SKILLED TRADES CLASSIFICATION STUDY

Draft Classification Standards
Series Overview:
Electricians as defined in this series are skilled trades workers responsible for the performance of the full range of skilled electrical work including the installation, maintenance, modification, and repair of electrical apparatus, equipment and systems. Incumbents inspect, isolate and troubleshoot and repair electrical malfunctions using various test instruments applicable to the electrical trade; operate electrical power generating plants and other electrical equipment and systems; test electrical equipment for safety and efficiency; plan the layout and wiring of new or remodeled installations; fabricate electrical parts; weld as necessary to perform electrical work; advise in the selection and storage of electrical equipment; inspect completed work for conformance with specifications and requirements of local building and safety codes; estimate cost, time and materials for electrical projects; participate in the maintenance and operations of an electric shop; 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; using manual and electronic record-keeping systems, maintain records and retrieve data related to work; prepare standard reports; and consult and work with other trades workers. Work may involve exposure to hazardous materials. Incumbents typically hold a license or applicable certification.

Three progressive classifications are defined within this series, each performing the full range of skilled electrical work; however, the supervisory, project planning and coordination responsibilities vary depending on the classification. Examples of typical activities are not meant to be all inclusive or restrictive; incumbents may perform related work activities.

Electrician I – Class Code 6533
Under general supervision, incumbents in this classification perform the full range of skilled journey-level electrical work including the installation, maintenance, remodel and repair of electrical apparatus, equipment and systems as outlined in the series overview. Incumbents at this level may also provide instruction and lead direction to unskilled and semi-skilled assistants.

Typical Qualifications:
➢ Knowledge – Work requires thorough knowledge of electrical theory and the methods, materials, tools and equipment used in the electrical trade for the installation, maintenance and repair of electrical apparatus, equipment and systems; and a thorough knowledge of applicable state and federal codes and regulations pertaining to the electrical trade.

➢ Abilities - Must be able to assemble, install, maintain and repair electrical apparatus; operate all applicable tools and equipment necessary to perform skilled electrical work; read, interpret and work from blue prints, plans, drawings, and specifications; make rough sketches; estimate the cost, time and materials of electrical work; using manual and
electronic record-keeping systems, maintain records and retrieve data related to work; prepare standard reports; provide instruction to unskilled and semi-skilled assistants; analyze and respond to emergency situations; read and write at a level appropriate to the position; and perform arithmetic calculations as required by the position.

➢ **Experience** - These abilities normally would be acquired through any combination of progressively responsible training and experience which demonstrates achievement of a journey-level of skill equivalent to that acquired through completion of a standard electrician's apprenticeship program.

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## Electrician II – Class Code 6532

Under general supervision, the Electrician II works with and is in charge of a small group of skilled Electricians and semi-skilled workers in the installation, maintenance, modification and repair of electrical apparatus, equipment and systems. The work of the Electrician II is distinguished from the Electrician I by the additional responsibilities of providing lead work direction to several journey-level crafts workers and semi-skilled assistants, laying out and coordinating the work flow for jobs, and preparing materials lists and supplies for jobs. Unlike the Supervising Electrician, the Electrician II primarily works as a skilled Electrician but has ancillary lead work and project planning responsibilities.

Incumbents typically lay out, direct, and assist with the full range of electrical work described in the series overview; supervise, instruct and work with a small crew of Electricians and assistants; instruct others in safety rules and ensure they are observed; select and prepare lists of materials for jobs and the storeroom; draw diagrams and sketches of work to be performed; maintain and prepare work records; and may supervise the maintenance of an electrical shop.

**Typical Qualifications:**

➢ **Knowledge** - In addition to the knowledge required of the Electrician I, the Electrician II must possess a working knowledge of effective supervisory practices and techniques.

➢ **Abilities** - In addition to the abilities required of the Electrician I, the Electrician II must be able to lead, instruct and coordinate the work of a small crew of skilled and semi-skilled workers; ensure work is performed in sequence; and maintain records and prepare reports of greater complexity.

➢ **Experience** - In addition to the experience required of the Electrician I, the abilities of an Electrician II normally would be acquired through one year of experience as a journey-level electrician that included work coordination responsibilities.

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## Supervising Electrician – Class Code 6534

Under general supervision, the Supervising Electrician is primarily responsible for supervising the work of one or more crews of skilled journey-level Electricians and their assistants in the performance of general electrical maintenance work outlined in the series overview. The
Supervising Electrician is distinguished from the Electrician II by the scope of supervisory and project planning and coordination duties and the greater amount of time devoted to these activities.

Incumbents typically prioritize and coordinate the work of multiple crews or projects; assign work to individual crew members, considering the special skills required and possessed; provide work and safety instructions; provide on-the-job training and instructions to less skilled workers in trade and safety practices; provide input to performance evaluations; monitor work in progress; inspect completed work to ensure it is in compliance with specifications, special instructions and sound trade practices; and oversee an electrical shop. Work on new construction and remodels requires; collaborating with engineering and design departments; interpreting complicated plans and drawings; coordinating work of schedules and work assignments to meet the overall construction/ modification objectives; accurate and detailed planning of work sequencing; 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.

Typical Qualifications:

- **Knowledge** - In addition to the knowledge required of the Electrician II, the Supervising Electrician must have a more thorough knowledge of effective supervisory practices and techniques and a working knowledge of job design and work sequencing related to construction projects.

- **Abilities** - In addition to the abilities required for the Electrician II, the Supervising Electrician must demonstrate the ability to plan and direct the work of skilled crafts workers and their assistants; determine and coordinate staffing, material and equipment needs for multiple jobs and projects; and perform basic design work.

- **Experience** - In addition to the experience required of the Electrician II, the abilities of the Supervising Electrician normally would be acquired through two or more years of experience as a journey-level electrician including one year in a lead/supervisory capacity.
Series Overview
Plumbers as defined in this series are skilled trades workers responsible for the performance of the full range of skilled plumbing work including the installation, maintenance, modification, remodel and repair of equipment and fixtures for water, gas, oil, steam, sewage, fire control, refrigeration and related plumbing systems, including automated plumbing systems. Incumbents typically troubleshoot and test plumbing systems; assemble, install and repair pumps, pipes, fittings, and fixtures for plumbing systems, cut, thread and weld pipes; assemble and install valves, pipe fittings and pipes composed of a variety of metals and materials; maintain campus swimming pools; manage lab utilities; advise on the selection, ordering and storage of plumbing equipment and supplies; inspect completed work for conformance with specifications and requirements of local building and safety codes; estimate cost, time and materials for plumbing projects; participate in the maintenance and operations of a plumbing shop; maintain and service tools and equipment used in the performance of duties; perform all work in accordance with established safety procedures and maintain a safe and clean work environment; using manual and electronic record-keeping systems, maintain records and retrieve data related to work performed; prepare standard reports; and consult and work with other trades workers. Some positions may be assigned water treatment duties that involve monitoring, testing and chemically treating potable and/or non-potable water systems which requires the incumbent to possess the applicable water treatment certification. Work may involve exposure to hazardous materials.

Three progressive classifications are defined within this series, each performing the full range of skilled plumbing work; however, the supervisory, project planning and coordination responsibilities vary depending on the classification. Examples of typical activities are not meant to be all inclusive or restrictive; incumbents may perform related work activities.

Plumber I – Class Code 6549
Under general supervision, incumbents in this classification perform the full range of skilled journey-level plumbing and related work as outlined in the series overview including the installation, maintenance, inspection, remodel and repair of mechanical plumbing equipment/fixtures related to water, gas, oil, sewage, fire control, steam and refrigeration systems. Incumbents at this level may also provide instruction and lead direction to unskilled and semi-skilled assistants.

Typical Qualifications:
➢ Knowledge – Work requires thorough knowledge of the methods, materials, tools and equipment used in the plumbing trade including a base knowledge of building automation systems; and a working knowledge of applicable state and federal health and safety orders and regulations pertaining to plumbing.
- **Abilities** - Must be able to perform skilled plumbing work on all applicable equipment and systems; perform applicable welding work; make rough sketches of plumbing installations; read and work from blueprints, plans, drawings and specifications; estimate materials and labor cost of standard plumbing maintenance and repair work; provide instruction to unskilled and semi-skilled assistants; analyze and respond appropriately to emergency situations; using manual and electronic record-keeping systems, maintain records and retrieve data related to work performed; prepare standard reports; read and write at the level required by the position; and perform arithmetic calculations as required by the position.

