



## **Regional District of Okanagan-Similkameen**

### **Construction Services for the Oliver Landfill Organics Composting Facility**

**To:** Posted on BC Bid Website  
**ITT:** RDOS-22-ENG-05  
**Attachments:** Addendum #1

**From:** Scott Garthwaite, ASCT  
**Date:** April 21, 2022  
**Pages:** 11

Please take note that RDOS has issued the attached Addendum #1 to address the questions and answers for the Invitation to Tender RDOS-22-ENG-05.

**This Addendum forms part of the contract documents and is to be read, interpreted, co-ordinated with all other parts. The cost of all contained herein is to be included in the contract sum. The following revisions supersede the information contained in the original drawings and specifications issued for the above-named project to the extent referenced and become part thereof.**

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This Addendum includes the following information:

- A. Tender Documents including Supplementary General Conditions (SGC's) Changes
- B. Questions and Answers
- C. Appendix A – Attendance list from the Mandatory Bidder's Meeting
- D. Appendix B – Revised Electrical Drawings from KYSU Consulting
- E. Appendix C – Revised Schedule of Quantities and Measurement and Payment
- F. Appendix D – Suggested Leachate Tank Aeration Diffuser and Recirculation Pumps

**A. Tender Documents including Supplementary General Conditions :**

1. The deadline for submitting inquiries is hereby extended to **Friday April 29, 2022.**

**Instruction to Tender Part I Subsection 1.2 currently reads:**

“The deadline for submitting inquiries is Thursday, April 14, 2021, at 2 PM”

**Instruction to Tender Part I Subsection 1.2 is hereby amended to:**

“The deadline for submitting inquiries is Friday, April 29, 2022, at 2 PM”

2. The term “contact water collection system” is hereby amended to “leachate collection system”.
3. The term “contact water disposal and sump” is hereby amended to “leachate collection disposal and sump”

**Original:**

<b>1.0</b>	<b>Introduction</b>	1.1	These Instructions apply to and govern the preparation of tenders for this <i>Contract</i> . The <i>Contract</i> is generally for the following work but not limited to:
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- 
1. Earthworks & Site Regrading: The Contractor is required to clear, grub, strip soil, prepare site for construction of composting pad, water service, lock block, drainage and roads.
  2. Composting Facility: The Contractor is required to supply and install the Dome structure, construct leachate management system, prepare subgrade and pave, and place piping and conduit for water, electrical, and leachate. The Contractor is required to supply and install various mechanical systems including but not limited to **contact water** disposal sumps/pumps and tank .

**Amendment:**

<b>1.0</b>	<b>Introduction</b>	1.1	These Instructions apply to and govern the preparation of tenders for this <i>Contract</i> . The <i>Contract</i> is generally for the following work but not limited to:
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- 
1. Earthworks & Site Regrading: The Contractor is required to clear, grub, strip soil, prepare site for construction of composting pad, water service, lock block, drainage and roads.
  2. Composting Facility: The Contractor is required to supply and install the Dome structure, construct leachate management system, prepare subgrade and pave, and place piping and conduit for water, electrical, and leachate. The Contractor is required to supply and install various mechanical systems including but not limited to leachate collection and disposal sumps/pumps and tank .



- 4. SGC 12 Quantity Variation is hereby amended to include the condition that rates are to be fixed unless a mutual agreement in writing is reached.

Original:

**SGC.12 QUANTITY VARIATION**

If for any reason, including an addition or deletion of work, the actual quantity of a unit price item listed in the Schedule of Quantities and Prices varies, neither the Contractor nor the Owner shall be entitled to unilaterally revise the unit price of said item. The unit rates set out in the Schedule of Quantities and Prices shall be considered fixed.

Amendment:

**SGC.12 QUANTITY VARIATION**

If for any reason, including an addition or deletion of work, the actual quantity of a unit price item listed in the Schedule of Quantities and Prices varies, neither the Contractor nor the Owner shall be entitled to unilaterally revise the unit price of said item. The unit rates set out in the Schedule of Quantities and Prices shall be considered fixed unless a mutual agreement in writing is reached.

- 5. The closing date is hereby amended to Friday, May 13, 2022.

Original:

**Tenders are scheduled to close:**

Tender Closing Time: 4 : 00 , Pm local time  
Tender Closing Date: April 14 , 20 22

Amendment:

**Tenders are scheduled to close:**

Tender Closing Time: 4 : 00 , PM local time  
Tender Closing Date: May 13 , 20 22

- 6. The following Payment Items have been added to the Schedule of Quantities and Measurement and Payment sections.
  - a. Payment Item 5.04 Site Service Communication Conduit from Blacksage Rd - Scale House
  - b. Payment Item 5.05 Site Service - Power Pedestal
  - c. Payment Item 5.06 Supply and Install Site Lighting - Single Davit
  - d. Payment Item 5.07 Supply and Install Site Lighting - Double Davit

Please reference **Appendix C** for the updated and revised Schedule of Quantities and Measurement and Payment.

7. The following Payment Items have been removed from the Schedule of Quantities and Measurement and Payment sections.
  - a. Payment Item 6.05 Common Excavation, Asphalt Remove up to 100mm thick,
  - b. Payment Item 6.10 Asphalt Roadway, 65 mm Thickness
  - c. Payment Item 6.11 Sawcut Asphalt Roadway were provisional and have been removed.

Please reference **Appendix C** for the updated and revised Schedule of Quantities and Measurement and Payment.

8. The following provisional Payment item has been added to the Schedule of Quantities and Measurement and Payment sections. Provisional items are optional and will only become part of the contract at RDOS' discretion.
  - a. Provisional Payment Item 7.02 Supply and Install Coverall Structure Lighting

Please reference **Appendix C** for the updated and revised Schedule of Quantities and Measurement and Payment.

9. The following Payment Items have been amended for clarity:
  - a. Payment Item 2.02 has hereby been amended to be measured in terms of cubic metre (m<sup>3</sup>)  
Original:
    2. **Payment Item 2.02 – Place and Compact 0.3 m Thick Lifts of Sorted, 300 mm Minus Material**
      - a. Measurement: Per square metre (m<sup>2</sup>)  
Amendment:
    2. **Payment Item 2.02 – Place and Compact 0.3 m Thick Lifts of Sorted, 300 mm Minus Material**
      - a. Measurement: Per cubic metre (m<sup>3</sup>)

- b. Payment Item 3.11 has hereby been amended to read Payment Item 3.11 Supply and Install Leachate Forcemain including Standpipe and Fittings (75mm HDPE DR 17 Solid Pipe).

Original:

11. **Payment Item 3.11 – Supply and Install Leachate Forcemain including Standpipe and Fittings ( 50 mm HDPE DR 11 Solid Pipe)**
- a. Measurement: Per meter (m)
  - b. Payment: Calculated length based on survey conducted by Contractor and verified by Engineer.

Amendment:

11. **Payment Item 3.11 – Supply and Install Leachate Forcemain including Standpipe and Fittings (75 mm HDPE DR 17 Solid Pipe)**
- a. Measurement: Per metre (m)
  - b. Payment: Calculated length based on survey conducted by Contractor and verified by Engineer.

- c. Payment Item 5.01 has been hereby amended for clarity to read Payment Item 5.01 Supply and Install Service Kiosk c/w 25MPa Reinforced Concrete Pads

Original:

1. **Payment Item 5.01- Supply and Install Service Kiosk**
- a. Measurement: Lump Sum (LS)
  - b. Payment: Per level of completion on completion of installation of service kiosk.

Amendment:

1. **Payment Item 5.01- Supply and Install Service Kiosk c/w 25MPa Reinforced Concrete Pads**
- a. Measurement: Lump Sum (LS)
  - b. Payment: On completion of installation of service kiosk

- d. Payment Item 7.01 has been hereby amended for clarity to be measured as a lump sum.

Original:

1. **Payment Item 7.01 - Supply and Erect Pre-Engineered Dome Structure (9.88 m x 10.64 m)**
- a. Measurement: Per unit (each)
  - b. Payment: Per level of completion.

Amendment:

1. **Payment Item 7.01 - Supply and Erect Pre-Engineered Dome Structure**  
**(9.88 m x 10.64 m)**
  - a. Measurement: Lump Sum (LS)
  - b. Payment: Per level of completion.

Please reference **Appendix C** for the updated and revised Schedule of Quantities and Measurement and Payment

10. Clarification to Instructions to Tenderers Part 1 Section 3.0 Submission of Tenders Subsection 3.1 provided to clarify **print-only** submission requirements.

Original:

- 3.0 Submission of Tenders** 3.1 Tenders, including amendments and Addendums, may be submitted in print or electronic form to the office of:
- Regional District of Okanagan Similkameen  
Attention: Shane Fenske, ASCT  
\_\_\_\_\_  
(TITLE OF POSITION)
- on or before:
- Tender Closing Time:** 4 : 00 , PM local time  
**Tender Closing Date:** May 13 , 20 22
- at
- Email:** [sfenske@rdos.bc.ca](mailto:sfenske@rdos.bc.ca)

Tenders must be submitted in print or electronic with the subject:  
"TENDER – OLIVER SANITARY LANDFILL – COMPOST FACILITY"

When a Tenderer submits their Tender by email then the email containing the Tender will be deemed to have been received at the Closing Location at the date/time stamped/tagged by the Regional District of Okanagan Similkameen's email system, and the Tenderer assumes the entire risk that the email is received by the addressee and is complete, including the risk that the Regional District of Okanagan Similkameen's system will not properly receive the email and any email attachments before the Tender Closing Date and Time. Regional District of Okanagan Similkameen's inability to receive an email or email attachment, for any reason, shall not constitute an exception to the mandatory requirement to submit the Tender by the Closing Date and Time, and the Regional District of Okanagan Similkameen assumes no risk or responsibility that any email will be received.

Amendment:

- 3.0 Submission of Tenders** 3.1 Tenders **must be submitted in print form** to the office of:
- Regional District of Okanagan Similkameen  
Attention: Shane Fenske, ASCT  
\_\_\_\_\_  
(TITLE OF POSITION)
- on or before:
- Tender Closing Time:** 4 : 00 , PM local time  
**Tender Closing Date:** May 13 , 20 22
- 3.2 Late tenders will not be accepted or considered, and will be returned unopened.

11. SGC. 5 requirements to follow 15 km/h is hereby amended to obey all posted speed limits.

Original:

All truck operators must comply with the Regional District by-laws regulating truck use, including truck route, engine brake noise, and weight and load securement provisions, and must also comply with the speed limit at the Oliver Landfill, which is 15 kph.

Amendment:

All truck operators must comply with the Regional District by-laws regulating truck use, including truck route, engine brake noise, and weight and load securement provisions, and must also obey the posted speed limits at the Oliver Landfill.

12. SGC 1 Hours of Work; Work Areas is hereby amended to provide contractor unrestricted access to the landfill for the duration of the project.

Original:

The Contractor will confine its performance of the Work to the limits of the areas noted on the Drawings, except that the Contractor will be entitled to utilize the roads within the Landfill Site for transporting its labour and equipment to and from such Work areas and except also that the Contractor may place its Site office within an area approved by the Consultant and Regional District.

Amendment:

The Contractor will have unrestricted access to the landfill for the duration of the project. The Contractor will be provided 2 keys for the landfill gate at the project kickoff meeting.



13. Issuer abbreviations for drawing packages amended to include full company names.

Original:

Schedule 2 List of Contract Documents

DRAWING LIST				
SHEET NO.	DWG NO.	ISSUER	REVISION	SHEET TITLE
<b>000 SERIES - EARTHWORK AND LEACHATE MANAGEMENT</b>				
000	20053-00	SHA	D	COVER PAGE, LEGEND AND DRAWING LIST
001	20053-01	SHA	D	EXISTING TOPOGRAPHY 2020-10-20 EG + 2022-01-20 EG
002	20053-02	SHA	D	COMPOST FACILITY DESIGN SUBGRADE
003	20053-03	SHA	D	CUT/FILL DESIGN SUBGRADE VS 2020-10-20 EG + 2022-01-20 EG
004	20053-04	SHA	D	COMPOST FACILITY SITE AND TRAFFIC LAYOUT
005	20053-05	SHA	D	LEACHATE MANAGEMENT LAYOUT
006	20053-06	SHA	D	COMPOSTING PAD, ACCESS ROAD DETAIL
007	20053-07	SHA	D	GORE COMPOSTING DETAILS
008	20053-08	SHA	D	COVERALL BUILDING DETAILS
009	20053-09	SHA	D	SECTION A-A'
010	20053-10	SHA	D	SECTION B-B'
011	20053-11	SHA	D	SECTION C-C'
012	20053-12	SHA	D	LEACHATE SYSTEM SCHEMATICS
<b>100 SERIES - ELECTRICAL FOR COMPOST FACILITY</b>				
100	20053-100	KYSU	D	ELECTRICAL SITE PLAN
101	20053-101	KYSU	D	ELECTRICAL DETAILS
103	20053-103	KYSU	D	ELECTRICAL SCHEDULES & SPECIFICATION
<b>200 SERIES - WATER SUPPLY FOR COMPOST FACILITY</b>				
200	20053-200	TRUE	2	COVER PAGE
201	20053-201	TRUE	2	PLAN & PROFILE 0+000 TO 0+370
202	20053-202	TRUE	2	PLAN & PROFILE 0+370 TO 0+750
203	20053-203	TRUE	2	PLAN & PROFILE 0+750 TO 1+130
204	20053-204	TRUE	2	PLAN & PROFILE 1+130 TO 1+180 AND DETAILS
205	20053-205	TRUE	2	PRE-PACKAGED BOOSTER STATION KIOSK PLAN, SECTION AND DETAILS
E01	E01	TRUE	1	ELECTRICAL SITE PLAN
E02	E02	TRUE	1	BOOSTER STATION PLAN AND SECTION

Amendment:

DRAWING LIST				
SHEET NO.	DWG NO.	ISSUER	REVISION	SHEET TITLE
<b>000 SERIES - EARTHWORK AND LEACHATE MANAGEMENT</b>				
000	20053-00	Sperling Hansen Associates	D	COVER PAGE, LEGEND AND DRAWING LIST
001	20053-01	Sperling Hansen Associates	D	EXISTING TOPOGRAPHY 2020-10-20 EG + 2022-01-20 EG
002	20053-02	Sperling Hansen Associates	D	COMPOST FACILITY DESIGN SUBGRADE
003	20053-03	Sperling Hansen Associates	D	CUT/FILL DESIGN SUBGRADE VS 2020-10-20 EG + 2022-01-20 EG
004	20053-04	Sperling Hansen Associates	D	COMPOST FACILITY SITE AND TRAFFIC LAYOUT
005	20053-05	Sperling Hansen Associates	D	LEACHATE MANAGEMENT LAYOUT
006	20053-06	Sperling Hansen Associates	D	COMPOSTING PAD, ACCESS ROAD DETAIL
007	20053-07	Sperling Hansen Associates	D	GORE COMPOSTING DETAILS
008	20053-08	Sperling Hansen Associates	D	COVERALL BUILDING DETAILS
009	20053-09	Sperling Hansen Associates	D	SECTION A-A'
010	20053-10	Sperling Hansen Associates	D	SECTION B-B'
011	20053-11	Sperling Hansen Associates	D	SECTION C-C'
012	20053-12	Sperling Hansen Associates	D	LEACHATE SYSTEM SCHEMATICS
<b>100 SERIES - ELECTRICAL FOR COMPOST FACILITY</b>				
100	20053-100	KYSU Consulting	D	ELECTRICAL SITE PLAN
101	20053-101	KYSU Consulting	D	ELECTRICAL DETAILS
103	20053-103	KYSU Consulting	D	ELECTRICAL SCHEDULES & SPECIFICATION
<b>200 SERIES - WATER SUPPLY FOR COMPOST FACILITY</b>				
200	20053-200	TRUE Consulting	2	COVER PAGE
201	20053-201	TRUE Consulting	2	PLAN & PROFILE 0+000 TO 0+370
202	20053-202	TRUE Consulting	2	PLAN & PROFILE 0+370 TO 0+750
203	20053-203	TRUE Consulting	2	PLAN & PROFILE 0+750 TO 1+130
204	20053-204	TRUE Consulting	2	PLAN & PROFILE 1+130 TO 1+180 AND DETAILS
205	20053-205	TRUE Consulting	2	PRE-PACKAGED BOOSTER STATION KIOSK PLAN, SECTION AND DETAILS
E01	E01	TRUE Consulting	1	ELECTRICAL SITE PLAN
E02	E02	TRUE Consulting	1	BOOSTER STATION PLAN AND SECTION

## **B. Questions and Answers**

- Q1: Is the intent to have the contractor do everything (water service, leachate system, paving, etc.) then just purchase the gore system and coverall building directly from the suppliers and have their people (mega dome and the gore cover people) set those up?
- A1: For all provisional items, (Optional Work as detailed under GC7.4 subsection 7.4.1), the contractor is responsible for the supply unloading, coordination, and installation. As outlined above, under Section A, all Provisional Items will only become part of the Contract if the RDOS determines they provide value to the project, at the sole discretion of the RDOS.
- Q2: Just to confirm, they will be purchasing the kiosk through mearl's, but we will by the gore system and coverall building and have those suppliers do those installs?
- A2: The kiosk will be purchased through Mearl's. For all provisional items, (Optional Work as detailed under GC7.4 subsection 7.4.1), the contractor is responsible for the supply unloading, coordination, and installation. As outlined above, under Section A, all Provisional Items will only become part of the Contract if the RDOS determines they provide value to the project, at the sole discretion of the RDOS.
- Q3: SGC.8 - Is there landfill waste in areas the contractor would be working in? if not, the first paragraph of this section shouldn't be included. The second paragraph is fine.
- A3: There will be no landfill waste in the work area. The soil composition is mostly silty sand. Condition however should stay.
- Q4: SGC 9 – Is this really the case? That MOE staff could shut the construction down? I would be more concerned with Worksafe. So, is this SGC necessary?
- A4: Correct. This project is also under ENV's (MOE) jurisdiction.
- Q5: SGC 13 – this seems odd – so is this saying that we would accept 100% variance in quantity amounts at total performance? This doesn't make any sense to me. Please explain if this was actually intended. Otherwise, 15% in GC 1.76 would be fine.
- A5: Variation Threshold Percentage (GC 1.76) is hereby amended to 15% .

- Q6: Please clarify specifications for the aeration and pump referenced under Payment Item 3.10 Supply and Install Leachate System c/w 7,000 GAL Underground FRP Double Wall Holding Tank c/w Leak Detection, Pump, Aeration, Blower and Controls.
- A6: Aeration refers to the leachate tank aeration diffuser and pump to the leachate recirculation pump The following example models are suggested:
- a. For Leachate Tank Sump c/w Dual float controller 2 HP 208 V 3 Phase, please see Stancor SS-200 Pump. Also, to make this pump work, we need to upsize the 2-inch leachate line to a 3-inch line with no change in DR.
  - b. For Leachate Tank Aeration Piston Compressor, please see Kasco KM-200Cx2 0.75 HP 115 V 1 Phase. Aeration system to include a minimum of 4 diffuser systems and a Large Cabinet c/w reinforced concrete pads.

Please refer to Appendix D – Suggested Leachate Tank Aeration Diffuser and Recirculation Pumps for full specifications on suggested models.



## Appendix A

Attendance list from the Mandatory Bidder's Meeting

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PRJ20053

Construction Services for the Oliver Landfill Organics Composting Facility

**Mandatory Bidders Meeting Attendance**

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*Owner:* Regional District of Okanagan-Similkameen

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*Owner's Representative:* Shane Fenske, ASCT

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*Consultant:* Sperling Hansen Associates Inc.

