

# CHAPTER 1

## INTRODUCTION

In general terms, Project Management involves

- (i) Establishing project baselines (or standards) for Scope (work to be performed), Schedule (time), Cost, Quality, Communications and Safety. This is sometimes referred to as base lining;
- (ii) Tracking actual project performance in these areas versus the baseline; and
- (iii) Making adjustments as required to keep the project on course and actual performance as close as possible to the baselines.

This course focuses on the Planning and Management of Engineering projects. Consequently, there is a need to understand the engineering process and the project cycle before diving into Project Management and Planning.

### 1.1 The Engineering Process

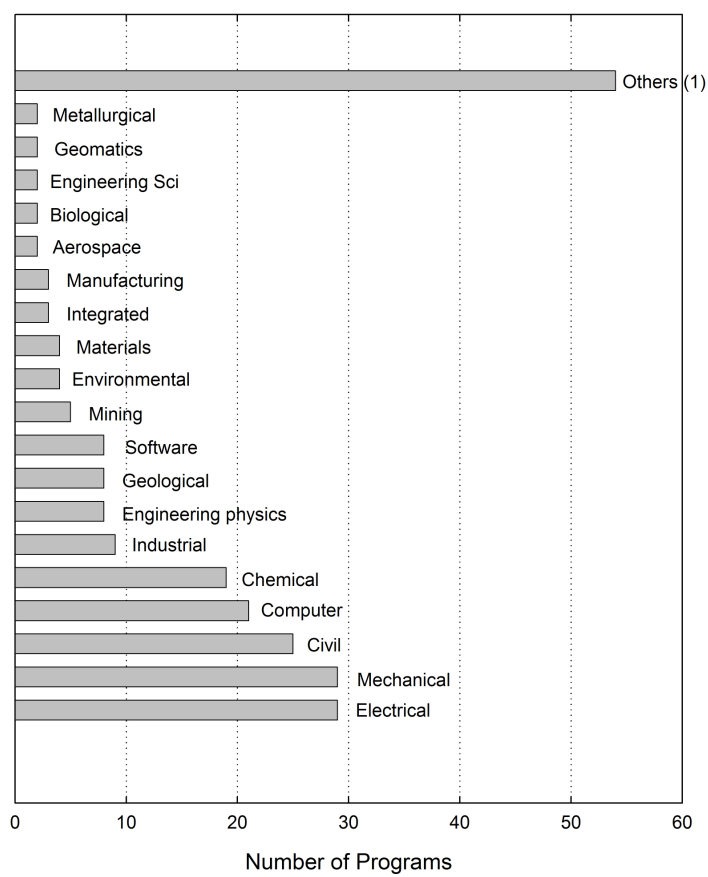
#### *The Engineer*

*An Engineer* is a person who uses science, mathematics, experience, and judgment to create, operate, manage, control, or maintain devices, mechanisms, processes, structures, or complex systems and who does so in a rational and economic way with human, societal and natural resources and constraints.

Figure 1 provides a breakdown of engineering programs in Canada as of 2005. Based on Fig. 1, Electrical, Mechanical, Civil, Computer and Chemical Engineering make up the majority of engineering programs. The largest is Mechanical (includes Industrial, Aerospace, and Manufacturing) followed by Civil Engineering (includes Mining and Geologic) and then Electrical Engineering.

In total, there are over 150,000 engineers in Canada, which represents 0.4% of the population.

**Figure 1**      *Number of Engineering Programs in Canada (Breakdown)*



**Table 1**      *Distribution of engineers in Canada*

Province or Territory	Percentage	Approx. Numbers
Ontario (PEO)	38	57 760
Québec (OIQ)	25	38 000
Alberta (APEGGA)	19	28 890
British Columbia (APEGBC)	9	13 680
Manitoba (APEGM)	2.5	3 800
Nova Scotia (APENS)	2.4	3 650
Saskatchewan (APEGs)	1.7	2 580
New Brunswick (APEGNB)	1.4	2 130
Newfoundland and Labrador (PEG-NL)	1.2	1 820
Northwest Territories and Nunavut (NAPEGG)	0.2	300
Prince Edward Island (APEPEI)	0.1	150
Yukon (APEY)	0.1	150

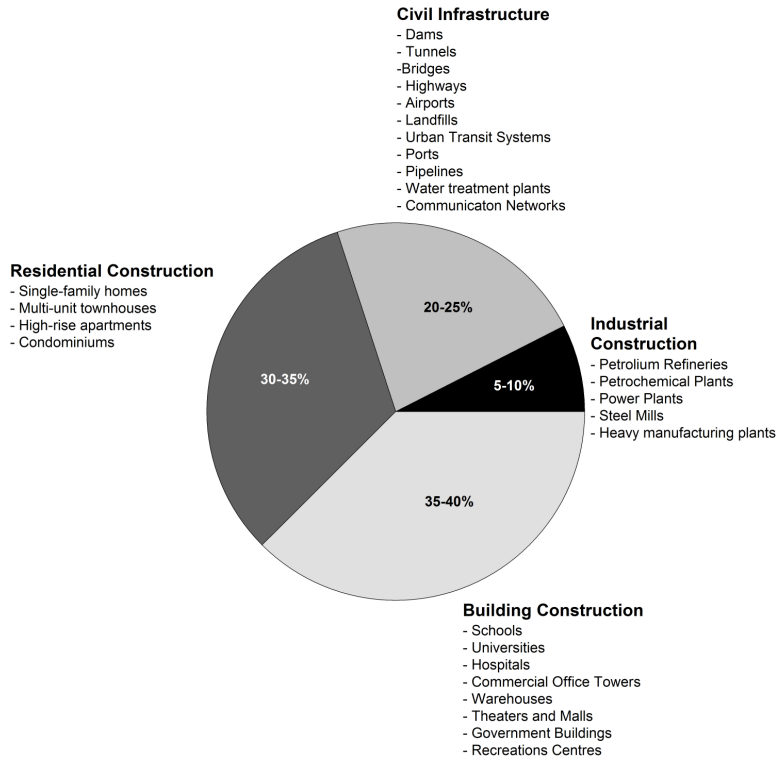
### ***Multidisciplinary Nature***

The following Table 1 summarizes the size of the Construction industry in Canada:

**Table 2** Statistics of the Canadian Construction Industry

Total value of construction in Canada (2000)	
Percent of Canadian GDP	
Salaries Paid	
Taxes Paid	
Number of Employees	
Percent of Canadian employment	
Estimated value of all building stock in Canada	

Figure 2 summarizes a breakdown of the Canadian construction industry by sector (Residential Construction, Civil Infrastructure, Industrial Construction and Building Construction). This figure enables us to examine the multidisciplinary nature of the engineering industry and to gain insight into the typical services that engineers provide.



**Figure 2** Construction Industry Breakdown

*Provide an Area Breakdown (by Discipline) of a typical Commercial Building Project*

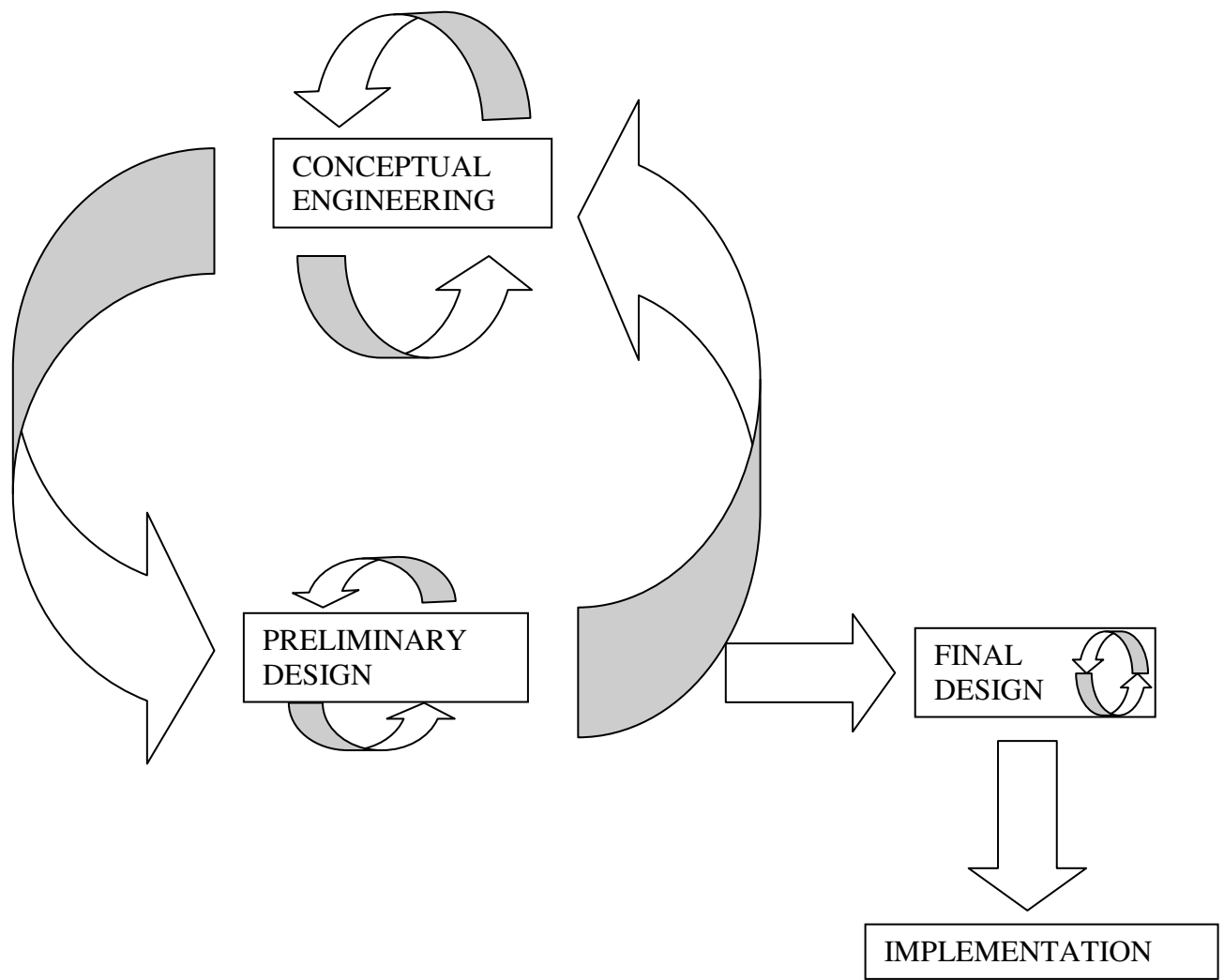
***Key Note:*** Engineering projects are multi-disciplinary. As a result, the **Project Manager (PM)** must have a solid understanding of multiple disciplines to be most effective. This does not mean the PM should be a subject matter expert in all fields. However, it means the PM must have a good generalized knowledge of all disciplines in order to be effective.

## *The Process*

Most projects are initiated after identifying a 'need'. For example, (a) there is a need for a new school in the north end of the city where there is high growth; (b) there is a need for an additional lane on the HWY 401 between Kitchener and Woodstock; (c) There is a need for a bridge over the Thames River (Oxford St. West) to enable expansion of the city westward.

After the 'need' is established, there are generally 4 levels or phases in the engineering process as summarized below:

- (a) Conceptual Design: This phase involves brainstorming, innovation, and creativity to develop options or engineering concepts that can meet the project 'needs'. Typically, an attempt is made to evaluate the options and to rule out options that are considered to be unfeasible. Thus, this phase is sometimes referred to as Feasibility Level Design.
- (b) Preliminary Design (50-70%): This design phase involves (a) progressively adding detail to concepts identified in Phase 1 and (b) ruling out concepts inferior options that have been carried into the preliminary design phase. In most cases, the objective of Preliminary Design is to freeze some aspects of the design such as the layout, or the general process and functions. (i.e. There is an attempt to narrow down or begin to restrict the amount of iteration).
- (c) Final Design (80-90%): The objective of this phase is to advance the details (design calculations and drawings, software code, process modeling etc.) to the point where the project can be implemented (i.e. Implementation  $\equiv$  construction, product rollout, company-wide implementation). This phase can involve the development of a prototype, pilot-scale plant, limited software trials, etc.
- (d) Implementation (100%) - The final phase is implementation of the engineered solution. Implementation ranges from construction in the case of buildings or plants, to rollout for software systems to mass production such as production of cars, planes, rail stock, etc.



**Figure 3** The Engineering Process

***Exercise 1 – Practice the Engineering Phases.***

## 1.2 Project Phases

There are common elements to all projects that follow a typical route to completion referred to as the 'Project Road Map'. This section summarizes the project road map, stakeholders, and common project risks.

### Phase 1 - Need

The owner identifies a 'need'. This is typically the first step in the project cycle. In some cases, the Owner identifies a problem and the Civil Engineer assists with determining what is needed. Exhibit 1 gives an example problem definition.

#### *Exhibit 1 – Example of a Need*

**Ontario Power Generation News Release, October 15, 2004 (Globe and Mail)**



**Municipality of Kincardine and Ontario Power Generation Reach the Next Step for the long-term Management of Low and Intermediate Level Nuclear Waste**  
**October 15, 2004**

*[Kincardine]:* — The Municipality of Kincardine and Ontario Power Generation (OPG) today announced they had initiated a 'hosting agreement' for the long-term storage of low and intermediate level radioactive wastes. If the citizens of Kincardine concur, this hosting agreement will support OPG as it pursues approvals for a deep geologic radioactive waste repository at the Bruce Nuclear site.

"This community understands the nuclear industry and as a Council we believe today's announcement will help protect the health and safety of our residents today and into the future," said Glenn Sutton, Mayor of the Municipality of Kincardine. "We are pleased to participate in a project that builds on the thirty years of safe interim storage experience OPG has at the site. This Council wanted a safe, long-term solution and we believe a deep geologic repository will safely isolate the waste."

The next phase of the agreement will be for Council to seek the views of the community as an endorsement of this proposal.

"I am pleased to see this proposal move into its next phase," said Ken Nash, OPG's Vice President of Nuclear Waste Management. OPG has a responsibility to safely manage the low level and intermediate level waste from our nuclear generating stations in a safe and socially and financially responsible way. With the support of the host community, the deep geological repository proposal will meet that objective and will meet best international standards."

The deep geologic repository will be subject to an environmental assessment, including public comment. The Canadian Nuclear Safety Commission will also require that OPG obtain a licence to construct and a licence to operate the facility.

The Municipality of Kincardine and OPG today opened an information office on Kincardine's main street to ensure the public has access to information about the deep geologic repository proposal. This storefront office will continue providing updates relating to the agreement over the coming months.

### Phase 2 - RFPs or RFQs (Owner's Procurement)

After identifying a need, the Owner typically issues a 'Request for Proposal' or 'Request for Quotation' for engineering services. The Engineer usually submits a competitive bid



to provide engineering services for the project. For example, the following exhibit shows an excerpt from the Ministry of Transportations RFQ web page.

***Exhibit 2***                      *Typical RFP or RFQ*

The Ministry of Transportation is seeking Request For Quotation Submissions (No EOI Step) from qualified consultants for the following projects. Advertisements for Consultant Assignments will appear on this web site but may also be advertised in national newspapers and/or through the Consultant Registration and Management System. Expressions of Interest Opportunities can be found on the [Consultant EOI Opportunities screen](#). It is the sole responsibility of each proponent to review the web posting up to the submission deadline for clarification and/or revisions to the posting.

Request For Quotation Opportunities (No EOI)	
RFQ Date	Project Type
	Southwestern
	Northwestern
	Northeastern
<a href="#">8/31/2007</a>	Consultant Agreement #: 5007-E-0023 Property
<a href="#">9/7/2007</a>	Consultant Agreement #: 5007-E-0002 Bridge Engineering, Electrical Engineering, Engineering Materials Testing And Evaluation, Environmental, Highway Engineering, Pavement Engineering, Traffic Engineering
<a href="#">9/7/2007</a>	Consultant Agreement #: 5007-E-0013 Engineering Materials Testing And Evaluation, Environmental, Foundations Engineering, Surveying
	Head Office - Downsview
	Eastern
	Central

## Phase 3 - The Engineering Design

The engineering firm that wins the bid (a) Assists the owner to define the problem, formulate solutions, evaluate the solutions (Conceptual Design); performs preliminary design (Preliminary Design), and undertakes final design (Final Design). In some cases, the engineer is retained by the owner to implement the design (Implementation). The following summarizes typical engineering services or functions:

- The engineer estimates the cost. Usually, cost estimates are developed at the end of Conceptual, Preliminary and Final Design phases. ***The Preliminary***

***Design Phase cost estimate is often used by the Owner to budget for the project and the implementation.*** So, costs are estimated at the conceptual design stage and then the costs are progressively refined as engineering definition advances toward the final design.

