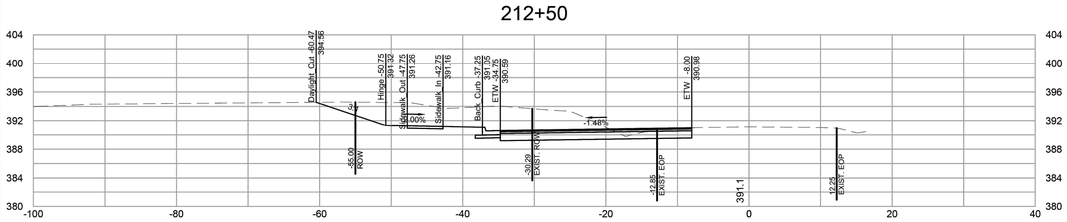

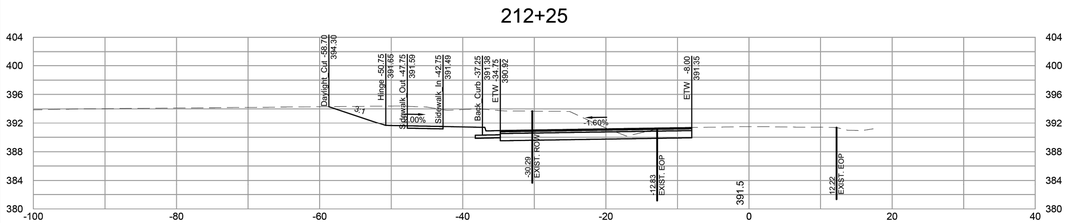

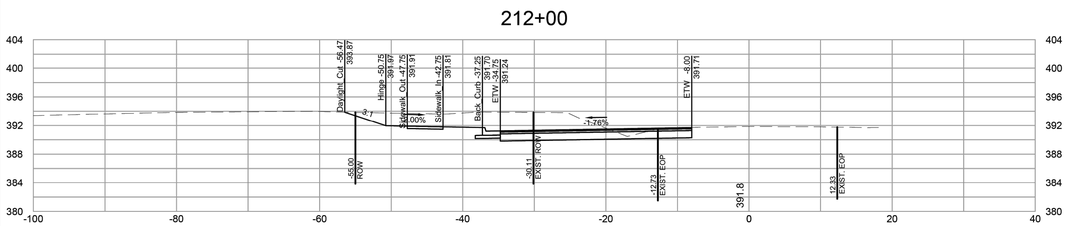

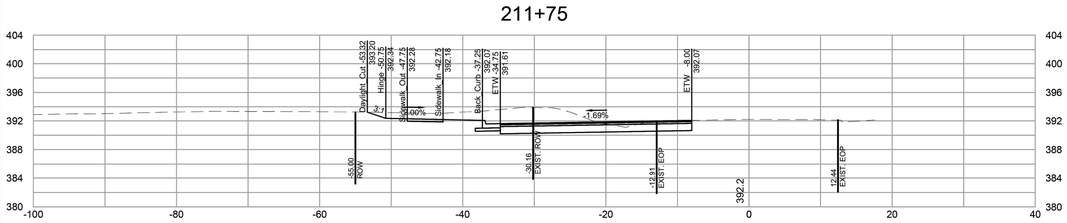

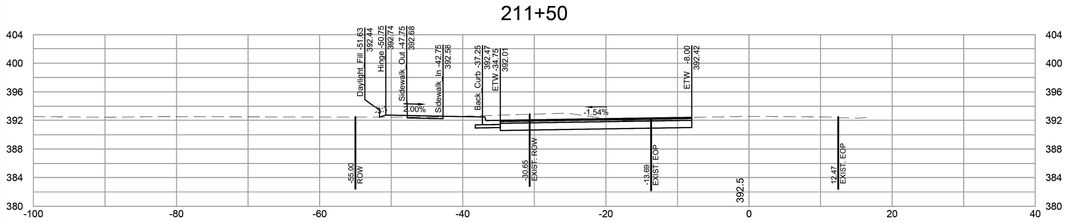

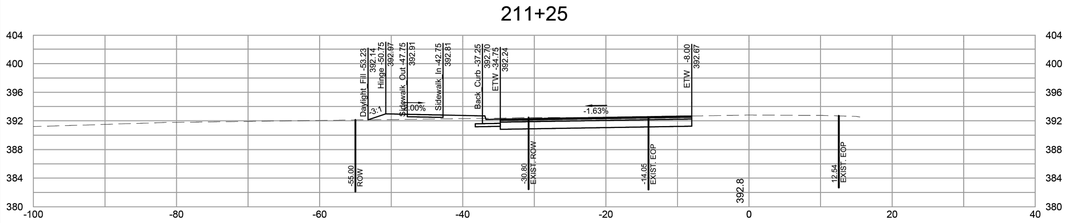

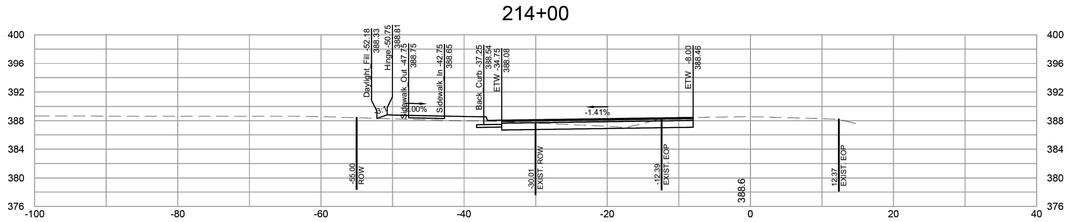

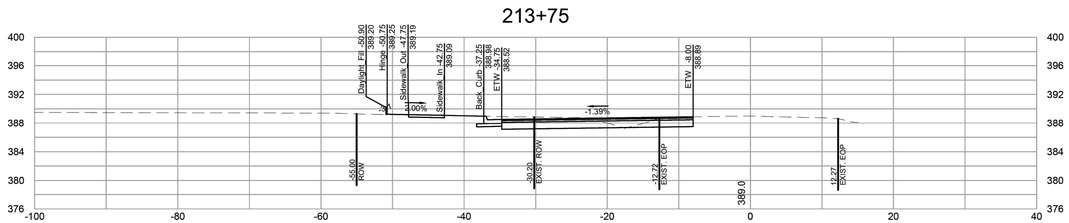

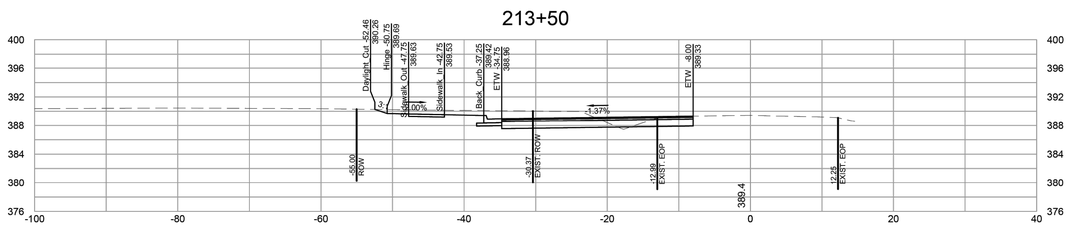

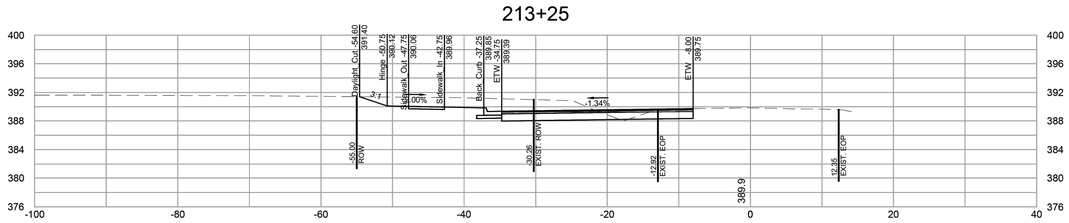

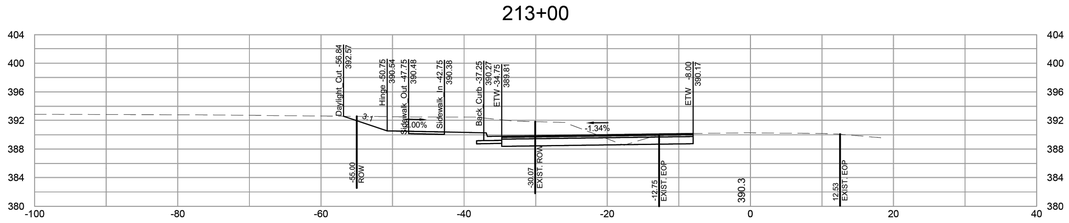

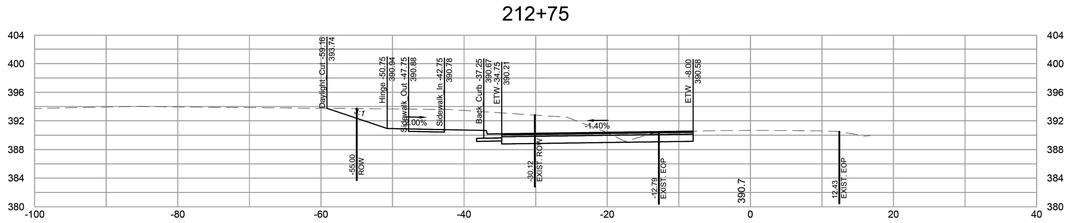

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YOUR VISION ACHIEVED THROUGH OURS.

REVISION DESCRIPTION	DATE
ROLESVILLE ROAD TAPER, SHIFT, AND STORM NETWORK UPDATE	06-15-2023
GRADING AND STORM NETWORK ADJUSTMENTS	10-24-2023

DATE
07/21/22
DRAWN BY
BPW
DESIGNED BY
BPW
CHECKED BY
BPW
SCALE
1" = 10'

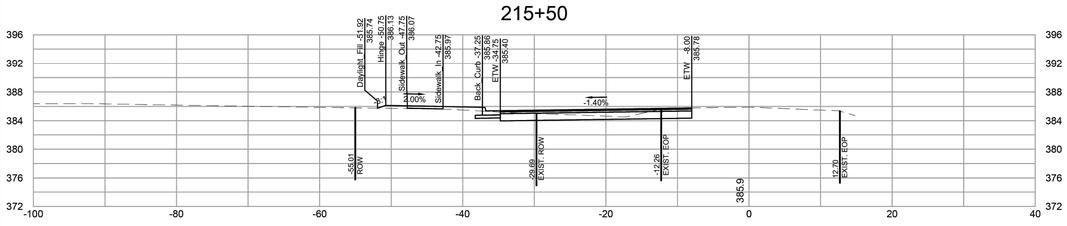
TIMMONS GROUP

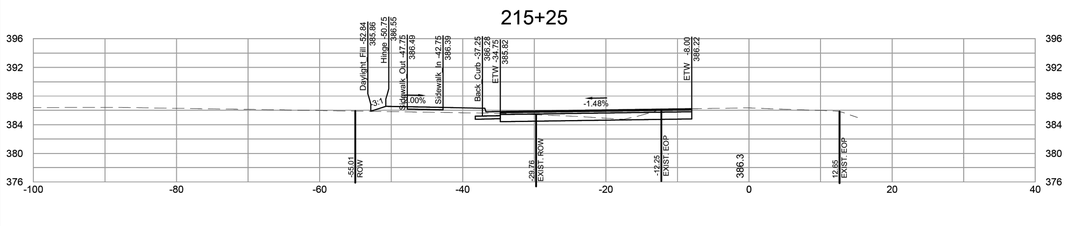
WHEELER TRACT - OFFSITE IMPROVEMENTS

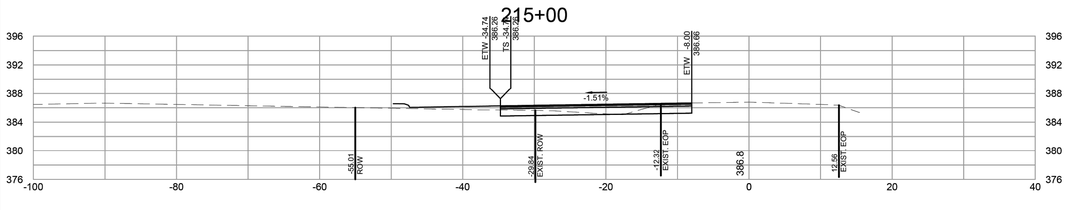
ROLESVILLE - WAKE COUNTY - NORTH CAROLINA

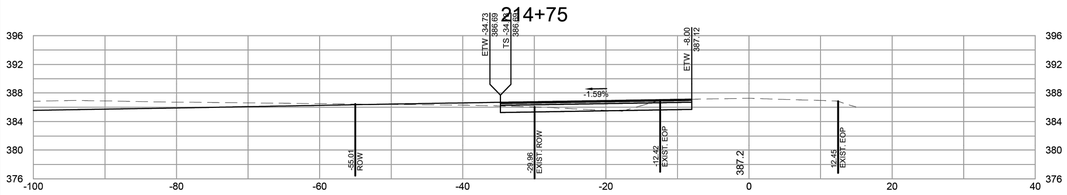
MITCHELL MILL ROAD CROSS SECTIONS

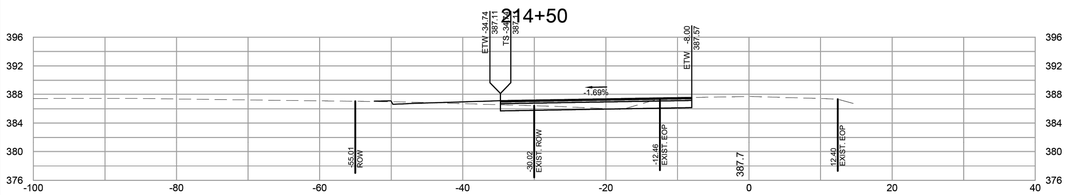
JOB NO.
43398
SHEET NO.
R8.07

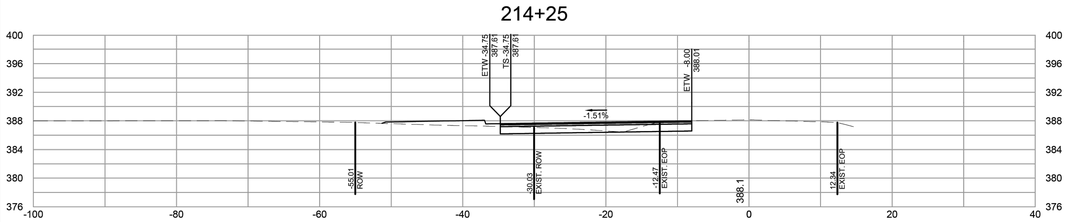


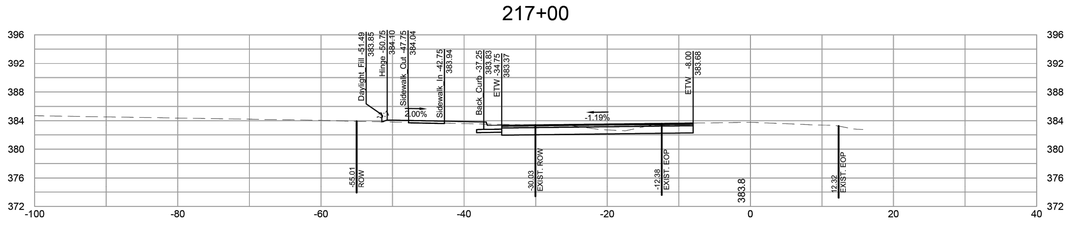


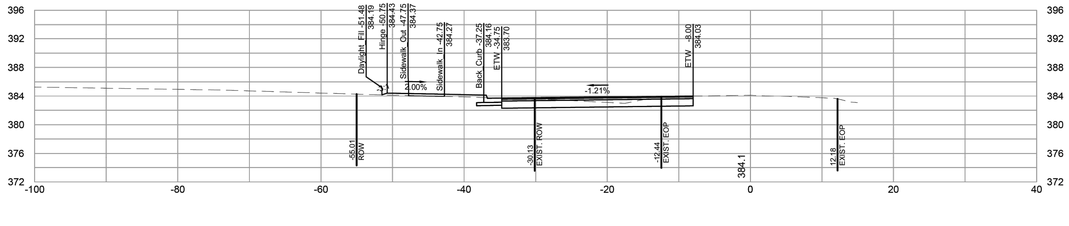


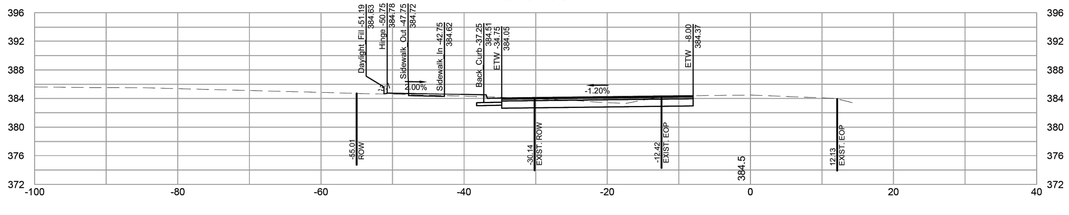


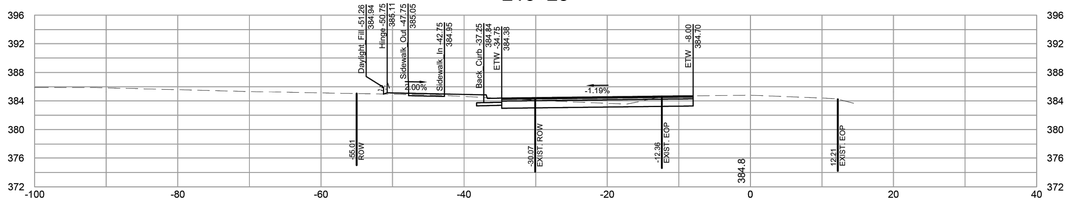


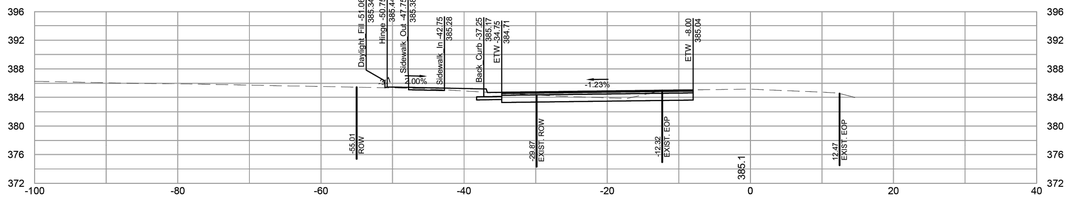


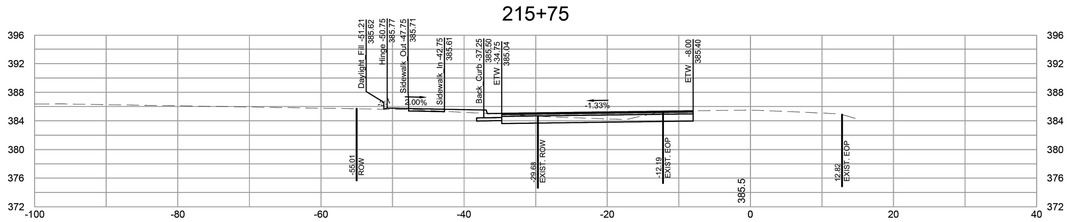












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DATE	REVISION DESCRIPTION
06-15-2023	ROLESVILLE ROAD TAPER, SHIFT, AND STORM NETWORK UPDATE
10-24-2023	GRADING AND STORM NETWORK ADJUSTMENTS

DATE *07/21/22*
DRAWN BY *BPW*
DESIGNED BY *BPW*
CHECKED BY *BPW*
SCALE *1" = 10'*

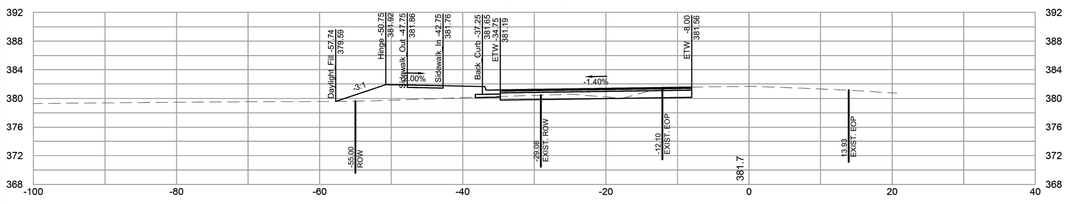
TIMMONS GROUP

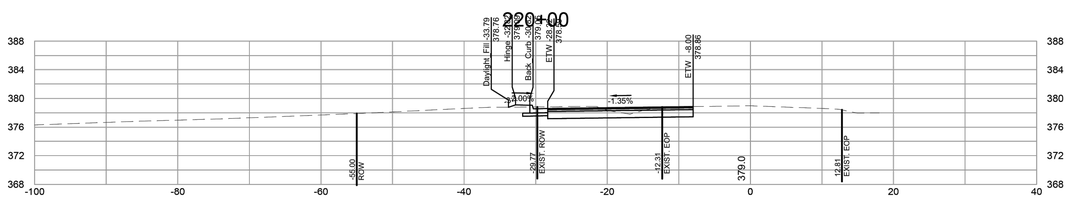
WHEELER TRACT - OFFSITE IMPROVEMENTS

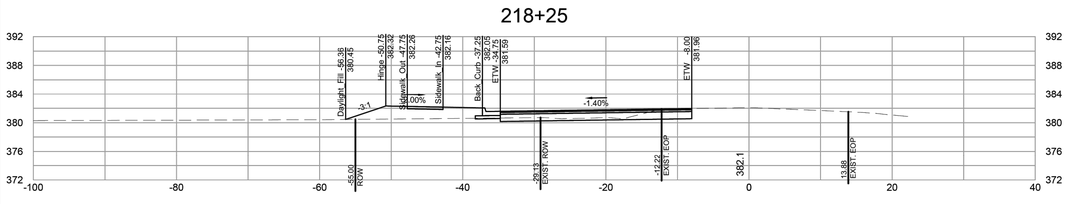
ROLESVILLE - WAKE COUNTY - NORTH CAROLINA

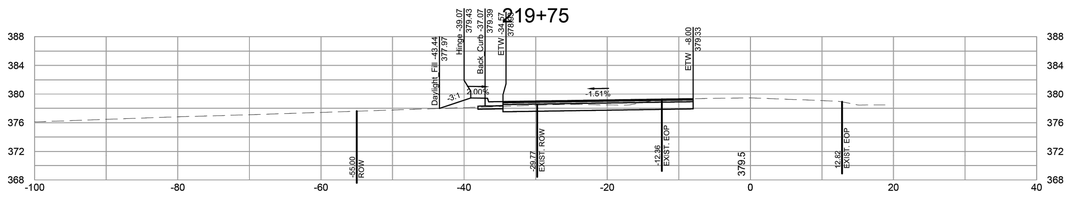
MITCHELL MILL ROAD CROSS SECTIONS

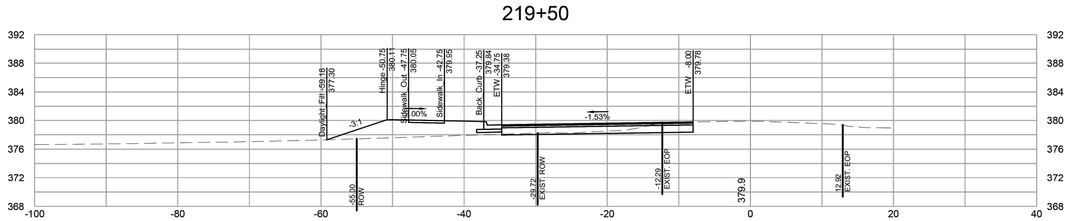
JOB NO. *43398*
SHEET NO. *R8.08*

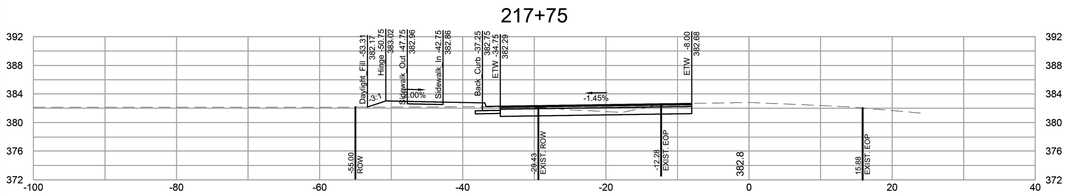


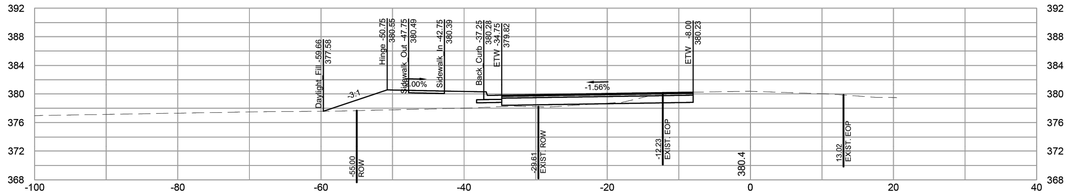


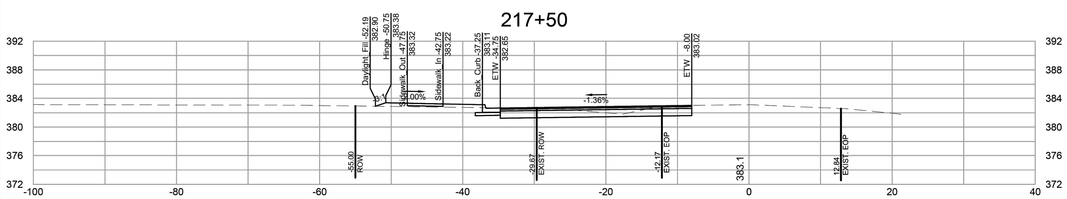


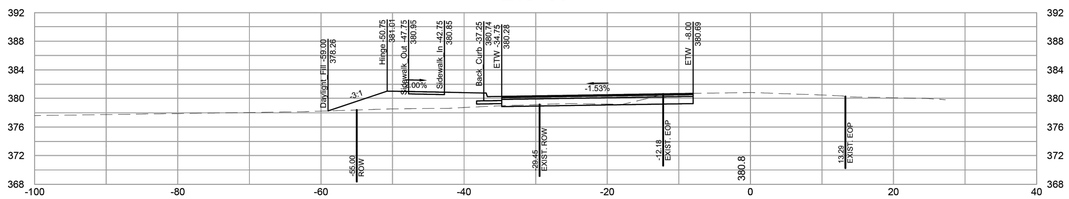


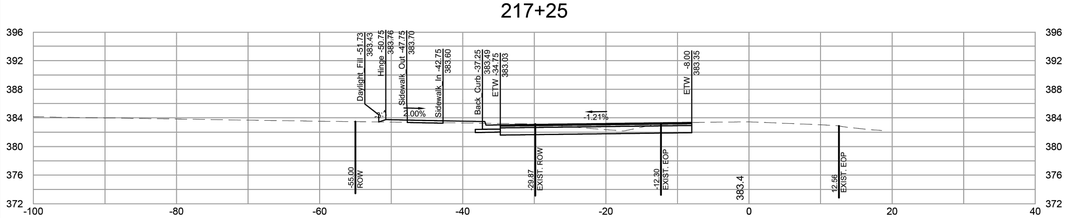


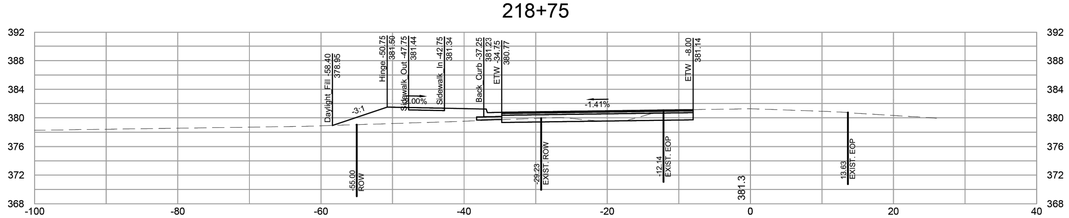












S:\33243398-Wheeler Tract\DWG\Sheet\CD\2023\43398-20\C-R8.0x-dwg | Plotted on 10/24/2023 11:53 AM | by Brian Welch

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YOUR VISION ACHIEVED THROUGH OURS.

