
	<b>COMMISSIONING FORM AIR CONDITIONER</b>			Page 1 of 2
	Equipment Tag:			
<b>Project</b>	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

<b>Project Contact</b>	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

<b>Air Conditioner Location &amp; Data</b>	A/C Equipment No.		A/C Location: <input type="checkbox"/> Ducted <input type="checkbox"/> Ductless		Fed From:		
	<b>Drawings:</b>	Single Line:		Mech. Schedule:		Schematic: <input type="checkbox"/> N/A	
	<b>A/C Ratings:</b>	Manufacturer:		Model:		Serial #:	
		Power: _____ kW Ton Size:	Rated Voltage: _____ VAC		Full Load Amps: _____ A	<input type="checkbox"/> 1-Phase <input type="checkbox"/> 3-Phase	

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

<b>Air Conditioner Electrical Testing</b>	Test Preparation: Setup: <input type="checkbox"/> Isolated <input type="checkbox"/> Connected		Power Cable <input type="checkbox"/> Disconnected <input type="checkbox"/> 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.						
	<b>Test</b>		<b>Test Voltage</b>	<b>Insulation Resistance (MΩ)</b>			Ground all phases not under test!
				<b>Phase A</b>	<b>Phase B</b>	<b>Phase C</b>	
	Contactor Line to Ground		VDC				
	Contactor Load to Ground		VDC				
	Contactor Line to Load		VDC				<b>Test Summary</b> <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Inconclusive Further Investigation Required. <input type="checkbox"/> Test Failed
	<b>Test</b>		<b>Tester</b>	<b>Resistance (μΩ)</b>			
			<b>Phases A-B</b>	<b>Phases B-C</b>	<b>Phases C-B</b>		
Heating Element		Fluke Meter					
Comments:							


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<b>Project</b>	Facility:		Project Name:
	Area:	RFP No.	Tender No.

<b>Full Load Operational Testing</b>	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	
	<b>A/C Loads</b>	<i>Device</i>	<i>Measured Current</i>		
			<i>Phase A</i>	<i>Phase B</i>	<i>Phase C</i>
		Compressor <input type="checkbox"/> N/A	A	A	A
		Fan <input type="checkbox"/> N/A	A	A	A
	Heater <input type="checkbox"/> N/A	A	A	A	
<b>Contactor</b>	<i>Description</i>	<i>Controller Contact Status</i>	<i>Contactor Status</i>	<i>A/C Status</i>	
	Contactor <input type="checkbox"/> N/A	Closed Opened	<input type="checkbox"/> Closed <input type="checkbox"/> Opened <input type="checkbox"/> Closed <input type="checkbox"/> Opened	<input type="checkbox"/> Running <input type="checkbox"/> Stopped <input type="checkbox"/> Running <input type="checkbox"/> Stopped	
Comments:					

<b>Final Analysis</b>	Returned to Service: <input type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
	Monitoring / Further Inspection Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Repair / Replacement Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	

	<b>Company</b>	<b>Name</b>	<b>Signature</b>	<b>Date (yyyy/mm/dd)</b>
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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.

	<b>COMMISSIONING FORM AUTOMATIC TRANSFER SWITCH</b>		Page 1 of 3
			Equipment Tag:
<b>Project</b>	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

<b>Project Contact</b>	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

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

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

<b>Contact / Pole Measurements</b>	<b>Test</b>	<b>Resistance (<math>\mu\Omega</math>)</b>			<b>Test Summary</b>
		<b>Phase A</b>	<b>Phase B</b>	<b>Phase C</b>	
	Source 1 (Normal) Line to Load				<input type="checkbox"/> Test Passed <input type="checkbox"/> Test Inconclusive Further Investigation Required. <input type="checkbox"/> Test Failed
	Source 2 (Emergency) Line to Load				
Comments:					



## COMMISSIONING FORM AUTOMATIC TRANSFER SWITCH

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Equipment Tag:


<b>Project</b>	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

<b>Insulation Resistance Test</b>	Test Preparation: <input type="checkbox"/> Disconnected <input type="checkbox"/> Connected with Source 1 Isolated	Source 1 (Normal) Cable: <input type="checkbox"/> Disconnected <input type="checkbox"/> Connected with Source 1 Isolated	Source 2 (Emergency) Cable: <input type="checkbox"/> Disconnected <input type="checkbox"/> Connected with Source 2 Isolated	Load Cable: <input type="checkbox"/> Disconnected <input type="checkbox"/> Connected with Load Isolated	Note: Approval of City's Representative is required, prior to leaving cables connected during the test.	
	<b>WARNING: DISCONNECT ALL POWER ATS CABLES AND DISCONNECT ALL CONTROL POWER FUSES PRIOR TO TEST.</b>					
	<b>Test</b>	<b>Voltage</b>	<b>Insulation Resistance (MΩ)</b>			Ground all phases not under test!
			<b>Phase A</b>	<b>Phase B</b>	<b>Phase C</b>	
	Source 1 (Normal) Line to Ground	1000 VDC				<b>Test Summary</b> <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Inconclusive Further Investigation Required. <input type="checkbox"/> Test Failed
	Source 2 (Emergency) Line to Ground	1000 VDC				
	Load to Ground	1000 VDC				
Source 1 (Normal) Line to Load	1000 VDC					
Source 2 (Emergency) Line to Load	1000 VDC					
Comments:						

<b>Operational Testing</b>	Automatic Mode Switches Source 1 to Source 2 (via Source 1 Power Disruption): <input type="checkbox"/> Yes <input type="checkbox"/> No			Automatic Mode Switches Source 2 to Source 1 (via Source 1 Power Restored): <input type="checkbox"/> Yes <input type="checkbox"/> No			
	<b>Operating Modes</b>	<i>Mode Description</i>	<i>Source Powers Load</i>			<i>ATS Indicator Light Illuminates</i>	
		Automatic Mode - Source 1 (Utility)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
		Automatic Mode - Source 2 (Emergency) via Source 1 Fail	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
		Normal Test Mode - Source 1 (Utility)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
		Emergency Test Mode - Source 2 (Emergency)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> N/A
Comments:							

<b>ATS Settings</b>	Program ATS Settings to Match Setting Letter.			Comments:		
	Settings Applied to ATS: <input type="checkbox"/> Yes <input type="checkbox"/> 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. <input type="checkbox"/> N/A	Source 2 to 1 Closed Transition Time:	sec. <input type="checkbox"/> N/A		
	Source 2 (Emergency) Warm-Up Time Delay:	sec.	Source 2 (Emergency) Cool-Down Time Delay:	sec.		

<b>ATS &amp; PLC Control Signals</b>	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: <input type="checkbox"/> Yes <input type="checkbox"/> No													
	<b>Discrete Signal</b>	<i>Signal Description</i>	<i>ATS Pilot Light Illuminates</i>			<i>Signal Received at PLC Card</i>			<i>Signal Appears on HMI Screen</i>			<i>SCADA Can See Signal</i>		
		On Source 1 Power	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
On Source 2 Power		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	
ATS Alarm		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	


	<b>COMMISSIONING FORM AUTOMATIC TRANSFER SWITCH</b>		Page 3 of 3
<b>Project</b>	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.	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail
	2	Power down (or isolate) Source 1 (Normal). ATS indicates Source 1 (Normal) is not available.	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail
	3	Source 2 (Emergency) start signal provided.	<input type="checkbox"/> Pass	<input type="checkbox"/> 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.	<input type="checkbox"/> Pass	<input type="checkbox"/> 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.	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail
	6	Timer expires and ATS transfers to Source 1 (Normal). ATS indicates Source 1 (Normal) position status.	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail
	7	Source 2 (Emergency) Stops after cool-down timer expires.	<input type="checkbox"/> Pass	<input type="checkbox"/> 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).	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail
	9	Reinstate the lost phase on Source 1 (Normal) and verify that ATS transfers back to Source 1 (Normal) after the appropriate delay.	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail
	10	Manually start Source 2 (Emergency) and perform a manual transfer to Source 2 (Emergency).	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail
	11	Perform a manual transfer back to Source 1 (Normal).	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail
<b>Test Summary</b> <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Inconclusive - Further Investigation Required <input type="checkbox"/> Test Failed				

<b>Final Analysis</b>	Returned to Service: <input type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
	Monitoring / Further Inspection Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Repair / Replacement Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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	<b>COMMISSIONING FORM</b>		Page 1 of 2
	<b>CUSTOMER SERVICE TERMINATION END</b>		Equipment Tag:
<b>Project</b>	Facility:	Project Name:	
	Area:	RFP No.	Tender No.


