



September 12, 2023

**ADDENDUM # 2**

Eight (8) Pages

Attachment(s) – Forty one (41) pages

**RE: RFT 2023-15 – DRAYTON PUMPHOUSE UPGRADES**

Dear Sir / Madam:

Please find enclosed Addendum #2 for the above noted contract. Confirmation that this addendum has been received shall be indicated on your bid submission.

Please treat this as an original. No follow up copy will be provided.

Sincerely,

**CIMA Canada Inc.**

A handwritten signature in black ink that reads "Adam Moore".

Adam Moore, P.Eng.  
Project Engineer, Infrastructure  
adam.moore@cima.ca

Encl.

cc: Stuart Winchester, CIMA+  
Jamie Morgan, Township of Mapleton

**TOWNSHIP OF MAPLETON  
DRAYTON PUMPHOUSE UPGRADES  
RFT 2023-15  
ADDENDUM NO. 2**

**ISSUE DATE: September 12, 2023**

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This addendum is issued for the purpose of clarifying, amending, or revising certain information contained in the Contract Documents. This Addendum No. 2 shall form an integral part of the Contract Documents. **The closing date has been extended to Tuesday, October 3<sup>rd</sup>, 2:00:01pm. The question period will be extended to Tuesday, September 26<sup>th</sup> at 5pm.**

The following changes, clarifications, additions and/or substitutions shall be incorporated into the pertinent portions of the Contract Documents as follows:

**1     ATTACHMENTS**

- 1.1     Form of Tender, pages FT-1, FT-4 to FT-11 and FT-20.
- 1.2     Agreement to Bond Form
- 1.3     Section 01330 - Submittals
- 1.4     Section 01520 – Construction Facilities
- 1.5     Section 01780 – Closeout Submittals

**2     FRONT-END DOCUMENTS**

- 2.1     Remove Form of Tender FT-1 and insert the revised page FT-1 noting the change below:
- 2.2     Remove: "The Tenderer agrees to have the Works "Substantially Performed" in accordance with the requirements of this Contract Document No. RFT 2023-05 by August 30, 2024.

The Tenderer agrees that they will complete and deliver the whole of the Works including all restoration in accordance with this Contract Document No. RFT 2023-05 no later than October 15, 2024."



Insert the statement regarding the date of substantial performance will be replaced with the following and is to be completed by the contractor with the bid:

“The tenderer agrees to have the Works “Substantially Performed” within a time,  
to be known as the “Time for Completion” of \_\_\_\_\_ weeks ( \_\_\_\_\_ weeks)  
(in (in  
words) figures)

from the date of the Engineer’s written order to commence work. “

The intent of this change is to provide the contractor the opportunity to state what the substantial completion timeframe will be, given their knowledge for delivery of certain equipment that is expected to impact the project schedule.

- 2.3 Remove Form of Tender pages FT-7 and FT-20 insert the revised pages FT-7 and FT-20 with cash allowance for the Roofing Works.

### **3 DRAWINGS**

- 3.1 None

### **4 QUESTIONS AND ANSWERS**

- 4.1 **Question:** Are the chemical containment curbs to be removed?

**Answer:** Yes, chemical containment curbs are to be removed.

- 4.2 **Question:** What is the size of the existing generator?

**Answer:** The existing standby generator is 150 kW.

- 4.3 **Question:** Is there Asbestos present at the facility?

**Answer:** Asbestos is not expected to be present. A designated substances survey was not completed for the pumphouse.

- 4.4 **Question:** Will SCADA modifications be required?

**Answer:** The existing reservoir level transmitter and both its transducers (cells 1 and 2) will be replaced. The upgrade work will include replacement like-for-like of a few IO and an integrator will need to be retained to overlook the switchover of the existing IO with the new to ensure a seamless transition. No modification to the process or control system philosophy is expected and therefore no updates to the existing control panel CP-01 or its program.

- 4.5 **Question:** How much emergency storage is available?

**Answer:** It is anticipated that there is enough storage available for a maximum 1 day shutdown, subject to the approval of the Overall Responsible Operator (ORO).

- 4.6 **Question:** When was the 100% design completed?

**Answer:** The 100% detailed design was completed in March 2023.



4.7 **Question:** Can the generator be relocated within the facility?

**Answer:** Approvals have been received from the GRCA and Source Water Protection for the current location of the generator, therefore it is preferred the generator remain in the location indicated on the site plan.

4.8 **Question:** Will the date of substantial completion be moved due to potentially long lead times for the MCC?

**Answer:** Please see 2.2 above.

4.9 **Question:** We would like to request an extension of two (2) weeks to the closing date to allow time to present your group with a more competitive proposal.

**Answer:** A two (2) week extension will be granted. The revised date for tenders to be received will be Tuesday, October 3<sup>rd</sup> at 2:00:01pm. The question period will be extended to Tuesday, September 26<sup>th</sup> at 5:00pm.

4.10 **Question:** Please confirm if we need to ask pricing from Garland Canada for Roofing Works and add to the bid price?

**Answer:** A cash allowance for Garland Canada Roofing Works scope has been provided in the revised Form of Tender FT-7.

4.11 **Question:** Please clarify if the removal of the existing roof will be shouldered by the Contractor or part of Garland Canada?

**Answer:** Removal of the existing roof will be part of Garland Canada's scope.

4.12 **Question:** Please clarify if the scope of work of Hydro One Networks Inc (HONI) is part of the bid price?

**Answer:** Work of Hydro One Networks Inc. will does not need to be covered under the bid price. A cash allowance has already been accounted for on the Form of Tender.

4.13 **Question:** Please clarify and indicate the area of the existing driveway to be topped with 50mm of granular 'A' compacted to 100% SPMDD.

**Answer:** Please see the hatched area of the driveway on drawing C101. The area inside the hatching will be covered with 50mm granular 'A' compacted to 100% SPMDD.

4.14 **Question:** Please provide interior and exterior photos of the pumphouse.

**Answer:** To obtain interior and exterior photos of the pumphouse, please contact the Township of Mapleton Public Works Department who can arrange a time to visit the site.

4.15 **Question:** Please advise of the current proposed Contract award date. From Form of Tender page FT-9 please advise what current issues would delay the award date from the base 60 days to the 90 and 120 award date extensions.

**Answer:** Contract award date is anticipated to be in October 2023. Award of the contract is subject to approval from the Township Council and budget constraints.



- 4.16 **Question:** Form of Tender FT-8 - The 3 tender summary items A-1.0, A-2.0 & A-3.0 don't match pages FT-5, FT-6 & FT-7.

**Answer:** Remove Form of Tender page FT-5 to FT-8 and insert revised pages FT-5 to FT-8

- 4.17 **Question:** Form of Tender FT-11 - There are a number of Subcontractor scopes of work that don't apply to this tender. i.e; - Excavation, Shoring, Site Servicing, Roadworks, Concrete Foundations and Reservoir, Concrete Reinforcement. Please advise.

**Answer:** Remove Form of Tender page FT-11 and insert revised page FT-11. The excavation, shoring, concrete foundation and concrete reinforcement are applicable for the generator pad. "Roadwork" was applicable for the driveway work. If the work is to be completed by Own Forces, please state this. Remove "Site servicing".

- 4.18 **Question:** Based on the current issue in this industry of MCC suppliers having a 14 to 16 week shop drawing submission & approval duration and a 50 to 54 week fabrication & delivery duration we expect that the project substantial completion date will be approximately 20 to 21 months from the date of award. The August 30th, 2024 date (approx. 11 months from now) cannot be met. Please advise on this issue.

**Answer:** Please see 2.2 above.

- 4.19 **Question:** Form of Tender FT-5 - Item A-3.01 - We require contract drawings and a specification & the preferred supplier for the proposed Ballast Railing System on the roof.

Since you are proposing a railing system on the roof please advise how the Municipality is to access the Pumphouse Roof as there don't appear to be any interior or exterior ladders.

**Answer:** Remove Form of Tender page FT-5 and insert revised page FT-5. Delete item A.2.01 (previously A.3.01).

- 4.20 **Question:** Form of Tender FT-5

Item A-3.02 - Provide a specification for the proposed Lavatory & Faucet set

Item A-3.03 - Provide at what locations we are to replace existing exhaust are dampers. Advise of sizes and advise on specifications for these dampers & damper motors.

Item A-3.04 - Provide the specifications for the proposed replacement eyewash fountain.

**Answer:** Remove Form of Tender page FT-5 and insert revised page FT-5. Delete item A.2.02 (previously A.3.02). The intent is to relocate the existing lavatory and faucet set to the new location shown on drawing M101, not to replace it with new.



Remove Form of Tender page FT-5 and insert revised page FT-5. Delete item A.2.03 (previously A.3.03). The damper location and sizes are shown on drawing M101. Damper and damper actuator specifications can be found in section 15500 of the specifications.

Remove Form of Tender page FT-5 and insert revised page FT-5. Delete item A.2.04 (previously A.3.04). The existing eye wash station is to remain in place, no new fountain will be provided. The existing fountain shall be served by a new water heater and thermostatic mixing valve per section 15450 of the specifications.

- 4.21 **Question:** Section 01520 - Confirm that an Engineers office is required. If so, is a 10.0 metre x 4.0 metre trailer required. If so, confirm that we are to carry the cost of professional cleaners to clean this trailer.

**Answer:** An Engineer field office is required. Remove section 01520 and insert revised section 01520.

- 4.22 **Question:** Are we are able to pull temporary hydro from the existing Drayton Parks Operation Building for office & tool trailers?

**Answer:** Yes, a temporary hydro line can be pulled from existing Park's Operation Building for office & tool trailers. The Township has requested that the temporary hydro line not impede Park's operations or limit access to the building.

- 4.23 **Question:** Confirm that we are to allow for the supply & installation of three (3) project signs.

**Answer:** Remove section 01520 and insert revised section 01520. Please provide at least one (1) project sign.

- 4.24 **Question:** Section 01330 Clause 1.16 - The verbiage for this Equipment Inventory appears to require a significant amount of the contractor's administrative time & costs. Confirm that we are only responsible for this information on new equipment supplied to the project. Confirm that the Owner has a current Asset Inventory & Tagging Guideline and a current CMMS.

