



**ENGINEERING CONSULTANT
GUIDELINES
for
HIGHWAY and BRIDGE PROJECTS -
Volume 2**

**CONSTRUCTION
CONTRACT
ADMINISTRATION**



2002



**Engineering Consultant
Guidelines for Highway and
Bridge Projects - Volume 2**

**Construction Contract
Administration**

2002



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This manual is a revised version and replaces the Alberta Transportation's
Contract Administration Manual issued in 1999.

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Executive Director,
Technical Standards Branch,
Alberta Transportation.

Engineering Consultant Guidelines For Highway and Bridge Projects - Volume 2, Construction Contract Administration

The purpose of this manual is as follows:

- To outline the Department's standards for the provision of engineering services for the administration of provincial highway and bridge construction projects where a consultant is hired directly by the Department.
- To outline specific responsibilities and authorities of the Consultant when performing these services.
- To ensure uniformity and consistency in the provision of these services.

The Department's contractual obligations on provincial highway and bridge construction projects are detailed in the contract documents. Many of these obligations are performed by the Consultant retained by the Department to administer the contract on its behalf. This manual outlines the processes to be used by the Consultant which are typically necessary to ensure the Department's contractual obligations and/or other requirements are performed in the necessary manner.

Users should note that this manual by itself does not provide a complete record of all the processes, responsibilities, and authorities of the Consultant and the Department in managing the delivery of a Department construction contract. Other Department documents which must be considered include, but are not limited to, the following:

- (1) Engineering Consultant Guidelines for Highway and Bridge Projects - Volume 1, Design and Tender
 - This document provides guidelines for the provision of engineering services for the pre-tender period of provincial highway or bridge construction projects.
- (2) Traffic Accommodation in Work Zones Manual
 - This document provides guidelines for the provision of traffic accommodation through work zones on provincial highway and bridge construction and maintenance projects.
- (3) Project Administration Manual
 - This document outlines the Department's methods for selecting, monitoring, and evaluating its engineering consultants and its processes for administering consulting engineering agreements and delivering provincial highway and bridge construction projects.

The authorities, responsibilities and processes contained in all these manuals are based on the Department's policy statements, authorities matrix, contract specifications, and agreements for engineering consultant services. Users are advised that updates or revisions to existing contract specifications, the terms of the consulting engineering agreement, policy statements or the authorities matrix may affect these processes, responsibilities and authorities. In the event of any such changes which significantly affect the contents of these manuals, users will be advised accordingly.

This manual is not intended to replace or modify the contents of the Department's construction contracts or consulting engineering agreements. If a conflict or ambiguity exists between this manual and the contract documents or the consulting engineering agreement, the user should contact the Department's Project Sponsor for clarification.

Any omissions, obvious errors, or recommendations for future updates to this manual should be forwarded to the Director, Maintenance, Specifications and Traffic Operations of the Department's Technical Standards Branch.

TABLE OF CONTENTS

| | | |
|------------------|---|-----------|
| SECTION 1 | CONTRACT ADMINISTRATION - GENERAL | 1 |
| 1.1 | GENERAL CONSTRUCTION CONTRACT POLICY | 1 |
| 1.1.1 | <u>General</u> | 1 |
| 1.1.2 | <u>Definitions</u> | 1 |
| 1.1.3 | <u>Contract Specifications And Standards</u> | 2 |
| 1.1.4 | <u>Construction Bulletins</u> | 3 |
| 1.1.5 | <u>Department Construction Contracts</u> | 3 |
| 1.1.6 | <u>Overview Of Consultant's Responsibilities And Authority When Administering A Construction Contract</u> | 3 |
| 1.1.7 | <u>Overview Of The Project Sponsor's Responsibilities</u> | 5 |
| 1.1.8 | <u>Communication Between The Consultant And The Department</u> | 5 |
| 1.2 | CONTRACT DESIGN CHANGE PROPOSALS | 5 |
| 1.3 | OCCUPATIONAL HEALTH AND SAFETY | 6 |
| 1.4 | TRAFFIC ACCOMMODATION | 7 |
| 1.5 | PROJECT JOURNALS | 7 |
| 1.6 | PROJECT SURVEY DATA | 9 |
| 1.7 | PROVIDING SURVEY AND QUANTITY INFORMATION TO CONTRACTORS | 9 |
| 1.7.1 | <u>Quantity Records, Contract Progress Estimates And Final Details</u> | 9 |
| 1.7.2 | <u>Survey Information</u> | 9 |
| 1.8 | COMMUNICATIONS WITH THE CONTRACTOR | 10 |
| 1.9 | COMMUNICATIONS WITH THE SURETY | 10 |
| 1.10 | COMMUNICATIONS WITH MUNICIPALITIES | 10 |
| 1.11 | COMMUNICATIONS WITH NEWS MEDIA | 11 |
| 1.12 | UTILITIES AND APPURTENANCES | 11 |
| 1.12.1 | <u>General</u> | 11 |
| 1.12.2 | <u>Traffic Control Signals</u> | 11 |
| 1.12.3 | <u>Private Signs</u> | 12 |
| 1.13 | AGGREGATE SOURCES | 12 |
| 1.13.1 | <u>General Contract Conditions For The Supply of Aggregates</u> | 12 |
| 1.13.2 | <u>General Policy And Expectations For The Use Of Aggregate Sources Controlled By The Department</u> | 12 |
| 1.13.3 | <u>Pit Management For Aggregate Sources Controlled By The Department</u> | 13 |
| 1.13.4 | <u>Reporting Requirements For Aggregate Sources Controlled By The Department</u> | 14 |
| 1.13.5 | <u>Pit Management And Reporting Requirements For Aggregate Sources Not Controlled By The Department</u> | 16 |
| 1.13.6 | <u>Reporting Requirements For Final Details</u> | 16 |
| 1.14 | GENERAL ENVIRONMENTAL REQUIREMENTS | 16 |
| 1.14.1 | <u>General</u> | 16 |
| 1.14.2 | <u>Reclamation of Borrow Areas</u> | 16 |

| | | |
|------------------|--|-----------|
| 1.14.3 | <u>Topsoil Conservation Within The Right-Of-Way</u> | 17 |
| SECTION 2 | CONTRACT ADMINISTRATION - CONSTRUCTION | 18 |
| 2.1 | GENERAL | 18 |
| 2.2 | COMMENCEMENT OF CONTRACT WORK | 18 |
| 2.2.1 | <u>Pre-commencement Meeting</u> | 18 |
| 2.2.2 | <u>Environmental Construction Operations Plan</u> | 18 |
| 2.2.3 | <u>Traffic Accommodation Strategy</u> | 20 |
| 2.2.4 | <u>Pre-construction Meeting</u> | 20 |
| 2.2.5 | <u>Commencing Work on the Project</u> | 21 |
| 2.3 | CONSTRUCTION SURVEY AND STAKING | 21 |
| 2.3.1 | <u>General</u> | 21 |
| 2.3.2 | <u>Baseline Stakes</u> | 21 |
| 2.3.3 | <u>Grade Work Stakes</u> | 22 |
| 2.3.4 | <u>Surfacing Work Stakes</u> | 22 |
| 2.3.5 | <u>Culvert Stakes</u> | 22 |
| 2.3.6 | <u>Interim And Final Cross-Sections</u> | 22 |
| 2.4 | SPECIAL MEASURES IN PROBLEM AREAS | 22 |
| 2.5 | PROJECT REPORTING REQUIREMENTS | 23 |
| 2.5.1 | <u>General</u> | 23 |
| 2.5.2 | <u>Weekly Construction Reports</u> | 23 |
| 2.5.3 | <u>Contract Progress Estimates And Final Estimate</u> | 23 |
| 2.5.4 | <u>Contract Log For Progress Estimate</u> | 24 |
| 2.5.4.1 | <u>Calculating Modified Tender Price</u> | 24 |
| 2.5.5 | <u>Project Expenditure Report</u> | 25 |
| 2.5.6 | <u>Monthly Health And Safety Summary</u> | 27 |
| 2.5.7 | <u>Project Completion Health and Safety Report</u> | 27 |
| 2.6 | QUALITY CONTROL AND QUALITY ASSURANCE DURING HIGHWAY CONSTRUCTION | 27 |
| 2.6.1 | <u>Quality Control/Quality Assurance</u> | 27 |
| 2.6.2 | <u>Timing Of Quality Assurance Testing And Sampling</u> | 27 |
| 2.6.3 | <u>Quality Assurance (Aggregate Production)</u> | 27 |
| 2.6.4 | <u>Quality Assurance (Highway Construction)</u> | 27 |
| 2.6.5 | <u>Quality Problems</u> | 28 |
| 2.6.6 | <u>Quality Assurance (Materials)</u> | 28 |
| 2.6.7 | <u>Quality Assurance (Manufactured Materials)</u> | 28 |
| 2.6.8 | <u>Quality Assurance Appeals</u> | 28 |
| 2.6.9 | <u>Materials/Mix Design</u> | 29 |
| 2.6.10 | <u>Pavement Segregation Assessment</u> | 29 |
| 2.6.11 | <u>Pavement Smoothness Assessment</u> | 29 |
| 2.6.12 | <u>Quality Assurance Reporting Requirements</u> | 30 |
| 2.6.12.1 | All Projects | 30 |
| 2.6.12.2 | Additional Requirements For Paving Projects | 30 |

| | | |
|------------------|--|-----------|
| 2.7 | UNIT PRICE APPROVALS | 31 |
| 2.8 | EXTRA WORK | 31 |
| 2.8.1 | <u>General</u> | 31 |
| 2.8.2 | <u>Equipment Rental Rates</u> | 32 |
| 2.9 | CONTRACT CHANGES | 32 |
| 2.10 | CONTRACT EXTENSIONS | 32 |
| 2.11 | ADJUSTMENTS TO SPECIFIED CONTRACT COMPLETION DATE | 33 |
| 2.12 | CONTRACT COST OVERRUNS | 33 |
| 2.12.1 | <u>Definitions</u> | 33 |
| 2.12.2 | <u>Procedure</u> | 34 |
| 2.13 | SITE OCCUPANCY | 35 |
| 2.13.1 | <u>Overview</u> | 35 |
| 2.13.2 | <u>Purpose</u> | 35 |
| 2.13.3 | <u>Risk Sharing</u> | 35 |
| 2.13.4 | <u>Allowing Efficient Use Of Contractor's Forces</u> | 36 |
| 2.13.5 | <u>Correcting Deficiencies</u> | 36 |
| 2.13.6 | <u>Specific Exclusions From Site Occupancy</u> | 37 |
| 2.13.7 | <u>Termination Of Site Occupancy</u> | 37 |
| 2.13.8 | <u>Payment</u> | 37 |
| 2.13.9 | <u>Site Occupancy for Quantity Increases</u> | 37 |
| 2.13.10 | <u>Site Occupancy for Scope Changes (Extra Work, Contract Extension and Contract Changes)</u> | 37 |
| 2.14 | FIRST PARTY CLAIMS | 37 |
| 2.14.1 | <u>Overview</u> | 37 |
| 2.14.2 | <u>Procedure For Claims And Appeals</u> | 38 |
| 2.15 | THIRD PARTY CLAIMS | 39 |
| 2.16 | DAMAGE CLAIMS | 39 |
| 2.17 | CONSTRUCTION COMPLETION, CONDITIONAL CONSTRUCTION COMPLETION, REPAIRING DEFICIENCIES AND WARRANTY | 39 |
| 2.17.1 | <u>Confirming Contract Requirements</u> | 39 |
| 2.17.2 | <u>Interim Inspections</u> | 40 |
| 2.17.3 | <u>Construction Completion Inspection</u> | 40 |
| 2.17.4 | <u>Construction Completion Certificate And Commencement Of Warranty</u> | 40 |
| 2.17.5 | <u>Conditional Construction Completion Inspection</u> | 40 |
| 2.17.6 | <u>Conditional Construction Completion Certificate And Commencement Of Warranty</u> | 41 |
| 2.17.6.1 | Deficiencies Repaired Within The Established Time-lines | 41 |
| 2.17.6.2 | Deficiencies Not Repaired Within The Established Time-lines | 41 |
| 2.18 | TERMINATION OF WARRANTY AND FINAL ACCEPTANCE | 41 |
| 2.18.1 | <u>Termination Of Warranty Period</u> | 41 |
| 2.18.2 | <u>Final Acceptance Certificate</u> | 42 |
| SECTION 3 | MEASUREMENTS AND PAYMENTS | 43 |

| | | |
|------------------|--|----|
| 3.1 | FINAL DETAILS | 43 |
| 3.1.1 | <u>General</u> | 43 |
| 3.1.2 | <u>List Of Significant Items</u> | 43 |
| 3.1.2.1 | Items To Be Submitted To The Department | 43 |
| 3.1.2.2 | Items To Be Retained By The Consultant | 44 |
| 3.1.3 | <u>Procedure For Preparing And Submitting Final Details</u> | 45 |
| 3.1.4 | <u>As-Constructed Project Information</u> | 46 |
| 3.1.4.1 | As-Constructed Plans And Drawings | 46 |
| 3.1.4.2 | As-Constructed Surfacing Project Information | 46 |
| 3.1.5 | <u>Project Summary Report</u> | 47 |
| 3.1.6 | <u>Timelines For Submission Of Final Details</u> | 48 |
| 3.2 | RETAINING AND RELEASING HOLDBACK | 48 |
| 3.2.1 | <u>Retaining Holdback</u> | 48 |
| 3.2.2 | <u>Partial Release Of Holdback</u> | 49 |
| 3.2.2.1 | When A Conditional Construction Completion Certificate Has Been Issued | 49 |
| 3.2.2.2 | When A Conditional Construction Completion Certificate Has Not Been Issued | 49 |
| 3.2.3 | <u>Final Release Of Holdback</u> | 49 |
| SECTION 4 | BRIDGE CONSTRUCTION | 50 |
| 4.1 | BRIDGE CONSTRUCTION INSPECTION AND CONTRACT ADMINISTRATION | 50 |
| 4.1.1 | <u>General</u> | 50 |
| 4.1.2 | <u>Pre-Fabrication</u> | 50 |
| 4.1.3 | <u>Bridge Material Fabrication Inspection</u> | 50 |
| 4.1.3.1 | Prestressed Precast Concrete Girders/Units Fabrication Inspection | 51 |
| 4.1.3.2 | Major Steel Components Fabrication Inspection | 52 |
| 4.1.3.3 | Miscellaneous Material Including Culvert Fabrication Inspection | 53 |
| 4.1.4 | <u>Bridge Construction Inspection</u> | 54 |
| 4.1.4.1 | Pre-Construction Meeting | 54 |
| 4.1.4.2 | Requirements For Bridge Construction Inspection (As Appropriate) | 54 |
| 4.1.4.3 | Weekly Progress Reports | 56 |
| 4.1.4.4 | Monthly Contract Progress Payments | 56 |
| 4.1.4.5 | Progress Meetings | 56 |
| 4.1.4.6 | Inspection Of Bridge Size Metal Culverts | 57 |
| 4.1.4.7 | Project Summary Report | 57 |

APPENDICES

- APPENDIX A - GENERAL CONSTRUCTION ADMINISTRATION FORMS
- APPENDIX B - BRIDGE ADMINISTRATION FORMS
- APPENDIX C - TESTING REQUIREMENTS AND REPORTING FORMS
- APPENDIX D - FINAL DETAILS FORMS
- APPENDIX E - COMPLETED SAMPLE PAGES

SECTION 1 CONTRACT ADMINISTRATION - GENERAL

1.1 GENERAL CONSTRUCTION CONTRACT POLICY

1.1.1 General

This manual is intended to be used by Consultants who have been hired directly by Alberta Transportation for the provision of contract administration services on provincial highway and bridge construction projects. The manual details the processes to be followed by the Consultant in administering the project from the time a construction contract has been executed by the Department and the Contractor, to the end of the contract warranty period.