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*Consultant's Representative:* Scott Garthwaite, ASCT

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*Contract:* Construction Services for the Oliver Landfill Organics Composting Facility

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*Reference No.:* RDOS-22-ENG-05

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*Meeting Time:* 9:00 am Tuesday April 12, 2022

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*Meeting Location:* 498 Saddle Ridge Rd, Oliver, BC V0H 1T0

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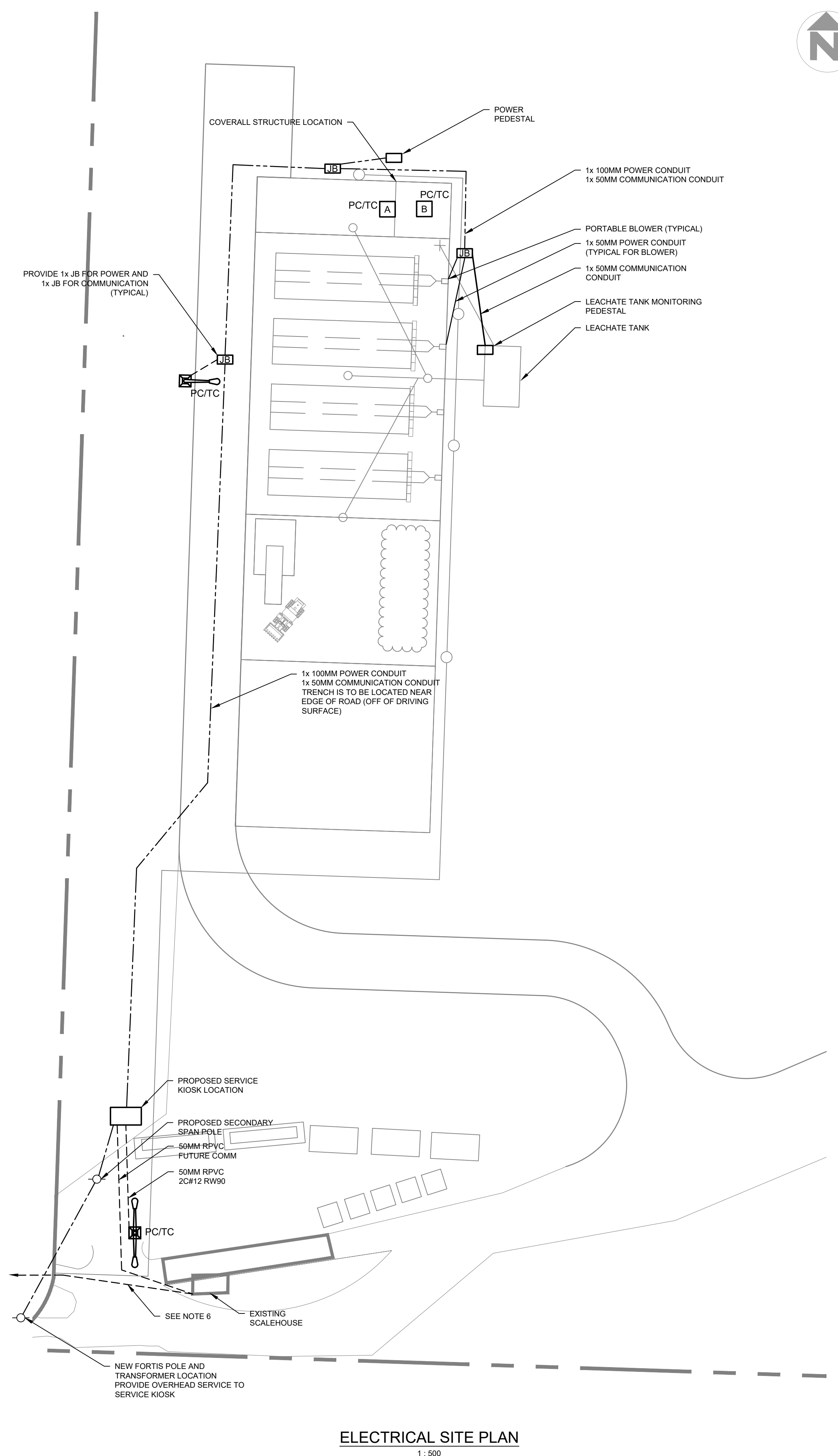
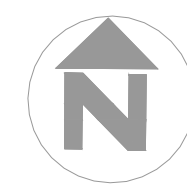
Name of the Company	Name of the Representative	Address - City	Phone	E-mail	Signature
Grizzly	Steve Carson				
TEBO	Sarunas Sviibkeska				
Modular Electric	Zach Clark				
West Alliance Construction	Cody Kloot				
Carver Construction	Rob Bryce				
Twincon	Jamie Lyoas				



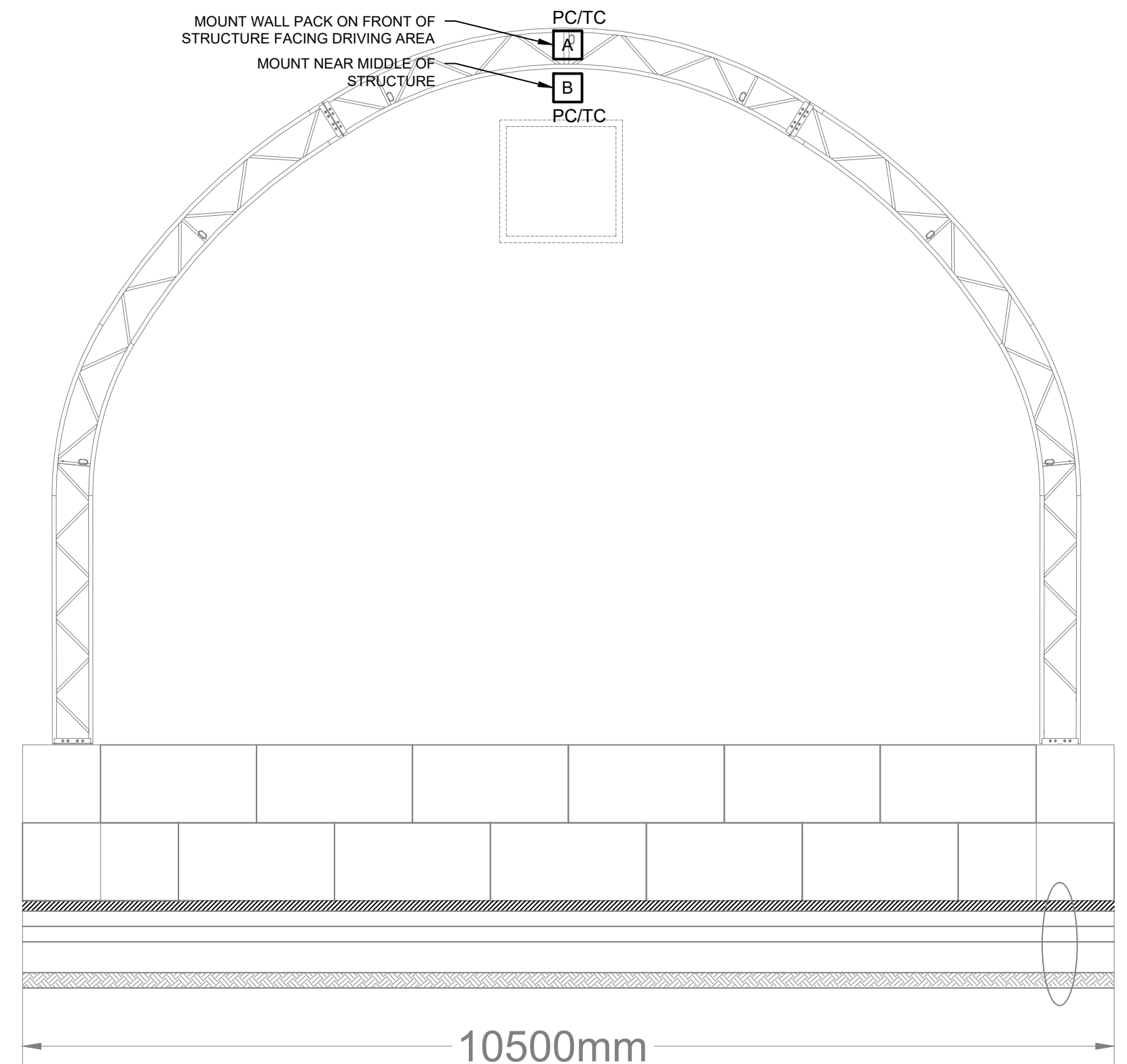
## Appendix B

Revised Electrical Drawings from KYSU Consulting

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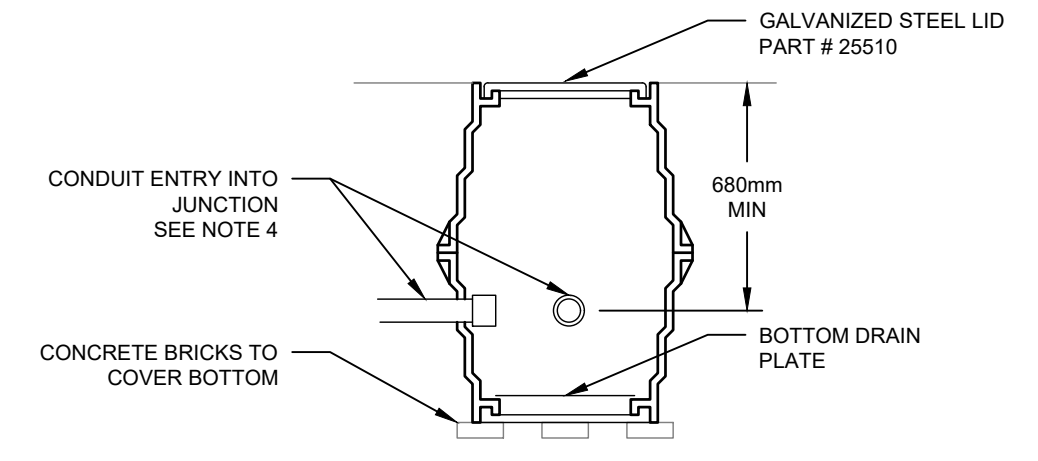


**ELECTRICAL SITE PLAN**  
SCALE: 1:500



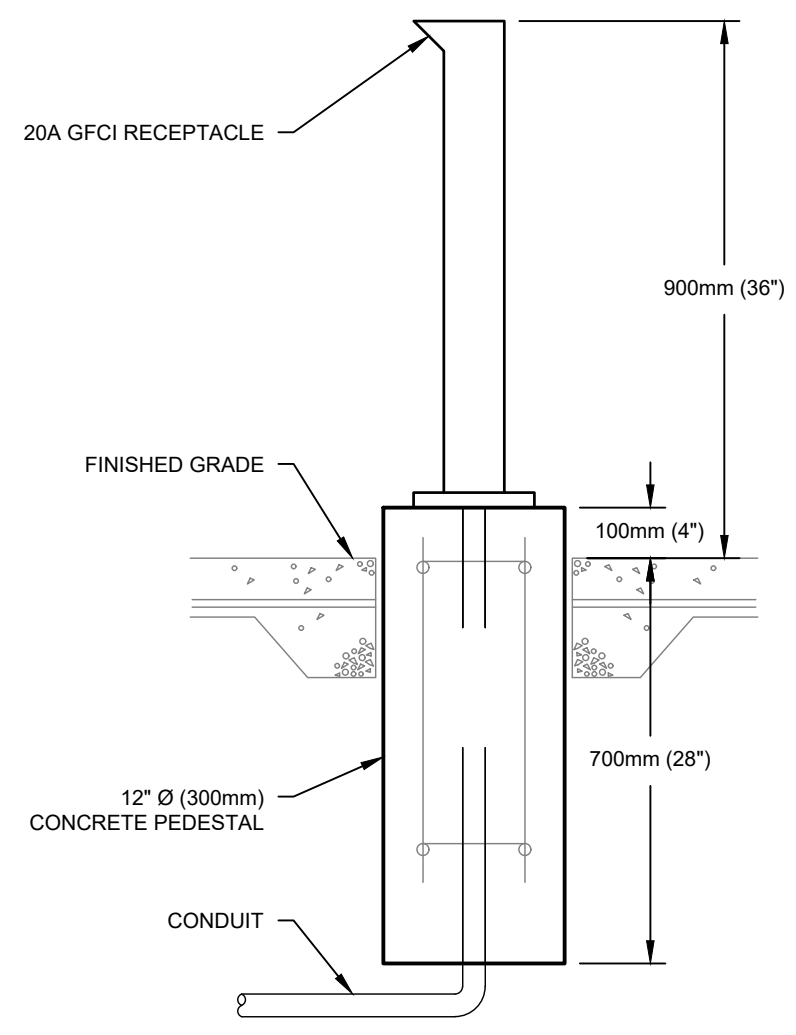
**COVERALL STRUCTURE**  
SCALE: 1:50

- NOTES:**
1. ALL INSTALLATION AS PER CURRENT EDITION OF THE CANADIAN ELECTRICAL CODE.
  2. EQUIPMENT AND BUILDING LOCATIONS ARE APPROXIMATE. FINAL LOCATIONS TO BE COORDINATED WITH SITE LAYOUT AND OWNER REQUIREMENTS.
  3. PROVIDE COMMUNICATION CONDUIT FROM NEW SERVICE KIOSK TO EXISTING SCALEHOUSE BUILDING. COORDINATE WITH OWNER FOR LOCATION OF COMMUNICATION CONDUIT ENTRY LOCATION.
  4. PROVIDE CONDUITS FROM LEACHATE TANK MONITORING PEDESTAL TO LEACHATE TANK.
  5. PROVIDE POWER PEDESTAL NEAR COVERALL STRUCTURE. POWER PEDESTAL IS TO HAVE 20A GFCI DUPLEX RECEPTACLE FOR MAINTENANCE USE. PEDESTAL CAN BE PRE-MANUFACTURED OR ASSEMBLED ON SITE. FEEDER IS TO BE 347V OR 600V. 1Ø AND PEDESTAL IS TO HAVE 2ØVA TRANSFORMER TO PRODUCE 120V.
  6. PROVIDE COMMUNICATION CONDUIT FROM THE SCALEHOUSE TO BLACKSAGE RD. CONDUIT IS TO BE 50MM DB2 WITH PULLBOXES INSTALLED EVERY 150M. PULLBOX IS TO BE SAME AS JUNCTION BOX DETAIL. ESTIMATED LENGTH OF CONDUIT RUN IS 1.2KM. REFER TO TRENCH DETAIL FOR COMMUNICATION CONDUIT ON SHEET 101.



- JUNCTION BOX NOTES:**
1. TWO RECTANGULAR JUNCTION BOXES INSTALLED WITH ONE INVERTED UNDER THE OTHER.
  2. PROVIDE BONDING FOR STEEL LID.
  3. JUNCTION BOX IS TO BE WEST COAST ENGINEERING 25100 OR APPROVED EQUAL.
  4. CONDUIT IS TO BE RUN AT A DEPTH OF 900mm AND HAVE A GENTLE RISE UP FOR ENTRY INTO JUNCTION BOX.

**JUNCTION BOX DETAIL**  
SCALE: NTS



**POWER PEDESTAL**  
SCALE: NTS

Project No:  
Permit To Practice: 1003300

**ISSUED FOR TENDER**  
NOT FOR CONSTRUCTION

#	REMARKS	DATE
00	ISSUED FOR COORDINATION	25/02/2022
01	ISSUED FOR TENDER	18/03/2022
02	ISSUED FOR ADDENDUM #1	18/04/2022

**DISCLAIMER**

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KYSU CONSULTING SERVICES IS NOT RESPONSIBLE FOR THE ACCURACY OF THESE DRAWINGS, THEY ARE ISSUED FOR INFORMATION PURPOSES ONLY. EXACT DIMENSIONS AND LOCATIONS OF ALL SERVICES SHALL BE COORDINATED AND VERIFIED WITH THE CONTRACTOR