<b>Project Contact</b>	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

<b>CSTE Location &amp; Data</b>	CSTE Downstream Load:		Equipment No.	Location:
	<b>Drawings:</b>	Single Line:	Grounding:	Site Plan:
	<b>CSTE:</b>	Manufacturer:	Model:	Serial #:
		Mounting Type: <input type="checkbox"/> Floor <input type="checkbox"/> Wall	Metering Type: <input type="checkbox"/> CTs & PTs w/ Meter <input type="checkbox"/> Meter Only	Remote Enclosure: <input type="checkbox"/> Yes <input type="checkbox"/> No
		Rated Current: A	Rated Voltage: VAC	Phases: <input type="checkbox"/> 1-Ph <input type="checkbox"/> 3-Ph
<b>Main Disconnect Type:</b>	<input type="checkbox"/> Breaker <input type="checkbox"/> Switch <input type="checkbox"/> N/A	Rating: A	Inst. Setting: A	Manufacturer: Model:

<b>Service Size &amp; CSTE Cabling</b>	Service Size: kVA	Voltage: VAC Phases: <input type="checkbox"/> 1Ø <input type="checkbox"/> 3Ø	Rated Service Current: A	Service Transformer: <input type="checkbox"/> Pole <input type="checkbox"/> Padmount
	CSTE Load Side Cabling Size and Type: (ie 2 x 4C, 350 kcmil Teck90)		CSTE Load Side Cabling: <input type="checkbox"/> Bottom <input type="checkbox"/> Side / Rear	CSTE Downstream Load:
	CSTE Load Side Cable Rating: Table	A (CEC C22.1) Diagram: Detail:		CSTE Ground Cable Size & Type:

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

<b>Resistance Measurements</b>	Test	Resistance (µΩ)			Test Summary
		Phase A	Phase B	Phase C	
	Interior Bus Bar / Cabling				<input type="checkbox"/> Test Passed <input type="checkbox"/> Test Inconclusive Further Investigation Required. <input type="checkbox"/> Test Failed
	Breaker / Disconnect				
Comments:					

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	<b>CUSTOMER SERVICE TERMINATION END</b>		Equipment Tag:
<b>Project</b>	Facility:	Project Name:	
	Area:	RFP No.	Tender No.


<b>Insulation Resistance Test</b>	Test Preparation: Setup: Source: <input type="checkbox"/> Isolated <input type="checkbox"/> Open Contactor: <input type="checkbox"/> Open	Cable Destination / Load: <input type="checkbox"/> Disconnected <input type="checkbox"/> Connected with Load <input type="checkbox"/> Isolated	Note: Approval of City's Representative is required, prior to leaving cables connected during the test.			
	<b>WARNING: DISCONNECT ALL POWER CABLES FROM VFD MODULE AND CAPACITORS, AND DISCONNECT ALL CONTROL POWER FUSES PRIOR TO TEST.</b>					
	<b>Test</b>	<b>Voltage</b>	<b>Insulation Resistance (MΩ)</b>			Ground all phases not under test!
			<b>Phase A</b>	<b>Phase B</b>	<b>Phase C</b>	
	Interior Bus Bar / Cabling to Ground	1000 VDC				<b>Test Summary</b> <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Inconclusive Further Investigation Required. <input type="checkbox"/> Test Failed
	Main Disconnect Line to Ground	1000 VDC				
Main Disconnect Load to Ground	1000 VDC					
Main Disconnect Line to Load	1000 VDC					
Comments:						

<b>Breaker Settings</b>	Adjust Settings to Match Single Line Diagram	Comments:
	Settings Applied to Breaker: <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Single Line Diagram:	

<b>Final Analysis</b>	Returned to Service: <input type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
	Monitoring / Further Inspection Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Repair / Replacement Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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	<b>COMMISSIONING FORM DISCONNECT SWITCH</b>			Page 1 of 2
<b>Project</b>	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

<b>Project Contact</b>	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	


<b>Disconnect Location &amp; Data</b>	Disconnect Equipment No.		Location:		Fed From:		
	<b>Drawings:</b>	Single Line:		Schematic:		Connection:	
		Manufacturer:		Model:		Serial #:	
	<b>Disconnect Ratings:</b>	Ampacity:	A	Rated Voltage:	VAC	No. of Poles:	Auxiliary Contacts: <input type="checkbox"/> Yes <input type="checkbox"/> No
		Withstand:	KAIC				
<b>Fuse Ratings:</b>	<input type="checkbox"/> Installed <input type="checkbox"/> N/A		Rating:	A	Type:	Manufacturer: Model:	

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

<b>Switchblade &amp; Fuse Measurements</b>	Test	Resistance ( $\mu\Omega$ )			Test Summary
		Phase A	Phase B	Phase C	
	Switchblade Pole Measurements				<input type="checkbox"/> Test Passed
	Fuse Measurements				<input type="checkbox"/> Further Investigation Required.
					<input type="checkbox"/> Test Failed
Comments:					

<b>Insulation Resistance Test</b>	Test Preparation:	Source: <input type="checkbox"/> Disconnected <input type="checkbox"/> Connected with Source Isolated	Load: <input type="checkbox"/> Disconnected <input type="checkbox"/> 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 (M $\Omega$ )			Ground all phases not under test!
			Phase A	Phase B	Phase C	
	Disconnect Line Side to Ground		VDC			<b>Test Summary</b> <input type="checkbox"/> Test Passed <input type="checkbox"/> Further Investigation Required. <input type="checkbox"/> Test Failed
	Disconnect Load Side to Ground		VDC			
Disconnect Line to Load		VDC				
Comments:						




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

<b>Final Analysis</b>	Returned to Service: <input type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
	Monitoring / Further Inspection Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Repair / Replacement Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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	<b>COMMISSIONING FORM DRY TYPE TRANSFORMER</b>			Page 1 of 2
	Equipment Tag:			
<b>Project</b>	Facility:		Project Name:	
	Area:		RFP No.	Tender No.


<b>Project Contact</b>	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

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

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


<b>Insulation Resistance Test</b>	Test Preparation:		Source: <input type="checkbox"/> Disconnected <input type="checkbox"/> 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.						
	<b>Winding</b>		<b>Voltage</b>	<b>Insulation Resistance (MΩ)</b>			Resistance to be recorded after 60 sec.
				<b>Phase A</b>	<b>Phase B</b>	<b>Phase C</b>	
	Primary to Ground		VDC				<b>Test Summary</b> <input type="checkbox"/> Test Passed <input type="checkbox"/> Further Investigation Required. <input type="checkbox"/> Test Failed
	Secondary to Ground		VDC				
Primary to Secondary		VDC					
Comments:							

<b>Final Analysis</b>	Returned to Service: <input type="checkbox"/> Yes <input type="checkbox"/> No		Comments:
	Monitoring / Further Inspection Required: <input type="checkbox"/> Yes <input type="checkbox"/> No		
	Repair / Replacement Required: <input type="checkbox"/> Yes <input type="checkbox"/> No		

		<b>COMMISSIONING FORM DRY TYPE TRANSFORMER</b>		Page 2 of 2
				Equipment Tag:
<b>Project</b>	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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	<b>COMMISSIONING FORM DUCT HEATER</b>			Page 1 of 2
	Equipment Tag:			
<b>Project</b>	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

<b>Project Contact</b>	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

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

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

<b>Heater Electrical Testing</b>	Test Preparation: Setup: Source: <input type="checkbox"/> Isolated <input type="checkbox"/> Disconnected <input type="checkbox"/> Connected		Power Cable <input type="checkbox"/> Disconnected <input type="checkbox"/> 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.						
	<b>Test</b>		<b>Test Voltage</b>	<b>Insulation Resistance (MΩ)</b>			Ground all phases not under test!
				<b>Phase A</b>	<b>Phase B</b>	<b>Phase C</b>	
	Line to Ground		VDC				<b>Test Summary</b> <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Inconclusive Further Investigation Required. <input type="checkbox"/> Test Failed
	<b>Test</b>		<b>Tester</b>	<b>Resistance (μΩ)</b>			
			<b>Phases A-B</b>	<b>Phases B-C</b>	<b>Phases C-B</b>		
Heating Element		Fluke Meter					
Comments:							


	<b>COMMISSIONING FORM DUCT HEATER</b>		Page 2 of 2
<b>Project</b>	Facility:		Project Name:
	Area:		RFP No. <span style="float: right;">Tender No.</span>

<b>Operational Testing</b>	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:					

<b>Final Analysis</b>	Returned to Service: <input type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
	Monitoring / Further Inspection Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Repair / Replacement Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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	<b>COMMISSIONING FORM EMERGENCY LIGHTING</b>		Page 1 of 2
<b>Project</b>	Facility:	Project Name:	
	Area:	RFP No.	Tender No.