- **Experience** - These abilities normally would be acquired through any combination of progressively responsible training and experience which demonstrates achievement of a journey-level of skill equivalent to that acquired through completion of a standard plumber’s apprenticeship program.

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<thead>
<tr>
<th>Plumber II – Class Code 6548</th>
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<tbody>
<tr>
<td>Under general supervision, the Plumber II works with and is in charge of a small crew of skilled Plumbers and semi-skilled assistants involved in the installation, maintenance, modification and repair of plumbing equipment and systems. The work of the Plumber II is distinguished from the Plumber I by the additional responsibilities of providing lead work direction to several journey-level crafts workers and/or semi-skilled assistants, laying out and coordinating the work flow for jobs, and preparing materials lists and supplies for jobs. Unlike the Supervising Plumber, the Plumber II still works primarily as a skilled Plumber with ancillary lead work direction and project planning activities.</td>
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Incumbents typically lay out, direct, and assist with the full range of plumbing work as described in the series overview; supervise, instruct, and work with a small crew of Plumbers and assistants; instruct others in safety rules and ensure they are observed; select and prepare lists of materials for jobs and the storeroom; draw diagrams and sketches of work to be performed; may assist in the design of plumbing systems; maintain and prepare work records; and may supervise the maintenance of a plumbing shop.

**Typical Qualifications:**

- **Knowledge** - In addition to the knowledge required of the Plumber I, the Plumber II must possess a working knowledge of effective supervisory practices and techniques.

- **Abilities** - In addition to the abilities required of the Plumber I, the Plumber II must be able to lead, instruct and coordinate the work of a small crew of skilled and semi-skilled workers, estimate costs of plumbing work and prepare lists of material and equipment needed; and maintain records and prepare more complex reports.

- **Experience** - In addition to the experience required of the Plumber I, the abilities of a Plumber II normally would be acquired through one year of experience as a journey-level plumber that included work coordination responsibilities.
Supervising Plumber – Class Code 6547

Under general supervision, the Supervising Plumber is primarily responsible for supervising the work of one or more crews of skilled journey-level plumbers and semi-skilled assistants performing general plumbing maintenance and repair work. Incumbents may also be responsible for overseeing the design and installation of plumbing equipment and systems for new construction and/or major modification projects. The Supervising Plumber is distinguished from the Plumber II by the scope of supervisory and project planning and coordination duties and the greater amount of time devoted to these activities.

Incumbents typically prioritize and coordinate the work of multiple crews or projects; assign work to individual crew members, considering the special skills required and possessed; provide work and safety instructions; provide on-the-job training and instructions to less skilled workers in trade and safety practices; provide input to performance evaluations; monitor work in progress; inspect completed work to ensure it is in compliance with specifications, special instructions and sound trade practices; and oversee a plumbing shop. Work on new construction and remodels requires: collaborating with engineering and design departments; interpreting complicated plans and drawings; coordinating work of schedules and work assignments to meet the overall construction/modification objectives; accurate and detailed planning of work sequencing; 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.

Typical Qualifications:

➢ **Knowledge** - In addition to the knowledge required of the Plumber II, the Supervising Plumber must have a more thorough knowledge of effective supervisory practices and techniques and a working knowledge of job design and work sequencing related to construction projects.

➢ **Abilities** - In addition to the abilities required of the Plumber II, the Supervising Plumber must demonstrate the ability to plan and direct the work of skilled crafts workers and their assistants; determine and coordinate staffing, material and equipment needs for multiple jobs and projects; and perform design work for plumbing systems.

➢ **Experience** - In addition to the experience required of the Plumber II, the abilities of a Supervising Plumber normally would be acquired through two or more years of experience as a journey-level plumber including one year in a lead/supervisory capacity.
LOCKSMITH SERIES
Draft Classification Standards
Class Codes – 6642 and 6643
Latest revision - February 4, 2000

Series Overview:
Locksmiths as defined in this series are skilled crafts workers who install, repair, remodel and maintain manual and automated locks, locking systems and security devices, including mechanical and electrical systems and devices, automated access control systems, and door opener, closers and hardware. Incumbents install, maintain, repair and adjust all types of locks and their components for campus buildings, rooms, furniture and vehicles; cut and issue keys; implement, troubleshoot, repair and program access control systems to meet campus facilities access and security needs; prepare and issue key cards; upgrade, troubleshoot and maintain security systems, including those interfacing with locking systems; maintain and repair automatic door openers, door closing units, and control gates; service and maintain safes; estimate cost, time and materials for locksmith projects; participate in the maintenance and operations of a locksmith shop; maintain and service tools and equipment used in the performance of duties; perform all work in accordance with established safety procedures and maintain a safe and clean work environment; using manual and electronic record keeping systems, maintain records and retrieve data related to work performed, keys issued and keying systems; prepare standard reports; and consult and work with other trades workers.

Two progressive classifications are defined within this series, each performing the full range of skilled locksmith work; however, the second level has supervisory and master key system design responsibilities. Examples of typical activities are not meant to be all inclusive or restrictive; incumbents may perform related work activities.

Locksmith 1 – Class Code 6642
Under general supervision, incumbents perform the full range of journey-level locksmith work as described in the series overview. Incumbents at this level assist higher level crafts workers in the development of master key systems and the design of special security devices and may also provide instruction and direction to unskilled and semi-skilled assistants.

Typical Qualifications:
➤ Knowledge - Work requires thorough knowledge of the methods, materials, tools and equipment used in the locksmith trade, including complex access and control systems; a thorough knowledge of all types of locks, fastening devices and related hardware; working knowledge of electrical locking and security systems and devices; and a thorough knowledge of applicable state codes pertaining to the locksmith trade including specifics related to fire exits, door hardware and fastening devices.

➤ Abilities - Must be able to perform journey-level locksmith work; use features of applicable access control systems; read, interpret and work from shop blue prints, plans, drawings, and specifications; maintain computerized inventory and master locking systems records and prepare standard reports; provide instruction to unskilled and semi-skilled assistants; read

Locksmith Series – V2
Draft - February 4, 2000
and write at a level appropriate to the position; and perform arithmetic calculations as required by the work.

➤ **Experience** - These abilities normally would be acquired through any combination of progressively responsible training and experience as a locksmith, which demonstrates achievement of a journey-level of skill equivalent to that acquired through completion of a locksmith’s apprenticeship program.

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<tr>
<th>Locksmith II – Class Code 6643</th>
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<td>In addition to performing skilled locksmith work, the Locksmith II is responsible for providing lead work direction to a group of several locksmiths, other skilled crafts workers and/or their assistants and for the planning, design, implementation and maintenance of a campus-wide master lock and key program. Incumbents typically supervise and work with a small crew engaged in locksmith work; plan, schedule and assign work; determine material, equipment and staffing needs for projects; monitor work in progress; inspect completed work to ensure compliance with specifications and sound trade practices; provide input to performance evaluations; oversee a locksmith shop; serve as the campus expert on all matters pertaining to locks, locking systems and fastening devices; and consult with campus administrators on the types of systems and devices most appropriate for new facilities and major replacements.</td>
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**Typical Qualifications:**

➤ **Knowledge** - In addition to the knowledge required of the Locksmith I, the Locksmith II must possess a comprehensive knowledge of master key systems and a working knowledge of effective supervisory techniques.

➤ **Abilities** - In addition to the abilities required of the Locksmith I, the Locksmith II must be able to implement a master key system to meet multiple needs; lead, instruct and coordinate the assignment of a small crew of skilled and semi-skilled workers; determine staffing, material and equipment needs and estimated costs for new locking systems or for replacement systems; analyze and respond promptly to emergency situations; and maintain more complex record keeping systems.

➤ **Experience** – In addition to the experience required of the Locksmith I, the abilities of a Locksmith II normally would be acquired through one year of experience as a journey-level locksmith that included lead or coordination responsibilities.
Series Overview:
Carpenters as defined in this series are skilled trades workers responsible for the full range of rough and finished skilled carpentry work. Incumbents work from blue prints, drawing and instructions to build, remodel, maintain and repair various types of facilities, buildings, offices, classrooms, restrooms, sheds, scaffolds, forms, frames, fences, and other structures; install, build and repair external structures; install and repair dry wall, ceiling and floor tiles, and roofs; make cabinets, counters, shelves, benches, partitions, floors, and door and window frames; hang doors and install windows; assist in making concrete molds and structures; make rough sketches of repair work; advise in the selection of building materials; requisition and store building materials; estimate cost, time and materials for carpentry projects; participate in the maintenance and operations of a carpentry shop; 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; using manual and electronic record-keeping systems, maintain records and retrieve data related to work; prepare standard reports; and consult and work with other trades workers. Work may involve exposure to hazardous materials such as lead and asbestos.