PROJECT TITLE  
**OLIVER LANDFILL COMPOST FACILITY**

DRAWING TITLE  
**ELECTRICAL SITE PLAN**

DRAWN BY  
KYSU/JAL

CHECKED BY  
KYSU/ILL

SCALE  
NTS

PROJECT#  
SHA 20053

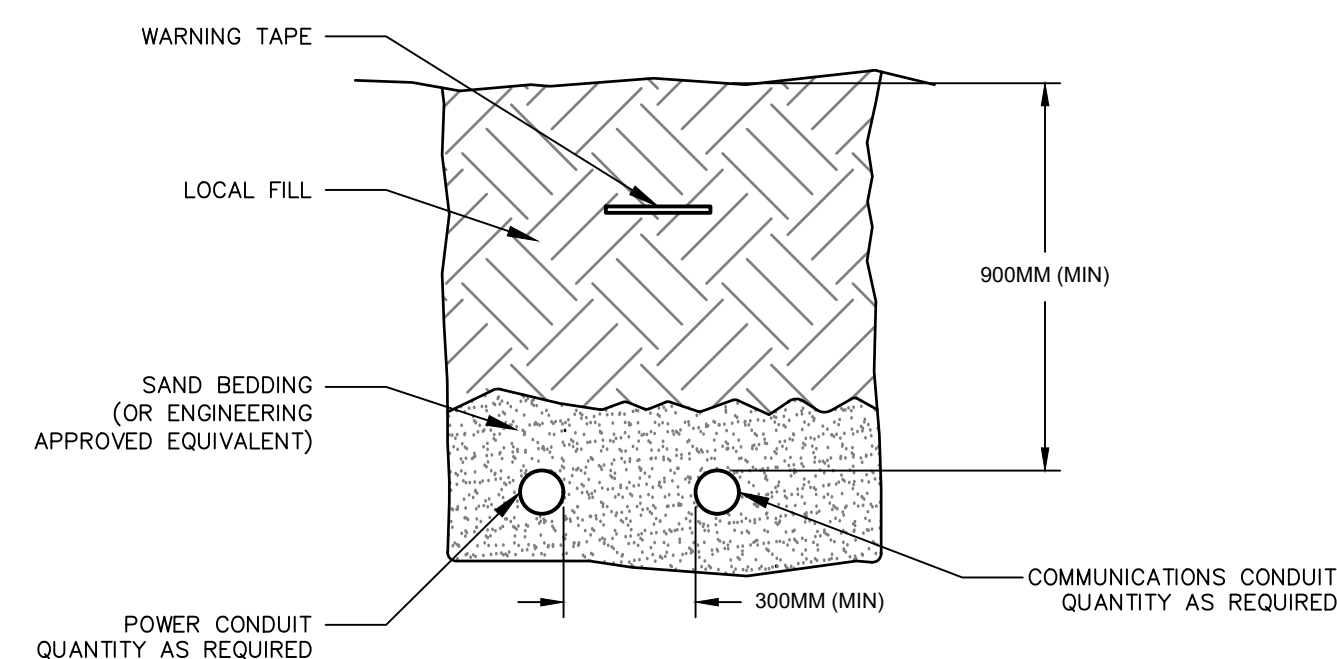
SEAL  
SHEET #  
20053-100

REVISION #

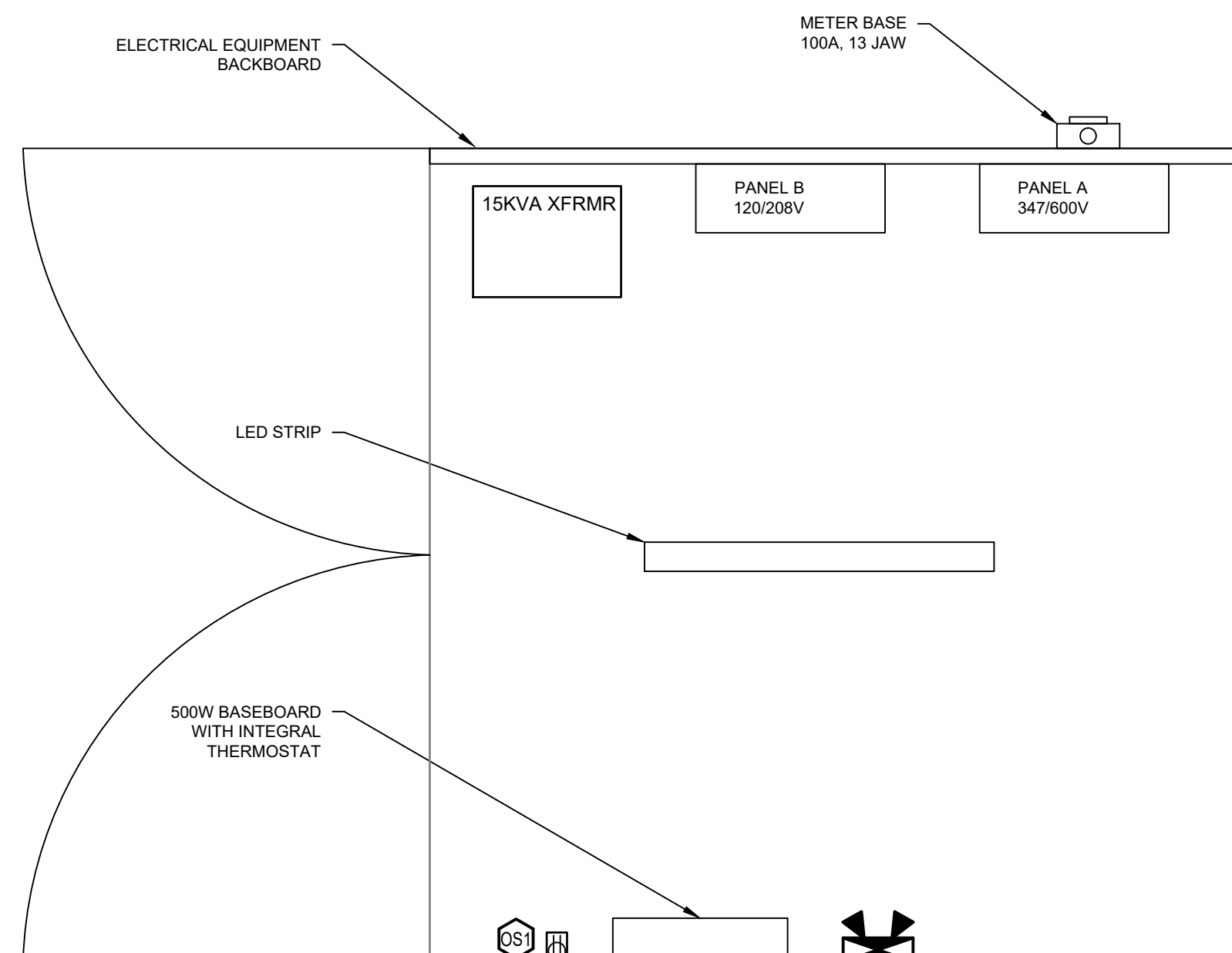
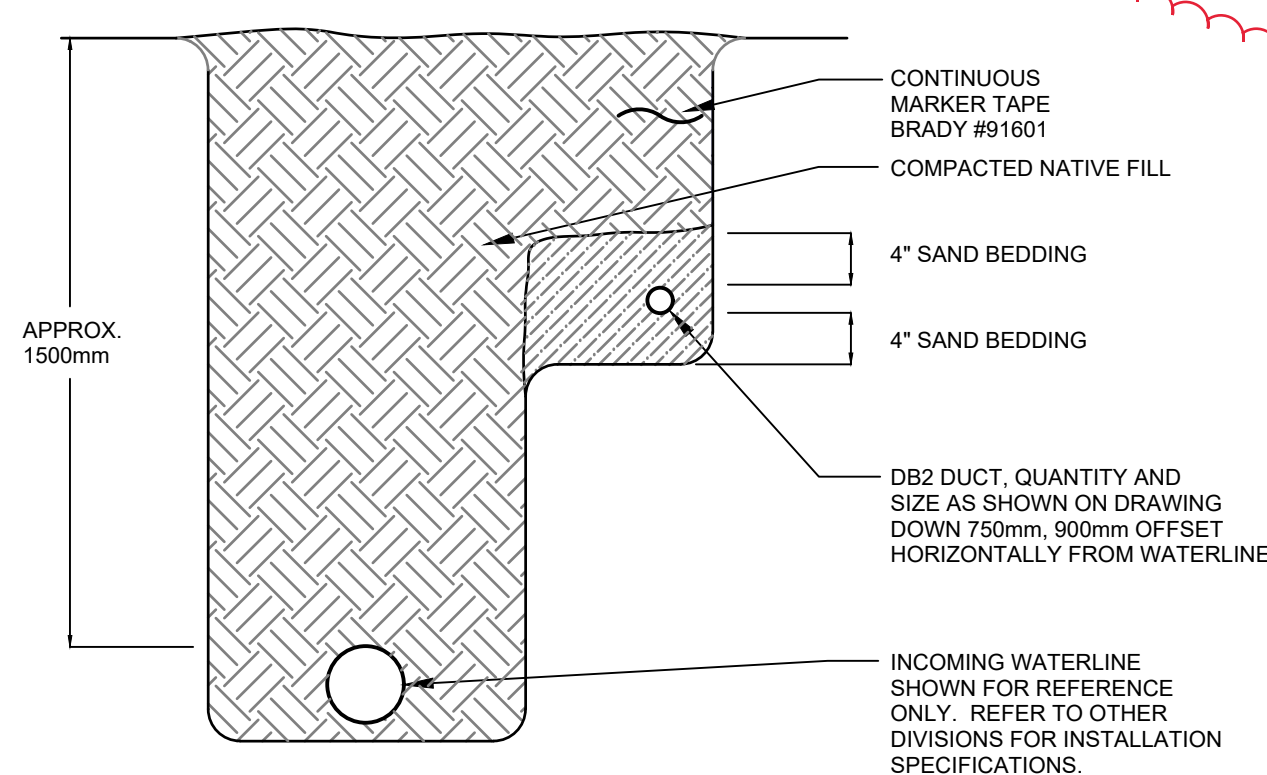


**ISSUED FOR TENDER**  
 NOT FOR CONSTRUCTION

#	REMARKS	DATE
00	ISSUED FOR COORDINATION	25/02/2022
01	ISSUED FOR TENDER	18/03/2022
02	ISSUED FOR ADDENDUM #1	18/04/2022

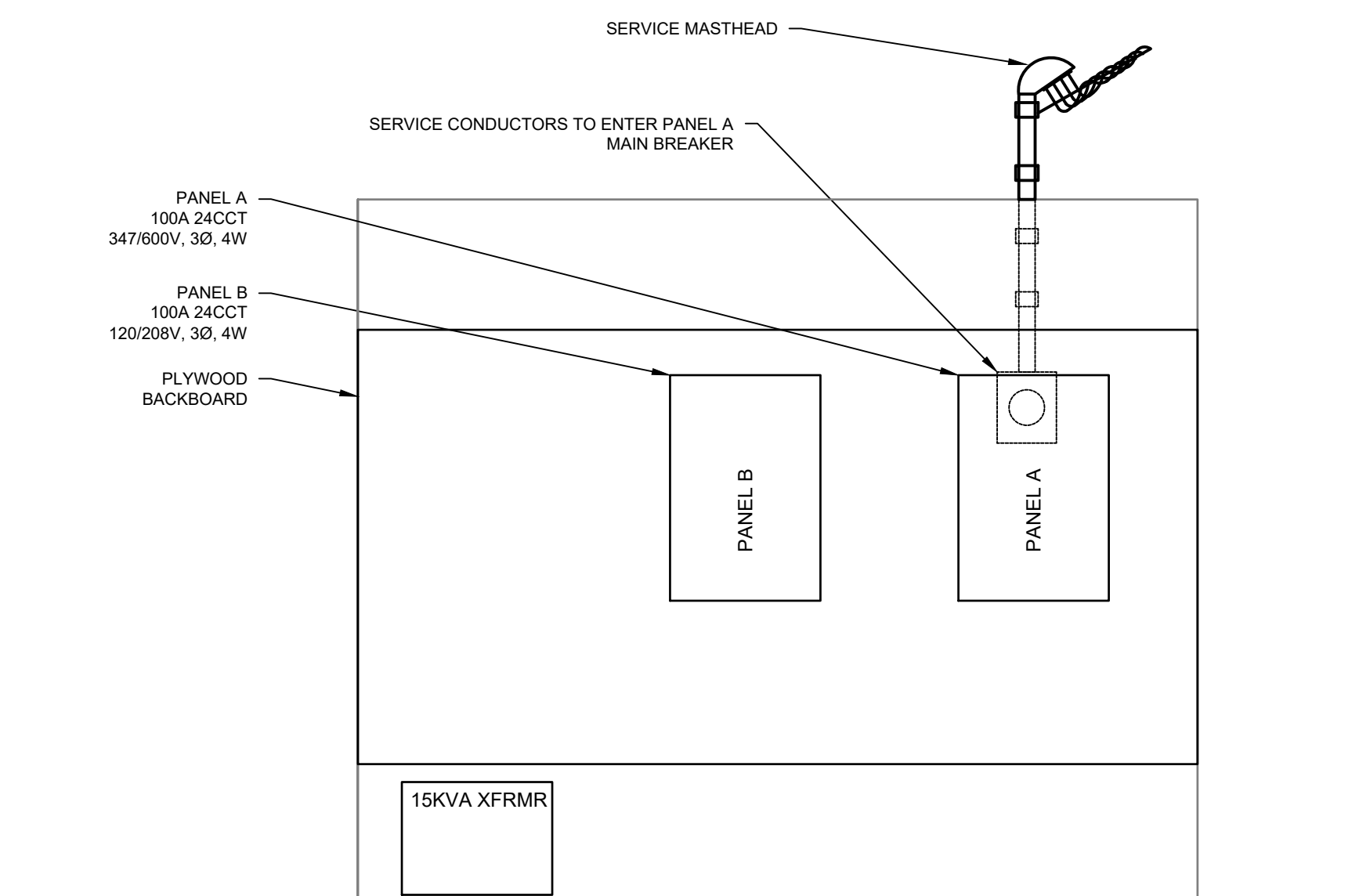


- TRENCH DETAIL NOTES:**
- 300MM HORIZONTAL SPACING BETWEEN COMMUNICATIONS AND POWER CONDUITS.
  - 300MM HORIZONTAL SPACING FROM ALL WATER PIPING.
  - 300MM OF VERTICAL SPACING BETWEEN POWER CONDUITS AND WATER PIPING, WHERE CROSSING.
  - CONDUITS SURROUNDED BY A MINIMUM OF 75MM OF SAND BEDDING OR ENGINEER APPROVED EQUIVALENT MATERIAL.

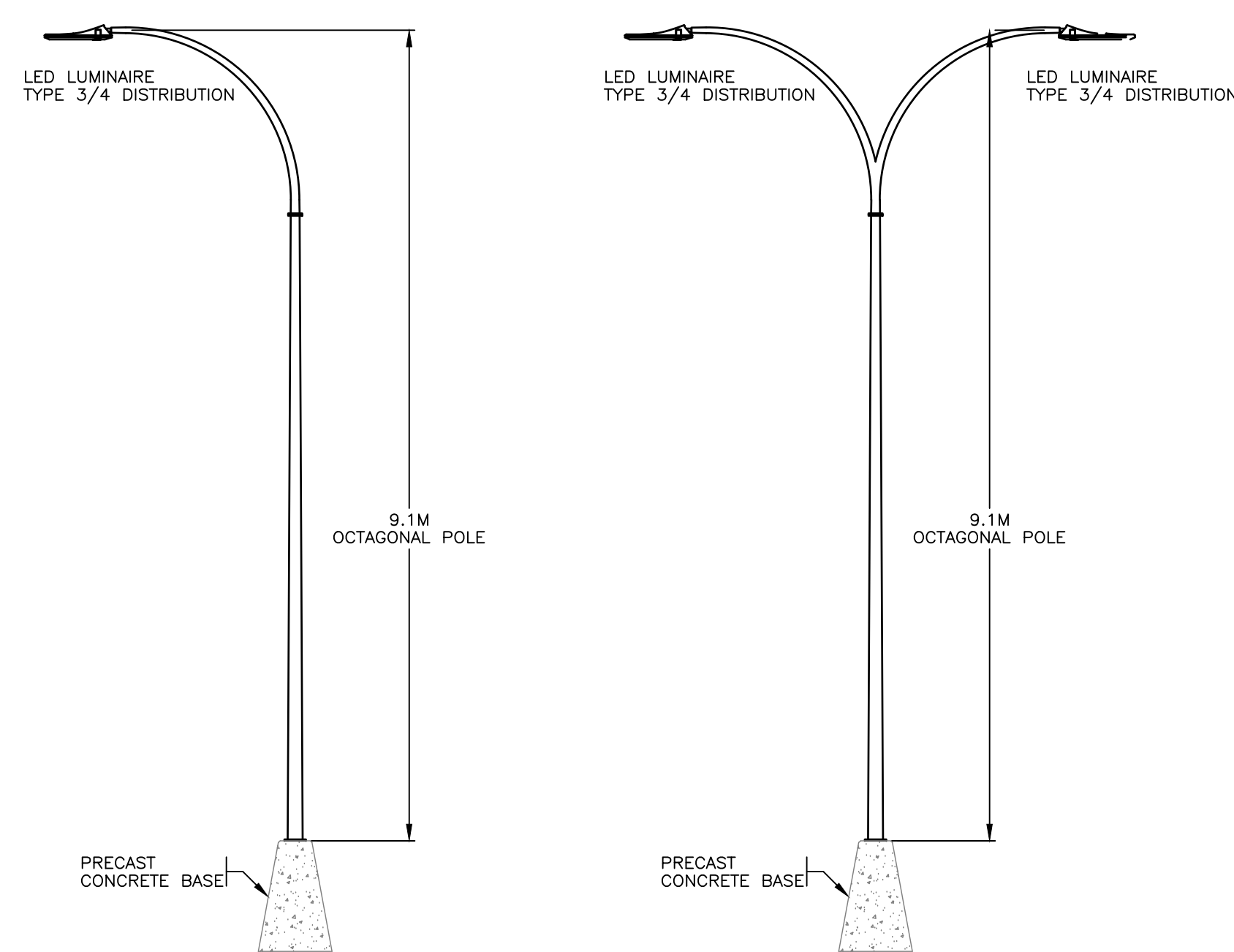


**ELECTRICAL SERVICE ENTRANCE - EQUIPMENT LAYOUT - PLAN VIEW**  
 NTS

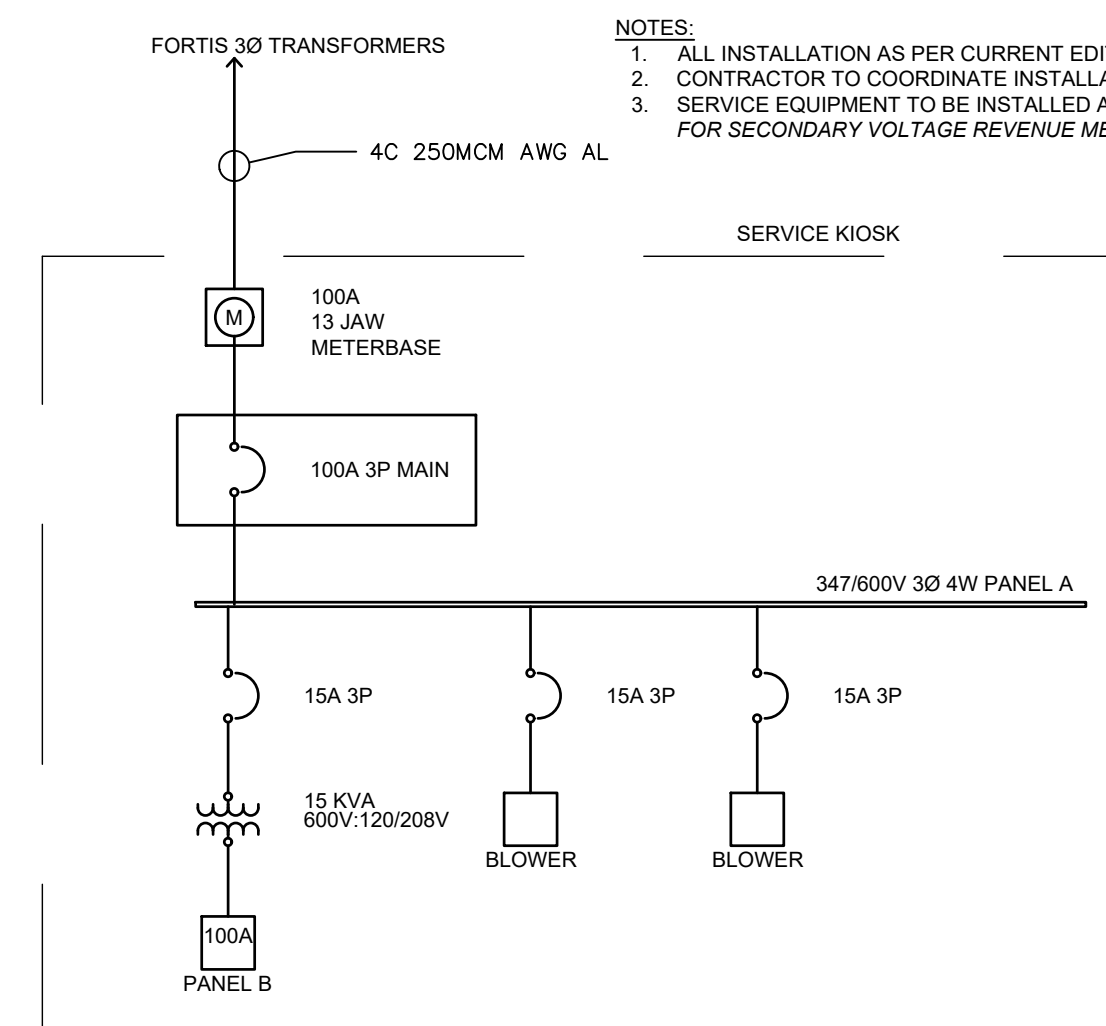
- NOTES:**
- ALL CUSTOMER INSTALLATION AS PER CURRENT EDITION OF THE CEC.
  - INSTALLATION OF SERVICE EQUIPMENT AS PER CURRENT EDITION OF BC HYDRO "REQUIREMENTS FOR SECONDARY VOLTAGE REVENUE METERING (750V AND LESS)".
  - PROPOSED SERVICE KIOSK IS 8'x8' SEACAN CONTAINER. ADJUST LAYOUT TO SUIT SITE CONDITIONS.



