

TECHNICAL MEMORANDUM



TO: Qualified Well Drilling Contractors **DATE:** September 21, 2022

FR: Ryan Rhodes, P.Geo. (Western Water on behalf of the Village of New Denver) **REFERENCE:** 22-004-01VR

**RE: REQUEST FOR QUOTATION – DRILLING, DEVELOPMENT AND TEST PUMPING:
VILLAGE OF NEW DENVER REPLACEMENT WELLS (WELLS #3 AND #4)**

1.0 Introduction

This document provides a request for bids to drill, develop, and test two 10-inch diameter production wells for the Village of New Denver (VND or “the Village”), B.C. This document includes information on:

- Quotation requirements and instructions to bidders
- Other bidding considerations
- Project schedule
- Project background
- Project well location
- Expected subsurface conditions and lithology
- General order of works
- Technical Specifications – Well Drilling and Development
- Technical Specifications – Test Pumping
- Supplementary Specifications – Measurement and Payment

Attachments to this Request for Quotation include:

- A. Preliminary Well Site Plan
- B. Supplementary subsurface information, including the well driller’s reports for the existing wells near the proposed replacement well site.
- C. Schedule of Prices
- D. Additional Bid Submittal Information Sheets (for bidders’ use as needed)
- E. Draft CCDC-I8-2001 Contract Document. It is the Village’s intent to enter into a contract with the successful bidder using a CCDC-I8 contract. As noted in the draft Contract, TRUE Consulting will act as the ‘Consultant’ in administering the contract.

2.0 Quotation Requirements and Instructions to Bidders

To complete a quotation submission and allow formal review by the Village, bidders are asked to provide the following:

- **Schedule of Prices.** A completed and signed Schedule of Prices must be provided.
- **Work Schedule.** A brief summary of the expected timeline and work plan for the project.

- **Equipment List.** A statement of the equipment available.
- **Qualified Driller(s).** The name/contact information of primary driller(s) for the project and Qualified Well Driller's registration number.
- **Qualified Well Pump Installer (if used).** The name and contact for the Qualified Well Pump Installer responsible for the pumping tests. Include registration number.
- **Project References.** Provide the names of at least three projects completed within the past three years involving 250 mm (10 inch) or larger diameter well casings installed for water supply purposes. Provide a name and contact number for the well owner as a reference, and include well depth, diameter, screen length, development methods and pumping test rate or yield. For pumping test subcontractors, provide details on test pump capability and three references from projects done in the last three years with pumping rates of at least 500 US gpm.

Emailed bid submissions will be accepted electronically by Western Water Associates Ltd. (Western Water or WWAL) up until **12:00 pm Wednesday October 5, 2022.**

Any questions or clarifications regarding the project or scope of works should be directed to Ryan Rhodes, P.Geo; contact information provided below. The ultimate contract will be between the selected well drilling contractor and the VND. Western Water will be the hydrogeological consultant assisting the client with this project.

Ryan Rhodes, P.Geo.

Western Water Associates Ltd.

1003 Kalamalka Lake Road, Vernon, BC V1T 6V4

Phone: 250-541-1030 (office); 250-308-6160 (cell)

Email: ryan@westernwater.ca

This bidding process is competitive, and price will be a major consideration. Equipment availability and particularly schedule for completion of the works will also receive substantial consideration.

The selected drilling contractor will act as prime contractor for the project. Subconsultants will be allowed (if needed) for well development and pump testing. Proposed sub-contractors and their role in the project must be clearly outlined in your bid.

3.0 Other Bidding Considerations

- Mandatory Driller Registration – Prospective bidders must supply personnel qualified by the BC Ministry of Environment and Climate Change Strategy for both drilling and pump installation. All work will be completed in accordance with well construction and testing standards outlined in the 2016 BC Groundwater Protection Regulation.

- **Subcontracting** – Prospective bidders may propose to subcontract portions of the work, for example, well development, camera survey and test pumping. Please provide the name(s) of proposed contractors in your proposal. Proposed pump contractors/subcontractors must be registered in B.C., provide references separate from the drilling contractor and provide an equipment list on the attached form(s).

4.0 Project Schedule

The Village intends to review submissions and award this contract on **Wednesday October 12, 2022**. The Village would like to have the wells completed as soon as feasible, ideally prior to the end of 2022. All works must be completed prior to the end of February 2023. Contractors can expect to be allowed to drill between 7:00 am and 7:00 pm on weekdays, and from 8:00 am to 5:00 pm on weekends. No work will be allowed on statutory holidays.

On the day of drill rig mobilization, there will be a mandatory site meeting to review access, safety procedures, communication requirements, invoicing procedures, and to review the technical specifications and work plan. Representatives of the drilling contractor, WWAL, the civil engineering consultant (TRUE Consulting) and the owner (Village of New Denver) will be present at this meeting. Approximately one hour should be allotted for this meeting.

5.0 Project Background

Western Water Associates Ltd (WWAL) is acting as the hydrogeological consultant for the Village of New Denver, who is proceeding with municipal water system improvements with the assistance of civil engineering consultant TRUE Consulting. As part of these improvements, two wells are planned to replace the two existing VND wells. The proposed new wells are referred to as Wells 3 and 4.

Of the existing supply wells, one is located in “uptown” New Denver near the former arena (Well 1, ~120m from the new well site) and the other is close to Slocan Lake (Well 2 or Lake well). There is also a 2011 VND test well drilled about 75 metres west of the proposed location of replacement wells 3 and 4. Select construction details for the three existing VND wells are summarized in Table 1. The new wells will be constructed with nominal 250 mm (10 inch) well casing and screen. The target completion depths are expected to fall within a range bracketed by Well 1 (138 ft) and the 2011 Test well (177 ft). Drilling supplies and tooling to drill up to 185 ft are required at mobilization, in the event that water-bearing characteristics differ slightly at the chosen replacement well sites, which is not unusual in an alluvial fan aquifer setting.

Table 1: Summary of Construction Details for the Village of New Denver Wells

Well ID	Well 1 (WPID 31658)	Well 2 (WPID 31702)	2011 Test Well (WPID32888)
Informal well name	Arena Well	Lake Well	2011 Test Well
Date Drilled	Oct-Nov. 1974	Nov-Dec. 1974	August 2011
Drilling Company	Quality Water Wells	Quality Water Wells	Thorman Drilling
Casing/screen diameter (mm)	8" (200 mm)	8" (200 mm)	6" (150 mm)
Total Depth (ft/m bgs)	138 ft (42.1 m)	110.5 ft (33.7 m)	177 ft (53.9m)
Screen Assembly length (ft/m)	42 ft (12.8 m)	21.8 ft (6.6 m)	22 ft (6.7 m)
Top of Screen Assembly (ft/m)	96 ft (29.3 m)	108 ft (32.9 m)	153 ft (46.6 m)
Slot size (thousandths of an inch)	150 slot: 96 – 106 ft Blank: 106 – 121.5 ft 12 to 18 slot: 121.5 – 138 ft	120 slot: 90.5 to 95.5 ft 200 slot: 95.5 – 105.5 ft 120 slot: 105.5 – 110.5 ft	150-177 ft
Well Yield	170 US gpm (10.7 L/s)	900 US gpm (56.7 L/s)	300 US gpm (18.9 L/s)
Typical flow rate	170 US gpm (10.7 L/s)	500 US gpm (31.5 L/s)	Not in use

6.0 Project Well Location

The new wells will be located near the intersection of Slocan Avenue and Columbia Street, about 75 metres east of the 2011 test well and 120 metres southeast of Well 1.

The well site is currently located in a treed area near the edge of a bank (Photo 1, Figure 1 in Appendix A). Separate from this contract, a level drill pad of sufficient size will be constructed by others, prior to contractor arrival.

A mandatory site meeting prior to bid submission is not required, however, contractors can view the site at any time. Contact Ryan Rhodes and arrangements to view the site will be made.

Photo 1: Proposed Drilling Location (facing east) 7 Sept 2022



Photo 2: Proposed Drilling (facing northeast) Location 21 April 2022



Considering the likely timeline for the project, the contractor should anticipate that drilling may occur while snow is on the ground. Maintenance of drill site including snow removal as needed will be the contractor's responsibility. Several trees shown in the photo will be removed by the Village and the drill site re-graded to allow for truck-mounted drill rig access from Columbia Street. The wells will be situated about 8 to 10 metres apart and staked in advance of drilling.

7.0 Expected Subsurface Conditions and Lithology

Flowing artesian conditions are NOT EXPECTED within the depth ranges planned for this drilling program. Available information suggests static water levels of about 55-60 ft below ground surface. As indicated on the attached well logs for Well 1 and the 2011 test well, lithology from surface downward can be expected to comprise the following main units:

- A largely unsaturated surficial unit that may have large boulders and cobbles from surface to 60+ ft;
- Layers of sand, coarse sand and gravel that become water-bearing below about 75 ft;
- The above sand and gravel may have interbeds of finer grained silt and/or glacial till; and
- As this project is drilling wells in an alluvial fan formation deposited by a creek draining a mountainous region, we can expect subsurface conditions to vary considerably over relatively short lateral

distances between boreholes. However, we do expect that there will be an aquifer with good water-bearing characteristics present below a depth of 100 ft.

8.0 General Order of Works

The order in which works will be completed by the contractor are as follows:

1. Drilling of first 250 mm replacement well up to and including screen installation.
2. Drilling of second 250 mm replacement well up to and including screen installation.
3. Alignment tests (Plumbness or straightness tests) on both completed wells either during steps 1 and 2 or after.
4. Well Development of both wells back to back.
5. Camera surveys of completed wells and screens (could be completed after step 2, 3 or 4. Camera survey must provide clear images, and is the responsibility of the contractor).
6. Test pumping of the wells.
7. Demobilization of all equipment; site clean-up. Submission of well driller's reports to VND, Western Water and Province of B.C.

Specifics on the requirements for drilling, development and test pumping are provided in the following sections.

9.0 Technical Specifications – Well Drilling and Development

The following section outlines the specifications for the drilling of the new well.

- **Drilling Method** – For this project drilling can be completed with a dual-rotary, air rotary or cable tool rig, while a cable tool rig is required for development. Screen installation can be completed with any type of rig.
- **Formation Sampling** – Formation samples are to be collected at 2-foot intervals from the surface to the final well depth.
- **Surface seal** – A minimum of 14-inch x 10-inch surface seal will be installed, as per the B.C. Groundwater Protection Regulation, and as further detailed herein. The seal shall be installed to a total depth of 18ft (5.5 m) by first advancing a temporary 14 or 16-inch casing. Once the well screen is in place and exposed to the aquifer, the temporary casing shall be withdrawn, and while the surface seal is installed. The seal material can be a hydrated bentonite chips or approved equivalent. The surface seal can be poured from the surface or pumped using a tremie pipe. The top of the seal shall be left at a depth of approximately 1 ft below ground and the remainder of the annulus shall be filled with drill cuttings in anticipation of future pitless installation.
- **Well casing** – All permanent well casing shall be new 250 mm (nominal 10-inch) casing. Casing will be composed of steel with sufficient wall thickness and collapse strength for the intended use and the expected well depth (54.8 m or 180 ft). Casing joints shall be butt-welded, and welds shall be fully penetrating.

- **Well Screen** – For the proposal, assume that the overall length of the well screen assembly will be 25 ft, including riser and tail pipe. The 10-inch telescoping screens will be composed of stainless steel, continuous wire-wrap and will be exposed using the pull-back method. About 20 ft of screen will be exposed to the aquifer not including riser, K packer and tail pipe (sump), if used.

Final details of the screen design will be made during drilling, and additions to or subtractions from the estimated length will be made at the per foot rate quoted on the bid form. To minimize time waiting for screens, well screens shall be ordered from Variperm in Calgary, Alberta. (403) 250-7263.

The bidder shall investigate shipping logistics with the screen supplier. The cost for shipping should be included in the per foot price quoted for the well screen.

- **Well Development** – Well development must be completed with a cable-tool drilling rig using the surge and bail method. During surging, a temporary submersible pump shall be installed in the well and operated to remove fine material suspended in the water column. This submersible pump shall be capable of producing approximately 90 US gpm during development. It is assumed that up to 50 hours of well development will be completed on each well (i.e. 2.5 hours per nominal foot of well screen exposed to formation); however, the actual number of development hours will depend on field observations and will ultimately be determined by WWAL. If less or more development time is deemed necessary, this would be completed at the hourly rate specified in the proposal.

Prior to and during development, brief specific capacity tests (5 to 10 minutes) are to be periodically completed to assess the effectiveness well development and determine if additional development time is required. WWAL hydrogeologists will provide additional instructions in this regard while onsite or via telephone, but the contractor can expect to be required to complete one or two brief tests per shift. These brief tests will count towards the development hours allocated to the well.

At the completion of development, the test pump will be run for 30 minutes, discharging water to ground, with the purpose of cleaning out the well and enabling the completion of well video camera survey (see below).

- **Water Management** – Water produced during the drilling process shall be managed to prevent erosion, sedimentation and flow of turbid water off the site. The site is relatively flat and appropriately sloped such that cuttings and produced water will flow into a natural vegetated depression nearby about 15 m from the well sites. Excavated sumps or bins are not anticipated to be necessary but are optional at contractor's discretion to aid in water management.

Water produced by the submersible pump during development must be routed to a predetermined infiltration area located in the natural depression area (within 50 m of the drill site). The contractor shall furnish the required discharge hose or piping to reach the infiltration area and will monitor the area throughout well development to ensure water does not flow off site.

- **Site Clean-up** – Following well drilling and development, all excess casing shall be removed by the drilling contractor. Any sumps, berms or piled cuttings are to be levelled. It is assumed that the area around the wellhead will be levelled, and excess drill cuttings will be removed by the contractor.

- **Well Straightness** – To ensure the well is adequately straight, an alignment test must be completed. The straightness test shall consist of raising and lowering a 40 ft long dummy of 9-inch outer diameter from surface to the depth of the top of the well screen without obstruction.

Alternately, a plumbness test can be completed. A plumbness test shall be completed with a tripod and plumb bob. Details and specifications for a plumbness test are outlined in *Groundwater and Wells 2nd Edition* (pages 335-339), which also tests the alignment (straightness) of the casing string. A copy of the plumbness and straightness test specifications can be provided by WWAL on driller request.

- **Video Camera Survey** – Following development and prior to test pumping, the contractor will provide a colour video camera survey (including side-looking images) of the wells showing the full length of the well casing, all casing welds and screen. A digital hardcopy of the camera surveys will be provided to WWAL upon completion.
- **Site Fencing** – Security for the wellhead and all drilling and testing related equipment will be the contractor's responsibility. Temporary fencing that encompasses the entire work site shall be provided by the contractor.
- **Well Disinfection** – Following well development, the driller shall thoroughly disinfect the wells. This process shall include the addition of sufficient chlorine solution to the well casing to achieve a concentration of at least 200 ppm chlorine throughout the borehole. The chlorine solution shall then be agitated and mixed appropriately within the water column with a surge block. Disinfection shall be done at a time when the process can be observed by WWAL or a Village representative.
- **Daily Reports and Well Log** – The drilling contractor shall provide daily reports via telephone or email to an assigned WWAL hydrogeologist. The drilling contractor shall also maintain written daily logs, which may be requested. The report shall provide at a minimum a summary of the day's progress, any problems encountered, equipment and material used, formation conditions and plans for the next working day. The drilling contractor shall provide well logs (well reports) using the B.C. provincial standard form. The well log must be provided to WWAL within five days of completion of the well.
- **Safety, Daily Reports and Well Log** – The drilling contractor will be the prime contractor for the project and will be responsible for site safety. The drilling contractor is expected to develop a job specific safety plan, complete daily safety meetings (or more, as needed), indoctrinate all visitors to the job site, and retain all safety records.

A WWAL hydrogeologist will be onsite frequently, but when not onsite, the driller shall provide updates via phone call or email at the end of each day. The drilling contractor shall also maintain written daily logs, which may be requested. The daily report shall provide, at a minimum, a summary of the day's progress, any problems encountered, equipment and material used, formation conditions and plans for the next working day of drilling. The drilling contractor shall provide a well log (well report) for each well using the B.C. provincial standard form and must submit the form directly to the Province, as required under the 2016 Groundwater Protection Regulation.

10.0 Technical Specifications – Test Pumping

The following section outlines requirements for the pumping tests on the new well.

- **Pumping test duration and flow requirements** – The target capacity of each of the replacement wells is 500 to 600 US gpm range and test pumping is expected to occur in this range. Testing on the newly completed wells is anticipated to consist of:
 - Four 60-minute steps at rates of approximately 300, 400, 500 and 600 US gpm.
 - Measurement of water level recovery (assume 4 hours).
 - A 48-hour constant rate test at a rate of 500-600 US gpm followed by monitoring of water level recovery.
 - Assume minimum 4 hours of water level recovery following the constant rate test, before which the test pump cannot be removed unless water levels have recovered fully.
 - During the testing, water levels in the other new production well and the 2011 test well shall be monitored regularly by the contractor, at frequencies to be provided by WWAL.
- **Water Management** – Discharge of test water shall be directed to Carpenter Creek (about 50 to 60 metres from well sites) using discharge hose or piping provided by the contractor. WWAL will be responsible for obtaining any necessary temporary discharge permits from the B.C. Ministry of Environment and Climate Change Strategy and/or permission from local landowners and the Ministry of transportation to install discharge piping through existing culverts. Assume the same discharge line can be used for both wells as the wells will be drilled in relative close proximity to each other.
- **Equipment** – The contractor will supply all equipment necessary to complete the works, including all discharge hose/piping and the use of a generator. The price of fuel and generator rental must be included in the hourly unit rate for the pump testing.

Discharge can be measured with either an orifice tube or a flow meter. State on your bid response which you propose (using both is acceptable). Two PVC sounding tubes (1-inch diameter) must be installed in the pumping well to the depth of the top of the pump. A hose bib sampling tap at the wellhead is required for the collection of water samples. A Rossum Sand Tester shall be installed per manufacturer's instructions on well head discharge line for measuring sand content during the step tests and, if needed, during the constant rate tests. The well shall be disinfected upon pump removal.

- **Submersible Test Pump Installation** – It is assumed that the test pump will be installed to a depth approximately 1.5 m (5 ft) above the well screen. Therefore set depths may range from about 125 to 150 ft. depending on the actual completion depth and screen interval of each well.

11.0 Supplementary Specifications - Measurement and Payment

Refer to attached Schedule of Prices bid sheet for Drilling and Test Pumping.

1. **Drill crew and equipment, mobilization and demobilization.** The payment for this item will be lump sum (in two parts – half on the first invoice and half on the final invoice) and shall include all contractor costs for:

- Mobilization of all drilling, well installation and well development equipment and personnel.
- Site safety/security/fencing.
- Provision and installation of silt fencing or hay bales around the site for water management.
- Snow clearing / site maintenance during the works.
- Crew changes (if any).
- Shipping of equipment and supplies to site.
- Providing daily reports, well logs and complying with contract general condition.
- Demobilization of all drilling, well installation and well development equipment and personnel.

Please note there is a separate mobilization item for test pumping crew and equipment (see Item #13 below).

