Mr. Michael Wallace Ruth, LEED AP, VMA
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Education
MS, Computer Science, Towson University, 2006
BS, Applied Mathematics, Towson University, 1988

Professional Certifications/Registrations
Certified Cost Professional (CCP), AACE International since 2009 cert # 2751
Value Methodology Associate (VMA), SAVE International since 2010 cert #201005036
LEED Accredited Professional BD+C, USGBC since 2009 cert #10392756-AP-BD+C

Professional Associations
Association for the Advancement of Cost Engineering International (AACEI)
American Society of Professional Estimators (ASPE)
SAVE International
US Green Building Council (USGBC)
American Society of Heating Refrigerating and Air Conditioning Engineers (ASHRAE), Past Member
Building Congress & Exchange of Baltimore, Past Member

Background
Mr. Ruth has more than 30 years of experience in the commercial construction industry providing cost estimating, valued engineering, claims analysis, scheduling and commissioning. He utilizes his cost estimating expertise for a variety of clients including: consulting firms, commercial property owners, government agencies, architects, engineers, attorneys, general contractors and arbitrators. Mr. Ruth matches his exceptional technical background with his masters in computer science and BS in math to provide detailed and accurate project controls including: budget setting, cost estimates at all stages of design, change order reviews, change order negotiations (representing the owner as expert witness), constructibility reviews and CPM schedule updates. As a cost estimator on value engineering teams, he can propose various construction methods to bring value to the owner. Utilizing state of the art software as well as a series of checks and balances, Mr. Ruth designs cost reports and sophisticated spreadsheet estimates for his clients. To ensure the most intricate details are evaluated Mr. Ruth reviews his past cost estimating records for validation. As a commissioning agent for mechanical and plumbing systems, Mr. Ruth provides full reports for his submittal reviews, engineer discussions and on-site inspections during the construction phase.

Software Proficiency
Bluebeam
RS Means Online / Costworks
Google Services, Cloud Based File Transfers
MS Office Suite / Microsoft Office 365
OnCenter Onscreen Takeoff / Planswift
MII with Database Management
BIM / Innovaya

Highlighted Projects

National Park Services (Senior Cost Estimator Providing Oversight on Cost Estimates) (Present)
Cost Estimates are for all 50 Divisions at All Stages of Design
University of Maryland, On-Call Provided Independent Cost Estimating Services (2006-2014)
All Campuses Statewide ($500 Million Annual Construction Budget)
NGA – National Geospatial-Intelligence Agency (2.4 Million Square Feet, $1.7 Billion Costs) (2009-2010)
Dulles Metrorail Phase 2 Fairfax, VA ($3.3 Billion Construction Costs) (2012)
Pennsylvania Convention Center ($640 Million Construction Budget) (2008)
Silver Spring Transit Center ($217 Million Construction Costs) (2011-2014)

Relevant Experience (More than 250 projects 15 billion in construction costs)
Michael W. Ruth Work History (2016 through 1988)

University of Maryland, Health Science Facility III, as a joint venture working as owner representative; providing independent cost estimating services on change orders during construction and negotiations with construction management firm and subcontractors for all divisions of work. (2016-Present)

ACM Technologies Building Renovations, Allegany College of Maryland, Cumberland, MD, Provided electrical cost estimate at the 50% DD stage of design. $500K in electrical takeoff and estimating services 4,200 GSF of effected renovation area. (Estimated Jan 2017 / Construction Dec 2017)

Freedom Readiness Center, Sykesville, MD (LEED Silver Rating) Cost estimating services at schematic design stage, using RS Means Online and Bluebeam, $400K fire protection, $1M plumbing and $2.1M mechanical, geothermal. 66,825 GSF two story building, 6,400 GSF detached storage warehouse, site work and fuel storage facility, union wages apply (Estimated Feb 2017 / Bid date March 2018)

University of Maryland College Park, H.J. Patterson Hall, Wing 2, Built in early 1960's, Wing 1 in 1933, Building #073, Mechanical Room Renovation at the Design Development stage 44,825 GSF, $500,000 in electrical cost estimating, features 800-ton chiller addition / temporary heat and air conditioning / phase work / occupied areas during construction (Estimate Jan 2017 / Construction completion June 2018)

New Paul VI High School, Loudoun Campus, Braddock Road, Loudoun Virginia, completion March 2019 New construction includes, biology & chemistry labs, dining hall, music hall and theater. Add alternates for football stadium, baseball, six lane track, soccer, tennis courts and softball fields. Building area 242,124 Total gross square feet (GSF) Eight different building areas, up to three stories, building areas encompass area 750 LF x 700 LF Design stage (DD) development design Mr. Ruth provided cost estimating services for the fire suppression, plumbing, mechanical, integrated automation, electrical, communications, electronic safety and security, in August 2016. Owner Catholic Diocese of Arlington, overall costs of project (budgeted) $73 million with add alternates of an additional $11 million, completion date in 2020

Walters Junior High School, New Building 11 and Addition of (3) Classrooms to Building 13, New construction includes options of both a four classroom or five classroom building 11 and addition of

three classrooms to existing building 13. Work involved LED lighting, utility room, equipment room and storage areas. 24,000 total gross square feet (GSF) Design stage (DD) development design Mr. Ruth provided cost estimating services, utilizing OnCenter OnScreen Takeoff software, for the fire suppression, plumbing, mechanical, electrical, lighting controls, communications, fire alarm and security. Approximate construction cost $8 million, April 2016

West Virginia University, Institute of Technology, Shroyer Hall Renovations, 24K GSF 4-stories, existing conditions, demolition, architectural, fire protection, plumbing, mechanical, electrical, communications, electronic safety, security and exterior improvements. Design development (65% construction document) stage took-off drawings using Oncenter Onscreen Takeoff and RS Means Costsworks to price. Special features included neutralization tank underground, fume hoods, special equipment exhaust points, DDC control system integration with campus-wide BAS. (July 2016)

Expert Testimony to client for correctional facilities, penal plumbing fixtures. Firm based in New York. (June 2016)

New Engineering Lab Building, West West VA Institute of Technology, Beckley, WV. Proposed new one story building consist of student lounge, soils, materials, manufacturing engineering, concrete, concrete canoe, composite and wood laboratories. Standard restrooms, mechanical room, storage areas and corridors. Plumbing fixtures include electronic flush, emergency eyewash and gas fired water heaters. The HVAC system consist of high efficiency boiler, gas fired make-up air unit, ten exhaust fans, three roof ventilators, ductless split system air conditioner, duct coil, cabinet and unit heaters. 11,136 total gross square feet (GSF) Design stage (75% CD) construction document. In July/August 2016, Mr. Ruth provided cost estimating services utilizing PlanSwift software for takeoffs, for the fire protection, plumbing, mechanical, electrical, fire alarm and telecom. Construction costs of $3 million, completion date July 2017

Franklin High School Renovation to school to architectural components as well as a whole new infrastructure for the HVAC Renovation. Construction includes demolition of architectural ceilings, interior walls, fire mains, and electric systems to accommodate a new HVAC system. Two new air cooled chillers, VRF air-cooled condensing unit, indoor VRF fan coil units, split systems, single duct air terminal units, dual temperature piping system with two new pumps, chilled water piping with two new pumps, three new hot water heating pumps, balancing, complete DDC system. New lighting with occupancy sensors, switches, upgrade to electrical system, fire alarm system changes, communications, electronic safety and security. Cost estimating at both the Design stage (50% CD) and 100% Construction document, Mr. Ruth in August and September 2016 provided cost estimating services for the fire suppression, plumbing, mechanical, DDC integrated automation, electrical, communications, electronic safety and security. Overall budgeted construction costs $8 million, Completion September 2017

Cyber Center for Education and Innovation, Home of the National Cryptologic Museum, total demolition and rebuild, New construction includes lobby, auditorium with balcony, orientation theater, library, gift shop, classrooms, offices, conference rooms and a kitchen. 77,463 total gross square feet (GSF) Design stage (DD) development design in October 2016 Mr. Ruth provided cost estimating services for the fire protection and mechanical. Overall costs of project (budgeted) $30 million

Mark O. Hatfield Clinical Research Center, National Institutes of Health, Bethesda, MD: As Senior Consultant, provided mechanical, fire protection, and plumbing constructibility review of drawings and specifications. The project was an incremental renovation of the F Wing of Building 10 (Floors 2 through 14). Due to partial occupancy of some areas in the F Wing and funding sources, the project was accomplished in two phases. Phase A consisted of converting 64,000 square feet of former patient care units on floors 2 through 5 to accommodate laboratories, laboratory support, and administrative areas; the installation of new utilities infrastructure to support the renovation of the entire F Wing; and the installation of mechanical equipment on floors 4 and 14. Phase B consisted of the conversion of 151,600 square feet of former patient care units on F Wing floors 6 through 13 to accommodate laboratories, laboratory support, and administrative areas. This included the installation of mechanical equipment for floors 9, 13, and 14. Phase B also included fit-out of north corridor areas of floors 2 through 5 not constructed in Phase A. The total construction value was $131.6 million. 12/30/10 - 6/15/15

National Geospatial-Intelligence Agency (NGA) New Campus East, U.S. Army Corps of Engineers, Fort Belvoir, VA: As Cost Estimator, reviewed change orders, worked with team to prepare independent cost estimates to assess cost impacts of change orders, and assisted in preparation of independent government estimates. Worked with owner's team through negotiations and settlements with contractor. This project was the largest single military construction project undertaken by the U.S. Army Corps of Engineers (USACE) since the Pentagon. The integrated design-bid-build early contractor involvement (ECI) project consolidated seven NGA locations into a new campus as directed by Base Realignment and Closure (BRAC) 2005. The campus is nearly 2.5 million square feet, situated on 98 acres on Fort Belvoir North Area near Springfield, Virginia. The entire campus meets sensitive compartmented information facility (SCIF) security standards. It includes administrative areas, a technology center, central utility plant, auditorium, conference center, education and training spaces, visitor control center, 5,200-vehicle parking garage, and $102 million in site and infrastructure improvements. This project is LEED Gold certified. The NGA parking garage is a $70 million structure located on the new NGA Campus. The garage is six levels, 1.5 million square feet with 5,132 parking spaces. It was built using precast sections and was located between surface parking lot, bus access road, and the main building. The garage also has a pedestrian bridge and a paver stone “vector path” leading into the main building. The total construction value was $1.46 billion. 7/6/09 - 12/30/11

Program Management Term Contract, University of Maryland, Various Locations, MD: As Cost Estimator, provided on call cost estimating support for multiple projects. The Department of Architecture, Engineering and Construction for the University System of Maryland executes a capital construction program of approximately $400 million annually at eight institutions statewide. The capital program involved new construction and major renovation of facilities to include residence halls, dining facilities, student unions, laboratories, lecture halls, computer centers, health centers, gymnasiums, athletic fields, parking lots, garage structures, offices, and libraries. Projects included:

- Biosciences Research Building: This $70 million project involved the construction of 138,700 gross square feet of space to provide labs and offices for the College of Life Science. Modern facilities enabled advanced cancer research and research for other diseases. Construction also included the renovation of the central utility building to serve as the new lecture hall.

- Bio-Safety Level III (BSL-3) Lab: This $2.1 million project consisted of a single 1,400-square-foot, BSL-3 animal support/research facility with infrastructure to support a future lab module within the new building. The project provided facility support for host-pathogen research.

- Chemistry Wing III Shelled Labs: This $3.2 million life science research facility included two floors of tenant work to create 5,830 gross square feet of space for staff offices and labs.

- Fischell Department of Bio-engineering: This $7.3 million 7,400-gross-square-foot facility involved a one-floor addition on the roof of the mechanical/loading dock wing of the existing building. The addition housed offices and bio-engineering labs.

- Center for Advanced Research in Bio-technology II: The $52.2 million project involved construction of a new 139,000-gross-square-foot laboratory facility, classrooms, and seminar and conference space at the Shady Grove campus.

- Chesapeake Biological Laboratory Truitt Lab Addition: This $4.5 million project involved construction of a 13,200-square-foot addition to the facility at the Chesapeake Biological Laboratory. Space included aquaculture research bays, laboratories, classroom, and support facilities.

- Center for Business & Graduate Studies, Bowie State: The project involved the construction of a new three-story, 66,396-square-foot Center for Business and Graduate Studies. The building includes a classroom wing, office wing, main plaza, parking lot, storm water management facilities, stairway, and elevators. The total construction value was $140 million. 4/14/11 - 3/15/11

Silver Spring Transit Center Cost Estimating, Silver Spring, MD: The Paul S. Sarbanes Silver Spring Transit Center is a three-tiered, urban, multi-modal, state-of-the-art transit facility for downtown Silver Spring. The project involved a renovation that consisted of a new three-story, 243,850-square-foot, cast-in-place, post-tensioned structure. It features 34 bus bays for Washington Metropolitan Area Transit Authority (WMATA) Metrobus, Montgomery County Ride-On, Maryland Transit Administration (MTA) regional commuter bus, Van-Go shuttle, inter-city buses, and University of Maryland shuttle; direct access to Metrorail and Maryland Area Regional Commuter (MARC) trains; 54 Kiss & Ride spaces and taxi spaces; intelligent transportation system; multi-modal transit store; accommodations for future Bi-County Transit-way; connections to regional hiker/biker trails and a local trail; and open space replacement and enhancement. The total construction value was $95 million. Mr. Ruth provided cost estimating on all division for change orders throughout the construction phase, then project went into claims and cost estimating continued through 2014 with an additional $122 million in repairs to defective concrete. Total construction cost was $217 million. 9/26/08 - 9/20/15

College of Arts and Sciences South Lawn, University of Virginia, Charlottesville, VA: As Estimator, provided a detailed estimate for the mechanical, plumbing, and fire protection sections. The project was built in three phases, ultimately covering 260,000 gross square feet, containing more than a third of the classrooms on Central Grounds, and housing eight of the College's 25 academic departments and one interdisciplinary program. The initial project involved the new academic center for the College of Arts and Sciences that consisted of approximately 114,000 square feet. This project included the demolition of the existing buildings and some features on the South Lawn, south of Jefferson Park Avenue (JPA), and the construction of North and South Wing buildings and a central Commons building. In addition, it

included a pedestrian crossing over JPA linking the New Cabell Hall to the New South Lawn Commons building. The total construction value was $65 million. 3/12/06 - 8/31/07

Value Management Study of the School of Education: The project is a 100-year life building and consists of a five-story academic building of approximately 177,000 square feet. The building houses the undergraduate, graduate, and executive education programs of the School of Business. The exterior of the building is consistent with the architectural legacy of the College with a brick exterior of light rose-colored, sand struck brick with dark highlights and a grey slate roof. The interior design of the building enhances the development of a strong sense of community within the student, faculty, and staff. The classroom, offices, and common areas have advanced communication information technology. The building is energy efficient and provides a high quality of indoor air and productive work and study environments for the students, faculty, and staff. This project is LEED Gold certified. The total construction value was $59 million. 7/23/13 - 3/1/07

Washington Headquarters Service, Alexandria, VA: As Cost Estimator, provided an estimate at the 50% stage for all divisions. This design-build project consisted of one 17-story and one 15-story office building (1.5 million total square feet supporting 6,400 relocated Department of Defense employees), two parking structures, remote delivery facility, remote inspection facility, and transportation center. This project is part of the 2005 Base Realignment and Closure (BRAC) program. It is planned to be LEED Silver certified. The total construction value was $738 million. 2/27/09 - 5/31/09

Wilmington Convention Center and Parking Deck, Wilmington, NC: As Cost Estimator, provided mechanical and plumbing cost estimate on 75% construction documents. The project was a 102,000-square-foot facility with a grand ballroom, an exhibit hall, offices and meeting rooms, as well as a commercial kitchen. The parking deck was a 592-space, pre-cast structure, which adjoins the convention center. The site was a brownfield which was topped with approximately four feet of clean soil prior to construction. The site's location, directly adjacent to the Cape Fear River, made sediment and erosion control a major concern. The asphalt drive to access the convention center ran along a river inlet and ends at what will be the future hotel entrance. Significant street disturbance for utility installation occurred adjacent to the convention center on Nutt Street. The project included all typical utility installation pricing from the street to within the building footprint as well as several large concrete storm water filter structures which were installed underground due to the site's proximity to the river. The interior finishes vary from eloquent at the formal ballroom to more durable at the exhibit hall with extensive woodwork as well as decorative fabric installations in the pre-function areas. The project achieved LEED Silver certification. The total construction value was $48 million. 6/19/07 - 7/31/07

West Frederick Middle School, Frederick, MD: As Mechanical/Electrical Engineer, reviewed the construction document against the design document review and the architect’s responses for the MEP drawings. This project included the construction of a 22,000-square-foot addition and 143,000-square-foot renovation. The building consisted of high-sloped shingle roofs and low-sloped built-up roofs. The school's enrollment capacity increased to 754 students. The total construction value was $42.3 million. 7/9/07 - 2/26/08

