STRUCTURE LOCATION TABLE						
CALLOUT	DESCRIPTION	NORTHING	EASTING	RIM	INVERT IN	INVERT OUT
1	NEW BAR SCREEN VAULT, CENTER	649551.45	2048755.66	275.50'	263.60'	263.50'
2	NEW 120" Ø WET WELL, CENTER	649542.44	2048742.70	276.00'	263.00'	N/A
3	NEW 7'X7' VALVE VAULT, CENTER	649534.07	2048730.86	276.00'	N/A	N/A
4	NEW 4'X6' FLOW VAULT, CENTER	649525.46	2048718.64	276.00'	N/A	N/A
5	NEW JIB CRANE PAD, CENTER	649536.80	2048785.27	276.00'	N/A	N/A

NOTE:
SEE SHEET C6.1 FOR CONTINUATION OF GRADING

NAD 83

NEW 18" PVC GRAVITY SEWER SAN

NEW PUMP STATION PROPERTY LINE

50' WETLAND OFFSET

NEW UTILITY EASEMENT

NEW BAR SCREEN VAULT (1)

NEW 10' WET WELL (SHEET 8.1) (2)

NEW JIB CRANE PAD (SEE SHEET 8.3) (5)

12.5' SPAN

NEW 12' DOUBLE OPENING OUTWARD SWING GATE (SEE DETAIL)

NEW PUMP STATION ACCESS ROAD. MINIMUM WIDTH OF 20' AND 6" OF ABC STONE

NEW GATE VALVE (TYP)

NEW 7'X7' VALVE VAULT (SEE SHEET 8.1) (3)

NEW NON-FREEZE YARD HYDRANT(SEE DETAIL) (TYP)

NEW CONC. PAD FOR JIB CRANE SLAB AT EL. 276.00' (SEE DETAIL)

LIMITS OF JIB CRANE SPAN

NEW TRANSFORMER WITH CONCRETE PAD SIZE AS REQ. (SEE ELECTRICAL NOTES)

NEW EMERGENCY PUMP CONNECTION (SEE DETAIL)

BOLLARDS (TYP)

NEW 4'X6' FLOW VAULT (SEE SHEET 8.1) (4)

NEW AREA LIGHT AND POLE (PSL-6)(SEE ELECTRICAL PLAN)

NEW 45° BEND

NEW 6' CHAINLINK FENCE (SEE DETAIL)

5' MIN TYP.

NEW ELECTRICAL RISER STRUCTURE SLAB AT EL. 275.50' (SEE DETAIL)

2" HDPE WATERLINE

CONTRACTOR TO COORDINATE ODOR CONTROL WITH HARNETT COUNTY

NEW 1" RPZ IN HOT BOX (SEE DETAIL)

NEW 1" WATER METER

NEW GENERATOR WITH CONCRETE PAD WITH CATWALK W/ SPILL CONTAINMENT WALL AND DRAIN. (SEE DETAIL ON 8.3) (CONTRACTOR TO COORDINATE SLAB WITH CATWALK SUPPORTS. SLAB AT EL. 275.50'

NEW CONC. PAD W/ SPILL CONTAINMENT WALL AND DRAIN. SIZE AS REQ. SLAB AT EL. 275.50' (SEE DETAIL)

PUMP STATION SITE TO BE COVERED WITH 8 MIL THICK BLACK POLYETHYLENE PLASTIC OR OTHER WEED BLOCKING MATERIAL TO EXTEND 1' BEYOND THE FENCE LINE TO BE COVERED WITH 6" OF ABC STONE

2" PLUG

TAP WATERLINE FROM RAWLS CHURCH RD

2" SADDLE TAPPING SLEEVE AND VALVE

NEW 12" SDR 21 FORCE MAIN

FUTURE 8" PVC GRAVITY SEWER

SCALE 1"=5'
0 5' 10'

NORTH CAROLINA PROFESSIONAL SEAL 041935 ENGINEER CHRISTOPHER R. PETREE
2/15/2021

THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
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YOUR VISION ACHIEVED THROUGH OURS.

REVISION DESCRIPTION	DATE
WATERLINE CHANGED TO 2"	02/15/2021

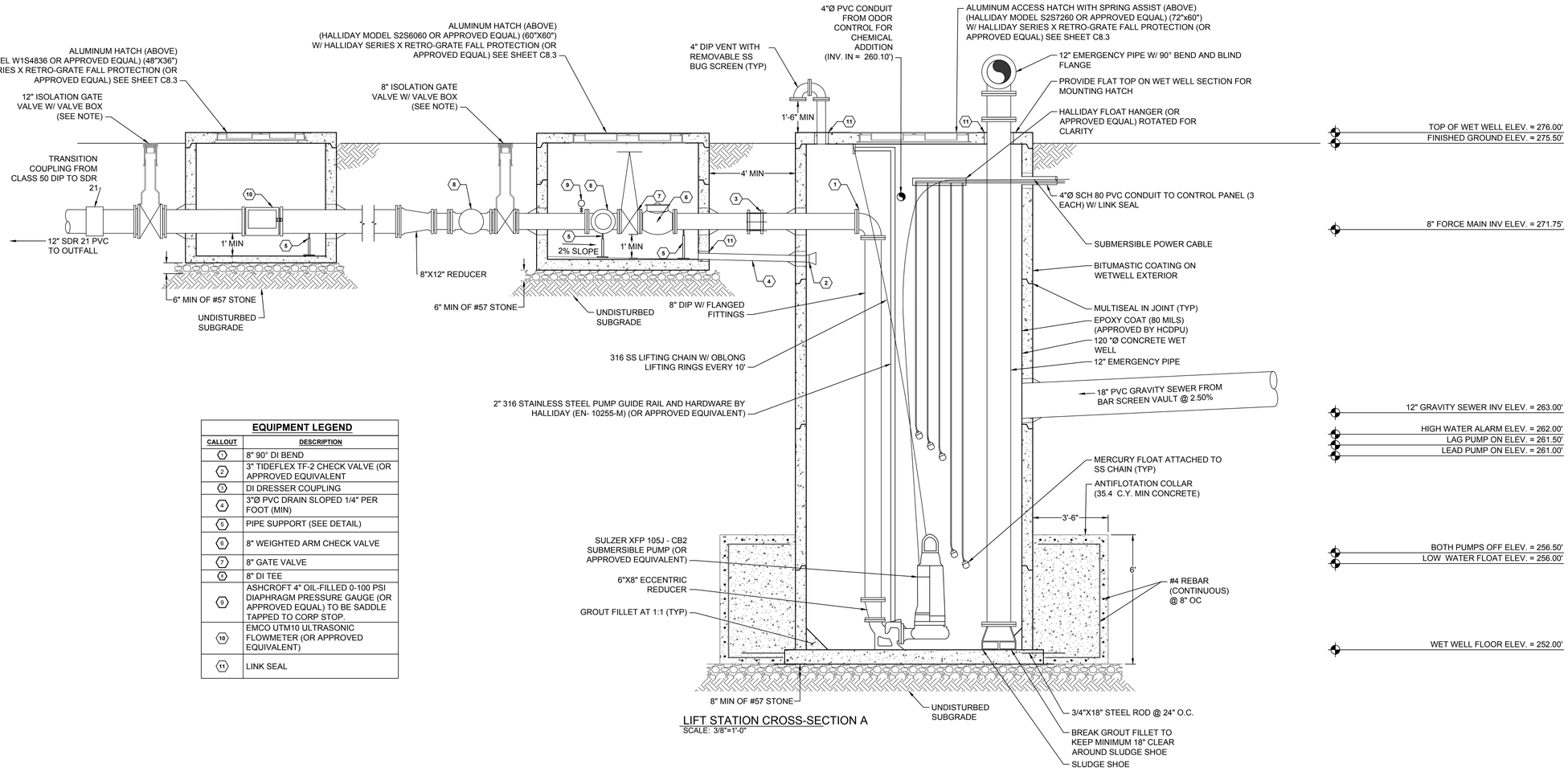
DATE 9/14/2020
DRAWN BY M. WU
DESIGNED BY M. WU
CHECKED BY C. PETREE
SCALE 1"=5'

TIMMONS GROUP

SERENITY PHASE 1A, 1B, & 1C
PINEY GROVE RAWLS RD, HARNETT COUNTY, NORTH CAROLINA
PUMP STATION SITE LAYOUT

JOB NO. 41158
SHEET NO. C8.0

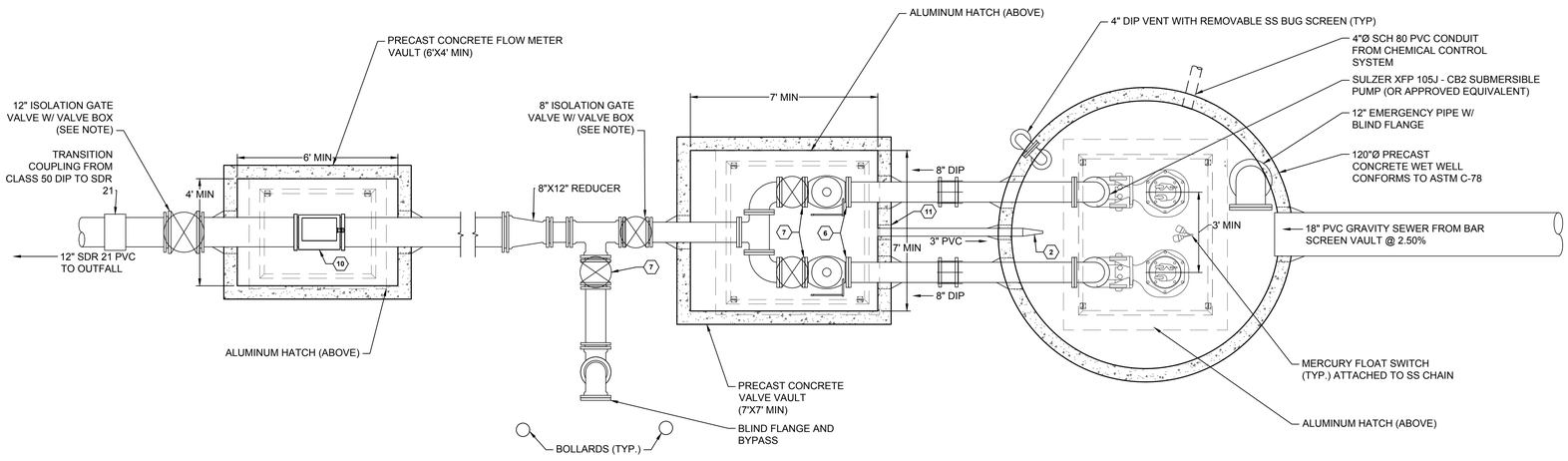
L:\21\241168-Piney_Grove (Serenity)\DWG\Sheet\C0s41168-8.0-GVRL.dwg | Plotted on 2/16/2021 8:24 AM | by Ashley Kabat



LIFT STATION CROSS-SECTION A
SCALE: 3/8"=1'-0"

EQUIPMENT LEGEND

CALLOUT	DESCRIPTION
1	8" 90° DI BEND
2	3" TIDEFLEX TF-2 CHECK VALVE (OR APPROVED EQUIVALENT
3	DI DRESSER COUPLING
4	3"Ø PVC DRAIN SLOPED 1/4" PER FOOT (MIN)
5	PIPE SUPPORT (SEE DETAIL)
6	8" WEIGHTED ARM CHECK VALVE
7	8" GATE VALVE
8	8" DI TEE
9	ASHCROFT 4" OIL-FILLED 0-100 PSI DIAPHRAGM PRESSURE GAUGE (OR APPROVED EQUAL) TO BE SADDLE TAPPED TO CORP STOP.
10	EMCO UTM10 ULTRASONIC FLOWMETER (OR APPROVED EQUIVALENT)
11	LINK SEAL



LIFT STATION PLAN VIEW
SCALE: 3/8"=1'-0"

GENERAL NOTES:

1. ALL EXPOSED METAL SHALL BE PAINTED WITH 2 COATS OF EXTERIOR ENAMEL PAINT
2. BASE AND FIRST RISER UNIT TO BE CAST MONOLITHIC
3. VALVE VAULT TO HAVE SEALED FLOOR AND DRAIN
4. ALL LOCATIONS WHERE PIPES ENTER OR LEAVE THE WET WELL OR VALVE VAULT SHALL BE MADE WATERTIGHT WITH WALL SLEEVE OR NON-SHRINK GROUT
5. THERE SHALL BE NO VALVES OR ELECTRICAL JUNCTION BOXES IN THE WET WELL
6. PUMPING SPECIFICATIONS ARE BELOW:

   THE PUMPING EQUIPMENT SHALL BE A DUPLEX SUBMERSIBLE SEWAGE PUMP INSTALLATION AS MANUFACTURED BY ABS. THE INSTALLATION SHALL INCLUDE ALL MOTORS, VALVES, PIPING, HARDWARE, HATCH COVERS, CONTROLS, ALARM BELL, ALARM LIGHT, AUTO DIALER, PUMP RUN TIME INDICATOR, ELECTRICAL EQUIPMENT AND WIRING. THE PUMPING EQUIPMENT SHALL BE CAPABLE OF DELIVERING 1000 GPM AGAINST A TDH OF 165 FEET. AN ABS SULZER XFP105J-CB2 60HZ PE860/4 115 HP OR APPROVED EQUIVALENT SHALL BE USED.

7. ALL HARDWARE IN WET WELL, VALVE VAULT, AND FLOW VAULT SHALL BE STAINLESS STEEL
8. PUMP MOTORS SHALL MEET UL REQUIREMENTS OF CLASS 1, DIVISION 1, GROUP D
9. PUMP STATION MUST COMPLY WITH ALL HCDPU STANDARDS DETAILS AND SPECIFICATIONS
10. ALL DISCHARGE PIPING SHALL BE CLASS 50 DUCTILE IRON FLANGED PIPER IN ACCORDANCE WITH AWWA C 141
11. PUMP STATION IS NOT LOCATED WITHIN 100-YR FLOODPLAIN ACCORDING TO FEMA FIRM MAP 3720065500K DATED 10/3/2006
12. JIB CRANE MUST HAVE A BOOM AND ELECTRIC HOIST. THE BOOM MUST EXTENT AT LEAST TWELVE (12') FEET FROM THE EDGE OF THE WET WELL AND MUST LIFT THE PUMP AT LEAST 6' OFF THE GROUND TO LOAD THE PUMP INTO THE BED OF A SERVICE TRUCK
13. ALL PARTS WITH SPECIFIED MANUFACTURERS MAY BE REPLACED WITH APPROVED EQUAL PARTS

A
C8.1 | C8.1

1' 0' 1' 2' 4' 8'
SCALE: 3/8" = 1'-0"

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 041935 2/15/2021 CHRISTOPHER R. PETREE

THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
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TEL 919.866.4951 | FAX 919.833.8124 www.timmons.com
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YOUR VISION ACHIEVED THROUGH OURS.

DATE	REVISION DESCRIPTION
02/15/2021	WATERLINE CHANGED TO 2"

DATE 9/14/2020
DRAWN BY M. WU
DESIGNED BY M. WU
CHECKED BY C. PETREE
SCALE 3/8"=1'

TIMMONS GROUP

SERENITY PHASE 1A, 1B, & 1C
PINEY GROVE RAWLS RD, HARNETT COUNTY, NORTH CAROLINA
PUMP STATION PLAN AND SECTION

JOB NO. 41158
SHEET NO. C8.1

Wastewater Pump Station Calculations

Project: Serenity Pointe
Project No: 41158

Prepared by: C. Petree
Prepared on: 9/21/2018
Date Revised: 6/19/2020

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Pump Station Capacity			
Description	**Value**	**Units**	**Notes**
Average Daily Flowrate	314.67	gpm	1,211 Lots @ 360 GPD +11.67 GPM (Amenity
Peak Factor Used	3.00		
Design Peak Influent Rate	944.01	gpm	
Design Pumping Rate	1000.00	gpm	*Must be greater than Design Influent Rate* *Update based on pump / system curves*

Wet Well Sizing			
Description	**Value**	**Units**	**Notes**
Wetwell Diameter	10.0	feet	
Minimum Pump Cycle Time	10	min	
Unit Volume	587.48	gal/ft	
Wet Well Drawdown Volume	2500.00	gal	Based on $V = \frac{TP}{4}$
Average Pump Run Time	3.86	min	Based on control settings below
Average Pump Cycle Time	12.26	min	*Time between pump starts*
Peak Pump Run Time	47.22	min	
Peak Pump Cycle Time	50.02	min	
Minimum Operating Depth	4.26	ft	

Control Settings			
Description	**Value**	**Units**	**Notes**
100-year Flood Plain Elevation	0.00	ft AMSL	ASSUMED
Top of Wet Well Elevation	276.00	ft AMSL	ASSUMED
Lowest Invert In Elevation	263.00	ft AMSL	
High Level Alarm Elevation	262.00	ft AMSL	**1.00' Below Influent Line**
Lag Pump On Elevation	261.50	ft AMSL	**0.50' Below High Level Alarm**
Lead Pump On Elevation	261.00	ft AMSL	**0.50' Below Lag Pump On**
Both Pumps Off Elevation	256.50	ft AMSL	**4.50' Below Lead Pump On**
Pump entrance diameter	6.00	inches	
Minimum Submergence	3.75	ft	H.I. Stds: $S=(1+2.3F)D$ where $F=v(gD)^{-0.5}$
Suction Entrance Elevation	252.50	ft AMSL	**4.00' Below Both Pump Off**
Wetwell Floor Elevation	252.00	ft AMSL	**6" Below Suction Entrance**
Depth of Wet Well	24.00	ft	

Pump Station Head Loss - Discharge Side			
Description	**Value**	**Units**	**Notes**
Pump Station Pipe Diameter	8.00	inch	From design plans
Pump Station Pipe Velocity	6.38	fps	
Pump Station Pipe "c" value	120		(Hazen-Williams)
Equivalent Length of Fittings	209.92	ft	From Fitting Friction Loss Table Below
Straight Pipe Quantity	40.00	ft	From design plans
Total Equivalent Length	249.92	ft	
Pump Station Head Loss	5.32	ft	

