

Selected Transportation Management Center (TMC) Position Descriptions

This document summarizes position descriptions for 12 selected TMC operator positions. It should in no way be considered definitive, as the functions performed at different TMCs vary according to local transportation conditions and operating agency goals. There currently exists no standard definition for TMC positions. For this reason, each description should be read carefully, as the duties of a Traffic Signal Technician supporting a TMC responsible for regional traffic operations in a major metropolitan area may vary markedly from those serving a smaller local market. This document includes descriptions for the following TMC positions:

- 1) Network Systems Technician**
- 2) Traffic Signal Technician I**
- 3) Traffic Signal Technician II**
- 4) Traffic Communication Technician I**
- 5) Traffic Communication Technician II**
- 6) Senior Traffic Signal Technician**
- 7) Senior Intelligent Transportation System (ITS) Technician**
- 8) Traffic Systems Engineering Supervisor**
- 9) Operator I**
- 10) Operator II**
- 11) Operator III**
- 12) Operator Trainee**

Position: Network Systems Technician

*Class specifications are intended to present a descriptive list of the range of duties performed by employees in the class. Specifications are **not** intended to reflect all duties performed within the job.*

Definition

To provide support for the ITS microcomputers, networking equipment, and related hardware; to determine microcomputer and system networking needs; to perform skilled electronic work in the repair and maintenance of ITS computer components and other solid-state electronic equipment; to maintain workstation, computer server, and network equipment system hardware and cabling.

Distinguishing Characteristics

Positions at this level are distinguished from other classes within the series by the level of responsibility assumed and the complexity of duties assigned. Employees perform the most difficult and responsible types of duties. Employees at this level are required to be fully trained in all procedures related to assigned area of responsibility. Employees are fully aware of the operating procedures and policies of the work unit.

Supervision Received and Exercised

Receives direction from higher level management staff.

Essential and Marginal Function Statements

Essential and other important responsibilities and duties may include, but are not limited to, the following:

Essential Functions:

1. Perform the work on microcomputers, network systems, and network hardware that are part of the ITS system operations of the Traffic Control Center.
2. Perform complex duties to repair and maintain ITS computer equipment, to include component level repair of computers, cabling, disk drives, printers, bridges, and routers; troubleshoot server, workstation, and network hardware problems.
3. Perform periodic maintenance of the Utah Transportation Control System mainframe traffic control system computer; maintain the computer and its component parts.
4. Determine ITS computer hardware as it relates to networking and microcomputer needs; troubleshoot hardware problems and correct them; install, configure, test, and troubleshoot associated hardware.
5. Perform advanced troubleshooting of all components of the ITS computer system; if required, repairs to be made at component level.

6. Respond to system trouble calls throughout the ITS computer system to determine the cause of and correct problems.
7. Create, maintain, and update the ITS computer systems networks; recommend new hardware as appropriate.
8. Develop sufficient hardware inventory to minimize ITS computer system downtime; provide technical support for maintaining system reliability and availability.
9. Design, install, inspect, upgrade, repair, and maintain ITS network wiring systems, fiber optic communications systems, and special power systems such as uninterruptible power supply.
10. Provide technical hardware support to personal computer (PC) users, communications staff, and other ITS system users.
11. Document work on the ITS computer network, microcomputers, and other hardware.

Marginal Functions:

1. Deal with vendors on equipment specifications, delivery and maintenance problems; confer with vendors on hardware technical issues.
2. Recommend computer hardware to management; maintain inventory of PCs and related peripherals; maintain system hardware manuals and reference material.
3. Set up and execute a preventive maintenance schedule for the ITS computer system that is part of the valley's traffic signal system.
4. Perform "back up" system administration duties including user account maintenance in the absence of the System Administrator.
5. Respond to network emergencies during evenings and weekends.
6. Perform related duties and responsibilities as required.

Qualifications

Knowledge of:

Computer networks, servers, and PCs and their hardware components.

Principles and practices of electronic theory; use and operation of various scopes, meters, and counters with understanding of component-level operation.

Pertinent federal, state, and local codes, laws, and regulations regarding electronics.

Basic mathematical principles.

Tools, equipment, and methods used in installing, maintaining, and repairing electronics solid state equipment.

Principles and practices of the use of diagnostic and utility software to find problems and repair system equipment and hardware.

Wiring requirements and basic operation of PCs, mainframe terminals, printers, and other peripheral devices.

Basic principles of data communications facilities, standards, and implementation.

Troubleshooting techniques for PC hardware problems.

Preventive maintenance techniques and procedures.

Occupational hazards and standard safety practices.

Blueprints, schematics, symbols, drawings, and related materials.

Ability to:

Troubleshoot, repair, or modify electronic computer and networking equipment.

Read, interpret, and apply information from technical publications, manuals, and other documents.

Establish and maintain effective working relationships with those contacted in the course of work.

Communicate clearly and concisely, both orally and in writing.

Troubleshoot PC hardware and networking problems and affect a solution.

Operate a PC, including a variety of software programs.

Operate advanced electronic test equipment.

Troubleshoot and repair data communication equipment and cable.

