THE CITY OF WINNIPEG

TENDER NO. 896-2021

NEWPCC UV TRANSFORMER REPAIR

APPENDIX A

CONSTRUCTION WORK PLAN

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Client	City of Winnipeg
Project	NEWPCC UV Transformer Repair
Package / Area	-
Prepared By	Curtis Reimer
Checked By	Curtis Reimer
Approved By	Curtis Reimer

Notes / Comments

1. This document provides constraints and sequencing requirements for the implementation of the on-site construction Work. It is intended to be read along with the associated Drawings and Specifications.
2. The Work identified in this document is an overview only. The document provides guiding requirements, and only includes major and significant tasks. The omission of any task within this document does not eliminate the requirement for the Contractor to complete the Work or coordinate the Work in accordance with the requirements of the Specifications and the guiding principles in this document.
3. The Contractor may propose a different Work sequence within the guiding principles of this document and the Specifications. The Contractor's proposed Work sequence is subject to the review of the Contract Administrator.

Revisions

Rev	Date	Description	By	Checked	Approved
00	2022-01-10	Issued For Construction	Curtis Reimer	Curtis Reimer	Curtis Reimer

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1 Introduction

1.1 General Requirements

The NEWPCC UV facility is critical to the treatment of wastewater for the City of Winnipeg. It is in continuous service, and all shutdowns must be scheduled. Under no circumstances shall any Work that affects UV operation be undertaken without prior approval.

The Contractor shall review all activities for risk and ensure that appropriate risk mitigation plans are in place prior to proceeding with the Work. If there is any doubt regarding a risk that could impact operations, the Contractor shall contact the Contract Administrator for review.

Should an unplanned incident occur, whether or not that incident is believed to impact operations, the Contractor shall immediately contact the City's designated Operations representative and the Contract Administrator.

The Contract Administrator and City reserve the right to interrupt and reschedule shutdowns to accommodate operational requirements.

1.2 Acronyms

D	Day 6:00 am – 12:00 am
N	Night 12:00 am – 6:00 am

2 General Operation Requirements and Allowable Shutdowns

2.1 Equipment Shutdown Availability

All shutdowns are subject to review and approval by the Contract Administrator.

Table 1. identifies the limitations to equipment shutdowns and associated requirements. Note that back-to-back shutdowns are not typically permissible, as the system must be stabilized after a shutdown.

Table 1: Shutdown Availability – UV Facility

Equipment	Months	Time of Day	Max Duration	Notes
Both UVT-2 and UVT-3 Transformers	Mar - May	-	Not typically permitted	*1*
	June – Feb		2 Hours	*2*
Single Transformer (UVT-2, UVT-3, LST-4, LST-5)	Mar - May	-	Not typically permitted	*1*
	June – Feb		2 weeks	

Notes:

1. *The months March through May are typically operational high-flow months for the NEWPCC facility. Shutdowns will be operationally challenging during high-flows and will only be permitted under the discretion of the City.*
2. *Shutdowns of both the UVT-2 and UVT-3 transformers will require detailed coordination with City operations and is subject to current NEWPCC operational conditions.*

3 General Sequence of Work

The following section details the Work phasing requirements. The indicated Work is not exhaustive and does not relieve the Contractor from planning the entire Work in a manner that meets all specified requirements. In no case shall the indicated Work sequence diminish or otherwise reduce the scope of Work required by the Contractor.

The Contractor will plan out the work on the Contractor's Schedule and will clearly indicate any proposed deviations to the sequence of Work in this document, for review by the Contract Administrator.