DATE	REVISION DESCRIPTION
06-15-2023	ROLESVILLE ROAD TAPER SHIFT AND STORM NETWORK UPDATE
10-24-2023	GRADING AND STORM NETWORK ADJUSTMENTS

DATE *07/21/22*
DRAWN BY *BPW*
DESIGNED BY *BPW*
CHECKED BY *BPW*
SCALE *1" = 10'*

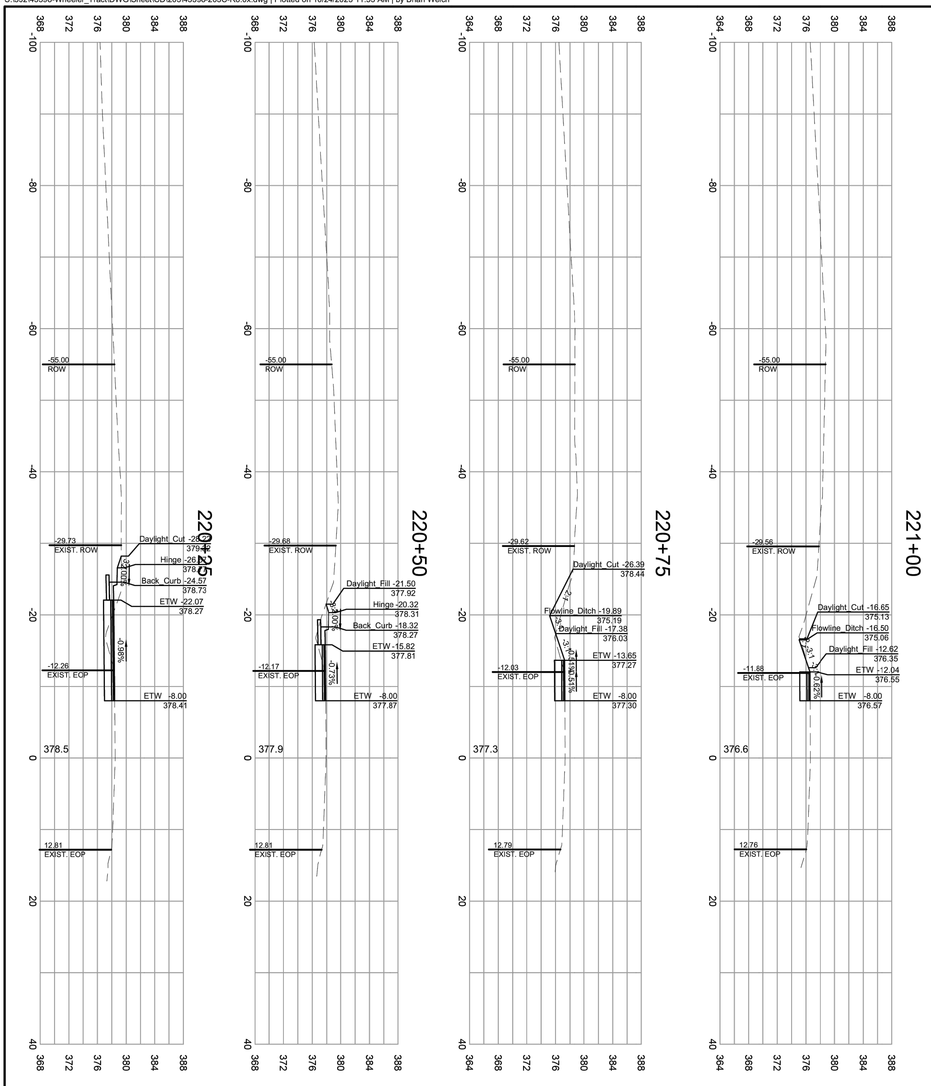
TIMMONS GROUP

WHEELER TRACT - OFFSITE IMPROVEMENTS

ROLESVILLE - WAKE COUNTY - NORTH CAROLINA

MITCHELL MILL ROAD CROSS SECTIONS

JOB NO. *43398*
SHEET NO. *R8.09*



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DATE	REVISION DESCRIPTION
06-15-2023	ROLESVILLE ROAD TAPER SHIFT AND STORM NETWORK UPDATE
10-24-2023	GRADING AND STORM NETWORK ADJUSTMENTS

SHEET NO. R8.10 | JOB NO. 43398

WHEELER TRACT - OFFSITE IMPROVEMENTS

ROLESVILLE - WAKE COUNTY - NORTH CAROLINA

MITCHELL MILL ROAD CROSS SECTIONS

SCALE: 1" = 10'
CHECKED BY: BPW
DESIGNED BY: BPW
DRAWN BY: BPW
DATE: 07/21/22

STRUCTURE LOCATION TABLE						
CALLOUT	DESCRIPTION	NORTHING	EASTING	RIM	INVERT IN	INVERT OUT
1	NEW 72" Ø MANHOLE, CENTER	778384.98'	2166624.53'	349.00'	329.00'	328.80'
2	NEW 72" Ø WET WELL, CENTER	778405.93'	2166607.73'	349.50'	328.50'	N/A
3	NEW 5' x 5.5' VALVE VAULT, CENTER	778412.82'	2166616.32'	349.50'	N/A	N/A

GENERAL NOTES:

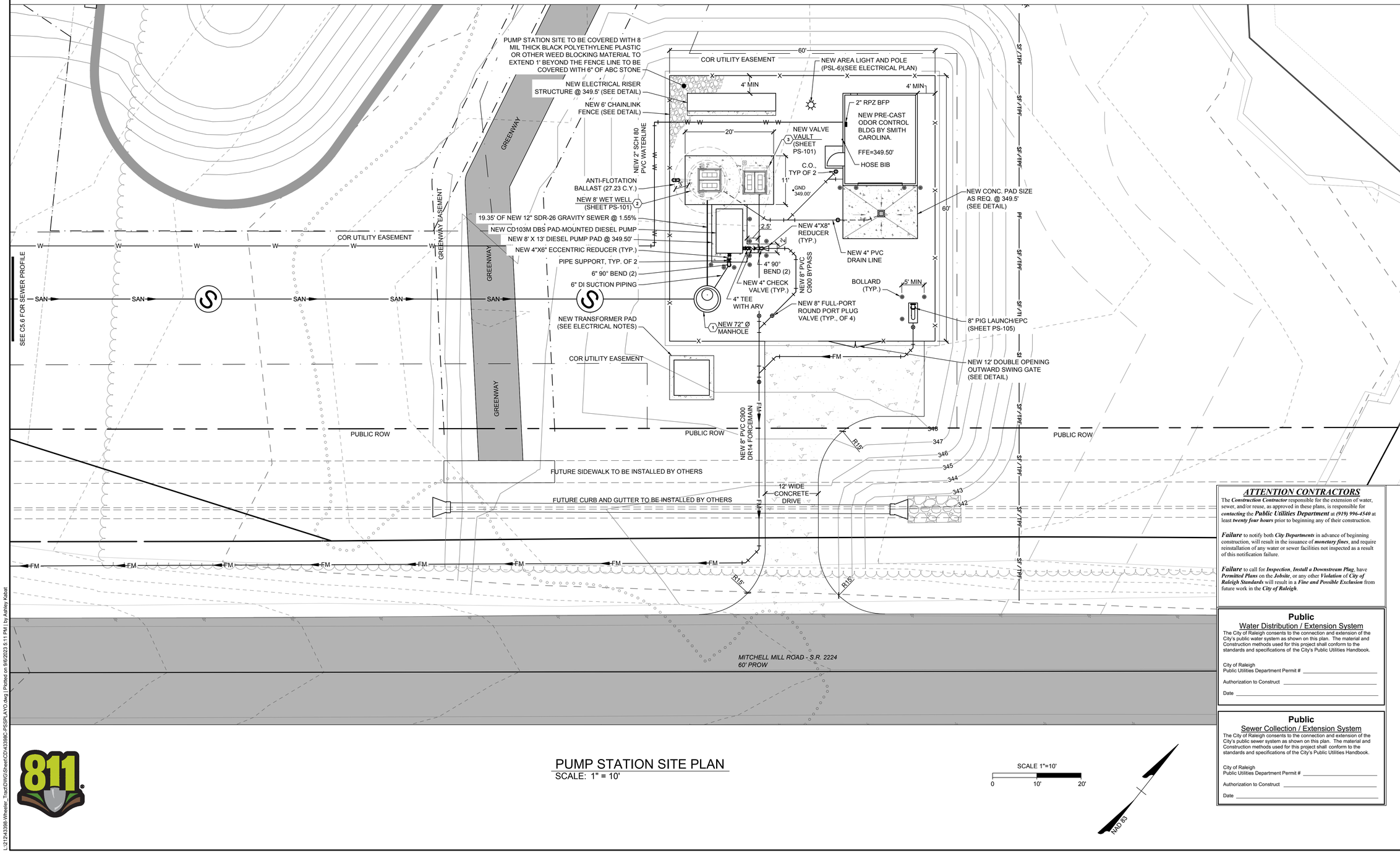
1. ALL WORK RELAETED TO THE PUMP STATION, WET WELL, AND FORCE MAIN SHALL BE TO THE CITY OF RALEIGH STANDARDS AND SPECIFICATIONS.
2. WET WELL EXTERIOR TO BE COATED WITH TWO SUCCESSIVE COATS OF COAL TAR EPOXY (APPROVED BY THE CITY OF RALEIGH)
3. WET WELL SHALL BE PRE-CAST CONCRETE PER ASTM C478. MANHOLE SECTION JOINTS SHALL BE DURABLE MASTIC SEALING MATERIAL AND WATERPROOFED BY USE OF ASHPHALTIC CEMENT AND WRAPPED WITH A BUTYL RESIN SEALANT WITH A 8" WIDTH.
4. ALL PENETRATIONS INTO THE WET WELL SHALL BE WATERTIGHT BY LINK SEAL OR NON SHRINK GROUT.
5. ALL HARDWARE IN THE WET WELL TO BE STAINLESS STEEL.
6. THERE SHALL BE NO VALVES, ELECTRICAL JUNCTION BOXES, OR CABLE SPLICES OF ANY KIND IN THE WET WELL.

DESIGN CRITERIA:

THE WHEELER TRACT PUMP STATION HAS BEEN DESIGNED TO SERVE A TOTAL OF 177 SINGLE-FAMILY RESIDENCES (250 GPD/RESIDENCE), 120 TOWNHOMES (250 GPD/TOWNHOME), AND A CLUBHOUSE WITH A SWIMMING POOL (10 GPD/PERSON). FLOWS FROM THE ADJACENT DRAINAGE BASIN HAVE BEEN INCLUDED, WHICH INCLUDES 280 ACRES (720 GPD/ACRE). THE TOTAL DESIGN FLOW IS APPROXIMATELY 277,350 GPD. USING A 2.5 PEAKING FACTOR, THE PEAK INFLUENT RATE IS 481.51 GPM. THE STATION WILL HAVE TWO (2) SULZER XFP100G CB1 60HZ PE250/4-G-60HZ WET WELL SUBMERSIBLE PUMPS. THE NEW 8-INCH PVC-C900 DR14 FORCE MAIN WILL DISCHARGE INTO THE GRAVITY SEWER PARALLEL TO HARRIS CREEK NEAR AMAZON TRAIL OWNED BY THE CITY OF RALEIGH.

DESIGN SUMMARY:

PUMP STATION FLOWS ARE HANDLED BY TWO (2) SULZER XFP100G CB1 60HZ PE250/4-G-60HZ SUBMERSIBLE PUMPS, EACH OPERATING AT 302 GPM @ 92' TDH AT 52.59 HZ AND 482 GPM @ 112' TDH AT 60 HZ.



PUMP STATION SITE PLAN

SCALE: 1" = 10'

SCALE 1"=10'

0 10' 20'

NAD 83

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

Public

Water Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____

Public

Sewer Collection / Extension System

The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052736 04/07/2023 ASHLEY M KABAT

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REVISION DESCRIPTION	DATE

DATE	09/06/23
DRAWN BY	A. KABAT
DESIGNED BY	A. KABAT
CHECKED BY	C. PETREE
SCALE	1" = 10'

TIMMONS GROUP

ROLESVILLE CROSSING

ROLESVILLE - WAKE COUNTY - NORTH CAROLINA

PUMP STATION PLAN

JOB NO.	SHEET NO.
43398	PS-100

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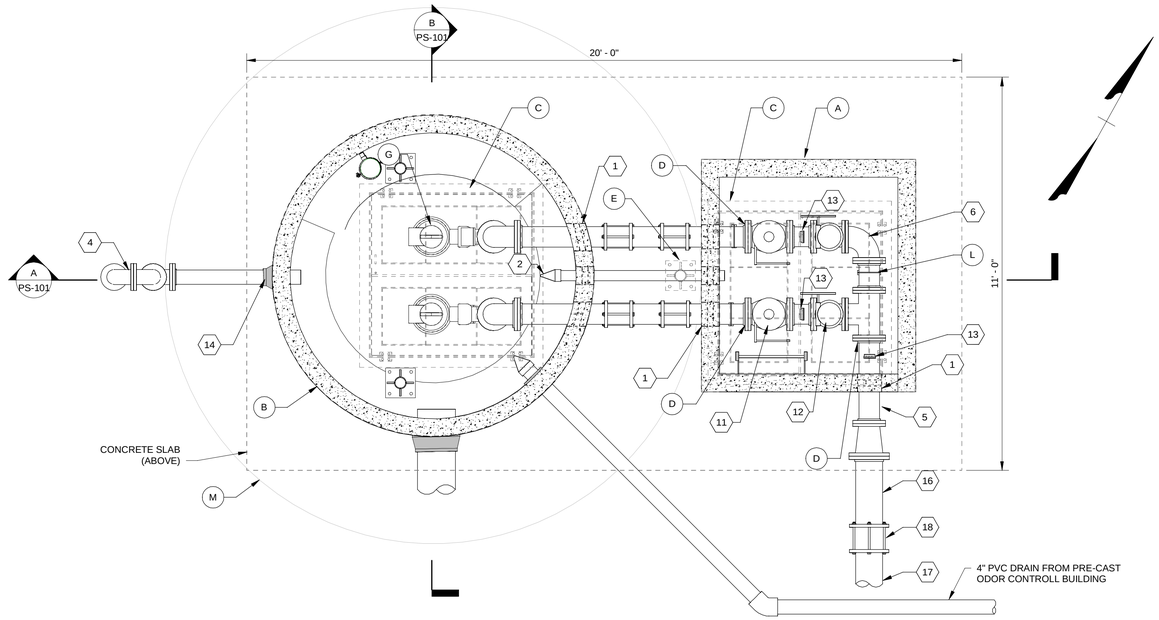
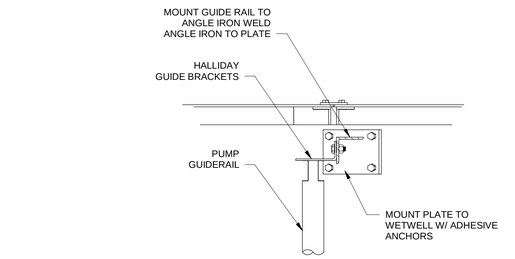
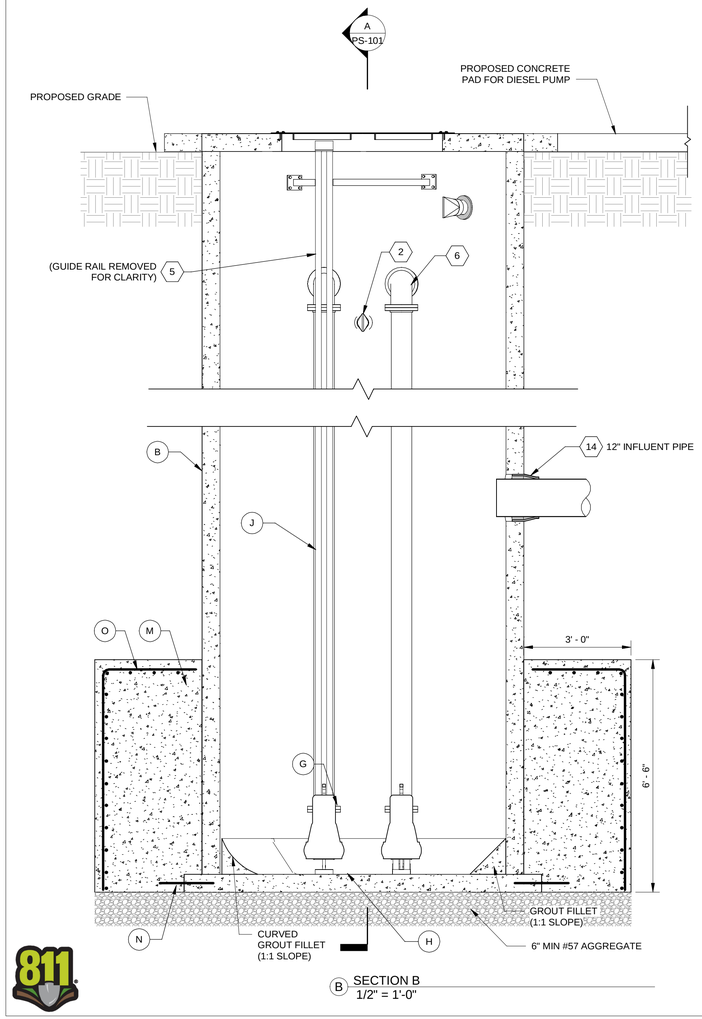


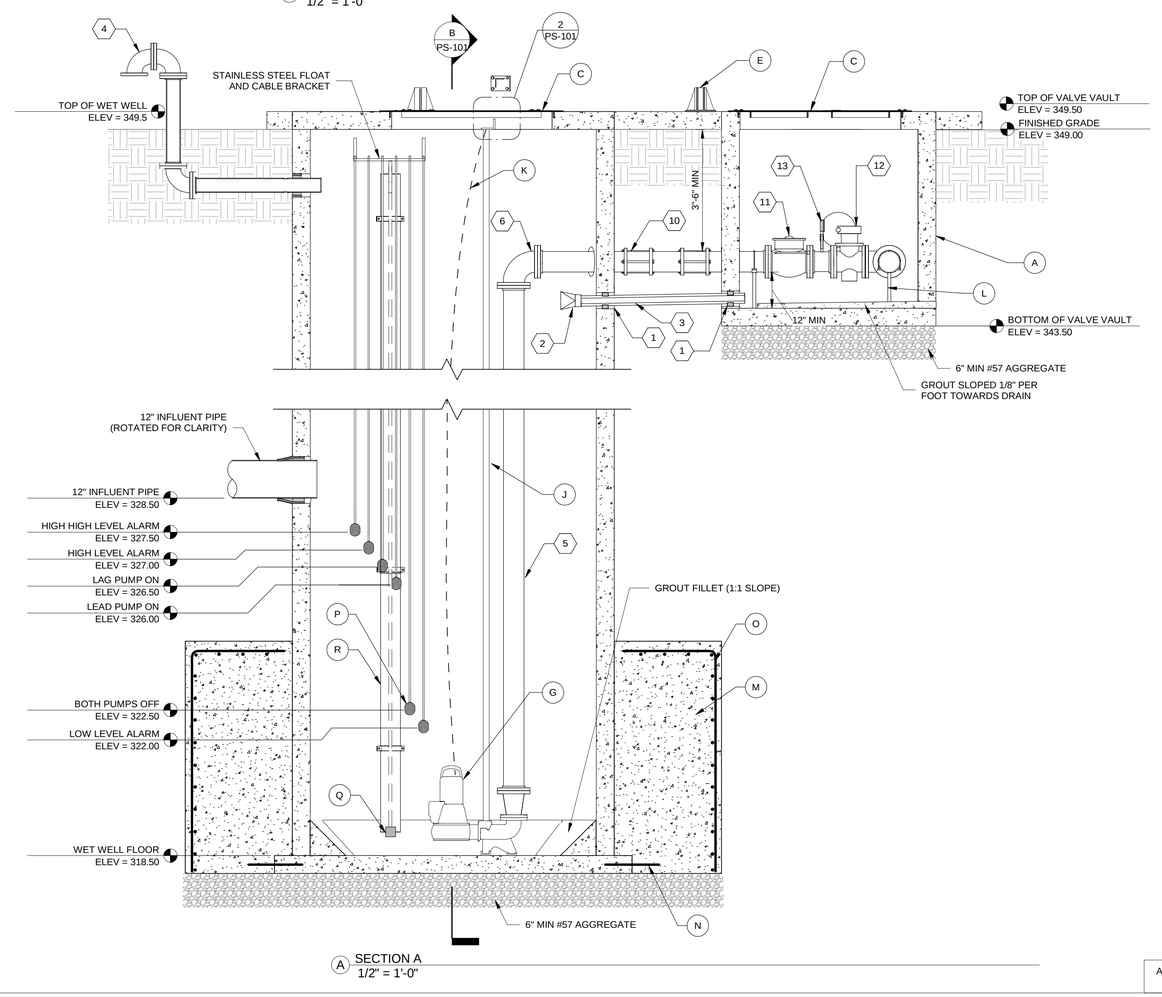
1 PUMP STATION PLAN
1/2" = 1'-0"



2 PUMP GUIDERAIL BRACKET MOUNTING
NOT TO SCALE



B SECTION B
1/2" = 1'-0"



A SECTION A
1/2" = 1'-0"