Veterans Affairs Medical Center, Rio Pedras, San Juan, PR: Provided claim review for all divisions The medical center included multidisciplinary ambulatory facilities, 348 authorized hospital beds, 12 blind rehabilitation beds, and 120 nursing home beds. The Center serves a population of approximately 150,883 veterans in Puerto Rico and in the U.S. Virgin Islands. The total construction value was $50 million. 5/1/06 - 5/31/06

The Flats and The Darcy, Bethesda, MD: As Mechanical Engineer, reviewed mechanical, plumbing, and fire protection drawings for constructibility at the design development phase. The project consisted of approximately 40,000 square feet of retail space above 1,400 parking spaces in two, three-story parking garage substructures. It also included construction of 250 units in a nine-story condominium and five-story apartment building above the parking garages, and significant roadway improvements and landscaped areas. The total construction value was $75 million. 7/22/11 - 7/29/11

North Carolina State University, Raleigh, NC: As Cost Estimator, provided cost estimate for the mechanical and plumbing systems for the NCSU Thompson Theater. The projects estimated under this task-order agreement included the 1911 Building, Greek Village Phase I, Partners II, and Thompson Theater. The total construction value was varied by project. 10/14/06 - 12/31/10

James M. Bennett High School, Salisbury, MD: As Mechanical/Electrical Engineer, reviewed the design document drawings and specifications against the owner's requirements and reported any issues in the mechanical submission. This new 240,867-gross-square-foot high school replaced the existing high school on the same lot. The new high school houses approximately 1,450 students at maximum capacity The total construction value was $68 million. 11/15/06 - 12/4/06

Joppatowne Elementary School, Harford County, MD: As Mechanical/Electrical Engineer, reviewed the construction document against the design document review and the architect's responses for the MEP drawings. This project included the construction of a 34,943-square-foot addition and 52,042-square-foot renovation. The building consisted of high-sloped shingle roofs and low sloped built up roofs. The total construction value was $21.6 million. 5/1/07 - 7/30/06

Meherrin River Regional Jail Authority, Richmond, VA: As Cost Estimator, participated in the 32-hour value engineering study. This 400-bed facility is being constructed on approximately 126-acres. The total construction value was $64 million. 11/10/10 - 11/12/10

National Business Park, Building 320, Annapolis Junction, MD: As Cost Estimator, provided the mechanical, plumbing, and fire protection estimates for the tenant fit-out and shell on this new building. Renovation of a four story office building in Annapolis, Maryland. The total construction value was $40.7 million. 2/15/08 - 2/25/08

NBP 132, Transportation Security Administration, Annapolis Junction, MD: MBP will provide independent cost estimating services for renovation of offices located inside a building known as NBP 132 in Annapolis Junction, MD for Gensler's client. The total construction value was $23 million. 4/18/11 - 4/22/11

New Brooks Library, Norfolk State University, Norfolk, VA: As Value Engineer, responsible for deriving a cost estimate for all items considered during the five day value engineering (VE) study. He was also responsible for creating a list of constructibility review issues for the A/E team to assist in achieving the desired LEED Gold certification and assisted the Certified Valued Specialist in summarization of the entire VE study list. The new Brooks Library is a four-story, 132,000-square-foot new construction that replaces the existing library on the Norfolk State University campus. The new Brooks Library is proposed as a student focused facility which includes a three-story round rotunda lobby, a 24/7 internet café, conference rooms, staff offices, and other regular library functional spaces. The project was designed for LEED Silver certification. The project also included demolition of the existing library. The total construction value was $36.9 million. 3/2/09 - 4/24/09

New Classroom and Nursing Building, Norfolk State University, Norfolk, VA: Served as Cost Estimator and LEED Consultant for the mechanical, plumbing, and fire protection review. As Mechanical Engineer, participated in the value engineering study for mechanical, plumbing, and fire protection cost analysis. The classroom and nursing building is a four-story, 144,000-square-foot new construction project that is located adjacent to the new Brooks Library, which is the centerpiece of the campus. It includes general and specialty classrooms, computer labs, seminar training rooms, group study rooms, nursing and allied health programs, dean suites, faculty offices, and other support functions. The framing is structural steel and the exterior has low emissivity (low-e) glazing and brick with a metal stud and gypsum board back-up, with a standing seam metal roof. This project was designed to achieve a LEED Silver certification. The total construction value was $35.2 million. 3/30/09 - 4/15/09

New Venable Hall, University of North Carolina Chapel Hill, Chapel Hill, NC: As a Senior Estimator, performed independent design development, 50%, and 100% construction document phase estimates for the mechanical, plumbing, and fire protection scopes. The project included construction of a new 164,440-square-foot building including numerous laboratory, research, and testing facilities, seminar and administrative areas, and a bridge connection to another existing building. The building consisted of cast-in-place concrete structure, extensive mechanical, electrical, fire protection, and plumbing, interior finishes including slate flooring, metal casework, wood panels and trim, acoustical ceilings, modified bituminous and slate roofing, and site improvements including parking, utilities, brick and stone walks, stairs, and retaining walls. The total construction value was $70 million. 4/3/06 - 1/31/07

Northern Virginia Community College, Annandale, VA: As Cost Estimator, participated in a 32-hour value engineering study at the 50% and 100% construction documents stage. The project consisted of a new, three-story, 89,450-gross-square-foot building located on the southeastern portion of the Annandale campus. The new building consolidated student services that include the business office, parking and ID office, admission and records, a counseling center, a testing center, a transfer center, and Financial Aid and other departments. A shared conference area is also located on the first level. The second level houses the college bookstore and police station. The third level includes classrooms, open and closed

student study areas, and office suites for the Dean of Students and the Business Manager. The total construction value was $47 million. 1/29/08 - 1/31/08

Oakdale High School, Frederick County, MD: As Mechanical/Electrical Engineer, reviewed the construction document drawings and specifications against the design document review and the architect's responses. The project consisted of construction of a new 256,296-gross-square-foot high school to accommodate 1,600 students. The facility was two stories with a steel frame and brick on both metal stud and masonry back up. Interior partitions include both metal stud and masonry. Foundations are slab on grade and elevated floors. The total construction value was $55.2 million. 3/28/06 - 3/31/06

New Walter Reed National Military Medical Center and Supporting Facilities, Bethesda, MD: This included two major design-build projects that supported relocating Walter Reed Army Medical Center from Washington, D.C. to the National Naval Medical Center in Bethesda, MD. Also included was the $200 million Warrior Transition Support Facilities, which involved the construction of 280,000 square feet for bachelor enlisted quarters, a dining facility, and a 145,000-square-foot administrative center to house a 70,000-square-foot fitness center above a multi-story, cast-in-place parking garage. Major upgrades to 17 operating room suites, additional parking facilities, and extensive infrastructure and gate improvements were a few additional projects making this a world-class facility. Total construction cost was 900 million. 2/12/12 – 6/22/14

CDM (Carbro): As Senior Estimator, performed quality take-offs, acquired materials, equipment and labor pricing, and worked with expert on estimate preparation. The overall work consisted of the construction of approximately 4,300 linear feet of buried 72-inch PCCP and associated structures, tunneling of approximately 250 linear feet of 72-inch PCCP and steel liner plates under railroad tracks, jacking of five 36-inch PVC pipes (approximately 20 feet) and steel casings under an active 80-year-old cast iron 48-inch water pipe, approximately 40-feet deep of 48-inch PCCP and connections to existing plant facilities. The total construction value was $10 million. 7/11/11 - 5/22/14

Cathedral of St. Mary, Trenton, NJ: The project consisted of a two phase facility condition assessment. Phase 1 contained a review of available records, interviews with users and on-site personnel, and a visual assessment of existing conditions. Phase 2 contained the analysis of the collected data and the preparation of a written report. The assessment addressed the following systems: heating, ventilation and air conditioning (HVAC) including boiler system in hot water distribution pumps and piping, air handling units, exhaust fans, ductwork, and building automation system; plumbing including domestic hot water heaters, recirculation pumps, sanitary waste water pumps, and storm water pumps; fire protection including fire suppression pumps, sprinkler piping, and detection, notification and signaling devices; and electrical distribution including panels, transformers and switchgear; and distribution wiring and devices. The total construction value was $12.5 million. 3/7/12 - 12/31/13

Cambridge Community, University of Maryland College Park, College Park, MD: The project consisted of HVAC upgrades to multiple student dormitory buildings at the Cambridge Community located at the University of Maryland College Park Campus. The Cambridge Campus is comprised of Cambridge Hall,

Centreville Hall, Chestertown Hall, Bel Air Hall, and Cumberland Hall. This project included hazardous materials abatement, window replacement, HVAC replacement, exterior wall thermal upgrades, flooring replacement, miscellaneous electrical upgrades, and the installation of an underground chilled water piping system between five dormitories and the main Cambridge community center. The total construction value was $40 million. 6/8/12 - 9/1/12

Multiple Land Ports of Entry, Various Locations: As Technical Consultant, participated in a constructibility review. This project included seven land ports of entry (LPOE) located throughout Maine, New York, Montana, Texas, and Washington. Each site is on five- to ten-acres of land and is a two-story building consisting of 5,000 to 10,000 square feet. The projects consisted of new construction and/or design-build special purpose facilities of $5 million or more. The total construction value was $65 million. 12/23/11 – 5/13/13

Montgomery County Police Headquarters Public Safety Building, Gaithersburg, MD: As Senior Cost Estimator, provided oversight for entire cost estimating team and provided quality control services for entire cost estimate at the schematic design, design development, and construction documents stages. This project included the renovation of an existing 408,000-gross-square-foot, six-story office building with a basement at Edison Park in Gaithersburg, MD. It included major and minor modifications to the architectural, mechanical, electrical, plumbing, life safety, acoustical, IT, furniture layout, and building operation design to house the Montgomery County Police Headquarters, the 1st Police District, and the Fire Department. The total construction value was $28.3 million. 3/3/10 - 2/28/10

Hurricane Storm and Damage Risk Reduction System (HDRRS), Frontage Protection at Bonnabel and Suburban Pump Stations, New Orleans, LA: Worked as a Lead Cost Estimator in assembling complete cost estimate and providing complete takeoff of plumbing, underground utilities, mechanical, marine work including sluice gates and slide gates at both the 50% Design Development and 95% Construction Document submissions. Mr. Ruth also assisted in wrapping up the estimates for all divisions and the final report. This project was part of the Hurricane and Storm Damage Risk Reduction System that was developed to reduce the risk of storm surges in five different parishes located in Louisiana. This project protects Jefferson Parish which is located in the greater New Orleans area between the Mississippi River and Lake Pontchartrain. The project was designed to reduce risk to residents within the project area. Structural features reduce the risk associated with a storm surge that has a one percent chance of occurring in any given year, or a 100-year storm surge. The project involved two pumping stations and provided fronting protection and backflow prevention.

- The Bonnabel Pump Station is located between Beverly Garden Drive and Hesper Street in Metairie at the northern most end of the Bonnabel Drainage Canal and houses three 1,050 cubic feet per second horizontal pumps and two cfs vertical pumps. Work was necessary to protect the pumping station that was vulnerable to reverse siphoning of the lake surge through the water passages of the horizontal pump discharge tubes. Cost: $35.7 million.
- The Suburban Pump Station is located at Lakevilla Drive in Metairie at Lake Pontchartrain at the northern most end of the Suburban Drainage canal. The Suburban Pump Station houses four horizontal pumps each with nominal capacity of 1,050 cubic feet per second. Work was necessary to protect the pumping station that was vulnerable to reverse siphoning of the lake surge through the water passages

of the horizontal pump discharge tubes. Cost: $44.2 million. The total construction value was $79.9 million. 1/30/09 - 6/30/09

Dulles Metrorail Phase 2, Fairfax, VA: As Senior Cost Estimator, provided the mechanical, plumbing, and site utilities cost estimate portion of this project. The project consisted of the design-build delivery of Phase 2 of the project. This included six new heavy rail stations, trackwork, roadway improvements, surface and garage parking facilities, relocation of existing utilities, storm water management, traction power sub stations, station platforms, kiss and ride stations, pedestrian bridges, at grade and elevated guideways, and support infrastructure. Also included are a new rail and train maintenance yard, new tracks for rail-car storage, service and inspection facility, paint shop, and operations building. The total construction value was $3.3 billion. 10/6/11 - 3/1/12

Central Virginia Regional Jail Authority, Orange County, VA: Provide cost estimating services in support of a value engineering study at the Central Virginia Regional Jail Authority for the Orange County Regional Jail Addition. Derived 38 proposals which resulted in a savings of $1.4 million. Project consists of a 200 bed Regional Jail addition, New Kitchen, and renovation of the existing Booking and Receiving area in Orange County. for minimum custody inmates, including space for those in the work-release program, those serving nine-day commitments and an area to start a pre-release program, which would teach life application skills for re-entering society to individuals meeting certain criteria. The expansion also includes a kitchen, which frees up the current kitchen space to renovate and enlarge the booking and receiving area. The total construction value was $17 million. 3/25/13 – 4/22/16

Crossland High School Auditorium, Temple Hills, MD: The project involved a new 21,865-square-foot building connected to the existing high school. The addition provides a new performing assembly space including an 800-seat auditorium, stage, service storage area, black box theaters, dressing room, project booth, and a lobby/pre-function area. This project is registered with the USGBC under the LEED green building certification program with the goal of LEED Gold. The total construction value was $4 million. 7/26/11 - 12/1/13

Danville Science Center, Richmond, VA: As Cost Estimator, participated in the value engineering study. The project consisted of the renovation of the existing three-story, 32,000-square-foot museum and the addition and construction of an underground museum with 3,500 square feet of exhibit space, and a new 180-seat digital dome theater with high-definition digital video and surround sound which is the largest theater in the region. The total construction value was $15 million. 12/13/10 - 4/16/12

East Baltimore Community School, Baltimore, MD: As Cost Estimator, provided estimates for the plumbing, mechanical, and fire protection systems at the design development and 75% construction documents design stages. The program for the East Baltimore Community Campus consisted of two primary facilities. The first was a K-8 school of approximately 103,000 square feet for 540 students. The second was a family support center of approximately 30,000 square feet, which housed an early learning programming for children from infancy to age five, along with four classrooms for adult learning

programs and support space for counseling and administration. The total construction value was $25 million. 6/17/11 - 6/1/12

Garrett Park Elementary School, Kensington, MD: As Mechanical Commissioning Agent, provided site inspection of the geothermal piping installation. This project involved a new 83,488-square-foot addition to the kindergarten through fifth grade school building, which replaced a large part of the existing facility, and renovations to the remaining 12,860 square feet for a total building size of approximately 96,348 square feet. It has a capacity of 662 students. The new addition is a two-story, steel-framed structure with brick veneer and masonry walls. The addition creates a centralized main entrance and an administrative suite located between the bus and student drop-off loops. This project also included a multi-purpose room, gymnasium, art and music rooms, a media center located on the second floor, and academic classrooms. The new building is heated and air-conditioned by a two-pipe hydronic heat pump system tied to a geothermal well field and consisting of individual vertical water-cooled units for each classroom. The remainder of the building is served by larger water source heat pumps located in the mechanical rooms. Classrooms will be ventilated via a roof-mounted hydronic heat pump integrated energy-recovery unit. Garrett Park Elementary School was reported to be the top energy performer for Montgomery County Public Schools for the May 2012 – April 2013 period. This project achieved LEED Gold certification. The total construction value was $24 million. 10/11/10 - 10/1/13

HEC Building, Northern Virginia Community College, Sterling, VA: As Cost Estimator, participated in the value engineering study. The project included cost estimating services in support of a four-day value engineering study. The architect/engineer's cost estimate was $12.1 million. Our estimate, based on the design, was $14.3 million, which meant that the project was over budget by $2.2 million. We derived a total of $3.2 million in savings, of which, $1.93 million could be completed together to create this "cumulative savings" total. This newly proposed building on the Loudoun Campus will house: faculty offices, IT and facilities staff offices, a Communication Center, an Information Technology Networking Lab, a recording technology studio as well as general classrooms and an event space for lectures and/or conferences. The HEC is loaded with energy saving features including directional outdoor lighting, occupancy sensors for lighting control, LED lights and a geothermal system to provide heating and cooling. This 43,400 square foot building is a three-story steel frame structure featuring a glass curtain-wall. The remaining façade is brick and stone veneer with metal wall panels. A cantilevered second floor dramatically extends over the campus pond and features a walkway across the water to connect the building with the Learning Commons Complex. The Higher Education Center is designed to engage the students academically, technologically and socially. The academic facility houses classrooms, labs, common areas, a multi-purpose room, and office space as well as a sound isolated recording studio with control room. Advanced telecommunications capabilities help to facilitate the connection between NVCC and its partner universities. Construction of the project included temporary, partial drainage of the pond for building footings, retaining walls, landscape and hardscape improvements. Building systems included an 80 well geothermal field and other energy conserving systems. The project is targeting LEED® Silver certification for the project. The HEC has a green roof and rain gardens for reducing rainwater run-off and a white roof for reflecting heat. This new building is situated over the campus pond. 250 people glass enclosed events center that extends cantilevered over the pond and fountain. The total construction value was $14.5 million. 10/20/14 - 9/15/15