2. **Drill and temporary case minimum 14-inch diameter for surface seal.** Payment for this item will be on a per lineal foot basis, including the cost to install and remove the temporary surface casing, the drive shoe and any credit for removed temporary casing.
3. **Install 14 x 10-inch surface seal.** Payment for this item will be for all labour and materials to install the surface seal.
4. **Overlap 10-inch casing.** Payment for this item will be for providing the 10-inch production casing within the temporarily cased 14-inch hole, including 2 ft allowance for casing stick up above ground.
5. **Drill and case 10-inch diameter from bottom of surface casing to targeted depth.** Payment for this item will be based on the actual lineal footage drilled and cased, and the per foot bid price. Payment will not be made for drilling and/or casing that does not pass the plumbness test or does not allow the screen assembly to be installed to total depth. This footage cost includes use of a booster compressor if deemed necessary by the contractor.
6. **Furnish and install 10-inch well screen.** Payment for this item will be based on the actual lineal footage of well screen assembly (including all fittings and K packer) installed. For bidding purposes, assume the assembly will be 25 ft. Note the bid price for the well screen must include an allowance for shipping and downtime while waiting for delivery, if such costs are not already covered in the mobilization bid item.
7. **Well development.** Payment for well development will be based on the actual hours of well development, as indicated on approved contractor daily drilling reports and the hourly price bid for well development. This item includes time for brief well performance tests.
8. **Alignment Test (Straightness or Plumbness).** Payment for this item will be based on the lump sum price bid.
9. **Disinfection and temporary well cap.** Payment for this item will be based on the lump sum price bid.

10. **14 and 10-inch drive shoes.** Payment for this item will be for non-recovered drive shoes as a lump sum.
11. **Video camera survey.** Payment for this item will be lump sum for the post development, video survey of the newly installed wells (2 surveys). A digital copy of the surveys must be provided to WWAL.
12. **Drill crew subsistence/live-out.** Payment for this item will be based on a day rate. For bidding purposes, an 18 day live-out period has been assumed including 6 days of well development per well. Payment will be based on actual number of days on site excluding the mobilization and demobilization days.
13. **Pumping test crew and equipment, mobilization and demobilization.** Payment for this item will be for mobilization and demobilization of test pumping equipment and crew.
14. **Install and remove test pump.** Payment for this lump sum item shall be for installation and removal of the test pump assembly, power source, and all required appurtenances including discharge works. The wells will be disinfected upon removal. Note that the cost of setting up the common discharge line from the well head area to the discharge location should be divided between the testing of each well.
15. **Run 4-hour step test.** Payment for this item will be based on the hours running the test pump and up to 4 hours of non-pumping recovery.
16. **Run 48-hour constant rate test.** Payment for this item will be based on the hours running the test pump and up to 4 hours of non-pumping recovery.
17. **Test pumping crew subsistence/live-out.** Payment for this item will be for the number of days of live-out not including mobilization and demobilization days (7 are assumed).

Attachments:

Orthophoto Coverage map and Preliminary Well Site Plan, Supplementary Subsurface Information, Schedule of Prices, Additional Bid Submittal Information Sheets, Draft CCDC-18 Contract Document

Attachment A – Preliminary Well Site Plan



Figure 1: Orthophoto Coverage of Well 1, 2011 Test Well and Locations of Wells 3 and 4

Date: Sept 2022

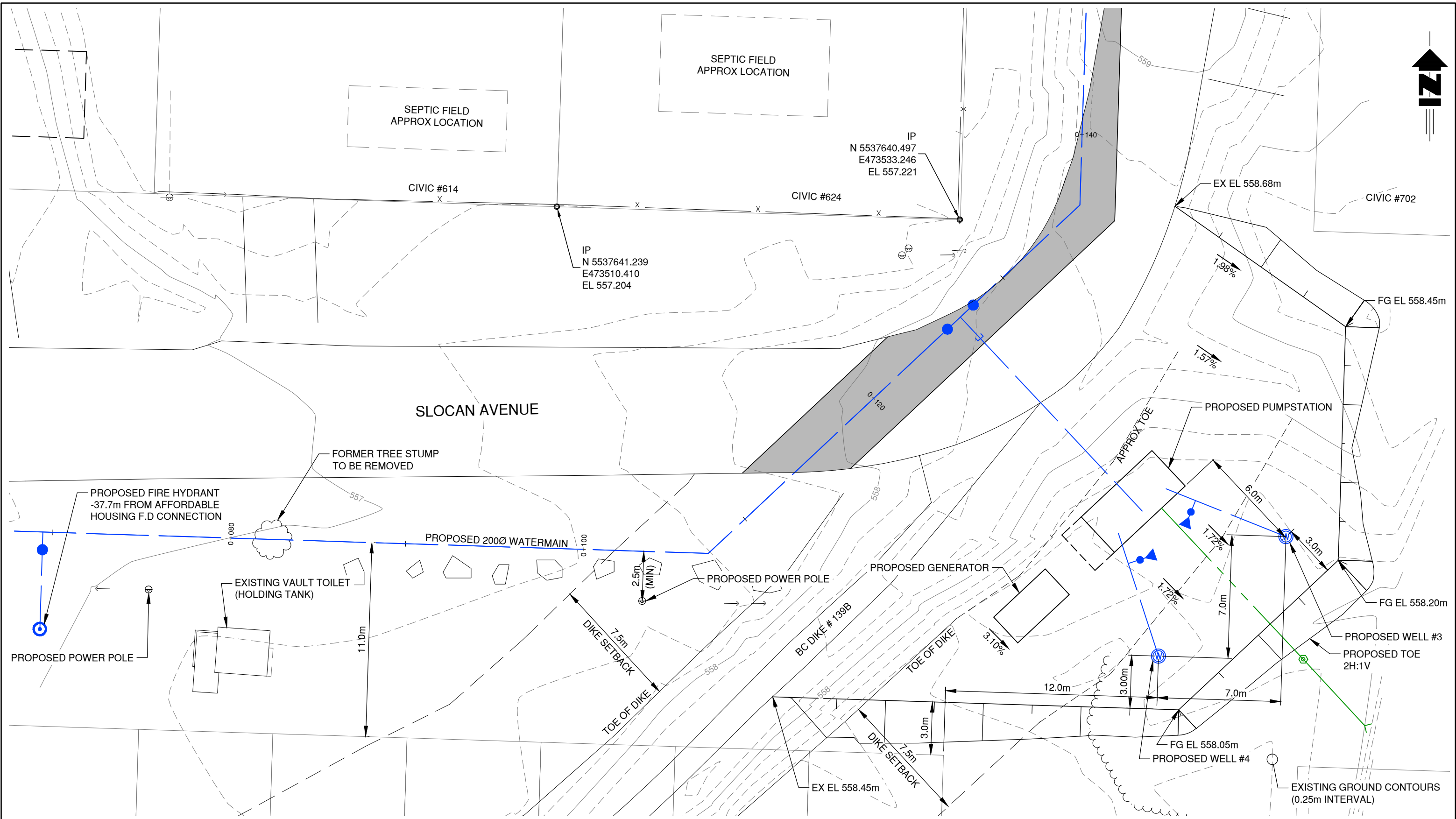
Image Source: Google Earth

WWAL Project: 22-004-01VR

Drawn by: RR

Checked by: DG

Client: Village of New Denver



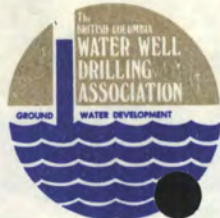
LEGEND:
EX EL EXISTING GROUND ELEVATION
FG EL PROPOSED GROUND ELEVATION

**VILLAGE OF NEW DENVER
COMMUNITY WATER WELL REPLACEMENT
PRELIMINARY WELL SITE PLAN**

DESIGN BY: SW	
SCALE: 1:200	
DWG NO.:	REV:
FIG.4 1479-042	
DRAWN BY: AZ	
DATE: FEBRUARY 2022	

FILE: \\clients\1400-1499\1479\1479-042\03 drawings\cad\02 design drawings\dm1479-042.dwg

Attachment B – Supplementary Subsurface Information



WELL LOG CONSTRUCTION RECORD

OWNER

Village of New Denver

Page 1

Address

New Denver B.C.

Well Location

By Arena

Date Started

Oct. 29 / 74

Date Completed

Nov. 21 / 74

QUALITY WATER WELLS
OKANAGAN FALLS, B.C.
BOX 159 PH. 497-5557
VOH 1R0

Drilling Method

Cable Tool

Driller

L. Crampton

Helper

K. Robbins

File

Folio

Signed By

LOG OF FORMATIONS

Depth

Descriptions

0	to	7'	Pebbles & Peas Lge & Sm.
	to		Gravel, loose & fill
7'	to	14'	Lge. & Sm. cobbles & Boulders
	to		Peb. & peas & clay - Black
14'	to	36'	Pebbles & peas. Silt gravel
	to		Blk. sand
36'	to	38'	Lge. & Sm. cobbles, pebbles, peas
	to		Sand silt, Dirty
38'	to	41'	Pebbles, peas, Sm. gravel
	to		Sand & silt, clay Blk
41'	to	47'	Sm. cobbles, sand & clay Tight
47'	to	49'	Lge. cobbles, gravel, Pebbles
	to		& peas Tight
49'	to	60'	Sm. gravel, Peas, peas, clay
	to		& sand black
60'	to	61'	Lge. cobbles & gravel Blk.
61'	to	63'	Lge. & Sm. Gravel, Peb. & Peas
	to		Blk & clay W.B.
63'	to	65'	Peb. peas, sand & clay Blk.
	to		water bearing Dirty
65'	to	74'	Peb. peas, Sm. gravel
	to		clay & sand W.B. Dirty blk.
74'	to	74 1/2'	Blk. sand, Peb. Peas, Sm.
	to		gravel Tight W.B.
74 1/2'	to	76'	Lge. & Sm. gravel, Peb. peas
	to		Dirty & Tight
76'	to	79'	Lge. & Sm. gravel, Peb. & Sm. cobbles
	to		Peb. & peas W.B. cleaner & looser

GENERAL REMARKS

Order of Screen Assembly as
follows: 10' - #150; 17' 7" Blank
5' - #12; 5' - #18; and 5' - #15

CASING RECORD

Dia. 8" ins. Wt. 322 #/ft. From 0 to 8' 7"

Dia. ins. Wt. #/ft. From to

Dia. ins. Wt. #/ft. From to

Shoe ☒ Welded ☒ Cemented

SCREEN RECORD

Make Johnson Material Stainless Steel

Slot opening 1/8" Gen. Rem. Length 42' 6 3/4"

Top 95' 3 1/2" ft. Bottom 138 ft.

Fittings Top 'K' Fittings Bottom Bail

Gravel Pack Natural ☒

Development Method Surge, pump & jetting

ROCK WELL DATA

Open Bore Hole Dia. ins.

From ft. to ft.

PRODUCTION DATA

Static Level 62' 6" - Nov. 16 / 74 ft.

Measured from Ground

Pumping Level 85.22' ft. at 164 GPM

ft. at GPM

Bail Test ft. at GPH

ft. at GPH

Recommended Pump Setting 92' ft.

Recommended Max. Pump Output GPM
GPH

Duration of Test 18 hrs. Hrs.

PUMP DATA

Make Type

Model Serial No.

Size HP Drop Pipe ins.

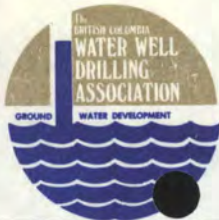
GPM Head ft. RPM

Motor Volts PH

Well Seal

Water Analysis — Hardness PPM

PH Iron PPM



WELL LOG CONSTRUCTION RECORD

#1 Hole
Page 2

OWNER Village of New Denver
Address New Denver, BC.
Well Location By Arena
Date Started Oct. 29 / 74 Date Completed Nov. 21 / 74

QUALITY WATER WELLS
OKANAGAN FALLS, B.C.
BOX 159 PH. 497-5557
VOH 1R0

Drilling Method Cable Tool
Driller L. Crompton Helper K. Robbins
File _____ Folio _____
Signed By [Signature]

LOG OF FORMATIONS

Depth Descriptions

0	to	
79	to	83. <u>Peb. & peassm. Gravel & sand W.B.</u>
83	to	86 <u>Sm. cobble sm. gravel</u>
	to	<u>Peb. & peass & sand</u>
86	to	88 <u>Cobbles sm. gravel</u>
	to	<u>Rubbles sand & cemented</u>
	to	<u>clay lenses</u>
88	to	93 <u>Top & sm. gravel Peb. & peass</u>
93	to	94 <u>Sm. rubbles & gravel Peb. & peass</u>
94	to	96 <u>Sm. Gravel Peb. & peass & sand</u>
96	to	97 <u>Peb. & peass sm. gravel & sand</u>
97	to	98 <u>Peb. peass & sand.</u>
98	to	101 <u>Sm. & lge. gravel Peb. & peass</u>
101	to	105 <u>Sand sm. & lge. gravel Peb. & peass</u>
105	to	106 <u>Lge. & sm. cobbles & gravel</u>
	to	<u>Peb. & peass</u>
106	to	107 <u>Cemented sand & gravel clay.</u>
107	to	108 <u>Br. sand & pebbles</u>
108	to	113 <u>Br. sandy clay & peb. dirty.</u>
113	to	115 <u>Silty sm. pebb. dirty.</u>
115	to	121 <u>Silty grey sand & some gravel</u>
	to	<u>& pebbles</u>
121	to	122 <u>Sand & grey clay</u>
122	to	124 <u>Sand & some gravel</u>
124	to	136 <u>Grey sand</u>
136	to	137 <u>Sm. & lge. gravel & sand</u>
	to	<u>peb. & peass</u>

GENERAL REMARKS

CASING RECORD

Dia. _____ ins. Wt. _____ #/ft. From _____ to _____
Dia. _____ ins. Wt. _____ #/ft. From _____ to _____
Dia. _____ ins. Wt. _____ #/ft. From _____ to _____
Shoe _____ Welded _____ Cemented _____

SCREEN RECORD

Make _____ Material _____
Slot opening _____ Length _____
Top _____ ft. Bottom _____ ft.
Fittings Top _____ Fittings Bottom _____
Gravel Pack _____ Natural _____
Development Method _____

ROCK WELL DATA

Open Bore Hole _____ Dia. _____ ins.
From _____ ft. to _____ ft.

PRODUCTION DATA

Static Level _____ ft.
Measured from _____
Pumping Level _____ ft. at _____ GPM
_____ ft. at _____ GPM
Bail Test _____ ft. at _____ GPH
_____ ft. at _____ GPH
Recommended Pump Setting _____ ft.
Recommended Max. Pump Output _____ GPM
_____ GPH
Duration of Test _____ Hrs.

PUMP DATA

Make _____ Type _____
Model _____ Serial No. _____
Size _____ HP _____ Drop Pipe _____ ins.
GPM _____ Head _____ ft. _____ RPM
Motor _____ Volts _____ PH _____
Well Seal _____
Water Analysis — Hardness _____ PPM
PH _____ Iron _____ PPM

OWNER Village of New Denver
Address New Denver B.C.
Well Location By Amana
Date Started Oct 29/74 Date Completed Nov. 21/74

Drilling Method Cable Tool
Driller L. Hampton Helper K. Robbins
File _____ Folio _____
Signed By _____

[illegible]

Make _____ Type _____
Model _____ Serial No. _____
Size _____ HP _____ Drop Pipe _____ ins.
GPM _____ Head _____ ft. _____ RPM _____
Motor _____ Volts _____ PH _____
Well Seal _____
Water Analysis — Hardness _____ PPM
PH _____ Iron _____ PPM

82 K-3

Copy

E. LIVINGSTON, P. ENG.
CONSULTING GROUND WATER GEOLOGIST

107-1401 WEST BROADWAY.
VANCOUVER 9, B.C.
TELEPHONE: 738-9232

November 27, 1974.

Village of New Denver,
New Denver, B. C.

Attention: Mr. V. Hanson, Mayor

Dear Sir:

The first test-production well for the Village of New Denver has now been completed as a successful production well. Described herein is the construction and testing of Well No. 1.

Quality Water Wells of Okanagan Falls submitted the lowest of five bids tendered for the groundwater exploration program and was awarded the contract. Quality began work on Oct. 28; the pump test was completed on November 22nd.

The well is located north of the arena; the choice of location was based on the design of the new distribution system which is to be installed in the near future.

The driller experienced some difficulty in drilling through very coarse bouldery gravel near surface but otherwise the drilling proceeded smoothly. These near-surface gravels are probably flood plain deposits of Carpenter Creek.

The log of Well No. 1 is as follows:

0	-	38'	compact black silty gravel; bouldery 7-14', some sand below 14'
38	-	41'	compact small gravel with black silty clay
41	-	49'	compact coarse gravel with black clay
49	-	60'	compact black small gravel with sandy clay
60	-	63'	compact black coarse gravel; dirty, tight
63	-	65'	compact black small gravel with clay streaks
65	-	77'	compact black sand and gravel; dirty, tight, becoming coarser below 74½' and becoming looser and cleaner below 76'
79	-	106'	gravel and sand; clay lenses 86-88'
106	-	107'	cemented sand and gravel with clay
107	-	113'	brown sand; silty sand, some pebbles
113	-	122'	grey silty sand with pebbles
122	-	124'	sand; some gravel
124	-	136'	grey sand
136	-	138'	brown sand and gravel
138	-	140'	clay or till; boulder 139-140'
140	-	148'	brown stoney till.

150 slot 96-106'

blank

12 - 18 slot 122 to
138'

The static level is about 64 ft. below ground surface.

The well was completed with the following screen assembly:

96	-	106'	8" screen .150" slots
106	-	121'6"	7" pipe blank
121' 6"	-	127'	8" screen .012" slots
127	-	132'6"	8" screen .018" slots
132' 6"	-	138'	8" screen .015" slots

All screen is Johnson 8" nominal stainless steel with threaded ends. A Johnson type K packer was used at the top of the screen assembly.

The well was developed by surging. Initial surging was done in the 8" casing allowing the lower section of screen to fill up with sand. After the upper section was developed the lower screen was cleaned out and surging was done for a short time in the 7" blank section. This failed to bring much sand into the well. Experience elsewhere has indicated that surging in a comparatively fine screen as used in the lower part of the screen assembly may be detrimental so surging was discontinued and the test pump installed with the idea of developing the well further by backwashing with the pump.

Backwashing did not seem to be effective in developing the lower screen. It is difficult to backwash under these conditions because of the presence of the coarse top screen which takes much of the backwash flow and because of the comparatively shallow static level which reduces the head on the backwash flow.

When backwashing proved to be ineffective we removed the test pump and tried developing with air. The only pipe available for air development was 2" with $\frac{1}{2}$ " plastic available for the air line. It was not possible to pump more than about 12 gpm with this combination. In order to concentrate on development of the lower screen a packer was placed on the two inch pipe to separate the upper and lower screens. Because of the danger of getting the pipe stuck a tight packer could not be used in the screen assembly. The packer was also used to surge the lower screen by raising and lowering the drop pipe with the bailer line. The lower screen was developed by air pumping, by blowing air below the drop pipe and by surging. A considerable amount of fine sand and silt was brought into the well and removed by this method. This work was continued for about $1\frac{1}{2}$ days. Measurements during air pumping and from a bail test at about 30 gpm showed that the well performance was improved by only a small amount so the test pump was re-installed and a pump test of about $17\frac{1}{2}$ hours duration was carried out.

A deep well turbine pump, driven by a gasoline engine, was installed with the intake at about 88 ft. Flow was measured with a 4" diameter orifice on 8" pipe. Water level measurements were taken by an electric water level indicator. The pumping rate was about 164 USgpm for most of the test. It was difficult to regulate the flow at the beginning of the test because the rate was considerably below the optimum rate for the pump used.

