



**Section 200**  
**Design Process and Quality Management**

Engineering Branch

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## **201 INTRODUCTION TO DESIGN PROCESS**

### **201.1 ABOUT SECTION 200**

Section 200 provides guidelines for maintaining a consistent approach in preparing and submitting designs and data. All pre-requisite steps and procedures for Ministry Reviews, Acceptance and/or Approvals are also described.

### **201.2 BEFORE YOU BEGIN**

- .1 Designers shall be fully aware of the requirements of this manual as well as all associated Technical Bulletins, prior to preparing a design.
- .2 A number of different fields of engineering are covered in this document (e.g., electrical, traffic, civil, structural, etc.). Agencies preparing designs must be competent in the fields of engineering required. Professional Engineers are required to sign and seal all drawings, specifications and reports submitted to the Ministry as per the Engineers and Geoscientists Act.
- .3 All design submissions and revisions shall be in strict accordance with this section unless otherwise indicated by the Ministry Representative.
- .4 Design agencies shall have an in-house Quality Management program in place prior to preparing any designs or data. Failure to maintain an effective in-house Quality Management Plan shall result in poor performance ratings in the Consultant Performance Evaluation process and will affect future project work for the design agency.

### **201.3 MINISTRY REFERENCE STAFF**

- .1 Designers shall determine the following key Ministry project team members prior to proceeding with the design:
  - .1 Ministry Electrical Representative
  - .2 Regional Traffic Engineer
  - .3 Manager, Electrical Services

### 201.4 TYPES OF DESIGN

- .1 The intention of this manual is to document the design process required for all of the different types of designs performed by in-house and external consultants. The types of projects and a brief description of each are as follows:
  - .1 Ministry Internal Work – External Design Contract
    - .1 The Ministry will identify the scope of the work and be responsible for engaging a design agency to perform the work. The work may include some geometric, sign and pavement marking design, traffic volume collection, traffic signal design, traffic signal plan development, construction engineering services and record drawings. The Ministry will provide consultant performance reviews, approvals and/or acceptance at various stages of the project as described later in this section. This work also includes projects where the electrical and traffic design work is part of a Major Project.
  - .2 Municipal or Developer Driven Work
    - .1 The Ministry identifies the scope of the work with the municipality or developer. The developer is responsible for engaging a design agency to perform geometric, sign and pavement marking design, traffic volume collection, traffic signal design, traffic signal plan development, construction engineering services and record drawings. The Ministry will provide approvals and/or acceptance at various stages of the project as described later in this section.
  - .3 Design/Build Project
    - .1 The Ministry will identify the scope of the work and be responsible for engaging a Design/Build Agency. The agency is responsible for engaging a designer to perform geometric, sign and pavement marking design, traffic volume collection, traffic signal design, traffic signal plan development, construction engineering services and record drawings. The Ministry will provide compliance audits, consultant performance evaluations and approvals and/or acceptance at various stages of the project as described later in this section.

### 201.5 GENERAL DESIGN PROCESS

- .1 Ministry of Transportation Internal Work – External Design Contract

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- .1 The Ministry prepares a scope of work for the assignment, prepares and signs off design criteria. The assignment shall generally be outcome based. The details of how to perform the outcome are left to the design agency subject to key acceptance checks by the Ministry.
- .2 The Ministry shall prepare a *Terms of Reference* for the work and engages a design agency to perform the assignment.
- .3 The design agency prepares a geometric, signing and pavement marking layout for the project.
- .4 The design agency arranges to do a traffic count for any traffic signals required.
- .5 The design agency arranges to obtain a *Drawing Series* number from the Ministry for any electrical work required.
- .6 The design agency prepares a *Traffic Engineering Checksheet* and preliminary *Traffic Signal Timing Plans* for any Traffic Signals on the project.
- .7 The Ministry accepts (or returns for modifications) the *Traffic Engineering Checksheet*.
- .8 The design agency proceeds with the electrical/traffic design and submits signed and sealed drawings and specifications as well as all information required in the *Electrical Design Submission* to the Ministry Electrical Representative.
- .9 The design agency prepares new *Traffic Signal Timing Plans* and submits signed and sealed *Traffic Signal Timing Plans*; signed and sealed geometric, signing and pavement marking drawings; and all other information required in the *Traffic Design Submission* to the Ministry Electrical Representative
- .10 The Ministry accepts the electrical and traffic design submitted by initialing the *Design Acceptance* form. (The Ministry will not perform detailed reviews of all designs but rather perform audits on selected projects).
- .11 The Ministry and design agency complete a *Consultant Performance Evaluation* form for this design stage of the project. Payment to the design agency is withheld until this evaluation is complete.
- .12 The Ministry arranges to tender the project work.
- .13 The Ministry will call on the design agency to provide construction engineering services as and if necessary.
- .14 The design agency shall provide construction services as requested.

