

PERSONNEL COMMITTEE

13-0469R

RESOLUTION APPROVING PROPOSED AMENDMENTS TO THE SPECIFICATIONS FOR THE EXISTING CIVIL SERVICE CLASSIFICATION OF SIGNAL TECHNICIAN.

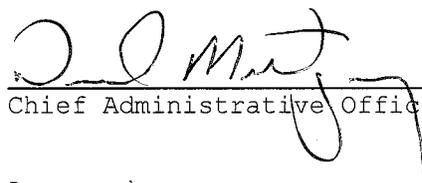
CITY PROPOSAL:

RESOLVED, that the proposed amendments to the specifications for the existing civil service classification of signal technician, which were approved by the civil service board on September 3, 2013, and which are filed with the city clerk as Public Document No. \_\_\_\_\_, are approved; that said classification shall remain subject to the city's collective bargaining agreement with its basic unit employees, that the pay range will change from Pay Range 30, \$3,822 to \$4,521, to Pay Range 31, \$3,979 to \$4,690 per month. The proper city officials are authorized to execute and implement an agreement with the union to provide for employing one or more unit members consistent with this resolution.

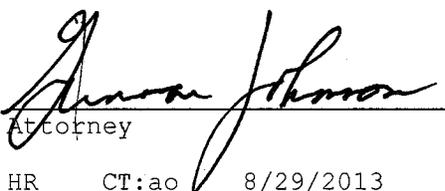
Approved:

  
\_\_\_\_\_  
Department Director

Approved for presentation to council:

  
\_\_\_\_\_  
Chief Administrative Officer

Approved as to form:

  
\_\_\_\_\_  
Attorney

Approved:

  
\_\_\_\_\_  
Auditor

HR CT:ao 8/29/2013

STATEMENT OF PURPOSE: This existing classification has been revised to reflect increasing technology. An emergency pre-emption system has been added to city traffic signals allowing emergency vehicles to control the signals remotely. Machine vision processors are being added which allow computers to process camera inputs appropriately. These devices must be networked and installed as well as

serviced and repaired at the component level. These functions were added and the format was changed to the current job description format. The pay rate negotiated for this classification is Pay Range 31, pay rate of \$3,979 to \$4,690 per month. This is a change from Pay Range 30, pay rate of \$3,822 to \$4,521 per month.

## **SIGNAL TECHNICIAN**

### **SUMMARY/PURPOSE:**

This classification works to ensure the dependability and functionality of traffic signals and street lighting for efficient vehicle flow and public safety on public thoroughfares. To perform highly technical work in the installation, repair, operation, and maintenance of electrical, electronic and digital controlled traffic control devices and systems, traffic signal equipment, street lighting equipment, traffic computer equipment, traffic network equipment, and control software.

### **ESSENTIAL DUTIES AND RESPONSIBILITIES (Other duties may be assigned):**

1. Program, install, maintain and repair traffic control devices and systems, including traffic signals, control cabinets, signal heads, inductive detectors, wireless detectors, communication cable, fiber optics, machine vision processors, speed reader boards, and related devices within the City of Duluth and surrounding municipalities.
2. Program, install, maintain and repair the City's emergency pre-emption system.
3. Test traffic control and signal equipment and related devices to identify defects in electric, analog, electronic, digital, and microprocessor equipment according to system schematics.
4. Program, install, maintain and repair various types of traffic signal controller units and associated system components and control and/or associated monitoring equipment.
5. Install, maintain and repair city-wide traffic supervisory control and data acquisition system communications and networks including, but not limited to, radio including wireless, fiber optics, and twisted pair.
6. Program, install, maintain and repair street lighting devices and systems, including control cabinets and all associated infrastructure.
7. Identify, locate and mark City underground electrical utilities in accordance with Minnesota "Gopher State One Call" requirements.
8. Inspect the work of contractors for proper operation and to ensure contract specifications are met.
9. Investigate and respond appropriately to citizen input, inquiries, and complaints.
10. Clean, organize, and maintain work areas, vehicles, tools and equipment.
11. Testify in court as required.

### **Job Requirements**

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

### **Education & Experience Requirements**

1. Two years of experience working with electronic and electrical signal systems as a Class A Journeyman Electrician.
2. A two-year degree in electrical or electronic technology is preferred.

### **License Requirements**

1. Possession of a valid Minnesota Driver's License or equivalent.
2. Possession of a State of Minnesota Class A Journeyman Electrician's License.
3. Acquire a Minnesota Class B Commercial Driver's License within twelve (12) months of hire date.
4. Acquire State of Minnesota Technical Certification for Signals & Lighting within twelve (12) months of hire date.