Printed: 6/19/2020
41158 - Piney Grove Pump Calcs - 1211 Lots

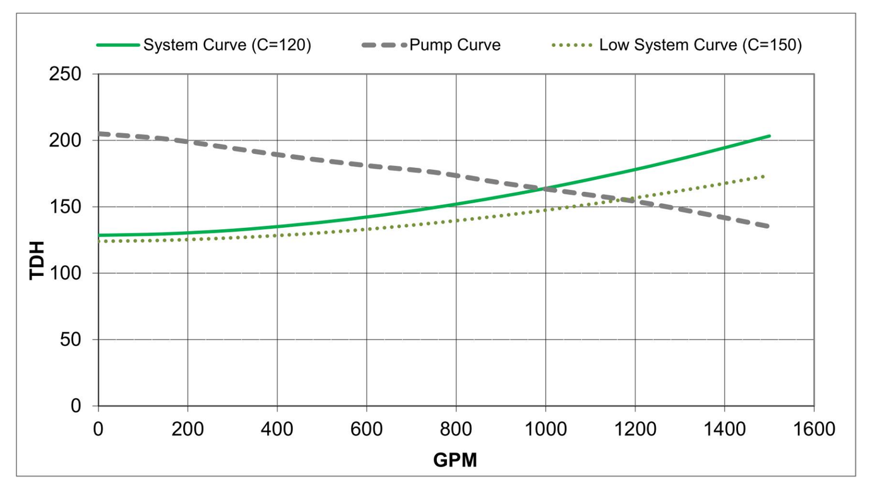
Pump Station System Performance

Project: Serenity Pointe
Project No: 41158

Prepared by: C. Petree
Prepared on: 9/21/2018
Date Revised: 6/19/2020

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Force Main Head Loss			
Description	**Value**	**Units**	**Notes**
Force Main "c" Value	120		(Hazen Williams)
Force Main Nominal Diameter	12	in	
Force Main Material	PVC-SDR 21		
Force Main Inside Diameter	11.465	in	*From Pipe Properties Table*
Flowrate	1000	gpm	
Velocity	3.11	fps	
Force Main Length	7700	ft	Measured From Drawings
Equivalent Length of Fittings	414.8	ft	From Fitting Friction Loss Table Below
Total Equivalent Length	8114.8	ft	
Force Main Friction Loss	30.00	ft	
Force Main High Point Elev.	385.00	ft AMSL	*Check FM / HGL plot for special design considerations*
Manifold Condition?	No		
~~Discharge Elevation~~	~~0.0~~	~~ft AMSL~~	
~~Peak Residual Pressure Head~~	~~23.0~~	~~ft~~	~~*At FM discharge*~~
~~Minimum Residual Pressure Head~~	~~10.0~~	~~ft~~	~~*At FM discharge*~~
Pump Station LWL	256.5	ft AMSL	
System Static Head	128.5	ft	
Total Dynamic Head	163.8	ft	



Printed: 6/19/2020
41158 - Piney Grove Pump Calcs - 1211 Lots

Pump Station System Performance

Project: Serenity Pointe
Project No: 41158

Prepared by: C. Petree
Prepared on: 9/21/2018
Date Revised: 6/19/2020

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Force Main Retention Time			
Description	**Value**	**Units**	**Notes**
Daily Flowrate	453,125	gpd	
Force Main Volume	41,292.18	gals	
Force Main Retention Time	2.19	hours	
Pump Cycles Req'd to Flush FM	10.70	cycles	
Pump Cycles per Day	117.5	cycles	Based on Average Daily Flow Rate

TOTAL BUILDOUT CALCULATIONS

Wastewater Pump Station Calculations

Project: Serenity Pointe Phase 1A,B,C
Project No: 41158

Prepared by: C. Petree
Prepared on: 9/21/2018
Date Revised: 6/19/2020

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Pump Station Capacity			
Description	**Value**	**Units**	**Notes**
Average Daily Flowrate	42.67	gpm	124 Lots @ 360 GPM + 11.67 GPM (Amenity)
Peak Factor Used	3.00		
Design Peak Influent Rate	128.01	gpm	
Design Pumping Rate	1000.00	gpm	*Must be greater than Design Influent Rate* *Update based on pump / system curves*

Wet Well Sizing			
Description	**Value**	**Units**	**Notes**
Wetwell Diameter	10.0	feet	
Minimum Pump Cycle Time	10	min	
Unit Volume	587.48	gal/ft	
Wet Well Drawdown Volume	2500.00	gal	Based on $V = \frac{TP}{4}$
Average Pump Run Time	2.76	min	Based on control settings below
Average Pump Cycle Time	64.72	min	*Time between pump starts*
Peak Pump Run Time	3.03	min	
Peak Pump Cycle Time	23.68	min	
Minimum Operating Depth	4.26	ft	

Control Settings			
Description	**Value**	**Units**	**Notes**
100-year Flood Plain Elevation	0.00	ft AMSL	ASSUMED
Top of Wet Well Elevation	276.00	ft AMSL	ASSUMED
Lowest Invert In Elevation	263.00	ft AMSL	
High Level Alarm Elevation	262.00	ft AMSL	**1.00' Below Influent Line**
Lag Pump On Elevation	261.50	ft AMSL	**0.50' Below High Level Alarm**
Lead Pump On Elevation	261.00	ft AMSL	**0.50' Below Lag Pump On**
Both Pumps Off Elevation	256.50	ft AMSL	**4.50' Below Lead Pump On**
Pump entrance diameter	6.00	inches	
Minimum Submergence	3.75	ft	H.I. Stds: $S=(1+2.3F)D$ where $F=v(gD)^{-0.5}$
Suction Entrance Elevation	252.50	ft AMSL	**4.00' Below Both Pump Off**
Wetwell Floor Elevation	252.00	ft AMSL	**6" Below Suction Entrance**
Depth of Wet Well	24.00	ft	

Pump Station Head Loss - Discharge Side			
Description	**Value**	**Units**	**Notes**
Pump Station Pipe Diameter	8.00	inch	From design plans
Pump Station Pipe Velocity	6.38	fps	
Pump Station Pipe "c" value	120		(Hazen-Williams)
Equivalent Length of Fittings	209.92	ft	From Fitting Friction Loss Table Below
Straight Pipe Quantity	40.00	ft	From design plans
Total Equivalent Length	249.92	ft	
Pump Station Head Loss	5.32	ft	

Printed: 6/19/2020
41158 - Piney Grove Pump Calcs - PHASE 1A

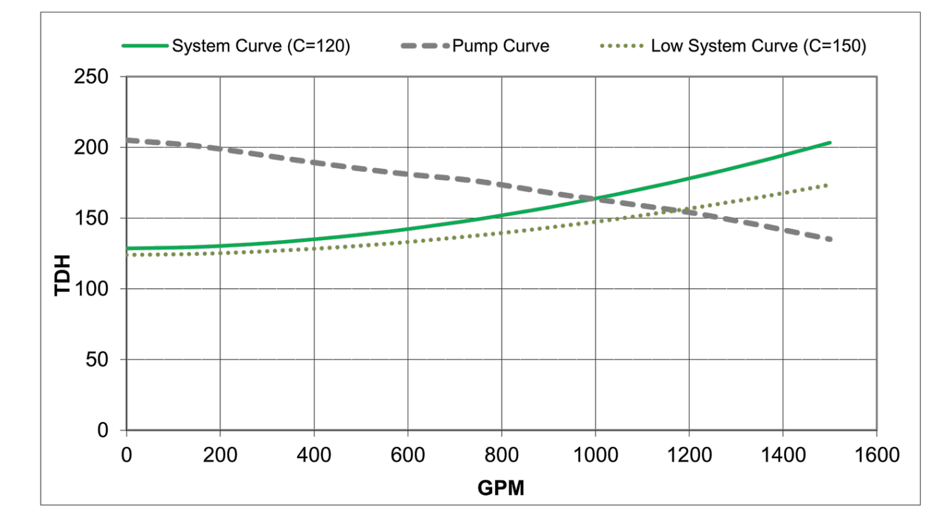
Pump Station System Performance

Project: Serenity Pointe Phase 1A,B,C
Project No: 41158

Prepared by: C. Petree
Prepared on: 9/21/2018
Date Revised: 6/19/2020

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Force Main Head Loss			
Description	**Value**	**Units**	**Notes**
Force Main "c" Value	120		
Force Main Nominal Diameter	12	in	
Force Main Material	PVC-SDR 21		
Force Main Inside Diameter	11.465	in	*From Pipe Properties Table*
Flowrate	1000	gpm	
Velocity	3.11	fps	
Force Main Length	7700	ft	Measured From Drawings
Equivalent Length of Fittings	414.8	ft	From Fitting Friction Loss Table Below
Total Equivalent Length	8114.8	ft	
Force Main Friction Loss	30.00	ft	
Force Main High Point Elev.	385.00	ft AMSL	*Check FM / HGL plot for special design considerations*
Manifold Condition?	No		
~~Discharge Elevation~~	~~0.0~~	~~ft AMSL~~	
~~Peak Residual Pressure Head~~	~~23.0~~	~~ft~~	~~*At FM discharge*~~
~~Minimum Residual Pressure Head~~	~~10.0~~	~~ft~~	~~*At FM discharge*~~
Pump Station LWL	256.5	ft AMSL	
System Static Head	128.5	ft	
Total Dynamic Head	163.8	ft	



Printed: 6/19/2020
41158 - Piney Grove Pump Calcs - PHASE 1A

Pump Station System Performance

Project: Serenity Pointe Phase 1A,B,C
Project No: 41158

Prepared by: C. Petree
Prepared on: 9/21/2018
Date Revised: 6/19/2020

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Force Main Retention Time			
Description	**Value**	**Units**	**Notes**
Daily Flowrate	61,445	gpd	
Force Main Volume	41,292.18	gals	
Force Main Retention Time	16.13	hours	
Pump Cycles Req'd to Flush FM	0.64	cycles	
Pump Cycles per Day	22.3	cycles	Based on Average Daily Flow Rate

PHASE 1A, 1B, 1C CALCULATIONS

Buoyancy Calculations

Project: Serenity Pointe
Project No: 41158

Prepared by: C. Petree
Prepared on: 9/21/2018
Date Revised: 4/09/2019

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Wet Well Buoyancy			
Description	**Value**	**Units**	**Notes**
Inner Diameter	10.0	ft	
Outer Diameter	11.0	ft	**6-inch wall thickness**
Depth	24.0	ft	
Concrete Volume	395.84	ft^3	
Wetwell Weight	57,397	lb	**Based on 145-lb/ft3**
Displaced Volume	2,281	ft^3	
Buoyancy Force	-142,322	lb	
Buoyant Weight of Wetwell	-84,925	lbs	**Structure is buoyant without base**

Base Buoyancy Credit			
Description	**Value**	**Units**	**Notes**
Base Diameter	13.0	ft	**12 inches beyond WW outer diameter**
Base Thickness	0.667	ft	
Concrete / Displaced Volume	88.53	ft^3	
Base Weight	12,837	lb	**Based on 145-lb/ft3**
Buoyancy Force	-5,524	lb	
Buoyant Weight of Base	7,313	lb	
Buoyant Weight of Structure	-77,612	lb	**Structure is buoyant without soil**

(Optional) Anti-Flotation Collar Credit			
Description	**Value**	**Units**	**Notes**
Collar Inner Diameter	11.0	ft	
Collar Thickness	3.50	ft	*If no collar used, set thickness to "0"*
Collar Height	6.0	ft	
Concrete / Displaced Volume	956.61	ft^3	
Base Weight	138,709	lb	**Based on 145-lb/ft3**
Buoyancy Force	-59,693	lb	
Buoyant Weight of Collar	79,016	lb	
Buoyant Weight of Structure	1,404	lb	Structure is not buoyant without soil

Note: The buoyancy calculations above reflect the worst case scenario during construction with the wet well empty, the excavation pit flooded and the absence of overbearing soil. Minimum concrete thicknesses were used for the wall and base sections to ensure a conservative approach. Actual wall and base thicknesses may increase per the manufacturer shop drawings which would reduce the size of the anti-floatation collar. Consideration would also be given to reducing the size of the anti-floatation collar if positive drainage away from the excavation could be maintained during construction.

Printed: 7/3/2019
41158 - Piney Grove Pump Calcs - Total Buildout 20190409

Buoyancy Calculations

Project: Serenity Pointe
Project No: 41158

Prepared by: C. Petree
Prepared on: 9/21/2018
Date Revised: 4/09/2019

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Soil Impact			
Description	**Value**	**Units**	**Notes**
Angle of Influence	15.0	degrees	
Angle of Influence	0.262	radians	
Top of Triangle	6	ft	
Top Diameter	26	ft	
Bottom Diameter	13	ft	
Saturated Soil Density	110.0	lb/ft^3	From Geotechnical Report or Estimate
Depth of Soil above Base	24.0	ft	
Volume of Soil	5,096	ft^3	Volume of Soil (frustrum of cone, less wetwell)
Buoyant Weight of Soil	242,560	lb	

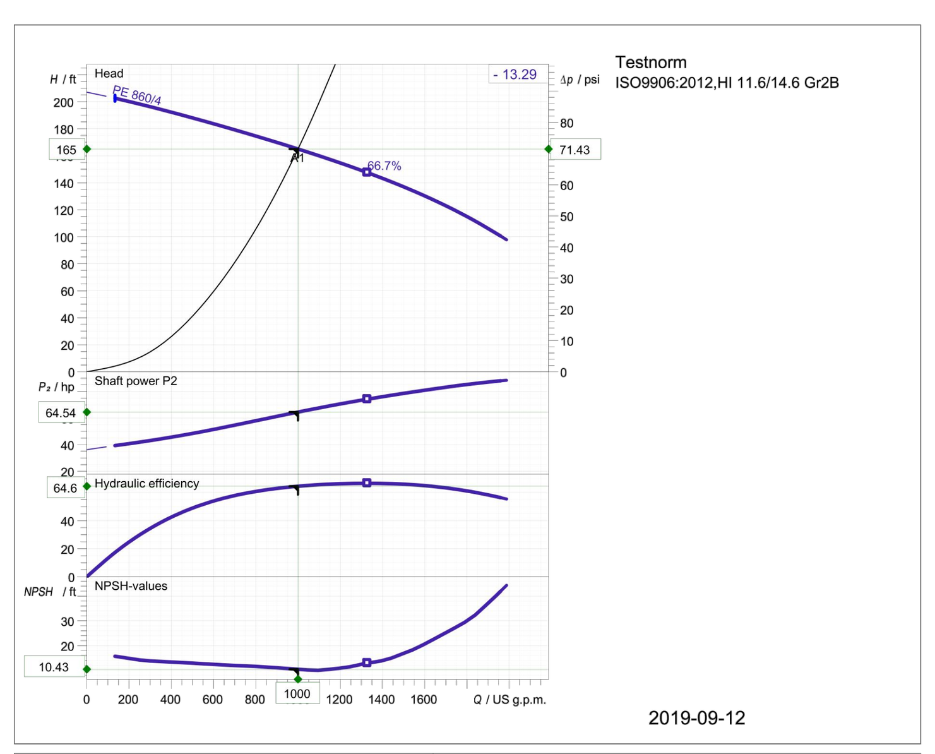
Buoyancy Float Check			
Description	**Value**	**Units**	**Notes**
Total Difference After Backfill	243,964	lb	*Structure is not buoyant after backfill*

Printed: 7/3/2019
41158 - Piney Grove Pump Calcs - Total Buildout 20190409

BUOYANCY CALCULATIONS

SULZER

XFP 105J-CB2 60 HZ



2019-09-12

Operating data specification		Power input	67.9 hp
Flow	1000 US g.p.m.	Head	165 ft
Efficiency	64.6 %	Rated power	64.5 hp
NPSH	10.4 ft	Fluid	Water
Temperature	68 °F	Nature of system	Single head pump
No. of pumps	1		
Pump data			
Type	XFP 105J-CB2 60 HZ	Make	SULZER
Series	XFP PE4-PE7	Impeller	Contrablock Plus impeller
N° of vanes	2	Impeller size	13 1/3inch
Free passage	2.95 x 3.94 inch	Suction flange	DN150
Discharge flange	DN100	Type of installation	wet well vertical installation 2"
Moment of inertia	12.2 lb ft²		
Motor data			
Rated voltage	480 V	Frequency	60 Hz
Rated power P2	115 hp	Nominal Speed	1780 rpm
Number of poles	4	Efficiency	95.4 %
Power factor	0.868	Rated current	125 A
Starting current	1190 A	Rated torque	340 lbf ft
Starting torque	1090 lbf ft	Degree of protection	IP 68
Insulation class	H(140)	No. starts per hour	10

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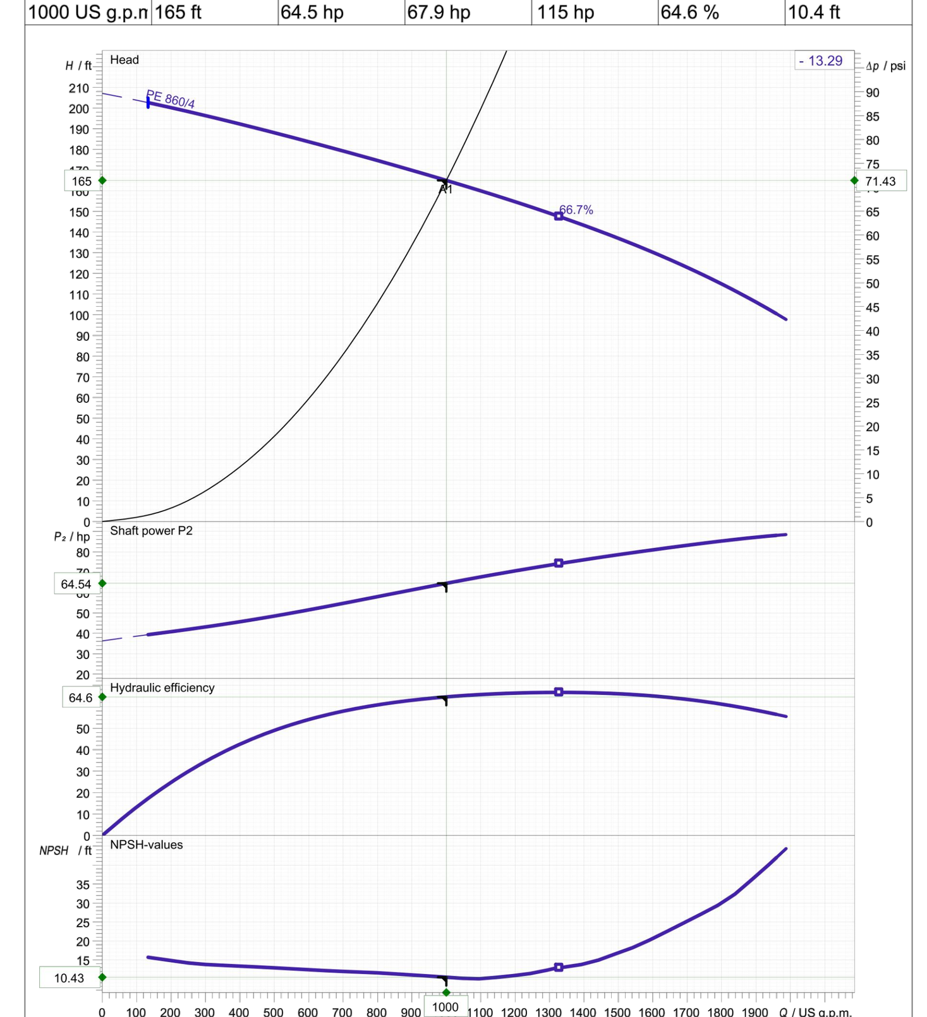
Spaix® 4, Version 4.3.12 - 2019/06/25 (Build 259) Data version July 2019

