



WATER AND SEWER
Engineering Design

DATE:
July 16, 2026

TO:
Plan Holders
Contractors

FROM:
Jenna Richardson
918-596-9637
jennarichardson@cityoftulsa.org

EMAIL TRANSMITTAL

ADDENDUM NO. 3

PROJECT NO. RMUA ES 2020-11 & BAMA HC21020
HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS
FAP 25-005-L | FAP 24-0002-L | FAP 24-0016L

Number of pages: 94

All addenda to the contract documents should be denoted on the
last page of the Proposal in the space provided.

Thank you,
Contract Administration



WATER AND SEWER
Engineering Design

DATE:

July 16, 2026

**ADDENDUM NO. 3
TO
PROJECT NO. RMUA ES 2020-11 & BAMA HC21020
HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS
FAP 25-005-L | FAP 24-0002-L | FAP 24-0016L**

This Addendum No. 3 consisting of (5) five items, submitted by Jacobs Engineering Group Inc, is hereby made a part of the Contract Documents to the same extent as though it were originally included therein and shall supersede anything contained in the Plans and Specifications with which it might conflict. **All addenda to the contract documents should be denoted on the last page of the Proposal in the space provided.**

This Addendum No. 3 consists of the following:

1. The attached documents list the detailed items that have been modified in Addendum No. 3. These documents shall be inclusive and apply to this project.
2. Replace the revised Addendum No. 2 page 1 of 2.

All other provisions of the Plans and Specifications shall remain in full force and effect.

CITY OF TULSA

Eric Lee
Director

TGP/HAS/AL/JR/ma

July 15, 2026

ADDENDUM NO. 3

**PROJECT NO. RMUA PROJECT NO. ES 2020-11, BAMA PROJECT NO.
HC21020 HAIKEY CREEK BIOSOLIDS IMPROVEMENTS**

This Addendum No. 3 consisting of 4 Items is hereby made a part of the Contract Documents to the same extent as though it were originally included therein and shall supersede anything contained in the Plans and Specifications with which it might conflict. **All addenda to the contract documents should be denoted on the last page of the Proposal in the space provided.**

This Addendum No. 3 consists of the following:

CLARIFICATION

None

SPECIFICATIONS

- 1) **REMOVE AND REPLACE** the following Specifications:
 - a. 40 91 00 - Instrumentation and Controls Components, Supplement 02
 - b. 40 91 00 - Instrumentation and Controls Components, Supplement 03
 - c. 44 42 19.04 - Rotary Positive Displacement Blower
 - d. 44 42 56.05 - Horizontal Chopper Pump and Mixing Assemblies
 - e. 44 46 13.05 - Compost Mixer System
- 2) **ADD** the following Specifications:
 - a. 44 42 19.04 - Rotary Positive Displacement Blower, Supplement 01

DRAWINGS

- 3) **REMOVE AND REPLACE** the following Plan Sheets:
 - a. 01-G-0021
 - b. 01-G-0070
 - c. 09-N-0004
 - d. 09-N-0011
 - e. 90-D1BL-D-2000

ADDENDUM NO. 2
PROJECT NO. RMUA ES 2020-11 & BAMA HC21020
HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS

- f. 90-D1BL-D-2100
- g. 90-D1BL-D-3004
- h. 90-D1BL-D-3006
- i. 90-D1BL-D-9001
- j. 90-D1BL-D-3005
- k. 90-D1BL-E-6001
- l. 90-D1BL-E-6002
- m. 90-DICT-D-2000
- n. 90-DICT-D-3001
- o. 90-DICT-D-9001
- p. 90-C2BL-D-4005
- q. 95-C2BL-E-2000
- r. 95-C2BL-E-4002
- s. 95-C2BL-E-6001

STANDARD DETAILS

4) **ADD** the following Standard Details:

- a. 4440-001 – Compost/Curing Bay Floor Cleanout

All other provisions of the Plans and Specifications shall remain in full force and effect.

Jacobs Engineering Group Inc.



Luke Lenard, PE
Engineer of Record



END OF ADDENDUM

July 10, 2026

ADDENDUM NO. 2

**PROJECT NO. RMUA PROJECT NO. ES 2020-11, BAMA PROJECT NO.
HC21020 HAIKEY CREEK BIOSOLIDS IMPROVEMENTS**

This Addendum No. 2 consisting of 107 Items is hereby made a part of the Contract Documents to the same extent as though it were originally included therein and shall supersede anything contained in the Plans and Specifications with which it might conflict. **All addenda to the contract documents should be denoted on the last page of the proposal in the space provided.**

This Addendum No. 2 consists of the following:

CLARIFICATION

- 1) QUESTION: Is there a geotechnical report available?

ANSWER: The geotechnical report will not be provided during the bidding phase.

- 2) QUESTION: How many hours per year will each centrifuge be operated?

ANSWER: For the first 20 years of operation, the centrifuges will run five days per week for a total of 10 hours per day, either using two units for 5 hours each or one unit for 10 hours.

- 3) QUESTION: Detail 4027-187 for process line clean-outs calls for installing flanged piping below grade. Can the Contractor install mechanical joint piping in lieu of flange piping below grade?

ANSWER: At the contractor's discretion, Mechanical Joint fittings may be used in place of Ductile Iron connections for flanged piping located below grade.

- 4) QUESTION: On sheet 07-Y-2002 (68), please confirm that the 4" W1 piping will be C900 PVC and then will transition to Sch 80 PVC after the backflow preventor assembly per the pipe schedule.

WAS1-PLC01 IO LIST

HAKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS

AREA	PANEL NO	PLC NO	TYPE	IO TAG PRE-FIX	IO TAG	SERVICE	P&ID NO.
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	AI	H040-WAS1	FMT01-FI	WAS FLOW METER	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	AI	H040-WAS1	WSP01-SI	WAS PUMP NO. 1 SPEED FEEDBACK	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	AI	H040-WAS1	WSP02-SI	WAS PUMP NO. 2 SPEED FEEDBACK	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	AI	H040-WAS1	WSP03-SI	WAS PUMP NO. 3 SPEED FEEDBACK	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	AO	H040-WAS1	WSP01-SC	WAS PUMP NO. 1 SPEED COMMAND	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	AO	H040-WAS1	WSP02-SC	WAS PUMP NO. 2 SPEED COMMAND	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	AO	H040-WAS1	WSP03-SC	WAS PUMP NO. 3 SPEED COMMAND	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI	H040-WAS1	PRS01-PL	WAS PUMP NO. 1 UPSTREAM LOW SUCTION PRESSURE	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI	H040-WAS1	PRS02-PH	WAS PUMP NO. 1 DOWNSTREAM HIGH DISCHARGE PRESSURE	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI	H040-WAS1	PRS03-PL	WAS PUMP NO. 3 UPSTREAM LOW SUCTION PRESSURE	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI	H040-WAS1	PRS04-PH	WAS PUMP NO. 3 DOWNSTREAM HIGH DISCHARGE PRESSURE	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI	H040-WAS1	PRS05-PI	WAS PUMP NO. 2 UPSTREAM LOW SUCTION PRESSURE	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI	H040-WAS1	PRS06-PH	WAS PUMP NO. 2 DOWNSTREAM HIGH DISCHARGE PRESSURE	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI	H040-WAS1	WSP01-HK	WAS PUMP NO. 1 "IN REMOTE" STATUS	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI	H040-WAS1	WSP01-MN	WAS PUMP NO. 1 "RUNNING" STATUS	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI	H040-WAS1	WSP01-TH	WAS PUMP NO. 1 HIGH MOTOR TEMPERATURE	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI	H040-WAS1	WSP01-XF	WAS PUMP NO. 1 "FAULT" STATUS	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI	H040-WAS1	WSP02-IR	WAS PUMP NO. 2 "IN REMOTE" STATUS	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI	H040-WAS1	WSP02-MN	WAS PUMP NO. 2 "RUNNING" STATUS	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI	H040-WAS1	WSP02-TH	WAS PUMP NO. 2 HIGH MOTOR TEMPERATURE	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI	H040-WAS1	WSP02-XF	WAS PUMP NO. 2 "FAULT" STATUS	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI	H040-WAS1	WSP03-IR	WAS PUMP NO. 3 "IN REMOTE" STATUS	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI	H040-WAS1	WSP03-MN	WAS PUMP NO. 3 "RUNNING" STATUS	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI	H040-WAS1	WSP03-TH	WAS PUMP NO. 3 HIGH MOTOR TEMPERATURE	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI	H040-WAS1	WSP03-XF	WAS PUMP NO. 3 "FAULT" STATUS	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI		ZSC14-ZL	PGV04 POSITION SWITCH CLOSE STATUS	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI		ZSC15-ZL	PGV05 POSITION SWITCH CLOSE STATUS	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI		ZSC16-ZL	PGV06 POSITION SWITCH CLOSE STATUS	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI		ZSC17-ZL	PGV07 POSITION SWITCH CLOSE STATUS	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI		ZSC18-ZL	PGV08 POSITION SWITCH CLOSE STATUS	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI		ZSO14-ZH	PGV04 POSITION SWITCH OPEN STATUS	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI		ZSO15-ZH	PGV05 POSITION SWITCH OPEN STATUS	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI		ZSO16-ZH	PGV06 POSITION SWITCH OPEN STATUS	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI		ZSO17-ZH	PGV07 POSITION SWITCH OPEN STATUS	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI		ZSO18-ZH	PGV08 POSITION SWITCH OPEN STATUS	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DO	H040-WAS1	WSP01-MD	WAS PUMP NO. 1 START/STOP	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DO	H040-WAS1	WSP02-MD	WAS PUMP NO. 2 START/STOP	09-N-0001
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DO	H040-WAS1	WSP03-MD	WAS PUMP NO. 3 START/STOP	09-N-0001
WAS FEED PUMPS HVAC	H040-WAS1-ACP01	H040-WAS1-PLC01	DI		ACU01-XA1	ACU01 GENERAL ALARM	09-N-0020
WAS FEED PUMPS HVAC		H040-WAS1-PLC01	DI		ACU01-XA2	ACU01 FAIL	09-N-0020
WAS FEED PUMPS HVAC		H040-WAS1-PLC01	DI		SD01-XA1	SMOKE DETECTOR EXHAUST AIR ALARM	09-N-0020
WAS FEED PUMPS HVAC		H040-WAS1-PLC01	DI		SD01-XA2	SMOKE DETECTOR SUPPLY AIR ALARM	09-N-0020
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI		UPS01-JA1	UPS POWER FAIL	09-N-0020
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI		UPS01-OB	UPS01 BATTERY LOW	09-N-0020
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI		UPS01-JA2	UPS01 FAIL	09-N-0020
WAS FEED PUMPS	H040-WAS1-PL01	H040-WAS1-PLC01	DI		XS11-XA	PANEL INTRUSION ALARM	09-N-0020
TOTAL ETH:	0						
TOTAL AI:	4						
TOTAL AO:	3						
TOTAL DI:	36						
TOTAL DO:	3						

HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS

FCL1-PLC01 IO LIST

AREA	PANEL NO	PLC NO	TYPE	IO TAG PRE-FIX	IO TAG	SERVICE	P&ID NO.
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	AI	H050-FCL1	LIT01-LI	SCUM TANK LEVEL	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	AI	H050-FCL1	PTM01-PI	SECONDARY SCUM PUMP NO. 1 PRESSURE	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	AI	H050-FCL1	PTM02-PI	SECONDARY SCUM PUMP NO. 2 PRESSURE	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DI	H050-FCL1	SCP01-XA	SECONDARY SCUM PUMP NO. 1 MOISTURE ALARM	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DI	H050-FCL1	SCP02-XA	SECONDARY SCUM PUMP NO. 2 MOISTURE ALARM	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DI	H050-FCL1	SCP01-TH	SECONDARY SCUM PUMP NO. 1 HIGH MOTOR TEMPERATURE	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DI	H050-FCL1	SCP02-TH	SECONDARY SCUM PUMP NO. 2 HIGH MOTOR TEMPERATURE	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DI	H050-FCL1	SCP01-IR	SECONDARY SCUM PUMP NO. 1 "IN REMOTE" STATUS	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DI	H050-FCL1	SCP02-IR	SECONDARY SCUM PUMP NO. 2 "IN REMOTE" STATUS	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DI	H050-FCL1	SCP01-MN	SECONDARY SCUM PUMP NO. 1 "RUNNING" STATUS	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DI	H050-FCL1	SCP02-MN	SECONDARY SCUM PUMP NO. 2 "RUNNING" STATUS	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DI	H050-FCL1	SCP01-XF	SECONDARY SCUM PUMP NO. 1 "FAULT" STATUS	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DI	H050-FCL1	SCP02-XF	SECONDARY SCUM PUMP NO. 2 "FAULT" STATUS	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DI	H050-FCL1	PGV02-IR	PGV02 VALVE VAULT "IN REMOTE" STATUS	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DI	H050-FCL1	PGV04-IR	PGV04 VALVE VAULT "IN REMOTE" STATUS	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DI	H050-FCL1	PGV02-ZH	PGV02 VALVE VAULT FULLY OPEN STATUS	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DI	H050-FCL1	PGV04-ZH	PGV04 VALVE VAULT FULLY OPEN STATUS	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DI	H050-FCL1	PGV02-ZL	PGV02 VALVE VAULT FULLY CLOSE STATUS	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DI	H050-FCL1	PGV04-ZL	PGV04 VALVE VAULT FULLY CLOSE STATUS	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DI	H050-FCL1	PRS01-PH	SECONDARY SCUM PUMP NO. 1 HIGH PRESSURE	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DI	H050-FCL1	PRS02-PH	SECONDARY SCUM PUMP NO. 2 HIGH PRESSURE	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DI	H050-FCL1	LIT01-LH	SCUM TANK HIGH HIGH LEVEL ALARM	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DI	H050-FCL1	LIT01-LL	SCUM TANK LOW LOW LEVEL ALARM	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DI	H050-FCL1	LIT01-LH	SCUM TANK HIGH LEVEL ALARM	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DO	H050-FCL1	SCP01-MD	SECONDARY SCUM PUMP NO. 1 START/STOP	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DO	H050-FCL1	SCP02-MD	SECONDARY SCUM PUMP NO. 2 START/STOP	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DO	H050-FCL1	PGV02-ZD	PGV02 VALVE VAULT OPEN COMMAND	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DO	H050-FCL1	PGV04-ZD	PGV04 VALVE VAULT OPEN COMMAND	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DO	H050-FCL1	PGV02-ZB	PGV02 VALVE VAULT CLOSE COMMAND	09-N-0002
SCUM WET WELL	H050-FCL1-CPL01	H050-FCL1-PLC01	DO	H050-FCL1	PGV04-ZB	PGV04 VALVE VAULT CLOSE COMMAND	09-N-0002
TOTAL ETH:	0						
TOTAL AI:	3						
TOTAL AO:	0						
TOTAL DI:	21						
TOTAL DO:	6						

DEW1-PLC01 IO LIST

HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS

AREA	PANEL NO	PLC NO	TYPE	IO TAG PRE-FIX	IO TAG	SERVICE	P&ID NO.
CENTRIFUGES	H090-DEW1-MCP01	H090-DEW1-PLC01	AI	H090-DEW1	FMT01-FI	CENTRIFUGE SLUDGE FEED NO. 1 FLOW	09-N-0005
CENTRIFUGES	H090-DEW1-MCP01	H090-DEW1-PLC01	AI	H090-DEW1	FMT02-FI	CENTRIFUGE SLUDGE FEED NO. 2 FLOW	09-N-0005
CENTRIFUGES	H090-DEW1-MCP01	H090-DEW1-PLC01	AI	H090-DEW1	FMT03-FI	CENTRIFUGE SLUDGE FEED NO. 3 FLOW	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	AI	H090-DEW1	MIT01-AI	CENTRIFUGE SLUDGE FEED PUMPS SUSPENDED SOLIDS ANALYZER	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	AI	H090-DEW1	SFP01-SI	CENTRIFUGE SLUDGE FEED PUMP NO. 1 SPEED FEEDBACK	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	AI	H090-DEW1	SFP02-SI	CENTRIFUGE SLUDGE FEED PUMP NO. 2 SPEED FEEDBACK	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	AI	H090-DEW1	SFP03-SI	CENTRIFUGE SLUDGE FEED PUMP NO. 3 SPEED FEEDBACK	09-N-0005
ADD. 3] SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	AI DI	H090-DEW1	GRD01-TH	GRINDER 1 HIGH MOTOR TEMPERATURE	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	AO	H090-DEW1	SFP01-SC	CENTRIFUGE SLUDGE FEED PUMP NO. 1 SPEED COMMAND	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	AO	H090-DEW1	SFP02-SC	CENTRIFUGE SLUDGE FEED PUMP NO. 2 SPEED COMMAND	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	AO	H090-DEW1	SFP03-SC	CENTRIFUGE SLUDGE FEED PUMP NO. 3 SPEED COMMAND	09-N-0005
DEWATERING BUILDING	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	LSH41-LH	DEWATERING BUILDING BASEMENT FLOOD LEVEL SWITCH	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	GRD01-IR	GRINDER 1 "IN REMOTE" STATUS	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	GRD01-MN	GRINDER 1 "RUNNING" STATUS	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	GRD01-XF	GRINDER 1 "FAULT" STATUS	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	SFP01-IR	CENTRIFUGE SLUDGE FEED PUMP NO. 1 "IN REMOTE" STATUS	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	SFP01-MN	CENTRIFUGE SLUDGE FEED PUMP NO. 1 "RUNNING" STATUS	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	SFP01-PH	CENTRIFUGE SLUDGE FEED PUMP NO. 1 HIGH DISCHARGE PRESSURE	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	SFP01-PL	CENTRIFUGE SLUDGE FEED PUMP NO. 1 LOW SUCTION PRESSURE	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	SFP01-TH	CENTRIFUGE SLUDGE FEED PUMP NO. 1 HIGH MOTOR TEMPERATURE	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	SFP01-XF	CENTRIFUGE SLUDGE FEED PUMP NO. 1 "VFD FAULT" STATUS	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	SFP02-IR	CENTRIFUGE SLUDGE FEED PUMP NO. 2 "IN REMOTE" STATUS	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	SFP02-MN	CENTRIFUGE SLUDGE FEED PUMP NO. 2 "RUNNING" STATUS	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	SFP02-PH	CENTRIFUGE SLUDGE FEED PUMP NO. 2 HIGH DISCHARGE PRESSURE	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	SFP02-PL	CENTRIFUGE SLUDGE FEED PUMP NO. 2 LOW SUCTION PRESSURE	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	SFP02-TH	CENTRIFUGE SLUDGE FEED PUMP NO. 2 HIGH MOTOR TEMPERATURE	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	SFP02-XF	CENTRIFUGE SLUDGE FEED PUMP NO. 2 "VFD FAULT" STATUS	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	SFP03-IR	CENTRIFUGE SLUDGE FEED PUMP NO. 3 "IN REMOTE" STATUS	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	SFP03-MN	CENTRIFUGE SLUDGE FEED PUMP NO. 3 "RUNNING" STATUS	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	SFP03-PH	CENTRIFUGE SLUDGE FEED PUMP NO. 3 HIGH DISCHARGE PRESSURE	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	SFP03-PL	CENTRIFUGE SLUDGE FEED PUMP NO. 3 LOW SUCTION PRESSURE	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	SFP03-TH	CENTRIFUGE SLUDGE FEED PUMP NO. 3 HIGH MOTOR TEMPERATURE	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	SFP03-XF	CENTRIFUGE SLUDGE FEED PUMP NO. 3 "VFD FAULT" STATUS	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZSC40-ZL	CENTRIFUGE SLUDGE FEED PUMP PGV10 VALVE CLOSE STATUS	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZSC41-ZL	CENTRIFUGE SLUDGE FEED PUMP PGV11 VALVE CLOSE STATUS	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZSC45-ZL	CENTRIFUGE SLUDGE FEED PUMP PGV05 VALVE CLOSE STATUS	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZSC47-ZL	CENTRIFUGE SLUDGE FEED PUMP PGV07 VALVE CLOSE STATUS	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZSC49-ZL	CENTRIFUGE SLUDGE FEED PUMP PGV09 VALVE CLOSE STATUS	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZSO40-ZH	CENTRIFUGE SLUDGE FEED PUMP PGV10 VALVE OPEN STATUS	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZSO41-ZH	CENTRIFUGE SLUDGE FEED PUMP PGV11 VALVE OPEN STATUS	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZSO45-ZH	CENTRIFUGE SLUDGE FEED PUMP PGV05 VALVE OPEN STATUS	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZSO47-ZH	CENTRIFUGE SLUDGE FEED PUMP PGV07 VALVE OPEN STATUS	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZSO49-ZH	CENTRIFUGE SLUDGE FEED PUMP PGV09 VALVE OPEN STATUS	09-N-0005

AREA	PANEL NO	PLC NO	TYPE	IO TAG PRE-FIX	IO TAG	SERVICE	P&ID NO.
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DO	H090-DEW1	GRD01-MD	GRINDER 1 START/STOP	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DO	H090-DEW1	SFP01-MD	CENTRIFUGE SLUDGE FEED PUMP NO. 1 START/STOP	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DO	H090-DEW1	SFP02-MD	CENTRIFUGE SLUDGE FEED PUMP NO. 2 START/STOP	09-N-0005
SLUDGE FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DO	H090-DEW1	SFP03-MD	CENTRIFUGE SLUDGE FEED PUMP NO. 3 START/STOP	09-N-0005
CENTRIFUGES	H090-DEW1-MCP01	H090-DEW1-PLC01	AI	H090-DEW1	UCF01-SI	ODOR CONTROL FAN NO. 1 SPEED FEEDBACK	09-N-0006
CENTRIFUGES	H090-DEW1-MCP01	H090-DEW1-PLC01	AO	H090-DEW1	OCF01-SC	ODOR CONTROL FAN NO. 1 SPEED COMMAND	09-N-0006
CENTRIFUGES	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	OCF01-IR	ODOR CONTROL FAN NO. 1 "IN REMOTE" STATUS	09-N-0006
CENTRIFUGES	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	OCF01-MN	ODOR CONTROL FAN NO. 1 "RUNNING" STATUS	09-N-0006
CENTRIFUGES	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	OCF01-XF	ODOR CONTROL FAN NO. 1 "FAULT" STATUS	09-N-0006
CENTRIFUGES	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PRS21-PL	ODOR CONTROL FAN NO. 1 LOW DIFFERENTIAL PRESSURE	09-N-0006
CENTRIFUGES	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	OCF01-TH	ODOROUS FAN NO. 1 HIGH MOTOR TEMPERATURE	09-N-0006
CENTRIFUGES	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZS053-ZH	CENTRIFUGE NO. 1 PGV13 VALVE OPEN STATUS	09-N-0006
CENTRIFUGES	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZSC53-ZL	CENTRIFUGE NO. 1 PGV13 VALVE CLOSED STATUS	09-N-0006
CENTRIFUGES	H090-DEW1-MCP01	H090-DEW1-PLC01	DO	H090-DEW1	OCF01-MD	ODOR CONTROL FAN NO. 1 START/STOP	09-N-0006
CENTRIFUGES	H090-DEW1-MCP01	H090-DEW1-PLC01	ETH	H090-DEW1	CEN01-ETH	CENTRIFUGE NO. 1	09-N-0006
CENTRIFUGES	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZS054-ZH	CENTRIFUGE NO. 2 CENTRIFUGE PGV14 VALVE OPEN STATUS	09-N-0007
CENTRIFUGES	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZS055-ZH	CENTRIFUGE NO. 3 CENTRIFUGE PGV15 VALVE OPEN STATUS	09-N-0007
CENTRIFUGES	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZSC54-ZL	CENTRIFUGE NO. 2 CENTRIFUGE PGV14 VALVE CLOSED STATUS	09-N-0007
CENTRIFUGES	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZSC55-ZL	CENTRIFUGE NO. 3 CENTRIFUGE PGV15 VALVE CLOSED STATUS	09-N-0007
ALT03: CENTRIFUGES	H090-DEW1-MCP01	H090-DEW1-PLC01	ETH	H090-DEW1	CEN03-ETH	CENTRIFUGE NO. 3	09-N-0007
CENTRIFUGES	H090-DEW1-MCP01	H090-DEW1-PLC01	ETH	H090-DEW1	CEN02-ETH	CENTRIFUGE NO. 2	09-N-0007
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	AI	H090-DEW1	FMT04-FI	POLYMER METERING PUMP NO. 1 PROCESS FLOW	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	AI	H090-DEW1	FMT05-FI	POLYMER METERING PUMP NO. 2 PROCESS FLOW	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	AI	H090-DEW1	FMT06-FI	POLYMER METERING PUMP NO. 3 PROCESS FLOW	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	AI	H090-DEW1	LIT02-LI	POLYMER BULK STORAGE TANK LEVEL	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	AO		LIT02-LI	POLYMER FILL PANEL TANK LEVEL	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	AO	H090-DEW1	PFP01-FI	POLYMER METERING PUMP NO. 1 PROCESS FLOW	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	AO	H090-DEW1	PFP02-FI	POLYMER METERING PUMP NO. 2 PROCESS FLOW	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	AO	H090-DEW1	PFP03-FI	POLYMER METERING PUMP NO. 3 PROCESS FLOW	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		LSH61-LH	POLYMER METERING PUMPS CONTAINMENT AREA LEVEL HIGH ALARM	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PFP01-IR	POLYMER METERING PUMP NO. 1 "IN REMOTE" STATUS	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PFP01-MN	POLYMER METERING PUMP NO. 1 "RUNNING" STATUS	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PFP01-XA	POLYMER METERING PUMP NO. 1 COMMON ALARM	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PFP02-IR	POLYMER METERING PUMP NO. 2 "IN REMOTE" STATUS	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PFP02-MN	POLYMER METERING PUMP NO. 2 "RUNNING" STATUS	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PFP02-XA	POLYMER METERING PUMP NO. 2 COMMON ALARM	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PFP03-IR	POLYMER METERING PUMP NO. 3 "IN REMOTE" STATUS	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PFP03-MN	POLYMER METERING PUMP NO. 3 "RUNNING" STATUS	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PFP03-XA	POLYMER METERING PUMP NO. 3 COMMON ALARM	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PR507-PL	POLYMER RECIRCULATION PUMP NO. 1 LOW PRESSURE ALARM	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PR508-PII	POLYMER RECIRCULATION PUMP NO. 1 HIGH HIGH PRESSURE ALARM	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PR509-PI	POLYMER METERING MIXER NO. 1 DIFFERENTIAL PRESSURE LOW	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PR511-PL	POLYMER METERING MIXER NO. 2 DIFFERENTIAL PRESSURE LOW	09-N-0008

