

## **Master Electrician - Public Works & Utilities**

### **SUMMARY/PURPOSE**

To provide oversight, guidance, and quality control of Public Works & Utilities electrical infrastructure and applications. This position will properly plan, lay out, perform, and supervise the installation and repair of wiring apparatus and equipment for electrical light, heat, power, and other purposes.

### **SUPERVISION RECEIVED**

The supervisor provides continuing or individual assignments by indicating generally what is to be done, limitations, quality and quantity expected, deadlines, and priority of assignments. The supervisor provides additional, specific instructions for new, difficult, or unusual assignments, including suggested work methods or advice on source material available.

### **SUPERVISION GIVEN**

Does not have direct supervisory responsibility but does have significant oversight of employees or project that require delegation and direction over the work of others.

### **ESSENTIAL DUTIES AND RESPONSIBILITIES**

1. Provide general oversight on Public Works & Utilities projects and electrical systems to ensure all regulations and codes are met.
2. Perform skilled electrical work in the installation, maintenance, and repair of electrical systems.
3. Perform the installation of conduit, including electrical-metallic tubing, plastic mold, and wire mold.
4. Perform the installation of transformers, control boards, electronic circuits, coils, circuit breakers, voltage regulators, switches, fuses, and related electrical equipment in electrical generating and distributing stations and buildings.
5. Perform additions, extensions, or alterations to electrical installations for power, light, heat, and appliances in buildings and on grounds.
6. Troubleshoot, perform repairs, and test a variety of motors, electrical circuits, machinery, transformers, meters, and recording instruments.
7. Perform installations and connections of motors, lights, controllers, voltage regulators, racks, and various electrical fixtures.
8. Inspect and perform cleaning and maintenance to electrical equipment and motors, including replacement of brushes and necessary parts.
9. Determine modifications required when obstructions are met while installing electrical systems.
10. Assist in operating and maintaining cathodic protection on gas and water distribution systems.
11. Ensure a safe work environment.
12. Maintain and perform repairs to equipment and tools.
13. Assist other staff as necessary.
14. Review and interpret blueprints and determine material lists and costs.
15. Estimate time and materials necessary to perform a job.
16. Assist with inspections of new installations and/or modifications performed by others.
17. Obtain electrical permits for the City of Duluth when required.
18. Secure meter applications when required.
19. Organize and direct the work of journeypersons and helpers as assigned.
20. Train journeypersons and helpers as assigned.
21. Schedule and conduct daily/weekly/monthly meetings with Water, Wastewater, Storm and Gas crews to review and schedule projects and repairs.
22. Ability to assemble, move, setup and dismantle tools and machinery in an industrial setting.
23. Be an effective team member by exhibiting self-motivation, supporting other employees in handling tasks, interacting effectively and respectfully with others, showing a desire to contribute to the team effort, accepting assignments willingly, and completing tasks within agreed upon
24. Coordinate with various City departments, other government agencies, and community groups to develop methods of sharing resources, minimizing duplication, and simplifying procedures.
25. Provide training on new or modified procedures and policies to all affected parties.

26. In collaboration with the supervisor, organize and direct the work activities of assigned team, and determine work priorities, assignments, and work schedules.
27. Provide input on decisions regarding the hiring processes and onboarding procedures of personnel.
28. Establish and maintain positive working relationship with the supervisor and employees by maintaining two-way communication, producing consistent results, advocating for the team when appropriate, and offering expertise to improve processes, systems, and the organization.
29. Other duties as assigned.

### JOB REQUIREMENTS

To perform this job successfully, an individual must be able to perform each essential duty satisfactorily. The requirements listed are representative of the knowledge, skills, and abilities required.