Three progressive classifications are defined within this series, each performing the full range of skilled carpentry work; however, the supervisory, project planning and coordination responsibilities vary depending on the classification. Examples of typical activities are not meant to be all inclusive or restrictive; incumbents may perform related work activities.

Carpenter I – Class Code 6476

Under general supervision, incumbents in this classification perform the full range of skilled journey-level carpentry work as outlined in the series overview. Incumbents in this classification may also provide instruction and lead direction to unskilled and semi-skilled assistants.

Typical Qualifications:
➢ Knowledge – Work requires thorough knowledge of methods, materials, tools and equipment used in both rough and finished carpentry; various types and grades of lumber; hand and power carpentry tools; and applicable state safety and related codes and regulations pertaining to carpentry.

➢ Abilities - Must be able to build, install and repair structural woodwork, flooring, ceilings and cabinetry; operate and maintain hand and power carpentry tools; read, interpret and work from blue prints, plans, drawings, and specifications; recognize and select appropriate lumber types and grades; make rough sketches; estimate the cost, time and materials of carpentry projects; using manual and electronic record-keeping systems, maintain records and retrieve...
data related to work; prepare standard reports; provide instruction to unskilled and semi-skilled assistants; analyze and respond appropriately to emergency situations; read and write at a level appropriate to the position; and perform arithmetic calculations as required by the position.

- **Experience** - These abilities normally would be acquired through any combination of progressively responsible training and experience which demonstrates achievement of journey-level skills equivalent to that acquired through the completion of a carpenter’s apprenticeship program.

### Carpenter II – Class Code 6475

Under general supervision, the Carpenter II works with and is in charge of a crew of several Carpenters and semi-skilled assistants in the building, remodeling and repairing of various internal and external structures. The work of the Carpenter II is distinguished from the Carpenter I by the additional responsibilities of providing lead work direction to several journey-level crafts workers and semi-skilled assistants, laying out and coordinating the work flow for jobs, and preparing materials lists and supplies for jobs. Unlike the Supervising Carpenter, the Carpenter II primarily works as a skilled Carpenter but has ancillary lead work and project planning responsibilities.

Incumbents typically lay out, direct, and assist with the full range of skilled carpentry work as described in the series overview; supervise and instruct a small crew of Carpenters and their assistants; instruct others in safety rules and ensure that rules are observed; select and prepare lists of materials for use on jobs and for the stockroom; inspect carpentry work to ensure it meets quality requirements and specifications; maintain and prepare work records; and may supervise the maintenance of a carpentry shop.

**Typical Qualifications:**

- **Knowledge** - In addition to the knowledge required of the Carpenter I, the Carpenter II must possess a working knowledge of effective supervisory practices and techniques.

- **Abilities** - In addition to the abilities required of the Carpenter I, the Carpenter II must be able to lead, instruct and coordinate the assignments of a small crew of skilled and semi-skilled workers, prepare lists of material and equipment needed; and maintain records and prepare reports of greater complexity.

- **Experience** - In addition to the experience required of the Carpenter I, the abilities of a Carpenter II normally would be acquired through one year of experience as a journey-level carpenter that included work coordination responsibilities.
Supervising Carpenter – Class Code 6474

Under general supervision, the Supervising Carpenter is primarily responsible for supervising the work of one or more crews of skilled journey-level carpenters and semi-skilled assistants in the performance of general carpentry maintenance work and/or new construction and major remodeling projects. The Supervising Carpenter is distinguished from the Carpenter II by the scope of supervisory and project planning and coordination duties and the greater amount of time devoted to these activities.

Incumbents typically prioritize and coordinate the work of multiple crews or projects; assign work to individual crew members, considering the special skills required and possessed; provide work and safety instructions; provide on-the-job training and instructions to less skilled workers in trade and safety practices; provide input to performance evaluations; monitor work in progress; inspect completed work to ensure it is in compliance with specifications, special instructions and sound trade practices; and oversee a carpentry shop. Work on new construction and remodels requires: collaborating with engineering and design departments; interpreting complicated plans and drawings; coordinating work of schedules and work assignments to meet the overall construction/modification objectives; accurate and detailed planning of work sequencing; 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.

Typical Qualifications:

➢ **Knowledge** - In addition to the knowledge required of the Carpenter II, the Supervising Carpenter must possess a more thorough knowledge of effective supervisory practices and techniques and a working knowledge of job design and work sequencing related to construction projects.

➢ **Abilities** - In addition to the abilities required of the Carpenter II, the Supervising Carpenter must be able to plan and direct the work of skilled crafts workers and semi-skilled workers, and determine and coordinate staffing, material and equipment needs for multiple jobs and projects. Incumbents must also be skilled in carpentry design.

➢ **Experience** - In addition to the experience required of the Carpenter II, the abilities of the Supervising Carpenter normally would be acquired through two or more years of experience as a journey-level carpenter including one year in a lead/supervisory capacity.
Series Overview:
Painters as defined this series are skilled trades workers responsible for the performance of skilled work in the painting, finishing, and maintaining of a wide variety of interior and exterior surfaces and structures. Incumbents prepare surfaces for painting and finishing; apply under coats and finish coats; hang paper; mix and match paints and finishes; erect scaffolding; paint signs and parking lot/roadway markings; advise in the selection, ordering and storing of painting materials; estimate cost, time and materials for painting projects; participate in the maintenance and operations of a paint shop; clean and maintain painting and finishing materials, 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; using manual and electronic record-keeping systems, maintain records and retrieve data related to work; prepare standard reports; and consult and work with other trades workers. Work may involve exposure to hazardous materials such as paint thinners, lead and asbestos.

Three progressive classifications are defined within this series, each performing the full range of skilled painting work; however, the supervisory, project planning and coordination responsibilities vary depending on the classification. Examples of typical activities are not meant to be all inclusive or restrictive; incumbents may perform related work activities.

Painter I – Class Code 6526
Under general supervision, incumbents in this classification perform the full range of skilled journey-level painting and finishing work as outlined in the series overview. Incumbents at this level may also provide instruction and lead direction to unskilled and semi-skilled assistants.

Typical Qualifications:
- **Knowledge** – Work requires thorough knowledge of the methods, materials, tools and equipment used in the painting trade including painting, finishing, drywall, and paperhanging; and thorough knowledge of the applicable state codes and regulations pertaining to painting, finishing and paperhanging.

- **Abilities** - Must be able to apply paints and finishes neatly and accurately; mix paints and finishes and match colors; erect and work from scaffolds, rigging and ladders; select the best material for a job; read, interpret and work from blue prints, plans, drawings, and specifications; make rough sketches; estimate the cost, time and materials of painting work; using manual and electronic record keeping systems, maintain records and retrieve data related to work performed; prepare standard reports; provide instruction to unskilled and semi-skilled assistants; analyze and respond appropriately to emergency situations; read and write at a level appropriate to the position; and perform arithmetic calculations as required by the position.
Experience - These abilities normally would be acquired through any combination of progressively responsible training and experience which demonstrates achievement of a journey-level of skill equivalent to that acquired through completion of a standard painter's apprenticeship program.

Painter II – Class Code 6525

Under general supervision, the Painter II works with and is in charge of a small crew of Painters and semi-skilled assistants in the painting and finishing of various interior and exterior surfaces and structures. The work of the Painter II is distinguished from the Painter I by the additional responsibilities of providing lead work direction to several journey-level crafts workers and/or semi-skilled assistants, laying out and coordinating the work flow for jobs, and preparing materials lists and supplies for jobs. Unlike the Supervising Painter, the Painter II primarily works as a skilled painter but has ancillary lead work and project planning responsibilities.

Incumbents typically lay out, direct, and assist with the full range of skilled painting work as described in the series overview; supervise and instruct a small crew of several painters and their assistants; instruct others in safety rules and ensure that they are observed; select and prepare lists of materials for use on jobs and for the stockroom; inspect paint jobs to ensure they meet quality requirements and specifications; maintain and prepare work records; and may supervise the maintenance of a paint shop.

Typical Qualifications:

Knowledge - In addition to the knowledge required of the Painter I, the Painter II must possess a working knowledge of effective supervisory practices and techniques.