Loudoun County Transit Maintenance and Operations Facility, Leesburg, VA: As Senior Engineer, provided the mechanical, fire protection, and plumbing cost estimate for the 95% CD Design Submission. The bus transit facility includes a 20,177-square-foot maintenance building and a 6,980-square-foot administration and operations building, both located on a 6.5-acre site. The facility consists of maintenance bays, service and support spaces, bus parking for fleet, administrative offices with storage, support spaces and lunch rooms, operation areas, and employee parking. The total construction value was $12.6 million. 8/28/12 - 9/1/12

Mitchell Hall, West Chester University, West Chester, PA: Served as a cost estimator for the mechanical, electrical, and plumbing services. The project included the design and 40-year life cycle renovation of Mitchell Hall on the campus of West Chester University. The facility is a 38,293-square-foot 41-year-old building. The project upgraded all building systems, provided state-of-the-art classrooms, faculty office space, and conference rooms. The total construction value was $7.2 million. 1/10/14 - 10/24/13

Montgomery County 3rd District Police Station, Silver Spring, MD: As Senior Cost Estimator, provided oversight for entire cost estimating team and provided quality control services for entire cost estimate at the schematic design, design development, and construction documents stages. The project consisted of the construction of the 3rd District Police Station. The station is a two-story facility with an overall height of 40-feet and gross square footage of approximately 30,000 square feet. Each floor comprises approximately 15,000 square feet. The building has a floor-to-floor height of 14 feet 8 inches. The floors are connected by two stairwells: one terminates at the vegetated roof level, allowing convenient access for maintenance workers. The project goal is to obtain a LEED Silver certification. The total construction value was $11.5 million. 1/4/10 - 2/28/10

Montgomery County Department of Health and Human Services Building, Rockville, MD: Provided oversight of the cost estimating team in quality assurance for this renovation cost estimate at the parametric level. This project included the renovation of a 1981 building housing the Department of Health and Human Services. The renovation work included upgrades to the HVAC, electrical, plumbing, and fire protection systems. In addition, flooring, ceiling, and wall assemblies were in need of repair. The total construction value was $12.7 million. 6/26/09 - 7/3/09

9/11 Memorial, Arlington, VA: As Cost Estimator, provided estimates and cost analysis for mechanical, fire safety, and plumbing divisions for this conceptual cost estimate. The project included the interior renovation of the lobby and second floor located in the existing TSA Systems Integration Facility (TSIF) building at Reagan National Airport for a 9/11 artifact exhibition. The total construction value was $628 thousand. 11/9/11 - 5/9/12

Building 9960, Fort Meade, Fort Meade, MD: The project included the renovation of a portion of an existing data center in the building. The project provided two new water cooled computer room air conditioning (CRAC) units, improvements to the chilled water loop, and electrical distribution improvements ahead of the installation of new IT racks within the data center. The total construction value was $4.5 million. 10/10/11 - 2/29/12

Aberdeen Proving Ground Data Center, Aberdeen, MD: As Senior Cost Estimator, derived a parametric cost estimate for $10.4 million based on the design narrative to provide upgrade to the current data and lighting at the Data Center Building 316, in Aberdeen Proving Ground, MD. This project consisted of upgrades to building 316 at Aberdeen Proving Ground. The total construction value was $10.4 million. 11/14/08 - 1/23/09

Academic Building Phase 3, Northern Virginia Community College, Woodbridge, VA: As Senior Cost Estimator, provided all division cost estimating at a value engineering study with two architects, civil, mechanical, plumbing, and electrical engineers. This project included the construction of a three-story, approximately 84,000-gross-square-foot, stand alone building that overlooks a lake on the Woodbridge campus. It was the second of six buildings in the 20-year master plan. The building provided much needed additional academic space for general classrooms, computer laboratories, and science laboratories for physics, chemistry and geology. The facility also includes a black-box theatre, a food service area, a new Learning Resources Center, and administrative and faculty office space. This project is LEED Silver certified. Special features include green vegetable roof structures, daylight/sunroofs, and a geothermal well system (80 wells - 400 foot depth each). The total construction value was $41.3 million. 1/19/10 - 1/21/10

Academic VI/Research II, George Mason University, Fairfax, VA: As Mechanical Commissioning Agent, performed on-site inspections for installation of ductwork, VAV boxes, and HVAC piping and plumbing. The new 180,000-square-foot building for the Volgenau School of Information Technology and Engineering contains 80,000 square feet of academic space including classrooms and administrative offices and 80,000 square feet of research space and laboratories. An additional 20,000 square feet of space is allocated for a collaborative research environment between the University and the private sector. The five-story Academic VI/Research II Building was constructed using the design-build delivery method and is the largest academic building at George Mason University that features a brick and cast-stone façade. Positioned at a prominent site near the main campus entrance, visitors to the building and the campus are greeted by the structure's four-story glass atrium. This building, the first LEED certified building on the GMU Fairfax campus, is LEED Gold certified. The total construction value was $66 million. 4/21/08 - 6/30/09

Admissions Center, Virginia Polytechnic Institute and State University, Blacksburg, VA: As Cost Estimator, provided a plumbing and mechanical cost estimate on 35% construction drawings. The project involved a new two-story building of approximately 18,125 gross square feet. It houses the Visitor Center including an assembly hall, exhibit space, and a reception area. The project attained LEED certification. The total construction value was $6.5 million. 2/3/09 - 3/31/09

AEDC White Oaks Security Improvements, Silver Spring, MD: As Cost Estimator, provided cost estimate based on the 100% submission drawings. The project included electrical upgrades, perimeter security fence, and new entrance guard booth . The project involved security improvements to AEDC White Oaks. The total construction value was $1.1 million. 4/21/08 - 4/25/08

Albemarle County Courthouse, Charlottesville, VA: As Mechanical Engineer, provided a constructibility review on the mechanical and plumbing construction documentation. The project was a renovation of the old courthouse. The total construction value was $20 million. 12/17/07 - 4/1/08

Aleda E. Lutz VAMC Water and Bulk Oxygen Tank Replacement, Saginaw, MI: As Cost Estimator certified in MCASES 2nd Generation (MII) cost estimating methodologies, provided a cost estimate for the 50%, 95%, and 100% construction documents. This project included determining the costs of various 150,000 to 250,000 gallon tanks such as “Double Ellipsoidal,” “Pedesphere,” “Torus Bottom,” ”Pedespheroid,” and “Fluted (Hydropilar)." Total project cost estimate at the 100% construction documents stage of design was $3.6 million which included removal of lead-based paint contaminated soil around existing tank. The project involved the removal and replacement of an existing medical grade bulk oxygen tank and water tower, including the water booster pump station, for the Medical Center. The items to be replaced were originally sized for a facility with a much larger in-patient capacity. The number of beds has been reduced over the years from about 258 to about 152. Today the facility is primarily used for outpatient surgery and ambulatory care. The existing water tank is a 150,000-gallon double-ellipse elevated water storage tank, which was built in 1949 by Pittsburg Des Moines with a height-to-low water line of 120 feet. The existing medical grade bulk oxygen tank needed to be removed and replaced. The total construction value was $5.7 million. 11/18/09 - 6/30/10

Allied Health Building, Georgia Technical College, Atlanta, GA: Provided a constructibility review for the mechanical and plumbing disciplines. This project involved the construction of a new two-story, 60,000 square foot educational facility at Okefenokee Technical College is a nursing and health technologies building. Programs housed include surgical technology, medical lab technology, respiratory therapy, medical assisting, paramedics, practical nursing, and radiological technology. General educational program spaces will also be included, such as a media center, economic development center, general classrooms and computer labs. The total construction value was $12.6 million. 7/2/07 - 6/30/07

Annandale Brault Building, Northern Virginia Community College, Annandale, VA: As Senior Cost Estimator, provided on-site estimating services for all disciplines. The value engineering study accumulative potential savings equaled $1.5 million. At the design development (DD) level the budget had not been set, however the current A/E cost estimate for the entire project was $12.46 million. The A/E cost estimate was adjusted by $250,000 to be more in line with the current costs of construction bringing the total cost to $12.7 million. The project involved cost estimating and value engineering (VE) services during a four-day VE Study. The Brault Building project consists of a 28,000-square-foot renovation and 20,000-square-foot addition to the administration building. The Brault Building features college administration, human resources, and printing services. The total construction value was $12.5 million. 3/1/11 - 3/3/11

Architect of the Capitol Tunnel, U.S. Army Corps of Engineers, Washington, DC: As Senior Cost Estimator, provided detailed cost estimate for the replacement of the tunnels for the Architect of the Capitol. This included not only cost, but also manpower and equipment in terms of crew hours and total duration of time for each task. This $15 million project consisted of approximately 600 linear feet of tunnel renovation to include hazardous materials abatement, road closures, steam and condensate pipe replacement, and encounter with existing utility systems conflicts. The tunnel system provides steam,

chilled water, and communications to the U.S. Capitol, Senate, Library of Congress, House of Representatives, U.S. Supreme Court, and other government buildings through over two miles of underground tunnels. The AOC performed assessments of the R (Red) tunnel which supports the Capitol office complex and identified five safety concerns: asbestos, structural hazards, poor egress, poor lighting, and inadequate communication systems. The tunnel has steam and condensate lines, as well as chilled water and communication cables; the utilities remained operational while the work was being performed. The AOC prepared a repair plan, considering the disruption and difficulty of the work. The potential costs, hazards, alternatives, and their associated costs and risks were also considered. The total construction value was $1 billion. 5/2/07 - 9/14/07

Athens Post Office HVAC Upgrades, U.S. General Services Administration, Athens, GA: As Mechanical Engineer, performed constructibility review for mechanical and plumbing trades. The project included the upgrade of the existing HVAC system in the combined post office and courthouse building in Athens. The total construction value was $350 thousand. 11/28/07 - 4/30/08

Athletic Team Building, Salisbury University, Salisbury, MD: The project included the new building which included demolition of existing facilities, and construction of a new press box, dugout, concession stand, and bleachers. The total construction value was $1.2 million. 11/16/11 - 11/14/11

Augusta Technical College, Augusta, GA: Provided a constructibility review for the mechanical and plumbing disciplines. Construction of a new classroom building. The total construction value was $6.8 million. 7/2/07 - 6/30/07

Avery Road Treatment Center, Rockville, MD: As Cost Estimator, performed a parametric cost estimate and provided oversight for quality assurance. The project consisted of replacing the existing Avery Road Treatment Center and was designed to be constructed in two phases to allow for continual use of the facility during construction. The existing 20,158-gross-square-foot short-term substance abuse treatment facility was in poor condition and would not withstand a renovation. The County planned to replace it with a new building. The new facility consisted of a two-story building that accommodated a total of 32,187 square feet of new program space. The total construction value was $14 million. 8/12/09 - 8/31/09

Bank of America Capital Plan, McLean, VA, United States of America: As Senior Cost Estimator, provided construction cost estimating services on various buildings through the Mid-Atlantic Region. Projects totaled over $2 million which included upgrades to communications, DDC system, lighting, security, elevator improvements, exterior signage, and HVAC work. The total construction value was $1.2 billion. 6/30/08 - 9/18/08

Banneker Hall, Morgan State University, Baltimore, MD: As Claims Consultant, wrote program to create actual project schedule based on daily reports for importing into Primavera P3. This project involved the renovation of the existing communications building, Banneker Hall, to house Morgan State University's Urban Studies department. The total construction value was $15 million. 8/9/10 - 6/30/10

Barstow Elementary School, Calvert County, MD: As Mechanical/Electrical Engineer, reviewed the construction document drawings and specifications against the design document review and the architect's responses for the MEP divisions. Project included geothermal wells and water source heat pumps. This new 75,600-gross-square-foot elementary school has a two-story wing to house the general instructional classrooms and a one-story wing for the cafeteria and gym. The school has the capacity for 723 students, 25 classrooms, and a wooded area. The total construction value was $27.6 million. 3/14/07 - 4/6/07

Baseball Stadium, James Madison University, Harrisonburg, VA: As Cost Estimator, participated in a 40-hour value engineering study. This project consisted of a new softball and baseball complex that will replace the existing stadiums. This new complex is scheduled to open in Spring of 2010, current set costs $8.6 million costs with 1,200 baseball seats and 800 softball seats. The value engineering team found potential valued engineering changes totaling $2.7 million in potential savings with $2.4 million cumulative savings. The total construction value was $9 million. 4/29/08 - 5/1/08

Bel Air High School, Harford County, MD: As Mechanical/Electrical Engineer, reviewed construction documents for this new $20 million project. This project included the construction of a new two-story, 262,424-gross-square-foot, 1,600 student facility to replace the 50-year-old Bel Air High School building. The new building, built on the same site as the existing facility, has a brick and metal panel exterior on a CMU back up, high-sloped shingle roofs, and low sloped built up roofs. One main corridor divides the building into a three-story classroom wing and a one-story administrative wing, which includes administrative offices, the auditorium, gymnasium, and several music and support spaces. The total construction value was $63.2 million. 3/20/07 - 7/30/06

Blue Ridge Regional Jail, Lynchburg, VA: As Cost Estimator for mechanical, electrical, and plumbing systems, participated in a value engineering (VE) study at the 35% and 100% design stages. Mr. Ruth developed life cycle cost estimates for electric alternative methods. The alternate proposal resulted in more than $100,000 in savings. The VE team derived $8.7 million in cost savings for this new prison facility. This project was originally schedule to be a $50 million, 460-bed facility. The new Amherst County Adult Detention Center is designed to include a full service kitchen and laundry facility, a medical unit, intake and booking facility, magistrate offices, educational services as well as administration and support areas. The project is pursuing LEED certification and includes preferred parking for low-emitting and fuel-efficient vehicles and carpools; storm water management strategies to reduce the quantity and improve the quality of storm water discharge; light or white roofing materials to prevent the heat island effect; landscaping with native and drought-resistant plants; vacuum plumbing system that will reduce wastewater generation by over 50 percent and will reduce overall water use by more than 60 percent; increased energy efficiency by selecting appropriate mechanical equipment, installing an air barrier, optimizing building insulation, and using energy efficient lighting fixtures to reduce energy use by at least 14 percent; enhanced commissioning to verify that the building’s energy systems are designed, installed, and operated to their highest energy efficiency potential; bicycle racks as well as shower and change facilities for building employees; recycling at least 50 percent of construction waste; using recycled and regionally-produced materials in the building construction; using FSC-certified wood products; and using low-emitting building materials. The total construction value was $6.9 million. 10/7/08 - 10/10/08

Blue Ridge Regional Jail, Falt Rock, NC: As Cost Estimator, derived cost savings for the 100% construction document design on the new prison facility. This new Amherst County Adult Detention Center is designed for 460 inmates. The regional facility will include a full service kitchen and laundry facility, a medical unit, intake and booking facility, magistrate offices, educational services as well as administration and support areas. The project is pursuing LEED certification and includes preferred parking for low-emitting and fuel-efficient vehicles and carpools; storm water management strategies to reduce the quantity and improve the quality of storm water discharge; light or white roofing materials to prevent the heat island effect; landscaping with native and drought-resistant plants; vacuum plumbing system that will reduce wastewater generation by over 50 percent and will reduce overall water use by more than 60 percent; increased energy efficiency by selecting appropriate mechanical equipment, installing an air barrier, optimizing building insulation, and using energy efficient lighting fixtures to reduce energy use by at least 14 percent; enhanced commissioning to verify that the building's energy systems are designed, installed, and operated to their highest energy efficiency potential; bicycle racks as well as shower and change facilities for building employees; recycling at least 50 percent of construction waste; using recycled and regionally-produced materials in the building construction; using FSC-certified wood products; and using low-emitting building materials. The total construction value was $35 million. 3/8/09 - 3/11/09

Base Realignment and Closure (BRAC) Construction Management Services, Washington, DC: Provided training and quality control for cost estimating services for the guard tower construction at NAVFAC Quantico. This indefinite delivery/indefinite quantity contract has a $20 million maximum order limit and a five-year term. Projects include:

Co-Locate Military Department Investigative Agencies (MDIA), Marine Corps Base, Quantico, VA ($357 million): This project co-located several military investigative agencies to a 719,000-gross-square-foot building on a 130-acre site. The state-of-the-art, secure complex consists of headquarters and administrative offices, investigative activity offices, security operations center, training centers, audio-visual production spaces, reference library, kitchen/dining area, fitness center, record storage, network operations center, logistical support area, electronics labs, and fabrication and vehicle maintenance areas. Separate buildings house a visitor control center, entry control facility, and an area distribution node for telecommunications connections to the base communications system. Also included in this project was off-site development of utilities, bridge and roadway improvements, and improvements to an existing access gate. The total construction value was $1 billion. 7/24/13 - 3/6/12