DEW1-PLC01 IO LIST

HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS

AREA	PANEL NO	PLC NO	TYPE	IO TAG PRE-FIX	IO TAG	SERVICE	P&ID NO.
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PRS13-PL	POLYMER METERING MIXER NO. 3 DIFFERENTIAL PRESSURE LOW	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	RCP01-IR	POLYMER RECIRCULATION PUMP NO. 1 "IN REMOTE" STATUS	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-PNL01	H090-DEW1-PLC01	DI	H090-DEW1	RCP01-MN	POLYMER RECIRCULATION PUMP NO. 1 "RUNNING" STATUS	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-PNL01	H090-DEW1-PLC01	DI	H090-DEW1	RCP01-XF	POLYMER RECIRCULATION PUMP NO. 1 FAIL	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZSC60-ZL	POLYMER METERING PUMP BLV50 VALVE CLOSE STATUS	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZSC66-ZL	POLYMER METERING PUMP BLV46 VALVE CLOSE STATUS	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZSC67-ZL	POLYMER METERING PUMP BLV47 VALVE CLOSE STATUS	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZSC68-ZL	POLYMER METERING PUMP BLV48 VALVE CLOSE STATUS	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZSC69-ZL	POLYMER METERING PUMP BLV49 VALVE CLOSE STATUS	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZSO60-ZH	POLYMER METERING PUMP BLV50 VALVE OPEN STATUS	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZSO66-ZH	POLYMER METERING PUMP BLV46 VALVE OPEN STATUS	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZSO67-ZH	POLYMER METERING PUMP BLV47 VALVE OPEN STATUS	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZSO68-ZH	POLYMER METERING PUMP BLV48 VALVE OPEN STATUS	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		ZSO69-ZH	POLYMER METERING PUMP BLV49 VALVE OPEN STATUS	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DO	H090-DEW1	PFP01-MD	POLYMER METERING PUMP NO. 1 START/STOP	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DO	H090-DEW1	PFP01-ZD	POLYMER METERING PUMP NO. 1 OPEN COMMAND	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DO	H090-DEW1	PFP02-MD	POLYMER METERING PUMP NO. 2 START/STOP	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DO	H090-DEW1	PFP02-ZD	POLYMER METERING PUMP NO. 2 OPEN COMMAND	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DO	H090-DEW1	PFP03-MD	POLYMER METERING PUMP NO. 3 START/STOP	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-MCP01	H090-DEW1-PLC01	DO	H090-DEW1	PFP03-ZD	POLYMER METERING PUMP NO. 3 OPEN COMMAND	09-N-0008
POLYMER FEED PUMPS	H090-DEW1-PNL01	H090-DEW1-PLC01	DO	H090-DEW1	RCP01-MD	POLYMER RECIRCULATION PUMP NO. 1 START/STOP	09-N-0008
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	AI	H090-DEW1	FMT07-FI	CENTRATE PUMP FLOW	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	AI	H090-DEW1	LIT03-LI	DEWATERING CENTRATE WET WELL LEVEL	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	AI	H090-DEW1	PMP01-SI	CENTRATE PUMP NO. 1 SPEED FEEDBACK	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	AI	H090-DEW1	PMP02-SI	CENTRATE PUMP NO. 2 SPEED FEEDBACK	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	AI	H090-DEW1	PMP03-SI	CENTRATE PUMP NO. 2 SPEED FEEDBACK	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	AO	H090-DEW1	PMP01-SC	CENTRATE PUMP NO. 1 SPEED COMMAND	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	AO	H090-DEW1	PMP02-SC	CENTRATE PUMP NO. 2 SPEED COMMAND	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	AO	H090-DEW1	PMP03-SC	CENTRATE PUMP NO. 2 SPEED COMMAND	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		LSH54-LH	CENTRATE WET WELL LEVEL HIGH	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		LSH55-LH	DEWATERING FACILITY BASEMENT LEVEL HIGH	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		LSHH54-LS	CENTRATE WET WELL LEVEL HIGH HIGH	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		LSL54-LS	CENTRATE WET WELL LEVEL LOW	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		LSLL54-LS	CENTRATE WET WELL LEVEL LOW LOW	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PMP01-IR	CENTRATE PUMP NO. 1 "IN REMOTE" STATUS	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PMP01-MN	CENTRATE PUMP NO. 1 "RUNNING" STATUS	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PMP02-IR	CENTRATE PUMP NO. 2 "IN REMOTE" STATUS	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PMP02-MN	CENTRATE PUMP NO. 2 "RUNNING" STATUS	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PMP03-IR	CENTRATE PUMP NO. 3 "IN REMOTE" STATUS	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PMP03-MN	CENTRATE PUMP NO. 3 "RUNNING" STATUS	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PRS15-PL	CENTRATE PUMP NO. 1 LOW INLET PRESSURE SWITCH	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PRS16-PH	CENTRATE PUMP NO. 1 HIGH DISCHARGE PRESSURE SWITCH	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PRS17-PL	CENTRATE PUMP NO. 2 LOW INLET PRESSURE SWITCH	09-N-0009

AREA	PANEL NO	PLC NO	TYPE	IO TAG PRE-FIX	IO TAG	SERVICE	P&ID NO.
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PRS18-PH	CENTRATE PUMP NO. 2 HIGH DISCHARGE PRESSURE SWITCH	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PRS19-PL	CENTRATE PUMP NO. 3 LOW INLET PRESSURE SWITCH	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	PRS20-PH	CENTRATE PUMP NO. 3 HIGH DISCHARGE PRESSURE SWITCH	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	DO	H090-DEW1	PMP01-MD	CENTRATE PUMP NO. 1 RUN COMMAND	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	DO	H090-DEW1	PMP01-XF	CENTRATE PUMP NO. 1 "VFD FAULT" STATUS	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	DO	H090-DEW1	PMP02-MD	CENTRATE PUMP NO. 2 RUN COMMAND	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	DO	H090-DEW1	PMP02-XF	CENTRATE PUMP NO. 2 "VFD FAULT" STATUS	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	DO	H090-DEW1	PMP03-MD	CENTRATE PUMP NO. 3 RUN COMMAND	09-N-0009
CENTRATE DRAIN PUMP STATION	H090-DEW1-MCP01	H090-DEW1-PLC01	DO	H090-DEW1	PMP03-XF	CENTRATE PUMP NO. 3 "VFD FAULT" STATUS	09-N-0009
COMPOST STORAGE	H090-DEW1-MCP01	H090-DEW1-PLC01	AI	H090-DEW1	CNV01-EI	SLUDGE CONVEYOR-ELAPSED TIME	09-N-0010
COMPOST STORAGE	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	CNV01-ES	SLUDGE CONVEYOR E-STOP FAULT STATUS	09-N-0010
COMPOST STORAGE	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	CNV01-IR	SLUDGE CONVEYOR "IN REMOTE" STATUS	09-N-0010
COMPOST STORAGE	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	CNV01-MN	SLUDGE CONVEYOR RUNNING STATUS	09-N-0010
COMPOST STORAGE	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	CNV01-XS	SLUDGE CONVEYOR ZERO SPEED FAULT STATUS	09-N-0010
COMPOST STORAGE	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H090-DEW1	CNV01-YA	SLUDGE CONVEYOR OVERLOAD FAULT	09-N-0010
COMPOST STORAGE	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		HS74-HS	SLUDGE CONVEYOR EMERGENCY STOP	09-N-0010
COMPOST STORAGE	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		HS75-HS	SLUDGE CONVEYOR EMERGENCY STOP	09-N-0010
COMPOST STORAGE	H090-DEW1-MCP01	H090-DEW1-PLC01	DO	H090-DEW1	CNV01-MA	SLUDGE CONVEYOR FAULT RESET	09-N-0010
COMPOST STORAGE	H090-DEW1-MCP01	H090-DEW1-PLC01	DO	H090-DEW1	CNV01-MD	SLUDGE CONVEYOR RUN COMMAND	09-N-0010
COMPOST STORAGE	H090-DEW1-MCP01	H090-DEW1-PLC01	DO		SNV71-ZC	SOLENOID VALVE OPEN/CLOSE COMMAND	09-N-0010
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	AI	H095-COM1	MXR01-WI	COMPOST MIXER NO. 1 WEIGHT	09-N-0011
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	AI	H095-COM1	MXR02-WI	COMPOST MIXER NO. 2 WEIGHT	09-N-0011
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	CNV01-IR	COMPOST CONVEYOR NO. 1 "IN REMOTE" STATUS	09-N-0011
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	CNV01-MN	COMPOST CONVEYOR NO. 1 "RUNNING" STATUS	09-N-0011
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI		HS79-ES	COMPOST CONVEYOR NO. 1 EMERGENCY STOP	09-N-0011
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	CNV01-XF	COMPOST CONVEYOR NO. 1 FAIL	09-N-0011
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	CNV02-IR	COMPOST CONVEYOR NO. 2 "IN REMOTE" STATUS	09-N-0011
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	CNV02-MN	COMPOST CONVEYOR NO. 2 "RUNNING" STATUS	09-N-0011
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI		HS80-ES	COMPOST CONVEYOR NO. 2 EMERGENCY STOP	09-N-0011
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	CNV02-XF	COMPOST CONVEYOR NO. 2 FAIL	09-N-0011
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	MXR01-IR	COMPOST MIXER NO. 1 "IN REMOTE" STATUS	09-N-0011

DEW1 PLC01 IO LIST

HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS

AREA	PANEL NO	PLC NO	TYPE	IO TAG PRE-FIX	IO TAG	SERVICE	P&ID NO.
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	MXR01-MN	COMPOST MIXER NO. 1 "RUNNING" STATUS	09-N-0011
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI		HS77-ES	COMPOST MIXER NO. 1 EMERGENCY STOP	09-N-0011
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	MXR01-XF	COMPOST MIXER NO. 1 FAIL	09-N-0011
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	MXR02-IR	COMPOST MIXER NO. 2 "IN REMOTE" STATUS	09-N-0011
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	MXR02-MN	COMPOST MIXER NO. 2 "RUNNING" STATUS	09-N-0011
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI		HS78-ES	COMPOST MIXER NO. 2 EMERGENCY STOP	09-N-0011
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	MXR02-XF	COMPOST MIXER NO. 2 FAIL	09-N-0011
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	CNV01-TH	COMPOST CONVEYOR NO. 1 HIGH MOTOR TEMPERATURE	09-N-0011
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	CNV02-TH	COMPOST CONVEYOR NO. 2 HIGH MOTOR TEMPERATURE	09-N-0011
COMPOST MIXER AND CONVEYOR SYSTEM	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H095-COM1	EHF01-MN	EXHAUST FAN NO. 1 "RUNNING" STATUS	09-N-0011
COMPOST MIXER AND CONVEYOR SYSTEM	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H095-COM1	EHF01-XF	EXHAUST FAN NO. 1 FAIL	09-N-0011
COMPOST MIXER AND CONVEYOR SYSTEM	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H095-COM1	EHF02-MN	EXHAUST FAN NO. 2 "RUNNING" STATUS	09-N-0011
COMPOST MIXER AND CONVEYOR SYSTEM	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H095-COM1	EHF02-XF	EXHAUST FAN NO. 2 FAIL	09-N-0011
COMPOST MIXER AND CONVEYOR SYSTEM	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H095-COM1	EHF03-MN	EXHAUST FAN NO. 3 "RUNNING" STATUS	09-N-0011
COMPOST MIXER AND CONVEYOR SYSTEM	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H095-COM1	EHF03-XF	EXHAUST FAN NO. 3 FAIL	09-N-0011
COMPOST MIXER AND CONVEYOR SYSTEM	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H095-COM1	EHF04-MN	EXHAUST FAN NO. 4 "RUNNING" STATUS	09-N-0011
COMPOST MIXER AND CONVEYOR SYSTEM	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H095-COM1	EHF04-XF	EXHAUST FAN NO. 4 FAIL	09-N-0011
COMPOST MIXER AND CONVEYOR SYSTEM	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H095-COM1	EHF05-MN	EXHAUST FAN NO. 5 "RUNNING" STATUS	09-N-0011
COMPOST MIXER AND CONVEYOR SYSTEM	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H095-COM1	EHF05-XF	EXHAUST FAN NO. 5 FAIL	09-N-0011
COMPOST MIXER AND CONVEYOR SYSTEM	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H095-COM1	EHF06-MN	EXHAUST FAN NO. 6 "RUNNING" STATUS	09-N-0011
COMPOST MIXER AND CONVEYOR SYSTEM	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H095-COM1	EHF06-XF	EXHAUST FAN NO. 6 FAIL	09-N-0011

HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS

DEW1-PLC01 IO LIST

AREA	PANEL NO	PLC NO	TYPE	IO TAG PRE-FIX	IO TAG	SERVICE	P&ID NO.
COMPOST MIXER AND CONVEYOR SYSTEM	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H095-COM1	EHF07-MN	EXHAUST FAN NO. 7 "RUNNING" STATUS	09-N-0011
COMPOST MIXER AND CONVEYOR SYSTEM	H090-DEW1-MCP01	H090-DEW1-PLC01	DI	H095-COM1	EHF07-XI	EXHAUST FAN NO. 7 FAIL	09-N-0011
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DO	H095-COM1	CNV01-MD	COMPOST CONVEYOR NO. 1 RUN COMMAND	09-N-0011
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DO	H095-COM1	CNV02-MD	COMPOST CONVEYOR NO. 2 RUN COMMAND	09-N-0011
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DO	H095-COM1	MXR01-MD	COMPOST MIXER NO. 1 RUN COMMAND	09-N-0011
[ADD. 3] ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DO	H095-COM1	MXR02-MD	COMPOST MIXER NO. 2 RUN COMMAND	09-N-0011
DEWATERING BUILDING HVAC	H090-DEW1-ACP01	H090-DEW1-PLC01	AI		TT01-TI	ROOM TEMPERATURE	09-N-0020
DEWATERING BUILDING	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		UPS01-XA01	UPS01 POWER FAIL	09-N-0020
DEWATERING BUILDING	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		UPS01-XA02	UPS01 BATTERY LOW	09-N-0020
DEWATERING BUILDING	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		UPS01-XA03	UPS01 FAIL	09-N-0020
DEWATERING BUILDING	H090-DEW1-MCP01	H090-DEW1-PLC01	DI		XS41-XA	PANEL INTRUSION ALARM	09-N-0020
DEWATERING BUILDING HVAC	H090-DEW1-ACP01	H090-DEW1-PLC01	DI		ACU01-XA1	ACU01 GENERAL ALARM	09-N-0020
DEWATERING BUILDING HVAC	H090-DEW1-ACP01	H090-DEW1-PLC01	DI		ACU01-XA2	ACU01 FAIL	09-N-0020
DEWATERING BUILDING HVAC	H090-DEW1-ACP01	H090-DEW1-PLC01	DI		SD01-XA01	SMOKE DETECTOR EXHAUST AIR ALARM	09-N-0020
DEWATERING BUILDING HVAC	H090-DEW1-ACP01	H090-DEW1-PLC01	DI		SD02-XA01	SMOKE DETECTOR SUPPLY AIR ALARM	09-N-0020
SLUDGE HOLDING TANKS	RI001	H090-DEW1-PLC01	DI		UPS02-XA01	UPS02 POWER FAIL	09-N-0020
SLUDGE HOLDING TANKS	RI001	H090-DEW1-PLC01	DI		UPS02-XA02	UPS02 BATTERY LOW	09-N-0020
SLUDGE HOLDING TANKS	RI001	H090-DEW1-PLC01	DI		UPS02-XA03	UPS02 FAIL	09-N-0020
TOTAL AI:	21						
TOTAL AO:	11						
TOTAL DI:	138						
TOTAL DO:	25						
TOTAL ETH:	3						

DEW2-PLC01 IO LIST

HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS

AREA	PANEL NO	PLC NO	TYPE	IO TAG PRE-FIX	IO TAG	SERVICE	P&ID NO.
DEWATERING BUILDING HVAC	H090-DEW2-ACP01	H090-DEW2-PLC01	DI		ACU01-XA1	ACU01 GENERAL ALARM	09-N-0020
DEWATERING BUILDING HVAC	H090-DEW2-ACP01	H090-DEW2-PLC01	DI		ACU01-XA2	ACU01 FAIL	09-N-0020
DEWATERING BUILDING HVAC	H090-DEW2-MCP01	H090-DEW2-PLC01	DI		SD01-XA1	SMOKE DETECTOR EXHAUST AIR ALARM	09-N-0020
DEWATERING BUILDING HVAC	H090-DEW2-MCP01	H090-DEW2-PLC01	DI		SD01-XA2	SMOKE DETECTOR SUPPLY AIR ALARM	09-N-0020
DEWATERING BUILDING	H090-DEW2-MCP01	H090-DEW2-PLC01	DI		UPS01-JA1	UPS POWER FAIL	09-N-0020
DEWATERING BUILDING	H090-DEW2-MCP01	H090-DEW2-PLC01	DI		UPS01-JA2	UPS01 FAIL	09-N-0020
DEWATERING BUILDING	H090-DEW2-MCP01	H090-DEW2-PLC01	DI		UPS01-OB	UPS01 BATTERY LOW	09-N-0020
DEWATERING BUILDING	H090-DEW2-MCP01	H090-DEW2-PLC01	DI		XS51-XA	PANFI INTRUSION ALARM	09-N-0020
TOTAL AI:	0						
TOTAL AO:	0						
TOTAL DI:	8						
TOTAL DO:	0						
TOTAL ETH:	0						

AREA	PANEL NO	PLC NO	TYPE	IO TAG PRE-FIX	IO TAG	SERVICE	P&ID NO.
[ADD. 2] SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	AI	H090-DEW2	MTR01-ORP	SLUDGE HOLDING TANKS ORP	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	AI	H090-DEW2	BLO01-SI	SLUDGE HOLDING TANK BLOWER NO. 1 SPEED FEEDBACK	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	AI	H090-DEW2	BLO02-SI	SLUDGE HOLDING TANK BLOWER NO. 2 SPEED FEEDBACK	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	AI	H090-DEW2	BLO03-SI	SLUDGE HOLDING TANK BLOWER NO. 3 SPEED FEEDBACK	09-N-0004
ROTARY DRUM THICKENERS	H090-DEW3-MCP01	H090-DEW3-PLC01	AI	H070-RDT1	FMT01-FI	SDT BYPASS VALVE BOX FLOW	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	AI	H090-DEW1	LI101-LI	SLUDGE HOLDING TANK NO. 1 LEVEL	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	AI	H090-DEW2	PTM01-PI	SLUDGE HOLDING TANK NO. 1 INLET PRESSURE	09-N-0004
SLUDGE MIXING	H090-DEW3-MCP01	H090-DEW3-PLC01	AI	H090-DEW2	PTM02-PI	RECIRCULATION PUMP NO. 1 INLET PRESSURE	09-N-0004
SLUDGE MIXING	H090-DEW3-MCP01	H090-DEW3-PLC01	AI	H090-DEW2	PTM03-PI	RECIRCULATION PUMP NO. 2 INLET PRESSURE	09-N-0004
SLUDGE MIXING	H090-DEW3-MCP01	H090-DEW3-PLC01	AI	H090-DEW2	PTM04-PI	RECIRCULATION PUMP NO. 1 OUTLET PRESSURE	09-N-0004
SLUDGE MIXING	H090-DEW3-MCP01	H090-DEW3-PLC01	AI	H090-DEW2	PTM05-PI	RECIRCULATION PUMP NO. 2 OUTLET PRESSURE	09-N-0004
SLUDGE MIXING	H090-DEW3-MCP01	H090-DEW3-PLC01	AI	H090-DEW2	RCP01-SI	RECIRCULATION PUMP NO. 1 SPEED FEEDBACK	09-N-0004
SLUDGE MIXING	H090-DEW3-MCP01	H090-DEW3-PLC01	AI	H090-DEW2	RCP02-SI	RECIRCULATION PUMP NO. 2 SPEED FEEDBACK	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	AO	H090-DEW2	BLO01-SC	SLUDGE HOLDING TANK BLOWER NO. 1 SPEED COMMAND	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	AO	H090-DEW2	BLO02-SC	SLUDGE HOLDING TANK BLOWER NO. 2 SPEED COMMAND	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	AO	H090-DEW2	BLO03-SC	SLUDGE HOLDING TANK BLOWER NO. 3 SPEED COMMAND	09-N-0004
SLUDGE MIXING	H090-DEW3-MCP01	H090-DEW3-PLC01	AO	H090-DEW2	RCP01-SC	RECIRCULATION PUMP NO. 1 SPEED COMMAND	09-N-0004
SLUDGE MIXING	H090-DEW3-MCP01	H090-DEW3-PLC01	AO	H090-DEW2	RCP02-SC	RECIRCULATION PUMP NO. 2 SPEED COMMAND	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI	H090-DEW2	BLO01-IR	SLUDGE HOLDING TANK BLOWER NO. 1 "IN REMOTE" STATUS	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI	H090-DEW2	BLO01-MN	SLUDGE HOLDING TANK BLOWER NO. 1 "RUNNING" STATUS	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI	H090-DEW2	BL001-XF	SLUDGE HOLDING TANK BLOWER NO. 1 "VFD FAULT" STATUS	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI	H090-DEW2	BLO02-IR	SLUDGE HOLDING TANK BLOWER NO. 2 "IN REMOTE" STATUS	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI	H090-DEW2	BLO02-MN	SLUDGE HOLDING TANK BLOWER NO. 2 "RUNNING" STATUS	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI	H090-DEW2	BLO02-XF	SLUDGE HOLDING TANK BLOWER NO. 2 "VFD FAULT" STATUS	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI	H090-DEW2	BLO03-IR	SLUDGE HOLDING TANK BLOWER NO. 3 "IN REMOTE" STATUS	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI	H090-DEW2	BLO03-MN	SLUDGE HOLDING TANK BLOWER NO. 3 "RUNNING" STATUS	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI	H090-DEW2	BLO03-XF	SLUDGE HOLDING TANK BLOWER NO. 3 "VFD FAULT" STATUS	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI	H090-DEW2	PRS04-PL	RECIRCULATION PUMP NO. 1 INLET "PRESSURE LOW" STATUS	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI	H090-DEW2	PRS05-PL	RECIRCULATION PUMP NO. 2 INLET "PRESSURE LOW" STATUS	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI	H090-DEW2	PRS06-PH	RECIRCULATION PUMP NO. 1 DISCHARGE "PRESSURE HIGH" STATUS	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI	H090-DEW2	PRS08-PH	RECIRCULATION PUMP NO. 2 DISCHARGE "PRESSURE HIGH" STATUS	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI	H090-DEW2	RCP01-IR	RECIRCULATION PUMP NO. 1 "IN REMOTE" STATUS	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI	H090-DEW2	RCP01-MN	RECIRCULATION PUMP NO. 1 "RUNNING" STATUS	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI	H090-DEW2	RCP01-XF	RECIRCULATION PUMP NO. 1 "VFD FAULT" STATUS	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI	H090-DEW2	RCP02-IR	RECIRCULATION PUMP NO. 2 "IN REMOTE" STATUS	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI	H090-DEW2	RCP02-MN	RECIRCULATION PUMP NO. 2 "RUNNING" STATUS	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI	H090-DEW2	RCP02-XF	RECIRCULATION PUMP NO. 2 "VFD FAULT" STATUS	09-N-0004
ROTARY DRUM THICKENERS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI		ZSC31-ZL	SDT BYPASS PGV01 VALVE BOX POSITION SWITCH CLOSE STATUS	09-N-0004
ROTARY DRUM THICKENERS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI		ZSC32-ZL	SDT BYPASS PGV02 VALVE BOX POSITION SWITCH CLOSE STATUS	09-N-0004
ROTARY DRUM THICKENERS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI		ZSC33-ZL	SDT BYPASS PGV03 VALVE BOX POSITION SWITCH CLOSE STATUS	09-N-0004
ROTARY DRUM THICKENERS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI		ZSC34-ZL	SDT BYPASS PGV04 VALVE BOX POSITION SWITCH CLOSE STATUS	09-N-0004
ROTARY DRUM THICKENERS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI		ZSO31-ZH	SDT BYPASS PGV01 VALVE BOX POSITION SWITCH OPEN STATUS	09-N-0004
ROTARY DRUM THICKENERS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI		ZSO32-ZH	SDT BYPASS PGV02 VALVE BOX POSITION SWITCH OPEN STATUS	09-N-0004

DEW3-PLC01 IO LIST

HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS

AREA	PANEL NO	PLC NO	TYPE	IO TAG PRE-FIX	IO TAG	SERVICE	P&ID NO.
ROTARY DRUM THICKENERS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI		ZS033-ZH	RDY BYPASS PGV03 VALVE BOX POSITION SWITCH OPEN STATUS	09-N-0004
ROTARY DRUM THICKENERS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI		ZS034-ZH	RDY BYPASS PGV04 VALVE BOX POSITION SWITCH OPEN STATUS	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DO	H090-DEW2	BLO01-MD	SLUDGE HOLDING TANK BLOWER NO. 1 START/STOP COMMAND	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DO	H090-DEW2	BLO02-MD	SLUDGE HOLDING TANK BLOWER NO. 2 START/STOP COMMAND	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DO	H090-DEW2	BLO03-MD	SLUDGE HOLDING TANK BLOWER NO. 3 START/STOP COMMAND	09-N-0004
SLUDGE MIXING	H090-DEW3-MCP01	H090-DEW3-PLC01	DO	H090-DEW2	RCP01-MD	RECIRCULATION PUMP NO. 1 START/STOP COMMAND	09-N-0004
SLUDGE MIXING	H090-DEW3-MCP01	H090-DEW3-PLC01	DO	H090-DEW2	RCP02-MD	RECIRCULATION PUMP NO. 2 START/STOP COMMAND	09-N-0004
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI		UPS02-XA01	UPS02 POWER FAIL	09-N-0020
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI		UPS02-XA02	UPS02 BATTERY LOW	09-N-0020
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI		UPS02-XA03	UPS02 FAIL	09-N-0020
SLUDGE HOLDING TANKS	H090-DEW3-MCP01	H090-DEW3-PLC01	DI		XS31-XA	PANEL INTRUSION ALARM	09-N-0020
TOTAL ETH:	0						
TOTAL AI:	13						
TOTAL AO:	5						
TOTAL DI:	31						
TOTAL DO:	5						

AREA	PANEL NO	PLC NO	TYPE	IO TAG PRE-FIX	IO TAG	SERVICE	P&ID NO.
ACTIVE COMPOSTING-BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	AI	H095-COM1	MXR01-WI	COMPOST-MIXER NO. 1 WEIGHT	09-N-0011
ACTIVE COMPOSTING-BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	AI	H095-COM1	MXR02-WI	COMPOST-MIXER NO. 2 WEIGHT	09-N-0011
ACTIVE COMPOSTING-BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	CNV01-IR	COMPOST CONVEYOR NO. 1 "IN REMOTE" STATUS	09-N-0011
ACTIVE COMPOSTING-BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	CNV01-MN	COMPOST CONVEYOR NO. 1 "RUNNING" STATUS	09-N-0011
ACTIVE COMPOSTING-BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI		HS79-ES	COMPOST CONVEYOR NO. 1 EMERGENCY STOP	09-N-0011
ACTIVE COMPOSTING-BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	CNV01-XF	COMPOST CONVEYOR NO. 1 FAIL	09-N-0011
ACTIVE COMPOSTING-BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	CNV02-IR	COMPOST CONVEYOR NO. 2 "IN REMOTE" STATUS	09-N-0011
ACTIVE COMPOSTING-BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	CNV02-MN	COMPOST CONVEYOR NO. 2 "RUNNING" STATUS	09-N-0011
ACTIVE COMPOSTING-BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI		HS80-ES	COMPOST CONVEYOR NO. 2 EMERGENCY STOP	09-N-0011
ACTIVE COMPOSTING-BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	CNV02-XF	COMPOST CONVEYOR NO. 2 FAIL	09-N-0011
ACTIVE COMPOSTING-BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	MXR01-IR	COMPOST-MIXER NO. 1 "IN REMOTE" STATUS	09-N-0011
ACTIVE COMPOSTING-BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	MXR01-MN	COMPOST-MIXER NO. 1 "RUNNING" STATUS	09-N-0011
ACTIVE COMPOSTING-BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI		HS77-ES	COMPOST-MIXER NO. 1 EMERGENCY STOP	09-N-0011
ACTIVE COMPOSTING-BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	MXR01-XF	COMPOST-MIXER NO. 1 FAIL	09-N-0011
ACTIVE COMPOSTING-BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	MXR02-IR	COMPOST-MIXER NO. 2 "IN REMOTE" STATUS	09-N-0011
ACTIVE COMPOSTING-BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	MXR02-MN	COMPOST-MIXER NO. 2 "RUNNING" STATUS	09-N-0011
ACTIVE COMPOSTING-BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI		HS78-ES	COMPOST-MIXER NO. 2 EMERGENCY STOP	09-N-0011
ACTIVE COMPOSTING-BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	MXR02-XF	COMPOST-MIXER NO. 2 FAIL	09-N-0011
ACTIVE COMPOSTING-BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DO	H095-COM1	CNV01-MD	COMPOST CONVEYOR NO. 1 RUN COMMAND	09-N-0011
ACTIVE COMPOSTING-BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DO	H095-COM1	CNV02-MD	COMPOST CONVEYOR NO. 2 RUN COMMAND	09-N-0011
ACTIVE COMPOSTING-BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DO	H095-COM1	MXR01-MD	COMPOST-MIXER NO. 1 RUN COMMAND	09-N-0011

COM1-PLC01 IO LIST

HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS

AREA	PANEL NO	PLC NO	TYPE	IO TAG PRE-FIX	IO TAG	SERVICE	P&ID NO.
ACTIVE COMPOSTING-BLOWER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DO	H095-COM1	MXR02-MD	COMPOST MIXER NO. 2 RUN COMMAND	09-N-0011
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AI	H095-COM1	FAN01-SI	COMPOST FAN NO. 1 SPEED FEEDBACK	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AI	H095-COM1	FAN10-SI	COMPOST FAN NO. 10 SPEED FEEDBACK	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AI	H095-COM1	FAN02-SI	COMPOST FAN NO. 2 SPEED FEEDBACK	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AI	H095-COM1	FAN03-SI	COMPOST FAN NO. 3 SPEED FEEDBACK	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AI	H095-COM1	FAN04-SI	COMPOST FAN NO. 4 SPEED FEEDBACK	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AI	H095-COM1	FAN05-SI	COMPOST FAN NO. 5 SPEED FEEDBACK	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AI	H095-COM1	FAN06-SI	COMPOST FAN NO. 6 SPEED FEEDBACK	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AI	H095-COM1	FAN07-SI	COMPOST FAN NO. 7 SPEED FEEDBACK	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AI	H095-COM1	FAN08-SI	COMPOST FAN NO. 8 SPEED FEEDBACK	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AI	H095-COM1	FAN09-SI	COMPOST FAN NO. 9 SPEED FEEDBACK	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AO	H095-COM1	FAN01-SI	COMPOST FAN NO. 1 SPEED COMMAND	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AO	H095-COM1	FAN10-SI	COMPOST FAN NO. 10 SPEED COMMAND	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AO	H095-COM1	FAN02-SI	COMPOST FAN NO. 2 SPEED COMMAND	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AO	H095-COM1	FAN03-SI	COMPOST FAN NO. 3 SPEED COMMAND	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AO	H095-COM1	FAN04-SI	COMPOST FAN NO. 4 SPEED COMMAND	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AO	H095-COM1	FAN05-SI	COMPOST FAN NO. 5 SPEED COMMAND	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AO	H095-COM1	FAN06-SI	COMPOST FAN NO. 6 SPEED COMMAND	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AO	H095-COM1	FAN07-SI	COMPOST FAN NO. 7 SPEED COMMAND	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AO	H095-COM1	FAN08-SI	COMPOST FAN NO. 8 SPEED COMMAND	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AO	H095-COM1	FAN09-SI	COMPOST FAN NO. 9 SPEED COMMAND	09-N-0012