FITTING AND EQUIPMENT SCHEDULE

LABEL	DESCRIPTION
1	LINK SEAL
2	3" TIDEFLEX TF-2 CHECK VALVE
3	3" PVC DRAIN SLOPED 1/4" PER FOOT (MIN) WITH FLEXIBLE COUPLING
4	4" VENT WITH REMOVABLE BRONZE OR ALUMINUM INSECT SCREEN
5	6" FLG CLASS 50 DI PIPE
6	6" FLG 90 DEGREE BEND
10	6" DRESSER COUPLING
11	6" SWING CHECK VALVE
12	6" GEAR OPERATED PLUG VALVE
13	PRESSURE GAUGE AND BALL VALVE (TAPPED)
14	MANHOLE BOOT
16	8" CLASS 50 DI PIPE
17	8" PVC C-900 DR14
18	8" TRANSITION COUPLING
A	5' X 5.5' PRECAST VALVE VAULT
B	8' DIAMETER PRECAST WET WELL
C	W2S5454 HALLIDAY HATCH (OR APPROVED EQUAL)
D	6" FLANGE ADAPTER
E	HALLIDAY D2R HOIST SOCKET (OR APPROVED EQUAL)
G	SUMBERSIBLE NON-CLOG SEWAGE PUMP SULZER XFP100G CB1 60HZ PE250/4-G-60HZ
H	STAINLESS STEEL ANCHORS PER PUMP MANUFACTURER
J	STAINLESS STEEL GUIDE RAIL
K	STAINLESS STEEL HOIST CABLE W/ 1" STAINLESS STEEL CHAIN
L	ADJUSTABLE PIPE SUPPORT (AS REQUIRED)
M	ANTI-FLOATATION COLLAR (27.23 C.Y. MIN CONCRETE)
N	3/4"X18" STEEL ROD @ 24" O.C.
O	#4 REBAR (CONTINUOUS) @ 8" O.C.
P	FLOAT SWITCH (TYP.)
Q	INTRINSICALLY SAFE PRESSURE TRANSDUCER
R	6" PVC SCH80 STILLING WELL

GENERAL NOTES:

1. BASE AND FIRST RISER UNIT TO BE CAST MONOLITHIC
2. VALVE VAULT TO HAVE SEALED FLOOR AND DRAIN
3. ALL LOCATIONS WHERE PIPES ENTER OR LEAVE THE WET WELL OR VALVE VAULT SHALL BE MADE WATERTIGHT WITH WALL SLEEVE OR NON-SHRINK GROUT
4. THERE SHALL BE NO VALVES OR ELECTRICAL JUNCTION BOXES IN THE WET WELL
5. CHECK VALVES SHALL BE IRON-BODIED, FULLY BRONZE CLAPPER DISC AND BRONZE SEAT RING, AND SHALL HAVE A SPRING LOADED LEVER ARM CAPABLE OF BEING MOUNTED ON EITHER SIDE OF THE VALVE
6. PLUG VALVES SHALL BE 1/4 TURN, ECCENTRIC ACTION AND RESILIENT PLUG FACING WITH HEAVY DUTY STAINLESS STEEL BEARINGS AND WELDED-IN CORROSION RESISTANT NICKEL SEAT. PUMP STATION PLUG VALVES SHALL BE "FULL-PORT ROUND PORT" CROSS-SECTIONAL AREA PERPENDICULAR TO THE FLOW OF AT LEAST 100% OF THE ADJOINING PIPE
7. FLEXIBLE COUPLING SHALL BE SLEEVE TYPE
8. PUMPING SPECIFICATIONS ARE BELOW:
   THE PUMPING EQUIPMENT SHALL BE A DUPLEX SOLIDS HANDLING SUBMERSIBLE SEWAGE PUMP INSTALLATION AS MANUFACTURED BY SULZER (OR APPROVED EQUIVALENT). 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 302 GPM AT 92.0 FEET TDH AND 482 GPM AT 112.0 FEET TDH. A SULZER XFP100G CB1 60 HZ PE250/4-G-60HZ OR APPROVED EQUIVALENT SHALL BE USED.
9. PUMP MOTORS SHALL MEET ALL REQUIREMENTS OF CLASS 1, DIVISION 1, GROUP D
10. PUMP STATION MUST COMPLY WITH ALL CITY OF RALEIGH AND TOWN OF ROLESVILLE SPECIFICATIONS
11. ALL DISCHARGE PIPING SHALL BE CLASS 50 DUCTILE IRON FLANGED PIPE IN ACCORDANCE WITH AWWA C 141
12. ALL PIPING, COUPLINGS, FITTINGS, VALVES, ETC. SHALL BE CLASS 125 FLANGES MEETING ANSI B16.1 SPECIFICATIONS
13. PUMP STATION IS NOT LOCATED WITHIN 100-YR FLOODPLAIN ACCORDING TO FEMA FIRM MAP 3720176600J (EFFECTIVE DATE 05/02/2006)
14. WET WELL EXTERIOR TO BE COATED WITH TWO SUCCESSIVE COATS OF COAL TAR EPOXY (APPROVED BY THE CITY OF RALEIGH)
15. WET WELL SHALL BE PRE-CAST CONCRETE PER ASTM C478. MANHOLE SECTION JOINTS SHALL BE DURABLE MASTIC SEALING MATERIAL AND WATERPROOFED BY USE OF ASPHALTIC CEMENT AND WRAPPED WITH A BUTYL RESIN SEALANT WITH A 8" WIDTH
16. ALL PENETRATIONS INTO THE WET WELL SHALL BE WATERTIGHT BY LINK SEAL OR NON SHRINK GROUT
17. ALL HARDWARE IN THE WET WELL TO BE STAINLESS STEEL
18. THERE SHALL BE NO VALVES, ELECTRICAL JUNCTION BOXES, OR CABLE SPLICESOF ANY KIND IN THE WET WELL

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

ATTENTION CONTRACTORS

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Public
Water Distribution / Extension System

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City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____

Public
Sewer Collection / Extension System

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City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____

PRELIMINARY - NOT RELEASED FOR CONSTRUCTION

ALL CONSTRUCTION TO BE IN ACCORDANCE WITH ALL TOWN OF ROLESVILLE, CITY OF RALEIGH, NCDEQ AND NCDOT STANDARDS, SPECIFICATIONS, AND DETAILS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052736 09/07/2023 ASHLEY W KABAT

THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
5410 Trinity Road, Suite 102 | Raleigh, NC 27607
TEL 919.866.4951 FAX 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

DATE	REVISION DESCRIPTION
12/07/2021	REVISIONS PER COR COMMENTS RECIEVED 11/19/2021
09/19/2022	REVISIONS PER COR COMMENTS RECIEVED 01/20/2022
06/01/2022	REVISIONS PER COR COMMENTS RECIEVED 05/19/2022

DATE
09/07/2023

DRAWN BY
L. KIM

DESIGNED BY
A. KABAT

CHECKED BY
C. PETREE

SCALE
AS SHOWN

TIMMONS GROUP
NORTH CAROLINA LICENSE NO. C-1652

ROLESVILLE CROSSING
ROLESVILLE - WAKE COUNTY - NORTH CAROLINA

PUMP STATION LAYOUT AND SECTIONS

JOB NO.
43398

SHEET NO.
PS-101

L:\212\43398-Wheeler_Tract\RVT\43398-MPPUMP.rvt
9/7/2023 2:50:08 PM

Wastewater Pump Station Calculations

Project: Wheeler Tract
Project No: 43398

Prepared by: A. Kabat
Prepared on: 09/08/2021
Date Revised: 12/13/2021

TIMMONS GROUP
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Current Design Flows

Type	Units		GPD/Unit	ADD (GPD)	Peaked Design Flow (GPM)
Single-Family Residences	177	residences	250	44,250	77
Townhomes	120	townhomes	250	30,000	52
Clubhouse wiith Swimming Pool	150	people	10	1,500	3
Total				**75,750**	**132**

Future Design Flows

Type	Units		GPD/Unit	ADD (GPD)	Peaked Design Flow (GPM)
Undeveloped Land	280	acres	720	201,600	350
Total				***201,600***	**350**
Total Basin Build-Out				**277,350 GPD**	**482 GPM**

Pump Station Buoyancy Calculations

Project: Wheeler Tract
Project No: 43398

Prepared by: A. Kabat
Prepared on: 09/08/2021
Date Revised: 12/13/2021

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Wet Well Buoyancy

Description	Value	Units	Notes
Inner Diameter	*8.0*	ft	
Outer Diameter	*9.0*	ft	**6-inch wall thickness**
Depth	*31.0*	ft	
Concrete Volume	*413.90*	ft^3	
Wetwell Weight	*60,016*	lb	**Based on 145-lb/ft3 for concrete**
Displaced Volume	*1,972*	ft^3	
Buoyancy Force	*-123,061*	lb	**Based on 62.4-lb/ft3 for water**
Buoyant Weight of Wetwell	*-63,045*	lbs	**Structure is buoyant without base**

Base Buoyancy Credit

Description	Value	Units	Notes
Base Diameter	*10.0*	ft	**6 inches beyond WW outer diameter**
Base Thickness	**6.0**	in	*Base Thickness should be no greater than 12"*
Concrete / Displaced Volume	*39.27*	ft^3	
Base Weight	*5,694*	lb	*Based on 145-lb/ft3 for concrete*
Buoyancy Force	*-2,450*	lb	*Based on 62.4-lb/ft3 for water*
Buoyant Weight of Base	*3,244*	lb	
Buoyant Weight of Structure	*-59,801*	lb	**Structure is buoyant without AF collar**

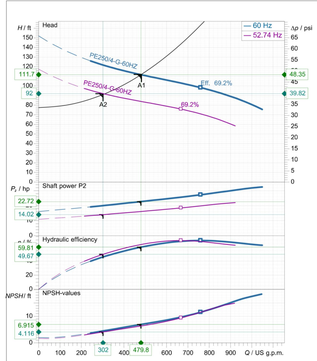
(Optional) Anti-Flotation Collar Credit

Description	Value	Units	Notes
Collar Inner Diameter	*9.0*	ft	
Collar Thickness	**3.00**	ft	*If no collar used, set thickness to "0"*
Collar Height	**6.5**	ft	
Concrete / Displaced Volume	*735.13*	ft^3	
Base Weight	*106,594*	lb	*Based on 145-lb/ft3 for concrete*
Buoyancy Force	*-45,872*	lb	*Based on 62.4-lb/ft3 for water*
Buoyant Weight of Collar	*60,722*	lb	
Buoyant Weight of Structure	*921*	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-flotation collar. Consideration would also be given to reducing the size of the anti-flotation collar if positive drainage away from the excavation could be maintained during construction.

SULZER

XFP100G CB1 60HZ (wet pit/dry pit)



Test Standard
ISO 9906, HI 11.6/14.6 Gr 2B

Curve Name
4

VFD efficiency is not included.
(Note: P1 is not including any VFD losses)

2023-09-07

Operating data specification		Power input	24.3 hp
Flow	479.8 US g.p.m.	Head	112 ft
Efficiency	59.8 %	Shaft power	22.7 hp
NPSH	6.92 ft	Fluid	Water
Temperature	68 °F	Nature of system	Single head pump
No. of pumps	1		
Pump data			
Type	XFP100G CB1 60HZ (wet pit/dry pit)	Make	SULZER
Series	XFP PE1-PE3	Impeller	Contrablock Plus impeller, 1 vane
N° of vanes	1	Impeller size	11.02 inch
Free passage	3.94 inch	Suction flange	DN100
Discharge flange	DN100	Type of installation	
Moment of inertia	2.25 lb ft²	Wet well installation with pedestal (without cooling jacket)	
Motor data			
Rated voltage	460 V	Frequency	60 Hz
Rated power P2	33.5 hp	Nominal Speed	1760 rpm
Number of poles	4	Efficiency	93.6 %
Power factor	0.821	Rated current	40.8 A
Starting current	315 A	Rated torque	100 lbf ft
Starting torque	279 lbf ft	Degree of protection	IP 68
Insulation class	H	No. starts per hour	15

Sparx® 6-23.2 - 2023/08/01 ((Build 1226), 64 bit
Data version Aug 23.1

Wastewater Pump Station Calculations

Project: Wheeler Tract
Project No: 43398

Prepared by: A. Kabat
Prepared on: 09/08/2021
Date Revised: 12/13/2021

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Pump Station Capacity

Description	Value	Units	Notes
Average Daily Flowrate	**52.60**	gpm	
Peak Factor Used	**2.50**		
Design Peak Influent Rate	*131.51*	gpm	
Design Pumping Rate	**302.00**	gpm	*Must be greater than Design Influent Rate*
			Update based on pump / system curves

Wet Well Sizing

Description	Value	Units	Notes
Wetwell Diameter	**8.0**	feet	
Minimum Pump Cycle Time	*10*	min	
Unit Volume	*375.99*	gal/ft	
Wet Well Drawdown Volume	*755.00*	gal	Based on $V = \frac{TP}{4}$
Average Pump Run Time	*5.28*	min	Based on control settings below
Average Pump Cycle Time	*30.29*	min	*Time between pump starts*
Peak Pump Run Time	*7.72*	min	
Peak Pump Cycle Time	*17.73*	min	
Minimum Operating Depth	*2.01*	ft	

Control Settings

Description	Value	Units	Notes
100-year Flood Plain Elevation	**346.00**	ft AMSL	Zone AE or Zone X - Map 3720176600J Eff.
Top of Wet Well Elevation	**349.50**	ft AMSL	ASSUMED
Lowest Invert In Elevation	**328.50**	ft AMSL	
High Level Alarm Elevation	*327.00*	ft AMSL	**1.50' Below Influent Line**
Lag Pump On Elevation	*326.50*	ft AMSL	**0.50' Below High Level Alarm**
Lead Pump On Elevation	*326.00*	ft AMSL	**0.50' Below Lag Pump On**
Both Pumps Off Elevation	*322.50*	ft AMSL	**3.50' Below Lead Pump On**
Pump entrance diameter	**4.00**	inches	
Minimum Submergence	*2.14*	ft	H.I. Stds: S=(1+2.3***F***)D where ***F***=v(gD)$^{-0.5}$
Suction Entrance Elevation	*319.00*	ft AMSL	**3.50' Below Both Pump Off**
Wetwell Floor Elevation	*318.50*	ft AMSL	**6" Below Suction Entrance**
Depth of Wet Well	*31.00*	ft	

Pump Station Head Loss - Discharge Side

Description	Value	Units	Notes
Pump Station Pipe Diameter	**6.00**	inch	From design plans
Pump Station Pipe Velocity	*3.43*	fps	
Pump Station Pipe "c" value	**120**		(Hazen-Williams)
Equivalent Length of Fittings	*114.79*	ft	From Fitting Friction Loss Table Below
Straight Pipe Quantity	**30.00**	ft	From design plans
Total Equivalent Length	*144.79*	ft	
Pump Station Head Loss	*1.36*	ft	

Pump Station Buoyancy Calculations

Project: Wheeler Tract
Project No: 43398

Prepared by: A. Kabat
Prepared on: 09/08/2021
Date Revised: 12/13/2021

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	*8*	ft	
Top Diameter	*27*	ft	
Bottom Diameter	*10*	ft	
Saturated Soil Density	**110.0**	lb/ft^3	From Geotechnical Report or Estimate
Depth of Soil above Base	*31.0*	ft	
Volume of Soil	*6,747*	ft^3	Volume of Soil (frustrum of cone, less wetwell)
Buoyant Weight of Soil	*321,168*	lb	

Buoyancy Float Check

Description	Value	Units	Notes
Total Difference After Backfill	*322,089*	lb	*Structure is not buoyant after backfill*

Wastewater Pump Station Calculations

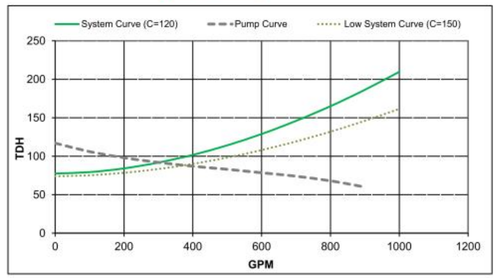
Project: Wheeler Tract
Project No: 43398

Prepared by: A. Kabat
Prepared on: 09/08/2021
Date Revised: 12/13/2021

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	**8**	in	
Force Main Material	**PVC - C900 DR14**		
Force Main Inside Diameter	*7.68*	in	*From Pipe Properties Table*
Flowrate	*302*	gpm	
Velocity	*2.09*	fps	
Force Main Length	**4400**	ft	Flow Away Condition Control Point
Equivalent Length of Fittings	*210.1*	ft	From Fitting Friction Loss Table Below
Total Equivalent Length	*4610.1*	ft	
Force Main Friction Loss	*13.07*	ft	
Force Main High Point Elev.	**400.00**	ft AMSL	*Check FM / HGL plot for special design considerations*
Manifold Condition?	**No**		
~~Manifold Elevation~~	~~0.0~~	~~ft AMSL~~	~~*At manifold connection*~~
~~Peak Residual Pressure Head~~	~~0.0~~	~~ft~~	~~*At manifold connection*~~
~~Minimum Residual Pressure Head~~	~~0.0~~	~~ft~~	~~*At manifold connection*~~
Pump Station LWL	*322.5*	ft AMSL	
System Static Head	*77.5*	ft	
Total Dynamic Head	*91.9*	ft	



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City of Raleigh
Public Utilities Department Permit # _____

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052736 ASHLEY M KABAT 09/07/2023

THIS DRAWING PREPARED AT THE RALEIGH OFFICE
5410 Trinity Road, Suite 102 | Raleigh, NC 27607
TEL 919.866.4951 FAX 919.833.8124 www.timmons.com

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DATE	REVISION DESCRIPTION
12/07/2021	REVISIONS PER COR COMMENTS RECIEVED 11/19/2021
03/18/2022	REVISIONS PER COR COMMENTS RECIEVED 01/20/2022
06/01/2022	REVISIONS PER COR COMMENTS RECIEVED 05/19/2022

DATE
09/07/2023

DRAWN BY
L. KIM

DESIGNED BY
A. KABAT

CHECKED BY
C. PETREE

SCALE
AS SHOWN

TIMMONS GROUP

NORTH CAROLINA LICENSE NO. C-1652

ROLESVILLE CROSSING

ROLESVILLE - WAKE COUNTY - NORTH CAROLINA

PUMP STATION DATA

JOB NO.
43398

SHEET NO.
PS-102

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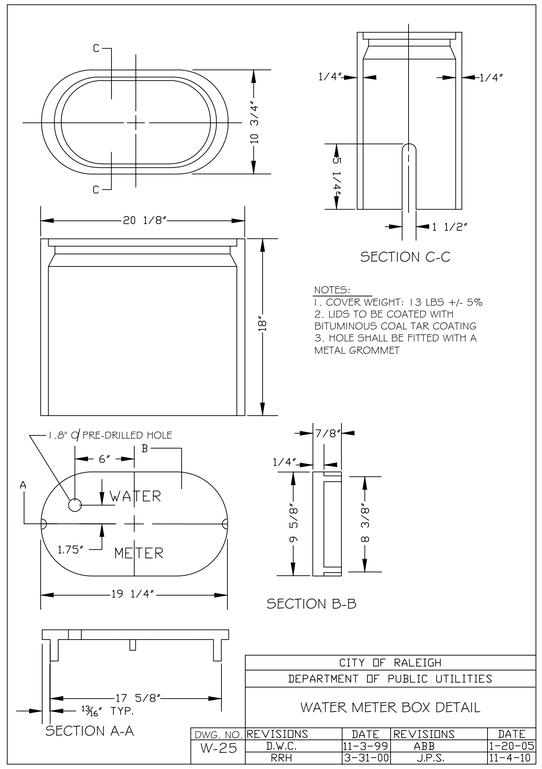
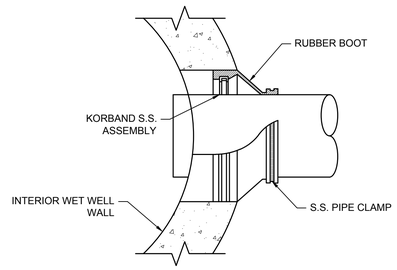
9/7/2023 2:50:11 PM

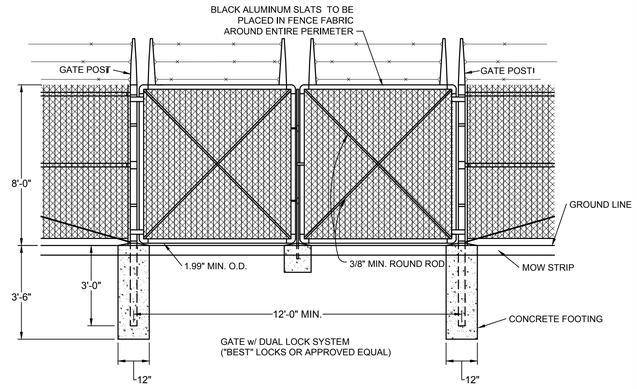


CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
WATER METER BOX DETAIL				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-25	D.W.C.	11-3-99	ABB	1-20-05
	RRH	3-31-00	J.P.S.	11-4-10

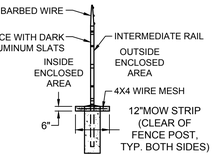
1" WATER SERVICE INSTALLATION — M-1 / C1.3
SCALE: NOT TO SCALE



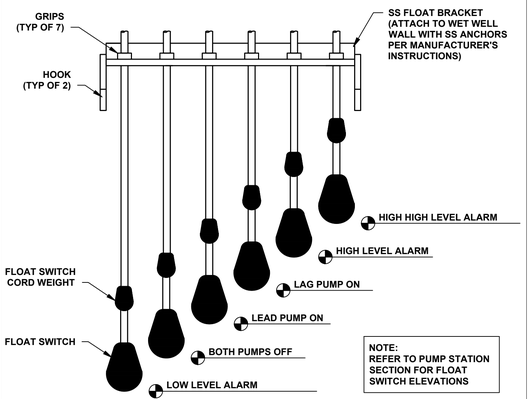
MANHOLE BOOT — M-2 / C1.3
SCALE: NOT TO SCALE



DOUBLE SWING GATE — M-3 / C1.3
SCALE: NOT TO SCALE

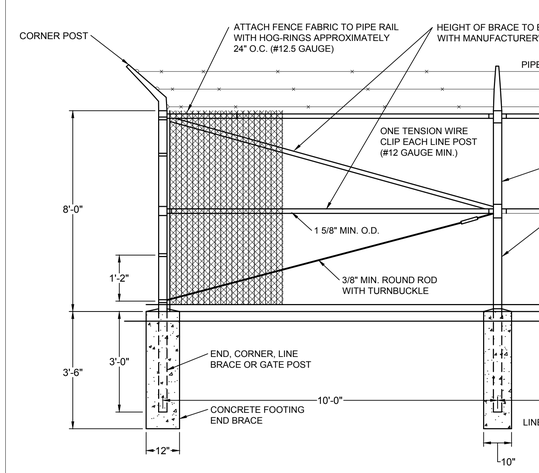


FENCE POST — M-4 / C1.3
SCALE: NOT TO SCALE

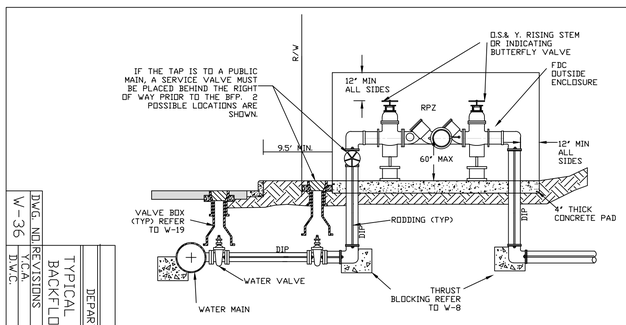


NOTE:
REFER TO PUMP STATION SECTION FOR FLOAT SWITCH ELEVATIONS

LEVEL FLOAT BRACKET — M-5 / C1.3
SCALE: NOT TO SCALE



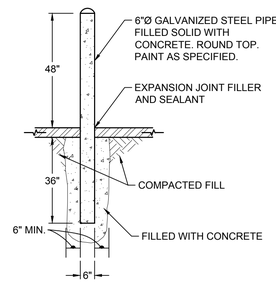
CHAIN LINK FENCE — M-6 / C1.3
SCALE: NOT TO SCALE



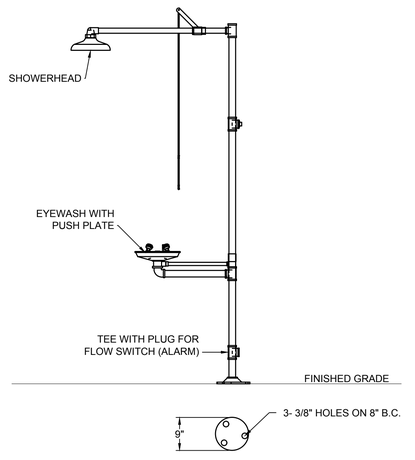
CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
TYPICAL REDUCED PRESSURE ZONE BACKFLOW PREVENTER ASSEMBLY				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-36	D.W.C.	11-8-99	A.B.	6-18-08
			R.H.L.	

1. ALL ABOVE GROUND ENCLOSURES MUST HAVE ADEQUATE DRAINAGE (TWICE THE DIAMETER OF THE SUPPLY PIPE) TO DAYLIGHT ABOVE GRADE.
2. REDUCED PRESSURE BACKFLOW PRESENTERS MAY BE LOCATED IN A BUILDING PROVIDED THERE ARE NO OTHER UNPROTECTED TAPS BETWEEN THE MAIN AND THE BUILDING. DRAINAGE IN A BUILDING MUST BE TWICE THE DIAMETER OF THE SUPPLY PIPE.
3. ABOVE GROUND INSULATED VAULTS MUST BE ASSE 1060 APPROVED ABOVE GROUND ENCLOSURES. SEE CROSS CONNECTION MANUAL FOR ENCLOSURE FREEZE PROTECTION AND CERTIFICATION REQUIREMENTS.
4. RESIDENTIAL LAWN IRRIGATION R.P. ASSEMBLIES THAT ARE REMOVED TO PREVENT FREEZING IN THE WINTER MONTHS MUST BE CAPPED OFF. ALL ABOVE GROUND ASSEMBLIES, EXCEPT RESIDENTIAL LAWN IRRIGATION ASSEMBLIES, MUST BE PROTECTED FROM FROST.
6. FOR ENCLOSURE DIMENSIONS SEE DETAIL W-34.
7. STEEL RODS AND BOLTS SHALL BE 3/4" HOT DIPPED GALVANIZED.
8. ALL ASSEMBLIES MUST BE ON THE CURRENT APPROVAL LIST.