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- .15 The Ministry and design agency shall complete a *Consultant Performance Evaluation* form for the construction services stage of the project.
  - .16 Within 30 days of the completion of the project, the design agency shall coordinate the collection of and submit completed signed and sealed record drawings for the project to the Ministry Electrical Representative.
  - .17 The Ministry and design agency shall complete a *Consultant Performance Evaluation* form for the record drawing stage of the project.
- .2 Municipal or Developer Driven Work
- .1 The Developer or Municipality submits their proposal and gets approval on an appropriate preliminary scope of work with the Ministry District office.
  - .2 The Developer/Municipality engages a design agency to perform the assignment.
  - .3 The design agency prepares a geometric, signing and pavement marking layout for the project.
  - .4 The design agency arranges to do a traffic count for any traffic signals required.
  - .5 The design agency arranges to obtain a *Drawing Series* number from the Ministry for any electrical work.
  - .6 The design agency prepares a *Traffic Engineering Checksheet* and preliminary *Traffic Signal Timing Plans* for any Traffic Signals on the project.
  - .7 The Ministry accepts (or returns for modifications) the *Traffic Engineering Checksheet*.
  - .8 The design agency proceeds with the electrical/traffic design and submits signed and sealed drawings and specifications as well as all information required in the *Electrical Design Submission* to the Ministry Electrical Representative.
  - .9 The design agency prepares new *Traffic Signal Timing Plans* and submits signed and sealed *Traffic Signal Timing Plans*; signed and sealed geometric, signing and pavement marking drawings; and all other information required in the *Traffic Design Submission* to the Ministry Electrical Representative.
  - .10 The Ministry accepts the electrical and traffic design submitted by signing the *Ministry Electrical Design Acceptance* form and initialling the *Traffic Signal Timing Sheet*. (The Ministry will not perform detailed

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reviews of designs but rather perform audits on selected projects; poor ratings on audits shall impact future consultant selections on Ministry work).

- .11 The signed drawings are returned to the Municipality/Developer which arranges to tender the project work.
- .12 Construction engineering services and completion of record drawings are the responsibility of the Municipality/Developer.
- .13 The Municipality/Developer arranges to submit Record Drawings within 30 days of completion of the construction work prior to any holdbacks and/or performance bonds being released.
- .14 Note: the process outlined above for Municipality/Developer work is a summary of the design component of the project. The reader is advised to consult the *Developer Information Sheet – Traffic Signal and Street Lighting Projects* located in Appendix 200 for a more complete list of the process, roles and responsibilities.

### .3 Design/Build Work

- .1 The Ministry prepares a scope of work for the assignment and prepares and signs off a design criteria. The assignment shall generally be outcome based. The details of how to perform the outcome are left to the Design/Build Agency subject to key acceptance checks by the Ministry.
- .2 The Ministry shall prepare a *Terms of Reference* for the Design/Build project and engages a Design/Build Agency to perform the assignment.
- .3 The design agency prepares a geometric, signing and pavement marking layout for the project.
- .4 The design agency arranges to do a traffic count for any traffic signals required.
- .5 The design agency arranges to obtain a *Drawing Series* number from the Ministry for any electrical work required.
- .6 The design agency prepares a *Traffic Engineering Checksheet* and preliminary *Traffic Signal Timing Plans* for any Traffic Signals on the project.
- .7 The Ministry accepts (or returns for modifications) the *Traffic Engineering Checksheet*.
- .8 The Design/Build Agency proceeds with the electrical/traffic design and submits signed and sealed drawings and specifications as well as all