Brentwood Town Center, Brentwood, MD: As Cost Estimator, provided a parametric cost estimate. The Brentwood Town Center Project involved the transformation of the former two-story, 7,000-square-foot Brentwood Fire Department building into a Town Center, incorporating town offices, quasi-governmental agencies, non-profit offices, and community meeting space. This project allowed the Town to expand its recreation programs for residents of all ages in the current Town Hall, thus improving the quality of life for the residents. The total construction value was $880 thousand. 4/10/09 - 2/15/09

Brookings Energy Upgrades, Washington, DC: As Cost Estimator, estimated change orders dealing with heating, ventilating, and air conditioning upgrades. The project consisted of upgrading mechanical and electrical fixtures in multiple buildings. The project is located in the high profile embassy row area of DC, near DuPont Circle. The total construction value was $500 thousand. 5/24/10 - 5/26/10

Federal Child Care Facility, Brooklyn, NY: As Mechanical/Plumbing Engineer, provided a constructibility review for plumbing, fire protection, and HVAC for this energy conservation and renewable energy generation project. The project consisted of a new federally-sponsored child care center that occupies 12,500 square feet of ground floor space and accommodates 76 children, ages three months to five years. The Center was designed to achieve LEED Silver certificationor better under the LEED for Commercial Interiors rating system from the USGBC. The total construction value was $9 million. 6/2/10 - 3/31/11

Brooks Library, Norfolk State University, Norfolk, VA: As Cost Estimator, provided a cost estimate for mechanical, plumbing, and fire protection systems at both the design development and final construction document design phase. The new Brooks Library is a four-story, 132,000-square-foot new construction that replaced the existing library on the Norfolk State University campus. The new Brooks Library is a student focused facility which includes a three-story round rotunda lobby, a 24/7 internet café, conference rooms, staff offices, and other regular library functional spaces. The project was designed for a LEED-Silver certification. The project also included the demolition of the existing library. The total construction value was $36.9 million. 1/13/09 - 1/22/09

Burgin Building, Fort Meade, Fort George G. Meade, MD: As Mechanical Commissioning Agent, provided functional performance testing and acceptance testing. The project provided for the replacement of existing air handling units with the installation of two new rooftop air handling units, approximately 32 variable air volume (VAV) boxes, an emergency management control system (EMCS) for the new equipment, and photovoltaic arrays. The total construction value was $3.2 million. 10/13/10 - 11/15/10

Camp Stanley Storage Armory, San Antonio, TX: As Cost Estimator, provided a 100% design stage submission cost estimate. The project involved a storage armory at Camp Stanley, a weapons and munitions supply, maintenance, test, and storage facility. The post is on 4,000 acres with 630,000 square feet of storage space. The total construction value was $11 million. 6/23/08 - 6/26/08

Catonsville High School, Catonsville, MD: As Plumbing Engineer, provided a plumbing constructibility review on 95% construction drawings. This project was a limited renovation of a 231,497-square-foot school, including select education program enhancements and selected system upgrades for 1,685 students. The total construction value was $19.7 million. 12/4/08 - 12/10/08

Catonsville High School Boiler Replacement, Catonsville, MD: As Mechanical Engineer, provided mechanical and plumbing constructibility review on 75% construction drawings. The project consisted of a boiler replacement. The total construction value was $2.5 million. 7/30/08 - 8/15/08

Cecil Technical High School, Cecil County, MD: Provided a constructibility review for the mechanical and plumbing disciplines. This project involved the replacement of the existing Cecil Technical High School with a new 77,990-square-foot facility for 601 students. The total construction value was $61 thousand. 7/24/13 - 10/21/08

Cedar Grove Elementary School Chiller Replacement, Germantown, MD: As Mechanical Engineer, provided constructibility review for mechanical and plumbing work. The project consisted of a chiller replacement for Cedar Grove Elementary School. The total construction value was $3.6 million. 10/14/08 - 10/21/08

Center for Medicare and Medicaid Services, Woodlawn, MD: As Cost Estimator, provided mechanical and plumbing cost estimate. The project involved the replacement of 9,529 light fixtures and the installation of two variable frequency drives. The total construction value was $5.7 million. 5/13/08 - 5/15/08

Central Prison, Raleigh, NC: As Cost Estimator, provided estimate for the mechanical and plumbing disciplines. The construction program was performed under the construction manager at-risk delivery method. The program consisted of three construction packages. Package A consisted of the early sitework and the Central Utility Plant ($40 million). Package B consisted of the construction of the Regional Medical Center and Mental Health Facility ($90 million). Package C consisted of the Central Services Building Renovation and Additions to include a new kitchen, enclosed concrete corridor and other renovations ($13 million). The project involved complex coordination and phasing between multiple packages and operational prison facilities. The total construction value was $143 million. 10/26/06 - 4/30/11

Central Prison Site Utilities and Central Utility Plant (Package A), Raleigh, NC: As Cost Estimator, completed the utility takeoff for this project and provided independent cost estimates on the 100% construction document design. This project included a new central utility plant to house the mechanical, electrical, plumbing, and emergency generation systems. It also involved the construction of a new pump house, guardhouse/sallyport, and two new guard towers. Sitework infrastructure improvements included sanitary, storm, electrical ductbank, and water distribution, excavation and embankment, parking areas and fencing. Also included were selective demolition of existing utilities, buildings, asbestos abatement, and new foundation piling for the Regional Medical Center and Mental Health Center. The total construction value was $40 million. 10/26/06 - 11/20/06

Central Prison Regional Medical Center and Mental Health Facility (Package B), Raleigh, NC: As Cost Estimator, completed the utility takeoff for this project and provided independent cost estimates on the 100% construction document design. This project included a 120-bed regional medical center which was a five-story comprehensive medical center totaling 190,000 square feet with concrete frame, pre-cast exterior, and concrete block in-fill. The medical center contained a service dock, warehouse, morgue, exam rooms, doctor offices, emergency rooms, inpatient rooms, and operating rooms. The 216-bed mental health facility was a five-story, 140,000-square-foot, steel frame building with connectors to the

medical center and pods of crisis, intensive, and residential units. The total construction value was $90 million. 7/3/07 - 10/31/08

Central Prison Central Services Building Renovation and Addition (Package C), Raleigh, NC: As Cost Estimator, completed the utility takeoff for this project and provided independent cost estimates on the 100% construction document design. This project included demolition of the existing hospital and corridor, site preparation and utilities, new linking corridor extension, new kitchen addition, and existing kitchen renovation. The total construction value was $13.4 million. 7/1/08 - 4/30/11

Montgomery County Children's Resource Center, Rockville, MD: As Senior Consultant, provided cost estimate oversight for quality assurance on all divisions of new and renovation portions. The project included two alternatives that would accommodate the expanding programmatic needs of the Health and Human Services Early Childhood Services. The building addition provided approximately 51,100 square feet of building area. The building addition required a demolition of the gymnasium and office sections while renovating the two classroom wings. The second option was for a new building that is approximately 52,500 square feet. The new building is located on the southwest corner of the site. The construction did not disrupt the activities of the current Children' Resource Center. Both alternatives were designed to meet the 2015 programming needs of the childcare services offered in the facility. The total construction value was $12.4 million. 8/12/09 - 8/31/09

CIA University: As Cost Estimator, responsible for oversight of the mechanical and plumbing cost estimate. MBP will provide independent cost estimating services for the CIA University project. The total construction value was $7.5 million. 1/6/11 - 2/1/11

City of Charlottesville Operations Center, Charlottesville, VA: As Cost Estimator, participated in a 32-hour VE study. The total construction value was $14 million. 6/12/07 - 6/14/07

Colonel Richardson High School, Federalsburg, MD: As Mechanical Engineer, reviewed plumbing, mechanical, and fire protection drawings for constructibility. The project consisted of the renovation of an existing 121,085- square-foot school including a 12,347 classrooms addition. The total construction value was $15.4 million. 5/27/08 - 6/5/08

Columbia Annex, CANX Chiller Upgrade, Columbia, MD: As Senior Cost Estimator, provided oversight for entire cost estimating team for the 50% and 100% construction document design stage cost estimate. The Independent Government Estimate (IGE) totaled $1.3 million. The project included the construction of an addition and upgrades to the existing chiller plant serving the CANX Building, BMS control system, electrical system, an addition to the pump house, and a new utility filter storage building. The mechanical system work included adding a chiller, five new pumps, two exhaust fans, and two electric heaters with associated new controls. The electrical work consisted of adding power and lighting to the new rooms and connecting the new equipment to the existing system. The total construction value was $1.3 million. 12/8/10 - 2/1/11

Columbus Courthouse and Post Office Window Restoration, U.S. General Services Administration, Newnan, GA: Repairs to external masonry and water intrusion. The total construction value was $290 thousand. 1/14/10 - 5/30/11

Construction Cost Analysis, Montgomery County, MD: As Cost Analyst, derived and provided to Montgomery County a cost analysis, which consisted of averages and sums based on over 2,000 individual different vertical construction bid results from 1993 through 2007 for the Mid-Atlantic region. This was calculated using pivot tables within excel calculated average costs, means, and medians from the data. The project consisted of researching local government agencies to find the costs of recent public buildings and to determine the price per square foot to complete. Completed this task on 10/1/07.

Corron Center, Lord Fairfax Community College, Middletown, VA: As Cost Estimator, participated in a 40-hour value engineering study. This 30,000-gross-square-foot building will be a multi-purpose facility that supports the workforce services, continuing education, small business development, college advancement and community events. In addition, the Old Dominion University (ODU) Teletechnet program is partnering with LFCC to occupy a portion of the building, allowing expanded distance learning opportunities. The two-story facility will include classrooms, office space, and a 500-seat multi-purpose room. The value engineering workshop agenda included a presentation of the project data and cost model, team discovery and creative brainstorming, development of a master list of key cost saving measures, and presentation to the owner. The team yielded $7 million in non-cumulative potential savings for the college. The total construction value was $6.7 million. 5/15/07 - 4/26/07

Paramount Construction Cost Estimating Support Database: As Cost Estimator, created a custom database for client using actual costs for their bid requirements. This database is able to generate queries and custom bid forms for the client. This is a multiple project task order which provides Paramount General Construction a bid form and draft bid items list containing quantities and pricing. MBP provided a final bid form and a brief summary explaining the estimating methods used, factors employed, and assumptions made. The total construction value was $500. 4/29/09 - 4/17/10

Department of Employment Services Building, Washington, DC: As Cost Estimator, provided mechanical, plumbing and fire protection estimate including a constructibility review at the 95% CD stage of design. Reviewed cost estimate provided by another independent cost estimate company. The project consisted of a new five-story, 225,000-square-foot office building with two levels of underground parking. The total construction value was $62 million. 8/25/06 - 8/31/06

Department of Energy Build-to-Suit, Morgantown, WV: As Cost Estimator, provided plumbing and mechanical cost estimate on 100% construction document drawings. This building provides a single-story, LEED Gold certified facility with 65,000 rentable square feet of office and record storage space and is National Archives and Records Administration (NARA) compliant. Tenant improvements included interior walls, finishes and doors, telephone, electrical, data outlets, plumbing, mechanical, parking, physical security components, and a security system. The total construction value was $17 million. 2/2/09 - 7/31/09

Dorchester Career and Technology Center, Cambridge, MD: As the mechanical engineer, provided a mechanical and plumbing constructibility review on 100% construction documents. The project included construction of a new two-story School of Technology with accompanying administration and student support facilities. The total construction value was $15.1 million. 7/31/08 - 8/14/08

Douglasville Campus Addition, Douglasville, GA: As Cost Estimator, provided estimate for the mechanical and plumbing disciplines. A new two-story, 55,000-square-foot building for general classroom space at the Douglasville Campus for the college. The total construction value was $11.5 million. 10/29/07 - 12/31/07

Eastern Montgomery Elementary School, Elliston, VA: Served as Cost Estimator. The project consisted of construction of a new elementary school of approximately 106,000 square feet on approximately 20 acres of land. The project included K-5 classrooms, cafeteria, gymnasium, library, and associated spaces. The total construction value was $18.6 million. 9/1/08 - 8/5/10

Ebb Valley Elementary School, Carroll County, MD: As Mechanical/Electrical Engineer, reviewed the construction document against the design document review and the architect's responses for the MEP drawings.

This project included the construction of a new two story building with brick and metal panel exterior on a CMU back up. The building consisted of high-sloped shingle roofs and low sloped built up roofs. The total construction value was $15.4 million. 4/11/06 - 7/30/06

Elbert P. Tuttle U.S. Court of Appeals Building HVAC Upgrade, U.S. General Services Administration, Atlanta, GA: As Consultant, reviewed the contractor's hazardous material abatement and safety plan. To improve occupant comfort in the first floor administrative space, repairs and modifications of the mechanical systems consisting of air handling units, controls, and ductwork was needed. Furthermore, asbestos and lead abatement was required to comply with building safety codes. The total construction value was $421 thousand. 8/25/08 - 7/16/09

Elbert P. Tuttle U.S. Court of Appeals, Non-Resident Judge's Chambers Renovation, U.S. General Services Administration, Atlanta, GA: As Consultant, reviewed the contractor's hazardous material abatement and safety plan. This project included the design and construction for the renovation of the 2nd floor non-resident Chief Judge's Chambers at the Elbert P. Tuttle U.S. Court of Appeals Building. The work included remodeling four rooms into a larger judge's chamber, addition of a walk-in closet, installation of new millwork, installation of new flooring, construction of a new ceiling and installation of new light fixtures, modification of fire protection and mechanical systems, and installation of security equipment. The total construction value was $543 thousand. 6/24/08 - 6/15/09

Elbert P. Tuttle U.S Court of Appeals, Security Vestibule, U.S. General Services Administration, Atlanta, GA: As Senior Consultant, reviewed hazard material abatement documentation for constructibility and

code validation. The project included the design and construction of a lobby CSO protective screening station enclosure incorporating the critical protective elements articulated in the GSA/USMS Design Notebook for Federal Building Lobby Security. The screening station is constructed in the main entrance of the building. The total construction value was $1.3 million. 8/25/08 - 9/30/10

Emergency Electrical Systems Upgrade, Veterans Affairs Medical Center, Perry Point, MD: As Senior Cost Estimator, provided a parametric cost estimate and a 50% construction documents design cost estimate. This project is located on approximately 400-acres on the banks of the Susquehanna River and the Chesapeake Bay. The Medical Center, part of the VA Capitol Health Care Network (VISN 5), offers long and short-term inpatient mental health care, including an inpatient alcohol and substance abuse treatment program that is unique in the Mid-Atlantic region, and is a recognized leader in providing comprehensive mental health care to veterans in the Baltimore-Washington Metropolitan Area. The Medical Center is comprised of nearly 50 buildings and accommodates 470 authorized beds. VAMC Perry Point engaged CSI to design the upgrade and modification of the VAMC Perry Point's Emergency Electrical Power Distribution System. The cost estimates consisted of a spreadsheet detailing costs by a 34-category Uniform Building Systems Format similar to the GSA system. Each estimate was broken down by building with the new construction and alteration costs separated. The total construction value was $12 million. 11/3/09 - 6/30/10

Estelle Pump Station, Hurricane Protection Project, Jefferson Parish, LA: As Cost Estimator, provided an estimate at the 50% stage for all divisions. This project was part of the Hurricane and Storm Damage Risk Reduction System that was developed to reduce the risk of storm surges in five different parishes located in Louisiana. This project protects the West Bank and vicinity which includes Jefferson, Orleans, and Plaquemines Parishes and is located on the west bank of the Mississippi River. The project raised hurricane protection to 100-year levels between Old Estelle Pump Station and New Estelle Pump Station. The hurricane protection improvements included T-Walls and geotextile-reinforced earthen levees. The project involved detailed engineering and design incorporated into the various design data investigation, as well as one tension and one compression pile test. The total construction value was $45.2 million. 1/28/09 - 6/30/09

Estes Kefauver Federal Building and Courthouse Boiler Replacement, U.S. General Services Administration, Atlanta, GA: As Cost Estimator, provided cost estimating for mechanical and plumbing trades. Responsible for managing the replacement of the boilers at the Kefauver Federal Building and Courthouse. The total construction value was $350 thousand. 9/25/07 - 1/30/08

Fauquier County Parks & Recreation, Fauquier County, VA: As Cost Estimator, provided pre-conceptual cost estimating services for setting the capital budget for various projects throughout the County. The project consisted of renovation and additions to maintenance buildings, community centers, playgrounds, and sports facilities throughout Fauquier County. The total construction value was $28 million. 2/25/08 - 3/14/08

FBI New Lease Construction, U.S. General Services Administration, Charleston, WV: As Cost Estimator, provided cost estimate for mechanical, plumbing, fire protection and outside utilties at the 100%

construction documentation design phase. The project involved the design of the new 21,000-square-foot office building. The first floor contains three vehicle bays, office space for technicians, storage space, and some common space. The second floor consisted of sensitive compartmented information facility (SCIF) spaces, offices, and common space. The building provides 21 surface parking spaces which are leased by the GSA for use by the FBI. The total construction value was $5.5 million. 6/17/11 - 8/23/11

FCC Monitoring Station, Part One, Columbia, MD: FCC Monitoring Station. Provided cost estimate for all divisions of this project. The total construction value was $1.4 million. 3/15/08 - 3/21/08