**Answer:** Remove Clause 1.16 from section 01330 and insert revised section 01330. Insert Clause 1.16.1: Provide Equipment Inventory and Tagging List in quantities specified in individual specification sections and Section 01780.

In section 01780, under clause 1.3.3.1.3.10 on page 3, insert "Asset tag list".

- 4.25 **Question:** Dwg E101 - Note 7 - Confirm the size of the existing diesel generator that we are to match with the required temporary diesel generator that will temporarily run the plant.

**Answer:** Please see 4.2 above.

- 4.26 **Question:** We would like to request a 10-day extension for questions and submission deadlines.

**Answer:** Please see 4.9 above.



4.27 **Question:** We request a 1-week extension to the current September 19th tender closing date.

**Answer:** Please see 4.9 above.

4.28 **Question:** Information for Tenderers point 19. Performance and Maintenance/Payment bonds indicates these bonds should be 100%/100%.

The agreement to bond form indicates a 50%/50% Performance and Maintenance/Payment bonds.

Please confirm which rate should be used.

**Answer:** Remove Form of Tender FT-10 and insert revised page FT-10. Remove Agreement to Bond form and insert the revised Agreement to Bond form.

4.29 **Question:** We are requesting a two (2) week extension to the tender closing a question period date.

**Answer:** Please see 4.9 above.

4.30 **Question:** Please revoke the previous 2-week extension. We are requesting only a ONE (1) Week extension to this tender closing and question period dates.

**Answer:** Please see 4.9 above.



**Addendum No. 2**

The Bidder shall sign this Addendum in the space provided below, shall affix his seal hereto, and shall submit this Addendum in the same envelope as the tender.

Except as and to the extent that they are amended by the foregoing, all terms and conditions of the tender documents remain in full force and effect.

Signature of Tenderer

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Affix Corporate Seal Above

**DRAYTON PUMPHOUSE UPGRADES**

Township of Mapleton

Contract No.: RFT-2023-15

**FORM OF TENDER****FT-1 ADDENDUM NO. 2****PART A****TO: THE TOWNSHIP OF MAPLETON**

This Tender is submitted by:

\_\_\_\_\_  
Firm Name\_\_\_\_\_  
Address  
\_\_\_\_\_\_\_\_\_\_  
TelephoneFor a Total Lump Sum Tender Price  
(HST included) of:

\$ \_\_\_\_\_

The Tenderer agrees to have the Works "Substantially Performed" within a time, to be known as the "Time for Completion" of \_\_\_\_\_ weeks ( \_\_\_\_\_ weeks)  
\_\_\_\_\_  
(in words) (in figures)

from the date of the Engineer's written order to commence work.

The Tenderer agrees that he will furnish the Owner a copy of his latest financial statement within 4 days after being requested to do so by the Owner.

1. I/We \_\_\_\_\_

of \_\_\_\_\_

DECLARE that no person, firm, or corporation other than the one whose signature or the signature of whose proper officers and the seal is or are attached below, has any interest in this tender or in the contract to be entered into with the Township of Mapleton.

2. I/WE FURTHER DECLARE that this tender is made without connection, knowledge, comparison of figures or arrangements with any other company, firm or person submitting a tender for the same work and is in all respects fair and without collusion or fraud.

3. I/WE FURTHER DECLARE that no member of the Municipal Council, or any officer of the Township of Mapleton, is or will become interested directly or indirectly as a contracting party or otherwise in or in the performance of the contract, or in the supplies, work or business to which it relates or in any portion of the profits thereof, or of any such supplies to be used therein or in any of the monies to be derived therefrom.

**DRAYTON PUMPHOUSE UPGRADES**

Township of Mapleton  
Contract No.: RFT-2023-15

**FORM OF TENDER**

**FT-4 ADDENDUM NO. 2**

SCHEDULE OF ITEMS AND PRICES			
PART A			
The Contractor shall prepare this bid in ink or typewriting. Any erasures or overwriting of the prices shall be initialed by the signing officer.			
For lump sum items (unit symbol L.S.) insert bid prices under Contractor's Total Bid Column only.			
The Tenderer is required to base his tender on all Lump Sum Prices for the work and the Unit Prices for Provisional Items listed below.			
PART A-1.0 – DRAYTON PUMPHOUSE UPGRADES			
Item No.	Description	Contractor's Bid Per Unit	Contractor's Total Bid
A-1.01	DRAYTON PUMPHOUSE UPGRADES covered under Divisions 1 through 16 inclusive of the Contract Specifications.	L.S.	\$
PART A-1.0 - SUB-TOTAL			\$

**DRAYTON PUMPHOUSE UPGRADES**

Township of Mapleton

Contract No.: RFT-2023-15

**FORM OF TENDER****FT-5 ADDENDUM NO. 2**

<b>PART A-2.0 - PROVISIONAL ITEMS</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Estimated Quantity</b>	<b>Contractor's Bid Per Unit</b>	<b>Contractor's Total Bid</b>
A-2.01	Deleted	Ea.	1	\$	\$
A-2.02	Deleted	Ea.	1	\$	\$
A-2.03	Deleted	Ea.	1	\$	\$
A-2.04	Deleted	Ea.	1	\$	\$
A-2.01	Additional excavation in all kinds of material except rock, including removal of surplus materials.				
	(i) Up to 2 meters deep	m <sup>3</sup>	50	\$	\$
A-2.02	Supply and place into any excavation or as fill				
	(i) Granular "A"	m <sup>3</sup>	50	\$	\$
	(ii) Unshrinkable Fill (0.4 MPa)	m <sup>3</sup>	10	\$	\$
	(iii) 30 MPa Concrete in place as specified including formwork and finishing but excluding reinforcing steel	m <sup>3</sup>	10	\$	\$
A-2.03	Additional labour requirements (labour rates to include payroll burden, overhead and profit)				
	(i) Project Manager	hr	50	\$	\$
	(ii) Foreman	hr	50	\$	\$
	(iii) Skilled Labourer	hr	10	\$	\$
	(iv) Common Labourer	hr	10	\$	\$
	(v) Heavy Equipment Operator	hr	10	\$	\$
	(vi) Carpenter	hr	10	\$	\$
	(vii) Electrical Foreman	hr	10	\$	\$

**DRAYTON PUMPHOUSE UPGRADES**

Township of Mapleton

Contract No.: RFT-2023-15

**FORM OF TENDER****FT-6 ADDENDUM NO. 2**

<b>PART A-2.0 - PROVISIONAL ITEMS</b>					
<b>Item No.</b>	<b>Description</b>	<b>Unit</b>	<b>Estimated Quantity</b>	<b>Contractor's Bid Per Unit</b>	<b>Contractor's Total Bid</b>
	(viii) Plumber	hr	10	\$	\$
	(ix) Welder	hr	10	\$	\$
	(x) Painter	hr	10	\$	\$
A-2.04	Removal and disposal of unsuitable material from project site (contaminated)	m <sup>3</sup>	25	\$	\$
A-2.05	Supply and install up to 100mm diameter direct buried PVC conduit	m	50	\$	\$
<b>PART A-2.0 - SUB-TOTAL</b>					<b>\$</b>

**DRAYTON PUMPHOUSE UPGRADES**

Township of Mapleton

Contract No.: RFT-2023-15

**FORM OF TENDER****FT-7 ADDENDUM NO. 2****PART A-3.0 - MISCELLANEOUS ITEMS AND CASH ALLOWANCES**

Item No.	Description	Unit	Estimated Quantity	Contractor's Bid Per Unit	Contractor's Total Bid
A-3.01	Bonding and Insurance			L.S.	\$
A-3.02	Project Signboard			LS	\$
A-3.03	Roofing Works by Garland Canada			LS	\$ 83,300.00
A-3.04	Allowance for Hydro-One			L.S.	\$ 10,000.00
A-3.05	Contingency Allowance			L.S.	\$ 142,000.00

**PART A-3.0 - SUB-TOTAL****\$**

The Tenderer agrees that they are not entitled to payment of either the Provisional Items or Cash Allowance Items except for additional work carried out in accordance with the Contract as directed by the Engineer and only to the extent of such additional work. The Tenderer further agrees that the Owner may or may not consider the Provisional Item or Cash Allowance Items pricing when comparing or awarding the Tenders.

**DRAYTON PUMPHOUSE UPGRADES**

Township of Mapleton

Contract No.: RFT-2023-15

**FORM OF TENDER****FT-8 ADDENDUM NO. 2**

<b>TENDER SUMMARY</b>		
<b>Item No.</b>	<b>Description</b>	<b>Tender Amount</b>
A-1.0	DRAYTON PUMPHOUSE UPGRADES	\$
A-2.0	PROVISIONAL ITEMS	\$
A-3.0	MISCELLANEOUS ITEMS AND CASH ALLOWANCES	\$
<b>SUB-TOTAL</b>		\$
<b>HST 13% OF SUB-TOTAL</b>		\$
<b>TOTAL LUMP SUM TENDER PRICE (carried forward to Page FT-1)</b>		\$
<p>The two lowest Tenderers shall submit to the Consulting Engineer within two working days after closing of the Tenders, a detailed breakdown of the Total Lump Sum Tender Price for the work to be done under Divisions 1 through 16 on pages FT-14 to FT-22 inclusive of the Form of Tender known as Part B in the Schedule of Items and Prices.</p>		
<p>The Contractor may be required to submit data to substantiate the breakdown contained in Part B. The Engineer may refuse to accept a breakdown containing prices which are, in the Engineer's opinion, unbalanced and has the right to adjust the breakdown to correct such unbalancing or to adjust the breakdown total to match the total entered in Part A of the Tender.</p>		

**STANDARD TENDER REQUIREMENTS****PERIOD OF VALIDITY**

The prices entered by the Tenderer in the Form of Tender Page FT-8 shall be based on the assumption that the Engineer's written order to commence work will be issued to the Tenderer within 60 days after the opening date of tenders.