Pump performance curves

SULZER

XFP 105J-CB2 60 HZ

Curve number				
Reference curve XFP 105J-CB2 60 HZ			Discharge DN100	Frequency 60 Hz
Density 62.32 lb/ft³	Viscosity 1.005 mm²/s	Testnorm ISO9906:2012,HI 11.6/14.6 Gr2B	Rated speed 1790 rpm	Date 2019-09-12
Flow 1000 US g.p.m	Head 165 ft	Shaft power 64.5 hp	Power input 67.9 hp	Rated power P2 115 hp
Hydraulic efficiency 64.6 %	NPSH 10.4 ft			



Impeller size	N° of vanes	Impeller	Solid size	Revision
13 1/3inch	2	Contrablock Plus impeller	2.95 x 3.94 inch	

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Spaix® 4, Version 4.3.12 - 2019/06/25 (Build 259) Data version July 2019

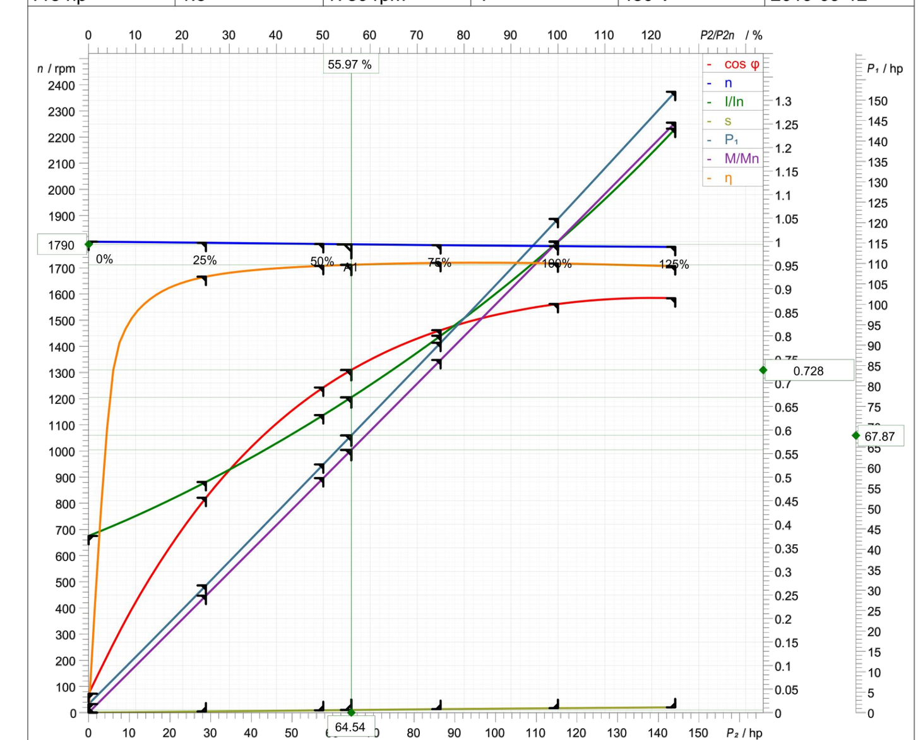
Motor performance curve

SULZER

Frequency 60 Hz, PE5

PE 860/4

Rated power	Service factor	Nominal Speed	Number of poles	Rated voltage	Date
115 hp	1.3	1780 rpm	4	480 V	2019-09-12



Symbol	No load	25 %	50 %	75 %	100 %	125 %
P_2 / hp	0	28.83	57.66	86.5	115.3	144.2
P_1 / hp	2.099	31.14	60.78	90.57	120.9	152.1
η / %	0	92.58	94.87	95.5	95.39	94.81
n / rpm	1800	1796	1791	1787	1783	1780
cos φ	0.04014	0.4563	0.6904	0.8121	0.8677	0.8799
I / A	46.9	61.22	78.96	100	125	155
s / %	0	0.2277	0.489	0.7332	0.939	1.112

Tolerance according to/DE 0530 T1 12.84for rated power

Starting current	Starting torque	Moment of inertia	No. starts per hour
1190 A	1090 lbf ft	29.9 lb ft²	10

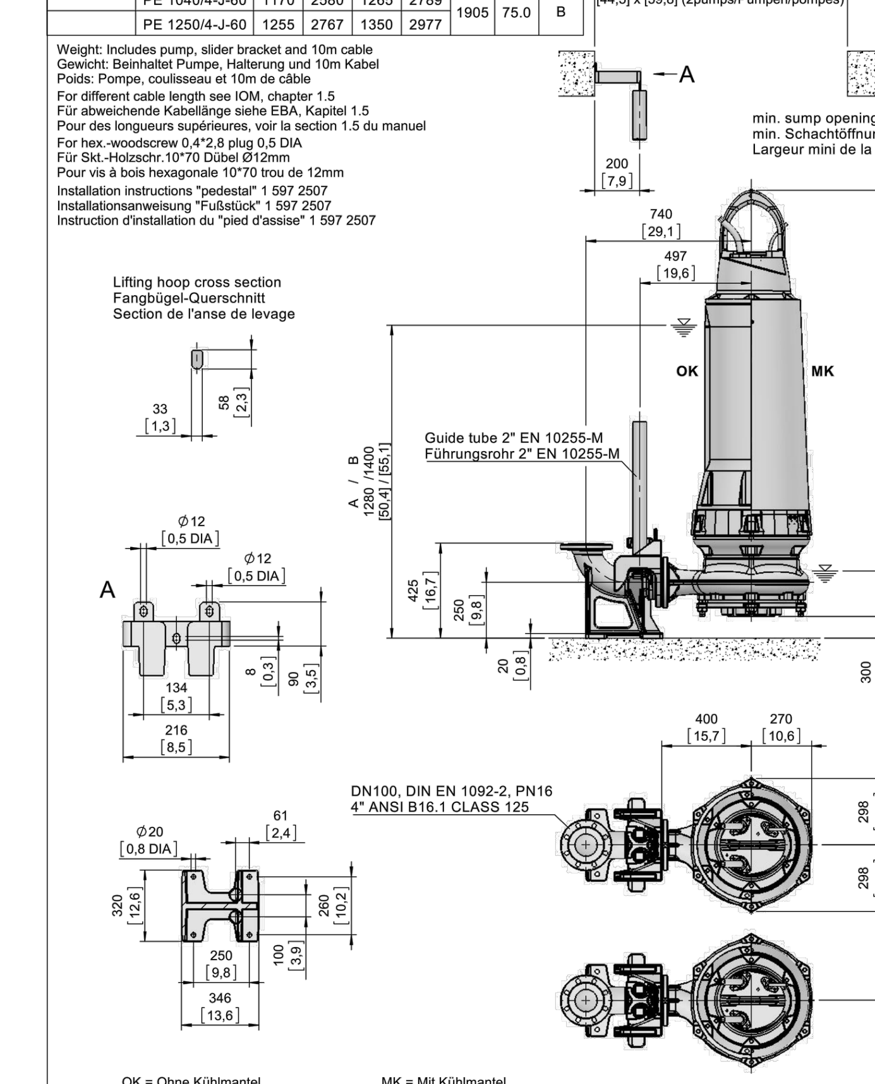
Sulzer reserves the right to change any data and dimensions without prior notice and can not be held responsible for the use of information contained in this software.
Spaix® 4, Version 4.3.12 - 2019/06/25 (Build 259) Data version July 2019

XFP 105J-CB2

SULZER

Dimension sheet PE5 WET WELL Installation dual guide rail 2"
Maßblatt PE5 Nassinstallation Zwei-Rohrführung 2"
Plan d'encombrement PE5 installation submersible Double barre de guidage 2"

Type 50Hz	Type 60Hz	Weight OK (~kg)	Weight OK (~lb)	Weight MK (~kg)	Weight MK (~lb)	H (mm)	H (inch)	Size
PE 550/4-J	PE 630/4-J-60	1015	2236	1095	2414	1785	70.3	A
PE 750/4-J	PE 860/4-J-60	1070	2359	1150	2536			
	PE 1040/4-J-60	1170	2580	1265	2789	1905	75.0	B
	PE 1250/4-J-60	1255	2767	1350	2977			



OK = Ohne Kühlmantel / Without cooling jacket / Sans enveloppe de refroidissement
MK = Mit Kühlmantel / With cooling jacket / Avec enveloppe de refroidissement

PUMP INFORMATION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 041935 CHRISTOPHER R. PETREE 2/15/2021

THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
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DATE	REVISION DESCRIPTION
02/15/2021	WATERLINE CHANGED TO 2"

DATE	9/14/2020
DRAWN BY	M. WU
DESIGNED BY	M. WU
CHECKED BY	C. PETREE
SCALE	N.T.S

TIMMONS GROUP

SERENITY PHASE 1A, 1B, & 1C

PINEY GROVE RAWLS RD, HARNETT COUNTY, NORTH CAROLINA

PUMP STATION CALCULATIONS

JOB NO.	41158
SHEET NO.	C8.2

SERIES S2S ACCESS DOOR

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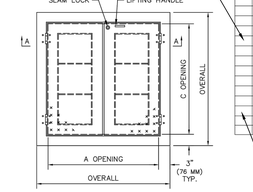
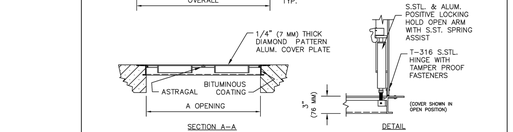
STANDARD FEATURES:
- AUTO-LOCK T-316 STAINLESS STEEL HOLD OPEN ARM WITH RELEASE HANDLE
- T-316 STAINLESS STEEL HINGES AND ATTACHING HARDWARE.
- T-316 STAINLESS STEEL SLAM LOCK WITH REMOVABLE KEY.
- STAINLESS STEEL COMPRESSION SPRING ASSIST
- BUILT-IN NEOPRENE CUSHION/GASKET
- NON-OZONE DEPLETING BITUMINOUS COATING
- DOUBLE LEAF CONSTRUCTION
- 300 LBS. PER SQ. FT. LOAD RATING (1464 KG. PER SQ. METER LOAD RATING)
- EXTRUDED ALUMINUM FRAME
- RECESSED LIFTING HANDLE
- LIFETIME GUARANTEE

TO BE USED ON BAR SCREEN VAULT
TO BE USED ON VALVE VAULT



TO BE USED ON WET WELL



QTY.	MODEL NO.	A DIM. INCHES (MM)	C DIM. INCHES (MM)	UNIT WT. LBS. (KG.)
	S2S2424	42 (1067)	42 (1067)	93 (43)
	S2S4842	48 (1219)	42 (1067)	99 (45)
	S2S4848	48 (1219)	48 (1219)	110 (50)
	S2S5442	54 (1372)	42 (1067)	108 (49)
	S2S5448	54 (1372)	48 (1219)	119 (54)
	S2S5454	54 (1372)	54 (1372)	127 (58)
	S2S6030	60 (1524)	30 (762)	87 (39)
	S2S6036	60 (1524)	36 (914)	100 (45)
	S2S6042	60 (1524)	42 (1067)	115 (52)
	S2S6048	60 (1524)	48 (1219)	130 (59)
	S2S6054	60 (1524)	54 (1372)	143 (65)
	S2S6060	60 (1524)	60 (1524)	158 (72)
	S2S6636	66 (1676)	36 (914)	109 (49)
	S2S6648	66 (1676)	48 (1219)	141 (64)
	S2S7236	72 (1829)	36 (914)	116 (53)
	S2S7242	72 (1829)	42 (1067)	135 (61)
	S2S7248	72 (1829)	48 (1219)	151 (68)
	S2S7254	72 (1829)	54 (1372)	168 (76)
	S2S7260	72 (1829)	60 (1524)	178 (81)

HALLIDAY S2S ACCESS HATCH
SCALE: NOT TO SCALE

SERIES W1S ACCESS DOOR

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STANDARD FEATURES:
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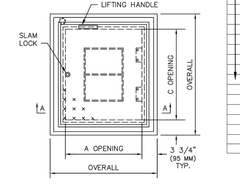
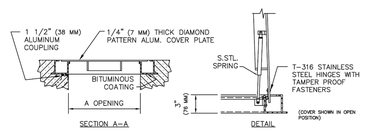
- T-316 STAINLESS STEEL HINGES AND ATTACHING HARDWARE
- T-316 STAINLESS STEEL SLAM LOCK WITH REMOVABLE KEY
- STAINLESS STEEL COMPRESSION SPRING ASSIST
- BUILT-IN NEOPRENE GASKET TO LIMIT THE TRANSMISSION OF ODORS
- NON-OZONE DEPLETING BITUMINOUS COATING
- SINGLE LEAF CONSTRUCTION
- 300 LBS. PER SQ. FT. LOAD RATING (1464 KG. PER SQ. METER LOAD RATING)
- EXTRUDED ALUMINUM CHANNEL FRAME
- RECESSED LIFTING HANDLE
- LIFETIME GUARANTEE

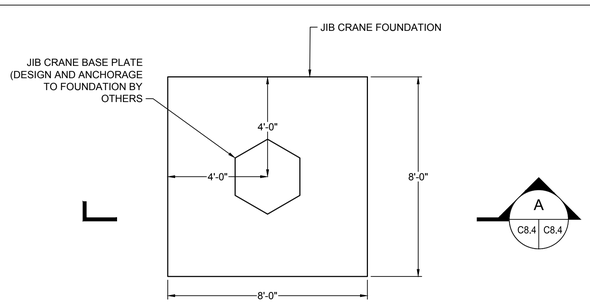
TO BE USED ON FLOW VAULT





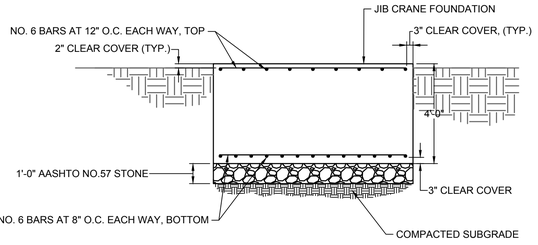
QTY.	MODEL NO.	A DIM. INCHES (MM)	C DIM. INCHES (MM)	UNIT WT. LBS. (KG.)
	W1S2424	24 (610)	24 (610)	46 (20)
	W1S2430	24 (610)	30 (762)	51 (23)
	W1S2436	24 (610)	36 (914)	61 (28)
	W1S2442	24 (610)	42 (1067)	77 (35)
	W1S2448	24 (610)	48 (1219)	85 (39)
	W1S3030	30 (762)	30 (762)	62 (28)
	W1S3036	30 (762)	36 (914)	69 (31)
	W1S3042	30 (762)	42 (1067)	77 (35)
	W1S3048	30 (762)	48 (1219)	85 (39)
	W1S3054	30 (762)	54 (1372)	99 (45)
	W1S3060	30 (762)	60 (1524)	102 (46)
	W1S3636	36 (914)	36 (914)	78 (35)
	W1S3642	36 (914)	42 (1067)	89 (40)
	W1S3648	36 (914)	48 (1219)	97 (44)
	W1S3654	36 (914)	54 (1372)	107 (49)
	W1S3660	36 (914)	60 (1524)	116 (53)
	W1S3666	36 (914)	66 (1676)	126 (57)
	W1S3672	36 (914)	72 (1829)	135 (61)
	W1S4242	42 (1067)	42 (1067)	108 (49)

HALLIDAY W1S ACCESS HATCH
SCALE: NOT TO SCALE



FOUNDATION PLAN

NOTE:
1. REINFORCING BARS NOT SHOWN FOR CLARITY



FOUNDATION SECTION

NOTE:
1. REINFORCING BARS NOT SHOWN FOR CLARITY

JIB CRANE FOUNDATION
SCALE: NOT TO SCALE

DRAWING NOTES:

DESIGN: DESIGN IS IN ACCORDANCE WITH THE NORTH CAROLINA STATE BUILDING CODE, DATED 2018, THE INTERNATIONAL BUILDING CODE (IBC), DATED 2015, AMERICAN SOCIETY OF CIVIL ENGINEERS MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES (ASCE 7), DATED 2010, AND THE BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318), DATED 2014.

GENERAL: THIS DRAWING IS BASED ON L. K. GOODWIN CO.'S FS300 BASE PLATE MOUNTED 2 TON CAPACITY JIB CRANE. IT IS ASSUMED THAT THE FOUNDATION SHOWN ON THIS DRAWING WILL BE USED TO SUPPORT THE FS300 JIB CRANE. TIMMONS GROUP OWNS THE DESIGN FOR THE FOUNDATION ONLY. THE JIB CRANE AND CRANE ANCHORAGE TO THE FOUNDATION ARE BY OTHERS. THE CENTER OF THE JIB CRANE BASE PLATE SHALL BE LOCATED AT THE CENTER OF THE FOUNDATION.

EXISTING CONDITIONS: THE CONTRACTOR SHALL PROTECT FROM DAMAGE ALL ELEMENTS OF EXISTING STRUCTURES AND UTILITIES THAT ARE ADJACENT TO THE PROPOSED FOUNDATION. EXISTING STRUCTURES AND UTILITIES ARE NOT SHOWN ON THIS DRAWING.

