OVERVIEW:
Metal Workers as defined in this series are journey-level skilled trades workers responsible for the full range of skilled welding, sheet metal, materials fabrication and other metal work in support of facilities and systems preventive maintenance and renovation. Three progressive classifications are defined in this series with work falling into the core areas of HVAC ductwork fabrication and installation; architectural metal work; piping systems fabrication and installation; architectural and structural fabrication; and machine shop work.

All incumbents participate in the maintenance of a metal working/machine shop; advise in the selecting, ordering, and storing of metal working, machining and fabrications materials, supplies and equipment; layout, position and complete projects from blueprints, sketches and verbal instructions; make sketches; estimate costs of metal and/or machine work; inspect completed work for conformance with specifications, requirements and compliance with applicable building and safety codes and regulations; inspect related work performed by contractors; clean, maintain and service tools and equipment used in the performance of duties; perform all work in accordance with established safety procedures; maintain a safe and clean work environment; maintain records and retrieve data related to work performed using manual and/or computerized record-keeping systems; prepare standard reports; and consult and work with other trades workers. Work may involve exposure to hazardous materials.

Examples of typical activities are not meant to be all inclusive or restrictive; incumbents may perform related work activities.

METAL WORKER I

Under general supervision, the Metal Worker I classification is responsible for the full range of skilled journey-level metal work as outlined in the series overview. Incumbents in this classification may also provide instruction and lead direction to unskilled and semi-skilled assistants. Incumbents perform a variety of metal and machine work for preventive maintenance on facilities, systems, equipment, structures and fixtures. Work for positions in this classification typically falls into one or more of the following core areas:

HVAC Ductwork Fabrication and Installation - Involves sizing and selecting ductwork and fittings based on CFM, velocity and static pressure requirements; the layout and fabrication of custom fittings; and the fabrication and installation of sheet metal components.

Sheet Metal Construction and Repair for Architectural and Non-Structural Metal Work - Involves using triangulation, radial parallel and shop mathematics to develop patterns, shapes and parts; cutting, welding, brazing, and soldering of sheet metals; installing, maintaining, inspecting and repairing sheet metal parts; and developing, forming and fashioning sheet metals into various sheet metal objects such as gutters and downspouts, air handling equipment, roof flashing, hand rails and related non-structural equipment and fixtures.

Machine Shop Work - Involves operating and maintaining machine tools used in the construction and repair of parts, tools, equipment and fixtures.
**TYPICAL QUALIFICATIONS:**

**Knowledge:** Work requires thorough knowledge of the methods, materials, tools and equipment used in a wide variety of metal and machine work including cutting, welding, brazing, soldering, layout, sheet metal brake, and/or machine shop work; thorough knowledge of the composition, characteristics and uses of ferrous metals, nonferrous metals and alloys and/or various sheet metals; thorough knowledge of installation standards for low, medium, and high pressure ductwork; and working knowledge of state safety orders applicable to metal work, including Safety Orders of the Division of Industrial Safety of the State of California. Positions involved in HVAC ductwork fabrication and installation require a thorough understanding of SMACNA duct construction and installation standards for low, medium and high pressure ductwork. Some positions may require an understanding of seismic bracing and vibration isolation.

**Abilities:** Must be able to lay out, develop and perform welding and sheet metal work; operate welding and fabricating equipment and perform arc and acetylene welding and brazing; size and select ductwork fittings; operate machine tools and equipment; make rough sketches and estimate the costs of materials and labor; interpret and read blueprints and work from plans and specifications; analyze and respond appropriately to emergency situations; maintain records and retrieve data related to work performed using manual and/or computerized record-keeping systems; prepare standard reports; provide instruction to unskilled and semi-skilled assistants; use mathematics and geometry in metal working calculations; and write at a level appropriate for the duties of the position.

**Experience:** These abilities normally would be acquired through any combination of progressively responsible training and experience as a welder, sheet metal worker or machinist which demonstrates achievement of journey-level skills equivalent to that acquired through completion of an applicable apprenticeship program.