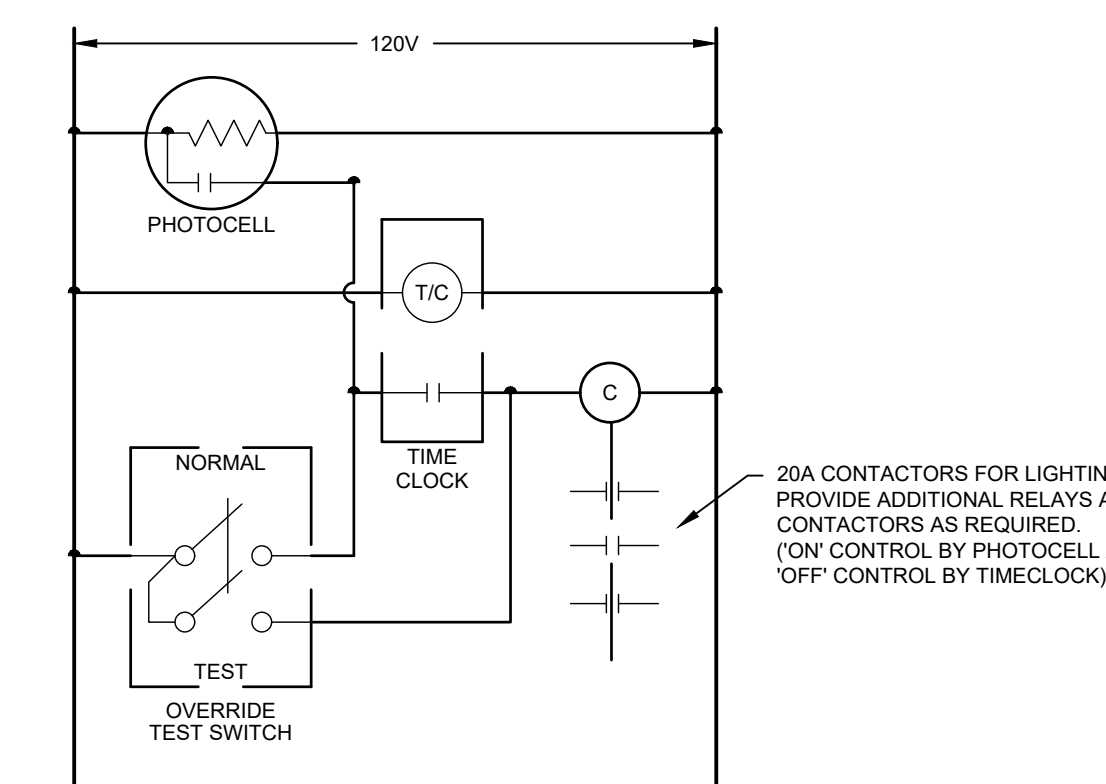
**ELECTRICAL SERVICE ENTRANCE - EQUIPMENT LAYOUT - SECTION VIEW**  
 NTS



**STREETLIGHT DETAIL**  
 SCALE: NOT TO SCALE



**SINGLE LINE DIAGRAM**  
 NOT TO SCALE



**OUTDOOR LIGHTING CONTROL WIRING SCHEMATIC**  
 SCALE: NTS

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PROJECT TITLE  
**OLIVER LANDFILL COMPOST FACILITY**

DRAWING TITLE  
**ELECTRICAL DETAILS**

DRAWN BY: KYSU/JAL

CHECKED BY: KYSU/ILL

SCALE: NTS

PROJECT#: SHA 20053

SEAL: SHEET #

20053-101

REVISION #



PANEL A						
MOUNTING - SURFACE LOCATION - KIOSK		FEEDER SIZE - 4C #250 AWG AL VOLTAGE - 347/600V, 3Ø, 4W MAIN BUS - 225A MAIN BREAKER - 100A				
NOTE	DESCRIPTION	BKR	CIRCUIT	BKR	DESCRIPTION	NOTE
--	POWER PEDESTAL	15 01	02	15	AREA LIGHTING	--
--		15 03	04			--
--		15 05	06			--
--		15 07	08			--
--		15 09	10			--
--		15 11	12			--
--	BLOWER 1	15 13	14			--
--		15 15	16			--
--		15 17	18			--
--	BLOWER 2	15 21	22	15	PANEL B	--
--		15 23	24	15		--

PANEL B						
MOUNTING - SURFACE LOCATION - KIOSK		FEEDER SIZE - 4C #6 VOLTAGE - 120/208V, 3Ø, 4W MAIN BUS - 125A MAIN BREAKER - NONE				
NOTE	DESCRIPTION	BKR	CIRCUIT	BKR	DESCRIPTION	NOTE
--	KIOSK LIGHT	- 01	02	-	--	--
--	KIOSK RECEPTACLE	- 03	04	-	--	--
--	KIOSK BASEBOARD	- 05	06	-	--	--
--	KIOSK EMERGENCY LIGHTING	- 07	08	-	--	--
--		- 09	10	-	--	--
--		- 11	12	-	--	--
--		- 13	14	-	--	--
--		- 15	16	-	--	--
--		- 17	18	-	--	--
--		- 19	20	-	--	--
--		- 21	22	-	--	--
--		- 23	24	-	--	--

SINGLE LINE SYMBOL SCHEDULE		
SYMBOL	DESCRIPTION	NOTES
	BREAKER	
	FUSE	
	GANG OPERATED LOAD BREAK SWITCH (OVERHEAD)	
	DISCONNECT SWITCH (FUSED) / FUSED SWITCH	
	FUSED CUT OUT (PRIVATE)	
	FUSED CUTOUT (SERVICE AUTHORITY)	
	METER - LETTER DENOTES TYPE	
	LIGHTING ARRESTOR	
	STRESS CONE (TRANSITION FROM OVERHEAD TO UNDERGROUND)	
	TRANSFORMER	
	MANUAL TRANSFER SWITCH	
	MOTOR/ EQUIPMENT	
	PANEL - MAIN BREAKER AS INDICATED	
	CONDUCTOR/FEEDER INFORMATION	

LIGHTING SYMBOL SCHEDULE		
SYMBOL	DESCRIPTION	NOTES
	LUMINAIRE OF TYPE 'A' REFER TO LUMINAIRE SCHEDULE FOR DETAILS	
	EMERGENCY LIGHTING - BATTERY PACK # OF TRIANGLES DENOTES # OF HEADS	
	LINE VOLTAGE LIGHTING SWITCH	
	OCCUPANCY SENSOR OF TYPE 'OS1' REFER TO OCCUPANCY SENSOR SCHEDULE FOR DETAILS	
PC	- PHOTOCELL	
TC	- TIMECLOCK	
DS	- DAYLIGHT SENSOR	

LUMINAIRE SCHEDULE				
TYPE	DESCRIPTION	LAMPING	MOUNTING	REMARKS
A	WALL PACK	LED	WALL	LITHONIA WDGE3LED-P4-30K-70CRI-R4-347
B	HIGH BAY	LED	CEILING	LITHONIA CSVT-L96-10000LM-347-40K
C	STREET LIGHT	LED	POLE	AMERICAN ELECTRIC ATB0-P204-347-R3-3K

NOTES:  
1. EXTERIOR LUMINAIRES HAVE PHOTOCELL ON AND TIME CLOCK OFF CONTROL. OFF TIME TO BE DETERMINED BY OWNER. PROVIDE LIGHTING CONTROL SYSTEM IN THE SERVICE KIOSK.

- SCOPE OF WORK
  - PROVIDE ALL NECESSARY LABOUR, MATERIAL, TOOLS, TRANSPORTATION, SERVICES AND FACILITIES REQUIRED FOR THE COMPLETE ELECTRICAL INSTALLATION AS SHOWN ON THE DRAWINGS AND AS SPECIFIED.
  - PROVIDE ALL NECESSARY LABOUR, MATERIALS, EQUIPMENT, DEVICES AND APPARATUS NOT MENTIONED IN THE SPECIFICATIONS, OR SHOWN ON THE DRAWINGS AS REQUIRED FOR THE COMPLETE ELECTRICAL INSTALLATION.
- CODE, RULES AND REGULATIONS
  - ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE CANADIAN ELECTRICAL CODE, NATIONAL BUILDING CODE, AND APPLICABLE MUNICIPAL AND PROVINCIAL CODES, RULES AND REGULATIONS.
  - PROVIDE ALL NECESSARY MATERIAL AND LABOUR REQUIRED TO MEET THE REQUIREMENTS OF THESE CODES, RULES AND REGULATIONS EVEN THOUGH THE WORK MAY NOT BE SHOWN ON THE DRAWINGS OR MENTIONED IN THE SPECIFICATIONS.
- PERMITS AND FEES
  - OBTAIN ALL PERMITS AND PAY ALL FEES REQUIRED FOR THE ELECTRICAL INSTALLATION.
- CO-OPERATION WITH OTHER TRADES
  - CHECK WITH OTHER TRADES TO AVOID DELAYS.
- APPROVAL OF MATERIALS
  - ELECTRICAL EQUIPMENT SHALL BE NEW AND OF THE TYPE AND QUALITY SPECIFIED.
- CERTIFICATION OF INSPECTION
  - OBTAIN A CERTIFICATE OF INSPECTION AND APPROVAL FROM THE ELECTRICAL INSPECTION DEPARTMENT HAVING JURISDICTION OVER THE WORK. CERTIFICATE OF INSPECTION SHALL BE SUBMITTED TO THE ARCHITECT ON COMPLETION OF THE WORK.
- CLEAN UP
  - REMOVE ALL DEBRIS FROM THE SITE AS IT OCCURS, AND DO NOT ALLOW TO ACCUMULATE. TOUCH UP WITH MATCHING PAINT ANY EQUIPMENT THAT HAS BEEN DAMAGED DURING CONSTRUCTION.
- GUARANTEE
  - THE SATISFACTORY OPERATION OF ALL WORK AND APPARATUS INCLUDED AND INSTALLED UNDER THIS SECTION OF THE SPECIFICATION SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR UNLESS NOTED OTHERWISE.
  - REPLACE FORTHWITH AT NO ADDITIONAL COST TO THE OWNER, ANY PART WHICH MAY PROVE TO BE DEFECTIVE WITHIN A PERIOD OF TWELVE MONTHS AFTER THE FINAL ACCEPTANCE OF THE COMPLETE BUILDING, PROVIDED THAT SUCH FAILURE IS NOT DUE TO ANY IMPROPER USAGE OR ORDINARY WEAR AND TEAR.
  - NO CERTIFICATE GIVEN, PAYMENT MADE, PARTIAL OR ENTIRE USE OF THE EQUIPMENT BY THE OWNER, SHALL BE CONSTRUED AS ACCEPTANCE OF DEFECTIVE WORK.
- CONDUIT AND RACEWAY
  - RIGID STEEL CONDUIT: FOR ALL EXPOSED AND UNDERGROUND CONDUIT EXPOSED TO MECHANICAL DAMAGE. (MINIMUM SIZE: 3/4" (19mm))
  - ELECTRICAL METALLIC TUBING (EMT): INTERIOR POWER AND LIGHTING BRANCH CIRCUITS WHERE NOT EXPOSED TO MECHANICAL DAMAGE, OR ABOVE 6' (1830mm) FROM FLOOR. (MINIMUM SIZE: 3/4" (19mm))
  - FLEXIBLE METALLIC CONDUIT: IN DRY LOCATIONS, CONNECTION TO TRANSFORMERS, (6" (1830mm) MAX.) AND VIBRATING EQUIPMENT (24" (610mm) MAX.)
  - LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT: IN DAMP AND WET LOCATIONS FOR CONNECTION TO ALL PUMP MOTORS, CONTROL EQUIPMENT AND SIMILAR DEVICES SHALL BE MADE USING LIQUID TIGHT FLEXIBLE METALLIC CONDUIT. PROVIDE SEPARATE GROUND WIRE INDEPENDENT OF CONDUIT, RUN INSIDE CONDUIT AND BONDED AT BOTH ENDS TO ENCLOSURES. MAXIMUM LENGTH OF 24" (610mm)
  - CONDUIT IN DIRECT CONTACT WITH EARTH TO BE RIGID PVC TYPE.
  - CONDUIT SYSTEM SHALL BE CONCEALED UNLESS EXPOSED WORK IS CLEARLY CALLED FOR ON DRAWINGS.
  - CONDUITS SHALL BE TIGHTLY COVERED AND WELL PROTECTED DURING CONSTRUCTION USING METALLIC BUSHINGS AND BUSHING "PENNIES" TO SEAL OPEN END.
  - IN ALL EMPTY CONDUITS OR DUCTS, INSTALL A 200 lb (90 kg) TENSILE STRENGTH POLYETHYLENE PULLING ROPE.
  - CONDUIT SYSTEMS SHALL BE ELECTRICALLY CONTINUOUS THROUGHOUT. INSTALL CODE SIZED, INSULATED, COPPER, GREEN GROUNDING CONDUCTOR IN ALL CONDUIT RUNS PULLED WITH PHASE AND/OR NEUTRAL CONDUCTORS.
  - LOCATIONS OF CONDUIT RUNS SHALL BE PLANNED IN ADVANCE OF THE INSTALLATION AND COORDINATED WITH WATER PIPING AND SHALL NOT UNNECESSARILY CROSS OTHER CONDUITS OR PIPE. NOR PREVENT REMOVAL OF NOR BLOCK ACCESS TO MECHANICAL OR ELECTRICAL EQUIPMENT.
  - WHERE PRACTICAL, INSTALL CONDUITS IN GROUPS, IN PARALLEL, FOR VERTICAL AND HORIZONTAL RUNS AND AT ELEVATIONS THAT AVOID UNNECESSARY OFFSETS.
  - EXPOSED CONDUIT SHALL BE RUN PARALLEL OR AT RIGHT ANGLES TO THE CENTERLINES OF COLUMNS AND BEAMS.

- CONDUITS SHALL NOT BE PLACED CLOSER THAN 12" (300mm) FROM A WATER PIPE AND WILL BE INSTALLED CROSSING PERPENDICULAR TO SUCH LINES FROM THE CONDUIT RUNS.
- ALL RACEWAY SYSTEMS SHALL BE SECURED TO THE BUILDING STRUCTURES USING SPECIFIED FASTENERS, CLAMPS AND HANGERS SPACED ACCORDING TO CODE REQUIREMENTS.
- SUPPORT SINGLE RUNS OF CONDUIT USING ONE HOLE PIPE STRAPS, WHERE RUN HORIZONTALLY ON WALLS IN DAMP OR WET LOCATION, INSTALL "CLAMP-BACKS" TO SPACE CONDUIT OFF THE SURFACE.
- MULTIPLE CONDUIT RUNS SHALL BE SUPPORTED USING "TRAPEZE" HANGERS, FABRICATED FROM SPECIFIED CONSTRUCTION CHANNEL, MOUNTED TO 3/8" (9.5mm) DIAMETER, THREADED STEEL RODS SECURED TO BUILDING STRUCTURES. FASTEN CONDUIT TO CONSTRUCTING CHANNEL WITH STANDARD ONE HOLE PIPE CLAMPS OR THE EQUIVALENT.
- RACEWAYS SHALL BE JOINED USING SPECIFIED COUPLING OR TRANSITION COUPLINGS WHERE DISSIMILAR RACEWAY SYSTEMS ARE JOINED.
- CONDUITS SHALL BE SECURELY FASTENED TO CABINETS, BOXES, AND GUTTERS USING TWO LOCKNUTS AND AN INSULATING BUSHING OR SPECIFIED INSULATING CONNECTORS. INSTALL GROUNDING BUSHINGS OR BONDING JUMPERS ON ALL CONDUITS TERMINATING AT CONCENTRIC KNOCKOUTS.
- CONDUIT TERMINATIONS EXPOSED AT WEATHERPROOF ENCLOSURES AND CAST OUTLET BOXES SHALL BE MADE WATER-TIGHT USING SPECIFIED CONNECTORS AND HUBS.
- INSTALL EXPANSION COUPLINGS WHERE ANY CONDUIT CROSSES A BUILDING SEPARATION OR EXPANSION JOINT.
- FLOOR PENETRATIONS SHALL BE SEALED WATER-TIGHT, MAINTAIN FIRE RATING AS REQUIRED.
- FIRE-SAFE ALL RATED WALL PENETRATIONS USING 3M LISTED FIRE-SAFING SEALANTS AND ASSEMBLIES.
- BOXES AND WIRING SERVICES
  - EXPOSED OUTLET BOXES AND BOXES IN DAMP AND WET LOCATIONS SHALL BE CAST METAL WITH GASKETED CAST METAL COVER PLATES.
  - OUTLET BOXES SHALL BE INSTALLED AT THE LOCATIONS AND ELEVATIONS SHOWN ON THE DRAWINGS OR SPECIFIED HEREIN, MAKE ADJUSTMENTS TO LOCATIONS AS REQUIRED BY STRUCTURAL CONDITIONS AND TO SUIT COORDINATION REQUIREMENTS OF OTHER TRADES.
  - MOUNTING HEIGHTS: MOUNTING HEIGHTS FROM FINISHED FLOOR TO CENTER LINE OF DEVICE BOX SHALL BE AS FOLLOWS AND IN ACCORDANCE WITH HANDICAPPED ACCESSIBILITY REQUIREMENTS OF GOVERNING CODE.
    - CONVENIENCE RECEPTACLE - 18" (450mm)
    - LIGHT SWITCHES - 48" (1220mm)
    - EMERGENCY LIGHT HEADS - 90" (2300mm)
- CABLE AND WIRE
  - CONDUCTORS SHALL NOT BE INSTALLED IN CONDUIT UNTIL ALL WORK OF ANY NATURE THAT MAY CAUSE DAMAGE IS COMPLETED. CARE SHALL BE TAKEN IN PULLING CONDUCTORS THAT INSULATION IS NOT DAMAGED. U.L. AND C.S.A. APPROVED NON-PETROLEUM BASE AND INSULATING TYPE PULLING COMPOUND SHALL BE USED AS NEEDED.
  - ALL CABLES SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS AND WARRANTY.
  - ALL ASPECTS OF SPlicing AND TERMINATING SHALL BE IN ACCORDANCE WITH CABLE MANUFACTURERS PUBLISHED PROCEDURES.
  - MAKE UP ALL SPLICES IN OUTLET BOXES WITH CONNECTORS AS SPECIFIED HEREIN WITH SEPARATE TAILS OF CORRECT COLOR TO BE MADE UP TO SPLICE. PROVIDE AT LEAST 6" (150mm) OF TAILS PACKED IN BOX AFTER SPLICE IS MADE UP.
  - ALL WIRE AND CABLE IN PANELS, TERMINAL CABINETS AND EQUIPMENT ENCLOSURES SHALL BE BUNDLED AND CAPPED.
  - FEEDERS LESS THAN 60A SHALL BE COPPER. FEEDERS LARGER THAN 60A MAY UTILIZE ALUMINIUM CONDUCTORS WITH ENGINEER APPROVAL.
  - MINIMUM WIRE SIZE SHALL BE NO. 12 AWG R90 COPPER.
- WIRING DEVICES
  - SWITCHES
    - SPECIFICATION GRADE AVAILABLE FOR BACK AND SIDE WIRING. 20A, 120V OR 347V, SINGLE POLE, DOUBLE POLE, THREE-WAY AS INDICATED.
    - RECEPTACLES
      - SPECIFICATION GRADE, DUPLEX RECEPTACLE CSA TYPE 5-15R, 125V, 15A U-GROUNDED.
      - GROUND-FULT INTERRUPTER TYPE TO BE INDICATING. SPECIFICATION GRADE, IMPACT RESISTANT, U GROUND, COMPLETE WITH BREAKER AND RESET BUTTON.
      - INSTALL ALL RECEPTACLES IN THE VERTICAL PLANE UNLESS OTHERWISE NOTED.
    - COVER PLATES
      - GALVANIZED STEEL, 1mm THICK BRUSHED COVER PLATES.
      - WEATHERPROOF, DURABLE, "IN-USE" RATED COVER PLATES COMPLETE WITH GASKETS FOR WP DUPLEX RECEPTACLES AS INDICATED.
      - INSTALL SINGLE THROW SWITCHES WITH HANDLE IN "UP" POSITION WHEN SWITCH CLOSED.
      - INSTALL RECEPTACLES/SWITCHES VERTICALLY IN GANG TYPE OUTLET BOX WHEN MORE THAN ONE RECEPTACLE IS REQUIRED IN ONE LOCATION.
- PANEL BOARDS
  - SUBMIT SHOP DRAWINGS PRIOR TO ORDERING.
  - RATINGS: REFER TO PANEL SCHEDULES SHOWN ON DRAWING.
  - BACKFEED BREAKERS SHALL NOT BE UTILIZED IN PLACE OF A MAIN BREAKER.