AREA	PANEL NO	PLC NO	TYPE	IO TAG PRE-FIX	IO TAG	SERVICE	P&ID NO.
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN01-IR	COMPOST FAN NO. 1 "IN REMOTE" STATUS	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN01-MN	COMPOST FAN NO. 1 "RUNNING" STATUS	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN01-XF	COMPOST FAN NO. 1 FAIL	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN10-IR	COMPOST FAN NO. 10 "IN REMOTE" STATUS	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN10-MN	COMPOST FAN NO. 10 "RUNNING" STATUS	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN10-XF	COMPOST FAN NO. 10 FAIL	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN02-IR	COMPOST FAN NO. 2 "IN REMOTE" STATUS	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN02-MN	COMPOST FAN NO. 2 "RUNNING" STATUS	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN02-XF	COMPOST FAN NO. 2 FAIL	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN03-IR	COMPOST FAN NO. 3 "IN REMOTE" STATUS	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN03-MN	COMPOST FAN NO. 3 "RUNNING" STATUS	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN03-XF	COMPOST FAN NO. 3 FAIL	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN04-IR	COMPOST FAN NO. 4 "IN REMOTE" STATUS	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN04-MN	COMPOST FAN NO. 4 "RUNNING" STATUS	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN04-XF	COMPOST FAN NO. 4 FAIL	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN05-IR	COMPOST FAN NO. 5 "IN REMOTE" STATUS	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN05-MN	COMPOST FAN NO. 5 "RUNNING" STATUS	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN05-XF	COMPOST FAN NO. 5 FAIL	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN06-IR	COMPOST FAN NO. 6 "IN REMOTE" STATUS	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN06-MN	COMPOST FAN NO. 6 "RUNNING" STATUS	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN06-XF	COMPOST FAN NO. 6 FAIL	09-N-0012

COM1-PLC01 IO LIST

HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS

AREA	PANEL NO	PLC NO	TYPE	IO TAG PRE-FIX	IO TAG	SERVICE	P&ID NO.
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN07-IR	COMPOST FAN NO. 7 "IN REMOTE" STATUS	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN07-MN	COMPOST FAN NO. 7 "RUNNING" STATUS	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN07-XF	COMPOST FAN NO. 7 FAIL	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN08-IR	COMPOST FAN NO. 8 "IN REMOTE" STATUS	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN08-MN	COMPOST FAN NO. 8 "RUNNING" STATUS	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN08-XF	COMPOST FAN NO. 8 FAIL	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN09-IR	COMPOST FAN NO. 9 "IN REMOTE" STATUS	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN09-MN	COMPOST FAN NO. 9 "RUNNING" STATUS	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN09-XF	COMPOST FAN NO. 9 FAIL	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN01-TH	COMPOST FAN NO. 1 HIGH MOTOR TEMPERATURE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN02-TH	COMPOST FAN NO. 2 HIGH MOTOR TEMPERATURE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN03-TH	COMPOST FAN NO. 3 HIGH MOTOR TEMPERATURE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN04-TH	COMPOST FAN NO. 4 HIGH MOTOR TEMPERATURE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN05-TH	COMPOST FAN NO. 5 HIGH MOTOR TEMPERATURE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN06-TH	COMPOST FAN NO. 6 HIGH MOTOR TEMPERATURE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN07-TH	COMPOST FAN NO. 7 HIGH MOTOR TEMPERATURE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN08-TH	COMPOST FAN NO. 8 HIGH MOTOR TEMPERATURE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN09-TH	COMPOST FAN NO. 9 HIGH MOTOR TEMPERATURE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM1	FAN10-TH	COMPOST FAN NO. 10 HIGH MOTOR TEMPERATURE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DO	H095-COM1	FAN01-MD	COMPOST FAN NO. 1 RUN COMMAND	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DO	H095-COM1	FAN10-MD	COMPOST FAN NO. 10 RUN COMMAND	09-N-0012

AREA	PANEL NO	PLC NO	TYPE	IO TAG PRE-FIX	IO TAG	SERVICE	P&ID NO.
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DO	H095-COM1	FAN02-MD	COMPOST FAN NO. 2 RUN COMMAND	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DO	H095-COM1	FAN03-MD	COMPOST FAN NO. 3 RUN COMMAND	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DO	H095-COM1	FAN04-MD	COMPOST FAN NO. 4 RUN COMMAND	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DO	H095-COM1	FAN05-MD	COMPOST FAN NO. 5 RUN COMMAND	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DO	H095-COM1	FAN06-MD	COMPOST FAN NO. 6 RUN COMMAND	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DO	H095-COM1	FAN07-MD	COMPOST FAN NO. 7 RUN COMMAND	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DO	H095-COM1	FAN08-MD	COMPOST FAN NO. 8 RUN COMMAND	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DO	H095-COM1	FAN09-MD	COMPOST FAN NO. 9 RUN COMMAND	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM01-TI	COMPOST BAY NO. 1 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM02-TI	COMPOST BAY NO. 1 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM03-TI	COMPOST BAY NO. 1 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM28-TI	COMPOST BAY NO. 10 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM29-TI	COMPOST BAY NO. 10 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM30-TI	COMPOST BAY NO. 10 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM04-TI	COMPOST BAY NO. 2 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM05-TI	COMPOST BAY NO. 2 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM06-TI	COMPOST BAY NO. 2 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM07-TI	COMPOST BAY NO. 3 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM08-TI	COMPOST BAY NO. 3 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM09-TI	COMPOST BAY NO. 3 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM10-TI	COMPOST BAY NO. 4 TEMPERATURE PROBE	09-N-0012

COM1-PLC01 IO LIST

HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS

AREA	PANEL NO	PLC NO	TYPE	IO TAG PRE-FIX	IO TAG	SERVICE	P&ID NO.
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM11-TI	COMPOST BAY NO. 4 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM12-TI	COMPOST BAY NO. 4 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM13-TI	COMPOST BAY NO. 5 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM14-TI	COMPOST BAY NO. 5 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM15-TI	COMPOST BAY NO. 5 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM16-TI	COMPOST BAY NO. 6 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM17-TI	COMPOST BAY NO. 6 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM18-TI	COMPOST BAY NO. 6 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM19-TI	COMPOST BAY NO. 7 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM20-TI	COMPOST BAY NO. 7 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM21-TI	COMPOST BAY NO. 7 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM22-TI	COMPOST BAY NO. 8 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM23-TI	COMPOST BAY NO. 8 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM24-TI	COMPOST BAY NO. 8 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM25-TI	COMPOST BAY NO. 9 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM26-TI	COMPOST BAY NO. 9 TEMPERATURE PROBE	09-N-0012
ACTIVE COMPOSTING BLOWER SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM1	TTM27-TI	COMPOST BAY NO. 9 TEMPERATURE PROBE	09-N-0012
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	AI	H095-COM1	DMP01-ZI	AIR INTAKE VALVE POSITION FEEDBACK	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	AI	H095-COM1	DMP02-ZI	AIR INTAKE VALVE POSITION FEEDBACK	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	AI	H095-COM1	FAN11-SI	BIOFILTER FAN NO. 1 SPEED FEEDBACK	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	AI	H095-COM1	FAN12-SI	BIOFILTER FAN NO. 2 SPEED FEEDBACK	09-N-0013

HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS

COM1-PLC01 IO LIST

AREA	PANEL NO	PLC NO	TYPE	IO TAG PRE-FIX	IO TAG	SERVICE	P&ID NO.
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	AI	H095-COM1	FMT01-FI	BIOFILTER FAN NO.1 FLOW	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	AI	H095-COM1	PTM01-PI	BIOFILTER FAN NO.1 PRESSURE	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	AI	H095-COM1	TTM01-TI	BIOFILTER FAN NO.1 TEMPERATURE	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	AI	H095-COM1	FMT02-FI	BIOFILTER FAN NO.2 FLOW	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	AI	H095-COM1	PTM02-PI	BIOFILTER FAN NO.2 PRESSURE	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	AI	H095-COM1	TTM02-TI	BIOFILTER FAN NO.2 TEMPERATURE	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	AO	H095-COM1	DMP01-ZC	AIR INTAKE VALVE POSITION COMMAND	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	AO	H095-COM1	DMP02-ZC	AIR INTAKE VALVE POSITION COMMAND	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	AO	H095-COM1	FAN11-SC	BIOFILTER FAN NO. 1 SPEED COMMAND	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	AO	H095-COM1	FAN12-SC	BIOFILTER FAN NO. 2 SPEED COMMAND	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI		HS82-IR	AIR INTAKE VALVE "IN REMOTE" STATUS	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI		HS83-IR	AIR INTAKE VALVE "IN REMOTE" STATUS	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	FAN11-XF	BIOFILTER FAN NO. 1 "FAULT" STATUS	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	FAN11-IR	BIOFILTER FAN NO. 1 "IN REMOTE" STATUS	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	FAN11-MN	BIOFILTER FAN NO. 1 "RUNNING" STATUS	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	DMP04-IR	BIOFILTER FAN NO. 1 DOWNSTREAM VALVE "IN REMOTE" STATUS	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	DMP04-ZL	BIOFILTER FAN NO. 1 DOWNSTREAM VALVE CLOSE STATUS	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	DMP04-ZH	BIOFILTER FAN NO. 1 DOWNSTREAM VALVE OPEN STATUS	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	DMP03-IR	BIOFILTER FAN NO. 1 UPSTREAM VALVE "IN REMOTE" STATUS	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	DMP03-ZL	BIOFILTER FAN NO. 1 UPSTREAM VALVE CLOSE STATUS	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	DMP03-ZH	BIOFILTER FAN NO. 1 UPSTREAM VALVE OPEN STATUS	09-N-0013

COM1-PLC01 IO LIST

HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS

AREA	PANEL NO	PLC NO	TYPE	IO TAG PRE-FIX	IO TAG	SERVICE	P&ID NO.
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	FAN12-XF	BIOFILTER FAN NO. 2 "FAULT" STATUS	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	FAN12-IR	BIOFILTER FAN NO. 2 "IN REMOTE" STATUS	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	FAN12-MN	BIOFILTER FAN NO. 2 "RUNNING" STATUS	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	DMP06-IR	BIOFILTER FAN NO. 2 DOWNSTREAM VALVE "IN REMOTE" STATUS	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	DMP06-ZH	BIOFILTER FAN NO. 2 DOWNSTREAM VALVE OPEN STATUS	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	DMP06-ZL	BIOFILTER FAN NO. 2 DOWNSTREAM VALVE CLOSE STATUS	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	DMP05-IR	BIOFILTER FAN NO. 2 UPSTREAM VALVE "IN REMOTE" STATUS	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	DMP05-ZL	BIOFILTER FAN NO. 2 UPSTREAM VALVE CLOSE STATUS	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	DMP05-ZH	BIOFILTER FAN NO. 2 UPSTREAM VALVE OPEN STATUS	09-N-0013
BIOFILTER	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	FAN11-TH	BIOFILTER FAN NO. 1 HIGH MOTOR TEMPERATURE	09-N-0013
BIOFILTER	H095-COM1-MCP01	H095-COM1-PLC01	DI	H095-COM1	FAN12-TH	BIOFILTER FAN NO. 2 HIGH MOTOR TEMPERATURE	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DO	H095-COM1	DMP04-ZB	BIOFILTER FAN NO. 1 DOWNSTREAM VALVE CLOSE COMMAND	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DO	H095-COM1	DMP04-ZD	BIOFILTER FAN NO. 1 DOWNSTREAM VALVE OPEN COMMAND	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DO	H095-COM1	FAN11-MD	BIOFILTER FAN NO. 1 START/STOP	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DO	H095-COM1	DMP03-ZB	BIOFILTER FAN NO. 1 UPSTREAM VALVE CLOSE COMMAND	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DO	H095-COM1	DMP03-ZD	BIOFILTER FAN NO. 1 UPSTREAM VALVE OPEN COMMAND	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DO	H095-COM1	DMP06-ZB	BIOFILTER FAN NO. 2 DOWNSTREAM VALVE CLOSE COMMAND	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DO	H095-COM1	DMP06-ZD	BIOFILTER FAN NO. 2 DOWNSTREAM VALVE OPEN COMMAND	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DO	H095-COM1	FAN12-MD	BIOFILTER FAN NO. 2 START/STOP	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DO	H095-COM1	DMP05-ZB	BIOFILTER FAN NO. 2 UPSTREAM VALVE CLOSE COMMAND	09-N-0013
COMPOSTING BIOFILTER SYSTEM	H095-COM1-MCP01	H095-COM1-PLC01	DO	H095-COM1	DMP05-ZD	BIOFILTER FAN NO. 2 UPSTREAM VALVE OPEN COMMAND	09-N-0013
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AI	H095-COM3	FAN01-SI	CURING FAN NO. 1 SPEED FEEDBACK	09-N-0014

HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS

COM1-PLC01 IO LIST

AREA	PANEL NO	PLC NO	TYPE	IO TAG PRE-FIX	IO TAG	SERVICE	P&ID NO.
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AI	H095-COM3	FAN02-SI	CURING FAN NO. 1 SPEED FEEDBACK	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AI	H095-COM3	FAN03-SI	CURING FAN NO. 1 SPEED FEEDBACK	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AI	H095-COM3	FAN04-SI	CURING FAN NO. 1 SPEED FEEDBACK	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AO	H095-COM3	FAN01-SC	CURING FAN NO. 1 SPEED COMMAND	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AO	H095-COM3	FAN02-SC	CURING FAN NO. 1 SPEED COMMAND	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AO	H095-COM3	FAN03-SC	CURING FAN NO. 1 SPEED COMMAND	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	AO	H095-COM3	FAN04-SC	CURING FAN NO. 1 SPEED COMMAND	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM3	FAN01-IR	CURING FAN NO. 1 "IN REMOTE" STATUS	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM3	FAN01-MN	CURING FAN NO. 1 "RUNNING" STATUS	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM3	FAN01-XF	CURING FAN NO. 1 FAIL	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM3	FAN02-IR	CURING FAN NO. 2 "IN REMOTE" STATUS	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM3	FAN02-MN	CURING FAN NO. 2 "RUNNING" STATUS	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM3	FAN02-XF	CURING FAN NO. 2 FAIL	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM3	FAN03-IR	CURING FAN NO. 3 "IN REMOTE" STATUS	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM3	FAN03-MN	CURING FAN NO. 3 "RUNNING" STATUS	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM3	FAN03-XF	CURING FAN NO. 3 FAIL	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM3	FAN04-IR	CURING FAN NO. 4 "IN REMOTE" STATUS	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM3	FAN04-MN	CURING FAN NO. 4 "RUNNING" STATUS	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM3	FAN04-XF	CURING FAN NO. 4 FAIL	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM3	FAN01-TH	CURING FAN NO. 1 HIGH MOTOR TEMPERATURE	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM3	FAN02-TH	CURING FAN NO. 2 HIGH MOTOR TEMPERATURE	09-N-0014

COM1-PLC01 IO LIST

HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS

AREA	PANEL NO	PLC NO	TYPE	IO TAG PRE-FIX	IO TAG	SERVICE	P&ID NO.
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM3	FAN03-TH	CURING FAN NO. 3 HIGH MOTOR TEMPERATURE	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DI	H095-COM3	FAN04-TH	CURING FAN NO. 4 HIGH MOTOR TEMPERATURE	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DO	H095-COM3	FAN01-MD	CURING FAN NO. 1 RUN COMMAND	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DO	H095-COM3	FAN02-MD	CURING FAN NO. 2 RUN COMMAND	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DO	H095-COM3	FAN03-MD	CURING FAN NO. 3 RUN COMMAND	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	DO	H095-COM3	FAN04-MD	CURING FAN NO. 4 RUN COMMAND	09-N-0014
ALT03: STORAGE BAYS	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM3	TTM12-TI	ALTERNATE STORAGE BAY NO. 4 TEMPERATURE PROBE	09-N-0014
ALT03: STORAGE BAYS	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM3	TTM13-TI	ALTERNATE STORAGE BAY NO. 5 TEMPERATURE PROBE	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM3	TTM01-TI	CURING BAY NO. 1 TEMPERATURE PROBE	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM3	TTM02-TI	CURING BAY NO. 1 TEMPERATURE PROBE	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM3	TTM03-TI	CURING BAY NO. 2 TEMPERATURE PROBE	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM3	TTM04-TI	CURING BAY NO. 2 TEMPERATURE PROBE	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM3	TTM05-TI	CURING BAY NO. 3 TEMPERATURE PROBE	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM3	TTM06-TI	CURING BAY NO. 3 TEMPERATURE PROBE	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM3	TTM07-TI	CURING BAY NO. 4 TEMPERATURE PROBE	09-N-0014
SCREENING AND CURING SYSTEM	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM3	TTM08-TI	CURING BAY NO. 4 TEMPERATURE PROBE	09-N-0014
STORAGE BAYS	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM3	TTM09-TI	STORAGE BAY NO. 1 TEMPERATURE PROBE	09-N-0014
STORAGE BAYS	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM3	TTM10-TI	STORAGE BAY NO. 2 TEMPERATURE PROBE	09-N-0014
STORAGE BAYS	H095-COM1-CPL01	H095-COM1-PLC01	ETH	H095-COM3	TTM11-TI	STORAGE BAY NO. 3 TEMPERATURE PROBE	09-N-0014
SANITARY LIFT STATION	H095-COM1-MCP01	H095-COM1-PLC01	DI		LSHH91-LH	SANITARY LIFT STATION HIGH HIGH LEVEL ALARM	09-N-0015
SANITARY LIFT STATION	H095-COM1-MCP01	H095-COM1-PLC01	DI		LSH91-LH	SANITARY LIFT STATION HIGH LEVEL ALARM	09-N-0015
SANITARY LIFT STATION	H095-COM1-MCP01	H095-COM1-PLC01	DI		LSL91-LL	SANITARY LIFT STATION LOW LEVEL ALARM	09-N-0015
SANITARY LIFT STATION	H095-COM1-MCP01	H095-COM1-PLC01	DI	H110-LF11	PMP01-XF	SANITARY PUMP NO. 1 "FAULT" STATUS	09-N-0015
SANITARY LIFT STATION	H095-COM1-MCP01	H095-COM1-PLC01	DI	H110-LFT1	PMP01-XA	SANITARY PUMP NO. 1 HIGH MOISTURE ALARM	09-N-0015
SANITARY LIFT STATION	H095-COM1-MCP01	H095-COM1-PLC01	DI	H110-LFT1	PMP01-TH	SANITARY PUMP NO. 1 HIGH MOTOR TEMPERATURE ALARM	09-N-0015
SANITARY LIFT STATION	H095-COM1-MCP01	H095-COM1-PLC01	DI	H110-LFT1	PMP02-XF	SANITARY PUMP NO. 2 "FAULT" STATUS	09-N-0015
SANITARY LIFT STATION	H095-COM1-MCP01	H095-COM1-PLC01	DI	H110-LFT1	PMP02-XA	SANITARY PUMP NO. 2 HIGH MOISTURE ALARM	09-N-0015
SANITARY LIFT STATION	H095-COM1-MCP01	H095-COM1-PLC01	DI	H110-LFT1	PMP02-TH	SANITARY PUMP NO. 2 HIGH MOTOR TEMPERATURE ALARM	09-N-0015
SANITARY LIFT STATION	H095-COM1-MCP01	H095-COM1-PLC01	DO	H110-LFT1	PMP01-MN	SANITARY PUMP NO. 1 "RUNNING" STATUS	09-N-0015

AREA	PANEL NO	PLC NO	TYPE	IO TAG PRE-FIX	IO TAG	SERVICE	P&ID NO.
SANITARY LIFT STATION	H095-COM1-MCP01	H095-COM1-PLC01	DO	H110-LFT1	PMP02-MN	SANITARY PUMP NO. 2 "RUNNING" STATUS	09-N-0015
COMPOSTING AREA		H095-COM1-PLC01	AI		TT01-TI	ROOM TEMPERATURE	09-N-0020
COMPOSTING AREA		H095-COM1-PLC01	AI		TT02-TI	ROOM TEMPERATURE	09-N-0020
COMPOSTING AREA	H095-COM1-ACP01	H095-COM1-PLC01	DI		ACU01-XA1	ACU01 GENERAL ALARM	09-N-0020
COMPOSTING AREA	H095-COM1-ACP01	H095-COM1-PLC01	DI		ACU01-XA2	ACU01 FAIL	09-N-0020
COMPOSTING AREA		H095-COM1-PLC01	DI		SD01-XA01	SMOKE DETECTOR EXHAUST AIR ALARM	09-N-0020
COMPOSTING AREA		H095-COM1-PLC01	DI		SD01-XA02	SMOKE DETECTOR SUPPLY AIR ALARM	09-N-0020
COMPOSTING AREA	H095-COM1-MCP01	H095-COM1-PLC01	DI		UPS01-JA1	UPS01 POWER FAIL	09-N-0020
COMPOSTING AREA	H095-COM1-MCP01	H095-COM1-PLC01	DI		UPS01-OB	UPS01 BATTERY LOW	09-N-0020
COMPOSTING AREA	H095-COM1-MCP01	H095-COM1-PLC01	DI		UPS01-JA2	UPS01 FAIL	09-N-0020
COMPOSTING AREA	H095-COM1-MCP01	H095-COM1-PLC01	DI		XS71-XA	PANEL INTRUSION ALARM	09-N-0020
TOTAL ETH:	43						
TOTAL AI:	28						
TOTAL AO:	18						
TOTAL DI:	111						
TOTAL DO:	30						

CONTROL PANEL SCHEDULE

HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS

TAG NO.	DESCRIPTION	PANEL OPTIONS	INSTALLATION DETAIL	PLC	P&ID	NOTES
H040-WAS1-CPL01	WAS FEED PUMP PANEL	TYPE: FREESTANDING MATERIAL: 316L NEMA RATING: 4X FINISH OPTIONS:	4091-402D 4091-452D	H040-WAS1-PLC01	09-N-0001	
H050-FCL1-CPL01	SCUM WET WELL PANEL	TYPE: MATERIAL: 316L NEMA RATING: 4X FINISH OPTIONS:	4091-402D 4091-452D	H050-FCL1-PLC01	09-N-0002	
H050-FCL1-CPL02	SCUM WET WELL LOCAL PANEL				09-N-0002	VENDOR SUPPLIED PANEL
H090-DFW2-CPL01	SLUDGE HOLDING TANK BLOWER NO. 1				09-N-0004	VENDOR SUPPLIED PANEL
H090-DEW2-CPL02	SLUDGE HOLDING TANK BLOWER NO. 2				09-N-0004	VENDOR SUPPLIED PANEL
H090-DEW2-CPL03	SLUDGE HOLDING TANK BLOWER NO. 3				09-N-0004	VENDOR SUPPLIED PANEL
H090-DEW3-MCP01	SLUDGE HOLDING TANKS AREA	TYPE: FREESTANDING MATERIAL: 316L NEMA RATING: 4X FINISH OPTIONS:	4091-402D 4091-452D	H090-DEW3-PLC01	09-N-0004	
H090-DEW1-CPL01	GRINDER NO. 1 PANEL				09-N-0005	VENDOR SUPPLIED PANEL
H090-DEW1-MCP01	DEWATERING AREA PANEL	TYPE: FREESTANDING MATERIAL: CS NEMA RATING: 12 FINISH GREY OPTIONS:	4091-139 4091-452D	H090-DEW1-PLC01	09-N-0005 09-N-0006 09-N-0007 09-N-0008 09-N-0009 09-N-0010 09-N-0011	
H090-DEW1-CPL02	CENTRIFUGE NO. 1 OPERATOR PANEL				09-N-0006	VENDOR SUPPLIED PANEL
H090-DEW1-MDP01	CENTRIFUGE NO. 1 STARTER PANEL				09-N-0006	VENDOR SUPPLIED PANEL
H090-DEW1-CPL03	CENTRIFUGE NO. 2 OPERATOR PANEL				09-N-0007	VENDOR SUPPLIED PANEL
H090-DEW1-CPL04	CENTRIFUGE NO. 3 OPERATOR PANEL				09-N-0007	VENDOR SUPPLIED PANEL
H090-DEW1-MDP02	CENTRIFUGE NO. 2 STARTER PANEL				09-N-0007	VENDOR SUPPLIED PANEL
H090-DEW1-MDP03	CENTRIFUGE NO. 3 STARTER PANEL				09-N-0007	VENDOR SUPPLIED PANEL
H090-DEW1-CPL06	POLYMER RECIRCULATION PUMP NO. 1				09-N-0008	VENDOR SUPPLIED PANEL
H090-DEW1-CPL07	POLYMER BLENDING UNIT NO. 1 CONTROL PANEL				09-N-0008	VENDOR SUPPLIED PANEL
H090-DEW1-CPL08	POLYMER BLENDING UNIT NO. 2 CONTROL PANEL				09-N-0008	VENDOR SUPPLIED PANEL
H090-DEW1-CPL09	POLYMER BLENDING UNIT NO. 3 CONTROL PANEL				09-N-0008	VENDOR SUPPLIED PANEL
H090-DEW1-PNL01	POLYMER FILL PANEL	TYPE: WALL-MOUNTED MATERIAL: 316L NEMA RATING: 4X FINISH OPTIONS:	09-N-0030		09-N-0008	
H090-DEW1-CPL05	SLUDGE CONVEYOR CONTROL PANEL				09-N-0010	VENDOR SUPPLIED PANEL

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CONTROL PANEL SCHEDULE

TAG NO.	DESCRIPTION	PANEL OPTIONS	INSTALLATION DETAIL	PLC	P&ID	NOTES
H095-COM2-CPL01	COMPOST MIXER NO. 1 & 2; COMPOST SCALE NO. 1 & 2; COMPOST CONVEYOR NO. 1 & 2 ^[ADD. 3]				09-N-0011	VENDOR SUPPLIED PANEL
H095-COM2-CPL02	COMPOST SCALE NO. 1 WEIGHT DISPLAY				09-N-0011	VENDOR SUPPLIED PANEL
H095-COM2-CPL03	COMPOST SCALE NO. 2 WEIGHT DISPLAY				09-N-0011	VENDOR SUPPLIED PANEL
H095-COM2-CPL04 ^[ADD. 3]	COMPOST MIXER NO. 2; COMPOST MIXER NO. 2 ^[ADD. 3]				09-N-0011 ^[ADD. 3]	VENDOR SUPPLIED PANEL ^[ADD. 3]
H095-COM1-MCP01	COMPOST AREA MASTER PLC	TYPE: FREESTANDING MATERIAL: 316L NFMA RATING: 4X FINISH OPTIONS:		11095-COM2-PLC01	09-N-0011 09-N-0013 09-N-0015	VENDOR SUPPLIED PANEL
H095-COM1-CPL01	REOTEMP PANEL			H095-COM2-PLC01	09-N-0012 09-N-0014	VENDOR SUPPLIED PANEL
H110-LFT01-CPL01	SANITARY LIFT STATION LOCAL CONTROL PANEL				09-N-0015	VENDOR SUPPLIED PANEL

**SECTION 44 42 19.04
ROTARY POSITIVE DISPLACEMENT BLOWER**

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. American Gear Manufacturers Association (AGMA).
2. American National Standards Institute (ANSI).
3. ASTM International (ASTM):
 - a. A48/A48M, Standard Specification for Gray Iron Castings.
 - b. A395/A395M, Standard Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures.
4. National Electrical Manufacturers Association (NEMA).
5. Section 40 99 90, Packaged Control Systems.