First Baptist Church of Guilford, Columbia, MD: As Cost Estimator, reviewed available project cost records including pay applications, draw request reports, change orders, and contractor job cost reports. Evaluated the reasonableness of claimed costs. The project involved renovation and addition to an existing church building. Project included a 76,000-square-foot, two-story facility including a sanctuary, offices, classrooms, kitchen facilities, surface parking, and site improvements on an 8.5-acre site. The total construction value was $16 million. 8/16/11 - 8/15/12

Federal Law Enforcement Training Center (FLETC) Auditorium, Building 64, Cheltenham, MD: As Cost Estimator, provided a plumbing, mechanical, fire protection, electrical, and architectural cost estimate on 100% construction drawings. Project involved a new 6,724-square-foot auditorium which replaced the existing building 64. This building serves as the new Federal Law Enforcement Training Center. The total construction value was $2.2 million. 2/2/09 - 1/30/08

Fluvanna High School, Palmyra, VA: As Senior Cost Estimator, provided total cost estimating for all divisions at a value engineering 40-hour project task with a team of architects and engineers of all disiplines. This project involved based bid for over 250,000 gross square feet of school facilities, career center, tech center, stadiums, a field house, and competition fields. This project was also a LEED certified proposed project. The project involved a new 280,000-square-foot high school on an 80-acre site. The total construction value was $65 million. 6/24/08 - 6/26/08

Football Complex, University of North Carolina Charlotte, Charlotte, NC: As Estimator, responsible for oversight of the mechanical and plumbing cost estimate. The project consisted of a permanent 15,000-seat stadium expandable to 40,000 permanent seats, with an approximately 46,150-square-foot field house building consisting of athletic offices, meeting spaces, weight and training rooms, locker rooms, restrooms, and storage. Project scope also included a press box, two practice fields, relocation of existing recreation fields, as well as lights, access roads, walkways, service area, and parking. The total construction value was $45.3 million. 7/29/10 - 6/30/11

Fort Wayne Supply, Processing, and Distribution Department Expansion and Kitchen Modification, Veterans Affairs, Fort Wayne, IN: As Senior Cost Estimator put together all divisions of the estimate. The project consisted of modifications to the Supply, Processing, and Distribution (SPD) Department within the Veterans Affairs Northern Indiana Health Care System. The scope of this project included the

modernization/expansion and relocation of the SPD Department and modification of the kitchen. There were two options for the SPD Department modernizations. The first was to utilize the existing SPD Department and expand into the adjacent kitchen. This option required a temporary SPD Department location during the modifications. Temporary department locations included the use of the existing laundry area or bringing trailers on-site. The second option was to relocate the SPD Department to the laundry area. The scope of work also included kitchen modifications. The SPD Department's primary function is to decontaminate, package, and distribute surgical equipment. The functions of the kitchen area include the warming of already prepared meals, the cleaning of dishes, and food refrigeration. This function of the kitchen was expected to be constantly maintained through SPD expansions. Expected modifications for the kitchen area included new equipment and office spaces to create a more consolidated kitchen. The most important consideration of the expansion was the complete, physical separation of soiled materials and equipment from activities connected with the preparation, packing, sterilization, and storing of clean and sterilized materials and equipment. Due to the limited amount of available space for this project, MBP prepared estimates for multiple scenarios during the design phase. The total construction value was $2.3 million. 1/23/10 - 7/1/10

Germanna Community College, Fredericksburg, VA: As Senior Cost Estimator, provided all division cost estimating at a value engineering study with two architects, civil, mechanical, plumbing, and electrical engineers. Project involved a value engineering study for the College. The total construction value was $20 million. 4/27/10 - 4/29/10

Germantown Swim Center, Boyds, MD: As Cost Estimator, provided oversight and review of final cost estimate for this change order. This project included the re-painting of the interior ceiling areas of the Germantown Indoor Swim Center. The total construction value was $80 million. 2/24/11 - 2/28/10

Glenarden Community Center, Glenarden, MD: As Senior Cost Estimator, performed oversight for cost estimating team in evaluating change orders which included modifications to site work and utilities. Special construction included security measures such as bollard. The project included the addition/renovation of the 32,000-square-foot community center and repairs to the Theresa Banks Pool. The total construction value was $4 million. 11/2/12 – 12/22/13

Godwin Student Center, Norfolk State University, Norfolk, VA: As Cost Estimator, provided mechanical and plumbing cost estimates for the 95% contract documents. The project involved the 59,647 square-foot Godwin Student Center. The building has three levels and the project included an alteration and modification of the existing exterior, exterior envelope, interior, fire protection, plumbing, and mechanical systems. The total construction value was $22.2 million. 12/23/06 - 7/31/05

Health Education Institute, Gaston College, Dallas, NC: As Cost Estimator, provided a detailed cost estimate for the mechanical, fire protection and plumbing system for the construction document design phase. Project initially included construction of a new 36,000-square-foot classroom and lab building including numerous seminar and administrative areas. Building consisted of cast-in-place concrete foundation, structural steel framing, mechanical, electrical, fire protection, and plumbing, interior finishes including carpet, VCT, and epoxy resin flooring, acoustical ceilings, therapeutic pool, brick and

cast stone veneer, thermoplastic polyolefin roofing membrane, site improvements, utilities, parking lot, site lighting, concrete walks, and screen wall. The project scope was changed to include a second classroom wing, bringing total area to 80,560 square feet. The total construction value was $9.7 million. 9/28/06 - 4/12/07

HFDF Monitoring Station, Federal Communications Commission, Columbia, MD: As Lead Cost Estimator, provided cost estimate reflecting changes between design development documentation and construction document drawings. Overall changes totaled $200,0000 and involved utilities, architectural, electrical, communications, security and safety. The project included a new 4,500-square-foot building for the High Frequency Detection Finding Center for the Public Safety and Homeland Security Bureau of the Federal Communications Commission. The building contains an operations center, conference rooms, office space, and common areas and meets SCIF security standards. The project also included installation of water well and septic system, fiber-optic information technology infrastructure, and primary and emergency electrical service. The total construction value was $1.97 million. 3/16/12 - 8/1/12

High Energy Propellant Formulation Facility, Picatinny Arsenal, NJ: As Mechanical, Electrical, and Plumbing (MEP) Engineer and Cost Estimator, provided on-site reviews of 12-18 buildings in mid-construction to assess the cost to finish the MEP work in each of the buildings, since the contractor had pulled off site and abandoned the project two years earlier. The project involved improving existing conditions and creating new state-of-the-art facilities for preparing and testing experimental propellants. Forty-three existing buildings were affected and 13 new buildings were constructed. The support facilities included offices, change houses, raw material storage buildings, propellant storage magazines, waste collection facilities, and utilities. The total floor area was 62,000 square feet on an 18-acre site. The total construction value was $18.5 million. 7/1/09 - 9/1/09

Hillpoint Elementary School, Suffolk, VA: As Estimator, performed a detailed take-off of the 65% contract documents for mechanical and plumbing systems. This project consisted of a two-story, 97,000-square-foot, 800-student, K-5 elementary school. This facility consisted of both load bearing masonry and steel framed construction, sloped roofing and low slope roofing, and interior finishes including drywall, ceramic tiles, vinyl composition tiles, and terrazzo in corridors. The 15-acre site was improved to include staff and bus parking, turn lanes, ball fields, water, sanitary sewer, and storm sewer utilities. The total construction value was $23 million. 11/17/06 - 6/1/09

Hiram H. Ward Federal Building Facade Caulking, U.S. General Services Administration, Winston-Salem, NC: Served as Cost Estimator for all divisions at the conceptual level. This project consisted of design and construction services required to replace the caulking on the exterior of the Hiram H. Ward Federal Building. The total construction value was $300 thousand. 7/24/13 - 12/31/08

Historical Triangle Campus, Thomas Nelson Community College, Hampton, VA: As Cost Estimator, participated in a 40-hour VE study and served as the cost estimator. Reviewed the original plans and specifications for Phase I of the project and developed an independent cost estimate. The College proposes to create a new campus over a series of phases. During Phase I, MBP reviewed original plans,

specifications and an independent cost estimate of 11 million dollars. Further analysis by the value engineering team yielded 4.0 million in potential cumulative savings for the college. The total construction value was $6 million. 9/11/06 - 9/14/06

Hospital Expansion, University of Virginia, Charlottesville, VA: As Consultant, provided periodic cost consulting services to review change orders for this design-build project. This project consisted of the construction of a 130,000-square-foot, six-level addition adjacent to University Hospital. The main purpose behind this renovation effort – besides upgrading and expanding facilities – has been to provide additional operating rooms from 19 to 24 and to house clinical and associated support space for four critical hospital services: The Heart and Vascular Center, Perioperative Services, Department of Radiology, and Clinical Laboratories. The second floor of the addition houses 14 expansive new operating rooms (OR). A number of these ORs feature "smart" OR technology, an integrated equipment system of booms, endoscopic cameras, imaging technologies, video monitors and modes of transmitting and receiving signals between the OR and outside areas such as the Department of Radiology. This technology improved consultation and teaching well beyond the boundaries of the OR and even the Medical Center. Another innovation, which exemplifies UVa's commitment to safety, is the laminar airflow infection barrier technology that has been installed in all of the new ORs. In addition to providing an exceptionally high level of safety and comfort for patients, the operating rooms provide the perfect setting for UVa physicians to advance new technologies as they are introduced in their quest for more precise, less invasive and more effective treatments. The addition is fully integrated with the existing hospital floor plan, so that patients, their families and medical staff can move seamlessly between the expansion facilities and pre-existing structures. The entire hospital facility remained operational throughout construction. The total construction value was $14 million. 6/28/06 - 11/15/07

Hospital Renovation, University of Virginia, Charlottesville, VA: As Estimator, provided a detailed estimate for the mechanical, plumbing, and fire protection sections. This project consisted of the renovation of the second and third levels of the existing hospital. The renovation work included phased demolition and interior construction for the vascular ultrasound, ECHO cardiogram, ECG/stress, nuclear cardiac, operating rooms, catheter lab, and other support spaces. The renovations included approximately 150,000 square feet. Renovation of the entire existing 126,000-square-foot second level was to accommodate changing programmatic needs. The entire hospital facility remained operational throughout construction. The total construction value was $14 million. 6/28/06 - 10/1/06

Hugo L. Black U.S. Courthouse, 3rd Floor Magistrate Courtroom Addition, U.S. General Services Administration, Birmingham, AL: Senior Mechanical Engineer The renovation consisted of building a new magistrate courtroom on the 3rd floor along with four Judge's Chambers. The total construction value was $2.1 million. 10/6/10 - 11/30/10

Information and Technology Convergence Center, University of Mary Washington, Fredericksburg, VA: As Cost Estimator, provided the mechanical, plumbing, and fire protection cost estimate at the 35% construction documents stage. The 76,750-gross-square-foot project consisted of the construction of the new center. It contained digital media production facilities and massive digital archives. As the most technologically-advanced facility at the University, the Center contained a new head-end for the University's Fredericksburg campus network. Workspaces in the center were designed for collaboration

to allow audiences to view multimedia presentations and high-quality video conferencing sessions. The Convergence Center is the principal home for instructional design and support for the Fredericksburg and Stafford campuses, as well as the new campus, Dahlgren, in King George County. The total construction value was $24 million. 11/8/10 - 11/30/10

J. Blaine Blayton Elementary School, Williamsburg, VA: Provided cost estimates and constructibility reviews for the mechanical and plumbing disciplines. This project consisted of an elementary school with approximately 91,000 gross square feet and an anticipated student population of 705 students. The building consists of a two-story portion that is structural steel framed with metal stud and brick veneer and a single-story portion that has load-bearing masonry walls. The elementary school has a geothermal water heat source systems and white roofs for sun reflection and reduced heat absorption. The exterior sitework included a bus-parking loop, staff parking lot, and lighted soccer and softball fields. The total construction value was $15.1 million. 10/25/07 - 9/30/10

J. Caleb Boggs Courthouse Lobby Renovation, Wilmington, DE: As Senior Consultant, provided oversight of quality assurance in all divisions and reviewed all comments provided by the constructibility review team. This lobby renovation will allow room in the interior of building where tenants and visitors can wait for the security screening, in lieu of waiting outside. The new lobby design improves visitor flow with ample space for waiting indoors, provides two separate portals for entering/exiting traffic and “by design” increases the distance between the first and second set of doors within the vestibules to better allow for one door to completely close before the other opens (reducing the likelihood of heat or air conditioning from escaping). Total construction cost was $700 thousand. The lobby was closed for 21 weeks and reopened on Dec 6, 2010.

This 4,000-square-foot, two-phase project included a lobby expansion and lighting upgrade funded by the American Recovery and Reinvestment Act of 2009. Phase one of the project included the construction of a temporary screening facility. Phase two expanded the main lobby to accommodate the growing pedestrian traffic. It involved upgrades to the existing lighting in the exterior plaza soffit, stairwells, and in the parking garage. Occupancy sensors were installed to support energy conservation. This project also included renovation and expansion of the GSA office suite within the building. The total construction value was $1.9 million. 8/16/09 - 12/31/10

J. Sargeant Reynolds Community College, Richmond, VA: As Cost Estimator for all disciplines, performed life cycle cost estimates for value engineering alternatives. Community College The total construction value was $10 million. 11/13/07 - 11/30/07

James A. Byrne Federal Courthouse and William J. Green Federal Building Boiler Replacement, Philadelphia, PA: As Cost Estimator, provided mechanical and plumbing cost estimate on 50% construction drawings. The project included a boiler replacement in the federal building. The total construction value was $1.7 million. 4/24/08 - 4/25/08

James City County Community Gymnasium, Williamsburg, VA: As Cost Estimator, participated in value engineering studies for mechanical, plumbing and fire protection. The Community Gymnasium was designed and built for James City County. It is a 31,000-square-foot, single-story facility with three full basketball courts and support facilities. The total construction value was $4 million. 8/27/09 - 12/31/09

Jimmye Laycock Football Stadium Complex, College of William & Mary, Williamsburg, VA: As Cost Estimator, provided multiple estimates for all divisions and life cycle analysis for the value engineering study. Reviewed the feasibility studies, geothermal analysis, equipment selection, energy analysis, life cycle costing, and value analysis from the A/E team in an effort to bring value in those areas in addition to initial costs analysis. Mr. Ruth reviewed the A/E team's design development stage cost estimate and adjusted items that didn't match current market value. This allowed the owner to accurately gauge whether the project was below, at, or exceeding the budget. The new Jimmye Laycock Football Training Complex at the College of William & Mary provided the football team with a state-of-the-art training facility that housed offices for coaching personnel, a first-class player locker room, team meeting spaces, and sports training and rehabilitation areas. The project site consisted of approximately four-acres adjacent to the existing stadium and alumni house. The 30,000-square-foot facility is two-stories and features a sloping slate roof with concealed gutters to reflect the surrounding buildings on campus. The total construction value was $11 million. 5/29/06 - 7/30/06

Joel W. Soloman Federal Building and Courthouse, U.S. Marshals Service Space Renovation, U.S. General Services Administration, Chattanooga, TN: As CADD Specialist, performed constructibility review of architecture/engineering documents at the design document level. The project included design and construction to renovate the basement of the Joel W. Solomon Federal Building and U.S. Courthouse for use by the U.S. Marshals Service. The total construction value was $1 million. 1/2/08 - 2/20/08

Landstown Yard, Public Utilities, Virginia Beach, VA: Serving the owner as Cost Estimator, provided a construction cost estimate for this addition and renovation project. Renovations and additions to the existing 42,362-square-foot public utility Landsdown yard building. Addition totals 7,957 square feet. The total construction value was $4.5 million. 7/23/08 - 12/31/08

Lane Kirkland Center, National Labor College, Silver Spring, MD: As Cost Estimator, provided electrical and mechanical cost estimate on 75% construction drawings. This project involved a multipurpose conferencing center equipped with state-of–the-art meeting and training rooms, a distance learning center, a full-service kitchen, serving line, print shop, bookstore, computer lab, and a business center. The facility has a great hall, break out meeting rooms, overnight accommodations, and dining facilities. The facility totals 75,000 gross square feet on two levels. The total construction value was $18 million. 10/31/08 - 12/15/08

Lane Kirkland Center, National Labor College, Silver Spring, MD: As Senior Cost Estimator, provided cost estimates and change order analysis as needed on behalf of the developer. The 72,000-square-foot learning facility included state-of-the-art classrooms, meeting rooms, a distance learning center, and computer learning areas. Facilities can combine to create an 8,000-square-foot hall ideal for union and trade conferences, workshops, and staff retreats. The facility was completed with a great hall, "break

out" meeting rooms, overnight accommodations, and dining facilities. The total construction value was $18 million. 3/17/06 - 3/31/07

