Winnipeg	**COMMISSIONING FORM** **AIR CONDITIONER**	Page 1 of 2 Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact		
	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

Air Conditioner Location & Data					
	A/C Equipment No.		A/C Location: ☐ Ducted ☐ Ductless		Fed From:
	Drawings:	Single Line:	Mech. Schedule:		Schematic: ☐ N/A
	A/C Ratings:	Manufacturer:	Model:		Serial #:
		Power: kW Ton Size:	Rated Voltage: VAC	Full Load Amps: A	☐ 1-Phase ☐ 3-Phase

Visual Inspection / Cleaning		
	Air Conditioner Lamacoid Installed: ☐ Yes ☐ No	Visual Signs of Overheating: ☐ Yes ☐ No
	Power Cables Labelled: ☐ Yes ☐ No	Appropriate Breaker / Fuse Size Installed: ☐ Yes ☐ No
	Appropriate Duct / Ductless Installation: ☐ Yes ☐ No	Sufficient Ton Size Installed: ☐ Yes ☐ No
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor	A/C Unit Properly Installed: ☐ Good ☐ Acceptable ☐ Poor
	Power Connection: ☐ Good ☐ Acceptable ☐ Poor	Ground Connection: ☐ Good ☐ Acceptable ☐ Poor
	Fully Functional Controller: ☐ Good ☐ Acceptable ☐ Poor	Controller Display Works: ☐ Good ☐ Acceptable ☐ Poor
	Remote Controller Installed: ☐ Yes ☐ No ☐ N/A	Remote Controller Cable Labelled: ☐ Yes ☐ No ☐ N/A
	Cables Supported Appropriately: ☐ Yes ☐ No	Equipment Cleaned: ☐ Yes Photograph Taken: ☐ Yes
	Comments:	

Air Conditioner Electrical Testing

Test Preparation: Setup: Source: ☐ Isolated

Power Cable ☐ Disconnected ☐ Connected

Note: Approval of City's Representative is required, prior to leaving cables connected during the test.

WARNING: DISCONNECT ALL FIELD POWER CABLES PRIOR TO TEST.

Test	*Test Voltage*	*Insulation Resistance (MΩ)*			Ground all phases not under test!
		Phase A	*Phase B*	*Phase C*	
Contactor Line to Ground	VDC				**Test Summary** ☐ Test Passed ☐ Test Inconclusive Further Investigation Required. ☐ Test Failed
Contactor Load to Ground	VDC				
Contactor Line to Load	VDC				

Test	*Tester*	*Resistance (μΩ)*		
		Phases A-B	*Phases B-C*	*Phases C-B*
Heating Element	Fluke Meter			

Comments:

Winnipeg	**COMMISSIONING FORM** **AIR CONDITIONER**	Page 2 of 2 Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Full Load Operational Testing

TESTING: AIR CONDITIONER TO BE RUN FOR FIVE (5) MINUTES POINT PRIOR TO RECORDING VALUES.

Temperature	Turn On Setpoint: °C	Actual Turn On Setpoint: °C

A/C Loads	*Device*	*Measured Current*		
		Phase A	*Phase B*	*Phase C*
	Compressor ☐ N/A	A	A	A
	Fan ☐ N/A	A	A	A
	Heater ☐ N/A	A	A	A

Contactor	*Description*	*Controller Contact Status*	*Contactor Status*	*A/C Status*
	Contactor ☐ N/A	Closed	☐ Closed ☐ Opened	☐ Running ☐ Stopped
		Opened	☐ Closed ☐ Opened	☐ Running ☐ Stopped

Comments:

Final Analysis

Returned to Service:	☐ Yes	☐ No	Comments:
Monitoring / Further Inspection Required:	☐ Yes	☐ No	
Repair / Replacement Required:	☐ Yes	☐ No	

	Company	**Name**	**Signature**	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

Note: The General Contractor Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

Winnipeg	**COMMISSIONING FORM** **AUTOMATIC TRANSFER SWITCH**	Page 1 of 3 Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact		
	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

ATS Location & Data								
	ATS Downstream Load:			ATS Location:			Section No. ☐ N/A	
	Sources:	Source 1 (Normal)		Source 2 (Emergency):			Closed Transition: ☐ Yes ☐ No	
	Drawings:	Single Line:		Connection:			Loop:	
	ATS:	Manufacturer:		Model:			Serial #:	
		Power Rating:	Rated Voltage: VAC		Current Rating: A		Control Voltage: VAC	
	Source 1 (Normal) Circuit Protection:	☐ Breaker ☐ Fuse	Frame Size: A Trip Size: A	Inst. Setting: A ☐ N/A	Manufacturer:			
					Model:	Location:		
	Source 2 (Emergency) Circuit Protection:	☐ Breaker ☐ Fuse	Frame Size: A Trip Size: A	Inst. Setting: A ☐ N/A	Manufacturer:			
					Model:	Location:		
	Line 1 (Normal) Contactor:	Type: ☐ NEMA ☐ IEC ☐ N/A	Manufacturer:		Model:			
			NEMA Size: ☐ N/A		IEC Rating: A	☐ AC-3	☐ AC-4	
	Line 2 (Emergency) Contactor:	Type: ☐ NEMA ☐ IEC ☐ N/A	Manufacturer:		Model:			
			NEMA Size: ☐ N/A		IEC Rating: A	☐ AC-3	☐ AC-4	
	Ctrl Power Transformer:	Size: VA	Primary Voltage: V Secondary Voltage: V		Primary Fuse: A	Secondary Fuse: A		

Visual Inspection / Cleaning				
	ATS Lamacoid Installed: ☐ Yes ☐ No		Visual Signs of Overheating: ☐ Yes ☐ No	
	Power Cables Labelled at Both Ends: ☐ Yes ☐ No		Control Cables Labelled at Both Ends: ☐ Yes ☐ No	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor		Power Cable Connections: ☐ Good ☐ Acceptable ☐ Poor	
	Control Cable Connections: ☐ Good ☐ Acceptable ☐ Poor		Elect./ Mech. Interlocks: ☐ Good ☐ Acceptable ☐ Poor	
	Ground Connections: ☐ Good ☐ Acceptable ☐ Poor		Contactor Condition: ☐ Good ☐ Acceptable ☐ Poor	
	Door Mechanical: ☐ Good ☐ Acceptable ☐ Poor		Contact Alignment: ☐ Good ☐ Acceptable ☐ Poor	
	Verify Contactors are correctly Sized for the Sources: ☐ Yes ☐ No ☐ N/A		Verify Source & Load Phases are Correctly Installed and Labelled ☐ Yes ☐ No	
	Cables Supported Appropriately: ☐ Yes ☐ No		Equipment Cleaned: ☐ Yes	Photograph Taken: ☐ Yes
	Comments:			

Contact / Pole Measurements	*Test*	*Resistance*			**Test Summary**
		Phase A	*Phase B*	*Phase C*	☐ Test Passed
	Source 1 (Normal) Line to Load	μΩ	μΩ	μΩ	☐ Test Inconclusive Further Investigation Required.
	Source 2 (Emergency) Line to Load	μΩ	μΩ	μΩ	☐ Test Failed
	Comments:				

Winnipeg	**COMMISSIONING FORM** **AUTOMATIC TRANSFER SWITCH**	Page 2 of 3 Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Insulation Resistance Test

Test Preparation:
- Source 1 (Normal) Cable: ☐ Disconnected ☐ Connected with Source 1 Isolated
- Source 2 (Emergency) Cable: ☐ Disconnected ☐ Connected with Source 2 Isolated
- Load Cable: ☐ Disconnected ☐ Connected with Load Isolated

Note: Approval of City's Representative is required, prior to leaving cables connected during the test.

WARNING: DISCONNECT ALL POWER ATS CABLES AND DISCONNECT ALL CONTROL POWER FUSES PRIOR TO TEST.

Test	*Voltage*	*Insulation Resistance*			Ground all phases not under test!
		Phase A	*Phase B*	*Phase C*	
Source 1 (Normal) Line to Ground	1000 VDC	MΩ	MΩ	MΩ	**Test Summary**
Source 2 (Emergency) Line to Ground	1000 VDC	MΩ	MΩ	MΩ	☐ Test Passed
Load to Ground	1000 VDC	MΩ	MΩ	MΩ	☐ Test Inconclusive Further Investigation Required.
Source 1 (Normal) Line to Load	1000 VDC	MΩ	MΩ	MΩ	
Source 2 (Emergency) Line to Load	1000 VDC	MΩ	MΩ	MΩ	☐ Test Failed

Comments:

Operational Testing

Automatic Mode Switches Source 1 to Source 2 (via Source 1 Power Disruption): ☐ Yes ☐ No

Automatic Mode Switches Source 2 to Source 1 (via Source 1 Power Restored): ☐ Yes ☐ No

Operating Modes	*Mode Description*	*Source Powers Load*	*ATS Indicator Light Illuminates*
	Automatic Mode - Source 1 (Utility)	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Automatic Mode - Source 2 (Emergency) via Source 1 Fail	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Normal Test Mode - Source 1 (Utility)	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Emergency Test Mode - Source 2 (Emergency)	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A

Comments:

ATS Settings

Program ATS Settings to Match Setting Letter.		Comments:
Settings Applied to ATS: ☐ Yes ☐ No		
ATS Setting Letter File:		
Source 1 (Normal) Dropout Voltage: V	Source 1 (Normal) Pickup Voltage: V	
Source 2 (Emergency) Dropout Voltage: V	Source 2 (Emergency) Pickup Voltage: V	
Transfer to Source 2 (Emergency) Time Delay: sec.	Retransfer to Source 1 (Normal) Time Delay: sec.	
Source 1 to 2 Closed Transition Time: sec. ☐ N/A	Source 2 to 1 Closed Transition Time: sec. ☐ N/A	
Source 2 (Emergency) Warm-Up Time Delay: sec.	Source 2 (Emergency) Cool-Down Time Delay: sec.	

ATS & PLC Control Signals

Verify Control Signals Between ATS and PLC		Comments:
Test Preparation: Test physical signals rather than installing jumpers for signals		
Field Wires Labelled at Both Ends: ☐ Yes ☐ No		

Discrete Signal	*Signal Description*	*ATS Pilot Light Illuminates*	*Signal Received at PLC Card*	*Signal Appears on HMI Screen*	*SCADA Can See Signal*
	On Source 1 Power	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	On Source 2 Power	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	ATS Alarm	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A

Winnipeg	**COMMISSIONING FORM** **AUTOMATIC TRANSFER SWITCH**	Page 3 of 3 Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Functional Testing	**Step**	**Description**	**Result**
	1	ATS in Source 1 (Normal) Position with Source 1 Energized. ATS indicates Source 1 (Normal) available and Source 1 (Normal) position status is provided.	☐ Pass ☐ Fail
	2	Power down (or isolate) Source 1 (Normal). ATS indicates Source 1 (Normal) is not available.	☐ Pass ☐ Fail
	3	Source 2 (Emergency) start signal provided.	☐ Pass ☐ Fail
	4	Source 2 (Emergency) starts. ATS indicates Source 2 (Emergency) available and transfers to Source 2 (Emergency) after appropriate delay. Source 2 position status is displayed.	☐ Pass ☐ Fail
	5	Power up (or reconnect) Source 1 (Normal). ATS indicates Source 1 (Normal) is available and delay timer starts before transfer back to Source 1 (Normal). ATS continues to indicate Source 2 (Emergency) position status.	☐ Pass ☐ Fail
	6	Timer expires and ATS transfers to Source 1 (Normal). ATS indicates Source 1 (Normal) position status.	☐ Pass ☐ Fail
	7	Source 2 (Emergency) Stops after cool-down timer expires.	☐ Pass ☐ Fail
	8	Ensure loads are isolated such that a phase loss will not damage equipment. Simulate a Source 1 (Normal) phase loss condition and verify the ATS starts Source 2 (Emergency) Generator and transfers to Source 2 (Emergency).	☐ Pass ☐ Fail
	9	Reinstate the lost phase on Source 1 (Normal) and verify that ATS transfers back to Source 1 (Normal) after the appropriate delay.	☐ Pass ☐ Fail
	10	Manually start Source 2 (Emergency) and perform a manual transfer to Source 2 (Emergency).	☐ Pass ☐ Fail
	11	Perform a manual transfer back to Source 1 (Normal).	☐ Pass ☐ Fail
	Test Summary	☐ Test Passed ☐ Test Inconclusive - Further Investigation Required ☐ Test Failed	Comments:

Final Analysis			
	Returned to Service:	☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes ☐ No	
	Repair / Replacement Required:	☐ Yes ☐ No	

	Company	**Name**	**Signature**	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

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Winnipeg	**COMMISSIONING FORM** **CUSTOMER SERVICE TERMINATION END**	Page 1 of 2
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact		
	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

CSTE Location & Data								
	CSTE Downstream Load:			Equipment No.			Location:	
	Drawings:	Single Line:		Grounding:			Site Plan:	
	CSTE:	Manufacturer:		Model:			Serial #:	
		Mounting Type: ☐ Floor ☐ Wall		Metering Type: ☐ CTs & PTs w/ Meter ☐ Meter Only			Remote Enclosure: ☐ Yes ☐ No	
		Rated Current: A	Rated Voltage: VAC		Phases: ☐ 1-Ph ☐ 3-Ph		Short-Circuit Rating kAIC	
	Main Disconnect Type:	☐ Breaker ☐ Switch ☐ N/A	Frame: A Trip: A	Inst. Setting: A	Manufacturer:			
					Model:			

Service Size & CSTE Cabling				
	Service Size: kVA	Voltage: VAC Phases: ☐ 1ø ☐ 3ø	Rated Service Current: A	Service Transformer: ☐ Pole ☐ Padmount
	CSTE Load Side Cabling Size and Type: (ie 2 x 4C, 350 kcmil Teck90)		CSTE Load Side Cabling: ☐ Bottom ☐ Side / Rear	CSTE Downstream Load:
	CSTE Load Side Cable Rating: A (CEC C22.1) Table Diagram: Detail:			CSTE Ground Cable Size & Type:

Visual Inspection / Cleaning						
	CSTE Lamacoid Installed: ☐ Yes ☐ No			Visual Signs of Overheating: ☐ Yes ☐ No		
	Power Cables Labelled at Both Ends: ☐ Yes ☐ No			Phases Labelled Inside Enclosure: ☐ Yes ☐ No		
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor			Power Cable Connections: ☐ Good ☐ Acceptable ☐ Poor		
	Main Disconnect: ☐ Good ☐ Acceptable ☐ Poor			Service Entrance Enclosure: ☐ Good ☐ Acceptable ☐ Poor		
	Ground Connections: ☐ Good ☐ Acceptable ☐ Poor			Bus Bars and Insulators: ☐ Good ☐ Acceptable ☐ Poor		
	Door Mechanical: ☐ Good ☐ Acceptable ☐ Poor			Exercised Circuit Breaker / Disconnect: ☐ Yes ☐ No		
	Cables Supported Appropriately: ☐ Yes ☐ No			Equipment Cleaned: ☐ Yes	Photograph Taken:	☐ Yes
	Comments:					

Resistance Measurements	*Test*	*Resistance*			**Test Summary**
		Phase A	*Phase B*	*Phase C*	☐ Test Passed
	Interior Bus Bar / Cabling	μΩ	μΩ	μΩ	☐ Test Inconclusive Further Investigation Required.
	Breaker / Disconnect	μΩ	μΩ	μΩ	☐ Test Failed
	Comments:				

Winnipeg	**COMMISSIONING FORM** **CUSTOMER SERVICE TERMINATION END**	Page 2 of 2
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Insulation Resistance Test

Test Preparation:
Setup:
Source: ☐ Isolated
Contactor: ☐ Open

Cable Destination / Load:
☐ Disconnected
☐ Connected with Load Isolated

Note: Approval of City's Representative is required, prior to leaving cables connected during the test.

WARNING: DISCONNECT ALL POWER CABLES FROM VFD MODULE AND CAPACITORS, AND DISCONNECT ALL CONTROL POWER FUSES PRIOR TO TEST.

