Mechanical Engineer, Melrose Credit Union, Queens, NY

Use NYC Local Law 87 to perform an energy audit and retro-commission the entire building. The building is approximately 58 KSF and constructed in 2012.

- Performed an energy assessment in order to identify energy efficiency measures that, when implemented, would make the property more efficient in terms of energy usage.
- The energy assessment procedures and methods exceeded the requirements of an ASHRAE Level II Energy Evaluation.
- The energy assessment included evaluations for retrofits for energy and water saving measures that are considered economical with included paybacks.
- A data driven (inverse) energy modeling approach was selected for the energy assessment.
- An energy benchmark was created by assessing the annual and water consumption for the building.
- Engineering evaluation and analysis for existing mechanical systems and controls.
- Operation and maintenance was reviewed to identify energy efficiency measures which included adding controls to shut down equipment, changing fan belts to improve performance or cleaning fins on coils to improve efficiency.
- Measurements are recorded throughout the facility for lumens of light, air flow from fans, and a range of temperatures. BTU meters are used on the building envelope. Lumens were measured with a light meter in all areas to check the ambient lighting. An inventory of existing light fixtures was gathered with their respective energy usage in Watts.
- Performed combustion analysis on the boiler. The boiler was started and ran until steady state conditions were obtained. The combustion analysis measured the efficiency of the boilers, excess air, and percent of residual carbon dioxide. Engineering analysis and calculations was performed to assess condition and boiler efficiency.
- Engineering analysis and field visit to assess conditions of the exhaust fans. The exhaust fan motors on the roof were surveyed and factory nameplate data was collected. The air flow in the ducts was measured with an anemometer and the room volume was collected so that the number of air changes could be calculated.
- Supervise data collections and field assessment for the following:

1. Temperature and humidity data was collected on all the floors. An infrared thermometer was used to spot check sensors and appliance performance.
2. A thermal imaging camera was used to study leakage through the building envelope and also used on mechanical components to check proper function.
3. A BTU meter was used to determine heat transfer through the windows.

- Development of Energy Efficiency Measures (EEMs) were assembled based on the results of gathered data from the walk through survey, measured data and modeling.
- An engineering analysis is conducted on key EEMs in order to determine the feasibility of implementation.
- A financial analysis was conducted and in some cases a life cycle cost analysis is performed to determine the economic impact of the EEMs. The results of these calculations are used to prioritize the list of EEMs.
- Energy Efficiency Measures suggested A21were based on ASHRAE Standard 55, NYC Local Laws, NYS Energy Conservation Code; examples included adding piping and duct insulation, adding automated temperature sensors to kitchen exhaust fan, and adding time clock control for outside lighting.A19

- A final report was created to the building owner which encompassed a detailed evaluation and analysis of all aspects of building energy (electricity, fuel oil, and natural gas) as well as energy efficiency measures in connection with the building's main components including heating, lighting, electric motors, air conditioning, and building envelope.

Mechanical Engineer, 1114 6th Ave., New York, NY

New sprinkler systems for 10 full floors in an existing commercial building, each floor is approximately 25 KSF.

- Designed temporary sprinkler systems as per NFPA 13 to meet fire suppression demands during the demolition and reconstruction of the existing space.
- The sprinkler systems were designed with the intent to suppress any single fire that may occur.
- Conducted field visits to assess field conditions and measurements.
- Assessed existing site materials, materials used during demolition, and materials used in the construction to determine the appropriate Occupancy Hazard Classification as the basis for the design of the sprinkler system.
- Performed node analysis and hydraulic calculations using NFPA 13 standard and NYC BC to insure the fire suppression demands are met.
- Reviewed and finalized AutoCAD drawings for construction.
- Approved materials and submittals for the construction of the sprinkler systems such as piping, sprinkler heads, and mechanical couplings.
- Generated project spec and submittal guidelines.
- Reviewed contractor shop drawings to achieve contract drawings.
- Answered contractor requests for information and provided field appropriate solutions.
- Reviewed constructability and coordination based on ongoing field conditions.
- Engineering/field supervision of construction and testing of the designed sprinkler systems as per NFPA 13.
- Provided overall site construction management and effective direction and control of site construction activities ahead of schedule.

Mechanical Engineer, 20 West 53rd St., New York, NY

New 290 KSF, 60-unit, 46 story residential, hotel, library, and restaurant building.

