

**GENERAL NOTES & CERTIFICATIONS**

- SANITARY SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE MOST RECENT NEW CASTLE COUNTY STANDARD SPECIFICATIONS FOR CONSTRUCTION, SPECIAL PROVISIONS, SUPPLEMENTAL SPECIFICATIONS, STANDARD DETAILS, AND THE RECOMMENDED STANDARDS FOR WASTEWATER FACILITIES OF STRICTER STANDARDS IDENTIFIED BY THE ENGINEER.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN APPROVAL AND ACCEPTANCE OF THE SANITARY SEWER SYSTEM BY NEW CASTLE COUNTY UPON COMPLETION OF CONSTRUCTION. AS-BUILT PLANS SIGNED AND SEALED BY A PROFESSIONAL LAND SURVEYOR OR PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF DELAWARE MUST BE SUBMITTED TO NEW CASTLE COUNTY BEFORE ACCEPTANCE.
- DURING CONSTRUCTION, THE CONTRACTOR MUST HAVE IN THEIR POSSESSION ON SITE, A SET OF CONSTRUCTION PLANS BEARING NEW CASTLE COUNTY'S STAMP OF APPROVAL.
- THE CONTRACTOR SHALL NOT PLACE, PLANT, PUT OR SET ANY STRUCTURE WITHIN THE SANITARY SEWER EASEMENT.
- A CONSTRUCTION PERMIT ISSUED BY THE STATE OF DELAWARE, DEPARTMENT OF TRANSPORTATION (DELDOT) IS REQUIRED BEFORE ANY WORK IS PERFORMED WITHIN A DELDOT RIGHT OF WAY. ALL WORK PERFORMED WITHIN DELDOT'S RIGHT OF WAY OR PROPERTY OWNED BY THE STATE OF DELAWARE SHALL BE PERFORMED IN ACCORDANCE WITH THE MOST RECENT DELDOT STANDARD SPECIFICATIONS AND UTILITY MANUAL.
- SANITARY SEWER IS TO BE PUBLICLY OWNED AND MAINTAINED.
- CONSTRUCTION SHALL NOT DEVIATE FROM THE PLANS AND SPECIFICATIONS APPROVED BY NEW CASTLE COUNTY WITHOUT WRITTEN PERMISSION FROM NEW CASTLE COUNTY'S DEPARTMENT OF SPECIAL SERVICES.
- EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE DELAWARE SEDIMENT AND STORMWATER REGULATIONS, DELAWARE EROSION AND SEDIMENT CONTROL HANDBOOK AND THE NEW CASTLE COUNTY DRAINAGE CODE, AS AMENDED.
- TYPICAL SEQUENCE OF CONSTRUCTION:
  - CONTACT NEW CASTLE COUNTY DEPARTMENT OF SPECIAL SERVICES (TWO BUSINESS DAYS' NOTICE AT 302-395-5756) PRIOR TO ANY EXCAVATION OR ACTIVITY INVOLVING SANITARY SEWER CONSTRUCTION, PUMP STATION CONSTRUCTION OR LATERAL TIE-IN'S TO EXISTING LINES.
  - CONSTRUCT PROPOSED SANITARY SEWER SYSTEM AS APPROVED BY NEW CASTLE COUNTY.
  - BACKFILL AND RE-GRADE AS REQUIRED.
  - PERFORM AIR TEST, IF REQUIRED, IN ACCORDANCE WITH SECTION 32.01-3 OF THE NEW CASTLE COUNTY STANDARD SPECIFICATIONS FOR CONSTRUCTION, IN THE PRESENCE OF A NEW CASTLE COUNTY INSPECTOR.
  - FOLLOWING A PASSING A TEST (IF APPLICABLE), A FINAL VISUAL INSPECTION (LAMP TEST) MUST BE PERFORMED BY NEW CASTLE COUNTY INSPECTOR PRIOR TO ACCEPTANCE BY NEW CASTLE COUNTY.
  - BASED UPON THE RESULTS OF THE VISUAL INSPECTION, A MANDREL TEST MAY BE REQUIRED FOLLOWING THE VISUAL INSPECTION.
  - A HYDROSTATIC TEST MUST BE PERFORMED FOR ANY SANITARY FORCEMAIN IN ACCORDANCE WITH SECTION 32.03-3.4, OF THE NEW CASTLE COUNTY STANDARD SPECIFICATIONS FOR CONSTRUCTION AS AMENDED.
  - LATERAL CONNECTIONS FROM NEW HOMES/OFFICE BUILDINGS INTO THE SEWER LINE WILL NOT BE PERMITTED UNTIL AFTER FINAL ACCEPTANCE.
  - PRIOR TO NEW CASTLE COUNTY MAKING A FINAL INSPECTION, THE FOLLOWING ITEMS MUST BE COMPLETED:
    - ALL MANHOLES MUST BE BROUGHT TO GRADE AND HAVE CONCRETE COLLARS INSTALLED.
    - CHANNELS MUST BE COMPLETED IN ALL MANHOLES.
    - ALL MANHOLES AND SEWER PIPES MUST BE CLEANED AND FLUSHED.
    - AS-BUILT DRAWINGS (SIGNED AND SEALED BY A REGISTERED LAND SURVEYOR OR PROFESSIONAL ENGINEER IN DELAWARE) WITH ONE (1) MYLAR AND THREE (3) SETS OF PRINTS MUST BE SUBMITTED TO NEW CASTLE COUNTY.
    - TURF TRAIL IS CONSTRUCTED IN ACCORDANCE WITH NCC DETAIL SS-WISC-2, OR IF PIPE AND MANHOLES ARE WITHIN A PROPOSED ROADWAY, STABILIZED ROADWAY ACCESS IS CONSTRUCTED FOR THE PURPOSE OF MAINTAINING THE CONSTRUCTED SANITARY SEWER SYSTEM UNTIL FINAL PAVING IS COMPLETED.
  - CERTIFICATES OF OCCUPANCY WILL NOT BE ISSUED UNTIL THE AS-BUILT DRAWINGS HAVE BEEN RECEIVED, REVIEWED, AND APPROVED AND THE SANITARY SEWER CONSTRUCTION (INCLUDING ALL APPURTENANCES HAS BEEN ACCEPTED BY NEW CASTLE COUNTY.
  - MANHOLE COVER(S) ON PRIVATELY OWNED AND MAINTAINED SEWER SYSTEMS SHALL NOT BE LABELED "NEW CASTLE COUNTY".

**PLAN DATA & NOTES**

- APPLICATION NO.: 2020-0644
- TAX PARCEL NO.: 13-003.00-001; 13-007.00-020; 13-007.00-021; 13-007.00-053; 13-007.00-054; 13-0070.00-090
- EXISTING ZONING: S (SUBURBAN)
- SOURCE OF TITLE: DR 189-140; DEED INSTRUMENT NO. 20030703-0079816
- DATUM: NAVD 88 (8.M. NAIL SET ON CONCRETE CULVERT (ELEV 32.34))
- LAND USE: GROSS AREA: 546.27 ACRES  
DETACHED LOTS: 174.90 ACRES  
PUMP STATION LOT: 0.17 ACRES  
OPEN SPACE: 317.77 ACRES (INCLUDING XXX ACRES OF STORMWATER MANAGEMENT AND XXX ACRES OF USABLE OPEN SPACE)  
60' WIDE ROW: 18.58 ACRES  
50' WIDE ROW: 41.69 ACRES
- WATER SUPPLY: ARTESIAN WATER COMPANY  
WATER SUPPLY IS SUBJECT TO THE APPROVAL OF THE DELAWARE STATE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL AND THE DELAWARE STATE DIVISION OF PUBLIC HEALTH.
- SANITARY SEWER: (PUBLIC) NEW CASTLE COUNTY SEWERAGE IS SUBJECT TO THE APPROVAL OF NEW CASTLE COUNTY AND THE DELAWARE STATE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL AT THE TIME OF APPROVAL OF THIS PLAN, SEWER CAPACITY EXISTED TO ACCOMMODATE THE ANTICIPATED FLOWS GENERATED BY THIS ADDITIONAL DEVELOPMENT. NEW CASTLE COUNTY HAS COMMITTED TO PROVIDE SEWER SERVICE IN ACCORDANCE WITH THE LAND DEVELOPMENT IMPROVEMENT AGREEMENT FOR THIS DEVELOPMENT. THE OWNER OF THIS PROPERTY, HIS SUCCESSORS OR ASSIGNS, SHALL BE RESPONSIBLE FOR EXTENDING SEWER SERVICE TO EACH LOT CREATED BY THIS PLAN.
- SANITARY SEWER FLOWS: ESTIMATED SEWAGE FLOW GENERATION: SINGLE FAMILY DETACHED UNITS 500 x 300 GPM = 202,200 GPD (AVERAGE)  
PEAK FLOW 150,000 GPD x 4.00 (PF) X 1 DAY / 1,440 MIN = 416.7 GPM
- FLOODPLAIN: A PORTION OF THE SITE LIES WITHIN THE 100-YEAR FLOODPLAIN. LIMITS OF THE 100-YEAR FLOODPLAIN WERE TAKEN FROM THE FLOOD INSURANCE RATE MAPS NO. 10003C0237L & 10003C0240L, BOTH DATED JANUARY 22, 2020.
- WATER RESOURCE PROTECTION AREA: AS PER THE WATER RESOURCE PROTECTION AREAS FOR THE CITY OF NEWARK, CITY OF WILMINGTON, NEW CASTLE COUNTY DELAWARE "MAP 3 OF 3, REVISED MARCH 2017, A PORTION OF THE SITE IS LOCATED IN A RECHARGE WATER RESOURCE PROTECTION AREA (WRPA).  
WRPA SUMMARY:  
TOTAL AREA IN WRPA= 64.65 ACRES  
DISTURBED AREA (50% MAX.)= 31.40 ACRES (48.6%)  
IMPERVIOUS SUMMARY:  
IMPERVIOUS ALLOWABLE= 12.93 ACRES (20% MAX.)  
IMPERVIOUS PROPOSED= 10.55 ACRES (16.3%)
- WETLANDS: THE WETLANDS BOUNDARIES DEPICTED ON THIS PLAN WERE TAKEN FROM A WETLAND DELINEATION REPORT BY WATERSHED ECO, LLC DATED SEPTEMBER 1, 2015. WETLANDS WERE FIELD VERIFIED BY WATERSHED ECO, LLC IN AUGUST 2020.
- CRITICAL NATURAL AREAS: THE STATE INVENTORY OF NATURAL AREAS HAS BEEN EXAMINED AND NO CRITICAL NATURAL AREAS (CNA) EXIST ON SITE.

**PLAN PURPOSE NOTE**

THE PURPOSE OF THE PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS IS TO PROVIDE SANITARY SEWER SERVICE FOR THE RESIDENTIAL SUBDIVISION OF MONARCH, CONSISTING OF 674 SINGLE FAMILY DETACHED UNITS.

**FOR USE BY DEPARTMENT OF PUBLIC WORKS**

**SUBMITTALS PRIOR TO CONSTRUCTION**

THE FOLLOWING DOCUMENTS ARE TO BE SUBMITTED TO THE DEPARTMENT OF PUBLIC WORKS PRIOR TO THE START OF CONSTRUCTION:

SUBMISSION ID	DESCRIPTION	DESIGN STANDARD	TO BE OBTAINED FROM
BP-01	PUMP STATION BUILDING PLAN COMPLIANCE CERTIFICATION	NCC LAND USE	ENGINEER
BP-02	PUMP STATION BUILDING PLAN COMPLIANCE CERTIFICATION	NCC LAND USE	ARCHITECT
BP-03	BUILDING PERMIT FOR THE PUMP STATION BUILDING	NCC LAND USE	NCC LAND USE
SC-01	SPECIFICATIONS OF ALL THE CONSTRUCTION MATERIALS	DPW STANDARD SPECIFICATION	CONTRACTOR
SD-01	SHOP DRAWING FOR PUMP STATION BUILDING	DPW STANDARD SPECIFICATION	CONTRACTOR
SD-02	SHOP DRAWING FOR PUMP AND PIPE LAYOUTS	DPW STANDARD SPECIFICATION	CONTRACTOR
SD-03	SHOP DRAWING FOR PRE CAST WET WELL	ASTM-C478	CONTRACTOR
ST-01	SOIL TEST REPORT FOR TEST PIT AT THE WET WELL LOCATION	DPW STANDARD SPECIFICATION	GEO-TECH

**OWNER'S CERTIFICATION**

I, TIM GREEN, HEREBY CERTIFY THAT I AM THE CURRENT, LEGAL OWNER OF THE PROPERTY TO BE SEWERED AND THAT THE SANITARY SEWER WILL BE CONSTRUCTED IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS, CODES, STANDARDS, GUIDELINES, LAWS AND POLICES, INCLUDING BUT NOT LIMITED TO CHAPTER 38 OF THE NEW CASTLE COUNTY CODE, THE DEPARTMENT OF SPECIAL SERVICES POLICES #6 AND #7, THE NEW CASTLE COUNTY STANDARD SPECIFICATIONS FOR CONSTRUCTION AND AMENDMENTS AND THE RECOMMENDED STANDARDS FOR WASTEWATER FACILITIES.

*Tim Green*

01/05/2024

DATE

**PROFESSIONAL ENGINEER'S CERTIFICATION**

I, RING LARDNER, P.E., HEREBY CERTIFY THAT I AM A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF DELAWARE WITH A BACKGROUND IN CIVIL ENGINEERING AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, I CERTIFY THAT ALL OF THE INFORMATION ON THESE SANITARY SEWER DRAWINGS IS TRUE AND CORRECT TO THE ACCURACY REQUIRED BY SURVEYING AND ENGINEERING STANDARDS AND PRACTICES AND BY THE NEW CASTLE COUNTY UNIFIED DEVELOPMENT CODE. ADDITIONALLY, THE SANITARY SEWER DESIGN HAS BEEN PREPARED IN ACCORDANCE WITH AND COMPLIES WITH ALL APPLICABLE REGULATIONS, CODES, STANDARDS, GUIDELINES, LAWS AND POLICES, INCLUDING BUT NOT LIMITED TO CHAPTER 38 OF THE NEW CASTLE COUNTY CODE, THE DEPARTMENT OF SPECIAL SERVICES POLICES #6 AND #7, THE NEW CASTLE COUNTY STANDARD SPECIFICATIONS FOR CONSTRUCTION AND AMENDMENTS AND THE RECOMMENDED STANDARDS FOR WASTEWATER FACILITIES.



01/05/2024

DATE

DAVIS, BOWEN & FRIEDEL, INC.  
BY RING LARDNER, P.E.

# MONARCH

## ST. GEORGES HUNDRED

### NEW CASTLE COUNTY, DELAWARE

#### PROJECT NO. 0818C048

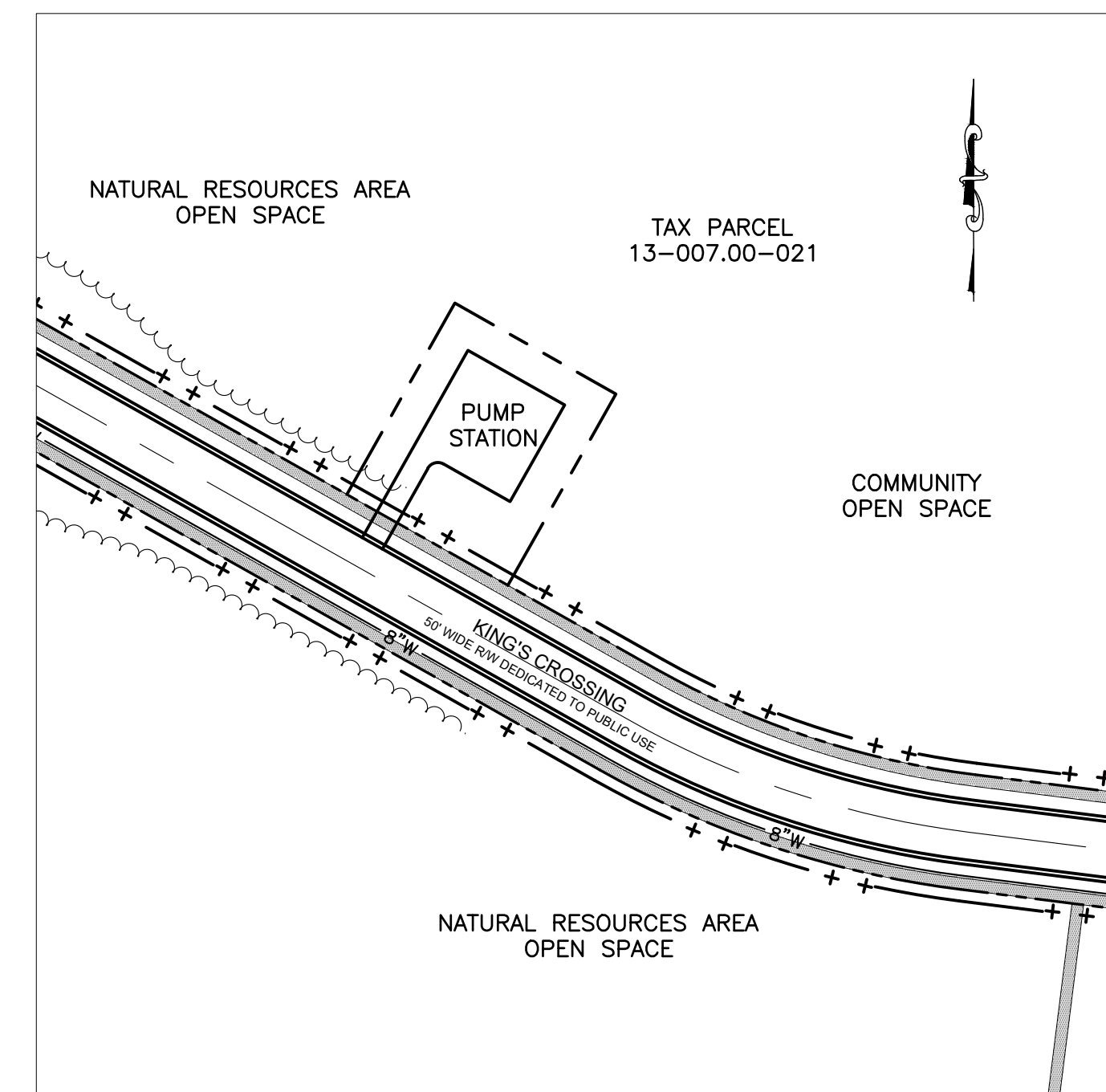
#### MAY 2023

**LEGEND**

	EXISTING	PROPOSED
CONTOUR ELEVATION	8	8
SEWER GRAVITY MAIN, MANHOLE	8" S	8" S
SEWER FORCEMAIN	8" FM	8" FM
CATCH BASIN, STORMDRAIN, MANHOLE, END SECTION	15" RCP	15" RCP
FENCE LINE	X	X
EDGE OF TREE LINE	Wavy line	Wavy line
EASEMENT	+	+
PS BOUNDARY / ROW	- - -	- - -
PS PAVED AREA	Diagonal hatching	Diagonal hatching
CONCRETE SIDEWALK	Grid hatching	Grid hatching
WATER LINE & FROST FREE HYDRANT	Circle with cross	Circle with cross



**VICINITY MAP**  
SCALE: 1" = 2,000'



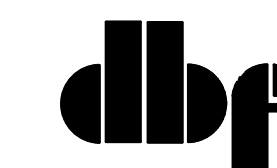
**LOCATION MAP**  
SCALE: 1" = 800'