For a number of reasons we do not think that it is possible to analyse the results of the pump test using available models for artesian or leaky artesian conditions. The aquifer is not a simple non-flowing artesian aquifer; it consists of two layers separated by a much less permeable layer. The two permeable layers probably have quite different characteristics; the upper is probably much more permeable than the lower. The overlying (confining) layer is probably somewhat permeable. The various layers are part of a fan-delta and are therefore lens-like in form with semi-permeable boundaries on all sides. No observation wells were used.

Considering the thickness of the aquifer and the well construction, the performance of the well is disappointing. From our experience with the development we believe that most of the water is coming through the upper screen. It is not possible however to determine this without using a special current meter designed for use in wells. Such a meter is not available in B.C. at this time. The overall flow is probably limited by the lens-like configuration of the aquifer.

After pumping about 500 minutes the drawdown became constant for about 175 minutes after which there was an increase of about .5 ft. during a short time. Following this increase stable conditions prevailed for the last 320 minutes. Most of the increase is probably due to aquifer boundaries but a small amount of the increase is the result of a slight increase in pumping rate.

After 1000 minutes of pumping at a rate of 164 USgpm the specific capacity is 7.9 USgpm per foot of drawdown. The total available drawdown from the static level (64 ft.) to the top of the screen (95 ft.) is 32 ft. The rating of the well based on 70% of total available drawdown is $(.7) (32) (7.9) = 177$ USgpm. To allow for maximum drawdown in the well the intake of the permanent pump should be set as low as possible. Because of the length of the motor, a submersible pump should be set with the motor not more than $1\frac{1}{2}$ ft. above the top of the screen packer. The top of the packer is about 95 ft. below ground.

In a case such as this where the well may be operated close to its maximum capacity I recommend that the well be equipped with a water meter and an opening through which it is possible to measure the water level in the well at regular intervals.

We checked the chemical quality of the water by means of a portable field Hach kit and obtained the following results: hardness = 120 ppm; iron = 0; phenolphthalein alkalinity = 0; total alkalinity = 100; pH = 7.5-7.6. This indicates excellent quality water. Bacteriological samples were taken and delivered to the Health Unit in Nelson. We collected a water sample and delivered it to CAN TEST Ltd. in Vancouver for more complete analysis. We will forward this as soon as it is available.

The cost of the construction and testing Well No. 1 exclusive of supervision and engineering costs is in the order of \$8300. Our original cost estimate allowing for the drilling of one dry hole to 200 ft. and the construction of a 150 foot successful well with 20 ft. screen was in the order of \$17,000 including the cost of engineering and supervision.

On Nov. 21 after testing of the well was completed we had a discussion with Mayor Hanson about further drilling. We feel that Well No. 1 is very likely adequate to supply the requirement for the present 313 connections other than during time of peak demand. We recommended that another test-production well be drilled in an effort to obtain additional water to supply peak demand and to allow for an increase in the number of connections. The geologic data obtained from the first well suggest that the next well be drilled toward the toe of the fan. At such a location the depth to till will probably be greater and the static level will be higher. The site near the lake in the small park suggested by Mayor Hanson is certainly suitable.

In summary:

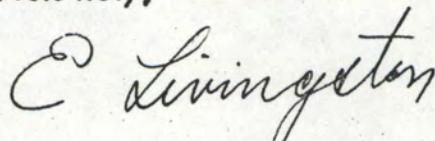
1. A production well has been constructed in a complex non-flowing artesian aquifer consisting of two permeable units separated by a much less permeable layer. Both permeable units have been screened.
2. The aquifer is part of a fan-delta made up of lens-like layers with semi-permeable boundaries on all sides.

3. It is not possible in this complex situation, to analyse the results of the pump test by using available models for artesian or leaky artesian conditions.
4. Based on 1000 minutes of pumping the specific capacity of the well is 7.9 USgpm/ft drawdown; use of 70% of available drawdown gives a well capacity of 177 UGgpm.

We recommend:

1. Pump Well No. 1 at a rate of 175 USgpm with the pump intake set as low as possible to allow for maximum drawdown.
2. Equip the well with a water meter to record consumption and provide for an opening so that regular water level measurements can be taken.
3. Another test-production well be drilled closer to the toe of the fan.

Yours truly,



E. Livingston, P.Eng.

EL:jb

c.c. A.A. Mactaggart, P.Eng.,
Water Rights Branch,
Water Resources Service,
Parliament Building,
Victoria, B.C.



Ministry of Environment

- ☒ Well Construction Report
- ☐ Well Closure Report
- ☐ Well Alteration Report

THORMAN DRILLING LTD
PO Box 986
Nelson, B.C.
V1L 6A5

Ministry Well ID Plate Number: 22988
Ministry Well Tag Number: 105583
☐ Confirmation/alternative specs. attached
☐ Original well construction report attached

Red lettering indicates minimum mandatory information. See reverse for notes & definitions of abbreviations.

Owner name: Village of New Denver
Mailing address: 115 Slokan Ave Town New Denver Prov. BC Postal Code V0G 1S0
Well Location (see note 2): Address: Street no. Street name Town
(or) Legal description: Lot 192 Plan 557 D.L. 549 Block 50 Sec. Twp. Rg. Land District KD
(or) PID: (and) Description of well location (attach sketch, if nec.):

NAD 83: Zone: 11 (see note 3) UTM Easting: 473435 m UTM Northing: 5537603 m (or) Latitude (see note 4): Longitude:
Method of drilling: ☒ air rotary ☐ dual rotary ☐ cable tool ☐ mud rotary ☐ auger ☐ driving ☐ jetting ☐ other (specify):
Orientation of well: ☒ vertical ☐ horizontal Ground elevation: 1819 ft (asl) Method (see note 5):
Class of well (see note 6): WATER Supply Sub-class of well: COMMERCIAL
Water supply wells: indicate intended water use: ☐ private domestic ☐ water supply system ☐ irrigation ☒ commercial or industrial ☐ other (specify):

Lithologic description (see notes 8-13) or closure description (see notes 14 and 15)

From ft (bgl)	To ft (bgl)	Surficial Material						Bedrock Material						Colour						Hardness		Water Content						Observations (e.g. other geological materials (e.g. boulders), est. water bearing flow (USgpm), or closure details)								
		Clay	Silt	Till	Sand with clay/silt	Sand, fine-med	Sand, med-coarse	Sand with gravel	Siltstone/shale	Sandstone	Conglomerate	Limestone	Basalt	Volcanic	Crystalline	Other Surficial/ Bedrock	Red	Orange	Brown	Tan	Light Grey	Blue	Green	Dark Grey	Very Hard	Hard	Dense/Stiff		Loose	Dry	Moist	Wet	High Production	Lost circulation	Not Available	
0	12																																			LARGE BOULDERS
12	29																																			CORRES.
23	60																																			10' WATER.
60	76																																			
76	80																																			
80	77																																			SOME TILL & SILT
97	136																																			COARSE SAND
136	168																																			SOME SMALL GRAVEL
168	180																																			
180	182																																			

Casing details

From ft (bgl)	To ft (bgl)	Dia in	Casing Material/Open Hole (see note 17)	Wall Thickness in	Drive Shoe
0	153	6	STEEL	350	REG.

Surface seal: Type: Bentonite Grout Depth: 18 ft
Method of installation: ☐ Poured ☒ Pumped Thickness: 1.68 in
Backfill: Type: Depth: ft
Liner: ☐ PVC ☐ Other (specify):
Diameter: in Thickness: in
From: ft (bgl) To: ft (bgl) Perforated: From: ft (bgl) To: ft (bgl)

Screen details

From ft (bgl)	To ft (bgl)	Dia in	Type (see note 18)	Slot Size
177	155	6	STAINLESS STEEL	.30
155	153		3' RISER K. PROCK	

Intake: ☒ Screen ☐ Open bottom ☐ Uncased hole
Screen type: ☒ Telescope ☐ Pipe size
Screen material: ☒ Stainless steel ☐ Plastic ☐ Other (specify):
Screen opening: ☒ Continuous slot ☐ Slotted ☐ Perforated pipe
Screen bottom: ☒ Bail ☐ Plug ☐ Plate ☐ Other (specify):
Filter pack: From: ft To: ft Thickness: in
Type and size of material:

Developed by:
☒ Air lifting ☒ Surging ☐ Jetting ☐ Pumping ☐ Bailing
Other (specify): Total duration: 3 hrs
Notes:
Well yield estimated by:
☐ Pumping ☒ Air lifting ☐ Bailing ☐ Other (specify):
Rate: 300 USgpm Duration: 3 hrs
SWL before test: 53 ft (btoc) Pumping water level: ft (btoc)
Obvious water quality characteristics:
☐ Fresh ☐ Salty ☒ Clear ☐ Cloudy ☐ Sediment ☐ Gas
Colour/odour: Water sample collected:
Well driller (print clearly):
Name (first, last) (see note 19): PAY GREEN
Registration no. (see note 20): 04121501
Consultant (if applicable; name and company): CARL MACKENZIE

Final well completion data:
Total depth drilled: 182 ft Finished well depth: 177 ft (bgl)
Final stick up: 34 in Depth to bedrock: ft (bgl)
SWL: 57 ft (btoc) Estimated well yield: 300 USgpm
Artesian flow: USgpm, or Artesian pressure: ft
Type of well cap: STEEL Well disinfected: ☐ Yes ☐ No
Where well ID plate is attached: TOC
Well closure information:
Reason for closure:
Method of closure: ☐ Poured ☐ Pumped
Sealant material: Backfill material:
Details of closure (see note 16):
Date of work (YYYY/MM/DD):
Started: 2011/08/08 Completed: 2011/09/16
Comments:

Attachment C – Schedule of Prices



Schedule of Prices

Owner Village of New Denver
Contract Title: Community Replacement Wells (Wells #3 and #4)
Reference Number: 1479-042-001

The Village of New Denver is requesting pricing for the work described in the Request for Quotation. A schedule of prices is provided below; additional information is included in the Technical Specifications - Measurement and Payment section.

ITEM & DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	TOTAL PRICE
Well Drilling and Development				
1.0 Drill crew and equipment, Mobilization and Demobilization	lump sum	1		
2.0 Drill and temporary case minimum 14-inch dia. for surface seal (18' x 2)	lineal feet	36		
3.0 Install 14-inch x 10-inch surface seal	each	2		
4.0 Overlap 10-inch casing	lineal feet	36		
5.0 Drill and case 10-inch dia. from bottom of surface casing to targetted depth	lineal feet	344		
6.0 Furnish and install 10-inch well screen	lineal feet	50		
7.0 Well development	hours	100		
8.0 Well Alignment test	each	2		
9.0 Disinfection and temporary well cap	each	2		
10.0 14 and 10-inch drive shoes	each	2		
11.0 Video camera survey	each	2		
12.0 Drill crew subsistence / live out	day	18		
Test Pumping				
13.0 Pumping test crew and equipment, Mobilization and Demobilization	lump sum	1		
14.0 Install and remove test pump, discharge hose. Assume same discharge hose can be used for both wells.	each	2		
15.0 Run 4-hour step test and 4 hours recovery (per well)	hour	16		
16.0 Run 48-hour constant rate test and 4 hours recovery (per well)	hour	104		
17.0 Pumping test crew subsistence / live out	day	7		
			Tender Price:	
			GST (5%):	
			Tender Price plus GST:	

Notes:

1. This quotation will be valid and open for acceptance by the Owner for 30 calendar days after the submission date.

Submitted by: Contractor

Date (DD / MM / YYYY)

Attachment D – Additional Bid Submittal Information Sheet Templates

Village of New Denver

Community Replacement Wells (Wells #3 and #4)

Proposed Work Schedule

Construction Start Date:

Construction Completion Date:

ACTIVITY	CONSTRUCTION SCHEDULE										
	Week:	1	2	3	4	5	6	7	8	9	10
Mobilize											
Drill and screen Well #3											
Drill and screen Well #4											
Alignment Tests											
Well development (both wells)											
Camera Surveys Wells #3 and #4											
Test Pumping Wells #3 and #4											
Site Cleanup and Demobilize											

Village of New Denver

Community Replacement Wells (Wells #3 and #4)

Equipment List

TYPE	UNIT AND MODEL DESCRIPTION

Village of New Denver

Community Replacement Wells (Wells #3 and #4)

Qualified Well Driller and Pump Tester Information

Well Driller Name:

Registration No.:

Address:

City, Province:

Postal Code:

Phone:

Email:

**Pump Tester
Name:**

Registration No.:

Address:

City, Province:

Postal Code:

Phone:

Email:

Well Driller and/or Test Pumping Subcontractor Project References

Contractor: _____

Date: _____

Reference #1

Project Name: _____

Client: _____ Date Completed: _____

Contact Name and Phone #: _____

Diameter of Well: _____ Depth of Well and Aquifer Type _____

Well Yield: _____ Pumping Test (Y / N) _____

Reference #2

Project Name: _____

Client: _____ Date Completed: _____

Contact Name and Phone #: _____

Diameter of Well: _____ Depth of Well and Aquifer Type: _____

Well Yield: _____ Pumping Test (Y / N) _____

Reference #3

Project Name: _____

Client: _____ Date Completed: _____

Contact Name and Phone #: _____

Diameter of Well: _____ Depth of Well and Aquifer Type: _____

Well Yield: _____ Pumping Test (Y / N) _____

Attachment E – Draft CCDC-18-2001 Contract Document

civil works contract

Project: Village of New Denver - Replacement Wells #3 and #4
1479-042-001

Apply a CCDC 18 copyright seal here. The application of the seal demonstrates the intention of the party proposing the use of this document that it be an accurate and unamended form of CCDC 18 – 2001 except to the extent that any alterations, additions or modifications are set forth in supplementary conditions.



Canadian Construction Documents Committee

TABLE OF CONTENTS

AGREEMENT BETWEEN OWNER AND CONTRACTOR

- A-1 THE WORK
- A-2 AGREEMENTS AND AMENDMENTS
- A-3 CONTRACT DOCUMENTS
- A-4 CONTRACT PRICE
- A-5 PAYMENT
- A-6 RECEIPT OF AND ADDRESSES FOR NOTICES
- A-7 LANGUAGE OF THE CONTRACT
- A-8 SUCCESSION

DEFINITIONS

- 1. Change Directive
- 2. Change Order
- 3. Construction Equipment
- 4. Consultant
- 5. Contract
- 6. Contract Documents
- 7. Contract Price
- 8. Contract Time
- 9. Contractor
- 10. Drawings
- 11. Owner
- 12. Place of the Work
- 13. Product
- 14. Project
- 15. Provide
- 16. Schedule of Prices
- 17. Shop Drawings
- 18. Specifications
- 19. Subcontractor
- 20. Substantial Performance of the Work
- 21. Supplemental Instruction
- 22. Supplier
- 23. Temporary Work
- 24. Unit Price
- 25. Value Added Taxes
- 26. Work
- 27. Working Day

GENERAL CONDITIONS OF THE CIVIL WORKS CONTRACT

PART 1 GENERAL PROVISIONS

- GC 1.1 CONTRACT DOCUMENTS
- GC 1.2 LAW OF THE CONTRACT
- GC 1.3 RIGHTS AND REMEDIES
- GC 1.4 ASSIGNMENT

PART 2 ADMINISTRATION OF THE CONTRACT

- GC 2.1 AUTHORITY OF THE CONSULTANT
- GC 2.2 ROLE OF THE CONSULTANT
- GC 2.3 REVIEW AND INSPECTION OF THE WORK
- GC 2.4 DEFECTIVE WORK

PART 3 EXECUTION OF THE WORK

- GC 3.1 CONTROL OF THE WORK
- GC 3.2 CONSTRUCTION BY OWNER OR OTHER CONTRACTORS
- GC 3.3 TEMPORARY WORK
- GC 3.4 DOCUMENT REVIEW
- GC 3.5 CONSTRUCTION SCHEDULE
- GC 3.6 SUPERVISION
- GC 3.7 LAYOUT OF THE WORK
- GC 3.8 SUBCONTRACTORS AND SUPPLIERS
- GC 3.9 LABOUR AND PRODUCTS
- GC 3.10 DOCUMENTS AT THE SITE
- GC 3.11 SHOP DRAWINGS
- GC 3.12 USE OF THE WORK
- GC 3.13 CUTTING AND REMEDIAL WORK
- GC 3.14 CLEANUP

PART 4 ALLOWANCES

- GC 4.1 CASH ALLOWANCES
- GC 4.2 CONTINGENCY ALLOWANCE

PART 5 PAYMENT

- GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER
- GC 5.2 BASIS OF PAYMENT FOR UNIT PRICE WORK
- GC 5.3 BASIS OF PAYMENT FOR LUMP SUM WORK
- GC 5.4 BASIS OF PAYMENT FOR COST PLUS WORK
- GC 5.5 APPLICATIONS FOR PROGRESS PAYMENT
- GC 5.6 PROGRESS PAYMENT
- GC 5.7 SUBSTANTIAL PERFORMANCE OF THE WORK
- GC 5.8 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK
- GC 5.9 PROGRESSIVE RELEASE OF HOLDBACK
- GC 5.10 FINAL PAYMENT
- GC 5.11 WITHHOLDING OF PAYMENT
- GC 5.12 NON-CONFORMING WORK

PART 6 CHANGES

- GC 6.1 CHANGES
- GC 6.2 CHANGE ORDER
- GC 6.3 CHANGE DIRECTIVE
- GC 6.4 CONCEALED OR UNKNOWN CONDITIONS
- GC 6.5 DELAYS
- GC 6.6 CLAIMS
- GC 6.7 QUANTITY VARIATIONS

PART 7 DEFAULT NOTICE

- GC 7.1 OWNER'S RIGHT TO PERFORM THE WORK, STOP THE WORK, OR TERMINATE THE CONTRACT
- GC 7.2 CONTRACTOR'S RIGHT TO STOP THE WORK OR TERMINATE THE CONTRACT

PART 8 DISPUTE RESOLUTION

- GC 8.1 AUTHORITY OF THE CONSULTANT
- GC 8.2 NEGOTIATION, MEDIATION, AND ARBITRATION
- GC 8.3 RETENTION OF RIGHTS

PART 9 PROTECTION OF PERSONS AND PROPERTY

- GC 9.1 PROTECTION OF WORK AND PROPERTY
- GC 9.2 DAMAGES AND MUTUAL RESPONSIBILITY
- GC 9.3 TOXIC AND HAZARDOUS SUBSTANCES
- GC 9.4 ARTIFACTS AND FOSSILS
- GC 9.5 CONSTRUCTION SAFETY

PART 10 GOVERNING REGULATIONS

- GC 10.1 TAXES AND DUTIES
- GC 10.2 LAWS, NOTICES, PERMITS, AND FEES
- GC 10.3 PATENT FEES
- GC 10.4 WORKERS' COMPENSATION

PART 11 INSURANCE AND CONTRACT SECURITY

- GC 11.1 INSURANCE
- GC 11.2 CONTRACT SECURITY

PART 12 INDEMNIFICATION - WAIVER - WARRANTY

- GC 12.1 INDEMNIFICATION
- GC 12.2 WAIVER OF CLAIMS
- GC 12.3 WARRANTY

CCDC 18 is the product of a consensus-building process aimed at balancing the interests of all parties on the construction project. It reflects recommended industry practices. CCDC 18 can have important consequences. The CCDC and its constituent member organizations do not accept any responsibility or liability for loss or damage which may be suffered as a result of the use or interpretation of CCDC 18.

