

POSITION TITLE:	Bridge Design Technician	POSITION NUMBER(S):	00042093
DIVISION: (e.g., Division, Region, Department)	Southern Interior Region		
UNIT: (e.g., Branch, Area, District)	Engineering	LOCATION:	Kamloops
SUPERVISOR'S TITLE:	Bridge Consultant Liaison Engineer	POSITION NUMBER:	New Position
SUPERVISOR'S CLASSIFICATION:	Licensed Science Officer (LSO) 4	PHONE NUMBER:	
FOR AGENCY USE ONLY		NOC CODE:	
APPROVED CLASSIFICATION:	STO 21	CLASS CODE:	
ENTERED BY:		PHONE NUMBER:	

PROGRAM (OPTIONAL)

Bridge Engineering Section provides engineering services, technical advice and recommendations and policy compliance monitoring with respect to the design, construction, inspection rehabilitation and maintenance of bridges and other structures for the Provincial highway system. These services are provided using both in-house staff and outside consultants. These services are provided primarily to support projects and programs carried out by the Southern Interior Region but may also be provided to other Provincial Regions as and when required.

PURPOSE OF POSITION

Under the direction of the Bridge Consultant Liaison Engineer, the position independently produces complete contract documents, completes material take-offs, quantity calculations and construction cost estimates and performs complex mathematical calculations related to the design and construction of bridges and other structures. The position assists the Bridge Consultant Liaison Engineer to ensure compliance with Ministry policies, guidelines, standards and other requirements and assists in the liaison between the Ministry and its consultants. The position assists the Regional Bridge and Structural Engineers to produce contracts documents for the rehabilitation of existing structures, as well as, inspection and preparation of reports relating to other highway structures. The position also manages the regional bridge drawing filing system and the regional design and construction cost estimating data base.

NATURE OF WORK AND POSITION LINKS

The Bridge Engineering Section is part of the Engineering Branch of the Southern Interior Region. The Bridge Consultant Liaison Engineer reports to the [Manager, Bridge and Structural Engineering](#) who reports to the Regional Manager Engineering.

The Bridge Design Technician is one of two positions reporting to the Bridge Consultant Liaison Engineer, LSO 4. The second position is the Assistant Bridge Consultant Liaison/Design Engineer, LSO 3.

SPECIFIC ACCOUNTABILITIES / DELIVERABLES

A. DESIGN

1. Acts as bridge/structural design technician by providing technical expertise and assistance to the design

engineers in carrying out complete and detailed designs of bridges, retaining walls, culverts and other structures by:

- participating as a member of the project team;
- conducting site visits with design team prior to design to review options and determine site requirements;
- reviewing and evaluating unusual project conditions which may impact design options, project costs or project scope. Investigate and recommend the type and location of practical bridge options by producing preliminary design/layout of bridges. Use preliminary design/layout to determine preliminary cost estimates and design options. Distribute information to other ministry branches and outside agencies as required;
- gathering pertinent design information as required from other Ministry branches, outside agencies and others. Critically review and assess information for required content and correctness. Perform design calculations as required to complete review and assessment of design information. Determine impacts on bridge design and constructability. Propose alternatives where required to achieve project objectives;
- gathering, reviewing and evaluating geotechnical, hydraulic and environmental reports. Interpret recommendations and incorporate into design.
- preparing Navigable Water Protection Act applications for Regulatory Liaison Officer;
- preparing preliminary General Arrangement Drawings and distribute to participating environmental, utility and other agencies and stakeholders.
- estimating costs and preparing budgets and schedules for the production of contract documents;
- negotiating internal contracts with Project Managers to fund work on projects,
- interpreting engineers' design briefs and calculations and incorporating design requirements into contract documents;
- designing and producing details for bridge and structures design as directed by the engineer. Perform design tasks and prepare calculations and sketches for review by the principal design engineer and others as required;
- providing technical input and advice to engineers and project managers regarding bridge details, drafting standards and other requirements;
- researching files and assessing previous designs and details used on past projects for use on current projects. Make recommendations on suitability or recommend modifications to details where required;
- evaluating specifications and design information from Ministry publications, design codes and suppliers for inclusion in design;
- assisting in the resolution of technical details/issues by researching and gathering information related to new construction or rehabilitation for bridge railings, deck drains, deck joints, bridge approach barrier flares etc. Evaluate options and make recommendations regarding such things as availability, construction methods and costs;
- calculating and checking horizontal and vertical road design information and calculating all bridge geometry as required to construct the project;
- compiling construction and material specifications for contract specifications/special provisions;
- calculating material quantities and preparing construction cost estimates. Research and evaluate previous contracts for pricing and determine suitability of use in current cost estimate. Liaise with contractors, suppliers and others as required to obtain cost information;
- reviewing progress and final drawings and documents with Bridge Design Engineer;
- carrying out checks on design work and calculations prepared by others;
- other related duties.

