

STATE OF OHIO (DAS) CLASSIFICATION SPECIFICATION	<b><u>CLASSIFICATION SERIES</u></b> Signal Electrician	<b><u>SERIES NUMBER</u></b> 5332
	<b><u>MAJOR AGENCIES</u></b> Transportation Only	<b><u>EFFECTIVE</u></b> 12/29/2013

**SERIES PURPOSE:**

The purpose of the signal electrician occupation is the installation and maintenance of traffic signals, flashing beacons, street and detour lights.

At the lower levels, incumbents perform the various signal electrician duties ranging from entry level to journey level.

At the middle level, incumbents diagnose, repair and test malfunctioning equipment and components associated with operation of microprocessor-based traffic control devices and systems in central office signal shop only.

At the higher levels, incumbents provide supervision and management of field crews and centralized operations.

<b><u>JOB TITLE</u></b>	<b><u>JOB CODE</u></b>	<b><u>PAY GRADE</u></b>	<b><u>EFFECTIVE</u></b>
Signal Electrician 1	53322	07	12/29/2013

**CLASS CONCEPT:**

The first full performance level class works under direction & requires considerable knowledge of electricity in order to troubleshoot & perform electrical work in field on traffic signals, flashing beacons, street & detour lights & other electrical devices, test signal & related equipment for individual intersections to ensure intersection is functioning as designed & make necessary adjustments & repairs.

<b><u>JOB TITLE</u></b>	<b><u>JOB CODE</u></b>	<b><u>PAY GRADE</u></b>	<b><u>EFFECTIVE</u></b>
Signal Electrician 2	53323	08	12/29/2013

**CLASS CONCEPT:**

The full performance level class works under direction & requires considerable knowledge of electricity in order to act as lead worker (i.e., provide work direction & training) over lower-level signal electrician(s) &/or other employees assigned to work crew engaged in maintenance, rebuilding, repair & installation of traffic signals, highway & sign lighting & related electrical items, &/or perform more complex repair, installation or maintenance activities (i.e., such activities include but are not limited to programming controllers components for time-based coordination, fire & emergency vehicle preemption, time of day function changes & make changes to signal coordination settings to effect traffic flow & other similarly complex functions), test entire signal system to ensure system is synchronized & functioning as designed, make adjustments/repairs as necessary & wire &/or direct wiring of signal housings in signal shop.

<b><u>JOB TITLE</u></b>	<b><u>JOB CODE</u></b>	<b><u>PAY GRADE</u></b>	<b><u>EFFECTIVE</u></b>
Traffic Control Devices Technician	53324	09	12/29/2013

**CLASS CONCEPT:**

The advanced level class works under direction & requires thorough knowledge of electronic/electrical engineering technology in order to diagnose, repair & test malfunctioning equipment & components associated with operation of microprocessor-based traffic control devices & systems, utilize diagnostic test equipment to determine scope of repair, perform component & board level repairs & bench test each item after repairs are completed for proper operation in central office signal shop only.

<b><u>JOB TITLE</u></b>	<b><u>JOB CODE</u></b>	<b><u>PAY GRADE</u></b>	<b><u>EFFECTIVE</u></b>
Signal Electrician Supervisor 1	53325	09	12/29/2013

**CLASS CONCEPT:**

The first supervisory level class works under general direction & requires thorough knowledge of electrical/electronics engineering technology in order to supervise work field crews engaged in installation & maintenance of traffic signals, controllers, detectors & related electrical/electronic devices.

<u>JOB TITLE</u>	<u>JOB CODE</u>	<u>PAY GRADE</u>	<u>EFFECTIVE</u>
Signal Electrician Supervisor 2	53326	10	12/29/2013

**CLASS CONCEPT:**

The second supervisory level class works under general direction & requires thorough knowledge of electrical/electronics engineering technology in order to supervise lower-level signal electrician supervisors.

<u>JOB TITLE</u>	<u>JOB CODE</u>	<u>PAY GRADE</u>	<u>EFFECTIVE</u>
Signal Electrician Manager	53328	11	12/29/2013

**CLASS CONCEPT:**

The managerial level class works under administrative direction & requires extensive knowledge of electrical/electronics engineering technology in order to manage overall operations of central office signal & light shop & supervise signal electrician supervisor 1's & 2's & central office field crews.