REDUCED PRESSURE ZONE ASSEMBLY — M-7 / C1.3
SCALE: NOT TO SCALE



BOLLARD — M-8 / C1.3
SCALE: NOT TO SCALE



EMERGENCY EYE WASH AND SHOWER — M-9 / C1.3
SCALE: NOT TO SCALE

ATTENTION CONTRACTORS

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Public
Water Distribution / Extension System

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City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____

Public
Sewer Collection / Extension System

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City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052736 04/07/2023 ASHLEY M KABAT

THIS DRAWING PREPARED AT THE
RALEIGH OFFICE
5410 Trinity Road, Suite 112 | Raleigh, NC 27607
TEL 919.866.4951 FAX 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

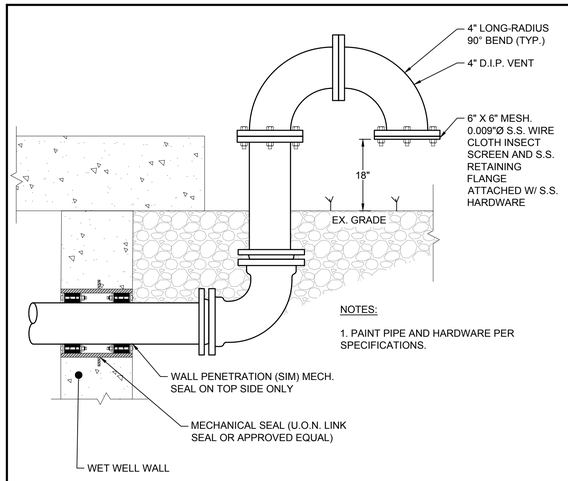
REVISION DESCRIPTION

DATE
09/06/23
DRAWN BY
L. KIM
DESIGNED BY
A. KABAT
CHECKED BY
C. PETREE
SCALE
AS SHOWN

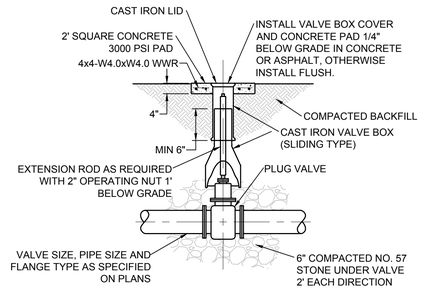
TIMMONS GROUP

ROLESVILLE CROSSING
ROLLESVILLE - WAKE COUNTY - NORTH CAROLINA
PUMP STATION DETAILS

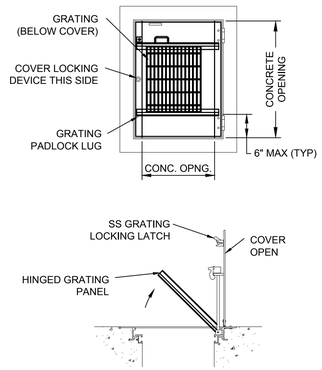
JOB NO.
43398
SHEET NO.
PS-103



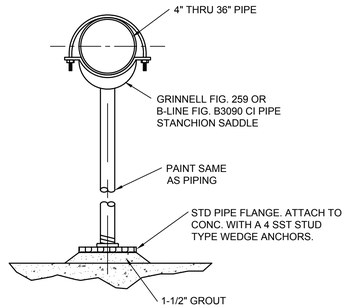
PIPE VENT
SCALE: NOT TO SCALE | M-10 | C1.4



BURIED PLUG VALVE
SCALE: NOT TO SCALE | M-14 | C1.4



HINGED FALL PROTECTION
SCALE: NOT TO SCALE | M-15 | C1.4



PIPE SUPPORT
SCALE: NOT TO SCALE | M-29 | C1.4

FREEZE PROOF
YARD HYDRANT
SCALE: NOT TO SCALE | M-16 | C1.4

NOTE: ALL BOLTS AND NUTS TO BE S.S. GRADE 304 OR 316

BASE ELBOW
SCALE: NOT TO SCALE | M-18 | C1.4

NOTE: S.S. = STAINLESS STEEL GRADE 304 OR 316.

PIPE BRACE
SCALE: NOT TO SCALE | M-19 | C1.4

SERIES J CABLE HOLDER

HALLIDAY PRODUCTS
www.HallidayProducts.com
Phone 800-298-1027
Fax 407-298-4534
Sales@HallidayProducts.com

STANDARD FEATURES:
- STAINLESS STEEL CONSTRUCTION
- 6 HOOKS STANDARD – FOR FLOAT SWITCHES
- AVAILABLE STANDARD DUTY OR HEAVY DUTY

MODEL	CABLE HOLDER
J6A	STD., 1/8" (3 mm) BODY, ø3/16" (4 mm) HOOK (T–316 S.STL. ONLY)
J4J	H.D., 3/16" (4 mm) BODY, ø1/4" (7 mm) HOOKS (T–304 S.STL)
J6J	H.D., 3/16" (4 mm) BODY, ø1/4" (7 mm) HOOKS (T–316 S.STL)

QUANITITY
J6A

QUANITITY
J4J

QUANITITY
J6J

GODWIN DRI-PRIME® CD103M
ONE (1) PUMP | SYSTEM CURVE
ROLESVILLE DBS

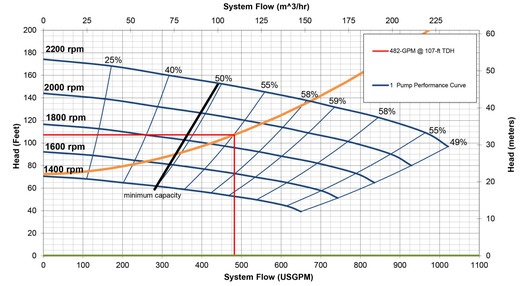
CD103M

Suction Lift: 18.5 ft
Suction Pipe: 50 ft 6" HDPE SDR 17, (1)90°, (1)Red, (1)Ent Loss

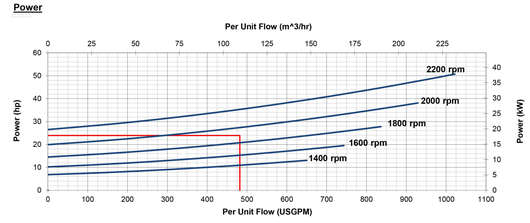
Discharge Head: 54 ft
Discharge Pipe: 30 ft 6" HDPE SDR 17, (2)90°, (1)Red, (1)CV, (1)Tee
4400 ft 8" FM, (2)90°, (1)Red, (1)Tee, (1)Exit Loss

Elevations	
Impeller	352
Grade	349
HWLA	333.5

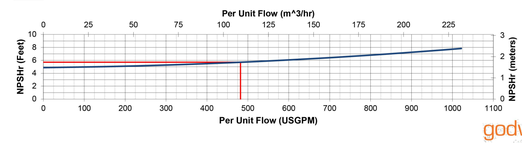
Performance - 256 mm Impeller | Variable Speed Curve



Power



NPSHr



GODWIN PUMPS OF AMERICA, 84 FLOODGATE ROAD, BRIDGEPORT, NJ, 08014. Tel - 856-467-3636. Fax - 856-467-4841. godwinpumps.com

CD103M.22006.apl.Rolesville DBS 2/22/2022

ATTENTION CONTRACTORS

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Public
Water Distribution / Extension System

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City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____

Public
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City of Raleigh
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Date _____

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052736 04/07/2023 ASHLEY M KABAT

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TEL 919.866.4951 FAX 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

REVISION DESCRIPTION

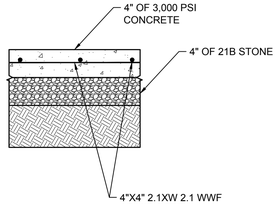
DATE
09/06/23

DRAWN BY: A. KABAT
DESIGNED BY: A. KABAT
CHECKED BY: C. PETREE
SCALE: AS SHOWN

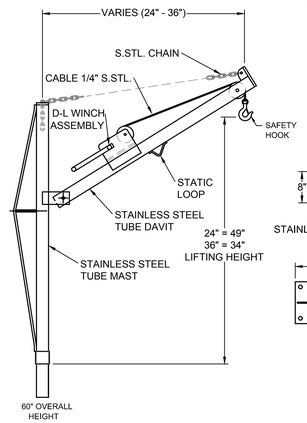
TIMMONS GROUP

ROLESVILLE CROSSING
ROLLESVILLE - WAKE COUNTY - NORTH CAROLINA
PUMP STATION DETAILS

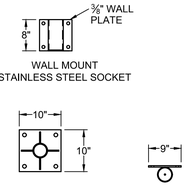
JOB NO. 43398
SHEET NO. PS-104



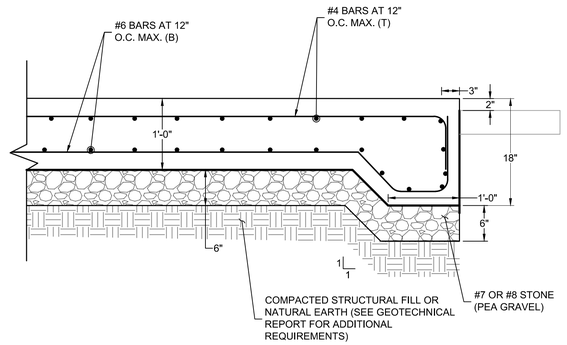
CONCRETE PAD
SCALE: NOT TO SCALE | M-21 | C1.5



NOTES:
1. HOIST TO BE CONSTRUCTED OF STAINLESS STEEL
2. HOIST TO HAVE AN ADJUSTABLE REACH FROM 24" TO 36"
3. PROVIDE 30 FEET OF STAINLESS STEEL CABLE AND SAFETY HOOK
4. HAND WINCH TO BE DUTTON-LAINSON OR EQUAL
5. HOIST SHALL HAVE A MINIMUM LOAD OF 890 LBS FULLY EXTENDED TO 36".



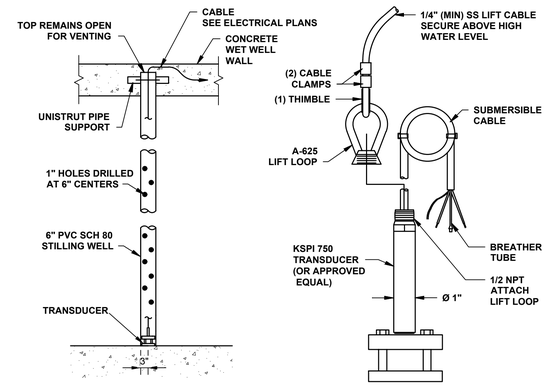
ADJUSTABLE PORTABLE HOIST AND S.S. SOCKET
SCALE: NOT TO SCALE | M-22 | C1.5



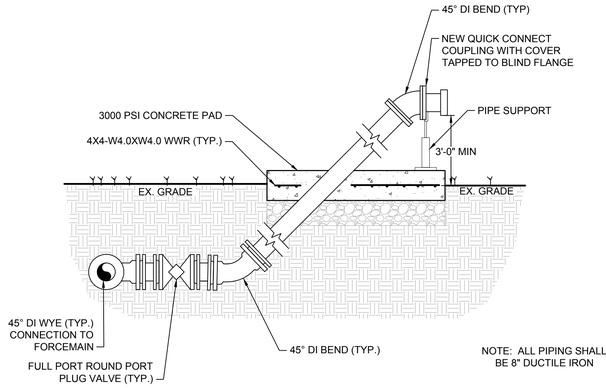
CONCRETE FOUNDATION PAD
SCALE: NOT TO SCALE | M-23 | C1.5

GENERAL NOTES:

1. SLAB DIMENSIONS TO BE BE 4" LONGER AND WIDER THAN OUTSIDE DIMENSION OF PRECAST CONCRETE BUILDING.
2. FLOOR STUB UPS MUST NOT BE ANY CLOSER THAN 4" IN FROM THE INSIDE WALL FACE TO PROVIDE CLEARANCE FOR WALL TO FLOOR ANCHORAGE.

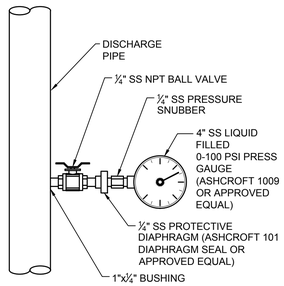


STILLING WELL
SCALE: NOT TO SCALE | M-30 | C1.5



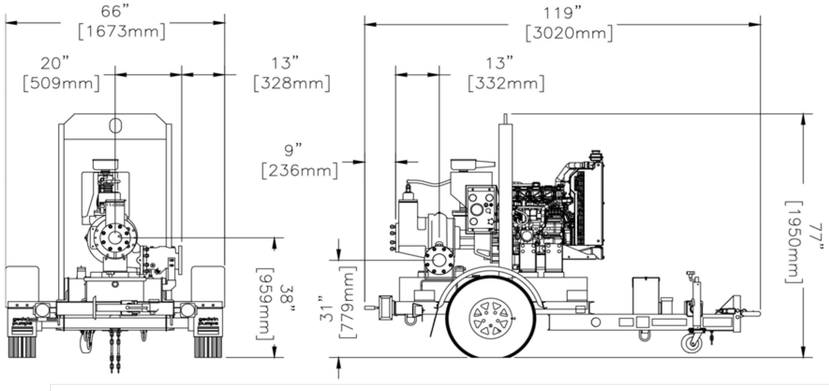
NOTE: ALL PIPING SHALL BE 8" DUCTILE IRON

PIG ACCESS AND EPC CONNECTION DETAIL
SCALE: NOT TO SCALE | M-27 | C1.5



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

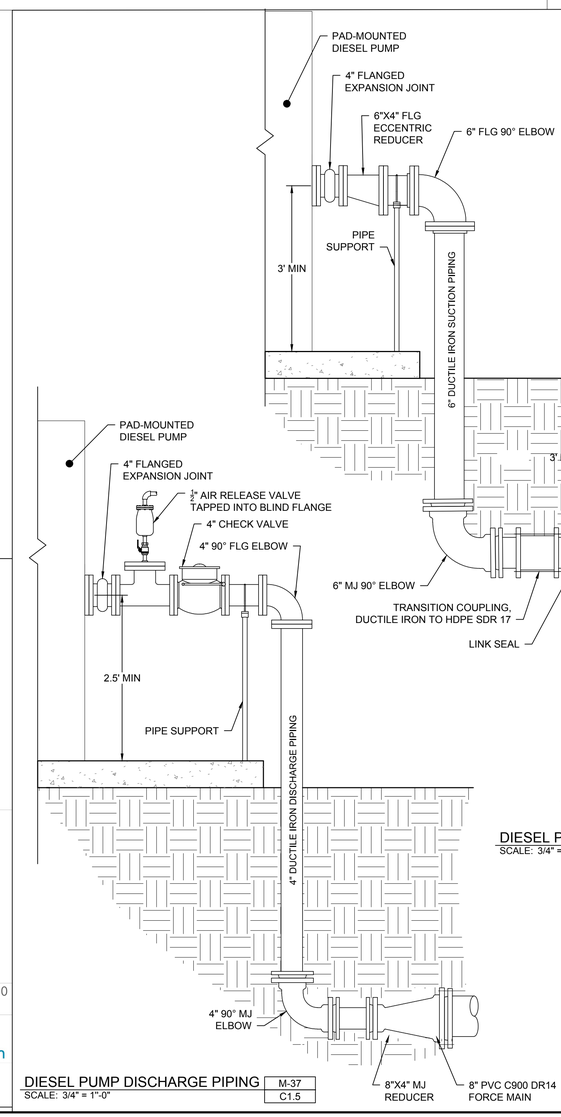
PRESSURE GAUGE ASSEMBLY
SCALE: NOT TO SCALE | M-28 | C1.5



xylem
Let's Solve Water
84 Floodgate Road
Bridgeport, NJ 08014 USA
(856) 467-3636 . Fax (856) 467-4841
Email: sales@godwinpumps.com

Reference number : 95-1008-3000
Date of issue : February 26, 2014
Issue : 5

www.godwinpumps.com



NOTES:
1. ALL ABOVE-GROUND PIPING SHALL BE CLASS 50 DUCTILE IRON FLANGED PIPE IN ACCORDANCE WITH AWWA C 141.
2. HORIZONTAL RUNS OF SUCTION PIPING SHALL BE MINIMIZED TO THE GREATEST EXTENT POSSIBLE.
3. ALL JOINTS TO BE RESTRAINED.

DIESEL PUMP SUCTION PIPING
SCALE: 3/4" = 1'-0" | M-38 | C1.5

DIESEL PUMP DISCHARGE PIPING
SCALE: 3/4" = 1'-0" | M-37 | C1.5

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REVISION DESCRIPTION

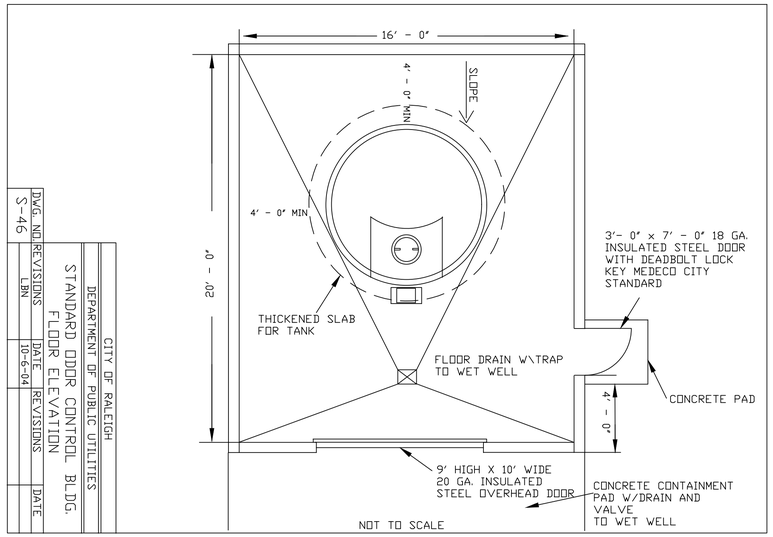
DATE

DATE: 09/06/23
DRAWN BY: A. KABAT
DESIGNED BY: A. KABAT
CHECKED BY: C. PETREE
SCALE: AS SHOWN

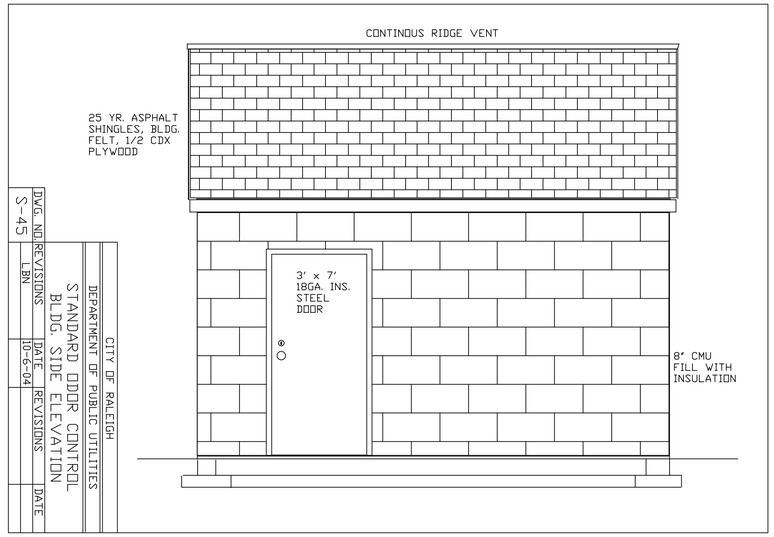
TIMMONS GROUP

ROLESVILLE CROSSING
ROLLESVILLE - WAKE COUNTY - NORTH CAROLINA
PUMP STATION DETAILS

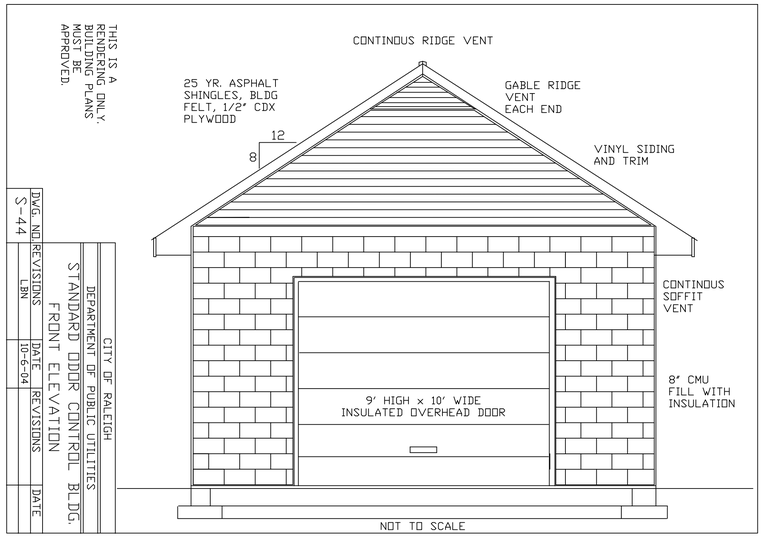
JOB NO. 43398
SHEET NO. PS-105



ODOR CONTROL BLDG
FLOOR ELEV. M-32
SCALE: NOT TO SCALE C1.6



ODOR CONTROL BLDG
SIDE ELEV. M-33
SCALE: NOT TO SCALE C1.6



ODOR CONTROL BLDG
FRONT ELEV. M-35
SCALE: NOT TO SCALE C1.6

SERIES W2S ACCESS DOOR

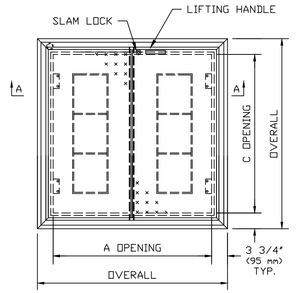
HALLIDAY PRODUCTS
www.HallidayProducts.com
Phone 800-298-1027
Fax 407-298-4534
Sales@HallidayProducts.com

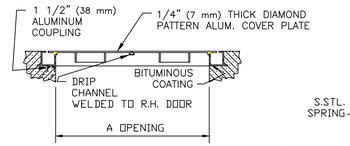
STANDARD FEATURES:

- 300 LBS. PER SQ. FT. LOAD RATING (1464 kg PER SQ. METER LOAD RATING)
- EXTRUDED ALUMINUM CHANNEL FRAME
- DOUBLE LEAF CONSTRUCTION
- 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 EPDM CUSHION/GASKET
- NON-OZONE DEPLETING BITUMINOUS COATING
- RECESSED LIFTING HANDLE
- LIFETIME GUARANTEE

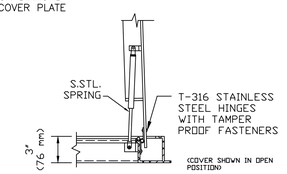
STANDARD SIZES

QTY.	MODEL NO.	A DIM. INCHES (mm)	C DIM. INCHES (mm)	UNIT WT. LBS. (kg.)
	W2S4242	42 (1067)	42 (1067)	108 (48)
	W2S4842	48 (1219)	42 (1067)	115 (52)
	W2S4848	48 (1219)	48 (1219)	126 (57)
	W2S5442	54 (1372)	42 (1067)	124 (56)
	W2S5448	54 (1372)	48 (1219)	136 (62)
2	W2S5454	54 (1372)	54 (1372)	149 (68)
	W2S6030	60 (1524)	30 (762)	102 (46)
	W2S6036	60 (1524)	36 (914)	116 (53)
	W2S6042	60 (1524)	42 (1067)	132 (60)
	W2S6048	60 (1524)	48 (1219)	148 (67)
	W2S6054	60 (1524)	54 (1372)	162 (73)
	W2S6060	60 (1524)	60 (1524)	177 (80)
	W2S6636	66 (1676)	36 (914)	126 (57)
	W2S6648	66 (1676)	48 (1219)	160 (73)
	W2S7236	72 (1829)	36 (914)	135 (61)
	W2S7242	72 (1829)	42 (1067)	154 (70)
	W2S7248	72 (1829)	48 (1219)	171 (78)
	W2S7254	72 (1829)	54 (1372)	188 (85)
	W2S7260	72 (1829)	60 (1524)	203 (92)



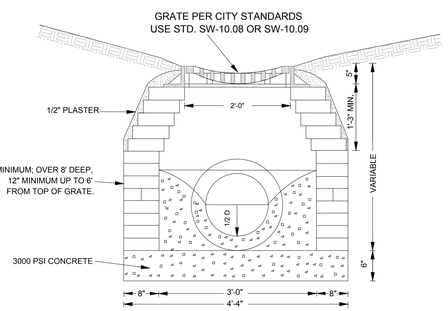


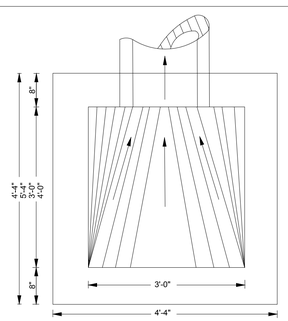
SECTION A-A



DETAIL

W2S ACCESS HATCH M-36
SCALE: NOT TO SCALE C1.6





CITY OF RALEIGH DROP INLET M-31
SCALE: NOT TO SCALE C1.6

NOTES:
1. FOR 24" RCP & LARGER USE PIPE DIAMETER PLUS 12" FOR MINIMUM INSIDE DIMENSION.
2. 24" X 24" CASTING WITH 12", 15" & 18" PIPE, 24" X 36" CASTING USED WITH 24" PIPE OR LARGER. IF PLACED WITHIN PUBLIC R/W CASTING MUST BE TRAFFIC BEARING TYPE PER NCDOT STANDARDS.
3. USE 4" X 4" X 8" OR 4" X 8" X 16" SOLID CONCRETE BLOCK, CAST IN PLACE OR PRECAST CONCRETE TO MEET N.C.D.O.T. STANDARDS ACCEPTABLE.
4. STEPS SHALL BE INSTALLED IN ALL DROP INLETS OVER 3' IN DEPTH. DEPTH SHALL BE MEASURED FROM THE TOP OF GRATE TO THE INVERT OF THE DROP INLET.