It is the Department's intent that the Consultant and Department maintain a positive line of communication and flow of information throughout the duration of the project, so that the administration of the Contract can be performed correctly and in an effective manner.

The written portion of this manual is divided into 4 distinct sections:

1. Contract Administration - General
2. Contract Administration - Construction
3. Measurements and Payments
4. Bridge Construction

Users of this manual should note that unless otherwise indicated, all requirements detailed in the first 3 sections of the manual also apply to bridge structures. Section 4, Bridge Construction provides additional and detailed requirements, unique to the administration of bridge structure construction.

Due to the evolving nature of Department policy, standards, guidelines and contract specifications, portions of this manual may become out of date from time to time. In as much as it is practical to do so, the Department will provide any updates required and/or advise the Consultant of any significant changes which affect the required processes or responsibilities.

1.1.2 Definitions

For the purposes of this manual, the following definitions will apply:

| | |
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| <i>Agreement</i> | The consulting services agreement between the Department and the Consultant, normally referred to as the consulting engineering agreement. |
| <i>Consultant</i> | The person or company that has entered into a consulting engineering agreement with the Department. |
| <i>Contract</i> | The contract between the Department and the Contractor covering the performance of the Work. |

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| Contractor | The person or company that has entered into a construction contract with the Department. |
| Department | Alberta Transportation. |
| Project Sponsor | The Department employee responsible for the delivery of the project. The Project Sponsor may be a Department Construction Manager, Bridge Manager or other Department employee assigned to perform the Department's management duties for the project. |
| Surety | The contractor's bonding company providing the performance and material for the Contract. |
| Work | All or any part of the work to be performed under the Contract by the Contractor, whether complete or incomplete, as originally set forth or as revised by the Department, and any or all of the equipment, material and labour supplied by or for the Contractor. |

1.1.3 Contract Specifications And Standards

Department construction contracts contain reference to specific editions or elements of one or more of the following manuals:

Standard Specifications for Highway and Bridge Construction. These manuals contain general contract requirements and technical specifications for both highway and bridge construction.

Specification Amendments and Supplemental Specifications for Highway and Bridge Construction. This manual is issued in conjunction with the Standard Specifications for Highway and Bridge Construction manuals. It contains various amendments to the specifications required to standardize project specific issues. The supplemental specification section of the manual contains specifications intended for use on a limited or trial basis.

Standard Drawings. This manual contains copies of standard drawings for the location, dimension and material details for miscellaneous standard highway appurtenances.

Traffic Accommodation in Work Zones. This manual contains the roles and responsibilities of the Department, Contractor and Consultant associated with traffic accommodation, factors to be considered when providing traffic accommodation and standard drawings showing minimum temporary signing requirements for typical situations.

1.1.4 Construction Bulletins

The Department strives to ensure that its contract specifications and manuals pertaining to highway and bridge construction, detail all items required for the proper delivery of a project. Providing the required information in a clear and concise form helps ensure that all projects can be administered consistently and in accordance with the Department's intent.

If an ambiguity is identified in the standard specifications or manuals, the Department will issue a Construction Bulletin. The Construction Bulletin will clarify the applicable construction specification or contract administration process until the issue is adequately addressed in a new edition of the Department's specifications or manuals.

Construction Bulletins will not be used to change specifications or contractual requirements.

Any questions concerning the Department's Construction Bulletins should be directed to the Department's Technical Standards Branch, attention Ian Baird, Contract Specification Specialist (780-415-1080, email ian.baird@gov.ab.ca).

1.1.5 Department Construction Contracts

Department construction contract documents are comprised of a schedule of work items and prices, standard specifications, specification amendments, special provisions, typical drawings and plans. The specifications, specification amendments and typical drawings are the "standard" for a particular type of work and generally do not change from contract to contract. However, the schedule of work items, special provisions, and the plans address the site specific items or issues on a project and are unique for each contract.

A Department construction contract requires the completion of a specific type and scope of work in accordance with specified requirements and at agreed payment rates. Any work or project not covered by the terms of the contract may not be undertaken without mutual written consent of the Department and the Contractor. Also, no condition of the Contract can be deleted or modified without mutual written consent of the Department and the Contractor.

1.1.6 Overview Of Consultant's Responsibilities And Authority When Administering A Construction Contract

The Consultant is retained by the Department to administer a construction contract between the Department and a Contractor. The Consultant is the single line of communication between the Department and the Contractor concerning issues arising out of the performance and administration of the Contract. It is the Consultant's responsibility to confirm the extent of his authority on contract administration issues with the Department's Project Sponsor prior to the commencement of the project. Any decisions required on contractual issues which fall outside the authority granted to the Consultant by the Project Sponsor, or on which the Project Sponsor has indicated that he wishes to be consulted, shall be referred to the Project Sponsor.

The following are examples of typical issues or matters which would normally be referred to the Project Sponsor by the Consultant:

- Issues related to construction schedules
- Contract Design Change Proposals
- Adjustments to unit prices on existing bid items or new unit prices for bid items not included in the contract (unless such unit prices are required for Extra Work less than \$10,000.00)
- Extra Work orders greater than \$10,000
- Contract claims resolution
- Contract Cost Overruns
- Contract Extensions
- Contract Changes
- Changes to the number of Site Occupancy days bid
- Property agreements
- Railway crossing agreements
- Utility crossing agreements
- Progress and final payment for construction contracts
- Extensions to the contract completion date
- Use of Department controlled blend sand sources

The Consultant is responsible for supplying all personnel, materials and equipment necessary to provide the services outlined in this document and the Agreement. The Consultant is also responsible for the services provided by any sub-consultant he employs. The Consultant shall ensure that any of his personnel who are involved in making decisions concerning the Contract are entirely familiar with the terms of the Contract. Also, the Consultant shall ensure that any of his staff, including any sub-consultants, who have knowledge of the Contractor's contract bid prices, keep this information confidential.

The Consultant is responsible for monitoring, inspecting and testing the work performed by the Contractor to confirm compliance with the terms of the Contract. The Consultant has the authority to reject defective work and to prohibit any work method or procedure which will result in a finished product which will fail to meet the standards required under the Contract. The Consultant also has the authority to order the Contractor to suspend the Work where, in his opinion, the Contractor fails to adequately provide for the safety of the public, for re-occurring safety issues or when the Contractor fails to comply with orders issued by the Consultant regarding traffic accommodation operations.

It is essential that the Consultant maintain accurate and complete records of all activities and significant issues arising from the performance of the Contract.

It is the Department's expectation that the Consultant administer the Contract with a view to bringing the project to completion, on time, within budget, and in accordance with the terms of the Contract. Further, the Department encourages the Consultant to monitor the performance of the project design throughout the course of construction and consider and recommend any changes which may facilitate or assist in achieving these objectives. Any significant changes to the project design must be referred to the Project Sponsor for approval prior to implementation.

The Consultant can not change the terms and conditions of the contract documents. Any changes to the contract requires written agreement by both the Department and the Contractor.

The Consultant is fully responsible for accurate and timely reporting of progress expenditures and forecast expenditures. Discrepancies and misrepresentations in individual projects can have significant provincial impact on the Department's ability to make maximum use of its allocated funding. The Department's expectation is that the Consultant follow the Expenditure Reporting process. Throughout the project and fiscal year, the Department will monitor this report for its accuracy and timeliness and is a measurable item in performance assessment.

The Consultant is totally responsible to ensure he fulfills his obligations in accordance with all applicable provincial and federal legislation and regulations.

The processes and procedures to be followed by the Consultant are outlined in this document and the Agreement. In the event a discrepancy exists or appears to exist between this document and the Agreement, the Consultant must immediately contact the Project Sponsor for clarification.

1.1.7 Overview Of The Project Sponsor's Responsibilities

The Project Sponsor is responsible to ensure that the Consultant fulfills his obligations in accordance with this document and the Agreement. The Project Sponsor will also address any issues or matters related to the Contract which do not fall within the limits of the authority delegated to the Consultant.

1.1.8 Communication Between The Consultant And The Department

It is the Department's intent that communications necessary between the Department and the Consultant concerning any issues arising from the Contract or the Agreement be handled using a "one window" approach between the Consultant and the Project Sponsor. However, the Department recognizes that to administer the Contract effectively, it may be necessary for the Consultant to communicate directly with other persons in the Department who are involved in the project. When this occurs, it is the Consultant's responsibility to immediately advise the Project Sponsor of any significant issues arising from these communications.

1.2 CONTRACT DESIGN CHANGE PROPOSALS

The Standard Specifications allow the Contractor (after a tender has been awarded), the option of submitting a Contract Design Change Proposal for an alternative design or change to the Department's design or any component thereof provided cost savings can be achieved without compromising the integrity and quality of the project. These proposals will be accepted or rejected by the Department at its sole discretion.

The Department's expectations of the Consultant and Contractor concerning Contract Design Change Proposals are outlined in the Standard Specifications. Typically, a preliminary technical review will be conducted by the Department to ensure it meets the Department's requirements. Generally, if a contract design change is successful at the preliminary technical review stage, the Department will ask the Consultant

to provide the following:

- Ramifications of changes on the original design.
- Checking of the engineering integrity of the proposed change without assuming engineering responsibility of the proposal.
- Inclusion of new drawings in the project documentation.

In the development or preparation of the proposal, the Contractor shall not employ the Department's Consultant who is providing engineering services on the Contract.

In the event that a Contract Design Change Proposal is submitted and the Department asks the Consultant to participate in the assessment of the proposal and subsequent engineering work, a change of scope to the original Agreement will be made if required.

The Consultant should also be aware that the Department may elect to hire a separate consultant to assist with the review of a Contract Design Change Proposal.

1.3 OCCUPATIONAL HEALTH AND SAFETY

It is the Department's policy that the responsibility for ensuring compliance with the Occupational Health and Safety Act should reside with the person(s) performing the Work. Therefore, the Department through its Contracts and Agreements, assigns the designation of Prime Contractor (as defined under the Occupational Health and Safety Act) to both the Contractor and Consultant for their respective activities and worksites.

Specific responsibilities of individual Prime Contractors concerning issues arising from joint worksites, are detailed in the Standard Specifications and the Agreement.

It is the Department's expectation that the Consultant has familiarized himself with the Occupational Health and Safety Act and Regulations and that he and his sub-consultants comply with the Act and Regulations in the performance of their duties.

It is also the Department's expectation that the Consultant take appropriate action in situations where he is aware that the Contractor is not complying with the Occupational Health and Safety Act and Regulations. In situations of recognized imminent danger, this would involve ordering suspension of the Work and immediately notifying the Project Sponsor.

Some general administrative responsibilities of the Consultant are:

- On complex projects or projects which involve the use of specialized work methods or equipment, require the Contractor to provide operational occupational safety policies and plans specific to the work (ie. safe work procedures for site specific hazards).

- Upon the commencement of construction activities, complete the Notification of Construction Report and the Order Fixing Maximum Speed and forward these forms to the Project Sponsor.
- Provide the Project Sponsor with copies of any written correspondence on safety issues/concerns pertaining to the Contractor's activities.
- Notify the Contractor's site representative of any health and safety violations related to the Contractor's activities which the Consultant is made aware of or observes.
- Provide the Project Sponsor with copies of any orders issued to the Contractor by Alberta Human Resources and Employment, Workplace Health and Safety.
- Provide to the Project Sponsor, within 72 hours, copies of any worksite injury or accident report (Section 13 - Occupational Health and Safety Act) involving employees of the Consultant, Contractor or their subcontractors. The Consultant will be responsible for obtaining and forwarding reports provided by the Contractor.
- Attend the Contractor's project safety meetings whenever possible.
- Provide the Project Sponsor with a copy of the Monthly Health and Safety Summary Reports (these reports are completed by the Contractor).
- Provide the Project Sponsor with a copy of the Project Completion Health and Safety Review Report. This form is completed jointly by the Consultant and the Contractor within 2 days of the completion of the project.

1.4 TRAFFIC ACCOMMODATION

The Consultant is responsible for providing suitable traffic accommodation for his activities and for coordinating the positioning of his traffic control devices with the Contractor when necessary.

The Consultant is also responsible for monitoring the traffic accommodation measures used by the Contractor to confirm compliance with the Contract and the Traffic Accommodation in Work Zones manual and that traffic is being safely and effectively accommodated through or around the work zone.

Details of all the Consultant's responsibilities associated with traffic accommodation are contained in the Traffic Accommodation in Work Zones manual.

1.5 PROJECT JOURNALS

Project Journals are of utmost importance in dealing with claims and Extra Work. Separate journals shall be kept for each contract and only information pertaining to that contract is recorded. It is essential that the Consultant maintain the Project Journal on a daily basis.

Project Journals shall contain the following identifying information in the front pages:

- contract number, project description, consulting engineering agreement number
- name and address of the person maintaining the journal
- index

Entries in the Project Journal shall be made by the Consultant's on-site manager or, in his absence, the person acting on his behalf. Once the project has been completed, the Project Journal shall be submitted with the Final Details to the Project Sponsor. Construction photos should also be included to back up Project Journal records. The photographs must be clearly identified by date, type of activity and location.

Daily entries shall include but are not necessarily limited to:

- weather
- location of Contractor's work area and description of work underway
- verbal instructions issued to the Contractor
- information pertaining to the relocation of utilities and note of any delay to the Contractor
- equipment and manpower hours where hourly rate is the payment method
- a record of visits from the Project Sponsor and other officials and any resulting instructions or decisions
- changes from original plans and/or design quantities and an explanation of the reasons
- irregularities on any item during the stages of construction
- explanations of incompleteness of field records
- explanations of defects and when they were rectified (provide photos)
- general progress of the work and an account of out of the ordinary difficulties encountered by the Contractor (provide photos)
- special notations of items pertaining to Extra Work
- Contractor's claims, intent to claim, complaints, disputes, etc. (photos if applicable)
- any significant event as it happens
- discussions or dealings with property owners and the public
- discussions or dealings with officials of municipalities
- record of events that could affect the Contractor's production
- record of all accidents within the contract limits and a record of conditions at the time of the accident (photos required), including description of all pertinent signing in place at the time
- discussions with Contractor regarding work schedules and quality of work
- assessment of the Contractor's working day
- traffic accommodation, detours, construction signs, flagperson (photos or video log required)
- full description of construction photos or videos taken
- information pertaining to work safety
- record of environmental issues.