PROPOSED DIMENSIONS & ELEVATIONS: THE CONTRACTOR SHALL INDEPENDENTLY VERIFY ALL DIMENSIONS SHOWN ON THIS DRAWING BEFORE FABRICATION AND CONSTRUCTION.

EXCAVATIONS & SUBGRADE: WHERE SOFT SOILS OR DEBRIS ARE ENCOUNTERED AT THE BOTTOM OF EXCAVATION, OVER-EXCAVATE THE DELETERIOUS MATERIALS AND REPLACE WITH ADDITIONAL NO. 57 STONE. THE FOUNDATION EXCAVATION SHALL BE EVALUATED BY A QUALIFIED GEOTECHNICAL ENGINEER (OR REPRESENTATIVE) PRIOR TO CONCRETE PLACEMENT. CONTRACTOR SHALL FOLLOW THE OSHA 29 CFR PART 1926 SUBPART P RULES AND REGULATIONS FOR THE EXCAVATION.

MATERIALS: REINFORCING STEEL: REINFORCING STEEL AND ALL SUPPORT DEVICES SHALL BE PLAIN BLACK BARS AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615, GRADE 60. CLEAR COVER SHALL BE AS SHOWN IN THE DETAILS.

CONCRETE:
A. 28-DAY STRENGTH: 4,500 PSI
B. DENSITY: NORMAL WEIGHT
C. DURABILITY REQUIREMENTS (PER ACI 318): F1, S0, C1

L.K. GOODWIN CO.
MATERIAL HANDLING EQUIPMENT
Toll free: 1-800-343-2470
In RI: 401-731-5526
Fax: 401-731-2880

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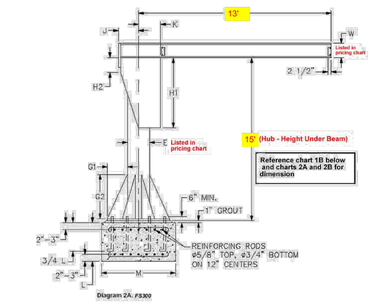
FS300 Base Plate Mounted 2 Ton Capacity

FS300 (FREE STANDING)



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PRICING - (Dimension charts are listed below pricing) - (Accessory Pricing is listed below the dimension charts)

HUB (B)	SPAN	8'	9'	10'	11'	12'	13'	14'	15'	16'	17'	18'	19'	20'
8'	Model (E-W)	14-10	14-10	14-12	14-12	16-12	16-W16	16-W16	16-W16	16-W18	16-W18	18-W18	18-W18	18-W18
	Weight (lbs)	1465	1490	1590	1620	2135	2357	2399	2447	2545	2645	2925	2961	3036
	Price	$4,025	$4,978	$5,002	$5,313	$5,954	$6,488	$6,590	$6,687	$7,270	$7,393	$9,079	$9,206	$9,335
9'	Model (E-W)	14-10	14-10	14-12	14-12	16-12	16-W16	16-W16	16-W16	16-W18	16-W18	18-W18	18-W18	18-W18
	Weight (lbs)	1510	1540	1635	1665	2195	2427	2454	2507	2640	2705	2995	3041	3091
	Price	$5,080	$5,131	$5,408	$5,473	$6,119	$6,649	$6,750	$6,843	$7,423	$7,552	$9,301	$9,424	$9,550
10'	Model (E-W)	14-10	14-10	14-12	14-12	16-12	16-W16	16-W16	16-W16	16-W18	16-W18	18-W18	18-W18	18-W18
	Weight (lbs)	1555	1580	1680	1710	2250	2482	2514	2562	2700	2765	3125	3181	3246
	Price	$5,220	$5,287	$5,560	$5,624	$6,266	$6,808	$6,909	$7,006	$7,581	$7,709	$9,516	$9,644	$9,769
11'	Model (E-W)	14-10	14-10	14-12	14-12	16-12	16-W16	16-W16	16-W16	16-W18	16-W18	18-W18	18-W18	18-W18
	Weight (lbs)	1660	1630	1725	1755	2315	2547	2579	2627	2765	2825	3200	3256	3316
	Price	$5,388	$5,439	$5,712	$5,781	$6,426	$6,965	$7,065	$7,162	$7,739	$7,868	$9,732	$9,859	$9,987
12'	Model (E-W)	14-10	14-10	14-12	14-12	16-12	16-W16	16-W16	16-W16	16-W18	16-W18	18-W18	18-W18	18-W18
	Weight (lbs)	1645	1675	1770	1800	2370	2607	2639	2693	2625	2890	3265	3321	3386
	Price	$5,562	$5,596	$5,871	$5,931	$6,582	$7,124	$7,218	$7,318	$7,895	$8,023	$9,951	$10,079	$10,205
13'	Model (E-W)	14-10	14-10	14-12	14-12	16-12	16-W16	16-W16	16-W16	16-W18	16-W18	18-W18	18-W18	18-W18
	Weight (lbs)	1690	1720	1815	1845	2435	2667	2709	2752	2885	2950	3335	3391	3451
	Price	$5,699	$5,752	$6,020	$6,084	$6,742	$7,284	$7,381	$7,478	$8,058	$8,184	$10,172	$10,295	$10,426
HUB (B)	SPAN	8'	9'	10'	11'	12'	13'	14'	15'	16'	17'	18'	19'	20'
	Model (E-W)	14-10	14-10	14-12	16-12	16-12	16-W16	16-W16	18-W16	18-W18	18-W18	18-W18	18-W18	20-W18
14'	Weight (lbs)	1730	1760	1860	2470	2500	2727	2759	3162	3285	3360	3405	3456	4166
	Price	$5,853	$5,904	$6,179	$6,837	$6,897	$7,440	$7,537	$9,558	$10,132	$10,260	$10,384	$10,513	$12,575
15'	Model (E-W)	14-10	14-10	14-12	16-12	16-12	16-W16	16-W16	18-W18	18-W18	18-W18	18-W18	20-W18	20-W18
	Weight (lbs)	1775	1805	1900	2525	2555	2787	2819	3232	3355	3430	3470	3951	4016
	Price	$6,005	$6,057	$6,334	$6,994	$7,057	$7,599	$7,696	$9,778	$10,351	$10,477	$10,603	$12,710	$12,840
16'	Model (E-W)	14-10	14-10	14-12	16-12	16-12	16-W16	18-W16	18-W18	18-W18	18-W18	18-W18	20-W18	24-W18
	Weight (lbs)	1825	1855	1950	2590	2620	2852	3244	3292	3425	3495	3540	4286	4956

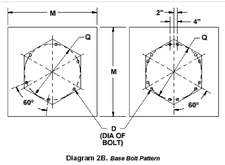


Diagram 2B. *Base Bolt Pattern*

CHART 1B - *Room Data*

STANDARD BOOM DATA		
Boom Height (W)	Beam Size	Flange Width (in)
6"	S6@12.5#/ft.	3-3/8"
7"	S7@15.3#/ft.	3-5/8"
8"	S8@18.4#/ft.	4"
10"	S10@24.4#/ft.	4-5/8"
12"	S12@31.8#/ft.	5"
16"	W16@45#/ft.	7"
18"	W18@50#/ft.	7-1/2"
21"	W21@62#/ft.	8-1/4"
24"	W24@84#/ft.	9"

FS300 BASE PLATE MOUNTED

2.1 - Pour the footing, according to the footing dimensions in diagrams 2A and 2B and charts 2A and 2B, with the anchor bolts (J-bolts) in place. There should be between 4" and 6" of anchor bolt exposed above the floor level.

NOTE: Jib crane foundation requirements

Chart 2A. *Crane Dimensions*

PIPE SIZE	DIMENSIONS (IN.)							ANCHOR BOLT PATTERN	
E	G1	G2	J	K	H1	H2	QTY.	D	Q
8	10	20	10-3/8	10	46-3/4	4	6	1.00	24
12	8-1/2	20	12-7/8	12-1/2	71-3/4	6	6	1.25	24
14	11	22	15-3/8	15	72	8	6	1.25	30

ELECTRIC HOIST SPECIFICATIONS:
ELECTRIC HOIST TO BE ABLE TO LIFT 1.5 TONS MINIMUM WITH A LIFT OF 30'. HARRINGTON H4 ELECTRIC CHAIN HOIST WITH 30' HOIST LIFT (OR APPROVED EQUAL)

JIB CRANE MANUFACTURER DETAILS
SCALE: NOT TO SCALE

are based on a soil pressure of 2500 lbs. per square foot. Concrete recommended for jib crane foundation is 3000 lbs. per square inch of compressive force.

NOTE:
Foundation/concrete must cure seven (7) days prior to mast installation. Foundation/concrete must cure 28 days prior to using crane to full capacity.

2.2 Once the concrete has cured, cover the base plate area with one (1") inch of grout.

2.3 Set the mast into place and make sure the base plate is completely seated in the grout.

2.4 Plumb mast following the plumbing procedure in Step 3.

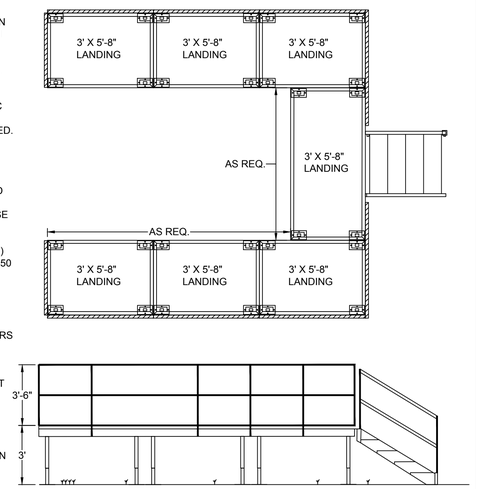
2.5 Once mast is plumb and grout has cured, tighten anchor bolts per manufacturer's specifications.

E	G1	G2	J	K	H1	H2	QTY.	D	Q
16	13	26	17-3/8	17	72	8	12	1.25	36
18	15	30	17-3/8	17	72	9	12	1.25	42
20	17	34	17-7/8	17-1/2	72	10	12	1.25	48
24	18	36	22-7/8	22-1/2	77	12	12	1.25	54
30	18	36	25-3/8	25	84	12	12	1.25	60

Chart 2B. *Foundation Depth*

STANDARD FOOTING REQUIREMENTS			
Capacity Tons	Span (ft.)	Width (ft.) M	Depth (ft.) L
1/4	8-13	4	3
1/4	14-20	4	4
1/2	8-12	4	4
1/2	13-20	5	4
1	8-10	5	4
1	11-15	6	4
1	16-20	7	4
1-1/2	8-12	6	4
1-1/2	13-15	7	4
1-1/2	16-20	8	4
2	8-11	6	4
2	12-15	7	4
2	16-20	8	4
3	8-16	8	4
3	17-20	9	4
4	8-13	8	4
4	14-20	10	4
5	8-14	9	4
5	15-18	10	4
5	19-20	10	5

GENERAL NOTES:
1. ALUMINUM RAM, LANDING AND STAIR SECTIONS SHALL BE A RIGID, FREE-SPAN DESIGN
2. DESIGN OF THE ALUMINUM STRUCTURES SHALL CONFORM TO THE CURRENT EDITION OF THE ALUMINUM ASSOCIATION SPECIFICATIONS AND GUIDELINES FOR ALUMINUM STRUCTURES .
3. ALL ALUMINUM CONSTRUCTION USING 6000 SERIES ALUMINUM ALLOYS. STRUCTURAL MEMBERS TO BE 6061-T6, 6063-T6 AND 6005-T5 ALUMINUM ALLOY
4. ALUMINUM WILL BE STANDARD MILL FINISH UNLESS OTHERWISE NOTED.
5. WELDING SHALL BE IN ACCORDANCE WITH ANSI/AWS D1.2/D1.2M-2014 GAS METAL ARC WELDING (GMAW) PROCESS BY EXPERIENCED OPERATORS.
6. ALL FASTENERS TO BE 18-8 (SERIES 304) STAINLESS STEEL UNLESS OTHERWISE NOTED.
7. LANDING, RAMP AND STAIR SECTIONS ARE TO BE ENGINEERED FOR A 100 PSF LIVE LOAD.
8. LANDING AND RAMP WALKING SURFACES SHALL BE DESIGNED FOR A MINIMUM CONCENTRATED VERTICAL LOAD OF 300 LBS APPLIED EVENLY OVER A 12" X 12" AREA. STAIR TREADS SHALL BE DESIGNED TO WITHSTAND A MINIMUM CONCENTRATED LOAD OF 300 LBS OVER A 4 SQUARE INCH AREA.
9. RAMP AND LANDING GUARDRAILS TO BE 42 INCH MINIMUM HEIGHT UNLESS OTHERWISE SPECIFIED. (34 AND 38 INCH TWO-LINE RAMP RAILS AND 34 AND 38 INCH VERTICAL PICKET RAMP RAILS AS WELL AS CUSTOM DESIGN RAMP RAILS AVAILABLE UPON REQUEST FOR SYSTEMS NO MORE THAN 30 INCHES ABOVE FINISHED GROUND LEVEL.)
10. HANDRAIL ASSEMBLIES AND GUARDRAILS SHALL BE DESIGNED TO RESIST A LOAD OF 50 PLF APPLIED IN ANY DIRECTION AT THE TOP OF THE RAIL.
11. HANDRAIL ASSEMBLIES AND GUARDRAILS SHALL BE ABLE TO RESIST A SINGLE CONCENTRATED LOAD OF 200 LBS, APPLIED IN ANY DIRECTION AT ANY POINT ALONG THE TOP OF THE RAIL. THIS LOAD NEED NOT BE ASSUMED TO ACT CONCURRENTLY WITH THE LOADS SPECIFIED IN THE PRECEDING PARAGRAPH.
12. INTERMEDIATE RAILS (ALL THOSE EXCEPT HANDRAILS), BALUSTERS AND PANEL FILLERS SHALL BE DESIGNED TO WITHSTAND A HORIZONTALLY APPLIED NORMAL LOAD OF 50 LBS ON AN AREA EQUAL TO 1 SQUARE FOOT, INCLUDING OPENINGS AND SPACE BETWEEN RAILS.
13. GUARDRAIL SYSTEMS SHALL BE DESIGNED SO THAT A 4 (FOUR) INCH SPHERE CANNOT PASS THROUGH ANY OPENING.
14. DECK SURFACE SHALL BE A SLIP RESISTANT, EXTRUDED ALUMINUM DECKING WITH A TRIPLE I-BEAM, SELF-MATING DESIGN.
15. ALL SURFACES, MEMBERS AND THEIR WELDED JOINTS SHALL BE SMOOTH AND FREE FROM SHARP OR JAGGED EDGES.
16. ALL DESIGNS SHOWN HEREIN ARE SUBJECT TO CHANGE PENDING FIELD VERIFICATION OF EXISTING CONDITIONS.
17. CONTRACTOR TO HAVE CATWALK DESIGN STAMPED BY A STRUCTURAL ENGINEER, LICENSED IN THE STATE OF NORTH CAROLINA



GENERATOR CATWALK DETAIL
SCALE: NOT TO SCALE

NORTH CAROLINA PROFESSIONAL SEAL 041935 ENGINEER CHRISTOPHER R. PETREE 2/15/2021

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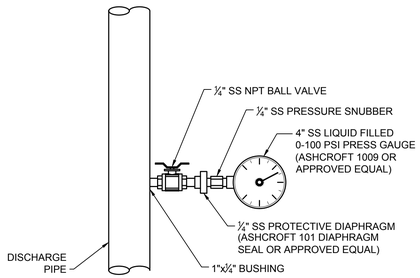
DATE	REVISION DESCRIPTION
02/15/2021	WATERLINE CHANGED TO 2"
DATE	9/14/2020
DRAWN BY	M. WU
DESIGNED BY	M. WU
CHECKED BY	C. PETREE
SCALE	N.T.S

SERENITY PHASE 1A, 1B, & 1C
PINEY GROVE RAWLS RD, HARNETT COUNTY, NORTH CAROLINA
PUMP STATION DETAILS

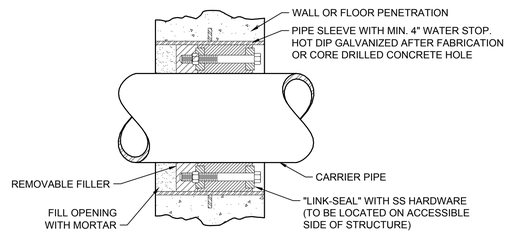
JOB NO. 41158
SHEET NO. C8.3

L:\21\241168-Piney_Grove (Serenity)\DWG\Sheet\C0s\41168-201-C8.X-NTDT.dwg | Plotted on 2/16/2021 8:24 AM | by Ashley Kabat



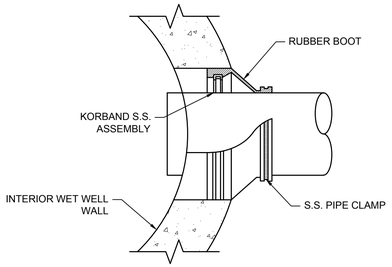
NOTE: STAINLESS STEEL (SS) TO BE GRADE 304 OR 316

PRESSURE GAUGE ASSEMBLY
SCALE: NOT TO SCALE

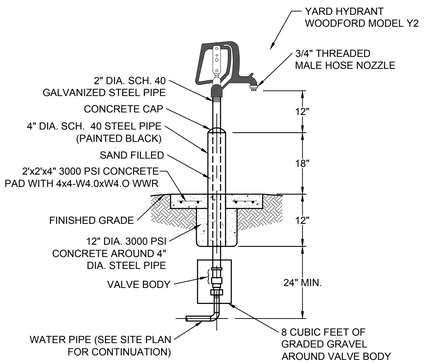


NOTE:
HOLE SIZE AND LINK SEAL SIZE TO BE COORDINATED AS PER MANUFACTURER'S REQUIREMENTS.

