Peter's," Cordelia Frances Biddle, et al., *St. Peter's Church: Faith and Action for 250 Years*, Philadelphia, Temple University Press, 2011.

With Susan Nigra Snyder, "William Price's Traymore Hotel: Modernity in the Mass Resort," *The Journal of Decorative and Propaganda Arts*, 25, *The Hotel*, (spring 2005), 186-213.

"Building Penn's Brand," *Pennsylvania Gazette*, 101:1 (Sept/Oct. 2002) 28-33.

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"'The Happy Employment of Means to Ends: Frank Furness's Library of the University of Pennsylvania and the Industrial Culture of Philadelphia,'" *Pennsylvania Magazine of History and Biography*, (April 2002).

"From Frontier to Center City: The Evolution of the Neighborhood of the Historical Society of Pennsylvania," *Pennsylvania Magazine of History and Biography*, 124 (January/ April 2000) 7-42.

"Frank Furness and the Poetry of the Present," Introduction to Ted Bosley, University of Pennsylvania Library. London: Phaidon, 1996.

"William Price's Rose Valley," Janet Kardon, ed. *The Ideal Home*, New York: American Craft Museum, 1993.

"Drexel University - An Architectural History of the Main Building, 1891-1991," Booklet published in conjunction with the Drexel University Centennial, 1991.

"A House Built on Sand: The Construction of Atlantic City's Traymore Hotel." *VIA 7*, 1984:8-21. "William L. Price, Architect: Prophet Without Honor" and "Rose Valley Architecture: Where Art Served Life." In *A Poor Sort of Heaven, A Good Sort of Earth: The Rose Valley Arts and Crafts Experiment*. William Ayres, ed. Chadds Ford, Pennsylvania: Brandywine River Museum, 1983: 23-26.

"Social Stratification and Architectural Patronage in Philadelphia, 1840-1920." In *The Divided Metropolis*. Howard Gillette and William Cutler, eds. Westport, Connecticut: Greenwood Press, 1980: 85-124

Philadelphia: Three Centuries of American Art. Darrel Sewell, ed. Philadelphia Museum of Art, 1976.

"The Pennsylvania Academy of the Fine Arts," "Centennial Exhibition Grounds and Buildings," "Peter A. B. Widener Mansion," "Art Club," "Philadelphia and Reading Terminal," "Rose Valley," "Jacob Reed's Sons' Store," "Walnut Lane Bridge," "Benjamin Franklin Parkway," "Philadelphia Savings Fund Society," "Casper Wistar Morris House," "Market Street National Bank," "Triangle Region Development Area," "Alfred Newton Richards Medical Building," "United Fund Headquarters," "Franklin Court," and various biographical notices.

"The Statue in the Garden" and "Art Deco Architecture and Sculpture." *Sculpture of a City: Philadelphia Treasures in Bronze and Stone*. Philadelphia: Fairmount Park Art Association, 1974.

"The Goals of William L. Price." In *A History of Rose Valley*. Peter Ham, ed. Rose Valley: privately published, 1973.

"The Politics of Destruction: When We Destroy the Past, We Also Destroy the Future." *Philadelphia Magazine* LXIV, no. 4 (April, 1973): 100 ff.

Architecture editor, *Evening Bulletin*, 1979-1980

Various reviews, articles, exhibitions, brochures and pamphlets, including "*Philadelphia: Panorama of a Civilization*" exhibition texts and brochures for 1895-1915 and 1915-1940.

Exhibitions

"Building a Modern Masterpiece: Frank Furness' Factory for Art": Pennsylvania Academy of the Fine Arts, Fall 2012; "Frank Furness: Working on the Railroads," Library Company of Philadelphia, fall 2012 – spring 2013; "Frank Furness's Machine for Learning: The University of Pennsylvania Library," with James F. O'Gorman, fall 2012; "Identity and Individualization: The Commercial Architecture of Frank Furness" Drexel University, fall 2012.; "Learning from Frank Furness: What Louis Sullivan

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learned in Philadelphia," Philadelphia Museum of Art, fall 2012.

With Susan Nigra Snyder, Special Photography & Map of Artists Houses in Phippsburg and Seguinland: "Maine Moderns: Art in Seguinland, 1900-1940," Portland Museum of Art, Portland, Maine, June 4-September 1, 2011.

Curator: "William L. Price: From Arts and Crafts to Modern Design," Arthur Ross Gallery, University of Pennsylvania, May - August, 2000; National Building Museum, Sept. 2001 – March 2002.

Curator and artist, "Cape May: Then and Now," photographs of Cape May in 1997 and the 1970s, Mid-Atlantic Center for the Arts Gallery, spring 1998.

Curator and artist: "When the Buildings Were White," photographs of Cape May, NJ in the 1970s, Genus Loci Gallery, spring 1996.

Curator, "Frank Furness: The Flowering of an American Architecture," Arthur Ross Gallery, University of Pennsylvania, 1991.

"100 For 100, History of the Graduate School of Fine Arts," exhibit concept and selection of objects, University of Pennsylvania, Fall 1990.

Exhibition Co-Organizer, "Drawing Towards Building: Philadelphia Architectural Graphics, 1732-1986." Pennsylvania Academy of the Fine Arts, October 9, 1986 - January 1987.

"Rose Valley," Brandywine Museum, Chadds Ford, Pennsylvania, Winter 1983.

"Philadelphia: Panorama of a Civilization," exhibition cycle, sponsored by the American Institute of Architects and funded by the National Endowment for the Humanities, with Carl Doebley, 1976: "The Eighteenth Century" at Pennsylvania Hospital; "1800-1840" at the Second Bank of the United States; "1840-1870" at Maxwell Mansion, Germantown; "1870-1895" at Drexel University; "1895-1915" at the University Museum; "1915-1940" at Strawbridge and Clothier Store; "1940-1976" at Municipal Services Building.

"A Victorian Masterpiece Rediscovered," co-curator with Hyman Myers, sponsored by the Pennsylvania Academy of the Fine Arts and the American Institute of Architects, 1974.

Curator, "The Restoration of the Pennsylvania Academy of the Fine Arts: A First Look," the Pennsylvania Academy of the Fine Arts, 1973.

"The Architecture of Frank Furness," co-curator with James F. O'Gorman, Hyman Myers, and the Division of Education, Philadelphia Museum of Art, 1973.

Selected Recent Lectures

"It's Not Your Mother's Main Street," International Downtown Association (IDA) National Conference, Milwaukee, with Susan Nigra Snyder, September 2009

"Learning from Las Vegas in the Media Age," Society for the History of Technology (SHOT) National Convention, Las Vegas, with Susan Nigra Snyder, October 2006.

"Frank Furness and the roots of American Modernism," June 2005, Preservation Alliance lecture series.

"Learning from Las Vegas in the Media Age," AIA National Convention, Las Vegas, with Susan Nigra Snyder, May 2005.

"From Our House to the Big House – Architectural Meaning in Philadelphia School Design," Society for

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the City and Regional Planning History, National Conference, St. Louis, Nov. 2003.

"The Madonna Effect: Learning From Las Vegas in the Media Age," Syracuse University Architectural Lecture Series, with Susan Nigra Snyder, April 2003.

"From Our House to the Big House," Lecture on Philadelphia School Buildings, Urban Studies, University of Pennsylvania. February 27, 2003.

"Frank Furness and the Pow of Now," Turner Brooks Seminar, with Susan Nigra Snyder, Yale University, October 2002

"Poles of Modern Design – Architecture as Sculpture or Engineered Grid," Inaugural lecture for Westphal Gallery series, Drexel University, 16 January 2003.