- FINISH: ALL PAINTED STEEL WORK SHALL BE TREATED WITH A PRIMER COAT AND FINISH COAT OF THE MANUFACTURER'S STANDARD GRAY COLOR OR ANSI 61.
- PANEL BOARDS TO HAVE FLUSH DOORS WITH TWO KEYS FOR EACH PANEL BOARD (ALL KEYS TO BE ALIKE).
- BUSING
  - BUSING SHALL BE RECTANGULAR CROSS SECTION FULL LENGTH TIN PLATED ALUMINIUM.
  - EACH PANEL BOARD SHALL BE EQUIPPED WITH A GROUND BUS SECURED TO THE INTERIOR OF THE ENCLOSURE. THE BUS SHALL BE EQUAL TO THE PANEL BOARD NEUTRAL BUS AND SHALL HAVE A SEPARATE LUG FOR EACH GROUND CONDUCTOR. NOT MORE THAN ONE CONDUCTOR SHALL BE INSTALLED PER LUG.
  - PANEL BOARD DIRECTORIES: SHALL BE TYPEWRITTEN, ARRANGE IN NUMERICAL ORDER AND SHALL SHOW THE NUMBER OF THE CIRCUIT IS INDICATED. THE ROOM NUMBERS SHALL BE VERIFIED WITH THE OWNER AND SHALL NOT NECESSARILY BE THOSE USED IN THE DRAWINGS. MOUNT TWO COPIES OF DIRECTORIES INSIDE EACH PANEL BOARD.
  - ACCEPTABLE MANUFACTURERS: SIEMENS, CUTLER HAMMER, SCHNEIDER CANADA.
- PROTECTIVE DEVICES
  - CIRCUIT BREAKERS: MOLDED CASE, BOLT-ON, THERMAL MAGNETIC TYPE, 40 DEGREES C. AMBIENT TEMPERATURE COMPENSATED, FIXED MOUNTING, WITH QUICK-MAKE AND QUICK-BREAK SWITCHING MECHANISM MECHANICALLY TRIP-FREE FROM THE OPERATING HANDLE.
  - RATINGS: REFER TO DRAWINGS AND PANEL SCHEDULES FOR TRIP FRAME AND POLES REQUIRED. MINIMUM SHORT CIRCUIT RATING FOR BREAKERS IS 10,000 A, IF NOT INDICATED OTHERWISE.
  - MANUAL MOTOR STARTERS: MOTORS SHALL BE PROTECTED BY THERMAL O.L. RELAY INTEGRAL WITH THE DISCONNECT.
- PLYWOOD BACKBOARDS
  - USE EXTERIOR GRADE PLYWOOD WITH "B" FACE, PRIME AND FINISHED PAINTED. PLYWOOD SHALL BE FIRE RESISTANT (3/4" (75mm) THICK).
- GROUNDING
  - ENCLOSURES OF EQUIPMENT, RACEWAYS, AND FIXTURES SHALL BE PERMANENTLY AND EFFECTIVELY GROUND. PROVIDE CODE-SIZED (UNLESS OTHERWISE INDICATED) COPPER, INSULATED GREEN EQUIPMENT GROUND WITH ALL BRANCH AND FEEDER CIRCUIT RUNS. EQUIPMENT GROUND SHALL ORIGINATE AT PANEL BOARD GROUND BUS AND SHALL BE BONDED TO ALL SWITCH AND RECEPTACLE BOXES AND ELECTRICAL EQUIPMENT ENCLOSURES.
  - BUILDING SERVICES SHALL BE GROUND TO BUILDING STEEL, TO COLD METALLIC WATER PIPING, AND GROUND RODS (3/4" (75mm) X 10' (3050mm) COPPER).
  - ISOLATED GROUND CONDUCTORS SHALL TERMINATE ON ISOLATED GROUND BUS AND RECEPTACLE ISOLATED GROUND BUS ONLY.
  - CONTRACTOR TO PROVIDE FALL OF POTENTIAL TEST FOR PAD MOUNT TRANSFORMER GROUND SYSTEM FOR ENGINEER REVIEW.
- TRANSFORMERS
  - TRANSFORMERS SHALL BE SELF COOLED, FULLY ENCLOSED, VENTILATED, 60 HERTZ, EQUIPPED WITH FOUR 2.5% VOLTAGE TAPS ABOVE AND BELOW RATED VOLTAGE AND SHALL BE OF THE KVA RATING SHOWN ON THE DRAWINGS.
  - TRANSFORMERS SHALL HAVE COPPER OR ALUMINIUM WINDINGS CLASS "F" INSULATION GROUP, WITH TEMPERATURE RISE, WHEN OPERATED CONTINUOUSLY AT FULL LOAD AND RATED FREQUENCY, NOT EXCEEDING 150 DEGREE C, RISE OVER 40 DEGREE C. AMBIENT, UNLESS INDICATED OTHERWISE ON THE ONE-LINE DIAGRAM.
  - SOUND LEVEL AT ANY LOAD SHALL NOT EXCEED 45dB WITH AMBIENT SOUND LEVEL NOT EXCEEDING 24 DB. EXCESSIVELY NOISY TRANSFORMERS SHALL BE REPLACED.
  - TRANSFORMER IMPEDANCE SHALL NOT BE LESS THAN 4.0% NOR GREATER THAN 6.5%. TRANSFORMER SHALL CONFORM TO NEMA TRI-1974, CEC 450-21 AND ALL APPLICABLE PROVINCIAL AND LOCAL CODES.
  - TRANSFORMER SIZES SHALL FIT SPACE ALLOCATED PER DRAWINGS.
  - TRANSFORMER SHALL BE MOUNTED AS SHOWN ON THE DRAWINGS AND AS DIRECTED BY THE ENGINEER. FURNISH AND INSTALL ALL MOUNTING HARDWARE TO SAFELY CARRY THE WEIGHT OF THE TRANSFORMER. MAINTAIN ADEQUATE SPACING FOR VENTILATION AS RECOMMENDED BY THE MANUFACTURER AND REQUIRED BY CODE.
  - PROVIDE NEOPRENE TYPE VIBRATION INSULATION PADS FOR EACH TRANSFORMER. VIBRATION AND SEISMIC CONTROL SHALL MEET NBC AND SUPPLEMENTS REQUIREMENT.
  - CONNECTIONS TO TRANSFORMERS SHALL BE MADE WITH FLEXIBLE METALLIC CONDUIT. INSTALL GROUNDINGS IN EACH CONDUIT AND PROVIDE GROUNDING BUSHINGS AS REQUIRED. PROVIDE "WONDER BOARD" HEAT INSULATING BARRIER AROUND TRANSFORMER WHERE INSTALLED ON COMBUSTIBLE SURFACE.
  - ACCEPTABLE MANUFACTURERS: SIEMENS, SCHNEIDER, POLYCON, CUTLER HAMMER, MARCUS, DELTA, HEMMEL, EATON AND REX.
- LIGHTING FIXTURES
  - SUBMIT SHOP DRAWINGS PRIOR TO ORDERING
  - FIXTURE INSTALLATION
    - CONTRACTOR SHALL BE RESPONSIBLE FOR HANDLING AND STORAGE. FIXTURES SHALL BE INSTALLED PLUMB, LEVEL, IN STRAIGHT LINES WITHOUT DISTORTION AND CLEAN.
    - INSTALL EACH FIXTURE IN A MANNER RECOMMENDED BY THE FIXTURE MANUFACTURER AND APPROVED BY THE OWNER'S REPRESENTATIVE. UNDER THIS SECTION OF THE WORK, FURNISH AND INSTALL ALL ADDITIONAL CEILING BRACING, HANGER SUPPORTS AND OTHER

- STRUCTURAL REINFORCEMENTS TO THE BUILDING REQUIRED TO PROPERLY AND SAFELY SUSPEND FIXTURES. ALL AS APPROVED BY THE ENGINEER.
- FIXTURES IN AREAS OF EXPOSED DUCT AND PIPE WORK SHALL BE SUSPENDED TO AVOID CONFLICT WITH SAME.
- LIGHTING CONTROLS
  - LIGHTING CONTROLS TO PROVIDE CONTROL AND OPERATION OF LIGHTING AS NOTED.
  - LIGHTING CONTROLS ARE PERMITTED TO BE LINE VOLTAGE THROUGHOUT.
  - ACCEPTABLE MANUFACTURERS: GREENGATE, WATTSTOPPER, LEVITON, LUTRON.
- IDENTIFICATION
  - IDENTIFY ALL PLACES OF ELECTRICAL EQUIPMENT (INCLUDING EACH AND EVERY RECEPTACLE) OTHER THAN CONDUITS AND CONDUCTORS WITH ENGRAVED LAMINATED PLASTIC NAMEPLATES OR BROTHER P-TOUCH LABELS HAVING 1/8" (3mm) MINIMUM HEIGHT. ATTACH ALL LAMACOID LABELS, UNLESS OTHERWISE DIRECTED WITH SILICONE CEMENT. COLOURS OF LABELS TO BE AS FOLLOWS:
    - NORMAL POWER - BLACK LETTERING ON WHITE BACKGROUND
    - STANDBY POWER - RED LETTERING ON WHITE BACKGROUND
    - EMERGENCY POWER - WHITE LETTERING ON RED BACKGROUND
    - LOW VOLTAGE - BLUE LETTERING ON WHITE BACKGROUND
  - ALL JUNCTION AND PULLBOXES FOR CONDUITS, DUCTS AND OTHER RACEWAYS IN CONCEALED CEILING SPACES SHALL BE PERMANENTLY MARKED USING A BLACK FELT PEN AS FOLLOWS. (WHERE CEILING SPACE IS PAINTED OUT, PUT MARKING ON INSIDE OF COVERPLATES).
  - FOR LIGHTING AND POWER SHOW THE COMPLETE CIRCUIT NUMBER OF ALL ENCLOSED CIRCUITS. FOR ALL COMMUNICATIONS AND FIRE ALARM SHOW THE USAGE (IE. "FIRE ALARM", "TELEPHONE")
- EMERGENCY LIGHTING BATTERY SYSTEM
  - EMERGENCY LIGHTING IS TO BE PROVIDED FROM A DC BATTERY PACK.
  - PROVIDE EMERGENCY BATTERY AND LIGHTING HEADS AS NOTED ON THE DRAWINGS.
  - BATTERY PACKS ARE TO BE 12V, 36-WATT (MINIMUM) AND SHALL BE COMPLETE WITH INTEGRAL LIGHTING HEADS (2 PER BATTERY). UPSIZE BATTERY PACK AS REQUIRED TO OPERATE ALL CONNECTED EMERGENCY HEADS FOR A MINIMUM 30 MINUTE RUN TIME AT FULL LOAD. WIRING SHALL BE MINIMUM #12 AWG AND SIZED UPWARD TO MINIMIZE THE VOLTAGE DROP TO NOT MORE THAN 5%.
  - ALL BATTERY PACKS ARE TO HAVE AUTO-TEST FUNCTIONALITY BUILT IN.
- RECORD DRAWING
  - ELECTRICAL CONTRACTOR TO PROVIDE AS-BUILT MARKUPS TO ENGINEER FOR RECORD DRAWINGS.
  - AS-BUILT MARKUPS ARE TO INDICATE THE FOLLOWING ITEMS:
    - ALL REVISIONS TO DRAWINGS FROM SITE INSTRUCTIONS AND CHANGE ORDERS ARE TO BE INDICATED.
    - DEVICE LOCATION AND CIRCUITING WHERE DIFFERS FROM ORIGINAL DRAWINGS.
    - LUMINAIRE TYPE, LOCATION, CIRCUITING AND CONTROL WHERE DIFFERS FROM ORIGINAL DRAWINGS.
- MAINTENANCE MANUALS
  - PROVIDE OPERATION AND MAINTENANCE DATA FOR INCORPORATION INTO MAINTENANCE MANUALS AS FOLLOWS IN HARD COVER 3 RING BINDER C/W INDEX TAB SEPARATORS. PROVIDE THREE (3) HARD COPIES AND ONE (1) PDF SOFT-COPY. SOFT COPY MAY BE SUBMITTED USING COMPACT DISC, USB FLASH DRIVE OR EMAIL.
  - TECHNICAL DATA: PRODUCT DATA, SUPPLEMENTED BY BULLETINS COMPONENT ILLUSTRATIONS, EXPLODED VIEWS, TECHNICAL DESCRIPTIONS OF ITEMS AND PARTS LISTS. (ADVERTISING OR SALES LITERATURE IS NOT ACCEPTABLE)
  - WIRING AND SCHEMATIC DIAGRAMS
  - NAMES AND ADDRESSES OF LOCAL SUPPLIERS FOR ITEMS INCLUDED IN MAINTENANCE MANUALS.

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Permit To Practice: 1003300

ISSUED FOR TENDER  
NOT FOR CONSTRUCTION

#	REMARKS	DATE
00	ISSUED FOR COORDINATION	25/02/2022
01	ISSUED FOR TENDER	18/03/2022
02	ISSUED FOR ADDENDUM #1	18/04/2022

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### PROJECT TITLE

OLIVER LANDFILL  
COMPOST FACILITY

### DRAWING TITLE

ELECTRICAL  
SCHEDULES &  
SPECIFICATION

### DRAWN BY

KYSUJAL

### CHECKED BY

KYSULL

### SCALE

NTS

### PROJECT#

SHA 20053

### SEAL

### SHEET #

20053-103

### REVISION #



## Appendix C

### Revised Schedule of Quantities and Measurement and Payment

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**The Regional District of Okanagan-Similkameen  
Construction Services for the Oliver Organics Composting Facility**

See paragraph 5.3.1 of the Instructions to Tenderers - Part II.  
All prices and quantities including the Tender Price shall include all Taxes, but shall not include GST. GST shall be shown separately.

Item	Description	Unit	Qty	Unit Cost	Total Cost
<b>1 Contract Considerations</b>					
1.01	Mobilization and Demobilization	LS	1		
1.02	Performance, Labour & Material Bonds	LS	1		
1.03	Insurance	LS	1		
1.04	Health & Safety Plan	LS	1		
1.05	Permitting, Survey, Submittals, Record Drawings, and Operation & Maintenance Manuals	LS	1		
<b>2 Earthworks &amp; Surface Water Management</b>					
2.01	Excavation (cut)	m <sup>3</sup>	1,700		
2.02	Place and Compact 0.3 m Thick Lifts of Sorted 300 mm Minus Material	m <sup>3</sup>	1,750		
2.03	Supply, Place and Compact in 0.3 m Thick Lifts of Sorted 300 mm Minus Material	m <sup>3</sup>	50		
2.04	Construct V-Shaped Stormwater Infiltration Ditch	m	140		
<b>3 Compost Process Area</b>					
3.01	Site Grading, Smoothing, and Proof Rolling	m <sup>2</sup>	2,250		
3.02	Supply, Place and Compact 300 mm of Select Granular Sub-Base (MMCD Section 31.05.17 Subsection 2.8)	m <sup>2</sup>	2,250		
3.03	Supply, Place and Compact 150 mm of Minus 75 mm Crushed Granular Sub-Base (MMCD Section 31.05.17 Subsection 2.9)	m <sup>2</sup>	2,250		
3.04	Supply, Place and Compact 150 mm of Minus 25 mm Crushed Base Course (MOT gradation and quality criteria)	m <sup>2</sup>	2,250		
3.05	Supply, Place and Compact Asphalt Paved Approach/Surface, 4" (100 mm) Total Thickness Placed in Two Lifts (MOT quality criteria)	m <sup>2</sup>	2,250		
3.06	Supply and Install 1200 mm Leak Proof Compact Water Sump c/w HS-25 Axle Loads Cast Iron Frame & Grate and Cast Iron Trapping Hoods	each	3		
3.07	Supply and Install 1200 mm Leak Proof Compact Water Sump c/w HS-25 Axle Loads explosion Proof Lid and Cast Iron Trapping Hoods	each	1		
3.08	Supply and Install 300 mm HDPE DR 17 Solid Pipe c/w Pipe Fittings	m	70		
3.09	Supply and Install 400 mm HDPE DR 17 Solid Pipe c/w Pipe Fittings	m	10		
3.10	Supply and Install Leak-detective System c/w 7,000 GAL Underground FRP Double Wall Insulating Tank c/w Leak Detection, Pump, Aeration, Blower and Controls	LS	1		
3.11	Supply and Install Leak-detective Enclosure including Standpipe and Airings (75mm HDPE DR 17 Solid Pipe)	m	25		
3.12	Supply and Place 1 type II Lock Blocks for Push Wall	each	18		
3.13	Supply and Place Custom Type II Lock Blocks for Push Wall c/w Airings Pipes Openings	each	4		
3.14	Supply and Place Type I Lock Blocks for Organics Receiving Dome Structure	each	54		
<b>4 Access Road &amp; Residential Dropoff Area</b>					
4.01	Site Grading, Smoothing, and Proof-rolling	m <sup>2</sup>	5,100		
4.02	Supply and Place High Density Woven Geotextile	m <sup>2</sup>	5,100		
4.03	Supply, Place and Compact 300 mm Minus 75 mm Crushed Granular Sub-Base (MMCD Section 31.05.17 Subsection 2.9)	m <sup>2</sup>	5,100		
4.04	Supply, Place and Compact 100 mm Thick Minus 19 mm Crushed Granular Base (MMCD Section 31.05.17 Subsection 2.10)	m <sup>2</sup>	5,100		
4.05	Supply and Install Traffic Signs including Round Galvanized Steel Panels c/w Concrete Bases	each	12		
<b>5 Electrical</b>					
5.01	Supply and Install Service Kiosk c/w 25Mpa Reinforced Concrete Pads	LS	1		
5.02	FOURIS Service	LS	1		
5.03	Site Services Power & Communication Systems	LS	1		
5.04	Site Services Communication Conduit from Black Sage Rd - Scale House	m	1,200		
5.05	Site Services - Power Pedestal	each	1		
5.06	Supply and Install Site Lighting - Single Davit	each	1		
5.07	Supply and Install Site Lighting - Double Davit	each	1		
<b>6 Oliver Landfill Water Supply</b>					
6.01	Traffic Control, Vehicle Access and Parking	LS	1		
6.02	Concrete Slab Foundation for Booster Station Kiosk	LS	1		
6.03	Power Supply and Electrical Commissioning for Kiosk	each	1		
6.04	Pre-Expose and Confirm Location and Elevation of Existing Utilities	m <sup>3</sup>	100		
6.05	Common Excavation	m <sup>3</sup>	130		
6.06	Road Subgrade Preparation	m <sup>2</sup>	130		
6.07	Select Granular Sub-Base, 200mm Thickness	m <sup>2</sup>	130		
6.08	Granular Base, 100mm Thickness	m <sup>2</sup>	120		
6.09	Galvanized Steel Ballards	m <sup>2</sup>	8		
6.10	Watermain HDPE PE4710, 75mm dia, including Class C pipe bedding, Class II bedding and restoration	m	1,360		
6.11	Watermain HDPE PE4710, 50mm dia, including Class C pipe bedding, Class II bedding and restoration	m	45		
6.12	Watermain HDPE PE4710, 75mm dia, via directional drilling (crossing of Black Sage Road), including 150mm carrier pipe and L-track casing spacers	m	40		
6.13	90° HDPE Bend, 75mm dia, including thrust block	each	3		
6.14	HDPE Reducer, 75x50mm dia.	each	1		
6.15	HDPE Tee, 75x50mm dia.	each	3		
6.16	HDPE Stub End Flange Adapter, 75mm dia, including backing rings and SS bolts	each	3		
6.17	Air release valve as per detail, including chamber	each	3		
6.18	Self-draining standpipe assembly as per detail, including service tubing to HDPE tee	each	4		
6.19	Watermain Gate Valve, 75mm dia.	each	3		
6.20	Water service, 25mm dia, (including corp stop, curb stop, tubing, cap, marker post)	each	1		
6.21	Watermain Tie-ins to Town of Oliver 50mm service tubing (including coupler, bushing, flange, and connection to HDPE)	LS	1		
6.22	Watermain Tie-ins to booster station kiosk (including HDPE nut ends, backing rings, SS bolts)	LS	1		
6.23	Supply, Install and Mechanically Commission the Booster Station Kiosk including buried pipe spools	LS	1		
<b>7 Pavedstone Items</b>					
7.01	Supply and Erec Pre-Engineered Dome Structure (9.88m x 10.64m)	LS	1		
7.02	Supply and Install Coverall Structure Lighting	LS	1		

Subtotal Cost Estimate (exc. GST)



Measurement and Payment

**SECTION 01 20 00**

**MEASUREMENT AND PAYMENT**

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## **012000 MEASUREMENT AND PAYMENT**

### **012000.1 GENERAL**

This section summarizes the work included in each bid item listed on the Schedule of Quantities and Prices and defines the methods of measurement and payment for each.