In addition, however, the Tenderer shall enter in the space provided herein the extra lump sum price, if any, to be added to the Total Lump Sum Tender Price shown in the Form of Tender if the Engineer's order to commence work is issued to the Tenderer after the aforesaid 60 day period has elapsed but within a 90 and 120 day period after the opening date for tenders.

Extra lump sum to extend the period of validity of the tender from 61 days to 90 days:

= \$ \_\_\_\_\_

Extra lump sum to extend the period of validity of the tender from 91 days to 120 days:

= \$ \_\_\_\_\_

The foregoing lump sum shall apply regardless of any difference between the Final Contract Price and the Original Contract Price.

The Owner may in its discretion take into account the extra lump sum tender price above when comparing tenders for awarding a contract.

Failure to enter the extra lump sum price in the space provided in the Form of Tender shall mean that the extra lump sum for extending the validity of tender to 90 and 120 days shall be considered to be NIL.

**AGREEMENT TO BOND**

We, the undersigned, hereby to agree to become bound as Surety for

\_\_\_\_\_

\_\_\_\_\_

a Performance and Maintenance Bond totalling One Hundred Percent (100%) of the contract amount, and conforming to the Instruments of Contract attached hereto, for the full and due performance of the works shown as described herein, as well as a Labour and Material Payment Bond in the amount of 100% of the contract amount if the Tender for

if accepted by the Owner.

It is a condition of the Agreement that if the above-mentioned Tender is accepted, applications for a Performance Bond and Labour and Material Payment Bond must be completed with the undersigned within ten days of acceptance of Tender related thereto, otherwise this Agreement shall be null and void.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Name of Bonding Company

\_\_\_\_\_

\_\_\_\_\_  
Signature of Authorized Person Signing  
for Bonding Company (Company Seal)

\_\_\_\_\_  
Position

**STATEMENT "A"****LIST OF SUB-CONTRACTORS**

The Tenderer also agrees that the following is a complete list of Sub-Contractors that will be required in the performance of the work and that no additions, deletions or changes to this list will be permitted after closing of Tenders without the approval of the Engineer.

State OWN FORCES if a Sub-Contractor is not required for any of the trades listed. If additional trades are required, insert in blank spaces.

Failure to complete this list of Sub-Contractors may render the Tender informal.

SUB-CONTRACTOR AND/OR SUPPLIER	NAME	ADDRESS
Excavation		
Shoring		
Roadworks		
Concrete Foundations		
Concrete Reinforcement		
Masonry		
Mechanical		
Electrical		
Instrumentation and Controls		
Disinfection / Testing		

**DRAYTON PUMPHOUSE UPGRADES**

Township of Mapleton

Contract No.: RFT-2023-15

**FORM OF TENDER****FT-20 ADDENDUM NO. 2**

04220 Concrete Unit Masonry \$

**Total Tendered Price for Division 4** \$**Division 5 – Metals**

Section No.	Title	Total Amount
05120	Structural Steel	\$
05500	Metal Fabrications	\$
05550	Anchorage in Concrete and Masonry	\$
<b>Total Tendered Price for Division 5</b>		<b>\$</b>

**Division 6 – Wood and Plastics**

Section No.	Title	Total Amount
06101	Rough Carpentry	\$
<b>Total Tendered Price for Division 6</b>		<b>\$</b>

**Division 7 – Thermal and Moisture Protection**

Section No.	Title	Total Amount
07160	Sheet Vapour Retarders	\$
07200	Modified Membrane Roofing – Hot Applied – By Garland Canada	\$ Included in FT-7
07212	Board Insulation	\$
07213	Batt and Blanket Insulation	\$
07620	Sheet Metal Flashing and Trim	\$
07720	Roof Hatches	\$
07720	Roof Hatches Barrier – By Garland Canada	\$ Included in FT-7
07840	Fire Stopping	\$
07900	Joint Sealants	\$
<b>Total Tendered Price for Division 7</b>		<b>\$</b>

**Division 8 – Doors and Windows**

# Agreement to Bond

(Surety Company) \_\_\_\_\_

(Address) \_\_\_\_\_

(Date) \_\_\_\_\_

Dear OWNER'S Representative:

Re: TOWNSHIP OF MAPLETON  
CONTRACT NO. RFT 2023-15  
REQUEST FOR TENDERS FOR THE  
DRAYTON PUMPHOUSE UPGRADES

In consideration of the Township of Mapleton (Owner) accepting the Tender of and executing an Agreement with:

\_\_\_\_\_  
(hereinafter referred to as "the tenderer")

for the Drayton Pumphouse Upgrades subject to the express conditions that the Owner receives the **Performance Bond** and the **Labour and Material Payment Bond** in accordance with the said tender, we the undersigned hereby agree with the Owner to become bound to the Owner as surety for the **Tenderer** in a Performance Bond and a Labour and Material Payment Bond each in an amount equal to **100 %** of the contract price or other such greater amount as may be determined by the Owner, in the Owner's forms of Performance Bond and Labour and Material Payment Bond and in accordance with the said tender, and we agree to furnish the Owner with said Bonds within **ten (10) business days** after notification of the acceptance of the said tender and execution of the said Agreement by the Owner has been mailed to us.

Yours very truly,

\_\_\_\_\_  
(Seal)

Note: This Agreement to Bond must be executed on behalf of the Surety Company by its officers under the company's corporate seal. Of the two forms bound herein, one shall become a part of the tender and the other shall be retained by the Surety Company.

## **1 GENERAL**

### **1.1 Summary**

1.1.1 This section defines necessary submittals to be made to the Engineer, before, during and after construction. These include, but are not limited to:

- .1 Proposed location and details of temporary buildings.
- .2 Shop drawings for permanent and temporary Works.
- .3 Shutdown Notifications.
- .4 Shutdown Master-list.
- .5 Samples.
- .6 Site progress reports.
- .7 Tests and reports.
- .8 Certificates and transcripts.
- .9 Maintenance data and operating instructions.
- .10 Interference drawings.
- .11 Redline drawings.
- .12 Other specific submittals as requested in individual specification sections.

### **1.2 Administrative**

1.2.1 The Contractor's responsibility for errors and omissions in submittals is not relieved by the Engineer's review of submittals. The review of shop drawings by the Engineer is for the sole purpose of ascertaining conformance with the general design concept on the Contract Drawings and documents. This review shall not mean that the Engineer approves detail design inherent in the manufacture of specific pieces of equipment, or those details required for construction, the responsibility for which shall remain with the Contractor submitting same, and such review shall not relieve the Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting all requirements of construction and the Contract Documents. Without restricting the generality of the foregoing, the Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of the work of all sub trades.

1.2.2 The Contractor's responsibility for deviations in submittals from requirements of Contract Documents is not relieved by the Engineer's review.

1.2.3 Submit all submittals to the Engineer for review as specified.

- 1.2.4 Submit with reasonable promptness and in orderly sequence so as to not cause delay in the Works. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- 1.2.5 The Contractor shall be responsible for:
- .1 The accuracy and completeness of the information contained in each submittal and ensure that the material, equipment or method of work is as described in the submittal.
  - .2 Verifying that features of products conform to the specified requirements.
  - .3 Editing submittal documents to indicate only those items, models, or series of equipment that are being submitted for review. Cross out or otherwise obliterate extraneous materials.
  - .4 Coordinating submittals among the subcontractors and suppliers and ensure there is no conflict with other submittals.
  - .5 Notifying the Engineer in each case where a submittal may affect the work of trades or the Owner.
- 1.2.6 Verify that the materials and equipment to be furnished and method of work comply with the provisions and the intent of the Contract as a whole. The Contract Documents are complementary, and what is required by anyone shall be as binding as if required by all.
- 1.2.7 Verify and guarantee that features and characteristics of materials, equipment and other items to be incorporated into the work, and for which no submittals are required, conform to the Contract requirements.
- 1.2.8 Work affected by submittals shall not proceed until the review process is complete.
- 1.2.9 Present shop drawings, product data, samples and mock ups in SI Metric units.
- 1.2.10 The Contractor shall review submittals prior to submission to the Engineer. This review confirms that each submittal has been checked and coordinated with requirements of the Works and Contract Documents. Submittals not stamped, signed, and dated by the General Contractor will be returned without being examined and shall be considered rejected. The Contractor shall specifically identify whether or not they have any comments on the shop drawings submitted by their sub-contractors and suppliers. If it is evident that the Contractor has not performed their own review of the submittal then the Engineers review of the submittal will cease and the submittal returned to the Contractor immediately.
- 1.2.11 Notify the Engineer in writing identifying deviations from the Contract Documents stating reasons for deviations. Also refer to Section 01200 – Alternatives.
- 1.2.12 Verify that field measurements have been taken and affected adjacent work has been coordinated.
- 1.2.13 The Engineer has allowed for up to two shop drawing submittals and reviews as part of the normal review process. Any more than two shop drawing submittals will be considered a deviation for which the Engineer may seek compensation from the Contractor for the additional time and effort of shop drawing review. This does not include initial submittal data such as shop tests and field tests that are submitted after initial submittal.