Test	*Voltage*	*Insulation Resistance*			Ground all phases not under test!
		Phase A	*Phase B*	*Phase C*	
Interior Bus Bar / Cabling to Ground	1000 VDC	MΩ	MΩ	MΩ	**Test Summary** ☐ Test Passed ☐ Test Inconclusive Further Investigation Required. ☐ Test Failed
Main Disconnect Line to Ground	1000 VDC	MΩ	MΩ	MΩ	
Main Disconnect Load to Ground	1000 VDC	MΩ	MΩ	MΩ	
Main Disconnect Line to Load	1000 VDC	MΩ	MΩ	MΩ	

Comments:

Breaker Settings

Adjust Settings to Match Single Line Diagram

Settings Applied to Breaker: ☐ Yes ☐ No

Single Line Diagram:

Comments:

Final Analysis

Returned to Service:	☐ Yes	☐ No	Comments:
Monitoring / Further Inspection Required:	☐ Yes	☐ No	
Repair / Replacement Required:	☐ Yes	☐ No	

	Company	**Name**	**Signature**	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

Note: The General Contractor Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

Winnipeg	**COMMISSIONING FORM** **DISCONNECT SWITCH**	Page 1 of 2 Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact		
	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

Disconnect Location & Data					
	Disconnect Equipment No.		Location:		Fed From:
	Drawings:	Single Line:	Schematic:		Connection:
		Manufacturer:	Model:		Serial #:
	Disconnect Ratings:	Ampacity: A Withstand: kAIC	Rated Voltage: VAC	No. of Poles:	Auxiliary Contacts: ☐ Yes ☐ No
	Fuse Ratings:	☐ Installed ☐ N/A	Rating: A	Type:	Manufacturer: Model:

Visual Inspection / Cleaning				
	Disconnect Lamacoid Installed: ☐ Yes ☐ No		Visual Signs of Overheating: ☐ Yes ☐ No	
	Power Cables Labelled: ☐ Yes ☐ No		Any Exposed Energized Metal: ☐ Yes ☐ No	
	Rated for Hazardous Location: ☐ Yes ☐ No		All Fuse Sizes Match Drawings: ☐ Yes ☐ No	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor		Enclosure Cover Secured: ☐ Good ☐ Acceptable ☐ Poor	
	Switchblade Mechanical: ☐ Good ☐ Acceptable ☐ Poor		Ground Connection: ☐ Good ☐ Acceptable ☐ Poor	
	Exercised Switchblade Operation: ☐ Yes ☐ No ☐ N/A		Auxiliary Contacts Change State: ☐ Yes ☐ No	
	Cables Supported Appropriately: ☐ Yes ☐ No		Equipment Cleaned: ☐ Yes	Photograph Taken: ☐ Yes
	Comments:			

Switchblade & Fuse Measurements	*Test*	*Resistance*			**Test Summary**
		Phase A	*Phase B*	*Phase C*	☐ Test Passed ☐ Further Investigation Required. ☐ Test Failed
	Switchblade Pole Measurements	μΩ	μΩ	μΩ	
	Fuse Measurements	μΩ	μΩ	μΩ	
	Comments:				

Insulation Resistance Test						
	Test Preparation:	Source: ☐ Disconnected ☐ Connected with Source Isolated	Load: ☐ Disconnected ☐ Connected with Load Isolated	Note: Approval of City's Representative is required, prior to leaving cables connected during the test.		
	WARNING: Isolate Source and Load Cabling Prior To Test. Use 500 VDC for < 300 V rated and 1000 VDC for > 300 V rated.					
	Test	*Voltage*	*Insulation Resistance*			Ground all phases not under test!
			Phase A	*Phase B*	*Phase C*	
	Disconnect Line Side to Ground	VDC	MΩ	MΩ	MΩ	**Test Summary** ☐ Test Passed ☐ Further Investigation Required. ☐ Test Failed
	Disconnect Load Side to Ground	VDC	MΩ	MΩ	MΩ	
	Disconnect Line to Load	VDC	MΩ	MΩ	MΩ	
	Comments:					

Winnipeg	**COMMISSIONING FORM DISCONNECT SWITCH**	Page 2 of 2
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Final Analysis				
	Returned to Service:	☐ Yes	☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes	☐ No	
	Repair / Replacement Required:	☐ Yes	☐ No	

	Company	**Name**	**Signature**	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

Note: The General Contractor Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

Winnipeg	**COMMISSIONING FORM** **DRY TYPE TRANSFORMER**	Page 1 of 2
		Equipment Tag:

Project	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

Transformer Location & Data	Transformer Equipment No.			Location:						Single Line Dwg:	
	Transformer Ratings:	Manufacturer:		CAT / Model No.						Serial #:	
		Primary: V		Secondary Voltage: V			Rating: kVA			☐ 1-Phase ☐ 3-Phase	
		Primary Winding (3-Ph) ☐ Δ ☐ Y ☐ Y-Gnd		Secondary Winding (3-Ph) ☐ Δ ☐ Y ☐ Y-Gnd			Winding Material: ☐ Aluminum ☐ Copper			Impedance: %Z	Temp. Rise: °C
	Transformer Taps:	☐ Primary ☐ Secondary ☐ N/A	Tap Setting	1 V	2 V	3 V	4 V	5 V	6 V	Tap Setting On V	

Visual Inspection / Cleaning	Transformer Lamacoid Installed: ☐ Yes ☐ No		Visual Signs of Overheating: ☐ Yes ☐ No	
	Power Cables Labelled: ☐ Yes ☐ No		Any Exposed Energized Metal: ☐ Yes ☐ No	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor		Enclosure Secured: ☐ Good ☐ Acceptable ☐ Poor	
	Power Connections: ☐ Good ☐ Acceptable ☐ Poor		Ground Connections: ☐ Good ☐ Acceptable ☐ Poor	
	Transformer Supported Appropriately: ☐ Yes ☐ No ☐ N/A		Neutral Bonded to Ground: ☐ Yes ☐ Yes ☐ N/A	
	Cables Supported Appropriately: ☐ Yes ☐ No		Equipment Cleaned: ☐ Yes	Photograph Taken: ☐ Yes
	Comments:			

Insulation Resistance Test	Test Preparation:	Source: ☐ Disconnected ☐ Connected with Source Isolated	Note: Approval of City's Representative is required, prior to leaving cables connected during the test.			
	WARNING: DISCONNECT INCOMING SOURCE POWER CABLES PRIOR TO TEST.					
	Winding	*Voltage*	*Insulation Resistance*			Resistance to be recorded after 60 sec.
			Phase A	*Phase B*	*Phase C*	
	Primary to Ground	VDC	MΩ	MΩ	MΩ	**Test Summary** ☐ Test Passed ☐ Further Investigation Required. ☐ Test Failed
	Secondary to Ground	VDC	MΩ	MΩ	MΩ	
	Primary to Secondary	VDC	MΩ	MΩ	MΩ	
	Comments:					

Final Analysis	Returned to Service: ☐ Yes ☐ No	Comments:	
	Monitoring / Further Inspection Required: ☐ Yes ☐ No		
	Repair / Replacement Required: ☐ Yes ☐ No		

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

	Company	Name	Signature	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

Note: The General Contractor Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

Winnipeg	**COMMISSIONING FORM** **DUCT HEATER**	Page 1 of 2 Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact		
	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

Duct Heater Location & Data						
	Heater Equipment No.		Heater Location:		Fed From:	
	Drawings:	Single Line:	Mech. Schedule:		Schematic:	☐ N/A
	Duct Heater Ratings:	Manufacturer:	Model:		Serial #:	
		Power: kW	Rated Voltage: VAC	Full Load Amps: A	☐ 1-Phase	☐ 3-Phase
		Flow Rate: L/s	Control Voltage: VAC	Stages:	SCR Controls: to V	

Visual Inspection / Cleaning				
	Duct Heater Lamacoid Installed: ☐ Yes ☐ No		Visual Signs of Overheating: ☐ Yes ☐ No	
	Power Cables Labelled: ☐ Yes ☐ No		Appropriate Breaker / Fuse Size Installed: ☐ Yes ☐ No	
	SCR Control Cables Labelled: ☐ Yes ☐ No		SCR Controls Properly Installed: ☐ Yes ☐ No	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor		Heater Properly Installed: ☐ Good ☐ Acceptable ☐ Poor	
	Power Connection: ☐ Good ☐ Acceptable ☐ Poor		SCR Controls Connection: ☐ Good ☐ Acceptable ☐ Poor	
	Ground Connection: ☐ Good ☐ Acceptable ☐ Poor		Ground Connection: ☐ Good ☐ Acceptable ☐ Poor	
	Remote Thermostat Installed: ☐ Yes ☐ No ☐ N/A		Remote Thermostat Cable Labelled ☐ Yes ☐ No ☐ N/A	
	Cables Supported Appropriately: ☐ Yes ☐ No		Equipment Cleaned: ☐ Yes	Photograph Taken: ☐ Yes
	Comments:			

Heater Electrical Testing

Test Preparation: Setup: Source: ☐ Isolated — Power Cable: ☐ Disconnected ☐ Connected

Note: Approval of City's Representative is required, prior to leaving cables connected during the test.

WARNING: DISCONNECT ALL FIELD POWER CABLES FROM MOTOR PRIOR TO TEST.

Test	*Test Voltage*	*Insulation Resistance*			Ground all phases not under test!
		Phase A	*Phase B*	*Phase C*	
Line to Ground	VDC	MΩ	MΩ	MΩ	**Test Summary** ☐ Test Passed ☐ Test Inconclusive Further Investigation Required. ☐ Test Failed

Test	*Tester*	*Resistance*			
		Phases A-B	*Phases B-C*	*Phases C-B*	
Heating Element	Fluke Meter	μΩ	μΩ	μΩ	

Comments:

Winnipeg	**COMMISSIONING FORM** **DUCT HEATER**	Page 2 of 2
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Operational Testing

TESTING: HEATER TO BE RUN FOR TWO (2) MINUTES UNDER EACH SCR DUTY POINT PRIOR TO RECORDING VALUES. SCR DUTY POINTS FOR 0 – 10 V WOULD BE TESTED AT 0.0 V, 2.5 V, 5.0 V, 7.5 V and 10.0 V.

Temperature		Turn On Setpoint: °C		Actual Turn On Setpoint: °C
SCR Duty Point	*SCR Volts*	*Duct Heater Measured Current*		
		Phase A	*Phase B*	*Phase C*
1	V	A	A	A
2	V	A	A	A
3	V	A	A	A
4	V	A	A	A
5	V	A	A	A

Comments:

Final Analysis			
Returned to Service:	☐ Yes	☐ No	Comments:
Monitoring / Further Inspection Required:	☐ Yes	☐ No	
Repair / Replacement Required:	☐ Yes	☐ No	

	Company	**Name**	**Signature**	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

Note: The General Contractor Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

Winnipeg	**COMMISSIONING FORM** **EMERGENCY LIGHTING**	Page 1 of 2
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact		
	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

Emergency Lighting Location & Data						
	Battery Bank Location:	Battery Bank Equipment No.	Panel Feed: Circuit No.	Control Panel No.		Applicable Drawings:
	Battery Bank:	Manufacturer:	Catalog No.			Serial #:
		Input Voltage: VAC	Output Voltage: VDC	Wattage: W		Internal Lamp Qty:
	Remote Fixtures:	Manufacturer:	Catalog No.			Remote Fixtures Qty:
		Input Voltage: VDC	Input Current: A	Lamp Wattage: W		Fixture Lamp Qty:
		Installed Locations:				

Visual Inspection / Cleaning				
	Identification Lamacoids Installed: ☐ Yes ☐ No		Lamps Properly Aimed: ☐ Yes ☐ No	
	Visual Signs of Moisture: ☐ Yes ☐ No		All Lamps Properly Operate: ☐ Yes ☐ No	
	Dry Well Remote Fixtures Moisture Proof Rated: ☐ Yes ☐ No ☐ N/A		Valve Chamber Remote Fixtures Moisture Proof Rated: ☐ Yes ☐ No ☐ N/A	
	Wet Well Remote Fixtures Explosion Proof Rated: ☐ Yes ☐ No ☐ N/A		Comminutor Chamber Remote Fixtures Explosion Proof Rated: ☐ Yes ☐ No ☐ N/A	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor		Cable Connections: ☐ Good ☐ Acceptable ☐ Poor	
	Ground Connections: ☐ Good ☐ Acceptable ☐ Poor		Connections Properly Sealed: ☐ Good ☐ Acceptable ☐ Poor	
	Cables Supported Appropriately: ☐ Yes ☐ No		Equipment Cleaned: ☐ Yes	Photograph Taken: ☐ Yes
	Comments:			

Battery Testing			
	Battery Bank Temperature Before Starting Testing: °C	Battery Bank Temperature After Testing Completed: °C	**Test Summary** ☐ Test Passed ☐ Test Inconclusive ☐ Further Investigation Required ☐ Test Failed
	Battery Voltage at Start of Testing: V		
	Battery Backup Design Time (from Drawing): minutes minimum		
	Time Until All Emergency Lights Turn Off: minutes		
	Measured Battery Bank Current Draw During Testing: A		
	Time to Fully Recharge Battery After Testing: minutes		
	Comments:		

Operational Testing				
	Emergency Lights Turn On and Off Automatically in Normal Mode: ☐ Yes ☐ No		Emergency Lights Turn On in Test Mode: ☐ Yes ☐ No	
	Operating Modes	*Mode Description*	*Emergency Lights On*	*Time For Emergency Lights to Turn On*
		Normal Mode – Normal Station Operation	No	N/A
		Normal Mode – Battery Bank Power Supply Failure	☐ Yes ☐ No	sec
		Normal Mode – Individual Normal Lighting Circuits Fail	☐ Yes ☐ No	sec
		Test Mode	☐ Yes ☐ No ☐ N/A	sec
	Comments:			

Winnipeg	**COMMISSIONING FORM** **EMERGENCY LIGHTING**	Page 2 of 2
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Final Analysis				
	Returned to Service:	☐ Yes	☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes	☐ No	
	Repair / Replacement Required:	☐ Yes	☐ No	

	Company	**Name**	**Signature**	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

Note: The General Contractor Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

Winnipeg	**COMMISSIONING FORM** **GENERATOR DAMPERS**	Page 1 of 2
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact		
	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

Damper Actuators Location & Data							
	Station Ventilation Room(s) / Area(s)			Generator Equipment No.		HVAC Control Panel Equip. No.	☐ N/A
	Drawings:	HVAC P&ID:		Control Panel:		Dampers Loop:	
	Combustion Air Damper 1 Actuator:	Room Installed:		Equipment No.		Control Type: ☐ Modulating ☐ On / Off	
		Manufacturer:		Catalog No.		Serial #:	
		Power Supply:	VAC / VDC	Torque:	Nm	Runtime:	sec.
		Control Input:	VAC / VDC	Control Output:	VAC / VDC	Auxiliary Switch Provided: ☐ Yes ☐ No	
	Combustion Air Damper 2 Actuator:	Room Installed:		Equipment No.		Type: ☐ Modulating ☐ On/Off	
		Manufacturer:		Catalog No.		Serial #:	
		Power Supply:	VAC / VDC	Torque:	Nm	Runtime:	sec.
		Control Input:	VAC / VDC	Control Output:	VAC / VDC	Auxiliary Switch Provided: ☐ Yes ☐ No	

Visual Inspection / Cleaning									
	Damper Lamacoids Installed:	☐ Yes	☐ No		Damper Actuator Lamacoids Installed:	☐ Yes	☐ No		
	Power Cables Labelled at Both Ends:	☐ Yes	☐ No		Control Cables Labelled at Both Ends:	☐ Yes	☐ No		
	Cleanliness:	☐ Good	☐ Acceptable	☐ Poor	Power Cable Connections:	☐ Good	☐ Acceptable	☐ Poor	
	Fully Functioning Actuators:	☐ Good	☐ Acceptable	☐ Poor	Actuators Properly Installed:	☐ Good	☐ Acceptable	☐ Poor	
	All Actuator Inputs Work:	☐ Good	☐ Acceptable	☐ Poor	All Actuator Outputs Work:	☐ Good	☐ Acceptable	☐ Poor	
	Cables Supported Appropriately:	☐ Yes	☐ No	☐ N/A	Equipment Cleaned: ☐ Yes		Photographs Taken: ☐ Yes		
	Comments:								