<b>Project Contact</b>	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

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

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

<b>Battery Testing</b>	Battery Bank Temperature Before Starting Testing: °C	Battery Bank Temperature After Testing Completed: °C	<b>Test Summary</b> <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Inconclusive <input type="checkbox"/> Further Investigation Required <input type="checkbox"/> 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:		


<b>Operational Testing</b>	Emergency Lights Turn On and Off Automatically in Normal Mode:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Emergency Lights Turn On in Test Mode:	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	<b>Operating Modes</b>	<i>Mode Description</i>		<i>Emergency Lights On</i>	<i>Time For Emergency Lights to Turn On</i>
		Normal Mode – Normal Station Operation		No	N/A
		Normal Mode – Battery Bank Power Supply Failure	<input type="checkbox"/> Yes <input type="checkbox"/> No		sec
		Normal Mode – Individual Normal Lighting Circuits Fail	<input type="checkbox"/> Yes <input type="checkbox"/> No		sec
		Test Mode	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		sec
Comments:					

		<b>COMMISSIONING FORM EMERGENCY LIGHTING</b>		Page 2 of 2
				Equipment Tag:
<b>Project</b>	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

<b>Final Analysis</b>	Returned to Service: <input type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
	Monitoring / Further Inspection Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Repair / Replacement Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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	<b>COMMISSIONING FORM GENERATOR DAMPERS</b>		Page 1 of 2
			Equipment Tag:
<b>Project</b>	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

<b>Project Contact</b>	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

<b>Damper Actuators Location &amp; Data</b>	Station Ventilation Room(s) / Area(s)	Generator Equipment No.	HVAC Control Panel Equip. No. <input type="checkbox"/> N/A	
	<b>Drawings:</b>	HVAC P&ID:	Control Panel:	
	<b>Combustion Air Damper 1 Actuator:</b>	Room Installed:	Equipment No.	Control Type: <input type="checkbox"/> Modulating <input type="checkbox"/> 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: <input type="checkbox"/> Yes <input type="checkbox"/> No
	<b>Combustion Air Damper 2 Actuator:</b>	Room Installed:	Equipment No.	Type: <input type="checkbox"/> Modulating <input type="checkbox"/> 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: <input type="checkbox"/> Yes <input type="checkbox"/> No

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

<b>Operational Testing</b>	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: <input type="checkbox"/> Yes <input type="checkbox"/> No	Combustion Air Damper 1 Changes From High Ventilation to No Ventilation: <input type="checkbox"/> Yes <input type="checkbox"/> No			
	Combustion Air Damper 2 Changes From No Ventilation to High Ventilation: <input type="checkbox"/> Yes <input type="checkbox"/> No	Combustion Air Damper 2 Changes From High Ventilation to No Ventilation: <input type="checkbox"/> Yes <input type="checkbox"/> No			
	<b>Operating Modes</b>	<i>Mode Description</i>	<i>Fail-Safe Position</i>	<i>No Ventilation Rate</i>	<i>High Ventilation Rate</i>
		Combustion Air Damper 1 Open Position	<input type="checkbox"/> Opened <input type="checkbox"/> Closed	%	%
		Combustion Air Damper 2 Open Position	<input type="checkbox"/> Opened <input type="checkbox"/> Closed	%	%
Comments:					

<b>Damper Actuator Settings</b>	Adjust Damper Actuator Settings for Damper Balancing		Comments:	
	Damper Settings Applied: <input type="checkbox"/> Yes <input type="checkbox"/> No			
	Combustion Air Damper Actuators	Direction Control <input type="checkbox"/> CCW <input type="checkbox"/> CW	Angle of Rotation Positions Starting: Ending:	Auxiliary Switch Position <input type="checkbox"/> Not Used





## COMMISSIONING FORM GENERATOR DAMPERS

Equipment Tag:


<b>Project</b>	Facility:	Project Name:		
	Area:	RFP No.	Tender No.	

<b>Actuator Input / Output Control Signals</b>	Verify Control Signals Between Generator Controller and Dampers					Comments:		
	Test Preparation: Test physical signals rather than installing jumpers for signals							
	Field Wires Labelled at Both Ends: <input type="checkbox"/> Yes <input type="checkbox"/> No							
	No Ventilation Rate	<i>Actuator</i>	<i>Signal Type</i>	<i>Measured Input Voltage</i>	<i>Measured Output Voltage</i>	<i>Output Received at PLC Card</i>	<i>Signal Appears on HMI Screen</i>	<i>SCADA Can See Signal</i>
		Generator Combustion Damper 1	<input type="checkbox"/> 0 – 5V <input type="checkbox"/> 0 – 10V <input type="checkbox"/> On / Off	VDC	VDC	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
	High Ventilation Rate	<i>Actuator</i>	<i>Signal Type</i>	<i>Measured Input Voltage</i>	<i>Measured Output Voltage</i>	<i>Output Received at PLC Card</i>	<i>Signal Appears on HMI Screen</i>	<i>SCADA Can See Signal</i>
		Generator Combustion Damper 1	<input type="checkbox"/> 0 – 5V <input type="checkbox"/> 0 – 10V <input type="checkbox"/> On / Off	VDC	VDC	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

<b>Final Analysis</b>	Returned to Service: <input type="checkbox"/> Yes <input type="checkbox"/> No		Comments:
	Monitoring / Further Inspection Required: <input type="checkbox"/> Yes <input type="checkbox"/> No		
	Repair / Replacement Required: <input type="checkbox"/> Yes <input type="checkbox"/> No		

	<b>Company</b>	<b>Name</b>	<b>Signature</b>	<b>Date (yyyy/mm/dd)</b>
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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	<b>COMMISSIONING FORM GENERATOR</b>			Page 1 of 4	
					Equipment Tag:
<b>Project</b>	Facility:		Project Name:		
	Area:		RFP No.	Tender No.	

<b>Project Contact</b>	General Contractor:		Project Manager:		
	Consultant:		Contract Administrator:		
	City of Winnipeg		Consulting Project Manager:		

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

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

<b>Protection Breaker Measurements</b>	<b>Test</b>	<b>Resistance (<math>\mu\Omega</math>)</b>			<b>Test Summary</b>
		<b>Phase A</b>	<b>Phase B</b>	<b>Phase C</b>	
	Main Circuit Protection Breaker				
	Load Bank Circuit Protection Breaker				
Comments:					




## COMMISSIONING FORM GENERATOR

Equipment Tag:

<b>Project</b>	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

<b>Insulation Resistance Test</b>	Test Preparation:	Setup: Source: <input type="checkbox"/> Isolated	Cable Load: <input type="checkbox"/> Disconnected <input type="checkbox"/> Connected with Load Isolated	Note: Approval of City's Representative is required, prior to leaving cables connected during the test.		
	<b>WARNING: DISCONNECT ALL POWER CABLES FROM GENERATOR OUTPUT, AND DISCONNECT ALL CONTROL POWER FUSES PRIOR TO TEST.</b>					
	<b>Test</b>	<b>Voltage</b>	<b>Insulation Resistance (MΩ)</b>			Ground all phases not under test!
			<b>Phase A</b>	<b>Phase B</b>	<b>Phase C</b>	
	Alternator Output to Ground	1000 VDC				<b>Test Summary</b> <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Inconclusive Further Investigation Required. <input type="checkbox"/> Test Failed
Comments:						


<b>Full Load Operational Testing on Load Bank</b>	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):			Automatic Mode Stops Generator (via Station Power Restored):				
	<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/> Yes <input type="checkbox"/> No				
	Manual Mode Starts Generator:			High Gas Detection Prevents Generator from Running:				
	<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/> Yes <input type="checkbox"/> No				
	Combustion Damper(s) Open When Generator is Running:			HVAC Ventilation Dampers Operate When Generator is Running:				
	<input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/> Yes <input type="checkbox"/> No				
	<b>Operating Modes</b>	<i>Mode Description</i>		<i>Generator Running</i>		<i>Controller Indicates Generator Running</i>		
Automatic Mode – Utility Power Available		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	
Automatic Mode – Loss of Utility Power		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	
Automatic Mode – Low Gas Detection		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	
Automatic Mode – High Gas Detection		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	
Manual Mode – Low Gas Detection		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	
Manual Mode – High Gas Detection		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	
Comments:								

	<b>COMMISSIONING FORM GENERATOR</b>		Page 3 of 4
<b>Project</b>	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

<b>Generator Controller Settings</b>	Program Generator Controller Settings to Match Setting Letter.		Comments:	
	Settings Applied to Controller: <input type="checkbox"/> Yes <input type="checkbox"/> No			
	Controller Setting Letter File:			
	Output Voltage:	VAC	Output Frequency	Hz
	Engine Warmup Time:	sec.	Engine Cool Down Time:	sec.

<b>Generator &amp; PLC Control Signals</b>	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: <input type="checkbox"/> Yes <input type="checkbox"/> No						
	<b>Discrete Signals</b>	<i>Signal Description</i>	<i>Generator Controller Indicates Status</i>	<i>Signal Shown on PLC Card</i>	<i>Signal Appears on HMI Screen</i>	<i>SCADA Can See Signal</i>	
		Auto Mode	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
		Manual Mode	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
		Running	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
		Alarm	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Generator Breaker Closed		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Load Bank Breaker Shunt Trip		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		

<b>Functional Testing</b>	Step	Description	Result
	1	Set Generator in Auto Mode with Utility powering the Station. Ensure ATS is in Auto Mode.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	2	Verify Generator breaker and Load Bank breaker are both closed.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	3	Power down (or isolate) Utility power. Verify ATS sends a start signal to Generator.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	4	Generator starts and after appropriate delay, Generator is connected to power Station loads.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	5	Start a pump and ensure Generator can power the load.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	6	Verify Load Bank breaker has been opened by a shunt trip.	<input type="checkbox"/> Pass <input type="checkbox"/> 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.	<input type="checkbox"/> Pass <input type="checkbox"/> 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	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	9	Once the Wet Well has been pumped down, stop the pump(s) from running.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	10	Restore Utility power at the ATS.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	11	After transfer timer expires, verify ATS transfers back to Utility power source.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

	<b>COMMISSIONING FORM GENERATOR</b>		Page 4 of 4
	Equipment Tag:		
<b>Project</b>	Facility:	Project Name:	
	Area:	RFP No.	Tender No.