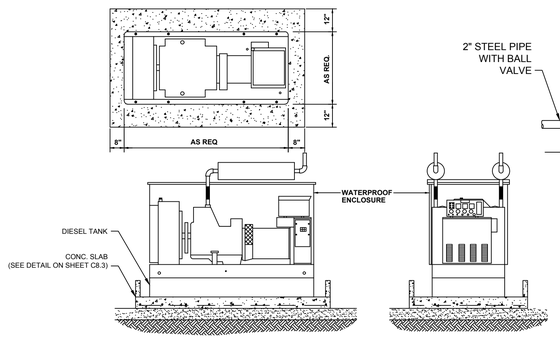
LINK SEAL DETAIL
SCALE: NOT TO SCALE



MANHOLE BOOT
SCALE: NOT TO SCALE

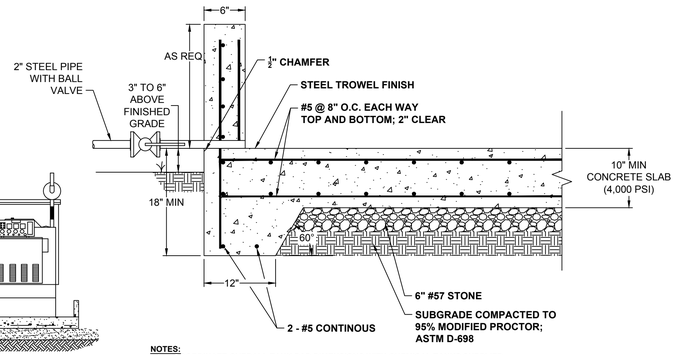


FREEZE PROOF YARD HYDRANT
SCALE: NOT TO SCALE



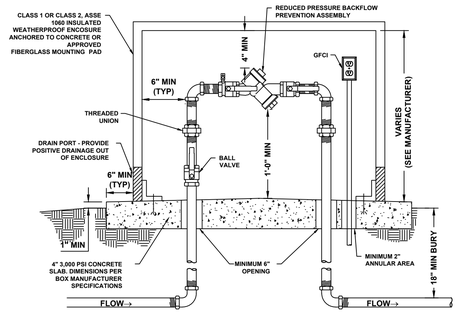
GENERATOR SPECIFICATIONS: THE AUXILIARY GENERATOR SHALL BE DIESEL FUEL DRIVEN, 4 CYCLE, 1800 RPMS, 480 V, 3 PH 60 HERTZ, 320 KVA, WITH SKID MOUNTED FUEL TANK, WATERPROOF HOUSING, RESIDENTIAL MUFFLER,BATTERY CHARGER,BATTERIES, FULL TANK OF FUEL, AND FUEL GAUGE. PROVIDE LOAD TRANSFER SWITCH IN WATERPROOF CABINIT. GENERATOR SHALL BE COMPLETE WITH ALL CONTROLS INCLUDING CLOCK EXCERCISER, AMMETER, VOLT METER, RUN TIME CLOCK. THE SYSTEM SHALL BE CAPABLE OF COMING ON LINE WITH FULL OPERATING VOLTAGE WITHIN TEN SECONDS OF POWER OUTAGE. GENERATOR SHALL NOT EXCEED STATE OR COUNTY NOISE STANDARDS GENERATOR SHALL BE CAPABLE OF STARTING EACH PUMP INDIVIDUALLY AND RUNNING BOTH PUMPS SIMULTANEOUSLY.

AUXILIARY GENERATOR STATION DETAIL
SCALE: NOT TO SCALE



NOTES:
1. **COORDINATE OVERALL TANK PAD DIMENSIONS WITH CHEMICAL TANKS SUPPLIED.**
2. **SLAB SUBGRADE SHALL BE PREPARED IN ACCORDANCE WITH EXISTING SOIL CONDITIONS. MINIMUM COMPACTION SHALL BE 95% OF THE SOIL'S STANDARD PROCTOR MAXIMUM DRY DENSITY.**
3. **REINFORCING; GRADE 60 PER ASTM A-615.**
4. **CONTAINMENT WALL SHALL BE SUFFICIENT TO CONTAIN 100% OF GENERATOR FUEL OR ODOR CONTROL CHEMICAL VOLUME.**

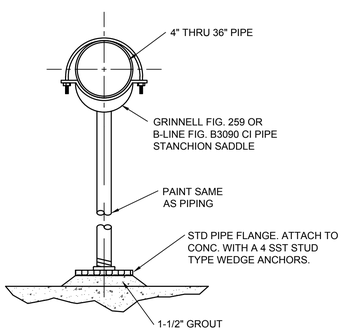
GENERATOR AND ODOR CONTROL CONCRETE PAD DETAILS
SCALE: NOT TO SCALE



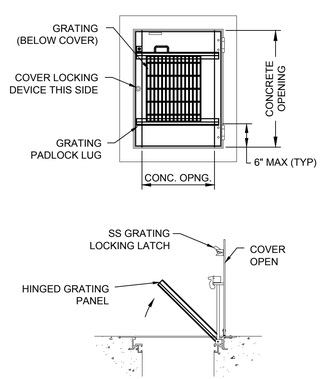
NOTES:
1. **REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY SHALL COMPLY WITH ASSE 1013 & AWWA C511.**
2. **BACKFLOW PREVENTION ASSEMBLIES SHALL BE EITHER DOUBLE CHECK VALVE OR REDUCED PRESSURE PRINCIPLE TYPE DEPENDING ON DEGREE OF HAZARD FOR PROPOSED INSTALLATION. BACKFLOW PREVENTION ASSEMBLIES SHALL BE MANUFACTURED IN CONFORMANCE WITH AWWA C150 (DOUBLE CHECK) OR AWWA C 511 (REDUCED PRESSURE) AND SHALL BE APPROVED BY THE FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH, UNIV. OF SOUTHERN CALIFORNIA AND NCDENR, DIVISION OF ENVIRONMENTAL HEALTH.**
3. **BACKFLOW PREVENTION ASSEMBLY SHALL BE INSTALLED WITHIN 5-FT OF THE METER.**
4. **BACKFLOW ASSEMBLY SHALL BE CENTERED ON CONCRETE OR OTHER APPROVED MOUNTING PAD AND CENTERED WITHIN ENCLOSURE.**
5. **MINIMUM INSULATED CLASS I OR CLASS II, ASSE 1060 WEATHERPROOF ENCLOSURE REQUIRED.**
6. **120 V GFCI ELECTRICAL RECEPTACLE TO BE INSTALLED IN ACCORDANCE WITH THE N.C. ELECTRICAL CODE FOR OUTDOOR OPERATION.**
7. **PIPE MATERIAL SHALL BE PVC (SCH. 80 OR BETTER), COPPER (TYPE K), OR BRASS (ASTM B43).**
8. **IRRIGATION ASSEMBLIES TO BE DRAINED DURING WINTER MONTHS BY PROPERTY OWNER.**
9. **INSTALLATION SHALL BE IN COMPLIANCE WITH ALL APPLICABLE SPECIFICATIONS IN ADDITION TO THE N.C. PLUMBING CODE.**

RPZ BACKFLOW PREVENTER
SCALE: NOT TO SCALE

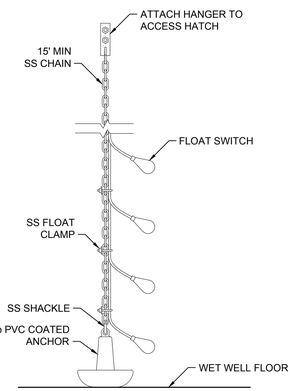
TYPICAL CORNER CONCRETE PAD DETAIL
SCALE: NOT TO SCALE



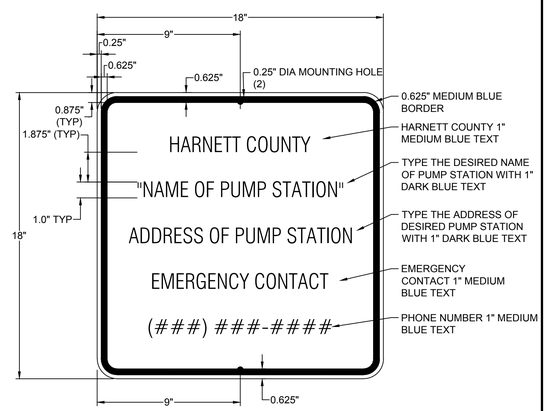
PIPE SUPPORT
SCALE: NOT TO SCALE



HINGED FALL PROTECTION
SCALE: NOT TO SCALE



LEVEL FLOAT ANCHOR DETAIL
SCALE: NOT TO SCALE



NOTES:
1. 18" x 18" NON-REFLECTIVE 18 GAUGE STEEL.
2. TEXT TO BE CENTERED ON SIGN.

PUMP STATION SIGN
SCALE: NOT TO SCALE

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NORTH CAROLINA PROFESSIONAL SEAL 041935 ENGINEER CHRISTOPHER R. PETREE
2/15/2021

REVISION DESCRIPTION	DATE
WATERLINE CHANGED TO 2"	02/15/2021

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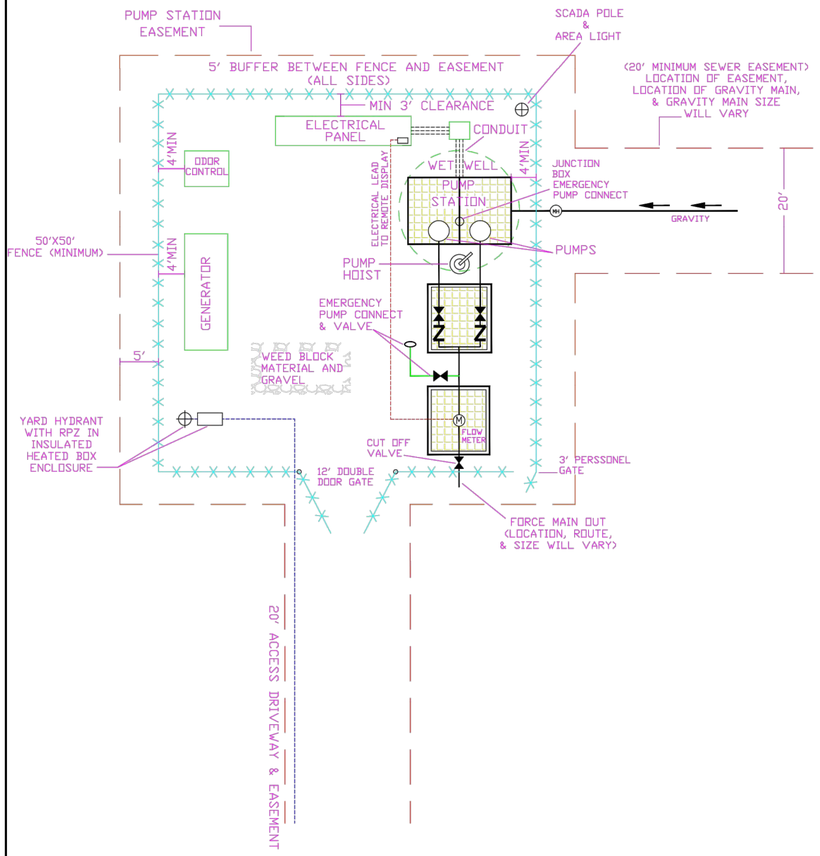
SCALE N.T.S

SERENITY PHASE 1A, 1B, & 1C
PINEY GROVE RAWLS RD, HARNETT COUNTY, NORTH CAROLINA
PUMP STATION DETAILS

JOB NO. 41158
SHEET NO. C8.4



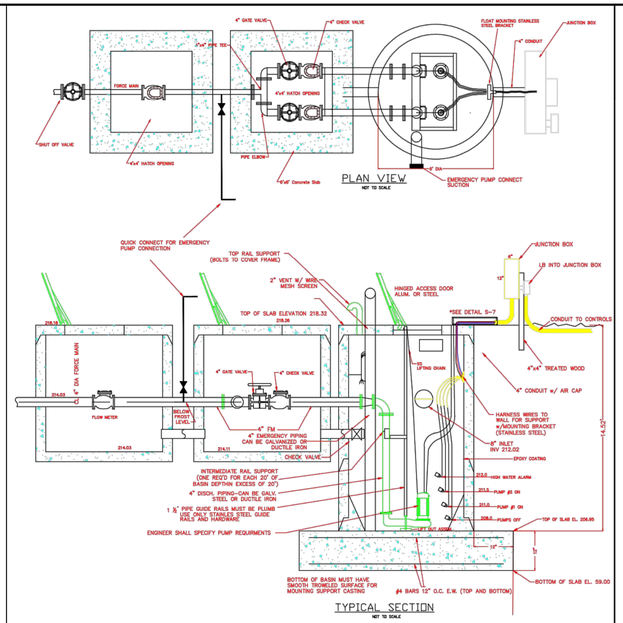
NOTES:

1. PUMP STATION MUST MEET ALL ZONING SET-BACK REQUIREMENTS
2. PUMP STATION MUST MEET ALL LANDSCAPING REQUIREMENTS
3. WATER SRVICE FOR YARD HYDRANT MUST HAVE RPZ PROTECTION.
4. PUMP STATION FENCE TO BE 50'X50' MINIMUM
5. 5' BUFFER SHALL BE REQUIRED BETWEEN FENCE AND EASEMENT LINE.
6. FOR ELECTRICAL PANEL REFER TO DETAILS S-9, S-10, S-11, S-12, AND S-13.
7. REFER TO MINIMUM REQUIREMENTS FOR SEWER LIFT STATION-2007edition
8. GATE VALVES AND CHECK VALVES TO BE SIZED WITH FORCE MAIN
9. CONCRETE FLOW METER VAULT SHOULD BE 4'WIDE X 4'DEEP AND 4' LONG AND IT MUST BE PROVIDED 4'X4' AMULMINUM BILCO HATCH
10. CONCRETE VALVE VAULT SHOULD BE 6'WIDE X 3'DEEP AND 6' LONG AND IT MUST BE PROVIDED 4'X4' ALUMINUM BILCO HATCH
11. NOTES 9 AND 10 DEPENDENT ON FORCE MAIN AND VALVE SIZE

SEE C8.0 FOR DETAILED SITE LAYOUT

TYPICAL SUBMERSIBLE PUMP STATION LAYOUT DETAIL — S-1
NO SCALE

* FOR RAIN HOOD REFER TO DETAIL S-9
* SEE DETAIL S-7 FOR JUNCTION BOX

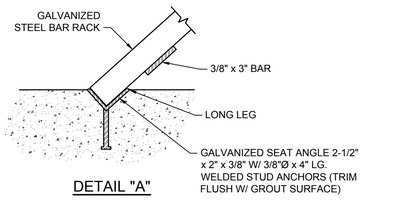


GENERAL NOTES

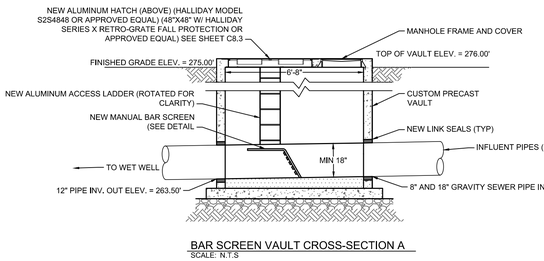
1. ALL FIELD WIRING CONNECTIONS BETWEEN PUMPS, FLOAT SWITCHES AND CONTROL PANEL BY LISCENSED ELECTRICIAN.
2. ALL ENCLOSURES SHALL BE NEMA 4X STAINLESS STEEL.
3. PVC END CAP GLUED TO ELBOW AND PERFORATED WITH 16 EA. 0.12" DIA. HOLES MAY BE USED IN LIEU OF THE BIRD SCREEN.
4. RUN FLOAT SWITCH WIRES TO TERMINAL STRIP ON JUNCTION BOX AND FROM JUNCTION BOX TO CONTROL PANEL.
5. INSTALL AN INTER LOCKED RECEPTACLE WITH ENCLOSED DISCONNECT FOR TRANSFERRING LINE POWER TO PERMANENT GENERATOR IN THE EVENT OF A POWER FAILURE.
6. WIRE AND CONDUIT SIZE MAY VARY DEPENDING UPON PUMP REQUIREMENTS.
7. PUMP STATION BASE TO BE MANUFACTURED SPECIFICALLY FOR DIRECT MOUNTING TO OPEN TOP, 5' DIA. MANHOLE AND SHALL BE PROVIDED WITH ALL MOUNTING HARDWARE AND ANCHOR BOLT. ANCHOR BOLTS SHALL BE HARDENED ALLOY,
8. CIRCUITS SHALL BE IN DIRECT BURIED RIGID STEEL CONDUIT A MINIMUM OF 18" BELOW FINISHED GRADE.
9. ALL HARDWARE INSIDE WETWELL SHALL BE STAINLESS STEEL.
10. ENGINEER MUST PROVIDE ELEVATIONS FOR BASE, FLOATS, AND TOP

TYPICAL BELOW GROUND PUMPS SEWER LIFT STATION DETAIL — S
NO SCALE

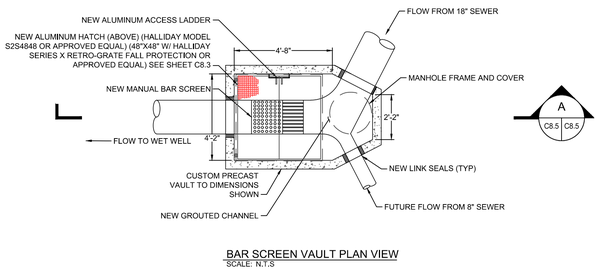
SEE C8.1 FOR DETAILED PUMP STATION PLANS



BAR RACK DETAILS
SCALE: NOT TO SCALE

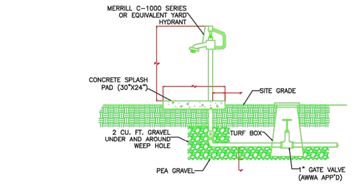


BAR SCREEN VAULT CROSS-SECTION A
SCALE: N.T.S



BAR SCREEN VAULT PLAN VIEW
SCALE: N.T.S

NOTE:
ALL TROUGHS TO BE SQUARE BOTTOM



YARD HYDRANT DETAIL

NOTES:
1. APPROVED RPZ ASSEMBLY MUST BE INSTALLED BETWEEN THE GATE VALVE AND METER.