<u>JOB TITLE</u>	<u>JOB CODE</u>	<u>B. U.</u>	<u>EFFECTIVE</u>	<u>PAY GRADE</u>
Signal Electrician 1	53322	06	12/29/2013	07

**JOB DUTIES IN ORDER OF IMPORTANCE: (These duties are illustrative only. Incumbents may perform some or all of these duties or other job-related duties as assigned.)**

Troubleshoots & performs electrical work in field on traffic signals, flashing beacons, street & detour lights & other electrical devices by installing, programming, maintaining & repairing controllers, signal heads, poles, ITS (e.g., changeable message signs), detectors, messenger cable, relays, meters, conduit, housings, luminaries & related equipment, tests signal & related equipment for individual intersections to ensure intersection is functioning as designed & makes necessary adjustments/repairs.

Installs, maintains & repairs traffic signs & route markings; erects new or repairs or replaces span wire & overhead signs; assists with sign erection, detour marking & pavement marking & maintains signal equipment & sign inventories; assists in wiring signal housings in signal shop; performs other developmental assignments.

Assists in installing & maintaining work zone traffic control including flagging; completes daily maintenance records; operates signal & lighting repair equipment (e.g., aerial bucket truck, auger truck, concrete saws & other miscellaneous tools); maintains stock carried on trucks; performs minor repairs & maintenance on equipment & tools.

Operates heavy motorized equipment (e.g., bucket truck; augers; boom trucks; forklift trenchers); conducts final inspections of new signals installed by contractors; operates personal computer to enter & retrieve data & generate required records & reports (e.g., charges items out by code; tracks personal time/time cards; keeps track of vehicle miles; completes inspection reports on traffic control devices & repairs); notifies supervisor when working on electrical service that requires inspection & contact with Ohio Department Of Commerce to arrange for inspector at job site; reviews printed materials & catalogs describing products used to install traffic control devices; confers with other district personnel regarding assigned projects, use of traffic control equipment & personnel; confers with Ohio utilities protection services to determine location of existing utilities prior to installation of cabling or poles.

**MAJOR WORKER CHARACTERISTICS:**

Knowledge of fractions, decimals, multiplication & division; electricity. Skill in installing, maintaining & repairing electrical equipment; operating aerial, bucket, ladder &/or auger truck, cranes, trenchers, forklift or electrical lift\*. Ability to interpret traffic signal & lighting plans & understand technical instructions; cooperate with co-workers on group projects; read simple sentences; carry out simple written or oral instructions; lift &/or transport 50-100 pounds.

(\*)Developed after employment.

**MINIMUM CLASS QUALIFICATIONS FOR EMPLOYMENT:**

1 yr. electrical trg. or 1 yr. electrical exp.

-Or equivalent of Minimum Class Qualifications For Employment noted above.

Note: If required to operate state vehicle, must have valid driver's license. Position description on file shall state licensure requirement.

**TRAINING AND DEVELOPMENT REQUIRED TO REMAIN IN THE CLASSIFICATION AFTER EMPLOYMENT:**

Must obtain & maintain commercial driver's license if assigned to operate motorized equipment of size & type regulated by Section 4506 of Ohio Revised Code within probationary period; if required to operate state vehicle, must maintain valid driver's license pursuant to position description on file.

**UNUSUAL WORKING CONDITIONS:**

May be exposed to working with high voltage; may work outside exposed to weather, dust, dirt, fumes & noise; may be exposed to moving traffic; may be on call 24 hrs., 7 days per week; may require overnight travel.