**SEWER DETAIL TABLE**

HEADER PIPING: 15 LF, 6" DIP
FORCE MAIN PIPING: KINGS CROSSING 1,552 LF, 8" PVC (DR-18)
RATLEDGE ROAD 1,813 LF, 8" PVC (DR-18)
10 LF, 10" PVC (DR-18)
<b>TOTAL 3375 LF</b>

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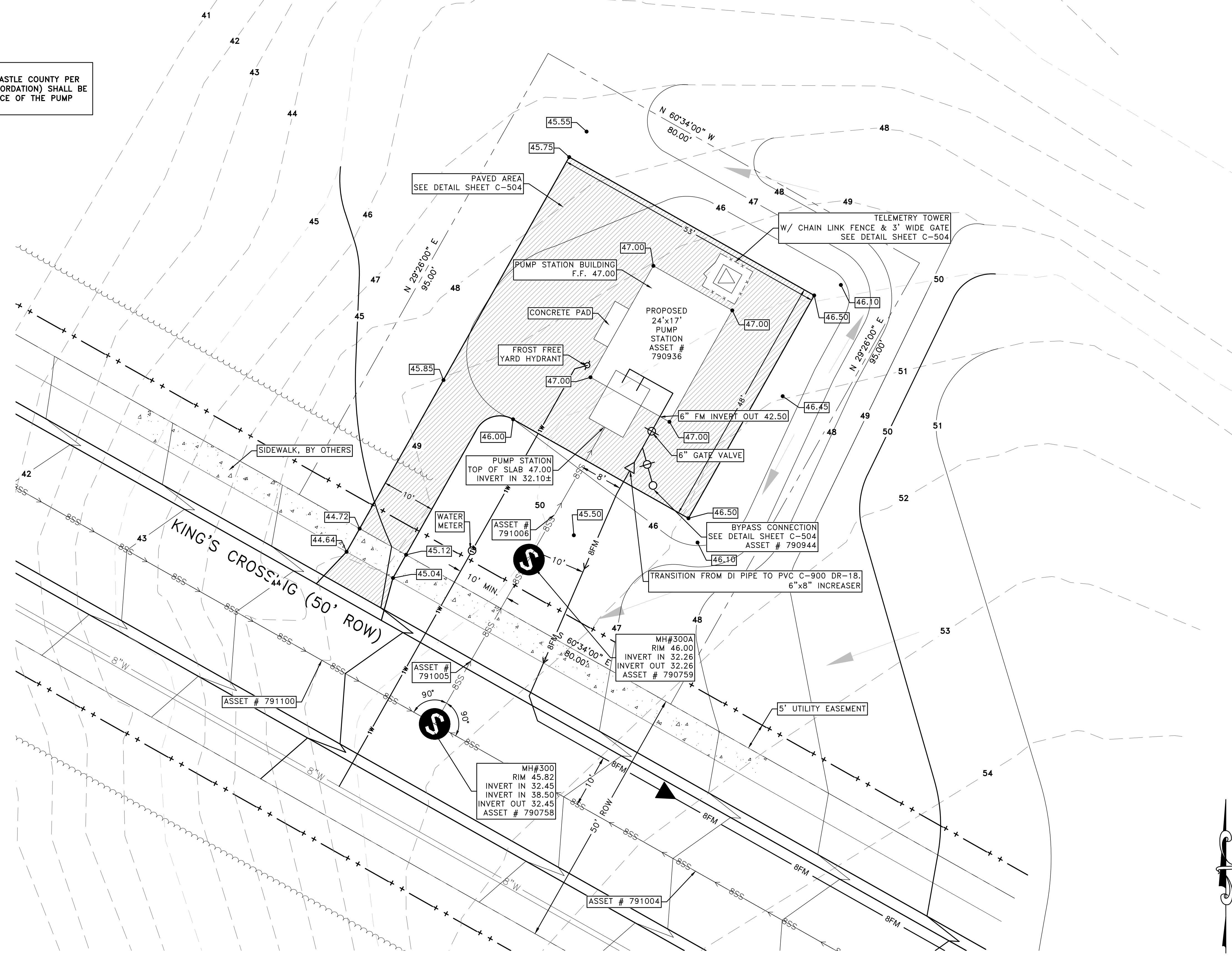
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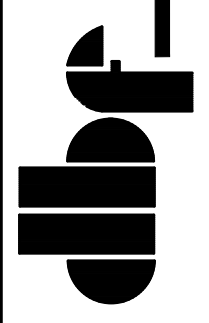
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01-05-2024

**C-500**

NOTE:  
THE PUMP STATION PARCEL DEDICATED TO NEW CASTLE COUNTY PER INSTRUMENT NUMBER (TO BE FILLED IN UPON RECORDATION) SHALL BE DEEDED TO NEW CASTLE COUNTY UPON ACCEPTANCE OF THE PUMP STATION & FORCE MAIN.



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PUMP STATION SITE PLAN

**MONARCH**  
**ST. GEORGES HUNDRED**  
**NEW CASTLE COUNTY, DELAWARE**

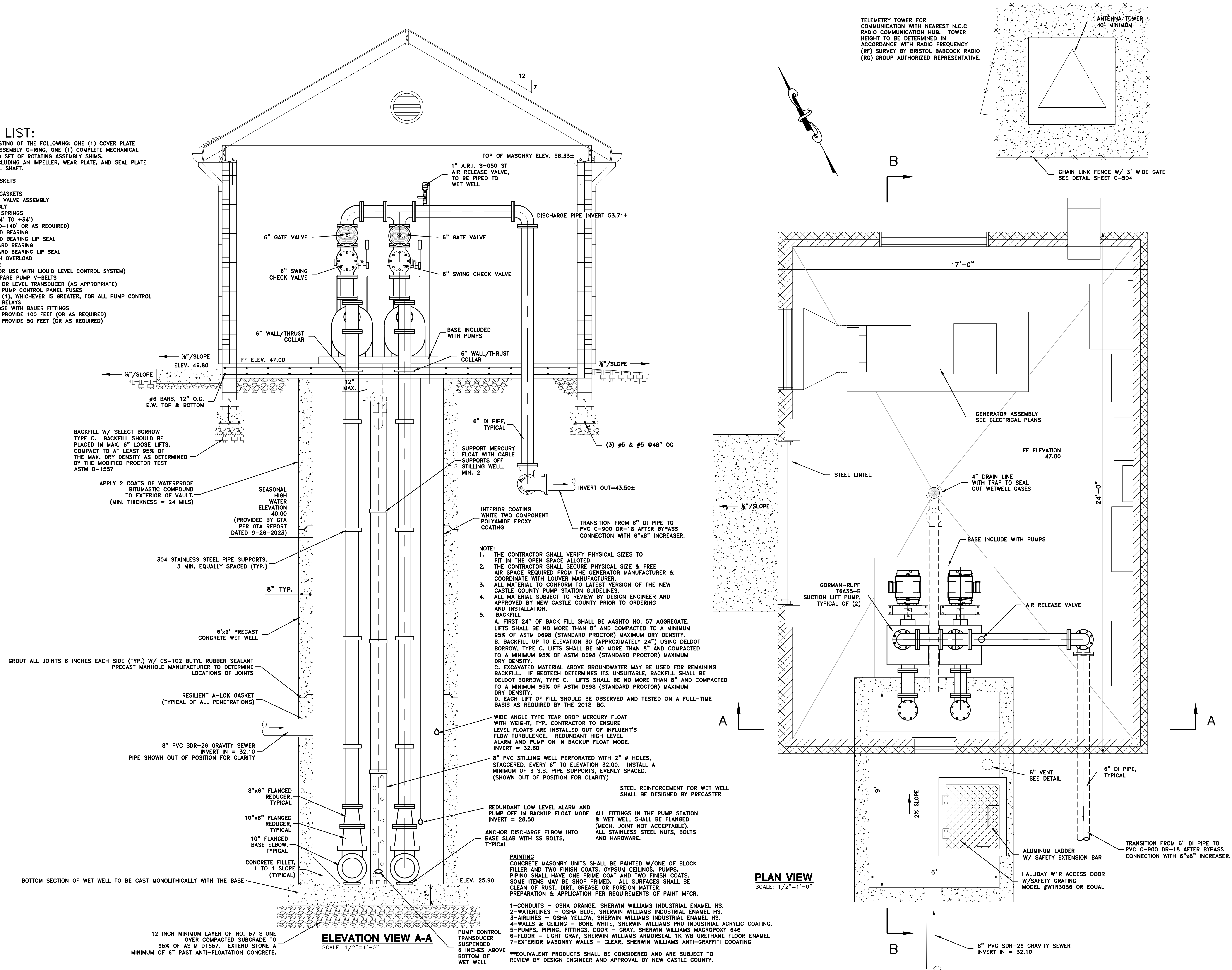
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01-05-2024

Date: MAY 2023  
Scale: 1"=10'  
Dwn.By: R/L  
Proj.No.: 0818C048  
Dwg.No.:

**C-501**

**SPARE PARTS LIST:**

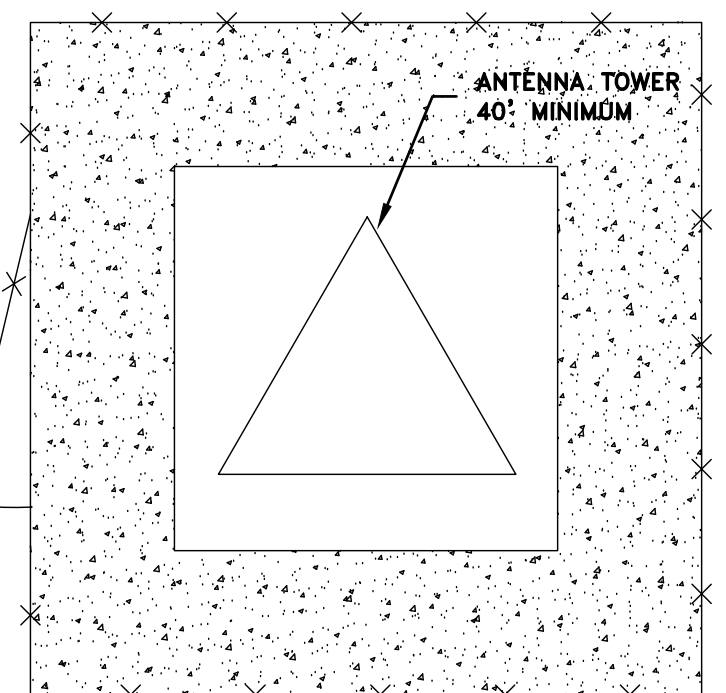
1. ONE SPARE PARTS KIT CONSISTING OF THE FOLLOWING: ONE (1) COVER PLATE O-RING, ONE (1) ROTATING ASSEMBLY O-RING, ONE (1) COMPLETE MECHANICAL SEAL ASSEMBLY, AND ONE (1) SET OF ROTATING ASSEMBLY SHIMS.
2. ONE ROTATING ASSEMBLY, INCLUDING AN IMPELLER, WEAR PLATE, AND SEAL PLATE AND 17-4PH STAINLESS STEEL SHAFT.
3. ONE (1) SPARE IMPELLER
4. TWO (2) SUCTION FLANGE GASKETS
5. ONE (1) FILL COVER GASKET
6. TWO (2) DISCHARGE FLANGE GASKETS
7. ONE (1) PUMP SUCTION FLAP VALVE ASSEMBLY
8. ONE (1) WEAR PLATE ASSEMBLY
9. TWO (2) AIR RELEASE VALVE SPRINGS
10. ONE (1) SUCTION GAUGE (-34' TO +34')
11. ONE (1) DISCHARGE GAUGE (0-140' OR AS REQUIRED)
12. ONE (1) PUMP SHAFT INBOARD BEARING
13. ONE (1) PUMP SHAFT INBOARD BEARING LIP SEAL
14. ONE (1) PUMP SHAFT OUTBOARD BEARING
15. ONE (1) PUMP SHAFT OUTBOARD BEARING LIP SEAL
16. ONE (1) MOTOR STARTER WITH OVERLOAD
17. ONE (1) ELAPSED TIME METER
18. ONE (1) SPARE AIR PUMP (FOR USE WITH LIQUID LEVEL CONTROL SYSTEM)
19. ONE (1) COMPLETE SET OF SPARE PUMP V-BELTS
20. ONE (1) SPARE AIR BUBBLER OR LEVEL TRANSDUCER (AS APPROPRIATE)
21. 100% REPLACEMENT FOR ALL PUMP CONTROL PANEL FUSES
22. 10% OR A QUANTITY OF ONE (1), WHICHEVER IS GREATER, FOR ALL PUMP CONTROL PANEL TIMING AND CONTROL RELAYS
23. ONE LENGTH OF LAY FLAT HOSE WITH BAUER FITTINGS
  - A) FOR 4" PUMP DISCHARGE, PROVIDE 100 FEET (OR AS REQUIRED)
  - B) FOR 6" PUMP DISCHARGE, PROVIDE 50 FEET (OR AS REQUIRED)



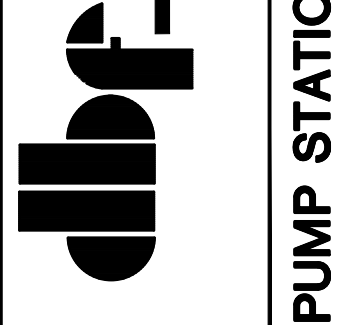
- NOTE:**
1. THE CONTRACTOR SHALL VERIFY PHYSICAL SIZES TO FIT IN THE OPEN SPACE ALLOTTED.
  2. THE CONTRACTOR SHALL SECURE PHYSICAL SIZE & FREE AIR SPACE REQUIRED FROM THE GENERATOR MANUFACTURER & COORDINATE WITH LOUVER MANUFACTURER.
  3. ALL MATERIAL TO CONFORM TO LATEST VERSION OF THE NEW CASTLE COUNTY PUMP STATION GUIDELINES.
  4. ALL MATERIAL SUBJECT TO REVIEW BY DESIGN ENGINEER AND APPROVED BY NEW CASTLE COUNTY PRIOR TO ORDERING AND INSTALLATION.
  5. BACKFILL
    - A. FIRST 24" OF BACK FILL SHALL BE AASHTO NO. 57 AGGREGATE. LIFTS SHALL BE NO MORE THAN 8" AND COMPACTED TO A MINIMUM 95% OF ASTM D698 (STANDARD PROCTOR) MAXIMUM DRY DENSITY.
    - B. BACKFILL UP TO ELEVATION 30 (APPROXIMATELY 24") USING DELDOT BORROW, TYPE C. LIFTS SHALL BE NO MORE THAN 8" AND COMPACTED TO A MINIMUM 95% OF ASTM D698 (STANDARD PROCTOR) MAXIMUM DRY DENSITY.
    - C. EXCAVATED MATERIAL ABOVE GROUNDWATER MAY BE USED FOR REMAINING BACKFILL, IF GEOTECH DETERMINES ITS UNSUITABLE, BACKFILL SHALL BE DELDOT BORROW, TYPE C. LIFTS SHALL BE NO MORE THAN 8" AND COMPACTED TO A MINIMUM 95% OF ASTM D698 (STANDARD PROCTOR) MAXIMUM DRY DENSITY.
    - D. EACH LIFT OF FILL SHOULD BE OBSERVED AND TESTED ON A FULL-TIME BASIS AS REQUIRED BY THE 2018 IBC.

- PAINTING**  
CONCRETE MASONRY UNITS SHALL BE PAINTED W/ONE OF BLOCK FILLER AND TWO FINISH COATS. GYPSUM CEILINGS, PUMPS, PIPING SHALL HAVE ONE PRIME COAT AND TWO FINISH COATS. SOME ITEMS MAY BE SHOP PRIMED. ALL SURFACES SHALL BE CLEAN OF RUST, DIRT, GREASE OR FOREIGN MATTER. PREPARATION & APPLICATION PER REQUIREMENTS OF PAINT MFRG.
- 1-CONDUITS - OSHA ORANGE, SHERWIN WILLIAMS INDUSTRIAL ENAMEL HS.
  - 2-WATERLINES - OSHA BLUE, SHERWIN WILLIAMS INDUSTRIAL ENAMEL HS.
  - 3-AIRLINES - OSHA YELLOW, SHERWIN WILLIAMS INDUSTRIAL ENAMEL HS.
  - 4-WALLS & CEILING - BONE WHITE, SHERWIN WILLIAMS PRO INDUSTRIAL ACRYLIC COATING.
  - 5-PUMPS, PIPING, FITTINGS, DOOR - GRAY, SHERWIN WILLIAMS MACROPOXY 646
  - 6-FLOOR - LIGHT GRAY, SHERWIN WILLIAMS ARMORSEAL 1K WB URETHANE FLOOR ENAMEL
  - 7-EXTERIOR MASONRY WALLS - CLEAR, SHERWIN WILLIAMS ANTI-GRAFFITI COATING
- \*\*EQUIVALENT PRODUCTS SHALL BE CONSIDERED AND ARE SUBJECT TO REVIEW BY DESIGN ENGINEER AND APPROVAL BY NEW CASTLE COUNTY.

TELEMETRY TOWER FOR COMMUNICATION WITH NEAREST N.C.C RADIO COMMUNICATION HUB. TOWER HEIGHT TO BE DETERMINED IN ACCORDANCE WITH RADIO FREQUENCY (RF) SURVEY BY BRISTOL BABCOCK RADIO (RG) GROUP AUTHORIZED REPRESENTATIVE.