TYPICAL YARD HYDRANT INSTALLATION DETAIL — S-6
NO SCALE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 041935 2/15/2021 CHRISTOPHER PETREE

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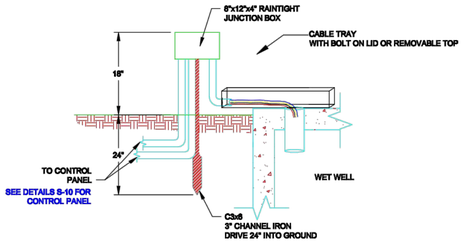
DATE 9/14/2020
DRAWN BY M. WU
DESIGNED BY M. WU
CHECKED BY C. PETREE
SCALE ----

TIMMONS GROUP

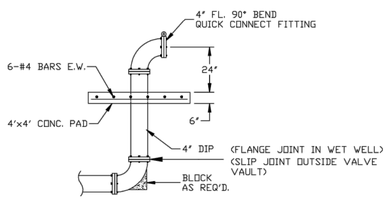
SERENITY PHASE 1A, 1B, & 1C
PINEY GROVE RAWLS RD, HARNETT COUNTY, NORTH CAROLINA
PUMP STATION DETAILS

JOB NO. 41158
SHEET NO. C8.5

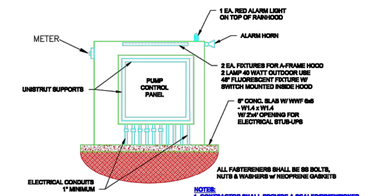


JUNCTION BOX
NOT TO SCALE

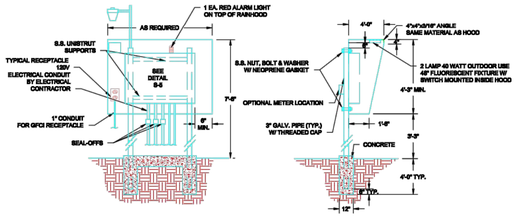
TYPICAL JUNCTION BOX DETAIL S-7
NO SCALE



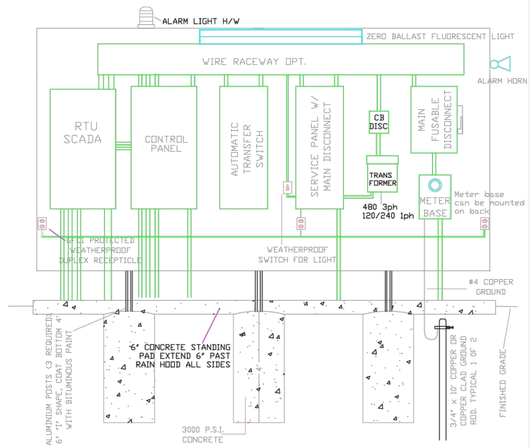
TYPICAL EMERGENCY PUMP DISCHARGE, PLUGGED DETAIL S-8
NO SCALE



NOTES:
1. CONTRACTOR SHALL PROVIDE A SCALED/DIMENSIONED LAYOUT OF CONTROL PANEL TO COUNTY PRIOR TO INSTALLATION.
2. CONTRACTOR TO FURNISH AND INSTALL CONTROL PANEL UNDER RAINHOOD, OR HOOD.
3. CONTRACTOR SHALL PROVIDE AND MOUNT PANEL FOR RTU.
4. RAINHOOD TO HOUSE CONTROL PANEL, AUTOMATIC TRANSFER SWITCH, MANUAL DISCONNECT, METER BASE, METERING CABINET, MOUNTING BRACKET FOR FUTURE RTU.
5. SERVICE TO BE 3 PHASE, 4 WIRE, 480V, 600 AMPS
6. POWER SHALL BE UNDERGROUND. TRANSFORMER AND METERBASE WILL BE SET BY POWER COMPANY (PROGRESS ENERGY, SOUTH RIVER ELECTRIC, CENTRAL ELECTRIC).



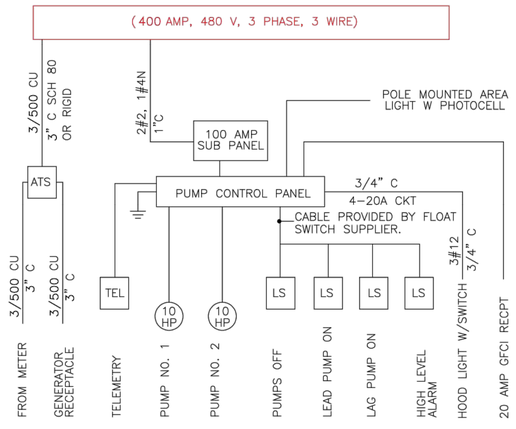
TYPICAL CONTROL PANEL RAIN HOOD DETAIL S-9
NO SCALE



NOTES

1. BACKING PLATE TO BE 1/4" ALUMINUM. MOUNT TO "I" BEAM POSTS WITH STAINLESS STEEL NUT, BOLTS, AND WASHERS.
2. ALL ELECTRICAL WORK SHALL CONFORM TO LATEST NATIONAL, STATE AND LOCAL CODES AND REQUIREMENTS.
3. SHOW CONDUIT SIZE AND RUNS WITH WIRE SIZE AND NUMBER ON PUMP STATION PLANS.
4. PANEL LAYOUT IS SCHEMATIC ONLY. ADJUST AS NEEDED TO ACCOMMODATE EQUIPMENT. MAINTAIN 4" MIN. CLEARANCE BETWEEN PANELS AND SIDE SHIELDS.
5. ALL ENCLOSURES SHALL BE NEMA 4X RATED AND LOCKABLE.
6. ENCLOSURES SHALL BE MOUNTED TO ALUMINUM BACKING PLATE WITH NYLON SPACERS & STAINLESS STEEL NUTS BOLTS & WASHERS.
7. CONDUIT SHALL BE RIDGID ALUMINUM OR GALVANIZED. MEYERS HUBS SHALL BE USED AT ALL PANEL CONNECTIONS.
8. NO EQUIPMENT SHALL BE MOUNTED LESS THAN 36" ABOVE FINISHED GRADE. MIN. CLEARANCE FROM WORK LIGHT TO STANDING PAD SHALL BE 6' 6".
9. FOR RAIN HOOD DETAIL SEE S-9.

TYPICAL PUMP STATION ELECTRICAL PANEL DETAIL S-10
NO SCALE

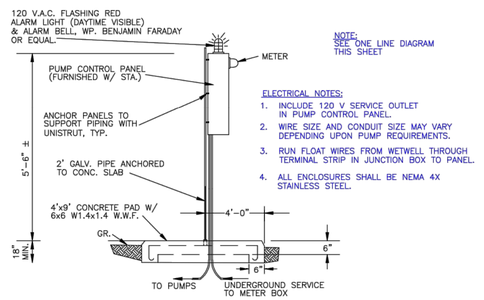


SEE E1.0 FOR RISER DIAGRAM

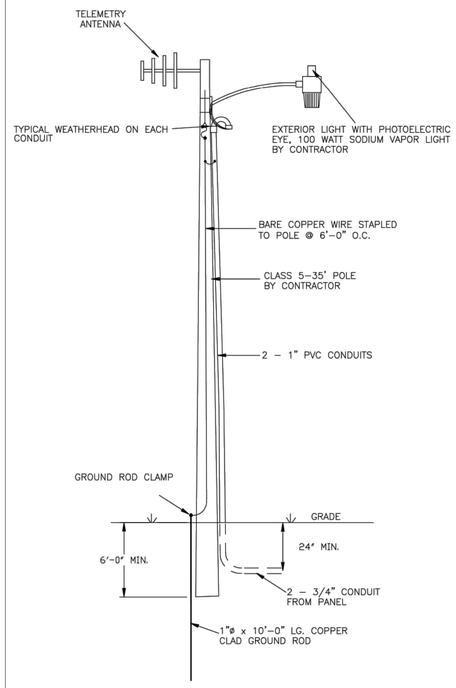
TYPICAL ONE LINE DIAGRAM DETAIL S-11
NO SCALE

NOTE:
1. MAIN DISCONNECT BREAKER/FUSE SHOULD BE SIZED BASED UPON PUMP LOAD WIRE SIZES THE ABOVE SCHEMATIC DIAGRAM IS FOR ILLUSTRATION OF TYPICAL INSTALLATION.
2. ENGINEER SHALL VERIFY BREAKER/FUSE & WIRE SIZES FOR EACH PROJECT.

200 AMP AUTOMATIC
100 AMP TRANSFER SWITCH



TYPICAL CONTROL PANEL & CONC. PAD SIDE VIEW DETAIL S-13
NO SCALE



TYPICAL AREA LIGHT DETAIL S-14
NO SCALE

GENERAL NOTES:

1. ALL FIELD WIRING CONNECTIONS BETWEEN PUMPS, FLOAT SWITCHES AND CONTROL PANEL SHALL BE MADE BY LICENSED ELECTRICIAN ELECTRICIAN.
2. P.V.C. END CAP GLUED TO ELBOW AND PERFORATED WITH 16 EA. 0.12" DIA. HOLES MAY BE USED IN LIEU OF THE BIRD SCREEN.
3. RUN FLOAT SWITCH WIRES TO TERMINAL STRIP IN JUNCTION BOX FROM WETWELL AND FROM JUNCTION BOX TO CONTROL PANEL.
4. ALL ENCLOSURES SHALL BE NEMA 4X STAINLESS STEEL.
5. WIRE SIZE AND CONDUIT SIZE MAY VARY DEPENDING UPON PUMP REQUIREMENTS BUT 1" CONDUIT SHALL BE MIN SIZE.
6. PUMP STATION BASE TO BE MANFACTURED SPECIFICALLY FOR DIRECT MOUNTING TO OPEN TOP, 6' DIA. MANHOLE AND SHALL BE PROVIDED WITH ALL MOUNTING HARDWARE AND ANCHOR BOLTS. ANCHOR BOLTS SHALL BE HARDENED ALLOY, 5/8" DIA.
7. CIRCUITS SHALL BE IN DIRECT BURIED RIGID STEEL CONDUIT A MINIMUM OF 18" BELOW FINISHED GRADE.
8. COORDINATE GENERATOR RECEPTACLE WITH OWNER.

GENERAL NOTES S-15

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TIMMONS GROUP

SERENITY PHASE 1A, 1B, & 1C
PINEY GROVE RAWLS RD, HARNETT COUNTY, NORTH CAROLINA
PUMP STATION DETAILS

JOB NO. 41158
SHEET NO. C8.6

GENERAL PUMP STATION CONSTRUCTION NOTES:

A. THE FOLLOWING MINIMUM REQUIREMENTS, STANDARDS, AND SPECIFICATIONS ESTABLISHED BY THE HCDPU SHALL APPLY TO ALL SEWER LIFT STATIONS CONSTRUCTED AFTER AUGUST 2009 AND THESE MINIMUM REQUIREMENTS SHALL BE INCLUDED WITH THE UTILITY NOTES ON ALL PLANS:

1. THREE (3) PHASE (480 VOLTS) POWER MUST BE PROVIDED FOR EACH SEWER LIFT STATION. EXCEPTIONS MUST BE APPROVED IN WRITING BY THE HCDPU ENGINEER OR THE HCDPU DIRECTOR IN ADVANCE OF THE INSTALLATION OF ANY EQUIPMENT AT ANY NEW SEWER LIFT STATION.

2. MULTIPLE PUMPS (MINIMUM OF 2) EACH CAPABLE OF PUMPING AT A RATE 2.5 TIMES THE AVERAGE DAILY FLOW RATE WITH ANY ONE PUMP OUT OF SERVICE. PUMP-ON/PUMP-OFF ELEVATIONS SHALL BE SET SUCH THAT 2-8 PUMPING CYCLES PER HOUR MAY BE ACHIEVED IN THE SEWER LIFT STATION UNDER THE AVERAGE FLOW RATE CONDITION.

3. AT LEAST TWO (2) GROUND FAULT CIRCUIT INTERRUPTER (GFCI) RECEPTACLES RATED FOR 110-120VAC SHALL BE INSTALLED NEAR THE MAIN CONTROL PANEL FOR EACH SEWER LIFT STATION. ONE GFCI RECEPTACLE SHALL BE LOCATED ON EACH END OF THE CONTROL PANEL HOOD ASSEMBLY AND EACH ONE SHALL BE PROVIDE WITH A WHILE-IN-USE COVER.

4. ONE (1) NEMA 4/4X STAINLESS STEEL ELECTRICAL CONTROL CABINET WITH MINIMUM CABINET DIMENSIONS OF THIRTY (30") INCHES WIDTH X OF THIRTY (30") INCHES LENGTH X TEN (10") INCHES DEPTH SHALL BE PROVIDED FOR THE STATION PUMPS. SPACE SHOULD BE LEFT UNDER THE CONTROL PANEL HOOD ASSEMBLY TO ADD ANOTHER NEMA 4/4X STAINLESS STEEL ELECTRICAL CONTROL CABINET WITH MINIMUM CABINET DIMENSIONS OF THIRTY (36") INCHES WIDTH X OF THIRTY (36") INCHES LENGTH X TEN (10") INCHES DEPTH SHALL BE PROVIDED FOR THE SCADA SYSTEM TO BE INSTALLED BY HCDPU. THE POWER (VOLTAGE AND AMPS) RATING FOR EACH CONTROL PANEL SHALL BE LABELED ON THE OUTSIDE OF THE STATION PUMP CONTROL PANEL, THE GENERATOR PANEL, AUTOMATIC TRANSFER SWITCH (ATS) AND DISCONNECT PANELS WITH BLOCK LETTERS AND NUMBERS AT LEAST THREE (3") INCHES TALL. THE BLOCK LETTERS AND NUMBERS SHOULD BE PERMANENTLY MOUNTED TO THE ELECTRICAL PANELS AND THE USE OF ADHESIVE TYPE (PEEL & STICK) LETTERS AND NUMBERS WILL NOT BE APPROVED BY HCDPU.

5. GAS/LIQUID BARRIER JUNCTION BOX OR CABLE SUPPORT FOR ALL CABLING THAT ENTERS THE WET WELL WITH CORD GRIP TYPE UNIONS. THE JUNCTION BOX SHOULD BE MOUNTED NEAR THE TOP OF THE WET WELL WITH AND OPEN RACEWAY PROVIDING AN AIR GAP ABOVE THE WET WELL PENETRATION TO THE JUNCTION BOX ALLOWING METHANE AND SEWER GASES TO ESCAPE BETWEEN THE WET WELL AND THE JUNCTION BOX SUCH THAT ALL SEWER GASES FROM THE WET WELL ARE PREVENTED FROM ENTERING THE CONTROL PANEL(S).

6. SPARE ONE (1") INCH (MINIMUM) CONDUIT WITH AN AIR GAP FROM THE RTU CABINET AREA TO THE LIQUID TIGHT JUNCTION BOX OF LOW VOLTAGE SIGNAL WIRE ENTRY INTO THE WET WELL.

7. DRY CONTACT TERMINAL STRIP SHALL BE INSTALLED TO PROVIDE SCADA CONNECTIONS FOR:

a. PUMP RUN INDICATION - AUXILIARY CONTACTS FROM PUMP MOTOR STARTERS.
b. HIGH LEVEL ALARM
c. PUMP HOA (HAND OR AUTOMATIC) SWITCH IN AUTO POSITION (CONTACTS ON THE HOA SWITCHES)
d. PUMP SEAL FAILURE AND/OR PRIMING FAILURE
e. MOTOR OVER TEMPERATURES
f. MOTOR OVERLOADS
g. LAG PUMP START
h. THREE PHASE POWER FAILURE OR "SINGLE PHASING"
i.CIRCUIT BREAKER TRIPPED OR CONTROL POWER FAILURE

8. FOR TOTALLY ENCLOSED LIFT STATIONS (I.E. GORMAN RUPP AND SMITH & LOVELESS), PROVISIONS MUST BE PROVIDED TO CONNECT RTU CONDUIT TO THE MOTOR CONTROL CABINET. ONE (1¼") NPT HOLE AND ONE (1") INCH HOLE WILL SUFFICE. TOTALLY ENCLOSED SEWER LIFT STATIONS SHALL BE PROVIDED WITH FORCED AIR VENTILATION AND DAMPER VENTS TO REDUCE HEAT DURING THE SUMMER MONTHS AND A HEAT SOURCE (LIGHT, HEAT STRIP, HEAT TAPE, ETC.) TO AVOID FREEZING DURING THE WINTER MONTHS.

9. INLINE CONTROL CIRCUIT PHASE FAILURE RELAYS WITH SPARE CONTACTS FOR SCADA MONITORING.

10. 100-WATT HEAT STRIP FOR MOISTURE AND TEMPERATURE CONTROL OF THE CABINET ENVIRONMENT.

11. EACH PUMP INSTALLED IN CONJUNCTION WITH THE SEWER LIFT STATION SHALL BE EQUIPPED WITH RUN TIME METERS OR HOUR METERS.

12. EACH SEWER LIFT STATION SHALL HAVE A VISIBLE ALARM LIGHT AND AN AUDIBLE ALARM HORN TO SIGNAL HIGH LEVEL WARNINGS.

13. A STAINLESS STEEL OR ALUMINUM HOODED CONTROL STATION MUST BE PROVIDED. SEE THE HCDPU STANDARD SEWER DETAILS OR CONTACT THE HCDPU ENGINEER FOR A FABRICATION GUIDE.

14. ALL MATERIALS AND CONSTRUCTION SHALL COMPLY WITH STANDARDS AND SPECIFICATIONS OF THE HARNETT COUNTY DEPARTMENT OF PUBLIC UTILITIES.

15. THE SANITARY SEWER FORCE MAIN LEAVING THE SEWER LIFT STATION SHALL BE INSTALLED WITH 12 GAUGE, INSULATED, SOLID COPPER CONDUCTOR, TRACER WIRE FROM THE GATE VALVES AND/OR CHECK VALVES TO THE POINT OF DISCHARGE MANHOLE. THE GATE VALVES AND CHECK VALVES SHALL BE LOCATED IN A CONCRETE VALVE VAULT WITH MINIMUM DIMENSIONS OF FOUR (4") FEET WIDTH X THREE (3") FEET DEPTH X SIX (6") FEET LENGTH NEAR THE WET WELL TO MEET MINIMUM REQUIREMENTS OF THE HCDPU STANDARDS AND SPECIFICATIONS. THE VALVE VAULT SHALL REMAIN ACCESSIBLE FOR MAINTENANCE AND REPAIRS WITH A POSITIVE HEAD FOR DRAINAGE HAVING AN ALUMINUM, LOCKING TYPE (BILCO) HATCH OR APPROVED EQUAL AT LEAST THIRTY (30") INCHES WIDTH X FORTY-EIGHT (48) INCHES LENGTH.