- The engineer prepares final design drawings and specifications.
- The engineer prepares a tender package, which includes General Contract Conditions, Special Conditions, Technical Specifications, Drawings, Background Information (e.g. geotechnical conditions) and Instructions to Bidders/Tenderers.
- The engineer assists the owner in distributing the tender package to Contractors and then helps the Owner to evaluate the tendered bids (select a Contractor).

ENERGY » NATURAL GAS

# Pay up or risk pipeline, Ottawa warned

NWT Industry Minister says Mackenzie Valley project in danger without loan guarantees, cash for infrastructure

BY BARRIE MCKENNA WASHINGTON

Northwest Territories Industry Minister Brendan Bell says the \$16.2-billion Mackenzie Valley pipeline may not get built without federal cash for key access infrastructure as well as loan guarantees for the project's aboriginal investors.

The roads, bridges, airstrips and barge landings needed to build the 1,200-kilometre natural gas pipeline would be a legacy to the North, Mr. Bell said yesterday after a speech in Washington.

Once in place, the infrastructure could be used to help develop the territory's economy, including its burgeoning diamond mines, Mr. Bell told reporters.

Ottawa has been loath to directly subsidize the main Mackenzie Delta gas producers, including Exxon Mobil Corp. and its 70-per-cent-owned subsidiary, Imperial Oil Ltd.

Exxon recently threatened to pull out of the pipeline deal unless Ottawa helps defray the mounting costs. The project's estimated price tag has shot up to more than \$16-billion from \$7-billion, threatening the economics of the project.

"The \$16-billion price tag changed some things," acknowledged Mr. Bell, who is touring major U.S. cities to promote the pipeline.

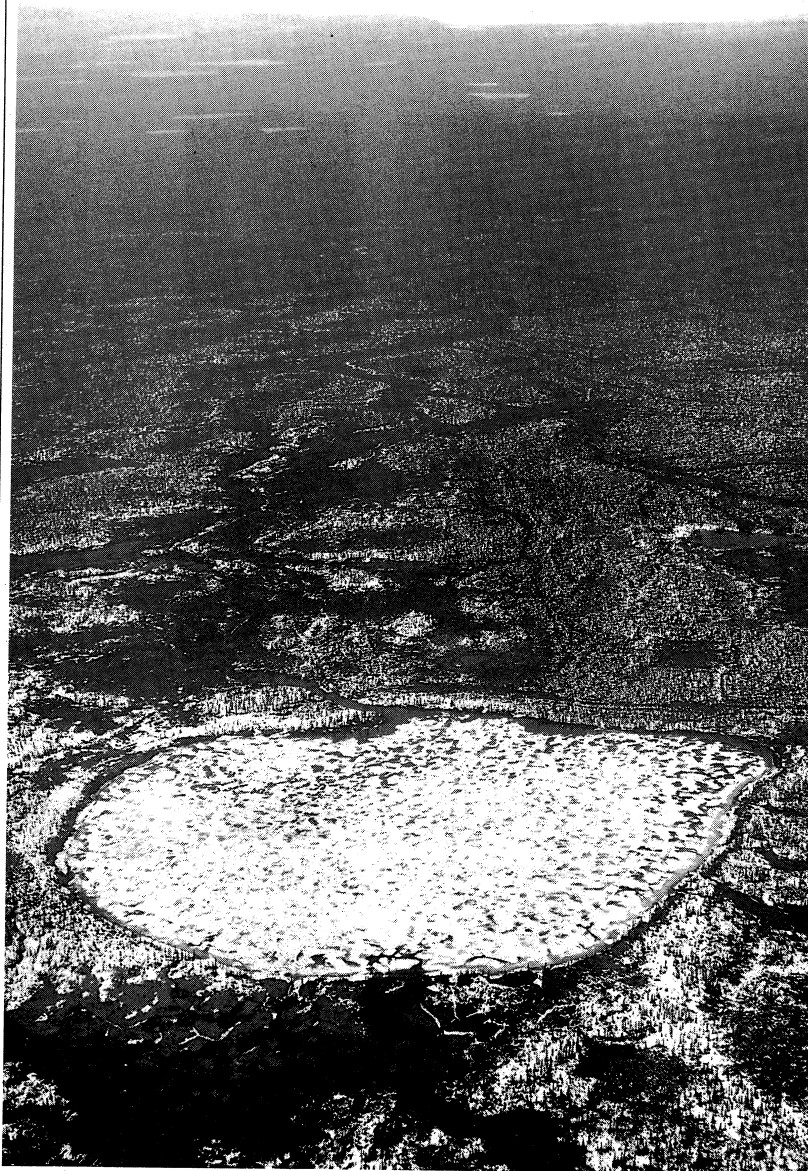
He also suggested that Ottawa may have to provide loan guarantees to an aboriginal-owned company, which is slated to take a minority stake in the project.

The producers are also pushing for special tax breaks, including accelerated depreciation of their costs.

The economics of the project are now a greater threat than any regulatory, environmental or aboriginal-land-claims hurdles, he said during a panel discussion at the Center for Strategic and International Studies, a Washington think tank.

Mr. Bell said Ottawa and the producers have about 12 months to work out their differences to stay on a schedule that would see the pipeline start pumping gas in 2013.

"We see the opportunity now and we want to move on that,"



Exxon Mobil recently threatened to pull out of a deal to build a 1,200-kilometre natural gas pipeline in the Mackenzie Valley unless Ottawa helps defray the mounting costs. FRED LUM/THE GLOBE AND MAIL

he said. "We could have a situation where we might have the regulatory issues sorted out, but the economics aren't there."

Any delay beyond 2013 would put the project in direct competition for scarce labour and steel with a proposed natural gas pipeline in Alaska.

Planning for the Alaska pipeline, which would bring stranded gas south from Alaska's North Slope, is three to four years behind the Mackenzie Valley pipeline.

Drue Pearce, U.S. federal coordinator of Alaskan natural gas pipeline projects, said officials are expecting several proposals to build the line by an early November state-imposed deadline.

Ms. Pearce said there is considerable uncertainty surrounding the project, including strict conditions imposed by the state of Alaska and competing ideas of where the pipeline should go.

She said at least three groups – including an unnamed Chinese entity, British Gas, and the Alaska Gasline Port Authority – want to build the line south to Valdez and then liquefy the gas for shipping.

Meanwhile, TransCanada Corp. and MidAmerican Energy Corp. want to build a long-planned pipeline that would take the gas south through Alaska, then east to Alberta via the Yukon.

There are also rumours that the major North Slope producers – Exxon Mobil, BP PLC and ConocoPhillips Co. – may be poised to mount a proposal of their own that would defy the state of Alaska's strict conditions on timing, tolls and subsidies, Ms. Pearce added.

Alaska is expected to make the various applications public in early December, and then take its preferred project to the state legislature for approval by early March.

Canada and the United States signed a treaty in the early 1980s to build the Alaskan pipeline. Ottawa has so far refused to say whether it will honour that deal. And that could open up contentious issues, including tolls and whether Alaskan gas would be available for use in the Yukon.

## **Phase 4 – Procurement**

Depending on the level of procurement required, the engineer will help the owner to procure a contractor to implement the project. In some cases, the engineer will procure materials and supplies for the implementation in addition to contractors.

In a manufacturing setting, the owner may outsource fabrication of components in the final product and assemble the components into a final project. For this case, the procurement process can involve multiple contracts with parts suppliers. Each procurement process will require a complete bid package (i.e. design drawings, specifications, GCs, SCs, Instructions to Tenderers, etc.)

- Engineers pre-qualify contractors. This is often done by advertising the projects and soliciting ‘Expression of Interest’ submissions from potential bidders.
- In some cases, the bid and award phase can be split up into several ‘Work Packages’ administered by the Management Team.
- During this phase, contractors are responsible for interpreting the design and bidding (entering a cost) to construct the project or fabricate the part.

## **Phase 5 – Implementation**

This phase is called the ‘Construction’ phase in Civil engineering. It is the phase where the design is implemented. The design may be an automobile, a new consumer product (iPod, Xbox, Blackberry etc.), a new hospital, a new power plant, etc.

- The Engineer oversees the implementation process to make sure it is undertaken in accordance with the drawings and specifications,
- Authorizes/approves payments (from Owner to the Contractor) during implementation,
- Provides design changes if needed,
- Approves ‘Shop Drawings’ from Fabricators,
- Prepares ‘as-built’ records.
- Engineers also work for the contractor!

## **Phase 6 - Commissioning and Acceptance**

During this phase, the owner strives to ensure the project has been implemented as specified in the contract documents. On the owner's behalf:

- The engineer prepares and compiles documentation for the end user e.g. as-constructed drawings, records of quality control and assurance testing, operation manuals, warranties and guarantees.
- Engineer and project teams tests the facilities to ensure they are working as intended. Facilities that are not working as intended are repaired or corrected before approval and acceptance.
- Final accounting is done.
- A postmortem is often done (The project team reviews their performance in an attempt to learn from any mistakes that were made).

## 1.3 Project Stakeholders

### Owner (or client)

This is the person or organization that has a need for and will finance and benefit from the engineered structure, process or system. Typical owners are:

- Governments (Federal, Provincial and Municipal)
- Power companies – Brascan Power, Ontario Power Generation, American Municipal Power of Ohio, Nova Scotia Power, Brighton Beach Power etc.
- Mining companies – Inco, Placer Dome Mines, Echo Bay Mines, Mosaic, Barrick etc.
- Industry – Eramet Ohio, US Steel Corp, etc.
- Oil Refineries – Irving Oil (St. John NB), North Atlantic Refinery Ltd. (Clareville NF)
- Retailers – Canadian Tire, Costco, etc.
- Private Developers – Sifton

The owner determines (a) the scope of the project, (b) when the project must start and end (the schedule), and (c) how much money is available for the project. This is often done with the assistance of an engineer. Typical projects include:

- Widening of Highway 401 and upgrades to the interchange near Woodstock. The scope is dictated by the Ontario Government and Toyota Canada (negotiated).
- Shikwamkwa Replacement Dam. Replacement of an old earthfill dam. The scope was determined by Brascan Power.
- Design and Construction of the Brighton Beach Power Plant. The scope was established by Brighton Beach Power (consortium of OPG and Atco).

### The Engineer

The engineer is provides contract engineering services to the Owner. The main roles of the engineer are to:

- (i) Interpret and assist the owner in developing the project scope, budget and schedule;
- (ii) Prepare the design and drawings that will be used to build or implement the project;
- (iii) Review shop drawings and material specifications during implementation to ensure compliance with the design requirements.

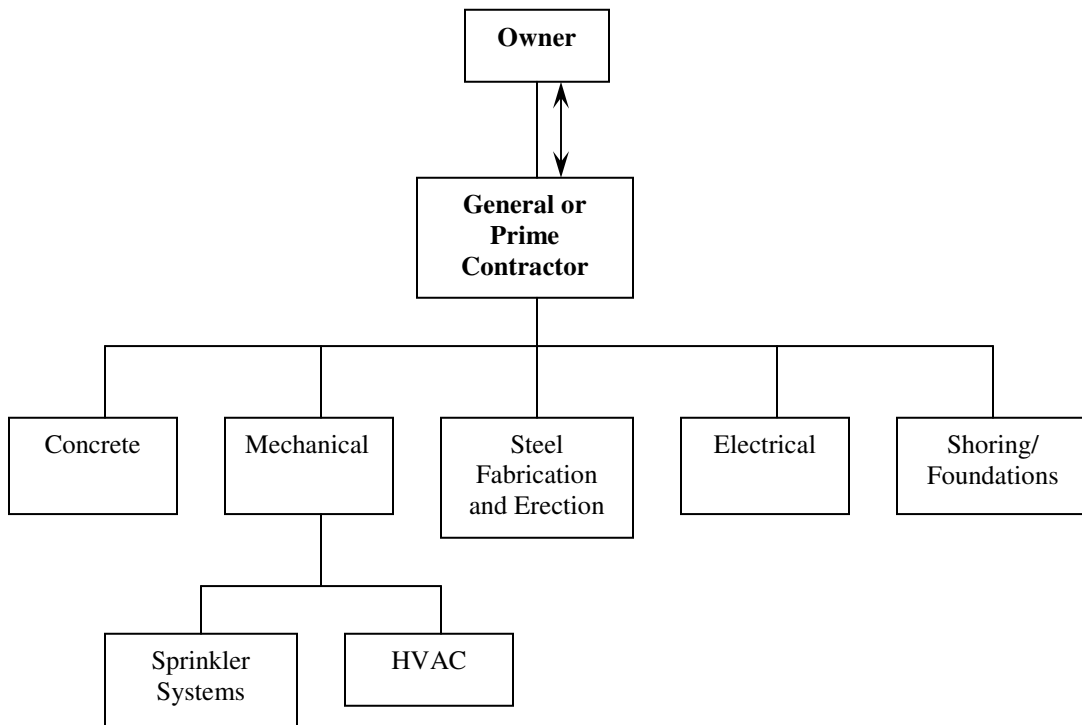
## The Constructor

A blanket term for the company or joint venture that implements the design. For multidisciplinary projects, this term refers to the ‘general contractor’ or ‘prime contractor’.

For traditional projects, the ‘general contractor’ or ‘prime contractor’ is the entity that has entered into a contract with the Owner and is thus contractually responsible for delivering a completed project in accordance with the design documents (which include for example specifications and design drawings).

On large complex projects, the ‘general contractor’ typically subcontracts portions of the overall project to ‘subcontractors’. The following is a typical Contractor Organizational Chart.

**Figure 4** Contractors Organizational Chart



## Construction Manager

In some cases, the Owner may hire a professional 'Construction Management' company to manage the construction process. In such an arrangement, the contractor, owner, and engineer work as a 'team' through the entire project.

Examples: <http://www.chantconstruction.com/>  
<http://www.pcl.com/>  
<http://www.snclavalin.com/>



## Summary – Typical Entities involved in a Highway Construction Project

<b>Government:</b>	Ministry of Transportation of Ontario (MTO) Ministry of the Environment (MOE) Indian Affairs ( <i>Federal</i> )
<b>Designers:</b>	Project Managers Civil engineers Transportation engineers Architects Graphic designers
<b>Construction:</b>	Project Managers Construction Engineers Construction Contractors Material Suppliers Equipment Suppliers Labor
<b>Consultants:</b>	Testing laboratories Surveyors Geotechnical engineers Environmental engineers Public relations

**Key Note:** Large projects are complex and they involve complicated contractual setups or relationships between

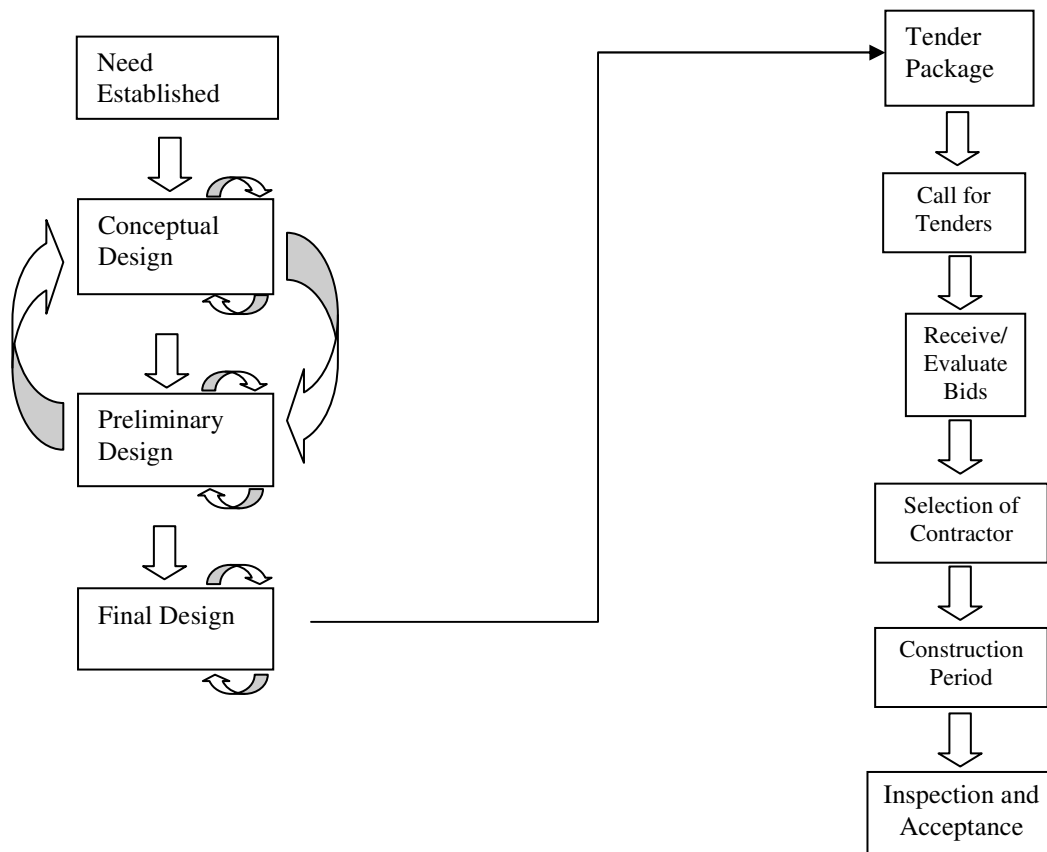


## Owner and Engineer; Owner and Contractor and Owner and Consultants.

### 1.4 The Project Road Map (Project Lifecycle)

Projects have a typical life cycle, which is illustrated in Figure 5 below. The role of the project manager is to guide the project through the cycle. The Project Management cycle parallels the project life cycle, which is governed by the engineering process.