Abilities - In addition to the abilities required of the Painter I, the Painter II must be able to lead, instruct and coordinate the work of a small crew of skilled and semi-skilled workers; and maintain records and prepare reports of greater complexity.

Experience - In addition to the experience required of the Painter I, the abilities of the Painter II normally would be acquired through at least one year of experience as a journey-level that included coordination responsibilities.

Supervising Painter – Class Code 6524

Under general supervision, the Supervising Painter is primarily responsible for supervising the work of one or more crews of journey-level painters and semi-skilled assistants performing painting, finishing and paperhanging work on new construction and remolds, as well as general maintenance painting and finishing. The Supervising Painter is distinguished from the Painter II by the scope of supervisory, project planning and coordination duties and the greater amount of time devoted to these activities.

Incumbents typically prioritize and coordinate the work of multiple crews or projects; assign work to individual crew members, considering the special skills required and possessed; provide work and safety instructions; provide on-the-job training and instructions to less skilled workers in trade and safety practices; provide input to performance evaluations; monitor work in
progress; inspect completed work to ensure it is in compliance with specifications, special instructions and sound trade practices; and oversee a paint shop. Work on new construction and remodels requires: collaborating with engineering and design departments; interpreting complicated plans and drawings; coordinating work of schedules and work assignments to meet the overall construction/modification objectives; accurate and detailed planning of work sequencing; 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.

**Typical Qualifications:**

- **Knowledge** - In addition to the knowledge required of the Painter II, the Supervising Painter must possess a more thorough knowledge of effective supervisory practices and techniques and a working knowledge of job design and work sequencing related to construction projects.

- **Abilities** - In addition to the abilities required of the Painter II, the Supervising Painter must be able to plan and direct the work of skilled crafts workers and semi-skilled workers; and determine and coordinate staffing, material and equipment needs for multiple jobs and projects.

- **Experience** – In addition to the experience required of the Painter II, the abilities of the Supervising Painter normally would be acquired through two or more years of experience as a journey-level painter including one year in a lead/supervisory capacity.
Classification Overview:
Masons as defined in this classification are skilled trades workers responsible for skilled masonry work, such as bricklaying, plastering and cement finishing in the alteration, repair, maintenance and renovation of the campus buildings, facilities, equipment and grounds. Examples of typical activities are not meant to be all inclusive or restrictive; incumbents may perform related work activities.

Typical Activities:
Under general direction, incumbents in this classification construct, maintain and repair foundations, pavements, and walks; build retaining walls, planters and shower stalls; cut, set and repair stone, tile and marble; lay brick; reline furnaces; make repairs to plaster and concrete pipelines; advise in the selection and storage of masonry materials and equipment; inspect completed work for conformance with specifications and requirements of local building and safety codes; estimate cost, time and materials for masonry projects; maintain and service tools and equipment used in the performance of duties; perform all work in accordance with established safety procedures and maintain a safe and clean work environment; using manual and electronic record keeping systems, maintain records and retrieve data related to work performed; prepare standard reports; consult and work with other trades workers; and may provide instruction and lead direction to unskilled and semi-skilled assistants.

Typical Qualifications:
➢ **Knowledge** - Work requires thorough knowledge of the methods, materials, tools, and equipment used in masonry work; and a thorough knowledge of applicable state safety codes and regulations pertaining to masonry.

➢ **Abilities** - Must be able to cut, set and repair masonry work; mix and temper lime and cement mortar; line furnaces; cut, drill, and set marble; operate all hand and power tools; determine proper foundation conditions and materials to be used; prepare rough sketches; estimate the cost, time and materials of electrical work; using manual and electronic record keeping systems, maintain records and retrieve data related to work performed; prepare standard reports; provide instruction to unskilled and semi-skilled assistants; analyze and respond to emergency situations; read and write at a level appropriate to the position; and perform arithmetic calculations as required by the position.

➢ **Experience** - These abilities normally would be acquired through any combination of progressively responsible training and experience which demonstrates achievement of a journey level of skill equivalent to that acquired through completion of a standard mason’s apprenticeship program.

Mason
Draft - February 4, 2000
Classification Overview:
Blacksmiths as defined in this classification are skilled trades workers who perform general blacksmith and metal fabrication work in direct support of various instructional programs and campus maintenance efforts. Examples of typical activities are not meant to be all inclusive or restrictive; incumbents may perform related work activities.

Typical Activities:
Under general direction, incumbents in this classification forge, weld, sharpen, temper, and repair tools and equipment; shoe horses and mules; rivet and cut common metals. Incumbents maintain a blacksmith shop; advise in the selection, ordering and storing of blacksmithing supplies and equipment; estimate cost, time and materials for blacksmith projects; clean, maintain and service tools and equipment used in the performance of duties; make rough sketches; perform all work in accordance with established safety procedures and maintain a safe and clean work environment; using manual and electronic record-keeping systems, maintain records and retrieve data related to work; prepare standard reports; consult and work with other trades workers; and may provide instruction and lead direction to semi-skilled and unskilled assistants. Work may involve exposure to hazardous materials.

Typical Qualifications:

- **Knowledge** - Work requires thorough knowledge of: the blacksmith trade including tools, equipment and processes; tool and metal tempering, hardening and sharpening; the recognized safety practices used in blacksmithing and applicable state safety codes and regulations.

- **Abilities** – Must be able to operate large capacity steam and air hammers; do minor repairs on metal and iron equipment; establish and maintain cooperative working relationships with students, farm employees and faculty; read, interpret and work from blue prints, plans, drawings, and specifications; make rough sketches; estimate the cost, time and materials for blacksmith projects; maintain records and retrieve data related to work performed using manual and electronic record keeping systems; prepare standard reports; provide instruction to unskilled and semi-skilled assistants; analyze and respond to emergency situations; read and write at a level appropriate to the position; and perform arithmetic calculations as required by the position.

- **Experience** – These abilities normally would be acquired through any combination of progressively responsible training and experience which demonstrates achievement of a journey-level of skill equivalent to the completion of a standard blacksmith’s apprenticeship program.
Series Overview
Classifications in this series are distinguished by the performance of general and preventive facilities and systems maintenance, repair and renovation functions. Four classifications are defined within the series with work ranging from semi-skilled to skilled, journey-level generalist work in the mechanical and building trades. Assignments may fall into one or more trade areas involving the installation, maintenance and repair of facilities and mechanical systems and/or facilities renovation.

All incumbents clean and maintain materials, tools and equipment used in the performance of duties; perform all work in accordance with established safety procedures and maintain a safe and clean work environment; using manual and electronic record keeping systems, maintain records and retrieve data related to work performed; prepare standard reports; and consult and work with other trades workers. Work may involve exposure to hazardous materials. Examples of typical activities for each classification are not meant to be all inclusive or restrictive; incumbents may perform related work activities.

Facilities Worker I – Replaces Class Codes 6215 and 6212
The Facilities Worker I is a semi-skilled general facilities maintenance classification. Incumbents perform a variety of general and preventive maintenance and repair work which is mechanical, electrical and/or renovation in nature, and which does not require journey-level skills. Incumbents typically perform a variety of semi-skilled facilities and systems maintenance functions independently or they may work under the direction of journey-level crafts worker on complex assignments.

Incumbents typically respond to daily service calls; perform routine preventive maintenance functions for facilities and systems; set up jobs and perform the manual labor preparation; clean, maintain and repair fixtures, equipment and appliances for facilities and systems; assist in the installation of facility and systems materials, fixtures and mechanical equipment; perform light electrical work; assist in maintaining and repairing electrical lines and fixtures; assist in the installation, maintenance and repair of plumbing and HVAC systems; assist in facilities renovations and new construction; assist in painting buildings and equipment; participate in construction site/remodel tear down and set up; make simple interior and exterior structural or furniture repairs; and perform related facilities and systems support functions.

Typical Qualifications:
- **Knowledge** - Work requires working knowledge of the common terminology, methods, practices, tools and procedures related to building and facilities services, maintenance and repair and/or a base knowledge of a building/construction or mechanical trade.

- **Abilities** - Must be able to perform a variety of semi-skilled facilities maintenance and repair tasks; use applicable tools, equipment and systems; follow standard written instructions and
procedures; read and write at a level appropriate for the duties of the position; perform simple arithmetic calculations as required by the position; and demonstrate the ability to learn maintenance and repair functions. All positions require the performance of strenuous manual labor.

