Position Summary

This summary describes the organization, duties, and requirements of a State of Michigan vacancy. The official position description for this position is available from the HR office for the agency.

Position Code: TRNSTCHE

Civil Service Class and Level: Transportation Technician-E

Working Title (What the agency calls the position): Survey Technician

Name and Position Code Description of Direct Supervisor: LEMIEUX, TYLER C; ENGINEER MANAGER LICENSED-3

Department/Agency: TRANSPORTATION CENTRAL OFFICE

Work Area: Bay Region

Work Location/Hours of Work: 5859 Sherman Rd., Saginaw, MI 48604 / Mon-Thurs 6:30 am - 5:00 pm (Hours may vary)

General Summary of Function/Purpose of Position: This survey technician position participates in and performs a variety of paraprofessional surveying and engineering assignments while applying the methods and staying current on new technologies of the design survey unit. Performs survey calculations and operates survey equipment, as well as computer and equipment software packages. Performs field mapping, processing, and prepares 2D and 3D technical drawings with associated supplementary files. Responsible for carrying out field and office duties, communicating with supervisors and others on status of assignments, and following all state and federal laws pertaining to surveying boundaries and government corner preservation under the guidance of a professional land surveyor.

This position requires possession of a valid driver's license to perform surveying activities.

Assigned duties and tasks for each duty.

Duty 1 **Percentage: 40**

Survey Technician Office Assignments

This duty requires possession of a valid driver's license to perform surveying activities.

- Review the assigned survey project with the region surveyor to determine what type of survey and information are needed to complete the proposed scope of work.
- Perform surveying procedures, calculations, and processing methods in compliance with the Michigan Department of Transportation (MDOT) Design Survey Standards of Practice Manual to complete projects efficiently and safely.
- Evaluate and verify information used in the process of producing project deliverables.
- Determine what field procedures, surveying instruments, and safety equipment are needed for the project.
- Process survey data collected by design survey crew using a variety of surveying software (e.g., MicroStation with OpenRoads, Leica Captivate, Leica Infinity, MicroSurvey, StarNet, LevProc, etc.) to produce files, maps and drawings to MDOT standards.
- Prepare and submit final calculations, data files, drawing, survey Reference Information Documents (RID) files and reports to be reviewed by a professional land surveyor.
- Remain current with new surveying technologies.
- Apply knowledge of the Michigan State Plan Coordinate system by assuring that the projects coordinates are in the correct zone and converting between grid and ground distances using the applicable scale factor.
- Analyze field procedures, computations, survey notes, safety measures, and other tasks performed by survey crew personnel, referring complex issues to the professional land surveyor when necessary.
- Analyze and reduce survey data from different media and place into computer mapping files (e.g., OpenRoads, etc.), coordinating review with a professional land surveyor.
- Assist in completing final booking and submittal of projects, including associated reports and forms.

Duty 2 **Percentage: 40**

Survey Technician Field Assignments

This position requires possession of a valid driver's license to perform surveying activities.

- Perform operation and diagnostics of surveying equipment, associated peripherals, and software (e.g., Total Stations, Global Positioning Systems (GPS), Digital Levels, Data Collectors, etc.) developing proficiency through experience.
- Complete total station and GPS topographic mapping. Perform data collection and stakeout procedures.
- Record survey measurements and descriptive data in various forms and formats per MDOT standards.
- Perform mathematical computations in both the horizontal and vertical planes and other problem-solving techniques.
- Set stakes, monuments, property irons, right-of-way (ROW) monuments, photographic targets, and witnessing when needed.
- Place temporary traffic control measures, maintain field notes, cut brush for lines, and search for and locate section corners, property irons, and survey points.
- Perform tasks related to the establishment of horizontal and vertical control.
- Make field decisions using established practices and sound judgment, while referring higher-level or complex issues to the professional land surveyor for guidance.
- Maintain favorable public relations while in the field conducting survey assignments.

Duty 3 **Percentage: 15**

Assignments as directed by Supervisor.

- Research and obtain necessary survey data needed to complete projects from existing MDOT survey control, Public Land Survey Corner records, re-monumentation data, as-built MDOT plans, MDOT ROW sheets, National Geodetic Survey control, Certificates of Survey, deeds, easements, plats and tax descriptions.
- Assist in estimating survey requirements (e.g., time, cost, and complexity) for proposed and existing projects by MDOT Staff or Consultant Contracts.
- Track daily surveying tasks to maintain a record for current and future projects. Keep land surveyors informed on a daily basis, on how the field projects are proceeding and of any possible delays.
- Perform additional surveying or engineering tasks as assigned by the supervisor or land surveyors to support project objectives and compliance with departmental standards.

Duty 4 **Percentage: 5**

Care and maintenance of Surveying Equipment

- Ensure all equipment is in proper working order.
- Ensure equipment needed to perform tasks are stocked and ready to use.
- Operate equipment and firmware as used in surveying operations.
- Schedule routine maintenance for survey vehicles.
- Ensure proper handling and storage of equipment.
- Keep equipment organized and clean.
- Calibrate and perform routine checks on total station, levels, tribrachs and laser plummets.
- Inform Supervisor of all equipment failures and repairs.
- Other duties as assigned.