Operational Testing					
	Combustion Air Damper 1 Actuator Measured Opening Time:	sec	Combustion Air Damper 1 Actuator Measured Closing Time:		sec
	Combustion Air Damper 2 Actuator Measured Opening Time:	sec	Combustion Air Damper 2 Actuator Measured Closing Time:		sec
	Combustion Air Damper 1 Changes From No Ventilation to High Ventilation:	☐ Yes ☐ No	Combustion Air Damper 1 Changes From High Ventilation to No Ventilation:		☐ Yes ☐ No
	Combustion Air Damper 2 Changes From No Ventilation to High Ventilation:	☐ Yes ☐ No	Combustion Air Damper 2 Changes From High Ventilation to No Ventilation:		☐ Yes ☐ No
	Operating Modes	*Mode Description*	*Fail-Safe Position*	*No Ventilation Rate*	*High Ventilation Rate*
		Combustion Air Damper 1 Open Position	☐ Opened ☐ Closed	%	%
		Combustion Air Damper 2 Open Position	☐ Opened ☐ Closed	%	%
	Comments:				

Damper Actuator Settings				
	Adjust Damper Actuator Settings for Damper Balancing		Comments:	
	Damper Settings Applied:	☐ Yes ☐ No		
	Combustion Air Damper Actuators	Direction Control	Angle of Rotation Positions	Auxiliary Switch Position
		☐ CCW ☐ CCW	Starting: Ending:	☐ Not Used

Winnipeg	**COMMISSIONING FORM** **GENERATOR DAMPERS**	Page 2 of 2
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Actuator Input / Output Control Signals

Verify Control Signals Between Generator Controller and Dampers

Test Preparation: Test physical signals rather than installing jumpers for signals

Field Wires Labelled at Both Ends: ☐ Yes ☐ No

Comments:

No Ventilation Rate	*Actuator*	*Signal Type*	*Measured Input Voltage*	*Measured Output Voltage*	*Output Received at PLC Card*	*Signal Appears on HMI Screen*	*SCADA Can See Signal*
	Generator Combustion Damper 1	☐ 0 – 5V ☐ 0 – 10V ☐ On / Off	VDC	VDC	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Generator Combustion Damper 2 ☐ Not Used	☐ 0 – 5V ☐ 0 – 10V ☐ On / Off	VDC	VDC	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A

High Ventilation Rate	*Actuator*	*Signal Type*	*Measured Input Voltage*	*Measured Output Voltage*	*Output Received at PLC Card*	*Signal Appears on HMI Screen*	*SCADA Can See Signal*
	Generator Combustion Damper 1	☐ 0 – 5V ☐ 0 – 10V ☐ On / Off	VDC	VDC	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Generator Combustion Damper 2 ☐ Not Used	☐ 0 – 5V ☐ 0 – 10V ☐ On / Off	VDC	VDC	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A

Final Analysis

			Comments:
Returned to Service:	☐ Yes	☐ No	
Monitoring / Further Inspection Required:	☐ Yes	☐ No	
Repair / Replacement Required:	☐ Yes	☐ No	

	Company	**Name**	**Signature**	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

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Winnipeg	**COMMISSIONING FORM GENERATOR**	Page 1 of 4
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact		
	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

Generator Location & Data						
	Generator Downstream Load:		Equipment No.		Location:	
	Drawings:	Single Line:	Generator Loop:		Gas Detector Loop:	
	Associated Equipment:	Combustion Air Damper 1 No.	Combustion Air Damper 2 No. ☐ N/A		Gas Detector Instrument No. ☐ N/A	
		HVAC Supply Damper:	HVAC Exhaust Damper:		HVAC Return Damper:	
	Generator:	Manufacturer:	Model:		Serial #:	
		Power Rating: kW kVA	Rated Voltage: VAC	Current Rating: A	Power Factor: Efficiency:	
		Engine RPM:	X''D Reactance: %	Fuel Type: ☐ Diesel ☐ Natural Gas ☐ Propane	Battery Voltage: VDC	
		Alternator RPM:	X'D Reactance: %		No. of Batteries:	
	Engine:	Manufacturer:	Model: Horsepower HP		Serial #:	
	Main Circuit Protection:	☐ Breaker	Rating: A Auxiliary Contacts: ☐ No ☐ Yes	Adjustable Settings: ☐ Yes ☐ No	Manufacturer: Model:	
	Load Bank Circuit Protection:	☐ Breaker ☐ N/A	Rating: A Shunt Trip: ☐ No ☐ Yes	Adjustable Settings ☐ Yes ☐ No	Manufacturer: Model:	
	Generator Panelboard:	☐ Installed ☐ N/A	Rating: VAC A	No. of Circuits:	Manufacturer: Model:	

Visual Inspection / Cleaning								
	Generator Lamacoid Installed:	☐ Yes	☐ No		Sufficient Cooling Provided:	☐ Yes	☐ No	
	Power Cables Labelled at Both Ends:	☐ Yes	☐ No		Control Cables Labelled at Both Ends:	☐ Yes	☐ No	
	Cleanliness:	☐ Good	☐ Acceptable	☐ Poor	Power Cable Connections:	☐ Good	☐ Acceptable	☐ Poor
	Control Cable Connections:	☐ Good	☐ Acceptable	☐ Poor	Elect./ Mech. Interlocks:	☐ Good	☐ Acceptable	☐ Poor
	Ground Connections:	☐ Good	☐ Acceptable	☐ Poor	Protection Breakers Condition:	☐ Good	☐ Acceptable	☐ Poor
	Generator Intake Gas Line:	☐ Good	☐ Acceptable	☐ Poor	Generator Exhaust Line:	☐ Good	☐ Acceptable	☐ Poor
	Visual Signs of Overheating:	☐ Yes	☐ No	☐ N/A	Exercised Protection Breakers:	☐ Yes	☐ No	
	Cables Supported Appropriately:	☐ Yes	☐ No		Equipment Cleaned: ☐ Yes	Photograph Taken:	☐ Yes	
	Comments:							

Protection Breaker Measurements	*Test*	*Resistance*			**Test Summary**
		Phase A	*Phase B*	*Phase C*	☐ Test Passed
	Main Circuit Protection Breaker	μΩ	μΩ	μΩ	☐ Inconclusive
	Load Bank Circuit Protection Breaker	μΩ	μΩ	μΩ	☐ Test Failed
	Comments:				

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Insulation Resistance Test

Test Preparation: Setup: Source: ☐ Isolated

Cable Load:
☐ Disconnected
☐ Connected with Load Isolated

Note: Approval of City's Representative is required, prior to leaving cables connected during the test.

WARNING: DISCONNECT ALL POWER CABLES FROM GENERATOR OUTPUT, AND DISCONNECT ALL CONTROL POWER FUSES PRIOR TO TEST.

Test	*Voltage*	*Insulation Resistance*			Ground all phases not under test!
		Phase A	*Phase B*	*Phase C*	
Alternator Output to Ground	1000 VDC	MΩ	MΩ	MΩ	**Test Summary** ☐ Test Passed ☐ Test Inconclusive Further Investigation Required. ☐ Test Failed

Comments:

Full Load Operational Testing on Load Bank

Run generator at full load while powering the load bank. Generator should be run for at least thirty (30) minutes before recording values.

Total Run Time: minutes	Generator Temperature Before Starting Testing:	°C			Temperature Upon Completion of Testing:	°C
Ramp Up Time	Specified:	sec			Actual:	sec
Ramp Down Time	Specified:	sec			Actual:	sec
Generator Measured Voltage	Phase A	VAC	Phase B	VAC	Phase C	VAC
Controller Displayed Voltage	Phase A	VAC	Phase B	VAC	Phase C	VAC
Generator Measured Current	Phase A	A	Phase B	A	Phase C	A
Controller Displayed Current	Phase A	A	Phase B	A	Phase C	A

Automatic Mode Starts Generator (via Station Power Disruption):	☐ Yes ☐ No	Automatic Mode Stops Generator (via Station Power Restored):	☐ Yes ☐ No
Manual Mode Starts Generator:	☐ Yes ☐ No	High Gas Detection Prevents Generator from Running:	☐ Yes ☐ No
Combustion Damper(s) Open When Generator is Running:	☐ Yes ☐ No	HVAC Ventilation Dampers Operate When Generator is Running:	☐ Yes ☐ No

Operating Modes	*Mode Description*	*Generator Running*	*Controller Indicates Generator Running*
	Automatic Mode – Utility Power Available	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Automatic Mode – Loss of Utility Power	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Automatic Mode – Low Gas Detection	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Automatic Mode – High Gas Detection	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Manual Mode – Low Gas Detection	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Manual Mode – High Gas Detection	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A

Comments:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Generator Controller Settings				
	Program Generator Controller Settings to Match Setting Letter.		Comments:	
	Settings Applied to Controller: ☐ Yes ☐ No			
	Controller Setting Letter File:			
	Output Voltage:	VAC	Output Frequency	Hz
	Engine Warmup Time:	sec.	Engine Cool Down Time:	sec.

Generator & PLC Control Signals												
	Verify Control Signals Between Generator Controller and PLC								Comments:			
	Test Preparation: Test physical signals rather than installing jumpers for signals											
	Field Wires Labelled at Both Ends: ☐ Yes ☐ No											
Discrete Signals	*Signal Description*	*Generator Controller Indicates Status*			*Signal Shown on PLC Card*			*Signal Appears on HMI Screen*			*SCADA Can See Signal*	
	Auto Mode	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No ☐ N/A
	Manual Mode	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No ☐ N/A
	Running	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No ☐ N/A
	Alarm	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No ☐ N/A
	Generator Breaker Closed	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No ☐ N/A
	Load Bank Breaker Shunt Trip	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No ☐ N/A

Functional Testing	Step	Description	Result
	1	Set Generator in Auto Mode with Utility powering the Station. Ensure ATS is in Auto Mode.	☐ Pass ☐ Fail
	2	Verify Generator breaker and Load Bank breaker are both closed.	☐ Pass ☐ Fail
	3	Power down (or isolate) Utility power. Verify ATS sends a start signal to Generator.	☐ Pass ☐ Fail
	4	Generator starts and after appropriate delay, Generator is connected to power Station loads.	☐ Pass ☐ Fail
	5	Start a pump and ensure Generator can power the load.	☐ Pass ☐ Fail
	6	Verify Load Bank breaker has been opened by a shunt trip.	☐ Pass ☐ Fail
	7	Try starting additional pumps. If the generator is sized for powering more than one pump then verify Generator powers additional pumps. Otherwise verify that additional pumps are not capable of being started.	☐ Pass ☐ Fail
	8	Verify Generator displays phase voltages and currents for all powered loads and record values. Phase A Voltage: VAC Phase B Voltage: VAC Phase C Voltage: VAC Phase A Current: A Phase B Current: A Phase C Current: A	☐ Pass ☐ Fail
	9	Once the Wet Well has been pumped down, stop the pump(s) from running.	☐ Pass ☐ Fail
	10	Restore Utility power at the ATS.	☐ Pass ☐ Fail
	11	After transfer timer expires, verify ATS transfers back to Utility power source.	☐ Pass ☐ Fail

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

	12	Verify ATS sends cool down signal to Generator.	☐ Pass	☐ Fail
	13	After cool down timer expires, verify Generator has stopped running.	☐ Pass	☐ Fail
	14	Manually start Generator and perform a manual transfer on the ATS to the Generator	☐ Pass	☐ Fail
	15	Start a pump and ensure Generator can power the load.	☐ Pass	☐ Fail
	16	Once the Wet Well has been pumped down, stop the pump(s) from running.	☐ Pass	☐ Fail
	17	Perform a manual transfer on the ATS back to Utility power source.	☐ Pass	☐ Fail
	18	Verify ATS has been put back into Auto mode.	☐ Pass	☐ Fail
	19	Manually stop the Generator and put the Generator back into Auto mode.	☐ Pass	☐ Fail
	Test Summary	☐ Test Passed ☐ Test Inconclusive - Further Investigation Required ☐ Test Failed		
	Comments:			

Generator Breaker Settings				
	Provide Final Generator Breaker Adjustable Settings			
	Trip Plug ☐ N/A	Manufacturer:	Model:	Trip Plug Size: A
	Long Time Settings ☐ N/A		Pickup:	Time Delay:
	Short Time Settings ☐ N/A		Pickup:	Time Delay:
	Instantaneous Settings ☐ N/A		Pickup:	Time Delay:
	Ground Settings ☐ N/A		Pickup:	Time Delay:
	Comments:			

Final Analysis			
	Returned to Service: ☐ Yes ☐ No	Comments:	
	Monitoring / Further Inspection Required: ☐ Yes ☐ No		
	Repair / Replacement Required: ☐ Yes ☐ No		

	Company	**Name**	**Signature**	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

Note: The General Contractor Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

Winnipeg	**COMMISSIONING FORM** **HVAC CONTROLLER**	Page 1 of 3
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact		
	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

Controller Location & Data									
	HVAC Controller Location:			Equipment No.			HVAC Control Panel Equip. No.	☐ N/A	
	Drawings:	HVAC P&ID:		Control Panel:			Dampers Loop:		
	Controlled Dampers:	Supply Damper Equipment No.	☐ N/A	Return Damper Equipment No.	☐ N/A		Exhaust Damper Equipment No.	☐ N/A	
	Controlled Heaters:	Heater No.	☐ N/A	Heater No.	☐ N/A		Heater No.	☐ N/A	
	HVAC Controller:	Manufacturer:		Catalog No.			Serial #:		
		Power Rating:		Power Supply: VAC		Current Rating: A		Control Voltage: VAC	
	Control Power Transformer:	Size: VA		Secondary Voltage: V		Primary Fuse: A		Secondary Fuse: A	

Visual Inspection / Cleaning									
	HVAC Controller Lamacoid Installed:	☐ Yes	☐ No		Visual Signs of Overheating:	☐ Yes	☐ No		
	Power Cables Labelled at Both Ends:	☐ Yes	☐ No		Control Cables Labelled at Both Ends:	☐ Yes	☐ No		
	Cleanliness:	☐ Good	☐ Acceptable	☐ Poor	Power Cable Connections:	☐ Good	☐ Acceptable	☐ Poor	
	Fully Functioning Controller:	☐ Good	☐ Acceptable	☐ Poor	Controller Properly Mounted:	☐ Good	☐ Acceptable	☐ Poor	
	Controller Fully Programmed:	☐ Good	☐ Acceptable	☐ Poor	All Inputs & Outputs Work:	☐ Good	☐ Acceptable	☐ Poor	
	Cables Supported Appropriately:	☐ Yes	☐ No	☐ N/A	Equipment Cleaned: ☐ Yes		Photograph Taken:	☐ Yes	
	Comments:								

Operational Testing					
	Station Occupied Light Switch Activates High Ventilation Rate:	☐ Yes ☐ No ☐ N/A	Comments:		
	High Outdoor Temperature Activates High Ventilation Rate:	☐ Yes ☐ No ☐ N/A			
	High Gas Detection Activates High Ventilation Rate:	☐ Yes ☐ No ☐ N/A			
	Controller Changes From High Ventilation Rate to Low Ventilation Rate:	☐ Yes ☐ No ☐ N/A			
	Controller Defaults to Low Ventilation Rate:	☐ Yes ☐ No ☐ N/A			
Operating Modes	*Mode Description*	*Supply Damper Open (0 – 100%)*	*Return Damper Open (0 – 100%)*	*Exhaust Damper Open (0 – 100%)*	
	High Ventilation Rate	% ☐ N/A	% ☐ N/A	% ☐ N/A	
	Low Ventilation Rate	% ☐ N/A	% ☐ N/A	% ☐ N/A	

