

**BENCHMARK POSITION DESCRIPTION – BM #40
MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE**

1. POSITION TITLE Geotechnical Design Engineer	2. CLASSIFICATION LEVEL LSO 3
3. DIVISION Highways	4. BRANCH Regions
5. IMMEDIATE SUPERVISOR Sr. Geotechnical Liaison Engineer	6. LOCATION Various

Program Function	Describe the purpose of the program and organization in which the position operates.
-------------------------	--

The primary functions of the Engineering Branch are to provide a complete range of services in highway survey, highway design, traffic design, consultant design liaison, highway and traffic design audit, safety audit, engineering plan preparation and general engineering services to the Region. The Regional Geotechnical and Materials Engineering program project manages and/or provides all geotechnical, geological, terrain analysis, materials and pavement engineering services to the Region. The program also provides quality management and assurance functions including review of work by others.

Purpose of Position and Summary of its Functions	This may be used for POSTING purposes.
---	--

The primary function of this position is to provide advanced geotechnical/geological and pavement design work for highways, highway structures and related land use applications. The position also carries out planning and programming associated with the assembly of a multi year resurfacing program. The position selects and recommends the engagement of licensed professional engineering consultants, and provides professional expert advice in the development, implementation and maintenance of standards and specifications for regional pavement design and materials evaluation.

Organizational Structure and Working Environment	
---	--

The Geotechnical Engineering Section is one of several engineering disciplines under the direction of the Regional Manager, Engineering. This position reports directly to the Sr. Geotechnical Liaison Engineer. Within the section are functional groups which may include: rockwork, geotechnical engineering design, roadway structural (pavement) design, aggregate resources, field operations and materials engineering.

Position's Specific Functions and How They Are Performed	
---	--

- 1. 25% Provides advanced geotechnical/geological and pavement design work for highways, highways structures and related land use applications by:**
- Acting as the principle design engineer to carry out detailed foundation designs for bridges and other complex structures
 - Conducting geological assessments, stability analysis, and determining and documenting the extent and scope of geotechnical investigations
 - Analyzing complex data, interpreting the results of the analysis and recommending designs
 - Assessing consultant's plans, specifications and completed drawings recommending remedial solutions as needed
 - Testing and adapting new technology
 - Producing remedial designs utilizing state-of-the-art techniques
 - Revising designs published in scientific journals to meet with new data or to conform with field performance as identified through field trials, observations and/or laboratory analysis
 - Designing programs to produce conceptual models applicable to highway infrastructure designs or land use applications
 - Preparing detailed analytical reports and giving direction to in-house technical staff, private licensed professional consultants and contractors

BENCHMARK POSITION DESCRIPTION – BM #40
MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE

2. 25% Carries out planning and programming associated with the assembly of a multi-year regional resurfacing program by:

- Ensuring the Pavement Management System data is complete, accurate and up to date
- Determining the appropriate extent of Resurfacing Program projects and recommending approval
- Determining alternative rehabilitative strategies and recommending acceptance of these strategies
- Determining if any deviations from current standards or specifications are required and recommending for approval
- Ensuring the utilization of state-of-the-art technology and procedures, and new and experimental materials and mix designs

3. 25% Identifies, selects and recommends the engagement of professional engineering consultants to carry out pavement and geotechnical investigations and produce designs by:

- Determining and documenting the extent and scope of work required for engineering assignments
- Reviewing and evaluating the professional expertise of private licensed professional engineering consultants
- Preparing invitations for proposals and reviewing preliminary reports on designs, construction methodology, cost estimates and feasibility
- Advising and providing guidance to consultants on the application of existing or new models, policies, standards or specifications in geotechnical/geological engineering
- Selecting firms, preparing terms of reference, drafting acceptance for the Manager and negotiating fees
- Monitoring and reviewing work done and altering or changing methodology, design or construction process as required

4. 10% Provides expert professional advice in the development, implementation and maintenance of regional pavement design and materials evaluation standards and specifications by:

- Developing standard testing and design methods for a variety of applications
- Assembling and interpreting a wide variety of data
- Establishing and directing a program to monitor seasonal strength loss and reporting the results
- In concert with others, establishing and implementing methods and specifications for: pavement conditions surveys, prioritizing pavement rehabilitation/resurfacing projects, identifying and making recommendations for the solution of pavement service problems