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PUMP STATION ELEVATION PLAN & DETAILS

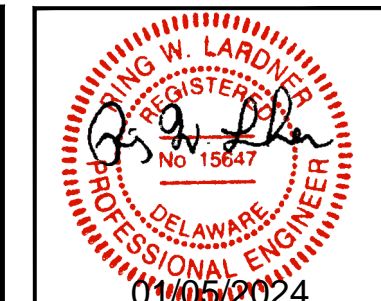
**MONARCH**  
**ST. GEORGES HUNDRED**  
**NEW CASTLE COUNTY, DELAWARE**

**REVISIONS:**

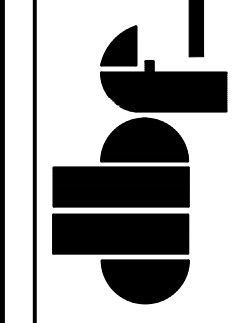
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Date:	MAY 2023
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**C-502**



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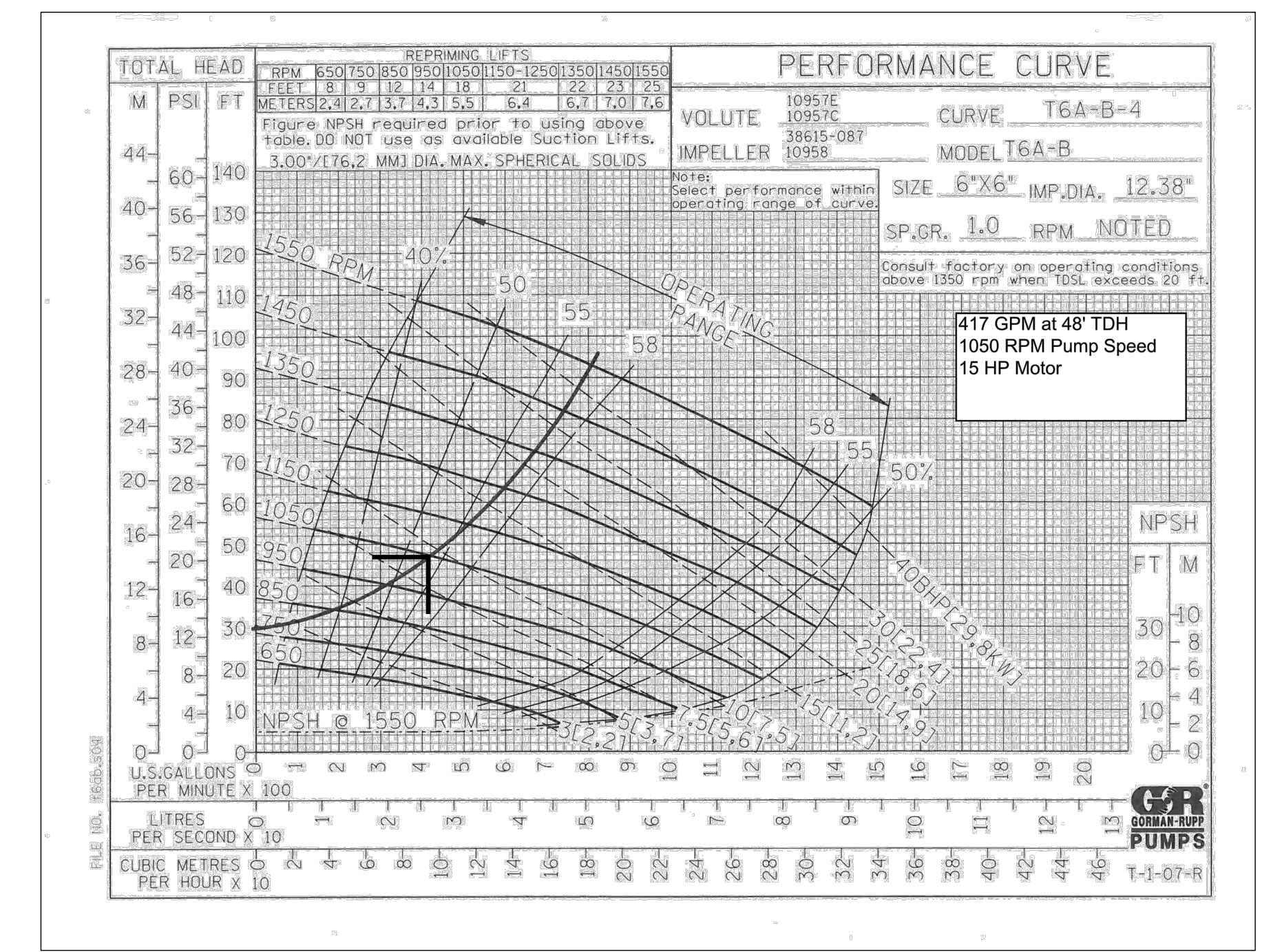
PUMP STATION ELEVATION VIEW

MONARCH  
ST. GEORGES HUNDRED  
NEW CASTLE COUNTY, DELAWARE

REVISIONS:  
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03-08-2023  
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Scale: 1"=5'  
Dwn.By: RJL  
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Dwg.No.:

C-503



PUMP CURVE  
NO SCALE

**SANITARY FLOW DATA**

INITIAL AVERAGE DAILY FLOW:  
SINGLE FAMILY 501 EDU'S  
ON SITE 501 EDU'S x 300 G.P.D.: 150,300 G.P.D.

PEAK FLOW:  
150,300 G.P.D. x 4 PEAKING FACTOR: 601,200 G.P.D.

FORCE MAIN CALCULATIONS:  
HEADER PIPING: 15 LF, 6" DIP, C=120  
FORCE MAIN PIPING: 3,361 LF, 8" PVC (DR-15), C=130  
VELOCITY: 2.63 FPS

**HYDRAULIC CALCULATIONS**

STATIC SUCTION LIFT: -19.76 FT.  
STATIC DISCHARGE HEAD: 10.20 FT.  
DESIGN FLOW: 418 GPM  
FRICTION HEAD: 17.20 FT.  
MINOR LOSSES: ADDED EQUIVALENT LENGTH TO FORCE MAIN  
TOTAL DYNAMIC HEAD: 47.16 FT.

**CONTROL SETTINGS**

8 INCH INFLUENT INVERT ELEV.= 32.10 FT.  
HIGH WATER ALARM ELEV.= 32.10 FT.  
LAG PUMP ON ELEV.= 32.10 FT.  
LEAD PUMP ON ELEV.= 31.60 FT.  
PUMP OFF ELEV.= 29.60 FT.  
LOW WATER ALARM ELEV.= 28.50 FT.  
BOTTOM OF WET WELL= 25.90 FT.

**PUMP STATION WET WELL SIZING (PER CODE)**

INITIAL PEAK DESIGN FLOW: (150,300 GPD./1440 MIN./DAY) x 4.00 (P.F.)= 418 GPM

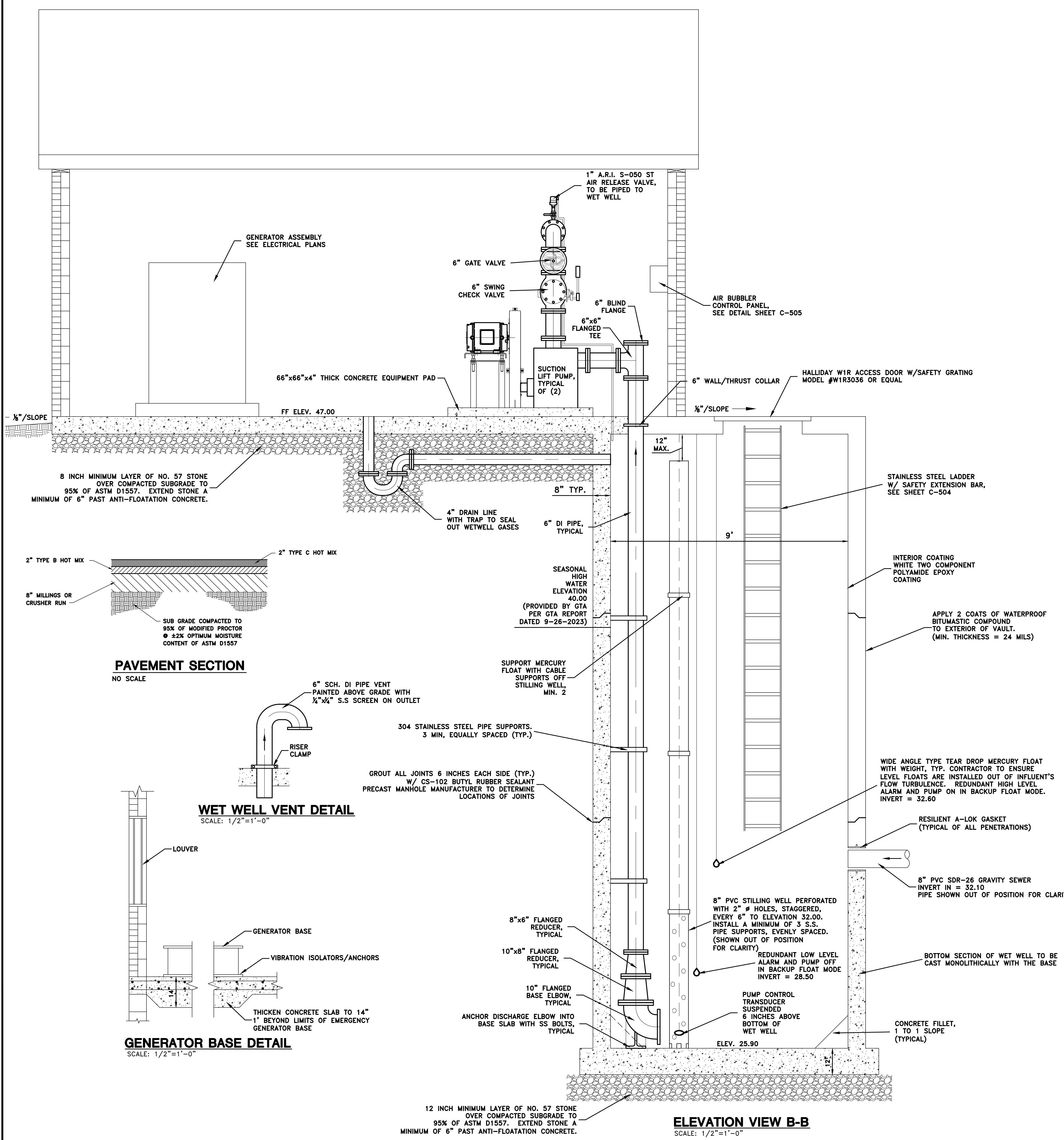
WET WELL VOLUME (BASED ON FUTURE FLOW):  
V<sub>MIN</sub>=(15 MIN. x 418 GPM/4)x2=783.75 GAL. 104.77 CF

USING 6'x9' WET WELL: AREA= 54.00 SF

DISTANCE FROM PUMP ON TO PUMP OFF:  
104.77 CF/54.00 SF= 1.94 FT.

**BUOYANCY CALCULATIONS**

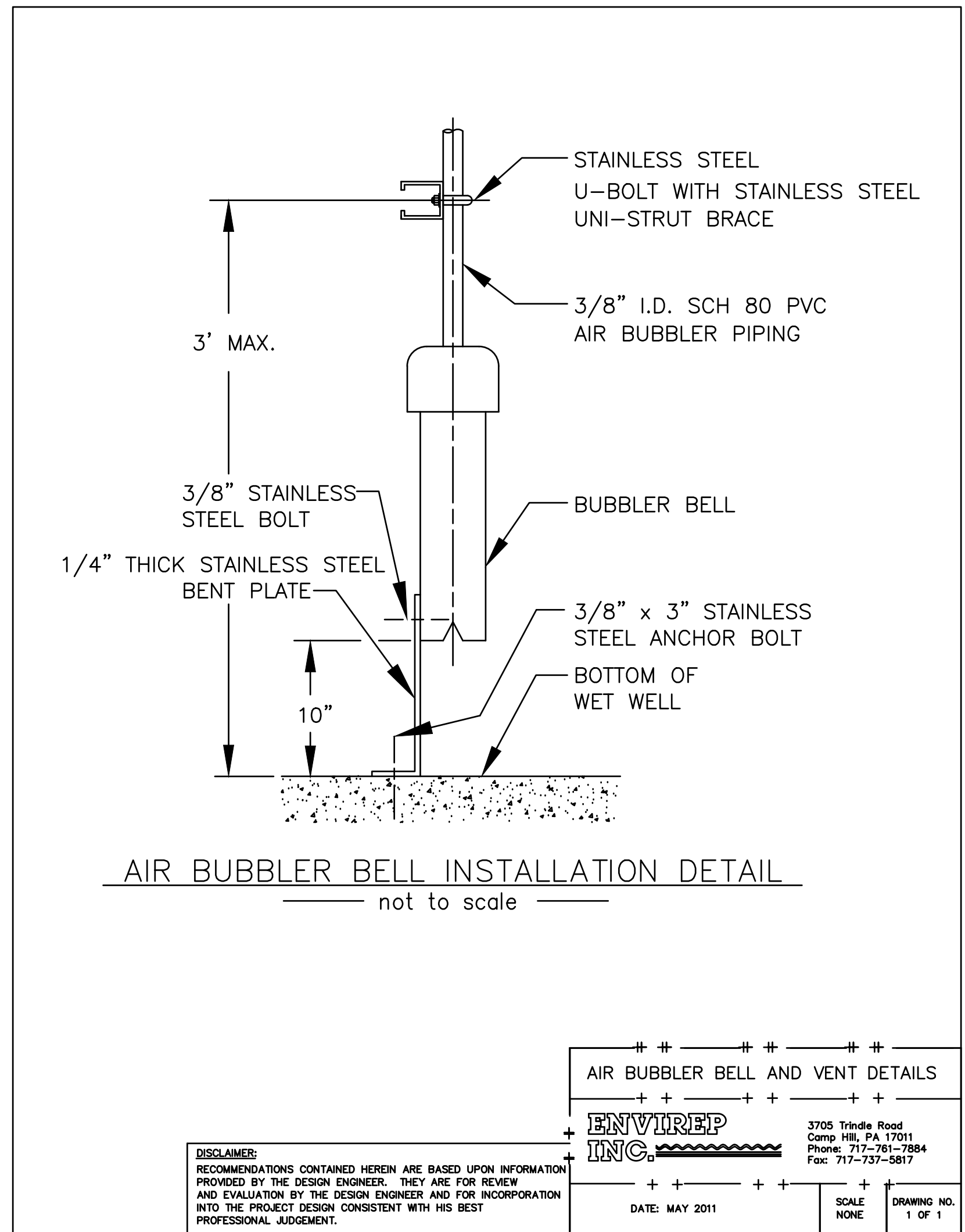
Description	Amount	Units
Cross-sectional area of square/rectangle Wet Well	54	s.f
Wall Thickness	8	Inches
Outside Cross-sectional area of Wet Well	75.8	s.f
Depth of Wet Well (to Top of Base)	21.1	Feet
Volume of Water Displaced by the Wet Well	1,598.9	c.f.t.
Weight of Water	62.4	lbs/c.f.t.
Bouyant Force (Weight of Water Displaced)	99,772	pounds
Safety Factor	1.50	
Counteractive Weight Required	149,658	pounds
Weight of Concrete	145	lbs/c.f.t.
Weight of Concrete in Wet Well Walls	66,629	pounds
Proposed Dimension of Square/Rectangle Base	137.8	s.f.
Volume of Saturated Soil Over Extended Base	1,308	c.f.t.
Weight of Saturated Soil (Loose Sand)	90.0	lbs/c.f.t.
Weight of Saturated Soil Over Extended Base	117,738	pounds
Depth of Concrete Base	0.00	Inches
Volume of Concrete Base	0	c.f.t.
Weight of Concrete in Base	0	pounds
Top Slab Width	0.0	ft
Top Slab Length	0.0	ft
Top Slab Thickness	0	in
Volume of Concrete in Top Slab	0	c.f.t.
Weight of Top Slab	0	lbs/c.f.t.
Required Weight of Ballast	-34,709	pounds
Volume of Ballast (if less than 0 ballast = 0 CY)	-8.87	CY



ELEVATION VIEW B-B  
SCALE: 1/2"=1'-0"

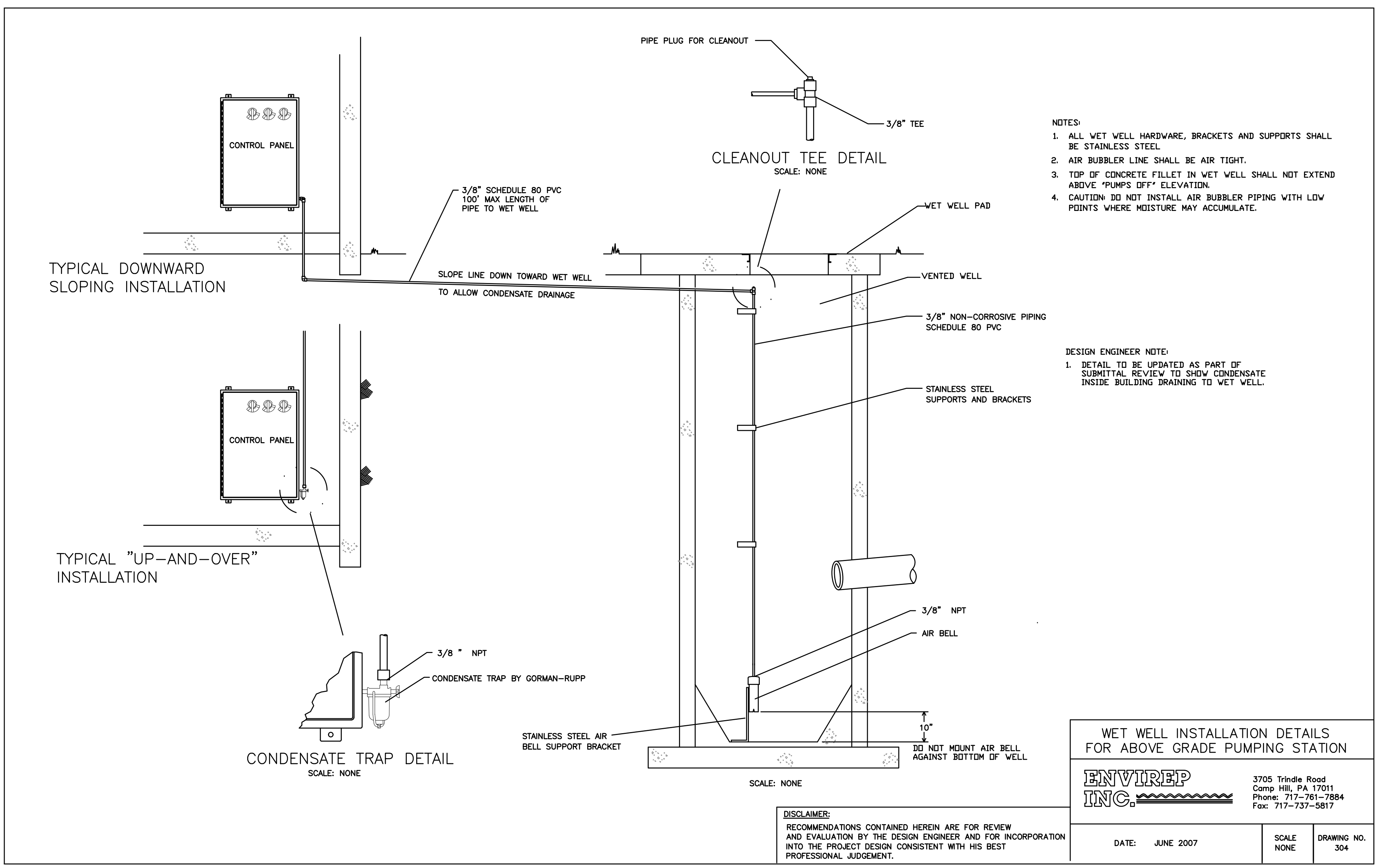
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DISCLAIMER:  
RECOMMENDATIONS CONTAINED HEREIN ARE BASED UPON INFORMATION PROVIDED BY THE DESIGN ENGINEER. THEY ARE FOR REVIEW AND EVALUATION BY THE DESIGN ENGINEER AND FOR INCORPORATION INTO THE PROJECT DESIGN CONSISTENT WITH HIS BEST PROFESSIONAL JUDGEMENT.

AIR BUBBLER BELL AND VENT DETAILS			
<b>ENVIREP INC.</b>			
3705 Trindle Road Camp Hill, PA 17011 Phone: 717-781-7884 Fax: 717-737-5817		DATE: MAY 2011	DRAWING NO. 1 OF 1

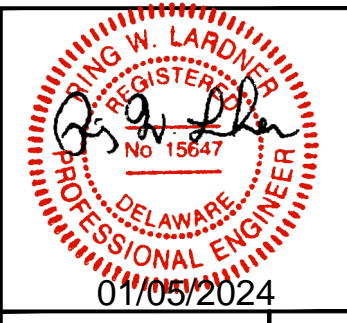


- NOTES:
1. ALL WET WELL HARDWARE, BRACKETS AND SUPPORTS SHALL BE STAINLESS STEEL.
  2. AIR BUBBLER LINE SHALL BE AIR TIGHT.
  3. TOP OF CONCRETE FILLET IN WET WELL SHALL NOT EXTEND ABOVE "PUMPS OFF" ELEVATION.
  4. CAUTION: DO NOT INSTALL AIR BUBBLER PIPING WITH LOW POINTS WHERE MOISTURE MAY ACCUMULATE.