It is recommended that the Consultant require the surveyors, materials inspectors, and any other key project staff to maintain separate journals detailing any significant issues occurring during construction.

1.6 PROJECT SURVEY DATA

The Consultant shall save all the original raw data files (data collection files), conversion files (unedited, edited and history files), and .XNG files and all T-Files.

The Consultant shall create backup copies of these files and store the data in a safe, off-site location. Copies of all the data shall be submitted to Project Sponsor with the Final Details.

1.7 PROVIDING SURVEY AND QUANTITY INFORMATION TO CONTRACTORS

1.7.1 Quantity Records, Contract Progress Estimates And Final Details

If requested by the Contractor, the Consultant shall make contract quantity records and Final Details available for examination. The project data may be examined at the Consultant's office or Department's office by appointment at a mutually agreeable time and in the presence of the Consultant. The Contractor is permitted to make notes during such examination. Under no circumstances are original records to be removed from the office. Project Journals, internal memoranda and reports, materials quality assurance test data work sheets, or correspondence with other parties shall not be provided.

Quantity information requested by sub-contractors may be provided upon approval from the Contractor. However, the unit prices in the Contract are confidential and under no circumstances shall these be released to the sub-contractors or any other party.

Copies of monthly Progress Estimates including the Final Estimate shall be forwarded to the Contractor by the Consultant.

1.7.2 Survey Information

If requested by the Contractor, the Consultant shall provide a computer disk at the pre-construction meeting with the following files:

- edited surfaces of the original ground data;
- control points file of all primary points established in the field;
- edited final design surface with all the significant points;
- a list of modifications of normal widths for intersections, climbing lanes, turning lanes, etc.

It is intended that the Contractor may use the original ground data and design information for interim construction layout and that he report any discrepancies to the Consultant. The release of all the survey information does not allow the Contractor to supersede Specification 2.3.5.1 ('...no more than 2 km of grade shall be in the rough at any one time').

If requested, the Consultant shall also provide the Contractor with a computer disk prior to finalizing the Final Progress Estimate with the following files:

- edited re-measure surface;
- edited stripping and undercut surfaces
- final earthwork volume report.

In all cases, the volumes calculated by the Consultant shall be deemed to be the final quantities. It is the Contractor's responsibility to investigate any discrepancies between quantities calculated by the two parties.

1.8 COMMUNICATIONS WITH THE CONTRACTOR

The Standard Specifications outline the various methods to be used for communicating issues of importance between the Contractor and the Department. The Consultant will generally be issuing or receiving such communications on the Department's behalf and therefore must be totally familiar with the specified requirements.

The Consultant should communicate any instructions, orders, approvals or decisions on any significant issues directly to the Contractor's superintendent. All such instructions, orders, approvals, or decisions shall be documented in the Consultant's Project Journal.

1.9 COMMUNICATIONS WITH THE SURETY

The Consultant shall complete the project status reports and return these reports directly to the Surety. The forms for these reports shall be provided to the Consultant by the Project Sponsor. Any other communication with the Surety shall be via the Department's Business Management Branch only. The Contractor will receive copies of any such correspondence with the Surety.

The Consultant shall direct any other issues concerning the Surety to the Project Sponsor.

1.10 COMMUNICATIONS WITH MUNICIPALITIES

Prior to the commencement of the project, the Consultant shall advise local authorities of impending construction activities in their areas, including the nature of the construction activities, the name of the contractor and the scheduled startup date. The Consultant shall also advise of the haul roads to be used or any other issues the Contractor has proposed which may impact the local authority. The Consultant shall notify the Project Sponsor immediately following such discussions with local authorities.

When work takes place on service roads or access roads which are under the jurisdiction of the local authority, the Consultant shall inform the Project Sponsor when work on these roads has been completed. The Consultant shall also carry out a field inspection on the completed roads with the appropriate

representative of the respective municipality. Any deficiencies noted are to be discussed with the Project Sponsor.

Once the Construction Completion Certificate has been issued to the Contractor, the Consultant shall provide the local authority with written confirmation of project completion.

1.11 COMMUNICATIONS WITH NEWS MEDIA

The Consultant may be required to provide technical and construction progress information to the news media. In these cases, the News Media form is to be completed and faxed to the Project Sponsor. Information regarding future planning of roadways and bridges or contentious issues will be provided by the Project Sponsor. Depending on the nature of the project and traffic characteristics, a News Release advising motorists of pending construction activities, delays, detours, etc., may be required. The issuance of a News Release shall be coordinated with the Project Sponsor.

1.12 UTILITIES AND APPURTENANCES

1.12.1 General

Normally, the Consultant shall use the pre-construction meeting to go over the utility plans, scheduling and special requirements of the project. On complex projects or projects with a large utility component, the Consultant should hold a separate meeting involving the Contractor and the utility company representatives to review all aspects of utility move scheduling and coordination. When necessary, meetings should also be supplemented by an on-site meeting to further define roles and responsibilities involved in the utility moves.

The Consultant shall provide the Contractor with copies of all finalized utility plans/drawings and any other relevant documentation not already contained in the Contract.

Generally, the Consultant's role involving utility relocation is limited to design functions as defined in the Department's Engineering Consultant Guidelines for Highway and Bridge Projects - Volume 1, Design and Tender and the Construction Tender Reference manuals. However, monitoring construction activities for compliance with the Contract is essential.

1.12.2 Traffic Control Signals

The Consultant shall confirm that all material and equipment installed meets National Electrical Manufacturer's Association (NEMA) standards, Alberta Electrical Protection Act requirements and Canadian Standards Association (CSA) approval.

1.12.3 Private Signs

The Department has several sign programs available to private facilities and businesses located along the highway. The Department leases or assigns space in the highway right-of-way for placement of these signs, and the private sign owners are responsible for supplying, installing and maintaining the signs. Any adjustments to these private signs shall be performed as specified in the Contract or as per the agreement between the Department and the sign owner. Examples of privately owned signs include Community Business Signs, Sponsorship Signs, Facility Signs, etc.

1.13 AGGREGATE SOURCES

1.13.1 General Contract Conditions For The Supply of Aggregates

The general contract conditions regarding the supply of aggregate material and use of aggregate sources are as follows:

"Designated Pit" For Supply of Aggregate. The Contractor is required to supply the aggregate entirely from the source identified by the Department in the Contract.

"Contractor's Option" for Supply of Aggregate. The Contractor is allowed the option of supplying the gravel portion of aggregate from the source identified by the Department in the Contract or any other source to which the Contractor has access. Other gravel sources controlled by the Department may not be used.

"No-Option" for Supply of Aggregate. The Contractor is required to supply the gravel portion of the aggregate entirely from any source to which he has access. A gravel source controlled by the Department may not be used.

Blend Sand Aggregate. Generally, the Contractor is allowed to access sand sources controlled by the Department for supplying the blend sand portion of the aggregate. However, the use of sand sources controlled by the Department requires prior approval of the Project Sponsor.

The contract payment conditions for the supply of aggregate vary significantly for each category. These payment conditions are also dependent upon the "legal status" of the source (Department owned or controlled source, crown source or private source). Therefore, the Consultant must be totally familiar with both the specifications for the supply of aggregate and the legal status of the source being used by the Contractor.

1.13.2 General Policy And Expectations For The Use Of Aggregate Sources Controlled By The Department

The Department's general policy and expectations concerning the use of aggregate sources controlled by the Department are:

- efficient management of the non-renewable aggregate resource;
- co-operation with other government agencies that have jurisdiction over land use;
- uniform treatment of private pit owners;
- progressive pit reclamation occurs as part of every project;
- consistency in royalty rates over local areas, and within the Province as a whole;
- accurate measurement of, and prompt payment for material removed;
- pits are cleaned up and made safe after each project; and
- pits are reclaimed when depleted.

1.13.3 Pit Management For Aggregate Sources Controlled By The Department

When the Contract allows the use of an aggregate source controlled by the Department, the contract special provisions will contain specific requirements for pit operations in the aggregate source. Prior (7 days) to the Contractor commencing work in the pit, the Consultant shall arrange a meeting with the Contractor and the following representatives to confirm the nature and scope of the activities within the pit:

- Project Sponsor and the Department's Aggregates Coordinator
- Alberta Sustainable Resource Development (Public Lands Division) when the pit is in the "white zone"
- Alberta Sustainable Resource Development (Land and Forest Services) when the pit is in the "green zone"
- Alberta Environment (Regional Office) when the pit is on patented land

The Consultant shall monitor the Work being performed in the pit for compliance with the Contract and environmental approval conditions. It is expected that multiple site visits will be necessary. Where possible, site visits shall be coordinated with construction related inspections. Environmental damage, waste of aggregate, and non-sequential pit development shall not be permitted. The Consultant shall immediately address any issues of non-compliance.

The following summary outlines the Consultant's responsibilities for on-site pit management:

- Monitor the topsoil, subsoil, overburden removal and crushing components of the Work. These activities may take place well in advance of construction on the roadway.
- Prior to any activity occurring in the pit, contact all necessary land administrators and advise of the scope and scheduling of the activities.
- At the pre-construction meeting, discuss pit activities with the Contractor and confirm that all requirements have or will be communicated to the equipment operators prior to commencement of the Work.
- Ensure that any request to change the approved pit activities are referred to the Project Sponsor for prior approval.
- Inspect and monitor the Contractor's activities at the pit for compliance with the contract requirements and environmental regulations during each stage of construction. Activities to be inspected and monitored include:

- & Clearing and disposal of brush or salvage of timber.
- & Salvage of topsoil, subsoil and overburden.
- & Contouring topsoil, subsoil and overburden stockpiles to facilitate seeding and weed control.
- & Mining of full depth of aggregate, providing test holes in pit floor.
- & Crushing and stockpiling (contract requirements for size of rock to be crushed).
- & Plant set up.
- & Levelling of reject fines and removal of reject ACP/ASBC.
- & Disposal of grey and black water and final site clean up.
- & Protection of livestock.
- & Sloping of active pit to conform with contract requirements.
- & Pit reclamation.
- & Sufficient erosion control measures are in place to prevent siltation off site.
- & Surface drainage does not adversely effect adjacent lands.
- & Stripped buffer zones are maintained during mining.
- & Impermeable layers are established for rinsing of truck boxes and the servicing and fuelling of equipment.
- & Removal of all generated waste products.

Upon completion of pit operations, the Consultant shall arrange for a joint inspection and acceptance of the pit by the Department. The local representative from Alberta Environment or Alberta Sustainable Resource Development shall also be invited to the final inspection.

The Consultant shall advise the Project Sponsor of any deficiencies remaining at the conclusion of the project and recommend the appropriate amount of holdback to be retained.

1.13.4 Reporting Requirements For Aggregate Sources Controlled By The Department

For aggregate sources which are controlled by the Department, some or all of the following reports and plans shall also be completed. The approved Department forms must be used. Digital copies are available by contacting the Department's Aggregate Coordinators.

Aggregate Removal Report. Required for all Department aggregate sources including blend sand sources. Submit within four weeks following the completion of pit operations or seasonal shut down.

Aggregate Testing Plan and Pit Plan. The Consultant shall dig random test holes on the bottom of the excavated areas to determine if the deposit has been fully mined. Test hole logs shall be shown on the plan. (This work may be done during mining using equipment the Contractor has on site.) The pit shall be surveyed (GPS or Total Station) and the plan updated in Microstation (DGN) format as described in the Department's "CB4 - Drafting Guidelines" manual. The plans shall show the following:

- edge of clearing
- stripped areas

- top and bottom of excavated pit face
- slopes of disturbed faces
- depth of exposed gravel
- water bodies
- new test hole data in pit floor
- adjusted areas of remaining gravel
- removal of any information previously shown on the plan which was made redundant by the current pit activities
- summary of remaining stockpiles
- stockpile locations, type and quantity

The plans shall be submitted as a hard copy and electronic format as described in the Department's CB4 Drafting Guidelines manual. Only a sketch copy is required at seasonal shutdown, however, the complete survey may be requested at any time if the tendering of another project is anticipated.

Aggregate Source Quality Report. Required when the Contractor uses an aggregate source controlled by the Department. Submit within four weeks following the completion of the project.

Aggregate Royalty Payment. Required when the Contractor uses an aggregate source controlled by the Department and this source is a private pit. Submit within four weeks of seasonal shutdown or completion of pit operations.

Generally, royalty payments made by the Department to landowners are based on the total quantity of useable aggregate removed from the sources (material incorporated into the Work plus useable material remaining in stockpile in the pit).

Material which is rejected during the crushing or mixing process is normally not measured for royalty payments.

The Consultant shall confirm the terms of the royalty agreement between the Department and the landowner with the Project Sponsor, prior to calculating the quantity for royalty payments.

Aggregate Stockpile Construction Report. Required when aggregate is placed in stockpile on site for future use or removal from the pit. Submit within four weeks following the completion of stockpiling.

All reports and plans shall be submitted to the Department's Aggregate Coordinator within 4 weeks of the conclusion of the pit activities. For projects which carry-over into the following construction season, interim sketch plans and reports must be submitted by December 31 of the current year. However, a complete pit survey may be requested at any time if the tendering of a separate project is anticipated.

If a source controlled by the Department is not used on the project, the Consultant shall inform the Department's Aggregate Coordinator.

1.13.5 Pit Management And Reporting Requirements For Aggregate Sources Not Controlled By The Department

All activities within pits which are not controlled by the Department are totally the responsibility of the Contractor. The Consultant is not required to confirm the nature and scope of these activities with the Project Sponsor or other jurisdictions, or submit any plans, forms or reports pertaining to the pit activities with the exception of any pit information required in the final details.

1.13.6 Reporting Requirements For Final Details

The Consultant shall detail the legal land description and the quantity and ownership of aggregate removed for each aggregate source used for the project. This information shall be documented regardless of whether or not a source controlled by the Department was used and shall be included in the Project Summary Report, which forms part of the Final Details.

1.14 GENERAL ENVIRONMENTAL REQUIREMENTS

1.14.1 General

The Consultant will be familiar with all environmental requirements as outlined in the Department's Engineering Consultant Guidelines for Highway and Bridge Projects - Volume 1, Design and Tender manual and ensure that all applicable permits, approvals, licenses and certificates are in place prior to commencement of construction.