1. Education & Experience Requirements
  - A. A minimum of one (1) year of related full-time, verifiable, professional experience as a licensed Master Electrician.
  - B. Experience working with high voltage, high horsepower motors and their associated control equipment in an industrial setting.
  - C. General working knowledge of residential or industrial plumbing and pipefitting with basic installation and repair experience is preferred.
2. License Requirements
  - A. Possess and maintain a valid Minnesota Class a Master Electrician License.
  - B. Possess and maintain a valid Minnesota Class D Driver's License or privilege.
  - C. Ability to become Operator Qualified to perform work on the Utilities natural gas distribution system within six months of employment.
3. Knowledge Requirements
  - A. Thorough knowledge of the National Electrical Code (NEC).
  - B. Thorough knowledge of all applicable laws, rules, and standards regulating electrical construction and installation practices.
  - C. Thorough knowledge of electrical test equipment, instruments, and appliances used in the electrical trade.
  - D. Knowledge of high voltage, high horsepower motor systems including their associated control and data acquisition systems.
  - E. Knowledge of electronics and electronic circuits.
  - F. Knowledge of system control and data acquisition systems and methods.
  - G. Knowledge of microcomputer operations.
  - H. Working knowledge of OSHA standards for arc flash protection.
  - I. Working knowledge of the installation and operation of equipment operating at or over 600 V nominal.
  - J. Proficient knowledge in the installation, maintenance, repair and troubleshooting of centrifugal pumps, air compressors, generators, electric motors, regulators and SCADA equipment.
  - K. General knowledge of industrial and residential plumbing.
  - L. Knowledge of problem-solving and conflict-resolution techniques.
  - M. Knowledge of applicable safety requirements.
  - N. Knowledge of, or the ability to learn, City policies and procedures.
  - O. Knowledge of federal, state, and local laws, statutes, regulations, codes, and standards related to the area of responsibility.
  - P. Knowledge of effective leadership and personnel practices.
4. Skill Requirements
  - A. Skill in safe work practices and procedures.

- B. Skill in operating and maintaining electrical equipment, instruments, appliances, and other electrically operated or controlled devices.
  - C. Skill in the installation, maintenance, and repair of electrical systems.
  - D. Skills in troubleshooting techniques to solve mechanical issues.
  - E. Skill in the operation of office equipment including, but not limited to, general computer systems, job required software applications, the internet, and modern office equipment.
  - F. Skill in managing one's own time and the time of others.
  - G. Skill in completing assignments accurately and with attention to detail.
  - H. Skill in using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems.
5. Ability Requirements
- A. Ability to read blueprints, diagrams, and schematics.
  - B. Ability to calculate materials costs.
  - C. Ability to estimate time and materials necessary to complete a job.
  - D. Ability to complete the layout and replacement of equipment and machinery in factory settings to ensure minimum downtime.
  - E. Ability to assemble and install water, gas, sewer and storm water equipment then testing to ensure they are working correctly.
  - F. Ability to assist in preventive maintenance by identifying and correcting potential issues.
  - G. Ability to erect ladders and scaffolding in a safe manner.
  - H. Ability to use hand and power tools.
  - I. Ability to recognize safety hazards and take appropriate precautions.
  - J. Ability to create and maintain a positive working environment that welcomes diversity, ensures cooperation, and promotes respect by sharing expertise with team members, fostering safe work practices, and developing trusting work relationships.
  - K. Ability to communicate and interact effectively with members of the public.
  - L. Ability to communicate effectively both orally and in writing.
  - M. Ability to recognize, analyze, and solve a variety of problems.
  - N. Ability to organize and prioritize work while meeting multiple deadlines.
  - O. Ability to handle difficult and stressful situations with professional composure.
  - P. Ability to work successfully as a member of a team and independently with minimal supervision.
  - Q. Ability to train and lead others.
  - R. Ability to interpret and apply laws, contracts, regulations, policies, and procedures.
  - S. Ability to enforce safety rules and regulations.
  - T. Ability to maintain confidential information.
  - U. Ability to demonstrate dependability, responsibility, and consistency in their job performance.
  - V. Ability to attend work as scheduled and/or required.

#### Physical Demands

The work requires considerable and strenuous physical exertion such as frequent climbing of tall ladders, lifting heavy objects over 50 pounds, crouching or crawling in restricted areas.

