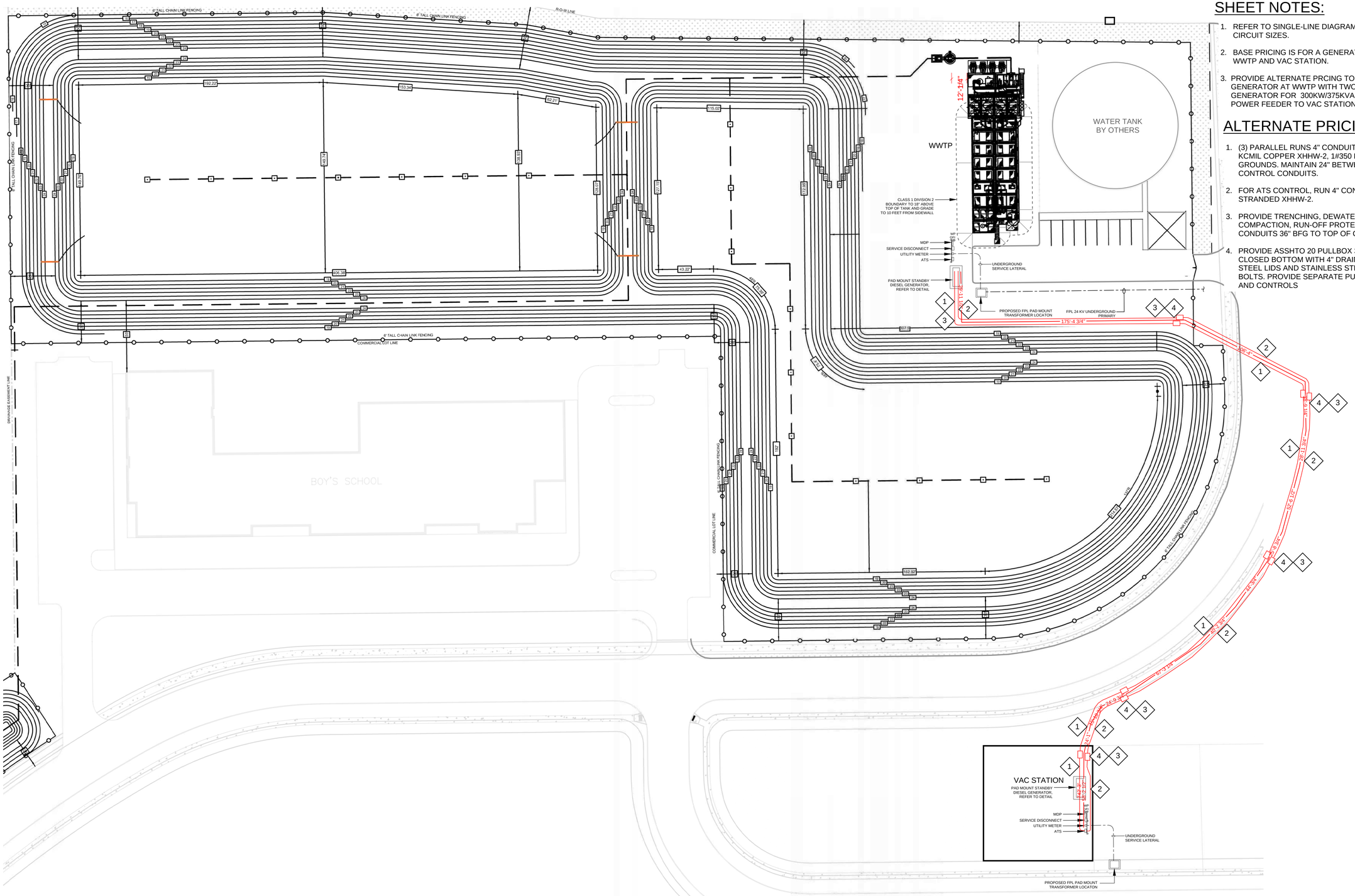


SHEET NOTES:

1. REFER TO SINGLE-LINE DIAGRAM FOR ALL EQUIPMENT AND CIRCUIT SIZES.
2. BASE PRICING IS FOR A GENERATOR AT EACH LOCATION, WWTP AND VAC STATION.
3. PROVIDE ALTERNATE PRCING TO PROVIDE ONE GENERATOR AT WWTP WITH TWO LOAD BREAKERS. SIZE GENERATOR FOR 300KW/375KVA AND ROUTE BACKUP POWER FEEDER TO VAC STATION ALONG ROUTE SHOWN.