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

<b>Generator Breaker Settings</b>	Provide Final Generator Breaker Adjustable Settings			
	Trip Plug	Manufacturer:	Model:	Trip Plug Size:    A
	Long Time Settings	<input type="checkbox"/> N/A	Pickup:	Time Delay:
	Short Time Settings	<input type="checkbox"/> N/A	Pickup:	Time Delay:
	Instantaneous Settings	<input type="checkbox"/> N/A	Pickup:	Time Delay:
	Ground Settings	<input type="checkbox"/> N/A	Pickup:	Time Delay:
Comments:				

<b>Final Analysis</b>	Returned to Service:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
	Monitoring / Further Inspection Required:	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Repair / Replacement Required:	<input type="checkbox"/> Yes <input type="checkbox"/> No	

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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	<b>COMMISSIONING FORM HVAC CONTROLLER</b>			Page 1 of 3	
					Equipment Tag:
<b>Project</b>	Facility:		Project Name:		
	Area:		RFP No.	Tender No.	

<b>Project Contact</b>	General Contractor:		Project Manager:		
	Consultant:		Contract Administrator:		
	City of Winnipeg		Consulting Project Manager:		

<b>Controller Location &amp; Data</b>	HVAC Controller Location:		Equipment No.		HVAC Control Panel Equip. No. <input type="checkbox"/> N/A		
	<b>Drawings:</b>	HVAC P&ID:		Control Panel:		Dampers Loop:	
	<b>Controlled Dampers:</b>	Supply Damper Equipment No. <input type="checkbox"/> N/A	Return Damper Equipment No. <input type="checkbox"/> N/A	Exhaust Damper Equipment No. <input type="checkbox"/> N/A			
	<b>Controlled Heaters:</b>	Heater No. <input type="checkbox"/> N/A	Heater No. <input type="checkbox"/> N/A	Heater No. <input type="checkbox"/> N/A			
	<b>HVAC Controller:</b>	Manufacturer:		Catalog No.		Serial #:	
		Power Rating:	Power Supply:	VAC	Current Rating:	A	Control Voltage: VAC
	<b>Control Power Transformer:</b>	Size: VA	Secondary Voltage: V	Primary Fuse: A	Secondary Fuse: A		

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

<b>Operational Testing</b>	Station Occupied Light Switch Activates High Ventilation Rate: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A			Comments:		
	High Outdoor Temperature Activates High Ventilation Rate: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A					
	High Gas Detection Activates High Ventilation Rate: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A					
	Controller Changes From High Ventilation Rate to Low Ventilation Rate: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A					
	Controller Defaults to Low Ventilation Rate: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A					
	<b>Operating Modes</b>	<i>Mode Description</i>	<i>Supply Damper Open (0 – 100%)</i>	<i>Return Damper Open (0 – 100%)</i>	<i>Exhaust Damper Open (0 – 100%)</i>	
High Ventilation Rate		% <input type="checkbox"/> N/A	% <input type="checkbox"/> N/A	% <input type="checkbox"/> N/A		
Low Ventilation Rate		% <input type="checkbox"/> N/A	% <input type="checkbox"/> N/A	% <input type="checkbox"/> N/A		

<b>Controller Settings</b>	Program HVAC Controller Settings to Match Setting Letter.		Comments:			
	Settings Applied to Controller: <input type="checkbox"/> Yes <input type="checkbox"/> No					
	HVAC Controller Setting Letter File:					




## COMMISSIONING FORM HVAC CONTROLLER

Equipment Tag:

<b>Project</b>	Facility:	Project Name:		
	Area:	RFP No.	Tender No.	

<b>Controller Input / Output Signals</b>	Verify Control Signals Between Controller and Field Devices				Comments:		
	Test Preparation: Test physical signals rather than installing jumpers for signals						
	Field Wires Labelled at Both Ends: <input type="checkbox"/> Yes <input type="checkbox"/> No						
	Discrete 1 Input	Signal Description	State	State Description	Signal Appears on Controller Screen	Modulated 1 Output (0 – 100 %)	Modulated 2 Output (0 – 100 %)
		<input type="checkbox"/> Not Used	Low (0)		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	% <input type="checkbox"/> N/A	% <input type="checkbox"/> N/A
			High (1)		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	% <input type="checkbox"/> N/A	% <input type="checkbox"/> 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 %)
			<input type="checkbox"/> RTD <input type="checkbox"/> PT100	<input type="checkbox"/> Low ≤ °C	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	% <input type="checkbox"/> N/A	% <input type="checkbox"/> N/A
		<input type="checkbox"/> Not Used	<input type="checkbox"/> PT1000 <input type="checkbox"/> 4-20 mA	<input type="checkbox"/> High > °C	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	% <input type="checkbox"/> N/A	% <input type="checkbox"/> 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 %)
			<input type="checkbox"/> RTD <input type="checkbox"/> PT100	<input type="checkbox"/> Low ≤ °C	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	% <input type="checkbox"/> N/A	% <input type="checkbox"/> N/A
		<input type="checkbox"/> Not Used	<input type="checkbox"/> PT1000	<input type="checkbox"/> High > °C	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	% <input type="checkbox"/> N/A	% <input type="checkbox"/> 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
				<input type="checkbox"/> Discrete Input 1	Low (0)		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		<input type="checkbox"/> Not Used		<input type="checkbox"/> Sensor A <input type="checkbox"/> Sensor B	High (1)		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> 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	
			<input type="checkbox"/> Discrete Input 1	Low (0)		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
	<input type="checkbox"/> Not Used		<input type="checkbox"/> Sensor A <input type="checkbox"/> Sensor B	High (1)		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> 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)	
	<input type="checkbox"/> Heater SCR <input type="checkbox"/> Supply Damper	<input type="checkbox"/> 0 – 5V	<input type="checkbox"/> Discrete Input 1	Low	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	V / mA	
	<input type="checkbox"/> Return Damper <input type="checkbox"/> Exhaust Damper <input type="checkbox"/> Not Used	<input type="checkbox"/> 0 – 10V <input type="checkbox"/> 4–20mA	<input type="checkbox"/> Sensor A <input type="checkbox"/> Sensor B	High	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> 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)	
	<input type="checkbox"/> Heater SCR <input type="checkbox"/> Supply Damper	<input type="checkbox"/> 0 – 5V	<input type="checkbox"/> Discrete Input 1	Low	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	V / mA	
	<input type="checkbox"/> Return Damper <input type="checkbox"/> Exhaust Damper <input type="checkbox"/> Not Used	<input type="checkbox"/> 0 – 10V <input type="checkbox"/> 4–20mA	<input type="checkbox"/> Sensor A <input type="checkbox"/> Sensor B	High	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	V / mA	


	<b>COMMISSIONING FORM HVAC CONTROLLER</b>		Page 3 of 3
	Equipment Tag:		
<b>Project</b>	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

<b>Final Analysis</b>	Returned to Service: <input type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
	Monitoring / Further Inspection Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Repair / Replacement Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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	<b>COMMISSIONING FORM HVAC DAMPERS</b>			Page 1 of 3	
					Equipment Tag:
<b>Project</b>	Facility:		Project Name:		
	Area:		RFP No.	Tender No.	

<b>Project Contact</b>	General Contractor:		Project Manager:		
	Consultant:		Contract Administrator:		
	City of Winnipeg		Consulting Project Manager:		

<b>Damper Actuators Location &amp; Data</b>	Station Ventilation Room(s) / Area(s)		HVAC Controller Equipment No.		HVAC Control Panel Equip. No. <input type="checkbox"/> N/A			
	<b>Drawings:</b>		HVAC P&ID:		Control Panel:			
	<b>Supply Damper Actuator:</b>		Room Installed:		Equipment No.			
			Manufacturer:		Catalog No.			
			Power Supply: VAC / VDC		Torque: Nm		Runtime: sec.	
			Control Input: VAC / VDC		Control Output: VAC / VDC		Auxiliary Switch Provided: <input type="checkbox"/> Yes <input type="checkbox"/> No	
	<b>Return Damper Actuator:</b>		Room Installed:		Equipment No.			
			Manufacturer:		Catalog No.			
			Power Supply: VAC / VDC		Torque: Nm		Runtime: sec.	
			Control Input: VAC / VDC		Control Output: VAC / VDC		Auxiliary Switch Provided: <input type="checkbox"/> Yes <input type="checkbox"/> No	
	<b>Exhaust Damper Actuator:</b>		Room Installed:		Equipment No.			
			Manufacturer:		Catalog No.			
			Power Supply: VAC / VDC		Torque: Nm		Runtime: sec.	
			Control Input: VAC / VDC		Control Output: VAC / VDC		Auxiliary Switch Provided: <input type="checkbox"/> Yes <input type="checkbox"/> No	

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

<b>Operational Testing</b>	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: <input type="checkbox"/> Yes <input type="checkbox"/> No		Supply Damper Changes From High Ventilation to Low Ventilation: <input type="checkbox"/> Yes <input type="checkbox"/> No		
	Return Damper Changes From Low Ventilation to High Ventilation: <input type="checkbox"/> Yes <input type="checkbox"/> No		Return Damper Changes From High Ventilation to Low Ventilation: <input type="checkbox"/> Yes <input type="checkbox"/> No		
	Exhaust Damper Changes From Low Ventilation to High Ventilation: <input type="checkbox"/> Yes <input type="checkbox"/> No		Exhaust Damper Changes From High Ventilation to Low Ventilation: <input type="checkbox"/> Yes <input type="checkbox"/> No		
	<b>Operating Modes</b>	<i>Mode Description</i>		<i>Fail-Safe Position</i>	<i>Low Ventilation Rate</i>
		Supply Damper Open Position		<input type="checkbox"/> Opened <input type="checkbox"/> Closed	%
		Return Damper Open Position		<input type="checkbox"/> Opened <input type="checkbox"/> Closed	%
		Exhaust Damper Open Position		<input type="checkbox"/> Opened <input type="checkbox"/> Closed	%
Comments:					