1.02 DEFINITIONS

- ~~A. Absolute Discharge Pressure: Pressure in pounds per square inch absolute (psia) at the blower discharge flange.~~
- ~~B. Brake Horsepower (BHP): (Shaft) Standard curve horsepower required, corrected for pressure, temperature, and relative humidity at inlet conditions.~~
- ~~C. Discharge Pressure: Pressure in pounds per square inch gauge (psig) at blower discharge flange at rated capacity.~~
- ~~D. Inlet Cubic Feet per Minute (icfm): Volumetric rate of air at the inlet flange of the blower corrected to absolute pressure, temperature, and relative humidity. The pressure takes into account the inlet piping in filter pressure drops.~~
- ~~E. Pressure Rise: Pressure developed within the blower between the inlet and outlet flanges. It is the discharge pressure less the inlet pressure measured at the discharge and inlet flanges, respectively.~~
- ~~F. Standard Cubic Feet per Minute (scfm): Volumetric rate of air measured in standard cubic feet per minute at 68 degrees F, pressure of 14.7 psig, and relative humidity of 36 percent. ^[ADD. 3]~~

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- A. Actual Cubic Feet per Minute (acfm): Air volume in cubic feet per minute corrected to Site conditions of elevation, temperature, and relative humidity.
- B. Ambient (inlet) Pressure: Absolute pressure of the ambient air measured in the vicinity of the blower inlet measured at the stagnation condition. This will equal barometric pressure under typical conditions.
- C. Ambient (inlet) Temperature: Total temperature of the ambient air in the vicinity of the blower package, but unaffected by it.
- D. Input Horsepower (IHP): Input horsepower (or wire power) is the total horsepower required to operate the blower motor and all ancillary equipment drive motors.
- E. Input Power: Input power (or wire power) is the total kilowatts (kW) required to operate the blower motor and all ancillary equipment drive motors.
- F. Blower Package: Blower package is defined by the limits of the scope of supply as specified in the overall project contractual agreement pertaining to the blower installation. Includes all deliverable components necessary to furnish an operational machine including but not limited to inlet, discharge, and all power devices that affect power consumption.
- G. Discharge Pressure: Pressure in pounds per square inch gauge (psig) at the blower package discharge flange. Typically measured downstream of the check valve at the rated capacity.
- H. Inlet Cubic Feet per Minute (icfm): The rate of flow which is determined by delivered mass flow rate divided by inlet total density as defined by the inlet to the package. Air volume in cubic feet per minute entering blower at inlet pressure and temperature conditions corrected for Site conditions and includes inlet filter and inlet line losses.
- I. Overall (Wire to Air) Efficiency: Wire to air isentropic efficiency of the entire blower package. This includes energy losses from all components within the blower package. This is the ratio of total measured wire-to-air (system) power demand to the power of compression due to an assumed reversible, adiabatic compression process with constant entropy.
- J. Pressure Rise: Pressure in pounds per square inch (psi). Difference between pressure at the blower package discharge flange (typically downstream of the check valve) and the package inlet (typically upstream of the inlet filter or inlet flange).

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- K. Standard Cubic Feet per Minute (scfm): Air volume in cubic feet per minute corrected to standard conditions of 68 degrees F, 14.70 psia, and 36 percent relative humidity.
- L. Total wire power (kW or hp): The blower package total wire power is the electrical power measured at the power input to the blower package. This will include all power consuming electrical components of the blower package as required for installation and normal operation. including: drive motor, motor cooling fan, bearing cooling fans, coolant pump and heat exchanger (if liquid cooling system is included), enclosure and package cooling fan, sine wave filter or output reactor, variable frequency drive and cooling fan, input choke or line reactor, harmonic filter, local control panel, PLC or processor, HMI and miscellaneous electronics, voltage transformer(s), DC power supplies, power conditioner. If the blower package receives multiple power feeds, the wire power is the sum of all wire powers measured individually. ^[ADD. 3]

1.03 SYSTEM DESCRIPTION

- A. Blower system, featuring rotary positive displacement blower(s) to supply air for the Sludge Holding Tank No. 1.
- B. Provide blower system, including, but not limited to, blowers, control panel, motors, drives, baseplates, vibration isolators, supports, inlet silencers, discharge silencers, relief valves, flexible connectors, noise enclosures, spare parts, outside air filter, and miscellaneous appurtenances as necessary.

1.04 DESIGN REQUIREMENTS

- A. Design equipment with due regard to safety of operation, accessibility, and durability of parts, and complying with applicable OSHA, state, and local safety regulations.
- B. Each blower will receive outside air from a dedicated filter and discharge into a main air discharge header.
- C. Intermittent and continuous operation in an indoor environment.
- D. Blower(s) shall start no more than four times per hour when operating in intermittent service.
- E. Blowers shall meet rated performance and sound level when operating at a maximum speed of 6,700 rpm.

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- F. Maximum Sound Pressure Level: ~~75~~85^[ADD. 3] dBA, ~~factory-calculated~~^[ADD. 3], with inlet and discharge silencers, measured with a sound enclosure. Sound pressure levels shall be measured in accordance with ASME PTC 36 during factory performance testing at the blower's maximum design capacity and speed.^[ADD. 3]
- G. Performance Requirements:

Design Conditions	
Equipment ID	H090-DEW2-BLO01, BLO02, BLO03
Design Capacity, scfm	2,000
Design Capacity, icfm	2,314
Maximum Capacity, icfm	2,545
Altitude, ft	600
Barometric pressure, psia	14.3
Inlet pressure at compressor flange, psia	14.3
<u>Maximum Inlet Pressure Loss (air pipes, dirty filter, inlet silencer)</u> ^[ADD. 3]	<u>0.25 psi</u> ^[ADD. 3]
Inlet air temperature, degrees F (Guarantee Point)	78
Inlet air temperature range, degrees F	20 min to 100 max
Relative humidity, % (Guarantee Point)	36
Discharge pressure at compressor discharge flange <u>as measured downstream of the check valve, psia-psig</u> ^[ADD. 3]	23.3
Blower pressure rise required, psi	9
Pressure relief valve setting, psig	11.9
Shaft brake horsepower, BHP ^{1,2}	100
¹ Includes main oil pump, if specified, and all gear and bearing frictional losses.	
² Not to exceed motor nameplate horsepower at 1.0 service factor at the inlet air temperatures design pressure, and altitude listed above.	

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1.05 SUBMITTALS

A. Action Submittals:

1. Shop Drawings:
 - a. Complete list of system components to be provided.
 - b. Make, model, weight, and horsepower of each equipment assembly.
 - c. Complete catalog information, descriptive literature, and specifications.
 - d. General arrangement drawings of the factory assembled blower package.
 - e. Performance data for each type of equipment that will show compliance with specification requirements stated herein.
 - f. Horsepower demand over the operating range of the blower.
 - g. Detailed structural, mechanical, and electrical drawings showing the equipment fabrications and interface with other items. Include dimensions, size, and locations of connections to other work.
 - h. Motor: See requirements of Section 26 20 00, Low-Voltage AC Induction Motors.
 - i. Monitoring System:
 - 1) Cut sheet on local blower controller and VFD.
 - 2) Wiring diagrams, including baseplate-mounted terminal junction box and equipment monitoring panel.
 - 3) Panel construction and face layout drawings.
 - j. Sound Enclosure: Complete description of sound enclosure and accessories.
 - k. Estimated blower sound level data and description of sound control measures required to meet the specified sound levels. ^[ADD. 3]

B. Informational Submittals:

1. Manufacturer's Certificate of Compliance.
- ~~2. Factory calculated sound levels (dBA) of blower unit with silencers and sound enclosure.~~ ^[ADD. 3]
- ~~3.2.~~ Identification of outside utility requirements for each component such as air, water, power, etc. Include operating parameters for required utilities.
- ~~4.3.~~ Special shipping, storage and protection, and handling instructions.
4. Descriptive literature on equipment coating system including surface preparation and shop priming.
5. Outline Drawings for all items that are shipped loose.
6. Detailed Bill of Materials.
7. Detailed data exchange tables for control from SCADA.

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- ~~8.~~ Recommended procedure for the protection and handling of materials prior to installation.^[ADD. 3]
- ~~9.~~ Manufacturer's written installation instructions.
- ~~5.~~~~10.~~ Certified foundation Drawings showing anchor bolt layouts and locations.^[ADD. 3]
- ~~6.~~~~11.~~ List of special tools, materials, and supplies furnished with equipment for use prior to and during startup and for future maintenance.
- ~~7.~~~~12.~~ Suggested spare parts list to maintain the equipment in service for a period of 5 years. Include a list of special tools required for checking, testing, parts replacement, and maintenance.
- ~~8.~~~~13.~~ Routine maintenance requirements prior to plant startup.
- ~~14.~~ Certificate that verifies that shop test equipment has been calibrated and checked against an approved standard within the last 12 months.^[ADD. 3]
- ~~9.~~~~15.~~ Test Reports:
 - a. Factory test reports for blower and motor.
 - b. Field test procedures.
- ~~b.~~~~16.~~ Factory measured sound levels (dBA) of blower unit with silencers and sound enclosure. Sound power values when measured in accordance with ASME PTC 36, Measurement of Industrial Sound.^[ADD. 3]
- ~~10.~~~~17.~~ Operation and Maintenance Data as specified in Section 01 78 23, Operation and Maintenance Data.
- ~~11.~~~~18.~~ Manufacturer's Certificate of Proper Installation.

1.06 EXTRA MATERIALS

- A. Furnish, tag, and box for shipment and storage the following spare parts, special tools, and materials:

Item	Quantity
Oil, synthetic	Enough for 1 year of continuous operation, per unit
Inlet Filters	Enough for 2 complete changes per unit
Flexible Coupling	One complete set per unit
Control Cabinet Filter Mats	Enough for 2 complete changes per unit
Motor Grease	1 Tube per unit
Special tools required to maintain or dismantle	One complete set for each unit

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- B. Delivery: In accordance with Section 01 61 00, Common Product Requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. General:

1. Where possible, provide end products of one manufacturer in order to achieve standardization for appearance, operation, maintenance, replacement, and manufacturer's service.
2. Manufacture spare parts to United States standard sizes and gauges.

B. Materials, equipment, and accessories specified in this section shall be products of:

1. Kaeser; Screw Type ~~FBS720L~~. [\[ADD. 3\]](#)
2. Gardner, Denver; ~~IQHE105/4P-1-100hp~~ [Screw Type](#). [\[ADD. 3\]](#)
3. Aerzen, USA; [Screw Type](#). [\[ADD. 3\]](#)

C. No "or-equal" or substitute products will be considered.

2.02 COMPONENTS

A. Blower:

1. Rotary positive displacement screw type, gear driven by horizontal electric motor.
2. Casing: Two-piece construction with thermally decoupled gearbox section, EN GJL-200 close-grain cast iron strongly ribbed to prevent distortion at the specified operating conditions.
3. Bearings:
 - a. Support shaft and impeller assembly by single-row roller bearings sized for a minimum L-10 rating of 100,000 hours at Project conditions.
 - b. An extra gear side ball bearing shall be provided for axial forces inherent with a screw blower design.
 - c. Bearings and Gears: Lubricated by a splash type lubrication system on both ends of the rotors.
 - d. Provide one seal assembly on each end of each rotor, for a total of four assemblies per blower. Each assembly shall consist of two piston ring labyrinth seals and two spiral seals. The drive shaft seal shall be a mechanical sliding ring type seal.

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- e. Make further provision to vent area between the two sealing systems to atmosphere to relieve excessive pressure on seals.
- 4. Impellers:
 - a. The primary rotor shall be machined out of a one piece casting made of EN GJL-250 material, with a press fit shaft machined of C45 shaft material. The secondary rotor and shaft shall be machined out of a one-piece casting made of EN GJS-500 material.
 - b. Screw blower type, rotating in opposite directions in a common casing without rubbing, liquid seals, or lubrication.
 - c. Positioned by timing gears to maintain proper clearances.
 - d. Mount impellers and timing gears on shafts supported by antifriction bearings, fixed to control the axial location of impeller/shaft in the casing.
 - e. Statically and dynamically balanced by removing metal from impeller body.
 - f. Positively timed by a pair of accurately machined and carburized steel spur gears to quality standard 5f 21. Gears mounted on shafts with tapered fit and secured by a locknuts.
- 5. Gear Drive:
 - a. The blower shall be driven by a direct coupled gear driven system.
 - b. A robust slip-free gear drive system, which requires no additional oil chambers, oil pumps, or additional bearings shall be utilized.
 - c. Drive gears shall be integrated into blower drive side oil chamber.
 - d. No additional oil pump, oil reservoir, or heat exchangers shall be used.
 - e. Drive motor with flanged direct mount face. Drive motor shall use grease-filled bearings.
 - f. Heavy duty mechanical blower/drive shaft seal with drain system towards motor face.
 - g. Low radial loads of the motors ball bearing design for long bearing lifetime.

B. Motor:

- 1. Squirrel-cage ac induction type, meeting requirements of Section 26 20 00, Low-Voltage AC Induction Motors, and as specified herein.
- 2. Motor Horsepower: 100 hp.
- 3. Nominal Speed: 3,600 rpm, constant.
- 4. Rated Voltage: 460 volt, three-phase, 60 Hz.
- 5. Enclosure Type: TEFC as specified in Section 26 20 00, Low-Voltage AC Induction Motors.
- 6. Inverter Rated Ready for VFD Operation Drive: Gear driven.

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7. Motor Efficiency: Premium efficiency as specified in Section 26 20 00, Low-Voltage AC Induction Motors.
8. Service Factor: 1.0.

C. Blower Support:

1. Baseplate: Cast iron or fabricated steel mounted on concrete equipment pad as shown on the Drawings.
2. Support Stand: Designed by manufacturer and reinforced to withstand anticipated loadings of blower, motor, inlet and discharge silencers, and associated piping.
3. Factory mount blower and motor as a package.
4. Provide vibration isolators to limit transmission of vibration to anchor points at floor.

2.03 ACCESSORIES

A. Air Inlet Filter: Provide as shown on the Drawings.

B. Blower Inlet Filter:

1. Dry-type inlet air filter of configuration shown on the Drawings for each blower.
2. The inlet silencer shall have an integral filter designed to protect the blower from particulates. It shall be located between the absorptive material and the blower inlet.
3. The filter element shall be a washable and reusable polyester element.
4. The filter efficiency shall meet ASHRAE 52.2 MERV7 50 percent to 70 percent at 3 microns to 10 microns corresponding to EN779 G4.
5. Filter element shall be removable without disconnecting the inlet duct.
6. Filters shall be furnished with the blowers and installed within the sound enclosure at the factory.

C. Inlet, Discharge Silencers:

1. Designed to reduce pulsation from rotary screw blowers at blower operating speed.
2. Silencers shall be of the wear-free absorptive type silencer.
3. Silencers shall be factory installed within the sound enclosure.
4. Any pressure loss associated with silencers shall be included in the manufacturer's performance data.

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D. Flexible Connectors:

1. Discharge: Pressure spool, single arch, expansion joint type with 125-pound ANSI flanges.
2. Inlet: Web reinforced silicone rubber sleeve with corrosion resistant clamps.
3. Operating Temperature Rating, Discharge: 300 degrees F.
4. Install as noted above on each blower at inlet and outlet.

E. Check Valve:

1. Single-plate, metal hinged wafer type for each blower; installed in blower discharge piping downstream of silencer and relief valve.
2. Steel body and circular steel plates.
3. Seat: Viton or Silicone for high temperature operation.
4. Elastomeric hinges will not be allowed.

F. Safety Relief Valve:

1. Spring type.
2. Sized to relieve entire discharge flow without overloading blower.
3. Furnish one for each blower.
4. Provide nozzle on discharge silencer to mount relief valve as shown.

G. Temperature Sensor:

1. Provide HIGH discharge air temperature sensor, factory installed within the sound enclosure, for each blower.
2. Locate sensor directly after blower discharge.

H. Noise Enclosure:

1. Total Noise Enclosure: 85 dBA average noise level at 1 meter.

I. Lifting Lugs: Provide lifting lugs on motors and holes to allow for installation of lugs on blower blocks as needed.

2.04 INSTRUMENTATION AND CONTROLS

- A. Instrumentation and Controls: In accordance with Section 40 99 90, Package Control Systems. External signal interfaces are required to interface with facility's CCS. Provide items not specifically called out which are required to implement functions required for proper system operation.

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B. Control Panel:

1. Panel Power Requirements: Must be powered via transformer and/or power supply within control cabinet. Only one 460V power source should be connected to integrated blower package.
2. IP52 rating.
3. Mounting: Integral and factory installed onboard blower package.
4. Control Capabilities via Local Controller:
 - a. LOCAL/OFF/REMOTE.
 - b. START/STOP.
 - c. RESET for blower fail.
5. Alarms, at a Minimum:
 - a. Blower FAIL.
 - b. HIGH differential air pressure.
 - c. Emergency Stop.
 - d. High Discharge Temperature.
 - e. Motor overload.
6. Miscellaneous:
 - a. RUN time meter.
 - b. High inlet vacuum shutdown.
 - c. Discharge High Temperature Shutdown: Based on blower performance data, via onboard temperature sensor.
 - d. Discharge High Pressure Shutdown: Based on blower performance data, via onboard pressure sensor.
 - e. Inlet and Discharge Pressure Readings must be displayed on the local controller.
 - f. Inlet and discharge temperature readings must be displayed on the controller.

C. Control Panel External Interfaces:

1. Discrete Outputs to CCS:
 - a. Dry contacts shall be pre-wired to a common terminal strip, and suitable for 1 amp at 120V ac.
 - b. REMOTE status.
 - c. Common FAIL alarm contact that closes on the occurrence of any of (but not limited to) the following conditions (to be used by CCS):
 - 1) HIGH differential air pressure.
 - 2) HIGH discharge temperature.
 - 3) Motor OVERTEMP.
2. Discrete Inputs:
 - a. Contact Rating: Wet contact at 24V dc.
 - b. START/STOP from CCS.

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3. Signals that interface with CCS shall be wired to a terminal block in each panel.

D. System Operation:

1. Functional Requirements:
 - a. Provide at each panel:
 - 1) Acknowledge Alarm pushbutton and associated logic for the common FAIL alarms. When alarm condition occurs, indicate associated condition at panel. Local indication of alarm condition shall remain until condition has been corrected and Acknowledge Alarm pushbutton pressed.
 - 2) Control logic to monitor operation of blower and fully control onboard motor and VFD. Blower shall alarm if a dangerous operating condition such as high discharge pressure or high discharge temperature is measured via onboard sensors.
 - 3) If an alarm is thrown, unit shall not start again until the problematic condition is resolved and the alarm is acknowledged.

~~2.05~~ SOURCE QUALITY CONTROL

~~A. Blower Performance Test:~~

- ~~1. Submit test results for review prior to shipment of package.~~
- ~~2. Perform on the blower actually furnished in accordance with ISO 1217 standards.~~
- ~~3. Test each blower for a minimum of 1 hour in total across five test points after stabilization at design conditions for mechanical integrity and flow performance.~~
 - ~~a. Perform at specified performance pressure rise.~~
 - ~~b. Tolerance on Flow: Plus or minus 4 percent, after correction to rated conditions.~~
- ~~4. Measure power consumption using a calibrated wattmeter.~~ ^[ADD. 3]

~~A. Test Report: Confirm capacity and power, complete with data and calculations used in the test.~~ General Testing Requirements:

1. Blower Testing:
 - a. Conduct manufacturer standard test in accordance with ISO 1217 standards as described herein on all furnished blowers and associated components supplied under this specification. Testing

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- of similar size units and components not actually furnished will not be allowed.
- b. Organize and clearly present testing methods and procedures, testing equipment, test data, calculations and analyses, conclusions, and recommendations.
 - c. Submit summarized test results in a certified report for approval.
2. The blower package manufacturer must submit a factory test procedure for approval. Pre-requisite for scheduling the factory test is an approved test procedure at least 6 weeks prior to scheduling the factory test.
- a. The test procedure shall include the completed attached Factory Testing Summary Checklists supplements:
 - 1) Process and Fluid Components.
 - 2) Electrical Power Related Components.
3. The test procedure shall include a sketch of the test setup showing the piping and instrumentation.
4. All test equipment shall be calibrated and certified by an independent test agency no more than 12 months prior to the test date. Certificates shall show the stability of calibration over a period of at least 1 year per ISO 9001, Paragraph 4.11.
5. The manufacturer shall provide copies of the test data and all certifications of Factory Testing for approval by the engineer prior to shipping equipment.
6. Final approved test results shall be included in the Operation and Maintenance Manual.

B. Blower Performance Test:

- 1. Each blower shall be performance tested to verify flow and wire power consumption at design conditions as well as blower minimum and maximum operating conditions. Tests shall be conducted using all components to be installed in the field.
- 2. The blower test report shall present computations with the performance curves showing capacity, pressure, and horsepower (kW) inputs for each of the flow and pressure conditions and the determination of the maximum operating pressure.
- 3. Each blower package shall be factory tested for duration not less than 4 hours under varying operating conditions.
- 4. The blower package including pressure relief/blowoff valve shall be tested before shipment.

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5. A calibrated wattmeter shall measure the electrical input to the blower system. Measured power shall include all losses associated with electrical shaft power, including but not limited to the motor, inverter, drive, cooling system, etc.
6. Plot flow vs. speed and power vs. speed and flow vs. power at constant pressure, using units as defined herein before. Plots should include one point near the minimum flow as limited by differential temperature and one point near the maximum flow as limited by the lower of motor power, speed, or pressure.
7. Inlet pressure, inlet temperature, inlet humidity, discharge temperature, discharge pressure, and net delivered flow rate shall be recorded for all operating design points outlined within this section.
8. The blower delivered flow rate (scfm) and discharge pressure (psi) shall be guaranteed with no negative tolerance. There shall be no other tolerances or measuring uncertainties used in reporting test results.
 - a. Air flow rate shall be measured on the discharge side of the blower.
 - b. Discharge pressure (delivered pressure) shall be measured downstream of the check valve.
 - c. Input power is the sum of the input electrical power to the blower system (package).
9. Measure power consumption using a calibrated wattmeter.
10. Provide total power consumption calculations for each blower for each specified operating condition.

C. Additional Testing and Verification:

1. Velocity vibration versus frequency levels shall be recorded within 10 1,000 and 10-10,000 Hz frequency.
2. The noise level shall be measured in accordance with ASME PTC-36, Measurement of Industrial Sound, and operating at the maximum design capacities during the preliminary equipment tests at the factory.
3. All START/STOP sequences and all safety and alarm systems shall be tested, simulating start of the blower motor. All blowers shall be demonstrated for satisfactory functional operation before shipment.

D. Motor Test: See Section 26 20 00, Low-Voltage AC Induction Motors. ^[ADD. 3]

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PART 3 EXECUTION

3.01 INSTALLATION

- A. In accordance with manufacturer's written instructions.
- B. Verify internal check valve was factory installed on blower package. If absent, install one check valve in the blower discharge piping, downstream of the silencer and safety relief valve.
- C. Anchor Bolts: Accurately place using templates furnished by manufacturer and as specified in Section 05 50 00, Metal Fabrications.
- D. Install blower package with anchor bolts in strict accordance with manufacturer's written instructions.

3.02 FIELD QUALITY CONTROL

- A. In accordance with Section 01 91 14, Equipment Testing and Facility Startup.
- B. Functional Test: Prior to facility startup, conduct on each Blower System for correct rotation, proper connection, quiet operation, and satisfactory specified performance.

3.03 MANUFACTURER'S SERVICES

- A. ~~Manufacturer's Representative~~ Provide the following manufacturer services. Refer to Section 01 43 33, Manufacturer's Field Services, and Section 01 91 14, Equipment Testing and Facility Startup:
 - 1. Manufacturer's Certificates of Compliance.
 - ~~1-2.~~ Manufacturer's Certificates of Proper Installation.
 - ~~2-3.~~ Manufacturer's Representative: Present at Site or classroom designated by Owner. ^[ADD. 3]
 - ~~3-4.~~ Present at Site ~~F~~ for ^[ADD. 3] minimum person-days listed below, travel time excluded:
 - a. 1-person-day for installation assistance and inspection.
 - b. 1-person-day for functional testing and completion of Manufacturer's Certificate of Proper Installation.
 - c. 1-person-day for post-startup training of Owner's personnel.

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3.04 SUPPLEMENTS

A. The supplements listed below, following “End of Section,” are a part of this specification:

1. Process and Fluid Components – Factory Testing Summary Checklist.
2. Electrical Power Related Component – Factory Testing Summary Checklist.^[ADD. 3]

END OF SECTION

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PROCESS AND FLUID COMPONENTS – FACTORY TESTING SUMMARY CHECKLIST^[ADD. 3]

<u>Included in Performance Boundary</u>			
	<u>Included in Test</u>	<u>Determine by Calculation</u>	<u>Not Applicable</u>
<u>Inlet filter</u>			
<u>Inlet silencer</u>			
<u>Discharge silencer</u>			
<u>Inlet isolation valve</u>			
<u>Throttling valve</u>			
<u>After cooler</u>			
<u>Misc. pipe and fittings</u>			
<u>Inlet air cooler</u>			
<u>Discharge check valve</u>			
<u>Discharge isolation valve</u>			
<u>Enclosure doors or panel openings</u>			
<u>Estimated system inlet pressure drop</u>			
<u>Additional components not listed included as forming the blower package</u>			

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ELECTRICAL POWER RELATED COMPONENT – FACTORY TESTING SUMMARY CHECKLIST^[ADD. 3]

<u>Included in Performance Boundary</u>			
	<u>Included in Test</u>	<u>Determine by Calculation</u>	<u>Not Applicable</u>
<u>Drive motor</u>			
<u>Motor cooling fan(s)</u>			
<u>Magnetic bearing(s) and controller(s)</u>			
<u>Bearing cooling fan(s)</u>			
<u>Coolant pumps</u>			
<u>Lubrication pump(s) and accessories</u>			
<u>Heat exchanger fan(s)</u>			
<u>Package cooling fan(s)</u>			
<u>VFD(s)</u>			
<u>VFD line-side power- conditioning equipment</u>			
<u>VFD load-side power- conditioning equipment</u>			
<u>Eddy current or variable speed clutch</u>			
<u>Operation control panel(s)</u>			
<u>Power/isolation transformers and power supplies</u>			
<u>Power conditioner(s)</u>			
<u>Blower and motor cooling systems</u>			

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<u>Included in Performance Boundary</u>			
	<u>Included in Test</u>	<u>Determine by Calculation</u>	<u>Not Applicable</u>
<u>VFD cooling</u>			
<u>Additional components not listed included as forming the blower package</u>			

SECTION 44 42 56.05
HORIZONTAL CHOPPER PUMP AND MIXING ASSEMBLIES

EQUIPMENT AND COMPONENT NUMBER(S)

H090-DEW2-RCP01: Recirculation Pump No. 1.

H090-DEW2-RCP02: Recirculation Pump No. 2.

PART 1 GENERAL

1.01 WORK OF THIS SECTION

- A. The Work of this section includes providing pump mixing systems as defined herein and all appurtenant Work.
- B. Unit Responsibility: The Work requires that the Sludge Holding Tank No. 1 mixing, complete with all accessories and appurtenances (including, but not necessarily limited to, electric motors, safety guards, and spare parts) be supplied by one responsible system manufacturer or responsible system supplier. Unless otherwise indicated, the Contractor shall obtain each system from the responsible supplier of the equipment. The supplier shall furnish all components and accessories of the system to enhance compatibility, ease of operation and maintenance, and as necessary to place the equipment in operation in conformance with the specified performance, features, and functions indicated without altering or modifying the Contractor's responsibility under the Contract Documents. The Contractor is responsible to the Owner for providing the equipment systems as specified herein.
- C. General Requirements: See Division 01, General Requirements, which contains information and requirements that apply to the Work specified herein and are mandatory for this Project.

1.02 DEFINITIONS

- A. Terminology pertaining to pumping unit performance and construction shall conform to the ratings and nomenclature of the Hydraulic Institute Standards.

1.03 SUBMITTALS

- A. Action Submittals:
 - 1. Shop Drawings:
 - a. Make, model, weight, and horsepower of each equipment assembly.

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- b. Complete catalog information, descriptive literature, specifications, and identification of materials of construction.
 - c. Performance data curves showing head, capacity, horsepower demand, and pump efficiency over the entire operating range of the pump, from shutoff to maximum capacity. Indicate separately the head, capacity, horsepower demand, overall efficiency, and minimum submergence required at the guarantee point.
 - d. Detailed structural, mechanical, and electrical drawings showing the equipment dimensions, size, and locations of connections and weights of associated mixing system and recirculation equipment.
 - e. Motor information as specified in Section 26 20 00, Low-Voltage AC Induction Motors.
 - f. Factory finish system data sheets.
2. Computational Fluid Dynamics (CFD) analysis that models the flows within each Sludge Holding Tank verifying that nozzle location and orientation provides adequate mixing of the tank contents, under service conditions specified herein. Adequate mixing shall be provided to obtain suspended solids concentrations within 10 percent of the average value regardless of location inside the tank. Model must contain all structural and mechanical elements.

