

## BRIDGE OPERATOR - ELECTRICAL

**PURPOSE:** Ensure safe passage of ships, pedestrians, and motorists by operating and maintaining lift bridges, and related equipment.

### **FUNCTIONAL AREAS:**

1. Operate lift bridges.
  - \* A. Correspond with ships by watching and listening for their audible, visual, or implied signals, and by sending audible, visual, and/or radio signals in response.
  - \* B. Estimate speed and distance of approaching vessel to maintain a safe operating margin.
  - \* C. Operate gates, pedestrian barriers, traffic control signals, and warning devices.
  - \* D. Clear vehicle and/or pedestrian traffic from the spans.
  - \* E. Operate controls to raise and lower the spans, and monitor their correct sequence of operation.
  - \* F. Operate support equipment including radar, marine radios, weather instruments, telephone, intercoms, scanners, closed circuit television, loudspeaker system, intrusion alarms, and malfunction indicators.
2. Perform maintenance work on the bridges and their operating mechanisms.
  - \* A. Troubleshoot drive systems using test equipment and technical schematics and manuals.
  - \* B. Test and maintain diesel and natural gas power plants which supply auxiliary power.
  - \* C. Inspect, adjust, and maintain a variety of electrical systems, equipment, and wiring.
  - \* D. Inspect and adjust a variety of mechanical equipment.
  - \* E. Maintain equipment by greasing and oiling bearings, gears, cables, guides, and chains.
  - \* F. Replace operating cables, counterweight guide shoes, roadway gates, sidewalks, and bridge decking.
  - \* G. Maintain traffic lanes so they are clear of obstructions.
  - \* H. Perform painting, cleaning, and maintenance of the control room, machinery rooms, generator room, shops and storage areas.
  - \* I. Inspect and perform minor repairs to weather instruments, communication equipment, radar and antennae.
  - \* J. Inspect and maintain miscellaneous electronic devices such as gas and smoke detectors, closed circuit TV systems, and power supplies.
  - K. Maintain and repair electrical wiring, receptacle outlets, apparatus, and equipment as needed.
  - L. Provide adjustment or repair or replacement of worn or defective parts of electrical equipment and replacement of defective receptacle outlets and manual switches for lighting control.
  - M. Maintain and repair motors, circuit breakers, and manual, magnetic, or electronic motor controllers using factory replacement parts as needed.
  - N. Repair or replace parts of, or make adjustments to installed electrical equipment.
  - O. Perform bench repair of electrical equipment as needed.
  - P. Ensure that all electrical maintenance is performed to code.
3. Perform related work as required.
  - \* A. Maintain approaches, sidewalks, and decks so that they are free from ice, snow, and other safety hazards.
  - B. Record and report weather information, vessel traffic reports, and other information requests to appropriate agencies.

- C. Perform a variety of tasks in other work units as assigned. Tasks may include mechanical and electrical repair work and maintenance work such as street patching; snow removal; cleaning gutters, drains and culverts; construction of park facility apparatus; maintenance of ski trails; general painting, etc.
- D. Attend specialized training to upgrade knowledge necessary for effective job performance.
- E. Perform related tasks as assigned.

### **JOB REQUIREMENTS**

#### **Education & Experience Requirements**

- ◆ One (1) year of specialized electrical training, plus two (2) years of experience working with large electrically operated machinery; or three (3) years of experience working with complex mechanized equipment; or one (1) year of experience working with computer-controlled electrical equipment; or a combination of education, training, and experience in the above areas which is accepted as equivalent.

#### **License Requirement**

- ◆ Possession of a Minnesota Maintenance Electrician or equivalent.

#### **Knowledge Requirements**

- ◆ A. Knowledge of electrical systems, instruments, and equipment and their applications.
- ◆ B. Knowledge of the principles, methods, equipment, and materials used in electrical installations and repairs.
- ◆ C. Knowledge of the National Electrical Code.
- ◆ D. Knowledge of basic electronics and troubleshooting procedures.
- ◆ E. Knowledge of the basic principles of mechanics.
- ◆ F. Knowledge of the basic principles of welding, metal working, and machine shop practices.
- ◆ G. Knowledge of the basic principles of plumbing, air, and hydraulic systems.
- ◆ H. Knowledge of basic carpentry methods, tools, equipment, and materials.
- ◆ I. Knowledge of the operation, maintenance, and testing of industrial computer systems and programmable controllers.
- ◆ J. Knowledge of safety and fire prevention methods, especially those related to electrical work.
- ◆ K. Knowledge of first aid and CPR procedures.

#### **Skill Requirements**

- ◆ A. Skill in working with hand and power tools.
- ◆ B. Communication skills.
- ◆ C. Skill in the use of the tools, equipment, materials, methods, and practices used in the maintenance, and repair of electrical equipment, and devices.
- ◆ D. Skill in inspecting, diagnosing, and repairing malfunctioning electrical equipment.

#### **Ability Requirements**

- ◆ A. Ability to work shifts.
- ◆ B. Ability to obtain applicable licenses, such as a restricted Radio-Telephone Operator's Permit, if required.
- ◆ C. Ability to read and interpret drawings, blueprints, and schematics.
- ◆ D. Ability to act decisively under stress.

- ◆ E. Ability to maintain accurate and complete records.
- ◆ F. Ability to interpret safety rules and apply them to various hazardous situations.
- ◆ G. Ability to participate in required training to update knowledge and skills.
- ◆ H. Ability to develop and maintain effective working relationships with supervisors, co-workers, outside agencies, and the general public.
- ◆ I. Ability to attend work on a regular basis.

Physical Requirements

- ◆ A. Vision correctable to 20-30.
- ◆ B. No hearing loss.
- ◆ C. Manual dexterity.
- ◆ D. Good depth perception.
- ◆ E. Ability to scale bridgework.
- ◆ F. Ability to work at heights.
- ◆ G. Ability to work in enclosed spaces.
- ◆ H. Ability to work outside in inclement weather.
- ◆ I. Ability to frequently pull, climb, and balance.
- ◆ J. Ability to occasionally lift and carry objects such as grease barrels and welding tanks weighing up to 100 pounds, and to frequently lift and carry objects weighing up to 50 pounds.

- \* Essential functions of the position
- ◆ Job requirements necessary the first day of employment

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