3.1 UVT-2

Item	Description of Work	D/N	Operation Impact	Notes
1	Prepare and install new structural supports for cable tray and busduct. Coordinate the sequence and provide temporary installations as required to replace the transformer enclosure roof while supporting any required cable tray and busduct segments.	D	Normal	
2	Coordinate with the City to shutdown both UVT-2 and UVT-3.	D/N	Complete UV Shutdown	*1*
3	Isolate the UVT-2 Neutral-to-Ground connection.			
4	Coordinate with City to restore power to UVT-3.			
5	Test transformer and cables before repair work.	D	UV Operational with one 480V transformer	
6	Perform repair work on the transformer.	D		
7	Repair the primary cables.	D		
8	Test transformer and cables after repair work.	D		
9	Coordinate with the City to shutdown both UVT-2 and UVT-3.	D/N	Complete UV Shutdown	*1*
10	Restore the UVT-2 Neutral-to-Ground connection.			
11	Coordinate with City to restore power to UVT-2 and UVT-3.			
12	Allow the City to operate a minimum of 48 hours on the transformer prior to proceeding with a shutdown of UVT-3 (if sequencing after).	D	Normal	

Notes:

3. As the UVT-2 and UVT-3 are connected to a common neutral in the main-tie-main switchgear, currents flow between the ground and neutral connections in the transformers and thus complete isolation of the neutral requires temporarily shutting down both transformers.

3.2 UVT-3

Item	Description of Work	D/N	Operation Impact	Notes
1	Prepare and install new structural supports for cable tray and busduct. Coordinate the sequence and provide temporary installations as required to replace the transformer enclosure roof while supporting any required cable tray and busduct segments.	D	Normal	
2	Coordinate with the City to shutdown both UVT-2 and UVT-3.	D/N	Complete UV Shutdown	*1*
3	Isolate the UVT-3 Neutral-to-Ground connection.			
4	Coordinate with City to restore power to UVT-2.			
5	Coordinate with City to shutdown and isolate UVT-3.	D	UV Operational with one 480V transformer	
6	Test transformer and cables before repair work.			
7	Perform repair work on the transformer.			
8	Test transformer and cables after repair work.			
9	Coordinate with the City to shutdown both UVT-2 and UVT-3.	D/N	Complete UV Shutdown	*1*
10	Restore the UVT-3 Neutral-to-Ground connection.			
11	Coordinate with City to restore power to UVT-2 and UVT-3.			
12	Allow the City to operate a minimum of 48 hours on the transformer prior to proceeding with a shutdown of UVT-2 (if sequencing after).	D	Normal	

Notes:

4. As the UVT-2 and UVT-3 are connected to a common neutral in the main-tie-main switchgear, currents flow between the ground and neutral connections in the transformers and thus complete isolation of the neutral requires temporarily shutting down both transformers.

3.3 LST-4

Item	Description of Work	D/N	Operation Impact	Notes
1	Prepare and install new structural supports for cable tray and busduct. Coordinate the sequence and provide temporary installations as required to replace the transformer enclosure roof while supporting any required cable tray and busduct segments.	D	Normal	
2	Coordinate with City to shutdown and isolate LST-4.	D	UV Operational with one 600V transformer	
3	Test transformer and cables before repair work.			
4	Perform repair work on LST-4.			
5	Test transformer and cables after repair work.			
6	Coordinate with City to restore power to LST-4.			
7	Allow the City to operate a minimum of 48 hours on the transformer prior to proceeding with a shutdown of LST-5 (if sequencing after).	D	Normal	

3.4 LST-5

Item	Description of Work	D/N	Operation Impact	Notes
1	Prepare and install new structural supports for cable tray and busduct. Coordinate the sequence and provide temporary installations as required to replace the transformer enclosure roof while supporting any required cable tray and busduct segments.	D	Normal	
2	Coordinate with City to shutdown and isolate LST-5.	D	UV Operational with one 600V transformer	
3	Test transformer and cables before repair work.			
4	Perform repair work on LST-5.			
5	Test transformer and cables after repair work.			
6	Coordinate with City to restore power to LST-5.			
7	Allow the City to operate a minimum of 48 hours on the transformer prior to proceeding with a shutdown of LST-4 (if sequencing after).	D	Normal	