Controller Settings		
	Program HVAC Controller Settings to Match Setting Letter	Comments:
	Settings Applied to Controller: ☐ Yes ☐ No	
	HVAC Controller Setting Letter File:	

Winnipeg	**COMMISSIONING FORM HVAC CONTROLLER**	Page 2 of 3
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Controller Input / Output Signals

Verify Control Signals Between Controller and Field Devices

Test Preparation: Test physical signals rather than installing jumpers for signals

Field Wires Labelled at Both Ends: ☐ Yes ☐ No

Comments:

Discrete 1 Input

Signal Description	*State*	*State Description*	*Signal Appears on Controller Screen*	*Modulated 1 Output (0 – 100 %)*	*Modulated 2 Output (0 – 100 %)*
☐ Not Used	Low (0)		☐ Yes ☐ No ☐ N/A	% ☐ N/A	% ☐ N/A
	High (1)		☐ Yes ☐ No ☐ N/A	% ☐ N/A	% ☐ N/A

Sensor A Input

Signal Description	*Signal Type*	*Condition Pickup Level*	*Signal Appears on Controller Screen*	*Modulated 1 Output (0 – 100 %)*	*Modulated 2 Output (0 – 100 %)*
☐ Not Used	☐ RTD ☐ PT100 ☐ PT1000 ☐ 4-20 mA	☐ Low ≤ °C	☐ Yes ☐ No ☐ N/A	% ☐ N/A	% ☐ N/A
		☐ High > °C	☐ Yes ☐ No ☐ N/A	% ☐ N/A	% ☐ N/A

Sensor B Input

Signal Description	*Signal Type*	*Condition Pickup Level*	*Signal Appears on Controller Screen*	*Modulated 1 Output (0 – 100 %)*	*Modulated 2 Output (0 – 100 %)*
☐ Not Used	☐ RTD ☐ PT100 ☐ PT1000	☐ Low ≤ °C	☐ Yes ☐ No ☐ N/A	% ☐ N/A	% ☐ N/A
		☐ High > °C	☐ Yes ☐ No ☐ N/A	% ☐ N/A	% ☐ N/A

Relay 1 Output

Signal Description	*Output Goes To*	*Output Changes Based on Signal Input*	*Output State Level*	*State Description*	*Signal Appears on Controller Screen*
☐ Not Used		☐ Discrete Input 1 ☐ Sensor A ☐ Sensor B	Low (0)		☐ Yes ☐ No ☐ N/A
			High (1)		☐ Yes ☐ No ☐ N/A

Relay 2 Output

Signal Description	*Output Goes To*	*Output Changes Based on Signal Input*	*Output State Level*	*State Description*	*Signal Appears on Controller Screen*
☐ Not Used		☐ Discrete Input 1 ☐ Sensor A ☐ Sensor B	Low (0)		☐ Yes ☐ No ☐ N/A
			High (1)		☐ Yes ☐ No ☐ N/A

Modulated 1 Output

Output Goes to Field Devices	*Output Signal*	*Output Changes Based on Signal Input*	*Output State Level*	*Signal Appears on Controller Screen*	*Measured Output (V / mA)*
☐ Heater SCR ☐ Supply Damper ☐ Return Damper ☐ Exhaust Damper ☐ Not Used	☐ 0 – 5V ☐ 0 – 10V ☐ 4–20mA	☐ Discrete Input 1 ☐ Sensor A ☐ Sensor B	Low	☐ Yes ☐ No ☐ N/A	V / mA
			High	☐ Yes ☐ No ☐ N/A	V / mA

Modulated 2 Output

Output Goes to Field Devices	*Output Signal*	*Output Changes Based on Signal Input*	*Output State Level*	*Signal Appears on Controller Screen*	*Measured Output (V / mA)*
☐ Heater SCR ☐ Supply Damper ☐ Return Damper ☐ Exhaust Damper ☐ Not Used	☐ 0 – 5V ☐ 0 – 10V ☐ 4–20mA	☐ Discrete Input 1 ☐ Sensor A ☐ Sensor B	Low	☐ Yes ☐ No ☐ N/A	V / mA
			High	☐ Yes ☐ No ☐ N/A	V / mA

Winnipeg	**COMMISSIONING FORM** **HVAC CONTROLLER**	Page 3 of 3
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Final Analysis				
	Returned to Service:	☐ Yes	☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes	☐ No	
	Repair / Replacement Required:	☐ Yes	☐ No	

	Company	**Name**	**Signature**	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

Note: The General Contractor Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

Winnipeg	**COMMISSIONING FORM** **HVAC DAMPERS**	Page 1 of 3
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact		
	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

Damper Actuators Location & Data								
	Station Ventilation Room(s) / Area(s)			HVAC Controller Equipment No.			HVAC Control Panel Equip. No. ☐ N/A	
	Drawings:	HVAC P&ID:		Control Panel:			Dampers Loop:	
	Supply Damper Actuator:	Room Installed:		Equipment No.			Control Type: ☐ Modulating ☐ On / Off	
		Manufacturer:		Catalog No.			Serial #:	
		Power Supply:	VAC / VDC	Torque:	Nm		Runtime: sec.	
		Control Input:	VAC / VDC	Control Output:	VAC / VDC		Auxiliary Switch Provided: ☐ Yes ☐ No	
	Return Damper Actuator:	Room Installed:		Equipment No.			Type: ☐ Modulating ☐ On/Off	
		Manufacturer:		Catalog No.			Serial #:	
		Power Supply:	VAC / VDC	Torque:	Nm		Runtime: sec.	
		Control Input:	VAC / VDC	Control Output:	VAC / VDC		Auxiliary Switch Provided: ☐ Yes ☐ No	
	Exhaust Damper Actuator:	Room Installed:		Equipment No.			Type: ☐ Modulating ☐ On/Off	
		Manufacturer:		Catalog No.			Serial #:	
		Power Supply:	VAC / VDC	Torque:	Nm		Runtime: sec.	
		Control Input:	VAC / VDC	Control Output:	VAC / VDC		Auxiliary Switch Provided: ☐ Yes ☐ No	

Visual Inspection / Cleaning								
	HVAC Damper Lamacoids Installed:	☐ Yes	☐ No	HVAC Damper Actuator Lamacoids Installed:	☐ Yes	☐ No		
	Power Cables Labelled at Both Ends:	☐ Yes	☐ No	Control Cables Labelled at Both Ends:	☐ Yes	☐ No		
	Cleanliness:	☐ Good ☐ Acceptable	☐ Poor	Power Cable Connections:	☐ Good ☐ Acceptable	☐ Poor		
	Fully Functioning Actuators:	☐ Good ☐ Acceptable	☐ Poor	Actuators Properly Installed:	☐ Good ☐ Acceptable	☐ Poor		
	All Actuator Inputs Work:	☐ Good ☐ Acceptable	☐ Poor	All Actuator Outputs Work:	☐ Good ☐ Acceptable	☐ Poor		
	Cables Supported Appropriately:	☐ Yes ☐ No ☐ N/A		Equipment Cleaned: ☐ Yes			Photographs Taken: ☐ Yes	
	Comments:							

Operational Testing					
	Supply Actuator Measured Opening Time: sec		Supply Actuator Measured Closing Time: sec		
	Return Actuator Measured Opening Time: sec		Return Actuator Measured Closing Time: sec		
	Exhaust Actuator Measured Opening Time: sec		Exhaust Actuator Measured Closing Time: sec		
	Supply Damper Changes From Low Ventilation to High Ventilation:	☐ Yes ☐ No	Supply Damper Changes From High Ventilation to Low Ventilation:	☐ Yes ☐ No	
	Return Damper Changes From Low Ventilation to High Ventilation:	☐ Yes ☐ No	Return Damper Changes From High Ventilation to Low Ventilation:	☐ Yes ☐ No	
	Exhaust Damper Changes From Low Ventilation to High Ventilation:	☐ Yes ☐ No	Exhaust Damper Changes From High Ventilation to Low Ventilation:	☐ Yes ☐ No	
Operating Modes	*Mode Description*		*Fail-Safe Position*	*Low Ventilation Rate*	*High Ventilation Rate*
	Supply Damper Open Position		☐ Opened ☐ Closed	%	%
	Return Damper Open Position		☐ Opened ☐ Closed	%	%
	Exhaust Damper Open Position		☐ Opened ☐ Closed	%	%
	Comments:				

Winnipeg	**COMMISSIONING FORM** **HVAC DAMPERS**	Page 2 of 3 Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Damper Actuator Settings

Adjust Damper Actuator Settings for Damper Balancing			Comments:
Damper Settings Applied to: ☐ Supply Damper ☐ Return Damper ☐ Exhaust Damper			
Supply Damper Actuator	Direction Control ☐ CCW ☐ CCW	Angle of Rotation Positions Starting: Ending:	Auxiliary Switch Position ☐ Not Used
Return Damper Actuator	Direction Control ☐ CCW ☐ CCW	Angle of Rotation Positions Starting: Ending:	Auxiliary Switch Position ☐ Not Used
Exhaust Damper Actuator	Direction Control ☐ CCW ☐ CCW	Angle of Rotation Positions Starting: Ending:	Auxiliary Switch Position ☐ Not Used

Actuator Input / Output Control Signals

Verify Control Signals Between HVAC Controller and Dampers	Comments:
Test Preparation: Test physical signals rather than installing jumpers for signals	
Field Wires Labelled at Both Ends: ☐ Yes ☐ No	

Low Ventilation Rate

Actuator	*Signal Type*	*Measured Input Voltage*	*Measured Output Voltage*	*Output Received at PLC Card*	*Signal Appears on HMI Screen*	*SCADA Can See Signal*
Supply Damper ☐ Not Used	☐ 0 – 5V ☐ 0 – 10V ☐ On / Off	VDC	VDC	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
Return Damper ☐ Not Used	☐ 0 – 5V ☐ 0 – 10V ☐ On / Off	VDC	VDC	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
Exhaust Damper ☐ Not Used	☐ 0 – 5V ☐ 0 – 10V ☐ On / Off	VDC	VDC	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A

High Ventilation Rate

Actuator	*Signal Type*	*Measured Input Voltage*	*Measured Output Voltage*	*Output Received at PLC Card*	*Signal Appears on HMI Screen*	*SCADA Can See Signal*
Supply Damper ☐ Not Used	☐ 0 – 5V ☐ 0 – 10V ☐ On / Off	VDC	VDC	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
Return Damper ☐ Not Used	☐ 0 – 5V ☐ 0 – 10V ☐ On / Off	VDC	VDC	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
Exhaust Damper ☐ Not Used	☐ 0 – 5V ☐ 0 – 10V ☐ On / Off	VDC	VDC	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A

Final Analysis

			Comments:
Returned to Service:	☐ Yes	☐ No	
Monitoring / Further Inspection Required:	☐ Yes	☐ No	
Repair / Replacement Required:	☐ Yes	☐ No	

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

	Company	Name	Signature	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

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Winnipeg	**COMMISSIONING FORM** **HVAC FANS & STARTERS**	Page 1 of 3
		Equipment Tag:

Project	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

Starter Location & Data	Starter Downstream Load:		Starter Location:		Section No. ☐ N/A	
	Drawings:	Single Line:	Schematic:		Connection:	
	Contactor Ratings:	Manufacturer:	Model:		Serial #:	
		Power Rating:	Rated Voltage: VAC	Current Rating: A	Control Voltage: VAC	
	Circuit Protection:	☐ Breaker ☐ Fuse	Rating: A	Inst. Setting: A	Manufacturer: Model:	
	Exhaust Contactor: ☐ N/A	Type: ☐ NEMA ☐ IEC ☐ N/A	Manufacturer:		Model:	
			NEMA Size: ☐ N/A		IEC Rating: A ☐ AC-3 ☐ AC-4	
	Supply Contactor: ☐ N/A	Type: ☐ NEMA ☐ IEC ☐ N/A	Manufacturer:		Model:	
			NEMA Size: ☐ N/A		IEC Rating: ☐ AC-3 ☐ AC-4	
	Overload Protection:	☐ Thermal ☐ Electronic ☐ Not Applicable	Class: ☐ 10 ☐ 20 ☐ 30 ☐ Unknown	Setting / Rating: A	Manufacturer:	
					Model:	
	Current Transformer:		Ratio:		Type:	
	Control Power Transformer:		Size: VA	Secondary Voltage: V	Primary Fuse: A	Secondary Fuse: A

Exhaust Fan Data	Equipment Tag:		Power: kW / HP	Voltage: VAC
	Full Load Amps: A	Service Factor:	Inverter Duty Rated: ☐ Yes ☐ No	Insulation Class:

Supply Fan Data	Equipment Tag:		Power: kW / HP	Voltage: VAC
	Full Load Amps: A	Service Factor:	Inverter Duty Rated: ☐ Yes ☐ No	Insulation Class:

Visual Inspection / Cleaning	Fan Lamacoid(s) Installed: ☐ Yes ☐ No		Visual Signs of Overheating: ☐ Yes ☐ No	
	Power Cables Labelled at Both Ends: ☐ Yes ☐ No		Control Cables Labelled at Both Ends: ☐ Yes ☐ No	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor		Power Cable Connections: ☐ Good ☐ Acceptable ☐ Poor	
	Control Cable Connections: ☐ Good ☐ Acceptable ☐ Poor		Elec / Mech Interlocks: ☐ Good ☐ Acceptable ☐ Poor	
	Door Mechanical: ☐ Good ☐ Acceptable ☐ Poor		Contactor Alignment: ☐ Good ☐ Acceptable ☐ Poor	
	Door Mechanical: ☐ Good ☐ Acceptable ☐ Poor		Contact Alignment: ☐ Good ☐ Acceptable ☐ Poor	
	Verify O/L element are correctly sized for the loads: ☐ Yes ☐ No ☐ N/A		Exercised Circuit Breaker / Disconnect: ☐ Yes ☐ No	
	Cables Supported Appropriately: ☐ Yes ☐ No		Equipment Cleaned: ☐ Yes	Photograph Taken: ☐ Yes
	Comments:			

Winnipeg	**COMMISSIONING FORM HVAC FANS & STARTERS**	Page 2 of 3
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Contact / Pole Measurements

Test	*Resistance*			**Test Summary**
	Phase A	*Phase B*	*Phase C*	☐ Test Passed
Exhaust Fan Contactor Contact	μΩ	μΩ	μΩ	☐ Test Inconclusive Further Investigation Required.
Supply Fan Contactor Contact	μΩ	μΩ	μΩ	
Breaker / Disconnect	μΩ	μΩ	μΩ	☐ Test Failed

Comments:

Insulation Resistance Test

Test Preparation:
Setup:
Source: ☐ Isolated
Contactor: ☐ Open

Cable Destination / Load:
☐ Disconnected
☐ Connected with Load Isolated

Note: Approval of City's Representative is required, prior to leaving cables connected during the test.

WARNING: DISCONNECT ALL POWER CABLES FROM CONTACTORS AND DISCONNECT ALL CONTROL POWER FUSES PRIOR TO TEST.