"Learning from the present: the industrial ornament of Frank Furness and the J. G. Cassatt House," Annual Lecture, Library Company of Philadelphia, 15 October 2002. "The Importance of Being Philadelphian: Philadelphia architecture from Furness to Venturi;" College Art Association National Conference, Philadelphia February 2002.

"From Holy Experiment to Wholly Experimental," Buildings of the United States session, Society of Architectural Historians International conference, Toronto, April 2001.

"William L. Price: Prophet Without Honor," National Building Museum lecture series, 1 May 2000. "American Preservation Practice," State Department lectures for representatives from Tatarstan, Russian Republic, 9 February 2001.

"The Religious Institution in the Community," Historic Religious Properties workshop for PHMC, Jim Thorpe, PA, 18 November 2000. "Disparate Ores: The architectural melting pot of the Delaware Valley," "Worldly Goods" Symposium, Philadelphia Art Museum, November 1999.

"A Walk Around the Block: The Historical Society's Neighborhood in 1900," Annual lecture for the Historical Society of Pennsylvania, 17 November 1998. "William L. Price: Modern Architecture in the Mid-Atlantic Region," Tile Heritage Society, Annual meeting, 15 October 1998. "Frank Furness and the Industrial Culture of Philadelphia," Pennsylvania Academy of the Fine Arts, 10 July 1998.

Horace Trumbauer: Builder of Dreams," Beaver College President's Dinner, 21 November 1998.

"Frank Furness: Learning from the present," Connecticut College Architectural Program Lecture series, 18 February 1998 "Society for Commercial Archaeology National Conference: "The Meaning of Names in the Cultural Universe: Cape May, Atlantic City, Wildwood," Wildwood, NJ, 20 September 1997.

"New Wine in Old Bottles: The Building of Penn's Graduate School of Fine Arts," Society of Architectural Historians, National Conference: Baltimore, MD 19 April 1997. Keynote address: Chestnut Hill Historical Society 30th Anniversary Lecture Series, "Deconstructing

Chestnut Hill: the Social and Architectural History of the pre-Houston Village" 23 February 1997.

University of Pennsylvania Art History Colloquium, "Frank Furness's Muse: the Poetry of the Present," 21 February 1997. "William L. Price: Utopian Realist," Arden Single Tax Association dinner, 18 January 1997. "William L. Price: Builder of Men and of Buildings," Rose Valley anniversary lecture series, 20 May

- 7. William Schwartz, Co-Founder and Principal; Phil Moses, LEED AP, Principal-in-Charge; Matthew Ritsko, AIA, LEED AP, Project Director; Dave Hofmann, Pre-Construction Director; AND John Neimeister, General Superintendent, INTECH Contractors and Construction Managers**



WILLIAM SCHWARTZ
CO-FOUNDER, PRINCIPAL

Bachelor of Science in Construction Engineering/Management, Massachusetts Institute of Technology

COMMUNITY INVOLVEMENT

University City District - Board of Directors
The Shipley School - Board of Trustees

SUMMARY

As co-founder of INTECH Construction, Will Schwartz, along with his partner Craig "Sab" Sabatino, has built INTECH from its humble beginnings in 1986 into a dynamic force in the commercial construction industry. With an inherent sense of fairness, combined with a strong determination to deliver on promises made, Will is a hands-on "passionate principal." He takes an active leadership role, guiding the company to successfully meet project challenges, and maximizing value for our clients. As a first generation company, INTECH benefits from the ongoing vision, experience, and leadership strength of its original founders.

Strongly relationship-oriented, Will is motivated by personal integrity and the strength of his word. His resolute work ethic inspires others to do their best, while his down to earth personality earns him the respect and cooperation of peers, project teams, owners, and architects. Will's extensive experience constructing a wide variety of building types enables him to solve complex project issues, while his innovative nature encourages the exploration of possibilities. Through his commitment to creative problem-solving and an inclination toward collaboration and consensus-building, Will is dedicated to constructing high quality work, achieving project budgets, and implementing excellent design in the field.

INTECH is committed to ethical behavior as we contribute toward the economic development of our region. Central to our corporate responsibility is the importance we place on safety, diversity, community, and sustainability – goals that originate with the company's co-founders, and that strive for improvement in the lives of our workforce and the community at large. Through his personal philanthropic efforts, Will sets an example that inspires others in the company. INTECH has long-standing relationships with charitable organizations that provide assistance to groups in need; generous in his commitment to share the fruits of INTECH's labor through financial support, Will also recognizes that time spent can be even more valuable. He serves as an active board member of several organizations in Philadelphia, and also commits the resources of the entire company to a civic group or community through INTECH's annual Day of Service.

Clients who have worked with INTECH can attest to Will's dedication, commitment, and involvement in the daily activities of each job he oversees. Unique for a company owner in the Philadelphia region, he is an active Principal-in-Charge with a strong project focus, following projects through from Pre-Construction all the way to project close-out. Will has an understanding and attention to detail that establishes a standard of excellence for project teams. He effectively bridges client vision with construction realities, and continually looks toward improving INTECH's performance in project delivery, in support of our region, and in service to our clients.

"... you have remained personally involved, and that presence has been of enormous value to both Polshak Partnership, and the client."

- Joseph Fleischer, FAIA, Partner, Polshak Partnership Architects



PHIL MOSES, LEED AP
PRINCIPAL-IN-CHARGE

Master in Business Administration, Pennsylvania State University
 Bachelor of Science in Civil Engineering, Villanova University

Phil Moses is a Principal and Vice President, with 20 years of professional construction industry experience. Phil oversees INTECH's Pre-Construction Department, providing leadership to our in-house team of Specialty Estimators, the Marketing and Business Development effort, and the company's Diversity/ Community Engagement initiatives.

Phil has managed several of INTECH's major projects. With experience for academic, healthcare, residential, and corporate clients, Phil has demonstrated a proven ability to oversee complex projects, coordinating large teams with a high degree of collaboration. Phil is actively involved in his projects, beginning during the Pre-Construction phase, managing his teams through the transition into construction, and seeing the project through to formal closeout.

EXPERIENCE RELEVANT TO THIS PROJECT

PROJECT	DESCRIPTION	COST
3601 MARKET STREET Philadelphia, PA	<ul style="list-style-type: none"> • 435,000 SF • 28-story mixed-use development includes ground floor retail space • Five levels of parking to accommodate 190 cars • 362 residential units are a combination of studio, one and two-bedroom apartments 	\$91M
UNIVERSITY OF PENNSYLVANIA NEW COLLEGE HOUSE Philadelphia, PA	<ul style="list-style-type: none"> • 195,000 SF • New 350-bed, seven-story, student housing complex • Public space amenities, social and academic spaces, kitchen and dining hall • Extensive hardscape and landscape work 	\$98M
CORINTHIAN CONDOMINIUMS Bala Cynwyd, PA	<ul style="list-style-type: none"> • 370,000 SF • New six-story condominium above a two-story structured parking garage • 108 residential units, gymnasium, meeting room, and ornate lobby with concierge • Constrained site, bounded on one side by a 30-foot soil nail retaining wall 	\$44M
CURTIS INSTITUTE OF MUSIC LENFEST HALL Philadelphia, PA	<ul style="list-style-type: none"> • 106,000 SF • New nine-story student residence facility • Student dining and lounge, servery, teaching studios, rehearsal rooms, and performance spaces • Tight urban site with demolition of existing buildings and facade stabilization of two historically certified buildings 	\$55M

"INTECH's expertise and professionalism have helped build confidence in and support for our project. Phil Moses and INTECH have my highest recommendation."