All weekly Construction Reports shall report on the Contractor's compliance with environmental requirements. Examples of items to be noted are:

- What physical or procedural measures are in place to address the conditions on the permits and approvals and are the measures functioning as intended?
- Have incidents of non-compliance with permits/regulations occurred? If so, what action was taken to correct the situation?
- Do actual topsoil depths on borrow areas and in the ROW vary significantly from the design?
- Is the topsoil within the ROW being properly salvaged? (ie. no admixing)
- Are there sufficient areas within the ROW to accommodate interim stockpiling of topsoil?
- What types of equipment are being used to salvage topsoil?

1.14.2 Reclamation of Borrow Areas

Areas outside the right-of-way which are used in obtaining borrow excavation for earthwork construction must be reclaimed to an "equivalent land capability" as required by Provincial Legislation. The standards the Department will use to measure the Contractor's reclamation efforts are detailed in the following documents:

- Alberta Transportation Pre-Disturbance Assessment Procedures for Borrow Excavations for Road Construction.
- Alberta Transportation Post-Disturbance Reclamation Criteria and Assessment Procedures for Borrow Excavations.

At the time this manual was published, these standards had not yet been incorporated into the standard specifications. The Department intends to incorporate these requirements into the specifications during the 2002 calendar year.

These documents are on the Department's website at www.trans.gov.ab.ca.

The documents detail the testing and survey requirements to be performed on the affected areas both prior to the Contractor disturbing the area and subsequent to his reclamation efforts. The documents also detail the reclamation criteria that the Contractor must achieve in order for the affected area to be considered acceptable.

For borrow areas that are supplied by the Department, the assessments and evaluation will be performed by the Consultant. For borrow areas that are supplied by the Contractor, the assessments shall be performed by the Contractor and provided to the Consultant for evaluation.

If the Consultant determines that a borrow area does not meet the "criteria", the project can not be accepted. In such cases, the Consultant shall immediately review the results of the assessment with the Project Sponsor.

These borrow reclamation requirements do not negate the Consultant's responsibility to monitor the work at all borrow areas, as the work is in progress, and address any instances of obvious non-compliance. In addition, the Consultant should also maintain an ongoing communication with Alberta Environment's local Reclamation Inspector concerning all borrow areas on the project.

1.14.3 Topsoil Conservation Within The Right-Of-Way

The Contractor is responsible for the proper salvage and redistribution of topsoil. The Consultant shall monitor the Contractor's construction activities to confirm that the topsoil is properly conserved. If admixing of the topsoil and subsoil is occurring, the Consultant shall take immediate action to ensure that the Contractor rectifies the problem. However, the Consultant shall not direct the Contractor's equipment or activities. The Consultant shall maintain ongoing communications with Alberta Environment's local Reclamation Inspector for the duration of the project.

The Consultant shall also ensure that his on-site field staff who are monitoring the work are aware of these requirements prior to commencement of the Contractor's topsoil conservation activities.

SECTION 2

CONTRACT ADMINISTRATION - CONSTRUCTION

2.1 GENERAL

This section provides the Consultant with an overview of the Department's requirements for contract administration and on-site project management.

Once the project commences, the Consultant shall monitor the performance of the Work to confirm that the Contractor is in compliance with the terms of the Contract. Instances of non-compliance by the Contractor must be addressed by the Consultant immediately and in a manner which will rectify the situation.

Verbal communications/instructions with the Contractor on significant issues shall always be confirmed in writing. The Consultant shall provide the Project Sponsor with copies of all written communication with the Contractor.

It is the Department's expectation that the Consultant initiate and organize any meetings necessary between the Department, Consultant, Contractor and other stakeholders in the project to discuss the status of the project or to address specific issues as they arise.

2.2 COMMENCEMENT OF CONTRACT WORK

2.2.1 Pre-commencement Meeting

Prior to the pre-construction meeting, the Project Sponsor may require the Consultant to attend a pre-commencement meeting to discuss expectations, levels of authority and any specific issues or concerns regarding the impending project. The pre-commencement meeting may be held several days prior to the pre-construction meeting or immediately prior to the pre-construction meeting as determined by the Project Sponsor.

2.2.2 Environmental Construction Operations Plan

The Contractor is required to prepare an Environmental Construction Operations Plan (ECO Plan) prior to commencement of work on the project. The ECO Plan consists of plans and written procedures that address the environmental protection issues relevant to the specific activity being performed. Detailed information to assist contractors in developing the ECO Plan are included in the Department's "ECO Plan Framework" located on the Department's website at www.trans.gov.ab.ca.

The Consultant is responsible to review the Contractor's ECO Plan to confirm compliance with the "Framework" and the conditions of approval for construction. The Consultant shall be familiar with all environmental conditions throughout the proposed construction area and shall confirm that the Contractor thoroughly addresses all aspects where environmental impacts will occur.

The following is a partial list of items the Consultant would normally consider when reviewing the Contractor's ECO Plan. The Consultant shall refer to ECO Plan framework for all his responsibilities concerning the ECO Plan. The Contractor is responsible to adjust the ECO Plan, as necessary, based on site conditions and changing field construction conditions throughout the duration of the project.

General

- Has the ECO plan been ratified by a senior representative of the Contractor?
- Is there a statement of commitment to follow the ECO Plan?
- General project description (type of work, location, roadway number, etc.)

Care of Water

- In-stream activities
- Work Schedule
- Detours?
- Copies of any Approvals/Authorizations
 - & Are conditions addressed?
 - & Timing windows for work within stream
 - & Monitoring requirements/reporting
- How will the new channel be constructed and reclaimed?
- Erosion and sediment control
- Diversion of Water
 - & Type of cofferdam. Does it meet requirements of Code of Practice for Watercourse and conditions of Approvals/Authorization?
 - & Diversion of water into new channel?
- Fish salvage
- Equipment cleanliness
- Reclamation of original channel
- Clearing, grubbing timber salvage and disposal
- Release of contaminants into watercourse - reporting requirements and remediation
- Fuel storage and equipment re-fuelling
- Temporary erosion and sediment control
- Interim seeding for reclamation

Earthwork

- Soil salvage
 - & Equipment being used
 - & Stockpile areas (location)
 - & Temporary erosion control devices
- Clearing, grubbing, timber salvage and disposal
- Erosion and sediment control
- Reclamation of borrow areas
- Weed control

Construction Site Management

- Establishment of camp
- Reclamation of disturbed areas
- Equipment/materials storage areas
- Equipment maintenance areas

- Petroleum, Oil and Lubrications (P.O.L.) storage and handling

Emergency Response Procedures

- Phone numbers for releases
- Key contacts

Training, Documentation, Communication

Marked up plans provided by Contractor showing location of above items.

2.2.3 Traffic Accommodation Strategy

The Contractor is required to complete a Traffic Accommodation Strategy prior to commencement of work on the project. The Traffic Strategy Accommodation details the traffic control procedures and temporary construction signing to be used on the project. Items to be included in the "Strategy" and the responsibilities of the Contractor and the Consultant concerning traffic accommodation on the project are detailed in the Department's Traffic Accommodation in Work Zones manual. Time-lines for the submission and review of the Traffic Accommodation Strategy are detailed in the standard specifications.

Upon receipt of the Traffic Accommodation Strategy from the Contractor, the Consultant will review it and send a copy to the Project Sponsor.

If either the Consultant or Project Sponsor are not satisfied with the Traffic Accommodation Strategy, the Consultant shall request the Contractor to address any questions or deficiencies.

Once the Traffic Accommodation Strategy is acceptable to all parties, the Consultant will forward a finalized copy to the Project Sponsor.

2.2.4 Pre-construction Meeting

The Consultant shall arrange a pre-construction meeting with the Project Sponsor, Department Safety Officer, and the Contractor. The Consultant shall notify the Contractor that a representative from each of his subcontractors (if any) should also attend. The Consultant shall also confirm the need for attendance by the local municipality, regulatory agencies and utility companies with the Project Sponsor. The Consultant shall prepare and confirm the agenda for the meeting with the Project Sponsor. Typical agenda items are included in Appendix A of this document. Minutes of the meeting shall be recorded by the Consultant and distributed to all attendees. Items such as the following should be discussed at the meeting:

- Administration procedures
- Special requirements of the project
- Traffic Accommodation Strategy
- Dust abatement requirements
- Work schedule and working hours of the Contractor

- Compliance with the Occupational Health and Safety Act and any other applicable Acts
- Prime Contractor roles and responsibilities
- Environmental issues and Environmental Construction Operations (ECO) Plan
- Topsoil survey and conservation
- Quality Assurance and Control
- Borrow pit reclamation requirements
- Utilities Coordination
- Progress Payments
- Property issues
- Coordination of sub-contractors
- Illumination
- Survey requirements
- Aggregate sources
- Bridge/culvert issues
- Construction Completion Inspection and requirements for project completion

2.2.5 Commencing Work on the Project

Work is not to commence on a project until the Contract has been signed by the Contractor and the Department, complete with the necessary insurance and security and the pre-construction meeting has been held.

Once work commences, the Consultant shall complete a Notification of Construction Report and an Order Fixing Maximum Speed Limit and forward these forms to the Project Sponsor.

2.3 CONSTRUCTION SURVEY AND STAKING

2.3.1 General

The contract documents identify general responsibilities of the Consultant and the Contractor concerning construction survey and staking.

This section details survey and staking requirements for typical situations only.

2.3.2 Baseline Stakes

On projects requiring baseline layout by the Consultant, a complete baseline survey shall be provided at 20m intervals for grading and base course construction and at 30m intervals for asphalt concrete pavement overlays. Baseline stakes shall include offsets and metric station numbers or kilometre chainages that correspond to the highway control section. On grading construction, at least one baseline shall note elevations above or below the shoulder grade.

2.3.3 Grade Work Stakes

On projects where measurement of excavation quantities is required, the Consultant shall supply initial work stakes and final grades for ditch cuts and on the road top at 20 m intervals. Work stakes shall indicate backslope and/or sideslope cut and fills left and right of centerline.

Bridge fills are to be staked by the Consultant in accordance with the Department's standard drawings.

Once the Consultant completes the initial staking, the Contractor will assume any interim survey to complete and prepare the road for final grade stakes. The Consultant shall provide a maximum of 2 sets of final grade stakes.

2.3.4 Surfacing Work Stakes

On base, base/paving, paving/sidesloping, paving/minor intersectional treatment projects which do not contain a significant grading component requiring measurement of excavation quantities, the Contractor is responsible for survey layout and construction staking. The Consultant shall provide the beginning and the end of project points and curve information to the Contractor.

2.3.5 Culvert Stakes

Culvert locations shall be staked by the Consultant noting the location of culvert ends, elevations, sizes, lengths, etc.

2.3.6 Interim And Final Cross-Sections

On projects where measurement of excavation quantities is required, the Consultant shall obtain interim cross-sections (where necessary) and final cross-sections at all stations. These cross-sections shall be used to generate volumes for payment of bid items.

2.4 SPECIAL MEASURES IN PROBLEM AREAS

In unforeseen problem areas, special measures may be deemed necessary during construction, such as:

- Horizontal Drains
- Wick Drains
- Geotextile Filter Fabrics
- Pre-Loading
- Gravel Drains
- Lightweight Fill Material
- Staged fill construction
- Pit run gravel strengthening of subgrade
- Additional under cut or subgrade excavation

- Permanent erosion control measures
- Muskeg removal
- Instrumentation

The case for using such special measures shall be clearly identified by the Consultant and approval obtained from the Project Sponsor prior to proceeding with the Work.

2.5 PROJECT REPORTING REQUIREMENTS

2.5.1 General

To keep the Department informed of the status of the project, the Consultant shall submit standard reports to the Project Sponsor. The appendices contain the sample forms and summary sheets along with the required reporting time lines. In addition, the Project Sponsor may require the submission of reports that are not included in the appendices and these are to be completed by the Consultant on a timely basis.

2.5.2 Weekly Construction Reports

The Consultant shall complete a Weekly Construction Report for each project. The Weekly Construction Report covers the period from Sunday to the following Saturday (inclusive) and shall be submitted to the Project Sponsor each Monday. Weekly reports shall be submitted regardless of whether or not work was performed during the previous week. A separate Weekly Construction Report is to be submitted for each project and/or Contractor.

Equipment hours to be recorded shall be obtained from the Contractor and the number of Site Occupancy days assessed must be signed off by the Contractor.

Copies of all QA testing results shall be submitted with the Weekly Construction Report.

2.5.3 Contract Progress Estimates And Final Estimate

A Progress Estimate is a monthly estimate of the work done on a project. A Final Estimate is the last Contract Progress Estimate for the Contract and contains the total actual quantities of work performed to project completion. The Final Estimate shall have "final" written beside the estimate number and is usually submitted with the Final Details.

The Contract Progress Estimate form will be provided to the Consultant by the Project Sponsor. This form will contain an estimated cost breakdown for the Contract, by project, job number, bid item, estimated quantity and unit price. The applicable Task/Activity Codes will also be indicated.

The Consultant shall complete the Contract Progress Estimate and Final Estimate forms by:

- updating each bid item quantity as outlined in this document. Payment is made only for completed and accepted work done to date. All quantities must be supported by approved methods of measurement in the field. The units of measurement for each bid item are outlined in the contract documents;
- applying the unit bid prices of the Contract, multiplying and totalling the amounts;
- entering the amount previously paid and subtracting that amount from the total to arrive at the current month's amount.

The Consultant shall review the payment quantities for each item with the Contractor prior to finalizing the Estimate.

The Consultant shall sign the Progress or Final Estimates certifying that goods and services as measured were received, or completed, that work complies with the terms of the Contract, and that the total value of work completed does not exceed the funds allotted to the project.

The "cut-off" for the Progress Estimate is the 25th of each month. The Consultant shall provide the original Progress Estimate to the Project Sponsor by the last working day of the month and shall forward a copy to the Contractor. When applicable, the Progress Estimate will include any orders for Extra Work and Contract Cost Overrun approvals as backup information.

2.5.4 Contract Log For Progress Estimate

The Consultant shall submit the Contract Log for Progress Estimate each month along with the Progress Estimate. It is used for project costs tracking and determines the Modified Tender Price and Modified Contract Payment Total for the Contract. These items are further used in monitoring costs in the Monthly Expenditure Report and for Contract Cost Overrun Approvals, if required.

The second part of the Contract Log determines the Contract Payment to date. The Modified Contract Payment Total is the Total Value of Contract Payment (as determined in the Progress Estimate) adjusted for any bonuses or penalties.

2.5.4.1 Calculating Modified Tender Price

The Modified Tender Price is calculated by subtracting the "site occupancy" bid item and where applicable the "supply of aggregate" bid item from the contract tender price. If any Contract Overrun approvals exist, they shall be added to the Modified Tender Price to determine the total approved funding for the Contract. If there are no Contract Overrun Approvals, then the Modified Tender Price equals the Total Approved Funding for Contract amount.

