


APPENDIX N - Electrical Forms

	INSPECTION FORM		Page 1 of 1
	AUTOMATION – CONTROL CONDUCTORS		ID:
Project	Facility: NEWPCC	Project Name: Sludge Cake Pump Upgrade	
	Area : Dewatering	Bid Opportunity: 326-2026	

Cable/Conduit Data	Source:		Dest.:	
	Installation: <input type="checkbox"/> Cable <input type="checkbox"/> Cable Tray <input type="checkbox"/> Direct Buried <input type="checkbox"/> Strapped		<input type="checkbox"/> Conduit <input type="checkbox"/> EMT <input type="checkbox"/> Rigid Steel <input type="checkbox"/> Alum. <input type="checkbox"/> PVC <input type="checkbox"/> Other:	
	No. of Conductors:	Size: AWG	Type:	Rated Voltage: V

Visual Inspection	Cable Identification Tag Installed: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		Enclosure Entry Acceptable: <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Wire tags installed: <input type="checkbox"/> Yes <input type="checkbox"/> No		Conduit / Cable Supported Appropriately: <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Comments:			

Insulation Resistance Test	Test Voltage: V		Ambient Temperature: °C		All conductors not under test grounded for each reading: <input type="checkbox"/> Yes <input type="checkbox"/> No				
	#	ID	MΩ	#	ID	MΩ	#	ID	MΩ
	1			19			37		
	2			20			38		
	3			21			39		
	4			22			40		
	5			23			41		
	6			24			42		
	7			25			43		
	8			26			44		
	9			27			45		
	10			28			46		
	11			29			47		
	12			30			48		
	13			31			49		
	14			32			50		
	15			33			51		
	16			34			52		
	17			35			53		
	18			36			54		
1. Utilize 1000VDC Test Voltage for 600V rated cables, 500VDC for cables rated <= 300V. 2. Utilize a single form for each cable / conduit. 3. Disconnect both ends of wiring prior to tests. 4. Test each conductor to ground. All conductors not under test must be grounded during each test. 5. Each reading must not be less than 22 MΩ or significantly less than comparable conductors.									
Comments:									
Test Summary: <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Failed									

	Company	Name	Signature	Date (yyyy/mm/dd)
Performed By				
Checked By				

Project	Facility: NEWPCC	Project Name: Sludge Cake Pump Upgrade
	Area : Dewatering	Bid Opportunity: 326-2026

Cable/Conduit Data	Source:		Dest.:			
	Installation:		Other:			
	<input type="checkbox"/> Cable <input type="checkbox"/> Cable Tray <input type="checkbox"/> Strapped		<input type="checkbox"/> Conduit <input type="checkbox"/> EMT <input type="checkbox"/> Rigid Steel <input type="checkbox"/> Alum. <input type="checkbox"/> PVC			
No. of Pairs:		Size:	AWG	Type:	Rated Voltage:	V

Visual Inspection	Cable Identification Tag Installed:		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	Enclosure Entry Acceptable:		<input type="checkbox"/> Yes	<input type="checkbox"/> No		
	Wire tags installed:		<input type="checkbox"/> Yes	<input type="checkbox"/> No	Conduit / Cable Supported Appropriately:					<input type="checkbox"/> Yes	<input type="checkbox"/> No
	Comments:										

Insulation Resistance Test	Test Voltage:		V		Ambient Temperature:		°C		All conductors not under test grounded for each reading:			<input type="checkbox"/> Yes	<input type="checkbox"/> No
	Pr	ID	Cond. 1 (+) to Gnd (MΩ)	Cond. 2 (-) to Gnd (MΩ)	Shield to Gnd (MΩ)	Pr	ID	Cond. 1 (+) to Gnd (MΩ)	Cond. 2 (-) to Gnd (MΩ)	Shield to Gnd (MΩ)			
	1					13							
	2					14							
	3					15							
	4					16							
	5					17							
	6					18							
	7					19							
	8					20							
	9					21							
	10					22							
	11					23							
12					24								
<ol style="list-style-type: none"> 1. Utilize 1000VDC Test Voltage for 600V rated cables, 500VDC for cables rated <= 300V. 2. Utilize a single form for each cable / conduit. 3. Disconnect both ends of wiring prior to tests. 4. Test each conductor to ground. All conductors and shields not under test must be grounded during each test. 5. Each reading must not be less than 22 MΩ or significantly less than comparable conductors. 													
Comments:													
Test Summary: <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Failed													