Lane Kirkland Center, National Labor College, Silver Spring, MD: Provided claim review for all divisions. The project consisted of construction of a 72,000-square-foot learning facility that included state-of-the-art classrooms, meeting rooms, a distance learning center, and computer learning areas. Facilities can combine to create an 8,000-square-foot hall ideal for union and trade conferences, workshops, and staff retreats. The facility also includes a great hall, "break out" meeting rooms, overnight accommodations, and dining facilities. The total construction value was $17.4 million. 7/24/13 - 9/30/06

Laurel High School, Laurel, MD: As Mechanical Engineer, reviewed plumbing, mechanical and fire protection drawings for constructibility. The project included a new gym and classroom renovations to the existing school. The total construction value was $2.8 million. 5/23/08 - 5/12/08

Lewis and Clark Elementary School, Ruther Glen, VA: As Estimator, provided a detailed estimate for the mechanical, plumbing and fire protection sections. This project consisted of a new pre-kindergarten through fifth grade school facility on 22.53 acres. The school is a one-story, 96,900-square-foot building with 4,500 square feet under canopies and covered walkways. The design provided for a student capacity of 950 students. The total construction value was $18.77 million. 6/5/06 - 3/31/09

Load Bank Upgrades, National Computer Center, Social Security Administration, Baltimore, MD: As Cost Estimator, provided estimating services for the mechanical and plumbing work. This project included the upgrade of existing load banks on-site. The total construction value was $1.3 million. 5/12/08 - 5/9/08

McMillan Chemical Building, Washington, DC: As Commissioning Agent, provided acceptance phase commissioning services. The project involved the renovation of the existing HVAC and control system. Renovations included the replacement of a multi-zone air handling unit (AHU), hot water circulation pumps, and a 50-ton chiller, as well as installation of new low pressure steam boilers, a new direct digital control (DDC) system, and miscellaneous HVAC improvements. The total construction value was $1 million. 1/7/10 - 12/31/09

Military and Leadership Field Training Grounds, Virginia Military Institute, Lexington, VA: Served as Cost Estimator. The project involved renovations and new construction at two existing locations. The North Post included construction of a new baffled firing range, new parking garage, storage for facility maintenance and tennis court equipment, consolidation and enhancement of the Leadership Reaction Course, new drill fields with seating and latrine facilities and the replacement of the existing footbridge. Construction at the McKethan Training Facility, used for simulated combat training, included new latrine facilities, storage space, communications rooms, renovation to the existing Sky Farm building to provide classrooms, guest facilities and access for persons with disabilities and the conversion of the existing Sky Farm pool enclosure to a classroom. The total construction value was $8 million. 2/25/09 - 6/30/09

Montgomery County Clarksburg Fire Station Sanitary Line, Clarksburg, MD: As Cost Estimator, provided parametric cost estimate. The project included the Montgomery County Clarksburg Fire Station sanitary line connection. The total construction value was $7.1 million. 10/3/08 - 10/2/08

Montgomery County Data Center, Rockville, MD: Served as Cost Estimator for the mechanical and plumbing systems. The project included a third floor HVAC system upgrade to the Montgomery County Council office building using indoor water cooled package units with an outdoor air cooled chiller. The total construction value was $2.1 million. 5/21/08 - 5/23/08

Montgomery County DLC Liquor Warehouse, Rockville, MD: As Lead Cost Estimator, provided oversight of the cost estimating team in quality assurance. The project consisted of the renovation of an existing 210,000-gross-square-foot warehouse that was originally built in 1970 for National Geographic. It included major and minor modifications to the architectural, mechanical, electrical, plumbing, life safety, acoustical, IT, furniture layout, liquor storage, and operation design to house the Montgomery County DLC Liquor Warehouse. The total construction value was $11 million. 8/26/09 - 6/30/11

Montgomery County Female Facility Upgrade, Kensington, MD: Served as Cost Estimator for all divisions. The Cabin John project scope included the renovation of approximately 244 square feet of space to accommodate lockers, toilets, lavatories, and showers. The Kensington Station #21 project scope included the renovation of approximately 3,800 square feet of space to accommodate 16 bunk beds, lockers, toilets, lavatories, showers, and sitework. The total construction value was $600 thousand. 7/9/08 - 10/18/08

Montgomery County Germantown Innovation Center, Germantown, MD: Served as Cost Estimator for mechanical and plumbing trades. This 32,000-square-foot, two-story building accommodates life sciences and advanced technology companies, office spaces, wet laboratories, modular clean rooms (Class 10,000), conference rooms, a large multi-purpose room, and full kitchen. Green-design elements include: lab floors of rapidly renewable materials, an innovative wall system that dramatically reduces dry-wall waste, carpet made with recycled materials, use of natural daylight and light sensors to reduce energy consumption and efficient mechanical systems. The total construction value was $6 million. 9/24/07 - 11/2/07

Montgomery County Yard Trim Processing Facility Gude Landfill, MD: As Cost Estimator, provided electrical and mechanical cost estimate on 50% construction drawings. The proposed project is for the installation of a yard trim processing facility at the Gude Landfill. The scope of work for this project includes modification to 6.8-acres of an existing 55.28-acre landfill. Modifications include but are not limited to installing a new tarping station, an asphalt driveway, guard station, weight scales, site lighting, retaining walls, facility building, and enlarging the existing retention pond. The total construction value was $8.9 million. 10/3/08 - 10/6/08

National Aquarium Restroom Renovation, Baltimore, MD: As Cost Estimator, responsible for oversight of the mechanical and plumbing cost estimate. MBP provided independent cost estimating services for the

National Aquarium's Restroom Renovation project located at Pier 3 and Pier 4 facilities. The total construction value was $800 thousand. 1/7/11 - 1/31/11

National Business Park Building 302, Annapolis Junction, MD: Served as Lead Cost Estimator for all divisions at the 35% design stage. The Building 302 project includes design and construction of a 38,900-square-foot secure office environment for administrative offices, lab spaces, and conference room using recycled content, regional and low-emitting materials. In addition, the project includes lighting and HVAC system upgrades/balancing, generators, security and communication support that optimized the energy performance of the building by 35% and reduce the lighting power density to 35% below the standard. In addition, this project will install sub-metering equipment to measure and record energy use. The facility is set to achieve at least a LEED Silver rating. The total construction value was $7.55 million. 2/11/09 - 2/13/09

National Business Park Building 324, Annapolis Junction, MD: As Senior Cost Estimator, attended the charrette with architect/engineer team, provided a cost estimate at the schematic design stage, and provided oversight to the cost estimating team for the 35%, 65%, and 100% design stage. This project provided tenant improvements to a four-story building known as National Business Park Building 324. The total renovated space is approximately 125,000 square feet. The total construction value was $2 million. 3/11/10 - 9/14/10

National Business Park Building No. 1 (Secure Facility), Annapolis Junction, MD: As Senior Cost Estimator, provided 65% and 95% cost estimates for the mechanical and plumbing disciplines. The project consists of the phased renovation of approximately 10,200 square feet of office space inside suite 12A55 in an existing 240,336-square-foot mixed-use office building. The total construction value was $2.5 million 9/30/12 – 8/22/13

National Maritime Center, Martinsburg, WV: As Cost Estimator, provided estimate for the mechanical and plumbing disciplines. The project consisted of a new 63,000-square-foot, three-story building constructed for the U.S. Coast Guard as a new facility to consolidate their mariner licensing activities into one central location. The project was constructed in a compressed ten-month time frame with five months for site excavation, foundation, and structural steel erection and five months for placement of concrete floor slabs, building enclosure, installation of building systems, and tenant improvement finishes. The total construction value was $3 million. 12/29/06 - 10/31/07

New Health Services Educational Building, Danville Community College, Danville, VA: Serving as Cost Estimator, participated in a 40-hour valued engineering study at Danville Community College for their newly proposed $7.6M Renovation and New Health Sciences Building in May 2007 during the design development (DD) stage. In April 2007 as Cost Estimator for the VE team proposed increase of approximately $800K for an adjusted project cost of $5.5M. Current budget was $4.5 M, however VE team proposed a total of 39 various discipline VE suggestions for a total potential savings of almost $1.5 M and an accumulative savings of $1.2 M. New Health services education building. The total construction value was $7.55 million. 4/24/07 - 4/26/07

New Jimmye Laycock Football Complex, College of William & Mary, Williamsburg, VA: As Cost Estimator, provided a detailed, professional estimates for this complex. The Jimmye Laycock Football Complex included a new 30,000-square-foot, two-story, football complex, and two new practice fields. The original budget for the project was analyzed by MBP. MBP created a new cost estimate to identify savings to the original budget. The college required that the new complex building be erected directly outside of the perimeter of existing football stadium without coming in contact with this existing structure. The new structure consisted of locker rooms on the first floor and coach offices on the second floor. The view from the second floor was designed to overlook the football field. The total construction value was $11 million. 1/7/08 - 2/18/07

New Market Elementary School, Frederick County, MD: As Mechanical/Electrical Engineer, reviewed the construction document drawings and specifications against the design document review and the architect's responses for the mechanical submission. This project consisted of the construction of a two story building with masonry walls, steel columns, steel beams, bar joists on concrete slabs. Construction included 23,181 square feet of new space in the addition while, 27,880 square feet of space was renovated. The total construction value was $8.8 million. 4/26/06 - 4/20/06

New Student Center, Tidewater Community College, Portsmouth, VA: As Cost Estimator for all disciplines, participated in a 32-hour value engineering study. This 57,133-square-foot design-bid-build project consisted of construction of a new student center. The space was intended to be used for interior and exterior social/gathering areas, food service, book distribution, event conferences, student organizations, gaming, child care, physical fitness, yoga and dance studios, and building support. It was designed to achieve LEED-Silver certification and consisted of brick, curtainwall, and metal panels consistent with the materials used in the existing campus buildings. The original budget for this project was estimated to be $15 million based on the architect/engineer's cost estimate. MBP found nearly $1 million of costs that were not in the original cost estimate, but were required as a part of the contract, along with $2.67 million in savings, of which, $2.64 million were accumulative savings. The total construction value was $15.2 million. 2/24/11 - 1/14/11

New Training Facility, Customs and Border Protection (CBP), Erie, PA: As Mechanical Engineer, reviewed drawings for mechanical, plumbing and fire protection constructibility. This was a 30,000-square-foot, single-story facility that included office space, a holding/detention area, a muster/training area, and an exercise/locker room constructed of recycled-content and low-emitting materials. It also included an enclosed vehicle parking garage, a dog kennel, and a helipad. The tenant improvements included interior wall, interior finishes, interior doors, telephone/electrical/data outlets, parking, physical security components, and security system. This station is set to be the first LEED-certified border patrol station in the country, with a goal of LEED Silver. The new station eliminated water pollution by increasing on-site infiltration, conserved existing natural areas, and restored damaged areas to provide habitat and promote biodiversity. It is scheduled to increase the levels of energy performance by 25% above the standard. The total construction value was $6.5 million. 4/14/11 - 4/30/10

Newnan Probation Office, U.S. General Services Administration, Newnan, GA: Reviewed specifications and drawings on abatement of asbestos provided by the contractor. The project consisted of renovating the existing courthouse to expand the footprint of the Probation Agency - the disciplines involved were

Hazmat, Architectural, Mechanical, Electrical and Life Safety. The total construction value was $1 million. 10/13/09 - 11/16/09

Nuclear Regulatory Commission, U.S. General Services Administration, Atlanta, GA: Provided a constructibility review for the mechanical and plumbing disciplines at the 75% construction document design stage. The Nuclear Regulatory Commission (NRC) acquired a new lease space at the Marquis One Tower. The new offices consisted of 101,528 rentable square feet of office space and two inside parking spaces. NRC is currently located in the Sam Nunn Atlanta Federal Center and the Richard B. Russell Federal Building Courthouse, this project consolidated their offices into one location. The Lessor provided the space was ACP Marquis One LLC. The new space consisted of renovating six office floors to accommodate NRC space and security requirements. The total construction value was $4.5 million. 7/24/13 - 11/1/09

Odenton Elementary School, Odenton, MD: As the mechanical engineer provided a mechanical and plumbing constructibility review. The project consisted of the replacement of the HVAC system for Odenton Elementary School. The total construction value was $2.75 million. 10/16/08 - 10/22/08

Office of Personnel Management (OPM), FISD National Training Facility, Slippery Rock, PA: As Estimator, provided estimates of costs for a/e and construction management services. The facility involved a 25,000-square-foot, single-story office building and training facility with 175 parking spaces. The training center has both an office component as well as five training rooms with the capability of opening into one large training room. The training rooms contain raised flooring as well as a significant amount of teledata infrastructure. The tenant improvements included architectural, electrical, mechanical, plumbing, data/communications, raised access flooring, audio-visual systems and equipment, parking, physical and electronic security components, and a security system. The total construction value was $13 million. 4/14/11 - 12/31/09

Organizational Maintenance Shop and U.S. Army Reserve Command Buildings, Sharonville, OH: As Cost Estimator, provided cost estimate for mechanical and plumbing. Mr. Ruth also provided oversight and guidance to the cost estimating team. This project included demolition, a new ceiling, new flooring, and structural modifications and alterations to existing mechanical, plumbing, and electrical systems. Utilized the U.S. Army Corps of Engineer's preferred MII software.

USARC Building Modifications, Bryan, Ohio: The project consisted of modifications to the USARC Building, located at 630 Newdale Drive, Bryan, Ohio, 43506. Approximately 2,700 square feet of building space was renovated. The project included asbestos abatement, demolition, a new ceiling, new flooring, and modifications to the existing mechanical and electric systems. There were no modifications to the existing fire protection or plumbing systems as shown on the final construction drawings. The total construction value was $400,000. 5/28/09 - 5/29/09

Pennsylvania Department of General Services, Pennsylvania Emergency Management Agency (PEMA) Headquarters, Susquehanna, PA: This project included the construction of a new PEMA headquarters

facility that houses operations of various agencies including the PEMA Emergency Operations Center, the Office of the State Fire Commissioner, the Office of Radio Operations, the Pennsylvania Department of Transportation Area Command, the Pennsylvania State Police Activation Watch Center, the Bureau of Radiation Protection Watch Center, and the Pennsylvania All Hazards Fusion Center. Additionally, the facility accommodates personnel representing the Office of Homeland Security. The facility consists of a main building with a floor area of approximately 97,400 gross square feet and a vehicle storage building of approximately 15,000 gross square feet. This project was originally designed to be constructed at Fort Indiantown Gap and, following the change in State leadership, was constructed in Susquehanna Township, Dauphin County. The total construction value was $50 million. 11/19/10 - 7/31/10

Aero Train System Main Terminal Station (Package 6), Dulles International Airport, VA: As Estimator, performed independent takeoffs, pricing and scope review of proposed change orders. The project involved the construction of a 1,600 foot-long train station, located directly adjacent to the Dulles Airport main terminal. The multi-level station incorporated new security screening levels and train platforms located 60 feet below grade. The $330 million project involved more than 220,000 C.Y. of excavation, extensive support of excavation and multiphase, and complex concrete construction. The project included approximately 275,000 square feet of finished space, including new security mezzanines, departure and arrival areas, and the train platform area. All construction took place adjacent to ongoing airport operations, and required renovation of FAA offices, baggage handling facilities and existing waiting areas. The total construction value was $333 million. 6/4/08 - 5/31/08

Pangborn Elementary School, Washington County, MD: As Mechanical/Electrical Engineer, reviewed the construction document drawings and specifications against the design document review and the architect’s responses for the MEP divisions. This new 84,500-gross-square-foot elementary school includes parking, athletic fields, and tennis court and increased the school's capacity to 699 students. The design was modeled after the Essex Elementary School prototype. The total construction value was $26.8 million. 3/7/07 - 9/6/06

Parking Garage Relocation, Ronald Reagan Washington National Airport, Arlington, VA: Served as Cost Estimator for electrical changes that required adding additional signage and re-location for several different rental car locations within the existing parking garage. The project involved the addition of a new fifth level on top of the existing parking garage and the relocation of rental car companies and their structures. The total area of addition and renovation was about 460,000 square feet with an estimated construction cost of $41 million. The estimated change was priced by the contractor at more than $1.35 million, and with our independent cost estimates, the owner was able to negotiate this cost down approximately 28%. The total construction value was $1.9 million. 4/4/09 - 3/31/09

Pennsylvania Convention Center, Philadelphia, PA: As Plumbing Engineer, provided cost estimates and constructibility reviews for plumbing at the design development stage. The project consisted of the construction of a multi-story, 965,000-square-foot expansion to the existing building. The new expansion included a lobby, meeting rooms, exhibit halls, offices, ballroom, new kitchen and mechanical room, and associated utility and support spaces. In addition, this project included renovation to the existing convention center; demolishing and reconstructing approximately 30,000 square feet of the back of the house support services without disruption to the day-to-day activities of the center. Key

work elements included sitework, building envelope, interior construction, escalators and elevators, interior finishes, millwork, furnishings, plumbing systems, fire protection systems, HVAC systems, and electrical systems. The total construction value was $630 million. 2/1/07 - 8/31/07

Perryville Middle School, Perryville, MD: As Plumbing Engineer, reviewed design development stage documentation on the plumbing system for constructibility. Renovation and new addition of the existing middle school. The project included renovation of the 94,550 square feet facility and 1,750 square feet of new construction. The total construction value was $14.2 million. 8/29/08 - 12/31/05

Petworth Branch Library, District of Columbia Public Libraries, Washington, DC: As Commissioning Agent, performed FPTs on HVAC equipment and ductwork, reviewed contractor TAB reports, and witnessed TAB verification. The design-build project involved modernizing the 21,266-gross-square-foot library to LEED Silver certification level and included a complete renovation and modernization of the building systems. The total construction value was $10 million. 3/7/12 - 10/1/12

Piedmont Community College, Charlottesville, VA: As Senior Cost Estimator, participated in a 40-hour VE study and served as the cost estimator. The College proposes to create a new 35,000 SF, two- story science lab with a circle roundabout in front of the building. The original budget of 7.7 million versus the independent cost estimate of 10.7 million required further analyzes by the valued engineering team, which yielded 2.6 million in potential cumulative savings for the college. The expected bid date for this project is to be Sept 2007. The total construction value was $8.1 million. 2/13/07 - 2/16/07

Partnership, Outreach, and Research to Accelerate Learning Building (PORTAL), University of North Carolina Charlotte, Charlotte, NC: As Senior Cost Estimator, provided oversight for the mechanical, plumbing and fire protection cost estimators during the design development stage. The PORTAL building project is an approximately 93,000-square-foot new higher education office building. The project consisted primarily of office and meeting space with a cafe and a functioning exterior space on the roof as well as areas constructed to comply with sensitive compartmented information facility (SCIF) requirements. The facility helps startup businesses grow and provide them with access to university resources. The total construction value was $37 million. 7/12/10 - 6/30/11

Portsmouth Campus, Tidewater Community College, Portsmouth, VA: As Senior Cost Estimator, participated in a 40-hour VE study filling the role of cost estimator.