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- information required in the Electrical Design Submission to the Ministry Electrical Representative.
- .9 The Design/Build Agency prepares *New Traffic Signal* timing plans and submits signed and sealed traffic signal timing plans; signed and sealed geometric, signing and pavement marking drawings; and all other information required in the Traffic Design Submission to the Ministry Electrical Representative.
  - .10 The Ministry performs compliance audits on the electrical and traffic design submitted. (The Ministry will not perform detailed reviews of designs but rather perform audits on selected components). The Design/Build Agency must correct any deficiencies identified in the audits.
  - .11 The Design/Build Agency arranges for construction.
  - .12 The Design/Build Agency arranges for the ordering of a traffic controller cabinet/modifications through the Ministry Electrical Representative.
  - .13 The Design/Build Agency provides construction engineering services as necessary.
  - .14 Within 30 days of the completion of the project, the Design/Build Agency shall coordinate the collection of and submit completed signed and sealed record drawings for the project to the Ministry Electrical Representative.

## 202 TRAFFIC AND ELECTRICAL DESIGNS

### 202.1 GENERAL

- .1 This chapter covers the general guidelines for traffic and electrical designs.
- .2 The Ministry will not accept drawing/specifications submissions that do not meet the requirements listed in this section. As such, the Ministry will only accept 100 percent submissions signed and sealed by a qualified professional engineer.
- .3 If the consultant wishes to confirm scope of work issues or obtain Ministry feedback on particular design issues, they shall arrange for a meeting with the Ministry. At this meeting, the consultant shall present their issues and the Ministry shall provide verbal feedback. It is the responsibility of the consultant to summarize and record any decisions made at this meeting and include this in the design folder for the project. ***The Ministry shall not provide written feedback on any drawings that are not signed complete submissions.***
- .4 The responsibility for performing the traffic and electrical design rests with the consultant. The Ministry shall only perform the following functions:
  - .1 Accepting and signing the final section of the *Traffic Engineering Checklist* form prior to the start of the electrical design;
  - .2 Accepting and signing the *Ministry Electrical Design Acceptance Form* for all final signed and sealed electrical drawings.
  - .3 Accepting and distributing all final signed and sealed *Traffic Signal Timing Plans*
  - .4 Performing *Consultant Performance Evaluations* of the design consultant and performing quality audits on selected projects
- .5 The Ministry shall provide feedback on all submissions within two weeks provided all appropriate documentation is submitted as a complete package. Submissions that are incomplete or fragmented will not be accepted by the Ministry and must be completed and resubmitted by the design agency. The Ministry will not be responsible for locating any missing documentation.
- .6 *Traffic Engineering Checksheets* that have *not* been signed by a Ministry Regional Traffic Engineer; or design drawings that have *not* been accepted by the Ministry representative (via an accepted *Ministry Electrical Design Acceptance* form) shall ***NOT BE USED FOR CONSTRUCTION.***

## TRAFFIC AND ELECTRICAL DESIGNS

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- .7 The Ministry supplies traffic controllers or arranges to modify existing traffic controllers for all Ministry projects. The costs for this work shall be paid by the Developer/Municipality or Design/Build Agency. Contact the Ministry Electrical Representative to obtain a quote on traffic controller work and to make arrangements for payment. In order to provide a new controller or modify an existing one, the Ministry requires:
  - .1 An accepted signed and sealed electrical design,
  - .2 An accepted traffic signal timing sheet and
  - .3 A purchase order to pay for the controller /modifications.