**Special Requirements:** May be required to possess applicable certification for metal or welding work performed.

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**METAL WORKER II**

Under general supervision, the Metal Worker II is responsible for highly skilled architectural and structural fabrication and/or for the layout, fabrication and installation of piping systems. The work of a Metal Worker II is distinguished from the Metal Worker I by required level of skill in a wider variety of fabrications and assembly, using materials and composites beyond standard metals and sheet metal. Additionally, incumbents in this classification must hold a certification in welding. Incumbents may also provide lead work direction and instruction to semi-skilled and skilled workers involved in metal, machine shop and related work. Assignments for positions in this classification typically fall into the following core areas:

**Architectural and Structural Fabrication and Installation** - Involve designing, laying out, fabricating, installing and repairing for more complicated structural components, fixtures, equipment and machinery, using a wide variety of materials such as sheet metals, structural metals, glass, and plexiglass; operating of welding, fabrication and machine shop equipment; using triangulation, radial parallel and shop mathematics to develop patterns, shapes and parts; determining of appropriate materials; and designing, developing and implementing solutions to resolve problems that arise in construction and repair.

**Pipefitting Fabrication and Installation** - Involves the welding, butt welding, soldering, brazing and using other methods to connect piping made of various metal and materials for HVAC, plumbing, sewage, water and related facility piping systems.

**TYPICAL QUALIFICATIONS:**

**Knowledge:** In addition to the knowledge required of the Metal Worker I, the Metal Worker II must possess a thorough knowledge of the methods, materials, tools and equipment used in metal, composite and other fabrication work; a working knowledge of piping accessories and the installation and applications requirements related to fluid, pressure, drainage, venting, and related issues; a thorough knowledge of allowable loads, deflection characteristics, and connection methods for a variety of structural shapes; and a more thorough knowledge of applicable federal and state safety orders related to metal work and materials fabrication.
Abilities: In addition to the abilities required of the Metal Worker I, the Metal Worker II must be able to design, lay out and develop all types of fabrication work; perform highly skilled welding including arc, heli-arc, and acetylene welding and brazing with a wide variety of materials and composites beyond standard metals; identify and select structural shapes, materials and connection methods appropriate for jobs; work with common piping materials; affect all pipe connection methods; read plans, schematics and isometric drawings; lead, instruct and coordinate the work of a small group or crew of semi-skilled and skilled workers.

Experience: In addition to the experience required of the Metal Worker I, the abilities of the Metal Worker II normally would be acquired through two years of experience as a journey-level sheet metal worker and fabrications specialist, including one year of experience in the fabrication, assembly or repair of objects containing glass, plexiglass, wrought iron, and/or other composites.

Special Requirements: Incumbents must possess applicable certification for metal or welding work performed.

SUPERVISING METAL WORKER

Under general supervision, the Supervising Metal Worker primarily is responsible for supervising and working with one or more small groups or crews of skilled journey-level metal workers and their semi-skilled assistants in the performance of metal work and materials fabrication duties as outlined in the series overview. Work crews may be involved in HVAC duct work fabrication and installation, sheet metal construction and installation, pipefitting fabrication and installation, and/or architectural and structural fabrication and installation.

Incumbents typically prioritize and coordinate the work of multiple crews or projects; assign work to qualified crew members; provide work and safety instructions; provide on-the-job training and instructions to less skilled workers in trade and safety practices; provide input on performance evaluations; monitor work in progress; inspect completed work to ensure compliance with specifications, special instructions and sound trade practices; develop and maintain manual and/or computerized work record-keeping and/or maintenance management systems; prepare reports; and oversee a metal or machine shop.

Work on new construction and remodels requires: collaborating with engineering and design departments; interpreting complicated plans and drawings; coordinating work schedules and work assignments to meet the overall construction/modification objectives; sequencing of work; ensuring the availability of required materials and equipment; analyzing operations; preparing cost and time estimates; and providing a high level of inspection to ensure appropriate building and safety codes are met. Incumbents may also design minor tenant improvements and coordinate and supervise the work of related trades workers on specific projects. Incumbents also may coordinate the work of outside contractors and vendors.

TYPICAL QUALIFICATIONS:

Knowledge: In addition to the knowledge required of the Metal Worker II, the Supervising Metal Worker must have a thorough knowledge of effective supervisory practices and techniques; and a working knowledge of job design and work sequencing related to maintenance, repair, renovation, and installation projects.

Abilities: In addition to the abilities required for the Metal Worker II, the Supervising Metal Worker must be able to plan and direct the work of skilled crafts workers and their semi-skilled assistants; determine and coordinate staffing, material and equipment needs for multiple jobs and projects; ensure accuracy and maintenance of assigned record-keeping systems; and perform design work.

Experience: In addition to the experience required of the Metal Worker II, the abilities of the Supervising Metal Worker normally would be acquired through two or more years of experience as a journey-level metal worker, including one to two years in a lead/supervisory capacity.