CITY OF RALEIGH
STANDARD DETAIL

REVISIONS	DATE: 8/2020	NOT TO SCALE
	STANDARD DROP INLET	
	SW-10.03	

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Date _____

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 052736 04/07/2023 ASHLEY M KABAT

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5410 Trinity Road, Suite 112 | Raleigh, NC 27607
TEL 919.866.4951 FAX 919.833.8124 www.timmons.com

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REVISION DESCRIPTION

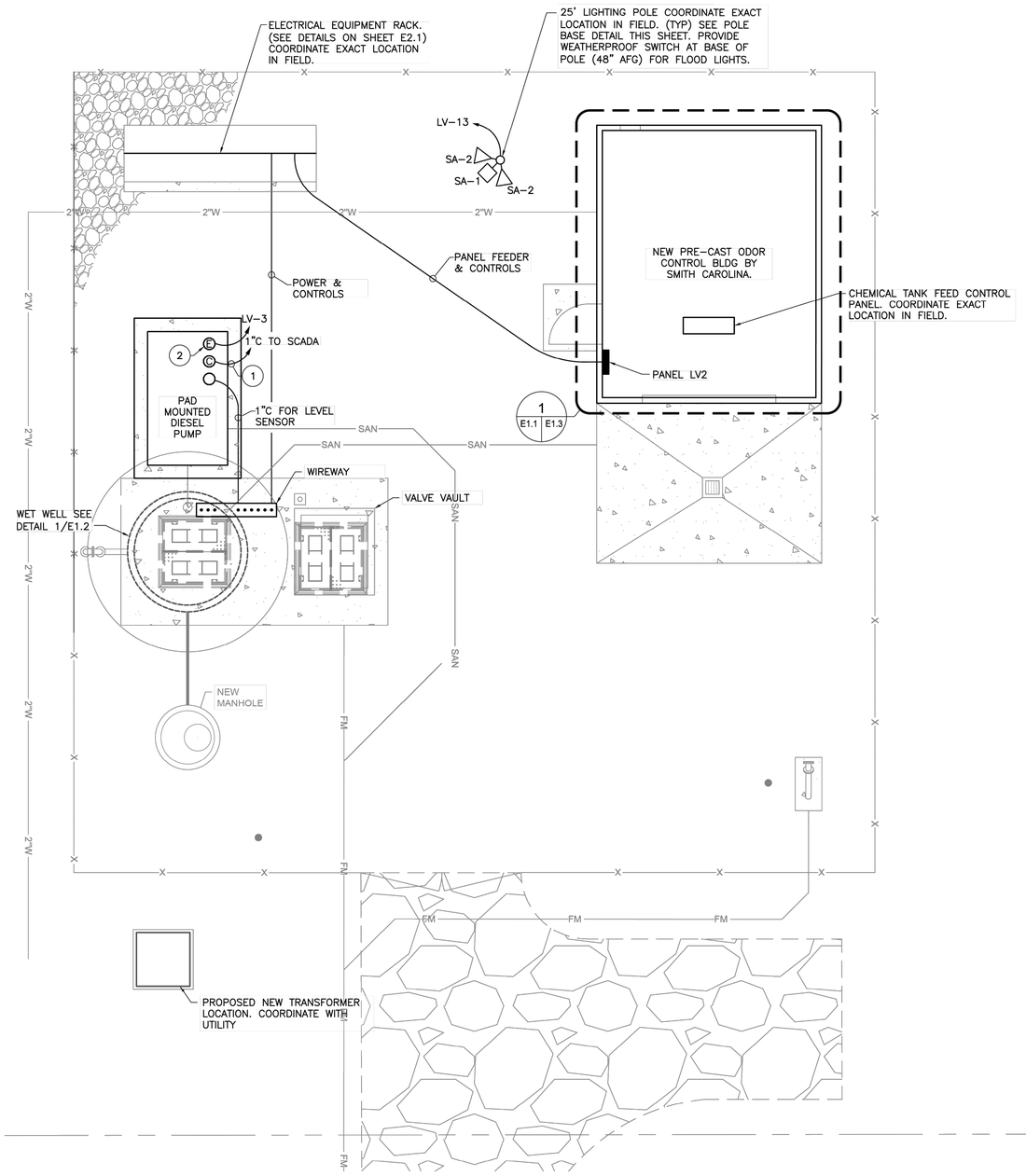
DATE

DATE 09/06/23
DRAWN BY A. KABAT
DESIGNED BY A. KABAT
CHECKED BY C. PETREE
SCALE AS SHOWN

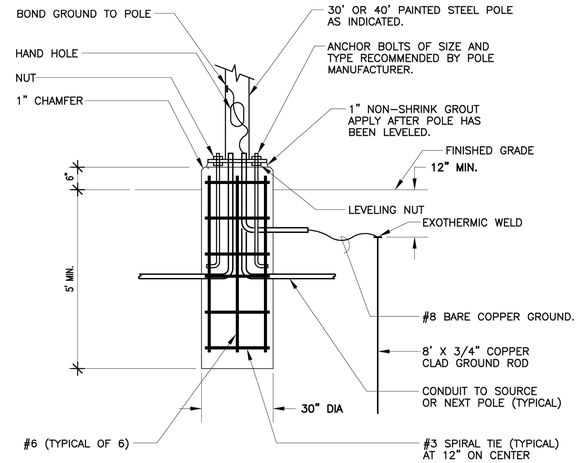
TIMMONS GROUP

ROLESVILLE CROSSING
ROLLESVILLE - WAKE COUNTY - NORTH CAROLINA
PUMP STATION DETAILS

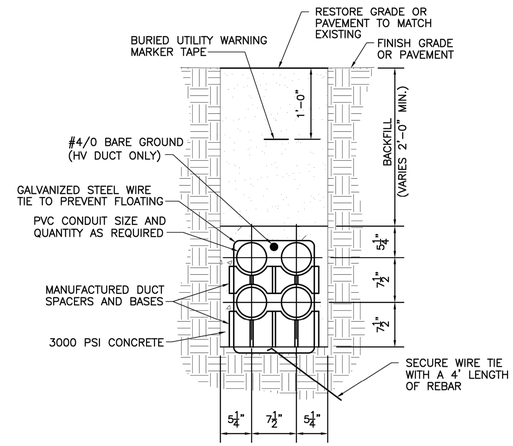
JOB NO. 43398
SHEET NO. PS-106



SITE PLAN - ELECTRICAL
SCALE: 1" = 10'-0"
1 E1.1 E1.1



POLE BASE DETAIL
NOT TO SCALE
2 E1.1 E1.1



NOTE: REPEAT CONSTRUCTION SHOWN IN THIS DETAIL ON 8'-0" CENTERS ALONG LENGTH OF DUCTBANK.

TYPICAL DUCT BANK DETAIL
NOT TO SCALE
3 E1.1 E1.1

SPECIFIC NOTES:

1. ALARM WIRING TO RTU/SCADA TO BE 8#14 & GND IN 1-1/2" CONDUIT (VERIFY EXACT QUANTITY OF CONDUCTORS WITH RTU/SCADA PROVIDER).
2. 1" CONDUIT FOR DIESEL PUMP AUXILIARY POWER WIRING (BLOCK HEATER, BATTERY CHARGER). CONNECT TO GFCI RECEPTACLE PROVIDED WITH DIESEL PUMP.

ELECTRIC LEGEND

480V,3P,60A NF, NEMA 4X	DISCONNECT	VOLTAGE, POLES, AMP RATING / FUSE SIZE, ENCLOSURE TYPE "NF" = NON FUSED
E	EQUIPMENT CONNECTION	
M	MOTOR CONNECTION	

ATTENTION CONTRACTORS

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City of Raleigh
Public Utilities Department Permit # _____

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Public
Sewer Collection / Extension System

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KNOW WHAT'S BELOW.
CALL 811 BEFORE YOU DIG.

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Consulting Engineering, PC
3212 HILL STREET, UNIT A
LYNCHBURG, VA 24501
Phone: (434) 525-7099
Fax: (757) 282-2636
Email: bjennings@jenningspe.com

ALL CONSTRUCTION TO BE IN ACCORDANCE WITH ALL TOWN OF ROLESVILLE, CITY OF RALEIGH, NCDEQ AND NCDOT STANDARDS, SPECIFICATIONS, AND DETAILS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18363 6/1/2022 WILLIAM R. JENNINGS, JR.

THIS DRAWING PREPARED AT THE **RALEIGH OFFICE**
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REVISION DESCRIPTION	DATE
REVISED PER COMMENTS	*6/1/2022*

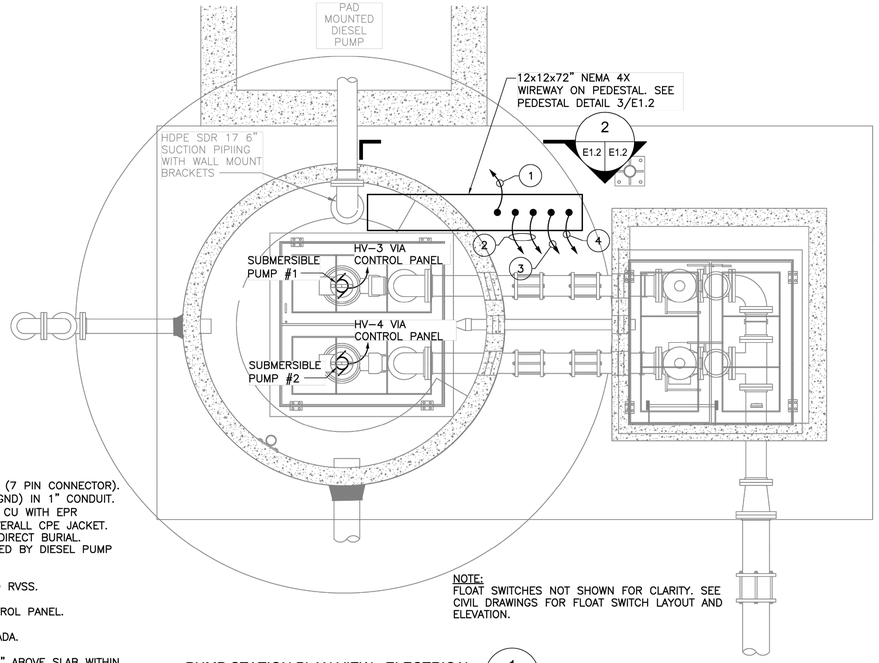
DATE *3/16/2022*
DRAWN BY *JTP*
DESIGNED BY *WRJ*
CHECKED BY *WRJ*
SCALE

TIMMONS GROUP

ROLESVILLE CROSSING
ROLESVILLE - WAKE COUNTY - NORTH CAROLINA
ELECTRICAL - SITE PLAN, NOTES & LEGEND

JOB NO. *43398*
SHEET NO. *E1.1*

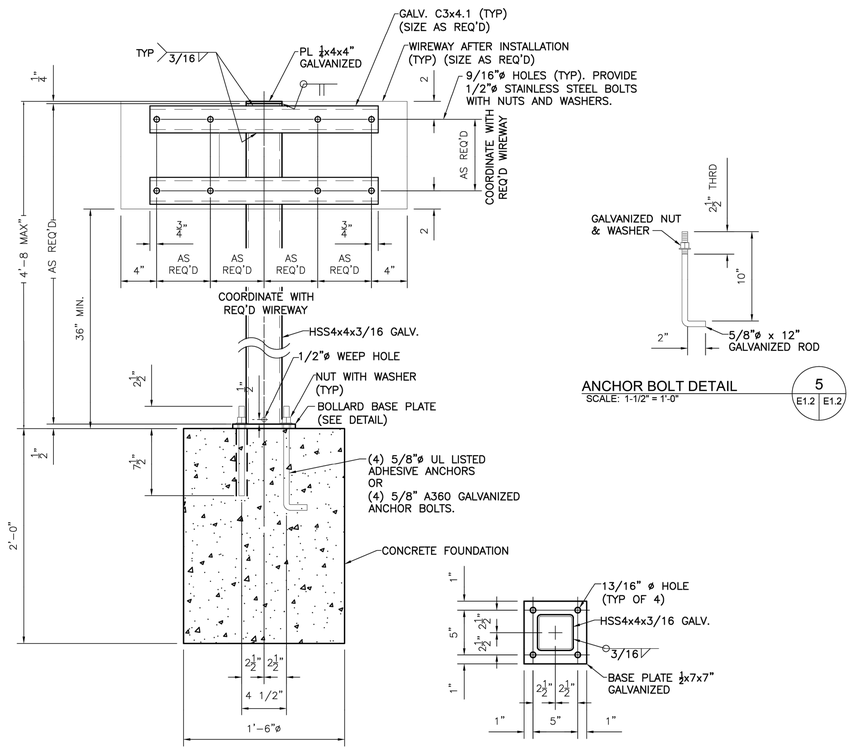
T:\JOBS\21139 - Rolesville Crossing Pump Sta - Wake Co\CAD\21139 - E1_1.dwg | Plotted on 6/1/2022 1:19 PM | by Jeff Porton



PUMP STATION PLAN VIEW - ELECTRICAL 1
SCALE: 1/2" = 1'-0" E1.1 E1.2

SPECIFIC NOTES:

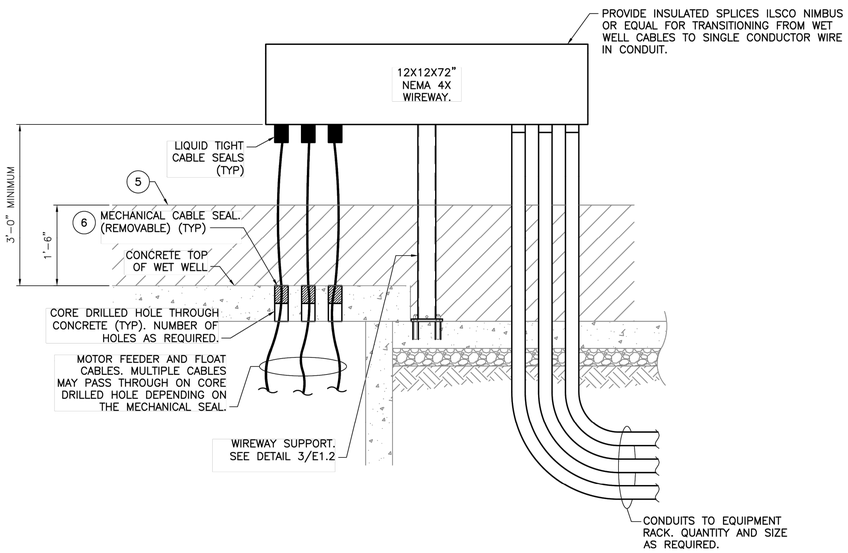
1. TO DIESEL PUMP CONTROL PANEL (7 PIN CONNECTOR). USE 7 CONDUCTOR CABLE (6 + GND) IN 1" CONDUIT. CONDUCTORS SHALL BE #14 AWG CU WITH EPR INSULATION (XHHW-2) AND AN OVERALL CPE JACKET. ASSEMBLY SHALL BE RATED FOR DIRECT BURIAL. TERMINATE IN CONNECTOR PROVIDED BY DIESEL PUMP SUPPLIER.
2. 1" CONDUIT FOR PUMP POWER TO RVSS.
3. 2" CONTROL CONDUIT PUMP CONTROL PANEL.
4. 1" CONTROL CONDUIT TO RTU/SCADA.
5. CLASS I, DIV 2 AREA EXTENDS 18" ABOVE SLAB WITHIN 3'-0" OF THE SEALED OPENINGS FOR CABLE. NOTE: IF OPENINGS ARE NOT SEALED IT IS CLASS I, DIV 1 WITHIN 3'-0" IN ALL DIRECTIONS OF OPENING AND CLASS 1, DIV 2 WITHIN 5'-0" OF OPENINGS.
6. SEAL TO BE ROXTEC RS SEAL OR EQUAL. METAL PARTS TO BE STAINLESS STEEL. ENTIRE FITTING SHALL BE "ACID PROOF".



WIREWAY BOLLARD DETAIL 3
SCALE: 1-1/2" = 1'-0" E1.2 E1.2

ANCHOR BOLT DETAIL 5
SCALE: 1-1/2" = 1'-0" E1.2 E1.2

BOLLARD BASE PLATE DETAIL 4
SCALE: 1-1/2" = 1'-0" E1.2 E1.2



PARTIAL PUMP STATION SECTION VIEW 2
SCALE: 3/4" = 1'-0" E1.2 E1.2

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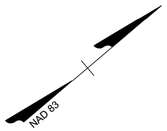
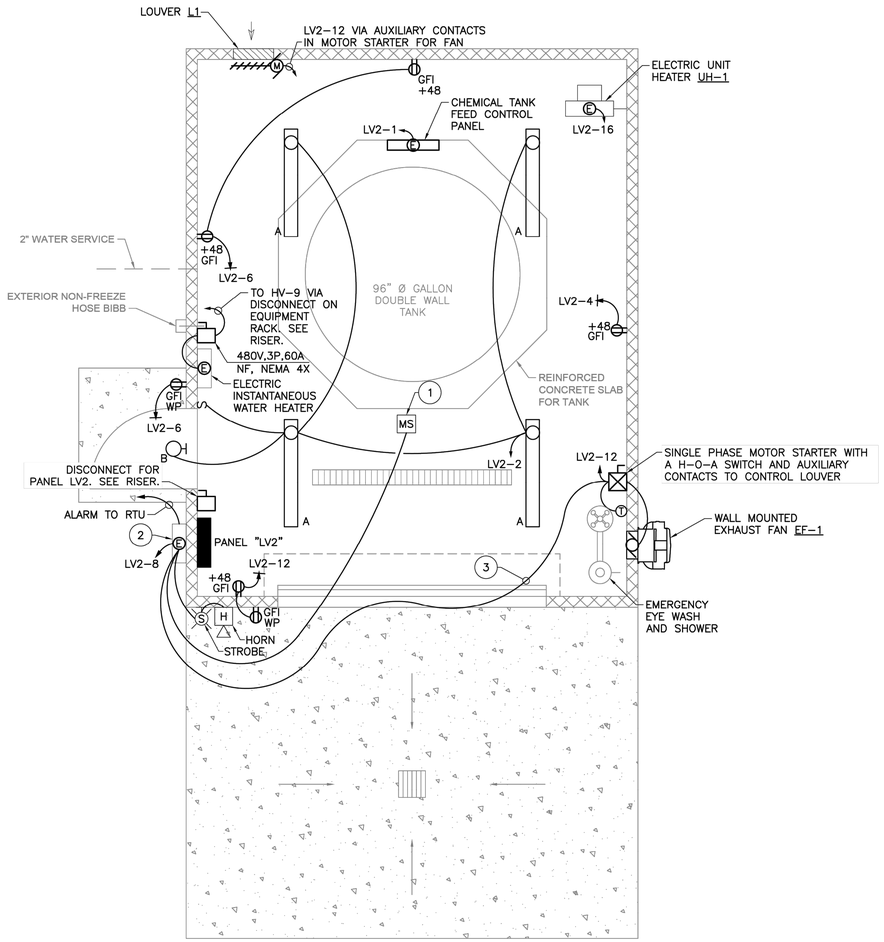
CHECKED BY *WRJ*
SCALE

TIMMONS GROUP

ROLESVILLE CROSSING
ROLESVILLE - WAKE COUNTY - NORTH CAROLINA
PUMP STATION PLAN - ELECTRICAL

JOB NO. *43398*
SHEET NO. *E1.2*





ODOR CONTROL BUIDING FLOOR PLAN - ELECTRICAL
SCALE: 3/8" = 1'-0"

1 | E1.3 | E1.3

SPECIFIC NOTES:

1. METHANE SENSOR – RKI INSTRUMENTS 65-264RK-04 M2A OR EQUAL.
2. GAS MONITOR – RKI INSTRUMENTS BEACON 110 MODEL IN NEMA 4X ENCLOSURE. SET SENSOR TO CLOSE CONTACTS AND ACTIVATE THE EXHAUST FAN @ 10% LEL (LOW EXPLOSIVE LIMIT). SECOND SET POINT SHALL BE AT 50% LEL AND THAT SHALL ACTIVATE THE HORN AND STROBE AND SEND A SIGNAL TO THE RTU.
3. FAN CONTROL WIRING CONNECTED IN PARALLEL WITH THE THERMOSTAT.

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T:\DBS\21139 - Rolesville Crossing Pump Sta - Wake Co\CAD\21139 - E1_3.dwg | Plotted on 6/1/2022 1:20 PM | by Jeff Porton

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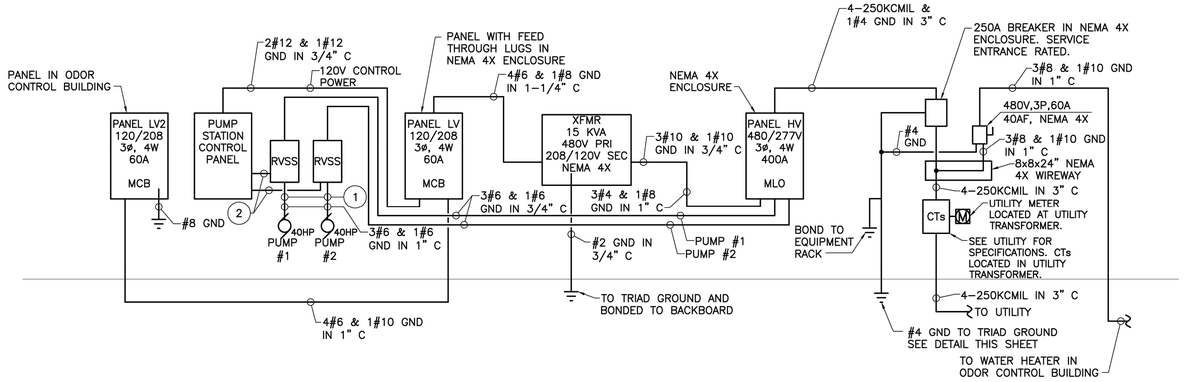
ROLESVILLE CROSSING
ROLESVILLE - WAKE COUNTY - NORTH CAROLINA
ODOR CONTROL BUILDING FLOOR PLAN - ELECTRICAL

JOB NO. *43398*
SHEET NO. *E1.3*



GENERAL NOTES:

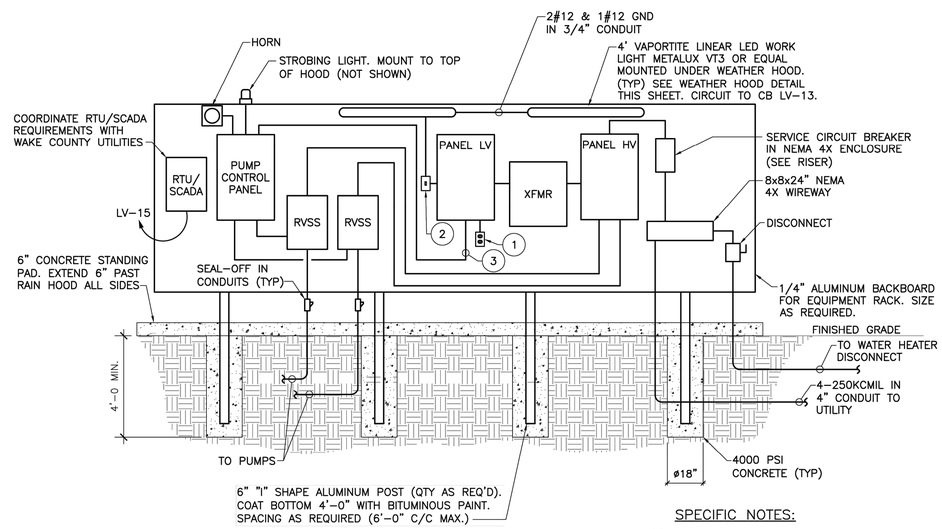
1. CONDUCTOR SIZES SHOWN ARE FOR COPPER.
2. CONDUIT SHALL BE GALVANIZED RIGID STEEL, EXCEPT BELOW GRADE.
3. BREAKERS AND EQUIPMENT CONNECTED TO THE UTILITY SHALL BE RATED FOR 50 KAIC MINIMUM.
4. GENERATOR SHALL HAVE EXTERIOR E-STOP MOUNTED NO MORE THAN 6'-0 AFF.
5. GENERATOR CONTROLLER SHALL PROVIDE OVERCURRENT PROTECTION FOR THE GENERATOR INDEPENDENT OF THE GENERATOR CIRCUIT BREAKER.
6. PROVIDE PLC BASED PUMP CONTROL PANEL IN NEMA 4X ENCLOSURE. PANEL SHALL HAVE THE FOLLOWING FUNCTIONS:
   - A. HAND-OFF-AUTO TOGGLE SWITCH FOR EACH PUMP
   - B. RED PUMP RUN PILOT LIGHT FOR EACH PUMP
   - C. ALARM TEST AND SILENCE SWITCHES
   - D. RED ALARM BEACON INCLUDED WITH NEMA 4X ENCLOSURE SEPARATELY MOUNTED ON ELECTRICAL SHELTER (SEE DETAIL).AND AUDIBLE ALARM HORN (MOUNTED REMOTELY) WITH 83 TO 85 DECIBEL RATING FOR A HIGH-WATER CONDITION AND ALARM SILENCE SWITCH.
   - E. AUXILIARY DRY CONTACT FOR THE FOLLOWING:
     - a. HIGH WATER ALARM
     - b. PUMP SEAL FAILURE
     - c. PUMP MOTOR STARTER FAULT
   - F. ALTERNATING MECHANISM
   - G. NUMBERED TERMINAL STRIP FOR CONNECTING ALARMS AND VARIABLE LEVEL FLOAT SWITCHES AND ALL OTHER EXTERNAL CONNECTIONS.
   - H. NEMA 4X, WATERTIGHT ENCLOSURES
   - I. VARIABLE LEVEL FLOAT SWITCH CONTROL OPERATION AS INDICATED.
   - J. PANEL SHALL HAVE A TOUCH SCREEN DISPLAY FOR CONTROL AND MONITORING. DISPLAY SHALL BE NEMA 4X.
   - K. PANEL SHALL BE UL LISTED AS AN ASSEMBLY PER UL 508A
7. CONTRACTOR SHALL PROVIDE A COORDINATION STUDY PREPARED BY A NORTH CAROLINA LICENSED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE SYSTEM IS IN COMPLIANCE WITH THE SELECTIVE COORDINATION REQUIREMENTS OF ARTICLE 701 OF THE NATIONAL ELECTRICAL CODE. STUDY SHALL BE SUBMITTED PRIOR TO OR IN CONJUNCTION WITH THE RELEVANT ELECTRICAL SHOP DRAWING, INCLUDING THE GENERATOR.