Test	*Voltage*	*Insulation Resistance*			Ground all phases not under test!
		Phase A	*Phase B*	*Phase C*	
Exhaust Contactor Line to Ground	1000 VDC	MΩ	MΩ	MΩ	**Test Summary**
Exhaust Contactor Load to Ground	1000 VDC	MΩ	MΩ	MΩ	☐ Test Passed
Exhaust Contactor Line to Load	1000 VDC	MΩ	MΩ	MΩ	☐ Test Inconclusive Further Investigation Required.
Supply Contactor Line to Ground	1000 VDC	MΩ	MΩ	MΩ	
Supply Contactor Load to Ground	1000 VDC	MΩ	MΩ	MΩ	☐ Test Failed
Supply Contactor Line to Load	1000 VDC	MΩ	MΩ	MΩ	

Comments:

Starter & PLC Control Signals

Verify Control Signals Between Starter and PLC

Test Preparation: Test physical signals rather than installing jumpers for signals

Field Wires Labelled at Both Ends: ☐ Yes ☐ No

Comments:

Supply Fan Signals	*Signal Description*	*Pilot Light Illuminates*	*Signal Received at PLC Card*	*Signal Appears on HMI Screen*	*SCADA Can See Signal*
	Manual Mode	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Auto Mode	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Run	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Overload / Fault	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A

Exhaust Fan Signals	*Signal Description*	*Pilot Light Illuminates*	*Signal Received at PLC Card*	*Signal Appears on HMI Screen*	*SCADA Can See Signal*
	Manual Mode	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Auto Mode	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Run	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Overload / Fault	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A

Winnipeg	**COMMISSIONING FORM** **HVAC FANS & STARTERS**	Page 3 of 3
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Operational Testing										
	Exhaust Fan Measured Current	Phase A	A	Phase B	A	Phase C	A			
	Supply Fan Measured Current	Phase A	A	Phase B	A	Phase C	A			
	Operating Modes	*Mode Description*		*Run Start & Stop*		*Overload Disables Run*				
		Manual Mode		☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	
		Automatic Mode		☐ Yes	☐ No	☐ N/A	☐ Yes	☐ No	☐ N/A	
	Comments:									

Final Analysis				
	Returned to Service:	☐ Yes	☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes	☐ No	
	Repair / Replacement Required:	☐ Yes	☐ No	

	Company	**Name**	**Signature**	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

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Winnipeg	**COMMISSIONING FORM** **INSTRUMENT TRANSMITTER (CONTROLLER)**	Page 1 of 3
		Equipment Tag:

Project	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

Instrument Data	**Drawings:**	P&ID:	Control Panel:	Loop Diagram:
	Instrument:	Room Installed:	Equipment No.	Output Signal: ☐ 4 – 20 mA ☐ 0 – 10V
		Manufacturer:	Catalog No.	Serial #:
		Power Supply: VAC / VDC	Loop Powered ☐ Yes ☐ No	Auxiliary Contacts Provided: ☐ Yes ☐ No

Visual Inspection / Cleaning	Instrument Lamacoid Installed: ☐ Yes ☐ No		Instrument Properly Mounted: ☐ Yes ☐ No	
	Power Cables Labelled at Both Ends: ☐ Yes ☐ No		Control Cables Labelled at Both Ends: ☐ Yes ☐ No	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor		Wiring Matches Loop Diagram: ☐ Good ☐ Acceptable ☐ Poor	
	Fully Functioning Instrument: ☐ Good ☐ Acceptable ☐ Poor		Fully Functioning Output Signal(s): ☐ Good ☐ Acceptable ☐ Poor	
	Instrument Display Works Properly: ☐ Yes ☐ No ☐ N/A		Equipment Cleaned: ☐ Yes	Photographs Taken: ☐ Yes
	Comments:			

Instrument Operational Testing

Test instrument for normal analog reading level along with alarm level condition.

Operational testing should be done as follows:

1. For flow detection, use a multimeter to simulate
2. For gas detection, use a gas calibration kit to simulate signal for flow alarm level
3. For level detection, use a physical level and/or simulated signal for level alarm level.
4. For pressure detection, use a multimeter to simulate signal for pressure alarm level.
5. For temperature detection, use a heat gun and/or multimeter for temperature alarm level.
6. For vibration detection, use a multimeter to simulate signal for vibration alarm level.

Analog Outputs Match Instrument Readings: ☐ Yes ☐ No	Display Reflects Instrument Readings (if applicable): ☐ Yes ☐ No
Alarm Condition Visually Appears on Display (if applicable) ☐ Yes ☐ No	Alarm Condition Annunciates from Instrument (if applicable) ☐ Yes ☐ No
Alarm Outputs Automatically Reset Once Alarm Levels Clear (if applicable): ☐ Yes ☐ No	Alarm Output Contacts Change State When Alarm Levels Reached (if applicable): ☐ Yes ☐ No

Operating Modes	*Sensor*	*Mode Description*	*Alarm Output Contact State*	*Measured Analog Output Signal*	*Instrument Display (include units)*
	Sensor 1	Instrument Normal Level Operation	☐ Opened ☐ Closed ☐ N/A	☐ mA ☐ V	☐ N/A
		Instrument Alarm Level Operation	☐ Opened ☐ Closed ☐ N/A	☐ mA ☐ V	☐ N/A
	Sensor 2 ☐ N/A	Instrument Normal Level Operation	☐ Opened ☐ Closed ☐ N/A	☐ mA ☐ V	☐ N/A
		Instrument Alarm Level Operation	☐ Opened ☐ Closed ☐ N/A	☐ mA ☐ V	☐ N/A

Comments:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Instrument Output Control Signals

Verify Control Signals Between Instrument and Control Panel

Test Preparation: Test physical signals rather than installing jumpers for signals

Field Wires Labelled at Both Ends: ☐ Yes ☐ No

Comments:

	Signal Type (Flow, Gas Reading, Level, Pressure, Temperature, Vibration, etc.)	*Transmitter Display (include units)*	*Measured Output Signal*	*Output Received at PLC Card*	*Signal Appears on HMI Screen*	*SCADA Can See Signal*
Analog Output Signal 1		☐ N/A	☐ mA ☐ V	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
Analog Output Signal 2	☐ N/A	☐ N/A	☐ mA ☐ V	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A

	Signal Description	State	Description	*Output Received at PLC Card*	*Signal Appears on HMI Screen*	*SCADA Can See Signal*
Discrete Output 1	☐ N/A	0		☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		1		☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
Discrete Output 2	☐ N/A	0		☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		1		☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
Discrete Output 3	☐ N/A	0		☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		1		☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
Discrete Output 4	☐ N/A	0		☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		1		☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A

Final Analysis

Returned to Service:	☐ Yes ☐ No	Comments:
Monitoring / Further Inspection Required:	☐ Yes ☐ No	
Repair / Replacement Required:	☐ Yes ☐ No	

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

	Company	Name	Signature	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

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Winnipeg	**COMMISSIONING FORM** **LIFT PUMP**	Page 1 of 2 Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact		
	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

Lift Pump Location & Data						
	Drawings:	Single Line:	Schematic:	Connection:		
	Motor:	Equipment No.	Location:	Enclosure Type: ☐ ODP ☐ TEFC		
		Manufacturer:	Model:	Serial No.		
		Power: HP	Voltage: VAC ☐ 1Ø ☐ 3Ø	Full Load Amps: A		
		Speed: RPM	Service Factor:	Efficiency:	Power Factor:	
		Inverter Duty Rated: ☐ No ☐ Yes	Insulation Class:	Ambient Temp. °C	Weight: lbs	
	Pump:	Equipment No.	Location:	Mech. Seal: ☐ Single ☐ Double		
		Manufacturer:	Model:	Serial No.		
		Impeller Size: mm	Driver Power: kW	Flow: L/s @ TDH m	Speed: RPM	

Visual Inspection / Cleaning								
	Motor Lamacoid Installed:	☐ Yes	☐ No		Pump Lamacoid Installed:	☐ Yes	☐ No	
	Drive Shaft Connected:	☐ Yes	☐ No		Visual Signs of Overheating:	☐ Yes	☐ No	
	Motor Power Cables Labelled:	☐ Yes	☐ No		Motor Control Cables Labelled:	☐ Yes	☐ No	
	Motor Operation:	☐ Good	☐ Acceptable	☐ Poor	Pump Operation:	☐ Good	☐ Acceptable	☐ Poor
	Motor Mounting Installation:	☐ Good	☐ Acceptable	☐ Poor	Pump Mounting Installation:	☐ Good	☐ Acceptable	☐ Poor
	Cleanliness:	☐ Good	☐ Acceptable	☐ Poor	Power Cable Connections:	☐ Good	☐ Acceptable	☐ Poor
	Control Cable Connections:	☐ Good	☐ Acceptable	☐ Poor	Ground Connections:	☐ Good	☐ Acceptable	☐ Poor
	Paint	☐ Good	☐ Acceptable	☐ Poor	Mechanical Noise / Vibrations	☐ Good	☐ Acceptable	☐ Poor
	Seal Water Automatically Turns On:	☐ Yes	☐ No	☐ N/A	Seal Water Automatically Turns Off:	☐ Yes	☐ No	☐ N/A
	Cables Supported Appropriately:	☐ Yes	☐ No		Equipment Cleaned: ☐ Yes	Photographs Taken: ☐ Yes		
	Comments:							

Motor Electrical Testing						
	Test Preparation: Setup: Source: ☐ Isolated		Power Cable ☐ Disconnected ☐ Connected		Note: Approval of City's Representative is required, prior to leaving cables connected during the test.	
	WARNING: DISCONNECT ALL FIELD POWER CABLES FROM MOTOR PRIOR TO TEST.					
	Test	*Test Voltage*	*Insulation Resistance*			Ground all phases not under test!
			Phase A	*Phase B*	*Phase C*	
	Line to Ground	VDC	MΩ	MΩ	MΩ	**Test Summary** ☐ Test Passed ☐ Test Inconclusive Further Investigation Required. ☐ Test Failed
	Test	*Tester*	*Resistance*			
			Phases A-B	*Phases B-C*	*Phases C-B*	
	Winding Resistance	Fluke Meter	μΩ	μΩ	μΩ	
	Comments:					

Winnipeg	**COMMISSIONING FORM** **LIFT PUMP**	Page 2 of 2 Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Full Load Operational Testing

TESTING: MOTOR AND PUMP TO BE RUN FOR FIVE (5) MINUTES UNDER FULL LOAD PRIOR TO RECORDING VALUES.

Bearing Temperature	☐ N/A	Recommended Alarm Level:	°C	Recommended Lockout Level:	°C
Bearing Vibration	☐ N/A	Recommended Alarm Level:	mm/s	Recommended Lockout Level:	mm/s
Motor Winding Temperature	☐ N/A	Recommended Alarm Level:	°C	Recommended Lockout Level:	°C

Motor Measured Current:	Phase A	A	Phase B	A	Phase C	A
Starter Displayed Current:	Phase A	A	Phase B	A	Phase C	A

Bearing Monitoring

Bearing Description	*Monitoring Signal*	*Measured Value*	*Calculated Value*	*PLC / HMI Displayed Value*
Motor Drive End (Upper)	Temperature ☐ N/A Vibration ☐ N/A	Ω mA	°C mm/s	°C mm/s
Motor Drive End (Lower)	Temperature ☐ N/A Vibration ☐ N/A	Ω mA	°C mm/s	°C mm/s
Pump Drive End (Upper)	Temperature ☐ N/A Vibration ☐ N/A	Ω mA	°C mm/s	°C mm/s
Pump Drive End (Lower)	Temperature ☐ N/A Vibration ☐ N/A	Ω mA	°C mm/s	°C mm/s

Motor Winding

Motor Winding Description	*Monitoring Signal*	*Measured Value*	*Calculated Value*	*Alarm Contact to PLC Initiated*
Phase A	Temperature ☐ N/A	Ω	°C	☐ Yes ☐ No ☐ N/A
Phase B	Temperature ☐ N/A	Ω	°C	☐ Yes ☐ No ☐ N/A
Phase C	Temperature ☐ N/A	Ω	°C	☐ Yes ☐ No ☐ N/A

Seal Water

Seal Water Instrument	*Motor Status*	*Instrument Output Status*		*Output Received at Seal / PLC*
Solenoid ☐ N/A	Running Stopped	☐ Closed ☐ Closed	☐ Opened ☐ Opened	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A
Flow Switch ☐ N/A	Running Stopped	☐ Closed ☐ Closed	☐ Opened ☐ Opened	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A

Comments:

Final Analysis			
Returned to Service:	☐ Yes	☐ No	Comments:
Monitoring / Further Inspection Required:	☐ Yes	☐ No	
Repair / Replacement Required:	☐ Yes	☐ No	

	Company	**Name**	**Signature**	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

Note: The General Contractor Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

Winnipeg	**COMMISSIONING FORM** **MOTOR CONTROL CENTRE**	Page 1 of 4
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact		
	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

MCC Location & Data						
	MCC Equipment No.			MCC Location:		No. of Sections
	Drawings:	Single Line:		Elevation:		Three-Line:
	MCC:	Manufacturer:		Model:		Serial #:
		Rated Voltage: VAC		Vertical Bus Current Rating: A		Horizontal Bus Current Rating: A
		Service Entrance Rated: ☐ No ☐ Yes		Neutral Bus: ☐ No ☐ Yes		Cabling Entry ☐ Bottom ☐ Top
		Withstand Rating: kAIC	Control Voltage: VAC	No. of Wires: ☐ 3W ☐ 4W		Bus Conductor: ☐ Aluminum ☐ Copper
	Main Circuit Feed Protection:	☐ Breaker ☐ Fuse ☐ N/A	Frame Size: A Trip Size: A	Withstand Rating: kAIC		Manufacturer: Model: Trip Plug: ☐ LI ☐ LSI ☐ LSIG
	Alternate Circuit Feed Protection:	☐ Breaker ☐ Fuse ☐ N/A	Frame Size: A Trip Size: A	Withstand Rating: kAIC		Manufacturer: Model: Trip Plug: ☐ LI ☐ LSI ☐ LSIG
	Power Meter	☐ Installed ☐ N/A	Metering Type:	☐ 1Ø ☐ 3Ø		Manufacturer: Model:
		Current Transformer Ratio: : A		Metering Voltage: VAC		Power Supply Voltage: VAC
	Transient Voltage Surge Suppressor	☐ Installed ☐ N/A	Rating: kA MCOV: VAC	☐ 1Ø ☐ 3Ø		Manufacturer: Model: Instrument No.
	Power Failure Relay:	☐ Installed ☐ N/A	Voltage: VAC	☐ 1Ø ☐ 3Ø		Manufacturer: Model: Instrument No.

Visual Inspection / Cleaning								
	MCC Lamacoid Installed:	☐ Yes	☐ No		All Pilot Device Lamacoids Installed:	☐ Yes	☐ No	
	Visual Signs of Moisture:	☐ Yes	☐ No		Visual Signs of Overheating / Corona:	☐ Yes	☐ No	
	Power Cables Labelled at Both Ends:	☐ Yes	☐ No		Control Cables Labelled at Both Ends:	☐ Yes	☐ No	
	Circuit Breakers Match Drawings:	☐ Yes	☐ No		Power/Control Fuses Match Drawings:	☐ Yes	☐ No	
	Cleanliness:	☐ Good	☐ Acceptable	☐ Poor	Power Cable Connections:	☐ Good	☐ Acceptable	☐ Poor
	Control Cable Connections:	☐ Good	☐ Acceptable	☐ Poor	Elect./ Mech. Interlocks:	☐ Good	☐ Acceptable	☐ Poor
	Ground Connections:	☐ Good	☐ Acceptable	☐ Poor	Vents / Filter Conditions:	☐ Good	☐ Acceptable	☐ Poor
	Door Mechanical:	☐ Good	☐ Acceptable	☐ Poor	All Instruments Work:	☐ Good	☐ Acceptable	☐ Poor
	Required Clearances Met:	☐ Good	☐ Acceptable	☐ Poor	All Buckets Securely Closed:	☐ Good	☐ Acceptable	☐ Poor
	All Terminal Blocks Properly Labelled:	☐ Yes	☐ No	☐ N/A	Exercised All Breakers & Disconnects:	☐ Yes	☐ No	
	Cables Supported Appropriately:	☐ Yes	☐ No		Equipment Cleaned: ☐ Yes	Photograph Taken:	☐ Yes	
	Comments:							

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Contact / Pole Measurements

Test	*Resistance Line-to-Load*			**Test Summary**
	Phase A	*Phase B*	*Phase C*	☐ Test Passed
Main Breaker ☐ N/A	µΩ	µΩ	µΩ	☐ Test Inconclusive Further Investigation Required.
Alternate Source Breaker ☐ N/A	µΩ	µΩ	µΩ	
Downstream MCC Feeder Breaker ☐ N/A	µΩ	µΩ	µΩ	☐ Test Failed
P-L01 Breaker ☐ N/A	µΩ	µΩ	µΩ	
P-L02 Breaker ☐ N/A	µΩ	µΩ	µΩ	
P-L03 Breaker ☐ N/A	µΩ	µΩ	µΩ	
P-L04 Breaker ☐ N/A	µΩ	µΩ	µΩ	

Comments:

Insulation Resistance Test

Test Preparation:
Source: ☐ Disconnected ☐ Connected with Source Isolated
Cable Destination / Load: ☐ Disconnected ☐ Connected with Load Isolated
Note: Approval of City's Representative is required, prior to leaving cables connected during the test.

