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: TRNSTCHEA06R

Civil Service Class and Level: TRANSPORTATION TECHNICIAN-E

Working Title (What the agency calls the position): Transportation Technician - Construction

Name and Position Code Description of Direct Supervisor: CADEAU, STEVEN J; ENGINEER MANAGER LICENSED-3

Department/Agency: TRANSPORTATION CENTRAL OFFICE

Work Area: Superior Region

Work Location/Hours of Work: 120 Tobin Alpha Rd, Crystal Falls MI 49920 / M - F 7:00 am to 3:30 pm (Hours may vary)

General Summary of Function/Purpose of Position: This position participates in and oversees construction and quality control inspection activities to ensure that highways, bridges, and allied transportation facilities are constructed to the plans and specifications contained in contractual construction agreements. Review and document project records for adherence to standards. Perform engineering technical support activities, including materials testing, inspection, and compliance.

This position requires possession of a valid driver's license to perform regular field inspections and reviews.

Assigned duties and tasks for each duty.

Duty 1 **Percentage: 70**

Perform construction and quality control inspection activities designed to ensure that highways, bridges, and allied transportation facilities are constructed to the plans and specifications contained in contractual construction agreements.

This duty requires possession of a valid driver's license to perform regular field inspections and reviews.

- Perform concrete testing such as air content and slump.
- Perform inspection on such construction items as culverts, sewers and drainage structures, base or surface course, guardrail placement, bridges, sodding and seeding, erosion control, and pavement patching.
- Monitor/inspect construction projects to maintain contract compliance.
- Perform various tests on concrete or bituminous paving materials to assure quality control specifications are met.
- Confer with personnel employed by contractors, public utilities, city/county engineering departments, or consultants regarding coordination of construction project activities.
- Perform Office Technician work such as: reviewing/making out daily reports, plans, proposals, specifications, construction manuals, and contract documents; setting up, reducing, and checking field books; plotting cross sections; computing areas/volumes; preparing field books and sketches for land clearings; setting up/maintaining engineering file systems; making contractor's payments.
- Document construction progress/activities in computerized record keeping programs by maintaining detailed project records and preparing periodic reports on project progress, including materials used and test results.
- Inspect construction projects ensuring work is completed per specification, including sampling and testing materials to be used, ensuring proper certification of materials, maintaining records, preparing daily reports and project progress reports, informing supervisor of problems.
- Inspect phases of bridge, grading, and paving projects assigned.
- Prepare written inspection reports and records.
- Inspect soil erosion and sedimentation control devices.
- Perform wage rate interviews on contractor's employees.
- Train seasonal and other employees.

Duty 2 **Percentage: 10**

Perform engineering technical support activities, including materials testing, inspection, and compliance. Ensure material acceptance activities are within standards and specifications. Ensure right of way permit activities are performed and are completed consistently within the Transportation Service Center (TSC), Region, and Statewide.

- Read, interpret, or explain applicable standards, technical literature, regulations, plans, and specifications.
- Complete necessary paperwork for material inspection and compliance.
- Perform aggregate gradation testing, density testing, and concrete testing.
- Perform Independent Assurance Testing relating to all testing on federal aid projects.
- Perform laboratory and/or field tests and sampling on materials proposed for construction to determine compliance with specifications.
- Review and document project records for adherence to standards. Perform data collection, analysis, tabulation, and application of engineering data within specific work situations.
- Perform field reviews of permit applications for encroachment; write and issue permits and inspect permit work.
- Review and process permit applications from state agencies, private businesses, and the general public to construct within the highway right-of-way including the identifying of adverse effects of proposed construction and preparing written responses to applicants.
- Coordinate details leading to the issuance or denial of construction and utility permits.
- Understand and interpret the specifications and special provisions for materials used on state and local government jobs.
- Evaluate soils for road and foundation and make recommendations to project engineers.
- Prepare engineering drawings, charts, maps, specifications, legal descriptions, cost estimates, noncompliance notices, and relocation permits.
- Perform mathematical calculations.
- Organize and keep track of permits issued using a computer and required programs.
- Train seasonal and other employees.