### **Knowledge Requirements**

1. Extensive knowledge of the principles, methods, equipment, and materials used in the repair of electronic and electrical signal systems.
2. Extensive knowledge of electronic theory and practice, including solid state and digital electronics.
3. Knowledge of mathematics at an advanced algebraic and trigonometric level.
4. Knowledge of the National Electrical Code.
5. Knowledge of state and local regulations governing electrical wiring.
6. Knowledge of precautionary, safety, and fire prevention methods involved in electrical work.
7. Knowledge of applicable safety regulations.

### **Skill Requirements**

1. Skill in diagnosing, maintaining, and repairing diverse electronic and electrical equipment at the component level.
2. Skill in communicating with others to determine the nature of equipment malfunction and assist with problem diagnosis.
3. Skill in diagnosing and repairing electrical and electronic malfunctions which includes the use of electronic test equipment and soldering stations for soldering/desoldering LSIC's (Large Scale Integrated Circuits) and SMD's (Surface Mount Devices).
4. Skill in the use of computer equipment to control, program, and diagnose equipment.
5. Skill in manipulating tools and equipment using fine hand movements.
6. Skill in performing mathematical calculations to compute ampacity, traffic flow rates and density, etc.
7. Skill in reading and interpreting blueprints and schematic drawings.

### **Ability Requirements**

1. Ability to work outside year-around.
2. Ability to work from ladders, scaffolds, and lifts up to fifty feet high.
3. Ability to use hand and power tools.
4. Ability to establish and maintain effective working relationships with co-workers, supervisors, and the general public.
5. Ability to make repairs on electrical and electronic signal equipment.
6. Ability to do light welding.
7. Ability to safely operate service vehicles.
8. Ability to work on-call after completion of regular assigned work hours.
9. Ability to work independently without direct supervision.
10. Ability to plan, set up, and maintain work zone traffic control.

11. Ability to use traffic simulation and modeling software such as SimTraffic
12. Ability to use traffic management software such as Syncro.
13. Ability to use wireless traffic detection software such as Sensys
14. Ability to use computer-aided design software such as Autodesk AutoCAD.

**Physical Ability Requirements**

1. Ability to feel to perceive temperature fluctuations caused by equipment malfunction.
2. Ability to smell to distinguish overheated or burned-out components, often by type of component.
3. Ability to work in confined spaces.
4. Ability to frequently stand, reach, and finger and occasionally walk, sit, push, pull, climb, balance, stoop, kneel, crouch, handle, feel, talk, hear, and smell as needed to perform work activities.
5. Ability to frequently see at near and mid distances using color vision to diagnose and repair electronic and electrical equipment and to occasionally see at far distances using depth perception and visual accommodation and field of vision to observe equipment function and for vehicle operation.
6. Ability to frequently lift and carry various items including tools boxes weighing up to 40 pounds and occasionally lift and carry with assistance street lighting light poles weighing up to 70 pounds.
7. Ability to attend work on a regular basis.

Genlst: CT	Job #: 4226	Union: Basic	Pay: 30	CSB:
CC:	Res:	EEOC:	EEOF:	WC:

20130719

## SIGNAL TECHNICIAN

**PURPOSE:** Ensure the dependability and functionality of existing and preexisting traffic signals and street lighting, for efficient vehicle flow and public safety on public streets and rights-of way.

### FUNCTIONAL AREAS:

1. Perform work to diagnose, repair, and maintain electrical and electronic signal systems, signal hardware and street lighting within the City of Duluth and surrounding municipalities.
  - \* A. Troubleshoot signal systems in order to locate malfunctions such as short, open or grounded circuits.
  - \* B. Perform work to replace transistors, diodes and other component parts of controllers.
  - \* C. Conduct testing in the field for proper timing and operation.
  - \* D. Perform work to clean, maintain and repair electronic and electrical equipment.
  - \* E. Perform work to set up, clean, maintain and repair signal standards, heads, hoods, connecting conduit and cables.
  - \* F. Perform work to connect, calibrate and check transformers, control boards, electronic circuit systems, circuit breakers, voltage regulators and related electronic and electrical equipment for proper operation.
  - \* G. Inspect the work of contractors for proper operation and to ensure contract specifications, are meet.
  - \* H. Perform work to rebuild and install electronic equipment.
  - \* I. Perform work to mark with paint and/or flags energized and de-energized electrical cables and conduits that are in danger of being damaged by any activity in the proximity of equipment.
  - \* J. Repair and replace traffic signal poles.
  - \* K. Perform work to replace and/or repair all underground wiring and conduit that has been damaged or needs to be relocated.
  - \* L. Perform work to remove and replace hand hole covers and collars in order to repair hand hole.
  - \* M. Perform work to connect stand-by generators for emergency back-up or a planned power shutdown.
  - \* N. Perform work to install temporary traffic signal, when needed.
  - \* O. Perform work to diagnose, repair, or replace any traffic signals component within the traffic signal cabinet.
  - \* P. Perform work to install traffic sensing loops.
  - \* Q. Perform work to test traffic signal components.
  - \* R. Perform work to replace or repair traffic signal lamps that have malfunctioned or burned out.