- 1.2.14 Keep one reviewed copy of each submission on site.
- 1.2.15 Compliance Statement: Include in every shop drawing submission, a copy of the relevant specification section, with addendum updates included, and all referenced and applicable sections, with addendum updates included. Check-mark each paragraph to indicate compliance with the specification or mark otherwise to indicate requested deviations from specified requirements. Check marks (√) denote full compliance with a paragraph in its entirety. If deviations from the specifications are indicated, underline each point of deviation and denote by a number in the margin to the right of the identified paragraph. The remaining portions of the paragraph not underlined will signify compliance with the specified requirements. Provide in the submittal a detailed, written justification for each deviation.
- 1.2.16 Certificate of Proper Equipment Application: With the initial shop drawing submittal or substitution request, provide a signed letter from the Equipment Manufacturer stating that the manufacturer has reviewed the Contract Documents and the equipment being supplied is suitable for the intended application. Submittal review will not be conducted without this completed certificate.
- 1.3 Shop Drawings and Product Data**
- 1.3.1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by the Contractor to illustrate details of a portion of the Works.
- 1.3.2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of the Works. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of where they are specified or on which drawings the work appears. Indicate cross-references to Contract Drawings and Specifications.
- 1.3.3 Provide a list of all shop drawings that the Contractor will be submitting to the Engineer 14 working days after the Order to Commence has been issued.
- 1.3.4 Allow 15 working days for the Engineer's review of each submission. The Contractor must stage the submittals such that the Engineer can review in the allotted time.
- 1.3.5 Adjustments made on shop drawings by the Engineer do not address the issue of Contract Price. If adjustments affect the value of the Works, state this in writing to the Engineer prior to proceeding with the work. Any changes affecting Contract Price or Contract Time require a Change Order to be issued.
- 1.3.6 Make all changes to shop drawings as required by the Engineer and consistent with Contract Documents. When resubmitting, notify the Engineer in writing of any revisions other than those requested.
- 1.3.7 Submittals:
- .1 Submittals must be submitted with a Submittal Transmittal Form to Engineer for official submission.
  - .2 The marked-up copies will be returned to the Contractor via the submission method received.

- .3 The final submittals will be retained by the Engineer and stored at the site office.
- .4 The Contractor is responsible for producing hardcopies and sharing softcopies with Equipment Manufacturers and with subcontractors.
- .5 Submittal Cover Page
  - .1 For each discrete submittal, type or print the appropriate information on a cover page to fully describe the submittals being sent for review. Include the cover page for each discrete submittal. The title page shall include the following:
    - .1 Project Title
    - .2 Project / Contract Number
    - .3 Submittal / Shop Drawing Title
    - .4 Contractor Reference Number (if applicable)
    - .5 Specification number
    - .6 Revision Number
    - .7 Filename

1.3.8 Submissions shall include:

- .1 Contractor's name, contact phone no. and address.
- .2 Date and revision dates.
- .3 Project title and number.
- .4 Name and address of:
  - .1 Subcontractor.
  - .2 Supplier.
  - .3 Manufacturer.
  - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
- .5 Section of Contract where specified and location to be installed.
- .6 Apply shop drawing stamp, signed by Contractor's authorized representative certifying their review and approval of submissions, verification of field measurements and compliance with Contract Documents.
- .7 Compliance statement, refer to Clause 1.2.15
- .8 Certificate of Proper Equipment Application, refer to Clause 1.2.16

- .9 Details of appropriate portions of Work as applicable:
  - .1 Fabrication.
  - .2 Layout, showing dimensions, including identified field dimensions and clearances.
  - .3 Setting or erection details.
  - .4 Capacities.
  - .5 Performance characteristics.
  - .6 Standards.
  - .7 Operating Weight and forces.
  - .8 Details of anchorage including bolt diameter, location and projection.
  - .9 Complete piping drawings, including size and location of all sleeves and/or openings to be formed into structural works.
  - .10 Submit all equipment and instrument shop drawings in advance of MCC and control panel shop drawings to allow coordination and any vendor specific power, I/O or control wiring requirements.
  - .11 Wiring diagrams.
  - .12 Single line and schematic diagrams.
  - .13 Relationship to adjacent work.
  - .14 Enclosure ratings (NEMA or IEC) for electrical equipment
  - .15 Electrical supply requirements including:
    - .1 Acceptable voltage range for mains and control power
    - .2 Current draw at full load
    - .3 Maximum and/or minimum setting of upstream protection
    - .4 Withstand and interrupt ratings
- 1.3.9 Submit one copy of product data sheets or brochures for requirements requested in the specifications and as requested by the Engineer where shop drawings will not be prepared due to standardized manufacture of product.
- 1.3.10 Submit shop drawings for each requirement requested in specification Sections and as Engineer may reasonably request.

1.3.11 Softcopy submittals

- .1 All softcopy submittals shall be named using the following nomenclature: [5]-[3]-R[2]-[4]-[1].pdf, where the fields in the filename are defined as follows:
  - .1 [1] = Contractor specific unique reference number (if applicable)
  - .2 [2] = Revision number
  - .3 [3] = Specification number
  - .4 Submittal number – some specs have more than one submittal, need a way to track those.
  - .5 [4] = Submittal/Shop Drawing title
  - .6 [5] = Project/Contract number
- .2 Each discrete shop drawing submittal shall be a single complete PDF document complete with cover page as the first page.
- .3 At the request of the engineer, the Contractor shall submit native files of certain submittals (MS Word, MS Excel, MS Project, Primavera, etc.) to help expedite the review process.
- .4 The Engineer reserves the right to request hardcopy submissions of any shop drawing submittal where it is deemed by the Engineer to be of benefit to have a complete hard copy version of the shop drawing for review.

1.3.12 Submittals will be returned with one or of the following notations. Take action as noted:

- .1 "NO COMMENT" - Make and distribute additional copies promptly as required for execution of Work. Instruct parties to report promptly any inability to comply with provisions.
- .2 "REVISE & RESUBMIT" - Make the necessary revisions and resubmit revised drawings for review. This procedure will not relieve the responsibility for errors or omissions in the shop drawings or of responsibility for meeting all requirements of Contract. Show the drawing number of the first such revised drawing and show the latest revision number applicable to the drawing by increasing the revision index – "R0", "R1", "R2", etc. Refer to 01330 – Submittals – Supplement B: Shop Drawing File Naming Convention Instructions for instructions on how to apply revision numbers.
- .3 "AS NOTED" – Make the necessary revisions prior to commencing with the execution of work. A resubmission for Engineer review is not required. Resubmit with all necessary revisions for record and coordination purposes.
- .4 "REJECTED" – This notation indicates that the Engineer has received the submission and has deemed it incomplete or improper for review.
- .5 "NOT REVIEWED" - This notation indicates when Engineer has acknowledged receipt of the shop drawing and that a review is not required.

- 1.3.13 Use only those shop drawings on the work that bear the "NO COMMENT" or "AS NOTED" notation.
- 1.3.14 Do not revise shop drawings marked "NO COMMENT" unless resubmitted to the Engineer for further review.
- 1.3.15 Ship one set of reviewed shop drawings, installation instructions, lubrication schedules, parts lists and other information along with each piece of equipment to the Site and clearly mark "DO NOT REMOVE FROM SITE".
- 1.3.16 Neither the Engineer nor the Owner will accept responsibility for the cost of changes necessary if any equipment is fabricated without prior review of shop drawings. Completion of the Engineer's review will be designated by the presence of the Engineer's initialed reviewed stamp on the returned drawings.
- 1.3.17 Where more than one type of shop drawing has been specified for one item, e.g., wiring diagrams, layout details, and dimensional drawings, the shop drawings will be submitted together, to enable Engineer to review the drawings as a package.
- 1.3.18 Catalogue pages or drawings applicable to an entire family or range of equipment will not be accepted as shop drawings unless they are clearly marked to show the pertinent data for the particular materials.
- 1.3.19 Manufacturers' catalogues, manuals, or price lists will not be accepted as shop drawings. Such materials may be used as supplemental information to the shop drawings.
- 1.3.20 Indicate the tag number of all instruments and valves and clearly show the features and details applicable to the equipment being supplied.
- 1.3.21 Determine which shop drawings have, in addition to those drawings specifically mentioned in the Contract, design elements requiring the seal of a Professional Engineer registered in the Province of Ontario, in accordance with the applicable provincial or federal engineering acts or other governing legislation. Seal such drawings before submitting them for review. Submit for review engineering calculations signed by the registered Professional Engineer responsible for the shop drawing design elements.
- 1.3.22 If upon review by Engineer, no errors or omissions are discovered or if only minor corrections are made, a copy will be returned denoted "AS NOTED", and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned denoted "REVISE AND RESUBMIT", and resubmission of corrected shop drawings, through the same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- 1.3.23 Owner may deduct, from payments due, costs of additional engineering work incurred if equipment Manufacturer does not submit correct shop drawings after one review.
- 1.3.24 Review by Engineer is for the sole purpose of ascertaining conformance with the general design concept. This review does not mean that Engineer approves the detail design inherent in the shop drawings, responsibility for which remains with the Contractor, and such review does not relieve the responsibility for errors or omissions in the shop drawings or of the responsibility for meeting all requirements of the Contract Documents. It also does not relieve the responsibility for dimensions to be confirmed and correlated at the job-site, for information that pertains solely to fabrication processes or to techniques of construction and installation, and for coordination of the work of all sub-trades.

- 1.3.25 As per Clause 1.6, prepare and submit proposed sleeve location drawings showing the location and size of sleeves, openings and miscellaneous items to be formed in the work with the reinforcing steel drawings to allow full coordination. Any reinforcing steel modifications required as a result of failure of the contractor to provide these drawings, will be at no cost to the Owner.
- 1.3.26 Delete information not applicable to project from all submittals.
- 1.3.27 Supplement standard information to provide details applicable to project as required.
- 1.3.28 When corrected copies are resubmitted, the Contractor shall direct specific attention to all revisions in writing and shall list separately any revisions made other than those called for by the Engineer on previous submittals. Requirements specified for initial submittals shall also apply to resubmittals.
- 1.3.29 If more than one resubmittal is required because of failure of the Contractor to provide all previously requested corrected data or additional information, the Contractor shall reimburse the Owner for the charges of the Engineer for review of the additional resubmittals. This does not include initial submittal data such as shop tests and field tests that are submitted after initial submittal.
- 1.3.30 When resubmittals are needed, resubmittals shall be made within 15 business days. The Contractor may submit an acceptable request for an extension of time, listing the reasons why the resubmittal cannot be completed within the stipulated time.
- 1.3.31 The need for more than one resubmittal, or any other delay in obtaining the Engineer review of submittals, will not entitle the Contractor to extension of the Contract Times unless delay of the Work is the direct result of a change in the Work authorized by a Change Order.
- 1.3.32 The maximum size of shop drawings shall be 600 mm x 900 mm to permit red line photocopy reproduction.
- 1.3.33 Shop drawings which require the approval of a legally constituted authority having jurisdiction shall be submitted by Contractor to such authority for approval. Such shop drawings shall receive final approval of authority having jurisdiction before Consultant's final review.
- 1.3.34 Drawings stamped "AS NOTED" must be revised for inclusion in the Operation and Maintenance Manuals. Returned copies containing review comments shall not be included in the Operation and Maintenance Manual.
- 1.3.35 Submit hardcopy and softcopy sets of final shop drawings as part of the O&M submission.
- 1.4 Shop Drawings for Temporary Works**
  - 1.4.1 Submit for review shop drawings of temporary works which:
    - .1 Control the dimensions and locations of any part of the structures to be constructed under the contract.
    - .2 Impose loads on parts of the works which are still under construction or on existing structures.
  - 1.4.2 Payment will not be made for work started or completed without the required drawing review. Submit shop drawings well in advance of the time when they are required for construction.