**Figure 5** *Project Road Map (or Development Cycle)*



In general, the Engineering Process is a creative and iterative process that can be broken down to facilitate managing the project life cycle. The following tables summarize typical engineering level (EL) definitions corresponding to the engineering phases identified above.

EL-1	Conceptual Design
EL-2	Preliminary Design
EL-3	90% Engineering Level
EL-4	Implementation

**Table 3** Project Execution Planning (PEP)

Deliverable	Status			
	EL-1	EL-2	EL-3	EL-4
Client Requirements Specification	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Finalised</i>
Work Plan (Scope)	<i>Finalised for Next Phase</i>	<i>Finalised for Next Phase</i>	<i>Final Drafts</i>	<i>Final</i>
Project Execution Plans (PEP)	<i>Not Started</i>	<i>Preliminary</i>	<i>Final Drafts</i>	<i>Final</i>
Project Set Up	<i>Not Started</i>	<i>Finalised for Next Phase</i>	<i>Finalised for Next Phase</i>	<i>Complete</i>
Scope of Facilities	<i>Facilities Description</i>	<i>Facilities Description</i>	<i>Approved Scope of Work</i>	<i>Frozen Scope of Work</i>
Scope of Hatch/JV Services	<i>Preliminary</i>	<i>Decided</i>	<i>Complete</i>	<i>Complete</i>
Hatch Services Contract/Commercial Agreement	<i>PO secure-filed</i>	<i>PO secure-filed</i>	<i>PO secure-filed</i>	<i>In place/secure filed</i>
JV/Alliance Relationships	<i>Preliminary</i>	<i>Decided</i>	<i>Complete</i>	<i>Complete</i>
Business Plan	<i>Generic Basic</i>	<i>Developed Model</i>	<i>Finalised</i>	<i>Complete</i>
Owner Interfaces	<i>Assumed/ Preliminary</i>	<i>Decided</i>	<i>Detailed</i>	<i>Final</i>
Execution/Contracting Strategies	<i>Not Started</i>	<i>Preliminary</i>	<i>Final Drafts</i>	<i>Final</i>
Organisational Plan	<i>Preliminary</i>	<i>Decided</i>	<i>Detailed</i>	<i>Final</i>
Compliance with Statutory & Regulatory requirements	<i>Framework Established</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>
Engineering Plan	<i>EL2 Work Plan completed</i>	<i>Draft</i>	<i>Final</i>	<i>Complete</i>
Communications Plan	<i>Not Started</i>	<i>Preliminary</i>	<i>Final Draft</i>	<i>Final</i>
Project Close Out Plan	<i>Not Started</i>	<i>Not Started</i>	<i>Preliminary</i>	<i>Final</i>

**Table 4** Health and Safety

Deliverable	Status			
	EL-1	EL-2	EL-3	EL-4
Project Safety Leadership	<i>Concept</i>	<i>Draft</i>	<i>Final Draft</i>	<i>Final</i>
Design for Safety Plan & Procedures	<i>Concept</i>	<i>Draft</i>	<i>Final Draft</i>	<i>Final</i>
H&S Management Plan	<i>Concept</i>	<i>Draft</i>	<i>Final Draft</i>	<i>Final</i>
H&S Risk Register	<i>Concept</i>	<i>Draft</i>	<i>Final Draft</i>	<i>Final</i>
Legal Register	<i>Concept</i>	<i>Draft</i>	<i>Final Draft</i>	<i>Final</i>
Client Alignment Meeting	<i>Concept</i>	<i>Draft</i>	<i>Final Draft</i>	<i>Final</i>
H&S Contractual requirements	<i>Not started</i>	<i>Draft</i>	<i>Final Draft</i>	<i>Final</i>

**Table 5** Project Quality

Deliverable	Status			
	EL-1	EL-2	EL-3	EL-4
Quality Objectives	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Finalised</i>
Quality Management Plan	<i>Draft</i>	<i>Preliminary</i>	<i>Final - ready to deploy EL4</i>	<i>Revised as Required</i>
Management System & Procedures	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>
Quality Manpower Plan & Resources	<i>Preliminary</i>	<i>Preliminary</i>	<i>Finalised at end of EL3 setup</i>	<i>Finalised at end of EL4 setup</i>
Project Review Program	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Live</i>	<i>Live</i>
Quality Performance Periodic Report	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Operating</i>	<i>Operating</i>
Consultants / Specialists Quality Requirements	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Finalised</i>
Supplier / Contractor Quality Requirements	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Finalised</i>
Budget Man-hours	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Revised as Required</i>

**Table 6** Control Systems

Deliverable	Status			
	EL-1	EL-2	EL-3	EL-4
Control Systems Project Execution Plan	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Finalised</i>
Deliverables Handover Matrix	<i>Draft</i>	<i>Preliminary</i>	<i>Final - ready to deploy EL4</i>	<i>Revised as Required</i>
Project Information & Communications Technology Plan	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>
Systems & ICT Requirements for Current Phase	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Finalised</i>
ICT Disaster Recovery Plan (DRP)	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Operating</i>
Close Out & Archiving Procedures	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Finalised</i>
Systems Cost Estimate	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Finalised for Phase</i>	<i>Finalised</i>
Project Execution Systems Indirect Estimate	<i>Finalised at end of EL1 set-up</i>	<i>Finalised at end of EL2 set-up</i>	<i>Finalised at end of EL3 set-up</i>	<i>Finalised at end of EL4 set-up</i>
Document Management and Document	<i>Preliminary</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>

Control Procedures				
--------------------	--	--	--	--

**Table 7** Project Controls

Deliverable	Required Status			
	EL-1	EL-2	EL-3	EL-4
Project Controls Plan	<i>Preliminary</i>	<i>Draft</i>	<i>Final</i>	<i>Final</i>
Schedule Management Plan	<i>Preliminary</i>	<i>Level 2</i>	<i>Final</i>	<i>Detailed Level 3 Schedule</i>
Project Master Schedule	<i>Level 1</i>	<i>Detail for EL3 Activities only</i>	<i>Level 3</i>	<i>Level 3 &amp; 4 Detail</i>
Engineering Schedule	<i>Detail for EL2 Activities only</i>	<i>All Key Packages</i>	<i>Level 3 Detail</i>	<i>Level 3 Detail</i>
Procurement Schedule	<i>Long Lead Items</i>	<i>Level 2</i>	<i>All Packages</i>	<i>Level 3 &amp; 4 Detail</i>
Construction Schedule	<i>Level 1</i>	<i>Preliminary</i>	<i>Level 3</i>	<i>Level 3 Detail</i>
Commissioning & Start-up Schedule	<i>Conceptual</i>	<i>Preliminary</i>	<i>Level 2</i>	<i>Detailed</i>
Schedule Contingency	<i>No Specific Provision</i>	<i>Summary</i>	<i>Calculated</i>	<i>Detailed</i>
Schedule Basis Description	<i>Summary</i>	<i>Draft</i>	<i>Detailed</i>	<i>Final</i>
Cost Management Plan	<i>Preliminary</i>	<i>Not Started</i>	<i>Final</i>	<i>Detailed</i>
Work Package Breakdown	<i>Not Started</i>	<i>Summary</i>	<i>Preliminary</i>	<i>Detailed</i>
Progress Report Format	<i>Preliminary</i>	<i>Draft</i>	<i>Detailed</i>	<i>Final</i>
Trend and Change Management	<i>Preliminary</i>	<i>Draft</i>	<i>Detailed</i>	<i>Final</i>
Project Controls Plan	<i>Preliminary</i>	<i>Level 2</i>	<i>Final</i>	<i>Detailed Level 3 Schedule</i>

**Table 8** Project Risk

Deliverable	Required Status			
	EL-1	EL-2	EL-3	EL-4
Risk Management Plan (PRMP)	<i>Not Started</i>	<i>Suitable for Phase</i>	<i>Suitable for Phase</i>	<i>Suitable for Phase</i>
Project Risk and Opportunity Register	<i>Develop at end of phase</i>	<i>Update at end of phase</i>	<i>Update at end of phase</i>	<i>Update as needed</i>
Risk Profiles - Qualitative	<i>Develop at end of phase</i>	<i>Update at end of phase</i>	<i>Update at end of phase</i>	<i>Update as needed</i>
Risk Treatment Plans	<i>Develop at end of phase</i>	<i>Update at end of phase</i>	<i>Update at end of phase</i>	<i>Update as needed</i>
Schedule Risk Profile	<i>Not Started</i>	<i>At end of Phase</i>	<i>At end of Phase</i>	<i>Update as needed</i>
Capital Cost Risk Profile.	<i>Not Started</i>	<i>At end of Phase</i>	<i>At end of Phase</i>	<i>Update as needed</i>
Monitoring, Review and Reporting	<i>Not Started</i>	<i>As per execution plan</i>	<i>As per execution plan</i>	<i>As per execution plan</i>
Technical Risk Management Plan	<i>Not Started</i>	<i>At end of Phase</i>	<i>At end of Phase</i>	<i>Update as needed</i>
Monitoring, Reviewing and Reporting	<i>As per execution plan</i>	<i>As per execution plan</i>	<i>As per execution plan</i>	<i>As per execution plan</i>

**Table 9** Engineering – Layout

Deliverable	Required Status			
	EL-1	EL-2	EL-3	EL-4
Project Objectives	<i>Preliminary</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>
Quality Management Plan	<i>Not Started</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>
Management System & Procedures	<i>Preliminary</i>	<i>Approved</i>	<i>Frozen</i>	<i>Final</i>
Quality Manpower plan & Resources	<i>Conceptual</i>	<i>Preliminary</i>	<i>Frozen</i>	<i>Detailed</i>
Project Review Program	<i>Preliminary</i>	<i>Preliminary</i>	<i>Frozen</i>	<i>Frozen</i>
Project QA/QC Function Performance	<i>Conceptual</i>	<i>Preliminary</i>	<i>Advanced</i>	<i>Final</i>
Quality Performance Periodic Report	<i>Not Started</i>	<i>Not Started</i>	<i>Preliminary</i>	<i>Final</i>
Consultants / Specialists Quality Requirements	<i>Preliminary</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>
Supplier / Contractor Quality Requirements	<i>Preliminary</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>

**Table 10** Engineering – Mechanical

Deliverable	Required Status			
	EL-1	EL-2	EL-3	EL-4
Mechanical Work Plan	<i>Preliminary</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>
Mechanical Engineering Work Packages	<i>Not Started</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>
Mechanical Design Criteria	<i>Preliminary</i>	<i>Preliminary</i>	<i>Frozen</i>	<i>Complete</i>
Mechanical Deliverables List	<i>Preliminary</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>
Mechanical Equipment List	<i>Preliminary</i>	<i>Draft</i>	<i>Advanced</i>	<i>Complete</i>
Mechanical Standard Specifications	<i>Not Started</i>	<i>Not Started</i>	<i>Preliminary</i>	<i>Complete</i>
Mechanical Equipment Calculations (Critical/Long Lead Equipment)	<i>Preliminary</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>
Mechanical Equipment Calculations (Non Critical Equipment)	<i>Not Started</i>	<i>Not Started</i>	<i>Preliminary</i>	<i>Final and Complete</i>
Equipment Specifications (Critical/Long Lead Equipment)	<i>Draft</i>	<i>Advanced</i>	<i>Final</i>	<i>Complete</i>
Technical Bid Evaluations (Critical/Long Lead Equipment)	<i>Not started</i>	<i>Not Started</i>	<i>Complete</i>	<i>Complete</i>
Equipment Specifications (Non Critical Equipment)	<i>Not started</i>	<i>Not Started</i>	<i>Not Started</i>	<i>Complete</i>
Technical Bid Evaluations (Non Critical Equipment)	<i>Not started</i>	<i>Not Started</i>	<i>Not Started</i>	<i>Complete</i>
Mechanical Installation Contracts	<i>Not started</i>	<i>Not Started</i>	<i>Not Started</i>	<i>Complete</i>
Detailed Design/ Fabrication Drawings (Critical/Long Lead Equipment - Hatch design)	<i>Not started</i>	<i>Preliminary</i>	<i>In Progress</i>	<i>Complete</i>
Detailed Design/ Fabrication Drawings (Non Critical Equipment - Hatch design)	<i>Not started</i>	<i>Not Started</i>	<i>Not Started</i>	<i>Complete</i>
Material Take-Offs (Critical/Long Lead Equipment - Hatch design)	<i>Conceptual</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>
Material Take-Offs (Non Critical Equipment - Hatch design)	<i>Conceptual</i>	<i>Preliminary</i>	<i>Preliminary</i>	<i>Complete</i>
Mechanical Model	<i>Preliminary</i>	<i>Preliminary</i>	<i>Advanced</i>	<i>Complete</i>

Mechanical Tie-In List	<i>Not started</i>	<i>Preliminary</i>	<i>Advanced</i>	<i>Final</i>
Reports (Project Specific)	<i>Issue for Use</i>	<i>Issued for use</i>	<i>Issued for Use</i>	<i>Issued for Use</i>
Mechanical Eng EL4 Hours Cost Estimate	<i>Preliminary</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>

**Table 11** Engineering Civil

Deliverable	Required Status			
	EL-1	EL-2	EL-3	EL-4
Civil Work Plan	<i>Preliminary</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>
Civil Engineering Work Packages (EWP's)	<i>Not started</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>
Property Impacts	<i>Major Impacts Identified</i>	<i>Major impacts defined</i>	<i>Property Impacts Finalised</i>	<i>Property Impacts Finalised</i>
Geotechnical Data	<i>Preliminary Site Geotechnical Data</i>	<i>Indicative Site Geotechnical Data</i>	<i>Definitive Geotechnical Data</i>	<i>Definitive Geotechnical Data</i>
Civil Design Criteria	<i>Preliminary</i>	<i>Draft</i>	<i>Final</i>	<i>Frozen</i>
Digital Terrain Model	<i>Conceptual</i>	<i>Detailed</i>	<i>Detailed</i>	<i>Detailed</i>
Seismic Data	<i>Public Domain Data</i>	<i>Preliminary Site Data</i>	<i>Detailed Site Data</i>	<i>Detailed Site Data</i>
Hydrology (Flood Handling)	<i>Public Domain Data</i>	<i>Preliminary data</i>	<i>Detailed Design IFR</i>	<i>Detailed Design IFC</i>
Bulk Earthworks /Drainage Design	<i>Conceptual</i>	<i>Preliminary</i>	<i>Detailed</i>	<i>Detailed</i>
Detailed Earthworks/ Drainage Design	<i>Not Started</i>	<i>Not Started</i>	<i>Preliminary</i>	<i>Detailed</i>
Civil Structures - bridges, drainage structures	<i>Preliminary</i>	<i>Preliminary</i>	<i>Detailed</i>	<i>Final</i>
Pavement Design	<i>Not Started</i>	<i>Not Started</i>	<i>Preliminary</i>	<i>Detailed</i>
Standard Specifications	<i>Not Started</i>	<i>Not Started</i>	<i>Preliminary</i>	<i>Detailed</i>
Material Take-Offs/ Bills of Quantities	<i>Preliminary</i>	<i>Preliminary</i>	<i>Definitive</i>	<i>Final</i>
Material Sourcing	<i>Preliminary</i>	<i>Preliminary</i>	<i>Detailed</i>	<i>Final</i>
Waste Disposal - Solid, liquid, industrial (slag, tailings, waste rock, ash, etc)	<i>Preliminary</i>	<i>Preliminary</i>	<i>Detailed</i>	<i>Final</i>
Infrastructure Plans - road access; utility corridors	<i>Preliminary</i>	<i>Preliminary</i>	<i>Detailed</i>	<i>Final</i>
Water Supply - dams; desalination; piping; treatment	<i>Preliminary</i>	<i>Preliminary</i>	<i>Detailed</i>	<i>Final</i>
People/material/traffic flow	<i>Preliminary</i>	<i>Preliminary</i>	<i>Detailed</i>	<i>Final</i>
Transportation/storage of consumables, products.	<i>Preliminary</i>	<i>Preliminary</i>	<i>Detailed</i>	<i>Final</i>
Civil Eng EL4 Hours Cost Estimate	<i>Preliminary</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>