The deletion of the "supply of aggregate" bid item depends on whether the aggregate is supplied from the contractor's source or a source controlled by the Department. If aggregate is supplied from the contractor's source, no deduction is made from the contract tender price. If aggregate is supplied from a source controlled by the Department, the estimated cost is deducted from the contract tender price. On some projects, the Contractor may supply aggregate from both his source and a source controlled by the Department. In these cases, the Consultant shall make a partial deduction for "supply of aggregate" based on the quantity of material obtained from the source controlled by the Department.

2.5.5 Project Expenditure Report

A Project Expenditure Report must be submitted to the Project Sponsor by the first business day of each month. When the Consultant is estimating costs on this report such as "Fiscal Costs" and "Carry Over", it is important that the estimate reflects what the Consultant believes will be the actual costs, and not inflated values. The costs estimated must not include any contingencies for unsubstantiated items. This estimate is used for Department budget control purposes and further adjustments to the project costs can be made in the event of any unforeseen changes in the work. A description of the various columns in the form are as follows:

General Project Information and Identification Area

This area is largely self-explanatory. *Length* refers to the total project length if there is one. Not all projects will have a length associated with them. *Other jobs* is requesting information about any other job numbers within the same contract for contract projects only. *Estimated End Date* becomes the actual project completion date once the project has been completed.

Column A

The line headings in Column A are used to indicate the various expenditure facets of a project that are going to be tracked.

Columns B and C (Contract Tender Price and Modified Tender Price)

The information for Column B comes directly from a combination of the contract tender and in the case of the lines below the shaded area in Column B, from the Consultant's design estimate. In either case, Column C is used to record the value of any revised funding allocations brought on by changes in scope and extent of the contract or project. Columns B and C indicate the original estimated overall project value, and this should not be confused with Column F that only asks for a forecast of the project value for the current fiscal period.

Column D (Previous Year Expenditure)

This column is only applicable to carry-over projects where costs were incurred in a previous fiscal year. If the project has been carried over for more than one year, then all costs should be accumulated for the previous years and be reported in this column.

Column E (Current Expenditure)

This is the area where current expenditures for this fiscal year are reported, current being April 1 to end of the month for which the report is being prepared. Current expenditure represents the total estimated expenditure for work completed in the current period, and includes contract payments, work for which an invoice is currently in progress, and the cost of any materials if physical delivery has been taken. The total current expenditure should always be equal to or greater than the contract progress payments made for the same period. It is not necessary to spend an inordinate amount of time calculating the amounts in this column, as anything omitted in the current month can be reconciled in the following month.

Column F (Fiscal Cost)

This is the most important column on the Project Expenditure Report, and is asking for the best effort forecast of the total funding that will be required for the project in the current fiscal period. The forecasting accuracy in this column should increase as the year progresses, and similarly greater attention should be given to expenditure forecasting as the project nears completion. Over-estimating the amount reported in Column F can lead to a severe reduction in the Department's flexibility to undertake further work in the current fiscal period. Similarly, under-estimating can lead to a shortfall of funds at the end of the year and an inability to pay for projects physically completed or materials purchased during the fiscal period.

Column G (Carry Over)

Once it becomes evident that a project will not be completed in the current fiscal year, a best effort forecast should start to be shown for the amount of funding that will be required in a subsequent fiscal period or periods to complete the project. Again, the forecasting accuracy in this column should increase as the year progresses and as the project nears completion.

Column H (Project Total)

This column is the total of Columns D, F and G, and provides the projected total expenditure from inception to completion for the project.

Remarks Area

This area has been provided to enable a detailed description of any project changes or complications, expenditure deviations or concerns, design changes or modifications, and any other project details that may have a significant impact on the forecasted final expenditure.

2.5.6 Monthly Health And Safety Summary

The Contractor completes a monthly health and safety summary report at the end of each month.

The Consultant shall obtain the completed report from the Contractor and submit it to the Project Sponsor by the tenth day of the following month.

2.5.7 Project Completion Health and Safety Report

This report shall be completed jointly by the Consultant and the Contractor with 2 days of the completion of the project. The Consultant shall forward the completed report to the Project Sponsor.

2.6 **QUALITY CONTROL AND QUALITY ASSURANCE DURING HIGHWAY CONSTRUCTION**

2.6.1 Quality Control/Quality Assurance

Quality Control (QC) is the responsibility of the Contractor and is carried out by the Contractor's staff or by consultants retained by the Contractor. Basic minimum QC requirements or recommendations are outlined in the contract specifications. Quality Assurance (QA) testing conducted to confirm acceptance of materials and construction is carried out by the Consultant.

2.6.2 Timing Of Quality Assurance Testing And Sampling

Sampling of field constructed materials for QA testing shall be conducted as soon as possible following the Contractor's completion of the Work, as allowed for in the contract specifications. Testing and reporting of the results to the Contractor shall be completed within 48 hours of the sampling. The timeliness of the testing and reporting of the results to the Contractor is important to assure the Department and the Contractor that the quality of construction is acceptable while the Work progresses.

2.6.3 Quality Assurance (Aggregate Production)

Prior to the start of aggregate production the Consultant shall review the Contractor's written proposal for aggregate processing in accordance with Specification 3.2, Aggregate Production & Stockpiling. During crushing operations the Consultant shall review the Contractor's QC test data for specification compliance as outlined in Specification 3.2.

2.6.4 Quality Assurance (Highway Construction)

Consultants performing materials testing functions for QA must be pre-qualified by the Department for the applicable category of work. A list of pre-qualified Consultants and the pre-qualification requirements are included on the Department's website.

Appendix C summarizes the minimum QA requirements for various types of typical projects. These tables specify the minimum QA testing to be conducted and the test methods to be followed. Alberta Transportation Test methods, as outlined in the contract specifications, shall be followed for construction QA unless otherwise specified.

The QA requirements on chip seals, graded seals and slurry seals are specified in the applicable specification and are based on a review of the Contractor's QC tests and visual inspection of the work. The Consultant administering a seal coat project shall determine the suitability of the Work as stipulated in the appropriate specification. This shall include the review of Contractor's design rates, design assumptions and field adjustments to rates, equipment calibration, and QC results for specification compliance. QC requirements for sieve analysis on chip seal projects are applicable to material produced after washing.

2.6.5 Quality Problems

In the event that quality problems are suspected, the Consultant shall discuss such concerns with the Project Sponsor to decide on the course of action required. Where agreed to, the Consultant shall conduct additional testing based on the testing requirements detailed in the contract specifications.

2.6.6 Quality Assurance (Materials)

The Contractor is responsible to perform the sampling for QA testing of certain materials such as asphalt products, paints, glass beads, etc., at the frequencies outlined in the applicable specifications. The Consultant shall supply the Contractor with all the necessary containers of proper size and type as called for in the applicable test procedures. Emulsion shall be shipped to the designated testing firm within 3 days of sampling. All other asphalt products shall be shipped to the designated testing firm within 7 days of sampling.

The Consultant shall also ensure that the required number of samples are obtained, properly identified and forwarded to the Department's designated testing firm in a timely manner.

2.6.7 Quality Assurance (Manufactured Materials)

The Consultant shall inspect materials supplied by the Contractor and obtain any quality control certification required by the contract specifications from the Contractor.

2.6.8 Quality Assurance Appeals

Quality Assurance Appeals, if required, shall be conducted by "Appeal Consultants" that are pre-selected each year by the Department. The Project Sponsor will have the list of pre-selected Appeal Consultants.

The Consultant is responsible for evaluating the justification of appeal requests and for coordinating the sampling and shipping of the appeal cores. For shipping of appeal test cores, the Consultant shall provide shipping boxes of rigid construction with interior protective padding. The Consultant shall determine whether

the Department or Contractor is responsible for payment of the appeal sampling and testing costs. The Consultant is also responsible for calculating new price adjustments and immediately advising the Project Sponsor of the invoicing requirements.

2.6.9 Materials/Mix Design

All materials testing and mix designs shall be conducted in accordance with the contract documents. Alberta Transportation Test (ATT) and Transportation Laboratory Testing Manual (TLT) procedures shall be used for materials design unless otherwise specified.

Cement Stabilized Base Course (CSBC) designs performed by the Consultant shall be provided to the Department.

Asphalt Concrete Pavement (ACP), Asphalt Stabilized Base Course (ASBC) and concrete mix designs are the responsibility of the Contractor. Mix designs prepared by the Contractor shall be reviewed and verified by the Consultant prior to any mix production. The Consultant shall not be affiliated with the Contractor's "mix design" or "quality control" consultant. The Consultant shall identify any concerns with the design when such designs are submitted and shall deal directly with any problems identified. Laboratory validation testing is not normally required, but shall be used in situations as determined by the Consultant and with prior approval of the Project Sponsor. The Consultant shall notify the Contractor of the status of his mix design submission in accordance with the contract specification.

For all approved mix designs or any changes in the approved Job Mix Formula, the Consultant shall complete the applicable Asphalt Mix Design and Job Mix Formula Summary Sheet included in Appendix C. Completed summary sheets are provided to the Project Sponsor and also faxed to the Department's Roadway Construction Standards Technologist (780)422-2846 or E-mail: dave.heath@gov.ab.ca.

2.6.10 Pavement Segregation Assessment

The Consultant shall assess pavement segregation and obvious defects in accordance with the contract specifications and the corresponding edition of the Department's Paving Guidelines and Segregation Rating manual.

2.6.11 Pavement Smoothness Assessment

The Consultant shall provide smoothness measurements of all top lift ACP using an approved profilograph in accordance with the contract specifications. Qualified flag people shall be used for traffic control. The Consultant shall identify any areas requiring repair and determine the applicable payment adjustments.

2.6.12 Quality Assurance Reporting Requirements**2.6.12.1 All Projects**

Construction Quality Assurance results shall be reported to the Project Sponsor on a weekly basis or as directed by the Project Sponsor. The Consultant shall use the most recent edition of report forms as indicated in the test procedures listed in Appendix C. Report forms developed by the Consultant will be acceptable only if all the required information is reported in the same layout as the Department form.

Quality Assurance test results shall be provided to the Contractor within the time period detailed in the contract specifications. The Consultant shall ensure that the Contractor signs and dates the test reports indicating his receipt of the test results.

2.6.12.2 Additional Requirements For Paving Projects

In addition to the above listed requirements the Consultant shall submit the following report forms and summary sheets to the Project Sponsor with a copy to the Department's Highway Engineering Section of the Technical Standards Branch.

| Report Form | Frequency of Submission |
|---|--|
| Asphalt Mix Design and Job Mix Formula Summary Sheet (Superpave also) | Each approved mix design or change in Job Mix Formula |
| Lot Paving Report (Superpave & HIR) | Weekly |
| Segregation Summary Report | After the segregation inspection following construction |
| Final Details ACP EPS Projects | Within the time period required for submission of Final Details (section 3 of this manual) |

All test and report forms, ATT procedures and QA testing requirements are available on the Department website.

The Consultant may submit completed paving reports, summary sheets, and Final Details sheets by either E-mail, fax, or mail to the following:

Attention: Roadway Construction Standards Technologist
 fax: (780) 422-2846 E-mail: dave.heath@gov.ab.ca

mail: Technical Standards Branch
Alberta Transportation
2nd Floor, Twin Atria, 4999 - 98 Ave.
EDMONTON, AB, T6B 2X3

2.7 UNIT PRICE APPROVALS

Adjustments to unit prices for existing bid items or new unit prices for additional bid items not included in the Contract require prior approval of the Department, with the exception that the Consultant may approve such unit prices that are required for Extra Work, to the extent allowed in Section 2.8, Extra Work.

The Consultant shall provide the Project Sponsor with documentation justifying the new bid items, written unit price quotes by the Contractor, and the Consultant's recommended unit prices.

2.8 EXTRA WORK

2.8.1 General

Extra Work is defined in the specifications as work which is not specified in the Contract or is of a class not included in the contract tender. In addition, Extra Work is considered to be work which is required to fulfill the scope of the original contract.

When Extra Work is necessary, the Consultant shall prepare an application for approval which details the scope of the work, the reason it is required and which itemizes all quantities and costs. The Consultant shall undertake any required negotiations with the Contractor to establish a suitable schedule for the completion of the work and a proposed method of payment, including any required unit prices. All applications for approval of Extra Work shall be processed using the appropriate Department form. The Extra Work shall not commence until approval from the appropriate authority has been issued.

It is the responsibility of the Consultant to ensure that the Extra Work is required to fulfill the scope of the original contract, that the work is not covered by existing contract unit prices, that the proposed method of payment is the most economical for the Department and that any proposed unit prices are reasonable for the work involved.

The Consultant may approve and issue a written order for Extra Work under the following conditions:

- The Extra Work is required to fulfill the scope of the original contract.
- The value of the Extra Work does not exceed \$10,000 per occurrence and the cumulative total value of all individual orders for Extra Work issued by the Consultant does not exceed 5% of the Modified Tender Amount.

- A copy of the order for Extra Work is provided to the Project Sponsor by the Consultant within 24 hours.
- The completion of the Extra Work will not result in increased payment to the Consultant.

The Consultant's authority to approve Extra Work also includes authority to approve any unit prices or lump sum prices required to complete the Extra Work.

The authority of the Consultant to approve orders for Extra Work may be rescinded by the Project Sponsor at his discretion.

All applications for Extra Work which do not fall under the approving authority of the Consultant shall be submitted to the Project Sponsor for consideration.

2.8.2 Equipment Rental Rates

The current "Alberta Roadbuilders and Heavy Construction Association Equipment Rental Rates Guide and Membership Roster" forms part of all contracts and contains the specified rates to be used for payment of Extra Work.

In the case of Extra Work on contracts which carry over from one year to the next, the Department's policy is to utilize the Guide current for the period in which the work was performed unless the rate in the current Guide has decreased.

Where equipment not listed in the Guide is employed, the Consultant shall provide the Project Sponsor with documentation justifying the need for the new rental rate, the written rental rate quotes by the Contractor, and the Consultant's recommended rental rate. The Project Sponsor will obtain the required approvals.

2.9 CONTRACT CHANGES

Contract Changes are typically initiated by the Department and cover situations where the scope of the Contract is being changed. The change in scope is covered by a Contract Change document signed by both the Department and the Contractor.

Contract Changes which involve additional work outside the contract limits are deemed to be Contract Extensions.

2.10 CONTRACT EXTENSIONS

Contract Extensions cover situations where a change in scope involves additional work outside the Contract limits.

Typically, Contract Extensions are initiated by the Department. A Contract Extension document is used to amend the Contract, and details the terms for performing the additional work. The Consultant may be required to calculate estimated quantities and negotiate prices with the Contractor for the additional work. The Contract Extension document must be signed by both the Contractor and the Department prior to the commencement of the additional work.