Coordinate shop drawings prepared by different trades so that information is available to prevent conflict or errors where the work of one trade affects the work of another.

- 1.4.3 Two copies of submitted shop drawings will be returned to the Contractor after review.
- 1.4.4 Shop drawings will be reviewed for conformity with the required arrangement and dimensions of the permanent structures and for general conformity with the specifications.
- 1.4.5 If resubmittal is requested, discuss the comments made and resolve all issues raised by them, then resubmit the shop drawings amended accordingly.
- 1.4.6 Do not begin construction of temporary works before review of the shop drawings is completed.
- 1.4.7 Review of the Contractor's drawings does not relieve the Contractor of the responsibility for the results arising from errors or omissions of design or from the use or abuse of the temporary works.
- 1.4.8 Keep one copy of each stamped, reviewed drawing at the site of the work for reference during the duration of the construction work.
- 1.4.9 Make no changes to drawings after they have been reviewed.
- 1.4.10 Submit shop drawings in SI metric units.
- 1.4.11 Use either ANSI size A (8.5" x 11") for text and drawings or size B (11" x 17") for drawings. Do not reduce originals to a degree that compromises legibility.
- 1.4.12 Have no lettering, symbols, and characters less than Font 11 in size.
- 1.4.13 The Contractor shall retain the services of a Professional Engineer to design and stamp all temporary works.

## **1.5 Samples**

- 1.5.1 Submit samples in duplicate for review as requested in respective specification Sections. Submit samples with identifying labels bearing material or component description, manufacturer's name and brand name, Contractor's name, project name, location in which material or component is to be used, and date.
- 1.5.2 Deliver samples prepaid to the Engineer's business address, or as otherwise directed by the Engineer.
- 1.5.3 Notify the Engineer in writing, at time of submission of deviations in samples from requirements of the Contract Documents.
- 1.5.4 Where colour, pattern or texture is a selection criterion, submit the full range of samples.
- 1.5.5 Adjustments made on samples by the Engineer do not address the issue of Contract Price. If adjustments affect the value of the Works, state such in writing to the Engineer prior to proceeding with the work.
- 1.5.6 Make all changes to samples as required by the Engineer and consistent with Contract Documents.

- 1.5.7 Reviewed and accepted samples will become the standard of workmanship and material against which installed work will be verified.

**1.6 Insert and Sleeve Location Drawings**

- 1.6.1 Submit insert and sleeve location drawings showing the location and size of sleeves, anchor bolts, openings and miscellaneous items to be formed in the work. Submit these drawings with the reinforcing steel drawings to allow full coordination.

**1.7 Interference Drawings**

- 1.7.1 Prepare composite working/layout/construction/interference drawings, fully dimensioned of cables, conduits, cable trays, cable bus ducts, sleeves, structures, clearances, pipes, ducts etc. and equipment in all areas to avoid conflict of trades. Base drawings on manufacturers' working drawings. Drawings shall be developed from consultation with and the agreement of all trades. All drawings shall be reviewed, checked for compliance with contract documents and stamped as "Reviewed" by the Contractor and Subcontractor prior the submission to the Engineer for review. Drawings that are not stamped as "Reviewed" by the Contractor and Subcontractor will be returned to the Contractor and shall have to be re submitted to the Engineer after review by the General Contractor and Subcontractor.
- 1.7.2 Before installation of structural, mechanical and electrical systems, prepare an integrated set of interference drawings in cooperation with all trades.
- 1.7.3 After discussion with Engineer, at no additional cost, make necessary relocations due to interference of trades, as a result of incomplete drawings.

**1.8 Professional Engineering Design**

- 1.8.1 Where specifications require Professional Engineer design, such Engineer is required to be licensed in the related discipline in the Province of Ontario.

**1.9 Test and Reports**

- 1.9.1 Insofar as practical, test materials and equipment on site. Where shop test is necessary, give Engineer two (2) weeks notice in writing of proposed shop test date.
- 1.9.2 Complete an equipment report prior to site testing each item of rotating mechanical equipment. During testing complete the remainder of the equipment report. Submit the reports for inclusion in the Installation, Operation and Maintenance manual.
- 1.9.3 Before operating equipment, engage the services of a qualified manufacturer's service representative to inspect, operate, test and adjust the equipment after installation.
- 1.9.4 Submit the manufacturer's representative's signed report describing in detail the inspection, tests and adjustments made, quantitative results and suggestions for precautions to be taken for correct maintenance. Verify that the equipment and its installation conform to the requirements of the Contract for the service intended and is ready for permanent operation. Bind copies of report into the installation, operation and maintenance manuals.
- 1.9.5 Inspection includes:
- .1 Soundness (without cracked or otherwise damaged parts).

- .2 Completeness of installation as specified and as recommended by manufacturer.
- .3 Correctness of setting, alignment and relative arrangement of various parts of system.
- 1.9.6 Operate, test and adjust equipment to prove it is correctly installed to operate under the intended conditions.
- 1.9.7 Equipment will only be accepted after receipt of the manufacturer's representative's report.
- 1.9.8 Submit notice in writing at least 48 hours before manufacturer's representative is scheduled to perform these services.
- 1.9.9 Modify or replace equipment or materials failing required tests.
- 1.9.10 Perform additional testing required due to changes of materials requested by Contractor or due to failure of materials or construction to meet specifications.
- 1.10 Redline Drawings**
  - 1.10.1 The Owner will supply a set of contract drawings. Mark thereon all revisions in red ink as the job progresses to produce a set of redline drawings.
  - 1.10.2 Dimension locations (vertically and horizontally) of buried or concealed work, especially piping and conduit, with reference to exposed structures. Dimension the installed locations of concealed service lines on the site or within the structure by reference from the centre line of the service to the structure column lines or other main finished faces or other structural point easily identified and located in the finished work.
  - 1.10.3 Update these drawings and make available for monthly review. Payment against the Progress Payment line item for updated drawings will be withheld if drawings have not been maintained up-to-date.
  - 1.10.4 Submit redline drawings in SI metric units.
  - 1.10.5 Record on the white prints on a daily basis, work constructed differently than shown on the Contract Documents. Record all changes in the work caused by site conditions, or originated by the Owner, the Engineer, the Contractor, or a sub-contractor and by addenda, supplemental drawings, site instructions, supplementary instructions, change orders, correspondence, and directions of regulatory authorities. Accurately record the location of concealed mechanical services and electrical main feeders, junction boxes and pull boxes. Do not conceal critical work until its location has been recorded.
  - 1.10.6 Do not use these drawings for daily working purposes and make the set available for periodic inspection by the Engineer.
  - 1.10.7 Make records in a neat and legibly printed manner with non-smudging medium.
  - 1.10.8 The Contractor shall scan the complete set of redline drawings in PDF (full resolution) and upload progress redline drawings onto the CIMA FTP site and transmit to the Engineer on a quarterly basis (every 3 months).
  - 1.10.9 To certify that the redline drawings are being kept up to date by the Contractor, there shall be a line item in the monthly payment certificate entitled "Redline Drawings". Refer to Section 01025 for further details.

- 1.10.10 Submit all redline drawings to the Engineer prior to Substantial Performance. Substantial Performance will not be issued until redline drawings are completed by the Contractor, submitted to the Engineer and reviewed with no further comments.

**1.11 Site Progress Records**

- 1.11.1 All site progress reports shall be provided as required to the Engineer and a copy shall also be kept for the Contractor's records.
- 1.11.2 Provide by 10:00 am EST a Daily Progress Report including the following:
- .1 The weather conditions with maximum and minimum temperatures.
  - .2 The conditions encountered during excavation.
  - .3 The commencement and the completion dates of the work of each trade in each area of the Contract.
  - .4 The erection and removal dates of formwork in each area of the Contract.
  - .5 The dates, the quantities, and the particulars of each concrete pour.
  - .6 The dates, the quantities, and the particulars of roofing installation.
  - .7 The dates on which major items are installed.
  - .8 The numbers and classifications of the Contractor's and the Sub-contractor's trades people working at the site and the numbers and classifications of construction machinery and equipment and the number of hours each is operated.
  - .9 The visits to the site by the Owner, Engineer, the Regulatory Authorities, testing companies, the Sub-contractors and the suppliers.

**1.12 Weekly Newsletters**

- 1.12.1 The Contractor shall prepare weekly newsletters and email a PDF copy to the Engineer and Owner every Monday morning by 10 a.m.
- 1.12.2 Newsletter shall summarize the Work completed the previous week and shall include pictures of the Work per Clause 1.14. A detailed description of the Work completed by all subcontractors / trades daily are to be included in the newsletter and not just a caption of the picture.
- 1.12.3 Throughout the project, the Owner and Engineer may request the raw (non-PDF) electronic copies of any newsletters, including pictures.
- 1.12.4 Prior to Substantial Performance, a USB containing all the raw (non-PDF) and PDF copies shall be provided.
- 1.12.5 Any Work completed between Substantial Performance and the end of Warranty shall also be included in newsletters and the USB updated at the end of the Warranty period to cover the entire Contract.

