

New

Ministry

Transportation and Economic Corridors

Describe: Basic Job Details

Position

Position ID

Position Name (200 character maximum)

Roadway Materials Engineer

Requested Class

Engineering & Related Level 2

Job Focus

Supervisory Level

n

Agency (ministry) code

Cost Centre

Program Code: (enter if required)

Employee

Employee Name (or Vacant)

Organizational Structure

Division, Branch/Unit

 Current organizational chart attached?

Supervisor's Position ID

Supervisor's Position Name (30 characters)

Supervisor's Current Class

Design: Identify Job Duties and Value

Job Purpose and Organizational Context

Why the job exists:

This position is responsible for and to provide support towards developing, monitoring and updating roadway related materials mix design/testing procedures, conducting field audits of paving construction materials testing to assure compliance to Department standards, and developing and updating roadway related materials specification. .

The position is expected to be the lead within the Department on matters of testing standards, protocols, and procedures for highway construction materials. It is expected that this position would provide technical leadership to industry partners in the development of new testing procedures and by providing trouble shooting services for specific materials testing and construction problems.

The incumbent undertakes these duties within the overall mandate of the Technical Standards Branch to assure quality of materials and construction and overall value for money for the Department.

Responsibilities

Job outcomes (4-6 core results), and for each outcome, 4-6 corresponding activities:

1. Develop, maintain, and enhance testing procedures and standards towards measuring the quality of highway construction materials.

Activities

- Responsible for maintaining and developing test procedures, data sheets, and report forms.
- Maintain current PC databases for the collection of construction test results and cost data such as the PCQS (Pavement Construction Quality System) data base for paving projects.
- Summarize and analyze materials testing and cost data to audit performance of Consultants in administrating contract specifications, particularly related to proper assessment of payment adjustments.
- Provide technical and instruction support to field staff in matters related to materials testing, reporting, and troubleshooting.
- Maintain Department's involvement in the Alberta Canadian Council of Independent Laboratories (CCIL), Certification Program Administration Committee (CPAC) on laboratory testing and correlations.
- Monitor construction tenders and projects on an ongoing basis as input towards the development of new or revised construction testing procedure specifications.
- Participate in the development of innovative testing procedures and quality assurance testing program requirement for new projects such as, high RAP mixes, balanced mix designs, design build and P3's.
- Provide support in managing IRI smoothness QA data from Department construction projects.

2. Conduct Audits of Department Construction Grading, Base and Paving Projects

Activities:

- Grading and Base projects - Review field practices, construction monitoring and specification enforcement. Advise Project Sponsor of any non-compliance that needs to be rectified and/or communicated to the Consultant. Review test results to ensure specification limits and tolerances are appropriate. Analyze if any specification or guideline changes are required to address issues.
- Asphalt paving projects - Review field practices, including QA testing, construction monitoring and end product specification enforcement. Advise Project Sponsor of any non-compliance that needs to be rectified and/or communicated to the Consultant. Review and analyze mix designs and QC/QA test results to ensure specification limits and tolerances are appropriate. Analyze if any specification or guideline changes are required to address issues.
- Submit project audit reports for each site visit.
- Participate in full engineering audits as required.
- Review tenders for conformance to specifications, specification amendments, or new standard special provisions and review with Roadway Construction Specialist as required, and advise Project Sponsor of non-compliance.

3. Assist in developing, maintaining, and enhancing roadway-related materials specifications procedures for use on Department projects.

Activities

- Review materials testing procedures on an as-required basis to implement new technological trends or address deficiencies.
- Evaluate new roadway materials, assess suitability and develop specifications or procedures as required.
- Update construction specifications to be consistent with current standard (ASTM or AASHTO)
- Review specifications used by other agencies or within the department (bridge or maintenance) for possible revisions to the Highway construction specifications.
- Update Department Manuals and Technical Bulletins as required.
- Where appropriate, develop or update construction specifications on other road-related construction materials or activities not directly related to surfacing materials (i.e. guardrail materials and installation, testing of painted lines, etc.).

4. Investigate new technologies and materials.

Activities

- Participate in Product Review Committee by reviewing new product submissions for compliance to specifications, providing recommendations with regards to acceptance, and attending quarterly meetings.
- Conduct performance evaluations of materials to assess suitability for the Department's needs and prepare technical reports to disseminate information.
- Assist in the development and participate in long term monitoring programs for trial sections, either initiated by the Department, Consultants or Industry.
- Assist in the development of specifications, technical bulletins or design standards for the implementation of new technologies or materials.

5. Provide technical support of technology pertaining to pavement materials.

Activities

- Provide expert advice to internal and external clients and stakeholders (e.g. regarding specification interpretation questions, general construction inquiries, other agency questions on specifications, and use of various technologies)
- Partner with others in and outside of the section, Department and other external agencies and suppliers to develop new specifications, discuss current practices, and share knowledge.
- Investigate pavement material failures or performance problem areas.
- Where appropriate, author or co-author papers and/or presentations dealing with new technologies or products implemented by the Department.

Problem Solving

Typical problems solved:

Provides input to management on issues related to the quality of the delivery of the Departments quality assurance materials testing procedures and program on construction projects.

- Primary developer of testing standards that would provide longer pavement life and/or potentially reduce maintenance, preservation and rehabilitation costs.
- Provides input related to development of new pavement materials criteria and testing standards
- Plans, monitors construction of trial sections, does long term monitoring, and formally documents performance results of trial sections utilizing new technologies or new materials to inform specification changes.

Types of guidance available for problem solving:

- Current test procedures and specifications review
- Analysis of past results and life cycle costs analysis
- Literature reviews
- Jurisdictional scans and discussions with peers in other jurisdictions
- Discussion with supervisor

Direct or indirect impacts of decisions:

- Impacts the Departments practices (standards/test procedures) related to pavement materials engineering,
- Impacts material specification development and utilization of specifications within the Department and by the consultants and contractors.

Key Relationships

Major stakeholders and purpose of interactions:

- Ongoing contact with consultants and suppliers during construction season to follow up on testing, sampling and any asphalt related issues.
- Monthly or more frequent contact with regional Department staff and consultants to coordinate site visits/inspections during construction season.
- Monthly or more frequent contact Contact with other jurisdictions to compare practices and specifications as required (responding to inquiries, or approaching other jurisdictions for details on their current practices).
- Ongoing contact with regional staff to deal with pavement material issues during various stages of design and construction (design, tender preparation, construction and post-construction)
- Continuous discussions with the team members by fostering team values through thoughtful and respectful communication, where collaboration thrives when ideas are shared with awareness of their impact on team members, Department staff, Consultants, and the Department.

Required Education, Experience and Technical Competencies

Education Level	Focus/Major	2nd Major/Minor if applicable	Designation
Applied Degree	Engineering	Other	Other

If other, specify:

Preferably Civil Engineering; P.Eng. or P.L. Eng. is desirable

Job-specific experience, technical competencies, certification and/or training:

- Knowledge of pavement materials and mix design characteristics
- Knowledge of highway construction test methods and specifications
- Knowledge of pavement construction methods
- Knowledge of asphalt rheology
- Class 5 Driver's License
- Advances computer skills in database and spreadsheet applications
- Knowledge of statistical methods
- Strong written and verbal communication skills
- Ability to work as a part of a team of engineers and technologists.
- Ability to deal with stakeholders in a business-like and courteous manner.
- Eligibility for registration as a member of APEGA, P.Eng. or P.L. Eng. is desirable.

Behavioral Competencies

Pick 4-5 representative behavioral competencies and their level.

Competency	Level A B C D E	Level Definition	Examples of how this level best represents the job
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