- **Experience** – These abilities normally would be acquired through any combination of experience and training equivalent to six months of hands-on experience in general facilities and systems maintenance and repair work or as a trades assistant or laborer which demonstrates proficiency to perform the required duties.

### Facilities Worker II – New Class

Under general supervision, the Facilities Worker II independently performs a wider range of more complex semi-skilled facilities and systems maintenance, repair and renovation work. In addition to the work performed by the Facilities Worker I, incumbents analyze and troubleshoot problems across multiple trade functions and perform necessary repairs.

#### Typical Qualifications

- **Knowledge** - In addition to knowledge required of the Facilities Worker I, the Facilities Worker II must possess a more comprehensive knowledge of specific methods, practices, tools and procedures related to facilities and systems maintenance and repair; may also possess semi-skilled level knowledge across multiple trades; a working knowledge of building codes; and a basic knowledge of electrical theory and mechanical principles.

- **Abilities** - In addition to the abilities required of the Facilities Worker I, the Facilities Worker II must demonstrate semi-skilled proficiency in multiple trade functions.

- **Experience** - In addition to the experience required of the Facilities Worker I, the abilities of the Facilities Worker II normally would be acquired through any combination of experience and training equivalent to two years of hands-on experience in general facilities and systems maintenance and repair work, or two years of experience as a trades assistant or laborer with demonstrated proficiency in the required duties.

### Facilities Services Specialist I – Replaces Class Code 6940

The Facilities Specialist I is a skilled generalist, performing at a journey-level in one trade with strong skills in other trades. Incumbents can independently perform a variety of skilled or specialized preventive and general facilities and systems maintenance, repair and renovation functions. The Facilities Services Specialist I is distinguished from the Facilities Worker classifications by the independent performance of skilled, journey-level trade work.

Incumbents typically operate, test, install, repair and perform corrective and preventive maintenance on mechanical facilities equipment and systems; perform electrical maintenance and repair work including work on low voltage control systems; use computerized maintenance systems to ensure preventive maintenance program objectives are met; perform a wide range of facilities renovation, maintenance, and repair work; estimate costs of materials and labor; determine the priority for requisitioning materials and supplies; may perform welding to make repairs and fabricate and construct parts; may monitor contractor performance and work
progress; respond to routine maintenance and service requests; and provide instruction and
direction to unskilled and semi-skilled assistants.

**Typical Qualifications**

- **Knowledge** - Work requires thorough knowledge of the methods, materials, equipment and
tools used in one skilled trade area; working knowledge of materials, methods, equipment
and tools in related trade areas pertaining to facilities, systems and renovations; working
knowledge of computerized maintenance and building automation systems; working
knowledge of applicable building and safety codes and regulations related to facilities,
systems and renovations.

- **Abilities** - Must be able to demonstrate journey-level skills in one trade and strong skills in
other applicable trades; use considerable judgment and discretion in performing their duties;
read, interpret and work from blue prints, plans, drawings, and specifications; make rough
sketches; estimate the cost, time and materials of maintenance, repair and renovation work;
maintain records and retrieve data related to work performed using manual and electronic
record keeping systems; prepare standard reports; provide instruction to unskilled and semi-
skilled assistants; analyze and respond to emergency situations; read and write at a level
appropriate to the position; and perform arithmetic calculations as required by the position.

- **Experience** – These abilities normally would be acquired through four years of increasingly
responsible experience leading to journey-level skills in a mechanical or facilities/building
trade or any equivalent combination of training and experience as a facilities and systems
mechanic which demonstrates achievement of a journey-level of skill.

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**Facilities Services Specialist II – Replaces Class Code 6941**

The work of the Facilities Services Specialist II is distinguished from the Facilities Services
Specialist I by the additional responsibilities of providing lead work direction to several journey-
level crafts workers and/or semi-skilled assistants, laying out and coordinating the work flow for
jobs, and preparing materials lists and supplies for jobs. Incumbents are skilled generalists,
capable of independently performing at a journey-level in more than one trade and/or at a senior
trade level for highly specialized or complex facilities and systems. Unlike the Facilities Work
Group Supervisor, the Facilities Services Specialist II still works primarily as a skilled crafts
worker.

Incumbents typically work with and are in charge of a small crew of skilled crafts workers and
semi-skilled assistants in the performance of general and preventive facilities and systems
maintenance, repair, and renovation work; determine priorities and assign work to crew
members; develop job specifications, material requests and cost estimates for assigned jobs;
maintain inventory of parts and materials and recommend purchase and storage of parts and
equipment; instruct others in safety rules and ensure they are observed; maintain and prepare
work records; supervise a maintenance shop; and may work with students assigned to
maintenance and construction projects.

**Typical Qualifications:**

- **Knowledge** - In addition to the knowledge required of the Facilities Services Specialist I, the
Facilities Services Specialist II requires thorough knowledge of the methods, materials, tools,
and equipment in more than one skilled trade and/or highly specialized knowledge in a single skilled trade; thorough and comprehensive knowledge of building construction principles, methods and techniques including foundations, framing, maintenance and repair; comprehensive knowledge of applicable state and federal codes and regulations pertaining to facilities and systems; and a working knowledge of effective supervisory practices and techniques.

- **Abilities** - In addition to the abilities required of the Facilities Services Specialist I, the Facilities Services Specialist II must be able to demonstrate journey-level skills in more than one trade or highly specialized skills in one trade with strong skills and capabilities in other trades; provide effective lead work direction, establish work priorities and assign work to a crew of skilled and semi-skilled workers; develop job specifications, material requests and cost estimates for assigned jobs; perform skilled to highly skilled repair, maintenance and modification work; and maintain records and prepare reports of greater complexity.

- **Experience** - In addition to the experience required of the Facilities Services Specialist I, the abilities of the Facilities Services Specialist II normally would be acquired through two years of journey-level experience as a skilled crafts worker focused in facilities and systems maintenance, repair and renovation, in addition to any combination of progressively responsible training and experience as a mechanic, building contractor or skilled crafts worker which demonstrates the achievement of a journey-level of skill equivalent to that acquired through completion of an applicable apprenticeship program.
FACILITIES WORK GROUP SUPERVISOR
Draft Classification Standard
Class Code: New

Classification Overview:
The Facilities Work Group Supervisor is designed for positions with responsibility for supervising work crews and projects involving skilled crafts workers and assistants across multiple trades. Incumbents are skilled in one or more trades and coordinate and supervise the work of one or more crews involved in the construction, maintenance, repair and renovation of various facilities and structures and provide comprehensive technical project leadership. Incumbents also act as key liaisons with customers, coordinate job estimates, and ensure supplies and materials are available for jobs. Examples of typical activities are not meant to be all inclusive or restrictive; incumbents may perform related work activities.

Distinguishing Characteristics:
Unlike other supervising classifications, the work group supervisor is responsible for supervising a crew comprised of semi-skilled and skilled journey-level workers from more than one trade. The crew is typically engaged in performing construction maintenance, repair and renovation work. The Facilities Work Group Supervisor is distinguished from the Facilities Services Specialist II by the scope of supervisory, project planning and coordination duties, and the greater amount of time devoted to these activities.

Typical Activities
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 to performance evaluations; monitor work in progress; and inspect completed work to ensure it is in compliance with specifications, special instructions and sound trade practices.

Work on new construction and remodels requires: collaborating with engineering and design departments; interpreting complicated plans and drawings; coordinating work of schedules and work assignments to meet the overall construction/revision objectives; accurate and detailed planning of work sequencing; ensuring the availability of 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.

Typical Qualifications:

➢ **Knowledge** – Work requires thorough knowledge of methods, materials, tools and equipment used in the building and construction trades; effective supervisory practices and techniques; job design and work sequencing related to construction projects; and applicable state and federal safety, building and construction codes and regulations.

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*Facilities Work Group Supervisor*

*Draft - February 4, 2000*
 Abilities - Must possess journey-level skills in a building or construction trade; must demonstrate the ability to operate all applicable building tools and equipment; plan and direct the work of skilled crafts workers and their assistants; determine and coordinate staffing, material and equipment needs for multiple jobs and projects; perform basic design work; read blue prints and work from plans and specifications and prepare rough sketches; analyze emergency situations accurately and take prompt action; maintain records and prepare reports; read and write at a level appropriate for the position; and perform arithmetic calculations as required by the position.