### 202.2 DESIGNER QUALIFICATIONS

- .1 Electrical and Traffic engineering designs prepared for the Ministry must be prepared, signed and sealed by a qualified professional engineer registered with the Association of Professional Engineers and Geoscientists of British Columbia (APEGBC) and knowledgeable and experienced in traffic operations engineering.
- .2 The Ministry may request that consultants provide documentation detailing their relevant experience in traffic operations engineering or/and traffic signal design.

### 202.3 BEFORE PROCEEDING WITH DESIGN

- .1 Designers shall contact the Ministry Electrical Representative to confirm the scope of work and ensure the requirements of the project are fully understood. This is particularly important for Developer derived work where the Ministry is not directly responsible for engaging the design firm.
- .2 The designer shall ensure that the Manager, Electrical Services is solicited for any design input prior to preparing the design.

### 202.4 TRAFFIC ENGINEERING CHECKSHEET SUBMISSION

- .1 If a project entails either modifying an existing traffic signal or installing a new traffic signal, the designer shall fill out and submit a *Traffic Engineering Checksheet* for the project. Since the Ministry will be operating the traffic signal once the project is implemented, the Ministry uses the Checksheet to

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ensure that all factors associated with traffic signal designs (geometrics, signing, pavement markings, and operations) are considered in the design to ensure minimal operational issues in the future.

- .2 The consultant shall submit a hardcopy of the *Traffic Engineering Checksheet* to the Ministry Regional Traffic Engineer for their acceptance. A *Traffic Engineering Checksheet* must be completed in its entirety, and must be signed by a qualified professional engineer prior to submitting to the Ministry.
- .3 A *Traffic Engineering Checksheet* shall have attached a hardcopy drawing of a) the existing and proposed modifications to the geometrics, b) existing signing and c) existing pavement markings. In addition, a preliminary timing sheet and digital files of all Synchro analyses shall be provided. The drawings shall be signed by a qualified professional engineer when submitted. Changes to the drawings shall require a new *Traffic Engineering Checksheet* be submitted to the Ministry. Refer to the document *Traffic Engineering Checklist – How to Complete the Form* in Appendix 200 for further details on completing *Traffic Engineering Checklists*.

### 202.5 ELECTRICAL DESIGN SUBMISSIONS

- .1 Electrical designs submitted shall be 100 percent complete with any comments submitted to the designer incorporated into the design. All drawings and special provisions shall be signed and sealed by a professional engineer as per the Engineers and Geoscientists Act. Final electrical design submissions shall include the following:
  - .1 One signed and sealed hardcopy of all electrical drawings.
  - .2 One softcopy (ACAD digital files) of all electrical drawings
  - .3 One hardcopy and one softcopy (digital file) of the special provisions.
  - .4 One hardcopy and one softcopy (digital file) of the schedule of quantities and unit prices form.
  - .5 One hardcopy and one soft copy (digital file) of the Ministry Electrical Materials List.
  - .6 One hardcopy one and one soft copy (digital file) list of any specialized Ministry supplied materials such as service kiosks, sign bridges, etc.
  - .7 One hardcopy and one soft copy (digital file) of the final Class ‘A’ construction cost estimate.
  - .8 One hardcopy of the final design folder - Refer to *Clause 202.7*.

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- .9 One hardcopy and one soft copy (digital file) of the final cost sharing breakdown where applicable.
- .2 The Final electrical design package shall be submitted to the Ministry Electrical Representative.
- .3 Where deliverables are submitted as part of the Prime Consultant's package, additional copies shall be submitted directly to the Ministry Electrical Representative (typically for Internal Major Projects).
- .4 All final drawings shall be signed, dated and sealed in the appropriate areas by the Engineer of Record. The Ministry requires two sets of prints signed and sealed.
- .5 Designers are responsible for ensuring all required Ministry acceptance signatures on the *Ministry Electrical Design Acceptance* form have been obtained prior to construction.
- .6 After the project is tendered, the project designer may be requested by the Ministry Electrical Representative to revise the:
  - .1 Design drawings
  - .2 Schedule of Quantities and Unit Prices
  - .3 Materials List