Maintain physical condition appropriate to the performance of assigned duties and responsibilities, which may include the following:

- *Sitting for long periods of time; and*
- *Operating assigned equipment.*

Maintain effective audio-visual discrimination and perception needed for:

- *Making observations;*
- *Communicating with others;*
- *Reading and writing; and*
- *Operating assigned equipment.*

Experience and Training Requirements:

Experience:

Two years of increasing responsibility and experience in computer system installation, operations, and maintenance. Traffic system or ITS experience desirable.

Training:

Equivalent to graduation from high school. Additional specialized training in microcomputer operation is required. Additional specialized training on networking fundamentals, operations, repair, and maintenance is preferred.

License or Certificate:

Possession of valid driver's license on the date of application.

Working Conditions

Environmental Conditions:

Office and shop environment; travel from site to site; exposure to electrical energy, high voltage, computer screens, heat, cold, noise, dust, fumes, inclement weather conditions.

Position: Traffic Signal Technician I

Position: Traffic Signal Technician II

*Class specifications are intended to present a descriptive list of the range of duties performed by employees in the class. Specifications are **not** intended to reflect all duties performed within the job.*

Definition

To operate, maintain, repair, and install traffic signal control devices, computerized communication cables, and associated equipment; to develop and evaluate special circuits and/or sequences to enhance/modify signal operations; and to assist in traffic pattern development to facilitate traffic progress.

Distinguishing Characteristics

Traffic Signal Technician I

This is the entry level class in the Traffic Signal Technician series. This class is distinguished from the Traffic Signal Technician II by the level of experience required for the performance of the tasks and duties assigned to positions within the series. This class may be used as a training class, wherein employees need only limited or no directly related work experience; or the class may contain positions wherein employees perform routine tasks on a permanent basis and therefore remain at an entry level.

Traffic Signal Technician II

This is the full journey level class within the Traffic Signal Technician series. Employees within this class are distinguished from the Traffic Signal Technician I by level of experience required to perform the full range of duties as assigned. Employees at this level receive only occasional instruction or assistance as new or unusual situations arise, and are fully aware of the operating procedures and policies of the work unit. Positions in this class are flexibly staffed and are normally filled by advancement from the I level, or when filled from the outside, have prior experience.

Supervision Received and Exercised

Traffic Signal Technician I

Receives direct supervision from higher level division staff.

Traffic Signal Technician II

Receives general supervision from higher level division staff.

Essential And Marginal Function Statements

Essential and other important responsibilities and duties may include, but are not limited to, the following:

Essential Functions:

1. Observe traffic signals and related control devices to determine correct operation; troubleshoot malfunctions, isolate defects, and make repairs; repair or report needed repairs for field wiring or controller cabinet wiring; initiate repairs to restore operations.
2. Monitor signal operation effectiveness through use of a computer; monitor signal patterns and make offset and/or split changes to signal operations; modify equipment to improve traffic flow.
3. Coordinate duties with other sections of Traffic Engineering to improve coordination and timing of the system; assist personnel with repairs and hook-ups of intercommunication cable and related equipment.
4. Bench test, troubleshoot, and repair traffic signal equipment to component level; conduct emergency repair of traffic signals due to accidents, malfunctions, and weather; repair conduit and pull wires and cable on an emergency basis.
5. Monitor signal pattern and operation effectiveness with the use of a computer; make offset and/or split changes to traffic signal operations.
6. Remove poles, cabinets, and associated traffic control equipment damaged by accidents or weather; evaluate damage to traffic control devices caused by accidents or weather; modify and/or update existing traffic control devices and equipment to improve traffic flow.
7. Develop new patterns; develop, install, and evaluate special circuitry; develop new signal sequencing/phasing scenarios; make corrections to schematics and blueprints; assist contractors and Department of Transportation (DOT) on installation of new intersections' signal devices.

Marginal Functions:

1. Install, program, and maintain school flashers.
2. Document work done on signals and control devices.
3. Isolate prime power malfunctions and coordinate repairs with power company.
4. Perform related duties and responsibilities as required.

Qualifications

Traffic Signal Technician I

Knowledge of:

Basic principles and practices of electronic theory; use and operation of various scopes, meters, and counters.

Basic principles and practices of computer operations.

Basic principles and practices of the use of a computerized system for coordinating traffic movement.

Cable and component color coding.

Tools, equipment, practices, and methods used in installing, maintaining, and repairing electronic solid state traffic signals and associated equipment.

Basic interpretation of design schematics, site plans, maps, and engineering drawings.

Pertinent federal, state, and local codes, laws, and regulations regarding electronics.

Basic mathematical principles.

Ability to:

Troubleshoot and repair problems inherent to traffic signals.

Learn to install and remove electronic devices.

Understand and follow oral and written instructions.

Establish and maintain effective working relationships with those contacted in the course of work.

Communicate clearly and concisely.

Maintain mental capacity which allows for effective interaction and communications with others.

Maintain physical condition appropriate to the performance of assigned duties and responsibilities which may include the following:

- *Walking, standing,, or sitting for extended periods of time; and*
- *Operating assigned equipment and vehicles.*

Maintain effective audio-visual discrimination and perception needed for:

- *Making observations;*
- *Communicating with others;*
- *Reading and writing; and*
- *Operating assigned equipment and vehicles.*

Experience and Training Requirements:

Experience:

One year of electronics experience is required.