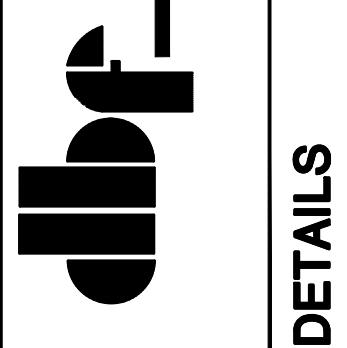
DESIGN ENGINEER NOTE:  
1. DETAIL TO BE UPDATED AS PART OF SUBMITTAL REVIEW TO SHOW CONDENSATE INSIDE BUILDING DRAINING TO WET WELL.

WET WELL INSTALLATION DETAILS FOR ABOVE GRADE PUMPING STATION		
<b>ENVIREP INC.</b>		
3705 Trindle Road Camp Hill, PA 17011 Phone: 717-781-7884 Fax: 717-737-5817		DATE: JUNE 2007
SCALE: NONE	DRAWING NO. 304	

DISCLAIMER:  
RECOMMENDATIONS CONTAINED HEREIN ARE FOR REVIEW AND EVALUATION BY THE DESIGN ENGINEER AND FOR INCORPORATION INTO THE PROJECT DESIGN CONSISTENT WITH HIS BEST PROFESSIONAL JUDGEMENT.



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ARCHITECTS, ENGINEERS & SURVEYORS  
SALISBURY, MARYLAND (410) 543-8081  
MILFORD, DELAWARE (302) 424-1441  
EASTON, MARYLAND (410) 770-4744



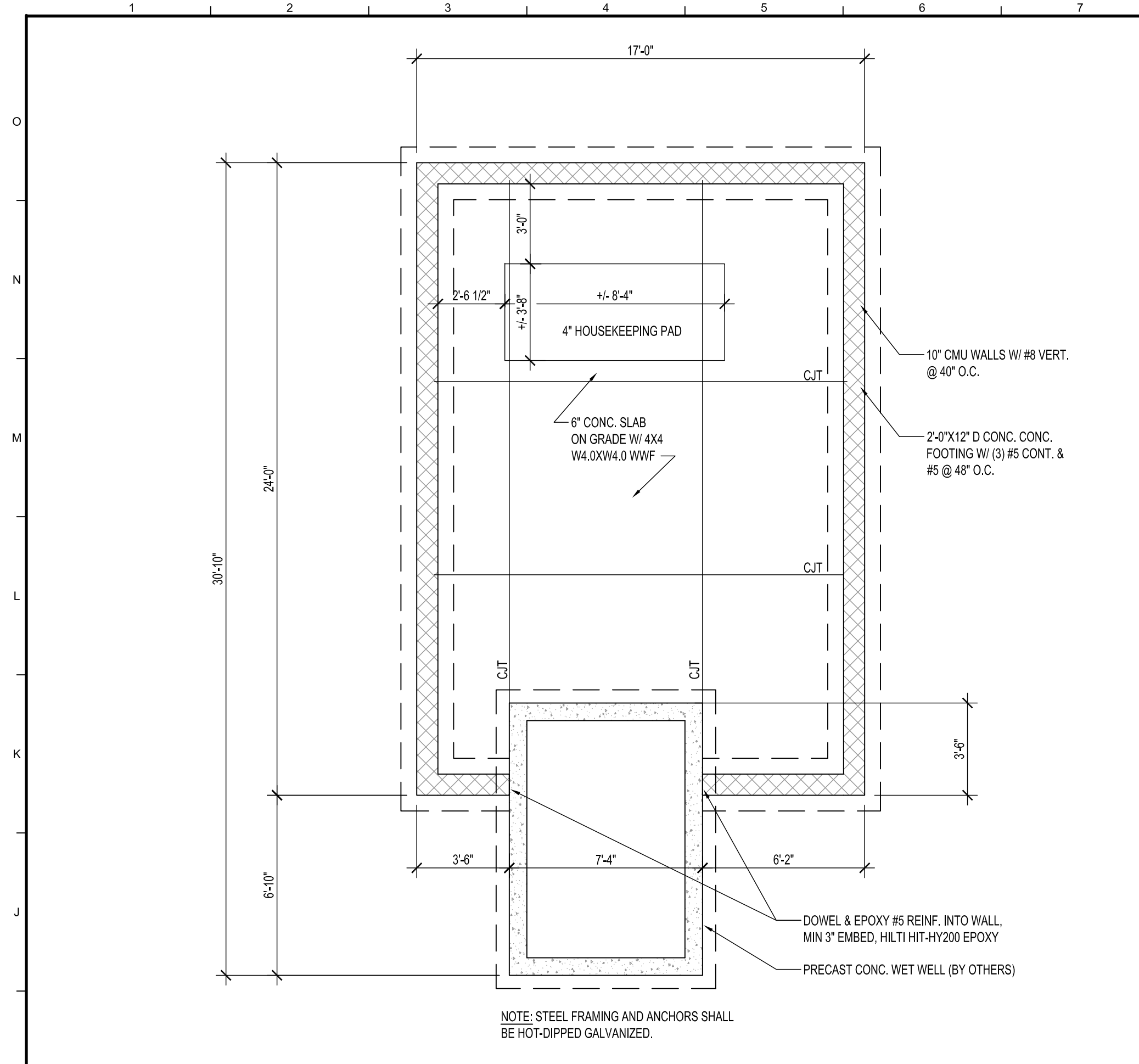
DETAILS

**MONARCH**  
**ST. GEORGES HUNDRED**  
**NEW CASTLE COUNTY, DELAWARE**

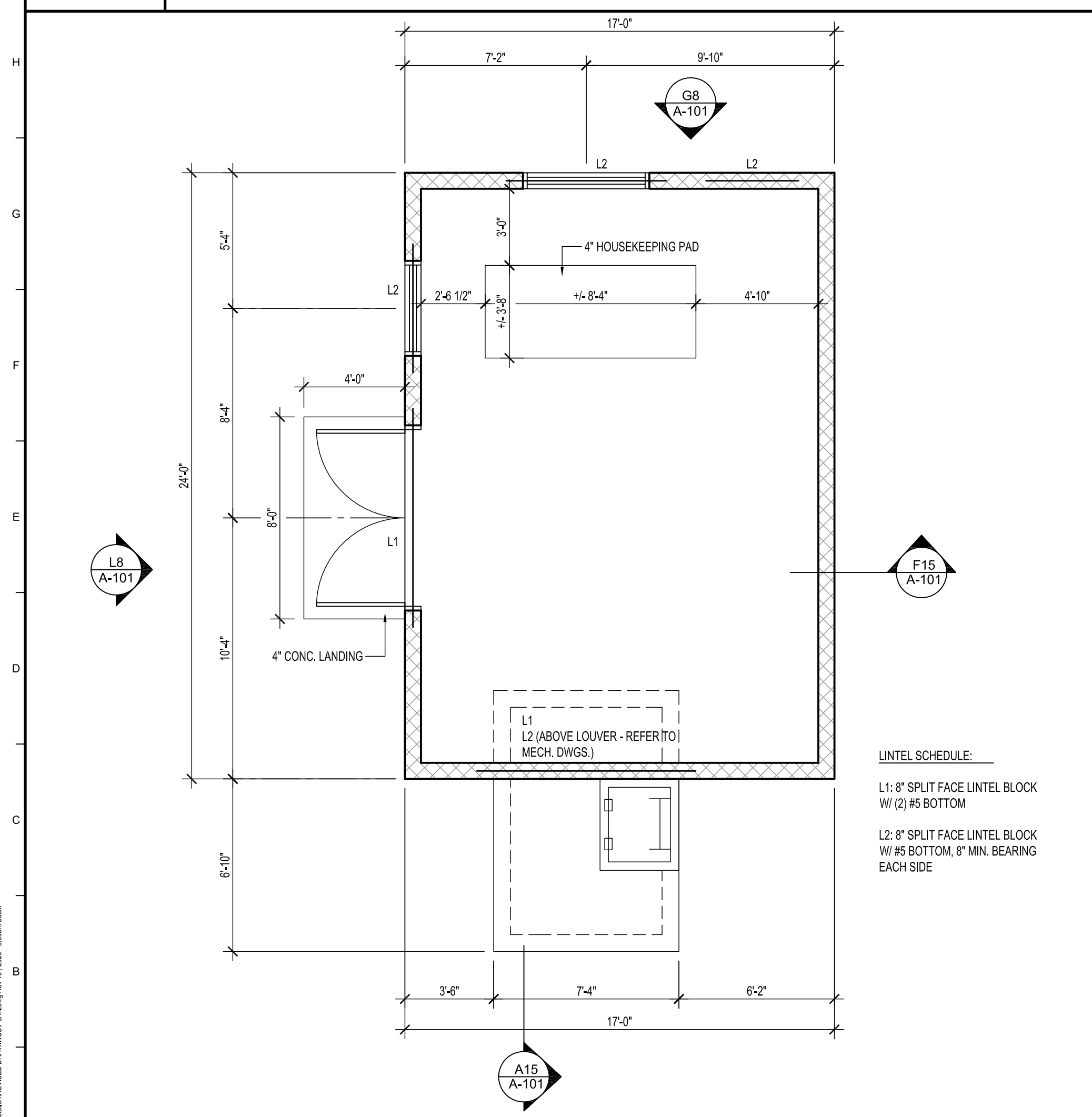
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NCC COMMENTS
03-08-2023
07-28-2023
08-25-2023

Date:	MAY 2023
Scale:	AS SHOWN
Dwn.By:	RJL
Proj.No.:	0818C048
Dwg.No.:	

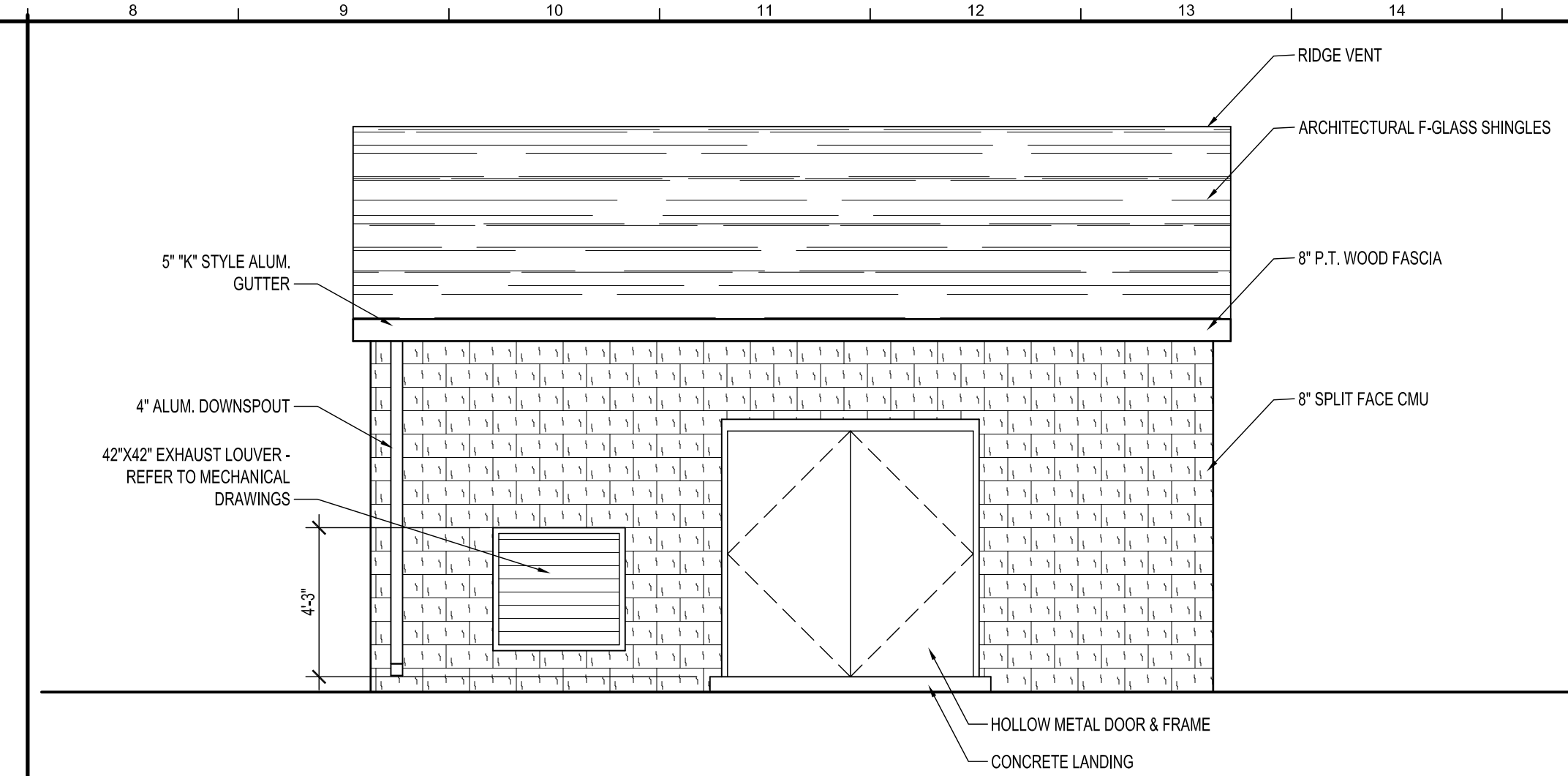
**C-505**



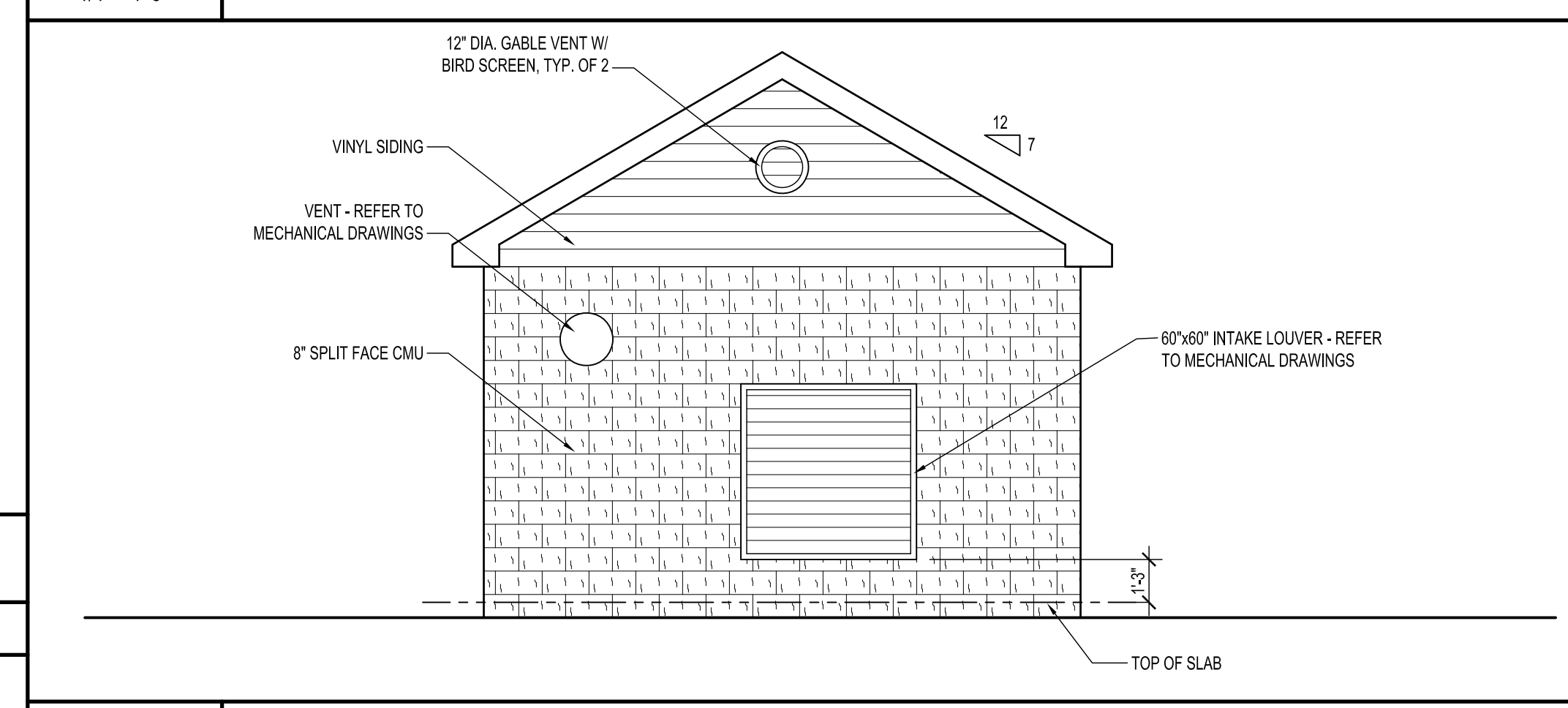
**H1 FOUNDATION PLAN**  
1/4" = 1'-0"



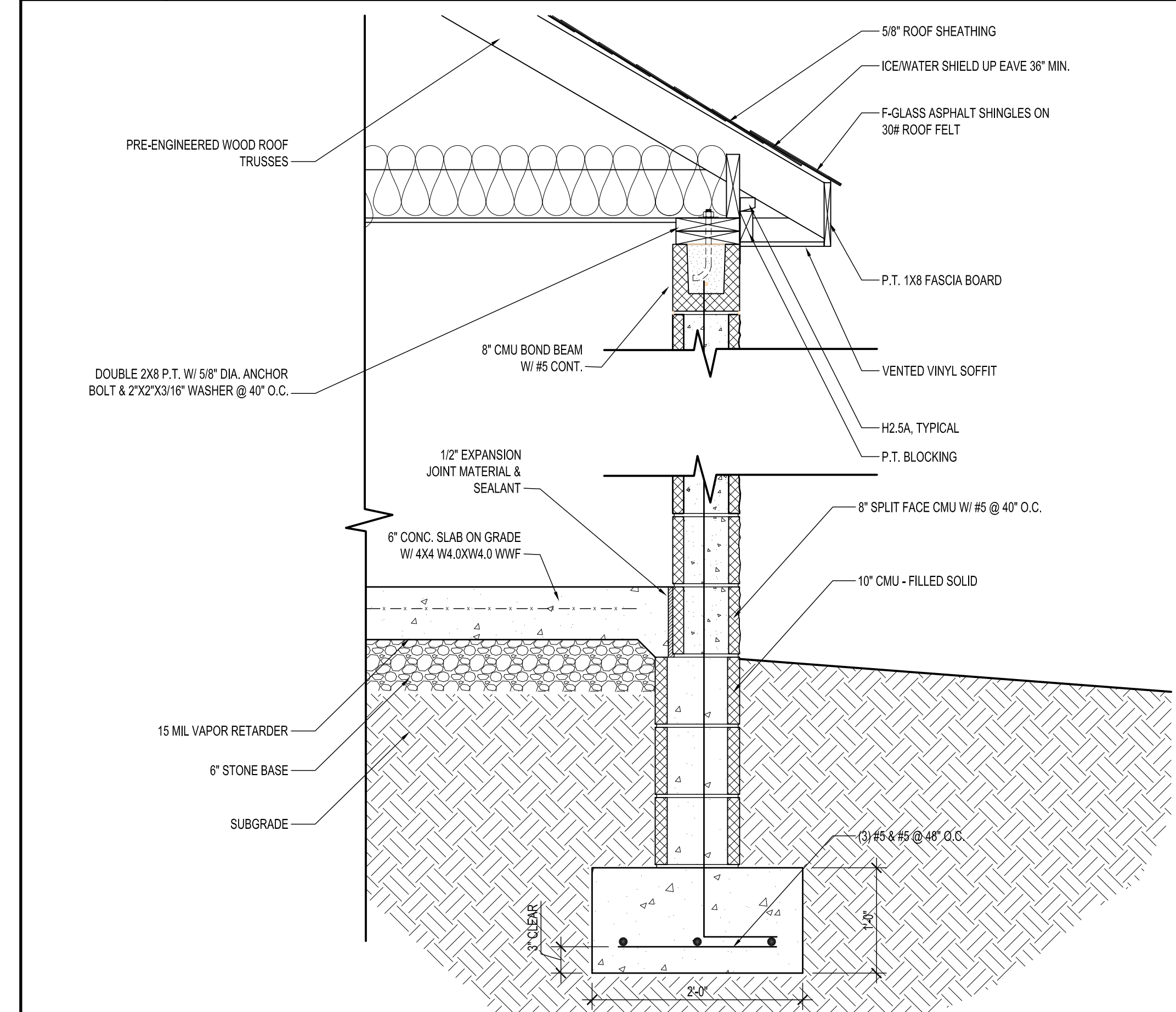
**A1 FLOOR PLAN**  
1/4" = 1'-0"