B. Informational Submittals:

1. Factory Functional and Performance Test Reports and Log from actual mixing pumps that will be used in the mixed systems for this Project.
2. Manufacturer's Certification of Compliance that the factory finish system is identical to the requirements specified herein.
3. Special shipping, storage and protection, and handling instructions.
4. Manufacturer's printed installation instructions.
5. Manufacturer's Certificate of Proper Installation.
6. Suggested spare parts list to maintain the equipment in service for a period of 1 year. Include a list of special tools required for checking, testing, parts replacement, and maintenance with current price information.
7. List special tools, materials, and supplies furnished with equipment for use prior to and during startup and for future maintenance.
8. Operation and Maintenance Manual.
9. If anchorage and support details, locations, sizes and materials are not identified by the manufacturer, the Contractor shall provide support and anchorage calculations stamped by an engineer registered in the state of the Project. Anchorage and support design criteria shall meet manufacturer's requirements, design loads provided in the General Structural Notes on the Drawings, and all applicable codes and standards. Provide ICC-ES report and special inspection requirements

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for any post installed anchors in concrete and masonry. Anchor calculations shall account for edge distance, concrete thickness and other existing conditions which shall be field verified by the Contractor and identified in the calculations and any related Drawings.

1.04 EXTRA MATERIALS

- A. Furnish complete mechanical seal, impeller, and cutter bar.

PART 2 PRODUCTS

2.01 GENERAL

- A. Coordinate pump requirements with drive manufacturer and be responsible for pump and drive requirements.
- B. Pumped Mixing System Manufacturer:
 - 1. Rotamix® as manufactured by Vaughan Co., Inc.
 - 2. Trillium Flow Technologies.^[ADD. 3]
 - ~~2.3.~~ Or approved equal.
- C. Mixing and Recirculation Pump Manufacturer:
 - 1. Vaughan Co., Inc.
 - 2. Trillium Flow Technologies.
 - 3. Or approved equal.

2.02 MIXING SYSTEM DESCRIPTION

- A. The Contractor shall furnish one complete mixing system, for Sludge Holding Tank No. 1, consisting of two floor-mounted mixing nozzle assemblies in the tank, and two associated chopper pumps. The dimensions of tank shall be as shown on the Drawings. The nozzles shall be designed to produce a rotational mixing pattern within the tank. The manufacturer shall be responsible for determining mixing assembly quantity, location, appropriate nozzle angles, and hydraulic performance of the pumps and system as a whole. Mixing system shall be designed to adequately mix the tank as specified under Article Field Quality Control, Paragraph Performance Test, with inner structural and mechanical elements including but not limiting to concrete fillets and weirs, as shown on the Drawings.

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B. Service Conditions:

1. Design Percentage Total Solids (TS) of Feed Sludge: 3.5 percent maximum. Range 1 percent to 6 percent.
2. Design Temperature of Sludge: 50 degrees F to 90 degrees F.
3. Recirculation Sludge Flows: 300 gpm to 1,000 gpm.
4. Target Tank Turnovers a Day: 6 to 10.
5. The sludge pH is anticipated to be normally 6-8.

C. The Contractor shall submit manufacturer's standard warranties for equipment to be furnished in accordance with this section. The pump warranty shall be manufacturer's standard for 1 year. The nozzle warranty shall be a 10-year nonprorated warranty, commencing on the initial startup date.

D. A performance affidavit shall be supplied certifying that the system as provided will meet or exceed the performance requirements for the specific application if proposed system has less than a minimum of 10 years of proven successful installations of the current design.

E. Nozzle Construction:

1. Nozzles: Shall be glass-lined cast ductile iron, with 1-inch nominal wall thickness to protect against abrasive conditions, and a long straight taper length of at least 10 inches.
2. Assembly Fittings: Shall be glass-lined cast ductile iron, with 150-pound flanged piping connection.
3. Base: Shall be fabricated carbon steel, with 3/4-inch mounting holes for 5/8-inch anchor bolts.
4. Anchor Bolts: Shall be 5/8-inch diameter minimum and sized by the equipment supplier, and of sufficient length to support thrust loads from nozzles. Construction shall be Type 316 stainless steel.

2.03 CHOPPER PUMPS

A. Recirculation Pump No. 1, and No. 2 (H090-DEW2-RCP01 and H090-DEW2-RCP02):

1. Capacity: Determined by mixing system manufacturer. One duty and one standby pump.
2. Head: Determined by mixing system manufacturer for the piping system as shown on the Drawings.
3. rpm: 1,170.
4. Pump shall be direct driven. Pump and motor orientation shall not compromise clearance shown on mechanical drawings for equipment access.

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B. Pump Construction:

1. Pumps shall be horizontal chopper type pumps with all appurtenances as specified. The pumps shall be specifically designed to pump waste solids at heavy consistencies. Materials shall be macerated and conditioned by the pump as an integral part of the pumping action. The pump must have demonstrated the ability to chop through and pump high concentrations of solids such as plastics, heavy rags, grease and hair balls, wood, paper products and stringy materials without plugging, both in tests and field applications.
2. Casing: The pump casing shall be semi-concentric back pullout design, with the first half of the circumference being cylindrical beginning after the pump outlet, and the remaining circumference spiraling outward to the 150-pound flanged centerline discharge.
3. ASTM A536 ductile cast iron with all water passages to be smooth, and free of blowholes and imperfections for good flow characteristics. A 1/4-inch NPT pressure tap shall be included in the discharge flange.
4. Impeller: Shall be semi-open type with pump out vanes to reduce seal area pressure. Chopping/maceration of materials shall be accomplished by the action of the cupped and sharpened leading edges of the impeller blades moving across the cutter bar at the intake openings, with a maximum set clearance between the impeller and cutter bar of 0.010-inch to 0.030-inch cold. Impeller shall be cast from ASTM A148 alloy steel, case hardened to minimum Rockwell C 60 and dynamically balanced. The impeller shall have no axial adjustments and no setscrews.
5. Cutter Bar: Shall be recessed into the pump bowl, with a funnel shaped inlet opening, and shall extend diametrically across entire pump suction opening. Cutter bar shall be cast from ASTM A536 ductile iron, or T1 alloy steel, hardened to minimum Rockwell C 50. Replaceable shear bars shall be AISI 8620 or ASTM A148 cast alloy steel, case hardened to minimum Rockwell C 60.
6. Pump Shafting: The pump shaft and impeller shall be supported by AFBMA ball bearings. All shafting shall be AISI 4140 heat treated.
7. Bearings: Shaft thrust in both directions shall be taken up by two back-to-back mounted single-row angular contact ball bearings. Two back-to-back mounted single-row radial bearings shall also be provided. B-10 bearing life shall be minimum 100,000 hours.
8. Bearing Housing: Shall be ASTM A536 ductile cast iron, and machined with piloted bearing fits for concentricity of all components. Bearing housing shall be oil bath lubricated with ISO Grade 46 turbine oil and a side-mounted site glass to provide a permanently lubricated assembly. Viton® double lip seals riding on stainless steel shaft sleeves are to provide sealing at each end of the bearing housing.

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9. Seal: Flushless mechanical seal system specifically designed to require no seal flush through the elimination of the stuffing box: The seal shall be made of AISI Type 316 stainless steel and shall be cartridge-type with Viton O-rings and tungsten carbide faces. The cartridge seal shall be preassembled and pretested so that no seal settings or adjustments are required. Any springs used to push the seal faces together must be shielded from the fluid to be pumped. The cartridge shall also include a 17-4PH, heat-treated seal sleeve and an ASTM A536 ductile iron seal gland. The mechanical seal faces shall be lubricated and cooled by a separate oil chamber. The oil chamber shall include a 10 psi pressure relief valve. The area between the seal oil chamber and bearing oil chamber shall be vented and drained to prevent contamination of the bearings.
 10. Inlet Manifold: The pump assembly shall be mounted horizontally with 150-pound standard inlet flange, cleanout, 1/4-inch NPT suction pressure tap, drain connection, and mounting feet.
 11. Shaft Coupling:
 - a. Bearing housing and motor stool design is to provide accurate, self-aligning mounting for a C-flanged electric motor. Pump and motor coupling shall be as manufactured by:
 - 1) T.B. Woods; Sureflex elastomeric type.
 - 2) Falk.
 - 3) "Or-equal."
 12. The pump manufacturer shall provide a common pump and motor base constructed of a minimum 3/8-inch thick fabricated steel, suitably reinforced to support the full weight of the pump and motor.
- C. Motors: Drive motors shall be inverter duty, horizontal, TEFC, 20 hp minimum, 1.15 service factor, 460 volts, three-phase, 60 Hz. Motor nameplate horsepower shall not be exceeded at any head capacity point on the pump curve. See Section 26 20 00, Low-Voltage AC Induction Motors.

2.04 ACCESSORIES

- A. Equipment Identification Plate: 16-gauge stainless steel with 3/8-inch high engraved block type equipment tag number securely mounted in a readily visible location.
- B. Lifting Lugs: Equipment weighing over 100 pounds.
- C. Anchor Bolts: Sized by equipment manufacturer, 1/2-inch minimum diameter, and as specified in Section 05 50 00, Metal Fabrications.

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2.05 FACTORY FINISHING

- A. Manufacturer's premium epoxy and polyurethane coating system "or-equal."

2.06 SOURCE QUALITY CONTROL

- A. Factory Inspections: Inspect control panels for required construction, electrical connection, and intended function.
- B. Factory Tests and Adjustments: Test all equipment and control panels actually furnished.
- C. Factory Test Report: Include test data sheets, curve test results, performance test logs, certified correct by a registered professional engineer.
- D. Functional Test:
 - 1. Perform manufacturer's standard motor test on equipment. Include vibration test, as follows:
 - a. Dynamically balance rotating parts of each pump and its driving unit before final assembly.
 - b. Limits:
 - 1) Driving Unit Alone: Less than 80 percent of NEMA MG 1 limits.
 - 2) Complete Rotating Assembly, Including Coupling and Motor: Less than 90 percent of limits established in the Hydraulic Institute Standards.
- E. Performance Test:
 - 1. Conduct on each pump.
 - 2. Perform under simulated operating conditions.
 - 3. Test for a continuous 3-hour period without malfunction.
 - 4. Test Log:
 - a. Record the following:
 - 1) Total head.
 - 2) Capacity.
 - 3) Horsepower requirements.
 - 4) Flow measured by factory instrumentation and storage volumes.
 - 5) Average distance from suction well water surface to pump discharge centerline for duration of test.

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- 6) Pump inlet and outlet pressure converted to feet of liquid pumped and corrected to pump discharge centerline.
 - 7) Driving motor voltage and amperage measured for each phase.
5. Adjust, realign, or modify units and retest in accordance with Hydraulic Institute Standards if necessary.
- F. Motor Test: See Section 26 20 00, Low-Voltage AC Induction Motors.
- G. Hydrostatic Tests: Pump casing(s) tested at 150 percent of shutoff head. Test pressure maintained for not less than 5 minutes.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's printed instructions.
- B. Level base by means of steel wedges (steel plates and steel shims). Wedge taper not greater than 1/4 inch per foot. Use double wedges to provide a level bearing surface for the pump and driver base. Accomplish wedging so that there is no change of level or springing of the baseplate when the anchor bolts are tightened.
- C. Adjust pump assemblies such that the driving units are properly aligned, plumb, and level with the driven units and all interconnecting shafts and couplings. Do not compensate for misalignment by use of flexible couplings.
- D. After the pump and driver have been set in position, aligned, and shimmed to the proper elevation, grout the space between the bottom of the baseplate and the concrete foundation with a poured, nonshrinking grout of the proper category, as specified in Section 03 62 00, Grouting. Remove wedges after grout is set and pack void with grout.
- E. Connect suction and discharge piping without imposing strain to pump flanges.
- F. Anchor Bolts: Accurately place using equipment templates and as specified in Section 05 50 00, Metal Fabrications. Type 316 stainless steel, sized by equipment manufacturer in accordance with Section 01 88 15, Anchorage and Bracing.

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3.02 FIELD FINISHING

- A. Nozzle assemblies manufacturers finish shall be suitable UV exposure. If factory finishes do not meet UV resistant then, field finish nozzle assemblies as specified in Section 09 90 00, Painting and Coating, System No. 2.

3.03 FIELD QUALITY CONTROL

- A. Functional Tests: Conduct on each pump, system, and subsystem as specified in Section 01 91 14, Equipment Testing and Facility Startup.
 - 1. Alignment: Test complete assemblies for correct rotation, proper alignment and connection, and quiet operation.
 - 2. Vibration Test:
 - a. Test with units installed and in normal operation, and discharging to the connected piping systems at rates and with the actual building structures and foundations provided shall not develop at any frequency or in any plane, peak-to-peak vibration amplitudes in excess of 3 mils.
 - b. If units exhibit vibration in excess of the limits specified, adjust or modify as necessary. Units which cannot be adjusted or modified to conform as specified shall be replaced.
 - 3. Flow Output: Measured by plant instrumentation and storage volumes.
- B. Operating Temperatures: Monitor bearing areas on pump and motor for abnormally high temperatures.
- C. Performance Test:
 - 1. In accordance with Hydraulic Institute Standard 1.6, Centrifugal Pump Test.
 - 2. After startup of the sludge holding process, perform a mixing test at each mixing system using each pump to demonstrate adequate mixing.
 - a. Perform at conditions stated in Article Mixing System Description.
 - b. Select three vertical lines and two depths in each tank.
 - c. Take three Samples at each of two depths along each vertical line using Van Doren sampler.
 - d. Independent testing laboratory approved by Engineer will perform residue test on each Sample. Mean value of total residue for three Samples at each depth will be used to determine if suspended solids concentrations of all samples are within 10 percent of the average value regardless of location inside the tank.

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- e. All testing and sampling shall conform to procedures established in latest edition of Standard Methods for Examination of Water and Wastewater.

3.04 MANUFACTURER'S SERVICES

A. Manufacturer's Representative:

- 1. Present at Site or classroom designated by Owner, for minimum person-days listed below, travel time excluded:
 - a. 1 person-day for installation assistance and inspection.
 - b. 1 person-day for functional and performance testing and completion of Manufacturer's Certificate of Proper Installation.
 - c. 1 person-day for post-startup training of Owner's personnel. Training shall not commence until an accepted detailed lesson plan for each training activity has been reviewed by Owner.

- B. See Section 01 43 33, Manufacturers' Field Services, and Section 01 91 14, Equipment Testing and Facility Startup.

END OF SECTION

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SECTION 44 46 13.05 COMPOST MIXER SYSTEM

EQUIPMENT AND COMPONENT NUMBER(S)

Compost Mixer 1: H095-COM2-MXR01.
Compost Mixer 2: H095-COM2-MXR02.
Compost Conveyor 1: H095-COM2-CNV01.
Compost Conveyor 2: H095-COM2-CNV02.
Compost Conveyor Panel 1: H095-COM2-CPL01.
Compost Conveyor Panel 2: H095-COM2-CPL02.
Compost Conveyor Panel 3: H095-COM2-CPL03.

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. American Bearing Manufacturers' Association (ABMA): 11, Load Ratings and Fatigue Life for Roller Bearings.
2. American Gear Manufacturers Association (AGMA).
3. American Iron and Steel Institute (AISI).
4. ASTM International (ASTM):
 - a. A36, Standard Specification for Structural Steel.
 - b. A167, Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - c. A325, Standard Specification for High-Strength Bolts for Structural Steel Joints.
5. Conveyor Equipment Manufacturers Association (CEMA):
 - a. Standard No. 502.
 - b. Publication, "Belt Conveyors for Bulk Material."
6. National Electric Manufacturers Association (NEMA): MG1, Motors and Generators.

1.02 RELATED SECTIONS

A. Section 40 90 00, Instrumentation and Control for Process Systems.^[ADD. 3]

~~A.B.~~ Section 40 99 90, Package Control Systems.

~~B.C.~~ Section 44 46 13.01, Belt Conveyor System. (Note: Both mixer and belt conveyor systems to be ~~supplied and~~ warranted by ~~one~~ ~~vendor~~ Contractor.)^[ADD. 3]

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1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Design conveyor system to meet service at less than 60 percent of the conveyor's rated capacity or 25 percent through filling. Each conveyor drive unit shall be designed for 100 percent of rated capacity.
- B. Material received from the Compost Mixers is required to be conveyed to the discharge location as shown on the Drawings. The mixed compost feedstock material will consist of a mixture of woodchips and dewatered sludge discharged from the mixers onto the conveyor.

1.04 SUBMITTALS

- A. Submittal requirements for the compost conveyors shall adhere to the same requirements outlined in Section 44 46 13.01, Belt Conveyor System, Article Submittals.
- B. Action Submittals:
 - 1. Shop Drawings:
 - a. Detail drawings and specifications for components of equipment showing all dimensions, parts, construction details, and materials.
 - b. Performance specifications of equipment.
 - c. Process schematics associated with equipment.
 - d. Standard operating procedures.
 - e. Jamb removal and troubleshooting guidance.
 - f. Standard lubrication requirements.
 - g. Calculations, including:
 - 1) Effective torque, foot-pounds on each particle.
 - 2) Working horsepower.
 - 3) Maximum shear unit stress, pound force per inch of width.
 - 4) Discharge conveyor speed, depth, discharge height from anchor bolt elevation.
 - 5) Height of top of hopper gunwale from anchor bolt elevation (datum).
 - 6) L-10 bearing life for head, tail, and snub pulleys.
 - 7) Equipment sizing.
 - 8) Anchorage details.
 - h. Fabricated items, equipment structural supports, platforms, handrails, and associated items.
 - i. Design calculations for items covered by these Shop Drawings. Calculations shall show design stresses in structural members and connections for loading combinations. Seal the calculation of the structural member calculations by a professional engineer.

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- j. Design loadings, for load combinations, to be transmitted to foundations or supports.
- k. Size, length, and spacing of anchor bolts or attachments to the foundations or supports.
- l. Specific details of attachment of bracing members to concrete or steel structures.
- m. Seal the structural shop drawings by a professional engineer.
- n. Wiring and control schematics, details of the control panels including panel layout, bill of materials terminals and numbers.

C. Informational Submittals:

- 1. Manufacturer's test reports.
- 2. Manufacturer's Certificate of Proper Installation.
- 3. Installation Instructions.
- 4. Operation and Maintenance Data.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Packing and Shipping: After testing and before dismantling for shipment, matchmark and tag wiring and mechanical connections to ensure proper field assembly.
- B. Delivery: In accordance with the General Conditions.

PART 2 PRODUCTS

2.01 GENERAL

- A. Mixer equipment and conveyors shall be designed to work in tandem with each other. All components supplied under this section shall be designed and rated for continuous duty (24 hours per day, 7 days per week, 365 days per year) operation.

2.02 SERVICE CONDITIONS – COMPOST FEEDSTOCK

- A. Material Conveyed: Dewatered sludge and shredded wood chip amendment mixture.
- B. Bulk Density:
 - 1. Compost Feed Stock: Approximately 800 ~~to 1,000~~ pounds^[ADD. 3] per cubic yard or ~~230 to 37~~ pounds^[ADD. 3] per cubic foot.
 - 2. Dewatered Sludge: See Section 44 46 13.01, Belt Conveyor System.
 - 3. Bulking agent: ~~650~~ percent^[ADD. 3] to 80 percent total solids, ~~2350~~ pounds^[ADD. 3] to ~~4650~~ pounds^[ADD. 3] per cubic yard.

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- C. Capacity: 250 tons per hour.
- D. Intermittent Use: 5 days/week.
- E. Running Hours/Day: 8.
- F. Belt Size: ~~48~~60 inches. ^[ADD. 3]
- G. Belt Speed: ~~350 feet per minute.~~ ^[ADD. 3] To be submitted for approval with calculations. ^[ADD. 3]
- H. Location: Outside underneath canopy, as shown on the Drawings.

2.03 MANUFACTURER

- A. Compost Feedstock Conveyor: ~~Kuhn; Roto-Mix Conveyor~~ ^[ADD. 3] Jim Myers & Sons (JMS). ^[ADD. 3]
- B. Compost Feedstock Mixer: Kuhn; Roto-Mix. ^[ADD. 3]

2.04 MIXERS

- A. General: Mixer specification is based on manufacturer and model listed first in Paragraph Manufacturer and Product in this article. If other manufacturer's products are used, modification to dimensions and power supply etc., may be required to suit. Feed rate, volumetric capacity, and transfer efficiency must be equal for any alternative design.
- B. The stationary mixer shall consist of one large diameter "reel" and two blending augers. The reel must turn slowly, lifting materials up and into the blending augers. The lower auger moves the material toward the front during the mixing process and charges the door opening during the unloading process. The upper auger turns at high speed, breaking up clumps and moving material toward the rear of the unit.
- C. Design Requirements:
 - 1. Capable of conveying mixture at a rate of ~~72~~144 cubic yards ^[ADD. 3] (~~four~~eight batch loads ^[ADD. 3]) per hour.
 - 2. Capable of eliminating all sludge balls over 1 inch in diameter.
 - 3. Density of mixed material is approximately 800 pounds to ^[ADD. 3] 1,000 pounds per cubic yard.
 - 4. Mix components consist of sludge at 14 percent to 24 percent total solids, 1,350 pounds to 1,600 pounds per cubic yard; bulking agent at 50 percent to ~~78~~0 percent ^[ADD. 3] total solids, 350 pounds to ~~6,000~~650 pounds ^[ADD. 3] per cubic yard.

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5. Material Conveyed: Dewatered sludge and shredded yard waste/wood chip amendment.
6. Size Distribution: 1/2-inch to 6-inch particles including splintered chips up to 6 inches long and 2 inches in diameter.
7. Continuous use.
8. Running Hours/Day: 4.
9. Mixer Volume: 22 cubic yards.
10. Number of Mixers: Two.

D. Mixing Box:

1. Mixer shell to be constructed of A-36 carbon steel lined with 12-gauge, Type 304 stainless steel. Support members, shields, undercarriage, etc., are to be made of A-36 carbon steel. The reel and augers are to be powered by a high torque, low speed chain and sprocket drive, completely housed in an oil bath enclosure. All bearings are to be high quality triple lip seal, self-aligning, and greaseable. Bearings that are not readily accessible are to be connected to lubrication points with flexible grease tubes. The mixer shall be equipped with a side discharge opening that is to be 22 inches high by 42 inches wide and equipped with a hydraulically controlled door.
2. Unloading time is to be approximately 3 minutes.

- E. Electric Drive: Mixer shall be powered by a 75 hp, 480-volt, three-phase electric motor using a 2:1 reduction gearbox. A control package, consisting of a TEFC motor, a NEMA 4 steel enclosure, fusible main disconnects, magnetic starter with overloads, control transformer with fused primary and secondary, power supply for scale, remote control panel with dust-tight buttons, and complete mounting on the unit shall be included. The electric door control shall include a 480V ac hydraulic power pack, 2 hp starter, control panel, and hoses.

- F. Slide Tray Discharge: Slide tray discharge will be used to direct material onto 60-inch wide stacking conveyor. Transfer to load conveyor uniformly in center of conveyor trough with minimal (less than 1 percent) spillage. Slide tray discharge shall facilitate the transfer of mixed solids onto a perpendicular 60-inch wide conveyor belt without spillage at all feed rates. Mixer slide tray shall have raising and lowering capabilities as needed to facilitate free conveyance of mixed material downstream.

- G. Finish: The base coat shall be a two-part epoxy primer. The finish coat shall be a two-part urethane. Standard color is gray.

H. Controls and Accessories:

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1. Electronic Scale: A digital scale with four-point weigh bar mounts shall be supplied which offers capacities to 40,000 pounds and accuracies of one half of 1 percent. Display is to be 4 inches high and audio/visual alarm is available at preset weights. Radio controller is to be provided to zero the scale from a remote location. Radio controller can be used to open and close the mixer gate and transfer contents to the belt conveyor.
2. Provide an 18-inch by 1/4-inch steel extension spill or splash boards designed by manufacturer to prevent spillage when materials are loaded by front end loader into the mixer.
3. Provide exterior ladder for inspection of mixer interior.

I. Control Panels (H095-COM2-CPL01):

1. NEMA 4 ~~paint~~~~ed steel~~~~stainless steel~~^[ADD. 3] enclosure, 480 volts, three-phase, for outdoor duty, for additional panel requirements.
2. Free standing, mounted on 9-inch concrete pad.
3. Control panel shall include:
 - a. 150A main circuit breaker disconnect interlocked with panel door.
 - b. Combination circuit breaker type, NEMA rated motor starters.
 - c. Fused control power transformer, 120V ac. Sized to accommodate all control devices plus 1,500 watts for receptacle.
 - d. HAND/OFF/AUTO selector switch for mixer unloading system.
 - e. START/STOP/AUTO switch for each component.
 - f. Running lights (red).
 - g. Motor failure alarm lights (amber).
 - h. Hydraulic system failure alarm light (amber)
 - i. Terminal strip for interfacing with external wiring.
 - j. Alarm (high temperature, moisture, or high level) beacon located on top of panel.
 - k. System EMERGENCY shut down push button.
 - l. EMERGENCY alarm with (system shut down due to EMERGENCY button) light (amber)
 - m. Lightning protection.
 - n. Intrinsically safe relays as required for UL validation.
 - o. Alarm silence button.
 - p. 110-volt, duplex GFI outlet, weather-protected, and accessible from outside of panel.
 - q. UL labeled panel.
 - r. See Section 40 99 90, Package Control Systems, for component and wiring requirements.

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J. Electrical:

1. General:
 - a. Provide all necessary electrical components and wiring for a complete, functional system. Electrical components shall be provided in accordance with the requirements of Division 26, Electrical.
 - b. Instruments supplied in this section shall be wired by the system supplier to a common terminal junction box. Each conductor shall be terminated on a separate terminal point. Provide separation between analog signals and 120-volt power connections.
2. Wiring: The Drawings and Specifications indicate the anticipated wiring for the equipment provided under this section. If additional wiring is required, or if required wiring does not match what is indicated, the Contractor shall make the necessary modifications to the electrical wiring and documentation as part of the lump sum price. All wiring shall meet the requirements of Section 26 05 05, Conductors, and NFPA 70. All insulation shall be rated 600 volts, minimum. All low-voltage (24V) signals shall be run in twisted, shielded pair cable.
3. Electrical Raceways: All electrical wiring shall be installed in conduit meeting the requirements of Section 26 05 33, Raceway and Boxes, and NFPA 70.

K. Operation Description:

1. Normal operation shall require the mixer/conveyor control panel to be set in AUTO mode. The mixer and conveyor system shall be controlled locally using a vendor-supplied control panel.
 - a. In AUTO mode, mixer shall start via a wireless hand-held remote from the front end loader (FEL) cab once materials have been successfully loaded into the mixer. Once the targeted mixer has finished mixing after a predetermined length of time (as recommended by mixer manufacturer, set by operator), an audible alarm shall be activated and the mixed mixer shall stop. The conveyor shall then start automatically. The discharge gate for mixed mixer shall then open, material shall be directed onto the conveyor for loading mixed material up and over the wall for storage of mix in the three-sided mix bunker.
 - b. In HAND mode, typically used for maintenance only, operator shall be able to manually control the mixer start and stop, mixer gate start and stop, and conveyor start and stop.
2. Each mixer shall have a large letter display visible by the FEL operator during loading process and shall indicate weight of the material inside the mixer.

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3. AUTO MODE ONLY Interlocks. Mixers shall only be able to discharge contents one at a time and only if mixer's discharge door downstream (if applicable) is not interfering with travel of mixed materials from discharge mixer. Mixers shall only be able to discharge if discharge conveyor is operating.
4. When either the conveyor is failed or stopped, mixer motor is overloaded, or hydraulic pump for discharge door is overloaded, or E-STOP button is activated, the FAIL signal shall be delivered to the appropriate control panels and the mixer(s) and /or conveyor shall be stopped automatically.

~~L. Manufacturer and Product:~~

- ~~1. Kuhn Knight; Model RC 260 Stationary Mixer.~~
- ~~2. Or Engineer approved equal.~~ ^[ADD. 3]

2.05 CONVEYOR COMPONENTS

A. General:

1. The compost conveyor piggy-back style is setup such that the elevated mixers are not too high for front-end loaders to dump material. The final discharge elevations shall be coordinated between mixer and conveyor manufacturers.
2. Manufacturer Responsibility: The conveyor manufacturer shall hold sole responsibility for the engineering, structural design, component selection, and operational integration of the conveyor system to meet the performance criteria specified herein.
3. The conveyor manufacturer shall design, engineer, and fabricate the conveyor system in strict accordance with the performance requirements of this specification. No fabrication shall begin until the manufacturer submits, and the Engineer approves, complete submittal packages including detailed shop drawings, system layouts, and technical data sheets. ^[ADD. 3]

~~A.B.~~ B. Frame:

1. Material: Type 316 stainless steel.
2. Type: 20-inch deep truss with angle or channel top and bottom chords, angle lattice, and cross bracing.

~~B.C.~~ C. Head Section:

1. Furnish a 16-inch diameter, 63-inch wide welded steel drum type head pulley, complete with lagging.

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2. Support pulley shaft in pillow block bearings spaced at minimal distance to clear the running belt.
3. Furnish a belt cleaner at the underside of the head pulley to remove adhering material.
4. Furnish spring or counterweighted neoprene rubber blade belt cleaner on a channel or truss frame, for connection to the intermediate section of conveyor.