- Ms. Elizabeth B. Warshawer, Executive Vice President, Curtis Institute of Music



MATT RITSKO, AIA, LEED AP
PROJECT DIRECTOR

Bachelor of Architecture, Pennsylvania State University
Bachelor of Arts in Art, Pennsylvania State University

Drawing on his experience in design, construction, and facilities management, Matt leads project teams with a multidisciplinary and collaborative approach that ensures project success. Matt combines unparalleled technical knowledge with the ability to converse easily among diverse groups of stakeholders in order to interpret and effectively communicate the goals and requirements of building projects. His experience with complex programs, congested sites, and aggressive timeframes allows him to exercise careful control of budgets and schedules while maintaining exceptional quality, remaining committed to sustainability, and achieving efficient project closeout.

In addition to his Project Management skills, Matt is thoroughly versed in Pre-Construction services including estimating, budgeting, scope writing, bidding, and value engineering.

EXPERIENCE RELEVANT TO THIS PROJECT

PROJECT	DESCRIPTION	COST
3601 MARKET STREET Philadelphia, PA	<ul style="list-style-type: none"> • 435,000 SF • 28-story mixed-use development includes ground floor retail space • Five levels of parking to accommodate 190 cars • 362 residential units are a combination of studio, one and two-bedroom apartments 	\$91M
NATIONAL MUSEUM OF AMERICAN JEWISH HISTORY Philadelphia, PA	<ul style="list-style-type: none"> • 102,000 SF • New Museum on Independence Mall • Temporary and permanent exhibits, event space, classrooms, auditorium, retail store, and administrative offices • Extensive logistic and safety coordination, including maintaining an operational SEPTA entrance throughout demolition and construction 	\$65M
SYMPHONY HOUSE CONDOMINIUMS AND SUZANNE ROBERTS THEATRE Philadelphia, PA	<ul style="list-style-type: none"> • 562,000 SF • New 31-story luxury condominium tower atop a seven-level parking garage and 400-seat live performance facility • 163 units, spa/fitness center, club room, dining salon, boardroom, and wine cellar • Acoustically-isolated auditorium and stagehouse with state-of-the-art sound and lighting systems 	\$80M
TEMPLE UNIVERSITY LIACOURAS WALK Philadelphia, PA	<ul style="list-style-type: none"> • 75,000 SF • New five-story student services building • President's residence, ballroom, mechanical room, classrooms, office spaces, and reception area • Restoration of 130-year-old brick façade, requiring intricate stabilization of existing walls 	\$16M

"Matt has established a reputation as an excellent Project Manager. His motivation, professionalism and integrity reflect greatly on himself and all who retain his services."

- George Robinson, Vice President, James G. Davis Construction



DAVE HOFMANN
PRE-CONSTRUCTION DIRECTOR

Bachelor of Science in Civil / Construction Engineering Technology, Temple University
 Associates of Science in Civil / Architectural Engineering Technology, Pennsylvania Institute of Technology

With 20 years in the construction industry, Dave has experience in all aspects of the Pre-Construction process. Dave guides INTECH's in-house Pre-Construction team of specialty estimators, coordinating the various details of a project's early stages. His leadership at the early stages of a project ensures a seamless transition into construction. In addition to a high level of skill in the areas of budget development, value engineering, bid packaging, and purchasing, he maintains a deep understanding of design and program goals for the projects. He has worked on projects from a few hundred thousand dollars to projects worth hundreds of millions. He has worked on a variety of projects including secondary and higher education, health care, mixed use, multi-family residential, entertainment, gaming, hospitality, hotels, office, correctional, pharmaceutical, and government facilities.

Dave works closely with Owners and design professionals to develop accurate budget estimates at all stages of design. This allows the project team to make informed decisions early in the pre-construction process. His attention to detail and ability to work well with others makes him a highly valuable member of INTECH's Pre-Construction team.

EXPERIENCE RELEVANT TO THIS PROJECT, IN ADDITION TO 3601 MARKET STREET

PROJECT	DESCRIPTION	COST
3737 CHESTNUT Philadelphia, PA	<ul style="list-style-type: none"> • 336,000 SF • Mixed-use project consists of three distinct components: new construction of a 25-story apartment tower, new construction of a three-story office building, and a 10,800 SF renovation to add a daycare facility • 287,000 SF apartment tower, designed as a concrete structural frame with window wall cladding • Underground parking for residents 	\$70M
500 WALNUT Philadelphia, PA	<ul style="list-style-type: none"> • 213,000 SF • 26-story ultra-luxe tower features an intimate collection of only 38 exclusive residences • Residences range from 2,700 SF to full-floor units of over 4,300 SF • Amenities include a fully robotic automated parking system with 90 parking spaces, state-of-the-art fitness facility, a 50-foot lap pool, board room with catering kitchen, entertainment lounge area, and a fully landscaped 4,000 SF outdoor terrace 	\$94M
RODIN SQUARE Philadelphia, PA	<ul style="list-style-type: none"> • 651,000 SF • Mixed-use development building including a 60,000 SF grocery store with a prominent glass façade, office and retail space • Grocery component served by one level of below-grade parking • 293 luxury apartment units on nine levels, landscaped roof terrace, swimming pool, landscaping, green roofs, and spaces for gathering, relaxing, and exercising 	\$120M
MUSEUM TOWERS II Philadelphia, PA	<ul style="list-style-type: none"> • 444,000 SF • Project consists of four distinct components: new construction of a 16-story apartment tower, sixteen townhomes, a four-story parking garage, and a lobby renovation • Apartment tower will include 270 apartment units with ground floor and rooftop amenities • It is designed as a steel girder-slab system with window wall cladding 	\$89M



JOHN NEIMEISTER
GENERAL SUPERINTENDENT

Construction Management Coursework, Drexel University
Bachelor of Arts in History, Rowan University

John Neimeister, with 38 years of construction experience, has led teams in the field for the largest and most complex projects undertaken by INTECH. When it comes to getting a complicated project coordinated, built, and built well, John is hard-driving and aggressive. As one of the most well-known and respected superintendents in the Philadelphia area, John has twice been honored as the Superintendent of the Year by the Subcontractors Association of the Delaware Valley.

His reputation has been earned through extensive experience and hard work on a unique combination of projects in the areas of healthcare, residential, retail, and academia, all with major site development components. He handles intricate issues of site logistics with aplomb, deftly coordinating the many difficult tasks involved in large-scale projects.

EXPERIENCE RELEVANT TO THIS PROJECT

PROJECT	DESCRIPTION	COST
3601 MARKET STREET Philadelphia, PA	<ul style="list-style-type: none"> • 435,000 SF • 28-story mixed-use development includes ground floor retail space • Five levels of parking to accommodate 190 cars • 362 residential units are a combination of studio, one and two-bedroom apartments 	\$91M
THE EPISCOPAL ACADEMY NEW CAMPUS Newtown Square, PA	<ul style="list-style-type: none"> • 364,000 SF / 120 acres • New Campus Center, Lower School, Academic Building, and Athletic Center • Extensive site work, playing fields for football, tennis, soccer, softball, baseball, and lacrosse • Multiple architects 	\$120M
CORINTHIAN CONDOMINIUMS Bala Cynwyd, PA	<ul style="list-style-type: none"> • 370,000 SF • New six-story condominium above a two-story structured parking garage • 108 residential units, gymnasium, meeting room, and ornate lobby with concierge • Constrained site, bounded on one side by a 30-foot soil nail retaining wall 	\$44M
CURTIS INSTITUTE OF MUSIC LENFEST HALL Philadelphia, PA	<ul style="list-style-type: none"> • 106,000 SF • New nine-story student residence facility • Student dining and lounge, servery, teaching studios, rehearsal rooms, and performance spaces • Tight urban site with demolition of existing buildings and facade stabilization of two historically certified buildings 	\$55M

"At our Metroplex project, John has effectively been able to manage a massive sitework package concurrently with the construction of 12 buildings. His coordination talents and ability to work under severe site constraints are extraordinary. His command of the subcontractors and, in turn, their respect for him, is very evident."