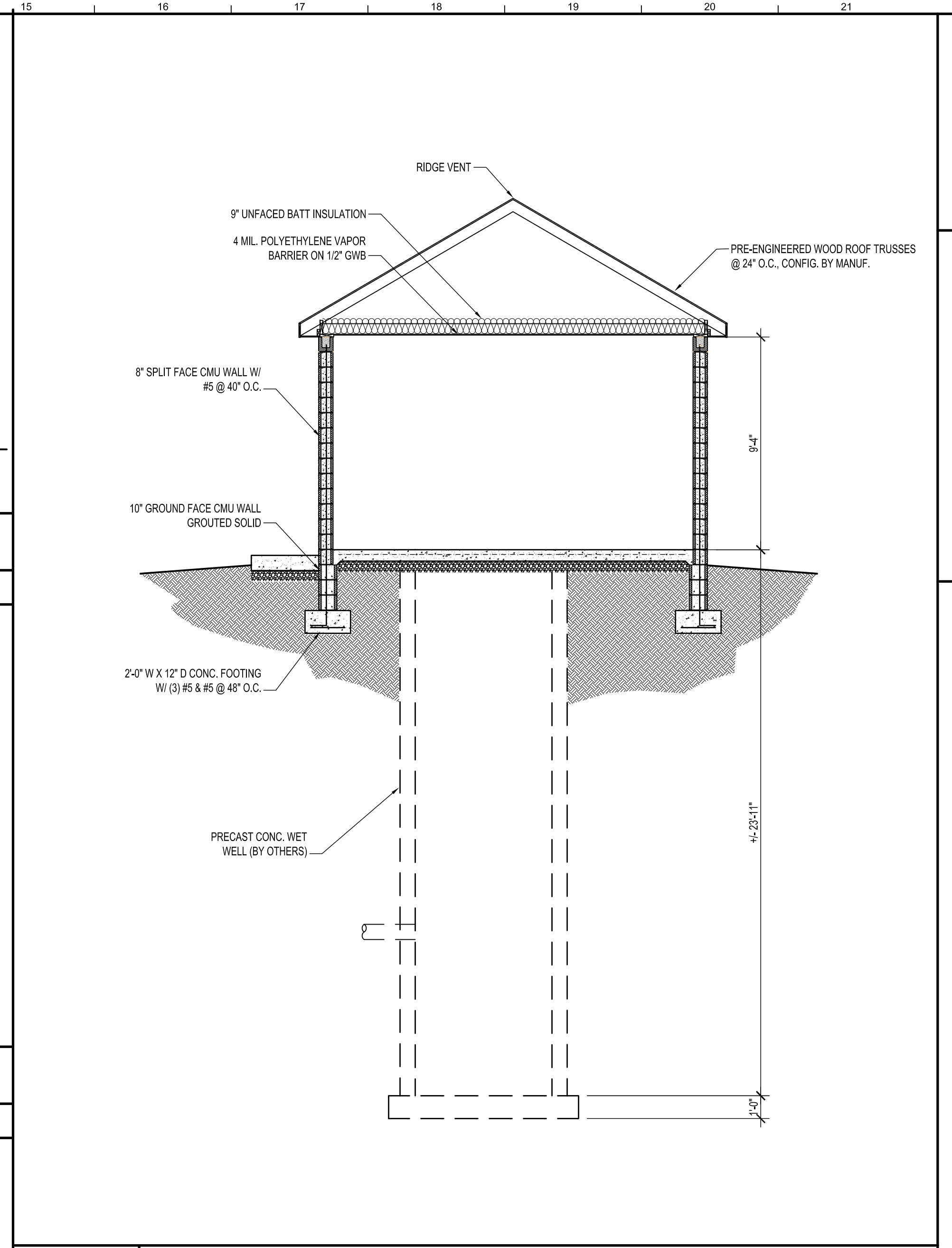
**L8 EXTERIOR ELEVATION**  
1/4" = 1'-0"



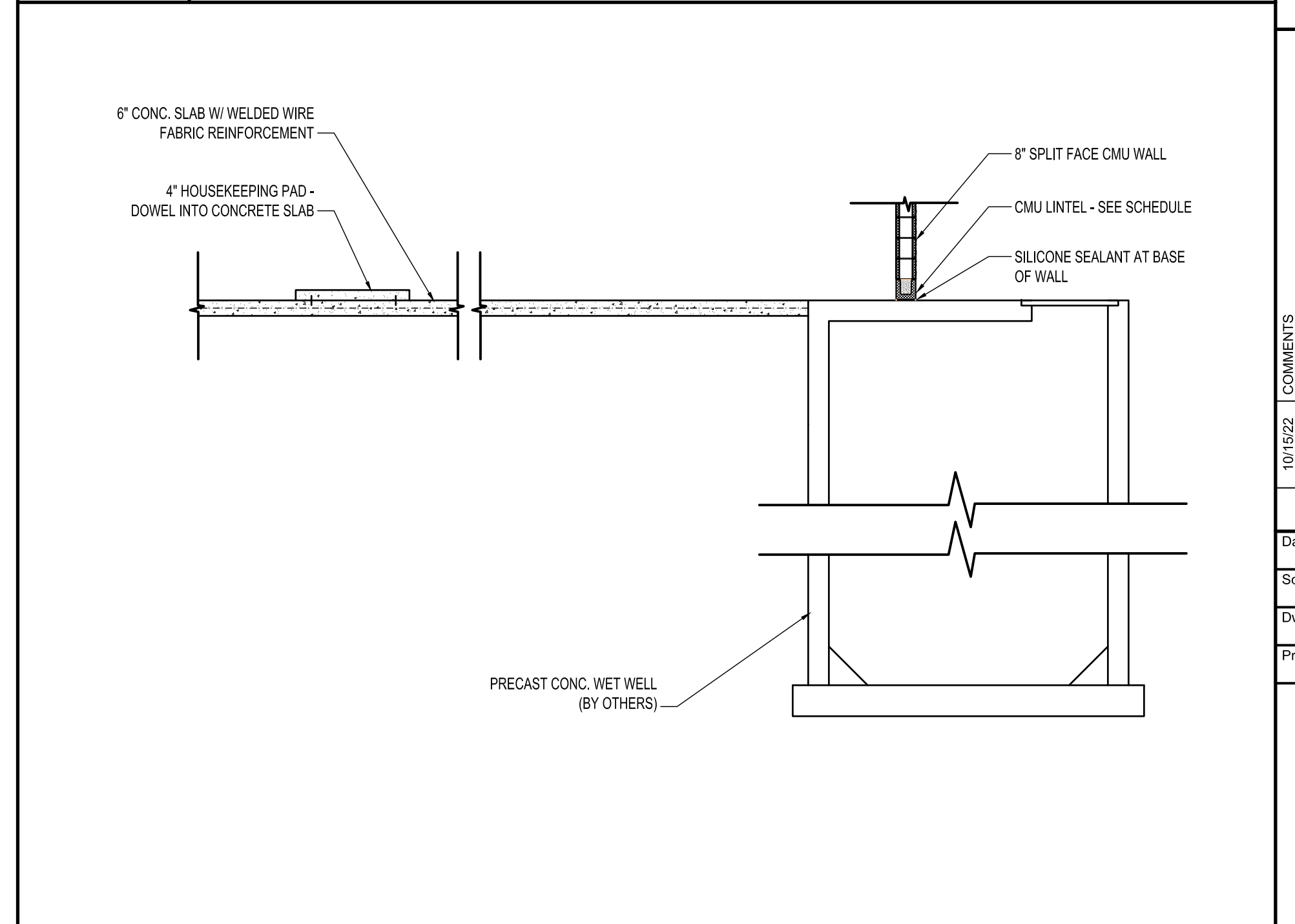
**G8 EXTERIOR ELEVATION**  
1/4" = 1'-0"



**A8 WALL SECTION**  
1" = 1'-0"



**F15 BUILDING SECTION**  
1/4" = 1'-0"



**A15 PARTIAL BUILDING SECTION**  
1/4" = 1'-0"



**DAVIS, BOWEN & FRIEDEL, INC.**  
ARCHITECTS - ENGINEERS - SURVEYORS  
1000 W. LANTANA BLVD., SUITE 200  
MILFORD, DELAWARE 19967  
410.760.7474

**MONARCH**  
**ST. GEORGE HUNDRED**  
NEW CASTLE COUNTY, DELAWARE

NO.	DATE	REVISION

NO.	DATE	REVISION

Date: 10/15/22  
Scale: AS NOTED  
Dwn. By: MPB  
Proj. No.: 0818C048.B01

**PLANS, SECTIONS & ELEVATIONS**

Dwg. No.: **A-101**





## LEGEND AND ABBREVIATIONS

	EXISTING WIRING AND/OR EQUIPMENT TO REMAIN, OR PROVIDED BY OTHERS	A	AMPERE
	NEW WIRING AND/OR EQUIPMENT. ARROW INDICATES HOMERUN, LETTERS DENOTE CIRCUIT	AB	AIR BUBBLER
	NEW WIRING RUN IN FLOOR CONSTRUCTION AND/OR UNDERGROUND	AC	ALTERNATING CURRENT
	DRAWING/EQUIPMENT REFERENCE SYMBOL	AIC	AMPERES INTERRUPTING CURRENT
	SECTION/ELEVATION REFERENCE SYMBOL	ATS	AUTOMATIC TRANSFER SWITCH
	WALL MOUNTED LIGHTING FIXTURE - UPPER CASE LETTER DENOTES FIXTURE TYPE IN LIGHTING FIXTURE SCHEDULE	BH	BLOCK HEATER
	LIGHTING FIXTURE: UPPER CASE LETTER DENOTES FIXTURE TYPE IN LIGHTING FIXTURE SCHEDULE	BC	BATTERY CHARGER
	WALL MOUNTED COMBINATION EXIT SIGN/EMERGENCY LIGHTING UNIT	CKT	CIRCUIT
	SWITCH: SINGLE POLE	CTRL	CONTROL
	SWITCH: MOTOR RATED	CU	COPPER
	CIRCUIT BREAKER	DC	DIRECT CURRENT
	DISCONNECT SWITCH : POLES & AMPACITY AS NOTED	DM	DIGITAL METER
	STARTER: SIZE & TYPE AS NOTED	DPS	DOOR POSITION SWITCH
	DUPLEX CONVENIENCE RECEPTACLE MOUNTED 18" A.F.F.-U.N.O.	EPO	EMERGENCY PUSHBUTTON OPERATOR - GENERATOR
	SINGLE SPECIAL PURPOSE RECEPTACLE WITH NEMA DESIGNATION	FLT	BALL STYLE FLOAT
	MOTOR AND MOTOR OUTLET: NUMBER DENOTES HORSEPOWER OR WATTS IF GREATER THAN 50	G/A	GENERATOR ANNUNCIATOR
	TRANSFORMER	GEN	GENERATOR
	SURFACE MTD. PANELBOARD & PANEL DESIGNATION	GFCI	GROUND FAULT CIRCUIT INTERRUPTER
	FLUSH MTD. PANELBOARD & PANEL DESIGNATION	GND	GROUND
	SEAL-OFF FITTING	MCB	MAIN CIRCUIT BREAKER
	GROUND	MFGR	MANUFACTURER
	JUNCTION BOX : SURFACE MOUNTED, FLUSH MOUNTED	MLO	MAIN LUG ONLY
	TERMINAL BLOCK	MOD	MOTOR OPERATED DAMPER
		MTD	MOUNTED
		FRI	PRIMARY
		PSI	POUNDS PER SQUARE INCH
		REQD	REQUIRED
		RTU	ROOFTOP UNIT
		SEC	SECONDARY
		SLD	SINGLE LINE DIAGRAM
		SM	SWITCH: MOTOR RATED
		SPD	SURGE PROTECTIVE DEVICE
		TB	TERMINAL BLOCK
		TYP	TYPICAL
		UNO	UNLESS NOTED OTHERWISE
		V	VOLT
		W/	WITH
		W	WATT
		WP	WEATHERPROOF
		WSFC	WELL SUPPLY FAN CONTROL
		XFMR	TRANSFORMER

## SITE NOTES

(NOT REFERENCED ON DRAWING)

1. THE LOCATION OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTORS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
2. CONTRACTOR SHALL OBTAIN THE SERVICES OF AN INDEPENDENT TESTING COMPANY, WHO SHALL BE RESPONSIBLE FOR THE IDENTIFICATION AND LOCATION OF ALL SITE UTILITIES IN THE AREA OF EXCAVATION OR DRILLING. NO ADDITIONAL COMPENSATION SHALL BE GIVEN FOR REPAIRS REQUIRED FOR DAMAGES TO EXISTING SITE UTILITIES.
3. CONTRACTOR SHALL IMMEDIATELY REPAIR, AT NO ADDITIONAL COST TO THE OWNER, ANY DAMAGE DURING EXCAVATION/ BACKFILLING, OR BORING TO EXISTING SITE UTILITIES.

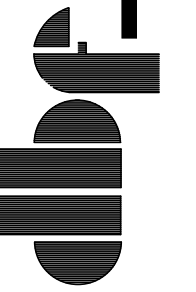
## ARC FLASH NOTES

1. EACH PANELBOARD, SWITCHBOARD, ENCLOSED CIRCUIT BREAKER & ELECTRICAL DISTRIBUTION APPARATUS SHALL BE PROVIDED WITH AN ARC FLASH LABEL INDICATING THE AVAILABLE ENERGY, SAFETY ZONE & EQUIPMENT PROTECTION REQUIRED. CONTRACTOR SHALL PREPARE AN ARC FLASH SAFETY STUDY, IN ADDITION TO THE COORDINATION & SHORT CIRCUIT STUDY AS PART OF THIS CONTRACT. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

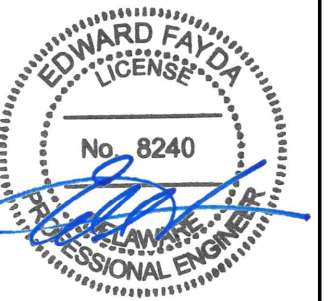
## SHORT CIRCUIT, COORDINATION & ARC FLASH NOTES

1. CONTRACTOR SHALL PROVIDE ALL FIELD INFORMATION INCLUDING BUT NOT LIMITED TO PANELBOARD DATA, FEEDER SIZE AND LENGTH & ALL OTHER RELATIVE INFORMATION TO THE ENGINEER PREPARING THE STUDY (UNDER THEIR CONTRACT) WHO WILL PERFORM THE SHORT CIRCUIT COORDINATION & ARC FLASH STUDY. ONCE STUDY IS COMPLETE, CONTRACTOR TO MAKE ALL FINAL CIRCUIT BREAKER ADJUSTMENTS TO MATCH THE STUDY & APPLY ALL ARC FLASH LABELS TO THE DISTRIBUTION EQUIPMENT.
2. CONTRACTOR SHALL VERIFY FEEDER SIZES THAT ARE SHOWN ON THE EXISTING FEEDER SCHEDULE AND PROVIDE THIS INFORMATION TO THE POWER SYSTEM STUDY ENGINEER.