**1.13 Pre-Construction Photographs**

- 1.13.1 Provide pre-construction photographs in digital format, prior to commencement of work on the site. Deliver to the Engineer before starting any construction, two electronic copies by digital devices. The Engineer may direct the Contractor to obtain additional photographic records of structures and features within the site limits. The pre-construction records will be compared to the post-construction records to assess damage or displacement of existing structures.
- 1.13.2 Pre-construction survey will be performed by an inspection company experienced in this work and approved by the Engineer. The Contractor will be required to indemnify the Owner against any claim by abutting property owners for damages sustained due to any construction activities.
- 1.13.3 The Contractor shall ensure that advanced notice is given to the residents, advising them of a pre-construction survey. A copy of the pre-construction survey shall be filed with the Engineer and Owner prior to commencement of construction.
- 1.13.4 Carry-out preconstruction survey of the Facility.
- 1.13.5 Obtain pre-construction photos of the existing:
- .1 Roads, sidewalks and curbs.
  - .2 Shoulder and grass areas.
  - .3 Building exterior.
  - .4 Trees
  - .5 Interior views of rooms, tunnels, etc., where modifications are planned.

**1.14 Progress Photographs**

- 1.14.1 On commencement of work and at monthly intervals thereafter, provide eight (8) different view photographs to illustrate the progress of the work. Photographs are to be taken by a professional photographer from locations selected by the Engineer. The Owner reserves the right to request hard copies of digital pictures as necessary, printed on photo quality media.
- 1.14.2 Refer to Section 01320 for further details on progress photographs.

**1.15 Operation and Maintenance Data**

- 1.15.1 Provide two (2) hard copies and electronic copy of draft manual or sets of manuals, of instruction, in accordance with Section 01780 for review by the Engineer. One copy will be returned with comments and one copy will be retained to assist the Engineer and will be returned after delivery of the final copies. The Contractor shall submit the draft O&M manual at least twenty (20) working days prior to the start of training specified in Section 01820.
- 1.15.2 Supply four (4) hard copy and electronic copy final and complete manuals or sets of manuals, of instruction, in accordance with Section 01780 for further details on Operation and Maintenance data and manual. Final submission of Operation and Maintenance data is required prior to Substantial Performance.

**1.16 Equipment Inventory**

- 1.16.1 Provide Equipment Inventory and Tagging List in quantities specified in individual specification sections and Section 01780.

**1.17 Spare Parts**

- 1.17.1 Provide spare parts, in quantities specified in individual specification sections and Section 01780.
- 1.17.2 Contractor shall include a consolidated list of all spare parts that have been provided as part of the Works. The Spare Parts List shall also indicate the box number in which the equipment is located.

**1.18 Maintenance Materials**

- 1.18.1 Provide maintenance material, in quantities specified in individual specification sections and Section 01780.
- 1.18.2 Contractor shall include a consolidated list of all maintenance materials that have been provided as part of the Works. The Maintenance Material List shall also indicate the box number in which the material is located.

**1.19 Special Tools**

- 1.19.1 Provide special tools, in quantities specified in individual specification sections and Section 01780.
- 1.19.2 Contractor shall include a consolidated list of all special tools that have been provided as part of the Works. The Special Tools List shall also indicate the box number in which the tools are located.

**1.20 Warranties and Bonds**

- 1.20.1 Provide warranties and bonds as specified in individual specification sections and Section 01780.
- 1.20.2 The placing, installation and connection of work by the Owner's own forces or by any other Contractors on and to the Contractor's Work does not relieve the Contractor of their responsibility to provide the specified warranties.

**2 PRODUCTS – NOT APPLICABLE**

**3 EXECUTION – NOT APPLICABLE**

**END OF SECTION**

## **1 GENERAL**

### **1.1 Submittals**

#### **1.1.1 Informational Submittals:**

- .1 Copies of permits and approvals for construction as required by all applicable laws, regulations and governing agencies.
- .2 Temporary Utility Submittals:
  - .1 Electric power supply.
  - .2 Water supply.
- .3 Temporary Construction Submittals:
  - .1 Parking area plans.
  - .2 Contractor's field offices locations, location of storage yard, and storage building plans, including gravel surfaced area.
  - .3 Fencing and protective barrier locations and details.
  - .4 Designated Work Areas - Fencing and protective barrier locations and details inside existing facilities to isolate New Work from ongoing Operations.
  - .5 Plan for temporary drainage course detour and details.
  - .6 Tower crane location plans (if applicable)
- .4 Temporary Control Submittals:
  - .1 Noise control plan.
  - .2 Dewatering well locations.
  - .3 Plan for disposal of waste materials and intended haul routes.
  - .4 Plan for sediment control and storm water management.

- 1.1.2 The Engineer has the right to modify the proposal for temporary works or connections at no additional cost to the Owner.

### **1.2 Mobilization**

#### **1.2.1 Mobilization of construction facilities shall include, but not be limited to, these principal items:**

- .1 Obtaining all required permits.

- .2 Moving the Contractor's field office and equipment required for the first month of operations onto the Site.
- .3 Moving Owner and Engineer's Field office and equipment onto site
- .4 Installing temporary construction power, wiring, and lighting facilities.
- .5 Providing on Site communication facilities.
- .6 Providing on Site sanitary facilities and potable water facilities as specified in the Contract Documents and as required by all applicable laws, regulations, and governing agencies.
- .7 Providing sedimentation and erosion control measures, including silt fencing and straw bale flow checks and the maintenance and repair (if necessary) of these facilities.
- .8 Arranging for and erection of the Contractor's work and storage yard.
- .9 Posting of the Occupational Health and Safety Act required notices and establishing safety programs and procedures.
- .10 Having the Contractor's superintendent at the Site full time.

1.2.2 Use the area designated for the Contractor's temporary facilities as shown on the Drawings.

### **1.3 Temporary Utilities**

- 1.3.1 Provide temporary utilities and controls in order to execute work expeditiously.
- 1.3.2 Remove all temporary works from site after use.
- 1.3.3 Co-ordinate all required utilities with the utility company. Provide details of the proposed temporary service connection and metering provisions prior to installation.
- 1.3.4 Make all necessary applications, obtain permits and pay for all fees, charges for service and use.
- 1.3.5 Contractor shall be responsible to all water, power and consumables that are required to carry out the Work.

## **2 PRODUCT**

### **2.1 Temporary Buildings**

- 2.1.1 Provide temporary buildings that meet the requirements of the Occupational Health and Safety Act.
- 2.1.2 Maintain temporary buildings clean and free from nuisances so as to avoid danger to Owner's personnel, property or structures, prevent complaints from the Engineer and prohibit interference with the operation of the existing Facility.

- 2.1.3 Prior to erection of temporary buildings to be used for construction purposes determine the extent of space required by Contractor for storage, temporary buildings, construction roads and parking, and submit a proposed layout of Contractor's compound including details of the type and proposed location of the temporary buildings.
- 2.1.4 Locate construction trailers and temporary buildings within the limits of the construction area or property boundaries shown on the Contract drawings and as agreed with the Engineer.
- 2.1.5 Provide and maintain on the site such substantially constructed, weather-tight structures as will adequately house and service personnel of the Contractor working on the project. In addition, furnish and maintain satisfactory weather-tight enclosures with raised floors as may be required to adequately protect materials and equipment stored on the site.
- 2.1.6 When temporary building facilities are no longer required, promptly dismantle and remove from the site, unless otherwise specified or directed. Restore areas damaged to conditions at start of Contract to the satisfaction of the Engineers.
- 2.1.7 Furnish and maintain all apparatus and equipment, such as ladders, scaffolds, ramps, runways, temporary stairs, derricks, hoists, elevators, chutes, etc., as required for the proper execution and progress of the Work. Such facilities shall be strong and substantial and safe for the purpose for which they are intended and shall meet all applicable requirements of governing regulations and authorities.

## **2.2 Site Facilities**

- 2.2.1 Contractor shall not use Owner or Engineer washroom facilities. Contractor shall maintain Engineer field office facilities in acceptable sanitary conditions, cleaned & disinfected weekly, and consumables replenished as required.
- 2.2.2 Provide and maintain on the site in a clean orderly condition, completely equipped first aid facilities which shall be readily accessible at all times to all Contractor personnel. Designate certain employees who are properly instructed to be in charge of first aid. At least one such employee shall always be available on the site while work is being carried on. Post in conspicuous locations a telephone call list for summoning aid, such as doctors, ambulances, pull motors, and rescue squads from outside sources.
- 2.2.3 The facilities shall be furnished as required by the Workers Compensation Act and the Ministry of Labour.
- 2.2.4 Contractor is to verify that the site facilities meet all the obligations and to provide temporary facilities as required.
- 2.2.5 Maintain facilities with all required toilet room supplies in a clean and sanitary condition and disinfect frequently.
- 2.2.6 Leave site in a clean sanitary condition.

## **2.3 Contractor's Field Office**

- 2.3.1 Provide temporary buildings and hygienic facilities which meet the requirements of Ontario Reg. 659/79.

2.3.2 Maintain all temporary buildings clean and free from nuisances so as to avoid danger to plant property or structures, and to prevent complaints from plant personnel and prohibit interferences with the operation of the existing plant.

2.3.3 Subcontractors may provide their own Site offices as necessary. Locate Site offices where directed by the Owner and the Engineer.

**2.4 Engineer's Field Office**

2.4.1 Provide unlimited high-speed wireless internet connection for the exclusive use of the Engineer and Owner.

2.4.2 Office shall have a floor which is at least 300mm above ground level and shall be at least 6.1m (20ft) long by 2.4m (8ft) wide by 2.1m (7ft) high ceiling.

2.4.3 Office shall have lockable doors and at least three (3) opening windows.

2.4.4 Office shall have a common space for photocopier, a colour scanner and printer compatible with 11x17 size paper.

2.4.5 Office layout shall be submitted to the Engineer for review and approval prior to construction.

2.4.6 Provide all temporary power, water, and lighting required during construction.

2.4.7 Provide heat traced and insulated water and sewer lines.

2.4.8 Make all necessary applications, obtain permits and pay for all set-up and installation fees, charges for service and use.