- \* S. Perform work to download and upload data between computer and signal system components.
  - \* T. Modify existing equipment in order to install or use a new technology or components, such as light emitting diode.
  - \* U. Establish new cabinets for installation on signal systems.
  - \* V. Perform work to implement and download detection programs to video detection cameras.
  - \* W. Implement and install controller programs.
  - \* X. Perform work to upload and download controller programs directly from a computer.
  - \* Y. Perform work to clean and organize work areas, bathrooms, vehicles, parking and storage areas.
2. Provide services related to planning, organizing, and maintaining traffic control systems and perform related tasks as assigned.
- \* A. Maintain tools and equipment.
  - \* B. Investigate complaints relating to proper operation of signal systems.
  - \* C. Train personnel in correct and safe operating procedures.
  - \* D. Compile reports and maintain files.
  - \* E. Maintain awareness of current industry developments by attending and participating in workshops, meetings, seminars, and/or training opportunities.
  - \* F. Operate light service vehicles, including aerial equipment.
  - \* G. Respond to citizens' inquiries, requests, and complaints.
  - \* H. Assist in ordering supplies, repair parts, and materials.
  - \* I. Provide testimony in court.
  - \* J. Adjust intersection signal timing.
  - \* K. Perform related tasks as required.

### **JOB REQUIREMENTS:**

1. Education and Experience Requirements
- + A. Possession of a State of Minnesota Class A Electrician's License and two years experience working with electronic or electrical signal systems; or
  - + B. Possession of a State of Minnesota Maintenance Electrician's License and eight years experience as a Traffic Signal Technician or equivalent.
2. License Requirements
- + A. Possession of a valid Class D Minnesota Driver's License or privilege.
  - + B. Ability to obtain a Minnesota Class B commercial drivers license within six (6) months of hire date.

### 3. Knowledge Requirements

- + A. Extensive knowledge of the principles, methods, equipment, and materials used in the repair of electronic and electrical signal systems.
- + B. Extensive knowledge of electronic theory and practice, including solid state and digital electronics.
- + C. Knowledge of mathematics at an advanced algebraic and trigonometric level.
- + D. Knowledge of the National Electrical Code.
- + E. Knowledge of state and local regulations governing electrical wiring.
- + F. Knowledge of precautionary, safety, and fire prevention methods involved in electrical work.
- + G. Knowledge of applicable safety regulations.

### 4. Skill Requirements

- + A. Skill in diagnosing, maintaining, and repairing diverse electronic and electrical equipment at the component level.
- + B. Skill in communicating with others to determine the nature of equipment malfunction and assist with problem diagnosis.
- + C. Skill in manipulating tools and equipment using fine hand movements.
- + D. Skill in performing mathematical calculations in order to size wire and determine current load.
- + E. Skill in reading and interpreting blueprints and schematic drawings.

### 5. Abilities Requirements

- + A. Ability to work outside year around.
- + B. Ability to work from ladders and scaffolds up to fifty feet high.
- + C. Ability to use hand and power tools.
- + D. Ability to establish and maintain effective working relationships with co-workers, supervisors, and the general public.
- + E. Ability to plan, assign, and supervise the work of assigned personnel.
- + F. Ability to make repairs on electrical and electronic signal equipment.
- + G. Ability to do light welding.
- + H. Ability to safely operate service vehicles.
- + I. Ability to work on-call after completion of regular assigned work hours.
- + J. Ability to feel to perceive temperature fluctuations caused by equipment malfunction.
- + K. Ability to smell to distinguish overheated or burned-out components, often by type of component.

- + L. Ability to routinely lift and carry various tools boxes weighing up to 40 pounds and occasionally lift and carry with assistance street lighting light poles weighing up to 70 pounds.
- + M. Ability to work in confined spaces.
- + N. Ability to stand, walk, kneel, crouch, and stoop, as needed to perform work activities.
- + O. Ability to attend work on a regular basis.
- \* Essential functions of the job.
- + Job requirements needed on the first day of employment.

Anlst: KG	Date:20050627
Union: Basic	Pay: 30
CSB: 20050705	Class: 4226
CC: 20050822	Res: 05-0548R