 Experience - These abilities normally would be acquired through two years of experience working as a journey-level crafts worker in one or more building trades including one year in a lead/supervisory capacity. Must have demonstrated achievement of journey-level skills equivalent to those acquired through the completion of an apprenticeship program.
Series Overview:
Classifications in this series are distinguished by their focus on the preventive maintenance, repair and modification of automotive, maintenance, construction and/or other power driven equipment. Three classifications are defined within the series. All incumbents clean and maintain materials, tools and equipment used in the performance of duties; perform all work in accordance with established safety procedures and maintain a safe and clean work environment; using manual and electronic record keeping systems, maintain records and retrieve data related to work performed; prepare standard reports on the condition of equipment; and consult and work with other trades workers. Work may involve exposure to hazardous materials. Examples of typical activities for each classification are not meant to be all inclusive or restrictive; incumbents may perform related work activities.

Mechanics Helper – Class Code 6837
The Mechanics Helper is involved in the servicing, maintenance and repair of automotive, maintenance and/or construction equipment. This classification is distinguished by the fact that the work performed independently does not require journey-level mechanic skills. Incumbents may assist in overhauling, repairing or adjusting engines, transmissions, ignition, electrical, fuel and cooling systems, and related component systems. Incumbents may also operate automotive equipment and other equipment and assist in directing less skilled workers.

Typical Qualifications:
➢ Knowledge – Work requires general knowledge of the names of automotive and machine parts, automotive and heavy equipment; working knowledge of materials, machines and hand tools, equipment, and procedures used in their maintenance, repair and adjustment; and working knowledge of applicable safety practices and regulations.

➢ Abilities - Must be able to identify automotive, equipment and machine parts; perform the less skilled tasks involved in repairing and servicing automotive and heavy mechanical equipment; read and write at a level appropriate to the duties of the position; and perform simple arithmetic calculations as required by the position.

➢ Experience - These abilities normally would be acquired through a combination of experience and vocational/trade schooling such as completion of a recognized vocational course in automotive or heavy construction equipment technology in either high school, trade school or junior college, and/or equivalent experience in the duties outlined above.
Automotive/Equipment Mechanic I – New Class Code (Replaces 6851 and 6834)

Under general supervision, the Automotive/Equipment Mechanic I performs skilled work in the overhaul, repair, maintenance, servicing and adjustment of campus automotive and/or heavy maintenance and construction equipment. The work of the Automotive/Equipment Mechanic I is distinguished from the Mechanics Helper by the regular and independent performance of the full range of journey-level automotive and/or heavy equipment overhaul, repair and maintenance work.

Incumbents typically inspect automotive, maintenance and/or construction equipment to determine corrective action necessary; perform diagnostic tests using engine analyzers; make minor to major repairs to automotive and/or heavy equipment; fabricate, construct and/or modify new or special equipment, mechanical and engine parts, and body parts; install and repair special equipment; operate and maintain tools, machinery and computerized systems used in the maintenance, repair and fabrication of automotive, maintenance and/or construction equipment; troubleshoot and repair all systems and components; perform smog tests; respond to emergency break downs and calls; perform minor welding and brazing work; estimate the cost of materials and labor for maintenance and repairs; maintain vehicle inspection, maintenance and repair records using manual or electronic record keeping systems; provide instruction and lead direction to semi-skilled and unskilled workers; and may serve as the campus vehicle inspector.

Typical Qualifications:

➢ **Knowledge** - Work requires thorough knowledge of the automotive and/or equipment mechanics including electrical systems, brake and engine overhaul; thorough knowledge of methods, tools, materials, equipment and computerized systems used in the maintenance, adjustment and repair of engines, equipment and accessories; working knowledge of wiring and electrical theory and engine principles; and working knowledge of applicable state and federal regulations pertaining to automotive and other power driven equipment and vehicles as well as applicable smog regulations.

➢ **Abilities** - Must be able to make skilled repairs to applicable automotive, maintenance and/or construction equipment; diagnose mechanical and electrical malfunctions; perform a variety of skilled repairs on equipment; work from blueprints, drawings and sketches to fabricate parts; perform required welding; inspect vehicles and equipment and determine extent of repairs; accurately estimate the cost, time and materials of mechanical work and repairs; using manual and electronic record keeping systems, maintain records and retrieve data related to work performed; prepare standard reports; provide instruction to unskilled and semi-skilled assistants; analyze and respond to emergency situations; read and write at a level appropriate to the position; and perform arithmetic calculations as required by the position.

➢ **Experience** - These abilities normally would be acquired through a combination of progressively responsible training and experience as an automotive and/or equipment mechanic, which demonstrates achievement of a journey-level of skill equivalent to that acquired through a four year apprenticeship program for automobile or equipment mechanics.

➢ **Special Requirements** - Incumbents are required to possess a California Driver’s license valid for the operation of any vehicle or equipment they are required to maintain and operate.
Automotive/Equipment Mechanic II – New Class Code (Replaces 6852)

Automotive/Equipment Mechanic II is distinguished by the performance of lead duties and/or a wider variety of highly skilled work in the maintenance, repair, design and modification of automotive, maintenance and construction mechanical equipment, machinery, and tools. In addition to the duties of the Auto/Equipment Mechanic I, incumbents typically provide on-site supervision to the automotive/equipment maintenance shop; assign work and provide daily work direction to shop personnel; establish priorities for automotive and equipment repair and maintenance work; ensure preventive maintenance program is accomplished and that manufacturer obligations are met; serve as the liaison with customers and vendors; maintain inventory of parts and materials and recommend purchase and storage of parts and equipment; instruct mechanics and equipment operators in the proper operation and servicing of their equipment; instruct shop personnel in safety and proper work techniques; recommend specialized jobs that need to be contracted out; and maintain and prepare work records.

Typical Qualifications:

➢ **Knowledge** - In addition to the knowledge of the Auto/Equipment Mechanic I, the Mechanic II must possess a working knowledge of effective supervisory practices and techniques.

➢ **Abilities** - In addition to the abilities required of the Automobile/Equipment Mechanic I, the Automobile/Equipment Mechanic II must be able to provide effective lead work direction including establishing work priorities, maintaining effective work relationships, and training and instructing shop personnel in methods and procedures for repair work and safety; perform skilled to highly skilled repair, maintenance and modification work; and maintain records and prepare reports of greater complexity.

➢ **Experience** - In addition to the abilities required of an Automobile/Equipment Mechanic I, the abilities of the Automobile/Equipment Mechanic II normally would be acquired through one year of experience as a skilled automotive or equipment mechanic involving work coordination responsibilities, in addition to any combination of progressively responsible training and experience as an automotive and/or equipment mechanic resulting in the achievement of a journey-level of skill equivalent to that acquired through completion of a four-year automotive and/or equipment mechanic apprenticeship program or the equivalent combination of training acquired through courses or training programs taken at a college, trade school or training center.

➢ **Special Requirements** - Incumbents are required to possess a California Driver’s license valid for the operation of any vehicle or equipment they are required to maintain and operate.
Series Overview:
The HVAC series is comprised of four classifications with varying levels of responsibility for the operation, maintenance and repair of heating, air conditioning, ventilation, and refrigeration equipment and systems and their related building automation systems. Incumbents in this series also maintain, service, inspect and repair the mechanical, electrical, electronic, and digital controls associated with such systems either in a centralized plant or in decentralized utilities centers across a campus.

All incumbents must be able to proficiently use building automation systems to diagnose and troubleshoot problems; estimate cost, time and materials for projects; participate in the maintenance and operations of applicable heating and air conditioning systems and equipment; maintain and service tools and equipment used in the performance of duties; perform all work in accordance with established safety procedures and maintain a safe and clean work environment; maintain records and logs and retrieve data related to work performed using manual and electronic 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 for each classification are not meant to be all inclusive or restrictive; incumbents may perform related work activities.

Operations Mechanic – Replaces Class Codes 6703 and 6685
The Operations Mechanic is primarily responsible for the operation, maintenance and repair of boilers and chillers for the heating and cooling systems on a campus or major facility. Incumbents also may be responsible for the operation, servicing and repair of power plants and high speed revolution cogeneration equipment. The Operations Mechanic is distinguished from the HVAC Mechanic in that the HVAC Mechanic must service a wider range of more complex and sophisticated heating ventilation and air conditioning systems and equipment.

Under general supervision, incumbents monitor, operate, service and maintain boiler and chiller systems and their components (including underground components), and/or power plant equipment such as reciprocating engines; fire and secure high pressure boilers; respond to comfort calls; manipulate features of building automation systems to adjust space temperatures and air intake to maximize comfort while conserving energy; effect building automation programming schedules for the heating and cooling of campus facilities; conduct chemical analyses for water treatment for both chiller and boilers; switch plant to manual operation in case of a power failure; perform some soldering and welding on plant equipment and pipelines; and may provide work direction to unskilled assistants.