**INSPECTION FORM
AUTOMATION – TWISTED SHIELDED PAIRS**

ID:

Continuity Test	Pr	ID	Cond. 1 (+) to Cond. 2 (-) (mΩ)	Cond. 1 (+) to Shield (mΩ)	Pr	ID	Cond. 1 (+) to Cond. 2 (-) (mΩ)	Cond. 1 (+) to Shield (mΩ)
	1				13			
	2				14			
	3				15			
	4				16			
	5				17			
	6				18			
	7				19			
	8				20			
	9				21			
	10				22			
	11				23			
	12				24			
<i>1. Record resistance from one end for each connection shown, which shall be made at the other end of the cable.</i>								
Comments:								
Test Summary: <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Failed								

	Company	Name	Signature	Date (yyyy/mm/dd)
Performed By				
Checked By				

Project	Facility: NEWPCC	Project Name: Sludge Cake Pump Upgrade
	Area: Dewatering	Bid Opportunity: 326-2026

Cable Data	Source:		Dest. / Load:	
	Manufacturer:		Type:	Conductor: <input type="checkbox"/> Copper <input type="checkbox"/> Aluminum
	No. of Conductors:	Size: <input type="checkbox"/> AWG <input type="checkbox"/> MCM	Length: m	<input type="checkbox"/> Measured <input type="checkbox"/> Previous Data <input type="checkbox"/> Jacket Markings <input type="checkbox"/> TDR
	Rated Voltage: V	Operating Voltage: V	Date Installed:	
	Installation: <input type="checkbox"/> Cable Tray <input type="checkbox"/> EMT <input type="checkbox"/> Alum. Conduit <input type="checkbox"/> Direct Buried <input type="checkbox"/> Strapped <input type="checkbox"/> Steel Conduit <input type="checkbox"/> PVC Conduit <input type="checkbox"/> Underground Duct		Other:	

Visual Inspection	Physical Damage on Exposed Ends: <input type="checkbox"/> Yes <input type="checkbox"/> No	Cable Identification Tag Installed: <input type="checkbox"/> Yes <input type="checkbox"/> No
	Visual Signs of Overheating: <input type="checkbox"/> Yes <input type="checkbox"/> No	Cable Supported Appropriately: <input type="checkbox"/> Yes <input type="checkbox"/> No
	Bend Radius Acceptable: <input type="checkbox"/> Yes <input type="checkbox"/> No	Comments:

Insulation Resistance Test	Test Preparation:	Source: <input type="checkbox"/> Disconnected <input type="checkbox"/> Connected with Source Isolated	Cable Dest. / 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.		
	Cable Temperature: °C		Temperature Correction Factor for 20°C:	Ground all conductors not under test for each reading.		
	Test Voltage	Insulation Resistance (MΩ)			Test Summary <input type="checkbox"/> Test Passed <input type="checkbox"/> Test Inconclusive Further Investigation Required. <input type="checkbox"/> Test Failed	
		A-GND	B-GND	C-GND		N-GND
	V	Reading				
	Corrected to 20°C					
Utilize 1000VDC Test Voltage for 600V rated cables, 500VDC for cables rated <= 300V.						
Comments:						

Connection Resistance	<i>Note: Torque check required for all cables. Connection Resistance Test required for cables 4/0 AWG or larger.</i>					
	Termination	Connection Resistance (μΩ) - As Left				Torque Check
		A	B	C	N	
	Source					<input type="checkbox"/> OK
	Dest. / Load					<input type="checkbox"/> OK
Comments:						

Final Analysis	Cable 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)
Performed By				
Checked By				



INSTRUMENTATION TRANSMITTER LOOP CHECKLIST

Project			
Facility:	NEWPCC	Project Name:	Sludge Cake Pump Upgrade
Area :	Dewatering	Bid Opportunity:	326-2026

Instrument (Sensor / Element)		
Tag:	Description:	
Manufacturer:	Model:	Serial Number:

Transmitter		
Tag:	Description:	
Manufacturer:	Model:	Serial Number:
Units:	Design Range: -	
Output	<input type="checkbox"/> 4-20 mA <input type="checkbox"/> Modbus <input type="checkbox"/> Other: <input type="checkbox"/> 0-10 V <input type="checkbox"/> Ethernet IP	

Inspection Checklist			
No.	Item to be Inspected	Comments	Pass (P/F)
1.	Instrument type and class per P&ID and specification		
2.	Instrument tag(s) installed and correct		
3.	Installation of sensor complete and correct		
4.	Block and drain valves		
5.	Pneumatic / hydraulic tubing leak tested		
6.	Heat tracing / insulation / instrument housing		
7.	Impulse lines pressure tested		
8.	Wiring correct		
9.	Drawings marked up as-built		
10.	HMI Graphic symbol, tag and units correct		



INSTRUMENTATION TRANSMITTER LOOP CHECKLIST

Signal Validation					
Input Signal	Location	Design Value	Actual Value	Error (%)	Pass (P/F)
	Transmitter Display				
	Transmitter Output				
	Process Display				
	PLC				
	HMI				
	Transmitter Display				
	Transmitter Output				
	Process Display				
	PLC				
	HMI				
	Transmitter Display				
	Transmitter Output				
	Process Display				
	PLC				
	HMI				

Notes:

1. Attach factory calibration forms for all instruments where provided and/or specified.
2. Provide instrument parameters for each parameter changed from the factory default.

Comments:

	Company	Name	Signature	Date (yyyy/mm/dd)
Tested By				
Witnessed By				



MODULATING CONTROL DEVICE CHECKLIST

Project

Facility: NEWPCC	Project Name: Sludge Cake Pump Upgrade
Area : Dewatering	Bid Opportunity: 326-2026

Control Device

Tag:	Description:	
Manufacturer:	Model:	Serial Number:

Inspection Checklist

No.	Item to be Inspected	Comments	Pass (P/F)
1.	Actuator type and class per P&ID and specification		
2.	Instrument tag(s) installed and correct		
3.	Installation of actuator complete and correct		
4.	Wiring correct		
5.	Drawings marked up as-built		
6.	HMI graphic symbol, tag and units correct		

Control Validation

Control Output	Location	Design Value	Actual Value	Error (%)	Pass (P/F)
0%	PLC Output				
	Field Device				
50%	PLC Output				
	Field Device				
100%	PLC Output				
	Field Device				

Notes:

1. Attach factory calibration forms for all instruments where provided and/or specified.
2. Provide instrument parameters for each parameter changed from the factory default.

Comments:

	Company	Name	Signature	Date (yyyy/mm/dd)
Tested By				
Witnessed By				



PLC DISCRETE INPUT CHECKLIST

Project	
Facility: NEWPCC	Project Name: Sludge Cake Pump Upgrade
Area : Dewatering	Bid Opportunity: 326-2026

PLC	
PLC ID:	Description:
Rack:	Slot:

Pt	Tag	Description	State	State Desc.	PLC Input	Local HMI	SCADA	Alarm	Pass (P/F)
			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	
			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	
			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	
			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	
			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	
			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	
			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	
			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	
			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	
			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	



PLC DISCRETE INPUT CHECKLIST

			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	
			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	
			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	
			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	

Comments:

	Company	Name	Signature	Date (yyyy/mm/dd)
Tested By				
Witnessed By				



PLC DISCRETE OUTPUT CHECKLIST

Project

Facility: NEWPCC	Project Name: Sludge Cake Pump Upgrade
Area : Dewatering	Bid Opportunity: 326-2026

PLC

PLC ID:	Description:
Rack:	Slot:

Pt	Tag	Description	State	State Desc.	PLC Output	Field Device	Pass (P/F)
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	



PLC DISCRETE OUTPUT CHECKLIST

			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	
			0		<input type="checkbox"/>	<input type="checkbox"/>	
			1		<input type="checkbox"/>	<input type="checkbox"/>	

Comments:

	Company	Name	Signature	Date (yyyy/mm/dd)
Tested By				
Witnessed By				