- Field engineering of mechanical works activities such as ductwork, piping, and various unit types as per ASHRAE and SMACNA standards.
- Field engineering of sprinkler and standpipe systems including supervising and accepting system testing as per NFPA 13.
- Field engineering of fuel oil piping and storage and emergency power systems as per NFPA 110.
- Field engineering of boilers and chimneys as per ASME BPVC and NYC Mechanical Code.
- Reviewed shop drawings and ASHRAE/NFPA/ASTM requirements and report any deviations to lead engineers for approval.
- Reviewed submittals for materials used such as mechanical couplers, piping, sprinkler heads, etc.
- Reviewed construction and operations for conformance with specifications.
- Prepared weekly and monthly progress reports.
- Field inspection and supervision to ensure compliance with approved procedures, drawing, and project specifications.

- Coordination among various construction trades and professional disciplines.
- Responsible for the quality control inspections at site.
- Monitored project and initiated action to ensure project conformance.
- Performed daily inspection of site. Responsible for the quality of works, materials, and control.
- Issued NCR in the event of the non-conforming work done by contractor. Reviewed and recommended approval of corrective action and monitored site implementation.
- Coordination of subcontractors drawings, witness field and laboratory tests.
- Overall site construction management and provided effective direction and control of site construction activities ahead of schedule.
- Monitored/supervised construction activities to ensure that the work progressed in a manner that would result in compliance with the project specifications and approved drawings and that the work was completed as specified.
- Surveillance and enforced quality assurance at the site and ensured that work was performed according to the approved project quality control plans and procedures.
- Prepared and evaluated periodically the construction status report for the project as a whole.
- Supervised inspection team; coordinated with them during inspection and initiated drastic action whenever necessary.
- Ensured that all the construction activities are systematically controlled and executed so that only conforming materials equipment, approved methods, and procedures are implemented for construction purposes.
- Maintained QA/QC operations by following policies and procedures, reported needed changes, witnessed tests, verified their adequacy in full compliance with approved quality standard, and certified appropriate documentations that formed part of quality records.

Senior Mechanical Engineer, 625 West 57th St., New York, NY

New 831 KSF, 750-unit, 34 story residential and commercial building.

- Supervised a team of six field engineers that carried out oversight of construction activities for the new building structure.
- Supervised field engineering of mechanical works activities including but not limiting to HVAC systems, ductwork (ventilation, exhaust, fresh air, return), piping (high/low pressure gas piping, mechanical piping, plumbing), units installation (heat-pumps, PTACs, fan-coil units, cooling towers, chillers), fuel oil and piping systems, and heating systems as per ASHRAE and SMACNA standards.
- Supervised field engineering of boilers and chimneys as per ASME BPVC and NYC Mechanical Code.
- Reviewed shop drawings based on contract drawings and NYC Building Code.
- Provided Engineer of Record with field modifications solutions based on engineering calculations for approval.
- Reviewed construction and operations for conformance with specifications.
- Reviewed the contractor's means and methods to ensure conformance with the plans, specifications, and building code.
- Prepared weekly and monthly progress reports.
- Field inspection and supervision to ensure compliance with approved procedures, drawing, and project specifications.
- Coordination among various construction trades and professional disciplines.

- Prepare as-built sketches for any needed design modifications based on field conditions for the EOR to review.
- Team leading for the quality control inspections at site.
- Monitored project and initiated action to ensure project conformance.
- Issued testing criteria of all components of HVAC system which included calculating testing parameters for duct leakage testing as per SMACNA and pipes pressure testing as per ASME B31.
- Oversee the testing process of all components of HVAC including ductwork/piping/units and emergency power systems including generators/ATSs.
- Oversee commissioning and startup of installed HVAC and emergency power systems including preparing testing protocols and parameters, acceptance and rejection criteria, and stress/endurance testing.
- Provided final approval for installed mechanical systems including various HVAC components including ductwork, piping, and units; Heating systems; and Fuel Oil delivery system.
- Issued NCR in the event of the non-conforming work done by contractor. Reviewed and recommended approval of corrective action and monitored site implementation.
- Monitored/supervised construction activities to ensure that the work progressed in a manner that would result in compliance with the project specifications and approved drawings and that the work was completed as specified.
- Surveillance and enforced quality control at the site and ensured that work is performed according to the approved project quality control plans and procedures.
- Prepared and evaluated periodically the construction status report for the project as a whole.
- Submitted internal inspection request to the designated QC inspectors, coordinated with them during inspection, and initiated drastic action whenever necessary.
- Ensured that all the construction activities are systematically controlled and executed so that only conforming materials equipment, approved methods, and procedures are implemented for construction purposes.
- Maintained QA/QC operations by following policies and procedures, reported needed changes, witnessed tests, verified their adequacy in full compliance with approved quality standard, and certified appropriate documentations that formed part of quality records.