➢ Knowledge - Work requires thorough knowledge of high and low pressure boiler systems, chiller systems, and/or electrical distribution and transfer systems and equipment, as well as auxiliary equipment; thorough knowledge of the methods, materials and tools used in the
operation of applicable systems; working knowledge of system water testing and treatment procedures; and working knowledge of applicable building automation systems and interfaces.

- **Abilities** - Must be able to safely and efficiently operate boilers and chillers; quickly identify and correct malfunctions; monitor energy consumption and manipulate equipment and system features to maximize comfort and conserve energy; operate computer-based energy management systems and interfaces with main building automation system; read, interpret and work from blueprints, manuals, diagrams and operating procedures; estimate the cost, time and materials of projects; maintain logs and records and retrieve data related to work performed using manual and electronic record keeping systems; prepare standard reports; provide instruction to unskilled assistants; analyze and respond to emergency situations; read and write at a level appropriate to the position; and perform arithmetic calculations as required by the position.

- **Experience** - These abilities normally would be acquired through the equivalent to two years of hands-on experience in the operation, maintenance and repair of boiler and chiller systems, cogeneration systems, and/or related mechanical equipment. Completion of a certificate or other vocational training may be substituted for hands-on experience.

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<tr>
<th>HVAC Mechanic – Replaces Class Code 6702</th>
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<tr>
<td>The HVAC Mechanic is distinguished from an Operations Mechanic by the independent and ongoing performance of maintenance and repair work on a wider range of heating, ventilating, plumbing, electrical, mechanical, refrigeration, air conditioning, and water and sewage systems. Compared to the Refrigeration Mechanic, the HVAC Mechanic does not perform the more sophisticated work on complex refrigeration and air conditioning systems requiring a more comprehensive knowledge of these systems and the applicable regulations.</td>
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Under general supervision, incumbents operate, maintain, repair, and inspect heating, ventilating, air conditioning, refrigeration, and water and sewage systems and equipment; test, adjust, and calibrate boiler and air conditioning machinery and mechanical, electrical, pneumatic, and/or micro-processor control instruments; test, and chemically treat as necessary, boiler, condenser, and cooling tower water and water from other systems; maintain, inspect, diagnose and make emergency repairs to steam, natural gas, water, refrigerant, air and oil distribution systems; use features of building automation systems to diagnose and troubleshoot problems in the HVAC systems and maximize energy usage; monitor building automation systems data and make system adjustments accordingly; respond to comfort and service requests to adjust air flow, temperature and humidity balances for individual rooms, building areas or buildings; rotate through various shift assignments at stations either in a central plant or in the utilities centers of individual buildings or campus centers; maintain logs of daily operating data and of maintenance and repair work performed; and may instruct and lead semi-skilled or unskilled assistants. Incumbents are also involved in the repair and replacement of bearings, shafts, seals, rings and electrical wiring and in the installation of central system parts, gauges, valves and pipes, which require the application of journey-level knowledge and skills in one or more of the applicable trades.
Typical Qualifications:

- **Knowledge** - Work requires thorough knowledge of high and low pressure boilers and of heating, pneumatic, lighting, ventilating, air conditioning, refrigeration and other mechanical equipment and of the methods, tools and materials used in the operation, maintenance and repair of such equipment; general knowledge of ventilation principles, thermal dynamics, and closed water systems; and working knowledge of energy management systems including the ability to understand and use system features.

- **Abilities** - Must be able to install, operate and repair of HVAC equipment and systems; demonstrate a high degree of mechanical skill equivalent to journey-level in one or more related trades such as plumbing, pipe setting, electrical, air conditioning or steam fitting; read, interpret and work from blue prints, plans, drawings, and specifications; make rough sketches; estimate the cost, time and materials of electrical work; using manual and electronic record keeping systems, maintain records and retrieve data related to work performed; prepare standard reports; provide instruction to unskilled and semi-skilled assistants; analyze and respond to emergency situations; read and write at a level appropriate to the position; and perform arithmetic calculations as required by the position.

- **Experience** - These abilities normally would be acquired through two years of journey-level experience in the operation, maintenance and repair of boiler, heating, ventilating, refrigeration and air conditioning equipment and systems involving the use of automatic controls or an equivalent combination of formal course work in mechanical technology and hands on experience.

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**Refrigeration Mechanic – Replaces Class Code 6699**

The Refrigeration Mechanic is distinguished by responsibility for the full range of service, maintenance and repair work on more complex HVAC and refrigeration systems and equipment. This work requires a more comprehensive knowledge of refrigeration and air conditioning systems than the more standard refrigeration and air conditioning work performed by the HVAC Mechanic. Typically, the Refrigeration Mechanic is working with campus-wide refrigeration systems. Incumbents must be thoroughly familiar with all legal and safety codes and regulations related to the installation and operation of refrigeration and air conditioning systems to ensure campus compliance. Positions in this classification typically require certification in the use and disposal of compressed refrigerants through the Environmental Protection Agency.

Under general direction, incumbents install, troubleshoot, calibrate, repair and maintain refrigeration, heating, ventilation and air conditioning systems equipment, instruments and controls using electrical, electronic, pneumatic or digitally controlled systems; oil, clean, adjust, overhaul, and repair motors, condensers, compressors, oil and vacuum pumps and similar equipment; perform major overhauls involving disassembly and inspection of all parts, replacement of defective and worn parts, reassembly of equipment instruments, and/or controls, and the testing of equipment to ensure proper functioning; locate and diagnose malfunctions using a wide variety of test equipment and instruments; analyze the operating efficiency of campus refrigeration and air conditioning systems and recommend actions for improvements; respond to comfort complaints; diagnose problems in the distribution of air to individual rooms and buildings and making necessary adjustments and balances in air conditioning systems; use

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*Draft - February 4, 2000*
building automation system to diagnose and troubleshoot problems in HVAC and refrigeration systems; maintain inventory and records and order parts and supplies; and train and provide work direction to skilled and semi-skilled assistants.

**Typical Qualifications**

- **Knowledge** - Work requires thorough knowledge of the theory and operation of major types of refrigeration and air conditioning equipment and of the materials, equipment and techniques used in the repair and maintenance of such equipment. Working knowledge of electrical voltage, plumbing refrigeration, electrical and plumbing codes, thermodynamics and automated energy/environmental management systems.

- **Abilities** - In addition to the abilities required of an HVAC Mechanic, the Refrigeration Mechanic must be able to use judgment and discretion in determining the methods of operation and priorities for work orders; perform skilled electrical and plumbing work; diagnose and repair major malfunctions in the complex multi-zone air conditioning systems; devise and control air distribution efficiently with maximum comfort; diagnose and repair centrifugal and absorber equipment.

- **Experience** – These abilities normally would be acquired through progressively responsible experience in the installation, adjustment, maintenance and repair of commercial and domestic refrigeration and air conditioning systems involving modulatory and safety controls, thermostats, humidifiers, and duct stats as well as one year of experience in the installation and repair of central multi-zone air conditioning systems experience. In additional, journey-level skill equivalent to that required through the completion of a refrigeration or air conditioning mechanic’s apprenticeship program is required.

- **Special Requirements** - Incumbents typically must possess certification in the use of refrigerants.

**Facilities Control Specialist – New Class Code**

This classification is designed for those positions primarily responsible for the installation, maintenance, adjustment and repair of electric, electronic, pneumatic and digitally controlled building automation systems which manage the most complex HVAC and refrigeration systems. Incumbents monitor, troubleshoot, design, modify and calibrate program system features and respond to technical and mechanical problems, either remotely or on-site. Incumbents must be thoroughly conversant in the software operation of the applicable building automation system and have journey-level skills and experience to allow them to diagnose, repair and maintain complex HVAC systems and their components. The Facilities Control Specialist is distinguished from the Refrigeration Mechanic by the fact that the primary focus is on the monitoring and maintenance of building automation systems. While some repairs and adjustments may be performed directly on HVAC and refrigeration systems and equipment, this work does not comprise a majority of time for the Facilities Control Specialist.