- Colin Jones, Vice President of Construction, The Goldenberg Group

8. **John J. Coyle 3rd, MAI, CRE, President and Director of Regional Valuation
Department of Coyle, Lynch & Company Valuation Advisory Services**

COYLE, LYNCH & COMPANY

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JOHN J. COYLE 3RD, MAI, CRE + ◊ • Δ

JOHN ANTHONY EGAN, MAI, SRA +

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JOHN J. COYLE 4TH, JD, MAI + ◊

BRIAN WILBUR COYLE, MAI + ◊ •

MACK E. WELLER +

MICHAEL J. MCCLOSKEY, JR., MAI, USMC
OF COUNSEL
(1972 - 2008)

+ PA CERTIFIED GENERAL REAL ESTATE APPRAISER

◊ NJ CERTIFIED GENERAL REAL ESTATE APPRAISER

◊ DE CERTIFIED GENERAL REAL ESTATE APPRAISER

• NY CERTIFIED GENERAL REAL ESTATE APPRAISER

± MD CERTIFIED GENERAL REAL ESTATE APPRAISER

Δ TX CERTIFIED GENERAL REAL ESTATE APPRAISER

PROFESSIONAL PROFILE

JOHN J. COYLE 3RD, MAI, CRE

PRESENT POSITION:

President and Director of the Regional Valuation Department of Coyle, Lynch & Company; Vice President of Coyle Real Estate Company; Director of Real Estate Valuation of Corporate Valuation Advisors; and Vice President of Delaware Valley Realty Advisors, Inc.

Mr. Coyle is a co-director of, co-manager of, and partial owner of the Henderson Group, Inc. The Henderson Group developed, owns, and manages 2,600,000 square feet of industrial, office, and retail properties in 48 buildings in 5 communities in the western Philadelphia, PA (Delaware County) suburbs, and 600,000 square feet of industrial and office space in 11 buildings in Melbourne, FL (Brevard County).

CERTIFICATION:

Mr. Coyle is a licensed Real Estate Broker (RM-024731-A) in the Commonwealth of Pennsylvania since 1972; and a Certified General Real Estate Appraiser in the Commonwealth of Pennsylvania (#GA-397L) since the enactment of the Real Estate Appraisers Certification Act No. 98 of 1990; in the State of New Jersey (#RG-1630); in the State of Delaware (#X10000145); in the State of New York (#46000018883); in the State of Colorado (#CG100003812); and in the State of Texas (#TX-1335204-G). In recent years, Mr. Coyle has also received reciprocal practice certificates in Rhode Island, Tennessee, Connecticut, Maryland, Virginia,

North Carolina, Oklahoma, California, Georgia, Florida, and New Hampshire. Mr. Coyle has met the current continuing educational requirements in each state in which he is certified and for each professional organization of which he is a member.

PAST EXPERIENCE:

Mr. Coyle's previous positions include Vice President of Strategis Asset Valuation & Management Company (formerly Realty Appraisals Company); President of Northland Appraisal Company; and Staff Appraiser for Jackson Cross Company.

PROFESSIONAL SOCIETIES:

Mr. Coyle is an MAI member and an SRA member of the Appraisal Institute (the merged entity of the former American Institute of Real Estate Appraisers and the former Society of Real Estate Appraisers), a CRE member of the Counselors of Real Estate, and a Hoyt Fellow of the Homer Hoyt Institute for Advanced Studies. Mr. Coyle is also a Realtor Member of the Delaware Valley Association of Realtors, and past President and Director of the Delaware County Association of Realtors and the Philadelphia Chapter of the Society of Real Estate Appraisers; served as District Governor of the Society of Real Estate Appraisers; and served on the national Board of Directors of the Appraisal Institute. Mr. Coyle presently serves as a Director of the Delaware County Industrial Development Authority.

PROPERTY TYPES EVALUATED:

Since 1972, Mr. Coyle has applied his expertise to a wide range of valuation problems. Property types appraised include improved real and personal property assets in the broad classifications of industrial, residential, institutional, commercial, agricultural, and special purpose properties, and a diverse array of undeveloped acreage and developed land. Improved industrial facilities appraised include light, medium, and heavy duty manufacturing plants; laboratory facilities; petroleum refineries; petroleum storage facilities; breweries; processing plants; chemical plants; pilot plants; warehouses; flex buildings; research and development facilities; transportation terminals; food processing plants; landfills; quarries; power generating facilities; and waterfront terminal facilities. Improved residential property types appraised include single family dwellings; garden, mid-rise, and high rise apartment buildings; and congregate care facilities; nursing homes; and

continuing care retirement communities. Improved institutional properties appraised include hospitals; colleges; schools; churches; and parsonages. Improved commercial property types appraised include regional shopping malls; regional, community and neighborhood shopping centers; hotels and motels; office buildings; service stations; operations centers; car washes; convenience stores; golf courses; marinas; mobile home parks; and department stores. Improved agricultural properties appraised include farms; fisheries; orchards; ranches; and commercially operated agribusiness facilities. Special purpose properties appraised include railroad rights of way; natural resource tracts consisting of timberlands; water rights; and peat, coal, and limestone reserves; amusement parks; cemeteries; restaurants; bowling alleys; parking garages; pipelines; water distribution systems; sewage treatment plants; and various forms of environmentally challenged properties. Property interests appraised include fee simple estates, leasehold estates, reversionary interests, life estates, leased fee estates, air rights, subsurface rights, and easements, including conservation easements.

EDUCATION:

Mr. Coyle is a graduate of The American University with an MS in Real Estate and Urban Development Planning; and a graduate of Saint Joseph's University with a BS in Business Administration. He has also completed coursework in valuation and related topics presented by the Appraisal Institute, the Society of Office and Industrial Realtors, the American Society of Appraisers, the Center for Business Intelligence, the RS Means Company, the Colorado School of Mines; and the Massachusetts Institute of Technology.

SCOPE OF ASSIGNMENTS:

Mr. Coyle has participated in appraisal and consulting assignments in 51 of the 67 counties in Pennsylvania, each of the 3 counties in Delaware, 20 of the 21 counties in New Jersey, and 33 of the 57 counties in New York. He has worked in 38 of the continental United States for private individuals, corporations, governmental agencies, law firms, and lending institutions in connection with the sale and acquisition of real estate; corporate dissolutions; mortgage financing; ad valorem, income, and estate tax litigation; bankruptcy proceedings; security offerings; condemnation matters; risk control issues; and portfolio management assignments.

EXPERT TESTIMONY:

Mr. Coyle has been qualified as an expert in the valuation of real and/or personal property in the Court of Common Pleas in 28 of the 67 counties in the Commonwealth of Pennsylvania; in the United States District Court for the Eastern District of Pennsylvania; in the Supreme Court of the State of New York; in the Tax Court of the State of New Jersey; in the Chancery Court of the State of Delaware; and in various quasi-judicial proceedings before boards and panels throughout the geographic area he has served.