AGREEMENT BETWEEN OWNER AND CONTRACTOR

This Agreement made on the _____ day of _____ October _____ in the year 2022 .

by and between

The Corporation of the Village of New Denver

hereinafter called the "Owner"

and

hereinafter called the "Contractor"

The *Owner* and the *Contractor* agree as follows:

ARTICLE A-1 THE WORK

The *Contractor* shall:

- 1.1 perform the *Work* required by the *Contract Documents* for Well #3 and Well #4 construction.

insert above the title of the Work

located at the intersection of Slocan Avenue and Columbia Street, New Denver BC.

insert above the Place of the Work

for which the Agreement has been signed by the parties, and for which TRUE Consulting

insert above the name of the Consultant

is acting as and is hereinafter called the "*Consultant*" and

- 1.2 do and fulfill everything indicated by the *Contract Documents*, and

- 1.3 commence the *Work* by the _____ day of _____ in the year _____ and, subject to adjustment in *Contract Time* as provided for in the *Contract Documents*, attain *Substantial Performance of the Work*, by the _____ day of _____ in the year _____

ARTICLE A-2 AGREEMENTS AND AMENDMENTS

- 2.1 The *Contract* supersedes all prior negotiations, representations, or agreements, either written or oral, relating in any manner to the *Work*, including the bidding documents that are not expressly listed in Article A-3 of the Agreement - CONTRACT DOCUMENTS.
- 2.2 The *Contract* may be amended only as provided in the *Contract Documents*.

ARTICLE A-3 CONTRACT DOCUMENTS

- 3.1 The following are the *Contract Documents* referred to in Article A-1 of the Agreement - THE WORK:
- Agreement Between *Owner* and *Contractor*
 - Definitions
 - The General Conditions of the Contract
 - *
 - Request for Quotation - Drilling, Development and Test Pumping: Village of New Denver Replacement Wells (Wells #3 and 4), prepared by Western Water Associates Sept 21, 2022.
 - Western Water Associates Figure 1: Orthophoto Coverage of Well 1, 2011 Test Well and Locations of Wells 3& 4
 - TRUE Consulting Figure 1479-042-Fig.4 (Preliminary Well Site Plan)
 - Schedule of Prices.
 - Additional Bid Submittal Information (Work Schedule, Equipment List, Qualified Driller, Qualified Well Pump Installer, Project References)

-END OF CONTRACT DOCUMENTS-

- * (Insert here, attaching additional pages if required, a list identifying all other *Contract Documents* e.g.:
- *Supplementary Conditions*;
 - *Schedule of Prices*;
 - *Specifications*, giving a list of contents with section numbers and titles, number of pages, and date;
 - *Drawings*, giving drawing number, title, date, revision date or mark;
 - *Addenda*, giving title, number, date;
 - *Information documents*, or parts thereof, to be incorporated in the *Contract Documents* identifying them by title, date, name of preparer and, if not included in their entirety, the page or sheet numbers to be included).

ARTICLE A-4 CONTRACT PRICE

- 4.1 * *Unit Prices* form the basis for payment of the *Contract Price*. Quantities in the *Schedule of Prices* are estimated. The estimated *Contract Price*, which is the total extended amount indicated in the *Schedule of Prices*, is:

OR

~~* A lump sum stipulated price forms the basis for payment of the *Contract Price*. The *Contract Price* is:~~

* (Manually strike out inapplicable paragraph)

----- \$ /100 dollars \$ -----

- 4.2 All amounts are in Canadian funds and exclude Value Added Taxes.
- 4.3 These amounts shall be subject to adjustments as provided in the *Contract Documents*.

ARTICLE A-5 PAYMENT

- 5.1 Subject to the provisions of the *Contract Documents*, and in accordance with legislation and statutory regulations respecting holdback percentages and, where such legislation or regulations do not exist or apply, subject to a holdback of _____ ten _____ percent (10 %), the *Owner* shall in Canadian funds:
- .1 make progress payments to the *Contractor* on account of the *Contract Price* when due in the amount certified by the *Consultant* together with such *Value Added Taxes* as may be applicable to such payment, and
 - .2 upon *Substantial Performance of the Work*, pay to the *Contractor* the unpaid balance of the holdback amount when due together with such *Value Added Taxes* as may be applicable to such payment, and
 - .3 upon the issuance of the final certificate for payment, pay to the *Contractor* the unpaid balance of the *Contract Price* when due together with such *Value Added Taxes* as may be applicable to such payment.
- 5.2 In the event of loss or damage occurring where payment becomes due under the property and boiler insurance policies, payments shall be made to the *Contractor* in accordance with the provisions of GC 11.1 - INSURANCE.
- 5.3 Interest
- .1 Should either party fail to make payments as they become due under the terms of the *Contract* or in an award by arbitration or court, interest at two percent (2%) per annum above the prime rate on such unpaid amounts shall also become due and payable until payment. Such interest shall be compounded and adjusted on a monthly basis. The prime rate shall be the rate of interest quoted by _____ Canadian Imperial Bank of Commerce for prime business loans. (Insert name of chartered lending institution whose prime rate is to be used)
 - .2 Interest shall apply at the rate and in the manner prescribed by paragraph 5.3.1 of this Article on the settlement amount of any claim in dispute that is resolved either pursuant to Part 8 of the General Conditions - DISPUTE RESOLUTION or otherwise, from the date the amount would have been due and payable under the *Contract*, had it not been in dispute, until it is paid.

ARTICLE A-6 RECEIPT OF AND ADDRESSES FOR NOTICES

- 6.1 Notices in writing between the parties or between them and the *Consultant* shall be considered to have been received by the addressee on the date of delivery if delivered to the individual, or to a member of the firm, or to an officer of the corporation for whom they are intended by hand or by registered post; or if sent by regular post, to have been delivered within 5 *Working Days* of the date of mailing when addressed as follows:

The *Owner* at Village of New Denver

115 Slocan Avenue, PO Box 40

street and number and postal box number if applicable

New Denver, BC, V0G 1S0

post office or district, province or territory, postal code

The *Contractor* at

street and number and postal box number if applicable

post office or district, province or territory, postal code

The *Consultant* at TRUE Consulting

2 - 860 Eldorado Street

street and number and postal box number if applicable

Trail, BC, V1R 3V4

post office or district, province or territory, postal code

ARTICLE A-7 LANGUAGE OF THE CONTRACT

- 7.1 When the *Contract Documents* are prepared in both the English and French languages, it is agreed that in the event of any apparent discrepancy between the English and French versions, the English / French * language shall prevail.
* (Complete this statement by striking out inapplicable term)

- 7.2 This Agreement is drawn in English at the request of the parties hereto. La présente convention est rédigée en anglais à la demande des parties.

ARTICLE A-8 SUCCESSION

- 8.1 The *Contract* shall enure to the benefit of and be binding upon the parties hereto, their respective heirs, legal representatives, successors, and assigns.

In witness whereof the parties hereto have executed this Agreement by the hands of their duly authorized representatives.

SIGNED AND DELIVERED
in the presence of:

Owner

The Corporation of the Village of New Denver

name of Owner

signature

name and title of person signing

signature

name and title of person signing

WITNESS

signature

name and title of person signing

Contractor

name of Contractor

signature

name and title of person signing

WITNESS

signature

name and title of person signing

- N.B. Where legal jurisdiction, local practice, or Owner or Contractor requirement calls for:
- (a) proof of authority to execute this document, attach such proof of authority in the form of a certified copy of a resolution naming the representative(s) authorized to sign the Agreement for and on behalf of the corporation or partnership; or
 - (b) the affixing of a corporate seal, this Agreement should be properly sealed.

DEFINITIONS

The following definitions shall apply to all *Contract Documents*.

1. Change Directive

A *Change Directive* is a written instruction prepared by the *Consultant* and signed by the *Owner* directing the *Contractor* to proceed with a change in the *Work* within the general scope of the *Contract Documents* prior to the *Owner* and the *Contractor* agreeing upon an adjustment in *Contract Price* and *Contract Time*.

2. Change Order

A *Change Order* is a written amendment to the *Contract* prepared by the *Consultant* and signed by the *Owner* and the *Contractor* stating their agreement upon:

- a change in the *Work*;
- the method of adjustment or the amount of the adjustment in the *Contract Price*, if any; and
- the extent of the adjustment in the *Contract Time*, if any.

3. Construction Equipment

Construction Equipment means all machinery and equipment, either operated or not operated, that is required for preparing, fabricating, conveying, erecting, or otherwise performing the *Work* but is not incorporated into the *Work*.

4. Consultant

The *Consultant* is the person or entity identified as such in the Agreement. The *Consultant* is the Engineer or other entity licensed to practise in the province or territory of the *Place of the Work*. The term *Consultant* means the *Consultant* or the *Consultant's* authorized representative.

5. Contract

The *Contract* is the undertaking by the parties to perform their respective duties, responsibilities, and obligations as prescribed in the *Contract Documents* and represents the entire agreement between the parties.

6. Contract Documents

The *Contract Documents* consist of those documents listed in Article A-3 of the Agreement - CONTRACT DOCUMENTS and amendments agreed upon between the parties.

7. Contract Price

When *Unit Prices* form the basis of payment, the *Contract Price* is the sum of the product of each *Unit Price* stated in the *Schedule of Prices* multiplied by the appropriate actual quantity of each item that is incorporated in or made necessary by the *Work*, plus lump sums, if any, and allowances, if any, stated in the *Schedule of Prices*. When a lump sum stipulated price forms the basis of payment, the *Contract Price* is the amount stipulated in Article A-4 of the Agreement - CONTRACT PRICE.

8. Contract Time

The *Contract Time* is the time stipulated in paragraph 1.3 of Article A-1 of the Agreement - THE WORK from commencement of the *Work* to *Substantial Performance of the Work*.

9. Contractor

The *Contractor* is the person or entity identified as such in the Agreement. The term *Contractor* means the *Contractor* or the *Contractor's* authorized representative as designated to the *Owner* in writing.

10. Drawings

The *Drawings* are the graphic and pictorial portions of the *Contract Documents*, wherever located and whenever issued, showing the design, location, and dimensions of the *Work*, generally including plans, elevations, sections, details, schedules, and diagrams.

11. Owner

The *Owner* is the person or entity identified as such in the Agreement. The term *Owner* means the *Owner* or the *Owner's* authorized agent or representative as designated to the *Contractor* in writing, but does not include the *Consultant*.

12. Place of the Work

The *Place of the Work* is the designated site or location of the *Work* identified in the *Contract Documents*.

13. **Product**
Product or *Products* means material, machinery, equipment, and fixtures forming the *Work*, but does not include *Construction Equipment*.
14. **Project**
The *Project* means the total construction contemplated of which the *Work* may be the whole or a part.
15. **Provide**
Provide means to supply and install.
16. **Schedule of Prices**
The *Schedule of Prices* is the schedule listed in Article A-3 - CONTRACT DOCUMENTS identifying items of work, estimated quantities, units of measure, and *Unit Prices*.
17. **Shop Drawings**
Shop Drawings are drawings, diagrams, illustrations, schedules, performance charts, brochures, *Product* data, and other data which the *Contractor* provides to illustrate details of portions of the *Work*.
18. **Specifications**
The *Specifications* are that portion of the *Contract Documents*, wherever located and whenever issued, consisting of the written requirements and standards for *Products*, systems, workmanship, and the services necessary for the performance of the *Work*.
19. **Subcontractor**
A *Subcontractor* is a person or entity having a direct contract with the *Contractor* to perform a part or parts of the *Work*, or to supply *Products* worked to a special design for the *Work*.
20. **Substantial Performance of the Work**
Substantial Performance of the Work is as defined in the lien legislation applicable to the *Place of the Work*. If such legislation is not in force or does not contain such definition, or if the *Work* is governed by the Civil Code of Quebec, *Substantial Performance of the Work* shall have been reached when the *Work* is ready for use or is being used for the purpose intended and is so certified by the *Consultant*.
21. **Supplemental Instruction**
A *Supplemental Instruction* is an instruction, not involving adjustment in the *Contract Price* or *Contract Time*, in the form of *Specifications*, *Drawings*, schedules, samples, models, or written instructions, consistent with the intent of the *Contract Documents*. It is to be issued by the *Consultant* to supplement the *Contract Documents* as required for the performance of the *Work*.
22. **Supplier**
A *Supplier* is a person or entity having a direct contract with the *Contractor* to supply *Products* not worked to a special design for the *Work*.
23. **Temporary Work**
Temporary Work means temporary supports, structures, facilities, services, and other temporary things, excluding *Construction Equipment*, required for the execution of the *Work* but not incorporated into the *Work*.
24. **Unit Price**
A *Unit Price* is the amount payable for a single unit of work as stated in the *Schedule of Prices*.
25. **Value Added Taxes**
Value Added Taxes means such sum as shall be levied upon the *Contract Price* by the Federal or any Provincial or Territorial Government and is computed as a percentage of the *Contract Price* and includes the Goods and Services Tax, the Quebec Sales Tax, the Harmonized Sales Tax, and any similar tax, the collection and payment of which is by the *Contractor* as imposed by the tax legislation.
26. **Work**
The *Work* means the total construction and related services required by the *Contract Documents*.
27. **Working Day**
Working Day means a day other than a Saturday, Sunday, statutory holiday or statutory vacation day that is observed by the construction industry in the area of the *Place of the Work*.

GENERAL CONDITIONS OF THE CIVIL WORKS CONTRACT

PART 1 GENERAL PROVISIONS

GC 1.1 CONTRACT DOCUMENTS

- 1.1.1 The intent of the *Contract Documents* is to include the labour, *Products*, and services necessary for the performance of the *Work* by the *Contractor* in accordance with these documents. It is not intended, however, that the *Contractor* shall supply products or perform work not consistent with, not covered by, or not properly inferable from the *Contract Documents*.
- 1.1.2 Except for the provisions of article 12.3.6, nothing contained in the *Contract Documents* shall create any contractual relationship between:
 - .1 the *Owner* and a *Subcontractor*, a *Supplier*, or their agent, employee, or other person performing any of the *Work*.
 - .2 the *Consultant* and the *Contractor*, a *Subcontractor*, a *Supplier*, or their agent, employee, or other person performing any of the *Work*.
- 1.1.3 The *Contract Documents* are complementary, and what is required by any one shall be as binding as if required by all.
- 1.1.4 Words and abbreviations which have well known technical or trade meanings are used in the *Contract Documents* in accordance with such recognized meanings.
- 1.1.5 References in the *Contract Documents* to the singular shall be considered to include the plural as the context requires.
- 1.1.6 Neither the organization of the *Specifications* nor the arrangement of *Drawings* shall control the *Contractor* in dividing the work among *Subcontractors* and *Suppliers*.
- 1.1.7 If there is a conflict within the *Contract Documents*:
 - .1 the order of priority of documents, from highest to lowest, shall be
 - the Agreement between the *Owner* and the *Contractor*,
 - the Definitions,
 - Supplementary Conditions,
 - the General Conditions,
 - the *Specifications*,
 - material and finishing schedules,
 - the *Drawings*.
 - .2 *Drawings* of larger scale shall govern over those of smaller scale of the same date.
 - .3 dimensions shown on *Drawings* shall govern over dimensions scaled from *Drawings*.
 - .4 later dated documents shall govern over earlier documents of the same type.
- 1.1.8 The *Owner* shall provide the *Contractor*, without charge, sufficient copies of the *Contract Documents* to perform the *Work*.
- 1.1.9 *Specifications*, *Drawings*, models, and copies thereof furnished by the *Consultant* are and shall remain the *Consultant's* property, with the exception of the signed *Contract* sets, which shall belong to each party to the *Contract*. All *Specifications*, *Drawings*, and models furnished by the *Consultant* are to be used only with respect to the *Work* and are not to be used on other work. These *Specifications*, *Drawings*, and models are not to be copied or altered in any manner without the written authorization of the *Consultant*.
- 1.1.10 Models furnished by the *Contractor* at the *Owner's* expense are the property of the *Owner*.

GC 1.2 LAW OF THE CONTRACT

- 1.2.1 The law of the *Place of the Work* shall govern the interpretation of the *Contract*.

GC 1.3 RIGHTS AND REMEDIES

- 1.3.1 Except as expressly provided in the *Contract Documents*, the duties and obligations imposed by the *Contract Documents* and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights, and remedies otherwise imposed or available by law.
- 1.3.2 No action or failure to act by the *Owner*, *Consultant*, or *Contractor* shall constitute a waiver of any right or duty afforded any of them under the *Contract*, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

GC 1.4 ASSIGNMENT

- 1.4.1 Neither party to the *Contract* shall assign the *Contract* or a portion thereof without the written consent of the other, which consent shall not be unreasonably withheld.

PART 2 ADMINISTRATION OF THE CONTRACT

GC 2.1 AUTHORITY OF THE CONSULTANT

- 2.1.1 The *Consultant* will have authority to act on behalf of the *Owner* only to the extent provided in the *Contract Documents*, unless otherwise modified by written agreement as provided in paragraph 2.1.2.
- 2.1.2 The duties, responsibilities, and limitations of authority of the *Consultant* as set forth in the *Contract Documents* shall be modified or extended only with the written consent of the *Owner*, the *Contractor*, and the *Consultant*.
- 2.1.3 If the *Consultant's* employment is terminated, the *Owner* shall immediately appoint or reappoint a *Consultant* against whom the *Contractor* makes no reasonable objection and whose status under the *Contract Documents* shall be that of the former *Consultant*.

GC 2.2 ROLE OF THE CONSULTANT

- 2.2.1 The *Consultant* will provide administration of the *Contract* as described in the *Contract Documents* during construction until issuance of the final certificate for payment, and subject to GC 2.1 - AUTHORITY OF THE CONSULTANT and with the *Owner's* concurrence, from time to time until the completion of any correction of defects as provided in paragraph 12.3.3 of GC 12.3 - WARRANTY.
- 2.2.2 The *Consultant* may provide at the *Place of the Work*, one or more project representatives to assist in carrying out the *Consultant's* responsibilities. The duties, responsibilities, and limitations of authority of such project representatives shall be as set forth in writing to the *Contractor*.
- 2.2.3 The *Consultant* will review the *Work* at intervals appropriate to the progress of construction to:
 - .1 become familiar with the progress and quality of the *Work*,
 - .2 determine if the *Work* is proceeding in general conformity with the *Contract Documents*, and
 - .3 verify quantities of *Work* performed under a *Schedule of Prices*.
- 2.2.4 Based on the *Consultant's* observations and evaluation of the *Contractor's* applications for payment, the *Consultant* will determine the amounts owing to the *Contractor* under the *Contract* and will issue certificates for payment as provided in Article A-5 of the Agreement - PAYMENT, GC 5.6 - PROGRESS PAYMENT, and GC 5.10 - FINAL PAYMENT.
- 2.2.5 The *Consultant* will not be responsible for and will not have control, charge, or supervision of construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs required in connection with the *Work* in accordance with the applicable construction safety legislation, other regulations, or general construction practice. The *Consultant* will not be responsible for the *Contractor's* failure to carry out the *Work* in accordance with the *Contract Documents*. The *Consultant* will not have control over, charge of, or be responsible for the acts or omissions of the *Contractor*, *Subcontractors*, *Suppliers*, or their agents, employees, or any other persons performing portions of the *Work*.