ALTERNATE PRICING NOTES: ◇#

1. (3) PARALLEL RUNS 4" CONDUIT EACH WITH 4#350 KCMIL COPPER XHHW-2, 1#350 KCMIL COPPER XHHW-2 GROUNDS. MAINTAIN 24" BETWEEN POWER AND CONTROL CONDUITS.
2. FOR ATS CONTROL, RUN 4" CONDUIT WITH 25#12 STRANDED XHHW-2.
3. PROVIDE TRENCHING, DEWATERING, BACKFILL, COMPACTION, RUN-OFF PROTECTION, ETC. BURY CONDUITS 36" BFG TO TOP OF CONDUIT.
4. PROVIDE ASSHTO 20 PULLBOX 35"W x 60"L x 48"D, CLOSED BOTTOM WITH 4" DRAIN HOLE, GALVANIZED STEEL LIDS AND STAINLESS STEEL TAMPER-PROOF BOLTS. PROVIDE SEPARATE PULLBOXES FOR POWER AND CONTROLS

ELECTRICAL PLAN

NOT TO SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING

0 ■■■■■ 1"

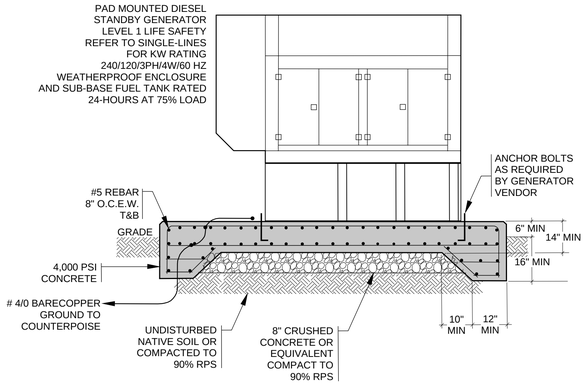
MACK INDUSTRIES, INC.

DRAWN BY:
CHK'D BY:
DATE: AUGUST 31, 2024
REVISED:
SCALE: AS SHOWN
DRAWING NO.

WWTP AND VAC STATION SITE PLAN

E-100

SHEET
OF



WWTP GENERATOR PAD DETAIL

NOT TO SCALE



WWTP ELECTRICAL PLAN

SCALE: 3/16" = 1'-0"

BAR IS ONE INCH ON
ORIGINAL DRAWING
0 1"

MACK INDUSTRIES, INC.

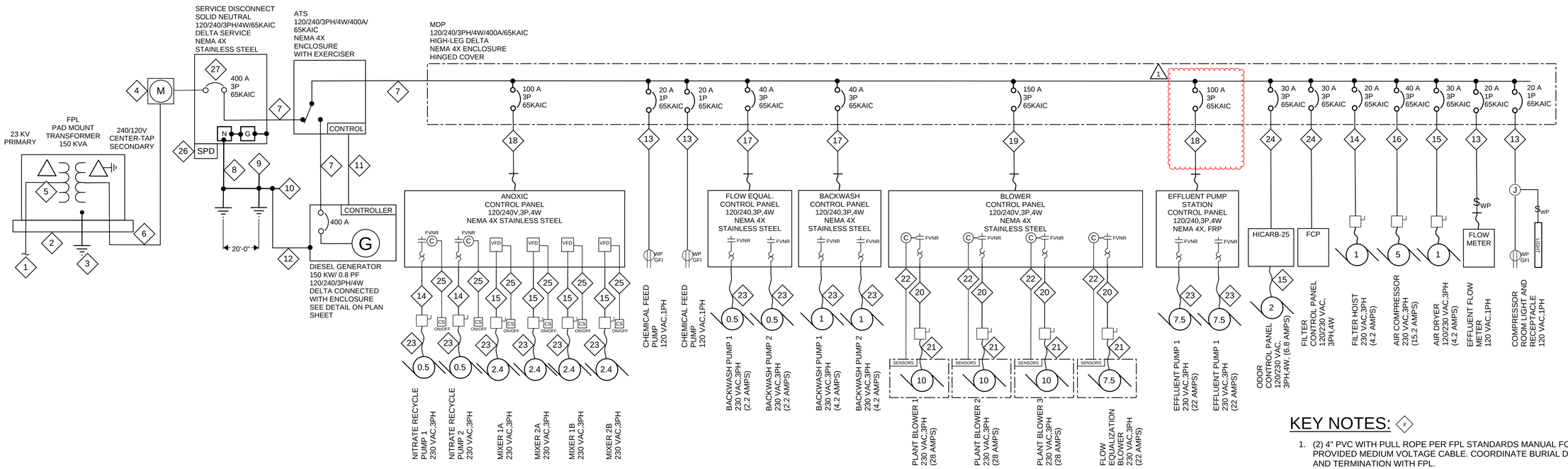
CHK'D BY:
REVISED:

DRAWN BY:
DATE: AUGUST 31, 2024
SCALE: AS SHOWN
DRAWING NO.

WWTP ELECTRICAL PLAN

E-200

SHEET
OF



SERVICE SINGLE-LINE DIAGRAM - WWTP

LOAD CALCULATION

WASTEWATER TREATMENT PLANT IS FULLY OUTDOORS.

YARD LIGHTS	250 VA x 2 FIXTURES	=	500 VA
GENERAL PURPOSE RECEPTACLES	4 x 180 VA EACH	=	720 VA
NITRATE RECYCLE PUMPS	2 x 500 VA EACH	=	1,000 VA
CHEMICAL FEED PUMPS	3 x 500 VA EACH	=	1,500 VA
MIXERS	4 x 2,400 VA EACH	=	9,600 VA
BACKWASH PUMPS	2 x 500 VA EACH	=	1,000 VA
PLANT BLOWERS	3 x 10,000 VA EACH	=	30,000 VA
FLOW EQUALIZATION BLOWER	1 x 7,500 VA	=	7,500 VA
ODOR CONTROL	1 x 2,000 VA	=	2,000 VA
AIR COMPRESSOR	1 x 5,000 VA	=	5,000 VA
AIR DRYER	1 x 1,000 VA	=	1,000 VA
FILTER HOIST	1 x 1,000 VA	=	1,000 VA
EFFLUENT PUMPS	2 x 7,500 VA	=	15,000 VA
25% OF LARGEST MOTOR		=	2,500 VA
TOTAL DEMAND LOAD		=	78,320 VA
AT 230 VOLT 3-PHASE DELTA		=	197 AMPS
PLUS 25% SPARE	197 AMPS x 1.25	=	246 AMPS
80% LOAD RATING OVER 3-HOURS	246 AMPS / 0.8	=	308 AMPS

PROVIDE 400 AMP SERVICE

SHEET NOTES:

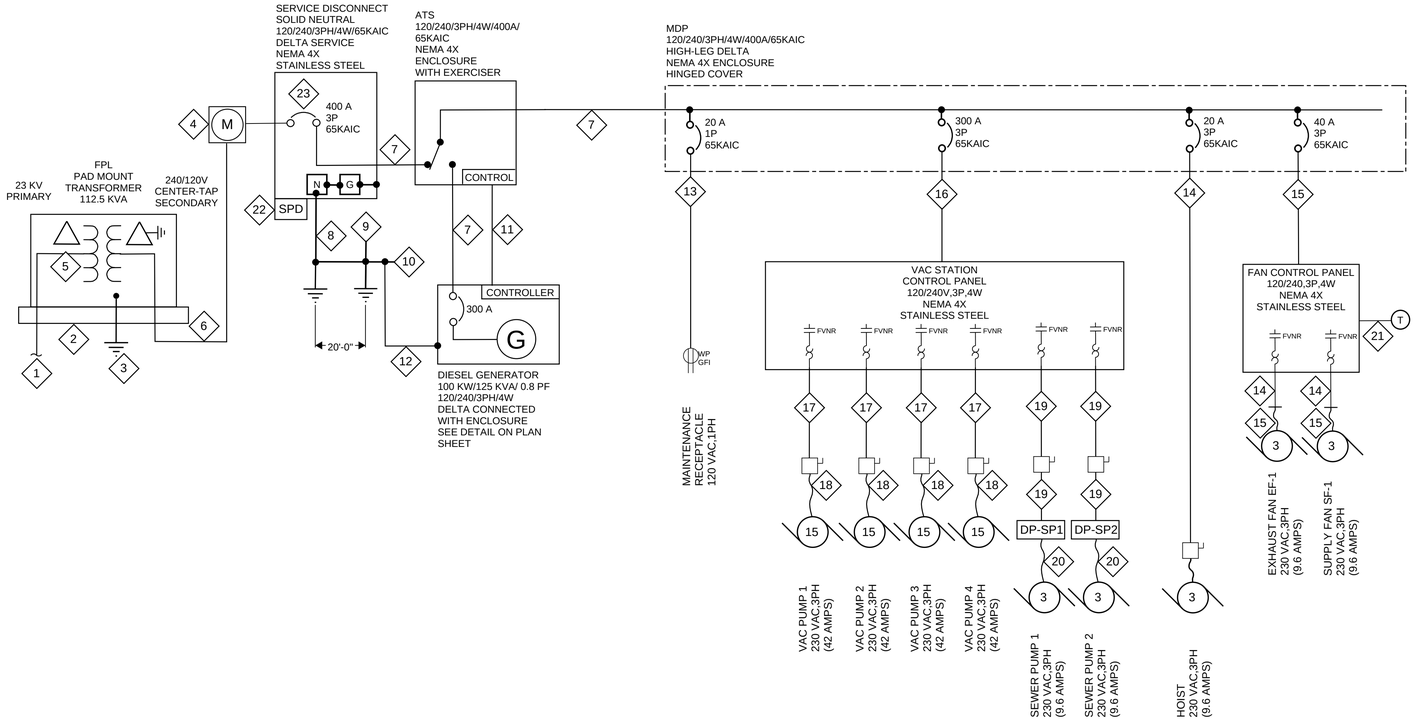
1. ALL CONDUIT BELOW GRADE SHALL BE SCH 80 PVC.
2. ALL CONDUIT ABOVE GRADE SHALL BE RIGID ALUMINUM.
3. ALL WIRING SHALL BE THWN-2 STRANDED COPPER UNLESS OTHERWISE NOTED.
4. HARDWARE AND STRUT SHALL BE 304 STAINLESS STEEL.
5. ALL WIRE SHALL BE #12 AWG IN 3/4" CONDUIT FOR 20 AMP CIRCUITS UNLESS OTHERWISE NOTED.
6. COORDINATE RACEWAY AND EQUIPMENT INSTALLATION FOR THE HAZARD RATING OF EACH AREA IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND NFPA 820 STANDARD FOR FIRE PROTECTION IN WASTEWATER TREATMENT AND COLLECTION FACILITIES.
7. PROVIDE SEAL-OFFS WHERE REQUIRED BY NATIONAL ELECTRICAL CODE.
8. FLEXIBLE CONNECTIONS SHALL BE LIQUID TIGHT METAL IN NON-HAZARDOUS AREAS AND AS REQUIRED BY THE NATIONAL ELECTRICAL CODE FOR THE HAZARD RATING THE EQUIPMENT IS USED IN. FLEXIBLE CABLE IS NOT ACCEPTABLE (EXCEPT FOR PUMP VENDOR SUPPLIED CABLES) DUE TO POTENTIAL DAMAGE FROM BIRDS AND RODENTS.