Duty 3 **Percentage: 5**

Design technical and/or automated drafting activities in such specialized areas as engineering, electrical, right-of-way, cartography, or architecture for the purpose of laying out and preparing drawings of new or existing facilities, roadways, bridges, property, and maps.

- Draw architectural and engineering details of roadways, buildings, structures, topographical features, and more using computer generated techniques and programs.
- Prepare charts and graphs for the presentation of statistical data.
- Operate Global Position System (GPS) and Electronic Distance Meter (EDM) equipment to take and check measurements.
- Compute and verify mathematical data and plots same for surveys, construction centerlines, ties, and alignment data.
- Check plotted and computed data and update and correct drawings and computations.
- Prepare charts and graphs for the presentation of statistical data.
- Maintain sets of drawings, test reports, work changes, vouchers, and daily reports for projects.
- Maintain files.
- Prepare special provisions, supplemental specifications, and special details.
- Prepare plans and sketches of roadways, right-of-ways, buildings, structures, utilities, equipment and equipment adaptations, and office layouts.
- Detail grades, geometrics, drainage, utilities and structures and compute necessary dimensions.
- Plot and display physical, cultural, and geographic features.
- Delineate boundaries according to legal description, date, means of acquisition, restrictions, sales of excess, and other miscellaneous data.
- Perform freehand sketching, lettering, pencil layouts, and ink work on engineering charts and graphs.
- Determine materials necessary to meet planning criteria and coordinate the work and changes with the construction staff and others, as necessary.
- Train seasonal and other employees.

Duty 4 **Percentage: 5**

Traffic technical activities designed to enhance highway safety and user efficiency through the collection, analysis, and application of traffic and highway safety data and principles to specific traffic control, signing, signaling, and marking situations.

- Prepare traffic plans for construction projects, including plans for both construction and permanent signs and markings.
- Conduct field investigations on problem locations, takes measurements and traffic counts, and make recommendations.
- Review traffic control set-ups for safety and compliance.
- Develop and review traffic management plans and perform traffic work zone reviews during construction. Maintain and review data as it relates to roadway maintenance activities.
- Recommend and draw up sample changes in standards and specifications for geometric design guides, signs, and signals.
- Prepare quality sheets, authorizations, and cost estimates for roadway improvements and sign/signal projects.
- Obtain field data for calculating span loading, heights, timing cycles, and electrical energy usage on electrical signal projects.
- Prepare layouts for geometric modifications to meet operational and safety requirements.
- Prepare detailed designs, drawings, or strip maps for roadway improvements and control devices.
- Recommend and prepare possible design treatments and placement of control devices.
- Perform on-site field investigations to determine the adequacy of signing and pavement marking.
- Conduct field reviews to ensure conformance to guidelines and proper installation of signing, as well as inspections during and after installation.
- Prepare computer inventory of existing and proposed signing data, quantities, and field engineering for sign upgrading contracts.
- Develop and evaluate emergency detour routes in coordination with other offices and stakeholder agencies.
- Assist in the development, field work, administration, and evaluation of pavement marking and signing contracts and contracted services.
- Review construction plans in terms of traffic operations, construction signing, geometric design, final signing, signals, and pavement marking and reflective system.
- Review maintenance of traffic plans, including field reviews with design and construction staff, and make recommendations.

Duty 5 **Percentage: 5**

Perform surveying technical work of a variety of surveying activities that provide assistance in the surveying of roads, building sites, bridges, environmental sites, and determination of land boundaries under the guidance of a professional surveyor.