### **012000.2 MEASUREMENT FOR PAYMENT QUANTITIES**

- A. Measurement for payment will be performed by the Contractor according to the standard measures and based on actual units of work performed or installed. The method of measurement is described under each bid item.
- B. The Contractor shall make all interim measurements, and determine all interim quantities and amounts of complete work done under the Contract. At the time measurements are made for quantity determinations, the Owner or its representative will be present to verify such measurements.
- C. Description of Methods for Measurement of Quantities
  - 1. For items specified to be measured by a length unit (e.g. linear or vertical metre), pay length will be measured along the line and grade of the item involved as actually placed and accepted.
  - 2. When items are specified to be measured by an area unit (e.g., square metre, hectare, etc.), the Owner will use one of the following measurement methods:
    - a. For those items to be measured by the in-place area, measurement shall be employed by the most practical means as determined by the Owner.
    - b. For those items measured by the in-place length with a neat line measurement for width, the area will be determined by the in-place horizontal measure for length multiplied by the fixed plan dimension for width as shown on the Drawings.
  - 3. For items specified to be measured by a volume unit (e.g. cubic metres), the Owner will use one of the following measurement methods:
    - a. For those items to be measured by the in-place volume, measurement shall be determined by detailed topographic survey methods. The quantity for payment shall be the calculated as a difference between the original ground surface (prior to construction) and the final ground surface (after construction is completed). The volume shall be calculated by a cut and fill analysis using Civil 3D software. For volumes of excavation or



### Measurement and Payment

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embankment which are small or otherwise impractical to measure quantities by a cut and fill analysis, an average-end-area method shall be used as specified by the Owner.

- b. For those items measured by the in-place area with a neat line measurement for depth, the volume will be determined by the in-place horizontal measure for area multiplied by the fixed plan dimension for depth as shown on the Drawings.
- c. For those items measured by the hauling vehicle, the volume will be determined by the dimensions of each hauling vehicle. Each hauling vehicle will be measured by the Owner to establish the number of cubic metres carried by that vehicle when full. All haul vehicles shall be numbered or otherwise uniquely marked for identification purposes.

For each load delivered to the site, the Contractor shall provide to the Owner at the time of delivery, a ticket indicating the vehicle number or other identification, material type, date, time of delivery, reference to borrowing source location, and intended use of material (i.e., subgrade, embankment, backfill, cover soil, drainage aggregate, drain rock, embedment, etc.)

In addition to vehicle tickets, the Contractor shall provide to the Owner daily, a summary of vehicle loads delivered that day listing the number of loads; type of material carried by each vehicle, and intended use of each type of material.

Subsequent loads will be checked at the option of the Owner, and adjustments will be made for partial loads. Where a discrepancy in the initial vehicle capacity determined is encountered, the Owner may elect to adjust all previous loads received by the vehicle or if applicable since the last check date.

4. For items specified to be measured by weight, the Owner will use the following methods for measurement:
    - a. Weight will be determined using truck scales approved by the Owner.
  5. Where a lump sum is the specified pay unit, complete payment for the work described to be done, completed, and accepted, without further measurement will be used.
- D. No measurement or payments will be made for:
6. Work performed or materials placed outside of lines indicated in the Drawings or established by the Owner.
  7. Materials wasted, used, or disposed of in a manner not called for under the Contract.



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8. Rejected materials (including material rejected after it has been placed, if the rejection is due to the Contractor's failure to comply with the provisions of the Contract).
  9. Hauling and placement of materials from or to interim stockpiles.
  10. Hauling and disposing of rejected materials.
  11. Material on hand after completion of work.
  12. Any other work or material when payment is contrary to any provision of the Contract.
  13. Work that has been buried and/or concealed without inspection and approval (immediately prior to, and during burying and/or concealment) from Engineer where required in the specifications.
  14. Work that has not received the required documentation and approval required through the submittal process.
  15. Work that has not been surveyed and documented for as-built records.

**012000.3 INSTRUCTIONS REGARDING FORM OF TENDER**

- A. Work completed under this Contract will be made for at the lump sum prices and unit prices set out in the Schedule of Quantities and Prices.
- B. Incorporate all costs associated with finding, procuring, and supplying all materials and performing all work specified herein in the prices set out in the Schedule; allow for Contractor's overhead and profit except for Provisional items which shall be priced as per Contract requirements.
- C. Any claim by Contractor for extra payment on grounds that work performed or materials supplied in accordance with the drawings and/or specifications could not be properly charged to items listed in the Schedule will not be considered by the Owner.
- D. If the Schedule of Quantities and Prices does not include a pay item that is shown in the drawings and/or specifications (by either direct mention and/or implication), the Contractor shall include costs and allocate to the pay item which pertains most closely.
- E. Prorate costs of a general nature that do not pertain to anyone item among all items except for Provisional Items.
- F. Payment will only be made for actual quantities supplied and installed during the Contract.



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**012000.4 PROGRESS PAYMENTS**

- A. The Contractor shall submit an Application for Payment monthly in accordance with the General Conditions of Contract and in a format acceptable to Owner.
- B. The Owner will pay the Contractor on or before the last day of the next month following the period covered by the Certificate.
- C. The Owner will hold back ten (10) percent of the amount of each Certificate in accordance with the Builder's Lien Act.
- D. The Owner will in addition, and where reasonably justified, make special payment holdbacks as provided for in the General Conditions of Contract.
- E. With every Monthly Application for Payment, the Contractor shall submit all relevant survey records for the current Progress Claim and a survey record summary for all completed work, in a form acceptable to the Owner. Failing to provide such records, could invalidate the Progress Claim and payment may not be considered.
- F. The Contractor shall provide a Statutory Declaration and a WCB Clearance Letter in accordance with the General Conditions of Contract for all progress payment certificates except the first one.

**012000.5 FORCE ACCOUNT WORK**

- A. Work may be required which is not covered by the Contract.
- B. All Force Account work shall be carried out in accordance with the General Conditions of Contract.
- C. All Force Account work carried out must have prior written approval from the Owner. All hours of work carried out under this item must be approved on the day the work is carried out. It is the Contractor's responsibility to obtain approval each and every day that work is carried out under this item. If these approvals are not received prior to commencement of the work and at the end of each day as the work is carried out, payment may not be considered.





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## **012000.6 DESCRIPTION OF PAYMENT ITEMS**

The section summarizes the work included for each of the items listed in the Schedule of Quantities and Prices.

### **A. GENERAL CONTRACT CONSIDERATIONS**

#### **1. Payment Item 1.01 – Mobilization and Demobilization**

- a. Measurement: Lump Sum (LS)
- b. Payment: Fifty percent (50%) of the value will be paid on completion of mobilization to the site, as determined by the Engineer (when equipment is on-site), and the fifty percent (50%) balance will be paid when all outstanding deficiencies have been addressed and all structures, materials and equipment have been demobilized from the site.
- c. Includes: The pay item includes all activities and associated costs for transportation of the Contractor's personnel, equipment and operating supplies to and from the site; establishing and maintaining of necessary temporary facilities for the Contractor's operations at the site. The work will be in accordance with the modified Section 01 52 01 Temporary Structures as referenced in Schedule B Supplementary Specifications.

#### **2. Payment Item 1.02 – Performance and Labour & Material Bonds**

- a. Measurement: Lump Sum (LS)
- b. Payment: Will be paid as a lump sum value after the Contract is signed and the Bonds are submitted to the Owner and accepted by the Engineer.
- c. Includes: Cost to obtain all required bonding for work associated with this Contract. Bonding shall cover the entire duration of the Contract.

#### **3. Payment Item 1.03 – Insurance**

- a. Measurement: Lump Sum (LS)
- b. Payment: Will be paid as a lump sum value after the Contract is signed and proof of insurance meeting the insurance requirements of the Contract is submitted to the Owner.



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- c. Includes: Cost to obtain all required insurance for the work associated with this Contract. Insurance shall cover the entire duration of the Contract.

4. **Payment Item 1.04 – Health and Safety Plan**

- a. Measurement: Lump Sum (LS)
- b. Payment: Will be made at the lump sum price quoted in the Schedule of Quantities and Prices. Fifty percent (50%) of the value will be paid after the Health and Safety Plan is received and reviewed by the Engineer, and implemented by the Contractor. The fifty percent (50%) balance will be prorated for the duration of the Contract as per Engineer’s estimate.
- c. Includes: This item includes all costs for labour, equipment and materials to prepare and implement the health and safety requirements including the on-site safety officer and safety equipment for the duration of the work for all areas that it applies to. The pay item also includes the costs associated with the Prime Contractor responsibilities for the site, which involves coordination of safety issues will all applicable parties conducting on-site works per WorksafeBC requirements.



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5. **Payment Item 1.05 – Permitting, Survey, Submittals, Record Drawings and Operation & Maintenance Manuals**

- a. Measurement: Lump Sum (LS)
- b. Payment: Payment will be made as a lump sum value. Thirty percent (30%) of the value will be paid at the completion of the Contract after all records and as-built information have been received and accepted by the Engineer. The Seventy percent (70%) balance will be prorated for the duration of the Contract as per Engineer's estimate.
- c. Include: The work includes performing all surveys, measurements, and computations required by the Contract. Verification of survey control points prior to starting the work. Provide field engineering services and close-out procedures. Establish locations, elevations, lines, grades and levels necessary for the construction of structures and systems, including up to three (3) different layouts and revisions for each construction item as deemed necessary by the Engineer. Locate and mark (stake) in the field all existing utilities. Periodically verify layouts. The construction survey records shall be available at all times during the progress of the work for examination and use by the Engineer. Complete survey records and supporting data for progress payments shall be submitted to the Engineer with each payment certificate. This item shall also include preparation, revision and submission of all submittals and record drawings as per the Contract Documents. Includes all costs associated with the provision of all documents pertaining to the equipment which form part of this tender to include, but not limited to, maintenance manuals, operation manuals, commissioning certificates, a comprehensive list of recommended spare parts and warranty details. This item shall include preparation and submission of record drawings as per the Contract documents. Also includes all costs associated with preparing and securing any and all permits including but not limited to Building Permits, Electrical Inspections and Occupancy permits. This includes coordination with all



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regulatory bodies. The work shall also be in accordance with Section 01 33 01 Project Record Documents as referenced in Schedule B Supplemental Specifications.

## **B. EARTHWORKS AND SURFACE WATER MANAGEMENT**

### **1. Payment Item 2.01 –Excavation (cut)**

- a. Measurement: Per cubic metre (m<sup>3</sup>)
- b. Payment: Calculated quantities based on topographic survey of the limits of the completed work; conducted by Contractor and verified by Engineer. Survey is to be conducted by Contractor and verified by Engineer before and after work is completed
- c. Includes: All labour, material, and equipment required to excavate, load, haul and stockpile overburden, on-site in an area as directed by the Engineer for future use. Also includes the excavation and removal of isolated boulders or rock fragments not larger than 1 cubic yard. Also includes the excavation of any wet, soft, or otherwise unsuitable materials, not suitable for road construction as directed by the Engineer. Includes all additional excavation and material grading required for placing the finished driving layer, road layers, crushed gravel base, and crushed gravel subbase layers as outlined in the Contract Documents. Excessive excavation and material grading outside work areas shall not be the responsibility of the owner. All such exceedances shall be re-and-re at the Contractor cost. Payment includes all grading required to facilitate drainage, prevent erosion, construction of berms, as specified in the Contract Documents

### **2. Payment Item 2.02 – Place and Compact 0.3 m Thick Lifts of Sorted, 300 mm Minus Material**

- a. Measurement: Per cubic metre (m<sup>3</sup>)
- b. Payment: Calculated quantities based on topographic survey of the limits of the completed work; conducted by



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Contractor and verified by Engineer before and after work is completed.

c. Includes:

All labour and equipment required to, sort, load, haul, place, and compact fill material. Payment includes costs required to sort the onsite material and produce a 300 mm minus pit-run material. Also includes placement and grading of a 0.3 m thick lift of sorted, 300 mm minus pit-run material to grades as per Contract Documents or as otherwise requested by the Engineer. Also includes compaction and moisture conditioning to achieve 95% of MMPD. Includes a total of a minimum of 6 satisfactory in-situ density measurements completed on-site, during two separate testing events ( 3 satisfactory tests per testing event) on areas indicated by the Engineer as well as recondition and repeat measurements for unsuitable results. Also includes all grading required to facilitate drainage, prevent erosion, construction of berms, as specified in the Contract Documents. Also, as part of this item, the Contractor is required to remove, dispose and replace any wet, soft, or otherwise unsuitable materials, as determined by the Engineer, and replace them with site sourced pit-run material. Any such areas will be added to the overall quantity. Includes any scarify areas showing excessive compaction to a minimum depth of 150 mm before subsequent lift installation. Water to be supplied by the Contractor

**3. Payment Item 2.03 – Supply, Place and Compact in 0.3 m Thick Lifts of Sorted, 300 mm Minus Material**

a. Measurement: Per cubic metre (m<sup>3</sup>)

b. Payment: Calculated quantities based on topographic survey of the limits of the completed work; conducted by Contractor and verified by Engineer before and after work is completed.

c. Includes: All labour and equipment required to, supply, place, and compact 300 mm minus pit-run fill material. Also includes placement and grading of a 0.3 m thick lift of sorted, 300 mm minus pit-run material to grades as per Contract Documents or as otherwise requested by the Engineer. Also includes



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compaction and moisture conditioning to achieve 95% of MMPD. Includes a total of a minimum of 2 satisfactory in-situ density measurements completed on-site, during two separate testing events ( 1 satisfactory test per testing event) on areas indicated by the Engineer as well as recondition and repeat measurements for unsuitable results. Also includes all grading required to facilitate drainage, prevent erosion, construction of berms, as specified in the Contract Documents. Also, as part of this item, the Contractor is required to remove, dispose and replace any wet, soft, or otherwise unsuitable materials, as determined by the Engineer, and replace them with site sourced pit-run material. Any such areas will be added to the overall quantity. Includes any scarify areas showing excessive compaction to a minimum depth of 150 mm before subsequent lift installation. Water to be supplied by the Contractor.

#### 4. **Payment Item 2.04 - Construct V-Shaped Stormwater Infiltration Ditch**

- a. Measurement: Per metre (m)
- b. Payment: Will be made on a linear metre basis on surveyed ditch centerline alignment. The survey is to be conducted by the Contractor and verified by the Engineer before and after work is completed
- c. Includes All labour, material and equipment required to excavate, shape, haul, and place material to achieve the required depth and slope for the V-Shaped Stormwater Infiltration Ditch located along the North and East as per Contract Documents. The depth of the ditch is 0.5 m as shown on the Contract Drawings.

### C. **COMPOST PROCESS AREA**

#### 1. **Payment Item 3.01 – Site Grading, Smoothing and Proof-rolling**

- a. Measurement: Per square metre (m<sup>2</sup>)
- b. Payment: Calculated quantities based on topographic survey of the limits of the completed work; conducted by Contractor and verified by Engineer before and after work is completed.



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- c. Includes: All labour, equipment and materials required for grading, smoothing, proof-rolling and compaction testing of all areas in preparation for their respective material placement as per Contract Documents. As part of this item, the Contractor is required to remove, dispose and replace any wet, soft or otherwise unsuitable materials, as determined by the Engineer, and replace with owner-supplied or equivalent on-site sorted, 300 mm Minus clean fill material
2. **Payment Item 3.02 – Supply, Place and Compact 300 mm of Select Granular Sub-Base (MMCD Section 31 05 17 Subsection 2.8)**
- a. Measurement: Per square metre (m<sup>2</sup>)
- b. Payment: Calculated quantities based on topographic survey of the limits of the completed work; conducted by Contractor and verified by Engineer before and after work is completed.
- c. Includes: Includes all labour, materials, and equipment required to supply and place 300 mm thick layer of select granular sub-base as per **MMCD Section 31 05 17 Subsection 2.8** gradation and quality criteria, as per the Contract Documents. Payment to include all labour, materials, shipping, handling, procurement, equipment, and all other incidental work.
3. **Payment Item 3.03 – Supply, Place and Compact 150 mm of Minus 75 mm Crushed Granular Sub-Base (MMCD Section 31 05 17 Subsection 2.9)**
- a. Measurement: Per square metre (m<sup>2</sup>)
- b. Payment: Calculated quantities based on topographic survey of the limits of the completed work; conducted by Contractor and verified by Engineer.
- c. Includes: Includes all labour, materials, and equipment required to supply and place 150 mm thick layer of Minus 75 mm Crushed Granular Sub-Base Course as per **MMCD Section 31 05 17 Subsection 2.9** gradation and quality criteria, as per the Contract Documents. Payment to include all labour, materials, shipping, handling, procurement, equipment, and all other incidental work.





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4. **Payment Item 3.04 – Supply, Place and Compact 150 mm of Minus 25 mm Crushed Base Course ( MoTI gradation and quality criteria )**
- a. Measurement: Per square metre (m<sup>2</sup>)
  - b. Payment: Calculated quantities based on topographic survey of the limits of the completed work; conducted by Contractor and verified by Engineer.
  - c. Includes: Includes all labour, materials, and equipment required to supply, place and compact 150 mm thick layer of Minus 25 mm Crushed Base Course per MoTI gradation and quality criteria, the Pavement Structure Design Guidelines and as per the Contract Documents. Payment to include all labour, materials, shipping, handling, procurement, equipment, and all other incidental work.
5. **Payment Item 3.05 – Supply, Place and Compact Asphalt Paved Approach/Surface, 4” (100 mm) Total Thickness Placed in Two lifts. ( MoTI quality criteria )**
- a. Measurement: Per square metre (m<sup>2</sup>)
  - b. Payment: Calculated quantities based on topographic survey of the limits of the completed work; conducted by Contractor and verified by Engineer.
  - c. Includes: Includes all labour, materials, and equipment and testing required to supply, place and compact 100 mm thick asphalt pavement in two lifts as per Contract Documents consistent with all MoTI quality criteria. Payment to include all labour, materials, shipping, handling, procurement, equipment, and all other incidental work.
6. **Payment Item 3.06 – Supply and Install 1200mm Leak Proof Contact Water Sump c/w HS-25 Axle Loads Cast Iron Frame & Grate and Cast Iron Trapping Hoods**
- a. Measurement: Per unit (each)
  - b. Payment: Will be made on “per unit” installed basis; verified by Engineer after work is completed.
  - c. Includes: Includes all labour, equipment and materials required to excavate and place manhole. Includes supply and install 100 mm thick Minus 25mm Crushed Gravel. Also includes prefabricated 1200





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mm concrete MH, base and lid, cast iron frame, gasket and grate, pipe coring, leachate pipe installation (incl. clamp and wall support), HS-25 axle loads explosion proof lid gasket ,cast iron trapping hoods, warning signs and fittings as per Contract Documents. Payment to include all labour, materials, shipping, handling, procurement, equipment, and all other incidental work.

