

COMPETENCY MODEL FOR STEAM PLANT MAINTENANCE MECHANIC (5630)

The following competencies have been identified as those that best separate superior from satisfactory job performance in the class of **STEAM PLANT MAINTENANCE MECHANIC**. (Numbers refers to the order of competencies in the Competency Bank.)

- 2. Mathematics
- 8. Safety Focus
- 10. Physical Capability
- 20. Job Knowledge
- 23. Equipment Operation
- 24. Mechanical Aptitude
- 33. Interpersonal Skills
- 35. Teamwork

On the following pages are descriptions of each competency, including a definition, the level of the competency required for the class (*italicized, bolded, and underlined*), examples of behavioral indicators, and satisfactory and superior performance levels.

2. MATHEMATICS – Performs arithmetic or higher-level mathematical computations accurately.

Level of Competency Required by Job:

Level 1: Perform arithmetic computations (add, subtract, multiply, divide, ratios, percentages).

Level 2: Use algebra (substitute numbers for letters in a formula), geometry (angles, distances, area), and/or descriptive statistics (mean/median/mode, standard deviation, range).

Level 3: Apply and interpret calculus, inferential statistics (t-tests, correlations, ANOVA, multiple regression) or other very high level mathematics.

Examples of Behavioral Indicators:

- Quickly and accurately performs arithmetic computations.
- Appropriately selects and applies formulas for stated purpose.
- Correctly identifies an appropriate analysis for a specific purpose and selects the appropriate computer program for computation.
- Accurately interprets and presents results of mathematical/statistical computations.

Performance Levels:

Satisfactory

Knows mathematical requirements of the job and performs them correctly. Verifies work to ensure accuracy.

Superior

Identifies additional opportunities for the application of mathematics in work. Answers questions/trains others to assist them in their use of mathematics.

8. SAFETY FOCUS – Performs work in a way that minimizes risk of injury to self or others.

Level of Competency Required by Job:

Level 1: Maintain awareness of unsafe conditions and actions to avoid injury.

Level 2: Follow safety rules/procedures; avoid known hazards in the work environment.

Level 3: Carefully follow safety rules and procedures and consistently use all necessary safety equipment.

Examples of Behavioral Indicators:

- Wears seat belt.
- Ensures safe physical work environment by taking actions such as eliminating unstable stacks of materials, closing drawers so filing cabinets will not tip over, and keeping pathways clear of tripping hazards.
- Reviews safety procedures before beginning each job with known hazards.
- Follows safety procedures while performing work even when it takes more time.
- Uses safety equipment such as goggles, gloves, and earplugs as required or warranted.
- Frequently checks safety equipment for proper condition and operation.

Performance Levels:

Satisfactory

Maintains awareness of personal safety to avoid injury or property damage during all work activities.

Superior

“Safety first.” Places avoidance of injury or property damage above all other job requirements. Mentions the need to follow safe work practices to co-workers. Actively seeks ways to avoid injury.

Safety Focus Areas

1. Knowledge of potential safety hazards encountered when working near operating steam plant equipment such as high pressure and high temperature steam and water, chemicals, and electric circuits and the methods used to prevent, identify, and/or address them including roping-off danger areas, using warning devices and firefighting equipment when necessary, ensuring fall protection, following clearance rules, and wearing appropriate personal protective equipment (PPE) such as hard hat, respiratory protective equipment, earplugs, rubber apron, and safety glasses sufficient to prevent injury of oneself and others.
2. Knowledge of proper hand signals used to safely direct mobile equipment, such as cranes, forklifts, skip loaders, and dump trucks as required by the Department of Water and Power (DWP) and California Occupational Safety and Health Administration (Cal-OSHA) sufficient to ensure a safe work environment when operating such equipment.
3. Knowledge of the purpose and use of Safety Data Sheets (SDS) including gathering information regarding the physical and chemical properties of products and their associated hazards, such as flammability, toxicity, and/or combustibility sufficient to determine the proper personal protective equipment (PPE) required for a specific job and to ensure the safe and proper storage, disposal and handling of hazardous materials in compliance with appropriate safety standards.
4. Knowledge of pertinent safety rules and regulations as required by the California Occupational Safety and Health Administration (Cal-OSHA) and the Department of Water and Power (DWP) when repairing, overhauling, and maintaining high-pressure, high-temperature, steam turbine, and auxiliary equipment including those related to emergency and confined space entry procedures sufficient to ensure the safety of oneself and others by complying with applicable rules and regulations.
5. Knowledge of safety procedures and regulations as required by the California Vehicle Code (CVC) and Department of Water and Power (DWP) when operating vehicles and equipment such as skip loaders, aerial lifts, forklifts, mobile cranes, rubber-tired tractors, pick-up and dump trucks, and automobiles sufficient to safely transport personnel and equipment and adhere to applicable safety procedures.
6. Knowledge of safety procedures required to access and perform work while being supported by various types of scaffolding including stationary, swinging, and portable (hydraulic and electric) scaffolding such as the proper use of ladders and personal protective equipment (PPE) sufficient to provide safe access to various work locations at varying heights.