2.4.9 Provide unlimited high-speed wireless internet connection for the exclusive use of the Engineer and Owner.

2.4.10 Provide two (2) AC outlets, per office.

2.4.11 Data connections shall be pulled to one common location to allow networking of equipment.

2.4.12 Provide:

.1 One (1) sloping plan table and shall be at least 1.0 x 2.5 m.

.2 One (1) standard double-pedestal desk, with lockable drawers complete with keys.

.3 A wastepaper basket for each office.

.4 Two (2) standard swivel-type office chairs.

.5 Two (1) standard four drawer, legal-size, lockable, steel filing cabinets with three (3) sets of keys.

2.4.13 Provide adequate road access and parking facilities as shown on the Contract Drawings. Parking is for the sole use of the Engineer's staff. Provide a walkway from the office door to the parking area and keep both free of mud and snow.

- 2.4.14 Provide fluorescent ceiling lights and other lights, switches, electrical outlets, medicine cabinet with mirror, first-aid kit, window shades, window with screens and door with screens.
- 2.4.15 Provide heating system to maintain a temperature of 22°C at outside temperatures of -30°C.
- 2.4.16 Provide an air conditioning unit for this office.
- 2.4.17 The Contractor shall provide snow and ice removal for all access roads and walkways to the Engineer's site office.
- 2.4.18 Provide a lockable main door with three (3) sets of keys available to the Engineer.
- 2.4.19 Use every reasonable precaution to protect the office against fire, theft, or other damage and render watchman services as if this were the Contractor's own property.
- 2.4.20 Indemnify the Owner and its agents against loss by fire, theft of injury to the office or its contents.
- 2.4.21 Remove construction facilities at the direction of the Engineer.
- 2.4.22 Ownership of equipment furnished under this subsection will remain, unless otherwise specified in the Contract Documents, that of the Contractor.
- 2.4.23 Equipment furnished shall be new or like new in appearance and function.
- 2.4.24 Office shall be retained and maintained for the entire duration of the Contract as defined in the Contract Documents.

## **2.5 Project Sign**

- 2.5.1 Provide and maintain at least one (1), 2400mm wide by 1200mm high sign constructed of 19 mm exterior high density overlaid plywood. Signs shall bear the name of the Contract, the Owner, the Contractor, and the Engineer. Paint shall be exterior-type enamel. Information to be included will be provided by the Engineer. Wording and colours on the sign shall be provided to the Contractor.
- 2.5.2 A suitable, stable framework to support each sign shall be provided and erected by the Contractor.
- 2.5.3 The Contractor shall erect project sign at locations acceptable to the Engineer as soon as the Work commences on Site and shall be maintained in position until Completion of the Work. The Contractor shall relocate the project signs when necessary or directed by the Engineer.
- 2.5.4 Upon completion of the Work, the Contractor is responsible for the removal of the signboards and the return of the signboards to the location of origin. No other signs or notices other than those required for the purposes of warning or indicating danger to the public in connection with their Work may be exhibited by the Contractor on the Site without the prior express approval of the Owner.

### **3 EXECUTION**

#### **3.1 Security**

- 3.1.1 The Contractor shall assume overall responsibility for security of the site, during construction. Security deemed necessary for protection against loss or damage of any equipment on site in relation to the project shall be the sole responsibility of the Contractor.
- 3.1.2 Confine work and operations of employees as required by Contract Documents. Do not unreasonably encumber premises with products.
- 3.1.3 Prohibit the committing of nuisance on the site and any employee found violating such a provision shall be promptly discharged.
- 3.1.4 Positive visual identification shall be worn at all times and be monitored by the Engineer. Any person without valid identification will be removed from the site. No additional cost shall be incurred by the Owner for persons removed from site.

#### **3.2 Access to the Site for Construction Deliveries**

- 3.2.1 Access to the site for deliveries and equipment is also used by other contractors.
- 3.2.2 The Engineer will not accept deliveries of any Construction materials.

#### **3.3 Cleaning**

- 3.3.1 The Engineer's field offices should be cleaned as follows:
  - .1 Waste paper baskets to be emptied once per week.
  - .2 Floors to be swept once per week.
- 3.3.2 Be responsible for maintenance of all electrical, mechanical and general maintenance and upkeep of the Engineering Field office for the duration of the Contract.

#### **3.4 Electrical and Temporary Power**

- 3.4.1 The Contractor shall arrange with the local power utility firm for an electrical power service to his field office and for all location that power is required to carry out construction activities. Contractor shall be responsible for installing all temporary wiring and provide all necessary means to convey the power to the location where it is required.
- 3.4.2 Temporary power in the form of overhead lines or portable generators shall be provided by the Contractor at no additional cost to the Owner.
- 3.4.3 Contractor shall pay for metered power consumption to the local hydro company at a rate set in the contract between the Contractor and the local hydro company.
- 3.4.4 To minimize the duration of shutdowns and to keep the plant operational, the Contractor shall maintain the existing electrical system in operation while all new electrical components required for the final electrical system are constructed.

- 3.4.5 Power will NOT be provided by the Owner for any temporary works and construction activity. Power by the Owner will only be provided for Functional Testing, Commissioning and Performance Testing.

### **3.5 Construction Parking**

- 3.5.1 Access to the site for construction personnel is also used by other Contractors, consultants, the Engineer and the Owner.
- 3.5.2 Contractor's personnel are to park vehicles as directed by the Engineer and noted on the drawing. If sufficient space is not available in the parking lot, arrange for parking elsewhere at no additional cost to the Owner. Do not park construction vehicles, equipment or cars on roads or grass areas within the site.
- 3.5.3 Snow removal to be performed and paid for by the Contractor at no additional cost to the Contract. Included in the cost of snow removal is the off-site disposal of accumulated removed snow, at a time deemed necessary by the Engineer.
- 3.5.4 Groundskeeping to be performed and paid for by the Contractor at no additional cost to the Contract.
- 3.5.5 Provide and maintain adequate access to project site.
- 3.5.6 Build and maintain temporary roads where indicated or directed by the Engineer and provide snow removal during period of Work.
- 3.5.7 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractors' use of roads.
- 3.5.8 When site space is not adequate, arrange for and/or maintain additional off-site parking at no extra cost to the Owner.

### **3.6 Hoisting**

- 3.6.1 Provide, operate and maintain hoists and cranes required for moving of workers, materials and equipment.
- 3.6.2 All hoists and cranes shall be operated by qualified operators.

### **3.7 Temporary Barriers and Enclosures**

- 3.7.1 Provide temporary barriers to prevent unauthorized entry to construction, site office and on-site parking areas, and to protect existing facilities and adjacent properties from damage from the Contractor's operations.
- 3.7.2 Where appropriate, equipment barriers with vehicular and pedestrian gates with locks.
- 3.7.3 Provide security and facilities to protect the Work and the Site from unauthorized entry, vandalism and theft.
- 3.7.4 Maintain a log of workers and visitors and make the log available to the Engineer upon request. Include the date, name, address and company employed by, company/ person invited, time in and time out for each person, and record deliveries and security incidents.

**3.8 Removal of Temporary Facilities and Controls**

- 3.8.1 At Final Completion of the Contract, remove all temporary field offices, storage facilities, etc., and restore the areas to pre-construction conditions.

**END OF SECTION**

## **1 GENERAL**

### **1.1 Section Includes**

- 1.1.1 Redline drawings, samples, and specifications.
- 1.1.2 Equipment and systems.
- 1.1.3 Product data, materials and finishes, and related information.
- 1.1.4 Operation and maintenance data.
- 1.1.5 Spare parts, special tools and maintenance materials.
- 1.1.6 Warranties and bonds.
- 1.1.7 Final site survey.

### **1.2 Submission**

- 1.2.1 Prepare closeout submittals as detailed with in this section and submit to the Engineer for review. Submittals shall be as detailed herein and shall also confirm to Section 01330 - Submittals.

### **1.3 Operation and Maintenance Data**

- 1.3.1 Prepare draft Operations and Maintenance (O&M) Manuals and submit to the Engineer for review.
- 1.3.2 One copy will be returned with comments and one copy will be retained to assist the Engineer and will be returned after delivery of the final copies.
- 1.3.3 Revise the content of documents as required prior to final submittal.

#### **1.3.1 Manual**

- .1 An organized compilation of operating and maintenance data including detailed technical information, documents and records describing operation and maintenance of individual products or systems as specified in individual Sections of Divisions 02 to 16.
- .2 The number of draft and final hard copy submissions is identified in Section 01330 – Submittals.

#### **1.3.2 General**

- .1 Provide copies of documentation including as-constructed shop drawings to instruct the Owner's operations and maintenance staff in the operation and associated maintenance of each piece of equipment and system as supplied and installed. The following description is provided to the Contractor to describe the general requirements of the O&M Manuals. All information may not apply in all cases. Similarly, the Contractor may be required to provide additional information to adequately describe the equipment.

- .2 The Contractor will prepare a skeleton of the O&M Manuals including table of contents, section tabs and scale mock-up of printing proposed. The Contractor shall submit the draft O&M manual at least twenty (20) working days prior to the start of training specified in Section 01820.
- .3 In construction projects where work is carried out in distinct stages, the relevant portion of the manual will be required for that section of the work prior to equipment start-up.
- .4 Payment for closeout submittals shall be per Section 01025 – Measurement and Payment.