Training:

Equivalent to graduation from high school. Additional specialized training in electronics or a related field is required.

License or Certificate:

Possession of an appropriate, valid driver's license.

Possession of, or ability to obtain, certification as a Traffic Signal Technician Level I from the International Municipal Signal Association.

Traffic Signal Technician II

In addition to the qualifications for the Traffic Signal Technician I:

Knowledge of:

Principles and practices of electronic theory; use and operation of various scopes, meters, and counters.

Principles and practices of the use of a computerized system for coordinating traffic movement. Interpretation of design schematics, site plans, maps, and engineering drawings.

Mathematical principles.

Ability to:

Operate and maintain computerized signal and communication equipment.

Troubleshoot and repair data communication equipment and cable.

Troubleshoot and repair problems inherent to traffic signals.

Operate electronic test equipment.

Wire and connect cables necessary for operation of signalized intersections.

Install and remove electronic devices.

Understand and follow oral and written instructions.

Experience and Training Requirements:**Experience:**

Two years of increasing responsibility and experience in maintenance and repair of traffic signals.

Training:

Equivalent to graduation from high school. Additional specialized training in electronics is required.

License or Certificate:

Possession of, or ability to obtain, an appropriate, valid driver's license.

Possession of, or ability to obtain, certification as a Traffic Signal Technician Level II from the International Municipal Signal Association is highly desirable.

Working Conditions**Environmental Conditions:**

Office and field environment; travel from site to site; exposure to electrical energy, high voltage, computer screens, heat, cold, noise, dust, fumes, inclement weather conditions; work at heights on ladders or other elevating device.

Physical Conditions:

Essential and marginal functions may require maintaining physical condition necessary for moderate or light lifting, bending, stooping, kneeling, climbing; standing for prolonged periods of

time; operating motorized equipment and vehicles; and the ability to distinguish color.

Position: Traffic Communication Technician I
Position: Traffic Communication Technician II

*Class specifications are intended to present a descriptive list of the range of duties performed by employees in the class. Specifications are **not** intended to reflect all duties performed within the job.*

Definition

To set up, operate, and maintain communication equipment used for video and data transmission for the Las Vegas Area Computer Traffic System (LVACTS); to perform skilled electronic work to repair and maintain traffic signal communication components, video devices, and other solid state electronic equipment; and to perform a variety of technical tasks related to assigned area of responsibility.

Distinguishing Characteristics

Traffic Communication Technician I

This is the entry level class in the Traffic Communication Technician series. This class is distinguished from the Traffic Communication Technician II by the level of experience required for the performance of the tasks and duties assigned to positions within the series. Since this class is typically used as a training class, employees may have only limited or no directly related work experience.

Traffic Communication Technician II

This is the full journey level class within the Traffic Communication Technician series. Employees within this class are distinguished from the Traffic Communication Technician I by level of experience required to perform the full range of duties as assigned, the complexity of duties assigned, and the independence with which employees are expected to perform. Employees at this level receive only occasional instruction or assistance as new or unusual situations arise, and are fully aware of the operating procedures and policies of the work unit. Positions in this class are flexibly staffed and are normally filled by advancement from the I level, or when filled from the outside, selected candidates have prior experience.

Supervision Received and Exercised

Traffic Communication Technician I

Receives direct supervision from higher level division staff.

Traffic Communication Technician II

Receives general supervision from the Traffic Signal System Manager, or his/her designee.

Essential and Marginal Function Statements

Essential and other important responsibilities and duties may include, but are not limited to, the following:

Essential Functions:

1. Monitor computerized communications between the TMC and field components during designated operational hours and ensure the system remains operational.
2. Verify the integrity and location of communication cables throughout the Las Vegas Valley, including repairing, fusion splicing, and maintaining fiber optic, twisted-wire copper, and coaxial video cable systems using optical and standard Time Domain Reflectometers.
3. Notify field maintenance personnel employed by other jurisdictional operators of equipment malfunctions in their areas.
4. Diagnose and repair problems with signalized intersections under computer control; rewire and adapt signalized intersections for computer control.
5. Monitor and maintain sophisticated microwave equipment of various frequencies used for traffic signal systems communication.
6. Maintain analog and video closed circuit television systems used for traffic flow observation, including the setup and repair of all types of failed components.
7. Repair all types of electronic equipment used for system communication both in the field and within a controlled workshop environment.
8. Document all work performed on the traffic communication system.

Marginal Functions:

1. Stay abreast of current methods used in digital and analog traffic communication formats.
2. Occasionally assist in developing and maintaining traffic signal progression patterns; assist in implementing and observing traffic control patterns to facilitate flow and safety.
3. Track, order, and stock electronic replacement parts; maintain sufficient inventory levels to allow timely repairs while controlling costs.
4. Perform related duties and responsibilities as required.

Qualifications

Traffic Communication Technician I

Knowledge of:

Principles and practices of the use, operation, maintenance, and repair of a variety of traffic communication test equipment as well as scopes, meters, and counters.