SPECIFIC NOTES:

(1) TO JUNCTION BOX AT WETWELL. SEE DETAIL E1.2

(2) 1" CONDUIT FOR CONTROL WIRING (RUN, STOP, RUNNING AND FAULT).

RISER DIAGRAM — NOT TO SCALE — 1 (E2.1 | E2.1)



FRONT VIEW

SPECIFIC NOTES:

(1) 20A GFCI RECEPTACLE WITH "IN-USE" TYPE WEATHERPROOF COVER. CIRCUIT TO CB LV-7.

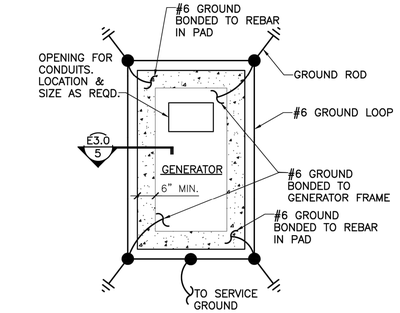
(2) WEATHER-PROOF SWITCH.

(3) 120V PUMP CONTROL CIRCUIT TO CB LV-5.

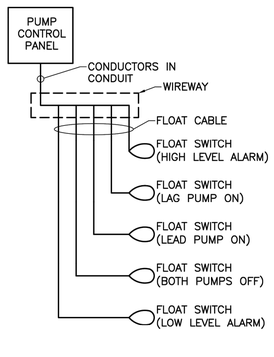
NOTES:

1. REFERENCE RISER DIAGRAM FOR CONDUIT AND WIRE SIZES.
2. CONDUITS SHOWN DIAGRAMMATICALLY. SEE CIVIL DRAWINGS FOR LAYOUT.
3. BACKING PLATE TO BE 1/4" ALUMINUM. MOUNT TO I-SHAPE POSTS WITH STAINLESS STEEL NUT, BOLTS, WASHERS.
4. ALL ELECTRICAL WORK SHALL CONFORM TO LATEST NATIONAL, STATE AND LOCAL CODES AND REQUIREMENTS.
5. SHOW CONDUIT SIZE AND RUNS WITH WIRE SIZE AND NUMBER ON PUMP STATION PLANS.
6. PANEL LAYOUT IS SCHEMATIC ONLY. ADJUST AS NEEDED TO ACCOMMODATE EQUIPMENT. MAINTAIN 4" MIN. CLEARANCE BETWEEN PANELS AND SIDE SHIELDS.
7. ALL ENCLOSURES SHALL BE NEMA 4X RATED AND LOCKABLE.
8. ALL ENCLOSURES SHALL ME MOUNTED TO ALUMINUM BACKING PLATE WITH NYLON SPACERS AND STAINLESS STEEL NUTS, BOLTS AND WASHERS.
9. CONDUIT SHALL BE RIGID ALUMINUM OR GALVANIZED. MEYERS HUBS SHALL BE USED AT ALL PANEL CONNECTIONS.
10. NO EQUIPMENT SHALL BE MOUNTED LESS THAN 36" ABOVE FINISHED GRADE. MINIMUM CLEARANCE FROM WORK LIGHT TO STANDING PAD SHALL BE 6'-6".
11. SEE DETAIL 8/E2.1 FOR WEATHER HOOD DETAILS.

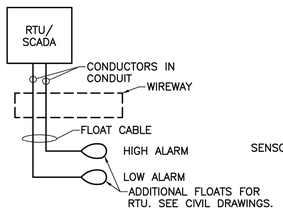
EQUIPMENT LAYOUT DETAIL — NOT TO SCALE — 3 (E2.1 | E2.1)

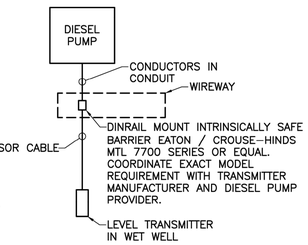


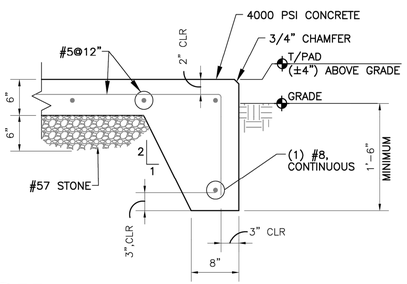
GENERATOR PAD DETAIL — NOT TO SCALE — 4 (E2.1 | E2.1)



PUMP CONTROL SCHEME — NOT TO SCALE — 2 (E2.1 | E2.1)

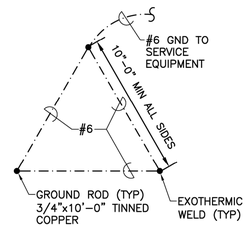




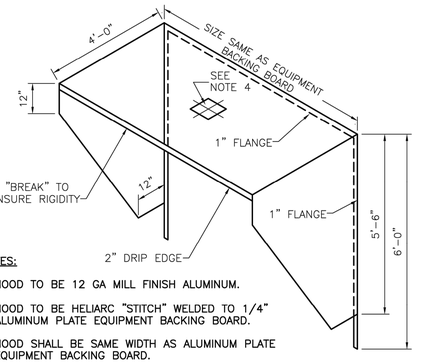


GENERATOR PAD SECTION — NOT TO SCALE — 5 (E2.1 | E2.1)

KNOW WHAT'S BELOW. CALL 811 BEFORE YOU DIG.



TRIAD GROUND DETAIL — NOT TO SCALE — 4 (E2.1 | E2.1)



NOTES:

1. HOOD TO BE 12 GA MILL FINISH ALUMINUM.
2. HOOD TO BE HELIARC "STITCH" WELDED TO 1/4" ALUMINUM PLATE EQUIPMENT BACKING BOARD.
3. HOOD SHALL BE SAME WIDTH AS ALUMINUM PLATE EQUIPMENT BACKING BOARD.
4. PROVIDE MOUNTING TABS FOR WORK LIGHT.

WEATHER HOOD DETAIL — NOT TO SCALE — 7 (E2.1 | E2.1)

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18363 6/1/2022 WILLIAM R. JENNINGS, JR.

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DATE: 3/16/2022
DRAWN BY: JTP
DESIGNED BY: WRJ
CHECKED BY: WRJ
SCALE:

TIMMONS GROUP

ROLESVILLE CROSSING
ROLESVILLE - WAKE COUNTY - NORTH CAROLINA
RISER AND DETAILS

JOB NO. 43398
SHEET NO. E2.1

T:\JOBS\21339 - Rolesville Crossing Pump Sta - Wake Co\CAD\21339 - E2_1.dwg | Plotted on 6/1/2022 1:20 PM | by Jeff Ponton

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER	CATALOG NUMBER	VOLTS	VOLT- AMPS		FIXT EFF	LAMPS		DESCRIPTION	REMARKS
							QTY	TYPE		
A	METALUX	4VT2-LD4-4-DR-UNV-L840-CD-1 WL	120/277	38			N/A	LED	4' SURFACE MOUNTED, SEALED AND GASKETED FIXTURE SUITABLE FOR WET LOCATIONS. 4000 LUMEN OUTPUT.	PROVIDE WITH STAINLESS STEEL MOUNTING BRACKETS CAT#VT2-SS-MBK, AS REQUIRED.
B	SPAULDING LIGHTING	LCC-12LU-2-PC1	120/277	12.8			N/A	LED	WALL MOUNTED FULL CUT-OFF EXTERIOR LED FIXTURE WITH 820 NOMINAL LLUMENS. FIXTURE IS CONTROLLED BY INTEGRAL PHOTO-EYE.	
SA-1	LITHONIA	RSX1-LED-P1-30K-R3-MVOLT-SPA-DDXBD	MVOLT	51.4			N/A	LED	RSX AREA FIXTURE SIZE 1 P1. LUMEN PACKAGE 3000CCT. TYPE R3 DISTRIBUTION.	PROVIDE 25' SQUARE PAINTED STEEL POLE WITH 3 LIGHT BULLHORN @ 180 DEGREES. SA-1 FIXTURE IN THE CENTER AND SA-2 FIXTURES ON THE OUTSIDE.
SA-2	LITHONIA	TXF2 LED 40K MVolt IS DDBXD	MVOLT	94			N/A	LED	FLOOD LIGHT WITH 13,200 LUMEN OUTPUT	MOUNT ON SAME POLE AS SA-1 FIXTURE. AIM AS DIRECTED BY THE OWNER. PROVIDE SWITCH FOR FLOODS ONLY AT BASE OF POLE

PANEL HV SCHEDULE

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

PHASE TO PHASE VOLTS: 480
PHASE TO NEUT. VOLTS: 277

MAIN LUGS: 225A
MINIMUM SHORT CIRCUIT RATING: 50K 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	NO. & WIRE SIZE NEUT.	NO. & WIRE SIZE GND	COND. SIZE
	1				52.0								
3	3	PUMP #1 VIA CONTROL PANEL*	M	43.2		52.0		3	70	3#8		#8	3/4"
	5						52.0						
	7				34.6								
9	9	INSTANTANEOUS WATER HEATER	E	28.8		34.6		3	45	3#10	#10	#10	3/4"
	11						34.6						
13	13	SPACE											
15	15	SPACE											
17	17	SPACE											
19	19	SPACE											
21	21	SPACE											
23	23	SPACE											
25	25	SPACE											
27	27	SPACE											
29	29	SPACE											
31	31	SPACE											
33	33	SPACE											
35	35	SPACE											
37	37	SPACE											
39	39	SPACE											
41	41	SPACE											
	2				52.0								
4	4	PUMP #2 VIA CONTROL PANEL	M	43.2		52.0		3	70	3#8		#8	3/4"
	6						52.0						
	8				5.2								
10	10	PSL VIA 30 KVA XFMR		4.29		5.2		3	50	SEE RISER DIAGRAM			
	12						5.2						
14	14	SPACE											
16	16	SPACE											
18	18	SPACE											
20	20	SPACE											
22	22	SPACE											
24	24	SPACE											
26	26	SPACE											
28	28	SPACE											
30	30	SPACE											
32	32	SPACE											
34	34	SPACE											
36	36	SPACE											
38	38	SPACE											
40	40	SPACE											
42	42	SPACE											

CONNECTED LOADS		DEMAND FACTOR	
RECEPTACLE	0.41	FIRST 10 KVA @ 100%, REMAINDER@50%	0.41
LIGHTING	1.44	100%	1.44
MECHANICAL	48.3	100%	48.32
EQUIPMENT	31.9	100%	31.86
KITCHEN		100% USE TABLE 220.55 OR .6	
TOTAL KVA CONNECTED	82.0	TOTAL KVA DEMAND	82.03

FEEDER DEMAND AMPS	98.7	AMPS
FEEDER SIZE AT 80%	123.4	AMPS
25% SPARE CAPACITY	154.3	AMPS

PANEL LV SCHEDULE

PANELBOARD CHARACTERISTICS:
VOLTS: 120/208
PHASES: 3
WIRES: 4
SOLID NEUTRAL, GROUND BAR, FEED THROUGH LUGS

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

MAIN LUGS: 100A
MINIMUM SHORT CIRCUIT RATING: 10K 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	NO. & WIRE SIZE NEUT.	NO. & WIRE SIZE GND	COND. SIZE
1	1	SPACE											
3	3	BATT CHGR / BLK HTR FOR DIESEL PUMP	E	0.1		0.8		1	20	1#12	#12	#12	3/4"
5	5	CONTROL PANEL	E	0.1			0.8	1	20	1#12	#12	#12	3/4"
7	7	RECEPTACLE	R	0.18	1.5			1	20	1#12	#12	#12	3/4"
9	9	MAG-METER	E	0.1		0.8		1	15	1#12	#12	#12	3/4"
11	11	RECEPTACLE	R	0.18			1.5	1	20	1#12	#12	#12	3/4"
13	13	LIGHTS	L	0.24	2.0			1	20	1#12	#12	#12	3/4"
15	15	RTU	E	0.1		0.8		1	20	1#12	#12	#12	3/4"
17	17	SPACE											
19	19	SPACE											
21	21	SPACE											
23	23	SPACE											
2	2	SPACE											
4	4	SPACE											
6	6	SPACE											
8	8	SPACE											
10	10	SPACE											
12	12	SPACE											
14	14	SPACE											
16	16	SPACE											
18	18	SPACE											
20	20	SPACE											
22	22	SPACE											
24	24	SPACE											
		TOTALS		1	3.5	2.5	2.3						

PANEL LV2 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 CIRCUIT BREAKER: 100A
MINIMUM SHORT CIRCUIT RATING: 10K 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	NO. & WIRE SIZE NEUT.	NO. & WIRE SIZE GND	COND. SIZE
1	1	ODOR CONTROL CONTROL PANEL	E	2.56	21.3			1	30	1#10	#10	#10	3/4"
3	3	SPACE											
5	5	SPACE											
7	7	SPACE											
9	9	SPACE											
11	11	SPACE											
13	13	SPACE											
15	15	SPACE											
17	17	SPACE											
19	19	SPACE											
21	21	SPACE											
23	23	SPACE											
2	2	LIGHTING	L	0.17	1.4			1	20	1#12	#12	#12	3/4"
4	4	RECEPTACLES	R	0.54		4.5		1	20	1#12	#12	#12	3/4"
6	6	RECEPTACLES	R	0.54			4.5	1	20	1#12	#12	#12	3/4"
8	8	GAS MONITOR	E	0.1	0.8			1	20	1#12	#12	#12	3/4"
10	10	SPACE											
12	12	EXHAUST FAN EF-1	M	0.12			1.0	1	20	1#12	#12	#12	3/4"
	14				13.9								
16	16	UNIT HEATER UH-1	M	5		13.9		3	20	3#12	#12	#12	3/4"
	18						13.9						
20	20	SPACE											
22	22	SPACE											
24	24	SPACE											
		TOTALS		9.03	37.5	18.4	19.4						

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

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Public
Water Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____

Public
Sewer Collection / Extension System

The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____

KNOW WHAT'S BELOW.
CALL 811 BEFORE YOU DIG.

William R Jennings, Jr.
Consulting Engineering, PC
3212 HILL STREET, UNIT A
LYNCHBURG, VA 24501
Phone: (434) 525-7099
Fax: (757) 282-2636
Email: bjennings@jenningspe.com

ALL CONSTRUCTION TO BE IN ACCORDANCE WITH ALL TOWN OF ROLESVILLE, CITY OF RALEIGH, NCDEQ AND NCDOT STANDARDS, SPECIFICATIONS, AND DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 18363 6/1/2022 ENGINEER WILLIAM R. JENNINGS, JR.

THIS DRAWING PREPARED AT THE **RALEIGH OFFICE**
5410 Trinity Road, Suite 112 | Raleigh, NC 27607
TEL 919.866.4951 FAX 919.833.8124 www.timmons.com

YOUR VISION ACHIEVED THROUGH OURS.

REVISION DESCRIPTION
REVISED PER COMMENTS

DATE
6/1/2022

DATE
3/16/2022

DRAWN BY
JTP

DESIGNED BY
WRJ

CHECKED BY
WRJ

SCALE

TIMMONS GROUP

ROLESVILLE CROSSING
ROLESVILLE - WAKE COUNTY - NORTH CAROLINA
SCHEDULES

JOB NO.
43398

SHEET NO.
E3.1

T:\DBS\21139 - Rolesville Crossing Pump Sta - Wake Co\CAD\21139 - E3_1.dwg | Plotted on 6/1/2022 1:20 PM | by Jeff Porton

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for conductors and cables, including detailed information on materials, construction, ratings, listings, and available sizes, configurations, and stranding.

PART 2 PRODUCTS

2.01 CONDUCTOR AND CABLE APPLICATIONS

A. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.

B. Nonmetallic-sheathed cable is not permitted.

C. Underground feeder and branch-circuit cable is not permitted.

D. Service entrance cable is not permitted.

E. Armored cable is not permitted.

F. Metal-clad cable is not permitted.

G. Manufactured wiring systems are not permitted.

2.02 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

A. Provide products listed, classified, and labeled as suitable for the purpose intended.

B. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.

C. Comply with NEMA WC 70.

D. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.

E. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.

F. Conductors for Grounding and Bonding: Also comply with Section 26 0526.

G. Conductor Material:

1. Provide copper conductors only. Aluminum conductors are not acceptable for this project. Conductor sizes indicated are based on copper.

2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.

3. Tinned Copper Conductors: Comply with ASTM B33.

H. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

I. Conductor Color Coding:

1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.

2. Color Coding Method: Integrally colored insulation.

a. Conductors size 4 AWG and larger may have black insulation color coded using vinyl color coding electrical tape.

3. Color Code:

a. 480Y/277 V, 3 Phase, 4 Wire System:

1) Phase A: Brown.

2) Phase B: Orange.

3) Phase C: Yellow.

4) Neutral/Grounded: Gray.

b. 208Y/120 V, 3 Phase, 4 Wire System:

1) Phase A: Black.

2) Phase B: Red.

3) Phase C: Blue.

4) Neutral/Grounded: White.

c. Equipment Ground, All Systems: Green.

d. For control circuits, comply with manufacturer's recommended color code.

2.03 SINGLE CONDUCTOR BUILDING WIRE

A. Description: Single conductor insulated wire.

B. Conductor Stranding:

1. Feeders and Branch Circuits:

a. Size 10 AWG and Smaller: Solid.

b. Size 8 AWG and Larger: Stranded.

2. Control Circuits: Stranded.

C. Insulation Voltage Rating: 600 V.

D. Insulation:

1. Copper Building Wire: Type XHHW-2.

2.04 WIRING CONNECTORS

A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.

B. Connectors for Grounding and Bonding: Comply with Section 26 0526.

C. Wiring Connectors for Splices and Taps:

1. Copper Conductors Size 8 AWG and Smaller: Use twist-on insulated spring connectors.

2. Copper Conductors Size 6 AWG and Larger: Use mechanical connectors or compression connectors.

D. Wiring Connectors for Terminations:

1. Provide terminal lugs for connecting conductors to equipment furnished with terminations designed for terminal lugs.

2. Where over-sized conductors are larger than the equipment terminations can accommodate, provide connectors suitable for reducing to appropriate size, but not less than required for the rating of the overcurrent protective device.

3. Copper Conductors Size 8 AWG and Larger: Use mechanical connectors or compression connectors where connectors are required.

4. Stranded Conductors Size 10 AWG and Smaller: Use crimped terminals for connections to terminal screws.

5. Conductors for Control Circuits: Use crimped terminals for all connections.

E. Do not use insulation-piercing or insulation-displacement connectors designed for use with conductors without stripping insulation.

F. Do not use push-in wire connectors as a substitute for twist-on insulated spring connectors.

G. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees F for standard applications and 302 degrees F for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.

H. Mechanical Connectors: Provide bolted type or set-screw type.

I. Compression Connectors: Provide circumferential type or hex type crimp configuration.

J. Crimped Terminals: Nylon-insulated, with insulation grip and terminal configuration suitable for connection to be made.

2.05 ACCESSORIES

A. Electrical Tape:

1. Vinyl Color Coding Electrical Tape: Integrally colored to match color code indicated; listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; suitable for continuous temperature environment up to 221 degrees F.

2. Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; conformable for application down to 0 degrees F and suitable for continuous temperature environment up to 221 degrees F.

3. Rubber Splicing Electrical Tape: Ethylene Propylene Rubber (EPR) tape, complying with ASTM D4388; minimum thickness of 30 mil; suitable for continuous temperature environment up to 194 degrees F and short-term 266 degrees F overload service.

4. Electrical Filler Tape: Rubber-based insulating moldable putty, minimum thickness of 125 mil; suitable for continuous temperature environment up to 176 degrees F.

B. Heat Shrink Tubing: Heavy-wall, split-resistant, with factory-applied adhesive; rated 600 V; suitable for direct burial applications; listed as complying with UL 486D.

C. Wire Pulling Lubricant:

1. Listed and labeled as complying with UL 267.

2. Suitable for use with conductors/cables and associated insulation/jackets to be installed.

3. Suitable for use at installation temperature.

D. Cable Ties: Material and tensile strength rating suitable for application.

PART 3 EXECUTION

3.01 INSTALLATION

A. Circuiting Requirements:

1. Include circuit lengths required to install connected devices within 10 ft of location indicated.

2. Common Neutrals: Unless otherwise indicated, sharing of neutral/grounded conductors among up to three single phase branch circuits of different phases installed in the same raceway is not permitted. Provide dedicated neutral/grounded conductor for each individual branch circuit.

B. Install products in accordance with manufacturer's instructions.

C. Perform work in accordance with NECA 1 (general workmanship).

D. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.

E. Install conductors with a minimum of 18 inches of slack at each outlet.

F. Make wiring connections using specified wiring connectors.

G. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

END OF SECTION 26 0519

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for grounding and bonding system components.

PART 2 PRODUCTS

2.01 GROUNDING AND BONDING REQUIREMENTS

A. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.

B. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

C. Grounding Electrode System:

1. Provide connection to required and supplemental grounding electrodes indicated to form grounding electrode system.

a. Provide continuous grounding electrode conductors without splice or joint.

b. Install grounding electrode conductors in raceway where exposed to physical damage. Bond grounding electrode conductor to metallic raceways at each end with bonding jumper.

2. Metal In-Ground Support Structure:

a. Provide connection to metal in-ground support structure that is in direct contact with earth in accordance with NFPA 70.

3. Ground Rod Electrode(s):

a. Provide three electrodes in an equilateral triangle configuration unless otherwise indicated or required.

b. Space electrodes not less than 10 feet from each other and any other ground electrode.

c. Where location is not indicated, locate electrode(s) at least 5 feet outside building perimeter foundation as near as possible to electrical service entrance; where possible, locate in softscape (uncovered) area.

D. Bonding and Equipment Grounding:

1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.

2. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.

3. Provide bonding for interior metal piping systems in accordance with NFPA 70. This includes, but is not limited to:

a. Metal water piping where not already effectively bonded to metal underground water pipe used as grounding electrode.

b. Metal process piping.

2.02 GROUNDING AND BONDING COMPONENTS

A. General Requirements:

1. Provide products listed, classified, and labeled as suitable for the purpose intended.

2. Provide products listed and labeled as complying with UL 467 where applicable.

B. Conductors for Grounding and Bonding, in Addition to Requirements of Section 26 0526:

1. Use insulated copper conductors unless otherwise indicated.

a. Exceptions:

1) Use bare copper conductors where installed underground in direct contact with earth.

2) Use bare copper conductors where directly encased in concrete (not in raceway).

C. Connectors for Grounding and Bonding:

1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.

2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.