- 2.2.6 The *Consultant* will be, in the first instance, the interpreter of the requirements of the *Contract Documents* and shall make findings as to the performance thereunder by both parties to the *Contract*, except with respect to GC 5.1 - FINANCING INFORMATION REQUIRED OF THE OWNER. Interpretations and findings of the *Consultant* shall be consistent with the intent of the *Contract Documents*. When making such interpretations and findings the *Consultant* will not show partiality to either the *Owner* or the *Contractor*.
- 2.2.7 Matters in question relating to the performance of the Work or the interpretation of the *Contract Documents*, except for GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER, shall be referred initially to the *Consultant* by notice in writing given to the *Consultant* and to the other party for the *Consultant's* interpretation and finding which will be given by notice in writing to the parties within a reasonable time. With respect to claims, the *Consultant* will make findings as set out in GC 6.6 - CLAIMS, paragraph 6.6.5.
- 2.2.8 The *Consultant* will have authority to reject work which in the *Consultant's* opinion does not conform to the requirements of the *Contract Documents*. Whenever the *Consultant* considers it necessary or advisable, the *Consultant* will have authority to require inspection or testing of work, whether or not such work is fabricated, installed, or completed. However, neither the authority of the *Consultant* to act nor any decision either to exercise or not to exercise such authority shall give rise to any duty or responsibility of the *Consultant* to the *Contractor*, *Subcontractors*, *Suppliers*, or their agents, employees, or other persons performing any of the *Work*.
- 2.2.9 During the progress of the *Work* the *Consultant* will furnish *Supplemental Instructions* to the *Contractor* with reasonable promptness or in accordance with a schedule for such instructions agreed to by the *Consultant* and the *Contractor*.
- 2.2.10 The *Consultant* will review and take appropriate action upon such *Contractor's* submittals as *Shop Drawings*, *Product data*, and samples, as provided in the *Contract Documents*.
- 2.2.11 The *Consultant* will prepare *Change Orders* and *Change Directives* as provided in GC 6.2 - CHANGE ORDER and GC 6.3 - CHANGE DIRECTIVE.
- 2.2.12 The *Consultant* will conduct reviews of the *Work* to determine the date of *Substantial Performance of the Work* as provided in GC 5.7 - SUBSTANTIAL PERFORMANCE OF THE WORK.
- 2.2.13 All certificates issued by the *Consultant* will be to the best of the *Consultant's* knowledge, information, and belief. By issuing any certificate, the *Consultant* does not guarantee the *Work* is correct or complete.
- 2.2.14 The *Consultant* will receive and review written warranties and related documents required by the *Contract* and provided by the *Contractor* and will forward such warranties and documents to the *Owner* for the *Owner's* acceptance.

GC 2.3 REVIEW AND INSPECTION OF THE WORK

- 2.3.1 The *Owner* and the *Consultant* shall have access to the *Work* at all times. The *Contractor* shall provide sufficient, safe, and proper facilities at all times for the review of the *Work* by the *Consultant* and the inspection of the *Work* by authorized agencies. If parts of the *Work* are in preparation at locations other than the *Place of the Work*, the *Owner* and the *Consultant* shall be given access to such work whenever it is in progress.
- 2.3.2 If work is designated for tests, inspections, or approvals in the *Contract Documents*, or by the *Consultant's* instructions, or the laws or ordinances of the *Place of the Work*, the *Contractor* shall give the *Consultant* reasonable notice of when the work will be ready for review and inspection. The *Contractor* shall arrange for and shall give the *Consultant* reasonable notice of the date and time of inspections by other authorities.
- 2.3.3 The *Contractor* shall furnish promptly to the *Consultant* two copies of certificates and inspection reports relating to the *Work*.
- 2.3.4 If the *Contractor* covers, or permits to be covered, work that has been designated for special tests, inspections, or approvals before such special tests, inspections, or approvals are made, given or completed, the *Contractor* shall, if so directed, uncover such work, have the inspections or tests satisfactorily completed, and make good covering work at the *Contractor's* expense.

- 2.3.5 The *Consultant* may order any portion or portions of the *Work* to be examined to confirm that such work is in accordance with the requirements of the *Contract Documents*. If the work is not in accordance with the requirements of the *Contract Documents*, the *Contractor* shall correct the work and pay the cost of examination and correction. If the work is in accordance with the requirements of the *Contract Documents*, the *Owner* shall pay the cost of examination and restoration.
- 2.3.6 The *Contractor* shall pay the cost of making any test or inspection, including the cost of samples required for such test or inspection, if such test or inspection is designated in the *Contract Documents* to be performed by the *Contractor* or is designated by the laws or ordinances of the *Place of the Work*.
- 2.3.7 The *Contractor* shall pay the cost of samples required for any test or inspection to be performed by the *Consultant* or the *Owner* if such test or inspection is designated in the *Contract Documents*.

GC 2.4 DEFECTIVE WORK

- 2.4.1 The *Contractor* shall promptly remove from the *Place of the Work* and replace or re-execute defective work that has been rejected by the *Consultant* as failing to conform to the *Contract Documents* whether or not the defective work has been incorporated in the *Work* and whether or not the defect is the result of poor workmanship, use of defective products, or damage through carelessness or other act or omission of the *Contractor*.
- 2.4.2 The *Contractor* shall make good promptly other contractors' work destroyed or damaged by such removals or replacements at the *Contractor's* expense.
- 2.4.3 If in the opinion of the *Consultant* it is not expedient to correct defective work or work not performed as provided in the *Contract Documents*, the *Owner* may deduct from the amount otherwise due to the *Contractor* the difference in value between the work as performed and that called for by the *Contract Documents*. If the *Owner* and the *Contractor* do not agree on the difference in value, they shall refer the matter to the *Consultant* for a determination.

PART 3 EXECUTION OF THE WORK

GC 3.1 CONTROL OF THE WORK

- 3.1.1 The *Contractor* shall have total control of the *Work* and shall effectively direct and supervise the *Work* so as to ensure conformity with the *Contract Documents*.
- 3.1.2 The *Contractor* shall be solely responsible for construction means, methods, techniques, sequences, and procedures and for co-ordinating the various parts of the *Work* under the *Contract*.

GC 3.2 CONSTRUCTION BY OWNER OR OTHER CONTRACTORS

- 3.2.1 The *Owner* reserves the right to award separate contracts in connection with other parts of the *Project* to other contractors and to perform work with own forces.
- 3.2.2 When separate contracts are awarded for other parts of the *Project*, or when work is performed by the *Owner's* own forces, the *Owner* shall:
- .1 provide for the co-ordination of the activities and work of other contractors and *Owner's* own forces with the *Work* of the *Contract*;
 - .2 assume overall responsibility for compliance with the applicable health and construction safety legislation at the *Place of the Work*;
 - .3 enter into separate contracts with other contractors under conditions of contract which are compatible with the conditions of the *Contract*;
 - .4 ensure that insurance coverage is provided to the same requirements as are called for in GC 11.1 - INSURANCE and co-ordinate such insurance with the insurance coverage of the *Contractor* as it affects the *Work*; and
 - .5 take all reasonable precautions to avoid labour disputes or other disputes on the *Project* arising from the work of other contractors or the *Owner's* own forces.

- 3.2.3 When separate contracts are awarded for other parts of the *Project*, or when work is performed by the *Owner's* own forces, the *Contractor* shall:
- .1 afford the *Owner* and other contractors reasonable opportunity to introduce and store products and use the *Owner's* or other contractor's construction equipment to execute their work;
 - .2 cooperate with other contractors and the *Owner* in reviewing their construction schedules; and
 - .3 where part of the *Work* is affected by or depends upon for its proper execution the work of other contractors or *Owner's* own forces, promptly report to the *Consultant* in writing and prior to proceeding with that part of the *Work*, any apparent deficiencies in such work
- 3.2.4 Where the *Contract Documents* identify the work to be performed by other contractors or the *Owner's* own forces, the *Contractor* shall coordinate and schedule the *Work* with the work of other contractors and the *Owner's* own forces and interface as specified in the *Contract Documents*.
- 3.2.5 Where a change in the *Work* is required as a result of the co-ordination and interface of the work of other contractors or *Owner's* own forces with the *Work*, the changes shall be authorized and valued as provided in GC 6.1 - CHANGES, GC 6.2 - CHANGE ORDER, and GC 6.3 - CHANGE DIRECTIVE.
- 3.2.6 Disputes, and other matters in question between the *Contractor* and other contractors shall be dealt with as provided in Part 8 of the General Conditions - DISPUTE RESOLUTION provided the other contractors have reciprocal obligations. The *Contractor* shall be deemed to have consented to arbitration of any dispute with any other contractor whose contract with the *Owner* contains a similar agreement to arbitrate.

GC 3.3 TEMPORARY WORK

- 3.3.1 The *Contractor* shall have the sole responsibility for the design, erection, operation, maintenance, and removal of *Temporary Work*.
- 3.3.2 The *Contractor* shall engage and pay for registered professional engineering personnel skilled in the appropriate disciplines to perform those functions referred to in paragraph 3.3.1 where required by law or by the *Contract Documents* and in all cases where such *Temporary Work* is of such a nature that professional engineering skill is required to produce safe and satisfactory results.
- 3.3.3 Notwithstanding the provisions of GC 3.1 - CONTROL OF THE WORK, paragraph 3.3.1, and paragraph 3.3.2 or provisions to the contrary elsewhere in the *Contract Documents* where such *Contract Documents* include designs for *Temporary Work* or specify a method of construction in whole or in part, such designs or methods of construction shall be considered to be part of the design of the *Work* and the *Contractor* shall not be held responsible for that part of the design or the specified method of construction. The *Contractor* shall, however, be responsible for the execution of such design or specified method of construction in the same manner as for the execution of the *Work*.

GC 3.4 DOCUMENT REVIEW

- 3.4.1 The *Contractor* shall review the *Contract Documents* and shall report promptly to the *Consultant* any error, inconsistency, or omission the *Contractor* may discover. Such review by the *Contractor* shall be to the best of the *Contractor's* knowledge, information, and belief and in making such review the *Contractor* does not assume any responsibility to the *Owner* or the *Consultant* for the accuracy of the review. The *Contractor* shall not be liable for damage or costs resulting from such errors, inconsistencies, or omissions in the *Contract Documents*, which the *Contractor* did not discover. If the *Contractor* does discover any error, inconsistency, or omission in the *Contract Documents*, the *Contractor* shall not proceed with the work affected until the *Contractor* has received corrected or missing information from the *Consultant*.

GC 3.5 CONSTRUCTION SCHEDULE

- 3.5.1 The *Contractor* shall:
- .1 prepare and submit to the *Owner* and the *Consultant* prior to the first application for payment, a construction schedule that indicates the timing of the major activities of the *Work* and provides sufficient detail of the critical events and their inter-relationship to demonstrate the *Work* will be performed in conformity with the *Contract Time*;
 - .2 monitor the progress of the *Work* relative to the construction schedule and update the schedule on a monthly basis or as stipulated by the *Contract Documents*; and
 - .3 advise the *Consultant* of any revisions required to the schedule as the result of extensions of the *Contract Time* as provided in Part 6 of the General Conditions - CHANGES IN THE WORK.

GC 3.6 SUPERVISION

- 3.6.1 The *Contractor* shall provide all necessary supervision and appoint a competent representative who shall be in attendance at the *Place of the Work* while the *Work* is being performed. The appointed representative shall not be changed except for valid reason.
- 3.6.2 The appointed representative shall represent the *Contractor* at the *Place of the Work* and notices and instructions given to the appointed representative by the *Consultant* shall be held to have been received by the *Contractor*.

GC 3.7 LAYOUT OF THE WORK

- 3.7.1 The *Owner* shall, in consultation with the *Contractor*, establish reference points for construction which are necessary for the *Contractor* to proceed with the *Work*.
- 3.7.2 The *Contractor* shall be responsible for laying out the *Work*, shall preserve and protect the established reference points, and shall not change or relocate the established reference points without the approval of the *Consultant*.
- 3.7.3 The *Contractor* shall advise the *Consultant* whenever any established reference point is lost, destroyed, damaged, or requires relocation as a result of the *Contractor's* operations. The cost to reestablish any reference point that is lost, destroyed, damaged, or requires relocation as a result of the *Contractor's* operations, shall be at the *Contractor's* expense.

GC 3.8 SUBCONTRACTORS AND SUPPLIERS

- 3.8.1 The *Contractor* shall preserve and protect the rights of the parties under the *Contract* with respect to work to be performed under subcontract, and shall:
- .1 enter into contracts or written agreements with *Subcontractors* and *Suppliers* to require them to perform their work as provided in the *Contract Documents*;
 - .2 incorporate the terms and conditions of the *Contract Documents* into all contracts or written agreements with *Subcontractors* and *Suppliers*; and
 - .3 be as fully responsible to the *Owner* for acts and omissions of *Subcontractors*, *Suppliers*, and of persons directly or indirectly employed by them as for acts and omissions of persons directly employed by the *Contractor*.
- 3.8.2 The *Contractor* shall indicate in writing, at the request of the *Owner*, those *Subcontractors* or *Suppliers* whose bids have been received by the *Contractor* which the *Contractor* would be prepared to accept for the performance of a portion of the *Work*. Should the *Owner* not object before signing the *Contract*, the *Contractor* shall employ those *Subcontractors* or *Suppliers* so identified by the *Contractor* in writing for the performance of that portion of the *Work* to which their bid applies.
- 3.8.3 The *Owner* may, for reasonable cause, at any time before the *Owner* has signed the *Contract*, object to the use of a proposed *Subcontractor* or *Supplier* and require the *Contractor* to employ one of the other subcontract bidders.
- 3.8.4 If the *Owner* requires the *Contractor* to change a proposed *Subcontractor* or *Supplier*, the *Contract Price* and *Contract Time* shall be adjusted by the differences occasioned by such required change.

- 3.8.5 The *Contractor* shall not be required to employ as a *Subcontractor* or *Supplier*, a person or firm to which the *Contractor* may reasonably object.
- 3.8.6 The *Owner*, through the *Consultant*, may provide to a *Subcontractor* or *Supplier* information as to the percentage of the *Subcontractor's* or *Supplier's* work which has been certified for payment.

GC 3.9 LABOUR AND PRODUCTS

- 3.9.1 The *Contractor* shall provide and pay for labour, *Products*, tools, *Construction Equipment*, water, heat, light, power, transportation, and other facilities and services necessary for the performance of the *Work* in accordance with the *Contract*.
- 3.9.2 *Products* provided shall be new. *Products* which are not specified shall be of a quality consistent with those specified and their use acceptable to the *Consultant*.
- 3.9.3 The *Contractor* shall maintain good order and discipline among the *Contractor's* employees engaged on the *Work* and shall not employ on the *Work* anyone not skilled in the tasks assigned.

GC 3.10 DOCUMENTS AT THE SITE

- 3.10.1 The *Contractor* shall keep one copy of current *Contract Documents*, submittals, reports, and records of meetings at the *Place of the Work*, in good order and available to the *Owner* and the *Consultant*.

GC 3.11 SHOP DRAWINGS

- 3.11.1 The *Contractor* shall provide *Shop Drawings* as required in the *Contract Documents*.
- 3.11.2 The *Contractor* shall review all *Shop Drawings* prior to submission to the *Consultant*. The *Contractor* represents by this review that:
- .1 the *Contractor* has determined and verified all field measurements, field construction conditions, materials, *Product* requirements, catalogue numbers, and similar data or will do so; and
 - .2 the *Contractor* has checked and co-ordinated each *Shop Drawing* with the requirements of the *Contract Documents*.
- 3.11.3 The *Contractor* shall confirm the review of each shop drawing by stamp, date, and signature of the person responsible for the review. At the time of submission the *Contractor* shall notify the *Consultant* in writing of any deviations in the *Shop Drawings* from the requirements of the *Contract Documents*.
- 3.11.4 The *Contractor* shall submit *Shop Drawings* to the *Consultant* to review in orderly sequence and sufficiently in advance so as to cause no delay in the *Work* or in the work of other contractors. Upon request of the *Contractor* or the *Consultant*, they jointly shall prepare a schedule of the dates for submission and return of *Shop Drawings*. *Shop Drawings* which require approval of any legally constituted authority having jurisdiction shall be submitted to such authority by the *Contractor* for approval.
- 3.11.5 The *Contractor* shall submit *Shop Drawings* in the form specified or as the *Consultant* may direct. The *Consultant* will review and return *Shop Drawings* in accordance with the schedule agreed upon, or otherwise with reasonable promptness so as to cause no delay. The *Consultant's* review is for conformity to the design concept and for general arrangement only. The *Consultant's* review shall not relieve the *Contractor* of responsibility for errors or omissions in the *Shop Drawings* or for meeting all requirements of the *Contract Documents* unless the *Consultant* expressly notes the acceptance of a deviation on the *Shop Drawings*.
- 3.11.6 Upon the *Consultant's* request, the *Contractor* shall revise and resubmit *Shop Drawings* which the *Consultant* rejects as inconsistent with the *Contract Documents* unless otherwise directed by the *Consultant*. The *Contractor* shall notify the *Consultant* in writing of any revisions to the resubmission other than those requested by the *Consultant*.

GC 3.12 USE OF THE WORK

- 3.12.1 The *Contractor* shall confine *Construction Equipment*, *Temporary Work*, storage of *Products*, waste products and debris, and operations of employees to limits indicated by laws, ordinances, permits, or the *Contract Documents* and shall not unreasonably encumber the *Place of Work* with *Products*.
- 3.12.2 The *Contractor* shall not load or permit to be loaded any part of the *Work* with a weight or force that will endanger the safety of the *Work*.

GC 3.13 CUTTING AND REMEDIAL WORK

- 3.13.1 The *Contractor* shall do the cutting and remedial work required to make the several parts of the *Work* come together properly.
- 3.13.2 The *Contractor* shall co-ordinate the *Work* to ensure that this requirement is kept to a minimum.
- 3.13.3 Should the *Owner*, the *Consultant*, other contractors or anyone employed by them be responsible for ill-timed work necessitating cutting or remedial work to be performed, the cost of such cutting or remedial work shall be valued as provided in GC 6.1 - CHANGES, GC 6.2 - CHANGE ORDER, and GC 6.3 - CHANGE DIRECTIVE.
- 3.13.4 Cutting and remedial work shall be performed by specialists familiar with the *Products* affected and shall be performed in a manner to neither damage nor endanger the *Work*.

GC 3.14 CLEANUP

- 3.14.1 The *Contractor* shall maintain the *Work* in a safe and tidy condition and free from the accumulation of waste products and debris, other than that caused by the *Owner*, other contractors or their employees.
- 3.14.2 Before applying for *Substantial Performance of the Work* as provided in GC 5.7 - SUBSTANTIAL PERFORMANCE OF THE WORK, the *Contractor* shall remove waste products and debris, other than that resulting from the work of the *Owner*, other contractors or their employees, and shall leave the *Work* clean and suitable for use or occupancy by the *Owner*. The *Contractor* shall remove products, tools, *Construction Equipment* and *Temporary Work* not required for the performance of the remaining work.
- 3.14.3 Prior to application for the final certificate for payment, the *Contractor* shall remove any remaining products, tools, *Construction Equipment*, *Temporary Work*, and waste products and debris, other than those resulting from the work of the *Owner*, other contractors or their employees.