## COMMISSIONING FORM HVAC DAMPERS

Page 2 of 3


Equipment Tag:

<b>Project</b>	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

<b>Damper Actuator Settings</b>	Adjust Damper Actuator Settings for Damper Balancing		Comments:	
	Damper Settings Applied to: <input type="checkbox"/> Supply Damper <input type="checkbox"/> Return Damper <input type="checkbox"/> Exhaust Damper			
	Supply Damper Actuator	Direction Control <input type="checkbox"/> CCW <input type="checkbox"/> CW	Angle of Rotation Positions Starting:      Ending:	Auxiliary Switch Position <input type="checkbox"/> Not Used
	Return Damper Actuator	Direction Control <input type="checkbox"/> CCW <input type="checkbox"/> CW	Angle of Rotation Positions Starting:      Ending:	Auxiliary Switch Position <input type="checkbox"/> Not Used
	Exhaust Damper Actuator	Direction Control <input type="checkbox"/> CCW <input type="checkbox"/> CW	Angle of Rotation Positions Starting:      Ending:	Auxiliary Switch Position <input type="checkbox"/> Not Used


<b>Actuator Input / Output Control Signals</b>	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: <input type="checkbox"/> Yes <input type="checkbox"/> No							
	Low Ventilation Rate	<i>Actuator</i>	<i>Signal Type</i>	<i>Measured Input Voltage</i>	<i>Measured Output Voltage</i>	<i>Output Received at PLC Card</i>	<i>Signal Appears on HMI Screen</i>	<i>SCADA Can See Signal</i>
		Supply Damper <input type="checkbox"/> Not Used	<input type="checkbox"/> 0 – 5V <input type="checkbox"/> 0 – 10V <input type="checkbox"/> On / Off	VDC	VDC	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		Return Damper <input type="checkbox"/> Not Used	<input type="checkbox"/> 0 – 5V <input type="checkbox"/> 0 – 10V <input type="checkbox"/> On / Off	VDC	VDC	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		Exhaust Damper <input type="checkbox"/> Not Used	<input type="checkbox"/> 0 – 5V <input type="checkbox"/> 0 – 10V <input type="checkbox"/> On / Off	VDC	VDC	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
	High Ventilation Rate	<i>Actuator</i>	<i>Signal Type</i>	<i>Measured Input Voltage</i>	<i>Measured Output Voltage</i>	<i>Output Received at PLC Card</i>	<i>Signal Appears on HMI Screen</i>	<i>SCADA Can See Signal</i>
		Supply Damper <input type="checkbox"/> Not Used	<input type="checkbox"/> 0 – 5V <input type="checkbox"/> 0 – 10V <input type="checkbox"/> On / Off	VDC	VDC	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		Return Damper <input type="checkbox"/> Not Used	<input type="checkbox"/> 0 – 5V <input type="checkbox"/> 0 – 10V <input type="checkbox"/> On / Off	VDC	VDC	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Exhaust Damper <input type="checkbox"/> Not Used		<input type="checkbox"/> 0 – 5V <input type="checkbox"/> 0 – 10V <input type="checkbox"/> On / Off	VDC	VDC	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	

<b>Final Analysis</b>	Returned to Service: <input type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
	Monitoring / Further Inspection Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Repair / Replacement Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	

		<b>COMMISSIONING FORM HVAC DAMPERS</b>		Page 3 of 3
				Equipment Tag:
<b>Project</b>	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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.

	<b>COMMISSIONING FORM HVAC FANS &amp; STARTERS</b>			Page 1 of 3	
					Equipment Tag:
<b>Project</b>	Facility:		Project Name:		
	Area:		RFP No.	Tender No.	

<b>Project Contact</b>	General Contractor:		Project Manager:		
	Consultant:		Contract Administrator:		
	City of Winnipeg		Consulting Project Manager:		

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

<b>Exhaust Fan Data</b>	Equipment Tag:		Power: kW / HP		Voltage: VAC
	Full Load Amps: A	Service Factor:	Inverter Duty Rated: <input type="checkbox"/> Yes <input type="checkbox"/> No		Insulation Class:

<b>Supply Fan Data</b>	Equipment Tag:		Power: kW / HP		Voltage: VAC
	Full Load Amps: A	Service Factor:	Inverter Duty Rated: <input type="checkbox"/> Yes <input type="checkbox"/> No		Insulation Class:

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



## COMMISSIONING FORM HVAC FANS & STARTERS


Equipment Tag:

<b>Project</b>	Facility:	Project Name:		
	Area:	RFP No.	Tender No.	

Contact / Pole Measurements	Test	Resistance ( $\mu\Omega$ )			<b>Test Summary</b> <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Inconclusive Further Investigation Required. <input type="checkbox"/> Test Failed
		Phase A	Phase B	Phase C	
	Exhaust Fan Contactor Contact				
	Supply Fan Contactor Contact				
	Breaker / Disconnect				
Comments:					

Insulation Resistance Test	Test Preparation:	Setup: Source: <input type="checkbox"/> Isolated Contactor: <input type="checkbox"/> Open	Cable Destination / Load: <input type="checkbox"/> Disconnected <input type="checkbox"/> 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 (M $\Omega$ )			Ground all phases not under test!
				Phase A	Phase B	Phase C	
		Exhaust Contactor Line to Ground	1000 VDC				<b>Test Summary</b> <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Inconclusive Further Investigation Required. <input type="checkbox"/> Test Failed
		Exhaust Contactor Load to Ground	1000 VDC				
	Exhaust Contactor Line to Load	1000 VDC					
	Supply Contactor Line to Ground	1000 VDC					
	Supply Contactor Load to Ground	1000 VDC					
	Supply Contactor Line to Load	1000 VDC					
Comments:							

Starter & PLC Control Signals	Verify Control Signals Between Starter and PLC				Comments:	
	Test Preparation: Test physical signals rather than installing jumpers for signals					
	Field Wires Labelled at Both Ends: <input type="checkbox"/> Yes <input type="checkbox"/> No					
	Supply Fan Signals	Signal Description	Pilot Light Illuminates	Signal Received at PLC Card	Signal Appears on HMI Screen	SCADA Can See Signal
		Manual Mode	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		Auto Mode	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		Run	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		Overload / Fault	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> 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	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Auto Mode		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Run		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Overload / Fault		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	


	<b>COMMISSIONING FORM HVAC FANS &amp; STARTERS</b>			Page 3 of 3	
	Equipment Tag:				
<b>Project</b>	Facility:		Project Name:		
	Area:		RFP No.	Tender No.	

<b>Operational Testing</b>	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		
	<b>Operating Modes</b>	<i>Mode Description</i>			<i>Run Start &amp; Stop</i>			<i>Overload Disables Run</i>		
		Manual Mode			<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
		Automatic Mode			<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Comments:										

<b>Final Analysis</b>	Returned to Service: <input type="checkbox"/> Yes <input type="checkbox"/> No			Comments:
	Monitoring / Further Inspection Required: <input type="checkbox"/> Yes <input type="checkbox"/> No			
	Repair / Replacement Required: <input type="checkbox"/> Yes <input type="checkbox"/> No			

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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	<b>COMMISSIONING FORM INSTRUMENT TRANSMITTER (CONTROLLER)</b>			Page 1 of 3	
					Equipment Tag:
<b>Project</b>	Facility:		Project Name:		
	Area:		RFP No.	Tender No.	

<b>Project Contact</b>	General Contractor:		Project Manager:		
	Consultant:		Contract Administrator:		
	City of Winnipeg		Consulting Project Manager:		

<b>Instrument Data</b>	<b>Drawings:</b>	P&ID:	Control Panel:	Loop Diagram:
	<b>Instrument:</b>	Room Installed:	Equipment No.	Output Signal: <input type="checkbox"/> 4 – 20 mA <input type="checkbox"/> 0 – 10V
		Manufacturer:	Catalog No.	Serial #:
		Power Supply: VAC / VDC	Loop Powered <input type="checkbox"/> Yes <input type="checkbox"/> No	Auxiliary Contacts Provided: <input type="checkbox"/> Yes <input type="checkbox"/> No