10/14

9. Peter Angelides, Principal, EConsult Solutions, Inc.

PETER A. ANGELIDES, PhD, AICP

October 2015

Econsult Solutions, Inc.
1435 Walnut Street, 3rd Floor
Philadelphia, PA 19102
215-717-2777
Email: angelides@econsultsolutions.com

EDUCATION

University of Minnesota

Doctor of Philosophy in Economics, February 1998
Master of Science in Economics, December 1996
Thesis topic: "Auto Ownership and Mode Choice: A Structural Approach"
Fields: Industrial Organization, Financial Economics

University of Pennsylvania

Master of City Planning, May 1988
Bachelor of Arts – Major: Urban Studies (Honors); Minor: Mathematics, May 1987

WORK EXPERIENCE

CURRENT POSITIONS

Econsult Solutions, Inc., Philadelphia, PA, *Principal*, 2013 – Present.

- Conduct economic, financial and strategic analyses for public and private entities.
- Concentrations include real estate development, transportation, economic development, economic and fiscal impacts, and financial modeling.

University of Pennsylvania, Philadelphia, PA, *Faculty*, 2004 – Present

- Fels Institute of Government, Department of City and Regional Planning

Delaware Valley Smart Growth Alliance – Primary Juror, Business Caucus

Design Advocacy Group – Steering Committee

PenTrans – Board of Directors

St. Peter's School – Finance Committee

Urban Land Institute – Capital Markets Council, Technical Assistance Program Council

PAST POSITIONS

Econsult Corporation, Philadelphia, PA, *Vice President and Director*, 2008 – 2012.

PricewaterhouseCoopers, Philadelphia, PA, *Manager, Director*, 2001-2008

- Provided economic and statistical modeling and analysis in business consulting, litigation and regulatory matters.
- Major work included litigation support in a variety of industries and case-types, setting prices for intellectual property and services, and evaluating the impact of royalty licensing agreements.

Charles River Associates, *Senior Associate*, Washington, DC, 1999-2001

- Provided economic analysis, primarily for Fortune 500 companies seeking Federal regulatory approval for mergers or joint ventures. Antitrust, commercial damages.

PHB Hagler Bailly / Putnam, Hayes & Bartlett, *Consultant*, Washington, DC, 1997-1999

- Economic and litigation consulting in the telecom, energy, pharmaceutical, and postal industries

University of Minnesota, *Instructor*, 1993-1997

- Taught eleven undergraduate and master's level economics classes and supervised more than 30 independent study projects.

Wallace Roberts & Todd, Philadelphia, PA, *Urban and Environmental Planner*, 1990-1992

- Provided planning services to private developers, state and county government, and the Washington Metropolitan Area Transportation Authority.
- Projects included preparation of county level master plans, analyzing the impact of statewide zoning changes, updating municipal zoning codes, and preparation of environmental impact statements.

Central Philadelphia Development Corporation, *Planner/Intern*, 1988-1990

- Supported the activities of CPDC committees and conducted numerous analyses in support of CPDC's initiative to create what became the Center City District.

SELECTED PROJECTS

Consulting and Planning

- Commonwealth of Pennsylvania, Legislative Budget and Finance Committee - *The Current Condition and Future Viability of Casino Gaming in Pennsylvania*. Assessed the state of the casino industry in Pennsylvania, forecast future revenue for the state in the face of increasing

competition from other states, identified profit enhancing regulatory changes, and estimated the value of potential additional forms of gaming.

- SEPTA – *Understanding SEPTA’s Statewide Economic Impact*. Valued the economic impact of SEPTA’s expenditures, as well as SEPTA’s importance to the region’s productivity.
- City of Chester – *Revitalization Plan for the Chester Transportation Center*. Analyzed the Chester SEPTA station and surrounding areas for economic development opportunities.
- University of Delaware – Participated in the creation of a strategic plan for a large newly acquired parcel adjacent to its main campus. (Newark, DE)
- Estimated the economic impact of a proposed coal mine on a mid-western state. The analysis included a calculation of the overall economic impact on the state, including output, wages, jobs and taxes.
- Marcus Hook – *Economic Development Agenda for Marcus Hook*. Identified economic development strategies and analyzed the potential for a land value tax or tax abatement in Marcus Hook.
- Delaware Valley Regional Planning Commission – *Using Toll Revenue to Finance Highway and Transit Capital Improvements*. Analyzed the ability of tolls on US 422 to finance roadway upgrades and the re-establishment of commuter rail service to Philadelphia. (Pennsylvania)
- Select Greater Philadelphia – *US 422 Improvements – Potential Economic Impacts*. Prepared an assessment of the potential economic impacts of restored passenger rail service and upgraded highway infrastructure in the US 422 corridor. (Pennsylvania)
- Philadelphia Water Department – *Economic Analysis of Stormwater Fee Changes on Philadelphia Businesses* (Philadelphia, PA)
- King of Prussia Business Improvement District – *Development Incentives Package For the King of Prussia Business Improvement District* (King of Prussia, PA)
- City of Coatesville – *Vision plan and retail study as part of Coatesville’s economic development strategy*. (Coatesville, PA)
- City of Coatesville – Prepared an Economic Development Strategy for the City of Coatesville, Pennsylvania. The strategy addressed ways to increase Coatesville’s

attractiveness as a place to live and work, and analyzed the current tax receipts to guide future development efforts. (Coatesville, PA)

- New Jersey Council On Affordable Housing (COAH) – Created a real estate development feasibility model. COAH uses this pro-forma based model to evaluate the financial performance of proposed private real estate developments in instances where the developer is petitioning COAH with regard to the affordable housing component of the development. (New Jersey)
- New Jersey Council On Affordable Housing (COAH) – Analyzed housing and employment growth at the municipal level for purposes of determining affordable housing requirements in the state. (New Jersey)
- Evaluated the feasibility of the market rate components of an inclusionary development in Cinnaminson, New Jersey to support the construction of affordable housing. The analysis was prepared for an Acting Special Master to the Superior Court Judge to assist the court determine whether the proposed development was “economically Feasible” for the purpose of applying for Low Income Tax Credit Financing through the New Jersey Housing Mortgage and Finance Agency. (New Jersey)
- New Jersey Housing Mortgage and Finance Agency (HMFA) – *Analysis of Four HOPE VI Development Proposals*. Evaluated the appropriateness of development costs for several affordable housing projects. (New Jersey)
- New Jersey Housing and Mortgage Finance Agency (HMFA) – Analyze the economic feasibility of multiple housing developments with and without tax credit assistance. (New Jersey)
- Coalition for Main Street Fairness - *The Impact of Not Collecting Sales and Use Taxes from Internet Sales into Pennsylvania*. Analyzed the economic consequences to Pennsylvania if it were able to collect sales tax from all internet retailers (Pennsylvania)
- Transportation Investment Generating Economic Recovery - Prepared benefit-cost analysis for numerous TIGER grant applications:
 - Bronx River Alliance – Bronx River Greenway multiuse trail (New York City) \$10 million awarded
 - Central Philadelphia Development Corporation – Bicycle Lanes and Pedestrian Improvements to Market Street and JFK Boulevard (Philadelphia, PA)
 - Central Philadelphia Development Corporation – Renovation of Dilworth Plaza (Philadelphia, PA) \$15 million awarded
 - Lower Merion Township – Ardmore Transportation Center (Lower Merion, PA)