### 202.6 TRAFFIC DESIGN SUBMISSIONS

- .1 Traffic designs submitted shall be 100 percent complete with any comments submitted to the designer incorporated into the design. All drawings and special provisions shall be signed and sealed by a professional engineer as per the Engineers and Geoscientists Act. Final traffic design submissions shall include the following:
  - .1 One signed and sealed hardcopy of all geometric, signing and pavement marking drawings showing any changes required as part of the project assignment.
  - .2 One softcopy (ACAD digital files) of all geometric, signing and pavement marking drawings
  - .3 One hard copy of a signed and sealed *Traffic Signal Timing Sheet*
  - .4 One soft copy (Microsoft Excel) of the *Traffic Signal Timing Sheet*
  - .5 One soft copy of the Synchro and Sim Traffic Files for the Traffic Analysis.

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- .6 One hard copy of all Synchro reports.
- .7 One soft copy (Excel) and one hard copy of the Traffic Count data conforming to the Ministry standard template. See Appendix 200.
- .8 One hardcopy and one softcopy (digital file) of any special provisions.
- .9 One hardcopy and one softcopy (digital file) of the schedule of quantities and unit prices for geometric, signing and pavement marking design.
- .10 One hardcopy and one soft copy (digital file) of any Ministry Supplied Materials List required for the traffic engineering component of the assignment.
- .11 One hardcopy and one soft copy (digital file) list of any specialized Ministry supplied materials for the traffic engineering portion of the assignment.
- .12 One hardcopy and one soft copy (digital file) list of any sign orders required for the project.
- .13 One hardcopy and one soft copy (digital file) of the final Class 'A' estimate for the traffic engineering portion of the assignment.
- .14 One hardcopy of the final traffic design folder - Refer to *Clause 202.8*.
- .2 The Final traffic design package shall be submitted to the Ministry Regional Traffic Engineer.
- .3 Where deliverables are submitted as part of the Prime Consultant's package, additional copies shall be submitted directly to the Ministry Regional Traffic Engineer
- .4 All final drawings shall be signed, dated and sealed in the appropriate areas by the Engineer of Record. The Ministry requires one set of any drawings signed and sealed.
- .5 Designers are responsible for ensuring all required Ministry acceptance sign-offs have been obtained prior to construction.

### 202.7 ELECTRICAL DESIGN FOLDERS

- .1 Electrical design folders provide relevant data and information to the Ministry Electrical Representative, aiding in any design review/compliance audit. The design folder is also used as supporting documentation in cases where legal action is brought against the Ministry/designer from motor vehicle accident

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claims. Electrical design folders are also useful when field changes are required during construction.

- .2 Electrical design folders shall be submitted with final design submissions.
- .3 Electrical design folders shall:
  - .1 Be bound or fastened.
  - .2 Have a table of contents.
  - .3 Generally follow the format of the attached sample in *Appendix 200*.
- .4 As a minimum, the electrical design folder shall contain the following:
  - .1 Title page.
  - .2 Table of contents.
  - .3 Project information sheet (Scope of Work).
  - .4 Record of key discussions. This sheet shall be used only where written confirmation cannot be obtained.
  - .5 Ministry Electrical Design Quality Review Checklist.
  - .6 *Electrical Criteria Exceptions* Sheet: This sheet shall list all deviations from the standards including why the standards were not followed and the name of the person who granted approval. If no deviations exist, the sheet shall state such. The sheet must be signed by the Engineer of Record.
  - .7 Verification of lighting levels including *Lighting Warrant Spreadsheets*.
  - .8 Relevant pictures of the site, where required.
  - .9 Key correspondence and general data. Some examples are:
    - .1 *Traffic Engineering Checksheet* (including appropriate Ministry signatures)
    - .2 Cost sharing breakdown.
    - .3 Written confirmation for hydro and telephone service locations from the utility companies including cost estimates.
    - .4 Confirmation of any potential underground or overhead utility conflicts. Provide sketches of areas of concern.
    - .5 A copy of computer aided lighting calculations demonstrating that lighting design(s) meet the appropriate Ministry lighting standards.
    - .6 Confirmation of overhead powerline clearances from poles.