PART 4 ALLOWANCES

GC 4.1 CASH ALLOWANCES

- 4.1.1 The *Contract Price* includes the cash allowances, if any, stated in the *Contract Documents*. The scope of work or costs included in such cash allowances shall be as described in the *Contract Documents*.
- 4.1.2 The *Contract Price*, and not the cash allowances, includes the *Contractor's* overhead and profit in connection with such cash allowances.
- 4.1.3 Expenditures under cash allowances shall be authorized by the *Owner* through the *Consultant*.
- 4.1.4 Where costs under any cash allowance exceed the amount of the allowance, the *Contractor* shall be compensated for the excess incurred and substantiated plus an amount for overhead and profit on the excess as set out in the *Contract Documents*. Where costs under any cash allowance are less than the amount of the allowance, the *Owner* shall be credited for the unexpended portion of the cash allowance, but not for the *Contractor's* overhead and profit on such amount. Multiple cash allowances shall not be combined for the purpose of calculating the foregoing.
- 4.1.5 The *Contract Price* shall be adjusted by *Change Order* to provide for any difference between the actual cost and each cash allowance.

- 4.1.6 The value of the work performed under a cash allowance is eligible to be included in progress payments.
- 4.1.7 The *Contractor* and the *Consultant* shall jointly prepare a schedule that shows when the *Consultant* and *Owner* must authorize ordering of items called for under cash allowances to avoid delaying the progress of the *Work*.

GC 4.2 CONTINGENCY ALLOWANCE

- 4.2.1 The *Contract Price* includes the contingency allowance, if any, stated in the *Contract Documents*.
- 4.2.2 Expenditures under the contingency allowance shall be authorized and valued as provided in GC 6.1 - CHANGES, GC 6.2 - CHANGE ORDER, and GC 6.3 - CHANGE DIRECTIVE.
- 4.2.3 The *Contract Price* shall be adjusted by *Change Order* to provide for any difference between the expenditures authorized under paragraph 4.2.2 and the contingency allowance.

PART 5 PAYMENT

GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER

- 5.1.1 The *Owner* shall, at the request of the *Contractor*, before signing the *Contract*, and promptly from time to time thereafter, furnish to the *Contractor* reasonable evidence that financial arrangements have been made to fulfill the *Owner's* obligations under the *Contract*.
- 5.1.2 The *Owner* shall notify the *Contractor* in writing of any material change in the *Owner's* financial arrangements during performance of the *Contract*.

GC 5.2 BASIS OF PAYMENT FOR UNIT PRICE WORK

- 5.2.1 Payment for *Unit Price* work shall be based on the *Unit Prices* in the *Contract*.
- 5.2.2 The *Contractor* shall measure the *Work* and the *Consultant* will verify such measurements to determine payment to the *Contractor* in accordance with the measurement provisions of the *Contract Documents*.

GC 5.3 BASIS OF PAYMENT FOR LUMP SUM WORK

- 5.3.1 Payment for lump sum work shall be based on the stipulated price(s) in the *Contract*.

GC 5.4 BASIS OF PAYMENT FOR COST PLUS WORK

- 5.4.1 Payment for cost plus work shall be based on the cost of such work, as provided in paragraph 5.4.2, plus a fee calculated as a percentage of the cost of such work, for the *Contractor's* overhead and profit. The percentage amount shall be as provided in the *Contract Documents* but shall not be applied to the cost of *Construction Equipment* when such cost is based on rates which already include the *Contractor's* overhead and profit.
- 5.4.2 The cost of cost plus work shall be at rates prevailing in the locality of the *Place of the Work* and shall include the following cost elements as applicable to such work:
- .1 wages and benefits paid for labour in the direct employ of the *Contractor* under applicable collective bargaining agreements, or under a salary or wage schedule agreed upon by the *Owner* and *Contractor*;
 - .2 salaries, wages, and benefits of the *Contractor's* personnel, when stationed at the field office, in whatever capacity employed; or personnel at shops or on the road, engaged in expediting the production or transportation of materials or equipment;
 - .3 contributions, assessments, or taxes incurred for such items as employment insurance, provincial or territorial health insurance, workers' compensation, and Canada or Quebec Pension Plan, insofar as such cost is based on wages, salaries, or other remuneration paid to employees of the *Contractor* and included in the cost of the *Work* as provided in paragraphs 5.4.2.1 and 5.4.2.2;
 - .4 travel and subsistence expenses of the *Contractor's* personnel described in paragraphs 5.4.2.1 and 5.4.2.2;
 - .5 the cost of all *Products* including cost of transportation thereof;

- .6 the cost of materials, supplies, *Construction Equipment*, *Temporary Work*, and hand tools not owned by the workers, including transportation, and maintenance thereof, which are consumed in the performance of the *Work*; and cost less salvage value on such items used but not consumed, which remain the property of the *Contractor*;
 - .7 the cost of all tools and *Construction Equipment*, exclusive of hand tools used in the performance of the *Work*, whether rented from or provided by the *Contractor* or others, including installation, minor repairs and replacements, dismantling, removal, transportation and delivery cost thereof;
 - .8 deposits lost;
 - .9 the amounts of all subcontracts;
 - .10 the cost of quality assurance such as independent inspection and testing services;
 - .11 charges levied by authorities having jurisdiction at the *Place of the Work*;
 - .12 royalties, patent license fees, and damages for infringement of patents and cost of defending suits therefor subject always to the *Contractor's* obligations to indemnify the *Owner* as provided in paragraph 10.3.1 of GC 10.3 - PATENT FEES;
 - .13 any adjustment in premiums for all bonds and insurance which the *Contractor* is required, by the *Contract Documents*, to purchase and maintain;
 - .14 any adjustment in taxes and duties for which the *Contractor* is liable;
 - .15 charges for long distance telephone and facsimile communications, courier services, expressage, and petty items incurred in relation to the performance of the *Work*;
 - .16 the cost of removal and disposal of waste products and debris; and
 - .17 cost incurred due to emergencies affecting the safety of persons or property.
- 5.4.3 The *Contractor* shall obtain the *Owner's* approval prior to subcontracting or entering into other agreements for cost plus work.
- 5.4.4 The *Consultant* may refuse to certify payment for all or part of the cost of any item under any cost element, where the item in question was unsuitable, unnecessary or the cost was otherwise improperly incurred in the performance of the *Work*.
- 5.4.5 The *Contractor* shall keep full and detailed accounts and records necessary for the documentation of the cost of cost plus work and shall provide the *Consultant* with copies thereof when requested.
- 5.4.6 The *Owner* shall be afforded reasonable access to all of the *Contractor's* books, records, correspondence, instructions, drawings, receipts, vouchers, and memoranda related to the cost of cost plus work, and for this purpose the *Contractor* shall preserve such records for a period of one year from the date of *Substantial Performance of the Work*.

GC 5.5 APPLICATIONS FOR PROGRESS PAYMENT

- 5.5.1 Applications for payment on account as provided in Article A-5 of the Agreement - PAYMENT may be made monthly as the *Work* progresses.
- 5.5.2 Applications for payment shall be dated the last day of the agreed monthly payment period and the amount claimed shall be for the value, proportionate to the amount of the *Contract*, of work performed and *Products* delivered to the *Place of the Work* at that date.
- 5.5.3 Where the basis of payment of the *Contract Price* is *Unit Prices*, applications for payment shall include quantity measurements and any other data requested by the *Consultant* to assist the *Consultant* in evaluating the application and verifying quantity measurements.
- 5.5.4 Where the basis of payment of the *Contract Price* is a lump sum stipulated price:
- .1 the *Contractor* shall submit to the *Consultant*, at least 10 *Working Days* before the first application for payment, a schedule of values for the parts of the *Work*, aggregating the total amount of the *Contract Price*, so as to facilitate evaluation of applications for payment;
 - .2 the schedule of values shall be made out in such form and supported by such evidence as the *Consultant* may reasonably direct and when accepted by the *Consultant*, shall be used as the basis for applications for payment, unless it is found to be in error; and
 - .3 the *Contractor* shall include a statement based on the schedule of values with each application for payment.

- 5.5.5 Where the basis of payment for a portion of the *Work* is cost plus, applications for payment shall be based on the cost of the work performed plus the amount of the fee earned, in accordance with GC 5.4 - BASIS OF PAYMENT FOR COST PLUS WORK.
- 5.5.6 Applications for payment for *Products* delivered to the *Place of the Work* but not yet incorporated into the *Work* shall be supported by such evidence as the *Consultant* may reasonably require to establish the value and delivery of the *Products*.

GC 5.6 PROGRESS PAYMENT

- 5.6.1 The *Consultant* will issue to the *Owner*, no later than 5 *Working Days* after the receipt of an application for payment from the *Contractor* submitted in accordance with GC 5.2 - APPLICATIONS FOR PROGRESS PAYMENT, a certificate for payment in the amount applied for or in such other amount as the *Consultant* determines to be properly due. If the *Consultant* amends the application, the *Consultant* will promptly notify the *Contractor* in writing giving reasons for the amendment.
- 5.6.2 The *Owner* shall make payment to the *Contractor* on account as provided in Article A-5 of the Agreement - PAYMENT no later than 5 *Working Days* after the date of a certificate for payment issued by the *Consultant*.
- 5.6.3 Where the basis of payment of the *Contract Price* is *Unit Prices*, quantities for progress payments shall be considered approximate until final verification of quantities by the *Consultant*. A certificate for progress payment shall not be construed as the *Consultant's* final verification of quantities. Final verification of quantities will be made after all work of an item is completed.

GC 5.7 SUBSTANTIAL PERFORMANCE OF THE WORK

- 5.7.1 When the *Contractor* considers that the *Work* is substantially performed, or if permitted by the lien legislation applicable to the *Place of the Work* a designated portion thereof which the *Owner* agrees to accept separately is substantially performed, the *Contractor* shall prepare and submit to the *Consultant* a comprehensive list of items to be completed or corrected and apply for a review by the *Consultant* to establish *Substantial Performance of the Work* or substantial performance of the designated portion of the *Work*. Failure to include an item on the list does not alter the responsibility of the *Contractor* to complete the *Contract*.
- 5.7.2 No later than 15 *Working Days* after the receipt of the *Contractor's* list and application, the *Consultant* will review the *Work* to verify the validity of the application and notify the *Contractor* whether the *Work* or the designated portion of the *Work* is substantially performed.
- 5.7.3 The *Consultant* will state the date of *Substantial Performance of the Work* or designated portion of the *Work* in a certificate.
- 5.7.4 Immediately following the issuance of the certificate of *Substantial Performance of the Work*, the *Contractor*, in consultation with the *Consultant*, shall establish a reasonable date for finishing the *Work*.

GC 5.8 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK

- 5.8.1 After the issuance of the certificate of *Substantial Performance of the Work*, the *Contractor* shall:
- .1 submit an application for payment of the holdback amount,
 - .2 submit a sworn or affirmed statement that all accounts for labour, subcontracts, *Products*, *Construction Equipment*, and other indebtedness which may have been incurred by the *Contractor* in the *Substantial Performance of the Work* and for which the *Owner* might in any way be held responsible have been paid in full, except for amounts properly retained as a holdback or as an identified amount in dispute.
- 5.8.2 After the receipt of an application for payment from the *Contractor* and the sworn or affirmed statement as provided in paragraph 5.8.1, the *Consultant* will issue a certificate for payment of the holdback amount.

- 5.8.3 Where the holdback amount required by the applicable lien legislation has not been placed in a separate holdback account, the *Owner* shall, 5 *Working Days* prior to the expiry of the holdback period stipulated in the lien legislation applicable to the *Place of the Work*, place the holdback amount in a bank account in the joint names of the *Owner* and the *Contractor*.
- 5.8.4 In the common law jurisdictions, the holdback amount authorized by the certificate for payment of the holdback amount is due and payable on the day following the expiration of the holdback period stipulated in the lien legislation applicable to the *Place of the Work*. Where lien legislation does not exist or apply, the holdback amount shall be due and payable in accordance with other legislation, industry practice, or provisions which may be agreed to between the parties. The *Owner* may retain out of the holdback amount any sums required by law to satisfy any liens against the *Work* or, if permitted by the lien legislation applicable to the *Place of the Work*, other third party monetary claims against the *Contractor* which are enforceable against the *Owner*.
- 5.8.5 In the Province of Quebec, the holdback amount authorized by the certificate for payment of the holdback amount is due and payable no later than 30 days after the issuance of the certificate. The *Owner* may retain out of the holdback amount any sums required to satisfy any legal hypothecs that have been taken, or could be taken, against the *Work* or other third party monetary claims against the *Contractor* which are enforceable against the *Owner*.

GC 5.9 PROGRESSIVE RELEASE OF HOLDBACK

- 5.9.1 In the common law jurisdictions, where legislation permits and where, upon application by the *Contractor*, the *Consultant* has certified that the work of a *Subcontractor* or *Supplier* has been performed prior to *Substantial Performance of the Work*, the *Owner* shall pay the *Contractor* the holdback amount retained for such subcontract work, or the *Products* supplied by such *Supplier*, on the first *Working Day* following the expiration of the holdback period for such work stipulated in the lien legislation applicable to the *Place of the Work*.
- 5.9.2 In the Province of Quebec, where, upon application by the *Contractor*, the *Consultant* has certified that the work of a *Subcontractor* or *Supplier* has been performed prior to *Substantial Performance of the Work*, the *Owner* shall pay the *Contractor* the holdback amount retained for such subcontract work, or the *Products* supplied by such *Supplier*, no later than 30 days after such certification by the *Consultant*. The *Owner* may retain out of the holdback amount any sums required to satisfy any legal hypothecs that have been taken, or could be taken, against the *Work* or other third party monetary claims against the *Contractor* which are enforceable against the *Owner*.
- 5.9.3 Notwithstanding the provisions of the preceding paragraph, and notwithstanding the wording of such certificates, the *Contractor* shall ensure that such subcontract work or *Products* is protected pending the issuance of a final certificate for payment and be responsible for the correction of defects or work not performed regardless of whether or not such was apparent when such certificates were issued.

GC 5.10 FINAL PAYMENT

- 5.10.1 When the *Contractor* considers that the *Work* is completed, the *Contractor* shall submit an application for final payment.
- 5.10.2 The *Consultant* will, no later than 15 *Working Days* after the receipt of an application from the *Contractor* for final payment, review the *Work* to verify the validity of the application and notify the *Contractor* that the application is valid or give reasons why it is not valid.
- 5.10.3 When the *Consultant* finds the *Contractor's* application for final payment valid, the *Consultant* will promptly issue a final certificate for payment.
- 5.10.4 Subject to the provision of paragraph 10.4.1 of GC 10.4 - WORKERS' COMPENSATION, and any lien legislation applicable to the *Place of the Work*, the *Owner* shall, no later than 5 *Working Days* after the issuance of a final certificate for payment, pay the *Contractor* as provided in Article A-5 of the Agreement - PAYMENT.

GC 5.11 WITHHOLDING OF PAYMENT

- 5.11.1 If because of climatic or other conditions reasonably beyond the control of the *Contractor*, there are items of work that cannot be performed, payment in full for that portion of the *Work* which has been performed as certified by the *Consultant* shall not be withheld or delayed by the *Owner* on account thereof, but the *Owner* may withhold, until the remaining portion of the *Work* is finished, only such an amount that the *Consultant* determines is sufficient and reasonable to cover the cost of performing such remaining work.

GC 5.12 NON-CONFORMING WORK

- 5.12.1 No payment by the *Owner* under the *Contract* nor partial or entire use or occupancy of the *Work* by the *Owner* shall constitute an acceptance of any portion of the *Work* or *Products* which are not in accordance with the requirements of the *Contract Documents*.

PART 6 CHANGES

GC 6.1 CHANGES

- 6.1.1 The *Owner*, through the *Consultant*, without invalidating the *Contract*, may make:
- .1 changes in the *Work* consisting of additions, deletions, or other revisions to the *Work* by *Change Order* or *Change Directive*, and
 - .2 changes to the *Contract Time* for the *Work*, or any part thereof, by *Change Order*.
- 6.1.2 The *Contractor* shall not perform a change in the *Work* without a *Change Order* or a *Change Directive*.

GC 6.2 CHANGE ORDER

- 6.2.1 When a change in the *Work* or the *Contract Time* is proposed or required, the *Consultant* will provide notice in writing to the *Contractor* describing the proposed change. The *Contractor* shall present, in a form acceptable to the *Consultant*, a method of adjustment or an amount of adjustment of the *Contract Price*, if any, and the adjustment in the *Contract Time*, if any, for the proposed change.
- 6.2.2 The method of adjustment of the *Contract Price* presented by the *Contractor* may be:
- .1 *Unit Prices* listed in the *Schedule of Prices* that are applicable to the change in the *Work* or, if *Unit Prices* listed in the *Schedule of Prices* are not directly applicable, by unit prices deduced or extrapolated from such *Unit Prices*,
 - .2 a lump sum or unit price quotation, or
 - .3 the cost plus method as provided in GC 5.4 - BASIS OF PAYMENT FOR COST PLUS WORK.
- 6.2.3 When the *Owner* and *Contractor* agree to the adjustments in the *Contract Price* and *Contract Time* or to the method to be used to determine the adjustments, such agreement shall be effective immediately and shall be recorded in a *Change Order*, signed by *Owner* and *Contractor*. The value of the work performed as the result of a *Change Order* shall be included in applications for progress payment.

GC 6.3 CHANGE DIRECTIVE

- 6.3.1 If the *Owner* requires the *Contractor* to proceed with a change in the *Work* prior to the *Owner* and the *Contractor* agreeing upon the adjustment in *Contract Price* and *Contract Time*, the *Owner*, through the *Consultant*, shall issue a *Change Directive*.
- 6.3.2 A *Change Directive* shall only be used by the *Owner* to direct a change in the *Work* that is within the general scope of the *Contract Documents*.
- 6.3.3 Upon receipt of a *Change Directive*, the *Contractor* shall proceed promptly with the change in the *Work*.

- 6.3.4 The adjustment in the *Contract Price* for a change in the *Work* carried out by way of a *Change Directive* shall be on the basis of the *Contractor's* actual expenditures and savings attributable to the change. If a change in the *Work* results in expenditures only, the change in the *Work* shall be valued as cost plus work in accordance with GC 5.4 - BASIS OF PAYMENT FOR COST PLUS WORK.
- 6.3.5 If a change in the *Work* results in savings only, the amount of the credit shall be the actual cost savings to the *Contractor*, without deduction for overhead or profit.
- 6.3.6 If a change in the *Work* results in both expenditures and savings, the change in the *Work* shall be valued as specified in GC 6.3.4 and GC 6.3.5, except that overhead and profit on the cost plus work shall be payable only on the net increase, if any, with respect to that change in the *Work*.
- 6.3.7 Pending determination of the final amount of a *Change Directive*, the undisputed value of the work performed as the result of a *Change Directive* is eligible to be included in progress payments.
- 6.3.8 If the *Owner* and *Contractor* do not agree on the proposed adjustment in the *Contract Time* or the method of determining it, the adjustment shall be referred to the *Consultant* for determination.
- 6.3.9 If at any time after the start of the work directed by a *Change Directive*, the *Owner* and the *Contractor* reach agreement on the adjustment to the *Contract Price* and to the *Contract Time*, this agreement shall be recorded in a *Change Order* signed by *Owner* and *Contractor*.

GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

- 6.4.1 If the *Owner* or the *Contractor* discover conditions at the *Place of the Work* which are:
- .1 subsurface or otherwise concealed physical conditions which existed before the commencement of the *Work* which differ materially from those indicated in the *Contract Documents*; or
 - .2 physical conditions, other than conditions due to weather, that are of a nature which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the *Contract Documents*;
- then the observing party shall notify the other party in writing before conditions are disturbed and in no event later than 5 *Working Days* after first observance of the conditions.
- 6.4.2 The *Consultant* will promptly investigate such conditions and make a finding. If the finding is that the conditions differ materially and this would cause an increase or decrease in the *Contractor's* cost or time to perform the *Work*, the *Consultant*, with the *Owner's* approval, will issue appropriate instructions for a change in the *Work* as provided in GC 6.2 - CHANGE ORDER or GC 6.3 - CHANGE DIRECTIVE.
- 6.4.3 If the *Consultant* finds that the conditions at the *Place of the Work* are not materially different or that no change in the *Contract Price* or the *Contract Time* is justified, the *Consultant* will report the reasons for this finding to the *Owner* and the *Contractor* in writing.
- 6.4.4 The *Contractor* shall not be entitled to an adjustment in the *Contract Price* or the *Contract Time* if such conditions were reasonably apparent prior to the time of bid closing.

GC 6.5 DELAYS

- 6.5.1 If the *Contractor* is delayed in the performance of the *Work* by an action or omission of the *Owner*, *Consultant*, or anyone employed or engaged by them directly or indirectly, contrary to the provisions of the *Contract Documents*, then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor*. The *Contractor* shall be reimbursed by the *Owner* for reasonable costs incurred by the *Contractor* as the result of such delay.
- 6.5.2 If the *Contractor* is delayed in the performance of the *Work* by a stop work order issued by a court or other public authority and providing that such order was not issued as the result of an act or fault of the *Contractor* or any person employed or engaged by the *Contractor* directly or indirectly, then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor*. The *Contractor* shall be reimbursed by the *Owner* for reasonable costs incurred by the *Contractor* as the result of such delay.

- 6.5.3 If the *Contractor* is delayed in the performance of the *Work* by
- .1 labour disputes, strikes, lock-outs (including lock-outs decreed or recommended for its members by a recognized contractors' association, of which the *Contractor* is a member or to which the *Contractor* is otherwise bound),
 - .2 fire, unusual delay by common carriers or unavoidable casualties,
 - .3 abnormally adverse weather conditions, or
 - .4 any other cause beyond the *Contractor's* control, other than one resulting from a default of or breach of *Contract* by the *Contractor*,
- then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor*. The extension of time shall not be less than the time lost as the result of the event causing the delay, unless the *Contractor* agrees to a shorter extension. The *Contractor* shall not be entitled to payment for costs incurred by such delays unless such delays result from actions by the *Owner*.
- 6.5.4 No extension shall be made for delay unless notice in writing of the cause of delay is given to the *Consultant* not later than 10 *Working Days* after the commencement of delay, providing however, that in the case of a continuing cause of delay only one notice shall be necessary.
- 6.5.5 If no schedule is made under paragraph 2.2.9 of GC 2.2 - ROLE OF THE CONSULTANT, then no request for extension shall be made because of failure of the *Consultant* to furnish instructions until 10 *Working Days* after demand for such instructions has been made and not then, unless the request is reasonable.

GC 6.6 CLAIMS

- 6.6.1 If the *Contractor* intends to make a claim for additional payment, or if the *Owner* intends to make a claim for a credit to the *Contract Price* or for damages of any kind, the party that intends to make the claim shall give notice in writing of intent to claim to the other party and to the *Consultant* as soon as practicable, but no later than 10 *Working Days* after commencement of the event or series of events giving rise to the claim. Failure to provide such notification shall invalidate the claim.
- 6.6.2 Upon commencement of the event or series of events giving rise to the claim, the party intending to make a claim shall:
- .1 take all reasonable measures to mitigate any loss or damage which may be incurred as a result of such event or series of events, and
 - .2 keep such records as may be necessary to support the claim.
- 6.6.3 Within 30 *Working Days* after commencement of the event or series of events giving rise to the claim, or such other reasonable time as may be agreed by the *Consultant*, the party making the claim shall submit to the *Consultant* a detailed account of the amount claimed and the grounds upon which the claim is based.
- 6.6.4 Where the event or series of events giving rise to the claim has a continuing effect, the detailed account submitted under paragraph 6.6.3 shall be considered to be an interim account and the party making the claim shall, at such intervals as the *Consultant* may reasonably require, submit further interim accounts giving the accumulated amount of the claim and any further grounds upon which it is based. The party making the claim shall submit a final account with 30 *Working Days* after the end of the effects resulting from the event or series of events.
- 6.6.5 The *Consultant's* findings, with respect to a claim made by either party, will be given by notice in writing to the other party within 30 *Working Days* after receipt thereof by the *Consultant*, or such other time period as may be agreed by the parties. If such finding is not acceptable to both parties, the claim shall be settled in accordance with Part 8 of the General Conditions - DISPUTE RESOLUTION.

GC 6.7 QUANTITY VARIATIONS

- 6.7.1 The *Owner* or the *Contractor* may request an adjustment to a *Unit Price* contained in a *Schedule of Prices* included in the *Contract* provided that the actual quantity of the item in the *Schedule of Prices* exceeds or falls short of the estimated quantity by more than 15%.
- 6.7.2 Where the actual quantity exceeds the estimated quantity by more than 15%, a *Unit Price* adjusted pursuant to paragraph 6.7.1 shall apply only to the quantity that exceeds 115% of the estimated quantity.

- 6.7.3 Where the actual quantity falls short of the estimated quantity by more than 15%, a *Unit Price* adjusted pursuant to paragraph 6.7.1 shall not exceed the *Unit Price* that would cause the extended amount to equal the original extended amount derived from the original *Unit Price* and estimated quantity.
- 6.7.4 If either party requests adjustment of a *Unit Price*, both parties shall make all reasonable efforts to agree on a revised *Unit Price*. The agreed revised *Unit Price* shall be recorded in a Change Order.
- 6.7.5 If agreement on a revised *Unit Price* is not reached, the matter shall be subject to final determination in accordance with Part 8 - DISPUTE RESOLUTION. Pending determination of the revised *Unit Price*, payment for the *Work* performed shall be included in progress payments based on the unrevised *Unit Price*.

PART 7 DEFAULT NOTICE

GC 7.1 OWNER'S RIGHT TO PERFORM THE WORK, STOP THE WORK, OR TERMINATE THE CONTRACT

- 7.1.1 If the *Contractor* is adjudged bankrupt, or makes a general assignment for the benefit of creditors because of the *Contractor's* insolvency, or if a receiver is appointed because of the *Contractor's* insolvency, the *Owner* may, without prejudice to any other right or remedy the *Owner* may have, by giving the *Contractor* or receiver or trustee in bankruptcy notice in writing, terminate the *Contract*.
- 7.1.2 If the *Contractor* neglects to prosecute the *Work* properly or otherwise fails to comply with the requirements of the *Contract* to a substantial degree and if the *Consultant* has given a written statement to the *Owner* and *Contractor* that sufficient cause exists to justify such action, the *Owner* may, without prejudice to any other right or remedy the *Owner* may have, notify the *Contractor* in writing that the *Contractor* is in default of the *Contractor's* contractual obligations and instruct the *Contractor* to correct the default in the 5 *Working Days* immediately following the receipt of such notice.
- 7.1.3 If the default cannot be corrected in the 5 *Working Days* specified, the *Contractor* shall be in compliance with the *Owner's* instructions if the *Contractor*:
 - .1 commences the correction of the default within the specified time, and
 - .2 provides the *Owner* with an acceptable schedule for such correction, and
 - .3 corrects the default in accordance with such schedule.
- 7.1.4 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:
 - .1 correct such default and deduct the cost thereof from any payment then or thereafter due the *Contractor* provided the *Consultant* has certified such cost to the *Owner* and the *Contractor*; or
 - .2 terminate the *Contractor's* right to continue with the *Work* in whole or in part or terminate the *Contract*.
- 7.1.5 If the *Owner* terminates the *Contractor's* right to continue with the *Work* as provided in paragraphs 7.1.1 and 7.1.4, the *Owner* shall be entitled to:
 - .1 take possession of the *Work* and *Products* delivered to the *Place of the Work*, subject to the rights of third parties, and finish the *Work* by whatever method the *Owner* may consider expedient, but without undue delay or expense, and
 - .2 withhold further payment to the *Contractor* until a final certificate for payment is issued, and
 - .3 charge the *Contractor* the amount by which the full cost of finishing the *Work* as certified by the *Consultant*, including compensation to the *Consultant* for the *Consultant's* additional services and a reasonable allowance as determined by the *Consultant* to cover the cost of corrections to work performed by the *Contractor* that may be required under GC 12.3 - WARRANTY, exceeds the unpaid balance of the *Contract Price*; however, if such cost of finishing the *Work* is less than the unpaid balance of the *Contract Price*, the *Owner* shall pay the *Contractor* the difference, and
 - .4 on expiry of the warranty period, charge the *Contractor* the amount by which the cost of corrections to the *Contractor's* work under GC 12.3 - WARRANTY exceeds the allowance provided for such corrections, or if the cost of such corrections is less than the allowance, pay the *Contractor* the difference.
- 7.1.6 The *Contractor's* obligation under the *Contract* as to quality, correction, and warranty of the work performed by the *Contractor* up to the time of termination shall continue in force after such termination.

GC 7.2 CONTRACTOR'S RIGHT TO STOP THE WORK OR TERMINATE THE CONTRACT

- 7.2.1 If the *Owner* is adjudged bankrupt, or makes a general assignment for the benefit of creditors because of the *Owner's* insolvency, or if a receiver is appointed because of the *Owner's* insolvency, the *Contractor* may, without prejudice to any other right or remedy the *Contractor* may have, by giving the *Owner* or receiver or trustee in bankruptcy notice in writing, terminate the *Contract*.
- 7.2.2 If the *Work* is stopped or otherwise delayed for a period of 20 *Working Days* or more under an order of a court or other public authority and providing that such order was not issued as the result of an act or fault of the *Contractor* or of anyone directly or indirectly employed or engaged by the *Contractor*, the *Contractor* may, without prejudice to any other right or remedy the *Contractor* may have, by giving the *Owner* notice in writing, terminate the *Contract*.
- 7.2.3 The *Contractor* may notify the *Owner* in writing, with a copy to the *Consultant*, that the *Owner* is in default of the *Owner's* contractual obligations if:
- .1 the *Owner* fails to furnish, when so requested by the *Contractor*, reasonable evidence that financial arrangements have been made to fulfill the *Owner's* obligations under the *Contract*, or
 - .2 the *Consultant* fails to issue a certificate as provided in GC 5.3 PROGRESS PAYMENT, or
 - .3 the *Owner* fails to pay the *Contractor* when due the amounts certified by the *Consultant* or awarded by arbitration or court, or
 - .4 the *Owner* violates the requirements of the *Contract* to a substantial degree and the *Consultant*, except for GC 5.1 - FINANCING INFORMATION REQUIRED OF THE OWNER, confirms by written statement to the *Contractor* that sufficient cause exists.
- 7.2.4 The *Contractor's* notice in writing to the *Owner* provided under paragraph 7.2.3 shall advise that if the default is not corrected within 5 *Working Days* following the receipt of the notice in writing, the *Contractor* may, without prejudice to any other right or remedy the *Contractor* may have, stop the *Work* or terminate the *Contract*.
- 7.2.5 If the *Contractor* terminates the *Contract* under the conditions set out above, the *Contractor* shall be entitled to be paid for all work performed including reasonable profit, for loss sustained upon *Products* and *Construction Equipment*, and such other damages as the *Contractor* may have sustained as a result of the termination of the *Contract*.

PART 8 DISPUTE RESOLUTION

GC 8.1 AUTHORITY OF THE CONSULTANT

- 8.1.1 Differences between the parties to the *Contract* as to the interpretation, application or administration of the *Contract* or any failure to agree where agreement between the parties is called for, herein collectively called disputes, which are not resolved in the first instance by findings of the *Consultant* as provided in GC 2.2 - ROLE OF THE CONSULTANT, shall be settled in accordance with the requirements of Part 8 of the General Conditions - DISPUTE RESOLUTION.
- 8.1.2 If a dispute arises under the *Contract* in respect of a matter in which the *Consultant* has no authority under the *Contract* to make a finding, the procedures set out in paragraph 8.1.3 and paragraphs 8.2.3 to 8.2.8 of GC 8.2 - NEGOTIATION, MEDIATION, AND ARBITRATION, and in GC 8.3 - RETENTION OF RIGHTS apply to that dispute with the necessary changes to detail as may be required.
- 8.1.3 If a dispute is not resolved promptly, the *Consultant* will give such instructions as in the *Consultant'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*.

GC 8.2 NEGOTIATION, MEDIATION, AND ARBITRATION

- 8.2.1 In accordance with the latest edition of the Rules for Mediation of Construction Disputes as provided in CCDC 40, the parties shall appoint a Project Mediator
- .1 within 20 *Working Days* after the *Contract* was awarded, or
 - .2 if the parties neglected to make an appointment within the 20 *Working Day* period, within 10 *Working Days* after either party by notice in writing requests that the Project Mediator be appointed.
- 8.2.2 A party shall be conclusively deemed to have accepted a finding of the *Consultant* under GC 2.2 - ROLE OF THE CONSULTANT and to have expressly waived and released the other party from any claims in respect of the particular matter dealt with in that finding unless, within 15 *Working Days* after receipt of that finding, the party sends a notice in writing of dispute to the other party and to the *Consultant*, 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*.
- 8.2.3 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.
- 8.2.4 After a period of 10 *Working Days* following receipt of a responding party's notice in writing of reply under paragraph 8.2.2, 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 Construction Disputes as provided in CCDC 40.
- 8.2.5 If the dispute has not been resolved within 10 *Working Days* after the Project Mediator was requested under paragraph 8.2.4 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.
- 8.2.6 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 8.2.5, either party may refer the dispute to be finally resolved by arbitration under the latest edition of the Rules for Arbitration of Construction Disputes as provided in CCDC 40. The arbitration shall be conducted in the jurisdiction of the *Place of the Work*.
- 8.2.7 On expiration of the 10 *Working Days*, the arbitration agreement under paragraph 8.2.6 is not binding on the parties and, if a notice is not given under paragraph 8.2.6 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.
- 8.2.8 If neither party requires by notice in writing given within 10 *Working Days* of the date of notice requesting arbitration in paragraph 8.2.6 that a dispute be arbitrated immediately, all disputes referred to arbitration as provided in paragraph 8.2.6 shall be
- .1 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
 - .2 consolidated into a single arbitration under the rules governing the arbitration under paragraph 8.2.6.

GC 8.3 RETENTION OF RIGHTS

- 8.3.1 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 Part 8 of the General Conditions - DISPUTE RESOLUTION and has carried out the instructions as provided in paragraph 8.1.3.

- 8.3.2 Nothing in Part 8 of the General Conditions - DISPUTE RESOLUTION 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 8.2.6 to proceed by way of arbitration to adjudicate the merits of the claim upon which such a lien is based.

PART 9 PROTECTION OF PERSONS AND PROPERTY

GC 9.1 PROTECTION OF WORK AND PROPERTY

- 9.1.1 The *Contractor* shall protect the *Work* and the *Owner's* property and property adjacent to the *Place of the Work* from damage which may arise as the result of the *Contractor's* operations under the *Contract*, and shall be responsible for such damage, except damage which occurs as the result of:
- .1 errors in the *Contract Documents*;
 - .2 acts or omissions by the *Owner*, the *Consultant*, other contractors, their agents and employees.
- 9.1.2 Before commencing any work, the *Contractor* shall determine the location of all known underground utilities and structures indicated in the *Contract Documents* or that are reasonably apparent in an inspection of the *Place of the Work*.
- 9.1.3 Should the *Contractor* in the performance of the *Contract* damage the *Work*, the *Owner's* property, or property adjacent to the *Place of the Work*, the *Contractor* shall be responsible for the making good such damage at the *Contractor's* expense.
- 9.1.4 Should damage occur to the *Work* or *Owner's* property for which the *Contractor* is not responsible, as provided in paragraph 9.1.1, the *Contractor* shall make good such damage to the *Work* and, if the *Owner* so directs, to the *Owner's* property. The *Contract Price* and *Contract Time* shall be adjusted as provided in GC 6.1 - CHANGES, GC 6.2 - CHANGE ORDER, and GC 6.3 - CHANGE DIRECTIVE.

GC 9.2 DAMAGES AND MUTUAL RESPONSIBILITY

- 9.2.1 If either party to the *Contract* should suffer damage in any manner because of any wrongful act or neglect of the other party or of anyone for whom the other party is responsible in law, then that party shall be reimbursed by the other party for such damage. The reimbursing party shall be subrogated to the rights of the other party in respect of such wrongful act or neglect if it be that of a third party.
- 9.2.2 If the *Contractor* has caused damage to the work of another contractor on the *Project*, the *Contractor* shall upon due notice in writing settle with the other contractor by negotiation or arbitration. If the other contractor makes a claim against the *Owner* on account of damage alleged to have been so sustained, the *Owner* shall notify the *Contractor* in writing and may require the *Contractor* to defend the action at the *Contractor's* expense. The *Contractor* shall satisfy a final order or judgment against the *Owner* and pay the costs incurred by the *Owner* arising from such action.
- 9.2.3 If the *Contractor* becomes liable to pay or satisfy a final order, judgment, or award against the *Owner*, then the *Contractor*, upon undertaking to indemnify the *Owner* against any and all liability for costs, shall have the right to appeal in the name of the *Owner* such final order or judgment to any and all courts of competent jurisdiction.

GC 9.3 TOXIC AND HAZARDOUS SUBSTANCES

- 9.3.1 For the purposes of applicable environmental legislation, the *Owner* shall be deemed to have control and management of the *Place of the Work* with respect to existing conditions.
- 9.3.2 Prior to the *Contractor* commencing the *Work*, the *Owner* shall:
- .1 take all reasonable steps to determine whether any toxic or hazardous substances are present at the *Place of the Work*, and
 - .2 provide the *Consultant* and the *Contractor* with a written list of any such substances that are known to exist and their locations.

- 9.3.3 The *Owner* shall take all reasonable steps to ensure that no person suffers injury, sickness, or death and that no property is damaged or destroyed as a result of exposure to, or the presence of, toxic or hazardous substances which were at the *Place of the Work* prior to the *Contractor* commencing the *Work*.
- 9.3.4 Unless the *Contract* expressly provides otherwise, the *Owner* shall be responsible for taking all necessary steps, in accordance with legal requirements, to dispose of, store or otherwise render harmless toxic or hazardous substances which were present at the *Place of the Work* prior to the *Contractor* commencing the *Work*.
- 9.3.5 If the *Contractor*
- .1 encounters toxic or hazardous substances at the *Place of the Work*, or
 - .2 has reasonable grounds to believe that toxic or hazardous substances are present at the *Place of the Work*, which were not disclosed by the *Owner*, as required under paragraph 9.3.2, or which were disclosed but have not been dealt with as required under paragraph 9.3.4, the *Contractor* shall
 - .3 take all reasonable steps, including stopping the *Work*, to ensure that no person suffers injury, sickness, or death and that no property is damaged or destroyed as a result of exposure to or the presence of the substances, and
 - .4 immediately report the circumstances to the *Consultant* and the *Owner* in writing.
- 9.3.6 If the *Contractor* is delayed in performing the *Work* or incurs additional costs as a result of taking steps required under paragraph 9.3.5.3, the *Contract Time* shall be extended for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor* and the *Contractor* shall be reimbursed for reasonable costs incurred as a result of the delay and as a result of taking those steps.
- 9.3.7 Notwithstanding paragraphs 2.2.6 and 2.2.7 of GC 2.2 - ROLE OF THE CONSULTANT, or paragraph 8.1.1 of GC 8.1 - AUTHORITY OF THE CONSULTANT, the *Consultant* may select and rely upon the advice of an independent expert in a dispute under paragraph 9.3.6 and, in that case, the expert shall be deemed to have been jointly retained by the *Owner* and the *Contractor* and shall be jointly paid by them.
- 9.3.8 The *Owner* shall indemnify and hold harmless the *Contractor*, the *Consultant*, their agents and employees, from and against claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of or resulting from exposure to, or the presence of, toxic or hazardous substances which were at the *Place of the Work* prior to the *Contractor* commencing the *Work*. This obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity set out in GC 12.1 - INDEMNIFICATION or which otherwise exist respecting a person or party described in this paragraph.
- 9.3.9 GC 9.3 - TOXIC AND HAZARDOUS SUBSTANCES shall govern over the provisions of paragraph 1.3.1 of GC 1.3 RIGHTS AND REMEDIES or GC 9.2 - DAMAGES AND MUTUAL RESPONSIBILITY.