**Table 12** Engineering - Structures

Deliverable	Required Status			
	EL-1	EL-2	EL-3	EL-4
Structural Work Plan	<i>Preliminary</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>
Structural Engineering Work Packages (EWP's)	<i>Not Started</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>
Foundation Concepts	<i>Preliminary</i>	<i>Preliminary</i>	<i>Final</i>	<i>Final</i>
Structural Concepts	<i>Preliminary</i>	<i>Preliminary</i>	<i>Final</i>	<i>Final</i>
Compliance with Building Regulations	<i>Preliminary</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>
Standard Specifications & Drawings	<i>Not Started</i>	<i>Preliminary</i>	<i>Finalised</i>	<i>Finalised</i>
Structural Design Criteria	<i>Preliminary</i>	<i>Draft</i>	<i>Final</i>	<i>Frozen</i>
Foundation Design	<i>Not Started</i>	<i>Preliminary</i>	<i>In Progress</i>	<i>Final</i>
Structural Design	<i>Not Started</i>	<i>Preliminary</i>	<i>In Progress</i>	<i>Final</i>
Structural Modelling	<i>Preliminary</i>	<i>Preliminary</i>	<i>In Progress</i>	<i>Final</i>
Structural Detailed Design Drawings	<i>Not Started</i>	<i>Not Started</i>	<i>Detailed</i>	<i>Final</i>
Architectural Design	<i>Preliminary</i>	<i>Preliminary</i>	<i>Final</i>	<i>Final</i>
Material Take-Offs (MTO's)/ Bills of Quantities	<i>Preliminary</i>	<i>Preliminary</i>	<i>Definitive</i>	<i>Final</i>

Shop Drawings	<i>Not Started</i>	<i>Not Started</i>	<i>Not Started</i>	<i>Completed</i>
Structural Eng EL4 Hours Cost Estimate	<i>Preliminary</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>

**Table 13** Engineering – Electrical

Deliverable	Required Status			
	EL-1	EL-2	EL-3	EL-4
Electrical Work Plan	<i>Preliminary</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>
Electrical Engineering Work Packages (EWP's)	<i>Not Started</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>
Electrical Design Criteria	<i>Outline</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>
Electrical Equipment List	<i>Outline</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>
Electrical Standard Specifications	<i>Not started</i>	<i>Not Started</i>	<i>Preliminary</i>	<i>Complete</i>
Equipment Specifications (Critical/Long Lead Equipment)	<i>Draft</i>	<i>Advanced</i>	<i>Final</i>	<i>Complete</i>
Equipment Specifications (Non Critical Equipment)	<i>Not started</i>	<i>Not Started</i>	<i>Not Started</i>	<i>Complete</i>
Technical Bid Evaluations (Critical/Long Lead Equipment)	<i>Not started</i>	<i>Not Started</i>	<i>Complete</i>	<i>Complete</i>
Technical Bid Evaluations (Non Critical Equipment)	<i>Not started</i>	<i>Not Started</i>	<i>Not Started</i>	<i>Complete</i>
Electrical Installation Contracts	<i>Not started</i>	<i>Not Started</i>	<i>Not Started</i>	<i>Complete</i>
Electrical Calcs & Studies (Load flow, fault level, etc)	<i>Outline</i>	<i>Preliminary</i>	<i>Final for Major Equipment</i>	<i>Complete</i>
Single Line Diagrams	<i>Outline</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>
Cable Schedules and Overhead Lines	<i>Outline</i>	<i>Preliminary</i>	<i>Firm</i>	<i>Complete</i>
Connected Load List including Motor List	<i>Outline</i>	<i>Preliminary</i>	<i>Firm</i>	<i>Complete</i>
Schematic Diagrams	<i>Not started</i>	<i>Preliminary</i>	<i>Firm</i>	<i>Complete</i>
Termination Diagrams	<i>Not started</i>	<i>Not Started</i>	<i>Not Started</i>	<i>Complete</i>
Electrical Raceway and Cable Tray (Ladder)	<i>Outline</i>	<i>Preliminary</i>	<i>Firm</i>	<i>Complete</i>
Underground (duct banks, cable)	<i>Not started</i>	<i>Preliminary</i>	<i>Firm</i>	<i>Complete</i>
Electrical 3D Model and Layouts	<i>Not started</i>	<i>Preliminary</i>	<i>Firm</i>	<i>Final</i>
Material Take-Offs (MTPO's)	<i>Not Started</i>	<i>Outline</i>	<i>Preliminary</i>	<i>Final</i>
Electrical Eng EL4 Hours Estimate	<i>Preliminary</i>	<i>Preliminary</i>	<i>Final</i>	<i>Complete</i>

**Table 14** Cost Estimate

Deliverable	Required Status			
	EL-1	EL-2	EL-3	EL-4
Capital Cost Estimate	<i>-30 to +50%</i>	<i>-20 to +40%</i>	<i>-10 to +20%</i>	<i>-5 to +10%</i>
Operating Cost Estimate	<i>-30 to +50%</i>	<i>-20 to +40%</i>	<i>-10 to +20%</i>	<i>-5 to +10%</i>
Estimate Plan and Basis	<i>Preliminary</i>	<i>Draft</i>	<i>Final</i>	<i>Final</i>
Labour Rates	<i>Preliminary</i>	<i>Draft</i>	<i>Calculated</i>	<i>Actual</i>
Productivity	<i>Preliminary</i>	<i>Preliminary</i>	<i>Preliminary</i>	<i>Actual</i>
Construction Equipment	<i>Not Started</i>	<i>Preliminary</i>	<i>Preliminary</i>	<i>Calculated</i>
Freight	<i>Not Started</i>	<i>Draft</i>	<i>Detailed</i>	<i>Calculated</i>
EPCM	<i>Not Started</i>	<i>Preliminary</i>	<i>Calculated</i>	<i>Calculated</i>
Owner's Costs	<i>Not Started</i>	<i>Draft</i>	<i>Final Draft</i>	<i>Calculated</i>



Temporary Facilities	<i>Not Started</i>	<i>Preliminary</i>	<i>Preliminary</i>	<i>Calculated</i>
Balance of Indirects	<i>Not Started</i>	<i>Preliminary</i>	<i>Preliminary</i>	<i>Calculated</i>
Escalation	<i>Not Started</i>	<i>Allowance</i>	<i>Calculated</i>	<i>Calculated</i>
Contingency	<i>Allowance</i>	<i>Allowance</i>	<i>Calculated</i>	<i>Calculated</i>
FOREX	<i>Not Started</i>	<i>Allowance</i>	<i>Calculated</i>	<i>Calculated</i>
Taxes	<i>Not Started</i>	<i>Allowance</i>	<i>Calculated</i>	<i>Calculated</i>
Project Risk	<i>Not Started</i>	<i>Allowance</i>	<i>Calculated</i>	<i>Calculated</i>

**Table 15** Procurement

Deliverable	Required Status			
	EL-1	EL-2	EL-3	EL-4
Procurement Objectives	<i>Baseline Plan</i>	<i>Baseline Plan</i>	<i>Baseline Plan</i>	<i>Baseline Plan</i>
Market & Supplier Study	<i>Final Study</i>	<i>Final Study</i>	<i>Final Study</i>	<i>Final Study</i>
Contract Type Definition	<i>Final Study</i>	<i>Final Study</i>	<i>Final Study</i>	<i>Final Study</i>
Procurement & Contract Plan	<i>Baseline Plan</i>	<i>Baseline Plan</i>	<i>Baseline Plan</i>	<i>Baseline Plan</i>
Contract List	<i>Baseline Plan</i>	<i>Baseline Plan</i>	<i>Baseline Plan</i>	<i>Baseline Plan</i>
Transport & Logistics Plan	<i>Baseline Plan</i>	<i>Baseline Plan</i>	<i>Baseline Plan</i>	<i>Baseline Plan</i>
Expediting Plan	<i>Baseline Plan</i>	<i>Baseline Plan</i>	<i>Baseline Plan</i>	<i>Baseline Plan</i>
Procedures, Template Reports, T&C's & tools	<i>Baseline</i>	<i>Baseline</i>	<i>Baseline</i>	<i>Baseline</i>
Enquiry Documentation	<i>Final</i>	<i>Final</i>	<i>Final</i>	<i>Final</i>

Question: What are the roles of the PM team?

# Individual Assignment 1

## Engineering Contracts (Implementation Phase)

A Tender or Bid package comprises:

1. Information to Tenderers – A document that describes what the bidders must do to submit a ‘qualifying’ bid.
  - a. A list and brief description of the documents included in the Tender package – e.g. Plans (Tender Drawings), Specifications, Contract, Geotechnical data for bidders.
  - b. The date, time and place that the tender must be submitted.
  - c. Deposits or Bid Bonds that will be required at the time of submitting the tender.
  - d. A requirement for the Contractor to submit evidence of his/her qualifications (e.g. a Resume).
  - e. In this document, the Owner must stipulate any special terms. An example would be the ‘bid evaluation’ procedures that will be used to select the winning bidder especially if the ‘lowest bid’ is not the only basis for awarding the contract.
  - f. This document must outline the Owner’s rights to negotiate with any of the bidders (if the Owner chooses to do so after receiving the bids).
2. A copy of the Construction contract that the Owner expects to sign with the ‘Contractor’.
  - a. The Contract includes Sections entitle: ‘General Conditions’, ‘Special Conditions’ and ‘Technical Specifications’
3. Tender Drawings” (Final Design Drawings).
4. General and Special Conditions
5. Data for Tenderers

Review the following bid package and answer the following questions:

- A. What is the purpose of the Information for Tenderers?
- B. What is the Contract A/Contract B concept for tender packages?
- C. What is the purpose of the GCs and SCs?
- D. What sections ‘communicate’ the design to the Tenderer?
- E. What is this contract for?

# Example of a Tender Package:

## Table of Contents

Section 1 Instructions and Information to Tenderers

Section 2 Form of Tender

Section 3 Agreement

Section 4 General Conditions

Section 5 Special Conditions

Section 6 Technical Specifications

Section 7: Tender Drawings

Site Location Plan

Drawings

Section 8: Environmental Policy and Statement of Understanding

## Section 1

### IT-1 – Tender Submission

- 1.1 Power Provider Limited (hereinafter referred to as "Owner") has entered into a contract with Design Engineers Limited (hereinafter referred to as the "Engineer") to act as Owner's Engineer with respect to Work contemplated by this Contract. Any correspondence concerning the Tender and the Contract documents should be addressed to:

Address

Telephone (555)-555-5555  
Fax (556)-556-5566

**Attention:** Mrs. Design  
Project Engineer

- 1.2 Tenders will be received by the Engineer until **3:00 p.m.** local time on **August 9, 2001**, for the Work specified herein.

- 1.3 Tenders shall be submitted as one marked Original and two Copies, marked Copy (1) and Copy (2). Tenders shall be enclosed in a sealed opaque envelope marked 'Tender for Power Provider Limited, Earthdam Remedial Work Program, Contract CC-ESD-2001-163: Supply of Zone 5B Granular Material. The Tenderer's name shall be on the outside of the envelope. Tenders shall be clearly marked as 'Original' or 'Copy' and shall be delivered or sent to the Engineer at the following address:

Address

Telephone (555)-555-5555  
Fax (556)-556-5566

**Attention:** Mrs. Designer Pants  
Project Engineer

- 1.4 Tenders will be opened in private immediately following the closing time set for receipt of Tenders. All Tenders received after the date

and time set for receipt of Tenders shall be returned to Tenderer's unopened.

- 1.5 In the event of any discrepancies between the 'Original' and the Tenders marked 'Copy (1)' or 'Copy (2)', the Tender marked 'Original' shall prevail.
- 1.6 The Original and each Copy shall include the full legal name and address of Tenderer and shall be signed and sealed by Tenderer or by Tenderer's duly authorized representative. The name of each person signing shall be typed or printed over the signature. When requested by the Owner or Engineer, satisfactory evidence of the authority of the person or persons signing on behalf of Tenderer shall be furnished.
- 1.7 If a corporation Tenders, it shall affix its seal and sign the Tender in its legal name by an authorized officer or officers.
- 1.8 In the event that Tenderer is a partnership or joint venture, Tenderer shall submit with the Tender a power of attorney executed by all of the general partners or venturers, designating and appointing one of the general partners or venturers as a management sponsor, and authorizing the management sponsor to sign the Tender on behalf of Tenderer, to act for and bind Tenderer in all matters relating to the Tender and, in particular, to agree that each partner or venturer shall be jointly and severally liable for any and all of the duties and obligations of Tenderer assumed under the Tender and the Contract if awarded. The Tender shall be signed on behalf of the partnership or joint venture in its legal name by the management sponsor.
- 1.9 All conditions contained in this request for Tenders are considered accepted by the Tenderer in any submission made by the Tenderer unless otherwise stated in its submission.
- 1.10 Tenders submitted by facsimile or other forms of electronic transmission will not be accepted.
- 1.11 Incomplete tenders may be rejected.

## IT-2 – Request for Interpretation

- 2.1 It is the Tenderer's responsibility to ensure it has a complete understanding of the requirements and instructions specified by the Engineer.
- 2.2 If the Tenderer finds discrepancies in or omissions from the Specifications or other Contract Documents, or if the Tenderer has any doubt as to the intent or scope of any part thereof, the Tenderer shall notify the Engineer, in writing, immediately at the following address.

Address

Telephone (555)-555-5555  
Fax (556)-556-5566

**Attention:** Mrs. Design  
Project Engineer

The Engineer will provide written instructions or explanations to all

Tenderers. The Engineer will not be responsible for oral instructions.

Addenda or clarifications issued during the tender period shall be considered

an integral part of the Contract documents and shall be provided for by the

Tenderer in the tender prices quoted.

## IT-3 – Acceptance Period

- 3.1 Tenders submitted constitute a firm offer which cannot be withdrawn before 90 Working Days have expired following the time set for the receipt of Tenders. Revisions to Tenders will not be accepted after receipt of the Tender by the Company. Tenders may be withdrawn only by written notice addressed to the Company and received prior to the date and time set for receipt of Tenders. Facsimile notices for withdrawal of the Tender are considered

acceptable. A new Tender submission from the Tenderer will be accepted up to the time set for receipt of Tenders.

#### **IT-4 – Alternatives**

- 4.1 Tenderer's completed Form of Tender must be priced on the basis of the specifications. However, Tenderer may submit priced alternatives in addition to the Tender based on the specifications, provided that such alternatives are accompanied by suitable test data and descriptive matter pointing out wherever the alternative is different from that required by the specifications.

#### **IT-5 – Form of Tender, Price Schedule and Other Information**

- 5.1 Tenderer shall complete the entire Form of Tender. Each and every item in the Price Schedule shall be priced separately.
- 5.2 The Appendices to the Form of Tender shall be completely filled in in the same format. Tenders which are incomplete, contradictory, obscure, or which contain erasures, alterations, uncanceled additions or irregularities of any kind may be rejected.
- 5.3 Tenderer shall quote all prices in Canadian dollars and shall include all Canadian import duties. Goods and Services and Ontario Retail Sales Taxes shall be excluded. The cost of the Performance Bond and Labour and Material Payment Bond shall be shown separately in Appendix A. The tendered prices shall be firm and not subject to escalation for the duration of the Contract.
- 5.4 Tenderer shall include in the Tender price any premiums on such insurance covering Tenderer, its Subcontractors and the Equipment which reflects insurance requirements stated in the General Conditions and Special Conditions.
- 5.5 Tenderer shall indicate its quality assurance Subcontractor with the Tender in Form of Appendix B.
- 5.6 Tenderer shall submit the names and addresses of any Subcontractors that Tenderer proposes to employ on the work and indicate

that section of work for which each Subcontractor is proposed. Only one Subcontractor shall be proposed for each portion of work. This information shall be supplied with the Form of Tender.

- 5.7 It is the intent of the Owner to give **Notice of Award of Contract by August 10, 2001**. Tenderer shall submit with the Tender, the proposed schedule by completing Appendix C, Schedule of the Form of Tender. The Schedule shall be in the form of a table, and shall show the start date, and delivery dates. Because of the "fast-track" nature of the project, the Tenderer shall indicate Tenderer's earliest possible delivery date(s). The Schedule shall take into account the information provided in Special Conditions Clause SC-5, Schedule

- 5.8 Tenders shall be accompanied by a Tender security in the amount of not less than 10% of the Total Tendered Price. The Tender security shall be in the form of a bond or an irrevocable bank guarantee. CCDC Form 220 shall be used in the case of a bond. The form of bank guarantee shall be satisfactory to the Owner. The Tender security shall be issued by a surety or bank, as the case may be satisfactory to the Owner.

#### **IT-6 – Tender Evaluation**

- 6.1 Tenders will be subject to an evaluation, which will take into account all relevant technical and financial matters together with an appraisal of the Tenderer's proposed production and delivery schedules.
- 6.2 In case of arithmetical errors in addition, the corrected total shall prevail. In case of discrepancy between amount in words and amount in numbers, the amount in words shall prevail.