Types of decisions made independently and whom or what those decisions affect: Routine, non-complex technical decisions necessary to carry out the mission of the department.

Types of decisions that require the supervisor's review: When there is a deviation from an established procedure or when new situations arise which have not been encountered before.

Physical effort used to perform this job and environmental conditions of this position: Requires ability to move around active job sites and remain in a stationary position for extended periods of time. Requires ability to traverse uneven and steep terrain and move equipment weighing up to 90 pounds. Exposure to environmental conditions associated with outdoor work such as cold, snow, heat, sun, rain, vegetation, etc. Exposure to heavy and/or high-speed traffic and occasionally construction hazards, such as noise and dirt. This position requires possession of a valid driver's license to travel to job sites. Occasional overnight travel may be required. Position may require availability outside normal working hours based on operational needs.

Names and classes and levels of employees whom this position immediately supervises:

Essential functions of this position: This survey technician position participates in and performs a variety of paraprofessional surveying and engineering assignments while applying the methods and staying current on new technologies of the design survey unit. Performs survey calculations and operates survey equipment, as well as computer and

equipment software packages. Performs field mapping, processing, and prepares 2D and 3D technical drawings with associated supplementary files. Responsible for carrying out field and office duties, communicating with supervisors and others on status of assignments, and following all state and federal laws pertaining to surveying boundaries and government corner preservation under the guidance of a professional land surveyor.

This position requires possession of a valid driver's license to perform surveying activities.

Function of the work area: The Bay Region Survey Unit provides hydraulic, right-of-way (ROW), supplementary mapping, bridge, and design surveys in support of highway and bridge program/scoping projects across the region. This position contributes to that function by performing entry-level to experienced-level field and office surveying tasks under the guidance of a professional land surveyor. The technician supports the development of project survey data by conducting field measurements, processing survey information, preparing project mapping products, and performing research needed for design and ROW determination. This position plays a key role in ensuring accurate, reliable survey data for transportation projects and performs duties in both field and office survey operations.

Education, experience, and credentials typically needed to perform the position's essential functions [Equivalent combinations of education and experience can also be evaluated on an individual basis for applications providing sufficiently detailed descriptions of the other experience.]:

EDUCATION:
Possession of an associate degree in concrete technology, civil technology, construction technology, surveying technology, construction management, mathematics, or computer science.

EXPERIENCE:
Transportation Technician 8
No specific type or amount is required.

Transportation Technician 9
One year of experience equivalent to a Transportation Technician 8.

Transportation Technician E10
Two years of experience equivalent to a Transportation Technician, including one year equivalent to a Transportation Technician 9.

Alternate Education and Experience

Transportation Technician 8 - 12
Possession of a bachelor's degree or higher in an Applied Science or Science with 16 semester hours (24 term) credits in job specific or related course work qualifies for the Transportation Technician E10 level.

OR

Completion of 60 semester (90 term) credits including 24 semester (36 term) credits in any combination of course work in the following areas: structures, materials, soils, hydrology, surveying, design, drafting, bituminous, concrete, aggregate, chemistry, physics, geology, environmental science, computer science, highway or traffic technology, construction management, engineering, or mathematics may be substituted for the education requirement.

OR

Four years of technician level experience consisting of quality control inspections, drafting, materials and testing, surveying, or traffic may be substituted for the education requirement.

OR

Current certification in bituminous (hot mix), concrete, density testing, or aggregate gradation and one year of technician level field experience may be substituted for the education requirement.

OR

Three years of experience equivalent to a Transportation Maintenance Worker 9, Transportation Maintenance Supervisor, or Transportation Maintenance Coordinator may be substituted for the education requirement.

OR

Current certification in bituminous (hot mix), concrete, density, or aggregate and two years of experience equivalent to an Engineering Assistant may be substituted for the education requirement.

OR

Current certification in bituminous (hot mix), concrete, density, or aggregate and completion of 16 semester (24 term) credits in any combination of course work in the following areas: structures, materials, soils, hydrology, surveying, design, drafting, bituminous, concrete, aggregate, chemistry, physics, geology, environmental science, computer science, highway or traffic technology, construction management, engineering, or mathematics may be substituted for the education requirement.

KNOWLEDGE, SKILLS, AND ABILITIES:

Knowledge of:

- the use and maintenance of surveying instruments and peripheral equipment
- United States Public Land Survey System and related state laws
- research methods to obtain survey records
- field survey procedures
- land surveying formats, language, and methods for recording measurements and data
- accuracy specifications for different classes of surveying measurements
- algebra, geometry, and trigonometry
- legal descriptions used in surveying
- computer-aided drafting
- of imperial and metric conversion factors and their application to various units of angular,
- linear, and aerial measurements

Ability to:

- print and draw legibly while maintaining speed and accuracy
- analyze field measurement for conformance with accuracy standards
- interpret plats, plans, maps, and drawings
- maintain records and prepare reports and correspondence related to ongoing work
- maintain survey equipment and tools
- communicate effectively

CERTIFICATES, LICENSES, REGISTRATIONS:

- Possession of a valid driver’s license is required and must be maintained throughout employment in the position.