

**GENERAL DESCRIPTION OF CLASS**

The ENGINEERING TECHNICIAN 2 (as a member of a crew) performs a variety of technical engineering work in the field such as instrument person on a survey crew with primary responsibility for operating the transit, technical drafting of preliminary engineering plans in a field office, inspection of contractors' work as a senior inspector, and testing of materials used on construction projects.

**DISTINGUISHING FEATURES**

This is the second level of a three-level series. This class is distinguished from the lower level class by the full-time responsibility for operating the transit on a survey crew, for inspecting all phases of roadway construction (e.g., subgrade excavation or embankment, placing of base, asphalt paving, or concrete surfacing) to determine satisfactory workmanship and adherence to plans and specifications and for coordinating the work of engineering technicians on construction projects. This class is distinguished from the next higher level by the absence of full-time responsibility as survey crew leader on field survey assignments, determining scope of project and coordinating work of crew members and responsibility as chief inspector for coordinating all assigned phases of work between project manager's office and the contractor on larger and more expensive construction projects.

**DUTIES AND RESPONSIBILITIES**

Allocation of positions to this class will depend on the total work performed which may include one or a combination of the duties or tasks listed below.

- 1. Field Surveying and Drafting.** Typical tasks: under the technical guidance of a survey crew leader, works outdoors as a member of a survey crew in the capacity of instrument person (operates transit to measure horizontal and vertical angles); uses transit, level, and chain to establish distance, establish property corners, determine elevations or cross sections (vertical sections of ground used to determine excavation and earthwork quantities); reviews and corrects field notes of geometric and trigonometric numbers and symbols prepared by other crew members for accuracy; using programmable calculators or computer program, performs calculations involving the use of algebra, geometry, and trigonometry to determine excavation and earthwork quantities or longitude/latitude coordinates, grade spirals and curves of roads; performs manual or computer-aided drafting for preliminary engineering projects using verbal instructions, surveying figures and sketches, or other data sources.
- 2. Construction Inspection.** Typical tasks: in the capacity as a senior inspector working under the guidance of a higher level engineer or project manager, reviews engineering plans and specifications for projects being inspected; performs such inspection related duties as inspecting all phases of roadway construction (e.g., subgrade excavation or embankment, placing of soils or aggregate, asphalt paving or concrete surfacing) for satisfactory workmanship and adherence to plans and specifications; conducts roadway related inspections on landscaping, temporary and permanent signing, earthwork, temporary protection and direction of traffic measures, guardrail installation, traffic sign installation, drainage, manholes, retaining walls and small bridges, and utility installations in the right-of-way section of the roadway to determine conformance with plans and specifications.

- 3. Materials Testing.** Typical tasks: coordinates the work of lower level inspectors to ensure proper and sufficient sampling of construction materials; obtains samples of construction materials at construction site; tests materials in a field laboratory using electrical and mechanical equipment and gives results to a higher level technician; records manually or using computer terminal, construction and testing documents, and reviews documents to determine conformance with contract specifications; tabulates daily and weekly construction material quantities used to determine contractor pay estimates using regular and programmable calculators.
- 4. Miscellaneous.** Typical tasks: under the direction of a supervisor, researches titles of ownership records for State-owned properties; prepares reports and maps of findings and makes recommendations for settling title disputes; uses aerial photos to identify alterations within navigable waterways affecting State ownership; prepares detailed maps from aerial photos; reviews environmental permit applications to determine if proposed project affects State-owned lands; issues easements for activities involving the use of State-owned lands; trains lower level engineering technicians, trainees or aides in fundamental surveying and construction inspection work procedures; performs a wide variety of technical engineering office functions such as checking drafting performed by peers for conformance to standards, checking survey data for accuracy by operating hand-held calculators, or computer programs to recalculate geometric or trigonometric data or estimates of earthwork or excavation quantities, or contractor payments; drives vehicle to and from worksites.

## **RELATIONSHIPS WITH OTHERS**

Employees in this class have regular in-person contact with the public as a member of a survey crew locating property and right-of-way lines, with contractors' employees to gather samples of construction materials and ensure compliance with plans and specifications, or with other governmental employees to obtain surveying information.

## **SUPERVISION RECEIVED**

Employees in this class work under the general supervision of an engineering supervisor who assigns the work in person or through a leadworker, and is responsible for reviewing the work, usually upon completion. Duties assigned will vary depending on the workload of the unit and season of the year. Assignments are usually in the form of results desired with the employee expected to use previous experience and training to determine the methods required to achieve those results. Technical guidelines in standard specifications, drafting manuals, construction inspection and material testing manuals are referred to on occasion when encountering new or unique assignments. A higher level technician or engineer is readily available to provide technical guidance. Technical work is reviewed for accuracy by a peer, higher level technician or engineer, and/or supervisor.

**KNOWLEDGE, SKILLS, AND ABILITIES (KSA)**

General knowledge of algebra, plane geometry, and trigonometry typically used in engineering technology.

General knowledge of the technical and safety procedures followed by survey crews in obtaining location or field construction data as a chain person or level person.

General knowledge of the symbols, terminology, equipment operation procedures, and methods required to perform preliminary drafting in a field office.

Basic knowledge of engineering plans and specifications sufficient to obtain contractor's compliance.

Basic knowledge of material testing procedures and equipment required to obtain and test construction materials in the field laboratory.

Skill in applying engineering technology to duties directly related to engineering such as land surveying, construction inspection, and drafting.

Ability to operate survey equipment such as transit, levels, and chains.

Ability to read plans and specifications and to conduct inspections of contractor's work.

Ability to follow standard material testing procedures and to work safely with toxic chemicals used in the testing process.

Ability to read, understand, and interpret instructions found in technical manuals, specification, and other guidelines.

Ability to obtain a valid Oregon driver's license.

Ability to work outdoors in a variety of weather conditions for extended periods of time.

Ability to work extended or irregular hours.

Ability to work cooperatively with members of a crew.

**NOTE:** The KNOWLEDGE and SKILLS are required for initial consideration. ABILITIES may be required for initial consideration, at any time during the selection process, or during a trial service period as a final stage of the selection process. Some duties performed by positions in this class may require different KSA's. No attempt is made to describe every KSA required for **all** positions in this class. Additional KSA requirements will be explained on the recruiting announcement.

Adopted 1/90

Revised

Examples of work are typical of duties assigned to this class. No attempt is made to describe every duty performed by all positions in this class.