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ELECTRICAL COVER SHEET



**MONARCH**  
**ST. GEORGES HUNDRED**  
**NEW CASTLE COUNTY, DELAWARE**

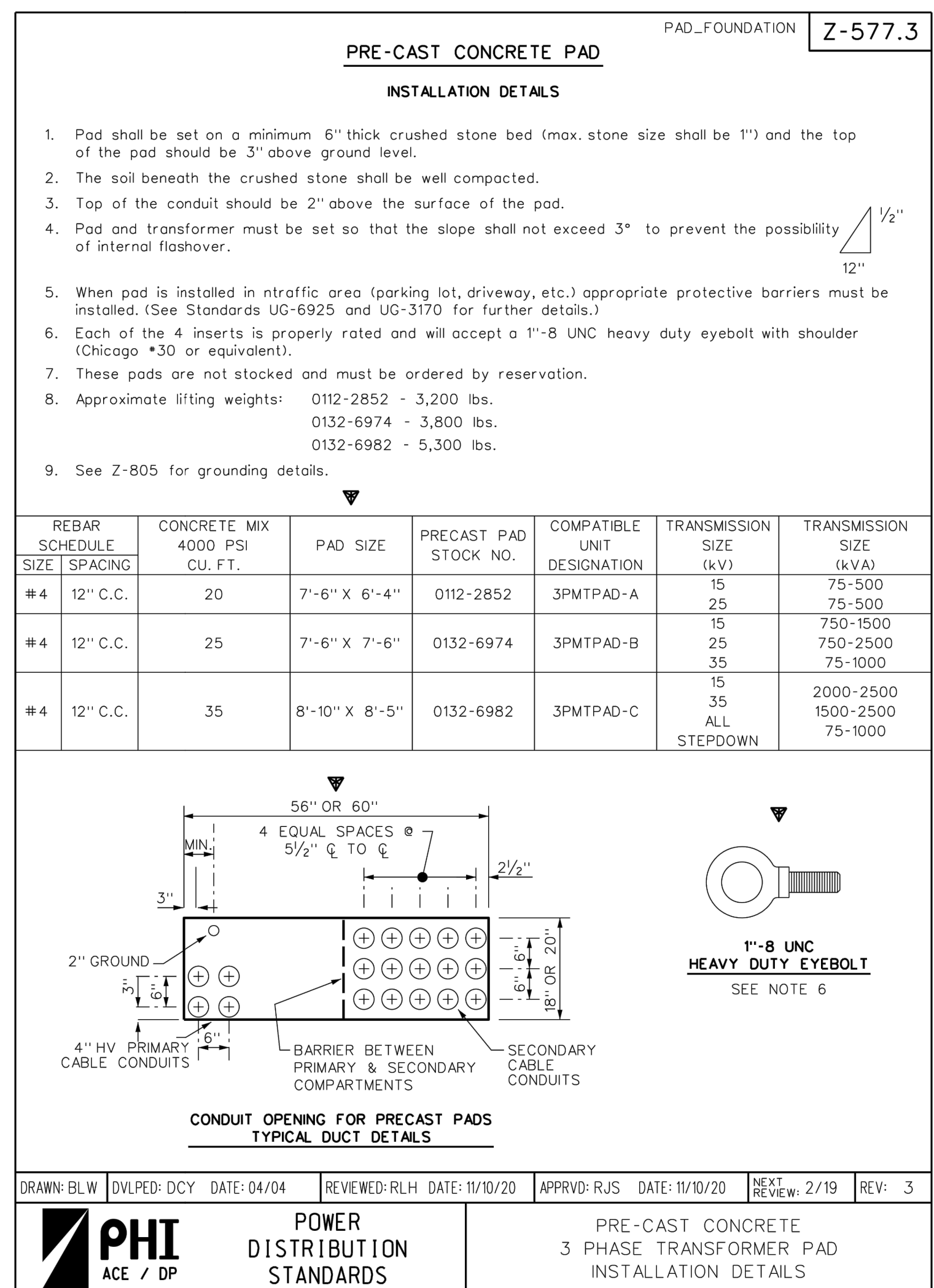
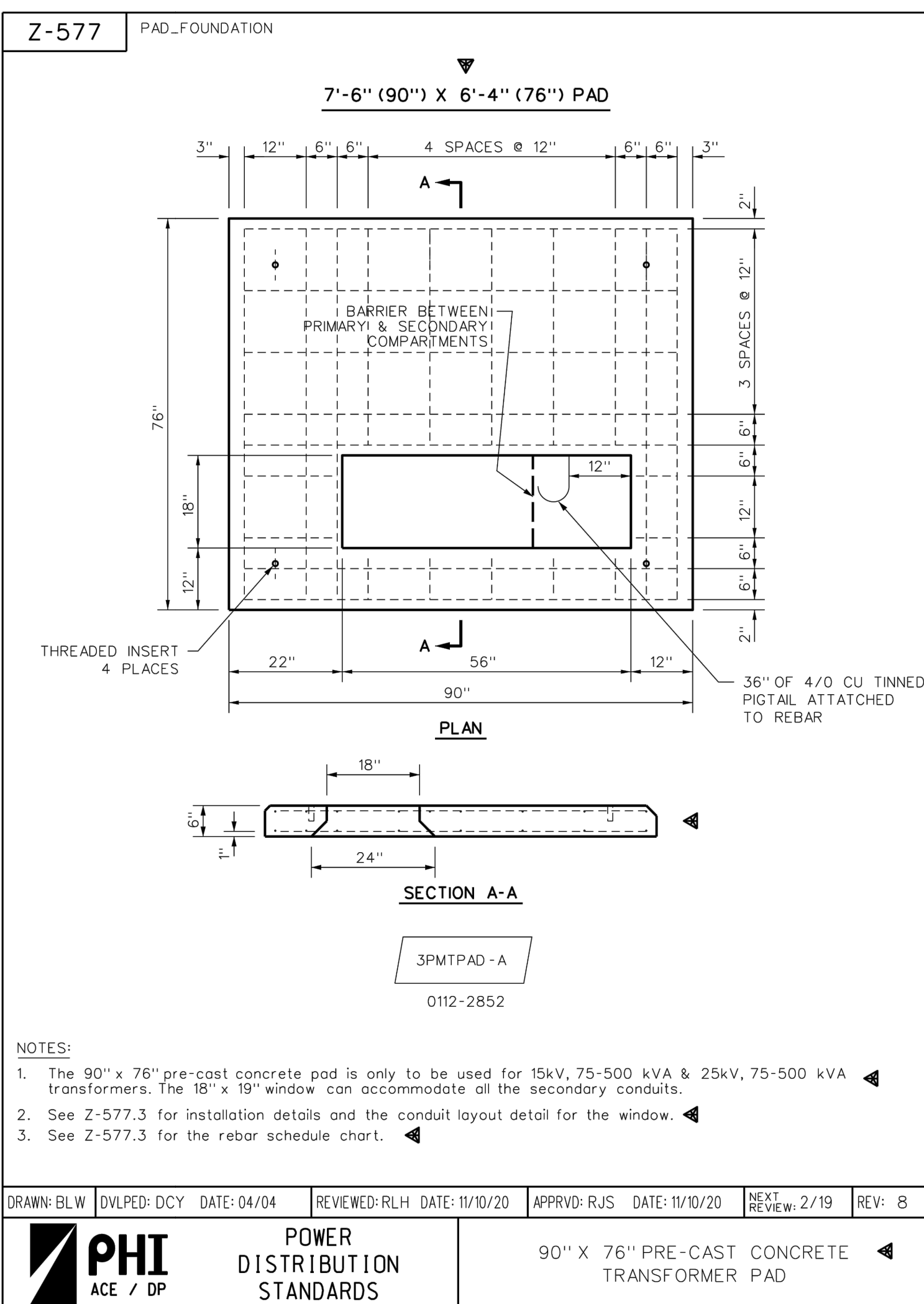
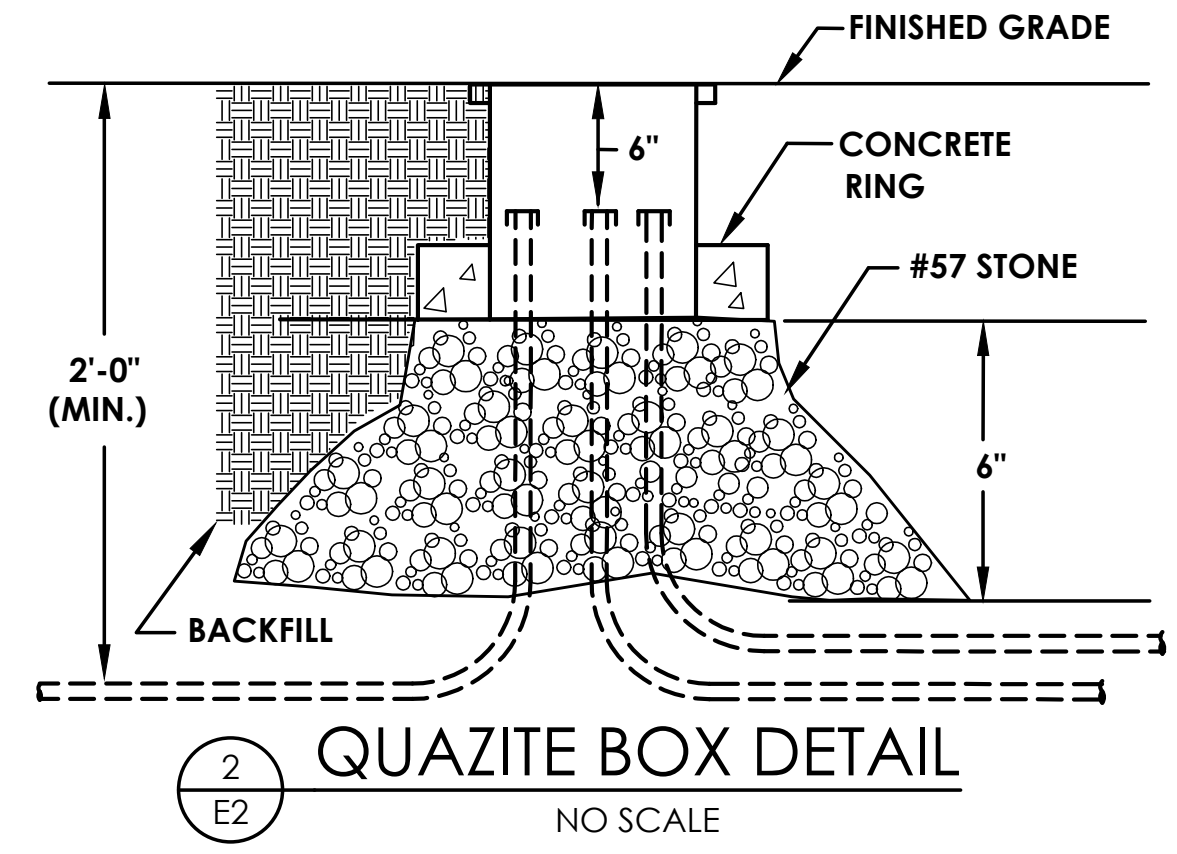
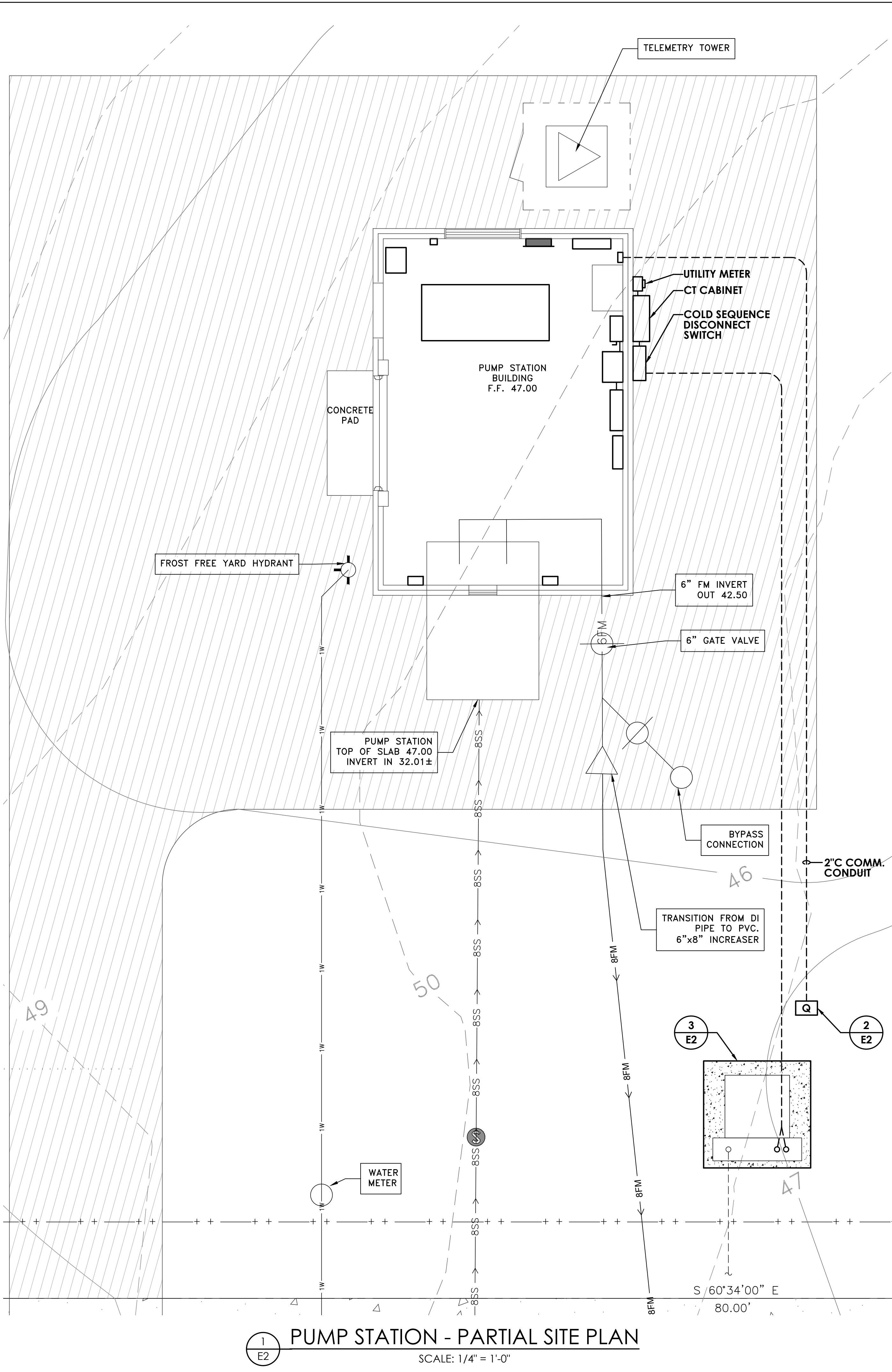
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03-08-2023  
07-28-2023  
ISSUED FOR APPROVAL  
12-01-2023

ISSUED FOR APPROVAL	12-01-2023
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ISSUED FOR REVIEW	05-26-2023
ISSUED FOR REVIEW	03-13-2023
ISSUED FOR REVIEW	10-21-2022

 **FAYDA ENGINEERING & ENERGY SOLUTIONS, LLC**  
801 W. Newport Pike, Wilmington, DE 19804  
Tel: 302-999-1060, Fax: 302-999-1053  
www.FaydaEES.com FE&ES COMM. NO: 22-1529

Date: DECEMBER 2023  
Scale: AS NOTED  
Dwn.By: MG/EF  
Proj.No.: 0818CD48  
Dwg.No.:





**3 E2 DELMARVA POWER PRE-CAST CONCRETE PAD DETAILS**  
NO SCALE

ISSUED FOR APPROVAL	12-01-2023
ISSUED FOR REVIEW	07-28-2023
ISSUED FOR REVIEW	05-26-2023
ISSUED FOR REVIEW	03-13-2023
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ARCHITECTS, ENGINEERS & SURVEYORS

**dbf**

**MONARCH ST. GEORGES HUNDRED NEW CASTLE COUNTY, DELAWARE**

**PARTIAL SITE PLAN**

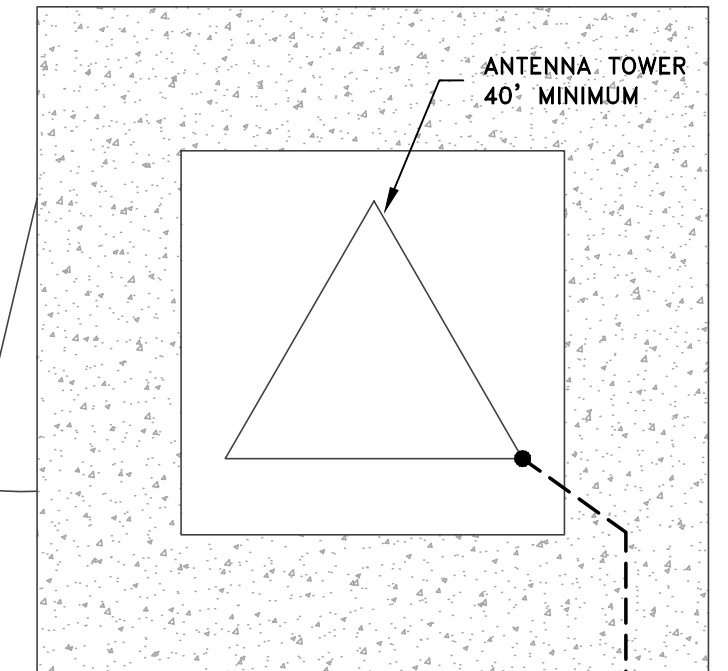
**1 E2**

**REVISIONS:**

NCC COMMENTS	03-08-2023
	07-28-2023
ISSUED FOR APPROVAL	12-01-2023

Date: DECEMBER 2023  
Scale: AS NOTED  
Dwn.By: MG/EF  
Proj.No.: 0818CD48  
Dwg.No.: E2

TELEMETRY TOWER FOR COMMUNICATION WITH NEAREST N.C.C. RADIO COMMUNICATION HUB. TOWER HEIGHT TO BE DETERMINED IN ACCORDANCE WITH RADIO FREQUENCY (RF) SURVEY BY BRISTOL BABCOCK RADIO (RG) GROUP AUTHORIZED REPRESENTATIVE.



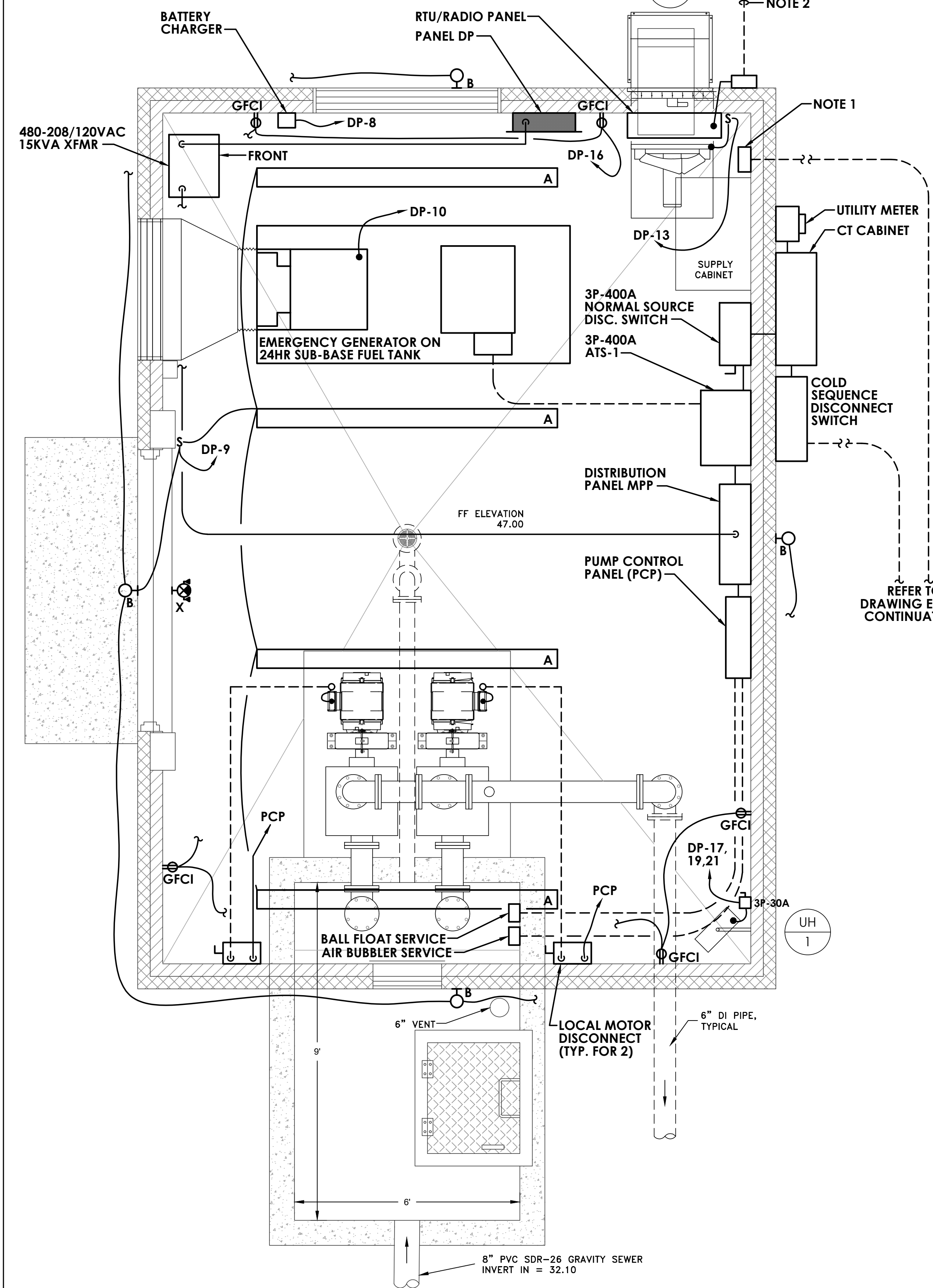
**SHEET NOTES**

1. PROVIDE 12"x12" COMMUNICATIONS TERMINATION BOX OR COMMUNICATIONS DEMARC AT THIS LOCATION.
2. ANTENNA CABLE RUN FROM RADIO TO ANTENNA, UNSPLICED.