Test	*Voltage*	*Insulation Resistance*			Ground all phases not under test!
		Phase A	*Phase B*	*Phase C*	
MCC Vertical Bus Phase to Ground	1000 VDC	MΩ	MΩ	MΩ	**Test Summary**
MCC Vertical Bus Phase to Phase	1000 VDC	MΩ	MΩ	MΩ	☐ Test Passed
MCC Horizontal Bus Phase to Ground	1000 VDC	MΩ	MΩ	MΩ	☐ Test Inconclusive Further Investigation Required.
MCC Horizontal Bus Phase to Phase	1000 VDC	MΩ	MΩ	MΩ	☐ Test Failed

Comments:

MCC Feeder Buckets

Visual Inspection Requirements:

G = Good, A = Acceptable, P = Poor. Comments required for any breakers listed as Poor condition.

1. Record all feeder bucket fuses and circuit breakers tying into MCC bus.
2. Confirm identification tag / lamacoid is installed.
3. Look for visual signs of overheating.
4. Inspect and torque connections.
5. Confirm disconnect operation and exercise operation including with circuit breaker.
6. Confirm cables are supported and routed appropriately.

Bucket ID	*Cell Location*	*Frame Size*	*Trip Size*	*Manufacturer*	*Model*	*Visual Inspection*	*Comments*
		A	A				
		A	A				
		A	A				
		A	A				
		A	A				
		A	A				
		A	A				
		A	A				

COMMISSIONING FORM
MOTOR CONTROL CENTRE

Equipment Tag:		
Project	Facility:	Project Name:
	Area:	RFP No. / Tender No.

MCC Device Settings

Adjust MCC Device Settings to Match Single Line and record final values below.

Comments:

Settings Applied to MCC Breakers: ☐ Yes ☐ No

Settings Applied to MCC Relays: ☐ Yes ☐ No

Source Breakers

	Long Time Settings	Short Time Settings	Instantaneous Settings	Ground Settings
Main ☐ N/A	☐ N/A Pickup: Delay: s	☐ N/A Pickup: Delay: s	☐ N/A Pickup: Delay: s	☐ N/A Pickup: Delay: s
Alt (Gen) ☐ N/A	☐ N/A Pickup: Delay: s	☐ N/A Pickup: Delay: s	☐ N/A Pickup: Delay: s	☐ N/A Pickup: Delay: s

Feeder Breakers

	Long Time Settings	Short Time Settings	Instantaneous Settings
P-L01	☐ N/A Pickup: Delay: s	☐ N/A Pickup: Delay: s	☐ N/A Pickup: Delay: s
P-L02 ☐ N/A	☐ N/A Pickup: Delay: s	☐ N/A Pickup: Delay: s	☐ N/A Pickup: Delay: s
P-L03 ☐ N/A	☐ N/A Pickup: Delay: s	☐ N/A Pickup: Delay: s	☐ N/A Pickup: Delay: s
P-L04 ☐ N/A	☐ N/A Pickup: Delay: s	☐ N/A Pickup: Delay: s	☐ N/A Pickup: Delay: s
☐ N/A	☐ N/A Pickup: Delay: s	☐ N/A Pickup: Delay: s	☐ N/A Pickup: Delay: s
☐ N/A	☐ N/A Pickup: Delay: s	☐ N/A Pickup: Delay: s	☐ N/A Pickup: Delay: s
☐ N/A	☐ N/A Pickup: Delay: s	☐ N/A Pickup: Delay: s	☐ N/A Pickup: Delay: s
☐ N/A	☐ N/A Pickup: Delay: s	☐ N/A Pickup: Delay: s	☐ N/A Pickup: Delay: s

Relays

	% Unbalance Settings	Delay Time Settings	Line Voltage Settings
Power Failure ☐ N/A	☐ N/A Percentage:	☐ N/A Restart: s Trip: s	☐ N/A Voltage: VAC

MCC Instrument Signals

Verify Control Signals Between MCC and PLC

Comments:

Test Preparation: Test physical signals rather than installing jumpers for signals

Field Wires Labelled at Both Ends: ☐ Yes ☐ No

Discrete Signals

Signal Description	*Display Light Illuminates*	*Signal Received at PLC Card*	*Signal Appears on HMI Screen*	*SCADA Can See Signal*
TVSS Status ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
Power Failure ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A

Winnipeg	**COMMISSIONING FORM** **MOTOR CONTROL CENTRE**	Page 4 of 4
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

MCC Instrument Testing

Power Meter Fully Functions:	☐ Yes ☐ No ☐ N/A	Comments:	
TVSS Relay Fully Functions:	☐ Yes ☐ No ☐ N/A		
TVSS Relay Fail-Safe Monitoring:	☐ Yes ☐ No ☐ N/A		
TVSS Relay Resets Automatically:	☐ Yes ☐ No ☐ N/A		
Power Fail Relay Fully Functions:	☐ Yes ☐ No ☐ N/A	Test Meter	Manufacturer:
Power Fail Relay Fail-Safe Monitoring:	☐ Yes ☐ No ☐ N/A		Model:
Power Fail Relay Resets Automatically	☐ Yes ☐ No ☐ N/A		Calibration Date:

	Description	*Phase*	*Desired Value*	*Displayed Value*	*Measured Value*	*Difference*	*Acceptable*
Power Meter	Voltage Line - Ground	A	347 V	V	V	V	☐ Yes ☐ No
		B	347 V	V	V	V	☐ Yes ☐ No
		C	347 V	V	V	V	☐ Yes ☐ No
	Current Line - Ground	A	A	A	A	A	☐ Yes ☐ No
		B	A	A	A	A	☐ Yes ☐ No
		C	A	A	A	A	☐ Yes ☐ No

	Desired Phase Line Voltage			*Test Meter Measured Phase Line Voltage*			*State (0 / 1)*	*State Description (Normal / Alarm)*
TVSS Relay	*A - B*	*B - C*	*C - A*	*A - B*	*B - C*	*C - A*		
	600 V	600 V	600 V	V	V	V		
	Test Surge	600 V	600 V	V	V	V		
	600 V	Test Surge	600 V	V	V	V		
	600 V	600 V	Test Surge	V	V	V		

	Desired Phase Line Voltage			*Test Meter Measured Phase Line Voltage*			*State (0 / 1)*	*State Description (Normal / Alarm)*
Power Fail Relay	*A - B*	*B - C*	*C - A*	*A - B*	*B - C*	*C - A*		
	600 V	600 V	600 V	V	V	V		
	0 V	600 V	600 V	V	V	V		
	600 V	0 V	600 V	V	V	V		
	600 V	600 V	0 V	V	V	V		

Final Analysis			
Returned to Service:	☐ Yes ☐ No	Comments:	
Monitoring / Further Inspection Required:	☐ Yes ☐ No		
Repair / Replacement Required:	☐ Yes ☐ No		

	Company	**Name**	**Signature**	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

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Winnipeg	**COMMISSIONING FORM** **MOTORIZED VALVE**	Page 1 of 2 Equipment Tag:

Project	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

Motorized Valve Location & Data	Motorized Valve Equipment No.			Location:		Control Panel Equipment No. ☐ N/A
	Drawings:	P&ID:		Control Panel:		Loop Diagram:
	Motorized Valve:	Manufacturer:		Model / CAT No.		Serial #:
		Power Supply:	VAC / VDC	Torque:	Nm	Control Type: ☐ Modulating ☐ On / Off
		Control Input:	VAC / VDC	Control Output:	VAC / VDC	Auxiliary Switch Provided: ☐ Yes ☐ No
	Remote Manual Station: ☐ N/A	Manufacturer:		Model / CAT No.		Display Screen Provided: ☐ Yes ☐ No

Visual Inspection / Cleaning	Motorized Valve Lamacoid Installed:	☐ Yes	☐ No		Visual Signs of Overheating:	☐ Yes	☐ No	
	Power Cables Labelled at Both Ends:	☐ Yes	☐ No		Control Cables Labelled at Both Ends:	☐ Yes	☐ No	
	Remote Manual Operator Installed:	☐ Yes	☐ No		Visual Position Indicator Installed:	☐ Yes	☐ No	
	Cleanliness:	☐ Good	☐ Acceptable	☐ Poor	Power Cable Connections:	☐ Good ☐ Acceptable		☐ Poor
	Control Cable Connections:	☐ Good	☐ Acceptable	☐ Poor	Ground Connections:	☐ Good ☐ Acceptable		☐ Poor
	Fully Functioning Valve:	☐ Good	☐ Acceptable	☐ Poor	Valve Properly Installed:	☐ Good ☐ Acceptable		☐ Poor
	All Valve Inputs Work:	☐ Good	☐ Acceptable	☐ Poor	All Valve Outputs Work:	☐ Good ☐ Acceptable		☐ Poor
	Cables Supported Appropriately:	☐ Yes ☐ No ☐ N/A			Equipment Cleaned: ☐ Yes	Photographs Taken: ☐ Yes		
	Comments:							

Operational Testing	Motorized Valve Measured Opening Time:	sec	Motorized Valve Measured Closing Time:		sec
	Motorized Valve Measured Opening Voltage:	V	Motorized Valve Measured Closing Voltage:		V
	Motorized Valve Changes From Open to Closed Position: ☐ Yes ☐ No		Motorized Valve Changes From Closed to Open Position: ☐ Yes ☐ No		
	Operating Modes — *Mode Description*		*Fail-Safe Position*	*Minimum Open Position*	*Maximum Open Position*
	Motorized Valve Position		☐ Opened ☐ Closed ☐ N/A	%	%
	Comments:				

Valve Settings	Adjust Damper Actuator Settings for Damper Balancing		Comments:	
	Motorized Valve	Open Direction Control	Angle of Rotation Positions	Auxiliary Switch Position
		☐ CCW ☐ CCW	Starting: Ending:	☐ Not Used

Winnipeg	**COMMISSIONING FORM** **MOTORIZED VALVE**	Page 2 of 2
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Motorized Valve Input / Output Control Signals

Verify Control Signals Between Controller and Valve					Comments:		
Test Preparation: Test physical signals rather than installing jumpers for signals							
Field Wires Labelled at Both Ends: ☐ Yes ☐ No							
Minimum Open Position	*Description*	*Control Signal Type*	*Measured Input Signal*	*Measured Output Voltage*	*Output Received at PLC Card*	*Signal Appears on HMI Screen*	*SCADA Can See Signal*
	Motorized Valve	☐ 4 – 20 mA ☐ 0 – 10V ☐ On / Off	☐ mA ☐ V	☐ mA ☐ V	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
Maximum Open Position	*Description*	*Signal Type*	*Measured Input Voltage*	*Measured Output Voltage*	*Output Received at PLC Card*	*Signal Appears on HMI Screen*	*SCADA Can See Signal*
	Motorized Valve	☐ 4 – 20 mA ☐ 0 – 10V ☐ On / Off	☐ mA ☐ V	☐ mA ☐ V	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A

Final Analysis			
Returned to Service:	☐ Yes ☐ No	Comments:	
Monitoring / Further Inspection Required:	☐ Yes ☐ No		
Repair / Replacement Required:	☐ Yes ☐ No		

	Company	**Name**	**Signature**	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

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Winnipeg	**COMMISSIONING FORM** **OUTDOOR LIGHTING**	Page 1 of 2 Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact		
	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

Outdoor Lighting Location & Data						
	Battery Bank Location:	Battery Bank Equipment No.	Panel Feed: Circuit No.	Control Panel No.	Applicable Drawings:	
	Outdoor Lighting Fixtures:	Manufacturer:	Catalog No.		Control Type	
		Rated Voltage: VAC	Input Current: A	Lamp Wattage: W	Outdoor Fixtures Qty:	
		Installed on Outdoor Walls: ☐ North ☐ East ☐ South ☐ West				
	Photocell:	Manufacturer:	Catalog No.	Adjustable Turn-On Level: ☐ Yes ☐ No Adjustable Turn-Off Level: ☐ Yes ☐ No		
		Rated Voltage: VAC	Rated Current: A	Installed Location:	Turn-On / Turn-Off Ratio: ☐ N/A	

Visual Inspection / Cleaning				
	Identification Lamacoids Installed: ☐ Yes ☐ No		Lamps Properly Aimed: ☐ Yes ☐ No	
	Visual Signs of Moisture: ☐ Yes ☐ No		All Lamps Properly Operate: ☐ Yes ☐ No	
	Outdoor Lights Moisture Proof Rated: ☐ Yes ☐ No ☐ N/A		Outdoor Light Levels Adjustable: ☐ Yes ☐ No ☐ N/A	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor		Cable Connections: ☐ Good ☐ Acceptable ☐ Poor	
	Ground Connections: ☐ Good ☐ Acceptable ☐ Poor		Connections Properly Sealed: ☐ Good ☐ Acceptable ☐ Poor	
	Photocell Installation: ☐ Good ☐ Acceptable ☐ Poor		Dimming Controller Installation: ☐ Good ☐ Acceptable ☐ Poor	
	Cables Supported Appropriately: ☐ Yes ☐ No		Equipment Cleaned: ☐ Yes	Photograph Taken: ☐ Yes
	Comments:			

Photocell & Controller Testing				
	Battery Bank Temperature Before Starting Testing: °C		Battery Bank Temperature After Testing Completed: °C	**Test Summary** ☐ Test Passed ☐ Test Inconclusive ☐ Further Investigation Required ☐ Test Failed
	Photocell Turn-On Level: foot-candles		Photocell Turn-On Time: sec	
	Photocell Turn-Off Level: foot-candles		Photocell Turn-Off Time: sec	
	Measured Light Output: foot-candles		Dimming Controller Output: V	
	Comments:			

Operational Testing				
	Outdoor Lights Turn On and Off by Photocell in Automatic Mode: ☐ Yes ☐ No		Outdoor Lights Turn On in Manual Mode: ☐ Yes ☐ No	
	Light Output Adjustable by Dimming Controller: ☐ Yes ☐ No		Photocell Turn-On Level:	foot-candles
	Operating Modes	*Mode Description*	*Outdoor Lights On*	*Time For Outdoor Lights to Turn On*
		Automatic Mode – Normal Operation	No	N/A
		Automatic Mode – Photocell Operation	☐ Yes ☐ No	sec
		Manual Mode – Individual Normal Lighting Circuits Fail	☐ Yes ☐ No	sec
	Comments:			

Winnipeg	**COMMISSIONING FORM OUTDOOR LIGHTING**	Page 2 of 2
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Final Analysis				
	Returned to Service:	☐ Yes	☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes	☐ No	
	Repair / Replacement Required:	☐ Yes	☐ No	

	Company	**Name**	**Signature**	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

Note: The General Contractor Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

Winnipeg	**COMMISSIONING FORM PANELBOARD**	Page 1 of 2
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact		
	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

Panelboard Location & Data						
	Panel Equipment No.		Panel Location:		Fed From:	
	Drawings:	Single Line:	Panel Schedule:		Schematic:	
	Panelboard Ratings:	Manufacturer:	Model:		Serial #:	
		Ampacity: A Withstand: kAIC	Rated Voltage: VAC	No. of Circuits:	☐ Single Phase ☐ 3-wire ☐ Three Phase ☐ 4-wire	
	Main Breaker:	☐ Top Installed ☐ Bottom Installed ☐ N/A	Rating: A	Inst. Setting: A ☐ N/A	Manufacturer: Model:	

Branch Breakers							
	List all branch breakers installed. Separate each common size breaker for number of poles (1-pole, 2-pole & 3-pole) and GFCI rated.						
	Breaker Size (A)	No. of Poles	GFCI Rated (Yes / No)	Manufacturer	Model No.	Interrupting Rating (kA)	Notes
	Comments:						

Visual Inspection / Cleaning								
	Panelboard Lamacoid Installed:	☐ Yes	☐ No		Visual Signs of Overheating:	☐ Yes	☐ No	
	Power Cables Labelled:	☐ Yes	☐ No		Any Exposed Energized Metal:	☐ Yes	☐ No	
	Typewritten Directory Installed:	☐ Yes	☐ No		All Breaker Sizes Match Drawings:	☐ Yes	☐ No	
	Cleanliness:	☐ Good	☐ Acceptable	☐ Poor	Enclosure Cover Secured:	☐ Good	☐ Acceptable	☐ Poor
	Door Mechanical:	☐ Good	☐ Acceptable	☐ Poor	Ground Connection:	☐ Good	☐ Acceptable	☐ Poor
	Exercised Main Breaker:	☐ Yes	☐ No	☐ N/A	Exercised All Branch Circuit Breakers:	☐ Yes	☐ No	
	Cables Supported Appropriately:	☐ Yes	☐ No		Equipment Cleaned: ☐ Yes	Photograph Taken:	☐ Yes	
	Comments:							

Main Breaker Measurements	*Test*	*Resistance*			**Test Summary**
		Phase A	*Phase B*	*Phase C*	☐ Test Passed ☐ Further Investigation Required. ☐ Test Failed
	Main Breaker Pole Measurements	μΩ	μΩ	μΩ	
	Comments:				

Winnipeg	**COMMISSIONING FORM PANELBOARD**	Page 2 of 2
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Insulation Resistance Test

Test Preparation: Source:
☐ Disconnected
☐ Connected with Source Isolated

Note: Approval of City's Representative is required, prior to leaving cables connected during the test.