GC 9.4 ARTIFACTS AND FOSSILS

- 9.4.1 Fossils, coins, articles of value or antiquity, structures, and other remains or things of scientific or historic interest discovered at the *Place or Work* shall, as between the *Owner* and the *Contractor*, be deemed to be the absolute property of the *Owner*.
- 9.4.2 The *Contractor* shall take all reasonable precautions to prevent removal or damage to discoveries as identified in paragraph 9.4.1, and shall notify the *Consultant* immediately upon discovery of such items.
- 9.4.3 The *Consultant* will investigate the impact on the *Work* of the discoveries identified in paragraph 9.4.1. If conditions are found that would cause an increase or decrease in the *Contractor's* cost or time to perform the *Work*, the *Consultant*, with the *Owner's* approval, shall issue appropriate instructions for a change in the *Work* as provided in GC 6.2 - CHANGE ORDER or GC 6.3 - CHANGE DIRECTIVE.

GC 9.5 CONSTRUCTION SAFETY

- 9.5.1 Subject to paragraph 3.2.2.2 of GC 3.2 - CONSTRUCTION BY OWNER OR OTHER CONTRACTORS, the *Contractor* shall be solely responsible for construction safety at the *Place or the Work* and for compliance with the rules, regulations, and practices required by the applicable construction health and safety legislation and shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the *Work*.

PART 10 GOVERNING REGULATIONS

GC 10.1 TAXES AND DUTIES

- 10.1.1 The *Contract Price* shall include all taxes and customs duties in effect at the time of the bid closing except for *Value Added Taxes* payable by the *Owner* to the *Contractor* as stipulated in Article A-4 of the Agreement - CONTRACT PRICE.
- 10.1.2 Any increase or decrease in costs to the *Contractor* due to changes in such included taxes and duties after the time of bid closing shall increase or decrease the *Contract Price* accordingly.

GC 10.2 LAWS, NOTICES, PERMITS, AND FEES

- 10.2.1 The laws of the *Place of the Work* shall govern the *Work*.
- 10.2.2 Except for the permits and fees, including those required under paragraph 10.2.3, which the *Contract Documents* specify as the responsibility of the *Contractor*, the *Owner* shall obtain and pay for all necessary approvals, permits, permanent easements, and rights of servitude.
- 10.2.3 The *Contractor* shall obtain and pay for permits, licenses, inspections and certificates necessary for performance of the *Work* and customarily obtained after signing of the *Contract*.
- 10.2.4 The *Contractor* shall give the required notices and comply with the laws, ordinances, rules, regulations, or codes which are or become in force during the performance of the *Work* and which relate to the *Work*, to the preservation of the public health, and to construction safety.
- 10.2.5 The *Contractor* shall not be responsible for verifying that the *Contract Documents* are in compliance with the applicable laws, ordinances, rules, regulations, or codes relating to the *Work*. If the *Contract Documents* are at variance therewith, or if, subsequent to the time of bid closing, changes are made to the applicable laws, ordinances, rules, regulations, or codes which require modification to the *Contract Documents*, the *Contractor* shall notify the *Consultant* in writing requesting direction immediately upon such variance or change becoming known. The *Consultant* will make the changes required to the *Contract Documents* as provided in GC 6.1 - CHANGES, GC 6.2 - CHANGE ORDER, and GC 6.3 - CHANGE DIRECTIVE.
- 10.2.6 If the *Contractor* fails to notify the *Consultant* in writing; and fails to obtain direction as required in paragraph 10.2.5; and performs work knowing it to be contrary to any laws, ordinances, rules, regulations, or codes; the *Contractor* shall be responsible for and shall correct the violations thereof; and shall bear the costs, expenses, and damages attributable to the failure to comply with the provisions of such laws, ordinances, rules, regulations, or codes.
- 10.2.7 If, subsequent to the time of bid closing, changes are made to applicable laws, ordinances, rules, regulations, or codes of authorities having jurisdiction which affect the cost of the *Work*, either party may submit a claim in accordance with the requirements of GC 6.6 - CLAIMS.

GC 10.3 PATENT FEES

- 10.3.1 The *Contractor* shall pay the royalties and patent licence fees required for the performance of the *Contract*. The *Contractor* shall hold the *Owner* harmless from and against claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of the *Contractor's* performance of the *Contract* which are attributable to an infringement or an alleged infringement of a patent of invention by the *Contractor* or anyone for whose acts the *Contractor* may be liable.
- 10.3.2 The *Owner* shall hold the *Contractor* harmless against claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of the *Contractor's* performance of the *Contract* which are attributable to an infringement or an alleged infringement of a patent of invention in executing anything for the purpose of the *Contract*, the model, plan, or design of which was supplied to the *Contractor* as part of the *Contract Documents*.

GC 10.4 WORKERS' COMPENSATION

- 10.4.1 Prior to commencing the *Work*, *Substantial Performance of the Work*, and the issuance of the final certificate for payment, the *Contractor* shall provide evidence of compliance with workers' compensation legislation at the *Place of the Work*, including payments due thereunder.
- 10.4.2 At any time during the term of the *Contract*, when requested by the *Owner*, the *Contractor* shall provide such evidence of compliance by the *Contractor* and *Subcontractors*.

PART 11 INSURANCE AND CONTRACT SECURITY

GC 11.1 INSURANCE

- 11.1.1 Without restricting the generality of GC 12.1 - INDEMNIFICATION, the *Contractor* shall provide, maintain, and pay for the insurance coverages specified in GC 11.1 - INSURANCE. Unless otherwise stipulated, the duration of each insurance policy shall be from the date of commencement of the *Work* until the date of the final certificate for payment. Prior to commencement of the *Work* and upon the placement, renewal, amendment, or extension of all or any part of the insurance, the *Contractor* shall promptly provide the *Owner* with confirmation of coverage and, if required, a certified true copy of the policies certified by an authorized representative of the insurer together with copies of any amending endorsements.

.1 General Liability Insurance:

General liability insurance shall be in the joint names of the *Contractor*, the *Owner*, and the *Consultant*, with limits of not less than \$2,000,000 per occurrence and with a property damage deductible not exceeding \$2,500. The insurance coverage shall not be less than the insurance required by IBC Form 2100, or its equivalent replacement, provided that IBC Form 2100 shall contain the latest edition of the relevant CCDC endorsement form. To achieve the desired limit, umbrella, or excess liability insurance may be used. All liability coverage shall be maintained for completed operations hazards from the date of *Substantial Performance of the Work*, as set out in the certificate of *Substantial Performance of the Work*, on an ongoing basis for a period of 6 years following *Substantial Performance of the Work*. Where the *Contractor* maintains a single, blanket policy, the addition of the *Owner* and the *Consultant* is limited to liability arising out of the *Work* and all operations necessary or incidental thereto. The policy shall be endorsed to provide the *Owner* with not less than 30 days notice in writing in advance of any cancellation, and of change or amendment restricting coverage.

.2 Automobile Liability Insurance:

Automobile liability insurance in respect of licensed vehicles shall have limits of not less than \$2,000,000 inclusive per occurrence for bodily injury, death, and damage to property, covering all licensed vehicles owned or leased by the *Contractor*, and endorsed to provide the *Owner* with not less than 15 days notice in writing in advance of any cancellation, change or amendment restricting coverage. Where the policy has been issued pursuant to a government-operated automobile insurance system, the *Contractor* shall provide the *Owner* with confirmation of automobile insurance coverage for all automobiles registered in the name of the *Contractor*.

.3 Aircraft and Watercraft Liability Insurance:

Aircraft and watercraft liability insurance with respect to owned or non-owned aircraft and watercraft if used directly or indirectly in the performance of the *Work*, including use of additional premises, shall be subject to limits of not less than \$2,000,000 inclusive per occurrence for bodily injury, death, and damage to property including loss of use thereof and limits of not less than \$2,000,000 for aircraft passenger hazard. Such insurance shall be in a form acceptable to the *Owner*. The policies shall be endorsed to provide the *Owner* with not less than 15 days notice in writing in advance of cancellation, change, or amendment restricting coverage.

.4 Property and Boiler and Machinery Insurance:

- (1) "All risks" property insurance shall be in the joint names of the *Contractor*, the *Owner*, the *Consultant*, and all *Subcontractors*, insuring not less than the sum of the amount of the *Contract Price* and the full value, as stated in the Supplementary Conditions, of *Products* that are specified to be provided by the *Owner* for incorporation into the *Work*, with a deductible not exceeding \$2,500. The insurance coverage shall not be less than the insurance required by IBC Form 4042 or its equivalent replacement, provided that IBC Form 4042 shall contain the latest edition of the relevant CCDC endorsement form. The coverage shall be maintained continuously until 5 *Working Days* after the date of the final certificate for payment.
- (2) Boiler and machinery insurance shall be in the joint names of the *Contractor*, the *Owner*, and the *Consultant* for not less than the replacement value of the boilers, pressure vessels, and other insurable objects forming part of the *Work*. The insurance provided shall not be less than the insurance provided by the "Comprehensive Boiler and Machinery Form" and shall be maintained continuously from commencement of use or operation of the property insured and until 5 *Working Days* after the date of the final certificate for payment.
- (3) The policies shall allow for partial or total use or occupancy of the *Work*. If because of such use or occupancy the *Contractor* is unable to provide coverage, the *Contractor* shall notify the *Owner* in writing. Prior to such use or occupancy the *Owner* shall provide, maintain, and pay for all risk property and boiler insurance insuring the full value of the *Work*, as in sub-paragraphs (1) and (2), including coverage for such use or occupancy and shall provide the *Contractor* with proof of such insurance. The *Contractor* shall refund to the *Owner* the unearned premiums applicable to the *Contractor's* policies upon termination of coverage.
- (4) The policies shall provide that, in the case of a loss or damage, payment shall be made to the *Owner* and the *Contractor* as their respective interests may appear. The *Contractor* shall act on behalf of the *Owner* for the purpose of adjusting the amount of such loss or damage payment with the insurers. When the extent of the loss or damage is determined, the *Contractor* shall proceed to restore the *Work*. Loss or damage shall not affect the rights and obligations of either party under the *Contract* except that the *Contractor* shall be entitled to such reasonable extension of *Contract Time* relative to the extent of the loss or damage as the *Consultant* may recommend in consultation with the *Contractor*.
- (5) The *Contractor* shall be entitled to receive from the *Owner*, in addition to the amount due under the *Contract*, the amount at which the *Owner's* interest in restoration of the *Work* has been appraised, such amount to be paid as the restoration of the *Work* proceeds and as provided in GC 5.5 - APPLICATIONS FOR PROGRESS PAYMENT and GC 5.6 - PROGRESS PAYMENT. In addition the *Contractor* shall be entitled to receive from the payments made by the insurer the amount of the *Contractor's* interest in the restoration of the *Work*.
- (6) In the case of loss or damage to the *Work* arising from the work of another contractor, or *Owner's* own forces, the *Owner*, in accordance with the *Owner's* obligations under paragraph 3.2.2.4 of GC 3.2 - CONSTRUCTION BY OWNER OR OTHER CONTRACTORS, shall pay the *Contractor* the cost of restoring the *Work* as the restoration of the *Work* proceeds and as provided in GC 5.5 - APPLICATIONS FOR PROGRESS PAYMENT and GC 5.6 - PROGRESS PAYMENT.

.5 Contractors' Equipment Insurance:

"All risks" contractors' equipment insurance covering *Construction Equipment* used by the *Contractor* for the performance of the *Work*, including boiler insurance on temporary boilers and pressure vessels, shall be in a form acceptable to the *Owner* and shall not allow subrogation claims by the insurer against the *Owner*. The policies shall be endorsed to provide the *Owner* with not less than 15 days notice in writing in advance of cancellation, change, or amendment restricting coverage. Subject to satisfactory proof of financial capability by the *Contractor* for self-insurance, the *Owner* agrees to waive the equipment insurance requirement.

- 11.1.2 The *Contractor* shall be responsible for deductible amounts under the policies except where such amounts may be excluded from the *Contractor's* responsibility by the terms of GC 9.1 - PROTECTION OF WORK AND PROPERTY and GC 9.2 - DAMAGES AND MUTUAL RESPONSIBILITY.
- 11.1.3 Where the full insurable value of the *Work* is substantially less than the *Contract Price*, the *Owner* may reduce the amount of insurance required or waive the course of construction insurance requirement.

- 11.1.4 If the *Contractor* fails to provide or maintain insurance as required by the *Contract Documents*, then the *Owner* shall have the right to provide and maintain such insurance and give evidence to the *Contractor* and the *Consultant*. The *Contractor* shall pay the cost thereof to the *Owner* on demand or the *Owner* may deduct the amount which is due or may become due to the *Contractor*.
- 11.1.5 All required insurance policies shall be with insurers licensed to underwrite insurance in the jurisdiction of the *Place of the Work*.

GC 11.2 CONTRACT SECURITY

- 11.2.1 The *Contractor* shall, prior to commencement of the *Work* or within the specified time, provide to the *Owner* any contract security specified in the *Contract Documents*.
- 11.2.2 If the *Contract Documents* require surety bonds to be provided, such bonds shall be issued by a duly licensed surety company authorized to transact the business of suretyship in the province or territory of the *Place of the Work* and shall be maintained in good standing until the fulfillment of the *Contract*. The form of such bonds shall be in accordance with the latest edition of the CCDC approved bond forms.

PART 12 INDEMNIFICATION — WAIVER — WARRANTY

GC 12.1 INDEMNIFICATION

- 12.1.1 The *Contractor* shall indemnify and hold harmless the *Owner* and the *Consultant*, their agents and employees from and against claims, demands, losses, costs, damages, actions, suits, or proceedings (hereinafter called "claims"), by third parties that arise out of, or are attributable to, the *Contractor's* performance of the *Contract* provided such claims are:
- .1 attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property, and
 - .2 caused by negligent acts or omissions of the *Contractor* or anyone for whose acts the *Contractor* may be liable, and
 - .3 made in writing within a period of 6 years from the date of *Substantial Performance of the Work* as set out in the certificate of *Substantial Performance of the Work*, or within such shorter period as may be prescribed by any limitation statute of the province or territory of the *Place of the Work*.
- The *Owner* expressly waives the right to indemnify for claims other than those stated above.
- 12.1.2 The obligation of the *Contractor* to indemnify hereunder shall be limited to \$2,000,000 per occurrence from the commencement of the *Work* until *Substantial Performance of the Work* and thereafter to an aggregate limit of \$2,000,000.
- 12.1.3 The *Owner* shall indemnify and hold harmless the *Contractor*, the *Contractor's* agents and employees from and against claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of the *Contractor's* performance of the *Contract* which are attributable to a lack of or defect in title or an alleged lack of or defect in title to the *Place of the Work*.
- 12.1.4 GC 12.1 - INDEMNIFICATION shall govern over the provisions of paragraph 1.3.1 of GC 1.3 - RIGHTS AND REMEDIES or GC 9.2 - DAMAGES AND MUTUAL RESPONSIBILITY.

GC 12.2 WAIVER OF CLAIMS

- 12.2.1 Waiver of Claims by *Owner*
- As of the date of the final certificate for payment, the *Owner* expressly waives and releases the *Contractor* from all claims against the *Contractor* including without limitation those that might arise from the negligence or breach of contract by the *Contractor* except one or more of the following:
- .1 those made in writing prior to the date of the final certificate for payment and still unsettled;
 - .2 those arising from the provisions of GC 12.1 - INDEMNIFICATION or GC 12.3 - WARRANTY;
 - .3 those arising from the provisions of paragraph 9.3.5 of GC 9.3 - TOXIC AND HAZARDOUS SUBSTANCES AND MATERIALS and arising from the *Contractor* bringing or introducing any toxic or hazardous substances and materials to the *Place of the Work* after the *Contractor* commences the *Work*.

In the Common Law provinces GC 12.2.1.4 shall read as follows:

- .4 those made in writing within a period of 6 years from the date of *Substantial Performance of the Work*, as set out in the certificate of *Substantial Performance of the Work*, or within such shorter period as may be prescribed by any limitation statute of the province or territory of the *Place of the Work* and arising from any liability of the *Contractor* for damages resulting from the *Contractor's* performance of the *Contract* with respect to substantial defects or deficiencies in the *Work* for which the *Contractor* is proven responsible. As used herein "substantial defects or deficiencies" means those defects or deficiencies in the *Work* which affect the *Work* to such an extent or in such a manner that a significant part or the whole of the *Work* is unfit for the purpose intended by the *Contract Documents*.

In the Province of Quebec GC 12.2.1.4 shall read as follows:

- .4 those arising under the provisions of Article 2118 of the Civil Code of Quebec.

12.2.2 *Waiver of Claims by Contractor*

As of the date of the final certificate for payment, the *Contractor* expressly waives and releases the *Owner* from all claims against the *Owner* including without limitation those that might arise from the negligence or breach of contract by the *Owner* except:

- .1 those made in writing prior to the *Contractor's* application for final payment and still unsettled; and
- .2 those arising from the provisions of GC 9.3 - TOXIC AND HAZARDOUS SUBSTANCES or GC 10.3 - PATENT FEES.

12.2.3 GC 12.2 - WAIVER OF CLAIMS shall govern over the provisions of paragraph 1.3.1 of GC 1.3 - RIGHTS AND REMEDIES, GC 6.6 - CLAIMS, and GC 9.2 - DAMAGES AND MUTUAL RESPONSIBILITY.

GC 12.3 WARRANTY

- 12.3.1 Except for extended warranties as described in paragraph 12.3.6, the warranty period under the *Contract* is one year from the date of *Substantial Performance of the Work*.
- 12.3.2 The *Contractor* shall be responsible for the proper performance of the *Work* to the extent that the design and *Contract Documents* permit such performance.
- 12.3.3 Subject to paragraph 12.3.2, the *Contractor* shall correct promptly, at the *Contractor's* expense, defects or deficiencies in the *Work* which appear prior to and during the warranty periods specified in the *Contract Documents*.
- 12.3.4 The *Owner*, through the *Consultant*, shall promptly give the *Contractor* notice in writing of observed defects and deficiencies which occur during the one-year warranty period.
- 12.3.5 The *Contractor* shall correct or pay for damage resulting from corrections made under the requirements of paragraph 12.3.3.
- 12.3.6 Any extended warranties required beyond the one-year warranty period, as described in paragraph 12.3.1, shall be as specified in the *Contract Documents*. Extended warranties shall be issued by the warrantor to the benefit of the *Owner*. The *Contractor's* responsibility with respect to extended warranties shall be limited to obtaining any such extended warranties from the warrantor. The obligations under such extended warranties are solely the responsibility of the warrantor.



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