### 1.3.3 Contents

- .1 Provide the material in sections organized by specification section. It is not necessary that each Division be in a separate binder. However, the arrangement must be approved by the Engineer.
  - .1 The manual content in Volume 1 will be prepared by the Engineer. Documentation for all other Volumes is the responsibility of the Contractor.
  - .2 Provide the following information for each system and major piece of equipment. Refer to each piece of equipment by its name and tag number. Where manufacturer's literature covers several models or options, highlight the applicable information and cross out redundant information.
    - .1 Index of information in that section in order of appearance.
    - .2 Description of system, components and technical data. Include interfaces, sequences, operations, characteristics changes for seasonal operation.
    - .3 Maintenance and operating instructions, including:
      - .1 Installation instructions
      - .2 Procedure for starting
      - .3 Proper adjustment
      - .4 Test procedures
      - .5 Procedure for operating
      - .6 Procedure for shutdown
      - .7 Safety precautions
      - .8 List of electrical relay settings and control and alarm contact settings.
        - .1 Troubleshooting data

- .2 Preventative maintenance program complete with:
    - 1. Suggested check list sheets
    - 2. List of points to be greased or oiled
    - 3. Recommended type, grade and temperature range of lubricants
    - 4. List of wear points to be inspected and/or adjusted regularly
    - 5. Suggested schedule of lubrication and inspection
  - .9 Schematic, single line and wiring diagrams
  - .10 Asset tag list
  - .11 Recommended spare parts list
  - .12 Certification, guarantee, warranty
  - .13 Service representatives – name, address and telephone number
  - .14 Suppliers for replacement parts – name, address and telephone numbers
  - .15 Test results; witness testing and commissioning, reports
  - .16 Test data for piping systems (degreasing, flushing, disinfection)
  - .17 Hydrostatic or air tests performance
  - .18 Equipment alignment certificates
  - .19 Balancing data for air and water systems
  - .20 Inspection approval certificates for all types of systems; plumbing and piping, hot air and ventilating, electrical supervisory, etc.
- 1.3.4 The material submitted in accordance with the contractual requirements for “As-Constructed Shop Drawings” is generally bulky and difficult to file in a binder. If requested by the Engineer, provide copies of all “As-Constructed Shop Drawing” material in a single drawer legal size cardboard file cabinet. Arrange in accordance with the Construction Specifications Institute. Identify any material located in the file cabinet as such in the appropriate location in the binders.
- 1.3.5 All schematic/control, equipment, and wiring changes made during construction shall be reflected in the final shop drawings. The Owner shall have the right to determine whether the scope of such changes requires a complete re-issue of shop drawings or may be submitted on a page page-for-page replacement basis. No extra payment will be made for any such requests.

1.3.6 Provide a tabulated report for all motors and other equipment on the contract outlining the description, nameplate data, measured current and voltage type, size, setting of overload heaters (thermal/electronic) installed, setting of motor circuit protectors, breaker trip settings, fuse relays and fuse sizes in the control circuits, equipment name, horsepower. Indicate feeder conductor size and length of conduit.

1.3.7 At the Engineer's discretion, provide the information in plastic map pockets in appropriate sections in the binders.

**.1 Binders**

.1 Binders shall be large capacity, expanding/catalogue type for 11 x 8-1/2 sheets with expanding, lockable posts, 2" to 4", or 3" to 5" capacity, having fully hinged (metal, piano type) hard covers bound in heavyweight black leather-grain cover with custom embossed gold lettering. Allow minimum 1/4" empty space inside each binder. Binders: ACCO 50505-05426, 50505-05436, or equal.

.2 The custom embossed gold lettering on the front cover and spine must include: the name of the Owner, Contract No., Contract Title, Owner Logo, "Operation & Maintenance Manual" title, Volume x of y number, Divisions included, and Set x of y number. Template for spine and cover page attached.

.3 Binder accessories – Sections will be separated with the divider pages with labelled printed indexes (side tabs) and reinforces with a rip-proof, three hold punched strip, or similar protection. Drawings will be folded and inserted in labelled clear plastic binder type pockets/sleeves (page protectors). CDs, DVDs, and other electronic media will be placed in labelled, clear plastic, static free binder type holder sheets.

.2 Provide one complete electronic copy on USB. The electronic copy shall be in PDF format.

.1 Files are to be exact duplicates of the hard copy submission. Arrange by Specification number and name.

.2 Files are to be fully functional and viewable in the most recent version of Adobe Acrobat.

.3 The single PDF file shall include bookmarks for each section and subsection, be properly indexed, and fully searchable.

**1.4 Redline Drawings and Samples**

1.4.1 The Owner will supply a set of contract drawings. Mark thereon all revisions in red ink as the job progresses to produce a set of redline drawings.

1.4.2 Dimension locations (vertically and horizontally) of buried or concealed work, especially piping and conduit, with reference to exposed structures. Dimension the installed locations of concealed service lines on the site or within the structure by reference from the centre line of the service to the structure column lines or other main finished faces or other structural point easily identified and located in the finished work.

- 1.4.3 Update these drawings and make available for monthly review. Payment against the Progress Payment line item for updated drawings will be withheld if drawings have not been maintained up-to-date.
- 1.4.4 Submit redline drawings for electrical schematic and instrument control diagrams. Submit operation and maintenance instruction manuals with updated as-built control diagrams, revised to show construction revisions.
- 1.4.5 Submit redline drawings in SI metric units.
- 1.4.6 Record on the white prints on a daily basis, work constructed differently than shown on the Contract Documents. Record all changes in the work caused by site conditions, or originated by the Owner, the Engineer, the Contractor, or a sub-contractor and by addenda, supplemental drawings, site instructions, supplementary instructions, change orders, correspondence, and directions of regulatory authorities. Accurately record the location of concealed mechanical services and electrical main feeders, junction boxes and pull boxes. Do not conceal critical work until its location has been recorded.
- 1.4.7 Do not use these drawings for daily working purposes and make the set available for periodic inspection by the Engineer.
- 1.4.8 Make records in a neat and legibly printed manner with non-smudging medium.
- 1.4.9 The Contractor shall scan the complete set of redline drawings to PDF (full resolution) and upload progress redline drawings onto the CIMA FTP site and transmit to the Engineer at the end of the project.
- 1.4.10 Submit all marked up redline drawings to the Engineer at the conclusion of the contract. Substantial Performance will not be issued until redline drawings are complete and submitted.
- 1.5 Recording Actual Site Conditions**
  - 1.5.1 Record information on set of drawing prints provided by the Engineer.
  - 1.5.2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.
  - 1.5.3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
  - 1.5.4 Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:
    - .1 Measured depths of elements of foundation in relation to finish first floor datum.
    - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
    - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
    - .4 Field changes of dimensions and details.

- .5 Changes made by Contract Change Directives.
  - .6 Details not on original Contract Drawings.
  - .7 References to related shop drawings and modifications.
- 1.5.5 Specifications: legibly mark each item to record actual construction, including:
- .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
  - .2 Changes made by Addenda and Contract Change Directives.
- 1.5.6 Other Documents: maintain manufacturers' certifications, inspection certifications, field test records, required by individual specifications sections.
- 1.6 Final Survey**
- 1.6.1 The Owner will check the 'As-Recorded' survey elevations.
- 1.7 Equipment and Systems**
- 1.7.1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- 1.7.2 Panel board circuit directories: provide electrical service characteristics, controls, and communications, final as-constructed diagram.
- 1.7.3 Include as-constructed installed colour coded wiring diagrams in the manual and also provide an electronic copy in AutoCAD.
- 1.7.4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- 1.7.5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- 1.7.6 Provide servicing and lubrication schedule, and list of lubricants required.
- 1.7.7 Include manufacturer's printed operation and maintenance instructions.
- 1.7.8 Include sequence of operation by controls manufacturer where appropriate.
- 1.7.9 Provide original manufacturers' parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- 1.7.10 Provide installed control diagrams by controls manufacturer where appropriate. Include copies in the manuals and provide an electronic version in AutoCAD.
- 1.7.11 Provide coordination drawings, with installed colour coded piping diagrams.

- 1.7.12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- 1.7.13 Provide list of original manufacturers' spare parts, current prices, and recommended quantities to be maintained in storage.
- 1.7.14 Include test and balancing reports.
- 1.7.15 Additional requirements: As specified in individual specification sections.
- 1.7.16 Provide Engineer-reviewed Single Line Diagram in its final version. Single Line Diagram shall be of size 24-inch by 36-inch, laminated, mounted on wood board and be installed by GC in respective electrical room.

## **1.8 Spare Parts**

- 1.8.1 Provide spare parts, in quantities specified in individual specification sections.
- 1.8.2 Provide items of same manufacture and quality as items in Work.
- 1.8.3 Deliver to site location and place in storage as directed by the Owner.
- 1.8.4 Obtain receipt for all delivered products from the Owner or Engineer and submit these receipts prior to Substantial Performance.
- 1.8.5 Where spare parts are not specified, provide the Engineer and Owner with a list of all spare parts recommended by the equipment manufacturer for all major pieces of equipment, valves, and instruments, including model or part numbers, and costs for individual items.

## **1.9 Maintenance Materials**

- 1.9.1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
- 1.9.2 Provide items of same manufacture and quality as items in Work.
- 1.9.3 Deliver to site location and place in storage as directed by the Owner.
- 1.9.4 Obtain receipt for all delivered products from the Owner or Engineer and submit these receipts prior to Substantial Performance.

## **1.10 Storage Handling and Protection**

- 1.10.1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- 1.10.2 Store in original and undamaged condition with manufacturers' seal and labels intact.
- 1.10.3 Store components subject to damage from weather in weatherproof enclosures.
- 1.10.4 Store paints and freezable materials in a heated and ventilated room.
- 1.10.5 Remove and replace damaged products at the Contractor's own expense and to the satisfaction of the Engineer.

- 1.10.6 Exercise all equipment in strict conformance with the equipment manufacturers written instructions during storage and following installation. Provide all equipment exercise logs to the Engineer for review.

**1.11 Warranties and Bonds**

- 1.11.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
- 1.11.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- 1.11.3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers.
- 1.11.4 No warranty will commence until issuance of Substantial Performance on respective work components. The warranty on items used during construction, with the Owner's permission, for the safe and orderly completion of the works will not commence until Substantial Performance.
- 1.11.5 Verify that documents are in proper form, contain full information, and are notarized.
- 1.11.6 Co-execute submittals when required.
- 1.11.7 Retain warranties and bonds until time specified for submittal.

**2 PRODUCTS – NOT APPLICABLE**

**3 EXECUTION – NOT APPLICABLE**

**END OF SECTION**