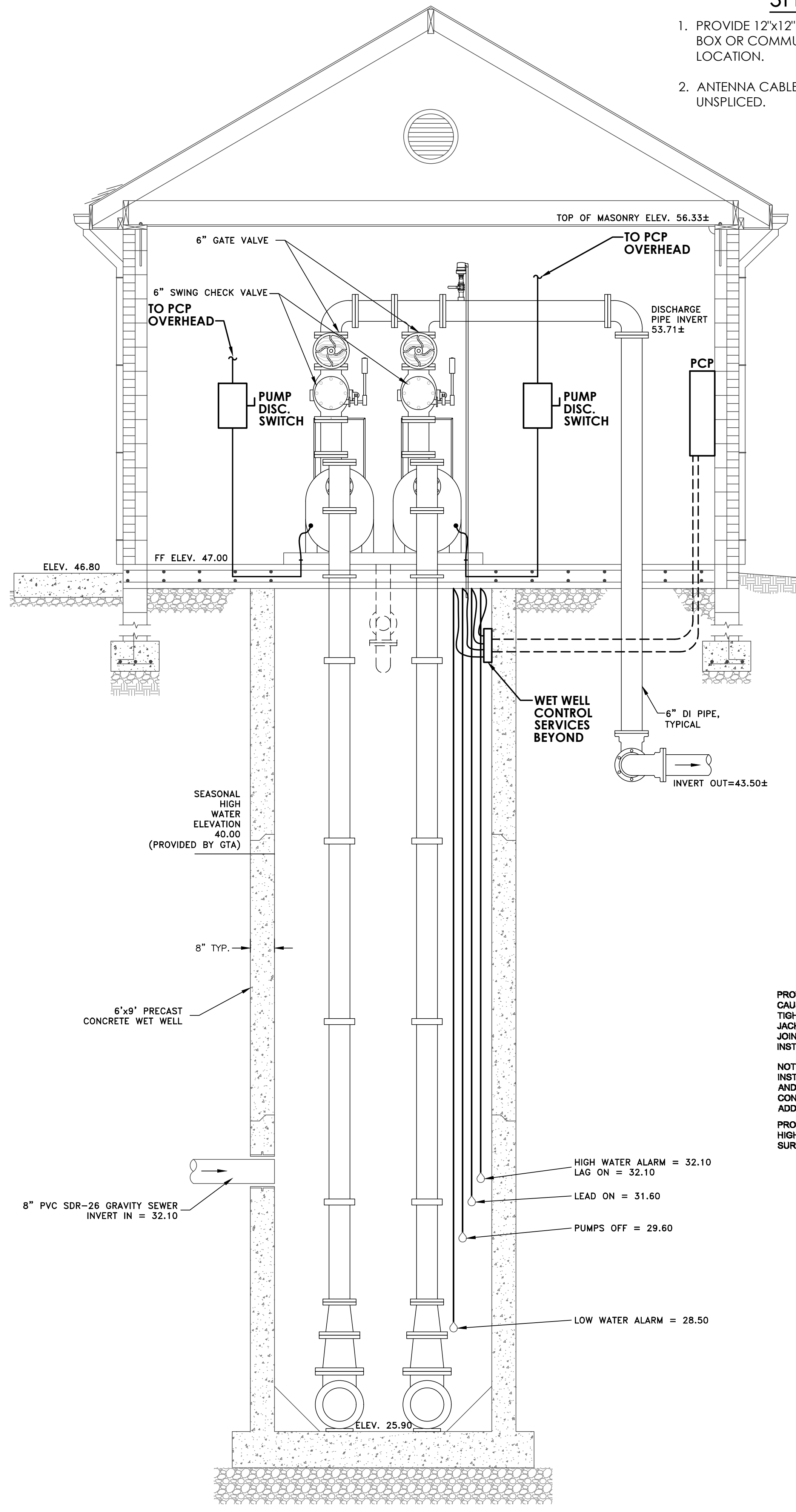
**GENERAL NOTES**

(NOT REFERENCED ON DRAWING)

1. CONNECT EMERGENCY/EXIT FIXTURE TO UNSWITCHED SIDE OF INTERIOR LIGHTING CIRCUIT.
2. ALL CONDUITS FROM BUILDING DOWN TO WET WELL SHALL BE COLOR CODED ORANGE.
3. ALL CONDUITS LEAVING THE WET WELL SHALL BE PROVIDED WITH UL LISTED SEAL-OFF FITTINGS.
4. CONDUIT & ELECTRICAL FITTINGS SHOWN 90 DEGREES OUT OF POSITION FOR CLARITY. NOT ALL CONDUITS REQUIRED ARE SHOWN.
5. REFER TO MECHANICAL DRAWINGS FOR COORDINATION OF WET WELL FAN WIRING.
6. REFER TO MECHANICAL DRAWINGS FOR COORDINATION OF MOTOR OPERATED DAMPERS.

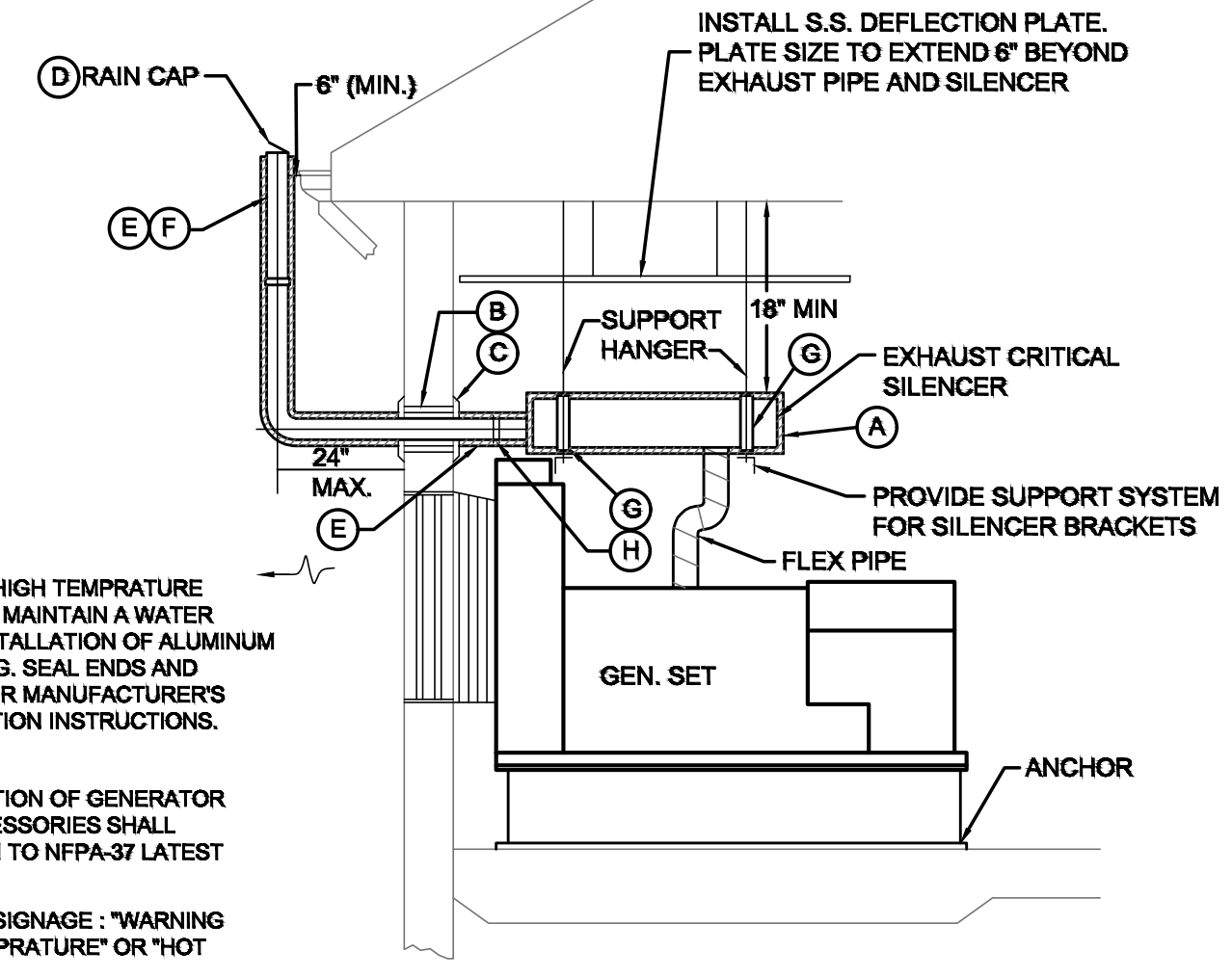


**1 CONTROL BUILDING FLOOR PLAN - POWER & SPECIAL SYSTEMS**  
SCALE: 1/2" = 1'-0"



**2 WET WELL - SECTION VIEW**  
SCALE: 1/2" = 1'-0"

ITEM	DESCRIPTION
A.	INSULATION BLANKET - ASBESTOS FREE, NONCOMBUSTIBLE RATED UP TO 2300°F. KFACTOR SHALL CONFORM TO MIL-11641 TYPE II. BLANKET TO MATCH SILENCER SIZE AND TYPE. AS MANUFACTURED BY SILEX OR EQUIVALENT.
B.	INSULATED WALL THIMBLE - CARBON STEEL CONSTRUCTION. MAXIMUM OPERATING TEMPERATURE 1400°F/760°C 9" EXTENSION ON EACH SIDE OF WALL. VENTED HOLES WITH BIRD SCREEN AND RAIN GUARD AS MANUFACTURED BY SILEX OR EQUIVALENT.
C.	WALL PLATE - WITH MOUNTING HARDWARE - CARBON STEEL. HIGH TEMPERATURE TO MATCH WALL THIMBLE, 2300°F. AS MANUFACTURED BY SILEX OR EQUIVALENT.
D.	RAIN CAP - CARBON STEEL CONSTRUCTION MAX TEMPERATURE 2300°F. AS MANUFACTURED BY SILEX OR EQUIVALENT.
E.	HIGH TEMPERATURE INSULATION UP TO 1200°F. CALCIUM SILGATE PIPE COVERING PER ASTM C-333-01 TYPE I CESS-04 2 LAYER SYSTEM. MINIMUM OF 2 1/2" TO REACH A MAXIMUM SURFACE TEMPERATURE OF 240°F.
F.	ALUMINUM JACKETING SHALL BE #16 GAUGE CORRUGATED ALUMINUM WITH 1/2" STAINLESS STEEL FAB STRAPS. (OD TO SUIT NOM SIZE OF PIPE OD PLUS INSULATION.)
G.	SILENCER MOUNTING BRACKETS SHALL MATCH WITH SILENCER MANUFACTURER AND SIZE OF INSULATION BLANKET. AS MANUFACTURED BY NELSON OR EQUIVALENT.
H.	MOUNTING FLANGE - CARBON STEEL HIGH TEMPERATURE TO MATE UP TO SILENCER FLANGE MANUFACTURED BY NELSON OR EQUIVALENT.



PROVIDE HIGH TEMPERATURE CAULK TO MAINTAIN A WATER TIGHT INSTALLATION OF ALUMINUM JACKETING. SEAL ENDS AND JOINTS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

NOTE: INSTALLATION OF GENERATOR AND ACCESSORIES SHALL CONFORM TO NFPA-37 LATEST ADDITION.

PROVIDE SIGNAGE: "WARNING HIGH TEMPERATURE" OR "HOT SURFACE"

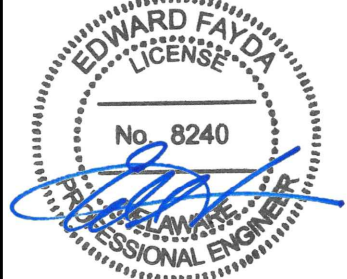
- GENERATOR SPARE PARTS LIST**
- (2) LUBRICANT FILTERS
  - (2) FUEL FILTERS
  - (2) AIR CLEANER ELEMENTS
  - (10) GALLONS OF SYNTHETIC LUBRICANT, OR SUFFICIENT LUBRICANT TO PERFORM (2) OIL CHANGES, WHICHEVER IS GREATER

**3 GENERATOR ENGINE EXHAUST DETAIL**  
NO SCALE

ISSUED FOR APPROVAL	12-01-2023
ISSUED FOR REVIEW	07-28-2023
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ISSUED FOR REVIEW	03-13-2023
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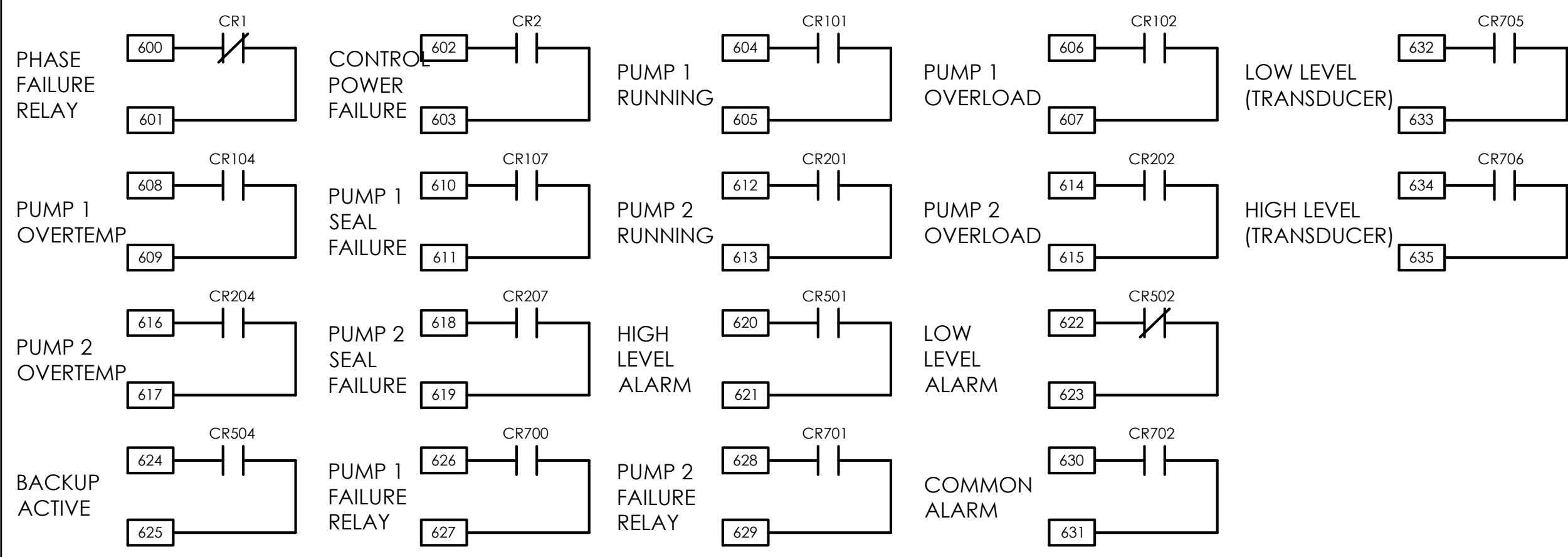


**MONARCH ST. GEORGES HUNDRED NEW CASTLE COUNTY, DELAWARE**

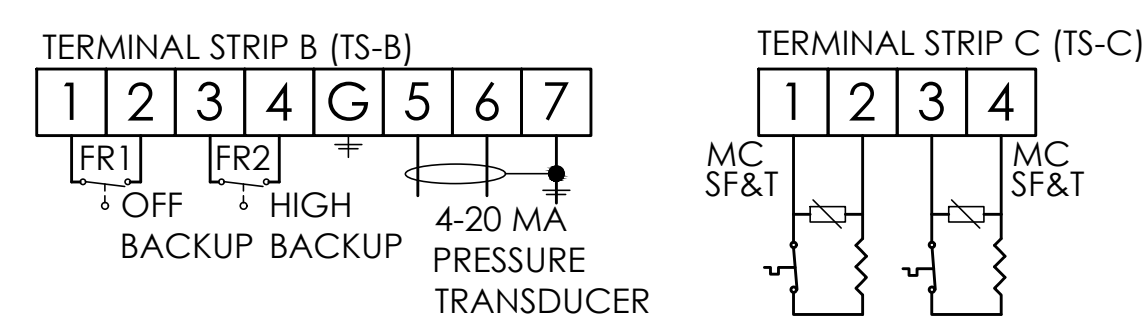
REVISIONS:  
NCC COMMENTS  
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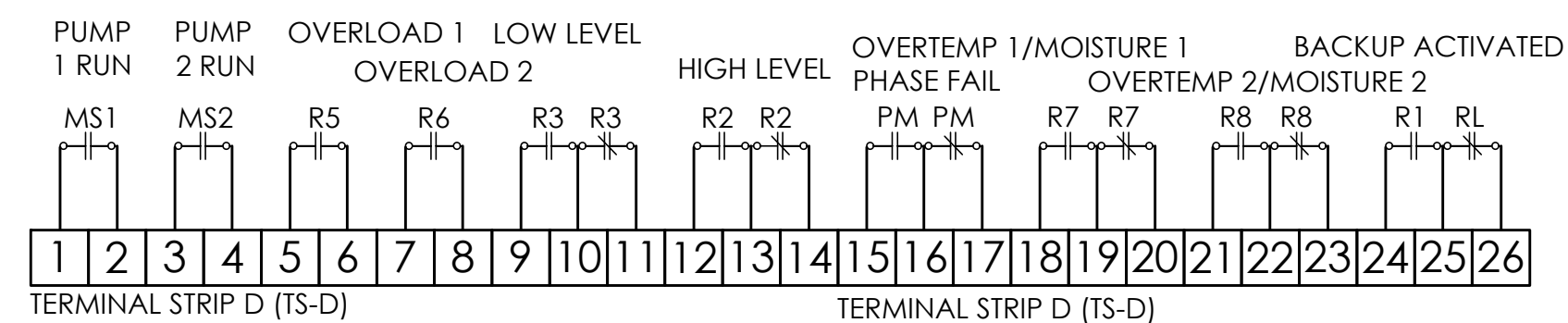
**E3**



INTRINSICALLY SAFE WIRING TERMINALS  
\*INSTALL IN ACCORDANCE WITH ARTICLE 504 OF THE NATIONAL ELECTRICAL CODE\*



DRY CONTACTS LEAVING PANEL POWERED BY OTHERS SOURCE  
REMOTE ALARMS



**SCHEDULE FOR DIST. PANEL: MPP**

STANDARD OF DESIGN: SQUARE D I-LINE

DESCRIPTION: TYPE HCM WITH HINGED COVER  
PM-8244 DIGITAL METER  
LOCATED IN: CONTROL ROOM

Schedule Number	LOAD SERVED			CIRCUIT PROTECTOR			WIRING DATA		
	TYPE OF LOAD	KVA	∅	VOLTS	QUAN.	AMPS.	POLES	FRAME	WIRING DATA
1	SPD	.1	3	480/277	1	60	3	-	INTEGRAL
2	PUMP CONTROL PANEL	-	3	480	1	100	3	-	SEE SLD
3	15kVA TRANSFORMER	15	3	480	1	30	3	-	SEE SLD
4									