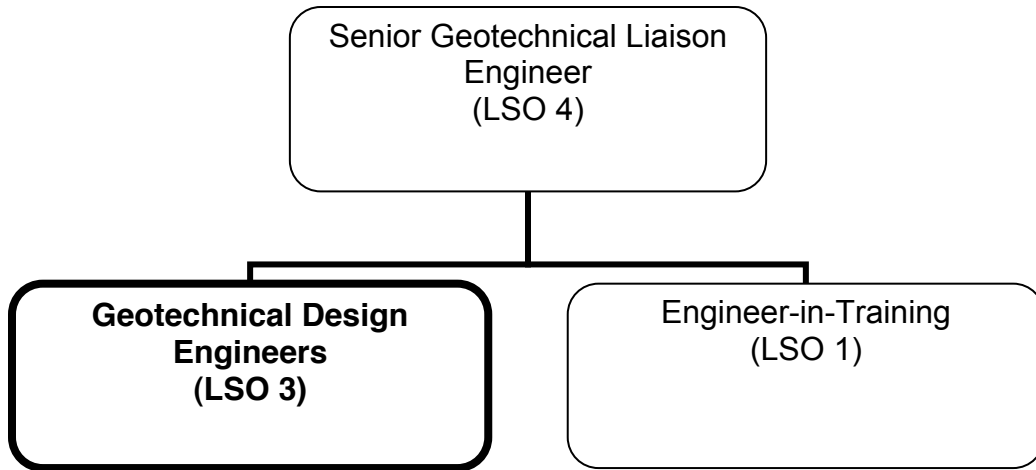
5. 10% Responds to inquiries and provides direction to private licensed professional consultants, contractors, other ministries and ministry staff by:

- Providing geotechnical advice
- Clarifying issues related to project design, investigation and/or construction
- Advising clients on the interpretation of standards, specifications, contract administration and the evaluation of results
- Providing direction on the development of terms of reference, methodology development and contract administration
- Providing technical supervision and mentoring to junior engineers and technicians

6. 5% Performs other related duties

**BENCHMARK POSITION DESCRIPTION – BM #40
MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE**

ORGANIZATION CHART – GEOTECHNICAL DESIGN ENGINEER



**BENCHMARK CLASSIFICATION RATIONALE – BM #40
MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE**

TITLE: Geotechnical Design Engineer

LEVEL: LSO 3

DIVISION/BRANCH: Highways/Regions

FACTOR	POINTS
<p><u>PURPOSE OF POSITION</u> The position provides advanced geotechnical/geological and pavement design work for highways, highway structures and related land use applications. The position also carries out planning and programming associated with the assembly of a multi-year Resurfacing Program, and provides technical supervision to consultant licensed professionals.</p> <p><u>KNOWLEDGE</u> The work requires a fairly broad knowledge of Geotechnical engineering with some depth of knowledge in pavement evaluation and design, terrain evaluation, groundwater hydrology and pavement structure design to provide advanced geotechnical and pavement designs.</p> <p>Rock and soil analysis and developing technical solutions where extreme variations in geology and geometry of rock or soil slopes and subsurface conditions make the work interpretive and analytical and will require judgements to be made based on considerable field experience.</p> <p>Requires registration as a Professional Engineer.</p>	<p>D(1) 113</p> <p>OR</p> <p>D(2)</p>
<p><u>JUDGEMENT</u> <u>Originality and Complexity:</u> The position undertakes reviews and assesses complex rock and soil stability issues which require making major adaptations to previously developed foundation designs, stability of rock and soil slopes and a variety of roadway structures. The work involves analyzing and interpreting complex data as the engineering properties of soils and rock are variable and difficult to assess and measure.</p> <p><u>Technical Supervision Received:</u> The completed program plans and designs are reviewed upon completion for adequacy and completeness although the technical details are not checked.</p>	<p>C2 86</p>
<p><u>ORGANIZATION AND PROGRAM ROLE</u> While the primary role of the position is to provide advanced geotechnical design work and expert professional advice, the position also provides technical supervision to private consultant licensed professionals on various geotechnical design projects.</p>	<p>III(b) 50</p>
<p><u>ADMINISTRATIVE SUPERVISORY RESPONSIBILITY</u> The position does not administratively supervise any ministry staff.</p>	<p>0</p>

TOTAL POINTS 249

LEVEL	POINT RANGE
1	168 – 203
2	204 – 237
<u>3</u>	<u>238 – 267</u>
4	268 – 295
5	296 – 365