<u>JOB TITLE</u>	<u>JOB CODE</u>	<u>B. U.</u>	<u>EFFECTIVE</u>	<u>PAY GRADE</u>
Signal Electrician 2	53323	06	12/29/2013	08

**JOB DUTIES IN ORDER OF IMPORTANCE: (These duties are illustrative only. Incumbents may perform some or all of these duties or other job-related duties as assigned.)**

Acts as lead worker (i.e., provides work direction & training) over lower-level signal electrician(s) &/or other employees assigned to work crew in maintenance, rebuilding, repair & installation of traffic signals, highway & sign lighting & related electrical items & assists with scheduling electrical upgrades & preventative maintenance,

&/OR

Performs more complex electrical & electronic repairs, installations or maintenance activities (i.e., such activities include but are not limited to programming controllers & components for time-based coordination, fire & emergency vehicle preemption, time of day function changes & makes changes to signal coordination settings to effect traffic flow & other similarly complex functions), tests entire signal system to ensure system is synchronized & functioning as designed, makes adjustments/repairs as necessary, & wires &/or directs wiring of signal housings in signal shop.

Installs, rebuilds, repairs & troubleshoots electrical work involved with traffic signals, message boards & flashing beacons, street & detour lights & other electrical devices by installing, maintaining, programming & repairing controllers, signal heads, poles, ITS (e.g., changeable message signs), detectors, messenger cable, relays, meters, conduits, housings, highway & sign luminaries & other related devices.

Installs, maintains & repairs traffic signs & route markings; erects new or repairs or replaces span wire & overhead signs; assists with sign erection, detour marking & pavement marking; maintains inventory of signal equipment, sign inventories, electrical parts & tools; performs duties of lower-level signal electrician as assigned.

Operates heavy motorized equipment (e.g., bucket truck; augers; boom trucks; forklifts; trenchers); conducts final inspections of new signals installed by contractors; operates personal computer to enter & retrieve data & generate required records & reports (e.g., charges items out by code; tracks personal time/time cards; keeps track of vehicle miles; completes inspection reports on traffic control devices & repairs); notifies supervisor when working on electrical service that requires inspection & contact with Ohio Department Of Commerce to arrange for inspector at job site; reviews printed materials & catalogs describing products used to install traffic control devices; confers with other district personnel regarding assigned projects, use of traffic control equipment & personnel; confers with Ohio utilities protection services to determine location of existing utilities prior to installation of cabling or poles.

**MAJOR WORKER CHARACTERISTICS:**

Knowledge of electricity & electronics; employee training & development\*. Skill in use of electronic testing instruments; maintenance, repair, rebuilding, & installation of traffic signal controllers to include solid-state & related equipment; operation of heavy motorized equipment (e.g., aerial lift trucks, augers, backhoes, trenchers & dump trucks); use of personal computer\*; data entry, typing or word processing\*. Ability to understand & interpret instructions, specifications & plans that are technical in nature; lift &/or transport 50-100 pounds.

(\*)Developed after employment.

**MINIMUM CLASS QUALIFICATIONS FOR EMPLOYMENT:**

12 mos. exp. as Signal Electrician 1, 53322.

-Or 2 yrs. electrical training &/or experience.

-Or equivalent of Minimum Class Qualifications For Employment noted above.

Note: If required to operate state vehicle, must have valid driver's license. Position description on file shall state licensure requirement.

**TRAINING AND DEVELOPMENT REQUIRED TO REMAIN IN THE CLASSIFICATION AFTER EMPLOYMENT:**

Must obtain & maintain commercial driver's license if assigned to operate motorized equipment of size & type regulated by Section 4506 of Ohio Revised Code within probationary period; if required to operate state vehicle, must maintain valid driver's license pursuant to position description on file.

**UNUSUAL WORKING CONDITIONS:**

May be exposed to working with high voltage; may work outside exposed to inclement weather, dust, dirt, fumes & noise; may be exposed to moving traffic; may be on call 24 hrs. per day, 7 days per week; may require overnight travel.

<u>JOB TITLE</u>	<u>JOB CODE</u>	<u>B. U.</u>	<u>EFFECTIVE</u>	<u>PAY GRADE</u>
Traffic Control Devices Technician	53324	06	12/29/2013	09

**JOB DUTIES IN ORDER OF IMPORTANCE: (These duties are illustrative only. Incumbents may perform some or all of these duties or other job-related duties as assigned.)**

In Ohio Department Of Transportation, central office signal shop only, diagnoses, repairs & tests malfunctioning equipment & components associated with operation of microprocessor based traffic control devices & systems (e.g., traffic controllers, conflict monitors, coordination units, vehicle detectors, load switches, flashers, flash transfer relays & time clocks), utilizes diagnostic test equipment to determine scope of repair, performs component & board level repairs & bench tests each item after repairs are completed for proper operation.