#### Work Environment

The work environment involves high risks with exposure to potentially dangerous situations or unusual environmental stress requiring a range of safety and other precautions (e.g., working at great heights under extreme outdoor weather conditions).

HR: LD	Union: Basic	EEOC: Skilled Craft Workers	CSB: 09/13/2022	Class No: 5205
WC: 5190	Pay:	EEOF: Utilities/Transportation	CC:	Resolution:

## **MASTER ELECTRICIAN**

### **Master Electrician - Public Works & Utilities**

#### **SUMMARY/PURPOSE**

~~1. To~~ To provide oversight, guidance, and quality control of Public Works & Utilities electrical infrastructure and applications. This position will properly plan, lay out, perform, and supervise the installation and repair of wiring apparatus and equipment for electrical light, heat, power, and other purposes.

#### **FUNCTIONAL AREAS:**

##### **4. SUPERVISION RECEIVED**

The supervisor provides continuing or individual assignments by indicating generally what is to be done, limitations, quality and quantity expected, deadlines, and priority of assignments. The supervisor provides additional, specific instructions for new, difficult, or unusual assignments, including suggested work methods or advice on source material available.

##### **SUPERVISION GIVEN**

Does not have direct supervisory responsibility but does have significant oversight of employees or project that require delegation and direction over the work of others.

#### **ESSENTIAL DUTIES AND RESPONSIBILITIES**

1. Provide general oversight on Public Works & Utilities projects and electrical systems to ensure all regulations and codes are met.
2. Perform skilled electrical work in the installation, maintenance, and repair of electrical systems.
3. ~~p A.~~ Perform the installation of conduit, including electrical-metallic tubing, ~~plastic mold~~ plastic mold, and ~~wire mold~~ wire mold.
4. ~~p B.~~ Perform the installation of transformers, control boards, electronic circuits, coils, circuit breakers, voltage regulators, switches, fuses, and related electrical equipment in electrical generating and distributing stations and buildings.
5. ~~p C.~~ Perform additions, extensions, or alterations to electrical installations for power, light, heat, and appliances in buildings and on grounds.
6. ~~p D.~~ Troubleshoot, perform repairs, and test a variety of motors, electrical circuits, machinery, transformers, meters, and recording instruments.
7. ~~p E.~~ Perform installations and connections of motors, lights, controllers, voltage regulators, racks, and various electrical fixtures.
8. ~~p F.~~ Inspect and perform cleaning and maintenance to electrical equipment and motors, including replacement of brushes and necessary parts.
9. ~~p G.~~ Determine modifications required when obstructions are met while installing electrical systems.
10. ~~p H.~~ Assist in operating and maintaining cathodic protection on gas and water distribution systems.
11. ~~I.~~ Ensure a safe work environment.
12. ~~J.~~ Maintain and perform repairs to equipment and tools.  
~~K. Attend related training sessions.~~
13. ~~L.~~ Assist other staff as necessary.
- ~~2. Perform other duties as assigned.~~
14. ~~p A.~~ Review and interpret blueprints and determine material lists and costs.
15. ~~p B.~~ Estimate time and materials necessary to perform a job.

16. ~~C.~~ Assist with inspections of new installations and/or modifications performed by others.
17. ~~D.~~ Obtain electrical permits for the City of Duluth when required.
18. ~~E.~~ Secure meter applications when required.
19. ~~F.~~ Organize and direct the work of journeypersons and helpers as assigned.
20. ~~G.~~ Train journeypersons and helpers as assigned.
- ~~H.~~ Perform related tasks as assigned.