A Contract Extension does not authorize additional funds. Additional funds can only be authorized through a Contract Overrun Approval.

2.11 ADJUSTMENTS TO SPECIFIED CONTRACT COMPLETION DATE

The Consultant does not have the authority to adjust contract completion dates.

If the Contractor feels an adjustment to the completion date is warranted, he must submit a written request to the Consultant. The Contractor's submission must contain justification of an impact to his schedule, preventing completion of the project by the date specified in the Contract. The Consultant shall review the Contractor's submission and provide the Project Sponsor with a detailed recommendation concerning an adjustment to the contract completion date.

2.12 CONTRACT COST OVERRUNS

This procedure applies to all contracts which are tendered on a lump sum or unit price re-measurable basis, and is to be followed by the Consultant in the administration of the Contract. The essence of the process is the early identification of potential cost overruns, the evaluation of alternatives to an overrun, and the timely submission of proposals to the relevant approval authority.

2.12.1 Definitions

Modified Tender Price Contract Tender Price less extended bid price for site occupancy less extended bid price for supply of aggregate (where applicable).

Significant Bid Item Any bid item with an extended value greater than 20% of the Modified Tender Price.

Contract Cost Overrun Approval in Principle Issued during the actual prosecution of the work to authorize anticipated expenditures in excess of the Modified Tender Price. This additional amount authorized may not be exceeded without prior approval in the form of an extension to the Contract Cost Overrun Approval in Principle.

Final Contract Payment Total cost payable to the Contractor.

Modified Final Contract Payment Final Contract Price net all unit price adjustments, site occupancy bonus/penalty, liquidated damages, and any other bonus or penalty assessments as shown in the Contract Log.

2.12.2 Procedure

Management and control of all potential contract cost overrun situations is the responsibility of the Consultant.

Contract cost overruns are determined based on Modified Tender Price and the Modified Final Contract Payment. These items are derived from the Contract Log for Progress Estimate form. A request for a Contract Cost Overrun in Principle should be made when the Consultant is aware that the project has a potential to overrun.

Contract Cost Overruns of up to 5% of the Modified Tender Price or \$5,000 (whichever is greater) can be approved by the Consultant. All other contract cost overruns are referred to the Project Sponsor.

Under no circumstances shall the Modified Tender Price be exceeded by more than 5% without a written Contract Cost Overrun Approval in Principle, nor shall a Significant Bid Item be exceeded by more than 20% without written authorization from the Project Sponsor.

All overrun applications shall contain full details of the circumstances leading to the anticipated overrun, an evaluation of all alternatives considered feasible to prevent the overrun, a recommended course of action, a detailed overrun cost estimate, together with the submission of the "Approval of Construction Contract Cost Overruns and Increases to Significant Bid Items" form. All applications shall be submitted in sufficient time to allow adequate evaluation of alternatives and the allocation of additional funding, without causing delay to the Contractor.

On completion of the Work, and checking of Final Details on all construction projects for which a Contract Cost Overrun Approval in excess of the greater of \$10,000 or 10% of the Modified Tender Price has been issued, a Final Contract Cost Overrun must be prepared and submitted with the Final Details package outlining the following:

- Contract Tender Price
- Modified Tender Price
- Total value of all Contract Cost Overrun Approvals
- Final Contract Payment
- Modified Final Contract Payment

- Difference between Modified Final Contract Payment and Modified Tender Price, expressed as a percentage of Modified Tender Price.

2.13 SITE OCCUPANCY

2.13.1 Overview

This section details the purpose of Site Occupancy, the bonus/penalty payment structure and provides guidance on significant issues which typically arise when administering the specification.

Administration of Site Occupancy often requires interpretation of the specification by the Consultant. This section captures the Department's intent for Site Occupancy and is intended to be used by the Consultant to administer the specification in a fair and consistent manner.

2.13.2 Purpose

Site Occupancy is a contracting strategy used by the Department to help ensure it receives the lowest total project cost (lowest price to construct plus the fewest number of work days to complete). The Contractor estimates the number of calendar days he requires to complete the work and includes this amount in his tender price (ie. number of days multiplied by a predetermined daily rate). The daily rate is established by the Department and varies depending on the type of project.

Contractors who complete the work in less calendar days than the number bid, receive a bonus. Contractors who exceed the number of calendar days bid are assessed a penalty.

Site Occupancy is not intended to ensure compliance with the specified contract completion date. Failure to complete the project by the specified completion date is addressed by the use of Liquidated Damages as detailed in General Specification 1.2.

Site Occupancy is simply intended to encourage Contractors to complete the project in the fewest number of days.

2.13.3 Risk Sharing

The risks associated with Site Occupancy are shared between the Department and the Contractor. The Contractor assumes the risk of his productivity while on the site. The Department assumes the risk of delays or uncertainties caused by items which are considered beyond the control of the Contractor, such as inclement weather.

For example, the Contractor is not required to estimate (in his bid) the number of "rain days" which will occur during the course of the project. Therefore, calendar days are not assessed when the contractor is "rained out" or, when he is solely or primarily attempting to restore previously constructed work to a condition similar to that which existed when the rain commenced.

It is the Consultant's responsibility to determine the point in time when the Contractor has completed the "restoration work" and is primarily progressing with new work.

2.13.4 Allowing Efficient Use Of Contractor's Forces

(a) Performing Minor Work During Downtime

There may be times during the course of the project when the Contractor has essentially "shut down" the work but wishes to proceed with some minor work such as trimming, rip-rapping culverts or fencing using only a small portion of his workforce. This could be during periods of inclement weather, during breaks between work phases, during scheduled time off or, on a "carry-over" project, prior to recommencement of the project in the spring.

Normally, Site Occupancy would not be charged in these situations. However, when making this decision, the Consultant must consider the scope of actual work being performed in relation to the scope of the overall project and the project schedule.

(b) Scheduling of Different Phases of the Work

Site Occupancy is not charged during "down time" resulting from different phases of the work being completed at different times, generally by different subcontractors or work crews. "Phases" of the work can be major items such as paving and base course work or a minor item such as fencing.

Generally, the overall project schedule, including schedules for the various phases of the work is established prior to commencement of the project. It is recognized that this schedule is subject to change. However, in the event changes occur in the project schedule, Site Occupancy must not be used to "penalize" the Contractor. Site Occupancy applies to the days the Contractor is actually working on the project, not to the days or period of time indicated on the project schedule. In the event changes to the project schedule proposed by the Contractor are not desirable to the Consultant or Department, the issue must be handled separately from Site Occupancy.

It is the Contractor's responsibility to advise the Consultant of proposed changes to the project schedule in a timely manner and in sufficient time for the Consultant to discuss the proposed changes and address any issues arising from the proposed changes with the Project Sponsor.

2.13.5 Correcting Deficiencies

Site Occupancy is not intended to apply in situations where the Contractor is working solely on correcting deficiencies in the work.

2.13.6 Specific Exclusions From Site Occupancy

The specification excludes specific types of work from Site Occupancy. Site Occupancy is not charged if the Contractor is working solely on these items.

2.13.7 Termination Of Site Occupancy

The assessment of calendar days will terminate once the Contractor has totally completed all work specified in the Contract with the exception of borrow pit reclamation, aggregate source reclamation, and milled rumble strips.

It must be noted that allowing minor work to be completed without assessing calendar days as detailed previously, does not apply at the "end of the project". For example, if the Contractor has completed all base and paving work but culvert riprap and fencing has not been completed, Site Occupancy will still apply.

2.13.8 Payment

The total number of calendar days assessed for the Contract are compared to the number of calendar days indicated in the unit price schedule. Any difference between these numbers is inserted in the final progress payment and multiplied by the specified daily rate to provide the total bonus or penalty. If the number of calendar days assessed is equal to the number of calendar days bid, Site Occupancy becomes a zero item.

2.13.9 Site Occupancy for Quantity Increases

The specification for Site Occupancy states that increasing the number of calendar days bid by the Contractor will be considered in cases where the scope of work increases.

The Consultant shall review any requests for additional calendar days and provide a recommendation to the Project Sponsor.

2.13.10 Site Occupancy for Scope Changes (Extra Work, Contract Extension and Contract Changes)

On projects where the Department negotiates a change in the scope of the work with the Contractor or when Extra Work is necessary, the impact on Site Occupancy will be negotiated with the Contractor as part of the Contract Extension, Contract Change, or Extra Work.

2.14 FIRST PARTY CLAIMS**2.14.1 Overview**

The procedure for administering claims submitted by a Contractor to the Department makes use of both a claims resolution process and a supplemental dispute resolution process which is contained in the

document entitled "Dispute Resolution Process for Government of Alberta Construction Contracts". This procedure is outlined in General Specification 1.2 and is intended to guide the Contractor through the various levels of appeal available under the terms and conditions of the Contract.

The Consultant is a key component in the Department's defence and avoidance of claims. In filling this role, the Consultant must observe good project management practice which includes fair negotiation and judgement when dealing with disputes. The Consultant's detailed project documentation through project journals, accurate quantity measurements and the accurate recording of quantities and quality are a basic component upon which responses to claims are based. A basic rule to assist in the prevention of claims is that Consultant's key representatives must have a thorough and detailed knowledge of the Contract.

It is important that the Consultant does not give any assistance, advice or gratuitous information to the Contractor to help formulate the basis of a claim. The Contractor must not have access to Project Journals or Departmental correspondence. Information relating to Progress Estimates and quality assurance test results may be provided.

2.14.2 Procedure For Claims And Appeals

Upon receiving a first party claim, the Consultant shall immediately issue written acknowledgement of his receipt of the claim to the Contractor and provide a copy of the Contractor's letter of claim to the Project Sponsor and the Director, Tender Administration of the Department's Business Management Branch.

The Consultant is the first level identified in the claims resolution process and is required to analyze the claim and respond to the Contractor in writing. The Consultant's analysis shall include investigating the basis for the claim, producing a summary of facts, figures, test results, pictures, relevant project journal entries, videos (if available) and detailing a recommended course of action. This analysis shall include the Project Sponsor who will assist the Consultant with the review of the claim and the development of the response to the Contractor.

The extent of the analysis will depend on the type and nature of the claim submitted. However, it must always include the contract documents and when possible the responses should contain reference to specific contract clauses.

It is the Department's intent that the analysis of the claim commence as soon as possible following the submission of the claim by the Contractor. Should the nature and complexity of the claim make it impractical to complete the analysis within a 2 week period, the Consultant must notify the Contractor in writing that the analysis is ongoing and that a formal response is forthcoming.

The contract documents permit the Contractor to appeal the Consultant's response to the next level in the claims resolution process. Members of the Consultant's staff may be required to provide information to assist subsequent review levels with their assessment of the claim. In addition, should the claim fail to be resolved and be referred to the Dispute Resolution Process, the Consultant may be requested to participate in Mediation and/or Arbitration proceedings.

2.15 THIRD PARTY CLAIMS

A third party claim is a claim against the Contractor or a sub-contractor by sub-contractors, suppliers, labourers, or others working on or providing material or services on the Contract.

Third party claims must be submitted in writing. Verbal statements are not sufficient. The Consultant must immediately date stamp and forward any submission to the Project Sponsor. Due to the time limitations under the Public Works Act, the Consultant must submit third party claims to the Department the same working day they are received.

The Public Works Act has a 90 day limit for filing claims. However, under no circumstances should a claimant be advised not to file a claim if the 90 day period has expired. Any claims filed beyond the 90 day or 120 day limits shall be date stamped and forwarded to the Project Sponsor.

2.16 DAMAGE CLAIMS

A damage claim (insurance claim) is a claim for injury, loss or damage arising in connection with the work. The most common damage claim is for cracked or broken windshields on chip seal coat projects.

The Consultant must immediately inform the Project Sponsor of any damage claims received.

The Consultant will forward the claim letter to the Contractor, requesting that the Contractor deal with the claim. The claimant shall be copied on this letter so that he is aware that the claim has been forwarded to the Contractor. The Contractor is required by the specifications to review any damage claims received and respond to the claimant in writing with a copy to the Project Sponsor.

The claimant is not to be provided with the Contractor's insurer's name. The claimant has the legal right to obtain the insurer's name from the Contractor but not from the Department.

2.17 CONSTRUCTION COMPLETION, CONDITIONAL CONSTRUCTION COMPLETION, REPAIRING DEFICIENCIES AND WARRANTY

2.17.1 Confirming Contract Requirements

It is critical that both the Consultant and the Contractor are aware of all contract requirements which may impact the issuance of the Construction Completion Certificate. The Consultant should confirm contract requirements with the Project Sponsor prior to commencement of the Work and at regular intervals throughout the project as the need arises. This will allow the Consultant to communicate any significant issues to the Contractor as the Work progresses, providing him with the opportunity to address them in an effective manner.

2.17.2 Interim Inspections

Throughout the course of the Work, the Project Sponsor and Consultant will conduct joint inspections to confirm that all Work is being completed to the required standards. The Consultant will alert the Contractor of any items, which require attention while the Work is in progress. The Contractor may participate in the interim inspection(s) to ensure that expectations are fully understood and nothing unexpected is identified during the Construction Completion Inspection. A representative from the local municipality should also be invited to participate in the interim inspections if there is a significant impact to the municipalities infrastructure network or local issues are identified. The local inspector from Alberta Environment should also be invited to participate if there are environmental issues.

2.17.3 Construction Completion Inspection

The Construction Completion Inspection is initiated by the Contractor. This inspection should only be requested when both the Consultant and the Contractor are in agreement that any significant items have been addressed and the Project appears to be complete. During the Construction Completion Inspection, deficiencies in the work which were not initially picked up by the Contractor and Consultant, may be identified.

The location and nature of any such deficiencies identified during the Construction Completion Inspection shall be recorded by the Consultant and provided to the Contractor in writing. The deficiency list must also include time-lines for the completion of the repairs.

In the event any defects in the Work are identified subsequent to the Construction Completion Inspection, such defects shall be considered a warranty item and will not require immediate repair. Any such defects will not impact the issuance of the Construction Completion Certificate. However, they must be documented by the Consultant and repaired by the Contractor prior to the expiration of the warranty period.

2.17.4 Construction Completion Certificate And Commencement Of Warranty

The Construction Completion Certificate is issued once the Consultant confirms that all work, including any deficiencies identified during the Construction Completion Inspection have been satisfactorily completed. The contract warranty period commences on the last date the deficiencies are satisfactorily repaired. If there are no deficiencies on the project, the warranty period commences on the date the project was ready for the construction completion.

Standard letters to be used by the Consultant for Construction Completion Certificates are included in the appendices of this document.

2.17.5 Conditional Construction Completion Inspection

The Conditional Construction Completion Inspection and Certificate are intended for use on projects where construction extends past August 31 but, due to weather conditions, all work cannot be totally completed

prior to winter shutdown. In addition to these conditions, all bid item work must be completed with only minor cleanup and/or deficiencies remaining.