Principles and practices of electronic theory.
Principles and practices of data communications.
Principles and practices of analog and digital video transmission.
Interpretation of design schematics, site plans, maps, and engineering drawings.
Pertinent federal, state, and local codes, laws, and regulations regarding electronics and communications.
Basic mathematics principles.
Tools, equipment, practices, and methods used in installing, maintaining, and repairing electronic solid state traffic communication equipment.

Ability to:

Learn to troubleshoot and repair data communication equipment and cabling.
Operate advanced and sophisticated electronic test equipment.
Wire and connect cables necessary for communication with signalized intersections.
Install and remove electronic devices.
Understand and follow oral and written instructions.
Establish and maintain effective working relationships with those contacted in the course of work.
Communicate clearly and concisely.
Perform repairs from a hydraulic ladder or other elevating device at heights up to 120 feet.

Experience and Training Requirements:

Experience:

One year of communications electronics experience with radio, fiber optics, microwave, or copper infrastructure.

Training:

Equivalent to graduation from high school. Additional specialized training in electronics or a closely related field is required.

License or Certificate:

Possession of an appropriate valid driver's license on the date of application.

Possession of certification as a Traffic Signal Technician Level I from the International Municipal Signal Association within one year of the date of appointment.

Traffic Communication Technician II

In addition to the qualifications for the Traffic Communication Technician I:

Knowledge of:

Principles and practices of federal, state, and local traffic control guidelines.
Techniques for troubleshooting and repairing data communication equipment and cabling.

Ability to:

Troubleshoot and repair data communication and video equipment and cabling.
Operate and maintain microwave and radio communication equipment.
Operate a fiber optic fusion splicer and other sophisticated electronic equipment.

Experience and Training Requirements:**Experience:**

Two years of increasing responsibility and experience in ITS, traffic communications, or traffic signal electronics.

Training:

Equivalent to graduation from high school. Additional specialized training in electronics is required.

License or Certificate:

Possession of an appropriate, valid driver's license on the date of application.

Possession of certification as a Traffic Signal Technician Level II from the International Municipal Signal Association on the date of application.

Working Conditions**Environmental Conditions:**

Office, workshop, and field environments; travel from site to site; exposure to electrical energy, high voltage, computer screens, heat, cold, noise, dust, fumes, inclement weather conditions; work at heights up to 120 feet on ladders, lift trucks, pole structures, or other elevating devices.

Physical Conditions:

Essential and marginal functions may require maintaining physical condition necessary for moderate or light lifting, bending, stooping, kneeling, climbing, standing for prolonged periods of time; operating motorized equipment and vehicles; and the ability to distinguish color.

Position: Senior Traffic Signal Technician

*Class specifications are intended to present a descriptive list of the range of duties performed by employees in the class. Specifications are **not** intended to reflect all duties performed within the job.*

Definition

To lead, oversee, and participate in the more complex and difficult work of staff responsible for maintaining, repairing, and installing traffic signal control devices and associated equipment; to develop and evaluate special circuits and/or sequences to enhance/modify signal operation; and to maintain records of maintenance and replacement of traffic signal control parts and equipment.

Distinguishing Characteristics

This is the advance journey level class in the Traffic Signal Technician series. Positions at this level are distinguished from other classes within the series by the level of responsibility assumed and the complexity of duties assigned. Employees perform the most difficult and responsible types of duties assigned to classes within this series. Employees at this level are required to be fully trained in all procedures related to assigned area of responsibility.

Supervision Received and Exercised

Receives general supervision from higher level staff.

Exercises functional and technical supervision over technical staff.

Essential and Marginal Function Statements

Essential and other important responsibilities and duties may include, but are not limited to, the following:

Essential Functions:

1. Lead, plan, train, and review the work of staff responsible for a variety of skilled repair and maintenance of traffic signals and communication cable equipment. Operate and monitor computerized signal system.
2. Plan, direct, and participate in the activities of the Traffic Signal section or the LVACTS field operations section.
3. Perform complex duties to monitor on-line status of the traffic signal system; monitor pattern effectiveness of computer; adjust timing in controllers and in computer to change traffic flow and signal sequence.
4. Develop new traffic patterns, new signal sequencing, and phasing. Develop, install, and evaluate special circuitry.
5. Modify traffic signal cabinets and control circuits; repair signal equipment; investigate and

respond to signal complaints or malfunctions.

6. Work with LVACTS central operations and systems maintenance personnel and other agencies' staff to improve coordination and timing of the systems and assist in the repair and hook-up of intercommunication cable.

Marginal Functions:

1. Document work done on signals and control devices.
2. Make corrections to schematics and blueprints; assist contractors and DOT on installation of new intersections' signal devices.
3. Isolate prime power malfunctions and coordinate repairs with power company.
4. Perform related duties and responsibilities as required.

Qualifications

Knowledge of:

Principles and practices of the use of diagnostic and utility software to find problems and repair system equipment.

Principles and practices of traffic control guidelines, both state and local.

Advanced principles and practices of the use of a computerized system for coordinating traffic movement.

Cable and component color coding.

Tools, equipment, practices, and methods used in installing, maintaining, and repairing electronic solid state traffic signals and associated equipment.