- New Haven (City) – Downtown Crossing urban boulevard, Phase II (New Haven, CT)
 - PATCO – Franklin Square station reopening (Philadelphia, PA)
 - Philadelphia Museum of Art – Roadway and Pedestrian Concourse Improvements (Philadelphia, PA)
 - Streetworks – Quincy Green project (Quincy, MA)
 - Waretown – Roadway Improvements for a New Town Center (Waretown, NJ)
 - Secaucus Brownfield Development Corporation – Parking lot at the Lautenberg – Secaucus Train Station (Secaucus, NJ)
 - Southeastern Pennsylvania Transportation Authority (SEPTA) – Track Segregation of the West Trenton line so CSX and SEPTA traffic does not intermix (Bucks County, PA). \$10 million awarded
 - Waterbury Connecticut – Waterbury Green bicycle path, access improvements and other greening elements (Waterbury, CT)
- Regional Municipality of Wood Buffalo – *Real Estate Solutions for the Regional Municipality*. Recommended development strategies for rapidly growing municipality near Alberta’s oil sands (Alberta, Canada)
 - Delaware Valley Healthcare Funders – *The Economic and Fiscal Impacts of Medicaid Expansion in Pennsylvania*. Conducted analysis regarding the incremental effect of Medicaid expansion from the baseline set by the Affordable Care Act.
 - Bureau of Labor Statistics - *Analysis of Possible Data Sources for the Estimation of Owner Equivalent Rent*. Conducted four analyses for the BLS to help them improve calculation of the Consumer Price Index. (Washington, DC)
 - Central Philadelphia Development Corporation (CPDC) – *Fiscal Impacts of the Proposed 22nd Street Subway Station*. Evaluated potential economic and fiscal impacts. (Philadelphia, PA)
 - Parkway Council Foundation – Examined alternatives for reconfiguring Eakins Oval in front of the Philadelphia Museum of Art and the intersection of 25th Street, Pennsylvania Avenue, Kelly Drive and Fairmount Avenue. (Philadelphia, PA)
 - Parkway Council Foundation – Prepared a strategic plan to assist the Parkway Council Foundation realize its vision for the Benjamin Franklin Parkway in Philadelphia as an exceptional cultural destination. (Philadelphia, PA)
 - Studied strategic investments in commercial corridors in Philadelphia. The study combined extensive, locally unprecedented data gathering with thorough econometric analysis to investigate the drivers of commercial success for all 265 retail corridors in Philadelphia. The

study included an examination of which City and non-profit based interventions in corridors were effective in improving corridor performance. The analysis also included a simulation tool to model and predict the impact of future interventions on corridors.

- Analyzed the Philadelphia Parking Tax for the Philadelphia Parking Association. The analysis investigated the share of revenue devoted to state and local taxes in several industries, the impact of the parking tax on the ability to develop parking facilities, and the impact of the tax on parking prices.
- Lower Merion Township - Evaluated proposals for the mixed-use, transit-oriented development in Ardmore, PA. This ongoing engagement provides Lower Merion Township with assistance in evaluating alternative development proposals for downtown Ardmore. The project includes the evaluation of residential, commercial and public uses, and assists in navigating the complex world of public-private partnerships with multiple interested public and private parties. (Lower Merion, PA)
- New York City Economic Development Corporation – Assessed the competitiveness of trash collection market in New York City. The assessment included calculation of market shares from data collected by the regulator, analysis of costs and ownership structures, and the use of a large survey. As a result of the analysis, the City proposed increasing the price cap governing haulers. (New York, NY)
- Evaluated the rates and claims experience of a health plan for a major health insurance company investigating the cause of an increase in claims from one of its clients. A major part of investigation concerned the analysis of several large claims and enrollment databases to determine the underlying causes for a large increase in claims per member.
- Assisted a software company conduct an internal review of an advertising campaign which involved numerical claims. The assignment involved liaising with the internal and external creators of the campaign to recreate the model underlying the claims, and to conduct additional modeling to extend the analysis. The analysis focused on two main issues - was the numerical calculation properly done, and was the numerical calculation appropriate for the purposes of the campaign.
- Prepared a land consumption analysis for a Mid-Atlantic state experiencing rapid suburbanization and construction on the fringes of metropolitan areas. The county-by-county analysis projected the percent of land that would remain undeveloped after 30 years of growth.
- Prepared Environmental Impact Statements for the Washington Metropolitan Transportation Authority as it sought regulatory approval for the expansion of its heavy rail network. The Statements reviewed visual, construction, noise and other impacts to land use, historic assets,

wetlands and other natural features. Based on the analysis in the statements, the final designs of the projects were modified to ameliorate the identified impacts.

- Monroe County – Prepared analyses in support of a master plan for Monroe County, Florida. The analysis included the preparation of thematic maps, proposed land uses, and calculations regarding housing capacity. A major constraint was consideration of evacuation capacity in the event of a hurricane. (Florida)

Regulatory

- Conducted market power analyses and prepared testimony for the Federal Energy Regulatory Commission regarding the following matters:
 - Market power studies for ancillary services, for sale at market-based rates into the California Independent System Operator, in support of the sale of generating capacity from Pacific Gas & Electric to Southern Energy.
 - Market power studies in support of market based rate authority for sale of ancillary services to ISO New England. (FERC Section 203)
 - Market power studies in support of the purchase by the Southern Company of several generating units in New England. (FERC Section 205)
 - Market power studies in support of the purchase by the Southern Company of several generating units in New York
- Analyzed the rate structure of the U.S. Postal Service in an omnibus postal rates case, and modeled the impact of different pricing theories on the rates for the various classes of mail. Prepared testimony regarding the new pricing method, which was filed with the Postal Rate Commission. Concurrently, analyzed testimony and models of several Postal Service witnesses in the rate case for consistency with the requirements of Postal Service's enabling legislation.
- Analyzed U.S. Postal Service volume forecasts for a category of mail and submitted testimony regarding the reliability of this forecast, which was based on an elasticity calculated from aggregated data. In addition, analyzed the rate design for two subclasses of mail, and submitted testimony regarding new rate designs.

Litigation

- Economic hardship analysis before the Philadelphia Historical Commission – Analyzed the financial feasibility of reusing historic structures.
 - Boyd Theater (2014)
 - Royal Theater (2015)

- Reviewed, analyzed and critiqued an econometrically based damage analysis that estimated how quickly shares of stock in a publicly held company could sell on the London AIM market in a marital dissolution matter.
- Assessed the value of missed appearances on a national television show. The appearances on the show served as advertising for the presenter's business, and his missed appearances due to injury affected the amount of advertising, of that type, that he was able to do.
- Calculated the damages from failure to divide proceeds from the sale of a business and the associated real estate evenly among the heirs of an estate.
- Determined the appropriate cram down interest rate in a bankruptcy proceeding. The case involved a bank foreclosure on a golf course that was in Chapter 11 proceedings. The calculation of the interest rate looked at risk factors appropriate to the course and its particular situation.
- Calculated the value of an easement in a property taking case. The easement was leased to a billboard company, and the billboard was removed as part of a road widening project. The analysis included identifying future lease payments and determining the appropriate discount rate to calculate the present value of the lease payments.
- Calculated the fiscal impact of a tax credit to a developer on a municipality. The analysis reviewed the methods, inputs and assumptions of a fiscal impact model. The proffered model claimed more than \$200 million in fiscal benefits over 20 years, whereas with the more appropriate assumptions and methods, the impact model should have shown fewer than \$80 million of impact.
- Analyzed the potential profitability of a real estate development in the western suburbs of Kansas City. The analysis examined the potential sale price and sales pace of building lots during the 2008-2011 period, focused on whether lots would sell according to plaintiff's damage analyses. The investigation used sales data for all developments within the submarket to calculate a sales pace and price. The case settled, and our report was cited as the major reason for moving the two sides together. (Kansas City, KS)
- Analyzed the potential profitability of a real estate development the eastern suburbs of Kansas City. The analysis examined the potential sale price and sales pace of residential and commercial building lots during the 2008-2013 period. (Kansas City, KS)
- Calculated the profitability of commercial real estate development along the Philadelphia waterfront in the absence of tax incentives. The analysis required the order of estimation of construction costs, financing costs, and potential rents.