10. PHYSICAL CAPABILITY – Strength, endurance, flexibility, and/or coordination.

Level of Competency Required by Job:

Level 1: Sitting and/or standing for extended periods of time.

Level 2: Awkward body position and/or precise motions required; and/or repeated lifting, carrying, and/or manipulation of objects; and/or walking for extended periods of time.

Level 3: Continuous or extreme exertion of physical effort.

Examples of Behavioral Indicators:

- Sits and may occasionally stand or walk for entire workday (except breaks).
- Walks for the duration of the workday.
- Repetitive motion required to perform task.
- Repeatedly lifts and carries heavy objects.
- Exerts maximal effort for extended periods of time.

Performance Levels:

Satisfactory

Performs tasks requiring physical capability satisfactorily and without undue physical stress or harm.

Superior

Performs tasks requiring physical capability correctly with relative ease. May be asked to perform the most physically demanding tasks or be sought by co-workers for assistance.

20. JOB KNOWLEDGE – Knows information required to perform a specific job. Includes both widely available courses of study (for example, chemistry, human resources management, graphic arts) and City-specific information (parking regulation and ticketing practices; purchasing procedures; provisions of the City Charter).

Level of Competency Required by Job:

Level 1: Knowledge is concrete, factual, and/or procedural and may be defined by the organization. Situations in which it is applied are quite consistent.

Level 2: Knowledge is substantive and may be defined by an external trade, field, or profession. Situations in which it is applied vary and, as such, require breadth and depth of understanding.

Level 3: Knowledge is abstract, conceptual, and/or complex and may be supported by a well-defined academic discipline or authoritative sources (e.g., laws, ordinances, government guidelines/regulations/codes). Situations in which it is applied may vary greatly or be novel.

Examples of Behavioral Indicators:

- Performs work correctly/avoids technical (job content related) errors.
- Answers technical questions about work accurately.
- Asks few technical questions about the performance of routine work activities.
- Offers advice (“coaching”) to new employees regarding their work.
- Develops training programs for other employees.
- Sought out as a source of information by others.

Performance Levels:

Satisfactory

Sufficient job knowledge to perform work correctly independently. Answers technical questions about work correctly.

Superior

Expertise in technical job information sufficient to serve as a resource to others. May develop training manuals/ programs and/or give internal and/or external presentations related to work.

Job Knowledge Areas

1. Knowledge of tools used in steam electric generating plants including manual, power, pneumatic, electric, and hydraulic tools sufficient to use them in a safe and proper manner when inspecting, maintaining, and repairing equipment, buildings, and machinery.
2. Knowledge of the symptoms of malfunctioning steam plant machinery, such as oil leaks and irregular sounds, vibrations, smells, gauge readings, and/or temperature sufficient to identify, troubleshoot, diagnose, repair and prevent problems and damage in high-pressure, high-temperature boiler, steam turbine, and auxiliary equipment.
3. Knowledge of methods used to maintain and repair boilers, boiler tubes, heat recovery steam generators, steam turbines, gas turbines, valves, and pumps such as changing the oil, lubricating equipment, adjusting packing glands, and cleaning heat exchangers sufficient to ensure equipment and machinery are operating in a safe and efficient manner.

23. EQUIPMENT OPERATION – Operates specialized equipment in performance of job duties.

Level of Competency Required by Job:

Level 1: Operate equipment based on on-the-job training.

Level 2: Operate equipment based on attendance at a training program and practice.

Level 3: Operate equipment for which in-depth, complex training was required and which may require certification.

Examples of Behavioral Indicators:

- Operates equipment proficiently.
- Operates equipment with strict adherence to safety procedures.
- Understands the operation of equipment used on the job and correctly answers questions about it.
- Willingly participates in any training necessary to maintain up-to-date knowledge of equipment operation.