Interpretation of design schematics, site plans, maps, and engineering drawings.

Pertinent federal, state, and local codes, laws, and regulations regarding electronics.

Advanced mathematical principles.

Ability to:

Troubleshoot and repair data communication equipment and cable.

Troubleshoot and repair problems inherent to traffic signals and computer equipment.

Operate sophisticated electronic test equipment.

Wire and connect cables necessary for operation of signalized intersections.

Install and remove electronic devices.

Understand and follow oral and written instructions.

Establish and maintain effective working relationships with those contacted in the course of work.

Communicate clearly and concisely.

Maintain physical condition appropriate to the performance of assigned duties and responsibilities which may include the following:

- *Walking, standing,, or sitting for extended periods of time; and*
- *Operating assigned equipment.*

Maintain effective audio-visual discrimination and perception needed for:

- *Making observations;*

- *Communicating with others;*
- *Reading and writing; and*
- *Operating assigned equipment and vehicles.*

Maintain mental capacity which allows the capability of:

- *Making sound decisions;*
- *Effective interaction and communication with others; and*
- *Demonstrating intellectual capabilities.*

Experience and Training Requirements:

Experience:

Three years of increasing responsibility and experience in traffic signal repair and maintenance.

Training:

Equivalent to graduation from high school. Additional specialized training in electronics is required.

License or Certificate:

Possession of an appropriate, valid driver's license on the date of application.

Possession of certification as a Traffic Signal Technician Level II from the International Municipal Signal Association on the date of application.

Working Conditions

Environmental Conditions:

Office and shop environment; travel from site to site; exposure to electrical energy, high voltage, computer screens, heat, cold, noise, dust, fumes, inclement weather conditions; work at heights on ladders or other elevating device.

Physical Conditions:

Essential and marginal functions may require maintaining physical condition necessary for moderate or light lifting, bending, stooping, kneeling and climbing; standing for prolonged periods of time; operating motorized equipment and vehicles; and the ability to distinguish color.

Position: Senior ITS Technician

*Class specifications are intended to present a descriptive list of the range of duties performed by employees in the class. Specifications are **not** intended to reflect all duties performed within the job.*

Definition

To lead, oversee, and participate in the most complex and difficult work of staff responsible for installing, maintaining, and repairing ITS control devices; to develop and evaluate Freeway and Arterial System of Transportation (FAST) design; to assist in the ITS design review and the development of standard operating procedures; and to perform a variety of technical tasks related to assigned area of responsibility.

Distinguishing Characteristics

This is the advanced journey level class in the ITS Technician series. Positions at this level are distinguished from other classes within the series by the level of responsibility assumed, the complexity of duties assigned, and the level of independence with which employees are expected to perform. Employees perform the most difficult and responsible types of duties assigned to classes within the series. Employees at this level are required to be fully trained in all procedures related to assigned area of responsibility.

Supervision Received and Exercised

Receives general supervision from the ITS supervisor and higher level management staff.

Exercises functional and technical supervision over technical staff.

Essential and Marginal Function Statements

Essential and other important responsibilities and duties may include, but are not limited to, the following:

Essential Functions:

1. Lead, plan, and review the work of staff responsible for installing and maintaining a wide variety of ITS devices such as video detection systems, vehicle induction loops, ramp meters, dynamic message signs, solid state equipment, fiber optic equipment, trailblazers, computerized communication cables, light emitting diode lamps, and related devices and equipment for freeway and arterial roadways; troubleshoot malfunctions, isolate defects and repair devices and equipment using a bucket truck on high speed, high volume roads and freeways; verify proper device and system operation; conduct inspections and periodic preventive maintenance.
2. Monitor ITS device operation through the use of a laptop computer in the field or a desktop computer in the TMC; use sophisticated ITS software, both proprietary and non-proprietary; recommend and safely complete appropriate changes for effective system operation.
3. Evaluate, plan, direct, and perform repair, removal, and replacement of poles, cabinets,

controllers, and other equipment; repair conduit and pull wires and cable, as needed; perform emergency repairs as needed.

4. Modify or update existing ITS devices and equipment to improve traffic flow.
5. Participate in the design, layout, modification, and fabrication of the ITS components used in the Las Vegas valley's freeway and arterial transportation infrastructure; recommend ITS equipment specifications; assist in developing operating procedures for ITS devices; read diagrams, blueprints, manuals, and specifications for new installations and continual maintenance of ITS devices; make corrections to schematics and blueprints; assist contractors and other agencies with installation of new devices and system expansion.
6. Estimate materials and repair parts, equipment, and tools required to work at a remote or central location; make independent technical decisions in the course of day to day maintenance activities.
7. Direct and participate in a wide range of functional electrical tasks on ITS components; isolate prime power malfunctions and coordinate repairs with power company; replace power service points as needed.
8. Lead and participate in complex field and bench testing procedures on a variety of ITS equipment, such as closed circuit television systems, traffic system control units, trailblazer signs, dynamic message signs, radio communication facilities, conflict monitors, incident detection systems, load switches, inductive vehicle detection systems, power service assemblies, and others; test, troubleshoot, and repair ITS equipment to component level of micro processing systems; maintain and service a variety of test and repair equipment.
9. Train assigned staff in proper work methods and techniques and in the set up and use of equipment.
10. Document work performed on all ITS devices in the freeway and arterial infrastructure.
11. Assist TMC staff within the center as needed with the operation of the ITS facilities.