**7. Payment Item 3.07 – Supply and Install 1200mm Leak Proof Contact Water Sump c/w HS-25 Axle Loads Explosion Proof Lid and Cast Iron Trapping Hoods**

- a. Measurement: Per unit (each)
- b. Payment: Will be made on “per unit” installed basis; verified by Engineer after work is completed.
- c. Includes: Includes all labour, equipment and materials required to excavate and place manhole. Includes supply and install 100 mm thick Minus 25mm Crushed Gravel. Also includes prefabricated 1200mm concrete MH, base and lid, explosion proof lid c/w frame, gasket and pipe coring, leachate pipe installation (incl. clamp and wall support), HS-25 axle loads explosion proof lid gasket , Cast Iron Trapping Hoods, warning signs and fittings as per Contract Documents. Payment to include all labour, materials, shipping, handling, procurement, equipment, and all other incidental work

**8. Payment Item 3.08 – Supply and Install 300 mm HDPE DR 17 Solid Pipe c/w Pipe Fittings**

- a. Measurement: Per meter (m)
- b. Payment: Calculated length based on survey conducted by Contractor and verified by Engineer
- c. Includes: All labour, equipment and materials required to excavate, shape trench, supply and install 300 mm Ø HDPE DR17 solid pipe, connection and fittings, backfill with pipe bedding as per Contract Documents. Provide positive pipe drainage grade as per Contract Documents. Payment to include all labour, materials, shipping, handling, procurement,



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equipment, and all other incidental work

9. **Payment Item 3.09 – Supply and Install 400 mm HDPE DR 17 Solid Pipe c/w Pipe Fittings**
- a. Measurement: Per metre (m)
  - b. Payment: Calculated length based on survey conducted by Contractor and verified by Engineer
  - c. Includes: All labour, equipment and materials required to excavate, shape trench, supply and install 400 mm Ø HDPE DR17 solid pipe, connection and fittings, backfill with pipe surrounds as per Contract Documents. Provide positive pipe drainage grade as per Contract Documents. Payment to include all labour, materials, shipping, handling, procurement, equipment, and all other incidental work
10. **Payment Item 3.10 – Supply and Install Leachate System c/w 7,000 GAL Underground FRP Double Wall Holding Tank c/w Leak Detection, Pump, Aeration, Blower and Controls.**
- a. Measurement: Lump Sum (LS)
  - b. Payment: Payment will be made as a lump sum value. Thirty percent (30%) of the value will be paid after the shop drawings are received and accepted by the Engineer. The Seventy percent (70%) balance will be paid after the successful installation and commissioning of the complete system and accepted by the Engineer.
  - c. Includes: Includes all required materials, labour, and equipment required to supply and install the 7,000-gallon leachate/ contact water underground FRP Double Wall Holding Tank c/w hydrostatic tank Continuous Monitoring Leak Detection system, pump, aeration and controls as per the Contract Documents. Payment to include all labour, materials, shipping, handling, procurement, equipment, and all other incidental work. The FRP Double Wall Holding Tank should withstand an inlet temperature of 60° Celsius. Also, payment to include the supply and installation of the aeration blower controls and all electrical and commissioning work associated with leak detection, leachate pump, and pump



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controls, and aeration blower and aeration diffuser. Payment to include all labor, materials, shipping, handling, procurement, equipment, and all other incidental work. Also, includes a 30-year limited warranty with no restrictions regarding water-bottom monitoring and removal.

**11. Payment Item 3.11 – Supply and Install Leachate Forcemain including Standpipe and Fittings (75 mm HDPE DR 17 Solid Pipe)**

- a. Measurement: Per metre (m)
- b. Payment: Calculated length based on survey conducted by Contractor and verified by Engineer.
- c. Includes: All labour, equipment and materials required to excavate, shape trench, supply and install 75 mm Ø HDPE DR17 solid force main, connection and fittings, backfill pipe with pipe surround as per Contract Documents.

**12. Payment Item 3.12 – Supply and Place Type II Lock Blocks for Push Wall**

- a. Measurement : Per unit (each)
- b. Payment : Will be made on a “per unit” installed basis; verified by Engineer after work is completed.
- c. Includes: Includes the supply and installation Type II lock blocks for the Push Wall. Payment to include all labour, materials, shipping, handling, procurement, equipment, and all other incidental work.

**13. Payment Item 3.13 – Supply and Place Custom Type I Lock Blocks for Push Wall c/w Aeration Pipes Openings**

- a. Measurement : Per unit (each)
- b. Payment : Will be made on a “per unit” installed basis; verified by Engineer after work is completed.
- c. Includes: Includes the supply and installation Type II lock blocks for the Push Wall. Payment to include all labour, materials, shipping, handling, procurement, equipment, and all other incidental work.

**14. Payment Item 3.14 – Supply and Place Type I Lock Blocks for Organics Receiving Dome Structure**

- a. Measurement : Per unit (each)



Measurement and Payment

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- b. Payment : Will be made on “per unit” installed basis; verified by Engineer after work is completed.
- c. Includes: Includes the supply and installation Type II lock blocks for Organics Receiving Dome Structure. Payment to include all labour, materials, shipping, handling, procurement, equipment, and all other incidental work.

**D. ACCESS ROAD & RESIDENTIAL DROP OFF AREA**

**1. Payment Item 4.01 - Site Grading, Smoothing, and Proof-rolling**

- a. Measurement: Per square metre (m<sup>2</sup>)
- b. Payment: Calculated quantities based on topographic survey of the limits of the completed work; conducted by Contractor and verified by Engineer.
- c. Includes: All labour, equipment and materials required for grading, smoothing, proof-rolling and compaction testing of all areas in preparation for their respective material placement as per Contract Documents. As part of this item, the Contractor is required to remove, dispose and replace any wet, soft or otherwise unsuitable materials, as determined by the Engineer, and replace them with owner-supplied or equivalent on-site sorted, 300 mm Minus clean fill material

**2. Payment Item 4.02- Supply and Place High-Density Woven Geotextile**

- a. Measurement: Per square metre (m<sup>2</sup>)
- b. Payment: Calculated quantities based on topographic survey of the limits of the completed work; conducted by Contractor and verified by Engineer.
- c. Includes: All materials, labour and equipment required to supply, install, and seam High-Density Woven Geotextile as per Contract Documents. Payment to include all labor, materials, shipping, handling, procurement, equipment, and all other incidental work.



Measurement and Payment

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3. **Payment Item 4.03 – Supply, Place and Compact 300 mm of Minus 75 mm Crushed Granular Sub-Base (MMCD 31 05 17 Subsection 2.9)**
- a. Measurement: Per square metre (m<sup>2</sup>)
  - b. Payment: Calculated quantities based on topographic survey of the limits of the completed work; conducted by Contractor and verified by Engineer.
  - c. Includes: Includes all labour, materials, and equipment required to supply and place 300 mm thick layer of Minus 75mm Crushed Granular Sub-Base per MMCD Section 31 05 17 Subsection 2.9 and as per the Contract Documents. Payment to include all labour, materials, shipping, handling, procurement, equipment, and all other incidental work.
4. **Payment Item 4.04 – Supply, Place and Compact 100 mm Thick Minus 19 mm Crushed Granular Base (MMCD Section 31 05 17 Subsection 2.10)**
- a. Measurement: Per square metre (m<sup>2</sup>)
  - b. Payment: Calculated quantities based on topographic survey of the limits of the completed work; conducted by Contractor and verified by Engineer.
  - c. Includes: Includes all labour, materials, and equipment required to supply and place 100 mm thick layer of Minus 19mm Crushed Granular Base per MMCD Section 31 05 17 Subsection 2.10 and as per the Contract Documents. Payment to include all labour, materials, shipping, handling, procurement, equipment, and all other incidental work.
5. **Payment Item 4.05 – Supply and Install Traffic Signs including Round Galvanized Steel Poles c/w Concrete Bases**
- a. Measurement: Per unit (each)
  - b. Payment: Will be made on “per unit” installed basis; verified by Engineer after work is completed.
  - c. Includes: Includes all labour, materials, and equipment required to supply and install traffic signs including round galvanized steel poles c/w concrete bases. Traffic control signs including STOP, YIELD, DO NOT ENTER and ONE WAY, SPEED 15 KM/H MAX. Payment to include all labour, materials,



Measurement and Payment

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shipping, handling, procurement, equipment, and all other incidental work.

**E. ELECTRICAL**

**1. Payment Item 5.01- Supply and Install Service Kiosk c/w 25MPa Reinforced Concrete Pads**

- a. Measurement: Lump Sum (LS)
- b. Payment: On completion of installation of service kiosk
- c. Includes: Includes all labour, material and equipment required to supply and install the service kiosk including 25MPa Reinforced Concrete Pads and place on site. Service kiosk is to be ready for connection to FORTIS overhead service. All equipment noted on details and layouts for service kiosk are to be included.

**2. Payment Item 5.02- FORTIS Service**

- a. Measurement: Lump Sum (LS)
- b. Payment: On completion of installation of overhead conductors, secondary service pole and connection to service mast on service kiosk.
- c. Includes: Includes all labour, material and equipment required to construct the site services. This includes service conductors, pole and associated wiring to new connections noted.

**3. Payment Item 5.03- Site Services Power & Communication Systems**

- a. Measurement: Lump Sum (LS)
- b. Payment: On completion of installation of underground service conduits, power & comm. distribution conduits, site lighting and leachate monitoring pedestal.
- c. Includes: Includes all labour, material and equipment required to construct the site services. This includes trenching and backfill, conduit, concrete works, ingrade junction boxes and associated wiring to new connections noted.



Measurement and Payment

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4. **Payment Item 5.04- Site Service Communication Conduit from Blacksage Rd - Scale House**
- a. Measurement: Per metre (m)
  - b. Payment: On completion of installation of underground service comm. conduits - estimated length of routing is 1200 m.
  - c. Includes: Includes all labour, material and equipment required to construct the site communication service conduit system. This includes trenching and backfill, conduit and ingrade junction boxes.
5. **Payment Item 5.05- Site Service - Power Pedestal**
- a. Measurement: Per unit (each)
  - b. Payment: On completion of installation of power pedestal with associated conduit and concrete base.
  - c. Includes: Includes all labour, material and equipment required to construct the power pedestal - this includes trenching and backfill, conduit, wiring, pedestal and concrete base.
6. **Payment Item 5.06- Supply and Install Site Lighting - Single Davit**
- a. Measurement: Per unit (each)
  - b. Payment: On completion of installation of pole, luminaire and wiring with associated conduit and concrete base.
  - c. Includes: Includes all labour, material and equipment required to supply and install the lighting pole assembly - this includes trenching and backfill, conduit, wiring, pedestal and concrete base.
7. **Payment Item 5.07- Supply and Install Site Lighting - Double Davit**
- a. Measurement: Per unit (each)
  - b. Payment: On completion of installation of pole, luminaires and wiring with associated conduit and concrete base.
  - c. Includes: Includes all labour, material and equipment required to supply and Install the lighting pole assembly - this includes trenching and backfill, conduit, wiring, pedestal and concrete base.





Measurement and Payment

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**F. OLIVER LANDFILL WATER SUPPLY**

**1. Payment Item 6.01 – Traffic Control, Vehicle Access and Parking**

- a. Measurement: Lump Sum (LS)
- b. Payment: Per level of completion.
- c. Includes: Payment includes all labour necessary to monitor vehicle traffic. The work shall be in accordance with Section 01 55 00 Traffic Control, Vehicle Access and Parking, as referenced in Schedule B Supplementary Specifications, and prepared Traffic Control Plan.

**2. Payment Item 6.02 – Concrete Slab Foundation for Booster Station Kiosk**

- a. Measurement: Lump Sum (LS)
- b. Payment: Per level of completion.
- c. Includes: Payment for cast-in-place slab foundation includes all work to complete the foundation as shown on the Contract Drawings, including excavation and disposal of surplus materials, subgrade preparation, sub-base and base gravels, footing insulation, formwork, reinforcements, drain pipe to and including rockpit (as required), and concrete finishing.

**3. Payment Item 6.03 – Power Supply and Electrical Commissioning for Kiosk**

- a. Measurement: Lump Sum (LS)
- b. Payment: Per level of completion.
- c. Includes: Payment includes all work to construct buried conduit to the kiosk including excavation, disposal of surplus materials, bedding, backfill, marking tape, rigid PVC and DB2 PVC conduit, pilaster on the Fortis pole, and sweep through the Booster Station kiosk slab foundation with connections in the electrical ‘end cabinet’. This work also includes power cabling to the pumps in the kiosk, and electrical commissioning of the Booster Station kiosk. The Contractor will be responsible for coordination with FortisBC’s installation crew for service to the kiosk. The RDOS is applying for





Measurement and Payment

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power service to this kiosk and paying for associated Fortis service fees.

4. **Payment Item 6.04 – Pre-Expose and Confirm Location and Elevation of Existing Utilities**
  - a. Measurement: Per unit (each)
  - b. Payment: Will be made on “per unit” utility exposed and located.
  - c. Includes: Payment includes vacuum or hand excavating to expose and locate existing utilities in specified areas; accurately measuring the location and elevation of the exposed utility and providing this information to the Contract Administrator at least 1 week prior to construction; and backfilling, grading, and compacting with approved native material. The work shall be in accordance with Section 31 23 01 Excavating, Trenching and Backfilling as referenced in Schedule B Supplemental Specifications.
  
5. **Payment Item 6.05 – Common Excavation**
  - a. Measurement: Per cubic metre (m<sup>3</sup>)
  - b. Payment: Calculated quantities based on topographic survey of the limits of the completed work; conducted by Contractor and verified by Engineer.
  - c. Includes: The work shall be in accordance with Section 31 24 13 Roadway Excavation, Embankment and Compaction in the MMCD.
  
6. **Payment Item 6.06 – Road Subgrade Preparation**
  - a. Measurement: Per square metre (m<sup>2</sup>)
  - b. Payment: Calculated quantities based on topographic survey of the limits of the completed work; conducted by Contractor and verified by Engineer.
  - c. Includes: The work shall be in accordance with Section 31 24 13 Roadway Excavation, Embankment and Compaction in the MMCD.



Measurement and Payment

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7. **Payment Item 6.07 – Select Granular Sub Base, 200mm Thickness**
  - a. Measurement: Per square metre (m<sup>2</sup>)
  - b. Payment: Calculated quantities based on topographic survey of the limits of the completed work; conducted by Contractor and verified by Engineer.
  - c. Includes: The work shall be in accordance with Section 32 11 16.1 Granular Subbase as referenced in the MMCD.
  
8. **Payment Item 6.08 – Granular Base, 100mm Thickness**
  - a. Measurement: Per square metre (m<sup>2</sup>)
  - b. Payment: Calculated quantities based on topographic survey of the limits of the completed work; conducted by Contractor and verified by Engineer.
  - c. Includes: The work shall be in accordance with Section 32 11 26 Granular Base as referenced in the MMCD
  
9. **Payment Item 6.09 – Galvanized Steel Bollards**
  - a. Measurement: Per unit (each)
  - b. Payment: Will be made on a “per unit” installed basis.
  - c. Includes: Payment includes supply and installation at locations as specified on the drawings, inclusive of all excavation, base, and backfill works. Measurement will be by observation of work complete. The work shall be in accordance with Section 32 31 13 Chain Link Fences and Gates in the MMCD.
  
10. **Payment Item 6.10 – Watermain HDPE PE4710, 75mm dia., including Class 'C' pipe bedding, Class II bedding and restoration**
  - a. Measurement: Per metre (m)
  - b. Payment: Calculated quantities based on topographic survey of the limits of the completed work; conducted by Contractor and verified by Engineer.
  - c. Includes: The work shall be in accordance with Section 33 11 01 Waterworks as referenced in Schedule B Supplemental Specifications.



Measurement and Payment

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11. **Payment Item 6.11 – Watermain HDPE PE4710,50mm dia., including Class 'C' pipe bedding, Class II bedding and restoration**
- a. Measurement: Per metre (m)
  - b. Payment: Calculated quantities based on topographic survey of the limits of the completed work; conducted by Contractor and verified by Engineer.
  - c. Includes: The work shall be in accordance with Section 33 11 01 Waterworks as referenced in Schedule B Supplemental Specifications.
12. **Payment Item 6.12 – Watermain HDPE PE4710, 75mm dia. via directional drilling (crossing of Black Sage Road), including 150mm carrier pipe and I-track casing spacers**
- a. Measurement: Per metre (m)
  - b. Payment: Calculated quantities based on topographic survey of the limits of the completed work; conducted by Contractor and verified by Engineer.
  - c. Includes: The work shall be in accordance with Section 33 11 01 Waterworks as referenced in Schedule B Supplemental Specifications.
13. **Payment Item 6.13 – 90° HDPE Bend, 75mm dia. including thrust block**
- a. Measurement: Per unit (each)
  - b. Payment: Will be made on “per unit” installed basis; verified by Engineer after work is completed
  - c. Includes: The work shall be in accordance with Section 33 11 01 Waterworks as referenced in Schedule B Supplemental Specifications.
14. **Payment Item 6.14 – HDPE Reducer, 75x50mm dia.**
- a. Measurement: Per unit (each)
  - b. Payment: Will be made on “per unit” installed basis; verified by Engineer after work is completed
  - c. Includes: The work shall be in accordance with Section 33 11 01 Waterworks as referenced in Schedule B Supplemental Specifications.



Measurement and Payment

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**15. Payment Item 6.15 – HDPE Tee, 75x50mm dia.**

- a. Measurement: Per unit (each)
- b. Payment: Will be made on “per unit” installed basis; verified by Engineer after work is completed
- c. Includes: The work shall be in accordance with Section 33 11 01 Waterworks as referenced in Schedule B Supplemental Specifications.

**16. Payment Item 6.16 – HDPE Stub End Flange Adapter, 75mm dia. including backing rings and SS bolts**

- a. Measurement: Per unit (each)
- b. Payment: Will be made on “per unit” installed basis; verified by Engineer after work is completed
- c. Includes: The work shall be in accordance with Section 33 11 01 Waterworks as referenced in Schedule B Supplemental Specifications.

**17. Payment Item 6.17 – Air Release Valve as per detail, including chamber**

- a. Measurement: Per unit (each)
- b. Payment: Will be made on “per unit” installed basis; verified by Engineer after work is completed
- c. Includes: The work shall be in accordance with Section 33 11 01 Waterworks as referenced in Schedule B Supplemental Specifications.

**18. Payment Item 6.18 – Self-Draining Standpipe Assembly as per detail, including Service Tubing to HDPE Tee**

- a. Measurement: Per unit (each)
- b. Payment: Will be made on “per unit” installed basis; verified by Engineer after work is completed
- c. Includes: The work shall be in accordance with Section 33 11 01 Waterworks as referenced in Schedule B Supplemental Specifications.