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

<b>Instrument Operational Testing</b>	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: <input type="checkbox"/> Yes <input type="checkbox"/> No			Display Reflects Instrument Readings (if applicable): <input type="checkbox"/> Yes <input type="checkbox"/> No			
	Alarm Condition Visually Appears on Display (if applicable) <input type="checkbox"/> Yes <input type="checkbox"/> No			Alarm Condition Annunciates from Instrument (if applicable) <input type="checkbox"/> Yes <input type="checkbox"/> No			
	Alarm Outputs Automatically Reset Once Alarm Levels Clear (if applicable): <input type="checkbox"/> Yes <input type="checkbox"/> No			Alarm Output Contacts Change State When Alarm Levels Reached (if applicable): <input type="checkbox"/> Yes <input type="checkbox"/> No			
	<b>Operating Modes</b>	<i>Sensor</i>	<i>Mode Description</i>	<i>Alarm Output Contact State</i>	<i>Measured Analog Output Signal</i>	<i>Instrument Display (include units)</i>	
		Sensor 1	Instrument Normal Level Operation	<input type="checkbox"/> Opened <input type="checkbox"/> Closed <input type="checkbox"/> N/A	<input type="checkbox"/> mA <input type="checkbox"/> V	<input type="checkbox"/> N/A	
			Instrument Alarm Level Operation	<input type="checkbox"/> Opened <input type="checkbox"/> Closed <input type="checkbox"/> N/A	<input type="checkbox"/> mA <input type="checkbox"/> V	<input type="checkbox"/> N/A	
		Sensor 2 <input type="checkbox"/> N/A	Instrument Normal Level Operation	<input type="checkbox"/> Opened <input type="checkbox"/> Closed <input type="checkbox"/> N/A	<input type="checkbox"/> mA <input type="checkbox"/> V	<input type="checkbox"/> N/A	
	Instrument Alarm Level Operation		<input type="checkbox"/> Opened <input type="checkbox"/> Closed <input type="checkbox"/> N/A	<input type="checkbox"/> mA <input type="checkbox"/> V	<input type="checkbox"/> N/A		
Comments:							



**COMMISSIONING FORM  
INSTRUMENT TRANSMITTER (CONTROLLER)**


Equipment Tag:

<b>Project</b>	Facility:	Project Name:		
	Area:	RFP No.	Tender No.	

<b>Instrument Output Control Signals</b>	Verify Control Signals Between Instrument and Control Panel				Comments:		
	Test Preparation: Test physical signals rather than installing jumpers for signals						
	Field Wires Labelled at Both Ends: <input type="checkbox"/> Yes <input type="checkbox"/> No						
	Analog Output Signal 1	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
			<input type="checkbox"/> N/A	<input type="checkbox"/> mA <input type="checkbox"/> V	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
	Analog Output Signal 2	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
		<input type="checkbox"/> N/A	<input type="checkbox"/> N/A	<input type="checkbox"/> mA <input type="checkbox"/> V	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
	Discrete Output 1	Signal Description	State	Description	Output Received at PLC Card	Signal Appears on HMI Screen	SCADA Can See Signal
			0		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		<input type="checkbox"/> N/A	1		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
	Discrete Output 2	Signal Description	State	Description	Output Received at PLC Card	Signal Appears on HMI Screen	SCADA Can See Signal
			0		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		<input type="checkbox"/> N/A	1		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
	Discrete Output 3	Signal Description	State	Description	Output Received at PLC Card	Signal Appears on HMI Screen	SCADA Can See Signal
			0		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
<input type="checkbox"/> N/A		1		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Discrete Output 4	Signal Description	State	Description	Output Received at PLC Card	Signal Appears on HMI Screen	SCADA Can See Signal	
		0		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
	<input type="checkbox"/> N/A	1		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	


<b>Final Analysis</b>	Returned to Service: <input type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
	Monitoring / Further Inspection Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Repair / Replacement Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	



	<b>COMMISSIONING FORM INSTRUMENT TRANSMITTER (CONTROLLER)</b>		Page 3 of 3
	Equipment Tag:		
<b>Project</b>	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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	<b>COMMISSIONING FORM LIFT PUMP</b>			Page 1 of 2
	Equipment Tag:			
<b>Project</b>	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

<b>Project Contact</b>	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

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

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

<b>Motor Electrical Testing</b>	Test Preparation:	Setup: <input type="checkbox"/> Isolated	Power Cable <input type="checkbox"/> Disconnected <input type="checkbox"/> 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.				
	<b>Test</b>	<b>Test Voltage</b>	<b>Insulation Resistance (MΩ)</b>		Ground all phases not under test!
	Line to Ground	VDC	Phase A	Phase B	
	<b>Test</b>	<b>Tester</b>	<b>Resistance (μΩ)</b>		<input type="checkbox"/> Test Passed <input type="checkbox"/> Test Inconclusive Further Investigation Required. <input type="checkbox"/> Test Failed
	Winding Resistance	Fluke Meter	Phases A-B	Phases B-C	
	Comments:				



## COMMISSIONING FORM LIFT PUMP

Equipment Tag:


<b>Project</b>	Facility:	Project Name:		
	Area:	RFP No.	Tender No.	

<b>Full Load Operational Testing</b>	TESTING: MOTOR AND PUMP TO BE RUN FOR FIVE (5) MINUTES UNDER FULL LOAD PRIOR TO RECORDING VALUES.						
	Bearing Temperature	<input type="checkbox"/> N/A	Recommended Alarm Level:	°C	Recommended Lockout Level:	°C	
	Bearing Vibration	<input type="checkbox"/> N/A	Recommended Alarm Level:	mm/s	Recommended Lockout Level:	mm/s	
	Motor Winding Temperature	<input type="checkbox"/> 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
	<b>Bearing Monitoring</b>	<i>Bearing Description</i>	<i>Monitoring Signal</i>	<i>Measured Value</i>	<i>Calculated Value</i>	<i>PLC / HMI Displayed Value</i>	
		Motor Drive End (Upper)	Temperature <input type="checkbox"/> N/A Vibration <input type="checkbox"/> N/A	Ω mA	°C mm/s	°C mm/s	
		Motor Drive End (Lower)	Temperature <input type="checkbox"/> N/A Vibration <input type="checkbox"/> N/A	Ω mA	°C mm/s	°C mm/s	
		Pump Drive End (Upper)	Temperature <input type="checkbox"/> N/A Vibration <input type="checkbox"/> N/A	Ω mA	°C mm/s	°C mm/s	
		Pump Drive End (Lower)	Temperature <input type="checkbox"/> N/A Vibration <input type="checkbox"/> N/A	Ω mA	°C mm/s	°C mm/s	
	<b>Motor Winding</b>	<i>Motor Winding Description</i>	<i>Monitoring Signal</i>	<i>Measured Value</i>	<i>Calculated Value</i>	<i>Alarm Contact to PLC Initiated</i>	
		Phase A	Temperature <input type="checkbox"/> N/A	Ω	°C	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
		Phase B	Temperature <input type="checkbox"/> N/A	Ω	°C	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
		Phase C	Temperature <input type="checkbox"/> N/A	Ω	°C	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
<b>Seal Water</b>	<i>Seal Water Instrument</i>	<i>Motor Status</i>	<i>Instrument Output Status</i>		<i>Output Received at Seal / PLC</i>		
	Solenoid <input type="checkbox"/> N/A	Running Stopped	<input type="checkbox"/> Closed <input type="checkbox"/> Closed	<input type="checkbox"/> Opened <input type="checkbox"/> Opened	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
	Flow Switch <input type="checkbox"/> N/A	Running Stopped	<input type="checkbox"/> Closed <input type="checkbox"/> Closed	<input type="checkbox"/> Opened <input type="checkbox"/> Opened	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Comments:							

<b>Final Analysis</b>	Returned to Service:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
	Monitoring / Further Inspection Required:	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Repair / Replacement Required:	<input type="checkbox"/> Yes <input type="checkbox"/> No	

	<b>Company</b>	<b>Name</b>	<b>Signature</b>	<b>Date (yyyy/mm/dd)</b>
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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	<b>COMMISSIONING FORM MOTORIZED VALVE</b>		Page 1 of 2
<b>Project</b>	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

<b>Project Contact</b>	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

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

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

<b>Operational Testing</b>	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: <input type="checkbox"/> Yes <input type="checkbox"/> No	Motorized Valve Changes From Closed to Open Position: <input type="checkbox"/> Yes <input type="checkbox"/> No		
	<i>Mode Description</i>	<i>Fail-Safe Position</i>	<i>Minimum Open Position</i>	<i>Maximum Open Position</i>
	Motorized Valve Position	<input type="checkbox"/> Opened <input type="checkbox"/> Closed <input type="checkbox"/> N/A	%	%
Comments:				

<b>Valve Settings</b>	Adjust Damper Actuator Settings for Damper Balancing		Comments:	
	Motorized Valve	Open Direction Control <input type="checkbox"/> CCW <input type="checkbox"/> CW	Angle of Rotation Positions Starting: Ending:	Auxiliary Switch Position <input type="checkbox"/> Not Used



### COMMISSIONING FORM MOTORIZED VALVE

Equipment Tag:


<b>Project</b>	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

<b>Motorized Valve Input / Output Control Signals</b>	Verify Control Signals Between Controller and Valve				Comments:			
	Test Preparation: Test physical signals rather than installing jumpers for signals							
	Field Wires Labeled at Both Ends: <input type="checkbox"/> Yes <input type="checkbox"/> 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	<input type="checkbox"/> 4 – 20 mA <input type="checkbox"/> 0 – 10V <input type="checkbox"/> On / Off	<input type="checkbox"/> mA <input type="checkbox"/> V	<input type="checkbox"/> mA <input type="checkbox"/> V	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> 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	<input type="checkbox"/> 4 – 20 mA <input type="checkbox"/> 0 – 10V <input type="checkbox"/> On / Off	<input type="checkbox"/> mA <input type="checkbox"/> V	<input type="checkbox"/> mA <input type="checkbox"/> V	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	

<b>Final Analysis</b>	Returned to Service: <input type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
	Monitoring / Further Inspection Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Repair / Replacement Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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	<b>COMMISSIONING FORM OUTDOOR LIGHTING</b>			Page 1 of 2	
					Equipment Tag:
<b>Project</b>	Facility:		Project Name:		
	Area:		RFP No.	Tender No.	