B. CONTRACT DRAWING PRODUCTION.

1. Acts as principal structural draftsman for the production of complete tender and contract drawings for the construction and rehabilitation of bridges, retaining walls, culverts and other structures by:
 - preparing detailed engineering drawings of bridges and related structures for use as tender and contract

- documents using current computer aided design and drafting packages;
- interpreting engineer's design briefs, memos and sketches prepared by the engineer and incorporating all requirements into the drawings;
 - determining the layout of information and the information requirements for each drawing based on the Ministry Standards for structural drawing preparation;
 - determining number of views, sections, details and appropriate scales required to clearly and completely illustrate the bridge components and materials to be used.
 - preparing detailed design drawings for concrete, steel and timber bridges and other structures;
 - ensuring appropriate and timely distribution of progress and completed contract drawings;
 - reviewing and carry out complete drawing checks on documents prepared as well as on documents prepared by others;
 - other related duties.

C. CONSTRUCTION

1. Acts as bridge/structural design technician and structural draftsman by providing technical expertise and assistance to the design engineers in overseeing and evaluating bridge design projects (construction engineering services) to ensure adherence to Ministry guidelines, standards, and specifications and conformance to Ministry policies and objectives by:
 - producing deck screed elevation sheets by calculating final design deck elevations over superstructure components, Evaluate field survey information to determine conformity with design and assist in developing corrective measures where required to suit construction conditions;
 - reviewing and checking shop drawings and erection procedures submitted by contractors and fabricators for compliance with design drawings and sign off on behalf of the Design Engineer;
 - responding to queries from consultants, contractors, engineers and field staff on matters regarding interpretation of the bridge contract drawings.
 - preparing drawing revisions and supplementary construction sketches as required to accommodate any design changes made during construction;
 - reviewing and incorporating all field as-built information into electronic drawing files and submit as structure record drawing for microfilming/archival.
 - reviewing and analyzing site modifications and design revisions for possible inclusion in future designs and Ministry Standards. Evaluate and recommend standard upgrades and revise drafting standards for use by ministry staff, consultants or other groups.
 - liaising with other Ministry branches and/or consultants for information pertinent to the project;
 - reviewing and evaluating material, product or supplier information to determine conformance to design requirements;
 - carrying out site visits during construction to review and assess design and detail revisions and make recommendations. Carry out site inspections as required to determine conformance with design details;
 - carrying out reviews and checks on work and calculations performed by others.
 - other related duties.

D. CONSULTANT LIAISON

1. Assists the Bridge Consultant Liaison Engineer in overseeing and evaluating bridge design projects carried out by consultant engineers to ensure adherence to guidelines, standards and specifications and conformance to Ministry policies and objectives by:
 - participating as a member of the project team;
 - preparing invitations for proposals from consultants for the preparation of designs and contract documents for bridges and other structures;
 - coordinating input from other participating Ministry Engineering Branches, Environmental Services, Property, Regional Branches and other agencies and officials to ensure that design assignments address the concerns of all affected disciplines;
 - reviewing consultants' proposals and drawings for ministry requirements and standard engineering

practices;

- reviewing and assessing consultant submissions to ensure conformity with Ministry Standards and objectives. Identify deficiencies, errors or omissions and make recommendations for remedial solutions;
- assisting with response to requests by consultants for information/advice on bridge engineering, drafting standards and other pertinent information. Liaise with other Ministry branches to gather required input as required;
- researching and evaluating past project files for contractual information or identical or similar bridge/structural work to confirm costs and schedule estimates;
- assisting in evaluating the need for and preparing amendments to consultant contracts as required by unforeseen circumstances and/or omissions;
- assisting in the preparation of reports Project Managers on project progress, costs and solutions to bridge /structure design problems.
- participating in agency, municipal, utility and/or public meetings to communicate Ministry bridge/structure design proposals and activities and to assist in the coordinated development of designs and other project related duties.

E. OFFICE TECHNICAL SUPPORT AND OTHER RELATED DUTIES

As a regional bridge team member, assist regional and provincial bridge group in maintaining its “knowledgeable owner” status by:

1. Bridge Drawing Filing System

- compiling and distributing all pertinent bridge information for the Provincial Bridge Index Computer Program including bridge number, region, district, location, consultant technical information, drawings, shop drawings and as build information;
- ensuring that all relevant drawings are submitted from regional projects for micro-filming;
- ensuring that all electronic files are properly archived;
- responding to queries from other regions, districts and consultants for the coordination and distribution of existing drawing information.