**19. Payment Item 6.19 – Watermain Gate Valve, 75mm dia.**

- a. Measurement: Per unit (each)
- b. Payment: Will be made on “per unit” installed basis; verified by Engineer after work is completed



Measurement and Payment

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- c. Includes: The work shall be in accordance with Section 33 11 01 Waterworks as referenced in Schedule B Supplemental Specifications.
20. **Payment Item 6.20 – Water service, 25mm dia. (including corp stop, curb stop, tubing, cap, marker post)**
- a. Measurement: Per unit (each)
  - b. Payment: Will be made on “per unit” installed basis; verified by Engineer after work is completed
  - c. Includes: The work shall be in accordance with Section 33 11 01 Waterworks as referenced in Schedule B Supplemental Specifications.
21. **Payment Item 6.21 – Watermain Tie-In to Town of Oliver 50mm Service Tubing (including coupler, bushing, flange, and connection to HDPE)**
- a. Measurement: Lump Sum (LS)
  - b. Payment: Per level of completion.
  - c. Includes: The work shall be in accordance with Section 33 11 01 Waterworks as referenced in Schedule B Supplemental Specifications.
22. **Payment Item 6.22 – Watermain Tie-Ins to Booster Station Kiosk (including HDPE butt ends, backing rings, SS bolts)**
- a. Measurement: Lump Sum (LS)
  - b. Payment: Per level of completion.
  - c. Includes: The work shall be in accordance with Section 33 11 01 Waterworks as referenced in Schedule B Supplemental Specifications.
23. **Payment Item 6.23 – Supply, Install and Mechanically Commission the Booster Station Kiosk including buried pipe spools**
- a. Measurement: Lump Sum (LS)
  - b. Payment: Per level of completion
  - c. Includes: Payment will include supply of a Booster Station kiosk and components from a pre-selected supplier. Payment will then also include coordination of delivery and offloading of the Contractor-supplied Booster Station kiosk and components from the supplier. This work will include excavation,



Measurement and Payment

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installation, and backfill of the buried steel pipe spools. It will also include final assembly, installation, and commissioning of the piping, pumps, valving, equipment, and kiosk. All stainless steel anchoring hardware for the kiosk and pipe support stands are also to be supplied by the Contractor. Assembled watermain piping and valving is to be pressure tested and disinfected. This work also includes supply, installation and wiring of all electrical equipment. Measurement will be by observation of work complete. The work shall be in accordance with Section 33 11 01 Waterworks as referenced in Schedule B Supplemental Specifications.

**G. PROVISIONAL ITEMS**

**1. Payment Item 7.01 - Supply and Erect Pre-Engineered Dome Structure  
(9.88 m x 10.64 m)**

- a. Measurement: Lump Sum (LS)
- b. Payment: Per level of completion.
- c. Includes: Payment includes all labour, materials and equipment necessary to supply and erect the dome structure as per Contract Documents. Payment to include Bollards double-dipped galvanized structural frame, stainless steel bracing, and 12 oz./23 mil membrane, made of flame-resistant woven polyethylene material conforming to CAN/ULC S-109-14 with a 15-year manufacturer's warranty and 6' trim. Payment to include all labour, materials, shipping, handling, procurement, equipment, and all other incidental work.

**2. Payment Item 7.02 – Supply and Install Coverall Structure Lighting**

- a. Measurement: Lump Sump (LS)
- b. Payment: On completion of the installation of luminaires, lighting controls, and wiring with associated conduit.
- c. Includes: Includes all labour, material and equipment required to supply and install the structure lighting system - this includes trenching and backfill, conduit, wiring, luminaires and mounting brackets.





No. RDOS-22-ENG-05  
Construction Services for the  
Oliver Organics Composting Facility  
Technical Specifications

Measurement and Payment

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\*\* END OF SECTION \*\*





## Appendix D

### Suggested Leachate Tank Aeration Diffuser and Recirculation Pumps

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**MOTOR SPECIFICATIONS**

<b>Motor Design</b>	Induction
<b>Motor Type</b>	Enclosed submersible
<b>Insulation Class</b>	Class B
<b>Motor Protection</b>	Bi-metallic Thermal Switch
<b>Bi-Metallic Temp Trip</b>	120° C
<b>Service Factor</b>	1.15
<b>Voltage Tolerance</b>	± 10% from nominal


**MOTOR DATA, 60Hz**

Model	Phase	Output Power BHP	Volts	Full Load Amps	Locked Rotor Amps	NEMA Code Letter	Power Factor 100% Load	Motor Efficiency 100% Load	Pole/Speed (rpm)
SS-200	1	2	208	12.2	61	H	0.765	0.731	2/3450
	1	2	230	11	55	H	0.995	0.602	2/3450
	3	2	208	7.7	38.5	H	0.832	0.712	2/3450
	3	2	230	7	35	H	0.739	0.725	2/3450
	3	2	460	3.5	17.5	H	0.689	0.752	2/3450
	3	2	575	2.5	12.5	G	0.732	0.767	2/3450

**MATERIALS OF CONSTRUCTION**

<b>Upper Motor Lid</b>	AISI Stainless Steel 316
<b>Motor Housing</b>	AISI Stainless Steel 316
<b>Oil Chamber</b>	AISI Stainless Steel 316
<b>Volute</b>	AISI Stainless Steel 316
<b>External Hardware</b>	AISI 316 Stainless Steel
<b>O-Rings</b>	FKM
<b>Motor Shaft</b>	AISI Stainless Steel 316 (in pumped media)
<b>Upper Bearing</b>	Single row, doubled sealed
<b>Lower Bearing(s)</b>	Single row, doubled sealed
<b>Upper Shaft Seal</b>	CA/CE (carbon/ceramic)
<b>Lower Shaft Seal</b>	SIC/SIC (silicon carbide/silicon carbide)
<b>Impeller</b>	AISI Stainless Steel 316

**DIMENSIONS, WEIGHT, AND MISC.**

<b>Pump weight single phase</b>	77lbs (35kg)
<b>Pump weight three phase</b>	77lbs (35kg)
<b>Maximum submergence</b>	33 feet (10m)
<b>Discharge size, standard</b>	2 inch NPS or 3 inch NPT female vertical
<b>Maximum temp. of pumped fluid</b>	104°F (40°C)
<b>Free Passage size</b>	1.77" (45mm)

**CABLE SPECIFICATIONS 60Hz**

MODEL	PHASE/VOLTAGE	POWER CABLE	LENGTH	OUTER JACKET
SS-200	1Ø-208V	SJTOW 14/3	33' (10m)	PVC
	1Ø-230V	SJTOW 14/3	33' (10m)	PVC
	3Ø-208V	STOW 16/4	33' (10m)	PVC
	3Ø-230V	STOW 16/4	33' (10m)	PVC
	3Ø-460V	STOW 16/4	33' (10m)	PVC
	3Ø-575V	STOW 16/4	33' (10m)	PVC

Power cable suitable for all standard voltages listed in "MOTOR DATA" section.

Document valid only for pump with serial number 1327-001 and up.  
Refer to previous document revision for earlier serial number.

Specifications subject to change without notice



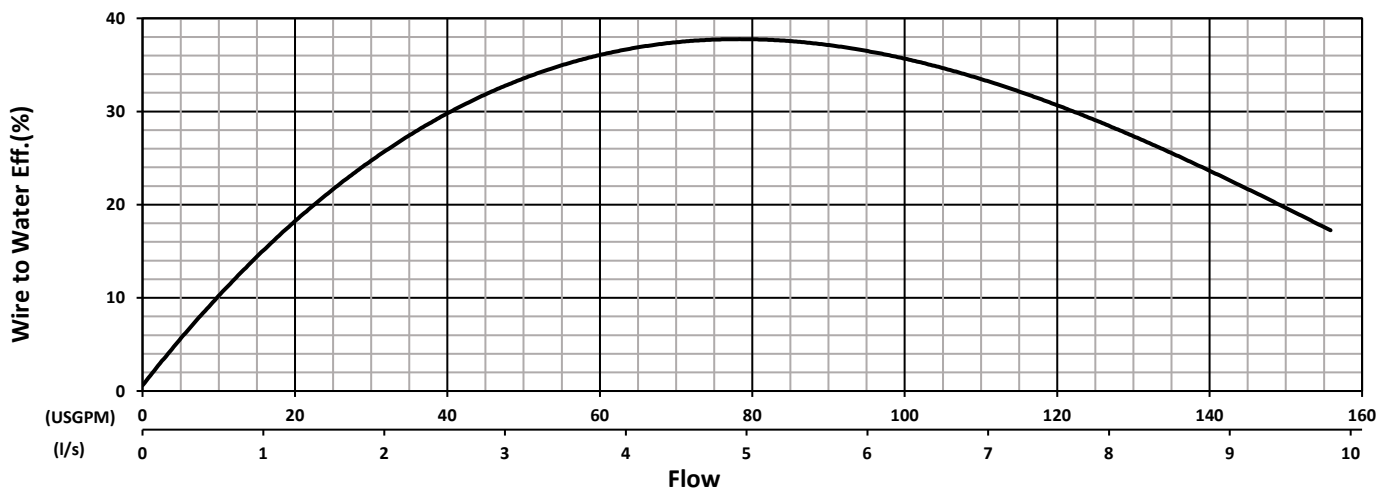
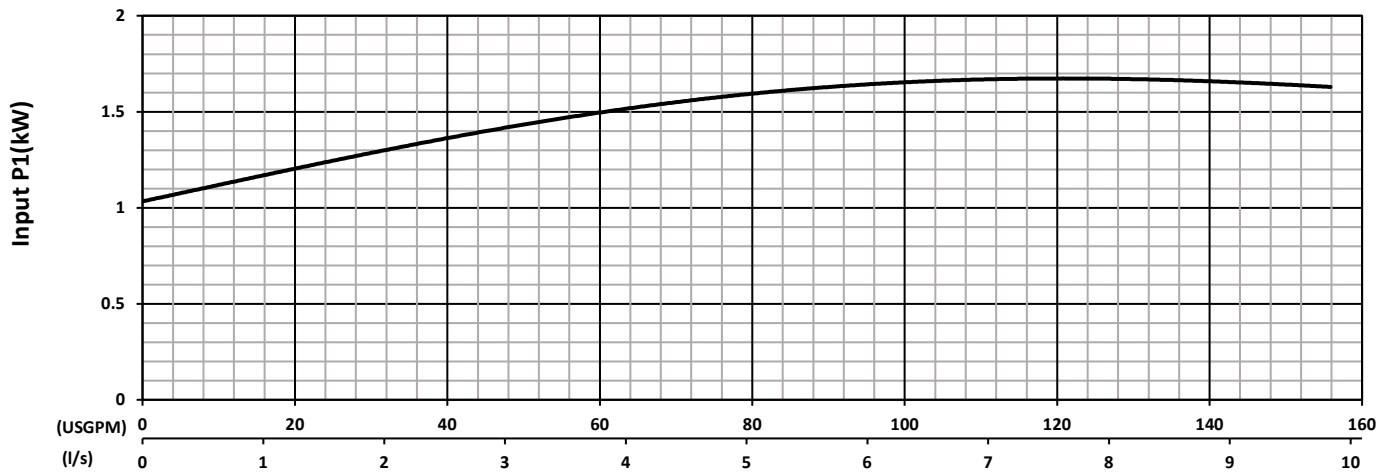
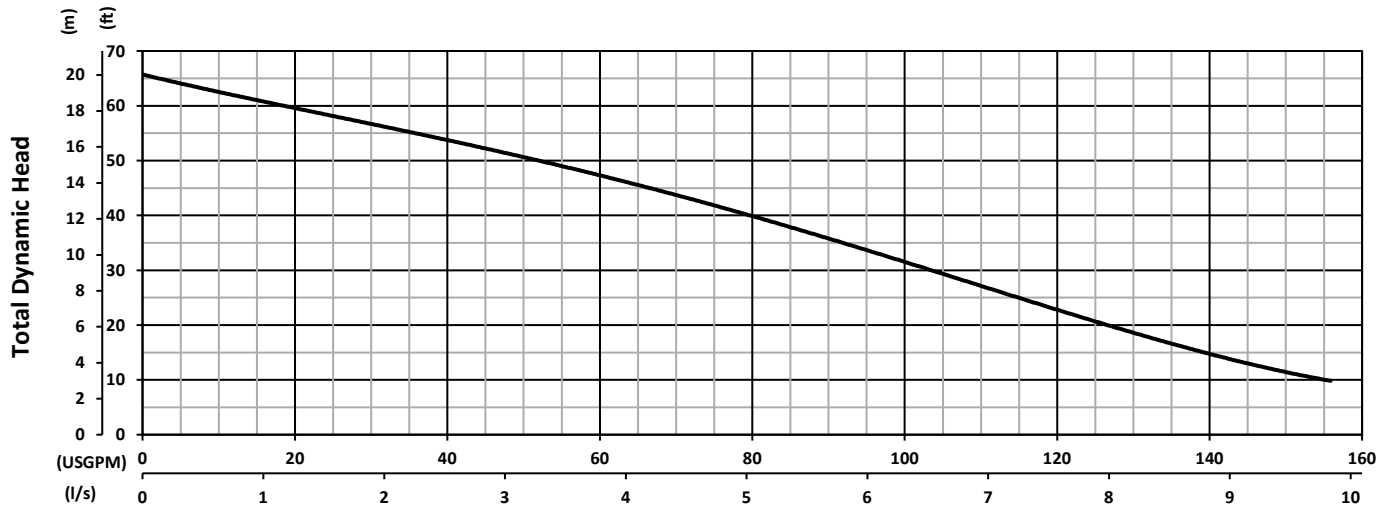
# PERFORMANCE CURVE

# Avenger Series SS-200

Dwg: DS-A07-013

Rev: 3

Date: 12/29/2017



Test Standard : HI 11.6 Gr 3B  
Tested with water at 20°C

### Pump Performance Test - Dual Units

Frequency 60 Hz  
Pump Speed 3450 RPM  
Impeller Ø103.6mm

Specifications subject to change without notice

<b>Quick Facts</b>	
<p>Systems Include:</p> <ul style="list-style-type: none"> <li>• Rocking Piston Compressor(s)</li> <li>• Cabinet Option</li> <li>• Diffuser Head(s)</li> <li>• Weighted Tubing                             <ul style="list-style-type: none"> <li>○ Included as standard on 1-3 diffuser systems</li> <li>○ Sold separately on 4-6 diffuser systems</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Designed for 24-hour operation with minimal maintenance</li> <li>• Inlet air filter visual maintenance indicator</li> <li>• Patent Pending noise cancelling design to dramatically reduce compressor sound</li> </ul>
<p style="text-align: center;"><b>Compressor</b></p> <p>Teich-Aire KM-120C</p> <ul style="list-style-type: none"> <li>• 1/2HP, Oil-less piston compressor</li> <li>• Continuous Duty Rated</li> <li>• 115V (KM-120C) 4.0 amps @ 20 psi</li> <li>• 230V (KM-120HC) 2.0 amps @ 20 psi</li> <li>• 4.9 CFM @ 5 psi; 4.0 CFM @ 25 psi</li> <li>• 25 psi pressure relief valve</li> <li>• Ramped reed valve</li> <li>• Heat resistant tubing</li> <li>• Paper air filter element</li> <li>• Can supply up to 3 diffuser heads</li> </ul> <p>Teich-Aire KM-200C</p> <ul style="list-style-type: none"> <li>• 3/4HP, Oil-less piston compressor</li> <li>• Continuous Duty Rated</li> <li>• 115V (KM-200C) 6.9 amps @ 20 psi</li> <li>• 230V (KM-200HC) 3.7 amps @ 200 psi</li> <li>• 7.2 CFM @ 5 psi; 6.2 CFM @ 25 psi</li> <li>• 25 psi pressure relief valve</li> <li>• Ramped reed valve</li> <li>• Heat resistant tubing</li> <li>• Paper air filter element</li> <li>• Can supply up to 3 diffuser heads</li> </ul>	<p style="text-align: center;"><b>Cabinet Options</b></p> <p>No Cabinet</p> <ul style="list-style-type: none"> <li>• Galvanized Steel Mounting Bracket</li> <li>• 16" on-center template</li> <li>• 110 CFM, Cooling Fan with Guard</li> <li>• Accommodates one ½ or ¾ HP compressor</li> </ul> <p>Post Mount Cabinet</p> <ul style="list-style-type: none"> <li>• Coated, aluminum, lockable cabinet</li> <li>• Internal sound dampening foam</li> <li>• Mounting template for 4x4 post or wall</li> <li>• Hinged top &amp; front cover for easy access</li> <li>• 110 CFM cooling fan with guard</li> <li>• 11.5"x11.4"x18.5"</li> <li>• Accommodates one ½ HP compressor</li> <li>• 6' pigtail with plug</li> </ul> <p>Large Cabinet</p> <ul style="list-style-type: none"> <li>• Coated, aluminum, lockable cabinet</li> <li>• Recommended installing on ground pad</li> <li>• Angled &amp; hinged top cover for easy access</li> <li>• 110 CFM cooling fan for each compressor</li> <li>• 20.1"x17.1"x23.7"</li> <li>• Accommodates one or two ½ or ¾ HP compressors</li> <li>• 115V has 6' pigtail with plug</li> </ul>
<p style="text-align: center;"><b>Diffuser</b></p> <ul style="list-style-type: none"> <li>• Independently tested to produce the most flow</li> <li>• Self-weighted, stainless steel base</li> <li>• Integrated tubing strain relief &amp; rope tie-offs</li> <li>• Molded plastic edge guards to protect pond lining</li> <li>• Proprietary linear low-density polyethylene &amp; rubber diffuser hose</li> <li>• 23"x15.5" assembled</li> <li>• Diffuser hose sits 6" above bottom of base</li> <li>• Check valve</li> </ul>	<p style="text-align: center;"><b>Optional Remote Manifold (RM)</b></p> <ul style="list-style-type: none"> <li>• Valve box to house remote manifold</li> <li>• PVC fittings and valves to position closer to pond edge</li> </ul>
<p style="text-align: center;"><b>SureSink Weighted Tubing</b></p> <ul style="list-style-type: none"> <li>• Available in 3/8" or 5/8" ID and 100' rolls or 500' reels</li> <li>• Self-weighted</li> <li>• 100' packages include all fittings</li> <li>• 3/8" recommended up to 300' runs</li> <li>• 5/8" recommended for greater than 300' runs</li> </ul>	<p style="text-align: center;"><b>Warranty</b></p> <ul style="list-style-type: none"> <li>• Compressor Motor – 3 years</li> <li>• Diffusers – Lifetime</li> <li>• Cabinet – Lifetime</li> <li>• SureSink Tubing – 15 years</li> </ul>

Model #	Compressor(s)	# of Diffusers	Cabinet	Voltage/Phase/Hz	Running Amps	CFM @ 10psi	Number of Boxes
RA2DP-NC	KM-120C	2	No Cabinet	115V/1/60	3.5	4.8	5
RAH2DP-NC	KM-120HC	2	No Cabinet	230V/1/60	1.75	4.8	5
RA2DP-PM	KM-120C	2	Post Mount	115V/1/60	3.5	4.8	5
RAH2DP-PM	KM-120HC	2	Post Mount	230V/1/60	1.75	4.8	5
RA2DP	KM-120C	2	Large Cabinet	115V/1/60	3.5	4.8	5
RAH2DP	KM-120HC	2	Large Cabinet	230V/1/60	1.75	4.8	5
RA4DP	KM-120C (x2)	4	Large Cabinet	115V/1/60	7	9.6	5*
RAH4DP	KM-120HC (x2)	4	Large Cabinet	230V/1/60	3.5	9.6	5*
RA5DP	KM-120C (x2)	5	Large Cabinet	115V/1/60	7	9.6	6*
RAH5DP	KM-120HC (x2)	5	Large Cabinet	230V/1/60	3.5	9.6	6*

\* - Tubing not included

Model #	Compressor(s)	# of Diffusers	Cabinet	Voltage/Phase/Hz	Running Amps	CFM @ 10psi	Number of Boxes
RA4XL	KM-200C (x2)	4	Large Cabinet	115V/1/60	12.3	13.6	5*
RAH4XL	KM-200HC (x2)	4	Large Cabinet	230V/1/60	6.2	13.6	5*
RA5XL	KM-200C (x2)	5	Large Cabinet	115V/1/60	12.3	13.6	6*
RAH5XL	KM-200HC (x2)	5	Large Cabinet	230V/1/60	6.2	13.6	6*
RA6XL	KM-200C (x2)	6	Large Cabinet	115V/1/60	12.3	13.6	7*
RAH6XL	KM-200HC (x2)	6	Large Cabinet	230V/1/60	6.2	13.6	7*

\* - Tubing not included

Depth (Ft.)	GPD per Diffuser (DP Systems)	GPD per Diffuser (XL Systems)
9	2,274,480	
12	3,411,720	
15	5,117,580	
18	6,652,854	
21	8,648,710	