MBP reviewed the proposed documentation, set budget, original plans, specifications, and independent cost estimate for the new buildings on campus. MBP assisted by providing cost estimates for the proposed changes by the value engineering team. The value engineering team yielded 7.0 million in potential savings for the college. The expected bid date for this project is to be Nov 2007. The total construction value was $45 million. 9/11/06 - 9/25/06

Pre-Release Center Kitchen Renovation & Addition, Montgomery County, MD: Served as Cost Estimator for all divisions. This project proposed to renovate and expand the existing Kitchen at the Montgomery

County Pre-Release Center a community correctional facility. The total construction value was $3 million. 7/19/07 - 6/15/05

Radio Frequency Shielded Enclosure Addition, U.S. Army Corps of Engineers, Laurel, MD: As Senior Cost Estimator, provided oversight and quality control for the entire cost estimate. MBP provided independent cost estimating services for the shielded enclosure located in the Emerson Building Complex in Annapolis Junction, MD for Gensler's client, the U.S. Army Corps of Engineers. The client received a 100% final design stage cost estimate. The total construction value was $1.1 million. 5/18/10 - 6/17/10

Rales Residence Arbitration, Potomac, MD: As Senior Estimator, prepared detailed cost estimates of repairs. Performed detailed takeoffs, contacted vendors for quotations, and prepared final estimate. The project involved a residence situated on 150 acres in Potomac, Maryland and includes a main house, guesthouse, pool house, lake and private art museum. The 22,000 square foot museum, clad in zinc panels and French limestone, is known as Glenstone and includes seven galleries and as well as administrative office suite, high-density art storage, temporary holding space, a service dock and a catering kitchen. The total construction value was $12.5 million. 4/2/13 - 4/1/13

Renovation of Anderson Training Building, Woodrow Wilson Rehab Center, Fishersville, VA: As Cost Estimator, developed a cost estimate for the mechanical, electrical, and plumbing systems. This project consisted of approximately 101,000 square feet of renovations to the existing facility that serves as a vocational building at the Woodrow Wilson Rehabilitation Center, and included office, classroom, and training spaces. The total construction value was $18 million. 11/8/12 - 2/12/13

Richard B. Russell Building, U.S. Attorney Office 10th Floor Renovation, U.S. General Services Administration, Atlanta, GA: As Cost Estimator, created a report and cost estimate after reviewing the drawings of the hazardous abatement requirements. The U.S. Attorney space is on the 10 floor of the Richard B. Russel Federal Building in Atlanta, GA. This renovation included 15 new interior offices plus a conference room. The total construction value was $400 thousand. 4/13/09 - 7/1/09

Roanoke County Fleet Management Facility, Roanoke, VA: As the Senior Cost Estimator Mr. Ruth performed the cost estimating for all construction divisions during a valued engineering study on-site. This new 23,600 gross square feet Roanoke County's Fleet Service Center serves as the County's maintenance facility for all fleet vehicles, including Garbage Trucks, Fire & Rescue vehicles, Police vehicles, Parks, Recreation and Tourism maintenance vehicles and more. Through a cooperative agreement, the Fleet Service Center also maintains vehicles for the Western Virginia Water Authority. The total construction value was $8.3 million. 2/19/08 - 1/21/08

Building SAB1, Fort Meade, MD: The project involved the mechanical and electrical systems. Equipment commissioned included three air handlers, one steam to hot water converter system, one air cooled chiller, two water heaters, thirty-six variable air volume (VAV) boxes, two exhaust fans, two condensate

pumps and associated energy management controls system (EMCS). The total construction value was $4.5 million. 10/6/11 - 9/1/13

Safe Haven Facility, Alexandria, VA: As Cost Estimator, performed a detailed cost estimate and value engineering study on behalf of the Owner. The project involved the additions and alterations of a two-story historic building which consisted of multi-purpose rooms, offices, bedrooms, kitchen, and living and dining rooms. The total construction value was $1.2 million. 8/12/08 - 7/22/08

Salisbury University Stadium, Salisbury, MD: The four-story Sea Gull Stadium will be more than 30,000 square feet when it opens in spring 2016. "The existing team building could fit into its lobby," Matthew Groves, the stadium's project manager, said in a statement. The project included the demolition of the existing press box, dismantling and reassembling current bleachers with ADA modifications, installation of a new press box and associated superstructure and utilities. The total construction value was $19 million. 10/21/11 - 10/21/11

Sam Nunn Atlanta Federal Center, Department of Education, U.S. General Services Administration, Atlanta, GA: The project involved renovations completed on the 18th and 19th floors of the Sam Nunn Atlanta Federal Center. The total construction value was $7 million. 10/11/10 - 10/1/10

Science Building, Northern Virginia Community College, Annandale, VA: Served as Cost Estimator for all divisions and provided cost estimating services in support of a value engineering study. Northern Virginia Community College Science Building, Loudoun Campus, III. The total construction value was $17 million. 10/28/08 - 10/30/08

Science Building, Virginia Military Institute, Lexington, VA: As Lead Cost Estimator, provided preliminary design cost estimates for all divisions and participated in a 40-hour value engineering workshop. The project was a 55,000-square-foot, four-story building occupied by the Biology and Chemistry Departments as well as the Undergraduate Research Institute. The total construction value was $12.5 million. 2/24/09 - 2/27/09

Scotland Recreation Center, Potomac, MD: As Estimator, provided estimating services for the mechanical, plumbing and fire protection section of the estimate. The project included demolition of an existing building, which was deemed undersized by the Montgomery County Recreation Department, and the construction of a new 13,467-square-foot, two-story recreation center. The project was designed to meet LEED Silver and comply with the County Planning and Energy Design Guidelines. The new facility includes a gymnasium, weight room, several activity rooms and game rooms, and a social hall. The total construction value was $5.16 million. 3/5/12 - 3/30/12

Seven Locks Elementary School, Bethesda, MD: As Mechanical Commissioning Agent, provided site inspection of the geothermal piping installation. The project involved modernizing a 65,500-gross-square-foot elementary school to replace the existing facility. The conservation of energy was a primary

design factor reflected in the configuration and orientation of the school building including the incorporation of outdoor courtyards to let natural sunlight into the interior spaces. The building plan consolidated the building into two wings with the administrative suite, multipurpose room, gymnasium, art, music, and support spaces located in one wing at the front of the school and the academic wing containing a two-story classroom atrium, instructional media center, and computer laboratory located at the rear of the building. The school is heated and cooled via a two-pipe hydronic heat pump system. Geothermal wells are used to reject or supply heat to the building's two-pipe water loop. The school has a capacity of 279 (kindergarten through fifth grade) students. This project is LEED Gold certified. The total construction value was $19.5 million. 10/14/10 - 1/22/13

Severna Park Middle School, Severna Park, MD: As Mechanical Engineer, provided a mechanical and plumbing constructibility review. This project involved a 145,000-square-foot renovation to the existing school along with a 55,000-square-foot addition. The total construction value was $56.2 million. 10/15/07 - 10/26/07

Sherman & Gloria H. Cohen Career Center, Williamsburg, VA: As Mechanical Engineer, created approximately 20 different fire protection, plumbing, and mechanical value engineering proposals. The Sherman & Gloria H. Cohen Career Center was located near Zable Stadium and immediately adjacent to the existing Sadler Center on the historic campus of the College of William & Mary. The new two-story building has a total plan area of 13,740 square feet. The facility has 16 sound attenuated business interview rooms for privacy, a presentation and meeting room, an elevated terrace, a large reception and resource room with a two-story fireplace, a director's suite, offices, and other support areas. The exterior was designed to fit the historical nature of the surrounding buildings yet offer a large two-story glass enclosed area for the reception and resource rooms. The sloped roof is comprised of artificial slate shingles to match the surrounding buildings. The total construction value was $7.9 million. 3/17/09 - 7/1/09

Shielded Enclosure, National Business Park Building 302, Annapolis Junction, MD: As Lead Cost Estimator, provided cost estimating services during the design charrette and at the 35% design stage and 100% stage for all divisions. This project included selective demolition of existing mechanical, electrical, and architectural components to accommodate a shielded enclosure comprised of four rooms and an anteroom, approximately 800 square feet. The RF shielded enclosure will receive new electrical, mechanical, and plumbing services and will have new communications and architectural components for the end-user, Corporate Office Properties Trust. The total construction value was $1 million. 8/9/10 - 12/31/10

New Social Security Administration Building, Roanoke, VA: As Cost Estimator, provided cost estimating at the 95% design stage and oversight on putting together all divisions (1-16) on the new building and also performed constructibility review for mechanical and plumbing systems. This new, LEED Silver certified, three-story facility has 67,000 rentable square feet on a three-acre lot. The tenant improvements included interior walls, interior finishes, interior doors, telephone/electrical/data outlets, parking, physical security components, and security systems. The total construction value was $17 million. 7/29/08 - 10/21/08

Social Security Administration Individualized Video Training Studio, U.S. General Services Administration, Atlanta, GA: As Cost Estimator, provided mechanical and plumbing cost estimate on 75% construction documents. The project included the design and construction of renovated office space in the Sam Nunn Atlanta Federal Center (SNAFC) for the Social Security Administration's Individualized Video Training Studio. The total construction value was $1.3 million. 2/25/08 - 5/31/08

South Carroll Senior and Community Center, Eldersburg, MD: As Commissioning Agent, provided on-site commissioning for mechanical, electrical, and domestic cold water systems during the construction and acceptance phases. The design-build project constructed a 32,600-square-foot, combined senior center and gymnasium facility. The center was designed to integrate the residential area surrounding it and provide a pleasant feel for the community. The design incorporated LEED concepts where possible. Additional designated areas included dining area, food service area, large multi-purpose rooms, separate craft areas, game rooms, reception, lounge, computer room, and conference room. The total construction value was $7.8 million. 3/12/09 - 1/31/10

Russell Hall Renovations, Southwest Community College, Cedar Bluff, VA: Served as Cost Estimator on the value engineering team. This project involved the renovation of 43,835 square feet. The existing building included a library, computer laboratories, an industrial learning center, classrooms, and supporting offices. The project consisted of eliminating interior concrete slab on grade and upgrades to the HVAC system (new boilers and rooftop air handling units and central building automation system), fire alarm system, life safety upgrades, and sprinkler system as well as the construction of new offices and computer laboratories and the demolition of the existing library. The total construction value was $5 million. 11/8/09 - 3/30/10

Social Security Administration Headquarters Clean Agent Fire Suppression System Annex & NCC Buildings, Baltimore, MD: As Cost Estimator, provided cost estimating services for the 50%, 90%, and 100% construction documents design stage. The project consisted the design for the installation of a HFC 227ea clean agent fire suppression system in the annex computer room no. 3860, an associated telephone riser closet room no. 3645, and an associated mission critical mechanical/electrical room. All rooms house mission critical equipment that must be protected in a case of a fire, consequently, SSA requested the installation of a HFC 227ea clean agent system because it is an environmentally-friendly, rapid extinguishing clean agent suppression system that is used in applications where the operations of the space cannot be interrupted. The total construction value was $1.2 million. 11/18/09 - 6/30/10

Social Security Administration Uninterruptible Power Supply Replacement, Wilkes-Barre, PA: DOC Mechanical and Plumbing This two-phase project included the demolition of the existing uninterruptible power supply systems (including batteries and controls systems) and the installation of a new upgraded system complete with battery and control systems and connection to the existing supply. The total construction value was $739 thousand. 4/25/08 - 4/25/08

Student Health & Success Center, James Madison University, Harrisonburg, VA: As Cost Estimator for all disciplines, participated in a value engineering study. The Student Health and Success Center (SHSC) was James Madison University's first project proposed for the recently purchased Rockingham Memorial

Hospital, across Grace Street from the main campus. The SHSC provided a central location for several student support services at JMU. Three major components composed the SHSC:

- The Student Success Center and General Services portion of the project housed office spaces, information and technology support, collaborative project workrooms, presentation and training, student study spaces and building support activities. General Services included computer IT support, the Office of Financial Aid and Scholarships, University Business Office, and Office of the Registrar. Total square footage was 196,089 with 20,790 square feet in additions and 175,297 square feet in renovations.
- The University Health Center included several services that were not in the existing Health Center such as open and enclosed offices, counseling rooms, exam rooms, medical and specialty clinics, physical therapy procedural rooms, radiology, laboratory, pharmacy, administrative offices, wellness and outreach, and support storage. This portion of the project includes 46,453 square feet, which includes a 4,728-square-foot addition and 41,725-square-foot renovation.
- JMU/Aramark Food Services were two food venues totaling 19,471 square feet. The addition was 1,450 square feet and the renovation included 18,021 square feet.

The value engineering team derived $4 million in savings for this project. The total construction value was $53.8 million. 2/10/11 - 2/10/11

Student Life Center, Virginia Western Community College, Roanoke, VA: The project included the expansion of the existing student center from 14,000 square feet to 23,400 square feet to improve the College's student activity and relaxation opportunities outside of the classroom. The renovation and third floor addition improved the existing building's connection to the campus. The center serves as a gateway from the main parking lot to the primary College circulation system by way of a new bridge on the third floor. The total construction value was $6.5 million. 10/21/11 - 11/10/11

Student Recreation Center, Blue Ridge Community College, Weyers Cave, VA: The project consisted of the construction of a 35,040-square-foot recreation facility. The building featured cardio fitness equipment; a gymnasium; racquetball; locker rooms; an elevated running track; free weights; and office, multipurpose and general recreational spaces. The project was designed to achieve LEED Silver certification. The value engineering team presented approximately $1 million in value engineering savings. The total construction value was $8.9 million. 7/20/11 - 10/1/10

Salisbury University New Intramural Field, Salisbury, MD: The project consisted of the construction of a new Intramural Field at the University's east campus. The project's scope of work included rough grading, turf, irrigation system, fencing, security cameras, emergency phone system, sports equipment, bleachers, a new equipment shed, and stadium lighting. The total construction value was $750 thousand. 10/26/12 - 9/10/12

Sub-region VI Elementary School, Upper Marlboro, MD: As Mechanical Engineer, provided a mechanical and plumbing constructibility review. This project included the construction of a new two-story, 82,659-square-foot, 792-student facility on the site adjacent to the Dr. Henry A. Wise Jr. High School. This pre-K through 6th grade elementary school contains 43 classrooms, art, science and music instructional spaces, a computer lab, a media center with television studio, a multipurpose room, and guidance and health services. The Barack Obama Elementary School, Prince George's County second LEED certified school, incorporates green features from design through occupancy including green classroom furniture and green educational initiatives. This project also included geothermal systems under the playing fields eliminating the need for boilers and chillers. This project is LEED Gold certified. The total construction value was $12.8 million. 5/2/08 - 5/8/09

Technology Center, Blue Ridge Community College, Weyers Cave, VA: As Cost Estimator, participated in a 32-hour VE study. This project consisted of a new 22,100-square-foot technology center building. The total construction cost for this new facility was $6.9 million dollars. The total construction value was $45 million. 3/18/08 - 3/20/08