21. Schedule and conduct daily/weekly/monthly meetings with Water, Wastewater, Storm and Gas crews to review and schedule projects and repairs.
22. Ability to assemble, move, setup and dismantle tools and machinery in an industrial setting.
23. Be an effective team member by exhibiting self-motivation, supporting other employees in handling tasks, interacting effectively and respectfully with others, showing a desire to contribute to the team effort, accepting assignments willingly, and completing tasks within agreed upon
24. Coordinate with various City departments, other government agencies, and community groups to develop methods of sharing resources, minimizing duplication, and simplifying procedures.
25. Provide training on new or modified procedures and policies to all affected parties.
26. In collaboration with the supervisor, organize and direct the work activities of assigned team, and determine work priorities, assignments, and work schedules.
27. Provide input on decisions regarding the hiring processes and onboarding procedures of personnel.
28. Establish and maintain positive working relationship with the supervisor and employees by maintaining two-way communication, producing consistent results, advocating for the team when appropriate, and offering expertise to improve processes, systems, and the organization.
29. Other duties as assigned.

## JOB REQUIREMENTS

To perform this job successfully, an individual must be able to perform each essential duty satisfactorily. The requirements listed are representative of the knowledge, skills, and abilities required.

### Education &

### ~~License Requirements:~~

- ☐ ~~A. Possess and maintain a State of Minnesota Class AA@ Master Electrician license.~~
- ☐ ~~B. Possess and maintain a State of Minnesota Class AD@ Driver's License or equivalent.~~
- ~~C. Ability to obtain a State of Minnesota Class AB@ Commercial Driver's License or equivalent.~~
- ~~D. Ability to obtain a State of Minnesota Department of Health Class D Water Supply System Operator Certificate.~~
- ~~E. Ability to become Operator Qualified to perform work on the Utility's natural gas distribution system.~~

### 1. Experience Requirements:

- A. ☐ ~~A. One~~ A minimum of one (1) year of related full-time, verifiable, professional experience as a licensed Master Electrician.
- B. ☐ ~~B.~~ Experience working with high voltage, high horsepower motors and their associated control equipment in an industrial setting.
- C. General working knowledge of residential or industrial plumbing and pipefitting with basic installation and repair experience is preferred.

HR: CT	Union: Basic	EEOC: Skilled Craft Workers	CSB: 20090303	Class No: 5205
WC: 5190	Pay: 31	EEOF: Admin/Finance	CC: 20090413	Resolution: 09-0200R

## 2. License Requirements

- A. Possess and maintain a valid Minnesota Class a Master Electrician License.
- B. Possess and maintain a valid Minnesota Class D Driver's License or privilege.
- C. Ability to become Operator Qualified to perform work on the Utilities natural gas distribution system within six months of employment.

## 3. Knowledge Requirements:

- A. ☐ ~~A.~~ Thorough knowledge of the National Electrical Code (NEC).
- B. ☐ ~~B.~~ Thorough knowledge of all applicable laws, rules, and standards regulating electrical construction and installation practices.
- C. ☐ ~~C.~~ Thorough knowledge of electrical test equipment, instruments, and appliances used in the electrical trade.
- D. ☐ ~~D.~~ Knowledge of high voltage, high horsepower motor systems including their associated control and data acquisition systems.
- E. ~~E.~~ Knowledge of electronics and electronic circuits.
- F. ~~F.~~ Knowledge of system control and data acquisition systems and methods.
- G. ~~G.~~ Knowledge of microcomputer operations.
- H. ~~H.~~ Working knowledge of OSHA standards for arc flash-over protection.
- I. ~~I.~~ Working knowledge of the installation and operation of equipment operating at or over 600 V nominal.
- J. Proficient knowledge in the installation, maintenance, repair and troubleshooting of centrifugal pumps, air compressors, generators, electric motors, regulators and SCADA equipment.
- K. General knowledge of industrial and residential plumbing.
- L. Knowledge of problem-solving and conflict-resolution techniques.
- M. Knowledge of applicable safety requirements.
- N. Knowledge of, or the ability to learn, City policies and procedures.
- O. Knowledge of federal, state, and local laws, statutes, regulations, codes, and standards related to the area of responsibility.
- P. Knowledge of effective leadership and personnel practices.