KEY NOTES: ◇#

1. (2) 4" PVC WITH PULL ROPE PER FPL STANDARDS MANUAL FOR FPL PROVIDED MEDIUM VOLTAGE CABLE. COORDINATE BURIAL DEPTH AND TERMINATION WITH FPL.
2. FPL PROVIDED, CONTRACTOR INSTALLED TRANSFORMER PAD. CONTRACTOR TO PICK UP PAD FROM FPL YARD AND TRANSPORT TO SITE.
3. PROVIDE GROUND RODS AND BONDING PER FPL STANDARDS MANUAL.
4. PROVIDE CONDUIT AND METER CAN PER FPL STANDARDS MANUAL.
5. TRANSFORMER AND TERMINATIONS PROVIDED AND INSTALLED BY FPL.
6. 4" WITH 4#500 KCMIL XHHW-2.
7. 4" WITH 4#500 KCMIL 1/0 CU GROUND XHHW-2.
8. #3/0 BARE COPPER GROUND AND (2) 20' x 3/4" COPPER-CLAD STEEL GROUND RODS SPACED AT LEAST 20' APART.
9. #3/0 BARE COPPER GROUND TO EACH METAL STAIRCASE.
10. #3/0 BARE COPPER GROUND TO EFFLUENT PUMP STATION.
11. 2.5" CONDUIT WITH 25#14 AWG RED CONTROL WIRE.
12. #3/0 BARE COPPER GROUND TO SERVICE GROUND SYSTEM.
13. 3/4" CONDUIT WITH 2#12, 1#12 G. FLEX FINAL CONNECTIONS.
14. 3/4" CONDUIT WITH 3#12, 1#12 G. FLEX FINAL CONNECTIONS.
15. 1" CONDUIT WITH 3#10, 1#10 G. FLEX FINAL CONNECTIONS.
16. 1.25" CONDUIT WITH 3#6, 1#10 G. FLEX FINAL CONNECTIONS.
17. 1.25" CONDUIT WITH 4#6, 1#10 G. FLEX FINAL CONNECTIONS.
18. 2" CONDUIT WITH 4#1/0, 1#6 G.
19. 2" RIGID STEEL WITH 4#1/0, 1#6 G.
20. CONDUIT WITH 3#3, 1#8 G.
21. CONDUIT WITH 3#3, 1#8 G. FLEX FINAL CONNECTIONS.
22. 1" CONDUIT WITH 7#12. CONNECT PER EQUIPMENT VENDOR PLANS. FLEX FINAL CONNECTIONS.
23. VENDOR SUPPLIED CABLE ATTACHED TO PUMP. TERMINATE POWER AT SAFETY SWITCH. TERMINATE MOTOR PROTECTION CABLE AT CONTROL PANEL.
24. 1" CONDUIT WITH 4#10, 1#10 G.
25. 3/4" CONDUIT WITH 4#12, 1#12 G. CONTRACTOR TO PROVIDE NEMA 4X STAINLESS STEEL ON/OFF LOCAL CONTROL STATION AND MOUNTING STANCHION.
26. PROVIDE 100KA SURGE PROTECTIVE DEVICE (SPD)
27. PROVIDE DOUBLE-LUG BREAKER TO ALLOW FOR SURGE PROTECTIVE DEVICE CONNECTION.

MACK INDUSTRIES, INC.

CHK'D BY:
REVISED: SEPTEMBER 8, 2024
1 PANEL FEEDER AND BREAKER
DRAWN BY:
DATE: AUGUST 31, 2024
SCALE: AS SHOWN
DRAWING NO.
WWTP SINGLE-LINE DIAGRAM
E-300
SHEET
OF



SERVICE SINGLE-LINE DIAGRAM - VAC STATION

LOAD CALCULATION

PACKAGED VACUUM SEWAGE PUMP STATION IS FULLY OUTDOORS.

LIGHTING LOAD	NO LIGHTING	=	0 VA
GENERAL PURPOSE RECEPTACLES	1 x 180 VA EACH	=	180 VA
VAC PUMPS	4 x 15,000 VA EACH	=	60,000 VA
SEWAGE PUMPS	2 x 3,000 VA EACH	=	6,000 VA
FANS	2 x 3,000 VA EACH	=	6,000 VA
LOW VOLTAGE TRANSFORMER		=	15,000 VA
25% OF LARGEST MOTOR		=	3,750 VA
TOTAL DEMAND LOAD		=	90,930 VA
AT 230 VOLT 3-PHASE DELTA		=	228 AMPS*

80% LOAD RATING OVER 3-HOURS 228 AMPS / 0.8 = 285 AMPS

PROVIDE 400 AMP SERVICE TO PREVENT NUISANCE BREAKER TRIPPING

* HOIST NOT INCLUDED AS IT WOULD USE POWER OF UNUSED PUMP AND DOES NOT ADD DEMAND LOAD.