Modifies, wires & adds customized electronic features to generic controller cabinets to meet plan requirements including but not limited to installation of circuitry (e.g., coordination devices; preemption; time clocks; prepare to stop when flashing; approach monitoring) & special circuits.

Tests new components to ensure equipment is operational & meets specifications; occasionally contacts counterpart employed by equipment manufacturers/vendors to discuss software &/or hardware problems arising in equipment testing or cabinet wiring; reports defective equipment problems & completion of projects to supervisor.

Assists district personnel in field diagnosis of malfunctioning electronic/electrical traffic control devices; provides training in or demonstrates troubleshooting procedures, use of diagnostic test equipment, equipment programming & cabinet wiring; operates state vehicle to travel to district work sites to provide guidance in signal repair & installation; shares information on problems with equipment with other signal shop personnel upon request.

Performs miscellaneous job duties (e.g., participates in research/evaluations of new devices/concepts projects by collecting data & preparing written reports of findings; maintains records of work performed; occasionally recommends timing changes & signal modifications to plan designers); operates personal computer to enter/retrieve data & to maintain & reconcile inventories; attends meetings as required.

**MAJOR WORKER CHARACTERISTICS:**

Knowledge of electrical engineering or electronic technology. Skill in use of standard diagnostic test equipment; personal computer\*. Ability to read & analyze schematic diagrams & electrical drawings; troubleshoot electronic equipment; read & interpret manuals; effectively communicate verbally & in writing.

**MINIMUM CLASS QUALIFICATIONS FOR EMPLOYMENT:**

Completion of undergraduate core program in electrical engineering or electronic technology; 12 mos. trg. or 12 mos. exp. in repair & maintenance of variety of electronic devices including experience with circuit designs & modifications & programmable controls.

-Or equivalent of Minimum Class Qualifications For Employment noted above.

Note: If required to operate state vehicle, must have valid driver's license. Position description on file shall state licensure requirement.

**TRAINING AND DEVELOPMENT REQUIRED TO REMAIN IN THE CLASSIFICATION AFTER EMPLOYMENT:**

Must obtain & maintain commercial driver's license if assigned to operate motorized equipment of size & type regulated by Section 4506 of Ohio Revised Code within probationary period; if required to operate state vehicle, must maintain valid driver's license pursuant to position description on file.

**UNUSUAL WORKING CONDITIONS:**

Requires travel to field districts (e.g., 1-2 times per month); exposed to dust, dirt, fumes, noise & moving traffic when called upon to make field visits to districts.

<u>JOB TITLE</u>	<u>JOB CODE</u>	<u>B. U.</u>	<u>EFFECTIVE</u>	<u>PAY GRADE</u>
Signal Electrician Supervisor 1	53325	EX	12/29/2013	09

**JOB DUTIES IN ORDER OF IMPORTANCE: (These duties are illustrative only. Incumbents may perform some or all of these duties or other job-related duties as assigned.)**

Supervises personnel assigned to one signal & lighting crew engaged in performing installation, maintenance & repair of signal heads, ITS (e.g., changeable message sign), poles, detectors, messenger cable, conduit, luminaries & related electrical equipment, schedules & assigns work of crew, trains & instructs crew in signal & lighting work & participates in performance of electrical work involving installation, maintenance & repair of signal heads, poles, detectors, messenger cable, relay meters, conduit, housings, luminaries & related electrical equipment.

Plans & assigns work to utilize manpower effectively, interprets signal/ lighting plans, procures necessary equipment, arranges transportation, food & lodging for crew members, completes documentation of work location, work completed, travel distance, vehicle mileage, equipment & material usage & man hours & evaluates performance of crew members.

Trains & instructs crew members in installation, maintenance & repair of electrical signal & lighting equipment, use of related equipment (e.g., aerial, bucket, ladder &/or auger truck, trenchers, cranes) & inspection procedures & use of electrical testing equipment for troubleshooting electrical &/or mechanical problems.