~~C.D.~~ Tail Section:

1. Furnish a 14-inch diameter, ~~48~~63-inch wide ^[ADD. 3] welded steel wing type tail pulley.
2. Support pulley shaft in pillow block bearings spaced at minimal distance to clear the running belt.
3. Furnish a belt cleaner-plow at the return belt prior to the tail pulley to prevent objects passing between the pulley and belt.
4. Furnish two feed-point troughing transition idlers, assembled and mounted on a channel or truss frame, for connection to the intermediate section of conveyor.

~~D.E.~~ Idlers:

1. Carrying Idlers: 60-inch, 20-degree, equal length, CEMA C roll diameter, 4-inch steel rolls, with factory-sealed bearings.
2. Return Idlers: 60-inch flat conventional CEMA C roll diameter, 4-inch rolls, with factory-sealed bearings.
3. Idlers for Belt Scales: Scale quality, turned and balanced to 0.015 T.I.R (Total Indicated Runout).

~~E.F.~~ Belt (Minimum Criteria):

1. Oil-resistant material.
2. 48-inch wide, multiple ply, rated at 330 piw (pounds per inch width).
3. Top Cover: 3/16 inch.
4. Bottom Cover: 1/16 inch.
5. Service: Conventional.
6. Splice: Mechanical fastener.

~~F.G.~~ Skirtboards:

1. Fabricate from 10-gauge minimal thickness Type 304 stainless steel plate.
2. Seal lower edge with a 60-durometer rubber, rectangular strip, clamped to the exterior of the skirtboard, with provision to adjust for wear.
3. The spacing shall not exceed 2/3 belt width.

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4. Set skirtboard length at 2 feet per 100 fpm belt speed, but not less than three times the belt width.
5. Attach to the conveyor support frame and terminate over an idler.

G.H. Drive Assembly:

1. Single drive, located at the head end.
2. Furnish OSHA coupling, belt, and chain guards.

H.I. Gear Reducer:

1. Shaft mounted, with a V-belt drive.
2. Gear housing shall provide complete protection under service conditions.
3. Gears: Manufactured to meet the requirements of AGMA Standards and rated Class II operation.
4. Lubrication: By splash as a minimum. Furnish with oil heater.
5. Furnish internally located and lubricated backstops.

I.J. Controlled Acceleration: Accelerate the conveyor belt from rest by reduced voltage.

1. Applied Torque: Adequate to start a fully loaded belt.

J.K. Creep Drive:

1. Furnish an independent motor and drive machinery capable of driving the empty conveyor through a clutch arrangement.
2. Install as part of drive assembly.

K.L. Shafts: Size shafts to ensure a bending deflection at the pulley end disc of no greater than 5 minutes.

1. Drive and Tail Shafts:
 - a. AISI Steel Grade Designation: 1040.
 - b. Select the heat treatment process (such as, normalize, anneal, 400-degree quench and temper, or 800-degree quench and temper) that will result in a minimum yield tensile strength as required for the calculated shaft loads.
 - c. Accurately grind and fit with key seats, as required.
 - d. Stepdown diameters will not be acceptable without prior approval.
2. Other Shafts: 65,000 psi minimum yield tensile strength, heat-treated, alloy steel.

L.M. Bearings:

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1. Self-aligning, antifriction type, mounted in malleable iron housings, and fitted with taper-locking hubs.
2. Meet ABMA Standards with an L-10 life rating of 100,000 hours.
3. One bearing on each shaft shall float to compensate for shaft expansion.
4. Bearing seals shall prevent the ingress of water, dust, and material handled.

~~M.N.~~ Takeup: Tail pulley, manually adjusted screw type operated.

1. Minimum Takeup Length: 3 percent of the total belt length.

~~N.O.~~ Emergency Stop Switch: Furnish belt conveyors with an emergency stop system consisting of pull cord switches actuated by a cable system running the full length of both sides of the conveyor.

1. Cables and Supports:
 - a. Orange-colored, plastic-covered steel aircraft cable.
 - b. All cable end fittings and intermediate cable support eyes.
 - c. Cable support eyes every 10 feet.
2. Switches:
 - a. Limit the required actuating force to OSHA guidelines.
 - b. Manually reset after actuation.
 - c. Visual indication of operation.
 - d. NEMA 250, Type 4, enclosure, with a single-pole, double-throw output contact, rated for switching an inductive load of 5 amps at 120V ac.
3. Manufacturers and Products:
 - a. Conveyor Control Components; Model RS.
 - b. Crouse-Hinds; Model AFU.

~~O.P.~~ Structural Supports:

1. Design conveyor supports.
2. Connect to building structure.
3. Conveyor support locations are only shown when the adjoining structure requires that the conveyor support points be limited to specific locations. The absence of defined conveyor support locations or support details on the Drawings shall not relieve the Contractor of the responsibility of providing required conveyor supports.
4. Supports shall not restrict access to other process systems.
5. Design conveyor structures in conformance with the AISC Manual of Steel Construction, AISC Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings.
6. Limit maximum total deflection to less than 1/300 of span. Brace supports adequately to carry horizontal loads.

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7. The flange, webs, legs, or wall thickness of conveyor support framing shall not be less than 1/4 inch. Use tubular steel, pipe, flat bar, or other members that provide a clean design that will minimize dust ledges and pockets.

Q. Maintenance Access:

1. Provide permanent maintenance access to the drive motors, gearboxes, couplings, bearings, and associated equipment located at the discharge end of the compost conveyor system.
2. Access shall be designed to allow safe inspection, lubrication, adjustment, repair, removal, and replacement of all drive system components without the use of temporary ladders or scaffolding.
3. Provide a fixed ladder conforming to applicable OSHA requirements, complete with required fall protection devices, mounting hardware, and supports.
4. Provide a maintenance platform at the drive motor location. Platform shall be of sufficient size to allow maintenance personnel to safely perform routine and major maintenance activities, including removal and replacement of motors, gear reducers, and other drive components.
5. Platform flooring shall consist of slip-resistant galvanized steel grating suitable for use in wet and corrosive composting environments.
6. Provide OSHA-compliant guardrails, midrails, and toe boards on all exposed sides of the platform and any associated landings or walkways.
7. Provide a minimum clear working space of 36 inches around equipment requiring routine maintenance unless greater clearance is required by the equipment manufacturer.
8. Access routes shall be arranged to provide unobstructed access to maintenance areas without requiring personnel to climb over conveyor equipment, piping, conduit, or structural members.
9. Design, fabrication, and installation of ladders, platforms, handrails, and fall protection systems shall comply with all applicable OSHA regulations and project safety requirements.
10. Submit access platform and ladder layout drawings, including dimensions, elevations, and equipment clearances, for review prior to fabrication.
11. Platform framing and supports shall be located so as not to impede egress and facility operations. ^[ADD. 3]

2.06 CONTROL SYSTEM

- A. General Instrumentation and Control Requirements: See Section ~~40 99 90~~ 40 90 00, Instrumentation and Control for Process Systems, and Section 40 99 90, ^[ADD. 3] Package Control Systems. ^[ADD. 3] All instrumentation, control, and electrical components provided under this

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section, including panel fabrication and color coding of lights and switches, shall comply with the requirements of Section [40 90 00, Instrumentation and Control for Process Systems](#), or Section [40 99 90, Package Control Systems](#).^[ADD. 3]

- B. Provide all items not specifically identified which are required to implement a complete and functional system.
- C. Equipment remote control and alarm monitoring provided by plant control system, furnished by others.
- D. Control Panel:
 - 1. Tag: H095-COM2-CPL01.
 - 2. Location: As shown on the Drawings.
 - 3. Mounting: Wall mounted.
 - 4. Power: 480-volt, three-phase, 60 Hz.
 - 5. Type: NEMA 4X, Type 304 stainless steel.
 - a. Certification: UL 508A label.
 - 6. Incoming Power and Distribution:
 - a. Provide main circuit breaker with external operator mechanism.
 - b. Provide a 480V/120V ac control power transformer sized appropriately for the control circuit loads.
 - 7. Motor Starters:
 - a. Solid state reduced voltage soft starter with integral bypass and the following integral functions:
 - 1) Phase reversal, phase loss, phase imbalance, SCR overtemp, SCR short and overload protection.
 - b. Provide starter properly sized for each motor.
 - 8. Operator Controls and Status Indicators:
 - a. EMERGENCY STOP pushbutton.
 - b. Conveyor HAND/OFF/REMOTE selector switch.
 - c. Conveyor running indicator light.
 - d. EMERGENCY STOP ACTIVATED indicator light.
 - e. CONVEYOR ZERO SPEED FAULT indicator light.
 - f. CONVEYOR OVERLOAD indicator light.
 - g. FAULT RESET pushbutton.
 - h. Elapsed run time meter.
 - 9. External Interfaces:
 - a. Discrete Inputs:
 - 1) Enable interlock from Plant SCADA system.
 - 2) RUN command interlock from Plant SCADA system.
 - b. Discrete Outputs:
 - 1) Conveyor REMOTE mode signal to Plant SCADA.
 - 2) EMERGENCY STOP signal to Plant SCADA.

HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS

- 3) COMMON FAULT signal to Plant SCADA.
10. Functional Requirements:
 - a. HAND/OFF/REMOTE Operation:
 - 1) HAND: Run conveyor, regardless of interlock conditions.
 - 2) REMOTE: System run command shall activate a timer, which shall allow conveyor to run for a preset duration after system RUN command has cleared, allowing all material to clear prior to shutting down conveyor.
 - 3) EMERGENCY STOP: All system faults shall shut down conveyor regardless of selected system mode.
 - b. Manual reset shall be required prior to restarting the system in the event of any system fault. Control circuit shall latch on the indicator light associated with any system fault upon detection of fault condition.

2.07 ACCESSORIES

- A. Anchor Bolts: Contractor to supply Type 304 stainless steel sized by equipment manufacturer, and as specified in Section 05 50 00, Metal Fabrications. Coat in accordance with Section 09 90 00, Painting and Coating.
- B. Lifting Lugs: Provide suitably attached for equipment assemblies and components weighing over 100 pounds.
- C. Equipment Identification Plates: Furnish 16-gauge stainless steel identification plate securely mounted conveyor drive station and shall have the job name and serial number.

2.08 SOURCE QUALITY CONTROL

- A. Inspect for required construction, electrical connection, and intended function.
- B. Factory Tests and Adjustments: Assemble and perform no-load running tests of the conveyor drive system at manufacturer's plant before shipment.
- C. Control Panel:
 1. Inspect for required assembly criteria, component locations, labeling and ratings.
 2. Inspect panel assembly for neatly arranged wiring and exceptional workmanship.
 3. Test point to point continuity check per assembly drawings prior to energizing panel.
 4. Test control circuit functionality.

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2.09 WARRANTY

- A. Manufacturer shall guarantee the equipment to be free of mechanical defects due to labor or materials for a period of 24 months from equipment startup.
- B. In the event the equipment does not meet the performance specified, the Seller shall make whatever modifications or additions required to bring the equipment into compliance at no additional cost to the Owner.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install equipment in accordance with the manufacturer's installation instructions.
- B. Following installation, protect materials and equipment from corrosion, physical damage, and the effects of moisture.

3.02 FIELD FINISHING

- A. Following installation, touch up scratches, scrapes, or chips in interior and exterior surfaces of devices and equipment with finishes matching as nearly as possible the type, color, and consistency, and type of surface of the original shop/factory finish.

3.03 FIELD QUALITY CONTROL

- A. Functional Tests: Conduct on each mixer and conveyor. [ADD. 3]
 - 1. Alignment: Prior to facility startup, test complete assemblies for correct rotation, proper alignment and connection, quiet operation, and satisfactory specified performance.
- B. Performance Test:
 - 1. Conduct on each mixer, related equipment, and conveyor system.
 - 2. Perform under actual or Engineer-approved simulated operating conditions.
 - 3. Test for a continuous 43-hour [ADD. 3] period without malfunction.
 - 4. Coordinate test with conveyor system, using Engineer-approved design conditions, and demonstrate proper mixing of material as specified.
 - 5. Coordinate ~~test~~ [ADD. 3] with mixer system to deliver designed operating conditions without spill or impact with downstream mixer tray on the compost feed stock system.

HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS

3.04 MANUFACTURER'S SERVICES

- A. Manufacturer's Representative: Present at Site or classroom designated by Owner for installation assistance, inspection, field test, startup and Site training.
 - 1. 3 person-days, for both mixer and attached mix discharge conveyor system. Representative for installation assistance and inspection, functional and performance testing and completion of Manufacturer's Certificate of Proper Installation, prestartup classroom or Site training, and facility startup.
 - 2. Manufacturer's Pre-startup Training.
- B. See Section 01 43 33, Manufacturers' Field Services, and Section 01 91 14, Equipment Testing and Facility Startup.

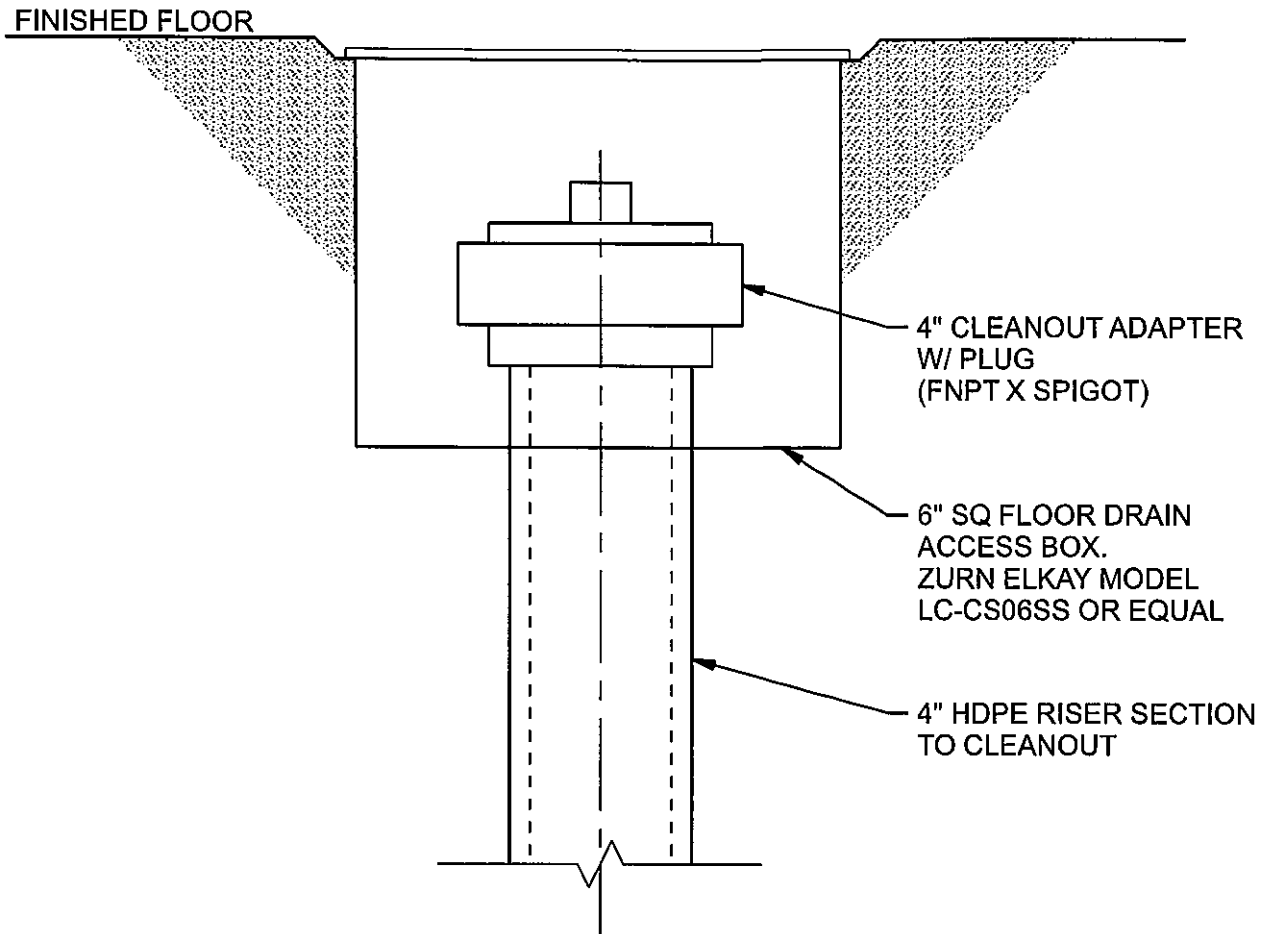
3.05 SUPPLEMENT

- A. The supplement listed below, following "End of Section," is a part of this specification:
 - 1. Compost Conveyor 1 and 2 Data Sheet.

END OF SECTION

HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS

COMPOST CONVEYOR 1 AND 2 DATA SHEET	
Project: <u>Haikey Creek WWTP Biosolids Improvements</u>	
Owner: <u>City of Tulsa, Oklahoma</u>	
Equipment Name(s): <u>Compost Conveyor 1 and Compost Conveyor 2</u>	
Equipment Tag Number(s): <u>H095-COM2-CNV01 and H095-COM2-CNV02</u>	
Type:	
Manufacturer: For multiple units of the same type of equipment, furnish motors and accessories of a single manufacturer.	
Hazardous Location: ☐ Furnish motors for hazardous (classified) locations that conform to UL 674 and have an applied UL listing mark.	
Motor Horsepower: <u>20 hp and 20 hp</u>	Guaranteed Minimum Efficiency at Full Load: _____ percent
Voltage: <u>460</u>	Guaranteed Minimum Power Factor at Full Load: _____ percent
Phase: <u>3</u>	Service Factor (@ rated max. amb. temp.): ☐ 1.0 ☒ 1.15
Frequency: <u>60-Hz</u>	Enclosure Type: <u>TEFC</u>
Synchronous Speed: <u>1,800</u> rpm	☐ Multispeed, Two-Speed: _____ / _____ rpm
☐ Thermal Protection: _____	Winding: ☐ One ☐ Two
☐ Space Heater: _____ volts, single-phase	Mounting Type: ☐ Horizontal ☐ Vertical
☐ Vertical Shaft: ☐ Solid ☐ Hollow	
☐ Vertical Thrust Capacity (lb): Up _ Down _____	
☒ Adjustable Speed Drive: See Section 26 29 23, Low-Voltage Adjustable Frequency Drive System.	
Operating Speed Range: _____ to _____ % of Rated Speed	
☐ Variable Torque	
☐ Constant Torque	
Additional Motor Requirements: ☐ See Section 26 20 00, Low-Voltage AC Induction Motors.	
Special Features:	
<u>Conveyor capacity shall handle 250 tons/hour based on 20 lbs/CF of material. Material is mixed woodchips and dewatered cake.</u>	

**NOTES:**

1. CLEANOUTS ARE PLACED AT THE END OF THE COMPOST AND CURING AERATION LATERALS. ENSURE PLUGS ARE SEALED DURING INITIAL STARTUP AND COMMISSIONING.
2. CLEANOUT FLOOR BOXES SHALL BE INSTALLED SUCH THAT THE FRONT END LOADER BLADES DO NOT CATCH THE LID.

COMPOST/CURING BAY FLOOR CLEANOUT

NTS

HAIKEY CREEK WWTP
BIOSOLIDS IMPROVEMENT
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

4440-001

CONCRETE UNIT MASONRY

- MASONRY WALL TYPE: INTERMEDIATE REINFORCED WALLS.
- DESIGN COMPRESSIVE STRENGTH, f_m , OF THE FINISHED ASSEMBLY AND MATERIAL PROPERTIES SHALL BE PER THE TABLE BELOW.
- MORTAR: ASTM C270, TYPE S, HYDRATED. DO NOT USE MASONRY CEMENT.
- GROUT: ASTM C476 COARSE GROUT. USE OF WATER REDUCERS OR SUPERPLASTICIZERS IS NOT PERMITTED.
- CONCRETE MASONRY UNITS: ASTM C90, MEDIUM WEIGHT, LINEAR SHRINKAGE SHALL NOT EXCEED 0.065 PERCENT.
- | DESIGN COMPRESSIVE STRENGTH (f_m) (PSI) | UNIT STRENGTH (PSI) | GROUT STRENGTH (PSI) MIN | MORTAR PROPERTIES |
|---|---------------------|--------------------------|-------------------|
| 2,000 | 2,000 | 2,000 | Type S |
- PLACE COURSES IN WALLS, COLUMNS, AND PILASTERS IN RUNNING BOND PATTERN.
- PROVIDE MATCHING FOUNDATION DOWELS FOR ALL LATERAL AND ADDITIONAL VERTICAL BARS.
- PROVIDE VERTICAL BARS AND DOWELS WITH LAP LENGTHS AS SHOWN IN DETAIL 0423-004.
- STAGGER ADJACENT LAP SPICES BY 24 INCHES WHEN SEPARATED BY 3 INCHES OR LESS.
- PROVIDE NUMBER UP FULL HEIGHT VERTICAL BARS AT EDGES OF OPENINGS AS SHOWN IN DETAIL 0422-004.
- PROVIDE FULL HEIGHT VERTICAL BARS IN 3 CELLS AT WALL CORNERS AND INTERSECTIONS AS SHOWN IN DETAIL 0422-001.
- PROVIDE HORIZONTAL CORNER AND INTERSECTION BARS WITH LAP LENGTHS AS SHOWN IN DETAIL 0422-001.
- PROVIDE REINFORCED LINEELS ABOVE AND REINFORCED BOND BEAMS BELOW OPENINGS AS SHOWN IN DETAIL 0422-003.
- PROVIDE FULL HEIGHT VERTICAL BARS WITH MATCHING DOWELS IN CELLS ADJACENT TO OPENINGS AS SHOWN IN DETAIL 0422-003.
- GROUTING: PARTIALLY GROUT WALLS:
 - DO NOT SOLID GROUT WALLS UNLESS INDICATED ON THE DRAWINGS.
 - GROUT ONLY CELLS WITH REINFORCING WHERE REBAR IS SPACED AT 32 INCHES ON CENTER OR GREATER EACH WAY.
 - SOLID GROUT ALL CELLS IN CMU WALLS WHERE REBAR IS SPACED AT 24 INCHES ON CENTER OR LESS, EITHER WAY.
 - SOLID GROUT ALL PIERS, COLUMNS, HEADERS, AND BOND BEAMS.
 - SOLID GROUT ADDITIONAL MASONRY AREAS SPECIFICALLY INDICATED ON THE DRAWINGS.
 - FILL NON-GROUTED CELLS WITH INSULATION WHERE WALL TYPES SHOWN ON ARCHITECTURAL DRAWINGS REQUIRE INSULATED MASONRY CELLS.
- MASONRY UNIT AND GROUT TESTING SHALL BE IN CONFORMANCE WITH ISO "UNIT ATTACHMENT METHOD". TESTING WILL BE OWNER FURNISHED AS INDICATED ON THE STATEMENT OF SPECIAL INSPECTIONS PLAN PROVIDED ON THE DRAWINGS. FROM 1531 16.11.00 MAY BE SUBMITTED AS AN ALTERNATIVE OR MAY BE REQUIRED BY OWNERS REPRESENTATIVE TO VERIFY WORK.
- DO NOT PLACE CONDUIT IN CELLS CONTAINING PARALLEL REINFORCEMENT.

WELDING

- WELDS SHALL CONFORM TO AMERICAN WELDING SOCIETY (AWS):
 - D1.1, STRUCTURAL WELDING CODE: STEEL
 - D1.2, STRUCTURAL WELDING CODE: ALUMINUM
 - D1.3, STRUCTURAL WELDING CODE: STAINLESS STEEL
 - D1.4, STRUCTURAL WELDING CODE: REINFORCING STEEL
 - D1.5, STRUCTURAL WELDING CODE: STAINLESS STEEL
- REPAIR WELDS FOUND DEFECTIVE IN ACCORDANCE WITH AWS D1.1 SECTION 5.2b.
- USE INTERMITTENT WELDS AT FIELD WELDS OF EMBED PLATES AND ANGLES TO AVOID SPALLING OR CRACKING OF THE EXISTING CONCRETE.
- DUTT JOINT WELDS SHALL BE COMPLETE JOINT PENETRATION (CJP) UNLESS INDICATED OTHERWISE.

STRUCTURAL STEEL AND METAL FABRICATIONS

- STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING ASTM STANDARDS:
 - W-SHAPES AND CHANNELS: A992
 - MISCELLANEOUS SHAPES INCLUDING ANGLES, PLATES, ETC.: A36
 - HOLLOW STRUCTURAL SECTIONS (HSS): A400, GRADE B OR C
 - STEEL PIPE: A53, GRADE B
 - STAINLESS STEEL SHAPES: A779
- ALUMINUM SHALL CONFORM TO THE FOLLOWING ASTM STANDARDS:
 - STRUCTURAL SHAPES: B308
 - PLATES: B309
- STRUCTURAL STEEL SHALL BE FABRICATED AND ERRECTED IN CONFORMANCE WITH THE AISC MANUAL OF STEEL CONSTRUCTION, CURRENT EDITION, AND CURRENT OSHA STANDARDS.
- FASTENERS SHALL BE HIGH STRENGTH BOLTS CONFORMING TO THE FOLLOWING ASTM STANDARDS EXCEPT WHERE SPECIFICALLY INDICATED OTHERWISE:
 - UNLESS GROWN OR HOT TREATED: F3125, OR A325-N
 - TENSION CONTROL (TC) BOLTS: ASTM A325 AND ASTM F1862
 - ANCHOR BOLTS (AB): F354, AB1 TYPE 315, CONDITION LW
 - STEEL OR GALVANIZED STEEL: F1554, GR 36 / A193
 - STEEL: A307
 - STAINLESS STEEL: F890, AB1 TYPE 316, CONDITION CW
 - GALVANIZED STEEL: A307 / A193
 - ALUMINUM: F468, ALLOY 2024-T4
- ITEMS TO BE EMBEDDED IN CONCRETE SHALL BE CLEAN AND FREE OF OIL, DIRT AND PAINT.
- NO HOLES OTHER THAN THOSE SPECIFICALLY DETAILED SHALL BE ALLOWED THROUGH STRUCTURAL STEEL MEMBERS. NO CUTTING OR BURNING OF STRUCTURAL STEEL IS PERMITTED WITHOUT THE APPROVAL OF THE ENGINEER.

STEEL DECKING

- FOR DECK SIZE, GAGE, AND FASTENING CONFIGURATIONS, SEE FRAMING PLANS. FASTENING CONFIGURATIONS SHOWN ARE SPECIFIC TO THE DECK PRODUCT USED AS BASIS OF DESIGN. CONTRACTOR SHALL FASTEN THE DECKING IN ACCORDANCE WITH INSTALLED DECK MANUFACTURER'S RECOMMENDATIONS TO MEET SPECIFIED CAPACITY REQUIREMENTS.
- WELDING SHALL BE IN ACCORDANCE WITH AWS D1.3 "STRUCTURAL WELDING CODE: SHEET STEEL".
- DECKING SHALL HAVE A MINIMUM 1 1/2 INCHES BEARING ON SUPPORTS.
- DECKING SHALL BE CONTINUOUS OVER THREE SPANS MINIMUM, EXCEPT WHERE SHOWN OTHERWISE.
- FLOOR DECK RECEIVING CONCRETE FILL SHALL BE COMPOSITE TYPE.
- DECK TO DRAG STRUTS AND TOP OF WALL ANGLE TIES WITH ATTACHMENTS AS SPECIFIED AT 0'-0" ON CENTER. UNLESS OTHERWISE NOTED, LOCATE ANGLES IN JACK VALLEY. SEE DETAILS.
- LOCATE OPENINGS FOR EQUIPMENT PER OTHER DISCIPLINE DRAWINGS.
- REINFORCE DECK FOR LARGER OPENINGS PER DETAIL 0331-021. REINFORCE SMALL OPENINGS AS SPECIFIED.
- UNLESS OTHERWISE NOTED, STRUCTURAL STEEL BEAMS HAVE BEEN DESIGNED FOR "UNSHORED CONDITION" DURING CONSTRUCTION, AND WILL DEFLECT UNDER WET CONCRETE LOADS. TO ACHIEVE THE FINISHED TOP OF CONCRETE INDICATED ON THE DRAWINGS, THE CONTRACTOR SHALL, AT NO ADDITIONAL COST TO THE OWNER, PROVIDE THE ADDITIONAL CONCRETE.