<b>Project Contact</b>	General Contractor:		Project Manager:		
	Consultant:		Contract Administrator:		
	City of Winnipeg		Consulting Project Manager:		

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

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

<b>Photocell &amp; Controller Testing</b>	Battery Bank Temperature Before Starting Testing:		°C		Battery Bank Temperature After Testing Completed:		°C		<b>Test Summary</b> <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Inconclusive <input type="checkbox"/> Further Investigation Required <input type="checkbox"/> 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:									


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

		<b>COMMISSIONING FORM OUTDOOR LIGHTING</b>		Page 2 of 2
				Equipment Tag:
<b>Project</b>	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

<b>Final Analysis</b>	Returned to Service:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
	Monitoring / Further Inspection Required:	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Repair / Replacement Required:	<input type="checkbox"/> Yes <input type="checkbox"/> No	

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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	<b>COMMISSIONING FORM PANELBOARD</b>			Page 1 of 2
	Equipment Tag:			
<b>Project</b>	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

<b>Project Contact</b>	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	


<b>Panelboard Location &amp; Data</b>	Panel Equipment No.		Panel Location:		Fed From:		
	<b>Drawings:</b>	Single Line:		Panel Schedule:		Schematic:	
	<b>Panelboard Ratings:</b>	Manufacturer:		Model:		Serial #:	
		Ampacity:	A	Rated Voltage:	VAC	No. of Circuits:	<input type="checkbox"/> Single Phase <input type="checkbox"/> 3-wire <input type="checkbox"/> Three Phase <input type="checkbox"/> 4-wire
	<b>Main Breaker:</b>	<input type="checkbox"/> Top Installed	Rating: A	Inst. Setting:	A	Manufacturer:	
<input type="checkbox"/> Bottom Installed		<input type="checkbox"/> N/A					
	<input type="checkbox"/> N/A						

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

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

<b>Main Breaker Measurements</b>	Test	Resistance ( $\mu\Omega$ )			Test Summary
		Phase A	Phase B	Phase C	
	Main Breaker Pole Measurements				<input type="checkbox"/> Test Passed <input type="checkbox"/> Further Investigation Required. <input type="checkbox"/> Test Failed
Comments:					



	<b>COMMISSIONING FORM PANELBOARD</b>		Page 2 of 2
<b>Project</b>	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

<b>Insulation Resistance Test</b>	Test Preparation: Source: <input type="checkbox"/> Disconnected <input type="checkbox"/> 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.					
	<b>Test</b>	<b>Voltage</b>	<b>Insulation Resistance (MΩ)</b>			Ground all phases not under test!
			<b>Phase A</b>	<b>Phase B</b>	<b>Phase C</b>	
	Main Breaker Line Side to Ground	500 VDC				<b>Test Summary</b> <input type="checkbox"/> Test Passed <input type="checkbox"/> Further Investigation Required. <input type="checkbox"/> Test Failed
Main Breaker Load Side to Ground	500 VDC					
Bus Bars to Ground	500 VDC					
Comments:						

<b>Final Analysis</b>	Returned to Service: <input type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
	Monitoring / Further Inspection Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Repair / Replacement Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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## COMMISSIONING FORM PLC ANALOG INPUT CARD

Page 1 of 2

Equipment Tag:


<b>Project</b>	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

<b>Project Contact</b>	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

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

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

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

	<b>COMMISSIONING FORM PLC ANALOG INPUT CARD</b>		Page 2 of 2
	Equipment Tag:		
<b>Project</b>	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

<b>Final Analysis</b>	Returned to Service: <input type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
	Monitoring / Further Inspection Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Repair / Replacement Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	

Comments:

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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## COMMISSIONING FORM PLC ANALOG INPUT RTD CARD

Page 1 of 2

Equipment Tag:


<b>Project</b>	Facility:	Project Name:		
	Area:	RFP No.	Tender No.	

<b>Project Contact</b>	General Contractor:		Project Manager:		
	Consultant:		Contract Administrator:		
	City of Winnipeg		Consulting Project Manager:		

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

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

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


	<b>COMMISSIONING FORM PLC ANALOG INPUT RTD CARD</b>		Page 2 of 2
	Equipment Tag:		
<b>Project</b>	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

<b>Final Analysis</b>	Returned to Service: <input type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
	Monitoring / Further Inspection Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Repair / Replacement Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	

Comments:

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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.

	<b>COMMISSIONING FORM PLC ANALOG OUTPUT CARD</b>			Page 1 of 2
	Equipment Tag:			
<b>Project</b>	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

<b>Project Contact</b>	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	


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

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

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

<b>Final Analysis</b>	Returned to Service: <input type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
	Monitoring / Further Inspection Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Repair / Replacement Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	

Comments:
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	<b>COMMISSIONING FORM PLC ANALOG OUTPUT CARD</b>		Page 2 of 2
	Equipment Tag:		
<b>Project</b>	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

	<b>Company</b>	<b>Name</b>	<b>Signature</b>	<b>Date (yyyy/mm/dd)</b>
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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## COMMISSIONING FORM PLC DISCRETE INPUT CARD

Page 1 of 3

Equipment Tag:

<b>Project</b>	Facility:	Project Name:		
	Area:	RFP No.	Tender No.	

<b>Project Contact</b>	General Contractor:	Project Manager:
	Consultant:	Contract Administrator:
	City of Winnipeg	Consulting Project Manager:

<b>PLC Data</b>	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.
	<b>Documents:</b> I/O Wiring Dwg:	DNP3 I/O File:	Control Narrative:
	<b>PLC:</b> Equipment Tag:	Rack:	Module:

<b>Visual Inspection</b>	Pre-Manufactured Cable Labelled: <input type="checkbox"/> Yes <input type="checkbox"/> No	Pre-Manufactured Cable Tag:
	All Inputs Wired to Terminal Blocks: <input type="checkbox"/> Yes <input type="checkbox"/> No	All Input Wires Labelled at Terminal Blocks: <input type="checkbox"/> Yes <input type="checkbox"/> No
	All Inputs Separately Fused: <input type="checkbox"/> Yes <input type="checkbox"/> No	All Inputs Wired at Discrete Input Card: <input type="checkbox"/> Yes <input type="checkbox"/> No
	Cleanliness: <input type="checkbox"/> Good <input type="checkbox"/> Acceptable <input type="checkbox"/> Poor	Wire Connections Both Ends: <input type="checkbox"/> Good <input type="checkbox"/> Acceptable <input type="checkbox"/> Poor
	Fully Functioning Card: <input type="checkbox"/> Good <input type="checkbox"/> Acceptable <input type="checkbox"/> Poor	Card Secured on PLC Rack: <input type="checkbox"/> Good <input type="checkbox"/> Acceptable <input type="checkbox"/> Poor
	Card Fully Programmed: <input type="checkbox"/> Good <input type="checkbox"/> Acceptable <input type="checkbox"/> Poor	All Card Input Lights Work: <input type="checkbox"/> Good <input type="checkbox"/> Acceptable <input type="checkbox"/> 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		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
1			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
2			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
3			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
4			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
5			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
6			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
7			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	





**COMMISSIONING FORM  
PLC DISCRETE INPUT CARD**

Equipment Tag:

<b>Project</b>	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		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> N/A	
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
9			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> N/A	
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
10			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> N/A	
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
11			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> N/A	
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
12			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> N/A	
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
13			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> N/A	
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
14			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> N/A	
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
15			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> N/A	
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> 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		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> N/A	
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
17			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> N/A	
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
18			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> N/A	
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
19			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> N/A	
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
20			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> N/A	
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
21			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off <input type="checkbox"/> N/A	
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	



### COMMISSIONING FORM PLC DISCRETE INPUT CARD

Page 3 of 3

Equipment Tag:

<b>Project</b>	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)
22			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
23			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
24			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
25			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
26			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
27			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
28			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
29			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
30			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	
31			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> N/A
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> On <input type="checkbox"/> Off	

<b>Final Analysis</b>	Returned to Service:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
	Monitoring / Further Inspection Required:	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Repair / Replacement Required:	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Comments:

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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	<b>COMMISSIONING FORM PLC DISCRETE OUTPUT CARD</b>			Page 1 of 2
	Equipment Tag:			
<b>Project</b>	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

<b>Project Contact</b>	General Contractor:		Project Manager:	
	Consultant:		Contract Administrator:	
	City of Winnipeg		Consulting Project Manager:	

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

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

Point	Physical Tag	Description	State	State Description	PLC Output	SCADA	Field Device	Pass (P/F)
0			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
1			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7			0		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	


	<b>COMMISSIONING FORM PLC DISCRETE OUTPUT CARD</b>		Page 2 of 2
	Equipment Tag:		
<b>Project</b>	Facility:	Project Name:	
	Area:	RFP No.	Tender No.