Under limited supervision, incumbents install, modify and adjust computer-based heating, ventilation and air conditioning equipment and systems; fabricate and implement programs or building control strategies for digitally controlled or global supervisory controlled systems;

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troubleshoot, design and modify programs for building automation systems; repair and maintain individual components of direct digital control system and energy management system, including hardware and software; perform major and minor overhauls, which involve the disassembly and inspection of all parts, replacing worn and defective parts, reassembly of all equipment and controls, and testing to ensure proper function; perform major and minor repairs of microprocessor-based automation that monitors and controls building environments; respond to requests for service; diagnose and troubleshoot system problems and correct them as necessary; may serve as the department specialist on building automation systems; and train others on the troubleshooting, overhaul, repair, calibration, and testing of controls to facilitate the maintenance of systems.

**Typical Qualifications**

- **Knowledge** - In addition to the knowledge requirements of the HVAC and Refrigeration Mechanics, the Facilities Control Specialist must possess a thorough understanding of electric, electronic, pneumatic and digitally controlled building automation systems, including a thorough knowledge of assigned building automation system.

- **Abilities** - In addition to the abilities of the HVAC and Refrigeration Mechanics, the Facilities Control Specialist must be conversant thoroughly in the use of the building automation system’s programming features and be able to design, modify and implement programs to achieve facilities management goals, as well as perform remote and hands-on troubleshooting, intervention and repair.

- **Experience** - These abilities normally would be acquired through formal training in refrigeration systems, HVAC systems, and building automation systems, plus four or more years of experience in the following areas:
  a) Progressively responsible skilled journey-level experience diagnosing, repairing and maintaining large, complex and sophisticated heating, ventilation, refrigeration and air conditioning and water treatment systems.
  b) Experience installing, inspecting, servicing, repairing, replacing and calibrating building automation and control systems.
  c) Experience using programming features of building automation systems.
Series Overview:
The Metal Worker series is designed for positions with primary responsibility for skilled work in welding, sheet metal, materials fabrication and machine shop in support of facilities and systems preventive maintenance and renovations. Two progressive classifications are defined in this series with work falling into the core areas of HVAC ductwork fabrication and installation; architectural metal works; fabrication and installation of piping systems; architectural and structural fabrications; and machine shop work.

All incumbents participate in the maintenance of a metal working/machine shop including advising in the selection, 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 and estimate costs of metal and/or machine work; inspect assemblies to ensure they conform to specifications; maintain and service tools and equipment used in the performance of duties; using manual and electronic record keeping systems, perform all work in accordance with established safety procedures and maintain a safe and clean work environment; maintain records and retrieve data related to work performed; prepare standard reports; and consult and work with other trades workers. Work may involve exposure to hazardous materials. Examples of typical activities provided below for each classification are not meant to be all inclusive or restrictive; incumbents may perform related work activities.

**Metal Worker I – New Class (Replaces Class Codes 6584, 6596 and 6805)**
The Metal Worker I is a skilled journey-level classification. 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 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 cutting, welding, brazing, and soldering of sheet metals; the installation, maintenance, inspection and repair of sheet metal parts; and developing, forming and fashioning sheet metals into various sheet metal objects such as gutters and downspouts, air handling equipment, roof flashings; hand rails and related non-structural equipment and fixtures.

- Machine shop work involves the operation and maintenance of 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 sheets metals; thorough knowledge of installation standards for low, medium, and high pressure ductwork; and working knowledge of state safety orders applicable to metal work. Some positions involved in HVAC ductwork fabrication and installation 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 emergency situations and take prompt action; maintain records and retrieve data related to work performed using manual and electronic 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 the achievement of a journey-level of skill equivalent to that acquired through the completion of an applicable apprenticeship program.

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

### Metal Worker II – Replaces Class Code 6583

Positions in this classification are responsible for highly skilled architectural and structural fabrications and/or for the layout, fabrication and installation of piping systems. Compared to the Metal Worker I, incumbents must be skilled in a wider variety of fabrications and assembly using materials beyond standard metals and sheet metal and hold a certification in welding. Incumbents may also provide lead work direction and instruction to semi-skilled and skilled workers. Work for positions in this classification typically falls into the following core areas.

- Architectural and structural fabrications and installations involve the design, layout, fabrication, installation and repair work for more complicated structural components, fixtures, equipment and machinery involving the use of a wide variety of materials such as sheet metals, structural metals, glass, and plexi-glass; the operation of welding, fabrication and machine shop equipment; the use of triangulation, radial parallel and shop mathematics to develop patterns, shapes and parts; the determination of appropriate materials; and the design, development and implementation of solutions to resolve problems that arise in construction and repair.

- Pipefiding fabrication and installation involves the welding, butt welding, soldering, brazing and use of other methods to connect piping made of various metal and piping materials for piping systems involved in HVAC, plumbing, sewage and water and related facility 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 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; and thorough knowledge of applicable state safety orders related to metal work and materials fabrication.

- **Abilities** – In addition to the abilities 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 beyond standard metals; identify and select structural shapes and materials and connection methods appropriate for jobs; work with common piping materials; to effect all pipe connection methods; read plans, schematics and isometric drawings; instruct, direct and coordinate the assignments of work crews 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, plexi-glass, wrought iron, or structural.

- **Special Requirements** – Incumbents must possess applicable certification for metal or welding work performed.
Classification Overview:
The Mechanical Systems Supervisor is designed for positions with responsibility for supervising work crews and projects involving skilled crafts workers and assistants from the mechanical, metal working and/or materials fabrications trades. Incumbents coordinate and supervise the work of one or more crews involved in the installation, operation, maintenance and repair of mechanical power systems, equipment and appliances and/or materials fabrications and provide comprehensive technical leadership. Incumbents are skilled in one or more trades. Often, incumbents are responsible for the operation of a large centralized or decentralized HVAC system and supervise the maintenance and repair of its mechanical equipment and components. Examples of typical work activities sited below are not meant to be all inclusive or restrictive; incumbents may perform related work activities.

Distinguishing Characteristics:
The Mechanical Systems Supervisor is distinguished from lead Mechanic and Metal Worker classifications by the scope of supervisory and project planning and coordination duties and the greater amount of time devoted to these activities.

Typical Activities
Under general direction, incumbents prioritize, schedule, coordinate and supervise the work of one or more crews of skilled mechanics, metal workers and/or fabrications specialists and their semi-skilled assistants; determine the necessary materials, supplies, equipment and staffing to meet work orders and preventive maintenance schedule; perform job lay out and assign work to individual crew members; provide work and safety instructions; provide on-the-job training and instructions to less skilled workers; and examine work in progress and completed work to ensure it is in compliance with specifications, special instructions and sound trade practices; may assist journey crafts workers on more difficult assignments in responding to emergency situations; review the work of contractors and vendors; maintain records and prepare reports; and provide input to employee evaluations. Work on new installations, construction, and renovations requires: collaborating with engineering and design departments; interpreting complicated plans and drawings; developing project plans including timelines and determining material, equipment and staffing needs; accurate and detailed planning of work sequencing; coordinating cost estimates from the various trades involved; coordination work of schedules and work assignments to meet the overall project objectives; analyzing work operations; providing cost and time estimates; providing a high-level inspection to ensure appropriate building and safety codes are met; and coordinating the work of outside contractors and vendors. Incumbents may also design minor tenant improvements.

Typical Qualifications:
➢ Knowledge – Work requires thorough knowledge of methods, materials, tools and equipment used in the applicable mechanical trades and systems, including applicable computerized or automated systems; thorough knowledge of effective supervisory practices and techniques;
thorough knowledge of job design and work sequencing related to renovation and installation projects; and thorough knowledge of the applicable state and federal safety codes and regulations pertaining to mechanical systems.

➢ **Abilities** - Must possess journey-level skills in the applicable mechanical and/or materials fabrications trade and be able to quickly learn and maintain currency in applicable industrial safety orders and regulations pertaining to mechanical systems and equipment; plan and direct the work of skilled crafts workers and semi-skilled workers; determine and coordinate staffing, material and equipment needs for multiple jobs and projects; perform basic design work; read blue prints and work from plans and specifications and prepare rough sketches; read and interpret complex operating manuals; analyze emergency situations accurately and take prompt action; maintain records and retrieve data related to work performed using manual and electronic record keeping systems; prepare more complex reports; read and write at a level appropriate to the position; and perform arithmetic calculations as required by the position.

➢ **Experience** - This background normally would be acquired through two years of experience working as a journey-level crafts worker in one or more applicable mechanical or related trades involving progressive responsibility in terms of leading work groups and training and monitoring the work of others. Must have demonstrated achievement of journey-level skills equivalent to those acquired through the completion of an apprenticeship program.