In these situations the Conditional Construction Completion Inspection, the identification of deficiencies and the establishing of time-lines for the repair of deficiencies shall be administered as described in the previous subsection entitled "Construction Completion Inspection".

2.17.6 Conditional Construction Completion Certificate And Commencement Of Warranty

The Conditional Construction Completion Certificate is issued following the inspection and contains a deficiency list and time-lines for completion of the repairs.

The issuance of a Conditional Construction Completion Certificate allows a reduction in holdback to be considered.

For projects on which a Conditional Construction Completion Certificate is issued, the contract warranty period is administered as follows:

2.17.6.1 Deficiencies Repaired Within The Established Time-lines

If the Contractor completes the repair of deficiencies within the established time-lines, the warranty period commences on the date that the project was ready for the Conditional Construction Completion Inspection.

2.17.6.2 Deficiencies Not Repaired Within The Established Time-lines

If the Contractor fails to complete the repair of deficiencies within the established time-lines, the warranty period commences on the date the deficiencies are satisfactorily repaired. Failure to complete repairs within the established time-lines may result in the Project Sponsor having the repairs completed by other forces and recovering those costs from the Contractor.

2.18 TERMINATION OF WARRANTY AND FINAL ACCEPTANCE

2.18.1 Termination Of Warranty Period

The Project Sponsor may retain the Consultant to perform a warranty inspection and to monitor any warranty work performed by the Contractor. The provision of these services will generally be covered by a separate agreement between the Consultant and the Department. The timing of the warranty inspection shall be determined by the Project Sponsor.

In the event defects in the work have been identified subsequent to the Construction Completion Inspection and/or through the warranty inspection, the Consultant shall immediately notify the Contractor in writing of the nature and location of the defective work and request a schedule from the Contractor detailing the timing and

the nature of the corrective work. The Consultant shall provide copies of all correspondence to the Project Sponsor.

Prior to and during the performance of the corrective work, the Consultant shall liaise with the Project Sponsor to ensure that the timing of the corrective work and the final product is satisfactory to the Department.

Once the corrective work has been satisfactorily completed, the Consultant shall notify the Project Sponsor in writing that a Final Acceptance Certificate may be issued to the Contractor.

The Contractor's contractual obligations to complete warranty work are guaranteed by the contract performance bond. Any communication necessary between the Department and the Surety concerning the Contractor's warranty obligations, shall be initiated by the Department.

2.18.2 Final Acceptance Certificate

A Final Acceptance Certificate is issued either at the expiration of the warranty period specified in the Contract or when any defects in the work occurring during the warranty period have been satisfactorily corrected, whichever occurs last. The Final Acceptance Certificate will be issued by the Department.

SECTION 3 MEASUREMENTS AND PAYMENTS

3.1 FINAL DETAILS

3.1.1 General

Final Details are a complete compilation of all details of the Work performed on a Department contract. Final Details serve as a means of verification of all quantities submitted for payment after completion and acceptance of work on the project.

The Consultant shall compile Final Details in accordance with the samples in Appendix D and forward the complete original package to the Project Sponsor within the time frames detailed herein. The Consultant shall retain and submit certain information for Final Details as outlined in this document and the Consultants Agreement with the Department. The information retained by the Consultant shall be stored satisfactorily as per the Agreement.

The Consultant should not wait until the Contract is complete to commence work on the Final Details. As soon as each bid item or work in each kilometre is completed, the Consultant should prepare the Final Details for those particular items or kilometres.

All final quantities must be supported by approved measurements in the field. All digital information must be submitted to the Department on CD ROM media.

Final cost information for bridge structures and bridge size culverts shall be documented separately from the highway cost information. Although the work may all be paid under a single account or contract, the costs incurred for bridge related work must be clearly documented for use in future analysis.

The following requirements apply primarily to highway construction projects. For additional detail concerning Final Details on bridge projects, please refer to Section 4 of this document.

3.1.2 List Of Significant Items

3.1.2.1 **Items To Be Submitted To The Department**

The following is a list of items that shall be submitted to the Department:

- Summary of Final Details Submitted
- Project Summary Report (2 copies)
- Checking Final Details Checklist (2)
- Grand Summary (2)
- Details of Width and Thicknesses (2)
- Final Estimate complete with applicable approvals
- The Project Journal (original)
- Plan of Final Subgrade Construction (grading projects only)
- Summary of Orders for Extra Work
- Summary of Extra Work

- Bid Item Details
- Copy of Contract with Unit Prices
- Final Details ACP/EPS Projects (2)
- EPS Price Adjustments Sheets
- Daily Lot Paving Reports
- Summary of Segregation Inspection and Obvious Defects
- Summary of Profilograph Inspection
- Segregation Rating Worksheets
- Profilograph Rolls and Index Summary Report
- Borrow Pit Diagrams (for sources controlled by the Department)
- Gravel Pit Diagrams (for sources controlled by the Department)
- Summary of Borrow Pits and supporting documentation for borrow reclamation (Pre-Disturbance Assessment and Post Assessment)
- Field Record Books (which include all measurements)
- Earthworks Information (Includes design cross-section data, all unedited original data, edited data with descriptions of changes, final re-measure including undercut, horizons, waste measurements, quantity calculations, and summary of results)
- Mylar and digital copies of As-Constructed Plans
- Summary of GBC and ACP placed
- Electronic Data for GBC and ACP placed (scale sheets if completed by manual calculations)
- Copies of all correspondence to Department and Contractor.
- Site Occupancy and Liquidated Damages Summary
- Minutes of meetings
- Utility agreements and costs for utility adjustments

3.1.2.2 Items To Be Retained By The Consultant

The following is a list of items that shall be retained by the Consultant:

- Checkers Field Books
- Work/Grade Stake Books
- Truck Haul Cards
- Scale Sheets
- Consultant's Correspondence File(s)
- Weekly reports
- Asphalt Mix Design and Job Mix Formula
- Notification of Construction Operations
- Certificate of Calibration
- Scale accuracy inspection sheets
- Monthly Progress Estimates
- Project Expenditure Reports
- Approvals of Construction Contract Cost Overruns
- Project Completion or Project Shut Down Reports
- Project Completion Health and Safety Review Form

- Monthly Health and Safety Summaries
- Contractor's Daily Traffic Signing Summaries
- Order Fixing Maximum Speed Limit
- Density Tests Work Sheets
- Sieve Analysis Work Sheets
- Contractor's Daily Testing Reports
- Site Inspection Reports
- Contractor Daily Testing Results
- All Appeal Data Sheets
- Copy of Electronic Data for GBC and ACP Placed

Although the Consultant is expected to store many items related to the project, it does not eliminate the Consultant's obligation to submit these forms to the Project Sponsor if requested.

3.1.3 Procedure For Preparing And Submitting Final Details

- (a) When work on a bid item or kilometre of highway is complete, the Consultant shall verify that all measurements are recorded, check all calculations and compile all quantities into the Grand Summary Sheet. The units for each item listed in the Grand Summary should carry the same decimal places as were used in the method of measurement and detailed calculations for that item.

The Consultant signs all Final Details certifying that:

- Goods and services were received or work was completed in accordance with the terms of the Contract
 - Quantities and calculations are correct
 - Policy and procedures outlined in this document and other applicable Department documents were applied to the administration of the Contract
- (b) Another experienced Engineer or Technologist employed by the Consultant or from another consulting firm undertakes an independent check on the Final Details to verify the following:
- Methods of measurement are those outlined in the contract documents
 - Finals have been compiled as outlined in this document for each bid item
 - Quantities are correct
 - Necessary approvals have been obtained and payments are in accordance with the terms of the contract
 - All measurements have been recorded and support the details.

The Checking Final Details - Checklist is signed and attached to the Final Details (sample included in Appendix D).

- (c) The Grand Summary is certified correct and stamped with Consultant's corporate seal or an Engineer's stamp. The correct number of copies of the Final Details are prepared and the Consultant submits the checked Final Details to the Project Sponsor.

3.1.4 As-Constructed Project Information

3.1.4.1 As-Constructed Plans And Drawings

The Consultant shall supply 3 mil matte finish mylar film and digital copies of all as-constructed plans to the Project Sponsor at the time all other Final Detail information is submitted.

The as-constructed drawings shall show details of horizontal alignment, vertical alignment, cross-section elements, intersection layouts, interchanges, etc. Details of signing and pavement markings shall be described through reference to standard plans where possible. A detailed description and location of all underground utilities and conduits, showing horizontal locations, elevations, size and type of utility, etc., shall be shown on as-constructed plans.

Affective August 2002, the as-constructed plans and drawings shall be provided using microstation .dgn format.

3.1.4.2 As-Constructed Surfacing Project Information

The Consultant shall provide the following as-constructed details of each surfacing project to the Project Sponsor. This information is used in the Department's Pavement Management System database.

Project Description. A complete description of the project, including the following:

- Highway control section number (e.g. 2:02)
- Project limits description (e.g. Hwy. 61:02, Jct. Hwy. 4 @0.00 km^a to Wrentham @25.06 km^a)

NOTE: Alberta Transportation control section numbering system and kilometre datum measurement must be used.

- Job type (eg. final pavement, overlay, staged granular base, cement stabilized base, double-sealed granular base, seal coat, or combinations thereof)
- Dates of start and finish of construction
- Contractor's name
- Consultant's contact person in charge of the work
- Contract number

Structural Information. Structural information, including the following:

- The Contract Plan, annotated to show any deviation from the original design.
- Information on the subgrade actually encountered or constructed:
 - < Soil classifications
 - < Subgrade additives used, if any (e.g. lime)

- < The results of any coring or drilling undertaken on the project
- Width and Thickness Diagrams, for each homogeneous section greater than 200 m in length, containing:
 - < The finished surface width (rounded to the nearest 0.1 m)
 - < The constructed side-slope ratios (e.g. 4:1) of pavement structure and subgrade as applicable
 - < The constructed pavement structure thickness (rounded to the nearest 5 mm) including the class and designation of aggregates used
 - < The constructed ASBC thickness (rounded to the nearest 10 mm)
 - < The constructed total base layer thickness (rounded to the nearest 10 mm)
 - < The constructed thickness of pit run gravel, if any
- On paving projects, the type and grade of asphalt cement used

Width and Thickness Diagrams. Within one month following completion of the project, the Consultant shall deliver to the Project Sponsor a diagram showing in detail the lengths, widths and depths of all surfacing materials applied to the project. The surfacing details will also be submitted as part of the final details. These dimensions are to be tied to the centreline chainage of the roadway and to the Control Section kilometres.

3.1.5 Project Summary Report

The Project Summary Report provides the written record of the project, forms part of the history of the roadway, and is an important project information source. The report must contain sufficient detail so that an independent reviewer either now or in the future can gain a clear understanding of the project. The Project Summary Report must be typewritten, separately bound and submitted along with the Final Details. The Project Summary Report shall contain but need not be limited to:

- Project title and contract number
- Scope of work, project description and site plan
- Project and contractor staff, sub-contractors, equipment and suppliers
- Project schedule and key dates
- A summary of site occupancy days
- Work progress, problems and solutions
- Innovative and unique aspects of the project
- Safety, traffic accommodation and utility relocation
- Design and actual contract quantities and costs, and any cost overruns, contract extensions or extra work. Reasons for any significant variations in quantities and costs
- Environmental issues
- Width and thickness charts
- Comments on contractors performance and recommendations

- Photographs of key activities
- Final project costs including all contract costs based on Modified Tender Price, bonuses and penalties (copy of the final contract log), utility, right-of-way, and initial and final engineering costs. Reasons for any Scope Changes and engineering costs shown as a percentage of contract cost.
- Commentary on the materials testing results for grading and GBC. Commentary and summary of ACP testing results.
- Suggested specification changes on any problems encountered with current specifications
- Any discussions or issues relating to pavement quality or obvious defects
- Copies of all correspondence to the Department and Contractor including minutes of meetings.

3.1.6 Timelines For Submission Of Final Details

The following are considered maximum times for submission of Final Details by the Consultant (including checking) to the Project Sponsor.

These timelines commence on the date it is determined that a Construction Completion Certificate or a Conditional Construction Completion Certificate should be issued.

- **Small roadway and/or bridge projects** within two weeks;
- **Surfacing and base projects** within four weeks;
- **Multiple and/or major bridge projects** within five weeks;
- **Grading and grading combined with base and surfacing projects** within ten weeks;
- **Grading with interchange or divided highway grading projects** within twelve weeks.

Re-measure is not to be considered as part of Final Details preparation and must be done as work on a bid item or on a kilometre is completed.

Any delay in the submission of the Final Details may entitle the Contractor to a financial compensation for late payments. If for any reason the Consultant is unable to meet the required time lines, he must immediately notify the Project Sponsor.

3.2 RETAINING AND RELEASING HOLDBACK

3.2.1 Retaining Holdback

As an alternative to cash holdback and subject to Department approval, the Contractor may provide an Irrevocable Letter of Credit or a Release of Holdback Bond in the amount specified in General Specification 1.2.

Prior to completing a Progress Estimate, the Consultant shall confirm with the Project Sponsor whether the Contractor has provided an Irrevocable Letter of Credit or a Release of Holdback Bond for the Contract. If an Irrevocable Letter of Credit or a release of Holdback Bond has not been provided, the Consultant shall identify Holdback on each Progress Estimate, including the Final Estimate, in the amount detailed in General Specification 1.2.

If, during the course of the Contract, the Contractor provides the Consultant with an Irrevocable Letter of Credit or a Release of Holdback Bond, it shall be immediately forwarded to the Project Sponsor.

3.2.2 Partial Release Of Holdback

3.2.2.1 When A Conditional Construction Completion Certificate Has Been Issued

In situations where a Conditional Construction Completion Certificate has been issued, the Department may initiate a reduction in the amount of the holdback, Irrevocable Letter of Credit, or Release of Holdback Bond. The Department will retain a sufficient amount to cover the cost of correcting the deficiencies.

In these situations, the Consultant shall calculate the amount it would cost the Department to hire a separate contractor to complete the deficiencies/repairs and advise the Project Sponsor.

3.2.2.2 When A Conditional Construction Completion Certificate Has Not Been Issued

In cases where a Conditional Construction Completion Certificate has not been issued any reduction in the holdback must be initiated by the Contractor. Such requests shall be in writing to the Consultant and must be accompanied by the written sanction of the Surety. The Consultant shall review the request with the Project Sponsor taking into account the reasons the Work is not completed, any unforeseen problems and the status of the Final Details.

A reduction in holdback may also be considered when the Contractor has diligently prosecuted the Work but weather conditions force winter shutdown. In these situations the remaining Work must be less than 2% of the Contract amount.

The Department will assess the request for a reduction in holdback and will release the appropriate amount.

3.2.3 Final Release Of Holdback

The Department will make the final release of Holdback once the Final Details have been checked and necessary clearances have been received.