#### **IT-7 – Cost of Tender**

- 7.1 The Owner will not be responsible for or pay for expenses or losses, which may be incurred by any Tenderer in the preparation of the Tender. All submissions become the property of the Owner and will not be returned.

#### **IT-8 – Pre-award Correspondence**

- 8.1 All relevant correspondence and minutes of meetings relating to any part of the Contract prior to the award shall become part of the Contract.

#### **IT-9 – Award of Contract**

- 9.1 Successful Tenderer will be notified of award of the Contract by the Owner, as soon as practicable after receipt of Tender.
- 9.2 The Owner will prepare copies of Contract documents, including pre-award correspondence, for execution the by successful Tenderer for Earthdam Remedial Work Program, Contract CC-ESD-2001-163: Supply of Zone 5B Granular Material.
- 9.3 Within five (5) Working Days of receipt of the Contract Documents from the Owner the successful Tenderer shall sign and deliver to the Owner copies of the Contract which shall be executed in the same manner as provided in Clause IT-1, paragraphs 1.6, 1.7 and 1.8 with respect to the Tender. When requested by the Owner, satisfactory evidence of the authority of the person signing on behalf of Tenderer shall be furnished. However, if a successful Tenderer is a corporation or a partnership or joint venture, composed of one or more corporations or partnerships or joint ventures, as the case may be, shall sign the Contract through a duly authorized officer.
- 9.4 The Owner reserves the right to waive any non-compliance or informality in Tenders received when the Owner determines, in its sole discretion, that such waiver is in the interest of the Owner.
- 9.5 The Owner will not necessarily accept the lowest or any of the tenders submitted. Each Tenderer acknowledges and agrees by submitting a Tender that the Owner will have no liability or obligation to any Tenderer, except to a party, if any, awarded a contract by the Owner, in its sole discretion and the Owner shall be fully and forever released and discharged of all liabilities and obligations in connection with the Tender submission. The Owner reserves the right to cancel this request for Tenders without any obligation or any reimbursement to Tenderers.

- 9.6 *The Owner reserves the right, at its discretion, to enter into discussions or to negotiate with any Tenderer as it sees fit, or with another Tenderer or Tenderers concurrently. In no event will the Owner be required to enter into discussions, negotiations on similar or other terms or offer any modified terms to any other Tenderer prior to entering into a binding Contract. The Owner shall incur no liability to any Tenderer as a result of these discussions, negotiations or modifications.*

Example of a Tender Package

## Section 2 - Form of Tender

Pursuant to the Invitation to Tender dated \_\_\_\_\_ we,

propose and agree to contract with the Owner for

Power Provider Limited, Earthdam Remedial Work Program, Contract CC-ESD-2001-163: Supply of Zone 5B Granular Material.

and do all that which is required in the Contract Documents bearing the above-referenced title, on the terms and conditions and under the provisions set out or called for in the Contract Documents for the Total Tender Price of (\$\_\_\_\_\_) Canadian dollars. The Tender price is firm and not subject to escalation.

Tenderer certifies that Tenderer is familiar with the Contract Documents entitled **Power Provider Limited, Earthdam Remedial Work Program, Contract CC-ESD-2001-163: Supply of Zone 5B Granular Material**, and that Tenderer has received and is familiar with the following addenda which form part of the Contract Documents.

Addendum dated \_\_\_\_\_

Addendum dated \_\_\_\_\_

Addendum dated \_\_\_\_\_

Tenderer hereby submits the following completed Appendices and other information which, by this reference, are incorporated into and form part of this Tender:

Appendix A	Price Schedules
Appendix B	Quality Assurance Subcontractor
Appendix C	Schedule
Appendix D	Methods and Borrow Source
Appendix E	Health and Safety
Appendix F	Environmental Management
Appendix G	Agreement to Bond

This Tender is made by Tenderer without any connection, knowledge, comparison of figures, or arrangement with any other person or persons making a Tender for the same work and is in all respects fair and without collusion or fraud.

Tenderer hereby agrees that Tenderer has checked all amounts, prices and any information submitted in the attached Form of Tender and agrees that the Owner will not be responsible for any errors or omissions in the Tender.

Tenderer hereby agrees that this Tender, unless withdrawn in the manner set forth in the Instructions and Information to Tenderers prior to the date and time set for receipt of Tenders, constitutes a firm offer which cannot be withdrawn before ninety (90) Working Days following the time set for receipt of Tender, and that the Owner may at any time within the said period accept this Tender whether or not any other Tender has been previously accepted.

Tenderer agrees that its corporate seal affixed hereto constitutes valid consideration for this covenant and acknowledges that Tenders not under seal received from corporations may not be considered.

If awarded the Contract, the Tenderer hereby agrees to execute and deliver to the Owner, at the address stated in Article 4 of the Agreement, the Contract Documents for *Earthdam Remedial Work Program, Contract CC-ESD-2001-163: Supply of Zone 5B Granular Material* within five (5) Working Days of receipt of Contract Documents for execution.

It is understood that the failure of the successful Tenderer to execute the Contract within five (5) Working Days after receipt of Contract Documents for execution, and to give the specified security to secure the performance of the terms and conditions of the Contract, will cause substantial damage to the Owner, including delay in its construction program. Therefore, in the event the successful Tenderer fails to execute the Contract within five (5) Working Days after receipt of the Contract Documents for execution, and to give the specified security to secure the performance of the terms and conditions of the Contract, then, without prejudice to any right or remedy the Owner may have, the amount of the Tender security will be forfeited on account of such damages.



**Signature of Tenderer**

---

*CORPORATE SEAL*

---

(Name)

---

(Title)

---

(Legal Name of Tenderer)

---

(Address of Tenderer)**Signature of Witness**

---

(Name)

---

(Address)

---

**Appendix A****Price Schedule****Supply of Zone 5B Granular Material**

Item No.	Description	Quantity	Unit Price <sup>1</sup>	Total Price
<i>Delivery No Later Than August 31, 2001</i>				
1	Zone 5B Granular Fill	2000 m <sup>3</sup>		
	<b>Total Tender Price</b>			
	The following items are optional and may be included in the Contract at the sole discretion of the Owner			
2	Performance Bond (50%) Premium			
3	Labour and Material Payment Bond (50%) Premium			

# Example of a Tender Package

---

1 - All prices shall exclude GST and PST

---

**Appendix B****Quality Assurance Subcontractor**

The Tenderer shall enter the name and address of the Quality Assurance Subcontractor below.

**Subcontractors****Element of  
Work****Name and Address of Subcontractor**

Quality  
Assurance

Example of a Tender Package

---

**Appendix C****Schedule**

Tenderer shall submit a schedule, which indicates the order of procedure and durations to carry out the processing of materials and delivery to the POWER PROVIDER Ltd. Earthfill Dam, Ontario (see Site Location Plan). This schedule must take into account all the dates listed in Special Conditions Clause SC-5, Schedule. In particular, Tenderer shall indicate its earliest possible delivery date.

Signature of Tenderer

---

**Appendix D****Methods and Borrow Source**

Tenderer shall describe how it intends to undertake the Work, the method of processing Material, the method of transport, and a list of Plant. Tenderer shall also provide details of the Borrow Source including location, owner, permits or agreements required to exploit the Borrow Source and any other information that may have an impact on the Work. If available, Tenderer shall provide results of grain size distribution tests for the borrow source.

Signature of Tenderer

Signature of Tenderer

---

## Appendix E

### Health and Safety

#### E-1 *Tenderer's WSIB Information*

Tenderer's Workplace Safety and Insurance Board Permit # \_\_\_\_\_

Tenderer shall provide a current copy of WSIB form, which includes experience rating (e.g. CAD-7, NEER or MAP) and any other relevant WSIB information.

Tenderer shall provide details of any warnings or convictions for violations of safety regulations within the past 5 years. Tenderer shall indicate if no such warnings or convictions exist:

#### E-2 *Corporate Safety Policy – Not Mandatory*

Tenderer shall provide sufficient information to illustrate corporate safety policies, procedures and management system that are in place and operational and that the Tenderer (including each member of a partnership or joint venture) is committed to safety. Complete corporate safety manuals need not be submitted here; however, information such as a summary of the manual, the manual table of contents or similar data to explain the thoroughness of the safety management system is important.

Signature of Tenderer \_\_\_\_\_

---

## Appendix F

### Environmental Management

#### F-1 **Record of Performance**

Tenderer shall provide details of any orders or convictions for violations of environmental regulations within the last 5 years. Tenderer shall state if no such warnings or convictions exist.

#### F-2 **Corporate Environmental Policy – Not Mandatory**

Tenderer shall provide sufficient information to illustrate corporate environmental policies, procedures and management system that are in place and operational and that the Tenderer (including each member of a partnership or joint venture) is committed to environmental protection. Complete corporate environmental manuals need not be submitted here; however, information such as the table of content or executive summary or similar data to explain the thoroughness of the environmental management system is important.

Signature of Tenderer \_\_\_\_\_

---

---

**Appendix G****Agreement to Bond**

Date:

Number:

WHEREAS (Principal) has submitted a written tender to the Owner/Engineer dated the day of \_\_\_\_\_, 2001, concerning:

and the condition of this obligation being such that the Principal shall have the Tender accepted within the time period prescribed in the Tender, or if no time period is specified in the Tender, within thirty (30) Working Days from the closing date of Tender,

We (Surety) a corporation created and existing under the laws of \_\_\_\_\_ and duly authorized to transact the business of Suretyship in the Province of Ontario as Surety, agree to issue for the Principal if the Principal shall enter into a written contract with the Obligor, the following bonds:

1. a contract performance bond of 50% of the Contract Price in the form specified in the Tender requirements
2. a labour and material payment bond for 50% of the Contract Price in the form specified in the Tender requirements.

This consent shall be null and void unless the Obligor or the Obligor's authorized representative shall request of the Principal the said bond(s) within thirty (30) Working Days following the award of the Contract.

Any suit filed against the Surety with respect to this Agreement to Bond must be initiated and duly served on the Surety within six (6) months of the closing date of Tender.

\_\_\_\_\_  
\_\_\_\_\_  
Attorney-in-Fact

Signature of Tenderer \_\_\_\_\_

Example of a Tender Package

### Section 3 - Agreement

THIS AGREEMENT made on the \_\_\_\_\_ day of \_\_\_\_\_, 2001.

BETWEEN

POWER PROVIDER LIMITED.  
(hereinafter referred to as 'Owner')

\_\_\_\_\_ of the first part

and

\_\_\_\_\_  
(hereinafter referred to as 'Contractor')

\_\_\_\_\_ of the second part

WITNESSETH that in consideration of the mutual covenants hereinafter expressed, the parties hereto agree as follows:

- 1 The Contractor shall provide the Material for *Earthdam Remedial Work Program, Contract CC-ESD-2001-163: Supply of Zone 5B Granular Material* in accordance with the Specifications, drawings, and other documents listed in Article 8 below and attached hereto.
- 2 The Contractor shall commence the Work by the 24th day of August, 2001 and complete the delivery of Material to Site by the 5th day of September, 2001.
- 3 The Estimated Contract Price in Canadian Funds is eighteen thousand eight hundred and twenty dollars (\$ 18,820.00 CAN), which is subject to adjustments as may be required in accordance with Items 5 and 6, below.
- 4 The Owner agrees to pay the Contractor, as full compensation for providing the Material, the Contract Price, in accordance with the provisions of the Contract Documents.

- 5 The quantities shown in the Price Schedule are estimated. The Contract Price shall be the final sum of the products of the actual quantities that are supplied to the Site, or made necessary by the Work, as confirmed by measurement, and the appropriate Contract Unit Prices, together with any adjustments that are made in accordance with the provisions of the Contract Documents.
- 6 The Estimated Contract Price shall be the sum of the products of the estimated quantities and the appropriate Contract Unit Prices in the Price Schedule.
- 7 Schedule of Contract Unit Prices is:

Item No.	Description	Quantity	Unit Price	Total Price
1	Zone 5B Granular Fill	2000 m <sup>3</sup>		
	<b>Total Estimated Contract Price</b>			
	The following items are optional and may be included in the Contract at the sole discretion of the Owner			
2	Performance Bond (50%) Premium			
3	Labour and Material Payment Bond (50%) Premium			

- 8 The documents listed herein and attached hereto form part of this Agreement, fully and with the same effect as if set forth herein.

Instruction and Information to Tenderers  
Completed Form of Tender dated August 8, 2001  
Agreement  
Completed Form of Performance Bond  
General Conditions  
Special Conditions  
*Technical Specifications*  
Drawings (listed in Clause SC-4)  
Addenda 1, dated August 7, 2001

- 9 Any notices or communications which may be or are required to be given under the terms of this Agreement shall be made in writing at the following addresses:

To the Owner at:

POWER PROVIDER LTD.  
2 Sackville Road  
Sault Ste. Marie, Ontario.  
P6B 6J6

**Attention:** Manager and Chief Engineer  
Engineering Services Department

To the Contractor at:

**Attention:**

- 10 This Agreement shall enure to the benefit of and be binding upon the respective heirs, executors, administrators, successors and assigns of the parties hereto.

IN WITNESS WHEREOF the parties hereto have caused this Agreement to be duly executed as of the date first above written.

**POWER PROVIDER LIMITED.**

By \_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Title)

I have the authority to bind the Corporation

By \_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Title)

I have the authority to bind the Corporation

**CONTRACTOR**

*CORPORATE SEAL*

By \_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Title)

I have the authority to bind the Corporation

By \_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Title)

I have the authority to bind the Corporation

Example of a Tender Package

## SECTION 4

### Table of Contents

GC-1	Definitions	1
GC-2	Priority of Documents	2
GC-3	Amendment to this Contract	2
GC-4	Contractual Authority	2
GC-5	Design Authority	2
GC-6	Changes in the Work	3
GC-7	Subcontracts	4
GC-8	Material and Workmanship	4
GC-9	Access to Contractor's Premises	5
GC-10	Inspection and Tests by the Owner	5
GC-11	Quality Control/Inspection Requirements	5
GC-12	Preservation and Transport	6
GC-13	Intentionally Not Used	6
GC-14	Intentionally Not Used	6
GC-15	Condition on Delivery	6
GC-16	Payment	6
GC-17	Title and Risk of Loss	6
GC-18	Intentionally not used	7
GC-19	Intentionally not used	7
GC-20	Intentionally not used	7
GC-21	Warranty of Title	7
GC-22	Intentionally not used	7
GC-23	Meetings	7
GC-24	Intentionally not used	8
GC-25	Intentionally not used	8
GC-26	Intentionally not used	8
GC-27	Intentionally not used	8
GC-28	Applicable Laws	8
GC-29	Customs Duties, Taxes and Tariffs	8
GC-30	Intentionally not used	8
GC-31	Governing Language	9
GC-32	Performance Bond, and Labour and Material Payment Bond	9
GC-33	Intentionally not used	9
GC-34	Payment by Contractor and Liens	9
GC-35	Delays in Contractor's Performance	10
GC-36	Termination for Default	10
GC-37	Force Majeure	11
GC-38	Termination for Insolvency	11
GC-39	Termination for Convenience	11
GC-40	Dispute Resolution	12
GC-41	Assignment	14
GC-42	Insurance	14
GC-43	Indemnification	16
GC-44	Notices	17

### GC-1 – Definitions

- 1.12 'Contract' means the contract entered into between the Owner and the Contractor, consisting of the documents listed in Clause GC-2 of the General Conditions, to provide Zone 5B Granular Material at the Earthfill Dam Site.
- 1.13 'Contract Documents' means those documents described in Clause GC-2 of the General Conditions.
- 1.14 'Contract Price' means the price payable to the Contractor under the Contract for the full and proper performance of Contractor's contractual obligations.
- 1.15 'Material' means everything expressly or implicitly required to be furnished by the Contractor under the Contract as shown or described in any way in the Contract Documents and shall include all ancillary work required to be done by the Contractor and also shall include any extra work as may be required by the Owner in accordance with the Contract Documents.
- 1.16 'Site' means the Earthfill Dam site of the Owner named in the contract.
- 1.17 'Subcontractor' or 'Subcontractor(s)' means any person, firm or corporation having a contract directly or indirectly with the Contractor, including but not limited to, material and material suppliers.
- 1.18 'Contractor' means the person or entity that enters in to the Contract with the Owner.
- 1.19 'Technical Specification(s)' or 'Specification' means the technical descriptions defining the technical requirements of the Material and include the drawings listed in Special Conditions, Clause SC-4.
- 1.20 'Working Day' means a day other than Saturday, Sunday or a holiday which is observed by the construction industry at the Site.
- 1.21 'Owner' means POWER PROVIDER Limited, or its duly authorized representatives.
- 1.22 'Work' means the work to be done, the materials to be furnished and stockpiled and the supply of all labor necessary under this contract, unless some other meaning is indicated by the context.
- 1.23 'Plant' means all matter, supplies, vehicles, buildings, equipment, facilities and articles, which are necessary for execution of the Work.
- 1.24 'Engineer' means the consultant commissioned by the Owner to undertake the design of the Work.