METAL BUILDING SYSTEMS

- FOR DESIGN LOADS REFER TO DESIGN CRITERIA SECTION ABOVE WITH THE FOLLOWING ADDITIONS:
 - SOIL-WATER LOAD: 5 PSF
- METAL BUILDING FOUNDATIONS HAVE BEEN DESIGNED FOR PRELIMINARY METAL BUILDING COLUMN REACTIONS SHOWN ON THE DRAWINGS. DO NOT EXCEED METAL BUILDING FOUNDATION LIMITS. THEIR SIZES HAVE BEEN VERIFIED BY THE ENGINEER FOR THE ACTUAL COLUMN REACTIONS TO BE PROVIDED BY THE METAL BUILDING MANUFACTURER.
- COLUMN ANCHOR BOLTS SHALL BE DESIGNED BY THE METAL BUILDING MANUFACTURER. ANCHORAGE DESIGN SHALL INCLUDE DETERMINATION OF ANCHOR BOLT MATERIAL, DIAMETER, EMBEDMENT DEPTH, QUANTITY, AND LAYOUT.
- METAL BUILDING MANUFACTURER TO VERIFY THAT CONCRETE COLUMN PIER DIMENSIONS SHOWN ON THE DRAWINGS ARE LARGE ENOUGH TO ACCOMMODATE METAL BUILDING COLUMN BASE PLATES AND PROVIDE SUFFICIENT EDGE DISTANCE FOR COLUMN ANCHOR BOLTS.

DEFERRED SUBMITTALS

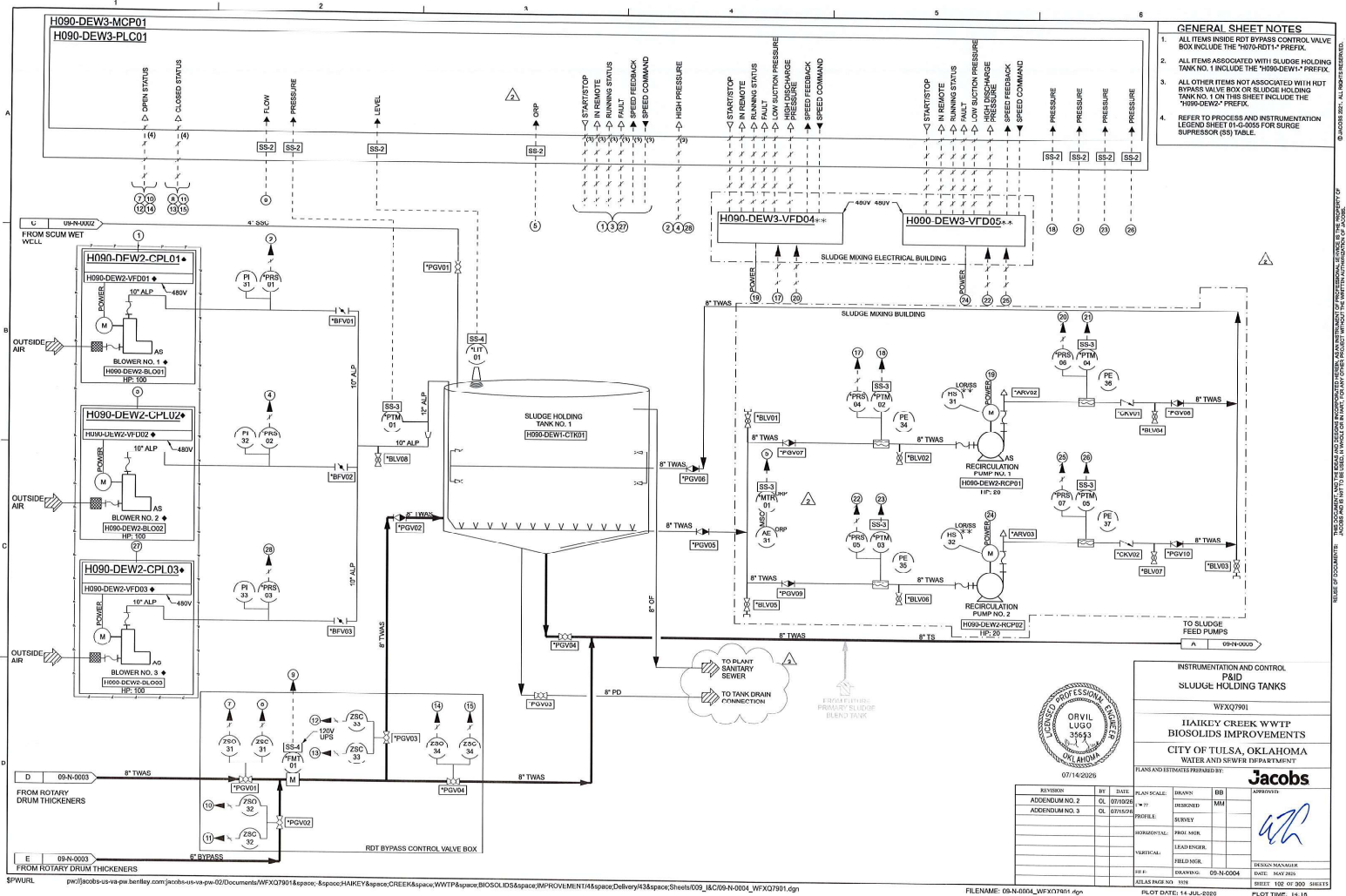
- DEFERRED SUBMITTALS ARE THOSE PORTIONS OF THE DESIGN WHICH ARE NOT SUBMITTED AT THE TIME OF PERMIT APPLICATION AND WHICH ARE TO BE SUBMITTED TO THE PERMITTING AGENCY FOR ACCEPTANCE PRIOR TO INSTALLATION OF THAT PORTION OF THE WORK OR ARE REQUIRED TO BE SUBMITTED FOR REVIEW ONLY BY THE ENGINEER.
- WHERE DEFERRED SUBMITTALS INCLUDE ADDITIONAL MATERIALS, INSTALLATION, ANCHORAGE, OR CERTIFICATION OF COMPONENTS THAT REQUIRE SPECIAL INSPECTION AND/OR STRUCTURAL OBSERVATION TO MEET CODE REQUIREMENTS, THE DEFERRED SUBMITTAL SHALL INCLUDE SPECIFIC LINE ITEMS TO BE SUBMITTED TO THE APPROPRIATE TABLES IN THE PROJECT'S STATEMENT OF SPECIAL INSPECTIONS PLAN IF THEY ARE NOT ALREADY IDENTIFIED.
- THE FOLLOWING IS A LIST OF DEFERRED SUBMITTALS PER AISC SECTION 8 THAT ARE EXPECTED TO CONTAIN STRUCTURAL CALCULATIONS OR SAFETY RELATED SYSTEM INFORMATION FOR REVIEW TO MEET BUILDING PERMITTING REQUIREMENTS FOR DESIGNED SYSTEMS. PRIOR TO INSTALLATION OF THE INDICATED STRUCTURAL ELEMENT, EQUIPMENT, DISTRIBUTION SYSTEM, OR COMPONENT OR ITS ANCHORAGE, THE CONTRACTOR SHALL SUBMIT THE REQUIRED CALCULATIONS AND SUPPORTING DATA AND DRAWINGS FOR REVIEW AND ACCEPTANCE BY THE ENGINEER. ADDITIONALLY, ACCEPTANCE INDICATED ON THE ENGINEER'S COMMENT FORM, ALONG WITH THE COMPLETED, FINAL SUBMITTAL SHALL THEN BE SUBMITTED BY THE CONTRACTOR TO THE PERMITTING AGENCY AND APPROVED PRIOR TO INSTALLATION OF THESE ITEMS.

SPECIFICATION	CODE REQUIRED DEFERRED SUBMITTALS FOR REVIEW BY
SECTION	PERMITTING AGENCY
01 05 13	ANCHORAGE AND TIEING
05 02 16	ALUMINUM RAILINGS
13 34 19	METAL BUILDING SYSTEMS
40 05 15	PIPING SUPPORT SYSTEMS
OTHER	ANY EQUIPMENT OR COMPONENT IN WHICH A TECHNICAL SPECIFICATION REQUIRES SUBMITTAL OF EQUIPMENT OR ANCHORAGE SYSTEM CALCULATIONS
44 45 13.05	OSHA COMPLIANT FIXED LADDER FOR COMPOST CONVEYOR SYSTEM



GENERAL	
STRUCTURAL NOTES 2	
WFXQ7901	
HAIRKEY CREEK WWTP	
BIOSOLIDS IMPROVEMENTS	
CITY OF TULSA, OKLAHOMA	
WATER AND SEWER DEPARTMENT	
PLANS AND ESTIMATES PREPARED BY: Jacobs	

REVISION	BY	DATE	REASON	SCALE	DATE	APPROVED
ADDENDUM NO. 3	EL	7/20/26	NOTE ON SURVEY	LS		
			PROFILES			
			PROF. MEAS.			
			LEAD ENGINEER			
			FIELD MEAS.			
			DESIGN MANAGER			
			FILE			
			DRAWING NO.	01-6-0021	DATE	NOV 18, 2025
			REVISION NO.	303	DATE	NOV 15, 2025
			PRINT DATE:	13-MAY-2026	PRINT TIME:	11:00



GENERAL SHEET NOTES

1. INFLUENT SLUDGE PIPING FROM HOLDING TANKS ARE ELEVATED AND SUPPORTED FROM THE ROOF BY PIPE HANGERS.
2. RESTRAINED DISMANTLING JOINT SHOWN FOR FITUP AND MAINTENANCE.
3. FIELD LOCATE EXISTING FLOOR DRAINS AND COORDINATE WITH ENGINEER IF EQUIPMENT PADS REQUIRE ADJUSTMENT.
4. SPARE GRINDER IS TO BE PROVIDED AND STORED UNDER STAIRS FOR EASY REPLACEMENT.
5. DOWT CRANE FOR PUMP MAINTENANCE IS TO BE PROVIDED AND STORED UNDER STAIRS. INITIAL INSTALLATION OF PUMPS WILL UTILIZE THE EXISTING ACCESS HATCH, 2 TON LIME MODEL NO. H-8422 OR EQUAL.
6. 4" POLYMER INJECTORS ARE INTEGRATED WITH THE SUPPLEMENTAL SLUDGE / POLYMER MIXERS.
7. EYE HOOKS IN CEILING TO BE USED FOR GRINDER MAINTENANCE AND REMOVAL.
8. CONNECT TO EXISTING WALL PIPE AS REQUIRED.

LOWER LEVEL PLAN
3/16"=1'-0"

LOWER LEVEL PLAN - PIPING
3/16"=1'-0"



REVISION			
NO.	DATE	BY	CHKD.
1	7/2/2008	TP	TP
PROJECT:			
HORIZONTAL:			
VERTICAL:			
FILE:			
DATE: MAY 2008			
PLOT TIME: 2:53:24 PM			

DEWATERING CENTRIFUGE BUILDING
PTOC03
LOWER LEVEL PLANS

WEKQ7981

HAKEY Creek WWTP
BIOSOLIDS IMPROVEMENTS
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

PLANS AND ESTIMATES PREPARED BY: **Jacobs**

APPROVED: *[Signature]*

FILENAME: 90-D1BL-D-2000_WFQX7981.dgn

PLOT DATE: 07/09/2008

PLOT TIME: 2:53:24 PM

GENERAL SHEET NOTES

1. EACH CENTRIFUGE IS EQUIPPED WITH A MOTORIZED SLUDGE CARP DISCHARGE DRAIN GATE.
2. FOR YARD PIPING CONNECTIONS SEE DEWATERING CENTRIFUGE BUILDING PROCESS LOWER LEVEL PLANS.
3. TERMINATE 4" OF 9" ABOVE FINISH FLOOR.
4. 1" W2 GOLENDOR CONNECT HORN LIVERATE GATE WASHWATER, TYPICAL 3.
5. EXISTING 2-TON BRIDGE CRANE TO BE INSPECTED AND TESTED. 2-TON CRANE SHALL ONLY BE USED FOR MAINTENANCE OF CENTRIFUGE ROTATING ASSEMBLY. CONTRACTOR TO PROCURE 15-TON CRANE FOR INITIAL CENTRIFUGE INSTALLATION.
6. 3/4" W2 WITH V330 FOR CONNECTION TO SLUDGE CONVEYOR WASH WATER SPRAY BARR.

SEE ACCESS RENT, ALL RIGHTS RESERVED.

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REUSE OF DOCUMENTS

FILENAME: 90-D1BL-D-3004 WFX27P001.dwg

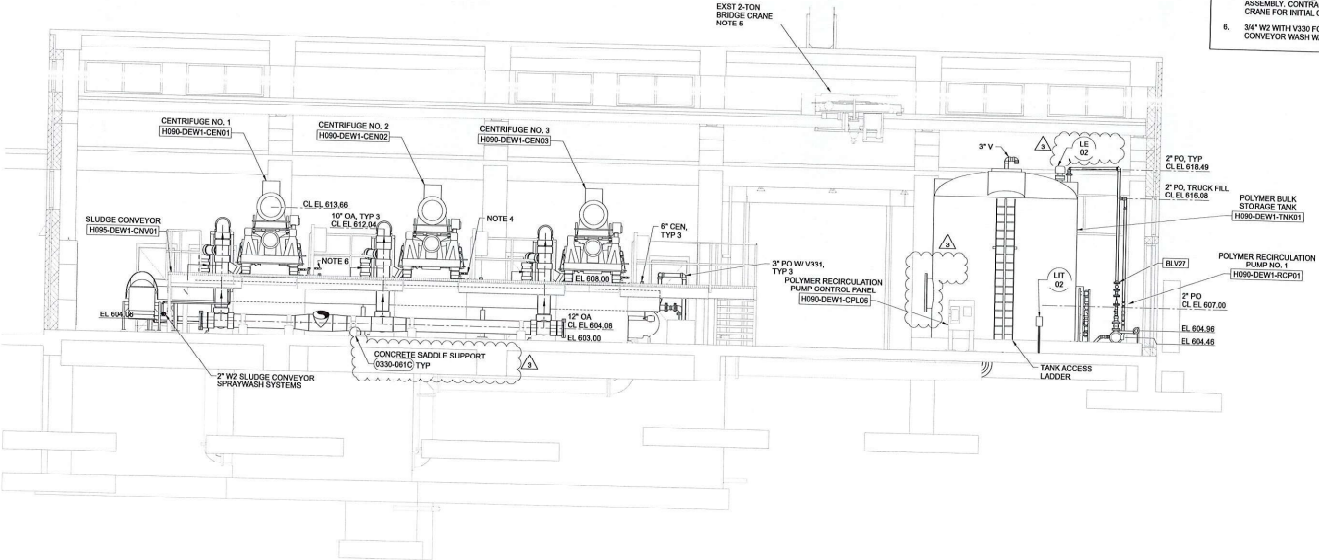
DATE: MAY 2014
SHEET 150 OF 300 SHEETS

SECTION D

90-D1BL-D-2000
90-D1BL-D-2100



DEWATERING CENTRIFUGE BUILDING PROCESS SECTION	
WFX27P001	
HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS	
CITY OF TULSA, OKLAHOMA WATER AND SEWER DEPARTMENT	
PLANS AND ESTIMATES PREPARED BY:	
JACOBS	
REVISION	BY DATE
ADDENDUM NO. 3	TP 7/2028
PLAN SCALE:	DRYAN JW
NOTE	DESIGNED TP
PROF:	SURVEY
HORIZONTAL:	FIELD MOR
VERTICAL:	LEAD ENDOR
FILE:	FIELD MOR
DATE:	DATE: MAY 2014
DATE:	DATE: MAY 2014



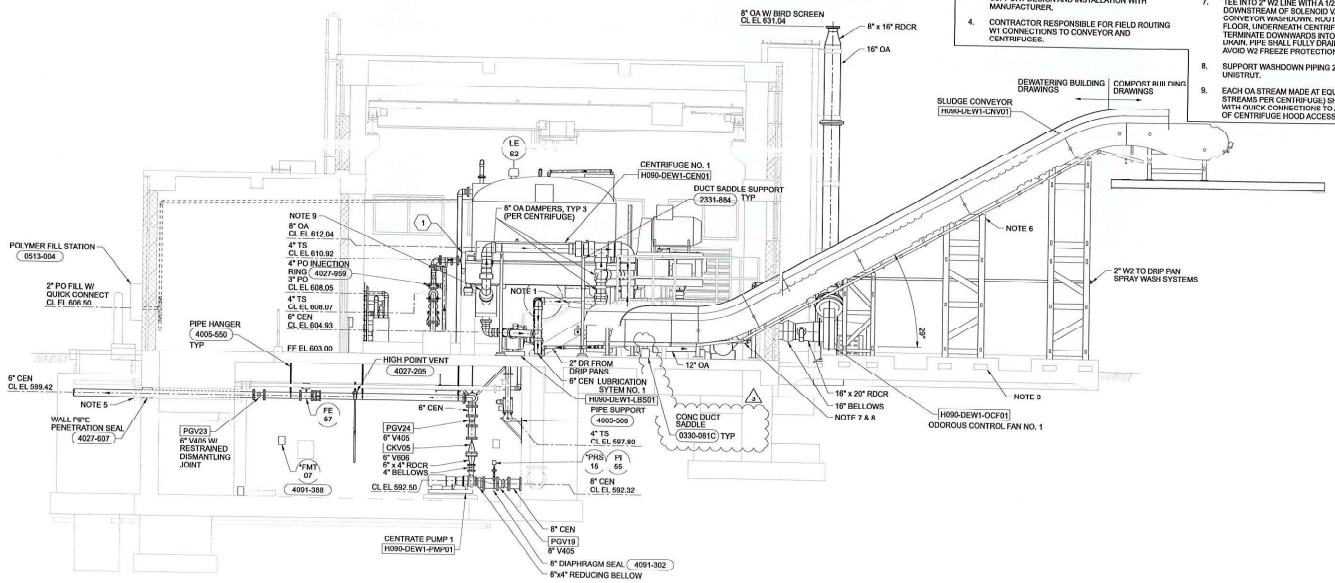
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SHEET KEYNOTES

1. CENTRIFUGE FEED "THROAT" OVERALL DRAIN PIPE NOT SHOWN FOR CLARITY, ROUTE DRAIN PIPING DOWN AND CONNECT BACK INTO CENTRATE CHUTE.

GENERAL SHEET NOTES

1. EACH CENTRIFUGE IS EQUIPPED WITH A MOTORIZED SLUDGE CASE DISCHARGE DRAIN GATE.
2. FOR YARD PIPING CONNECTIONS SEE DEWATERING CENTRIFUGE BUILDING PROCESS LOWER LEVEL PLAN DRAWING.
3. CONTRACTOR TO COORDINATE CONVEYOR SUPPORT DESIGN AND INSTALLATION WITH MANUFACTURER.
4. CONTRACTOR RESPONSIBLE FOR FIELD ROUTING W/ CONNECTIONS TO CONVEYOR AND CENTRIFUGES.
5. REUSE EXISTING 10" WALL PENETRATION, USE LINK SEAL TO FILL IN ANNULAR SPACE. CONTRACTOR TO VERIFY APPROACH FOR FILLING ANNULAR SPACE ON EXISTING PENETRATION.
6. DRIP PAN WASHDOWN PIPING SHALL BE MOUNTED TO CONVEYOR SUPPORTS, COORDINATE WITH MANUFACTURER TO INSTALL WASHDOWN PIPING.
7. TEE INTO 2" W2 LINE WITH A 1/2" PVC PIPE DOWNSTREAM OF SOLENOID VALVE FOR CONVEYOR WASHDOWN. INSTALL 1/2" PVC ALONG FLOOR UNDERNEATH CENTRIFUGE AND TERMINATE DOWNWARDS INTO EXISTING FLOOR DRAIN. PIPES SHALL FULLY DRAIN WASHDOWN AND AVOID ICE FREEZE PROTECTION.
8. SUPPORT WASHDOWN PIPING 2" AND BELOW WITH UNISTRUT.
9. EACH OASTREAM MADE AT EQUIPMENT (3 STREAMS PER CENTRIFUGE) SHALL BE INSTALLED WITH QUICK CONNECTIONS TO ACCOMMODATE FOR EASE OF CENTRIFUGE HOOD ACCESS.



SECTION
F
1/8\"/>

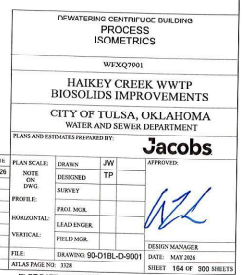
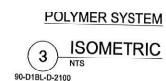
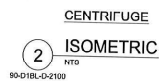
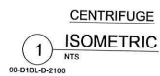


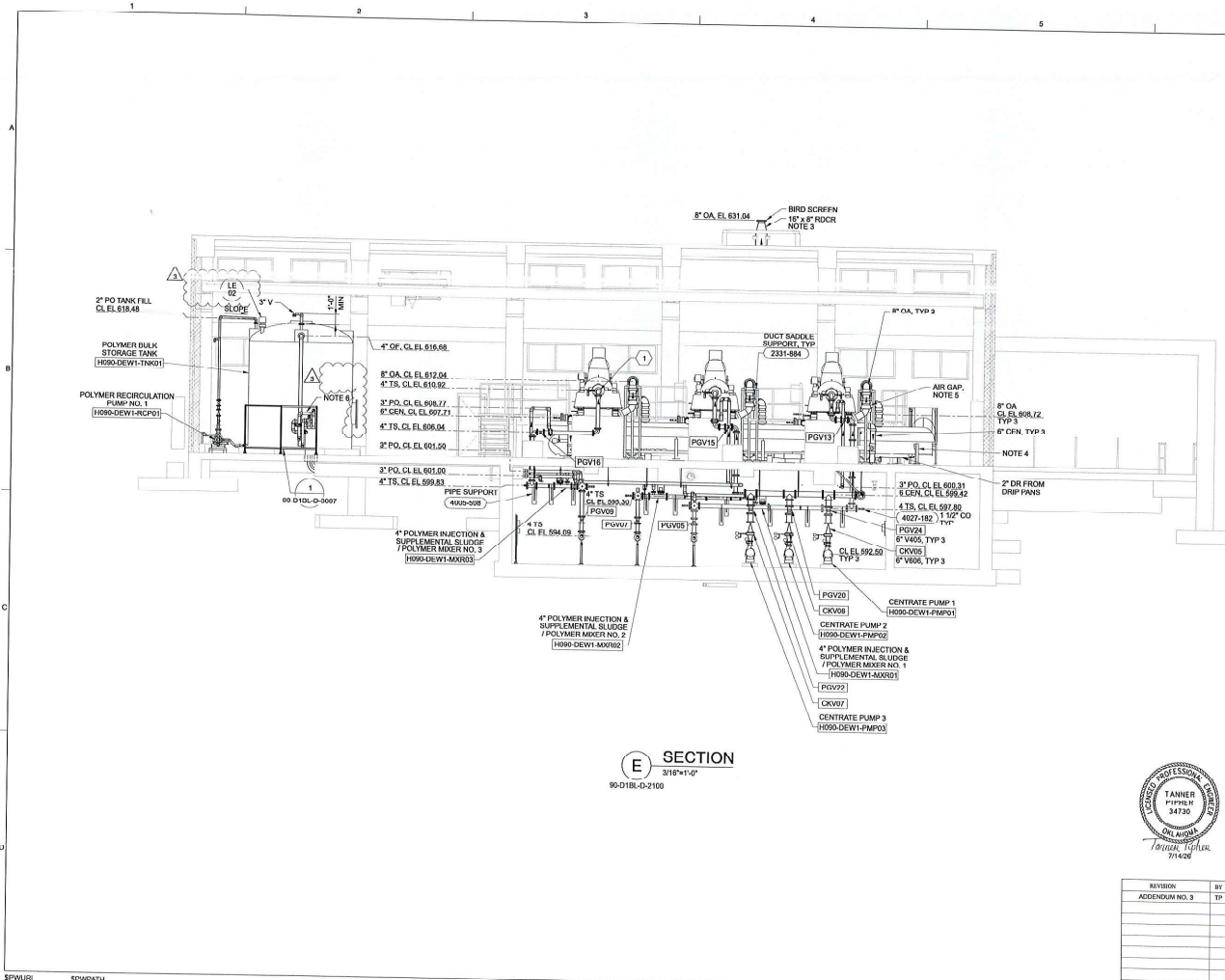
DEWATERING CENTRIFUGE BUILDING PROCESS SECTION																															
WFXQ7901																															
HAIKEY CREEK WWTP DIOSOLIDS IMPROVEMENTS																															
CITY OF TULSA, OKLAHOMA WATER AND SEWER DEPARTMENT																															
PLANS AND ESTIMATES PREPARED BY: Jacobs																															
<table border="1"> <tr> <th>REVISION</th> <th>BY</th> <th>DATE</th> </tr> <tr> <td>ADDENDUM NO. 3</td> <td>TP</td> <td>7/20/08</td> </tr> </table>	REVISION	BY	DATE	ADDENDUM NO. 3	TP	7/20/08	<table border="1"> <tr> <th>PLAN SCALE:</th> <th>DRAWN</th> <th>JW</th> <th>APPROVED</th> </tr> <tr> <td>PLAN</td> <td>ON</td> <td>TP</td> <td></td> </tr> <tr> <td>PROF.:</td> <td></td> <td></td> <td></td> </tr> <tr> <td>HORIZONTAL:</td> <td>PROJ. MGR.</td> <td></td> <td></td> </tr> <tr> <td>VERTICAL:</td> <td>LEAD ENGR.</td> <td></td> <td></td> </tr> <tr> <td></td> <td>FIELD MGR.</td> <td></td> <td></td> </tr> </table>	PLAN SCALE:	DRAWN	JW	APPROVED	PLAN	ON	TP		PROF.:				HORIZONTAL:	PROJ. MGR.			VERTICAL:	LEAD ENGR.				FIELD MGR.		
REVISION	BY	DATE																													
ADDENDUM NO. 3	TP	7/20/08																													
PLAN SCALE:	DRAWN	JW	APPROVED																												
PLAN	ON	TP																													
PROF.:																															
HORIZONTAL:	PROJ. MGR.																														
VERTICAL:	LEAD ENGR.																														
	FIELD MGR.																														
PREP. DATE: 07/09/2008 DRAWING NO: 80-D1BL-D-3006 SHEET: 102 OF 102 (REV. 2008.12)	DESIGNED BY: [Signature] DATE: 08/07/2008 PLOT DATE: 07/09/2008 PLOT TIME: 2:49:33 PM																														

FILENAME: 80-D1BL-D-3006_WFXQ7901.dgn

PLOT DATE: 07/09/2008

PLOT TIME: 2:49:33 PM





NOTES

- FOR YARD PIPING CONNECTIONS SEE DEWATERING CENTRIFUGE BUILDING PROCESS LOWER LEVEL PLAN.
- PROVIDE HAND WHEEL OR CHAIN VALVE OPERATORS AS DIRECTED IN SPECIFICATION 40 27 02B.
- 18" FOAL AIR DUCT TO REDUCE TO 8" AT DISCHARGE OUTLET TO ENSURE SUFFICIENT VELOCITY OUT OF DUCT FOR ODOR CONTROL.
- CONTRACTOR TO VERIFY CONVEYOR SUPPORTS AND BRACING WITH MANUFACTURER. CONTRACTOR RESPONSIBLE FOR FIELD ROUTING PIPING AROUND CONVEYOR SUPPORTS.
- DUCT HOOD TO PROVIDE NECESSARY AIR GAP TO PROTECT CENTRIFUGES. COORDINATE WITH CENTRIFUGE MANUFACTURER.
- CONTRACTOR TO FIELD VERIFY POLYMER PIPE ROUTING TO AND THROUGH EXISTING PIPE CHASE.
- 4" POLYMER INJECTORS ARE INTEGRATED WITH THE SUPPLEMENTAL SLUDGE / POLYMER MIXERS.

SHEET KEYNOTES

- CENTRIFUGE FEED "THROAT" OVERALL DRAIN PIPE NOT SHOWN FOR CLARITY. ROUTE DRAIN PIPING DOWN AND CONNECT BACK INTO CENTRATE CHUTE.