Marginal Functions:

1. Assist communications technicians with repairs and connection of intercommunication cable and related equipment.
2. Lead other related technical staff as required.
3. Stay abreast of new control devices in the field of ITS.
4. Perform related duties and responsibilities as required.

Qualifications

Knowledge of:

Principles and techniques of lead supervision and training.
Principles and practices of the use of diagnostic and utility software to locate problems and repair system equipment.
Principles and practices of state and local traffic control guidelines.
Advanced principles and practices of the use of a computerized system for coordinating traffic movement.
Cable and component color coding.
Tools, equipment, practices, and methods used in installing, maintaining, and repairing electronic solid state traffic signals and associated equipment.
Practices and techniques of field and bench testing of electronic devices and components.
The relationship of the various components of a computer-controlled traffic control system.
Interpretation of design schematics, site plans, maps, and engineering drawings.
Advanced mathematical principles.
Techniques and methods of record keeping.
Pertinent federal, state, and local laws, codes, and regulations.

Ability to:

Work independently without direct supervision.
Communicate clearly and concisely, both orally and in writing.
Establish and maintain effective working relationships with those contacted in the course of work.
Maintain effective audio-visual discrimination and perception needed for:

- *Making observations;*
- *Communicating with others;*
- *Reading and writing; and*
- *Operating assigned equipment.*

Maintain mental capacity which allows the capability of:

- *Making sound decisions;*
- *Effective interaction and communication with others; and*
- *Demonstrating intellectual capabilities.*

Maintain physical condition appropriate to the performance of assigned duties and responsibilities which may include the following:

- *Sitting for extended periods of time; and*
- *Operating assigned equipment.*

Experience and Training Requirements:

Experience:

Three years of increasing responsibility and experience in ITS or traffic control system installation, repair, and maintenance.

Training:

Equivalent to graduation from high school, plus additional specialized training in electronics.

License or Certificate:

Possession of a valid Class B commercial driver's license on the date of application.

Possession of a Traffic Signal Technician Level II or Traffic Signal Electrician Level II certification from the International Municipal Signal Association on the date of application.

Working Conditions

Environmental Conditions:

Office, shop, and field environments; travel from site to site; exposure to electrical energy, high voltage, computer screens, heat, cold, noise, dust, fumes, inclement weather conditions; work in high speed and high volume traffic; work at heights on ladders or other elevating device.

Physical Conditions:

Essential and marginal functions may require maintaining physical condition necessary for light to moderate lifting, bending, stooping, kneeling, climbing, and standing for prolonged periods of time; operating motorized equipment and vehicles; the ability to distinguish color.

Position: Traffic Systems Engineering Supervisor

*Class specifications are intended to present a descriptive list of the range of duties performed by employees in the class. Specifications are **not** intended to reflect all duties performed within the job.*

Definition

To supervise, assign, and review the work of staff responsible for the traffic engineering functions of the LVACTS; to oversee and participate in all engineering and project management activities; and to perform a variety of engineering and technical tasks related to the operation of the LVACTS traffic signal system.

Supervision Received And Exercised

Receives direction from the Traffic Signal Systems Manager.

Exercises direct supervision over assigned technical staff.

Essential and Marginal Function Statements

Essential and other important responsibilities and duties may include, but are not limited to, the following:

Essential Functions:

1. Plan, prioritize, assign, supervise, and review the work of staff responsible for using sophisticated computer programs to develop traffic signal phasing and timing alternatives for optimum system efficiency and performance throughout the Las Vegas valley; analyze traffic via field observations and evaluate engineering solutions to improve traffic flow.
2. Review subdivision and construction plans to ensure compliance with member agencies' traffic ordinances while analyzing roadway capacities.
3. Determine causes of, and recommend solutions for, traffic congestion; conduct studies of traffic volumes, peak loads, origins, destinations, and related issues, and develop reports of findings.
4. Oversee the evaluation and monitoring of operations and performance of coordinated traffic signals in the field and at the TMC, and make or direct appropriate major and minor adjustments and revisions within complex engineering constraints.
5. When needed, represent LVACTS at regular formal and informal interagency meetings of traffic engineers or member agency staff.
6. Work cooperatively with the staffs of member agencies, and with the system maintenance section of LVACTS.

Marginal Functions:

1. Participate in the selection of traffic control system technical staff; provide or coordinate staff training; assign and supervise the work of staff; work with employees to develop short and long term goals, monitor accomplishments, establish performance requirements and personal development targets, and provide coaching for performance improvement and development.
2. Meet with staff to identify and resolve problems; assign work activities, projects, and programs; monitor work flow; review and evaluate work products, methods, and procedures.
3. Prepare analytical and statistical reports on operations and activities within the traffic engineering section of LVACTS.
4. Work closely with the Traffic Signal Systems Manager in developing and establishing ideas for advanced and unusual engineering improvements to traffic signal operations to meet the needs of heavy traffic loads.
5. Attend and participate in professional group meetings; stay abreast of new trends and innovations in the field of traffic signal control systems and related traffic engineering.
6. Recommend and assist in the implementation of goals and objectives; implement approved policies and procedures.
7. Provide responsible staff assistance to the Traffic Signal Systems Manager.
8. Participate in the preparation and administration of the division budget, submit budget recommendations, and monitor expenditures.
9. Establish schedules and methods for providing services; identify resource needs; review needs with appropriate management staff; allocate resources accordingly.
10. Respond to and resolve difficult and sensitive citizen and developer inquiries and complaints; provide information to developers and citizens.
11. Perform related duties and responsibilities as required.