- Perform a variety of survey work assignments including stacking rods; setting prisms for measurements; running rods for benches and cross section elevations; searching for section corners, property irons and survey points; and cutting brush for lines.
- Record measurements and descriptive data in various forms and formats.
- Perform calculations and computations.
- Participate in laying out grids and determining horizontal and vertical controls.
- Analyze and compare computations with standards set forth by state law or department policy.
- Document survey findings and delineation of lines and boundaries as found and set, using drawings, sketches, and inked tracings.
- Prepare topographic and contour maps of land surveyed.
- Measure distances in both metric and English units.
- Set and witness stakes, monuments, iron pins, spikes, and nails with tags for the establishment of horizontal and vertical control.
- Set monuments under the direction of a licensed land surveyor.
- Operate precise and automatic digital automatic levels, electronic total stations, and robotic total stations with data collectors and GPS receivers.
- Use an electronic data collector to record survey data.
- Record field data in field book using legible writing and directly into computer input forms.
- Maintain and clean survey instruments, tools, and vehicles.
- Train seasonal and other employees.

Duty 6 **Percentage: 5**

Educational Advancement, Career Development, Advanced Training, maintaining industry certifications, and other duties as assigned.

- 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 dealt with before.

Physical effort used to perform this job and environmental conditions of this position: May be required to work extended hours (standard work schedule 8 hours per day/5 days per week) and may work nights or other altered shift hours. Requires the ability to work in confined spaces, traverse on irregular and steep terrain and/or high structures. Requires ability to safely and properly use hazardous chemicals (storage of containers, applications requiring safety equipment respirators, hearing and eye protection, rubber gloves and protective clothing). Exposure to weather, traffic and construction hazards, noise, dirt, concrete and bituminous materials and other conditions associated with heavy construction. Overnight travel may be required. Ability to transport items weighing up to 50 lbs. This position requires possession of a valid driver's license. 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 position participates in and oversees construction and quality control inspection activities to ensure that highways, bridges, and allied transportation facilities are constructed to the plans and specifications contained in contractual construction agreements. Review and document project records for adherence to standards. Perform engineering technical support activities, including materials testing, inspection, and compliance.

This position requires possession of a valid driver's license to perform regular field inspections and reviews.

Function of the work area: Provides customer service to the public, local and contract agencies, and vendors. This includes coordinating construction projects, designing road and bridge projects, developing maintaining traffic plans, issuing permits, and evaluating and inspecting bridges and culverts. This position performs work in right of way/design development, inspection, surveying, and office work on highway and bridge program and projects, and associated transportation functions.

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's 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 associate's degree.

OR

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

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 associate's degree.

OR

Current certification in bituminous (hot mix), concrete, density testing, or aggregate gradation and three years experience equivalent to a Transportation Maintenance Worker 9 may be substituted for the associate's degree.

OR

Current certification in bituminous (hot mix), concrete, density testing, or aggregate gradation and two years experience equivalent to an Engineering Assistant may be substituted for the associate's degree.

OR

Current certification in bituminous (hot mix), concrete, density testing, or aggregate gradation 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 Associate's degree.

KNOWLEDGE, SKILLS, AND ABILITIES:
Knowledge of:
• Math.
• Proper use of equipment.
• Safety practices.
• Terminology.
• Computer input forms and proper formatting of data.
• English/metric conversion factors.

Skill in:
• Use of testing equipment.

Ability to:
• Compute areas/volumes.
• Work on high structures.
• Traverse on uneven terrain.
• Remain in a stationary position for long periods of time.
• Communicate effectively.
• Maintain favorable public relations.
• Use computer programs.
• Transport equipment/materials.
• Work under extreme weather and environmental conditions.
• Conduct tests.
• Read/interpret design/construction plans/specifications.
• Conduct field investigations/prepare recommendations.
• Maintain records.
• Prepare reports.
• Understand/carry out detailed technical instructions.
• Read/interpret design/construction plans/specifications.
• Operate equipment.

CERTIFICATES, LICENSES, REGISTRATIONS:
- Possession of a valid driver's license is required.
- Possession of Comprehensive Soil Erosion and Sedimentation Control certification of possession within 1 year of date of hire.
- Possession of 3 of 4 industry certifications (Bituminous (Hot Mix), Concrete, Density Testing, Aggregate Gradation) within 1 year of the date of hire.