SECTION 4 BRIDGE CONSTRUCTION

4.1 BRIDGE CONSTRUCTION INSPECTION AND CONTRACT ADMINISTRATION

4.1.1 General

This section of the document outlines responsibilities and authority of the consultant which are more specific to the administration of bridge contracts and bridge material fabrication inspection. The construction of bridges, which include bridge size culverts, are combined with highway construction projects in many instances. This section applies to both "stand alone" bridge projects and combined bridge/highway construction projects. The Consultant shall not consider this section in isolation but rather as an integral part of the previous sections. For the various phases of a bridge construction project it may be necessary for the Consultant to liaise with several individuals/areas within the Department, other than the Project Sponsor. For such instances, the term "Department" rather than "Project Sponsor" has been used in this section. Where contact with other areas of the Department is necessary, the Consultant will be advised of the appropriate Department contact person by the Project Sponsor.

Copies of all forms referenced in this section are contained in Appendix B.

Qualification and/or certification requirements for Consultants involved with bridge work are detailed in the Engineering Consultant Guidelines for Provincial Highway Projects - Volume 1 - Design and Tender.

4.1.2 Pre-Fabrication

The Consultant shall obtain documentation to demonstrate that fabrication plants are C.W.B. or C.S.A. approved as applicable. The requirements also include approval of shop drawings, stressing calculations, mill certificates, jack calibration, concrete mix designs, etc. Approved copies of these requirements shall be forwarded to the Department prior to fabrication.

The Consultant shall also forward welding procedures and fabrication schemes to the Department for review. The Consultant shall not permit fabrication to commence until the review process is complete and the Consultant has approved the shop drawings.

NOTE: As applicable, the approval of shop drawings, fabrication drawings, erection drawings, stressing calculations, etc. shall be in accordance with the clauses pertaining to shop drawings in the current version of the "Specifications for Bridge Construction".

4.1.3 Bridge Material Fabrication Inspection

The Consultant shall perform quality assurance checks, inspections and acceptance of fabricated materials in accordance with Department standards and guidelines.

There are three major areas in bridge materials fabrication inspection:

- Prestressed precast concrete girders/units, refer to section 4.1.3.1.
- Major steel components, refer to section 4.1.3.2.

- Miscellaneous material including culverts, refer to section 4.1.3.3.

The Consultant is responsible for the following:

- Analyze, report and provide recommendations on all design changes to the Project Sponsor prior to implementation.
- Arrange an initial meeting with the Department to outline plant inspection and quality assurance requirements, and coordinate a prejob meeting with the Contractor, the fabricator and the Department.
- Perform quality assurance throughout the course of fabrication in accordance with the Precast Inspection Forms.
- Perform quality assurance throughout the course of fabrication in accordance with the Department Structural Steel manual for major steel components.
- Perform checks and inspection on miscellaneous materials including culverts in accordance with Department procedures and specifications. Culvert Inspection Reports for CSP and SPCSP shall be submitted to the Project Sponsor.
- Review SPCSP fabrication drawings and supply copies of all these reviewed drawings to the Department. Appropriate bridge file number(s) shall be shown on these drawings.
- Consult with the Department on any problems that occur throughout the course of fabrication.
- Complete a final inspection to confirm the suitability of fabricated materials.
- Submit weekly inspection reports for all material fabrication and a final report for prestressed precast concrete girders/units and major steel components.

All inspection forms, reports and records of inspection shall be submitted to the Department.

4.1.3.1 Prestressed Precast Concrete Girders/Units Fabrication Inspection

REQUIREMENTS OF INSPECTION

- Attend the pre-fabrication meetings with the Department and the fabricator.
- Check material mill reports and certificates.
- Check form set up for integrity and accuracy of dimensions.
- Review stressing procedures and operations.
- Check miscellaneous material and reinforcing steel for accuracy of fabrication and details of placement.
- Witness concrete testing (percentage air, unit weight, slump, temperature) by the fabricator.
- Check for proper rebar cover.
- Inspect concrete pours and application of heat/steam in the form.
- Direct from which batch to take the release cylinders.
- Make 28 days test cylinders and provide final test results.
- Inspect the stripped unit for dimensions as well as finishing, application of silane sealer and curing.
- Take camber readings on selected units.

- Submit weekly inspection reports.
- Perform final inspection of each unit.
- Submit a final inspection report once the fabrication phase of the project is completed.
- Any issues or questions arising in the shop that the inspector is not able to answer shall be referred to the Department.
- Items which require major repairs must be referred to the Department for consideration, prior to commencement of the repairs.

FINAL INSPECTION REPORT CONTENT

- summary of fabrication (synopsis)
- pre-fabrication meeting minutes and correspondence
- fabrication schedules
- daily reports
- mill reports for stressing strand
- stress-strain curves
- mix designs
- approved stressing calculations
- daily stressing sheets
- curing temperatures
- camber records
- approved repair procedures (if any)
- construction data sheets
- weekly summaries of inspection hours
- photos

4.1.3.2 Major Steel Components Fabrication Inspection

Major steel components include steel girders, sign structures and ferries.

REQUIREMENTS OF DAY SHIFT VISUAL INSPECTION

- Attend the pre-fabrication meetings with the Department and the fabricator.
- Coordinate all other inspections, including Non-Destructive Testing (NDT) as required. Assume responsibility for the work of the individuals performing such inspections/testing as well as the second shift visual inspector, if one is required.
- Check material mill reports as well as plant's certification and welder's qualification.
- Perform hardness testing of flange plates.
- Check to ensure welding is being performed in accordance with approved procedures.
- Certify and accept radiographic film interpretation.
- Perform daily fabrication inspection, check dimensions and visually inspect all welds.
- Perform minor amount of NDT such as dye penetrant.
- Witness critical welds and set up prior to commencing next stage of fabrication.

- Submit weekly inspection reports. This shall include radiographic films and all non-destructive inspection reports interpreted by NDT technicians.
- Perform final inspection of each girder section.
- Any issues or questions arising in the shop that the inspector is not able to answer shall be referred to the Department.
- Items which require major repairs must be referred to the Department for consideration prior to the commencement of the repairs.

REQUIREMENTS OF SECOND SHIFT VISUAL INSPECTION

The requirements for the second shift visual inspection are basically the same as noted above, but the inspector reports directly to the day shift inspector.

FINAL REPORT CONTENT

- summary of fabrication
- pre-job meeting
- weekly reports
- production schedules, progress charts, inspection checklist
- approved repair procedures (if any)
- mill certificate
- plate cutting diagrams with heat numbers
- weld procedures and Charpy Impact test on weld metal (if any)
- welders tickets
- hardness test records
- radiography test reports
- ultrasonic test reports
- MPI test reports
- dye penetrant test records (if any)
- heat treatment records (if any)
- camber records
- weekly summaries of inspection hours (Notes and visual)
- photographs

4.1.3.3 Miscellaneous Material Including Culvert Fabrication Inspection

Miscellaneous material includes deck joints, bearings, bridgerail, strengthening/replacement members, miscellaneous iron and culverts.

REQUIREMENTS OF INSPECTION

- Attend the prejob meetings with the Department, where required.

- Checking material mill reports as well as plant's certification and welder's qualification when required.
- Check to ensure welding is being performed in accordance with approved procedures.
- Certify and accept radiographic film interpretation.
- Check critical points in fabrication such as jig set-up.
- Check dimensions, coating thickness and integrity and visually inspect all welds.
- Provide interpretation of results for macro-etched samples of bridgerail post to base plate welds.
- Perform final inspection of the assembly when required.
- Submit weekly inspection reports with radiographic films and summary of inspection hours.
- Photographs of problem areas shall also be submitted with the report.
- Any issues or questions arising in the shop that the inspector is not able to answer shall be referred to the Department.
- Items which require major repairs must be referred to the Department for consideration prior to commencement of the repairs.

4.1.4 **Bridge Construction Inspection**

Bridge Construction inspection shall include inspection of all bridge structures including bridge size culverts and bridge rehabilitation work.

The Consultant shall inspect the Contractor's work to confirm compliance with the Contract.

The Consultant shall analyse, report and provide recommendations to the Project Sponsor on any design changes which occur during the construction phase of the project. Any design changes require prior approval of the Project Sponsor.

4.1.4.1 **Pre-Construction Meeting**

The Consultant shall arrange a Pre-construction Meeting as outlined in Section 2 of this document and shall report the minutes of this meeting on the Pre-Construction Meeting Agenda form.

4.1.4.2 **Requirements For Bridge Construction Inspection (As Appropriate)**

- Coordinate and conduct the preconstruction meeting including milestone meetings as appropriate for different phases of construction such as foundation construction, girder erection, deck forming and casting.
- Perform inspections to ensure the work is in compliance with Department standards and specifications.
- Administer traffic control on the project in accordance with the current edition of the Department's Traffic Accommodation in Work Zones manual.
- Review berm work proposals and cofferdam designs.
- Inspect excavations and approve foundation material.

- Confirm suitability of the Contractor's pile driving/drilling equipment.
- Log and record all pile data for driven and drilled piles and ensure conformance with the specified pile tip elevation and bearing requirements. Complete the Pile Data form for all driven piles.
- Review formwork, shoring and scaffold designs.
- Inspect removal of existing ACP from bridge deck.
- Inspect formwork for integrity, dimensions and elevations prior to casting all concrete.
- Inspect reinforcement for accuracy of fabrication and placement.
- Check to ensure deck joints are set to the correct elevation, gap setting and location.
- Review and approve all concrete and ACP mix designs.
- Review and approve all proposed backfill materials including clay seal material.
- Survey existing deck concrete to establish gradelines for overlay concrete, curb/median and ACP approach.
- Locate all areas of delaminated or unsound deck and curb concrete and inspect repair procedures.
- Inspect all concrete pours to ensure proper quality control, placing, finishing, and curing procedures.
- Inspect sealer application.
- Confirm that all materials used conform with the Department's recognized products list and contract specifications.
- Monitor all quality control for polymer overlay work ensuring conformance to contract specifications.
- Review and approve all stressing calculations/details and inspect all work related to stressing or strengthening of girders. Inspect grouting procedures for post tension ducts.
- Review and approve girder erection proposal.
- Conduct survey of substructure elements including checking of girder layouts. Monitor girder erection to ensure conformance to Contractor's girder erection proposal. Check all structural bolts for specified tension.
- Check to ensure correct orientation of girder bearings.
- Check elevations and locations of erected girders. Utilizing camber diagram, determine corrections for setting of deck formwork.
- Check contractors elevations of support rails for deck finishing machine and monitor "dry run".
- Inspect and approve alignment and elevations of bridgerail and/or guardrail.
- Ensure proper techniques used when grouting bridgerail baseplates and bearings.
- Ensure the waterproofing membrane and ACP wearing surface are in compliance with the specifications.
- Conduct other inspections as may be required to ensure acceptable construction practices.
- Prepare and submit monthly contract progress payments.
- Maintain neat and accurate notes for all survey audits.
- Diarize all site activities and discussions and prepare Daily Construction Reports.
- Document all approved changes to the contract and prepare as-constructed drawings and the final bridge construction report form.

- Resolve daily construction problems related to contract interpretation, specification conformance or any claims for extra work.
- Document, report and prepare correspondence as requested for construction claim resolution.
- Submit Monthly Health and Safety Summaries and the Project Completion Health and Safety Review.

PAINT INSPECTION

- Ensure the Contractor's paint system is in compliance with the Department's requirements
- Ensure that the Contractor has obtained all the necessary permits and approvals
- Review details of the proposed containment structure and scaffolding
- Monitor abrasive blasting spoil recovery and disposal
- Approve surface preparation and check anchor pattern prior to application of paint
- Inspect paint application to ensure conformance to all contract requirements
- Ensure temporary attachments are not injurious to the structure
- Approve cleaning of structure to ensure it is free of chlorides and other contaminants
- Inspect penetrant and caulking application
- Check for quality as well as runs and sags

AUDIT TESTING

The Consultant may arrange, on an as required basis, to carry out independent audit testing to ensure that the Contractor is complying with all requirements regarding the supply of materials.

4.1.4.3 Weekly Progress Reports

The Consultant shall submit a copy of the Weekly Progress Report and the Bridge Construction Inspector's Report to the Project Sponsor on a weekly basis.

4.1.4.4 Monthly Contract Progress Payments

The Consultant shall prepare Contract Progress Estimates and Project Expenditure Reports on a monthly basis. These reports are required to generate contract payments and to track project costs. The Consultant shall provide appropriate documentation and authorization for extra work including the Order for Extra Work form. The Consultant shall also provide documentation for claims and submission of the Contract Cost Overrun form.

4.1.4.5 Progress Meetings

The Consultant shall arrange progress meetings with the Department and Contractor on an as-required basis. The Consultant shall prepare minutes of the meetings and distribute to all attendees and the Project Sponsor.

4.1.4.6 Inspection Of Bridge Size Metal Culverts

Critical phases of bridge size metal culvert installations require inspections to ensure design and specification compliance. The Consultant shall inspect the culvert backfill and perform barrel measurements. This information shall be summarized on the Culvert Barrel Measurements form. This form along with a completed Culvert Installation Inspection Record form shall be submitted to the Department at the end of the project.

4.1.4.7 Project Summary Report

At project completion, the Consultant shall be responsible for providing a Project Summary Report for each bridge structure including, but not limited to the following:

- A letter from the Consultant stating that the construction project management and inspection has been performed in accordance with the Agreement and construction is in compliance with the Contract Specifications and Drawings and Department Standards.
- Pile driving, pile drilling, foundation records, etc.
- Concrete test results including a summary in an electronic format.
- Post tensioning and stressing records.
- Results of all material testing, including approved gradation analysis for backfill materials, clay seal, etc. (Culvert Installation Inspection Record and Culvert Barrel Measurements forms.)
- All final quantities with support documentation including detailed calculations where required.
- "As-Constructed" drawings as well as mylars and electronic copies of the revised drawings.
- Final Bridge Construction Report, photographs with descriptive text, Project Completion Health & Safety Review Report.
- Level 1 BIM report completed in accordance with the provisions of the current version of the Bridge Inspection Manual, by an Inspector certified by the Department for that type of structure.
- Appropriate completed inventory coding forms (BIS, CIS, BRIS, etc.) when applicable.
- All information which may influence the performance or future maintenance requirements of the structure.
- Suggested specification changes on any problems encountered with current specifications.
- Comments on Contractor performance and recommendations.
- Innovative and unique aspects of the work.

4.1.4.7.1 As-Constructed Drawings

The last revision on the revision block will be "As-Constructed". The Consultant shall update the original contract drawings to reflect changes which may have occurred during construction. The Consultant shall supply 3 mil matte finish mylar film and digital copies of all as-constructed drawings to the Project Sponsor at the time all other Final Detail information is submitted. The as-constructed drawings shall bear original stamps and signatures of the Consultant.