3. Unless otherwise indicated, use compression connectors or exothermic welded connections for accessible connections.

a. Exceptions:

1) Use exothermic welded connections for Metallic abover ground structures.

D. Ground Rod Electrodes:

1. Comply with NEMA GR 1.

2. Material: Copper-bonded (copper-clad) steel.

3. Size: 3/4 inch diameter by 10 feet length, unless otherwise indicated.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Perform work in accordance with NECA 1 (general workmanship).

C. Ground Rod Electrodes: Unless otherwise indicated, install ground rod electrodes vertically. Where encountered rock prohibits vertical installation, install at 45 degree angle or bury horizontally in trench at least 30 inches (750 mm) deep in accordance with NFPA 70.

1. Outdoor Installations: Unless otherwise indicated, install with top of rod 12 inches below finished grade.

END OF SECTION 26 0526

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for channel/strut framing systems, nonpenetrating rooftop supports, and post-installed concrete/masonry anchors.

1.02 QUALITY ASSURANCE

PART 2 PRODUCTS

2.01 SUPPORT AND ATTACHMENT COMPONENTS

A. General Requirements:

1. Comply with the following. Where requirements differ, comply with most stringent.

a. NFPA 70.

b. Requirements of authorities having jurisdiction.

2. Do not use products for applications other than as permitted by NFPA 70 and product listing.

3. Do not use wire, chain, perforated pipe strap, or wood for permanent supports unless specifically indicated or permitted.

4. Steel Components: Use corrosion-resistant materials suitable for environment where installed.

a. Indoor Dry Locations: Use Galvanized Steel unless otherwise indicated.

b. Outdoor and Damp or Wet Indoor Locations: Use fiberglass, galvanized steel or stainless steel unless otherwise indicated. All treatment areas shall be considered wet locations.

c. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.

B. Conduit and Cable Supports: Straps and clamps suitable for conduit or cable to be supported.

1. Conduit Straps: One-hole or two-hole type; malleable iron for indoor dry locations. Stainless steel for outdoor, damp or wet locations. This includes all treament buildings and structures.

2. Conduit Clamps: Bolted type unless otherwise indicated.

C. Outlet Box Supports: Hangers and brackets suitable for boxes to be supported.

D. Metal Channel/Strut Framing Systems:

1. Description: Factory-fabricated, continuous-slot, metal channel/strut and associated fittings, accessories, and hardware required for field assembly of supports.

2. Comply with MFMA-4.

3. Channel/Strut Used as Raceway, Where Indicated: Listed and labeled as complying with UL 5B.

4. Channel Material:

a. Indoor Dry Locations: Use galvanized steel.

b. Outdoor and Damp or Wet Indoor Locations: Use fiberglass or stainless steel. All fittings and hardware for stainless steel channel shall be stainless steel. All fitting and hardware for fiberglass channel shall be Glass Reinforced Polyurethane, except that components that must be metal (springs) shall be stainless steel.

5. Minimum Channel Thickness: Steel sheet, 12 gauge, 0.1046 inch.

6. Minimum Channel Dimensions: 1-5/8 inch wide by 13/16 inch high.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install hangers and supports in accordance with NECA 1.

C. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.

D. Unless specifically indicated or approved by Engineer, do not provide support from suspended ceiling support system or ceiling grid.

E. Unless specifically indicated or approved by Engineer, do not provide support from roof deck.

F. Do not penetrate or otherwise notch or cut structural members without approval of Engineer.

G. Equipment Support and Attachment:

1. Use metal, fabricated supports or supports assembled from metal channel/strut to support equipment as required.

SPECIFICATIONS CONTINUED
ON NEXT SHEET

ATTENTION CONTRACTORS

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Water Distribution / Extension System

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City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____

Public
Sewer Collection / Extension System

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City of Raleigh
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Authorization to Construct _____

Date _____

William R Jennings, Jr.
Consulting Engineering, PC
3212 HILL STREET, UNIT A
LYNCHBURG, VA 24501
Phone: (434) 525-7099
Fax: (757) 282-2636
Email: bjennings@jenningspe.com

ALL CONSTRUCTION TO BE IN ACCORDANCE WITH ALL TOWN OF ROLESVILLE, CITY OF RALEIGH, NCDEQ AND NCDOT STANDARDS, SPECIFICATIONS, AND DETAILS

KNOW WHAT'S BELOW.
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YOUR VISION ACHIEVED THROUGH OURS.

REVISION DESCRIPTION	DATE
REVISED PER COMMENTS	*6/17/2022*

DATE
3/16/2022

DRAWN BY
JTP

DESIGNED BY
WRJ

CHECKED BY
WRJ

SCALE

TIMMONS GROUP

ROLESVILLE CROSSING
ROLESVILLE - WAKE COUNTY - NORTH CAROLINA
SPECIFICATIONS

JOB NO.
43398

SHEET NO.
E4.1

2. Use metal channel/strut secured to studs to support equipment surface mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.

3. Use metal channel/strut to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.

4. Unless otherwise indicated, mount floor-mounted equipment on properly sized concrete pad 3 inches in height; see Section 03 3000.

5. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.

H. Identify independent electrical component support wires above accessible ceilings, where permitted, with color distinguishable from ceiling support wires in accordance with NFPA 70.

END OF SECTION 26 0529

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for conduits and fittings.

B. Shop Drawings:

1. Include proposed locations of roof penetrations and proposed methods for sealing.

C. Project Record Documents: Record actual routing for conduits installed underground and conduits 2 inch (53 mm) trade size and larger.

1.02 QUALITY ASSURANCE

PART 2 PRODUCTS

2.01 CONDUIT APPLICATIONS

A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70, manufacturer's instructions, and product listing.

B. Unless otherwise indicated and where not otherwise restricted, use conduit types indicated for specified applications. Where more than one listed application applies, comply with most restrictive requirements. Where conduit type for particular application is not specified, use galvanized steel rigid metal conduit.

C. Underground:

1. Under Slab on Grade: Use galvanized steel rigid metal conduit.

2. Exterior, Direct-Buried: Use galvanized steel rigid metal conduit.

3. Exterior Concrete Encased Duct Bank: Use rigid PVC conduit.

4. Where rigid polyvinyl chloride (PVC) conduit is provided, transition to galvanized steel rigid metal conduit (RMC) where emerging from underground.

D. Embedded Within Concrete:

1. Within Slab on Grade: Not permitted.

2. Within Slab Above Ground: Not permitted.

E. Exposed, Exterior: Use galvanized steel rigid metal conduit.

F. Connections to Luminaires: Use liquidtight flexible metal conduit.

1. Maximum Length: 6 feet.

G. Flexible Connections to Vibrating Equipment:

1. Dry Locations: Use Liquidtight Flexible Metal Conduit (LFMC).

2. Damp, Wet, or Corrosive Locations: Use liquidtight flexible metal conduit (LFMC).

3. Maximum Length: 6 feet unless otherwise indicated.

4. Vibrating equipment includes, but is not limited to:

a. Transformers.

b. Motors.

2.02 CONDUIT - GENERAL REQUIREMENTS

A. Fittings for Grounding and Bonding: See Section 26 0526 for additional requirements.

B. Provide conduit, fittings, supports, and accessories required for complete raceway system.

C. Provide products listed, classified, and labeled as suitable for purpose intended.

D. Minimum Conduit Size, Unless Otherwise Indicated:

E. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.03 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

A. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.

B. Fittings:

1. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 6.

2. Material: Use steel or malleable iron.

a. Do not use die cast zinc fittings.

3. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

2.04 GALVANIZED STEEL INTERMEDIATE METAL CONDUIT (IMC)

A. Description: NFPA 70, Type IMC galvanized steel intermediate metal conduit complying with ANSI C80.6 and listed and labeled as complying with UL 1242.

B. Fittings:

1. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 1242.

2. Material: Use steel or malleable iron.

a. Do not use die cast zinc fittings.

3. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

2.05 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

A. Description: NFPA 70, Type LFMC polyvinyl chloride (PVC) jacketed steel flexible metal conduit listed and labeled as complying with UL 360.

B. Fittings:

1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.

2. Material: Use steel or malleable iron.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install conduit in accordance with NECA 1.

C. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.

D. Install intermediate metal conduit (IMC) in accordance with NECA 101.

E. Conduit Support:

1. Secure and support conduits in accordance with NFPA 70 using suitable supports and methods approved by authorities having jurisdiction; see Section 26 0529.

2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.

3. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conduits to lay on ceiling tiles.

4. Use conduit strap to support single surface-mounted conduit.

a. Use clamp back spacer with conduit strap for damp and wet locations to provide space between conduit and mounting surface.

5. Use metal channel/strut with accessory conduit clamps to support multiple parallel surface-mounted conduits.

6. Use conduit clamp to support single conduit from beam clamp or threaded rod.

7. Use trapeze hangers assembled from threaded rods and metal channel/strut with accessory conduit clamps to support multiple parallel suspended conduits.

F. Connections and Terminations:

1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.

2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.

3. Provide drip loops for liquidtight flexible conduit connections to prevent drainage of liquid into connectors.

4. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.

5. Provide insulating bushings, insulated throats, or listed metal fittings with smooth, rounded edges at conduit terminations to protect conductors.

G. Penetrations:

1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.

2. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.

3. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.

4. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty.

H. Underground Installation:

1. Minimum Cover, Unless Otherwise Indicated or Required:

a. Underground, Exterior: 18 inches.

I. Embedment Within Structural Concrete Slabs (only where approved by Structural Engineer):

J. Concrete Encasement: Where conduits not otherwise embedded within concrete are indicated to be concrete-encased, provide concrete in accordance with Section 03 3000 with minimum concrete cover of 3 inches on all sides unless otherwise indicated.

K. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:

1. Where conduits cross structural joints intended for expansion, contraction, or deflection.

2. Where conduits are subject to earth movement by settlement or frost.

L. Conduit Sealing:

1. Use foam conduit sealant to prevent entry of moisture and gases. This includes, but is not limited to:

a. Where conduits enter building from outside.

b. Where conduits enter building from underground.

c. Where conduits may transport moisture to contact live parts.

2. Where conduits cross barriers between areas of potential substantial temperature differential, use foam conduit sealant at accessible point near penetration to prevent condensation. This includes, but is not limited to:

a. Where conduits pass from outdoors into conditioned interior spaces.

b. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.

END OF SECTION 26 0533.13

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for panelboards, enclosures, overcurrent protective devices, and other installed components and accessories.

1. Include characteristic trip curves for each type and rating of overcurrent protective device.

B. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, overcurrent protective device arrangement and sizes, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.

1. Include dimensioned plan and elevation views of panelboards and adjacent equipment with all required clearances indicated.

2. Clearly indicate whether proposed short circuit current ratings are fully rated or, where acceptable, series rated systems.

3. Include documentation of listed series ratings.

C. Source Quality Control Test Reports: Include reports for tests designated in NEMA PB 1 as routine tests.

D. Project Record Documents: Record actual installed locations of panelboards and actual installed circuiting arrangements.

1.02 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

PART 2 PRODUCTS

2.01 PANELBOARDS - GENERAL REQUIREMENTS

A. Provide products listed, classified, and labeled as suitable for the purpose intended.

B. Short Circuit Current Rating:

1. Provide panelboards with listed short circuit current rating not less than the available fault current at the installed location as determined by short circuit study performed in accordance with Section 26 0573.

2. Listed series ratings are not acceptable.

C. Panelboards Used for Service Entrance: Listed and labeled as suitable for use as service equipment according to UL 869A.

D. Mains: Configure for top or bottom incoming feed as indicated or as required for the installation.

E. Conductor Terminations: Suitable for use with the conductors to be installed.

F. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.

1. Boxes: Galvanized steel unless otherwise indicated.

a. Provide wiring gutters sized to accommodate the conductors to be installed.

b. Provide painted steel boxes for surface-mounted panelboards where indicated, finish to match fronts.

2. Fronts:

3. Lockable Doors: All locks keyed alike unless otherwise indicated.

G. Future Provisions: Prepare all unused spaces for future installation of devices including bussing, connectors, mounting hardware and all other required provisions.

H. Surge Protective Devices: Surge Protective Devices shall be factory-installed, internally mounted surge protective devices are provided in accordance with Section 26 4300, list and label panelboards as a complete assembly including surge protective device.

1. Provide SPD's internally mounted in all panels.

I. Selectivity: Where the requirement for selectivity is indicated, furnish products as required to achieve selective coordination.

J. Load centers are not acceptable.

2.02 POWER DISTRIBUTION PANELBOARDS

A. Description: Panelboards complying with NEMA PB 1, power and feeder distribution type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.

B. Conductor Terminations:

1. Main and Neutral Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.

2. Main and Neutral Lug Type: Mechanical.

C. Bussing:

1. Phase and Neutral Bus Material: Aluminum or copper.

2. Ground Bus Material: Aluminum or copper.

D. Circuit Breakers:

1. Provide bolt-on type or plug-in type secured with locking mechanical restraints.

2. Provide thermal magnetic circuit breakers for circuit breaker frame sizes less than 100 amperes.

3. Provide electronic trip circuit breakers for circuit breaker frame sizes 100 amperes and above.

E. Enclosures:

1. Provide surface-mounted enclosures unless otherwise indicated.

2. Fronts: Provide lockable hinged door with concealed hinges for access to overcurrent protective device handles without exposing live parts.

3. Provide clear plastic circuit directory holder mounted on inside of door.

2.03 LIGHTING AND APPLIANCE PANELBOARDS

A. Description: Panelboards complying with NEMA PB 1, lighting and appliance branch circuit type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.

B. Conductor Terminations:

1. Main and Neutral Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.

2. Main and Neutral Lug Type: Mechanical.

C. Bussing:

1. Phase and Neutral Bus Material: Aluminum or copper.

2. Ground Bus Material: Aluminum or copper.

D. Circuit Breakers: Thermal magnetic bolt-on type unless otherwise indicated.

E. Enclosures:

1. Provide surface-mounted or flush-mounted enclosures as indicated.

2. Fronts: Provide lockable hinged door with concealed hinges for access to overcurrent protective device handles without exposing live parts.

3. Provide clear plastic circuit directory holder mounted on inside of door.

2.04 OVERCURRENT PROTECTIVE DEVICES

A. Molded Case Circuit Breakers:

1. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.

2. Interrupting Capacity:

a. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than:

1) 10,000 rms symmetrical amperes at 240 VAC or 208 VAC.

2) 14,000 rms symmetrical amperes at 480 VAC.

b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.

3. Conductor Terminations:

a. Provide mechanical lugs unless otherwise indicated.

b. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.

4. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.

5. Electronic Trip Circuit Breakers: Furnish solid state, microprocessor-based, true rms sensing trip units.

a. Provide the following field-adjustable trip response settings that are individually adjustable:

1) Long time pickup, adjustable by replacing interchangeable trip unit or by setting dial.

2) Long time delay.

3) Short time pickup and delay.

4) Instantaneous pickup.

5) Ground fault pickup and delay where ground fault protection is indicated.

6. Provide the following circuit breaker types where indicated:

a. Ground Fault Circuit Interrupter (GFCI) Circuit Breakers: Listed as complying with UL 943, class A for protection of personnel.

SPECIFICATIONS CONTINUED
ON NEXT SHEET

ATTENTION CONTRACTORS

The ***Construction Contractor*** responsible for the extension of water, sewer, and/or reuse, as approved in these plans, is responsible for ***contacting*** the ***Public Utilities Department*** at ***(919) 996-4540*** at least ***twenty four hours*** prior to beginning any of their construction.

Failure to notify both ***City Departments*** in advance of beginning construction, will result in the issuance of ***monetary fines***, and require reinstallation of any water or sewer facilities not inspected as a result of this notification failure.

Failure to call for ***Inspection***, ***Install a Downstream Plug***, have ***Permitted Plans*** on the ***Jobsite***, or any other ***Violation*** of ***City of Raleigh Standards*** will result in a ***Fine and Possible Exclusion*** from future work in the ***City of Raleigh***.

Public
Water Distribution / Extension System

The City of Raleigh consents to the connection and extension of the City's public water system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit #: _____

Authorization to Construct _____

Date _____

Public
Sewer Collection / Extension System

The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit #: _____

Authorization to Construct _____

Date _____

William R Jennings, Jr.
Consulting Engineering, PC
3212 HILL STREET, UNIT A
LYNCHBURG, VA 24501
Phone: (434) 525-7099
Fax: (757) 282-2636
Email: bjennings@jenningspe.com

ALL CONSTRUCTION TO BE IN ACCORDANCE WITH ALL TOWN OF ROLESVILLE, CITY OF RALEIGH, NCDEQ AND NCDOT STANDARDS, SPECIFICATIONS, AND DETAILS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 38631 6/17/2022 WILLIAM R. JENNINGS, JR.

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YOUR VISION ACHIEVED THROUGH OURS.

REVISION DESCRIPTION
REVISED PER COMMENTS

DATE
6/17/2022

DATE
3/16/2022

DRAWN BY
JTP

DESIGNED BY
WRJ

CHECKED BY
WRJ

SCALE

TIMMONS GROUP

ROLESVILLE CROSSING
ROLESVILLE - WAKE COUNTY - NORTH CAROLINA
SPECIFICATIONS

JOB NO.
43398

SHEET NO.
E4.2

811 KNOW WHAT'S BELOW. CALL 811 BEFORE YOU DIG.

7. Provide listed switching duty rated circuit breakers with SWD marking for all branch circuits serving fluorescent lighting.

8. Provide listed high intensity discharge lighting rated circuit breakers with HID marking for all branch circuits serving HID lighting.

9. Do not use tandem circuit breakers.

10. Do not use handle ties in lieu of multi-pole circuit breakers.

PART 3 EXECUTION

3.01 INSTALLATION

A. Perform work in accordance with NECA 1 (general workmanship).

B. Install products in accordance with manufacturer's instructions.

C. Install panelboards in accordance with NECA 407 and NEMA PB 1.1.

D. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

E. Provide required support and attachment in accordance with Section 26 0529.

F. Mount panelboards such that the highest position of any operating handle for circuit breakers or switches does not exceed 79 inches above the floor or working platform.

G. Provide minimum of six spare 1 inch trade size conduits out of each flush-mounted panelboard stubbed into accessible space above ceiling and below floor.

H. Provide grounding and bonding in accordance with Section 26 0526.

I. Set field-adjustable circuit breaker tripping function settingsas directed.

J. Set field-adjustable ground fault protection pickup and time delay settingsas directed.

K. Provide filler plates to cover unused spaces in panelboards.

END OF SECTION 26 2416

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for circuit breakers, enclosures, and other installed components and accessories.

1. Include characteristic trip curves for each type and rating of circuit breaker upon request.

PART 2 PRODUCTS

2.01 ENCLOSED CIRCUIT BREAKERS

A. Description: Units consisting of molded case circuit breakers individually mounted in enclosures.

B. Short Circuit Current Rating:

1. Provide enclosed circuit breakers with listed short circuit current rating as calculated in the Power System Study.

C. Enclosed Circuit Breakers Used for Service Entrance: Listed and labeled as suitable for use as service equipment according to UL 869A.

D. Conductor Terminations: Suitable for use with the conductors to be installed.

E. Provide electronic trip circuit breakers.

F. Provide solidly bonded equipment ground bus in each enclosed circuit breaker, with a suitable lug for terminating each equipment grounding conductor.

G. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.

1. Finish for Painted Steel Enclosures: Manufacturer's standard, factory applied grey unless otherwise indicated.

2. Provide surface-mounted enclosures unless otherwise indicated.

H. Provide externally operable handle with means for locking in the OFF position.

I. Selectivity: Where the requirement for selectivity is indicated, furnish products as required to achieve selective coordination.

2.02 MOLDED CASE CIRCUIT BREAKERS

A. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.

B. Interrupting Capacity:

1. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating calculated in the power systems analysis.

C. Conductor Terminations:

1. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.

D. Electronic Trip Circuit Breakers: Furnish solid state, microprocessor-based, true rms sensing trip units.

1. Provide the following field-adjustable trip response settings:

a. Long time pickup, adjustable by replacing interchangeable trip unit or by setting dial.

b. Long time delay.

c. Short time pickup.

d. Short time delay.

PART 3 EXECUTION

3.01 INSTALLATION

A. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

B. Provide required support and attachment in accordance with Section 26 0529.

C. Provide grounding and bonding in accordance with Section 26 0526.

D. Set field-adjustable circuit breaker tripping function settings as determined by overcurrent protective device coordination study performed according to Section 26 0573.

END OF SECTION 26 2816.13

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for enclosed switches and other installed components and accessories.

1.02 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

PART 2 PRODUCTS

2.01 ENCLOSED SAFETY SWITCHES

A. Description: Quick-make, quick-break enclosed safety switches listed and labeled as complying with UL 98; heavy duty; ratings, configurations, and features as indicated on the drawings.

B. Provide products listed, classified, and labeled as suitable for the purpose intended.

C. Horsepower Rating: Suitable for connected load.

D. Voltage Rating: Suitable for circuit voltage.

E. Short Circuit Current Rating:

1. Minimum Ratings:

a. Heavy Duty Single Throw Switches Protected by Class R Fuses: 200,000 rms symmetrical amperes.

F. Fuse Clips for Fusible Switches: As required to accept fuses indicated.

1. Where NEMA Class R fuses are installed, provide rejection feature to prevent installation of fuses other than Class R.

G. Provide safety interlock to prevent opening the cover with the switch in the ON position with capability of overriding interlock for testing purposes.

H. Heavy Duty Switches:

1. Comply with NEMA KS 1.

2. Conductor Terminations:

a. Provide mechanical lugs.

b. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.

3. Provide externally operable handle with means for locking in the OFF position, capable of accepting three padlocks.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

C. Provide required support and attachment in accordance with Section 26 0529.

END OF SECTION 26 2816.16

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for motor controllers, enclosures, overcurrent protective devices, and other installed components and accessories.

PART 2 PRODUCTS

2.01 ENCLOSED CONTROLLERS

A. Provide products listed, classified, and labeled as suitable for the purpose intended.

B. Description: Enclosed controllers complying with NEMA ICS 2, and listed and labeled as complying with UL 60947-I and UL 60947-4-1; ratings, configurations and features as indicated on the drawings.

C. Service Conditions:

1. Provide controllers and associated components suitable for operation at indicated ratings under the service conditions at the installed location.

D. Conductor Terminations: Suitable for use with the conductors to be installed.

E. Enclosures:

1. Comply with NEMA ICS 6.

2. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:

a. Indoor Clean, Dry Locations: Type 1 or Type 12.

b. Outdoor Locations: 4X.

F. Magnetic Motor Starters: Combination or noncombination type as indicated.

1. Combination Magnetic Motor Starters: NEMA ICS 2, Class A combination motor controllers with magnetic contactor(s), externally operable disconnect and overload relay(s).

2. Configuration: Full-voltage non-reversing unless otherwise indicated.

3. Minimum Starter Size: NEMA Size 0.

4. Use of non-standard starter sizes smaller than specified standard NEMA sizes is not permitted.

5. Overload Relays: Solid-state type unless otherwise indicated.

2.02 OVERCURRENT PROTECTIVE DEVICES

A. Overload Relays:

1. Provide overload relays and, where applicable, associated current elements/heaters, selected according to actual installed motor nameplate data, in accordance with manufacturer's recommendations and NFPA 70; include consideration for motor service factor and ambient temperature correction, where applicable.

2. Inverse-Time Trip Class Rating: Class 20 unless otherwise indicated or required.

3. Resettable.

a. Employ manual reset unless otherwise indicated.

b. Do not employ automatic reset with two-wire control.

4. Solid-State Overload Relays:

a. Adjustable full load current.

b. Phase loss protection.

c. Phase imbalance protection.

d. Thermal memory.

e. Provide isolated alarm contact.

2.03 CONTROL ACCESSORIES

A. Auxiliary Contacts:

1. Comply with NEMA ICS 5.

2. Provide number and type of contacts indicated or required to perform necessary functions, including holding (seal-in) circuit and interlocking, plus one normally open (NO) and one normally closed (NC) spare contact for each magnetic motor starter, minimum.

B. Pilot Devices:

1. Comply with NEMA ICS 5; heavy-duty type.

2. Nominal Size: 30 mm.

3. Pushbuttons: Unless otherwise indicated, provide momentary, non-illuminated type with flush button operator; normally open or normally closed as indicated or as required.

4. Selector Switches: Unless otherwise indicated, provide maintained, non-illuminated type with knob operator; number of switch positions as indicated or as required.

5. Indicating Lights: Push-to-test type unless otherwise indicated.

6. Provide LED lamp source for indicating lights and illuminated devices.

C. Control Power Transformers:

1. Size to accommodate burden of contactor coil(s) and all connected auxiliary devices.

2. Include primary and secondary fuses.

D. Control Terminal Blocks: Include 25 percent spare terminals.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

C. Where accessories are not self-powered, provide control power source as indicated or as required to complete installation.

D. Set field-adjustable controllers and associated components according to installed motor requirements, in accordance with manufacturer's recommendations and NFPA 70.

END OF SECTION 26 2913

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Provide manufacturer's standard catalog pages and data sheets for motor controllers, enclosures, overcurrent protective devices, and other installed components and accessories.