2. Design and Construction Information Database

- assisting in the start-up and maintenance of a computerized filing system to be used as a database for consultants design budgets, work performance expenditures and project schedules.
- assisting in the start-up and maintenance of a computerized filing system to be used as a database for construction budgets, work performance expenditures and project schedules.
- responding to queries from other regions, headquarters, districts and consultants for the coordination and distribution of existing information.

3. Provincial Bridge and Structures Standards

- assisting the Standards Committee in formulating and revising bridge drafting and design standards;
- investigating and evaluating new products and practices for suitability, availability, costs, etc.

4. Office IT Support

Provides advice and support to the bridge and structures group for computer hardware/software related issues by:

- acting as the Work Group Administer for the business unit;
- reviewing purchases and testing new or upgraded software;
- setting up and maintaining plotters, printers, copiers etc. to reflect changes in software or bridge groups procedures;
- liaising with Headquarters and region on long term archival of electronic and paper media.
- other related duties.

5. Continuous Development

- participating in technical workshops and seminars;

- researching and compiling technical information related to bridge/structure design and construction;
- participating in the exchanging ideas and information at technical meetings and conferences;
- mentoring and overseeing work of junior staff.

FINANCIAL RESPONSIBILITY

DIRECT SUPERVISION (i.e., responsibility for signing the employee appraisal form)

Role	# of Regular FTE's	# of Auxiliary FTE's
Directly supervises staff		1
Supervises staff through subordinate supervisors		

PROJECT /TEAM LEADERSHIP OR TRAINING (Check the appropriate boxes)

Role	# of FTE's	Role	# of FTE's
Supervises students or volunteers <input type="checkbox"/>		Provides formal training to other staff <input type="checkbox"/>	1
Lead project teams <input type="checkbox"/>		Assigns, monitors and examines the work of staff <input type="checkbox"/>	1

SPECIAL REQUIREMENTS

TOOLS / EQUIPMENT

WORKING CONDITIONS

WORK EXAMPLES

COMMENTS

PREPARED BY

NAME:	DATE:	
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EXCLUDED MANAGER AUTHORIZATION

I confirm that:

1. the accountabilities / deliverables were assigned to this position effective: (Date).
2. the information in this position description reflects the actual work performed.
3. a copy has / will be provided to the incumbent(s).

NAME:

SIGNATURE:

DATE:

SELECTION CRITERIA

EDUCATION, CERTIFICATION, EXPERIENCE AND/OR TRAINING REQUIREMENTS

Grade 12 graduation and 6 years related experience or BCIT (or equivalent) Diploma in Civil and/or Structural Technology or Structural Drafting with 4 years of related experience. Related experience includes experience with bridge structural technology, bridge drawing preparation and manufacture and erection of bridge components.

Must Possess and maintain a valid Class 5 driver's license

B. RATED QUALIFICATIONS (Criteria which will be tested by Oral interview questions, written exams, practical tests, and past work performance checks)

KNOWLEDGE, SKILLS AND ABILITIES REQUIREMENTS

- Bridge structural technology/drafting technology
- Properties of materials used in bridge construction
- Fabrication and erection methods applied to bridges
- Codes, specifications, standards and engineering drawings
- Computer software including AutoCAD/CAD systems, word processing and spreadsheets
- Fundamental knowledge of the preparation of contract documents

SKILLS AND ABILITIES

- Work independently
- Deal tactfully with members of the public, colleagues and government agencies
- Effective oral and written communication skills
- Interpret specifications, standards and engineering drawings
- Prepare technical reports, drawings, cost estimates and other administrative reports
- Strong computer hardware/software skills, and working knowledge other related document production equipment

COMPETENCIES

Thinking Capabilities –Managing Organizational Resources, Problem Solving and Judgement

Self Management – Results Orientation, Expertise, Integrity

Social Awareness – Teamwork and Cooperation, Service Orientation, Information Seeking

ORGANIZATIONAL CHART

Deputy Minister

Assistant Deputy Minister, Highways Department

Regional Director, Southern Interior Region, 00040754

Regional Manager, Engineering, Business, 00040774

Manager, Bridge and Structural Engineering, LSO 5, 00053084

Bridge Consultant Liaison Engineer, LSO 4,

Bridge Design Technician, STO 4, 00042093