16. EACH SEWER LIFT STATION MUST HAVE AN APPROVED FLOW METER RATED FOR SEWER SERVICE (SCADA READY) INSTALLED IN A SEPARATE CONCRETE VAULT BESIDE THE VALVE VAULT WITH MINIMUM DIMENSIONS OF FOUR (4") FEET WIDTH X THREE (3") FEET DEPTH X SIX (6") FEET LENGTH. THE FLOW METER SHOULD BE AN EMCO ULTRASONIC FLOW METER OR APPROVED EQUAL WITH EXTERNAL TRANSDUCERS CLAMPED ONTO THE OUTSIDE OF THE FORCE MAIN. THE EMCO ULTRASONIC FLOW METER SHOULD BE EQUIPPED WITH SCADA-READY 4-20 MA I/O PORTS AND HAVE A CABLE EXTENDED TO A REMOTE READOUT DISPLAY MOUNTED NEAR THE CONTROL PANEL. THE FLOW METER VAULT SHALL REMAIN ACCESSIBLE FOR MAINTENANCE AND REPAIRS WITH A POSITIVE HEAD FOR DRAINAGE AND AN ALUMINUM, LOCKING TYPE (BILCO) HATCH OR APPROVED EQUAL AT LEAST THIRTY (30") INCHES WIDTH X FORTY-EIGHT (48) INCHES LENGTH.

17. EACH SEWER LIFT STATION SHALL HAVE POTABLE WATER SERVICE ON SITE CONSISTING OF AT LEAST ONE (1) YARD HYDRANT INSTALLED DURING THE CONSTRUCTION OF THE PROJECT. THE YARD HYDRANT SHALL MEET MINIMUM REQUIREMENTS OF THE HCDPU STANDARDS AND SPECIFICATIONS AND THIS WATER SERVICE SHOULD BE EQUIPPED WITH AN ABOVE GROUND RPZ INSTALLED INSIDE A WEATHERPROOF HOUSING.

18. EACH LIFT STATION AND PUMP STATION SHALL HAVE AN EMERGENCY PUMP CONNECTION ON THE FORCE MAIN WITH AN ASSOCIATED SHUT-OFF VALVE TO MEET MINIMUM REQUIREMENTS OF THE HCDPU STANDARDS AND SPECIFICATIONS. THE FORCE MAIN(S) SHALL BE AT LEAST FOUR (4") INCHES IN DIAMETER UNLESS OTHERWISE APPROVED BY THE HCDPU.

19. THE WET WELL FOR EACH SEWER LIFT STATION MUST BE CONSTRUCTED OF CONCRETE LINED WITH A PROTECTIVE COATING AND EQUIPPED WITH A MAINTENANCE MANHOLE AND/OR ASSOCIATED BAR SCREEN TO MEET MINIMUM REQUIREMENTS OF THE HCDPU STANDARDS AND SPECIFICATIONS. THE JOINTS BETWEEN THE PREFABRICATED WET WELL SECTIONS SHALL BE SEALED EXTERNALLY WITH SEALED WITH AN EXTERNAL RUBBER SLEEVE (SIMILAR TO MAC-WRAP, INFI-SHIELD GATOR WRAP AS MANUFACTURED BY SEALING SYSTEMS, INC) OR APPROVED EQUAL AS OUTLINED IN SECTION 5.5.6 OF THESE SPECIFICATIONS.

20. EACH SEWER LIFT STATION SHALL HAVE AN EMERGENCY GENERATOR SIZED TO HANDLE AT LEAST 2.5 TIMES THE RATED ELECTRICAL LOAD FOR THE ENTIRE SEWER LIFT STATION THAT SHALL BE MOUNTED UPON A CONCRETE PAD. IN ADDITION THE EMERGENCY GENERATOR SHOULD BE PROVIDED WITH AN AUTOMATIC TRANSFER SWITCH. AN EXTERNAL CONNECTOR PLUG SIZED TO HANDLE THE OUTPUT OF AN EMERGENCY GENERATOR AS OUTLINED ABOVE AS A MINIMUM REQUIREMENT ON ALL TEMPORARY SEWER LIFT STATIONS AS PRE-APPROVED BY THE HCDPU. AN ALTERNATIVE WOULD BE TO PROVIDE HCDPU WITH A DIESEL DRIVEN EMERGENCY PUMP RATED TO HANDLE AT LEAST 2.5 TIMES THE RATED PEAK FLOW FOR THE ENTIRE SEWER LIFT STATION.

21. THE EMERGENCY STANDBY GENERATOR SHALL INCLUDE A DRY CONTACT TERMINAL STRIP FOR SCADA CONNECTIONS TO MONITOR:

a. GENERATOR IN AUTOMATIC MODE
b. GENERATOR RUNNING
c. COMMON ENGINE FAILURE
d. LOW FUEL LEVEL AND FUEL LEAK DETECTION
e. LOW AND HIGH WATER TEMPERATURE
f. LOW OIL PRESSURE

22. EACH SEWER LIFT STATION SHALL BE SURROUNDED BY SECURITY FENCING AT LEAST SIX (6") HIGH WITH TWELVE (16") FEET WIDE DOUBLE SWINGING GATE COMPRISED OF TWO - EIGHT (8 FT.) FEET WIDE SECTIONS FOR VEHICULAR TRAFFIC AND ONE - THREE (3 FT.) WIDE SINGLE SWINGING GATE FOR A PERSONNEL ENTRANCE. THE SECURITY FENCING INSTALLED AROUND THE SEWER LIFT STATION SHALL BE 50 FT. X 50 FT. AS A STANDARD AREA UNLESS THE STATION HAS PUMPS GREATER THAN 50 HP THEN THE STATION SHALL HAVE A 60 FT. X 60 FT. AREA UNLESS OTHERWISE APPROVED BY THE HCDPU ENGINEER.

23. EACH SEWER LIFT STATION SHALL BE PROVIDED WITH A SCADA POLE, A SCADA ANTENNA AND ASSOCIATED TELEMETRY TO MEET MINIMUM REQUIREMENTS OF THE HCDPU STANDARDS AND SPECIFICATIONS. HCDPU WILL INSTALL THE SCADA SYSTEM AND INVOICE THE DEVELOPER FOR THE SCADA FEES TO COVER THE EQUIPMENT AND INSTALLATION COSTS.

24. EACH SEWER LIFT STATION SHALL BE PROVIDED AN AREA SECURITY LIGHT (MERCURY VAPOR BULB) WITH PHOTOCELL CONTROL. THE WEATHER HOOD OVER THE CONTROL PANEL SHOULD INCLUDE THE INSTALLATION OF A FLUORESCENT LIGHT FIXTURE WITH A ZERO (0°) DEGREE BALLAST ABOVE THE CONTROL PANEL MOUNTED FAR ENOUGH FROM THE CONTROL PANEL TO ALLOW FOR FULL OPENING OF THE PANEL DOOR WITHOUT OBSTRUCTION.

25. EACH SEWER LIFT STATION SHALL HAVE AN ACCESS ROAD THAT IS PROPERLY GRADED FOR ADEQUATE STORM WATER RUN-OFF AND AT LEAST TWENTY (20FT.) FEET WIDE. THE ACCESS ROAD MUST BE PAVED IF THE GRADE IS MORE THAN 10 % BUT, IT SHALL HAVE AT LEAST SIX (6") INCHES OF # 57 (CRUSH AND RUN) STONE. THE DEVELOPER MUST PROVIDE THE HCDPU A PERMANENT EASEMENT FOR THE SEWER LIFT STATION AND ASSOCIATED ACCESS ROAD.

26. ALL BOLTS, MOUNTING BRACKETS, PUMP LIFT CHAINS, ETC., SHALL BE STAINLESS STEEL OR MANUFACTURED OF AN APPROVED MATERIAL WITH PROPER CORROSION RESISTANCE AND PROPERLY SIZED AND MOUNTED TO PROVIDE PROPER SUPPORT FOR THE APPLICABLE LOADS.

27. ALL WIRING AND ELECTRICAL WORK SHALL CONFORM TO THE LATEST REVISED NATIONAL ELECTRICAL CODE (NEC) AND LOCAL GUIDELINES. ALL WIRING SHALL BE IDENTIFIED AT EACH TERMINATION ON BOTH ENDS.

28. NEW INSTALLATIONS ARE REQUIRED TO MEET THE LATEST REVISED OSHA STANDARDS AT THE TIME OF FINAL ACCEPTANCE. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL SITE SPECIFIC OSHA REQUIRED LABELS AND SIGNS FOR THE SEWER LIFT STATION EQUIPMENT. THE HATCH OPENING OF THE WET WELL SHALL BE PROVIDED WITH A WEBBING OR NET TO PROVIDE FALL PROTECTION. THE WEBBING OR NET SHALL BE SECURED BY HOOKS AND REINFORCED GROMMETS IN THE WEBBING OR NET.

29. THE SEWER LIFT STATION SHALL BE LOCATED TWO (2") FEET ABOVE THE 100-YEAR FLOOD ELEVATION AND THE 100-YEAR FLOOD ELEVATIONS SHOULD BE SHOWN ON THE PLANS AND AS-BUILT RECORD DRAWINGS. THE SITE FOR THE SEWER LIFT STATION MUST BE PROVIDED WITH ADEQUATE MEANS FOR DRAINAGE OF STORM WATER RUNOFF WHEREBY THE STATION SITE WILL NOT BE FLOODED DURING SIGNIFICANT RAIN EVENTS OF MORE THAN 2" INCHES OF RAINFALL. THE ENTIRE SITE SHALL BE PROVIDED WITH WEED BLOCKING MATERIAL BELOW GRAVEL FOR ADEQUATE DRAINAGE INSIDE THE STATION. THE GRAVEL SHALL BE ABC WASHED STONE INSTALLED AT LEAST SIX (6") INCHES THICK ON TOP OF THE WEED BLOCK MATERIAL.

30. SITE VISITS BY THE HCDPU UTILITY CONSTRUCTION INSPECTOR AND THE ENGINEER OF RECORD WILL BE REQUIRED AND SCHEDULED FOR THE FOLLOWING ACTIONS:

a. BEFORE FINAL PLAN APPROVAL,
b. PRESSURE TESTING THE FORCE MAIN
c. WHEN PUMPS ARE SET,
d. PUMP DRAW DOWN TESTING,
e. GENERATOR STARTUP TESTING,
f. FINAL INSPECTION OF ALL SEWER LIFT STATION EQUIPMENT AND WHEN FLOW IS APPLIED.

FINAL START UP TESTING SHALL BE COORDINATED WITH THE DESIGN ENGINEER, THE HCDPU ENGINEER, THE OEM PUMP MANUFACTURER REPRESENTATIVE, OEM GENERATOR MANUFACTURER REPRESENTATIVE, THE HCDPU SCADA SUPERVISOR AND THE HCDPU COLLECTIONS SYSTEM SUPERVISOR. FINAL START UP TESTING SHALL INCLUDE ITEMS D & E ABOVE AT A MINIMUM. THE FLOW METER SHALL BE CALIBRATED PRIOR TO THE HCDPU FINAL ACCEPTANCE OF THE SEWER LIFT STATION.

31. THE MANUFACTURER IS TO FURNISH ALL RECOMMENDED SPARE PARTS INCLUDING, AT A MINIMUM, TWO SETS OF MECHANICAL SEALS, O-RINGS, GASKETS, AND WEAR RINGS. EACH PUMP SHALL BE PROVIDED WITH AN EXTRA FULL SIZE IMPELLER IN ADDITION TO OTHER SPARE PARTS RECOMMENDED BY THE PUMP MANUFACTURER. THE SPARE PARTS SHALL BE PROVIDED BY START-UP DATE. SPARE PARTS SHALL BE PROVIDED IN ORIGINAL PACKAGING IN FACTORY NEW CONDITION. IN ADDITION TO THE SPARE PUMP ASSEMBLY, THE CONTRACTOR SHALL FURNISH TO THE HCDPU ONE COMPLETE SET OF SPARE PARTS FOR THE ELECTRIC GENERATOR INCLUDING: AN AIR FILTER, AN OIL FILTER, AND A FUEL FILTER ALONG WITH ONE SPARE SET OF ACCESSORY BELTS IF APPLICABLE. AN EMERGENCY PUMP CONNECTION SHALL BE DESIGNED WITH A TEE, A GATE VALVE AND QUICK CONNECT NOZZLE FOR THE EMERGENCY PUMP CONNECTION BETWEEN THE VALVE VAULT AND THE FLOW METER VAULT.

32. THE CONTRACTOR SHALL PROVIDE HCDPU WITH AT LEAST THREE (3) SETS OF OEM OPERATING AND MAINTENANCE MANUALS FOR ALL EQUIPMENT. THE MANUALS MUST BE ORIGINAL AS PROVIDED BY THE MANUFACTURER AND BOUND. SPARE PARTS AS REQUIRED BY HCDPU SHALL BE BOXED FOR LONG TERM STORAGE WITH PART NUMBERS AND IDENTIFICATION LABELS. ITEMS SUBJECT TO HANDLING DAMAGE WILL NOT BE ACCEPTED IF THE FACTORY PACKAGING HAS BEEN OPENED. ALL MANUALS AND SPARE PARTS ARE TO BE TURNED OVER TO HCDPU AT FINAL INSPECTION AND ACCEPTANCE OF THE PUMP STATION.

33. THE GENERATOR MUST HAVE A MEZZANINE OR CATWALK AROUND IT TO PROVIDE ADEQUATE ACCESS TO SERVICE, INSPECT AND TEST THE UNIT. IF THE DOORS ON THE ENCLOSURE CANNOT BE OPENED AND REMOVED TO SERVICE THE UNIT WITHOUT A LADDER OR LIFT THEN THE CONTRACTOR MUST CONSTRUCT A MEZZANINE OR CATWALK AROUND IT TO PROVIDE ADEQUATE ACCESS. GENERALLY WHEN THE ACCESS DOOR PANELS ARE MORE THAN TWO (2") FEET ABOVE FINISH GRADE OR THE CONCRETE PAD THEN A MEZZANINE OR CATWALK WILL BE REQUIRED BY THE HCDPU.

34. THE SEWER LIFT STATION MUST BE PROVIDED WITH A JIB CRANE, BOOM AND ELECTRIC HOIST TO REMOVE AND REPLACE THE PUMPS WHEN THE PUMPS ARE LARGER THAN 25 HP. THE BOOM MUST EXTEND AT LEAST TWELVE (12") FEET FROM THE EDGE OF THE WET WELL AND BE ABLE TO LIFT THE PUMP AT LEAST SIX (6") FEET OFF THE GROUND IN ORDER TO ALLOW A PUMP TO BE LOADED INTO THE BED OF A SERVICE TRUCK. A JIB CRANE THAT ROTATES 360º WILL BE REQUIRED FOR PUMPS GREATER THAN 60 HP.

35. THE SEWER LIFT STATION MUST BE PROVIDED WITH A TEE AND TWO VALVES BETWEEN THE FLOW METER VAULT AND THE VALVE VAULT IN ORDER TO ACCOMMODATE THE QUICK CONNECTION OF A DIESEL DRIVEN PUMP. DIESEL DRIVEN PUMPS MAY BE USED TO REPLACE THE EMERGENCY GENERATOR IF APPROVED BY THE HCDPU IN ADVANCE AND PERMITTED WITH NCDENR-DWQ BEFORE INSTALLATION.

36. THE 911 ADDRESS FOR THE SEWER LIFT STATION CANNOT BE ASSIGNED UNTIL THE MAP FOR THE SUBDIVISION HAS BEEN PROVIDED TO THE HARNETT COUNTY E-911 DEPARTMENT. ONCE THE 911 ADDRESS HAS BEEN ASSIGNED FOR THE SEWER LIFT STATION, EACH SEWER LIFT STATION SHALL HAVE A PLACARD MOUNTED AT THE GATE WHICH CLEARLY IDENTIFIES THE HCDPU STATION NUMBER AND ASSIGNED E-911 ADDRESS FOR THE STATION PER ITEM # 37 BELOW. THE CONTRACTOR SHALL BE RESPONSIBLE TO INSTALL THE PLACARD SIGN OR PAY FOR THE INSTALLATION THEREOF.

37. EACH SEWER LIFT STATION SHALL BE PROVIDED A STANDARD SIGN (32" WIDE X 16" TALL) DESIGNATING THE FACILITY AS THE PROPERTY OF **HARNETT COUNTY DEPARTMENT OF PUBLIC UTILITIES**. THE STATION SIGN SHOULD HAVE LARGE RED LETTERS ON A WHITE BACKGROUND DENOTING THE **SEWER LIFT STATION #** (TO BE ASSIGNED BY HCDPU COLLECTIONS DEPARTMENT), THE **911 ADDRESS** (TO BE ASSIGNED BY E911) AND **IN CASE OF EMERGENCY CALL TELEPHONE NUMBER (910) 893-2424**. THE SIGN SHALL BE PERMANENTLY MOUNTED ON THE SECURITY FENCING OF THE MAIN GATE AT EYE LEVEL. THE SIGNS CURRENTLY POSTED BY HARNETT COUNTY DEPARTMENT OF PUBLIC UTILITIES (HCDPU) HAVE BEEN ORDERED FROM ADVANCED SIGNS OF ANGIER AND THEIR TELEPHONE NUMBER IS (919) 639-0794. ALL QUESTIONS CONCERNING THE STATION SIGN SHOULD BE DIRECTED TO THE HCDPU COLLECTIONS SYSTEMS SUPERVISOR AT (910) 893-7575 EXTENSION 3243.

38. THE DEVELOPER MUST PROVIDE HCDPU WITH A MAP AND DEED WHICH DESCRIBES ALL METES AND BOUNDS FOR THE EASEMENTS FOR THE SEWER LIFT STATION, THE ASSOCIATED FORCE MAIN AND THE ACCESS ROAD. IF THE PROJECT INCLUDES A UTILITY EASEMENT, THEN THE DEED AND ALL PERTINENT UTILITIES EASEMENT(S) MUST BE ASSIGNED TO HCDPU AND RECORDED WITH THE HARNETT COUNTY REGISTER OF DEEDS OFFICE. THE DEVELOPER OR REGISTERED LAND SURVEYOR (RLS) SHOULD COORDINATE ALL RECORDING OF DEED(S) AND UTILITY EASEMENT PLAT(S) WITH THE HCDPU RIGHT-OF-WAY AGENT AT (910) 893-7575 EXTENSION 3277.