- Assessed the ability of a private, for-profit, golf course to continue operations as a golf course by forecasting club profit and loss based on industry growth forecasts and financing commitments made by the owners of the course. The assessment included analysis of potential alternative uses for the golf course, including the addition of housing to the course and the conversion of the facility, in whole or in part, into non-golf course uses. Finally, I compared the suitability of the golf course site with another site for the potential to provide affordable housing.
- Calculated the impact of a municipal regulation severely restricting the sale of cigars in packages of fewer than five cigars. The analysis used industry data on shipments of cigar packages to all types of stores and scanner data on sales at retail stores to quantify the number of cigars sold in the jurisdiction, broken down by package size and by sales channel, as well as to estimate the total expenditures on cigars. The analysis estimated the change in the number of cigars that would be sold as a result of the regulation, as well as the impact of the regulation on other jurisdictions.
- Calculated the value of a ground lease to the owners of an undeveloped restaurant pad. The pad had been leased but not developed, and the restaurant chain that had leased the pad sought to escape the lease by paying the fair value of the remaining lease payments to the landlord. Though there were still more than 15 years on the lease, the pad had significant value as a development site that could be realized if the lease were terminated. Our analysis included evaluating the price and timing of releasing opportunities, using Monte Carlo simulation to address uncertainty, and applying appropriate discount rates to the future cash flows.
- Determined the appropriate discount rate to use in a marital dissolution matter. The main wage earner is a highly compensated, high net-worth individual in the financial services industry, and a primary driver of the settlement amount was the riskiness of his potential future earnings. The analysis included a consideration of his compensation structure, and assessment of its historic volatility, and an examination of his continued ability to work.
- City of Allentown – Assisted the City of Allentown, Pennsylvania negotiate with its police union. The project included modeling the financial impact of contract proposals on the city budget, comparing the terms of the existing and proposed contracts with the terms of contracts from similar cities, preparing presentation material explaining the analyses, and testifying at the arbitration. The arbitration adopted most of the City's positions. (Allentown, PA)
- Upper Darby Township – Tax Base Analysis for Upper Darby Township. Conducted a tax base analysis and testified at arbitration for Upper Darby as part of its contract negotiations with its police union. (Upper Darby, PA)

- Assisted American Express in the preparation of its business interruption insurance claim related to damages suffered as a result of the September 11 attacks on the World Trade Center. The assistance involved the determination of potential areas of loss, and the quantification of revenues and costs that would have been realized had the interruption not incurred.
- Assisted a health insurance company investigate the impact of errors in claims processing on the appropriate purchase price of the company that made the errors. The analysis included investigation of the health care claims, and a recreation and examination of valuation models used to assist deal makers set the price for the acquisition.
- Calculated damages to purchasers of variable universal life insurance, who allege they purchased policies based on misrepresentations made by the insurance agent. The analysis investigated the value of the policies through several methods, including the cost of replacement policies and the value of a portfolio of investments that could have been made as an alternative to purchasing the insurance policies. The analysis was the starting point for the ultimate settlement.
- Calculated damages and analyzed opposing expert's report in a state-wide class action suit between a health insurance company and member pharmacies. The plaintiffs alleged that the insurance company was obliged to continue making certain payments that it had made in the past. Our damage calculation extrapolated past payments through the damage period. The analysis of the opposing expert centered on the lack of connection between the liability theory and the method for calculating damages.
- Calculated damages to a not-for-profit organization from the allegedly wrongful actions of a local government. The not-for-profit, a provider of housing for physically and mentally disabled residents, claimed the actions caused its costs to increase. The analysis compared costs across years and quantified the cost increase attributable to the municipality's actions.
- Calculated damages resulting from a company's withdrawal of its long-term care insurance products on its outside sales force. The analysis included a thorough review of the plaintiff's damage model, and the production of an alternative model. The analysis concentrated on the structure of the agent's commissions, the relationship between the agents and the provider of long-term care insurance, and the assumptions about the size of the market.
- For a large pharmaceutical company, evaluated the potential exposure of the company in a large class action lawsuit regarding drug pricing. The analysis calculated the potential value of claims for drugs provided to Medicaid and Medicare recipients.

- Performed several analyses with respect to drug pricing for a large pharmaceutical company. The analysis involved the review of all sales by the manufacturer of the majority of its prescription products. The result integrated direct sales, chargebacks, rebates, and other pricing adjustments.
- In a suit alleging that an insurer with a retrospective workers compensation policy was overpaying claims, reviewed records of the largest claims to determine the appropriateness of the payments. The analysis involved analyzing the claim files, constructing timelines, and reviewing the policy to determine consistency with the contract.
- Determined overcharges in a class-action dispute between resellers of toll-free 800 service and several Local Exchange Carriers. The case involved extensive discovery of decade-old documents, the reconstruction of the quantity of a specific type of phone call, and the research and application of appropriate tariffs. The analysis was also conducted using a top-down, industry-wide model to confirm the results of the reconstruction.
- Conducted analyses, including a damages calculation, for an independent power producer in a breach of contract dispute with its host utility. The engagement involved the reconstruction of the opposition's analysis concerning the construction of the power plant and the viability of the contract with the plant, as well as a projection of the future income stream under a variety of contract interpretations and the calculation of the present value of the income streams.
- Calculated damages in a breach of contract dispute between the owners of a chain of cell-phone kiosks in a major discount store with the host discount store. The engagement involved the calculation of revenue the kiosk owners could have expected to receive from the customers who would have purchased phones at the kiosks. This involved the review of previous sales, extrapolation of sales trends, and the application of shrinkage factors as customers discontinued service.

Intellectual Property Litigation

- Determined damages in a copyright infringement case involving a luxury goods manufacturer and retailer. The analysis focused on determining the costs appropriately attributable to manufacturing, distributing, selling and servicing the products that were allegedly infringing a copyright, and then valuing the profits attributable strictly to that line of products through a discounted cash flow analysis. The case required an investigation of the company's operations to determine the nexus between each of the firm's cost centers and the allegedly infringing products.

- For a direct response television marketer, determined damages in a copyright infringement case against a competing firm. The analysis determined the defendant's revenue from direct response television sales of the allegedly infringing product, as well as the portion of the defendant's retail sales that were properly attributable to its direct response television spots.
- Assisted a large software company (Microsoft) determine the appropriate royalty program, including royalty rates, maximums, minimums and other terms, for sets of Windows Server protocols that the European Union required Microsoft to License as part of the remedy in an antitrust case against Microsoft. The work included conducting income based and market based valuations of the protocols, including several written reports presented to the European Commission. The project also included preparing written analysis explaining how the company's plan was reasonable and non-discriminatory, and was an appropriate response to the regulator's decision.
- Evaluated the impact of a set of technology licenses on the licensor. The analysis included calculating royalties paid, assessing the markets for products based on the licensed technology, and determining the ways in which the licensees' products were complimentary or competitive to the licensor's products.
- Defended patent validity in a case involving an over-the-counter medication. The issue was whether the medicine provided surprising benefits, fulfilling the non-obviousness test required for patenting. The analysis included reviewing the results of several clinical trials, and then conducting new analysis by combining the data from the trials into one larger data set.
- Analyzed a royalty distribution model used to determine payments to content creator in situations where no record of the originator of the content was kept. The analysis showed that the distribution model led to royalty payments that were not proportional to the number of times a creator's works were copied.
- Conducted reasonable royalty calculations in a patent infringement case. The case involved both the review of the Georgia-Pacific factors to determine a reasonable royalty, and a critique of another calculation of a reasonable royalty.
- Modeled revenues for several pharmaceutical products in an intellectual property and breach of contract dispute.