## **GC-2 - Priority of Documents**

- 2.1. The documents listed below form part of and by this reference are incorporated into the Contract. If there is a discrepancy between the wording of one document from the wording of any other document that appears on the list, the wording of the document that first appears on the list shall prevail. The Contractor acknowledges to having all the listed documents in its possession.

2.1	Agreement
2.2	Special Conditions
2.3	General Conditions
2.4	Technical Specifications (including drawings)
2.5	Contractor's Tender (Form of Tender) dated _____
2.6	Addenda
2.7	Instructions and Information to Tenderers

## **GC-3 - Amendment to this Contract**

- 3.1. The Contract will not be modified, changed, altered or amended by anyone, including the Contractor, or others, without written instructions from the Owner.

## **GC-4 - Contractual Authority**

- 4.1. All queries concerning this Contract shall be forwarded to the Owner at the address stated in Article 9 of the Agreement. The Owner reserves the right to appoint a representative with respect to the administration of the Contract. The representative shall be duly appointed, in writing, and notification given to the Contractor.

## **GC-5 - Design Authority**

- 5.1. Prior to the award of Contract design queries shall be directed to the Engineer at the address stated in Instructions and Information to Tenderers.
- 5.2. After award of Contract queries related to the Specifications shall be directed to the Owner at the address stated in Article 9 of the Agreement.

## **GC-6 - Changes in the Work**

- 6.1. No increase in the total liability of the Owner or in the price of Material resulting from any design changes, modifications or interpretations of specifications, made by the Contractor, will be authorized or paid to the Contractor unless such design changes, modifications or interpretations, have been approved, in writing, by the Owner prior to manufacture of the Material.

- 6.2. The Owner may at any time, by written change order given to the Contractor, make changes within the general scope of the Contract in any one or more of the following:

- (a) drawings, designs, or Technical Specifications where Material furnished under the Contractor is to be specifically manufactured for the Owner ; and/or
- (b) the place of delivery.

- 6.3. If any such change causes an increase or decrease in the cost of, or the time required for, the Contractor's performance of any provisions under the Contract, an equitable adjustment shall be made in the Contract Price or Schedule, or both, and the Contract shall accordingly be amended.

- 6.4. If a change is proposed or required, the Contractor shall present to the Owner for approval its claim for a change, if any, in the Contract Price and change, if any, in Schedule with full documentation and completed itemized cost breakdown in form acceptable to the Owner. The Owner shall satisfy itself as to the correctness of such claim and, when approved by the Owner, a change order shall be issued to Contractor amending the Contract Price and Schedule for delivery as appropriate.

- 6.5. If the method of valuation, measurement, change in Contract Price and change in delivery schedule cannot be promptly agreed upon and the change is required to be proceeded with then the Owner in the first instance will determine the method of valuation measurement. The change in the Contract Price and delivery schedule subject to final determination in the manner set out in Clause GC-40, Dispute Resolution of the General Conditions, and the Contractor shall promptly proceed with the change.

- 6.6. In the case of a dispute in the valuation of a change authorized and pending final determination of such value, the Owner will certify the value of work performed in accordance with its evaluation of the change and include the amount with regular payments to be made to the Contractor. The Contractor shall keep accurate records of quantities and cost resulting from the change.

- 6.7. It is intended that the Owner and/or the Contractor shall act promptly in all matters referred to above.

- 6.8. If notice of any change affecting the scope of the Contract or the provisions of the Contract Documents (including, but not limited to, Contract Price or delivery schedule) is required by the provisions of any Bond to be given to a Surety, the giving of such notice shall be the Contractor's responsibility. The amount of each applicable Bond shall be adjusted to reflect to effect of any such change.



#### **GC-7 - Subcontracts**

- 7.1. The Contractor shall not subcontract the whole of the work or any part of the work without the Owner's written consent, except that such consent will not be required for Subcontractors named in the Contract.
- 7.2. Subcontracts with any Subcontractor shall expressly provide for the Subcontractor's agreement to be bound by the provisions of this Contract insofar as they are applicable and the Contractor shall require from every Subcontractor strict compliance therewith.
- 7.3. The Contractor shall advise the Owner when, and by what means, any portion of the Material described in Technical Specifications is to be moved to the premises of a Subcontractor for further processing or adjustment.
- 7.4. The consent by the Owner for the use of a Subcontractor, whether named in the Contract or additional, shall not release the Contractor from any liability or obligation under this Contract.

#### **GC-8 - Material and Workmanship**

- 8.1. The Material supplied shall be new, unused, unless provided otherwise in the Contract. The Material shall comply with the latest edition of the standards and codes stipulated in the Contract. The Contractor shall, if requested, furnish satisfactory evidence as to the origin and quality of the Material.
- 8.2. In cases where the Contract provides for a choice of Material, the final selection of the Material shall rest with the Owner.
- 8.3. Workmanship shall be of the first class only and the best of its kind in each trade.

#### **GC-9 - Access to Contractor's Premises**

- 9.1. The Owner's personnel or representatives shall, at all reasonable times, be afforded free access to the Contractor's or its subcontractor(s) plant, and to other premises where processes, including engineering, related to this Contract are being performed.

#### **GC-10 - Inspection and Tests by the Owner**

- 10.1. Material provided under this Contract may be subject to inspection by the Owner's inspectors or designated representatives to confirm compliance with the Technical Specifications at no extra cost to the Owner. The Owner shall notify the Contractor in writing in a timely manner, of the identity of any representatives retained for these purposes.

- 10.2. The inspections and tests may be conducted on the premises of the Contractor or its Subcontractor(s), or at the point of destination of the Material. If conducted on the premises of the Contractor or its Subcontractor(s), all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the inspectors at no charge to the Owner.
- 10.3. Should any of the inspected or tested Material fail to conform to the Technical Specifications, the Owner may reject the Material, and the Contractor shall either replace the rejected Material or make alterations necessary to meet the Technical Specification requirements free of cost to the Owner.
- 10.4. The Owner's right to inspect, test and, where necessary, reject Material after its arrival at the final destination shall in no way be limited or waived by reason of the Material having been previously inspected, tested and passed by the Owner or its representatives prior to the Material being shipped.
- 10.5. Nothing contained in this Clause GC-10 shall in any way be construed to release the Contractor from any warranty or other obligations under this Contract.

#### **GC-11 - Quality Control/Inspection Requirements**

- 11.1. In the provisioning of the Material described herein, the Contractor shall meet or exceed the requirements stated in the Technical Specifications.
- 11.2. The Contractor shall retain a qualified quality control and testing Subcontractor to perform quality control requirements in accordance with the Technical Specifications.
- 11.3. The Contractor shall retain quality control and inspection records for a period of one (1) year from the date of Final Acceptance or termination of the Contract.

#### **GC-12 - Preservation and Transport**

- 12.1. The Contractor shall transport all Material as is required to prevent deterioration during transit to the final destination as indicated in the Contract.
- 12.2. Contractor shall be responsible for and make good any and all damage due to improper loading, handling or transporting of the Material.
- 12.3. A detailed bill of material must accompany all shipments with the Contract number and title clearly indicated.

#### **GC-13 – Intentionally Not Used**

#### **GC-14 – Intentionally Not Used**

**GC-15 - Condition on Delivery**

- 15.1. The Material shall be delivered in condition for immediate installation and use.

**GC-16 - Payment**

- 16.1. Payments will be made on the basis of firm prices, in Canadian funds.
- 16.2. Payments will be made in accordance with the method and conditions stated in the Special Conditions, Clause SC-16.
- 16.3. GST/PST extra, if applicable.

**GC-17 - Title and Risk of Loss**

- 17.1. Except as otherwise provided herein, Material supplied by Contractor hereunder shall become the property of the Owner upon payment therefore or upon delivery, whichever occurs earlier. Notwithstanding the foregoing, Contractor shall be responsible for and shall bear any and all risk of loss or damage to the Material until delivery thereof in accordance with the conditions of shipment contained herein. Upon such delivery to destination, risk of loss or damage shall pass to the Owner provided, however, that any loss or damage, whenever occurring, which results from Contractor's handling or transportation shall be borne by Contractor.

**GC-18 - Intentionally not used****GC-19 – Intentionally not used****GC-20 - Intentionally not used****GC-21 - Warranty of Title**

- 21.1. The Contractor warrants that, at the time title passes, the Owner shall be the lawful owner of the Material which is included in this Contract; that it will deliver title to all Material free and clear of any defects in title or any lien or encumbrance thereon; that Contractor shall have the legal right to convey and transfer title to the Material as herein provided; and that title to all Material shall pass to the Owner upon payment therefore, free and clear of all liens arising from the Contract work, attachments and other encumbrances.
- 21.2. The Contractor shall, at no additional expense to the Owner, defend any claims and indemnify and hold harmless the Owner from any claims relating to title arising from the Contract, including without limitation taking such action required to discharge any lien upon the Site.

- 21.3. The warranties and obligations of the Contractor pursuant to this Clause shall apply regardless of whether any item of Material constitutes real or personal property or fixtures or mixed real and personal property.

**GC-22 - Intentionally not used****GC-23 - Meetings**

- 23.1. Contractor shall meet with the Owner at regular intervals to discuss progress and other matters relating to the Contract.
- 23.2. The Owner may require a pre-production meeting with the Contractor.
- 23.3. In the event meetings are required under Clauses GC-23.1 and GC-23.2, the Owner will advise the Contractor of the date, time, place and purpose of the meeting in sufficient time to permit the Contractor to make arrangements for those who are required to attend to be present. The meeting may take place at the Owner or the Contractor's premises or elsewhere at the discretion of the Owner.

**GC-24 - Intentionally not used****GC-25 - Intentionally not used****GC-26 - Intentionally not used****GC-27 - Intentionally not used****GC-28 - Applicable Laws**

- 28.1. This Contract, including all matters relating to its validity and performance, shall be interpreted, construed and governed by, and all relations between the parties, shall be fully determined in accordance with the laws of the Province of Ontario, Canada. The courts of the Province of Ontario shall have jurisdiction over all matters arising in relation to the Contract. Contractor attorns to the jurisdiction of the courts of the Province of Ontario.

**GC-29 - Customs Duties, Taxes and Tariffs**

- 29.1. All Canadian customs duties and tariffs are to be included in the Contract Price. Federal Goods and Services and Ontario Provincial Retail Sales taxes, if applicable, are extra to the Contract Price and shall be payable by the Contractor. Such taxes if paid by the Contractor, will be reimbursed to the Contractor by the Owner upon presentation by the Contractor of documentation satisfactory to the Owner proving that the amounts invoiced by the Contractor have been paid. All such payments to the Contractor will be

Example of a Tender Package

made with payments scheduled under Clause GC-16 of the General Conditions. Separate payments will not be made.

- 29.2. The Contractor shall fully cooperate with the Owner in the recovery of any federal or provincial taxes, if applicable, which may have been paid under the Contract.
- 29.3. Any customs duties recovered pursuant to Clause GC-14, and any taxes recovered pursuant to the Clause GC-29 shall be for the account of the Owner.

#### **GC-30 - Intentionally not used**

#### **GC-31 - Governing Language**

- 31.1. The Contract shall be written in English. All correspondence and other documents pertaining to the Contract, which are exchanged between the parties shall be written in English.

#### **GC-32 - Performance Bond, and Labour and Material Payment Bond**

- 32.1. Should the Owner request that the Contractor provide a Performance Bond and/or a Labour and Material Payment Bond, the Contractor shall provide such bonds within five (5) Working Days after Contract award and prior to execution of the Agreement.
- 32.2. The bonds, if required, shall be in the specified amount and on the appropriate CCDC forms.

#### **GC-33 - Intentionally not used**

#### **GC-34 - Payment by Contractor and Liens**

- 34.1. To protect the Owner lands from liens and subject to receipt of payments due from the Owner, the Contractor shall pay promptly for all materials, Material and labour used on the work, and costs in respect of materials, Material and labour to be used and shall pay promptly all Subcontractors doing portions of the work. The Contractor shall, even though it may not have received such funds from the Owner, pay promptly all duties, taxes and assessments that are due.
- 34.2. No payment shall become due until the Contractor has delivered to the Owner a complete discharge of all claims for lien arising out of the work and supply of Material and has caused each such claim for lien to be cancelled and discharged or has vacated the claim by posting lien security in accordance with the Construction Lien Act of the Province of Ontario.
- 34.3. If any lien remains unsatisfied, or any amount owed by the Contractor remains unpaid in respect of the Material, either before or after the Contractor has

received the final payment from the Owner, and if the Owner vacates or discharges such lien, or pay such unpaid amount, then the Contractor shall reimburse the Owner on demand, or the Owner may set off against amounts owing or due the Contractor all costs incurred in vacating or discharging such lien, or payment of amounts owed by Contractor, including any legal fees thereby incurred.

#### **GC-35 - Delays in Contractor's Performance**

- 35.1. Delivery of the Material shall be made by the Contractor in accordance with the time schedule specified herein.
- 35.2. If at any time during the performance of the Contract, the Contractor or its Subcontractors should encounter conditions impeding timely delivery of Material, the Contractor shall promptly notify the Owner in writing of the fact, stating the reasons and likely duration of the delay. As soon as practicable after receipt of the Contractor's notice, the Owner shall evaluate the situation and may at its discretion extend the Contractor's time for performance, in which case the extension shall be ratified by the parties by amendment of the Contract.
- 35.3. Except as provided under Clause GC-37 of the General Conditions, a delay by the Contractor in the performance of its delivery obligations shall render the Contractor liable for damages incurred by the Owner resulting from such delay.

#### **GC-36 - Termination of Default**

- 36.1. If the Contractor fails to comply with the requirements of the Contract, the Owner, without prejudice to any other remedy for breach of Contract, by written notice sent to the Contractor, may notify the Contractor that the Contractor is in default of the Contractor's contractual obligations and instruct the Contractor to correct the default in five (5) Working Days immediately following receipt of such notice.
- 36.2. If the default cannot be corrected in the five (5) Working Days specified, the Contractor shall be in compliance with the Owner's instructions if the Contractor:
- (a) commences correction of the default within the specified time, and
  - (b) provides the Owner with a schedule acceptable to the Owner for such correction, and
  - (c) corrects the default in accordance with such schedule.

36.3. If the Contractor fails to correct the default in the time specified or subsequently agreed upon, without prejudice to any other right or remedy the Owner may have, the Owner may:

- (a) correct such default and deduct the cost thereof from any payment then or thereafter due the Contractor
- (b) terminate Contractor's right to continue with the Contract in whole or in part or terminate the Contract.

36.4. In the event the Owner terminates the Contract in whole or in part, pursuant to this Clause GC-36, the Owner may procure, upon such terms and in such manner as it deems appropriate, Material similar to that undelivered, and the Contractor shall be liable to the Owner for any excess costs for such similar Material. However, the Contractor shall continue performance of the Contract to the extent not terminated.

#### **GC-37 - Force Majeure**

37.1. Notwithstanding the provisions of Clauses GC-35 and GC-36 of the General Conditions, the Contractor shall not be liable for forfeiture of its performance security, liquidated damages, or termination for default if and to the extent that its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

37.2. For purposes of this Article, "Force Majeure" means an event beyond the control of the Contractor and not involving the Contractor's or any of Contractor's Subcontractors fault, negligence or insolvency and not reasonably foreseeable. Such events may include, but are not restricted to, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes.

37.3. If a Force Majeure situation arises, the Contractor shall promptly notify the Owner in writing of such condition and the cause thereof. Unless otherwise directed by the Owner in writing, the Contractor shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

#### **GC-38 - Termination for Insolvency**

38.1. The Owner may at any time terminate the Contract by giving written notice to the Contractor if the Contractor becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation to the Contractor, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the Owner.

#### **GC-39 - Termination for Convenience**

39.1. The Owner, by written notice sent to the Contractor, may terminate the Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for the Owner's convenience, the extent to which performance of the Contractor under the Contract is terminated, and the date upon which such termination becomes effective.

39.2. Material that is complete and ready for shipment within thirty (30) Working Days after the Contractor's receipt of notice of termination shall be accepted by the Owner at the Contract terms and prices. For the remaining Material, the Owner may elect

- (a) to have any portion completed and delivered at the Contract terms and prices
- (b) to cancel the remainder and pay to the Contractor an agreed amount for partially completed Material and for materials and parts previously procured by the Contractor.

#### **GC-40 - Dispute Resolution**

40.1 Differences between the parties to the Contract as to the interpretation, application or administration of the Contract or any failure to agree where an agreement between the parties is called for, herein collectively called disputes, shall be settled in accordance with the requirements of GC-40 of the General Conditions - DISPUTE RESOLUTION.

