

**MECHANICAL ENGINEERING ASSOCIATE
(CLASS CODE 7554)**

TASK LIST – 2021

Design

1. Reviews design drawings and calculations completed by vendors or contractors, Engineering Designers, and/or other Mechanical Engineering Associates, for accuracy and completeness, in order to validate that equipment, material, and/or vendor services is in compliance with contract requirements and/or pertinent codes including building, energy, plumbing, fire protection, mechanical, and elevator codes.
2. Participates in technical committee work and meets with contractors, manufacturers, and representatives of other agencies and City departments to discuss project status and resolve project related issues such as plan approvals, equipment installations, and technical specifications in order to support project goals and/or operational needs.
3. Determines quality assurance acceptance levels and writes quality assurance plans, by taking into consideration applicable industry and regulatory standards such as the Uniform Building Code (UBC) in order to ensure compliance with project requirements.
4. Reads and interprets written instructions and designer sketches in order to create, update and revise drawings, sketches, and diagrams using computer aided drafting software such as Revit, Microstation, or Auto Computer Aided Design (AutoCAD) for the construction, installation, alteration, and repair of equipment at various mechanical and power facilities such as distribution stations, generating plants, pumping and water treatment plants, and substations.
5. Visits job site with drafters such as Mechanical Engineering Drafting Technicians or Engineering Designers, upon completion of a project or job, to inspect completed work and take measurements of final dimensions in order to verify physical conditions and update drawings as necessary.
6. Designs treatment systems such as water distribution systems by taking a variety of factors into consideration such as age of pipes, water flow, pressure, new technology, and corrosion and metallurgical requirements when designing systems in soil or when working with dissimilar metals in order to meet or exceed design life expectancy and make water suitable for use in domestic, industrial, process applications and safe for waste disposal.
7. Designs custom tools and fixtures required for particular jobs related to the installation, disassembly and repair of mechanical equipment in order to assist in the installation of new equipment or the maintenance and/or modification of existing equipment.

8. Designs modifications to existing mechanical equipment to conserve energy and water such as the use of solar power and energy efficient light bulbs in order to meet department and City initiatives and goals and to ensure compliance with local, state, and federal regulations.
9. Develops and designs mechanical systems including building mechanical systems such as heating, ventilation and air conditioning (HVAC), plumbing, solar, and fire protection in order to meet established building requirements.
10. Designs or modifies specialty automotive and mobile construction and maintenance equipment such as bucket trucks, cable pullers, pavers, and insulator washer trucks by taking into consideration a variety of factors such as tire size, engine horsepower, torque, and gear ratios in order to maintain infrastructure and facilitate City operations.
11. Utilizes computer software such as Finite Element Analysis software to perform calculations and analysis pertaining to fluid dynamics, mechanical, chemical, and engineering problems such as equipment needs and characteristics, stress analysis, thermodynamics, heat balances, and engineering economics in order to design or analyze mechanical systems.

Testing/ Inspection

12. Makes recommendations for new and/or existing testing procedures and inspection or evaluation schedules for treatment processes, equipment and materials based on specifications, manufacturer recommendations, issues and needs identified from performance tests or planned maintenance services, and/or management objectives in order to improve equipment efficiency, reliability and availability and ensure compliance with regulatory standards and codes.
13. Evaluates the condition and functionality of various mechanical equipment and systems such as pipes, valves, heating ventilation and air conditioning systems (HVAC), rotating equipment such as pumps and fans by performing various tests including visual inspections, as needed or prior to installation or implementation, in order to prepare written reports of findings and recommend appropriate corrective actions when necessary.
14. Investigates mechanical equipment malfunctions and failures, upon request or in response to safety related incidents and accidents, by utilizing techniques such as field sampling observations, reviewing historical log of events, and interviews and tools such as air monitoring devices, pH meters, noise meters, and direct reading instruments in order to determine the root cause and recommend appropriate corrective actions.
15. Performs field investigations and quality-control activities by visiting job sites to monitor construction and manufacturing work, as needed, in order to ensure that work is completed according to plans and specifications.

Procurement/ Contract Administration

16. Writes specifications for procuring mechanical equipment and materials such as piping, valves, heating, ventilation and air conditioning systems (HVAC), rotating equipment such as pumps and fans, turbo machinery, and/or instrumentation and control systems and services from vendors and consultants in order to determine contract requirements prior to invitations to bid.
17. Evaluates vendor submittals for compliance with specifications and requirements, technical content, cost effectiveness, and past experience of the bidder and provides written recommendations to Purchasing Division or management, of which vendor to award the contract to, in order to ensure that the proposed equipment, materials, and/or vendors meet specifications.