Temple Beth Aaron Additions and Alternations, Teaneck, NJ: As Cost Estimator, provided oversight of cost estimating services for the fire protection, mechanical, plumbing, and electrical disciplines. Mr. Ruth also provided quality control for this task. This project included a 12,000-square-foot renovation and 10,544-square-foot addition to the existing Temple Beth Aaron. The project includes the demolition of existing adjacent structures, site preparation, a three-story addition for congregation spaces, and new partition walls, lighting, plumbing, and furnishings in the existing building. The total construction value was $4 million. 7/24/13 – 12/12/14

The Brookings Institution, Washington, DC: As Cost Estimator, provided change order estimates for the HVAC piping system. The project involved an existing four-story building with a basement that had recently had the third and fourth floors renovated. The project included exterior handicap improvements and improvements to the first and second floors, which totaled approximately 12,500 square feet. The first floor included the president's office and other high-level management offices. The building was occupied during the three-month renovation. The total construction value was $2.8 million. 3/25/09 - 7/13/09

The Mikvah of Greater Washington, Silver Spring, MD: As Senior Consultant, provided a detailed cost estimate for the mechanical, electrical, and plumbing systems. The project involved the construction of a new one-story 5,508-gross-square-foot Mikvah with a partial basement. The building has a wood frame and masonry structure and includes plumbing, HVAC, data and telephone systems throughout. The total construction value was $1.67 million. 12/18/06 - 12/28/06

Thompson Theatre, North Carolina State University, Raleigh, NC: As Cost Estimator, provided estimates for the mechanical and plumbing trades. The project was the renovation of an existing 52,500-square-foot building. The building was originally a gymnasium but was subsequently converted to a theater. The theater renovation included new theater facilities, studios, shops, and rehearsal rooms. Work

included demolition, hazardous material abatement, structural reinforcing, adding a partial second floor, interior finishes, mechanical, electrical, plumbing and life-safety improvements. The total construction value was $8 million. 11/21/06 - 6/16/06

Thurmont Primary School, Frederick County, MD: As Mechanical/Electrical Engineer, reviewed the construction document drawings and specifications against the design document review and the architect's responses for the mechanical submission. Key features of this project included a one-story building, masonry walls, steel columns, steel beams and bar joists, and a concrete slab. The project also consisted of 16,734 gross square feet of new construction and 2,850 gross square feet of renovation. The total construction value was $8.9 million. 6/27/06 - 7/20/06

Tyler Building, Northern Virginia Community College, Alexandria, VA: As Cost Estimator, provided cost estimating and value analysis in support of a value engineering study. MBP provided cost estimating and value engineering services during a four-day value engineering study. The total construction value was $15 million. 5/11/10 - 5/13/10

U.S. Postal Service, Regional Sorting Facility, Capitol Heights, MD: As Cost Estimator, provided cost estimating services for the electrical, mechanical duct, and HVAC equipment changes. This project included comprehensive upgrades to the existing HVAC system in a phased construction schedule within an active mail processing facility operating 24 hours a day, seven days a week. Systems replaced included boilers, air handlers, VAV boxes, rooftop package DX units, distribution, and BACnet compliant DDC controls. Reference: Lori Bickler. The total construction value was $12 million. 7/24/13 - 10/1/08

University of Maryland College Park, College Park, MD: The capital program involved new construction and major renovation of facilities which included residence halls, dining facilities, student unions, research laboratories, lecture halls, computer centers, health centers, gymnasiums, athletic fields, parking lots, roads and utilities, garage structures, offices, and libraries for the University of Maryland College Park and eight University System of Maryland institutions. Most of the buildings were LEED certified. The total construction value was $500 million. 2007-2014

U.S. Army Corps of Engineers, Training Services, Various Locations: Assisted with the creation of a database in Microsoft Access. U.S. Army Corps of Engineers Baltimore District will have hired 135 interns over a five-year period by 2010 and 30 new managers to manage a threefold increase in annual construction workload. Additionally, as significant loss in experienced staff is anticipated due to retirement in the near future. An extensive construction management training program for the Baltimore District is required to overcome these challenges and accomplish its BRAC mission while concurrently preparing for future missions. The total construction value was $164 thousand. 10/21/08 - 3/22/09

Veterans Affairs Medical Center, Wilmington, DE: As Cost Estimator, provided cost estimates for mechanical systems. Project involved an upgrade to the rooftop chiller for an operating room at the Veterans Affairs Medical Center. The total construction value was $180 thousand. 4/7/08 - 9/30/08

Norfolk Light Rail Vehicle Storage and Maintenance Facility, Norfolk, VA: As Senior Mechanical/Plumbing Cost Estimator, provided fire protection, mechanical, and plumbing cost estimating for 32 different change orders for the owner totaling $500 thousand versus the contractor's request of over $1 million. This project consisted of the redesign of a 24,460-square-foot vehicle storage and maintenance facility (VSMF) on the Norfolk light rail system. Early in the construction phase, the exterior of the building and several functional spaces inside were changed. These changes resulted in a major redesign of the facility. The VSMF serves as the operations, control, maintenance, and cleaning facility for the light rail operations. The total construction value was $15 million. 9/6/11 - 5/1/11

Veterans Affairs Medical Center, Salem, VA: Served as Cost Estimator for all divisions. The project included the replacement of underground utilities throughout the site, replacement of air handling units on buildings 11, 12, and 74, and replacement of water condensing units on buildings 11 and 74. The total construction value was $15.1 million. 8/18/08 - 8/22/08

Vincent Farm Elementary School, Baltimore County, MD: As Mechanical/Electrical Engineer, reviewed the design document drawings and specifications against the owner's requirements and reported any issues in the mechanical submission. A new 91,000 square feet elementary school with parking, athletic fields, and tennis courts. The school will have a capacity for 699 students and has the basic layout of the previous versions of the Essex Elementary School prototype. The total construction value was $10.4 million. 8/22/06 - 9/6/06

Walter Reed Community Center, Arlington, VA: As Commissioning Agent, investigated the existing construction implementation to determine new sequences of operation requirements for the direct digital control (DDC) system and recommended building envelope repairs during the post-construction phases. The Walter Reed Community Center is a 30,000-square-foot, single-level community center completed in 2006 in compliance with the USGBC's LEED Silver certification requirements. The county requested help with this project in developing and implementing new sequences of operation to reduce excessive energy costs. The total construction value was $200 thousand. 1/26/10 - 1/1/12

Washington Building Claim, Richmond, VA: As Lead Estimator, estimated renovations to the mechanical, HVAC, domestic water, and sanitary systems of this facility in the heart of the historic downtown district. This project involved the renovation of a 13-story, high-rise office building. The total construction value was $18 million. 1/12/09 - 6/1/09

Washington Building Renovations, Virginia Department of General Services, Richmond, VA: As Cost Estimator, provided a detailed estimate for replacing the flooring structure of this facility by investigating various systems and inspecting the current conditions on-site. Renovation of a 12 story building built in the 1920's. Work primarily involves interior renovation. The total construction value was $18 million. 10/13/06 - 12/31/06

Wilder Center Renovation, Norfolk State University, Norfolk, VA: As cost estimator provided cost estimate at the schematic design stage for the mechanical, plumbing and fire protection renovations totaling over $1 million dollars. This project includes renovation of the existing 56,247-square-foot, two-story, Wilder Performing Arts Center. The overall aim of the project is to correct a safety problem that occurred during the previous design and construction related to the auditorium floor. The project also includes an upgrade and replacement of communication, audiovisual, and information technology systems to maintain a functional arts presentation facility. The project additionally includes extensive stage lighting and stage rigging system upgrades, site improvements, landscape, site lighting, paving, handicapped accessibility and other amenities. The total construction value was $5.2 million. 2/29/12 - 3/20/12

Williamsburg James City County Public Schools, Williamsburg, VA: Provided cost estimates and constructibility reviews for the mechanical and plumbing disciplines. The schools are situated on an 81-acre-site. The two schools share a common parking lot for staff and visitors. Each school has its own bus parking and turnaround areas that have separate entrances from the main road to minimize vehicle traffic into school loading and unloading zones. There are a number of athletic fields including two softball, one baseball, and four multi-purpose fields. Each of these fields has site lighting and an underground irrigation system. Two of the multipurpose fields also contain the geothermal well field that includes 520 geothermal wells that are part of the buildings' heating, cooling, and ventilation systems. The site also includes three large stormwater ponds that manage the quality and quantity of the runoff water from rain events. In addition, the site includes playgrounds, play areas, a maintenance storage building, an outdoor stage at the middle school, and an environmental study area that consists of a deck and walkway along the perimeter of one of the stormwater management ponds. The J. Blayton Elementary School consisted of approximately 91,000 gross square feet and an anticipated student population of 705 students. The building consists of a two-story portion that is structural steel framed with metal stud and brick veneer and a single-story portion that has load-bearing masonry walls. The Lois S. Hornsby Middle School consisted of approximately 145,000 gross square feet and an anticipated student population of 800 students. The building consists of a three-story structure that is structural steel framed with metal stud and brick veneer and a single-story portion that has load-bearing concrete masonry unit walls with brick. MBP won the CMAA Project Achievement Award for the Lois S. Hornsby and J. Blaine Blayton Construction Program in November 2011. The total construction value was $46.5 million. 10/24/07 - 12/31/09

Windsor Oaks Elementary School, Virginia Beach, VA: As Cost Estimator, provided estimate for the mechanical and plumbing disciplines. The project consisted of the construction of a new 85,940 square foot elementary school for 722 students. After the students and staff moved into the new facility, the old building was torn down to make way for the ball fields and parking areas. The school received in 2009 the Sustainable Development Merit Award from the Virginia Beach Planning Commission and is LEED Silver certified. Windsor Oaks is a prototype plan used by the school division for 14 other elementary schools to include: Christopher Farms, Linkhorn Park, Seatack, New Castle, Bayside, Kempsville Meadows, Woodstock, Hermitage, Three Oaks, Brookwood, Windsor Woods, Arrowhead and Diamond Springs and Newtown elementary schools. The total construction value was $17 million. 10/15/10 - 12/31/08

Winston E. Arnow U.S. Courthouse, U.S. General Services Administration, Pensacola, FL: As Cost Estimator, provided independent cost estimates on change orders for renovations to the existing courthouse. The purpose of the project was to restore, hurricane-proof, and modernize the historic Winston E. Arnow U.S. Courthouse constructed in 1949. The project was composed of four phases. Phase I included the installation of a new roof, demolition of the interior of the building, removal of mold and contamination, and hurricane-proofing the building. Phase II included upgrading and modernizing the HVAC, constructing all interior partitions, and installing new electrical systems throughout the building (fire alarm, life safety, branch and emergency circuitry). Phase III involved completing all aesthetics including painting, wood finishing, installation of crown molding, flooring (carpet and VCT), and restoring the historic elevator. Phase IV included performing sallyport renovations and constructing an addition for U.S. Marshalls services' space including a new secured elevator, holding cells for prisoners, and a secured parking area for judges. The Winston E. Arnow Federal Building was vacated in 1998 when the U.S. District Court moved offices to a new courthouse, after which the building underwent an 11-year renovation. Starting in 2003, Congressman Jeff Miller introduced legislation to name the building in memory of Judge Winston E. Arnow. President Barack Obama signed the designation into law on December 14, 2010 and the renovated building was formally dedicated on May 20, 2011. The total construction value was $15.5 million. 2003 – 5/20/2011

Woodlawn High School, Woodlawn, MD: As Mechanical Engineer, provided mechanical, plumbing, and fire protection constructibility review on 95% construction drawings. The project included the renovation of the 26,390-square-foot auditorium and gymnasium. The total construction value was $3.6 million. 12/12/08 - 12/10/08

Workforce Development Center, Northern Virginia Community College, Woodbridge, VA: As Cost Consultant, Mr. Ruth provided estimates to be used in a life cycle cost analysis based on value engineering alternative recommendations. The project included the construction of new 55,000-gross-square-foot work-force development building, along with associated sitework including parking lot construction for 250 cars and possible utility relocations. A food service facility was also included in the building. The project was out of budget by $2 million at the time of the VE study. The team developed 41 proposals that amounted to more than $4 million in cumulative savings. The total construction value was $23.7 million. 4/16/12 - 4/12/12

Pre MBP Projects

Malcom Randall Veterans Administration Medical Center Residential Units, Gainsville, FL (3/16/06): Reviewed SD-2 Peer Review and CPM scheduling.

Montgomery County's Division of Capital Development, Various Projects, Montgomery County, MD (3/9/06): As Scheduler, updated over 30 projects using Primavera's Project Management Enterprise Program (P3eC).

National Park Services Georgetown Waterfront Park, Washington, DC (2/5/06): As Lead Estimator, provided cost estimating services for the mechanical utilities and landscape design for this $500 thousand renovation.

National Park Services Great Falls Tavern, Potomac, MD (1/20/06): As Lead Estimator, provided estimates for the mechanical and domestic water system cost for the $400 thousand repair/renovations to the Great Falls Tavern.

National Institutes of Health, Harbor Hospital, Baltimore, MD (1/18/06): As Cost Estimator, provided estimates for the mechanical and domestic water system cost for the $300 thousand addition of an MRI area. Mr. Ruth also provided a cost estimate for the plumbing and HVAC work during a $1.2 million expansion for a new MRI room.

National Park Services Ford's Theatre, Washington DC (1/17/06): As Lead Estimator, provided a class C estimate of the mechanical, HVAC, domestic water, and sanitary systems for the $3.5 million renovation of this historical facility.

Veterans Administration Medical Center, Las Vegas, NV (1/12/06): As Technical Reviewer, provided a schematic design constructibility review for this new $160 million facility.

Plum Orchard Mansion Phase II, Cumberland Island National Seashore (1/11/06): As Inspector, provided inspection services for the validation and verification of changes to HVAC, plumbing, and fire protection system for this historical renovation project.

National Institutes of Health AHU Replacement Project, Bethesda, MD (1/9/06): As Estimator, provided three cost estimates for the replacement of the air handling unit on the roof of this more than 30 years, old facility. Mr. Ruth analyzed and evaluated the best method of removal and the installation of new systems and provided sample schedules to illustrate the complexity of each option. The system upgrade was projected to cost up to $10 million.

National Park Services Corson Block Building, New Bedford, MA (12/23/05): As Estimator, provided cost estimating services for plumbing and HVAC renovations/upgrades on this $4 million project.

Veterans Administration Medical Center, Heinz Engineering Shop Building, Pittsburgh, PA (12/20/05): As Estimator, reviewed cost estimates for adding air conditioning to an existing heating ventilation unit during this $3 million renovation.

Courthouse 402, U.S. Court of Appeals, Washington DC (9/14/05): As Cost Estimator, reviewed the mechanical and plumbing take-offs for this $250 thousand renovation to an existing courthouse. This

building was certified as a historical structure and renovations were phased to allow for occupancy during construction.

Maersk Sealand's A.P. Moller Marine Terminal, Portsmouth, VA (5/16/05): As the Mechanical and Utility Estimator, estimated the following systems: underground storm water management, fire protection, domestic water, sanitary system, and pumping stations. This $220 million project consisted of constructing a 1.5-square-mile new marine terminal. The estimate was created during the construction development design stage and required calculations of the shoring and excavation.

Cherry Hill Middle School and Library Renovations, Elkton, MD (4/29/05): As Estimator during the schematic design stage, estimated the heating and cooling requirements based on the scope of work for this $125 thousand renovation project.

Stevensville Middle School, Stevensville, MD (1990): As Lead Estimator on behalf of the owner, Queen Anne's County, Mr. Ruth managed this $2.5 million renovation project. He estimated costs for material procured and completed certified payroll for the HVAC and plumbing systems.

HUD Baltimore Housing Authority, Baltimore, MD (1988): Managed this $2.5 million steam renovation project. Estimated project cost for almost 50 three-story townhouses including steam tunnels between each building to central steam from Baltimore's central steam station. Procured and completed payroll on Housing Authority of Baltimore projects through Perkins Homes.

Damascus Volunteer Fire Station, Damascus, MD: As Project Manager, responsibilities included on-site construction management, estimating and purchasing of all construction materials, and critical path method (CPM) scheduling. This new 10,000-square-foot building included accommodations for six, a kitchen, and a common room for the firefighters. It also housed offices for administrative personal, training rooms, and garage space for the fire engines.

Surveyor/Inspector, Various Locations: Provided asbestos abatement, hazardous material, medical waste, flood control and security surveys on behalf of various owners. Researched past drawings, reviewed proposed construction plans and specifications and monitored contractors during construction. Projects included:

- Ingersoll Dresser Plant Manufacturing Facility, Baltimore, MD
- Bruning Paint Company Storage Facility, Baltimore, MD
- Phoenix Color Printing Press, Hagerstown, MD
- Mason F. Lord Building on Johns Hopkins Bayview Campus
- Homewood Dormitory, Johns Hopkins University
- St. Mary's College Science Center Renovation, Emmitsburg, MD

- Johns Hopkins Hospital/Eastern High School Renovation, Baltimore, MD
- Sacred Heart Hospital, Cumberland, MD
- Aberdeen Proving Grounds Building 3156, Aberdeen, MD
- Baltimore City Detention Center. Baltimore, MD
- Maryland House of Corrections, Jessup, MD