40.2 If a dispute is not resolved promptly, the Owner shall give such instructions as in the Owner's opinion are necessary for the proper performance of the Work and to prevent delays pending settlement of the dispute. The parties shall act immediately according to such instructions, it being understood that by so doing neither party will jeopardize any claim the party may have. If it is subsequently determined that such instructions were in error or at variance with the Contract Documents, the Owner shall pay the Contractor costs incurred by the Contractor in carrying out such instructions which the Contractor was required to do beyond what the Contract Documents correctly understood and interpreted would have required, including costs resulting from interruption of the Work.

40.3 In accordance with the latest edition of the Rules of Mediation of CCDC 2 Construction Disputes, the parties shall appoint a Project Mediator

- .1 within 15 days after either party by notice in writing requests that the Project Mediator be appointed.

40.4 A party may send a notice in writing of dispute to the other party, which contains the particulars of the matter in dispute and the relevant provisions of the Contract Documents. The responding party shall send a notice in writing of reply to the dispute within 10 Working Days after receipt of the notice of

dispute setting out particulars of this response and any relevant provisions of the Contract Documents.

- 40.5 The parties shall make all reasonable efforts to resolve their dispute by amicable negotiations and agree to provide, without prejudice, frank, candid and timely disclosure of relevant facts, information, and documents to facilitate these negotiations.
- 40.6 After a period of 10 Working Days following receipt of a responding party's notice in writing of reply under paragraph 40.4, the parties shall request the Project Mediator to assist the parties to reach agreement on any unresolved dispute. The mediated negotiations shall be conducted in accordance with the latest edition of the Rules for Mediation of CCDC 2 Construction Disputes. The mediator shall be "rights based", i.e., the mediator should assist the parties in resolving the dispute based on the contract documents, applicable law and pertinent facts.
- 40.7 If the dispute has not been resolved within 10 Working Days after the Project Mediator was requested under paragraph 40.6 or within such further period agreed by the parties, the Project Mediator shall terminate the mediated negotiations by giving notice in writing to both parties.
- 40.8 By giving a notice in writing to the other party, not later than 10 Working Days after the date of termination of the mediated negotiations under paragraph 40.7, either party may refer the dispute to be finally resolved by arbitration under the latest edition of the Rules for Arbitration of CCDC 2 Construction Disputes. The arbitration shall be conducted in the jurisdiction of the Place of the Work.
- 40.9 On expiration of the 10 Working Days, the arbitration agreement under paragraph 40.8 is not binding on the parties and, if a notice is not given under paragraph 40.8 within the required time, the parties may refer the unresolved dispute to the courts or to any other form of dispute resolution, including arbitration, which they have agreed to use.
- 40.10 If neither party requires by notice in writing given within 10 Working Days of the date of notice requesting arbitration in paragraph 40.8 that a dispute be arbitrated immediately, all disputes referred to arbitration as provided in paragraph 40.8 shall be held in abeyance until
- .1 Substantial Performance of the Work,
  - .2 the Contract has been terminated, or
  - .3 the Contractor has abandoned the Work, whichever is earlier, and
  - .4 consolidated into a single arbitration under the rules governing the arbitration under paragraph 40.8.
- 40.11 It is agreed that no act by either party shall be construed as a renunciation or waiver of any rights or recourses, provided the party has given the notices required under this clause and has carried out the instructions as provided in paragraph 40.2.

- 40.12 Nothing in this clause shall be construed in any way to limit a party from asserting any statutory right to a lien under applicable lien legislation of the jurisdiction of the Place of the Work and the assertion of such right by initiating judicial proceedings is not to be construed as a waiver of any right that party may have under paragraph 40.8 to proceed by way of arbitration to adjudicate the merits of the claim upon which such a lien is based.

#### **GC-41 - Assignment**

- 41.1. The Contractor shall not assign its interest in the Contract, in whole or in part, without the written consent of the Owner. The Owner may assign its interest in the Contract without obtaining the written consent of the Contractor to:
- (a) any construction or permanent lender(s) providing financing on the project, or
  - (b) any party acquiring ownership interest in the project, or
  - (c) the parent, subsidiary or affiliate of the Owner.
- 41.2. Such assignee shall have all the rights and remedies available to the Owner under the Contract as well as the Owner's responsibilities thereunder from and after the time such assignment occurs to all the Owner's right, title and interest to and under the Contract. Written notice of all assignments shall be provided.

#### **GC-42 - Insurance**

- 42.1. The Contractor shall place, maintain and pay at its sole cost and expense all premiums for the insurance specified in paragraph 42.2. All policies must be in a form and placed with insurers acceptable to the Owner. All policies must act as primary, and must be endorsed to provide the Owner with not less than sixty (60) Working Days prior notice of cancellation, lapse or material change in coverage. The policies will take effect prior to commencement of work and shall be maintained until total performance or as otherwise stated below.
- 42.2. The policies to be placed and maintained by the Contractor are:
- (a) Motor Vehicle Liability Insurance in the usual form, including non-ownership use and all like risks, in a combined amount of not less than two million dollars (\$2,000,000.00) per accident for bodily injury (including death) and property damage on each vehicle that the Contractor, Subcontractors or any of their servants, agents or employees may use at any time in connection with the performance of the Contract.
  - (b) "All Risks" Contractor's Material insurance (if applicable) and installation floater coverage covering owned and non-owned construction machinery and Material used by the Contractor, Subcontractors or their respective servants, agents or

employees against all risk of loss or damage with coverage on a replacement cost basis. This coverage will be written with insurers acceptable to the Owner and contain a waiver of subrogation against the Owner, and any consultant, other contractor, or subcontractor engaged in the work. The Contractor, its Subcontractors or their respective servants, agents or employees shall be entitled to self-insure their own Material.

- (c) Aircraft and Watercraft Liability Insurance (if applicable) with respect to owned and non-owned aircraft and watercraft used directly or indirectly by the Contractor, a Subcontractor or their respective agents and employees in the performance of the Contract covering liability for bodily injury, death and damage to property with limits of not less than five million dollars (\$5,000,000.00) inclusive for each loss.
- (d) Workplace Safety Insurance as required under the Workplace Safety Insurance Act of the Province of Ontario. The Contractor unconditionally guarantees to the Owner full compliance with the conditions, regulations and laws relating to Workplace Safety Insurance by itself and by all Subcontractors.
- (e) Marine Freight Insurance, if required, covering the Material while in transit. This policy shall be written on a valued form to the replacement cost of the Material, and include the Institute of Marine Cargo "Clause A" "All Risks" coverage including the War Clauses endorsements.

#### 42.3. Proof of Insurance

- (a) The Contractor shall, seven (7) Working Days prior to the commencement of the work, furnish to the Owner two (2) copies of Insurance Certificates, signed by an authorized representative of the insurer and one copy of certified policies once received from the insurer. The Contractor is obliged to furnish that the premium associated with such policies has been paid; however receipt by the Owner of the above information shall in no way constitute confirmation by the Owner that the insurance complies with the requirements of paragraph 42.2. Responsibility for ensuring that the insurance coverage outlined herein is in place rests solely with the Contractor.
- (b) The Contractor shall require its Subcontractors to provide insurance, where required, under paragraph 42.2 and the Contractor is responsible for obtaining and forwarding to the Owner the appropriate signed certificates or other proof of insurance.

#### 42.4. Commencement of Work

Neither the Contractor nor any of its Subcontractors shall begin any work on the Site or delivering of Material until necessary proofs of insurance have been furnished and approved by the Owner.

#### 42.5. Policy Requirements

All insurance shall include the Owner and Engineer, other contractor or subcontractor engaged in the project; both with respect to the Contractor's insurance as well as the Subcontractors insurance. All insurance shall provide for cross-liability so that each insured is protected separately by the insurer.

#### 42.6. Maintaining Insurance

If the Contractor or its Subcontractors fail to place or maintain insurance as required under paragraph 42.7, the Owner shall have the right but is not obligated to place and maintain insurance as required. All premiums and other costs incurred by the Owner will be paid by the Contractor to the Owner on demand, or failing payment may be deducted by the Owner from any amount then or thereafter due to the Contractor.

#### 42.7. Additional Insurance

From time to time at its discretion by written notice to the Contractor, the Owner may require the Contractor to procure or maintain additional insurance if required. The cost of such additional insurance will be dealt with in accordance with Clause GC-6 of the General Conditions.

#### 42.8. Contractors' Liability Preserved

The provisions of paragraph 42.2 do not diminish, limit or otherwise affect the liability of the Contractor to the Owner under or in relation to any other provisions of the Contract.

### GC-43 - Indemnification

- 43.1. The Contractor agrees to indemnify and save harmless the Owner and its affiliated companies, directors, officers, employees, agents, customers, other contractors and any assignees, without limitation, from and against any and all liability, losses, damages, injuries, actions, causes of action, suit, debt, expense, claim or costs (including without limitation legal fees and disbursements on a solicitor client basis) and the costs of enforcing any indemnity contained herein, any lost revenues, profits or opportunities or other consequential damages, whatsoever incurred, suffered, sustained or required to be paid directly or indirectly (including interest), by or sought to be imposed at law or in equity upon the Owner and its affiliated companies, directors, officers, employees, agents, customers, other contractors and any assignees, howsoever caused, including without limitation any obligations and liabilities arising out of any environmental law, act, statute or regulation in any way connected with, that arise out of, or are attributable to, the Contractor's performance of the Work.

- 43.2. The Contractor hereby releases the Owner and its affiliated companies, directors, officers, employees, agents, customers, contractors and any assignees, without limitation, from and against any and all liability, losses, damages, injuries, actions, causes of action, suit, debt, expense, claim or costs which may arise as a result of or in any way connected to the Work.
- 43.3. The obligation of the Contractor to indemnify hereunder shall be limited to two million dollars (\$2,000,000.00) per occurrence from the commencement of the Work until Acceptance of the Work and thereafter to an aggregate limit of two million dollars (\$2,000,000.00).

#### **GC-44 - Notices**

- 43.4. Unless otherwise stated in the Contract, all notices to be given under the Contract shall be in writing and shall be sent by personal delivery, regular or registered post (airmail when applicable), courier or facsimile to the address of the relevant party set out herein, with the following provisions:
- any notice sent by facsimile shall be considered to have been delivered one (1) Working Day after the date of transmission
  - any notice sent by regular post shall be considered (in the absence of earlier receipt) to have been delivered five (5) Working Days after the date of mailing. For proving the fact of mailing, it shall be sufficient to show that the envelope containing such notice was properly addressed/stamped and conveyed to the postal authorities for transmission by post
  - any notice delivered personally, by courier or by registered post, shall be considered to have been delivered on the date of delivery if delivered to the individual or to a member of the firm or to any officer of the corporation for whom they are intended by hand or by registered post

either party may change its postal, facsimile address(es) for receipt of such notices by written notice to the other party

## **SECTION 5 - Special Conditions**

### **SC-1 - Scope of Contract**

- 1.1. The Work under this Contract comprises the supply of all labour, Plant, materials and quality assurance testing, and the performance of all work necessary for the processing, supply and delivery of the Material to the Site.
- 1.2. The Contractor is required to create two separate stockpiles in the area designated by Owner (see Drawing 2001-P10117-002). One stockpile will comprise 600 m<sup>3</sup> of Material. The second stockpile will comprise 1400 m<sup>3</sup> of Material. The Contractor must provide sufficient space between piles, as directed by the Owner, to allow access using standard construction equipment.
- 1.3. Plant used to stockpile the Material shall be capable of moving and placing Material without segregation or contamination by native soil deposits at Site, debris or other unsuitable material.
- 1.4. The Contractor is responsible for maintaining access to the stockpiled Material at all times during the Contract at no additional cost to the Owner.
- 1.5. The Contractor is responsible for maintenance of all access roads to the Site as required in Section SC-7, Roads and Accesses.

### **SC-2 - Intent of the Specification**

- 2.1. The intent of the Specification is that the Work covered under this Contract be fully completed in every detail for the function designated by the dates listed in Section SC-5, Schedule, of this Contract.
- 2.2. The execution of the Work shall be the responsibility of the Contractor. The Contractor, in accepting the Contract, agrees to furnish all Plant, material and labour not specifically mentioned or included herein, but that is necessary to complete any portion of the Work in a satisfactory manner, and in compliance with the requirements of the Specifications, at no additional cost to the Owner.
- 2.3. Where conflict exists between the requirements of this Specification and those of the detailed Material Specification and/or drawings, the Contractor shall obtain clarification from Owner before proceeding with the Work.
- 2.4. The Contractor shall obtain written agreement from the Owner before proceeding with any deviations from this Specification.

### SC-3 - Purpose and Function

- 3.1. Zone 5B granular material will be used to fill depressions/sinkholes located about 150 m upstream of the Earthfill Dam in the headpond. A marine operation, by others, will be used to place the Material.
- 3.2. The Material is designed, with a specified grainsize distribution, to provide filtration for the native sand and gravel bottom of the reservoir. The material will be placed in headpond depressions/sinkholes to stabilize and to prevent further enlargement of the depressions.
- 3.3. The primary function of the Material is to stabilize headpond depressions/sinkholes and prevent possible undermining of the upstream toe of the dam.

### SC-4 - Specification Drawings

- 4.1. The following drawings accompany and form part of the Specification:  
  
CC-ESD-2001-163-001      Site Access and Location Plan  
CC-ESD-2001-163-002      Designated Stockpile Area

### SC-5 - Schedule

- 5.1. Within five (5) Working Days of notification of acceptance of the Tender, Contractor shall submit, for review and comment by the Owner, a schedule of the Contractor's activities. Such activities shall include mobilization of equipment to the granular borrow area, production of Material, quality control testing and delivery of the Material to the Site.
- 5.2. Contractor's schedule shall take into account the following key dates which shall form part of the Contract and be incorporated into Contractor's schedule as contractual restraints.

Notice of award (Anticipated)	<b>August 10, 2001</b>
Begin of Processing Material	<b>No later than August 22, 2001</b>
Mobilization to the Site	<b>No later than August 27, 2001</b>
Completed Delivery of Material	<b>No later than August 31, 2001</b>

Demobilization from the Site  
**August 31, 2001**

**No later than**

- 5.3. On acceptance by the Owner, the schedule shall be the Contract Schedule and Contractor shall carry out the work in strict compliance with the Contract Schedule. No changes will be permitted except on written authorization of the Owner.
- 5.4. In the event that activities are behind schedule, Contractor shall submit a proposal, for review by the Owner, providing details for regaining the Contract Schedule.

### SC-6 – Job Planning

- 6.1. The Contractor's Supervisor and/or Foremen shall prepare a detailed written Job Plan and Job Safety Analysis, in accordance with the Owner's procedures. The Job Plan and Safety Analysis shall be submitted to the Owner for approval prior to commencement of the Work. The Owner, after review of the Job Plan and Safety Analyses, shall indicate acceptance in writing.
- 6.2. Each member of the Contractor's staff shall be instructed as to their role as detailed in the approved Job Plan and Safety Analyses. An example of a typical Job Plan and Safety Analysis is attached.

### SC-7 –Roads and Accesses

- 7.1. The Site is located at the Earthfill Dam, approximately 30 km west of Wawa, Ontario. Access to the Site is from Highway 101 on unpaved gravel roads (see Drawing 2001-P10117-001).
- 7.2. The Contractor must cross the Concrete Gravity Dam, which is equipped with a locked security gate. The Contractor shall coordinate opening and closing of the access gate across the Hollingsworth Dam with the Owner.
- 7.3. The maximum speed limit on unpaved gravel roads is 50 km/h. The Contractor and Subcontractors must strictly obey the imposed speed limit.
- 7.4. The general public uses unpaved access roads from Highway 101 to the Whitefish Lake Boat Ramp. The Contractor must ensure public safety on access roads at all time.
- 7.5. The Contractor shall inspect the condition of the haul road as part of his tender to satisfy himself of its condition and any access



constraints. Contractor shall inspect all crossing structures on access roads and shall advise the Owner of any unsuitable structure prior to use of the structure by the Contractor or Subcontractors. The Owner shall advise the Contractor of alternative access arrangements within five (5) days.

- 7.6. The Contractor shall maintain all access roads used during the Work. Maintenance shall include all necessary repairs due to the Contractor's operations or as required to leave the road in 'as found' conditions, and shall be performed at no additional cost to the Owner.
- 7.7. Prior to the start of hauling, the Contractor and a representative of the Owner shall inspect the haul roads and agree on its 'as found' condition. During hauling, the Contractor shall be responsible for good maintenance of the roadway.