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- .7 All relevant correspondence including letters, memos, etc.
- .8 A list of any items which may be of concern or cause problems during construction.
- .9 Minutes from all meetings relevant to this project.

### 202.8 TRAFFIC DESIGN FOLDERS

- .1 Traffic design folders provide relevant data and information to the Ministry Regional Traffic Engineer, aiding in any design review/compliance audit. The design folder is also used as supporting documentation in cases where legal action is brought against the Ministry/designer from motor vehicle accident claims. Traffic design folders are also useful when field changes are required during construction.
- .2 Traffic design folders shall be submitted for final design submissions only.
- .3 Traffic design folders shall:
  - .1 Be bound or fastened.
  - .2 Have a table of contents.
  - .3 Follow the format of the attached sample in *Appendix 200* for the Electrical Design Folder
- .4 As a minimum, the traffic design folder shall contain the following.
  - .1 Title page.
  - .2 Table of contents.
  - .3 Project information sheet (Scope of Work).
  - .4 Record of key discussions. This sheet shall be used only where written confirmation cannot be obtained.
  - .5 Relevant pictures of the site, where required.
  - .6 Key correspondence and general data. Some examples are:
    - .1 One hard copy of a signed and sealed complete *Traffic Engineering Checklist* (including appropriate Ministry signatures)
    - .2 Complete capacity analysis including phasing and clearance time calculations.
    - .3 The operation of any preemption should be explained and timing outlined.

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- .4 Confirm and justify any non-standard loop placement.
- .5 Requirements for interconnections must be stated. If the operation is interconnected with another signal then that operation must be outlined and all possible impacts assessed.
- .6 All relevant correspondence including letters, memos, etc.
- .7 A list of any items which may be of concern or cause problems during construction or after implementation.
- .8 Any major deviations from the standards including why the standards were not followed and the name of person who granted approval.
- .9 Minutes from all meetings relevant to this project.

## 203 SIGNING DESIGNS

### 203.1 GENERAL

- .1 Signing drawings will typically include all signs as required with the exception of temporary signs.

### 203.2 SIGNING DRAWINGS AND SPECIFICATIONS

- .1 Signs shall be shown on drawings in accordance with Section 700. Existing and new signs shall be shown. Elevation drawings and foundation design drawings will be required for all signs on custom sign bridge or cantilever structures (refer to Section 500)
- .2 All signs shall be supplied by the Contractor unless otherwise noted. Confirm details regarding the procurement of signs with the Ministry Project Manager.
- .3 All signs purchased for use on Ministry of Transportation right of way must comply with the following:
  - .1 The Manual of Standard Traffic Signs and Pavement Markings ([http://www.th.gov.bc.ca/publications/eng\\_publications/electrical/MoST\\_PM.pdf](http://www.th.gov.bc.ca/publications/eng_publications/electrical/MoST_PM.pdf))
  - .2 The Sign Pattern Manual ([http://www.th.gov.bc.ca/publications/eng\\_publications/geomet/geometsigns.htm](http://www.th.gov.bc.ca/publications/eng_publications/geomet/geometsigns.htm))
  - .3 The Specification for Standard Highway Sign Materials, Fabrication and Supply ([http://www.th.gov.bc.ca/publications/eng\\_publications/signs/Sign\\_Fabrication\\_Specs](http://www.th.gov.bc.ca/publications/eng_publications/signs/Sign_Fabrication_Specs))
- .4 Special Provisions shall be prepared by the designer. Refer to Section 800 for Generic Special provisions which are to be modified to suit the specifics of the work
- .5 Signing drawings shall be signed and sealed by a professional engineer registered with the APEGBC.