Qualifications

Knowledge of:

Operations, services, and activities of a computerized traffic control program.

Principles of supervision, training, and performance evaluation.

Modern and complex principles and practices of traffic control systems.

Principles and practices of transportation engineering.

Operations of a central computer control system used for traffic signal system applications.

Methods, practices, techniques, and vocabulary used in traffic engineering studies and reports.

Recent developments and trends in and sources of information for traffic engineering as it relates to traffic system operation.

Techniques used to review and modify traffic engineering plans, designs, and specifications.

Modern traffic signal control methods and computer equipment and related software.

Principles and practices of budget preparation and administration.

Pertinent federal, state, and local laws, codes, and regulations.
Advanced principles of mathematics as applied to engineering work.

Ability to:

Interpret, explain, and enforce member agencies' traffic control system policies and procedures.
Use initiative and independent judgment within established guidelines.

Interpret, apply, explain, and enforce applicable laws, codes, regulations, policies, and procedures.

Analyze problems, identify alternative solutions, project consequences of proposed actions, recommend best options, and implement approved solution in support of goals.

Exercise professional engineering judgment to achieve results consistent with objectives.

Communicate clearly and concisely, both orally and in writing.

Establish and maintain effective working relationships with those contacted in the course of work.

Maintain effective audio-visual discrimination and perception needed for:

- *Making observations;*
- *Communicating with others;*
- *Reading and writing; and*
- *Operating assigned equipment.*

Maintain mental capacity which allows the capability of:

- *Making sound decisions;*
- *Effective interaction and communication with others; and*
- *Demonstrating intellectual capabilities.*

Maintain physical condition appropriate to the performance of assigned duties and responsibilities which may include the following:

- *Sitting for extended periods of time; and*
- *Operating assigned equipment.*

Experience and Training Requirements:

Experience:

Five years of increasing responsibility and professional (post license) experience with computerized traffic signal systems, three years of which must have been at the managerial, administrative, or supervisory level.

Training:

Equivalent to a bachelor's degree from an accredited college or university with major course work in civil, transportation, traffic, or electrical engineering, or a closely related field.

License or Certificate:

Possession of a professional engineer license on the date of application, and possession of a professional engineer license in the state of Nevada within 6 months of the date of appointment.

Working Conditions

Environmental Conditions:

Field, office, roadway, and construction site environments; exposure to computer screens; exposure to traffic, high voltage, electrical energy, and inclement weather conditions when conducting traffic system operational inspections.

Physical Conditions:

Essential and marginal functions may require maintaining physical condition necessary for sitting, standing, and walking for prolonged periods of time.

Position: Operator I

General Function

The Operator I will be responsible for effectively and efficiently responding to all incident and operational needs that occur within the Traffic Operations Center (TOC). This person shall possess a thorough understanding of the various system tools and operational procedures utilized within the TOC. The Operator I shall report directly to the TOC Operator III.

Individuals holding this position shall be capable of performing routine TOC functions, including but not limited to: the dissemination of information regarding active incidents, coordination with emergency response units, maintaining a working knowledge of all system applications, continuous monitoring of system devices, and light office work (e.g., word processing, spreadsheets, etc.).

This position will require flexible work hours, rotating shifts, and on-call support work to meet the demands of the TOC operation. This individual must be able to pass an exam and demonstrate proficiency for this position, which may include a subjective analysis of the ability to use good common sense under adverse and stressful situations.

Minimum Qualifications

- Education: Graduation from an accredited high school or possession of a high school equivalency certificate. Passage of the Operator I proficiency exam.
- Experience: Hands on training in all aspects of the TOC operations, with a demonstrated knowledge of the TOC operating procedures and policies.
- Skills: Must have ability to cope with some job stress resulting from unusual work schedules, limited interaction with other people, and must be capable of working closely with co-workers. Must be dedicated and capable of performing duties with minimum supervision.

Specific Functions

All traffic and safety related operations and record keeping duties associated with the smooth operations of the TOC. Examples of duties include:

- All qualities and duties required of an Operator Trainee
- Monitor system resources to quickly detect and identify incident or hazardous conditions
- Monitor Roadway Weather Information System (RWIS)
- Prepare incident and construction event information for subsequent dissemination
- Display library or template based variable message sign messages in accordance with TOC guidelines
- Record template based audio messages in accordance with TOC guidelines
- Monitor system performance and generate work order reports as required
- Perform record keeping tasks such as daily communication logs and incident reports
- Coordinate with other agency and construction staff

Position: Operator II

General Function

The Operator II will be responsible for effectively and efficiently responding to all incident and operational needs that occur within the TOC. This person shall possess a thorough understanding of the various system tools and operational procedures utilized within the TOC. In the absence of any senior level supervisor, the Operator II shall be responsible for approving all sign and audio messages generated by the Operator I or Trainee. The Operator II shall report directly to the Operator III.