#### **SC-8 – Security**

- 8.1. *The Contractor shall provide for the security of its Plant, materials and the Site at all times during the Contract, at no additional cost to the Owner. The Owner will in no way be responsible or liable for the security of the Contractor's Plant and materials or the Site during execution of the Work.*
- 8.2. *The Contractor shall in connection with the Work, provide and maintain at its own cost, all lights, guards, fencing and other security measures when and where necessary.*

#### **SC-9 - Safety**

- 9.1 The Contractor shall maintain a high regard for safety while performing the Work. The Contractor and its Subcontractors shall ensure that the measures and procedures prescribed by the Occupational Health and Safety Act, and the Regulations are carried out under this Contract, and that all workmen work in a manner and with the protective devices, measures and procedures required by the Act.
- 9.2 The Contractor must comply with all related requirements of the Owner's Work Protection Code and Safe Work Practices.
- 9.3 The Contractor shall ensure that all workmen employed in the execution of the Contract are fully briefed and advised of the location of all electrically energized equipment or apparatus in the

vicinity of the Work and that they shall be fully briefed and instructed as to the correct and safe working procedures. The Contractor shall further ensure that on-site supervisors in charge of any work group will be fully conversant with the Owner's Work Protection Code and Safe Work Practices in order to prevent electrical contact or near miss contact. In the event that the Contractor, or any of its on-site supervisors are unsure of the Owner's Work Protection Code and Safe Work Practices, such person or persons shall immediately request guidance from the Owner prior to proceeding with the Work.

- 9.4 The Contractor shall operate all Plant in a way that will ensure that they do not come into contact with live conductors.
- 9.5 All Plant shall be inspected regularly to ensure that it is in safe working condition and that any defect is rectified before resumption of use.
- 9.6 All equipment shall be approved by the Canadian Standards Association for the purpose for which it is being used.

#### **SC-10 – Safety Orientation**

- 10.1. *The Contractor shall participate in a safety orientation meeting conducted by the Owner following award of the Contract and prior to commencement of the Work. The safety orientation meeting shall include the Contractor's Supervisors and all personnel who will be on Site during execution of the Work. The cost for this meeting shall be deemed to be included in the Contract Price. The duration of the meeting is 3 hours.*
- 10.2. *The Contractor is responsible for safety orientation of truck drivers. All drivers shall be made aware of speed limits and public access issues prior to delivery of the Material to the Site.*

#### **SC-11 – Environmental Management System**

- 11.1. *The Owner has identified environmental aspects associated with Owner's activities that have the potential to impact on the environment. The Owner has developed an Environmental Management System and Operating Control Procedures that satisfy ISO 14001 standards to mitigate impacts.*

11.2. The Contractor shall comply with all applicable legislation, regulations, manufacturer's recommendations and the Owner's Environmental Management System and Operating Control Procedures in the Work covered in this Contract.

in accordance with the manufacturer's or Contractor's instructions

#### SC-12 – Environmental Controls

11.3. The Contractor shall ensure all its employees understand the potential environmental impacts of the Work, their role and responsibility, the importance of compliance with the Environmental Management System and Operating Control Procedures and the potential consequences of failing to comply.

11.4. The Owner has attached to this Contract a copy of its Environmental Policy and a Statement of Understanding. Signing and return of the Statement of Understanding signifies the Contractor's receipt of the Owner's Environmental Policy, awareness and understanding by all parties engaged in the Work and agreement to comply fully with the policy and procedure requirements.

11.5. The Contractor may employ, in performance of the Work, products which are classified as hazardous or which may be harmful to the environment if not properly used. The Contractor shall take all necessary care and precautions to ensure negative environmental impacts are eliminated. These measures may include but are not limited to:

- storage of hazardous materials in a secure storage area
- separation of combustible materials from the same storage area as flammable or combustible liquids
- ensuring all containers are tightly closed and sealed when not in use
- making a copy of relevant Material Safety Data Sheets accessible to employees wherever hazardous materials are stored and/or used
- keeping appropriate spill cleanup materials near storage areas and ensuring employees are aware of the necessary cleanup precautions and procedures
- ensuring all containers are clearly labeled as to their contents and warnings necessary for proper handling and storage
- using volatile products only in well ventilated areas
- ensuring the use of appropriate personal protective clothing and equipment with the various products
- ensuring all empty containers are reused or recycled, where possible, or disposed of in an environmentally sound manner

12.1. The Environmental Protection Act requires spill incidents involving fuels, oil, hydraulic fluid, herbicides and other pollutants to be reported forthwith to the Ministry of the Environment and to the local municipality where the spill occurred.

12.2. The Contractor, its supervisors and all Subcontractors shall ensure that all reasonable precautions are taken to avoid spillage of oil, grease, gasoline, diesel fuel, herbicides or other contaminants. All such materials shall be handled and stored in a manner acceptable to the Ministry of the Environment and in accordance with the requirements of the Workplace Hazardous Materials Information System.

12.3. The Contractor shall perform all acts required of the owner or controller of any spilled materials and comply with all pertinent legislation. Incidents of spills shall be reported immediately to the appropriate authorities in accordance with the legislation. The Owner shall also be promptly notified of all spills.

12.4. The Contractor shall immediately take steps to control any such spillage and to report spillage to the Ministry of the Environment as required under the provisions of the Environmental Protection Act.

#### SC-13 – Property of Others

13.1. Where the property, Plant or equipment of others requires handling to effectively protect it from the Contractor's Work, the Contractor shall contact the owner of the property, Plant or equipment before handling and shall handle the property, Plant or equipment in a manner suitable to the owner.

#### SC-14 – Emergencies

14.1. The Owner or Owner's duly appointed representative has authority in any emergency to stop the progress of the Work

*whenever, in his opinion, such stoppage may be necessary to ensure the safety of life, equipment, the structure or property. This includes authority to make such changes and to order, assess and award the cost of such extra work to the Contract or otherwise as may in his opinion be necessary.*

#### SC-15 – Communications

- 15.1. The Contractor shall have the capability of communicating with the System Control Operators at the Owner's offices in Sault Ste. Marie, for the full duration of the Work. Communications shall be in the form of telephone, cellular telephone or two-way radio located at the Site.
- 15.2. The Owner's System Control Operators must be able to make contact with the Contractor's personnel on Site at all locations and at all times. The Contractor's communication system must have the capability of alerting personnel despite adverse conditions such as extensive noise.
- 15.3. The Contractor shall provide a contact number and reliable means of contacting the Contractor or its designated representative on a 24-hour, 7-day per week basis in case of emergencies

#### SC-16 - Payment

- 16.1. Payment shall be made to the Contractor as follows:
  - (i) Upon completion of the Contract and acceptance by Owner, in writing, of the Material.
  - (ii) Performance Bond and Labour and Material Payment Bond - should the Owner require the bonds
    - 50% of the Contract Price of the Performance Bond and the Labour and Material Payment Bond upon receipt of the Performance Bond and Labour and Material Payment Bond by the Owner.
- 16.2. All payments shall be subject to holdback prescribed by the Construction Lien Act of Ontario R.S.O. 1990, Chapter c.30, as amended.
- 16.3. Subject to Owner's acceptance of Material, Contractor shall submit to the Owner, at the address noted in Article 4 of the Agreement an original and one copy of the Contractor's own invoice. The invoice will show the following:
  - the date
  - name and address of the consignee

- item number, quantity, part number, reference number and description
- contract number
- Goods and Services and Provincial Retail Sales Taxes separately.

- 16.4. Invoices are not to be submitted prior to Owner's acceptance of Material, and the original invoice must be stamped "Original".
- 16.5. Payments by the Owner will be made within forty five (45) Working Days following the date on which an invoice and substantiating documentation satisfactory to the Owner are received according to the terms of the Contract.
- 16.6. If the Owner has any objection(s) to the form of the invoice or the substantiating documentation, within fifteen (15) Working Days of receipt, the Owner shall notify the Contractor of the nature of the objection. Upon the Contractor making good the cause of the objection by the Owner, the Owner will process the invoice for payment.
- 16.7. The Owner may deduct from any money due or becoming due to the Contractor:

- (i) All liquidated or unliquidated amounts owing or due from the Contractor or its Subcontractors to the Owner.
- (ii) All costs, charges, damages, liquidated sums and expenses which the Owner may have paid or incurred and which or for which the Contractor or its Subcontractors is or are liable to bear, pay or make reimbursement to the Owner.

#### SC-17 - Acceptance

- 17.1. Acceptance of the Material shall be deemed to have occurred on the date the Material has passed all required tests and has been delivered to the Site. The Owner will issue Contractor with a Certificate of Acceptance declaring the Owner's Acceptance of the Material as of the date of the Certificate.
- 17.2. The issue of an Acceptance Certificate shall not constitute a release of the Contractor from any requirement of the Contract or Work, or other matter in respect of which it is issued nor shall it be taken as an admission of the due performance of the Contract or any part thereof or of the accuracy of any claim or demand, made by the Contractor or of altered, amended, omitted, additional or otherwise varied work having been directed or permitted by the Owner, nor shall any such Certificate negate or prejudice any of the rights, powers and remedies of the Owner or the Contractor.

#### SC-18 - Price Adjustment

- 18.1. The Contract Price shall not be subject to adjustment by reason of any rise in the cost of labour or materials.
- 18.2. The Contract Price shall not be subject to adjustment for variations in the rates of foreign exchange.

#### SC-19 - Interest Charges

- 19.1. If either party fails to make payments as they become due under the terms of the Contract or an award by arbitration or court, interest at one (1) percent per annum above the bank rate on such unpaid amounts shall also become due and payable until payment. Such interest shall be paid on a monthly basis. The bank rate shall be the rate established by the Bank of Canada as the minimum rate at which the Bank of Canada makes short term advances to the chartered banks.
- 19.2. Interest shall apply at the rate and in the manner prescribed above on the amount of any claim settled pursuant to Clause GC-40 - Dispute Resolution from the date the amount would have been due and payable under the Contract, had it not been in dispute, until the date it is paid.

#### SC-20 - Performance Bond and Labour and Material Payment Bond

- 20.1 The Owner may require the Contractor to furnish a Performance Bond and a Labour and Material Payment Bond, each in the amount of 50% of the Contract Price. The bonds shall remain in force and in effect throughout the period from the date of award until the date which is 3 months after the date of the Provisional Acceptance, or until all warranty obligations of the contractor have been fulfilled, whichever is later. The Bonds shall be furnished before execution of a Contract. The bonds shall be issued by a bonding company satisfactory to the Owner and licensed to issue such bonds in the Province of Ontario. The Performance Bond shall be on Form CCDC 221 and the Labour and Material Payment Bond shall be on Form CCDC 222, and the forms shall be amended as necessary. In the event that the successful Tenderer fails to furnish said Bonds, the Owner shall have the right to withdraw award of Contract.

## SECTION 6 - Technical Specifications

#### TS-1 – General

- 1.1. Contractor shall guarantee and be responsible for:
- I. the suitability and quality of all materials and workmanship entering into the Material
  - II. delivery of the Material within the period of time indicated in Section SC-5 of the Special Conditions
  - III. the Specifications
- 1.2. The system of measurement shall be SI units.
- 1.3. The following abbreviations are used herein.

##### SI Metric

µm	micrometre
mm	millimetre
m	metre
km	kilometre
m <sup>2</sup>	square metre
m <sup>3</sup>	cubic metre
kg	kilogram
t	tonne

#### TS-2 – Mobilization and Demobilization

##### TS-2.1 – General

- 2.1.1. The work to be done under this item shall comprise the supply of all labour, material, supervision, and the performance of all work necessary for mobilizing the Plant required to perform the Work as specified herein and for final cleanup, demobilization and removal of all plant, and removal of all surplus material, scrap, waste and debris which have been deposited at the Site during and as a result of the Work.
- 2.1.2. The Contractor shall inform the Owner, in writing, of the date of Mobilization at least five (5) working days prior to Mobilization to the Site.

##### TS-2.2 – Definitions

- 2.2.1. Mobilization shall consist of transporting Plant to the Site, and unloading, assembling, erecting, or otherwise preparing the Plant in readiness for use.

- 2.2.2. Plant shall include, but shall not be limited to equipment for moving earth and/or debris and all other equipment necessary to perform the Work.
- 2.2.3. Demobilization shall include the removal of all plant, surplus materials and debris of any description from the Site, to satisfaction of the Owner. The Contractor shall leave the entire Site, stockpile and Work areas, in a neat and tidy condition.

#### TS-2.3 – Payment

- 2.2.4. No Payment shall be made for Mobilization and Demobilization. The cost of Mobilization and Demobilization of equipment to Site shall be included in the unit rate for Zone 5B Granular Material.

#### TS-3 - Zone 5B Granular Material

##### TS-3.1 – General

- 3.1.1. The work to be done under this item shall comprise the supply of labour, Plant, material, supervision, quality assurance, and performance of all work necessary to excavate, process, load, transport, dump, stockpile and survey the Material at the Site.
- 3.1.2. Quality Assurance shall be undertaken by the Contractor, Form of Tender, Appendix B, at no additional cost to the Owner. Contractor shall submit the name and address of a qualified geotechnical inspection and testing subcontractor as part of its Tender and include the cost of Quality Assurance Testing in the unit price for Zone 5B fill.
- 3.1.3. Quality Assurance shall consist of Gradation Testing, ASTM C 136-93, conducted by a qualified Geotechnical inspection and testing Subcontractor.
- 3.1.5. A minimum of four (4) Gradation test shall be performed. One test after production of 50 m3, 100m3, 400 m3 and 700 m3, respectively.
- 3.1.7. Contractor shall be responsible for survey measurement of the finished stockpile at no additional cost to the Owner.

##### TS-3.2 – Material Specifications

- 3.2.1. Zone 5B Granular Material shall consist of durable gravel-sized materials corresponding to all requirements of ASTM C 33 – Concrete Aggregates, Size Numbers 357 or 467.
- 3.2.2. For clarification, Zone 5B materials shall conform to the following grading limits.

Standard Sieve	Percent Finer
75 mm	100
50 mm	80-100
37.5 mm	60-100

Standard Sieve	Percent Finer
25.0 mm	35-85
19.0 mm	20-70
12.5 mm	10-45
9.5 mm	5-30
4.75 mm	0-5

##### TS-3.3 – Stockpiling of Zone 5B Material

- 3.3.1. Zone 5B Material shall be stockpiled by the Contractor in the designated stockpile area shown on Drawings CC-ESD-2001-163-001 and -002. The Contractor shall be responsible for maintaining haul roads to the Site in accordance with Special Condition SC-7.
- 3.3.2. The Contractor shall supply suitable Plant at Site to handle Zone 5B material without segregation or contamination by natural soils and/or debris at the Site. Material shall be stockpiled in two separate piles at locations specified by the Owner. One stockpile will comprise 600 m3 of Zone 5B Material. The second stockpile will comprise 200 m3 of Zone 5B Material.
- 3.3.3. Side slopes of the stockpiles shall be relatively uniform and at the angle of repose of the material.
- 3.3.4. Compaction is not required.
- 3.3.5. The maximum height of stockpile shall be 4 metres.

##### TS-3.4 – Measurement

- 3.4.1. Measurement for payment for Zone 5B Granular Material will be made of the actual number of cubic metres of fill in place between the surface of the prepared foundation and the finished lines and grades as required by the Owner.
- 3.4.2. The surface of the prepared foundation and the finished lines and grades of the stockpile shall be measured by Contractor using total station survey. A sufficient number of survey points shall be recorded to accurately calculate volumes. The volume of Zone 5B Granular Material shall be calculated using Digital Terrain Model (DTM) calculations.
- 3.4.3. Contractor shall inform Owner of the time of survey with 2 days prior notice so that the Owner may witness the survey.

##### TS-3.5 - Payment

- 3.5.1. Payment for supplying, hauling, dumping, stockpiling and survey of Zone 5B granular fill, complete in every respect and as specified herein, will be made at the unit price stated under Item 1 in the Price Schedule, Appendix A.

3.5.2. No payment will be made for maintenance of haul roads or access to the stockpiles. The Cost of haul road maintenance and stockpile access shall be incorporated in the unit price for Zone 5B Material, Item 1, in the Price Schedule, Appendix A.

3.5.3. No payment will be made for Quality Assurance testing. The Contractor shall include the cost of Quality Assurance Testing in the unit price for Zone 5B Material, Item 1, in the Price Schedule, Appendix A.

3.5.4. No payment will be made for survey of the stockpile. The Contractor shall include the cost of survey in the unit price for Zone 5B Material, Item 1, in the Price Schedule, Appendix A.

#### **TS-4 - Borrow Area and Quarry Operations**

##### **TS-4.1 – General**

4.1.1. The work to be done under this section shall comprise the supply of all labour, Plant, material and supervision, and the performance of all work necessary to excavate overburden and rock from borrow/quarry areas, including clearing and stripping of the areas, and the reinstatement of areas used on completion of the Work.

4.1.2. The Contractor is responsible for all borrow area and quarry operations including securing all necessary permits and approvals.

##### **TS-4.2 – Measurement**

4.2.1. There will be no measurement for payment under this item.

##### **TS-4.3 – Payment**

4.3.1. Payment for borrow/quarry area development and reinstatement, if required, shall be deemed to be included

Example of a Tender Package