B. Project Record Documents: Record actual installed locations of controllers and final equipment settings.

1. Include nameplate data of actual installed motors and associated overload relay selections and settings.

2. Motor Circuit Protectors: Include magnetic instantaneous trip settings.

PART 2 PRODUCTS

2.01 RDUCED VOLTAGE SOLID STATE STARTERS

A. Output Power Section

1. The Soft starter shall be available in Amperage ratings from 8A through 1100A at 208 to 600Vac.

2. Three Phase

3. Standard Three Wire L1/U, L2/V, L3/W or Six Wire Inside Delta (Programmable)

B. Soft Starter Keypad

1. The Soft Starter shall be supplied with a backlit alphanumeric Liquid Crystal Display (LCD) Multi-Function Keypad. The Keypad shall be capable of programming and monitoring the Soft starter.

2. Keypad shall be divided into 3 functional groups:

a. Graphical display shall two lines of 16 alphanumeric characters each with full text programming. Codes are not accepted.

b. LEDs – To display soft starter functions

c. Navigation keys to program soft starter, display operational data, and faults

3. The Soft Starter shall have Indication LEDs as follows:

a. Green – The soft starter is "On"

b. Yellow – The soft starter is in "Ramp"

c. Green – The soft starter is in "Run" mode

d. Red – The soft starter is in "Fault" mode

4. The Soft Starter shall display operating data, fault information, and programming parameters in English with other languages - Spanish, German and Italian available by parameter setting.

5. The keypad shall display the last 10 faults and provides detailed information on soft starter operating conditions at the time of fault occurrence.

6. Soft Starter shall have the following user adjustments

a. Two Motor full load amp settings with individual adjustments from 50 to100% of the soft starters full load amp rating.

b. Two acceleration ramps with individual adjustments from 1 to 90 seconds.

c. Two deceleration ramps with individual adjustments from 0 to 90 seconds.

d. Two initial voltage settings with individual adjustments from 10 to 80%of nominal voltage.

e. Final torque setting adjustable from 0 to 10 (maximum level).

f. Two current limit settings with individual adjustments from 100 to 500% of motor full load amps.

g. Three selectable pump control acceleration curves.

h. Three selectable pump control deceleration curves.

i. Torque acceleration curve

j. Torque deceleration curve

k. Current control ramp

l. Kick-start (80% voltage boost) shall be adjustable from 0.1 to 1 second.

m. Maximum starting time (stall protection) shall be adjustable from 1 to 60 minutes.

n. Number of starts shall be adjustable from 1 to 10, in a programmable time period of 1 to 60 minutes.

o. The start inhibit time period shall be adjustable from 1 to 60 minutes.

p. Under current trip setting shall be adjustable from 20 to 90% of the motor full load amps. Under current shall be disabled when set to 'Off'.

q. Under current trip shall have an adjustable delay from 1 to 40 seconds.

r. Shear pin shall have an adjustable trip level from 100 to 850% of motor full load amps.

C. Soft Starter I/O Control

1. The Soft starter shall have 6 digital inputs with the following assigned functions:

a. Start

b. Stop

c. Soft Stop

d. External Fault Input

2. The Soft starter shall have 3 Form C relay outputs with the following assigned functions:

a. Run

b. End of Ramp

c. Fault

3. The Soft Starter shall have 1 analog output signal with either 0/4-20mA or 0-10V settings on ratings 58A and above. The analog output must reflect the motor current.

4. The Soft Starter shall have 1 dedicated thermistor input that is programmable for PTC or NTC type thermistors.

SPECIFICATIONS CONTINUED
ON NEXT SHEET

ATTENTION CONTRACTORS

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Public
Water Distribution / Extension System

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City of Raleigh
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ALL CONSTRUCTION TO BE IN ACCORDANCE WITH ALL TOWN OF ROLESVILLE, CITY OF RALEIGH, NCDEQ AND NCDOT STANDARDS, SPECIFICATIONS, AND DETAILS

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YOUR VISION ACHIEVED THROUGH OURS.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18263 6/7/2022 WILLIAM R. JENNINGS, JR.

REVISION DESCRIPTION	DATE
REVISED PER COMMENTS	*6/7/2022*

DATE *3/16/2022*
DRAWN BY *JTP*
DESIGNED BY *WRJ*
CHECKED BY *WRJ*
SCALE

TIMMONS GROUP

ROLESVILLE CROSSING
ROLESVILLE - WAKE COUNTY - NORTH CAROLINA
SPECIFICATIONS

JOB NO. *43398*
SHEET NO. *E4.3*

D. Soft Starter Protective and Diagnostic Features

1. In the event of a fault, the soft starter will have tripped. Faults must be reset to restart operation once their cause has been rectified. The soft starter shall offer the following Faults list:

   a. Too Many Starts

   b. Long Start Time

   c. Over Current Jam

   d. Overload

   e. Undercurrent

   f. Undervoltage

   g. Overvoltage

   h. Phase Loss

   i. Frequency out of Range

   j. Phase Sequence

   k. Slow Speed Time

   l. Wrong Motor Connection

   m. Shorted SCR

   n. Heat Sink Over Temperature

   o. External Fault signaled by Digital Input

   p. Wrong Parameters

   q. Wrong Wiring Connection

E. Provide products listed, classified, and labeled as suitable for the purpose intended.

F. Conductor Terminations: Suitable for use with the conductors to be installed.

G. Disconnects: Circuit breaker type.

1. Circuit Breakers: Thermal magnetic unless otherwise indicated or required.

2. Overload Relays: Solid-state type unless otherwise indicated.

PART 3 EXECUTION

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Include detailed component information, voltage, surge current ratings, repetitive surge current capacity, voltage protection rating (VPR) for all protection modes, maximum continuous operating voltage (MCOV), nominal discharge current (I-n), short circuit current rating (SCCR), connection means including any required external overcurrent protection, enclosure ratings, outline and support point dimensions, weight, service condition requirements, and installed features.

1.02 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

1.03 WARRANTY

A. Manufacturer's Warranty: Provide minimum five year warranty covering repair or replacement of surge protective devices showing evidence of failure due to defective materials or workmanship.

B. Exclude surge protective devices from any clause limiting warranty responsibility for acts of nature, including lightning, stated elsewhere.

PART 2 PRODUCTS

2.01 SURGE PROTECTIVE DEVICES - GENERAL REQUIREMENTS

A. Description: Factory-assembled surge protective devices (SPDs) for 60 Hz service; listed, classified, and labeled as suitable for the purpose intended; system voltage as indicated on the drawings.

B. Unless otherwise indicated, provide factory-installed, internally-mounted SPDs.

C. List and label as complying with UL 1449, Type 1 when connected on line side of service disconnect overcurrent device and Type 1 or 2 when connected on load side of service disconnect overcurrent device.

D. Protected Modes:

1. Wye Systems: L-N, L-G, N-G, L-L.

E. UL 1449 Voltage Protection Ratings (VPRs):

1. 208Y/120V System Voltage: Not more than 1,000 V for L-N, L-G, and N-G modes and 1,200 V for L-L mode.

2. 480Y/277V System Voltage: Not more than 1,500 V for L-N, L-G, and N-G modes and 2,000 V for L-L mode.

F. UL 1449 Maximum Continuous Operating Voltage (MCOV): Not less than 115% of nominal system voltage.

G. Enclosure Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:

1. Indoor clean, dry locations: Type 1.

2. Outdoor locations: Type 4X.

H. Equipment Containing Factory-installed, Internally Mounted SPDs: Listed and labeled as a complete assembly including SPD.

2.02 SURGE PROTECTIVE DEVICES FOR SERVICE ENTRANCE LOCATIONS

2.03 SURGE PROTECTIVE DEVICES FOR BRANCH PANELBOARD LOCATIONS

A. Surge Protective Device.

1. Voltage: As indicated on drawings.

2. Features: Discrete "all-mode" protection (10 modes for 3-phase wye circuits); component-level thermal fusing; internal circuit board-mounted overcurrent fusing; 200 kAIC SCCR; 25 year warranty.

3. Include the following options:

   a. DIAGNOSTIC:

      1) Basic internal audible alarm with dry relay contacts.

B. Surge Protective Device:

1. Protection Circuits: Field-replaceable modular or non-modular.

2. Surge Current Rating: Not less than 60 kA per mode/120 kA per phase.

3. UL 1449 Nominal Discharge Current (I-n): 20 kA.

4. UL 1449 Short Circuit Current Rating (SCCR): Not less than the available fault current at the installed location as indicated on the drawings.

5. Diagnostics:

   a. Protection Status Monitoring: Provide indicator lights to report the protection status for each phase.

   b. Alarm Notification: Provide indicator light and audible alarm to report alarm condition. Provide button to manually silence audible alarm.

PART 3 EXECUTION

END OF SECTION 26 4300

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NORTH CAROLINA PROFESSIONAL SEAL 038631 ENGINEER WILLIAM R. JENNINGS, JR. 6/17/2022

REVISION DESCRIPTION	DATE
REVISED PER COMMENTS	6/17/2022

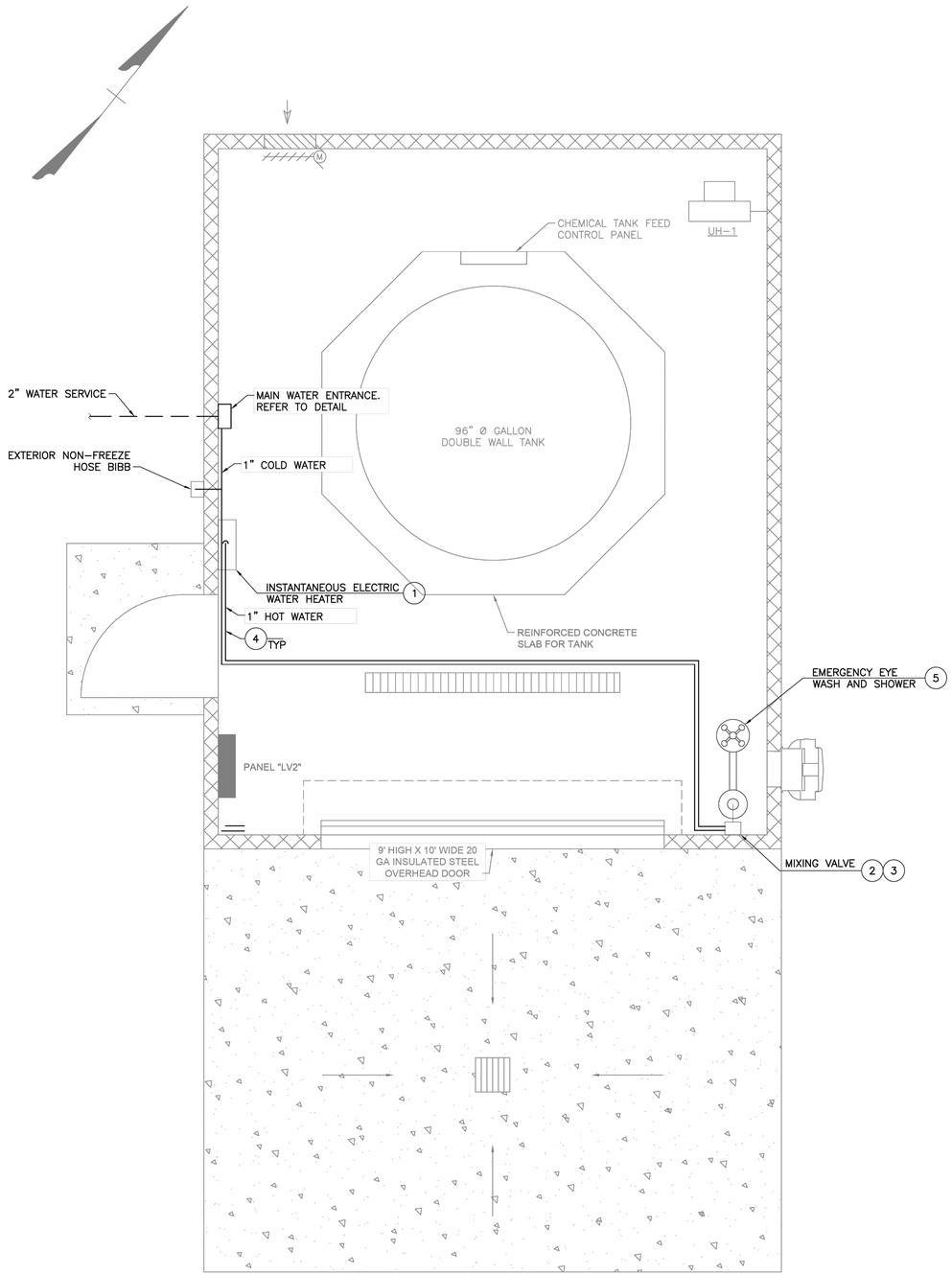
DATE 3/16/2022
DRAWN BY JTP
DESIGNED BY WRJ
CHECKED BY WRJ
SCALE

TIMMONS GROUP

ROLESVILLE CROSSING
ROLESVILLE - WAKE COUNTY - NORTH CAROLINA
SPECIFICATIONS

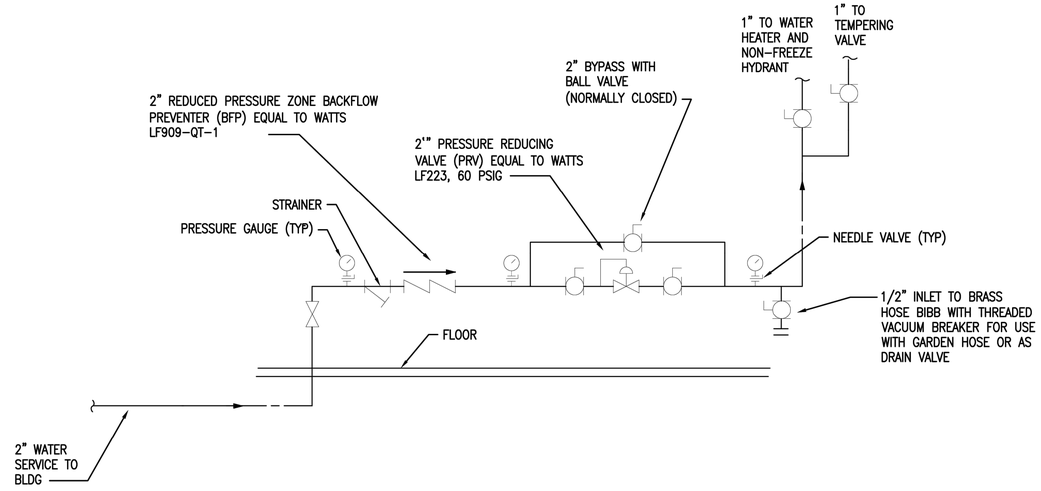
JOB NO. 43398
SHEET NO. E4.4

T:\JOBS\21139 - Rolesville Crossing Pump Sta - Wake Co\CAD\21139 - E4_1.dwg | Plotted on 6/16/2022 1:20 PM | by Jeff Porton

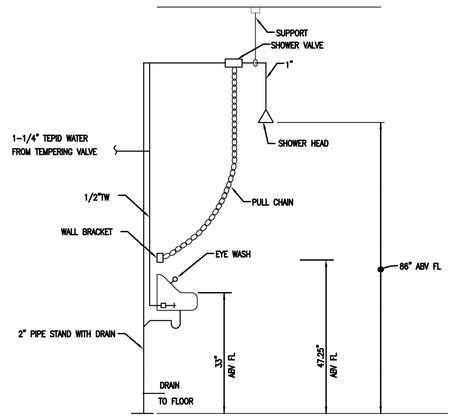


ODOR CONTROL BUIDING FLOOR PLAN - PLUMBING
SCALE: 1/2" = 1'-0"

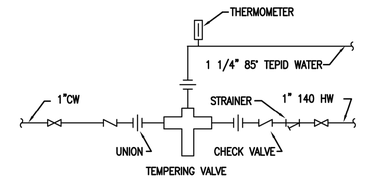
1 H1.1 H1.1



DETAIL – WATER SERVICE ENTRANCE



SCHEMATIC DETAIL OF CONNECTIONS TO EYE WASH & EMERGENCY SHOWER
NOT TO SCALE



DETAIL OF CONNECTIONS FOR TEMPERING VALVE
NO SCALE

SPECIFIC NOTES:

1. PROVIDE CHRONOMITE ELECTRIC TANKLESS WATER HEATER MODEL ER-60H/480_3P OR EQUAL. HEATER TO BE 480V, 3 PHASEI NEMA 4X ENCLOSURE. MOUNT 48" AFF MINIMUM.
2. SET THERMOSTATIC MIXING VALVE FOR 86 DEG F DISCHARGE OF TEPID WATER TO EYEWASH/FACEWASH.
3. PROVIDE THERMOSTATIC MIXING VALVE EQUAL TO PROVIDE 0.4 GPM TO EYEWASH AND 20 GPM TO SHOWER WITH TEPID WATER (60 DEG F TO 90 DEG F). PROVIDE UNIONS AND CONCENTRIC REDUCERS TO CONVERT 3/4" OUTLET TO 1-1/4'' PIPING TO EYEWASH.
4. ALL WATER PIPING SHALL BE TYPE K COPPER. ALL COLD WATER AND HOT WATER PIPING TO BE INSULATED WITH 1 INCH THICK CLOSED-CELL FOAM INSULATION.
5. PROVIDE COMBINATION EMERGENCY EYEWASH/SHOWER EQUAL TO GUARDIAN G1942. BALANCE WATERFLOW TO EYEWASH AND TO SHOWER PER OSHA STANDARDS. PROVIDE BALL VALVES AS REQUIRED TO BALANCE AS DETERMINED BY SYSTEM WATER PRESSURE.

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18363 6/1/2022 WILLIAM R. JENNINGS, JR.

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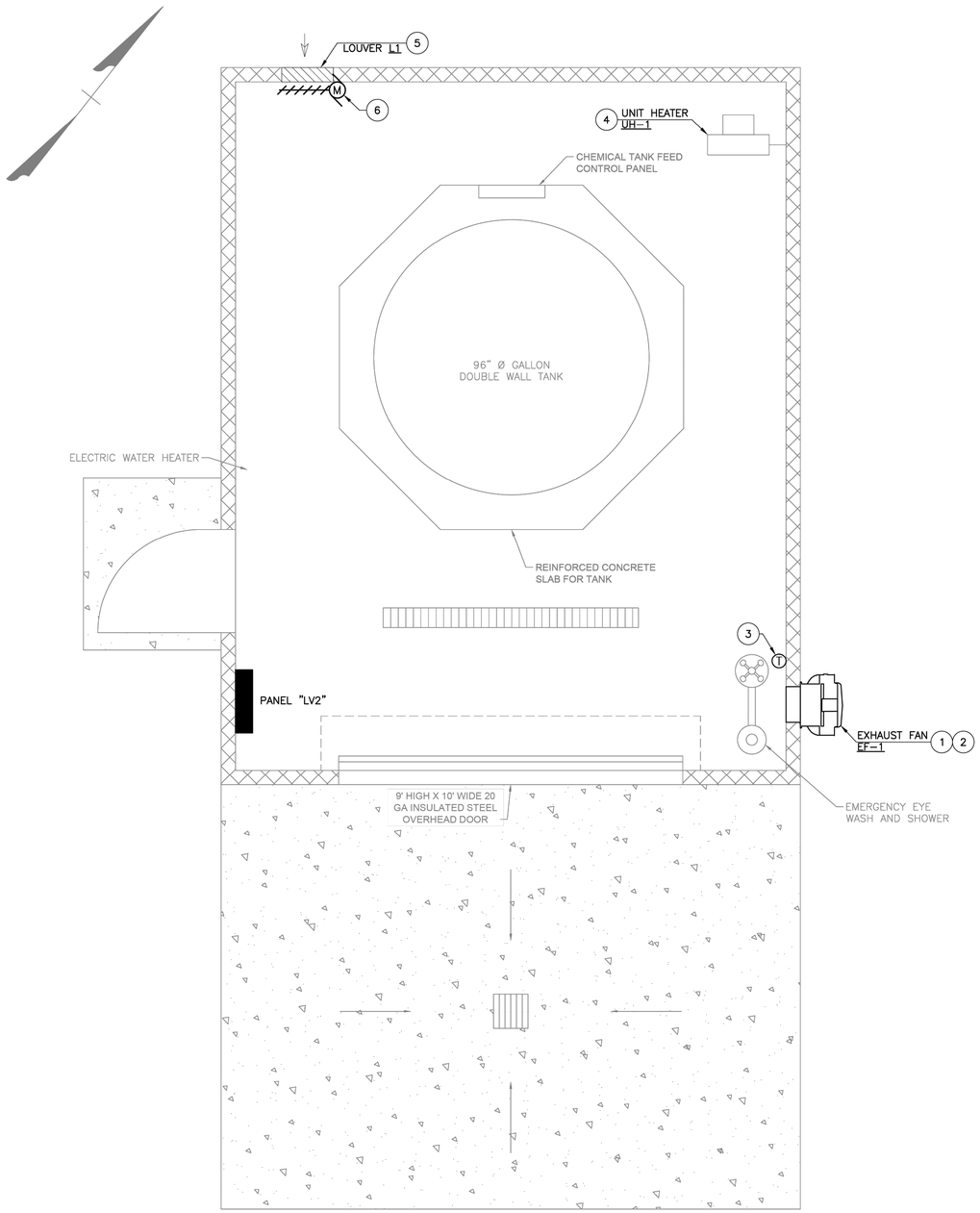
DATE *3/16/2022*
DRAWN BY *JTP*
DESIGNED BY *WRJ*
CHECKED BY *WRJ*
SCALE

TIMMONS GROUP

ROLESVILLE CROSSING
ROLESVILLE - WAKE COUNTY - NORTH CAROLINA
ODOR CONTROL BUILDING FLOOR PLAN - PLUMBING

JOB NO. *43398*
SHEET NO. *H1.1*

T:\JOBS\21139 - Rolesville Crossing Pump Sta - Wake Co\CAD\21139 - H1_1.dwg | Plotted on 6/1/2022 1:20 PM | by Jeff Ponton



ODOR CONTROL BUIDING FLOOR PLAN - MECHANICAL (1 / M1.1)
SCALE: 1/2" = 1'-0"

SPECIFIC NOTES:

1. EF-1: PROVIDE WALL MOUNTED EXHAUST FAN EQUAL TO GREENHECK CUE-090 (650 CFM AT 0.25 INWG, 1550 RPM, 7.5 SONES, 1/6 HP MOTOR, 120V/1PH), WITH DIRECT DRIVE EC MOTOR AND MANUAL SPEED CONTROLLER EQUAL TO GREENHECK VARI-GREEN. APPROXIMATELY 12.5" X 12.5" WALL OPENING. PROVIDE WITH WALL OPENING SUPPORT FRAME. COVER FAN INTAKE WITH ALUMINUM BIRD SCREEN. PROVIDE FAN WITH BACKDRAFT DAMPER. PROVIDE WITH FAN RELAY SO THAT ASSOCIATED INTAKE MOTORIZED DAMPER IS FULLY OPEN PRIOR TO FAN ENERGIZING. PROVIDE WITH WALL MOUNTED MOTOR STARTER. CONTROL SHALL BE WALL MOUNTED THERMOSTAT (85 DEG F, ADJ).
2. MOUNT TOP OF FAN APPROXIMATELY 18 INCHES BELOW ROOF STRUCTURE.
3. WALL MOUNTED THERMOSTAT FOR FAN CONTROL. MOUNT AT 48 INCHES ABOVE FINISHED FLOOR.
4. PROVIDE ELECTRIC UNIT HEATER EQUAL TO MARKEL F2FUH05003 (5KW, 208V/3 PHASE, 18 AMPS, 400 CFM). WITH FACTORY BUILT-IN THERMOSTAT. PROVIDE WITH WALL MOUNTING BRACKET AND DISCONNECT. SET THERMOSTAT FOR 45 DEG F (ADJ).
5. L-1: PROVIDE STATIONARY WALL LOUVER FOR INTAKE AIR. MINIMUM DIMENSIONS OF 24" WIDE X 18" WIDE. EQUAL TO GREENHECK MODEL EHM-601, CONSTRUCTED OF HEAVY GAUGE ALUMINUM WITH 45 DEG DUAL DRAINABLE LOUVERS. LOUVER FINISH SHALL BE FACTORY BAKED ENAMEL, COLOR TO MATCH DOORS AND FRAME ON BUILDING. PROVIDE WITH BIRDSCREEN. PROVIDE WITH DAMPER CONNECTION FOR MOTORIZED DAMPER. MOUNT BOTTOM OF LOUVER APPROXIMATELY 12 INCHES ABOVE FINISHED FLOOR.
6. PROVIDE LOW LEAKAGE MOTORIZED DAMPER, SPRING LOADED TO BE NORMALLY CLOSED. INTERLOCK WITH EXHAUST FAN EF-1. ACTUATOR SHALL BE LINE VOLTAGE. COORDINATE WITH EXHAUST FAN. DAMPER SHALL OPEN BASED ON THERMOSTAT/FAN OPERATION AND SHALL BE CLOSED WHEN FAN IS OFF.

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ROLESVILLE CROSSING
ROLESVILLE - WAKE COUNTY - NORTH CAROLINA
ODOR CONTROL BUILDING FLOOR PLAN - MECHANICAL

JOB NO. *43398*
SHEET NO. *M1.1*

T:\JOBS\21139 - Rolesville Crossing Pump Sta - Wake Co\CAD\21139 - H1_2.dwg | Plotted on 6/1/2022 1:20 PM | by Jeff Porton