Individuals holding this position shall be capable of performing all daily TOC functions with limited supervision. This individual shall also be capable of training lower level operators. This position will require flexible work hours, rotating shifts, and on-call support work to meet the demands of the TOC operation.

Minimum Qualifications

Education: Graduation from an accredited high school or possession of a high school equivalency certificate. Passage of the Operator II proficiency exam.

Experience: One year of technical experience in the areas of traffic, communications, computers, or electronics. Hands on training in all aspects of the TOC operations, with a demonstrated knowledge of the TOC hardware and software equipment.

Skills: Must have ability to cope with some job stress resulting from unusual work schedules, limited interaction with other people, and must be capable of working closely with co-workers. Proficiency in the use of basic computer programs such as spreadsheets and word processors is required. Must be capable of performing duties with minimum supervision.

Specific Functions

All traffic and safety related operations and record keeping duties associated with the smooth operations of the TOC. Examples of duties include:

- All duties required of an Operator I position
- Thoroughly familiar with all TOC applications and their use
- Capable of performing routine administrative tasks (e.g., monthly reports, graphic updates, device configurations) with limited supervision
- Provide guidance and support to the Operator I and Trainee staff

Position: Operator III

General Function

The Operator III will be responsible for coordinating the day-to-day operations of the TOC. This person shall have good verbal and written communications skills and a thorough understanding of the daily traffic management techniques utilized in a TOC. When the TOC Supervisor is not present, the Operator III will be expected to assume some supervisory duties, as required, to ensure the proper daily operation of the TOC. The Operator III shall report directly to the TOC Supervisor or Engineer-in-Charge for management direction, and to the Utah DOT TOC Manager for day-to-day directives.

Individuals holding this position shall be capable of performing all daily TOC functions, and shall be thoroughly familiar with all TOC hardware and software configuration and use. This individual shall also be capable of approving non-standard (template) messages and procedures to accommodate unusual circumstances, and may directly coordinate emergency response activities with field and supervisory personnel. This individual shall be capable of evaluating the performance of lower level operators, and shall be responsible for ensuring additional training is provided to address any deficiencies. This position will require flexible work hours, rotating shifts, and on-call support work to meet the demands of the TOC operation.

Minimum Qualifications

Education: Graduation from an accredited high school or possession of a high school equivalency certificate. Passage of the Operator III proficiency exam.

Experience: Two years of technical experience in the areas of traffic, communications, computers, or electronics. Extensive hands on training in all aspects of the TOC operations, with a demonstrated knowledge of the hardware and software equipment.

Skills: Must have ability to cope with some job stress resulting from unusual work schedules, limited interaction with other people, and must be capable of working closely with co-workers. A thorough working knowledge of basic PC computer programs such as spreadsheets, word processors, and database programs is required. Human relation skills are important. Must be dedicated and capable of performing duties with minimum supervision.

Specific Functions

All traffic and safety related operations and record keeping duties associated with the smooth operations of the TOC. Examples of duties include:

- All duties required of an Operator II position
- Supervise TOC operators for conformity with standards and operating policies
- Coordinate operator schedules to ensure appropriate coverage is available (normal and after-hour support)
- Generate reports for management on system performance and activities
- Serve as focal point of contact between Operations Supervisor and TOC Operators to

ensure directives and job assignments are appropriately delegated

Position: Operator Trainee

General Function

The Operator Trainee is an entry-level position that is intended to orient new hires to the operational procedures of the TOC. This is a probationary position, and operators are expected to advance to an Operator I position within two months of date of hire. The Trainee position will receive direct training from Operators of a level II or higher, but shall report directly to the TOC Operator III for assignments and performance monitoring.

This position may require flexible work hours and rotating shifts to expose individuals to more varied training and shift responsibilities.

Minimum Qualifications

Education: Graduation from an accredited high school or possession of a high school equivalency certificate.

Experience: Familiarity of the local roadway network and street numbering convention used in the Salt Lake area.

Skills: Must be capable of working closely with co-workers, possess good phone skills, and be computer literate.

Specific Functions

All traffic and safety related operations and record keeping duties associated with the smooth operations of the TOC. Examples of duties include:

- Monitor system resources (i.e., closed circuit television, map, computer aided dispatch, radio, scanner, etc.) for incident detection and verification
- Monitor RWIS
- Prepare incident and construction event information for subsequent dissemination via signs, CommuterLink Alerts, phone, radio, and fax.
- Monitor system performance and generate work order reports as required
- Perform record keeping tasks such as daily communication logs and incident reports

List of Acronyms

DOT	Department of Transportation
FAST	Freeway and Arterial System of Transportation
ITS	Intelligent Transportation Systems
LVACTS	Las Vegas Area Computer Traffic System
PC	Personal Computer
RWIS	Roadway Weather Information Systems
TMC	Traffic Management Center
TOC	Traffic Operations Center