WARNING: DISCONNECT INCOMING SOURCE POWER CABLES PRIOR TO TEST.

Test	*Voltage*	*Insulation Resistance*			Ground all phases not under test!
		Phase A	*Phase B*	*Phase C*	
Main Breaker Line Side to Ground	500 VDC	MΩ	MΩ	MΩ	**Test Summary**
Main Breaker Load Side to Ground	500 VDC	MΩ	MΩ	MΩ	☐ Test Passed
Bus Bars to Ground	500 VDC	MΩ	MΩ	MΩ	☐ Further Investigation Required. ☐ Test Failed

Comments:

Final Analysis

Returned to Service:	☐ Yes	☐ No	Comments:
Monitoring / Further Inspection Required:	☐ Yes	☐ No	
Repair / Replacement Required:	☐ Yes	☐ No	

	Company	**Name**	**Signature**	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

Note: The General Contractor Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

Winnipeg	**COMMISSIONING FORM** **PLC ANALOG INPUT CARD**	Page 1 of 2 Equipment Tag:

Project	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

PLC Data	PLC Enclosure Name:		PLC Manufacturer:	PLC Model:
	Card Catalog No.		Rated Input Voltage: VDC	Inputs 0-7 Fuse No.
	Documents:	I/O Wiring Dwg:	DNP3 I/O File:	Control Narrative:
	PLC:	Equipment Tag:	Rack:	Module:

Visual Inspection	Pre-Manufactured Cable Labelled:	☐ Yes	☐ No	Pre-Manufactured Cable Tag:				
	All Inputs Wired to Terminal Blocks:	☐ Yes	☐ No	All Input Wires Labelled at Terminal Blocks:	☐ Yes	☐ No		
	All Inputs Separately Fused:	☐ Yes	☐ No	All Inputs Wired at Analog Input Card:	☐ Yes	☐ No		
	Cleanliness:	☐ Good	☐ Acceptable ☐ Poor	Wire Connections Both Ends:	☐ Good	☐ Acceptable	☐ Poor	
	Fully Functioning Card:	☐ Good	☐ Acceptable ☐ Poor	Card Secured on PLC Rack:	☐ Good	☐ Acceptable	☐ Poor	
	Card Fully Programmed:	☐ Good	☐ Acceptable ☐ Poor	All Card Input Lights Work:	☐ Good	☐ Acceptable	☐ Poor	
	Comments:							

Point	Physical Tag	Description	Signal Type	Signal Mapping	PLC Input	Local HMI	SCADA	Condition Pickup Level	Pass (P/F)
0			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low: mA/V = High: mA/V =	☐	☐	☐	☐ Low ☐ High ☐ N/A	
1			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low: mA/V = High: mA/V =	☐	☐	☐	☐ Low ☐ High ☐ N/A	
2			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low: mA/V = High: mA/V =	☐	☐	☐	☐ Low ☐ High ☐ N/A	
3			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low: mA/V = High: mA/V =	☐	☐	☐	☐ Low ☐ High ☐ N/A	
4			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low: mA/V = High: mA/V =	☐	☐	☐	☐ Low ☐ High ☐ N/A	
5			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low: mA/V = High: mA/V =	☐	☐	☐	☐ Low ☐ High ☐ N/A	
6			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low: mA/V = High: mA/V =	☐	☐	☐	☐ Low ☐ High ☐ N/A	
7			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low: mA/V = High: mA/V =	☐	☐	☐	☐ Low ☐ High ☐ N/A	

Winnipeg	**COMMISSIONING FORM** **PLC ANALOG INPUT CARD**	Page 2 of 2
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Final Analysis				
	Returned to Service:	☐ Yes	☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes	☐ No	
	Repair / Replacement Required:	☐ Yes	☐ No	

Comments:

	Company	**Name**	**Signature**	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

Note: The General Contractor Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

Winnipeg	**COMMISSIONING FORM** **PLC ANALOG INPUT RTD CARD**	Page 1 of 2 Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact		
	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

PLC Data				
	PLC Enclosure Name:		PLC Manufacturer:	PLC Model:
	Card Catalog No.		Rated Input Voltage: VDC	Inputs 0-7 Fuse No.
	Documents:	I/O Wiring Dwg:	DNP3 I/O File:	Control Narrative:
	PLC:	Equipment Tag:	Rack:	Module:

Visual Inspection									
	Pre-Manufactured Cable Labelled:	☐ Yes	☐ No		Pre-Manufactured Cable Tag:				
	All Inputs Wired to Terminal Blocks:	☐ Yes	☐ No		All Input Wires Labelled at Terminal Blocks:	☐ Yes	☐ No		
	All Inputs Separately Fused:	☐ Yes	☐ No		All Inputs Wired at Analog Input RTD Card:	☐ Yes	☐ No		
	Cleanliness:	☐ Good	☐ Acceptable	☐ Poor	Wire Connections Both Ends:	☐ Good	☐ Acceptable	☐ Poor	
	Fully Functioning Card:	☐ Good	☐ Acceptable	☐ Poor	Card Secured on PLC Rack:	☐ Good	☐ Acceptable	☐ Poor	
	Card Fully Programmed:	☐ Good	☐ Acceptable	☐ Poor	All Card Input Lights Work:	☐ Good	☐ Acceptable	☐ Poor	
	Comments:								

Point	Physical Tag	Description	Signal Type	Signal Mapping Range	PLC Input	Local HMI	SCADA	Condition Pickup Level	Pass (P/F)
0			☐ 2-wire RTD ☐ 3-wire RTD ☐ PT100	°C - °C	☐	☐	☐	☐ Low ☐ High ☐ N/A	
1			☐ 2-wire RTD ☐ 3-wire RTD ☐ PT100	°C - °C	☐	☐	☐	☐ Low ☐ High ☐ N/A	
2			☐ 2-wire RTD ☐ 3-wire RTD ☐ PT100	°C - °C	☐	☐	☐	☐ Low ☐ High ☐ N/A	
3			☐ 2-wire RTD ☐ 3-wire RTD ☐ PT100	°C - °C	☐	☐	☐	☐ Low ☐ High ☐ N/A	
4			☐ 2-wire RTD ☐ 3-wire RTD ☐ PT100	°C - °C	☐	☐	☐	☐ Low ☐ High ☐ N/A	
5			☐ 2-wire RTD ☐ 3-wire RTD ☐ PT100	°C - °C	☐	☐	☐	☐ Low ☐ High ☐ N/A	
6			☐ 2-wire RTD ☐ 3-wire RTD ☐ PT100	°C - °C	☐	☐	☐	☐ Low ☐ High ☐ N/A	
7			☐ 2-wire RTD ☐ 3-wire RTD ☐ PT100	°C - °C	☐	☐	☐	☐ Low ☐ High ☐ N/A	

Winnipeg	**COMMISSIONING FORM** **PLC ANALOG INPUT RTD CARD**	Page 2 of 2
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Final Analysis				
	Returned to Service:	☐ Yes	☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes	☐ No	
	Repair / Replacement Required:	☐ Yes	☐ No	

Comments:

	Company	**Name**	**Signature**	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

Note: The General Contractor Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

Winnipeg	**COMMISSIONING FORM** **PLC ANALOG OUTPUT CARD**	Page 1 of 2 Equipment Tag:

Project	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

PLC Data	PLC Enclosure Name:		PLC Manufacturer:	PLC Model:
	Card Catalog No.		Rated Output Voltage: VAC / VDC	Outputs 0-3 Fuse No.
	Documents:	I/O Wiring Dwg:	DNP3 I/O File:	Control Narrative:
	PLC:	Equipment Tag:	Rack:	Module:

Visual Inspection	Pre-Manufactured Cable Labelled:	☐ Yes	☐ No	Pre-Manufactured Cable Tag:			
	All Outputs Wired to Terminal Blocks:	☐ Yes	☐ No	All Output Wires Labelled at Terminal Blocks:	☐ Yes	☐ No	
	All Outputs Separately Fused:	☐ Yes	☐ No	All Outputs Wired at Analog Input Card:	☐ Yes	☐ No	
	Cleanliness:	☐ Good	☐ Acceptable ☐ Poor	Wire Connections Both Ends:	☐ Good	☐ Acceptable	☐ Poor
	Fully Functioning Card:	☐ Good	☐ Acceptable ☐ Poor	Card Secured on PLC Rack:	☐ Good	☐ Acceptable	☐ Poor
	Card Fully Programmed:	☐ Good	☐ Acceptable ☐ Poor	All Card Input Lights Work:	☐ Good	☐ Acceptable	☐ Poor
	Comments:						

Point	Physical Tag	Description	Signal Type	State Mapping	PLC Input	SCADA	Field Device	Pass (P/F)
0			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low mA/V = High mA/V =	☐	☐	☐	
1			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low mA/V = High mA/V =	☐	☐	☐	
2			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low mA/V = High mA/V =	☐	☐	☐	
3			☐ 0 – 20mA ☐ 4 – 20mA ☐ 0 – 10V	Low mA/V = High mA/V =	☐	☐	☐	

Final Analysis	Returned to Service:	☐ Yes	☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes	☐ No	
	Repair / Replacement Required:	☐ Yes	☐ No	

Winnipeg	**COMMISSIONING FORM** **PLC ANALOG OUTPUT CARD**	Page 2 of 2
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Comments:

	Company	**Name**	**Signature**	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

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Winnipeg	**COMMISSIONING FORM** **PLC DISCRETE INPUT CARD**	Page 1 of 3 Equipment Tag:

Project	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

PLC Data	PLC Enclosure Name:		PLC Manufacturer:	PLC Model:
	Card Catalog No.		Rated Inputs Voltage: VAC / VDC	Inputs 0-15 Fuse No. Inputs 16-31 Fuse No.
	Documents:	I/O Wiring Dwg:	DNP3 I/O File:	Control Narrative:
	PLC:	Equipment Tag:	Rack:	Module:

Visual Inspection	Pre-Manufactured Cable Labelled: ☐ Yes ☐ No		Pre-Manufactured Cable Tag:	
	All Inputs Wired to Terminal Blocks: ☐ Yes ☐ No		All Input Wires Labelled at Terminal Blocks: ☐ Yes ☐ No	
	All Inputs Separately Fused: ☐ Yes ☐ No		All Inputs Wired at Discrete Input Card: ☐ Yes ☐ No	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor		Wire Connections Both Ends: ☐ Good ☐ Acceptable ☐ Poor	
	Fully Functioning Card: ☐ Good ☐ Acceptable ☐ Poor		Card Secured on PLC Rack: ☐ Good ☐ Acceptable ☐ Poor	
	Card Fully Programmed: ☐ Good ☐ Acceptable ☐ Poor		All Card Input Lights Work: ☐ Good ☐ Acceptable ☐ Poor	
	Comments:			

TESTING: ALL DISCRETE INPUTS SHOULD BE TESTED AT THE INSTRUMENT END AS BEST AS POSSIBLE TO VERIFY CABLING. AS AN EXAMPLE, A MANUAL MODE STATUS WOULD BE TESTED AT THE MOTOR STARTER SELECTOR SWITCH TO VERIFY STATES AT THE PLC CARD.

Point	Physical Tag	Description	State	State Description	PLC Input	Local HMI	SCADA	Alarm	Pass (P/F)
0			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
1			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
2			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
3			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
4			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
5			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
6			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
7			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

TESTING: ALL DISCRETE INPUTS SHOULD BE TESTED AT THE INSTRUMENT END AS BEST AS POSSIBLE TO VERIFY CABLING. AS AN EXAMPLE, A MANUAL MODE STATUS WOULD BE TESTED AT THE MOTOR STARTER SELECTOR SWITCH TO VERIFY STATES AT THE PLC CARD.

Point	Physical Tag	Description	State	State Description	PLC Input	Local HMI	SCADA	Alarm	Pass (P/F)
8			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
9			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
10			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
11			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
12			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
13			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
14			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
15			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	

TESTING: ALL DISCRETE INPUTS SHOULD BE TESTED AT THE INSTRUMENT END AS BEST AS POSSIBLE TO VERIFY CABLING. AS AN EXAMPLE, A MANUAL MODE STATUS WOULD BE TESTED AT THE MOTOR STARTER SELECTOR SWITCH TO VERIFY STATES AT THE PLC CARD.

Point	Physical Tag	Description	State	State Description	PLC Input	Local HMI	SCADA	Alarm	Pass (P/F)
16			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
17			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
18			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
19			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
20			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
21			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
22			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	

Winnipeg	**COMMISSIONING FORM** **PLC DISCRETE INPUT CARD**	Page 3 of 3
		Equipment Tag:

Project	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

TESTING: ALL DISCRETE INPUTS SHOULD BE TESTED AT THE INSTRUMENT END AS BEST AS POSSIBLE TO VERIFY CABLING. AS AN EXAMPLE, A MANUAL MODE STATUS WOULD BE TESTED AT THE MOTOR STARTER SELECTOR SWITCH TO VERIFY STATES AT THE PLC CARD.