E SECTION

3/16" x 1/4"
90-01BL-D-2100



DEWATERING CENTRIFUGE BUILDING PROCESS SECTION
WFXQ7901
HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS
CITY OF TULSA, OKLAHOMA WATER AND SEWER DEPARTMENT
PLANS AND ESTIMATES PREPARED BY: Jacobs

NO.	BY	DATE	PLAN SCALE	DRAWN	JW	APPROVED
1	ACCESSION NO. 3	12/1/2008	1" = 10'	DESKTOP	TP	
2			NOTE	DESKTOP		
3			PROF. DR.	SURVEY		
4			HORIZONTAL	PROJ. MGR.		
5			VERTICAL	LEAD ENGR.		
6				FIELD ENGR.		
7				DESIGN MANAGER		
8						
9						
10						

FILENAME: 90-01BL-D-3005_WFXQ7901.dgn

PLOT DATE: 07/06/2020

PLOT TIME: 4:35:57 PM

H090-DEW1-MCC01 CONNECTED LOAD	
DESCRIPTION	AMP
H090-DEW1-MDP01	245.35
H090-DEW1-MDP03	245.35
CENTRATE PUMP 1	21
CENTRATE PUMP 3	21
SLUDGE FEED PUMP 1	27
SLUDGE FEED PUMP 3	27
DEWATERING EXHAUST FAN	11
GRINDER 1	11
BUILDING VENTILATION FAN#1	4.8
BUILDING VENTILATION FAN#3	4.8
BUILDING VENTILATION FAN#5	4.8
BUILDING VENTILATION FAN#7	4.8
SLUDGE CONVEYOR	4.8
DOOR CONTROL FAN NO. 1	7.6
H090-DEW1-MDP04	96
DEWATERING HOT WATER HEATER	10
TOTAL	738.9
TOTAL PLUS 25% LARGEST MOTOR	796.2375
*DESIGN LOAD = CONNECTED LOAD PLUS 25% OF LARGEST MOTOR	

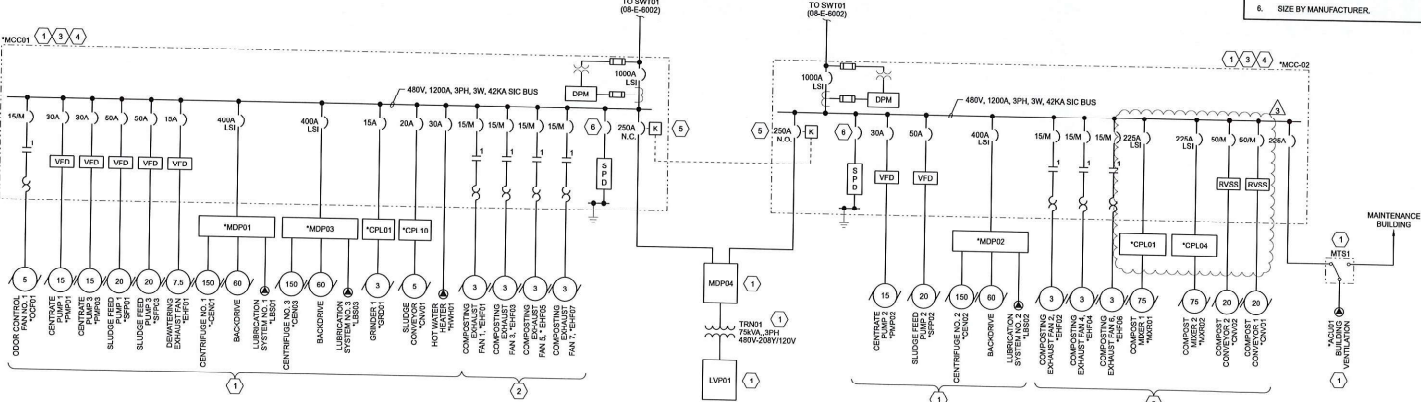
H090-DEW1-MCC02 CONNECTED LOAD	
DESCRIPTION	AMP
H090-DEW1-MDP02	245.35
H090-COM1-ACU01	182
H090-COM2-CPL01	96
H090-COM2-CPL04	96
COMPOST CONVEYOR NO.1	27
COMPOST CONVEYOR NO.2	27
CENTRATE PUMP 2	27
SLUDGE FEED PUMP 2	27
BUILDING VENTILATION FAN#2	7.6
BUILDING VENTILATION FAN#4	7.6
BUILDING VENTILATION FAN#6	7.6
TOTAL	744.15
TOTAL PLUS 25% LARGEST MOTOR	805.468
*DESIGN LOAD = CONNECTED LOAD PLUS 25% OF LARGEST MOTOR	

GENERAL SHEET NOTES

- CENTRIFUGAL NO. 3 AND STARTER PANEL: ALTO1, SEE 04-000A FOR QUANTITIES AND NOTES.
- REFER TO 06-000A FOR THE OVERALL POWER RIBER DIAGRAM, OVERALL NETWORK RIBER DIAGRAM AND INDIVIDUAL FACILITY RIBER DIAGRAMS FOR CONDUIT AND WIRE CALLOUTS.
- CIRCUIT BREAKERS AND STARTERS TO HAVE PADLOCKABLE OPERATING HANDLE WHEN DE-ENERGIZED.

SHEET KEYNOTES

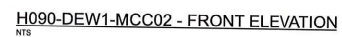
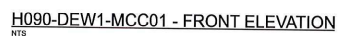
- COMPLETE TAG NUMBER INCLUDES 1090-DEW1- PREFIX.
- COMPLETE TAG NUMBER INCLUDES 1090-DEW1- PREFIX.
- REFER TO FRONT ELEVATION FOR FAN NAME AND D.B.L. E. RING FOR CIRCUIT BREAKER AND COMBINATION STARTER QUANTITY AND SIZE.
- PRELIMINARY CALCULATED AVAILABLE FAULT = 24,877.50 AMP. FINAL AVAILABLE FAULT CURRENT SHALL BE PROVIDED BY THE SHORT CIRCUIT STUDY SPECIFIED IN SECTION 26.05.70. ELECTRICAL SYSTEM ANALYSIS.
- PROVIDE MECHANICAL KEY INTERLOCK PROCEDURE SIGNS WITH LOCATIONS OF ALL KEYS.
- SIZE BY MANUFACTURER.



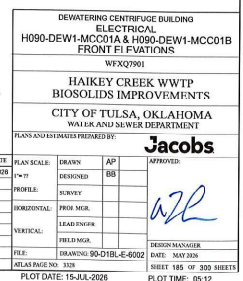
DEWATERING CENTRIFUGAL RIBER RING
ELECTRICAL
H090-DEW1-MCC01 AND H090-DEW1-MCC02
ONE-LINE DIAGRAM
WFX07901
HAKEY CREEK WWTP
BIOSOLIDS IMPROVEMENTS
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

REVISION	BY	DATE	PLAN SCALE	APPROVED
ADDENDUM NO. 2	VP	07/15/2026	DESIGNED	BB
ADDENDUM NO. 3	VP	07/15/2026	SURVEY	
			HORIZONTAL	PROJ. MGR.
			VERTICAL	LEAD ENGR.
			FIELD MGR.	DESIGN MANAGER
FILE	DRWING	9001BL-E-0001	DATE	MAY 2026
			SHEET	154 OF 202 SHEETS

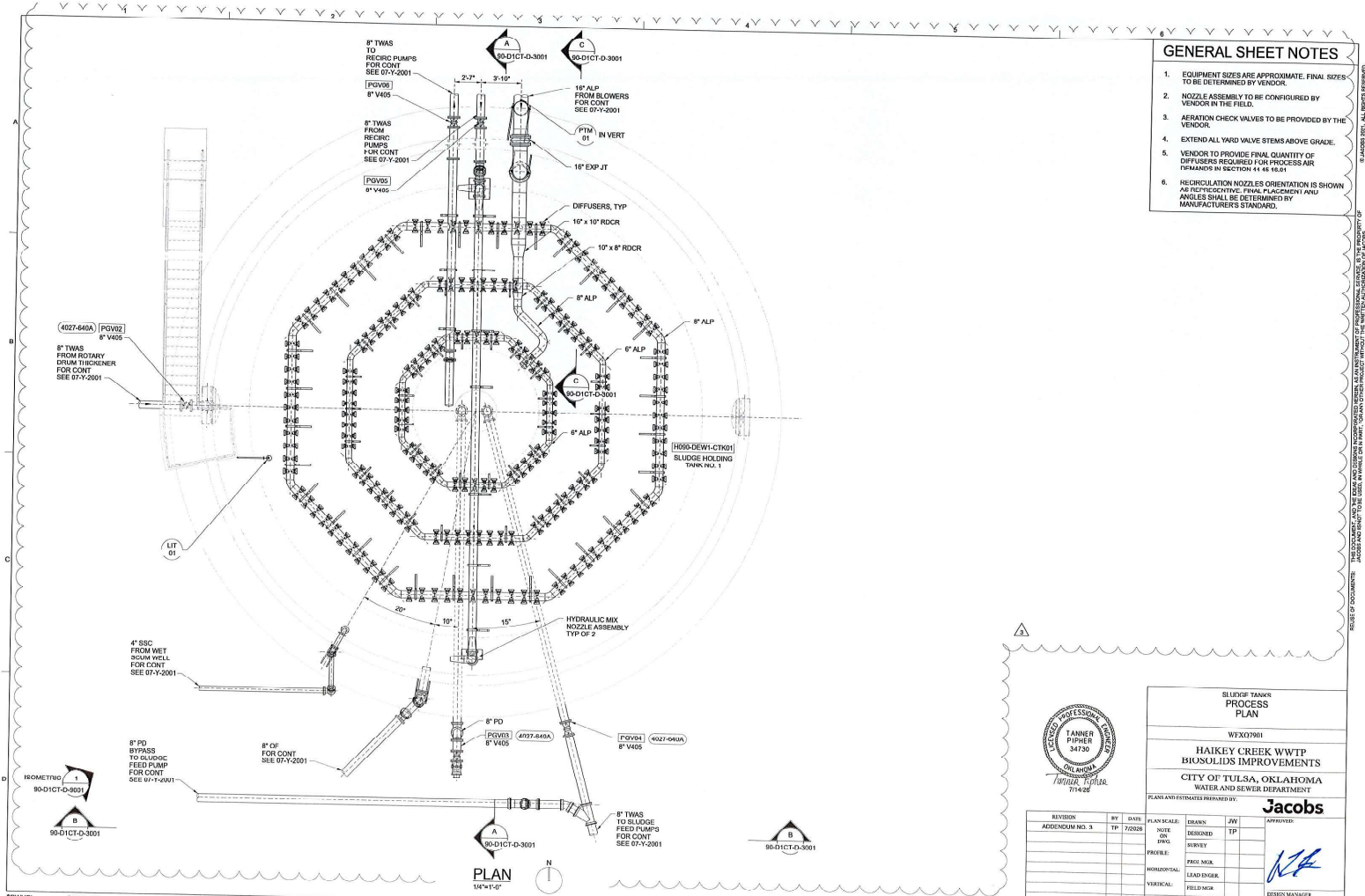
PLOT DATE: 15-JUL-2026



1. BUCKET SHOULD BE USED AS AN ADDED ALTERNATIVE SPARE IF NOT USED.



REVISION		BY	DATE	PLAN SCALE	DRAWN	AP	
ADDENDUM NO. 3		VP	7/20/08	1"=17'	DESIGNED	BS	
				PROFILE:	SURVEY		
				HORIZONTAL:	FROM MGR.		
				VERTICAL:	LEAD ENGINEER		
					FIELD MGR.		
				FILE:	DRAWING NO.	00-D1B1-E-6002	DESIGN MANAGER
				ATLAS PAGE NO.	328		DATE: MAY 2008
							SHEET 145 OF 200 SHEETS
PLOT DATE: 15-JUL-2006 PLOT TIME: 05:12							



GENERAL SHEET NOTES

- EQUIPMENT SIZES ARE APPROXIMATE. FINAL SIZES TO BE DETERMINED BY VENDOR.
- NOZZLE ASSEMBLY TO BE CONFIGURED BY VENDOR IN THE FIELD.
- AERATION CHECK VALVES TO BE PROVIDED BY THE VENDOR.
- EXTEND ALL YARD VALVE STEMS ABOVE GRADE.
- VENDOR TO PROVIDE FINAL QUANTITY OF DIFFUSERS REQUIRED FOR PROCESS AIR DEMANDS IN SECTION 41.45 15.01.
- RECIRCULATION NOZZLES ORIENTATION IS SHOWN AS REPRESENTATIVE. FINAL PLACEMENT AND ANGLES SHALL BE DETERMINED BY MANUFACTURER'S STANDARD.

SLUDGE TANKS PROCESS PLAN

WFO07901

HAKEY CREEK WWTP
BIOSOLIDS IMPROVEMENTS
CITY OF TULSA, OKLAHOMA
WATER AND SEWER DEPARTMENT

PLANS AND ESTIMATES PROVIDED BY:

Jacobs

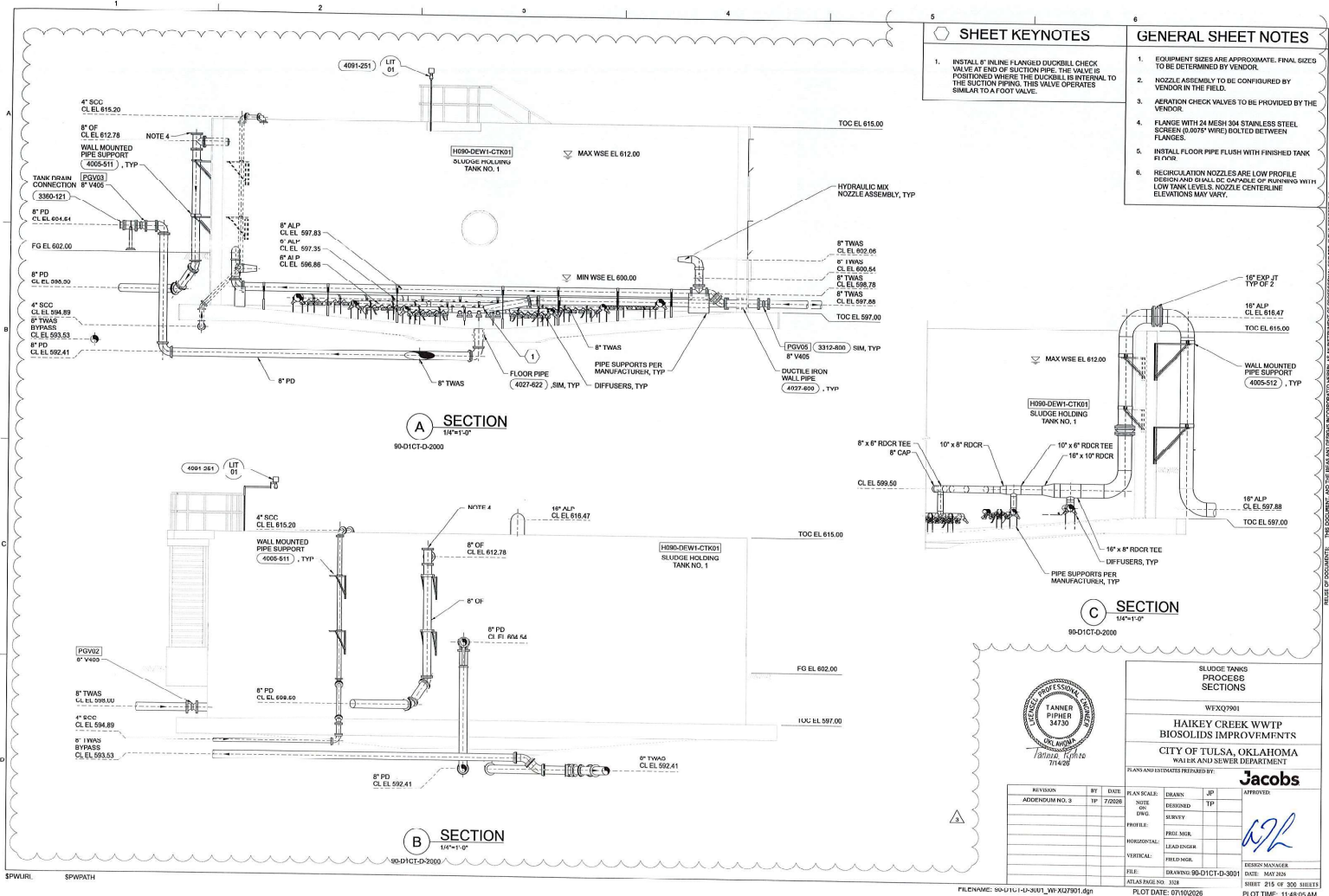


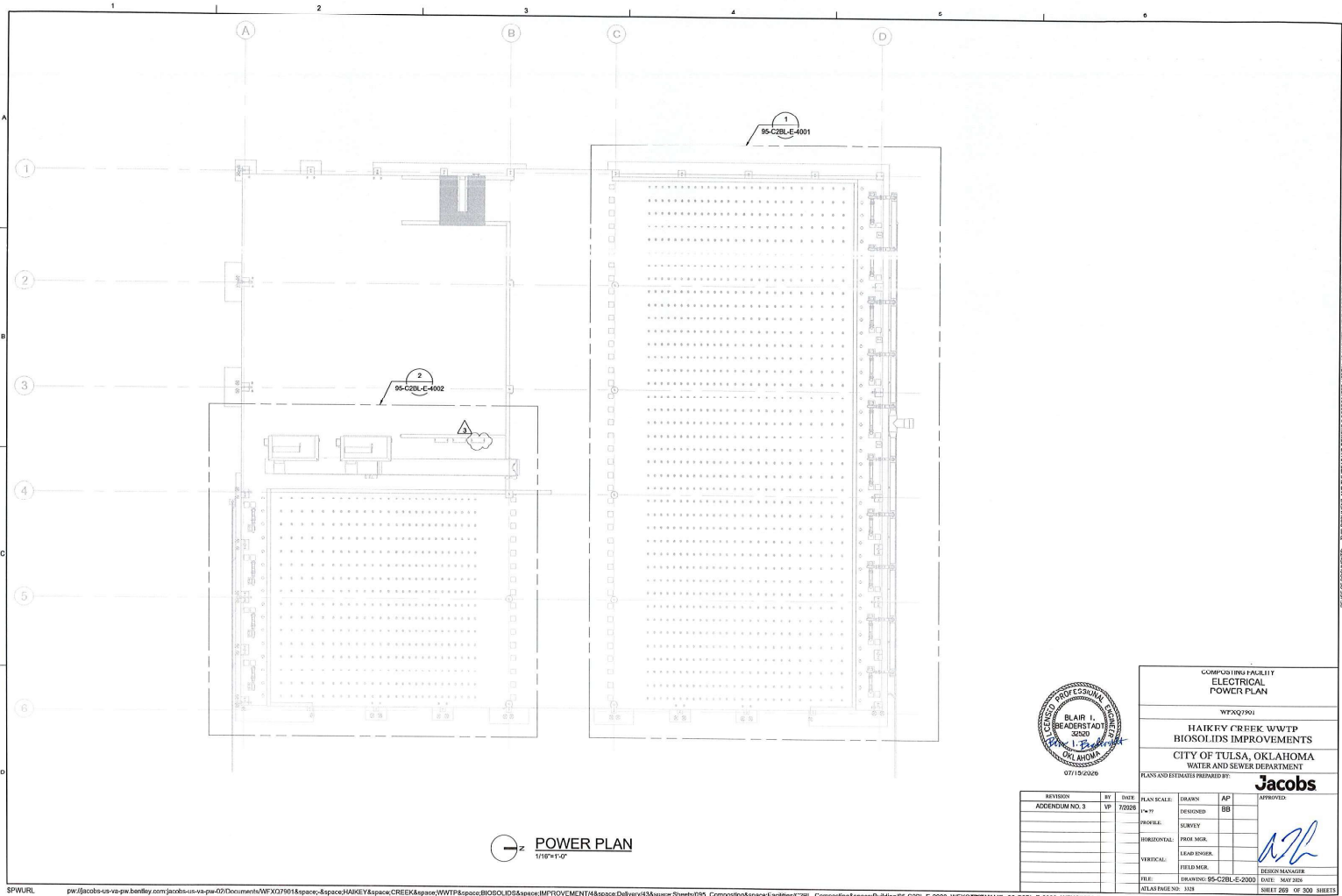
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ADDENDUM NO. 3	TP	7/20/20	NOTE	DESIGNED	TP
			PLAN	SURVEY	
			PROFILE	PAUL MOK	
			HORIZONTAL	LEAD ENGR	
			VERTICAL	FIELD MGR	
			FILE		
			DATE		
			SHEET		
			SHEETS		

FILENAME: 90-D1CT-D-2000_WFO07901.dgn

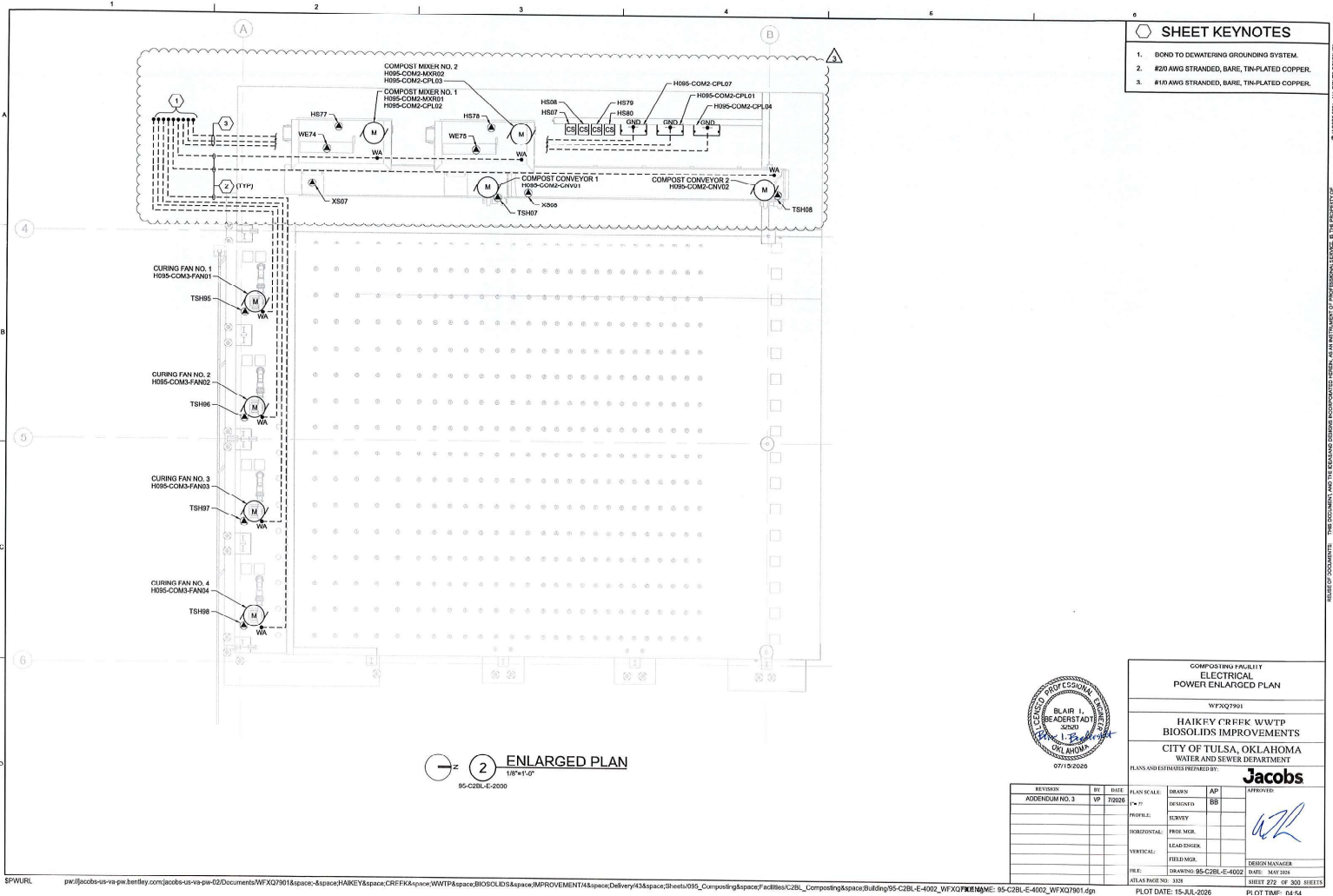
PLOT DATE: 07/10/2020

20 07/10/2020 11:40:00 PM





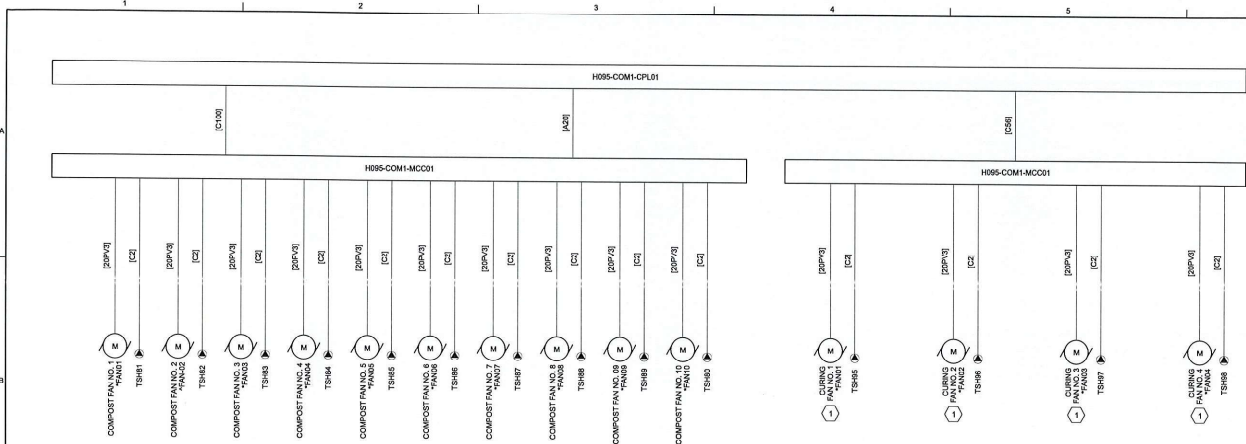
COMPUTING FACILITY ELECTRICAL POWER PLAN			
WFXQ1901			
HAIRY CREEK WWTB BIOSOLIDS IMPROVEMENTS			
CITY OF TULSA, OKLAHOMA WATER AND SEWER DEPARTMENT			
PLANS AND ESTIMATES PREPARED BY: Jacobs			
REVISION	BY	DATE	APPROVED
ADDENDUM NO. 3	MP	7/20/26	BB
PLAN SCALE:	DRAWN	AP	
1"=17'	DESIGNED	BB	
PROFILE:	SURVEY		
HORIZONTAL:	PROJ. MGR.		
VERTICAL:	LEAD ENGINEER		
	FIELD MGR.		
FILE:	DRAWING: 95-C2BL-E-2000	DATE: MAY 2024	
ATLAS ENGINE NO. 303		SHEET 200 OF 300 SHEETS	



- SHEET KEYNOTES**
1. BOND TO DEWATERING GROUNDING SYSTEM.
 2. #210 AWG STRANDED, BARE, TIN-PLATED COPPER.
 3. #110 AWG STRANDED, BARE, TIN-PLATED COPPER.

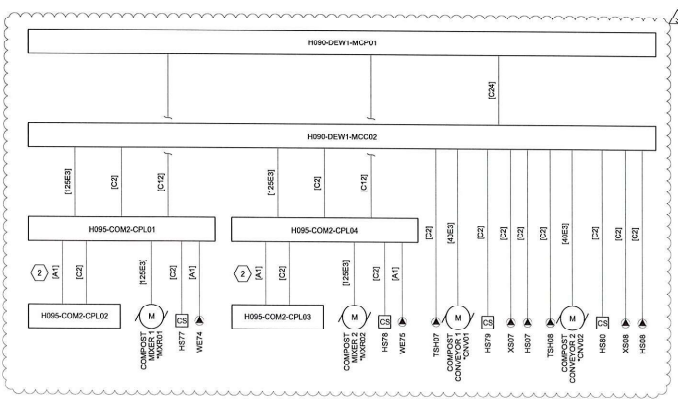


COMPOSTING FACILITY ELECTRICAL POWER ENLARGED PLAN			
WFXQ7901			
HAIKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS			
CITY OF TULSA, OKLAHOMA WATER AND SEWER DEPARTMENT			
PLANS AND ESTIMATES REVIEWED BY: Jacobs			
REVISION	BY	DATE	APPROVED
ADDENDUM NO. 3	SP	7/20/25	BB
PLAN SCALE:	DRAWN	AP	
1"= 77'	DESIGNED	BB	
PROFILE:	SURVEY		
HORIZONTAL:	FIELD MGR.		
VERTICAL:	FIELD MGR.		
FILE:	DRAWING: 55-C2BL-E-4002	DATE: MAY 2024	DESIGN MANAGER
ATLAS PAGE NO. 310	SHEET 272 OF 303 SHEETS		



- SHEET KEYNOTES**
1. THE COMPLETE TAG NUMBER INCLUDES THE "H095-COM2" PREFIX.
 2. CONTRACTOR TO REVIEW VENDOR INFORMATION PRIOR TO INSTALLING CONDUIT AND CONDUCTOR.

ACTIVE COMPOSTING BLOWER SYSTEM, MIXER, & CONVEYOR SYSTEM - RISER DIAGRAM



COMPOSTING MIXER & CONVEYOR SYSTEM RISER DIAGRAM



COMPOSTING MIXER & CONVEYOR SYSTEM RISER DIAGRAM	
WFX07901	
HAKEY CREEK WWTP BIOSOLIDS IMPROVEMENTS	
CITY OF TULSA, OKLAHOMA	
WATER AND SEWER DEPARTMENT	
PLANT AND ESTIMATES PREPARED BY:	
Jacobs	
REVISION	DATE
ADDENDUM NO. 3	10/20/2018
PLAN SCALE	AS SHOWN
PROFILE	CONVEYOR
HORIZONTAL	CONVEYOR
VERTICAL	CONVEYOR
FILE	CONVEYOR
ALIAS FILE NO.	3350
DATE	10/20/2018
DESIGN MANAGER	
SHEET 279 OF 300 SHEETS	