Coordinates work of signal/lighting crews with routemarking crews to install, maintain & repair roadway & overhead signs as necessary.

**MAJOR WORKER CHARACTERISTICS:**

Knowledge of algebra or technical mathematics; supervisory principles/techniques\*; employee training & development\*; electrical/electronics engineering technology. Skill in installing, maintaining & repairing electrical signal & lighting equipment; operating aerial, bucket, ladder &/or auger truck, trenchers & cranes; operation of electronic/electrical testing equipment; route marking & operation of related equipment. Ability to interpret traffic signal & lighting plans & understand technical instructions; prepare meaningful, concise & accurate reports; define problems, collect data, establish facts & draw valid conclusions; establish friendly atmosphere as supervisor of work unit; lift &/or transport 50-100 pounds; demonstrate dexterity in fingers & hands.

(\*)Developed after employment.

**MINIMUM CLASS QUALIFICATIONS FOR EMPLOYMENT:**

Completion of undergraduate major core program in electrical/electronics engineering technology or electro- mechanical technology covering topics of electrical circuits, electrical machinery or electronic devices, design & engineering graphics or drafting; 6 mos. trg. or 6 mos. exp. in operation of aerial, bucket, ladder or auger truck, cranes & trenchers; 3 courses or 9 mos. exp. in algebra or technical mathematics; valid commercial driver's license.

-Or 6 mos. exp. as Signal Electrician 2, 53323.

-Or equivalent of Minimum Class Qualifications For Employment noted above.

Note: If required to operate state vehicle, must have valid driver's license. Position description on file shall state licensure requirement.

**TRAINING AND DEVELOPMENT REQUIRED TO REMAIN IN THE CLASSIFICATION AFTER EMPLOYMENT:**

Must obtain & maintain commercial driver's license if assigned to operate motorized equipment of size & type regulated by Section 4506 of Ohio Revised Code within probationary period; if required to operate state vehicle, must maintain valid driver's license pursuant to position description on file.

**UNUSUAL WORKING CONDITIONS:**

May be exposed to working with high voltage; may work outside exposed to weather, dust, dirt, fumes & noise; may be on call 24 hrs., 7 days per week; may require overnight travel.

<u>JOB TITLE</u>	<u>JOB CODE</u>	<u>B. U.</u>	<u>EFFECTIVE</u>	<u>PAY GRADE</u>
Signal Electrician Supervisor 2	53326	EX	12/29/2013	10

**JOB DUTIES IN ORDER OF IMPORTANCE: (These duties are illustrative only. Incumbents may perform some or all of these duties or other job-related duties as assigned.)**

Supervises lower-level signal electrician supervisors & signal electrician field work crews in installation, repair & fabrication of electronic signals, electrical devices, traffic signaling & signal control equipment, maintains production schedule to meet field crew assignments, makes field checks of crews & inspects completed work.

Performs layout & fabrication of electrical components & circuits into completed control units & checks & tests all equipment for correct operations; reviews work orders from districts as to field layouts, troubleshooting & necessary liaisons with utilities, districts & central office; inspects & troubleshoots contracted & force account installed signal devices.

Provides technical assistance to central office & field crews in areas of signal head, sign & special unit fabrication & wiring; trains & instructs signal electricians in installation, maintenance & repair of traffic signals, signal control devices & lighting.

Coordinates annual inventory of orders & special materials for fabrication of electrical devices; oversees maintenance of adequate supply of replacement parts & maintains files of signal maintenance documentation & prints/timing charts.

**MAJOR WORKER CHARACTERISTICS:**

Knowledge of algebra or technical mathematics; supervisory principles/techniques; employee training & development; electrical/electronics engineering technology; inventory control. Skill in installation, maintenance & repair of electrical signal & lighting equipment; operation of electronic/electrical testing equipment; layout & fabrication of electrical components & circuits. Ability to interpret traffic signal & lighting plans & understand technical instructions; prepare meaningful, concise & accurate reports; define problems, collect data, establish facts & draw valid conclusions; establish friendly atmosphere as supervisor of work unit; lift &/or transport 50-100 pounds; demonstrate dexterity in fingers & hands; maintain accurate records.