Point	Physical Tag	Description	State	State Description	PLC Input	Local HMI	SCADA	Alarm	Pass (P/F)
23			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
24			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
25			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
26			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
27			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
28			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
29			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
30			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	
31			0		☐	☐	☐	☐ On ☐ Off ☐ N/A	
			1		☐	☐	☐	☐ On ☐ Off	

Final Analysis			Comments:
	Returned to Service:	☐ Yes ☐ No	
	Monitoring / Further Inspection Required:	☐ Yes ☐ No	
	Repair / Replacement Required:	☐ Yes ☐ No	

Comments:

	Company	Name	Signature	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

Note: The General Contractor Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

Winnipeg	**COMMISSIONING FORM** **PLC DISCRETE OUTPUT CARD**	Page 1 of 2 Equipment Tag:

Project	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

PLC Data	PLC Enclosure Name:		PLC Manufacturer:	PLC Model:
	Card Catalog No.		Rated Output Voltage: VAC / VDC	Outputs 0-7 Fuse No.
	Documents:	I/O Wiring Dwg:	DNP3 I/O File:	Control Narrative:
	PLC:	Equipment Tag:	Rack:	Module:

Visual Inspection	Pre-Manufactured Cable Labelled: ☐ Yes ☐ No		Pre-Manufactured Cable Tag:	
	All Outputs Wired to Terminal Blocks: ☐ Yes ☐ No		All Output Wires Labelled at Terminal Blocks: ☐ Yes ☐ No	
	All Outputs Separately Fused: ☐ Yes ☐ No		All Outputs Wired at Discrete Output Card: ☐ Yes ☐ No	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor		Wire Connections Both Ends: ☐ Good ☐ Acceptable ☐ Poor	
	Fully Functioning Card: ☐ Good ☐ Acceptable ☐ Poor		Card Secured on PLC Rack: ☐ Good ☐ Acceptable ☐ Poor	
	Card Fully Programmed: ☐ Good ☐ Acceptable ☐ Poor		All Card Input Lights Work: ☐ Good ☐ Acceptable ☐ Poor	
	Comments:			

Point	Physical Tag	Description	State	State Description	PLC Output	SCADA	Field Device	Pass (P/F)
0			0		☐	☐	☐	
			1		☐	☐	☐	
1			0		☐	☐	☐	
			1		☐	☐	☐	
2			0		☐	☐	☐	
			1		☐	☐	☐	
3			0		☐	☐	☐	
			1		☐	☐	☐	
4			0		☐	☐	☐	
			1		☐	☐	☐	
5			0		☐	☐	☐	
			1		☐	☐	☐	
6			0		☐	☐	☐	
			1		☐	☐	☐	
7			0		☐	☐	☐	
			1		☐	☐	☐	

Final Analysis	Returned to Service: ☐ Yes ☐ No	Comments:	
	Monitoring / Further Inspection Required: ☐ Yes ☐ No		
	Repair / Replacement Required: ☐ Yes ☐ No		

Winnipeg	**COMMISSIONING FORM** **PLC DISCRETE OUTPUT CARD**	Page 2 of 2
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Comments:

	Company	**Name**	**Signature**	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

Note: The General Contractor Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

Winnipeg	**COMMISSIONING FORM** **PLC SYSTEM**	Page 1 of 2
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact		
	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

PLC Data				
	PLC Enclosure Name:		PLC Manufacturer:	PLC Model:
	PLC No. of Modules (Slots)		Rated PLC Voltage: VAC / VDC	Communication to SCADA: ☐ Wired ☐ Wireless
	HMI Screen Installed: ☐ Yes ☐ N/A		HMI Manufacturer:	HMI Model:
	Documents:	Power Dist Schem.	Pump Ctrl Schematic:	Control Narrative:
		Network Diagram:	PLC Mode Schematic	DNP3 I/O List:
	PLC:	Power Supply Catalog No.	Rack Number	Module (Slot) No.
		Processor Card Catalog No.	Rack Number	Module (Slot) No.
		Communication Card Catalog No.	Rack Numbers	Module (Slot) No.

Visual Inspection / Cleaning			
	PLC Lamacoid Installed: ☐ Yes ☐ No	Visual Signs of Overheating: ☐ Yes ☐ No	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor	PLC Properly Mounted: ☐ Good ☐ Acceptable ☐ Poor	
	Fully Functioning PLC: ☐ Good ☐ Acceptable ☐ Poor	PLC Fully Programmed: ☐ Good ☐ Acceptable ☐ Poor	
	All Cards Work: ☐ Yes ☐ No ☐ N/A	Equipment Cleaned: ☐ Yes	Photograph Taken: ☐ Yes
	Comments:		

Operational Testing						
	Wet Well Levels Start and Stop Pumps: ☐ Yes ☐ No ☐ N/A				Comments:	
	PLC Mode Cycles Pump Duties: ☐ Yes ☐ No ☐ N/A					
	HMI Screen Functions Properly: ☐ Yes ☐ No ☐ N/A					
	Alarm Test Switch Block Alarms to SCADA: ☐ Yes ☐ No ☐ N/A					
	HMI Screen Functions Properly: ☐ Yes ☐ No ☐ N/A					
	Local Mode Pushbutton Works: ☐ Yes ☐ No ☐ N/A				PLC Mode Pushbutton Works: ☐ Yes ☐ No ☐ N/A	
	PLC Reset Clears PLC Mode Fail Alarm: ☐ Yes ☐ No ☐ N/A				PLC Mode Fails to Local Mode: ☐ Yes ☐ No ☐ N/A	
	SCADA Wireless Connection Works: ☐ Yes ☐ No ☐ N/A				SCADA Wired Connection Works: ☐ Yes ☐ No ☐ N/A	
	PLC Mode Operation	*Pump Duty*	*Setpoint*	*Setpoint Level*	*Output Changes Pump Status*	*Duty Output Appears on HMI*
		Duty 1	Start	m	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
			Stop	m	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		Duty 2 ☐ N/A	Start	m	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
			Stop	m	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		Duty 3 ☐ N/A	Start	m	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
			Stop	m	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
		Duty 4 ☐ N/A	Start	m	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
			Stop	m	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A

Winnipeg	**COMMISSIONING FORM** **PLC SYSTEM**	Page 2 of 2
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

PLC Settings		
	Program PLC Settings to Match Control Narrative.	Comments:
	Programming Applied to PLC: ☐ Yes ☐ No	
	PLC Programming by: Company Name	

Final Analysis			
	Returned to Service:	☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes ☐ No	
	Repair / Replacement Required:	☐ Yes ☐ No	

	Company	**Name**	**Signature**	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

Note: The General Contractor Representative is responsible for ensuring that the data is transcribed from the handwritten form correctly, and that the analysis results are correct.

Winnipeg	**COMMISSIONING FORM** **UNIT HEATER**	Page 1 of 2 Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact		
	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

Unit Heater Location & Data						
	Heater Equipment No.		Heater Location:		Fed From:	
	Drawings:	Single Line:	Mech. Schedule:		Schematic:	☐ N/A
	Unit Heater Ratings:	Manufacturer:	Model:		Serial #:	
		Power: kW	Rated Voltage: VAC	Full Load Amps: A	☐ 1-Phase	☐ 3-Phase

Visual Inspection / Cleaning				
	Unit Heater Lamacoid Installed: ☐ Yes ☐ No		Visual Signs of Overheating: ☐ Yes ☐ No	
	Power Cables Labelled: ☐ Yes ☐ No		Appropriate Breaker / Fuse Size Installed: ☐ Yes ☐ No	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor		Heater Properly Installed: ☐ Good ☐ Acceptable ☐ Poor	
	Power Connection: ☐ Good ☐ Acceptable ☐ Poor		Ground Connection: ☐ Good ☐ Acceptable ☐ Poor	
	Remote Thermostat Installed: ☐ Yes ☐ No ☐ N/A		Remote Thermostat Cable Labelled ☐ Yes ☐ No ☐ N/A	
	Cables Supported Appropriately: ☐ Yes ☐ No		Equipment Cleaned: ☐ Yes	Photograph Taken: ☐ Yes
	Comments:			

Heater Electrical Testing

Test Preparation: Setup: Source: ☐ Isolated

Power Cable ☐ Disconnected ☐ Connected

Note: Approval of City's Representative is required, prior to leaving cables connected during the test.

WARNING: DISCONNECT ALL FIELD POWER CABLES FROM MOTOR PRIOR TO TEST.

Test	*Test Voltage*	*Insulation Resistance*			Ground all phases not under test!
		Phase A	*Phase B*	*Phase C*	
Line to Ground	VDC	MΩ	MΩ	MΩ	**Test Summary**
					☐ Test Passed
Test	*Tester*	*Resistance*			☐ Test Inconclusive Further Investigation Required.
		Phases A-B	*Phases B-C*	*Phases C-B*	
Heating Element	Fluke Meter	μΩ	μΩ	μΩ	☐ Test Failed

Comments:

Full Load Testing

TESTING: HEATER TO BE RUN FOR FIVE (5) MINUTES UNDER FULL LOAD PRIOR TO RECORDING VALUES.

Temperature:	Turn On Setpoint: °C	Actual Turn On Setpoint: °C	
Heater Measured Current:	Phase A A	Phase B A	Phase C A
Comments:			

Winnipeg	**COMMISSIONING FORM** **UNIT HEATER**	Page 2 of 2
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Final Analysis				
	Returned to Service:	☐ Yes	☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes	☐ No	
	Repair / Replacement Required:	☐ Yes	☐ No	

	Company	**Name**	**Signature**	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

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Winnipeg	**COMMISSIONING FORM** **VARIABLE FREQUENCY DRIVE**	Page 1 of 3 Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Project Contact		
	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

VFD Location & Data									
	VFD Equipment No.			VFD Location:			Downstream Load.		
	Drawings:	Single Line:		Schematic:			Connection:		
	VFD:	Manufacturer:		Model:			Serial #:		
		Power Rating:		Rated Voltage: VAC		Current Rating: A		Control Voltage: VAC	
	Circuit Protection:	☐ Breaker ☐ Fuse	Rating: A	Inst. Setting: A		Manufacturer: Model:			
	Line Reactor:	☐ Installed ☐ N/A	Rating:			Manufacturer: Model:			
	Harmonic Filter:	☐ Installed ☐ N/A	Rating:			Manufacturer: Model:			
	Load Reactor:	☐ Installed ☐ N/A	Rating:			Manufacturer: Model:			
	Bypass Contactor:	Type: ☐ NEMA ☐ IEC ☐ N/A	Manufacturer:			Model:			
			NEMA Size: ☐ N/A			IEC Rating: A ☐ AC-3 ☐ AC-4			
	Bypass Overload Protection:	☐ Thermal ☐ Electronic ☐ Not Applicable	Class: ☐ 10 ☐ 20 ☐ 30 ☐ Unknown	Setting / Rating: A		Manufacturer: Model:			
	Current Transformer:	Ratio: : A				Type:			
	Control Power Transformer:	Size: VA	Secondary Voltage: V			Primary Fuse: A		Secondary Fuse: A	

Motor Data				
	Equipment Tag:	Power: kW / HP		Voltage: VAC
	Full Load Amps: A	Service Factor:	Inverter Duty Rated: ☐ Yes ☐ No	Insulation Class:

Visual Inspection / Cleaning				
	VFD Lamacoid Installed: ☐ Yes ☐ No		Visual Signs of Overheating: ☐ Yes ☐ No	
	Power Cables Labelled at Both Ends: ☐ Yes ☐ No		Control Cables Labelled at Both Ends: ☐ Yes ☐ No	
	Cleanliness: ☐ Good ☐ Acceptable ☐ Poor		Power Cable Connections: ☐ Good ☐ Acceptable ☐ Poor	
	Control Cable Connections: ☐ Good ☐ Acceptable ☐ Poor		Elect./ Mech. Interlocks: ☐ Good ☐ Acceptable ☐ Poor	
	Ground Connections: ☐ Good ☐ Acceptable ☐ Poor		Contactor Condition: ☐ Good ☐ Acceptable ☐ Poor	
	Door Mechanical: ☐ Good ☐ Acceptable ☐ Poor		Contact Alignment: ☐ Good ☐ Acceptable ☐ Poor	
	Verify Bypass O/L element is correctly sized for the load: ☐ Yes ☐ No ☐ N/A		Exercised Circuit Breaker / Disconnect: ☐ Yes ☐ No	
	Cables Supported Appropriately: ☐ Yes ☐ No		Equipment Cleaned: ☐ Yes	Photograph Taken: ☐ Yes
	Comments:			

Winnipeg	**COMMISSIONING FORM** **VARIABLE FREQUENCY DRIVE**	Page 2 of 3
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

Contact / Pole Measurements

Test	*Resistance*			**Test Summary**
	Phase A	*Phase B*	*Phase C*	☐ Test Passed
Harmonic Filter Contactor Contact	μΩ	μΩ	μΩ	☐ Test Inconclusive Further Investigation Required.
Bypass Contactor Contact	μΩ	μΩ	μΩ	☐ Test Failed
Breaker / Disconnect	μΩ	μΩ	μΩ	

Comments:

Insulation Resistance Test

Test Preparation:
Setup:
Source: ☐ Isolated
Contactor: ☐ Open

Cable Destination / Load:
☐ Disconnected
☐ Connected with Load Isolated

Note: Approval of City's Representative is required, prior to leaving cables connected during the test.

WARNING: DISCONNECT ALL POWER CABLES FROM VFD MODULE AND CAPACITORS, AND DISCONNECT ALL CONTROL POWER FUSES PRIOR TO TEST.

Test	*Voltage*	*Insulation Resistance*			Ground all phases not under test!
		Phase A	*Phase B*	*Phase C*	
VFD Line to Ground	1000 VDC	MΩ	MΩ	MΩ	
VFD Load to Ground	1000 VDC	MΩ	MΩ	MΩ	
VFD Line to Load	1000 VDC	MΩ	MΩ	MΩ	**Test Summary**
Harmonic Filter Contactor Line to Ground	1000 VDC	MΩ	MΩ	MΩ	☐ Test Passed
Harmonic Filter Contactor Load to Ground	1000 VDC	MΩ	MΩ	MΩ	☐ Test Inconclusive Further Investigation Required.
Harmonic Filter Contactor Line to Load	1000 VDC	MΩ	MΩ	MΩ	
Bypass Contactor Line to Ground	1000 VDC	MΩ	MΩ	MΩ	☐ Test Failed
Bypass Contactor Load to Ground	1000 VDC	MΩ	MΩ	MΩ	
Bypass Contactor Line to Load	1000 VDC	MΩ	MΩ	MΩ	

Comments:

Full Load Operational Testing

Ramp Up Time	Specified:		sec	Actual:		sec
Ramp Down Time	Specified:		sec	Actual:		sec
Motor Measured Current	Phase A	A	Phase B A	Phase C	A	
VFD Displayed Current	Phase A	A	Phase B A	Phase C	A	

PLC HMI Screen Displayed Motor Current: A

Ammeter Current in Bypass Mode: ☐ Yes ☐ No ☐ N/A

Potentiometer Adjusts Speed in Manual Mode: ☐ Yes ☐ No

Potentiometer Adjusts Speed in Local Auto Mode: ☐ Yes ☐ No

Operating Modes	*Mode Description*	*Forward Run Start & Stop*	*Reverse Run Start & Stop*
	VFD Manual Mode	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	VFD Automatic Mode – PLC Mode	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	VFD Automatic Mode – Local Mode	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Bypass Manual Mode	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
	Bypass Automatic Mode – Local Mode	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A

Comments:

Winnipeg	**COMMISSIONING FORM** **VARIABLE FREQUENCY DRIVE**	Page 3 of 3
		Equipment Tag:

Project			
	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

VFD Settings		
	Program VFD Settings to Match Setting Letter.	Comments:
	Settings Applied to VFD: ☐ Yes ☐ No	
	VFD Setting Letter File:	

VFD & PLC Control Signals

Verify Control Signals Between VFD and PLC	Comments:
Test Preparation: Test physical signals rather than installing jumpers for signals	
Field Wires Labelled at Both Ends: ☐ Yes ☐ No	

Discrete Signals

Signal Description	*Pilot Light Illuminates*	*Signal Received at PLC Card*	*Signal Appears on HMI Screen*	*SCADA Can See Signal*
Ready	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
VFD Mode	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
Bypass Mode	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
Manual Mode	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
Auto Mode	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
Forward Run	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
Reverse Run	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
VFD Fault	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
Bypass Fault	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
Vibration Lockout	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A

Analog Signals

Signal Description	*Measured Signal*	*Signal received At VFD / PLC Card*	*Signal Appears on HMI Screen*	*SCADA Can See Signal*
Speed Input	mA	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
Speed Reference	mA	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A
Motor Current	mA	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No ☐ N/A

Final Analysis			
	Returned to Service:	☐ Yes ☐ No	Comments:
	Monitoring / Further Inspection Required:	☐ Yes ☐ No	
	Repair / Replacement Required:	☐ Yes ☐ No	

	Company	**Name**	**Signature**	**Date** (yyyy/mm/dd)
General Contractor Representative				
City Representative				

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