<b>Final Analysis</b>	Returned to Service: <input type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
	Monitoring / Further Inspection Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Repair / Replacement Required: <input type="checkbox"/> Yes <input type="checkbox"/> No	

Comments:

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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		<b>COMMISSIONING FORM PLC SYSTEM</b>		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	
	HMI Screen Installed:		<input type="checkbox"/> Yes <input type="checkbox"/> N/A		
	HMI Manufacturer:		HMI Model:		
	Documents:	Power Dist Schem.	Pump Ctrl Schematic:	Communication to SCADA:	
		Network Diagram:	PLC Mode Schematic	<input type="checkbox"/> Wired <input type="checkbox"/> Wireless	
	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:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Visual Signs of Overheating:	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Cleanliness:	<input type="checkbox"/> Good <input type="checkbox"/> Acceptable <input type="checkbox"/> Poor	PLC Properly Mounted:	<input type="checkbox"/> Good <input type="checkbox"/> Acceptable <input type="checkbox"/> Poor
	Fully Functioning PLC:	<input type="checkbox"/> Good <input type="checkbox"/> Acceptable <input type="checkbox"/> Poor	PLC Fully Programmed:	<input type="checkbox"/> Good <input type="checkbox"/> Acceptable <input type="checkbox"/> Poor
	All Cards Work:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Equipment Cleaned:	<input type="checkbox"/> Yes
	Photograph Taken: <input type="checkbox"/> Yes			
Comments:				

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


	<b>COMMISSIONING FORM PLC SYSTEM</b>		Page 2 of 2
<b>Project</b>	Facility:		Project Name:
	Area:	RFP No.	Tender No.

<b>PLC Settings</b>	Program PLC Settings to Match Control Narrative.		Comments:
	Programming Applied to PLC: <input type="checkbox"/> Yes <input type="checkbox"/> No		
	PLC Programming by:	Company                      Name	

<b>Final Analysis</b>	Returned to Service: <input type="checkbox"/> Yes <input type="checkbox"/> No		Comments:
	Monitoring / Further Inspection Required: <input type="checkbox"/> Yes <input type="checkbox"/> No		
	Repair / Replacement Required: <input type="checkbox"/> Yes <input type="checkbox"/> No		

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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.

	<b>COMMISSIONING FORM UNIT HEATER</b>			Page 1 of 2	
					Equipment Tag:
<b>Project</b>	Facility:		Project Name:		
	Area:		RFP No.	Tender No.	


<b>Project Contact</b>	General Contractor:		Project Manager:		
	Consultant:		Contract Administrator:		
	City of Winnipeg		Consulting Project Manager:		

<b>Unit Heater Location &amp; Data</b>	Heater Equipment No.		Heater Location:		Fed From:	
	<b>Drawings:</b>	Single Line:		Mech. Schedule:		Schematic: <input type="checkbox"/> N/A
		<b>Unit Heater Ratings:</b>		Model:		Serial #:
	Power:	kW	Rated Voltage:	VAC	Full Load Amps:	A

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

<b>Heater Electrical Testing</b>	Test Preparation: Setup: <input type="checkbox"/> Isolated <input type="checkbox"/> Connected		Power Cable <input type="checkbox"/> Disconnected <input type="checkbox"/> 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.						
	<b>Test</b>		<b>Test Voltage</b>	<b>Insulation Resistance (MΩ)</b>			Ground all phases not under test!
	Line to Ground		VDC	<b>Phase A</b>	<b>Phase B</b>	<b>Phase C</b>	
	<b>Test</b>		<b>Tester</b>	<b>Resistance (μΩ)</b>			<b>Test Summary</b> <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Inconclusive Further Investigation Required. <input type="checkbox"/> Test Failed
	Heating Element		Fluke Meter	<b>Phases A-B</b>	<b>Phases B-C</b>	<b>Phases C-B</b>	
Comments:							

<b>Full Load Testing</b>	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:							


		<b>COMMISSIONING FORM UNIT HEATER</b>		Page 2 of 2
		Equipment Tag:		
<b>Project</b>	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

<b>Final Analysis</b>	Returned to Service:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Comments:
	Monitoring / Further Inspection Required:	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	Repair / Replacement Required:	<input type="checkbox"/> Yes <input type="checkbox"/> No	

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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	<b>COMMISSIONING FORM VARIABLE FREQUENCY DRIVE</b>			Page 1 of 4	
					Equipment Tag:
<b>Project</b>	Facility:		Project Name:		
	Area:		RFP No.	Tender No.	

<b>Project Contact</b>	General Contractor:		Project Manager:		
	Consultant:		Contract Administrator:		
	City of Winnipeg		Consulting Project Manager:		

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

<b>Motor Data</b>	Equipment Tag:		Power: kW / HP		Voltage: VAC	
	Full Load Amps: A	Service Factor:	Inverter Duty Rated:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Insulation Class:	

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

	<b>COMMISSIONING FORM</b>		Page	2 of 4
	<b>VARIABLE FREQUENCY DRIVE</b>		Equipment Tag:	
<b>Project</b>	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

<b>Contact / Pole Measurements</b>	Test	Resistance ( $\mu\Omega$ )			<b>Test Summary</b> <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Inconclusive Further Investigation Required. <input type="checkbox"/> Test Failed
		Phase A	Phase B	Phase C	
	Harmonic Filter Contactor Contact				
	Bypass Contactor Contact				
Breaker / Disconnect					
Comments:					

<b>Insulation Resistance Test</b>	Test Preparation: Setup: Source: <input type="checkbox"/> Isolated Contactor: <input type="checkbox"/> Open	Cable Destination / Load: <input type="checkbox"/> Disconnected <input type="checkbox"/> Connected with Load Isolated	Note: Approval of City's Representative is required, prior to leaving cables connected during the test.			
	<b>WARNING: DISCONNECT ALL POWER CABLES FROM VFD MODULE AND CAPACITORS, AND DISCONNECT ALL CONTROL POWER FUSES PRIOR TO TEST.</b>					
	Test	Voltage	Insulation Resistance (M $\Omega$ )			Ground all phases not under test!  <b>Test Summary</b> <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Inconclusive Further Investigation Required. <input type="checkbox"/> Test Failed
			Phase A	Phase B	Phase C	
	VFD Line to Ground	1000 VDC				
	VFD Load to Ground	1000 VDC				
	VFD Line to Load	1000 VDC				
	Harmonic Filter Contactor Line to Ground	1000 VDC				
	Harmonic Filter Contactor Load to Ground	1000 VDC				
	Harmonic Filter Contactor Line to Load	1000 VDC				
Bypass Contactor Line to Ground	1000 VDC					
Bypass Contactor Load to Ground	1000 VDC					
Bypass Contactor Line to Load	1000 VDC					
Comments:						

<b>Full Load Operational Testing</b>	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: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A			
	Potentiometer Adjusts Speed in Manual Mode:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Potentiometer Adjusts Speed in Local Auto Mode: <input type="checkbox"/> Yes <input type="checkbox"/> No			
	<b>Operating Modes</b>	<i>Mode Description</i>	<i>Forward Run Start &amp; Stop</i>		<i>Reverse Run Start &amp; Stop</i>	
		VFD Manual Mode	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		VFD Automatic Mode – PLC Mode	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		VFD Automatic Mode – Local Mode	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Bypass Manual Mode		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Bypass Automatic Mode – Local Mode	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Comments:						



## COMMISSIONING FORM VARIABLE FREQUENCY DRIVE


Equipment Tag:

<b>Project</b>	Facility:	Project Name:		
	Area:	RFP No.	Tender No.	

<b>VFD Settings</b>	Program VFD Settings to Match Setting Letter.		Comments:
	Settings Applied to VFD: <input type="checkbox"/> Yes <input type="checkbox"/> No		
	VFD Setting Letter File:		

<b>VFD &amp; PLC Control Signals</b>	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: <input type="checkbox"/> Yes <input type="checkbox"/> No					
	Discrete Signals	<i>Signal Description</i>	<i>Pilot Light Illuminates</i>	<i>Signal Received at PLC Card</i>	<i>Signal Appears on HMI Screen</i>	<i>SCADA Can See Signal</i>
		Ready	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		VFD Mode	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		Bypass Mode	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		Manual Mode	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		Auto Mode	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		Forward Run	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		Reverse Run	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		VFD Fault	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		Bypass Fault	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
	Vibration Lockout	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
	Analog Signals	<i>Signal Description</i>	<i>Measured Signal</i>	<i>Signal received At VFD / PLC Card</i>	<i>Signal Appears on HMI Screen</i>	<i>SCADA Can See Signal</i>
Speed Input		mA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Speed Reference		mA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Motor Current		mA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	

<b>Final Analysis</b>	Returned to Service: <input type="checkbox"/> Yes <input type="checkbox"/> No		Comments:
	Monitoring / Further Inspection Required: <input type="checkbox"/> Yes <input type="checkbox"/> No		
	Repair / Replacement Required: <input type="checkbox"/> Yes <input type="checkbox"/> No		

		<b>COMMISSIONING FORM VARIABLE FREQUENCY DRIVE</b>		Page 4 of 4
				Equipment Tag:
<b>Project</b>	Facility:		Project Name:	
	Area:		RFP No.	Tender No.

	Company	Name	Signature	Date (yyyy/mm/dd)
<b>General Contractor Representative</b>				
<b>City Representative</b>				

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