Performance Levels:

Satisfactory

Operates equipment safely and with a high degree of proficiency.

Superior

Operates equipment with extreme proficiency and correctly answers questions about its operation. Trains and/or coaches others in the operation of equipment.

Equipment Operation Areas

1. Operation of steam plant equipment, including their components and functions such as boilers, heat recovery steam generators, steam turbines, gas turbine valves, pumps, high-pressure feed water heaters, steam turbine condensers, and heat exchangers sufficient to perform repairs, when necessary, including the assembly and disassembly of equipment.
2. Operation of manual and mechanical rigging equipment including ropes, blocks, tackles, come-alongs, chain falls, jacks, hoists, and cranes sufficient to safely and efficiently move machinery and equipment.

24. MECHANICAL APTITUDE – Accurately predicts the impact of forces on objects and assesses the behavior of other physical phenomena (e.g., volume, weight, velocity). Readily learns work involving the application of mechanical principles.

Level of Competency Required by Job:

Level 1: Maintain a safe work environment by ensuring objects in it are stable, tools and equipment are properly used.

Level 2: Know the physical properties of objects in the work environment and correctly anticipate the action of forces upon them; performs work accordingly (correctly and safely).

Level 3: In-depth understanding of mechanical and physical phenomena sufficient to design and/or oversee the construction of systems.

Examples of Behavioral Indicators:

- Recognizes the impact of an earthquake on objects in the work environment and re-arranges them as possible to avoid possible damage or destruction and potential to cause injury.
- Uses tools properly to accomplish work correctly and safely.
- Recognizes the effects of various actions on objects and performs only those actions that will accomplish intended result and will not cause property damage or injury.
- Systems designed and/or for which construction is overseen operate as intended upon completion.

Performance Levels:

Satisfactory

Recognizes the operation of mechanical/physical phenomena sufficient to readily learn and perform work of a mechanical nature.

Superior

Displays exceptional insight into the operation of mechanical phenomena, and makes correct inferences regarding it. Promptly and accurately troubleshoots problems.

33. INTERPERSONAL SKILLS – Interacts effectively and courteously with others.

Level of Competency Required by Job:

Level 1: *Interact with members of the workgroup, supervision, and/or the public in a cordial, service-oriented manner.*

Level 2: Interact across department lines and with appointed City officials, and/or members of the public, at times under adversarial circumstances, in a cordial, respectful manner.

Level 3: Interact with appointed and elected City officials, department heads, representatives of external organizations, and/or the media in a cordial, effective manner.

Examples of Behavioral Indicators:

- Works well with others toward mutual objectives.
- Does not arouse hostility in others.
- “Disagrees without being disagreeable.”
- Elicits acceptance/cooperation from others.
- Affords all individuals respect, regardless of their role or status.
- Effectively addresses concerns of politicians or others who may have their “own agenda.”

Performance Levels:

Satisfactory

Behaves in a courteous, respectful, cooperative manner toward co-workers, other City employees, and members of the public.

Superior

Facilitates positive interpersonal relations within/among workgroups and toward members of the public. Adept at finding similarities and grounds for cooperation/mutual benefit.

35. TEAMWORK – Interacts effectively with others to achieve mutual objectives; readily offers assistance to others to facilitate their goal accomplishment.

Level of Competency Required by Job:

Level 1: Work effectively as a member of a work unit or project team. Readily offer assistance to others when they have too much work or have too little.

Level 2: Work effectively as a team member in which different people have different roles/responsibilities and perspectives. Identify points for collaboration with co-workers; readily offer and request assistance.

Level 3: Work effectively as a part of an interdependent team (your work gets done only if the work of the whole team is done; evaluation of team performance is more relevant than individual performance).

Examples of Behavioral Indicators:

- Discusses work-related matters with co-workers.
- Offers and requests assistance readily.
- Offers and is receptive to suggestions.
- Identifies problems with workflow that will prevent team from accomplishing its goals.
- Provides constructive criticism and feedback to team members to improve overall functioning of team.
- Assigns credit to team for accomplishments.

Performance Levels:

Satisfactory

Cooperates with co-workers and fulfills responsibilities as a member of a project team. Maintains a focus on common objectives and offers and requests assistance readily.

Superior

Sees the team as a whole; acknowledges that performance of the team is what in reality is evaluated by others. If anyone fails, everyone on the team fails.