Project Management

18. Communicates with various stakeholders' including contractors, construction managers and the public, verbally and in writing, during the pre-construction and construction stages to discuss project progress, project issues, and public concerns regarding traffic, noise, and parking in order to resolve problems and/or obtain input.
19. Plans, organizes, and attends meetings with various stakeholders including City department representatives, community groups, regulatory agencies, and the public to discuss various topics such as project costs and schedule, environmental considerations, and public concerns in order to fulfill project needs, obtain input on project feasibility, and ensure compliance with local, state, and federal regulations.
20. Serves as a lead of multidisciplinary teams including engineers from various disciplines by scheduling meetings and work activities in order to facilitate the accomplishment of project goals.

Research

21. Attends technical conferences, conducts research on the internet, reads publications, meets with representatives of other government or public agencies, and/or attends public meetings in order to identify new work methods, tools, and equipment that can be used to improve workflow and efficiency within the City.
22. Conducts research on federal, state and local codes, regulations and guidelines, court decisions, and/or legislation by cross-checking information from the internet including professional journals or news sources in order to identify economic and environmental impacts to City operations and ensure compliance with regulatory requirements.
23. Makes recommendations for improvements to the environment and emission controls, and plant or facility efficiency, reliability, availability and preventive maintenance, as needed, by writing memos to management in order to improve the City's portfolio of generation resources and Power System assets and to ensure consistency with environmental priorities and reliability standards.

Plan Checking

24. Responds to general inquiries received from City representatives including elected officials, private contractors, public agency personnel, and the public, over the phone, in person, or via email, regarding the interpretation of City codes as it relates to mechanical buildings or structures in order to provide clarification on plans and code consultation.
25. Reviews requests for permits regarding the installation or modification of elevators, mechanical heating, ventilation and air conditioning (HVAC), plumbing, and fire protection systems by reviewing plans, blueprints, site layouts, riser diagrams, specifications, and/or construction methods submitted by applicants such as private contractors, engineers, consultants and architects in order to ensure that the plan complies with City codes and ordinances.

Planning

26. Analyzes and evaluates the feasibility of alternative resources, such as wind, solar, geothermal, and small hydroelectric power by taking into consideration various factors such as future energy demands, regulatory requirements, advances in renewable energy, technologies, and conservation and energy efficiency plans in order to develop resource plans for sustainability and energy efficiency for various City Departments.
27. Writes reports of engineering studies, which outlines cost benefit analysis, value engineering job plans, the intended scope of a project, and estimates of resources, personnel, time and equipment required to complete future or current projects in order to compare engineering alternatives and provide recommendations to management.
28. Plans and schedules capital improvement projects for facilities and system components such as infrastructure replacement, air/water quality improvements, renewable energy, and sewer treatment capacities, by working with other City departments and/or external organizations to obtain historical data such as aging, working condition, operating history, and/or maintenance schedules in order to assess the current infrastructure and determine if there's sufficient capability to meet projected needs.

Operations

29. Writes generating availability data system (GADS) reports on plant reliability and availability by collecting and analyzing data obtained from various logs such as information regarding forced outages and unit run time and submits electronic report on a monthly basis to regulating agencies such as North American Electric Reliability Corporation (NERC) in order to ensure compliance with transmission standards.
30. Writes reports summarizing the measurement and analysis of data related to the formation, collection, conversion, emission, and dispersion of air and water pollutants associated with the operation of City departments as needed or when required by governmental agencies

such as the Air Quality Management District in order to meet regulatory requirements and standards.

Supervision

31. Plans the work of Mechanical Engineering Associates I and II, Office Engineering Technicians, and other staff by assigning and directing work, taking into account the priority and difficulty level of each job, the skill set needed to complete the work, and the schedules and workloads of employees, and assigns work using automated systems, email, verbally, or in hard copy format in order to ensure that the job receives the appropriate level of technical expertise and is completed in a timely manner.
32. Applies the principles of Equal Employment Opportunity through the promotion of a positive work environment through training and discussion and monitoring employees' behavior regarding cultural diversity, sexual harassment, discrimination, and retaliation and taking appropriate corrective action when necessary to ensure compliance with City and department policies and procedures.
33. Counsels employees regarding personnel issues such as rule infractions or inappropriate conduct, and/or disciplines employees following departmental progressive disciplinary procedures in order to perform personnel policy functions.
34. Discusses completed work with employees, including quantity and quality, timeliness, and problems encountered, and provides verbal and/or written praise and/or constructive criticism in order to provide recognition of good/poor performance and to coach them for effective performance of current and future assignments.