## 4. Skill Requirements:

- A. ~~A.~~ Skill in safe work practices and procedures.
- B. ☐ ~~B.~~ Skill in operating and maintaining electrical equipment, instruments, appliances, and other electrically operated or controlled devices.
- C. ☐ ~~C.~~ Skill in the installation, maintenance, and repair of electrical systems.
- D. Skills in troubleshooting techniques to solve mechanical issues.
- E. Skill in the operation of office equipment including, but not limited to, general computer systems, job required software applications, the internet, and modern office equipment.
- F. Skill in managing one's own time and the time of others.
- G. Skill in completing assignments accurately and with attention to detail.
- H. Skill in using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems.

## 5. Ability Requirements:

- A. ☐ ~~A.~~ Ability to read blueprints, diagrams, and schematics.
- B. ☐ ~~B.~~ Ability to calculate materials costs.
- C. ☐ ~~C.~~ Ability to estimate time and materials necessary to complete a job.
- ☐ ~~D.~~ Ability to perform soldering complete the layout and mechanical work.

HR: CT	Union: Basic	EEOC: Skilled Craft Workers	CSB: 20090303	Class No: 5205
WC: 5190	Pay: 31	EEOF: Admin/Finance	CC: 20090413	Resolution: 09-0200R

- ~~D. ☐ E. Ability to understand replacement of equipment and follow oral and written instructions machinery in factory settings to ensure minimum downtime.~~
- ~~☐ F. Ability to direct assigned personnel.~~
- ~~E. ☐ G. Ability to assemble and install water, gas, sewer and storm water equipment then testing to ensure they are working correctly.~~
- ~~F. Ability to assist in preventive maintenance by identifying and correcting potential issues.~~
- ~~G. Ability to erect ladders and scaffolding in a safe manner.~~
- ~~H. ☐ H. Ability to use hand and power tools.~~
- ~~I. ☐ I. Ability to recognize safety hazards and take appropriate precautions.~~
- ~~☐ J. Ability to work at heights up to 80 feet.~~
- ~~J. ☐ K. Ability to create and maintain a positive working environment that welcomes diversity, ensures cooperation, and promotes respect by sharing expertise with team members, fostering safe work practices, and developing trusting work relationships.~~
- Ability to ~~work in damp~~ communicate and ~~confined spaces.~~
- ~~K. ☐ L. Ability to establish and maintain effective working relations~~ interact effectively with ~~co-workers and~~ members of the public.
- ~~L. ☐ M. Ability to communicate effectively both orally and in writing.~~
- ~~M. Ability to recognize, analyze, and solve a variety of problems.~~
- ~~N. Ability to organize and prioritize work while meeting multiple deadlines.~~
- ~~O. Ability to handle difficult and stressful situations with professional composure.~~
- ~~P. Ability to work successfully as a member of a team and independently with minimal supervision.~~
- ~~Q. Ability to train and lead others.~~
- ~~R. Ability to interpret and apply laws, contracts, regulations, policies, and procedures.~~
- ~~S. Ability to enforce safety rules and regulations.~~
- ~~T. Ability to maintain confidential information.~~
- ~~U. Ability to demonstrate dependability, responsibility, and consistency in their job performance.~~
- ~~V. Ability to attend work on a regular basis~~ as scheduled and/or required.
- ~~☐ N. Ability to frequently push, pull, lift to move and carry equipment weighing up to 50 pounds and occasionally up to 100 pounds.~~

#### ~~p~~ Essential functions of the job

- ~~☐ Job requirements necessary on the first day of employment~~

#### Physical Demands

The work requires considerable and strenuous physical exertion such as frequent climbing of tall ladders, lifting heavy objects over 50 pounds, crouching or crawling in restricted areas.

#### Work Environment

The work environment involves high risks with exposure to potentially dangerous situations or unusual environmental stress requiring a range of safety and other precautions (e.g., working at great heights under extreme outdoor weather conditions).

HR: <u>LD</u>	Union: <u>Basic</u>	EEOC: <u>Skilled Craft Workers</u>	CSB: <u>      </u>	Class No: <u>5205</u>
WC: <u>5190</u>	Pay: <u>      </u>	EEOF: <u>Utilities/Transportation</u>	CC: <u>      </u>	Resolution: <u>      </u>