(\*)Developed after employment.

**MINIMUM CLASS QUALIFICATIONS FOR EMPLOYMENT:**

Completion of undergraduate major core program in electrical/electronics engineering technology or electro- mechanical technology covering topics of electrical circuits, electrical machinery or electronic devices, design & engineering graphics or drafting; 9 mos. trg. or 9 mos. exp. in supervisory principles/techniques; 9 mos. trg. or 9 mos. exp. in employee training & development; 3 courses or 9 mos. exp. in algebra or technical mathematics; 3 mos. trg. or 3 mos. exp. in inventory control; valid commercial driver's license.

-Or 6 mos. exp. as Signal Electrician Supervisor 1, 53325.

-Or equivalent of Minimum Class Qualifications For Employment noted above.

Note: If required to operate state vehicle, must have valid driver's license. Position description on file shall state licensure requirement.

**TRAINING AND DEVELOPMENT REQUIRED TO REMAIN IN THE CLASSIFICATION AFTER EMPLOYMENT:**

Must obtain & maintain commercial driver's license if assigned to operate motorized equipment of size & type regulated by Section 4506 of Ohio Revised Code within probationary period; if required to operate state vehicle, must maintain valid driver's license pursuant to position description on file.

**UNUSUAL WORKING CONDITIONS:**

May be exposed to working with high voltage; may work outside exposed to weather, dust, dirt, fumes & noise; may be exposed to moving traffic; may be on call 24 hrs., 7 days per week; may require overnight travel.

<u>JOB TITLE</u>	<u>JOB CODE</u>	<u>B. U.</u>	<u>EFFECTIVE</u>	<u>PAY GRADE</u>
Signal Electrician Manager	53328	EX	12/29/2013	11

**JOB DUTIES IN ORDER OF IMPORTANCE: (These duties are illustrative only. Incumbents may perform some or all of these duties or other job-related duties as assigned.)**

Manages overall operations of central office signal & light shop & supervises Signal Electrician Supervisor 1's & 2's & central office field crews in installation, maintenance & repair of electrical/electronic traffic signal & lighting devices.

Initiates production schedules to cover material requisitions, maintains material inventories, purchase orders, work progress records & signal & light shop orders.

Provides documentation regarding specific signal & lighting operations when required for legal purposes.

Coordinates scheduling & interchange of rolling stock equipment among field signal & lighting crews & schedules maintenance of equipment as necessary.

**MAJOR WORKER CHARACTERISTICS:**

Knowledge of supervisory principles/techniques; management; algebra or technical mathematics; employee training & development; electrical/electronics engineering technology; inventory control; budgeting\*. Ability to prepare meaningful, concise & accurate reports; deal with many variables & determine specific course of action; proofread technical materials, recognize errors & make corrections; establish friendly atmosphere as section manager.

(\*)Developed after employment.

**MINIMUM CLASS QUALIFICATIONS FOR EMPLOYMENT:**

Completion of undergraduate major core program in electrical/electronics engineering technology or electro- mechanical technology covering topics of electrical circuits, electrical machinery or electronic devices, design & engineering graphics or drafting; 24 mos. trg. or 24 mos. exp. in supervisory principles/techniques; 24 mos. trg. or 24 mos. exp. in algebra or technical mathematics; 3 mos. trg. or 3 mos. exp. in inventory control.

-Or 6 mos. exp. as Signal Electrician Supervisor 2, 53326.

-Or equivalent of Minimum Class Qualifications For Employment noted above.

Note: If required to operate state vehicle, must have valid driver's license. Position description on file shall state licensure requirement.

**TRAINING AND DEVELOPMENT REQUIRED TO REMAIN IN THE CLASSIFICATION AFTER EMPLOYMENT:**

Must obtain & maintain commercial driver's license if assigned to operate motorized equipment of size & type regulated by Section 4506 of Ohio Revised Code within probationary period; if required to operate state vehicle, must maintain valid driver's license pursuant to position description on file.

**UNUSUAL WORKING CONDITIONS:**

May be exposed to inclement weather.