Antitrust and Securities Litigation

- For a provider of services to internet and small scale retailers, conducted an analysis to determine potential 10b-5 damages to shareholders resulting from its alleged failure to

disclose material information. The analysis included a review of events potentially causing changes in the stock price, as well as the use of trading models to determine the number of damaged shares.

- For an exclusionary dealing claim against a manufacturer of agricultural chemicals, evaluated the effect of the defendant's dealer-loyalty program on the ability of new entrants to gain market share. The analysis included a review of the loyalty program, as well as definitions of the relevant markets.
- Conducted a potential damages analysis in a 10b-5 case against the auditors of a manufacturer of building supplies. The manufacturer was accused of fraudulent accounting and inaccurate disclosures regarding the amount of revenue from an overseas customer. The analysis evaluated the potential liability of the auditor, based on dates the auditor knew or should have known about the fraudulent accounting
- For a merger between a broadcast network (CBS) and a production studio with broadcast interests (Viacom), evaluated the effect on the broadcast advertising market, the market for the sale of first-run television programs to the networks, and the sale of syndicated shows to the local broadcast stations. The merger was cleared by the Department of Justice with no conditions.
- For a merger between two major interstate gas pipeline companies (Coastal and El Paso), evaluated horizontal overlaps in several geographic regions. The case involved investigating the operations of the pipeline businesses, including future plans, to identify actual or potential competitors to the merging parties. In areas where there was significant, market-affecting overlap, participated in negotiations with the Federal Trade Commission to minimize divestitures.
- For a joint venture between a gas pipeline company and an investor owned utility (El Pso and Southern Company), evaluated several market overlaps and investigated the validity of the government's anticompetitive theories, including raising rivals' costs, regulatory evasion, and direct competition between gas and electricity for residential heating. Vertical issues played a substantial part in the analysis.
- For the acquisition of a number of brands by a major consumer products company (Diageo, Pernod, and Seagrams), evaluated the effect of the combination of brands on the consumer. This case was mostly concerned with market definition. The analysis included using econometric modeling on a large supermarket scanner data set to calculate cross-elasticities of demand to demonstrate empirically the extent of the market.

RELEVANT SKILLS/AFFILIATIONS

COURSES TAUGHT

University of Pennsylvania, 2004-present

CPLN 633: Urban and Regional Economics

CPLN 705: Studio

G AFL 522: Economic Principals of Public Policy

G AFL 724: Infrastructure Investment and Economic Growth: Why, How and When?

URBS 456: Economics and Urban Affairs

University of Minnesota, 1993-1997

Cost - Benefit Analysis, Industrial Organization, Welfare Economics, Principals of Microeconomics, Intermediate Microeconomics, Principals of Macroeconomics, International Trade and Payments

STUDENTS SUPERVISED

Mengke Chen – *Agglomeration Economies and High Speed Rail*. University of Pennsylvania, PhD in City Planning, Independent Study, 2011

Jonathan Broder – *New York City Highline*. University of Pennsylvania, Master of Liberal Arts, Capstone Paper, 2011

University of Pennsylvania Studio – *Cost Benefit Analysis for High Speed Rail in the Northeast Corridor*, City Planning Studio, 2011

Allyson Randolph – *The Reinvestment Fund in Baltimore: A Model for CDFI Expansion*. University of Pennsylvania, Master of Liberal Arts, Capstone Paper, 2009

Scott Zeigler – *Identifying Housing Bubbles: An Analytical Approach*. University of Pennsylvania, Master of Liberal Arts, Capstone Paper, 2008

John Culbertson – *Microfinance*. University of Pennsylvania, Master of Liberal Arts, Capstone Paper, 2007

MEMBERSHIPS

American Economics Association

American Planning Association

American Institute of Certified Planners

Urban Land Institute

PUBLICATIONS and PRESENTATIONS

The Impacts of Regional rail Service on Suburban House Prices in Southeastern Pennsylvania, (with R. Voith and D. Miles) 2015 Transportation Research Board Annual Conference, January 2015

The Economic Value of Transit and the Effect of Insufficient Capital Funding – A Case Study of the Southeastern Pennsylvania Transportation Authority (SEPTA), (with R. Voith and A. Ozimek) 2014 Transportation Research Board Annual Conference, January 2014

Consumer Response to Service Interruption on the Washington Metro, (with R. Voith and A. Ozimek) 2014 Transportation Research Board Annual Conference, January 2014

Actual Value Initiative: Winners and Losers – presenter and panelist at Ballard Spahr Real Estate Continuing Education Program, Philadelphia, May 2013

Real Estate as Critical Infrastructure – presenter and panelist at NYU Stern School of Business Center for Real Estate Finance Research, Annual Spring Symposium, New York, April 2013

American Institute of Certified Planners – Certification Exam Refresh, Exam Question Writer, January 2013

Thinking Creatively About Infrastructure, Region's Business Journal, January 2013

Data Sources for Economic and Financial Information, New Jersey Redevelopment Authority Training Institute Seminar on Project Feasibility, December 2012

Why Does Affordable Housing Cost So Much To Build? And What Can Be Done About It? – panelist and presenter at the Housing Alliance of Pennsylvania, 2011 Homes Within Reach conference, Harrisburg, November 2011

Help or Hinder: How Local Government Helps or Hinders the Development of Affordable Housing – presenter and panelist at American Planning Association – Pennsylvania Chapter, 2010 Annual Conference, Scranton, October 2011

Drivers of Commercial Corridor Success: Lessons for Increasing Retail Performance – presenter and panelist at American Planning Association – Pennsylvania Chapter, 2010 Annual Conference, Lancaster, October 2010

Development Costs and Affordable Housing – presenter and panelist at New Jersey Governor's Conference on Housing and Community Development, Atlantic City, New Jersey, September 2010

Inclusionary Zoning and Financial Feasibility – presenter and panelist at “Homes Within Reach” conference, Harrisburg, December 2009

Response to Peter Brown's book, *America's Waterfront Revival, Port Authorities and Urban Redevelopment*, presented at Penn Institute for Urban Research, Philadelphia, September, 2009

Design Implications of Research on Commercial Corridors – Presentation to the Design Advocacy Group, Philadelphia, April 2009

Current Opportunities for Design Professionals – Presenter and panel discussant at “Survival Strategies for Design Professions”, sponsored by Powell Trachtman, March 2009

Predicting the Direct and Indirect Economic Impacts of the Stimulus Investments – Delaware Valley Regional Planning Commission, January 2009

Impact of President-elect Obama's economic policies on Pennsylvania – Panel discussant Global Entrepreneurship Week, November 2008

Valuation of Intellectual Property – American Bar Association, International Law Section, and Intellectual Property in Asset Transactions: Buying What You Can't See, May 2007

Securities Litigation Damages - class in Law and Economics course at The Wharton School, University of Pennsylvania, 2003-2007

Gauging the Impact of CDH Ps on Pharmaceutical Companies, Contingencies, American Society of Actuaries, March/April 2008

Calculating Damages in Intellectual Property Litigations – Advisory University, PricewaterhouseCoopers, 2005

Securities Damages Litigation – Advanced Topics in Damages – Advisory University, PricewaterhouseCoopers, 2004