THE FOLLOWING ADDITIONAL REQUIREMENTS SHALL BE REQUIRED FOR SEWER LIFT STATIONS WITH PUMPS LARGER THAN 25 HP:

A. A JIB CRANE, BOOM AND THE ELECTRIC PUMP HOIST SHALL BE DESIGNED BY THE PROFESSIONAL ENGINEER TO ACCOMMODATE THE WEIGHT OF THE PUMP AND MOTOR ASSEMBLY PROVIDED WITH THE PROJECT TO AID THE REMOVAL AND RE-INSTALLATION OF THE PUMPS FOR REPAIRS. SOME CONSIDERATION OF FUTURE UPGRADE MAY BE REQUIRED FOR SIZING THE CRANE, BOOM AND HOIST.
B. THE EMERGENCY GENERATOR MUST BE A PERMANENTLY MOUNTED GENERATOR WITH AN AUTOMATIC TRANSFER SWITCH AND A MEZZANINE CATWALK TO ACCESS THE UNIT FOR SERVICING AND REPAIRS. THE MEZZANINE CATWALK SHALL BE EQUIPPED WITH A SET OF STEPS ON TWO SIDES OF THE UNIT.

C. THE EMERGENCY GENERATOR SHALL BE PROVIDED WITH A RAIN HOOD TO COVER THE GENERATOR AND THE MEZZANINE CATWALK. THE RAIN HOOD SHALL EXTEND ABOVE THE GENERATOR BY AT LEAST 24 INCHES AND OVER THE CATWALK BY AT LEAST 36 INCHES.

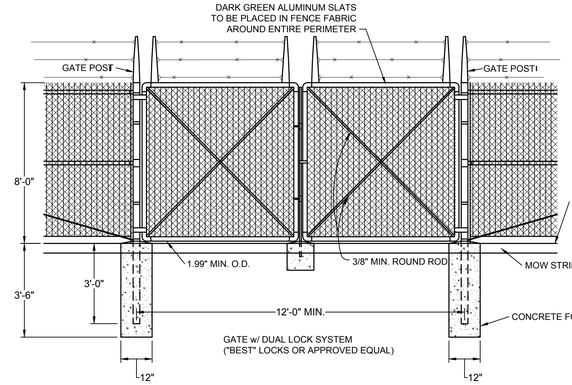
D. THE WET WELL MUST BE PROVIDED WITH ANTI-FLOATATION RING IF INSTALLED IN FLOOD PLAIN OR WETLANDS.

E. A CONCRETE PAD SHALL BE INCLUDED WITH THE SEWER LIFT STATION DESIGN FOR A SAMPLING STATION OR ODOR CONTROL EQUIPMENT TO INCLUDE A CHEMICAL TANK AND PUMP FOR DELIVERY OF ODOR CONTROL CHEMICALS TO THE WET WELL.

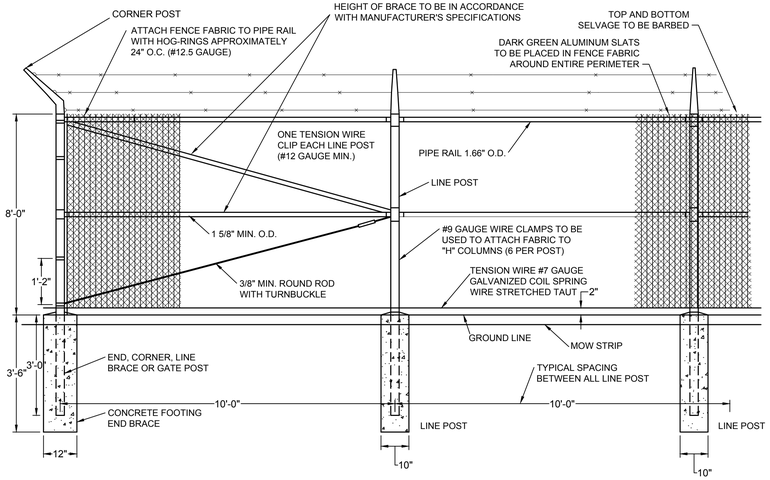
F. A CONCRETE BASIN OR RETAINING WALL SHALL BE CONSTRUCTED AROUND THE GENERATOR FUEL TANK(S) AND THE ODOR CONTROL CHEMICAL TANK TO CONTAIN ANY POTENTIAL SPILL. THE CONTAINMENT AREA SHALL BE EQUIPPED WITH A DRAIN AND PLUG TO ALLOW FOR EASY REMOVAL OF THE SPILLED FUEL OR CHEMICAL.

G. LIGHTNING PROTECTION MUST BE DESIGNED FOR THE SEWER LIFT STATION ELECTRICAL EQUIPMENT WHERE THE PUMPS WILL EXCEED 50 HP IN SIZE.

H. THE SEWER LIFT STATION SHALL HAVE THREE PUMPS WITH ONE OF THEM BEING A DIESEL DRIVEN PUMP CONNECTED TO THE FUEL SUPPLY OF THE EMERGENCY GENERATOR OR PROVIDED WITH A SEPARATE FUEL STORAGE CONTAINER ON SITE DESIGNED TO BE LARGE ENOUGH SO THE EMERGENCY DIESEL DRIVEN PUMP CAN RUN AT LEAST 24 HOURS. ALTERNATIVELY, PROVIDE ONE SPARE PUMP TO HCDPU



DOUBLE SWING GATE
SCALE: NOT TO SCALE



CHAINLINK FENCE AND GATE DETAIL
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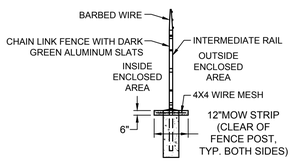

FENCE POST DETAIL
SCALE: NOT TO SCALE

CHAINLINK FENCE AND GATE DETAIL
SCALE: NOT TO SCALE

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NORTH CAROLINA PROFESSIONAL SEAL 041035 ENGINEER CHRISTOPHER R. PETREE 2/15/2021

YOUR VISION ACHIEVED THROUGH OURS.

DATE	REVISION DESCRIPTION
02/15/2021	WATERLINE CHANGED TO 2"

DATE 9/14/2020
DRAWN BY M. WU
DESIGNED BY M. WU
CHECKED BY C. PETREE
SCALE ----

SERENITY PHASE 1A, 1B, & 1C
PINEY GROVE RAWLS RD, HARNETT COUNTY, NORTH CAROLINA
PUMP STATION GENERAL NOTES

JOB NO. 41158
SHEET NO. C8.7

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LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER	CATALOG NUMBER	VOLTS	VOLTS-AMPS	FIXT-EFF	LAMPS QTY	LAMPS TYPE	DESCRIPTION	REMARKS
A	HUBBELL	DAS65F POLE MOUNT	120	60		1	93023491	4" SURFACE MOUNTED, SEALED AND GASKETED FIXTURE SUITABLE FOR WET LOCATIONS.	PROVIDE WITH STAINLESS STEEL MOUNTING BRACKETS CAT# VT2-SS-MBK. (1 RQD)
B									
C									
D									

ELECTRIC LEGEND

- E — 1"X4' LED LIGHT FIXTURE. UPPERCASE LETTER INDICATES TYPE. LOWERCASE LETTER INDICATES SWITCHING.
- H — INCADESCENT, HID, FLUORESCENT OR LED FIXTURE, WALL MOUNTED. LETTER INDICATES TYPE.
- S — SWITCH, SINGLE POLE, MOUNT 48" AFF, UON.
- WP — RECEPTACLE, DUPLEX, NEMA 5-20R, WALL MOUNTED 18" AFF, UON. AC= MOUNT 6" ABOVE COUNTER, WP = WEATHERPROFF, IG = ISOLATED GROUND, CTR = COUNTER LEVEL xx"AFF = MOUNTING HEIGHT, EWC = ELECTRIC WATER COOLER T = TAMPER RESISTANT
- GFI — GROUND FAULT INTERRUPTER RECEPTACLE, NEMA 5-20R, UON. 18" AFF, UON. PROVIDE A DEVICE WITH INTEGRAL GROUND FAULT INTERRUPTER.
- TVSS — TRANSIENT VOLTAGE SURAGE SUPPRESSOR
- HOMERUN

ABBREVIATIONS

A	AMPERES
ATS	AUTOMATIC TRANSFER SWITCH
BKR	BREAKER
C	CONDUIT
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
IG	ISOLATED GROUND
KVA	KILOVOLT-AMPERES
KW	KILOWATT
MCB	MAIN CIRCUIT BREAKER
MLO	MAIN LUG ONLY
NEUT	NEUTRAL
PNL	PANEL
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
V	VOLTS
VA	VOLT-AMPERES
WP	WEATHER PROOF
XFER	TRANSFER

PANEL PSH SCHEDULE
PANELBOARD CHARACTERISTICS:
VOLTS: 480/277V
PHASES: 3
WIRES: 4
SOLID NEUTRAL, GROUND BAR

PHASE TO PHASE VOLTS: 480
PHASE TO NEUT. VOLTS: 270

MAIN LUGS: 400A
MINIMUM SHORT CIRCUIT RATING: 65K RMS SYM AMPS
SERIES RATED WITH UPSTREAM DEVICE

CKT. NO.	POLE NO.	DESCRIPTION	LOAD TYPE.	CONN. KVA.	CONN. AMPS A	CONN. AMPS B	CONN. AMPS C	BREAKER P	BREAKER AT	NO. & WIRE SIZE PHASE	NEUT.	GND	COND. SIZE
3	1	PUMP #1 VIA CONTROL PANEL	E	98.8	118.8			3	250	3/3/0	#4	#6	2"
	3					118.8							
	5						118.8						
9	7	PUMP #2 VIA CONTROL PANEL	E	98.8	118.8			3	250	3/3/0	#4	#6	2"
	9					118.8							
	11						118.8						
15	13	PSL VIA 30 KVA XFMR		6.3	7.54			3	50	SEE RISER DIAGRAM			
	15					7.54							
	17						7.54						
21	19	TVSS			0.0			3	60	3#6	#6	#6	1"
	21					0.0							
	23						0.0						
27	25												
	27												
	29												
33	31												
	33												
	35												
37	37	SPACE			0.0								
39	39	SPACE				0.0							
41	41	SPACE					0.0						
2	2	SPACE			0.0								
4	4	SPACE				0.0							
6	6	SPACE					0.0						
8	8	SPACE			0.0								
10	10	SPACE				0.0							
12	12	SPACE					0.0						
14	14	SPACE			0.0								
16	16	SPACE				0.0							
18	18	SPACE					0.0						
20	20	SPACE			0.0								
22	22	SPACE				0.0							
24	24	SPACE					0.0						
26	26	SPACE			0.0								
28	28	SPACE				0.0							
30	30	SPACE					0.0						
32	32	SPACE			0.0								
34	34	SPACE				0.0							
36	36	SPACE					0.0						
38	38	SPACE			0.0								
40	40	SPACE				0.0							
42	42	SPACE					0.0						
		TOTALS		210.2	252.8	252.8	252.8						

PANEL PSL SCHEDULE
PANELBOARD CHARACTERISTICS:
VOLTS: 120/208
PHASES: 3
WIRES: 4
SOLID NEUTRAL, GROUND BAR

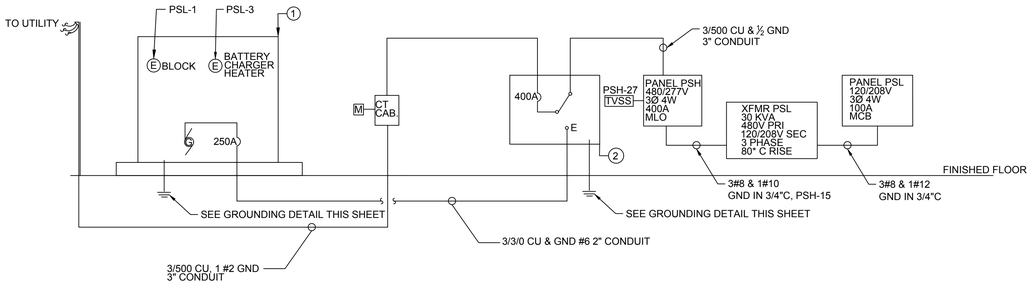
PHASE TO PHASE VOLTS: 208
PHASE TO NEUT. VOLTS: 120

MAIN LUGS: 100A MINIMUM SHORT CIRCUIT RATING: 65K RMS SYM AMPS
SERIES RATED WITH UPSTREAM DEVICE

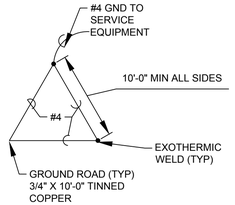
CKT. NO.	POLE NO.	DESCRIPTION	LOAD TYPE.	CONN. KVA.	CONN. AMPS A	CONN. AMPS B	CONN. AMPS C	BREAKER P	BREAKER AT	NO. & WIRE SIZE PHASE	NEUT.	GND	COND. SIZE
1	1	BLOCK HEATER	E	1	8.3			1	20	1#12	#12	#12	3/4"
3	3	BATTERY CHARGER	E	.1		.8		1	20	1#12	#12	#12	3/4"
5	5	CONTROL PANEL	E	.1			.8	1	20	1#12	#12	#12	3/4"
7	7	RECEPTACLES	R	.36	3.0			1	20	1#12	#12	#12	3/4"
13	13	FLOW METER DISPLAY	E	.1			.8	1	20	1#12	#12	#12	3/4"
19	19	SCADA	E	.1		.8		1	20	1#12	#12	#12	3/4"
23	23												
2	2												
4	4												
6	6	YARD LIGHT	L	.1		1			20	1#12	#12	#12	3/4"
8	8	SPACE											
10	10	SPACE											
12	12	SPACE											
14	14	SPACE											
16	16	SPACE											
18	18	SPACE											
22	20												
	22												
	24												
		TOTALS		3.86	11.3	10.9	9.9						

GENERAL NOTES:
1. CONTRACTOR SHALL VERIFY THAT FIXTURES SPECIFIED ARE SUITABLE FOR CEILING TYPE AND REVISE IF NECESSARY PRIOR TO ORDERING.
2. CONTRACTOR SHALL USE 4100K COLOR CHARACTERISTICS FOR LIGHTING OR CLOSEST EQUIVALENT
3. ALL FIXTURES ARE BASIS FOR DESIGN EQUIVALENT FIXTURE MAY BE USED. CONTRACTOR SHALL SUBMIT ALTERNATE FIXTURES TO ENGINEER SO EQUIVALENCY CAN BE VERIFIED
4. FIXTURES ARE SPECIFIED WITH PHILIPS LAMPS TO IDENTIFY THE TYPE, TEMPERATURE, COLOR RENDERING, LAMP LIFE AND INITIAL LUMENS REQUIRE. EQUIVALENT LAMPS MANUFACTURED BY GE OR OSRAM WILL BE ACCEPTABLE.
5. VERIFY LAMPS ARE COMPATIBLE WITH FIXTURES PRIOR TO ORDERING. WHERE LAMP AND FIXTURE COMBINATION ARE INCOMPATIBLE, PROVIDE A LAMP WITH SIMILAR CHARACTERISTICS TO THE LAMP SPECIFIED THAT IS COMPATIBLE WITH THE FIXTURE SPECIFIED.
6. START CURRENTS ON PUMPS @ 1190A, AND START KVA ON PUMPS IS 989.3 KVA. A VFD WILL BE REQUIRED FOR SOFT START.

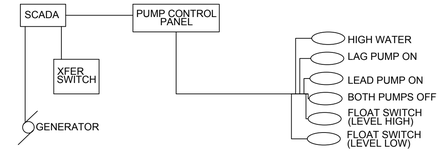
GENERATOR NOTES:
1. 480V, 3Ø, 300 KW LIQUID COOLED DIESEL GENERATOR WITH BLOCK HEATER AND BATTERY CHARGER. GENERATOR BREAKER SHALL SELECTIVELY COORDINATE WITH PUMP CIRCUIT BREAKERS IN PANEL PSH, SEE CIVIL DRAWINGS FOR GENERATOR LOCATION. SEE GENERATOR PAD DETAIL ON SHEET C8.4.
2. 480V, 3Ø, 400A, 4-POLE, SERVICE ENTRANCE RATED AUTOMATIC TRANSFER SWITCH WITH 100% RATED 480V, 3Ø, 400A MAIN CIRCUIT BREAKER.



RISER DIAGRAM
NOT TO SCALE

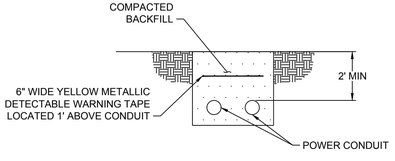


TRIAD GROUND DETAIL
NOT TO SCALE

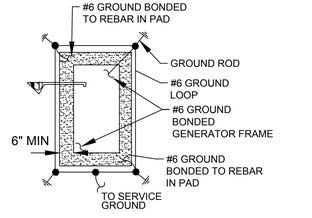


NOTE:
SEE SPECIFICATION 13.5002 FOR ALL POINTS REQUIRED TO BE CONNECTED TO SCADA

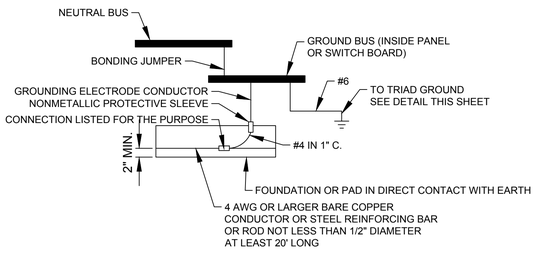
PUMP CONTROL SCHEME
NOT TO SCALE



CONDUIT TRENCH DETAIL
NOT TO SCALE



GENERATOR AND TRANSFORMER GROUNDING DETAIL
NOT TO SCALE



GROUND DETAIL
NOT TO SCALE

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YOUR VISION ACHIEVED THROUGH OURS.

NORTH CAROLINA PROFESSIONAL SEAL 15443 ENGINEER R. G. McGAVRAN III

REVISION DESCRIPTION	DATE
WATERLINE CHANGED TO 2"	02/15/2021

DATE 9/14/2020
DRAWN BY J. DEMMER
DESIGNED BY T. MCGAVRAN
CHECKED BY J. TALBERT
SCALE AS NOTED

TIMMONS GROUP

SERENITY PHASE 1A, 1B, & 1C

PINEY GROVE RAWLS RD, HARNETT COUNTY, NORTH CAROLINA

ELECTRICAL LEGEND, NOTES, & SCHEDULES

JOB NO. 41158
SHEET NO. E1.0