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### 203.3 SERVICE AND ATTRACTION SIGNS

- .1 Refer to the Ministry *Service and Attraction Signing Manual* for information on Service and Attraction Signs

### 203.4 GUIDE SIGNS

- .1 The designer shall prepare small scale concept drawing (1:2000 scale) showing guide sign locations, sizes and messages on the laning and geometrics. This drawing shall be submitted to the Regional Traffic Engineer for review at the preliminary design stage. It is critical the guide sign design be developed in concert with the roadworks design to allow drivers the required time to make the required movements.
- .2 Once the concept drawing is approved the designer shall submit digital copy laning and geometrics drawings and the concept drawings to the Ministry Project Manager who in turn shall submit the package to Regional Traffic Engineer.
- .3 The Regional Traffic Engineer shall submit the concept drawing and laning and geometrics to the Provincial Sign Services Section (Ross McLean at 250-377-4478).
- .4 The Provincial Sign Services Section in turn will develop the Ministry Sign Design Sheets. Once developed by the Provincial Sign Services Section, the Sign Design Sheets shall be submitted to the Regional Traffic Engineer and the designer for review and sign-off.
- .5 The sign sizes and messages shown on Sign Design Sheets shall be shown on the site plan and sign elevation drawings.
- .6 The sign elevation shall be used by the structural engineer to calculate the base reaction forces and in turn design the foundations. Refer to Section 500 for further details.
- .7 Sign Design Sheet shall be issued with Contract Documents. The Sign Design Sheets shall be used by the Contractor for pricing and fabrication.

## 204 ENGINEERING WORK ACCEPTANCE

### 204.1 DEFINITION OF ACCEPTANCE

- .1 With respect to traffic and electrical engineering designs, the consultant is responsible for the engineering content of the assignments. The Ministry will perform a cursory review and “accept” engineering products from the engineering consultant that comply with the “intent” of the original scope of work. This acceptance should in no way be interpreted as a quality assurance check on the engineering details of the assignment. Any errors and omissions of “accepted” drawings that result in additional costs to the Ministry or project shall be charged back to the consultant.

### 204.2 MINISTRY ACCEPTANCE

- .1 Each engineering drawing set submitted to the Ministry shall have attached a *Ministry Electrical Design Acceptance Form* as shown in Appendix 200. This form shall have the following signatures:
  - .2 **Consultant Engineer of Record** – this shall be signed by the engineer of record responsible for the quality control of the engineering assignment
  - .3 **Consultant Quality Management Representative** – this shall be signed by the representative from the consultant firm that is responsible for ensuring that their quality management plan has been followed.
  - .4 **Ministry Representative Acceptance** – this shall be signed by the Ministry representative responsible for “accepting” the work. This will be the Manager, Traffic and Electrical Systems Engineering or their designate.
  - .5 **Chief Engineer / Regional Manager, Engineering** – this shall be signed by the Regional Manager, Engineering; or the Chief Engineer depending on whether the designer has identified any exceptions to standards as per the electrical submission. This signature is not required if there are no deviations to standards identified in the design folders (i.e. Electrical Criteria Exceptions form indicates no deviations from standards).

## 205 QUALITY MANAGEMENT

### 205.1 QUALITY MANAGEMENT

- .1 Design agencies shall institute a Quality Management Plan. The **plan must be specific to the project**. As a minimum this plan shall identify the various quality control and quality management tasks to be undertaken, and the staff that will be assigned to them. The quality management staff and their reporting relationships shall be shown in a project organization chart.
- .2 The description of the quality management plan should be with sufficient details and written documentation to allow the Ministry to readily verify whether or not the plan is being implemented as the work proceeds
- .3 A similar Quality Management process should be required by the Consultant from each of the sub consultants working on the project.
- .4 All work shall be carried out in accordance with the protocol described in the Quality Management Accord.
- .5 Upon request, the design agency shall provide written documentation confirming their quality management program. The Ministry, at its discretion, may audit the design agency's quality management program.
- .6 If the consultant cannot demonstrate that they have and are implementing an appropriate quality management plan, the Ministry may choose to withhold any acceptance of engineering products until the consultant can demonstrate that they have corrected the situation. Failure to employ an appropriate quality management plan will result in poor consultant performance evaluations which will negatively impact future consultant assignment selections.