SHEET NOTES:

1. ALL CONDUIT BELOW GRADE SHALL BE SCH 80 PVC.
2. ALL CONDUIT ABOVE GRADE SHALL BE RIGID ALUMINUM.
3. ALL WIRING SHALL BE THWN-2 STRANDED COPPER UNLESS OTHERWISE NOTED.
4. HARDWARE AND STRUT SHALL BE 304 STAINLESS STEEL.
5. ALL WIRE SHALL BE #12 AWG IN 3/4" CONDUIT FOR 20 AMP CIRCUITS UNLESS OTHERWISE NOTED.
6. COORDINATE RACEWAY AND EQUIPMENT INSTALLATION FOR THE HAZARD RATING OF EACH AREA IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND NFPA 820 STANDARD FOR FIRE PROTECTION IN WASTEWATER TREATMENT AND COLLECTION FACILITIES.
7. PROVIDE SEAL-OFFS WHERE REQUIRED BY NATIONAL ELECTRICAL CODE.
8. FLEXIBLE CONNECTIONS SHALL BE LIQUID TIGHT METAL IN NON-HAZARDOUS AREAS AND AS REQUIRED BY THE NATIONAL ELECTRICAL CODE FOR THE HAZARD RATING THE EQUIPMENT IS USED IN. FLEXIBLE CABLE IS NOT ACCEPTABLE (EXCEPT FOR PUMP VENDOR SUPPLIED CABLES) DUE TO POTENTIAL DAMAGE FROM BIRDS AND RODENTS.

KEY NOTES: ◇#

1. (2) 4" PVC WITH PULL ROPE PER FPL STANDARDS MANUAL FOR FPL PROVIDED MEDIUM VOLTAGE CABLE. COORDINATE BURIAL DEPTH AND TERMINATION WITH FPL.
2. FPL PROVIDED, CONTRACTOR INSTALLED TRANSFORMER PAD. CONTRACTOR TO PICK UP PAD FROM FPL YARD AND TRANSPORT TO SITE.
3. PROVIDE GROUND RODS AND BONDING PER FPL STANDARDS MANUAL.
4. PROVIDE CONDUIT AND METER CAN PER FPL STANDARDS MANUAL.
5. TRANSFORMER AND TERMINATIONS PROVIDED AND INSTALLED BY FPL.
6. 4" WITH 4#500 KCMIL XHHW-2.
7. 4" WITH 4#500 KCMIL 1/0 CU GROUND XHHW-2.
8. #3/0 BARE COPPER GROUND AND (2) 20' x 3/4" COPPER-CLAD STEEL GROUND RODS SPACED AT LEAST 20' APART.
9. #3/0 BARE COPPER TO VACUUM SYSTEM METALLIC PIPE.
10. #3/0 BARE COPPER GROUND TO PUMP STATION REBAR.
11. 2.5" CONDUIT WITH 25#14 AWG RED CONTROL WIRE.
12. #3/0 BARE COPPER GROUND TO SERVICE GROUND SYSTEM.
13. 3/4" CONDUIT WITH 2#12, 1#12 G.
14. 1" CONDUIT WITH 3#12, 1#12 G.
15. 1" CONDUIT WITH 3#12, 1#12 G. FLEX FINAL CONNECTIONS.
16. 3.5" WITH 4#350 KCMIL #4 AWG GROUND XHHW-2, COPPER.
17. 1.25" CONDUIT WITH 3#6, 1#10 G, 4#14 CONTROL.
18. 1.25" CONDUIT WITH 3#6, 1#10 G, 4#14 CONTROL. FLEX FINAL CONNECTIONS.
19. 1" RIGID STEEL WITH 3#10, 1#10 G, 4#14 CONTROL.
20. VENDOR SUPPLIED CABLE ATTACHED TO PUMP. TERMINATE POWER AT SAFETY SWITCH. TERMINATE MOTOR PROTECTION CABLE AT CONTROL PANEL.
21. 3/4" CONDUIT WITH 7#14 AWG CONDUCTORS TO 120 VOLT LINE VOLTAGE THERMOSTAT.
22. PROVIDE 100KA SURGE PROTECTIVE DEVICE (SPD)
23. PROVIDE DOUBLE-LUG BREAKER TO ALLOW FOR SURGE PROTECTIVE DEVICE CONNECTION.

MACK INDUSTRIES, INC.

CHK'D BY:
REVISED: AUGUST 3, 2024
DRAWN BY:
DATE: AUGUST 31, 2024
SCALE: AS SHOWN
DRAWING NO.

VAC STATION SINGLE-LINE DIAGRAM

E-320

SHEET
OF