**LIGHTING FIXTURE SCHEDULE**

TYPE	MANUF.	CATALOG NUMBER	LAMP DRVR	LAMP DATA			FIXTURE TYPE	MOUNTING	REMARKS
				CRI	TEMP	WAIT			
A	COLUMBIA	LCL-8-35-LW-E-U CSHC-LCLWG4	1	80+	3.5K	38	5152	X	CEILING/CHAIN 8' LED LENSED STRIPLIGHT W/ CHAIN HANGER ASSEMBLY & WIREGUARD
B	HUBBELL	LNC-9L-4K-070-2-U-PCU	1	80	4K	21	2,072	X	WALL/SURFACE LED WALLPACK, BRONZE FINISH
X	DUAL-LITE	HGX-U-R-B-03L	-	-	-	6	-	X	WALL/SURFACE EMERGENCY BATTERY UNIT 2 LAMPS

**SCHEDULE FOR DISTRIBUTION PANEL: DP (NEW)**

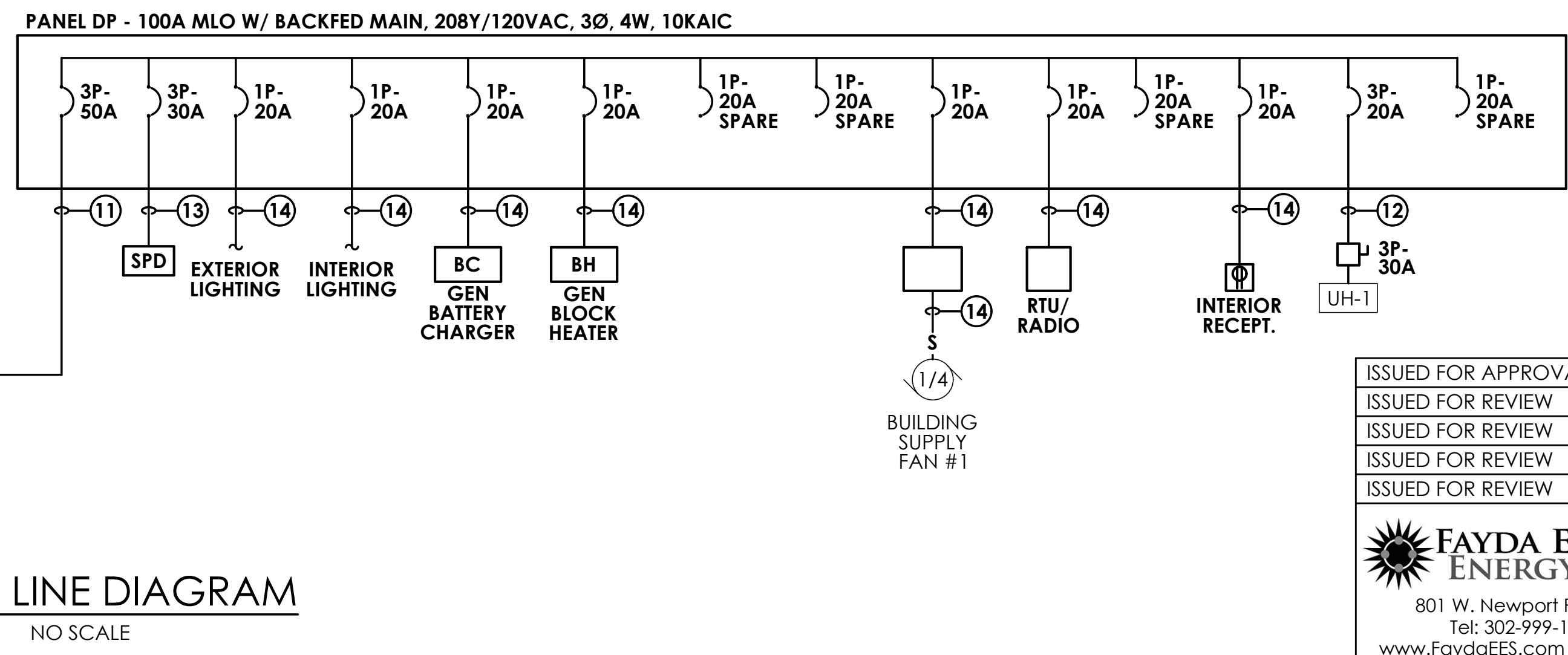
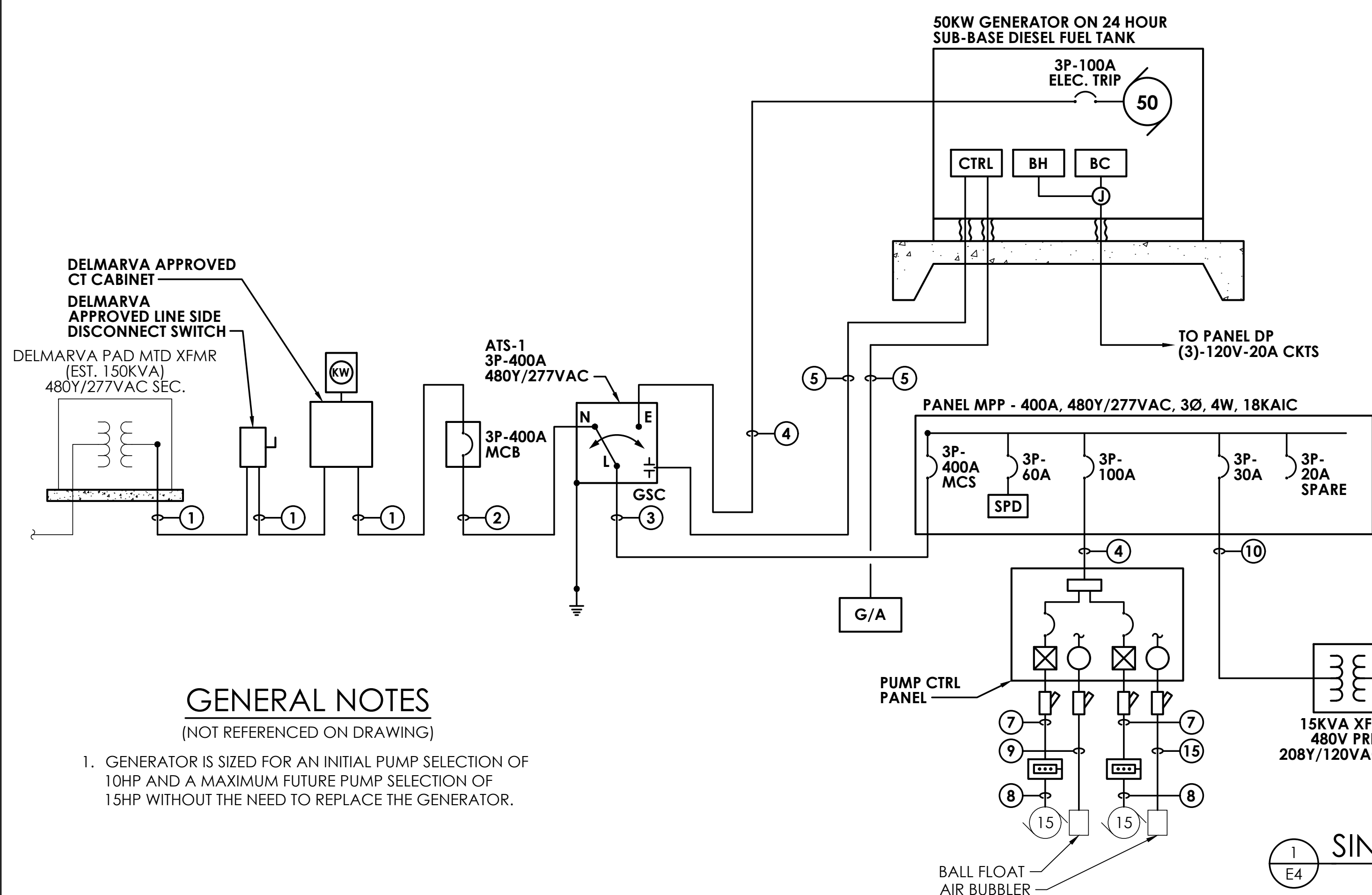
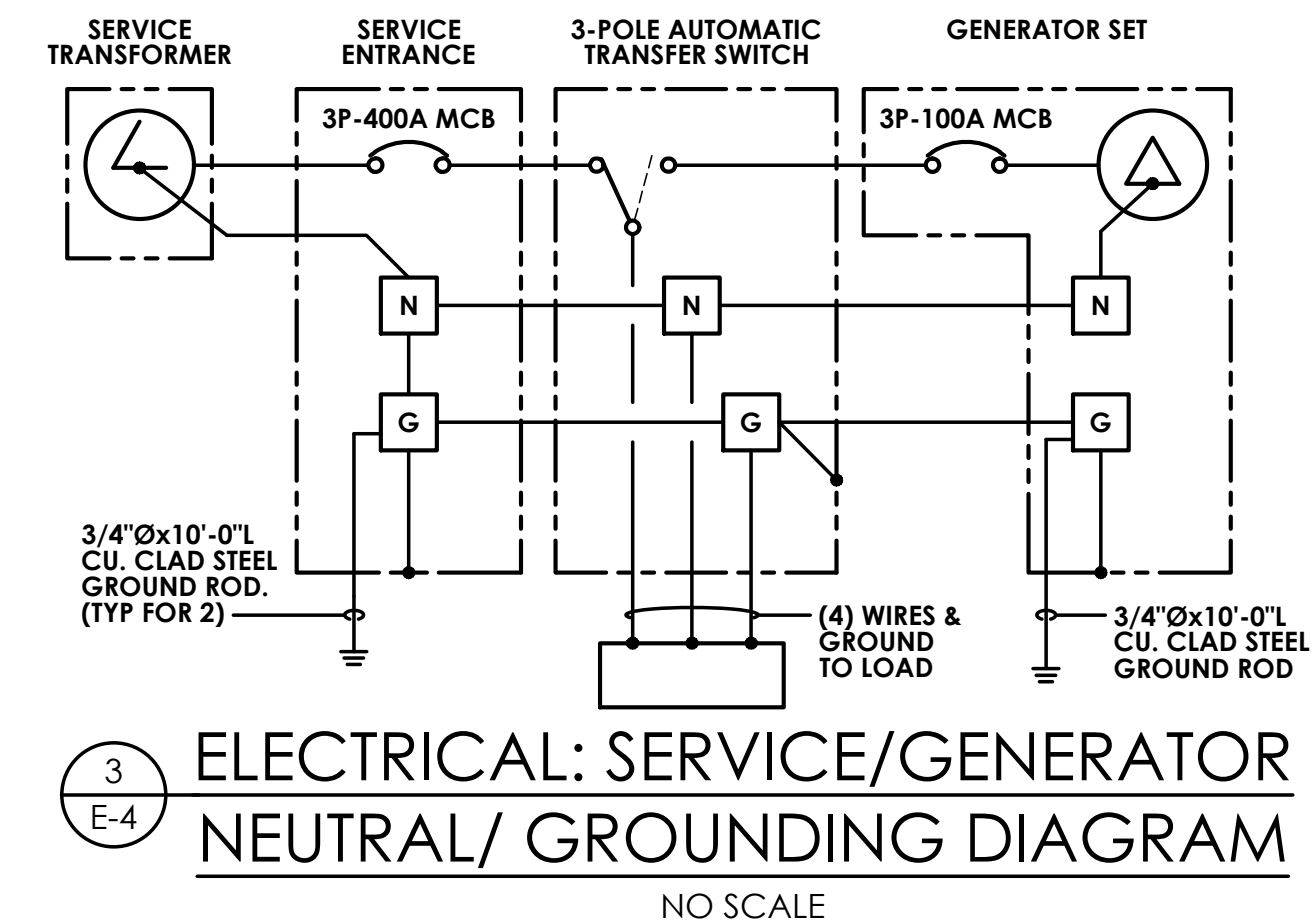
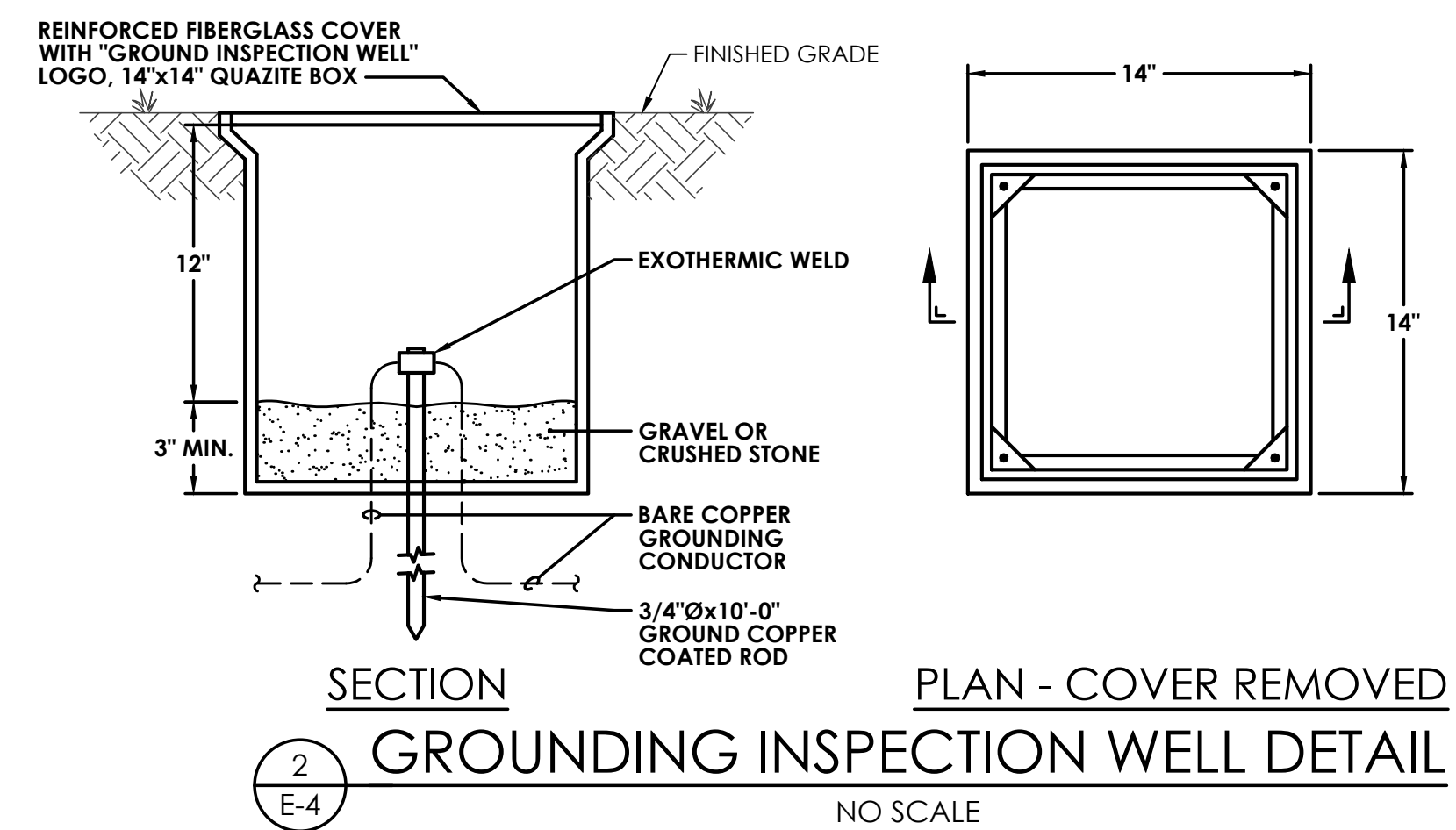
LOCATED IN: CONTROL ROOM

GENERAL PANEL DATA:  
208Y/120VAC, 3Phase, 4Wire  
100A - MAIN LUG ONLY  
30 CIRCUIT 10KAIC SURFACE MOUNTED

CKT. No.	LOAD SERVED	KVA			CIRCUIT PROTECTOR	WIRING DATA	KVA			LOAD SERVED	CKT. No.		
		PHASE A	PHASE B	PHASE C			PHASE A	PHASE B	PHASE C				
3	BACKFED MAIN BREAKER	-	-	-	208/120	3P-50A	SEE SLD	SEE SLD	3P-30A	208/120	SPD	2	
5		-	-	-								4	
7	EXTERIOR LIGHTING	.1			120	1P-20A	SEE SLD	SEE SLD	1P-20A	120	.5	GEN BATTERY CHARGER	8
9	INTERIOR LIGHTING	.1			120	1P-20A	SEE SLD	SEE SLD	1P-20A	120	.5	GEN BLOCK HEATER	10
11	SPARE	-	-	-	120	1P-20A	-	-	1P-20A	120	-	SPARE	12
13	BUILDING SUPPLY FAN #1	.53			120	1P-20A	SEE SLD	SEE SLD	1P-20A	120	.5	RTU/RADIO	14
15	SPARE	-	-	-	120	1P-20A	-	-	1P-20A	120	.90	RECEPT.: INTERIOR	16
17		-	-	-	120	1P-20A	-	-	1P-20A	120	-	SPARE	18
19	UNIT HEATER UH-1	1.7			208	3P-20A	SEE SLD	-	1P-20A	120	-	SPARE	20
21		1.7					-	-	1P-20A	120	-	SPARE	22
23	SPARE	-	-	-	120	1P-20A	-	-	1P-20A	120	-	SPARE	24
25	SPACE	-	-	-	-	-	-	-	-	-	-	SPARE	26
27	SPACE	-	-	-	-	-	-	-	-	-	-	SPARE	28
29	SPACE	-	-	-	-	-	-	-	-	-	-	SPARE	30
TOTAL KVA A PHASE		1.47					2.77		1.3			TOTAL KVA A PHASE	
TOTAL KVA B PHASE		.93					2.03		1.1			TOTAL KVA B PHASE	
TOTAL KVA C PHASE		1.38					2.98		1.6			TOTAL KVA C PHASE	
TOTAL PANEL KVA							7.78						

**FEEDER SCHEDULE**

1	(4)-#500KCMIL - 4°C & (1)-4°C SPARE
2	(4)-#500KCMIL & (1)-#1/0GND - 4°C
3	(4)-#500KCMIL & (1)-#3GND - 4°C
4	(4)-#1/0 & (1)-#8GND - 1-1/2°C
5	1°C - WIRING PER GENERATOR MFR
6	(3)-#3/0 & (1)-#6GND - 2°C
7	(3)-#1 & (1)-#8GND - 1-1/2°C
8	2°C - CABLE BY PUMP MFR
9	1-1/2°C - INTRINSICALLY SAFE WIRING PER CONTROLLER MFR
10	(3)-#10 & (1)-#10GND - 3/4°C
11	(4)-#6 & (1)-#10GND - 1°C
12	(3)-#12 & (1)-#12GND - 3/4°C
13	3/4°C - WIRING BY SPD MFR
14	(2)-#12 & (1)-#12GND - 3/4°C
15	1-1/2°C (AIR BUBBLER)

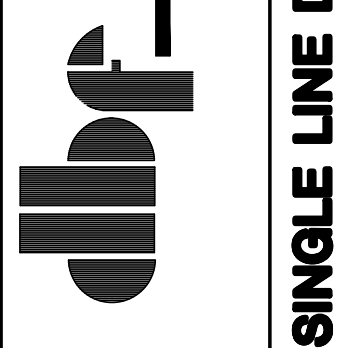


**GENERAL NOTES**  
(NOT REFERENCED ON DRAWING)

- GENERATOR IS SIZED FOR AN INITIAL PUMP SELECTION OF 10HP AND A MAXIMUM FUTURE PUMP SELECTION OF 15HP WITHOUT THE NEED TO REPLACE THE GENERATOR.

1 SINGLE LINE DIAGRAM  
NO SCALE

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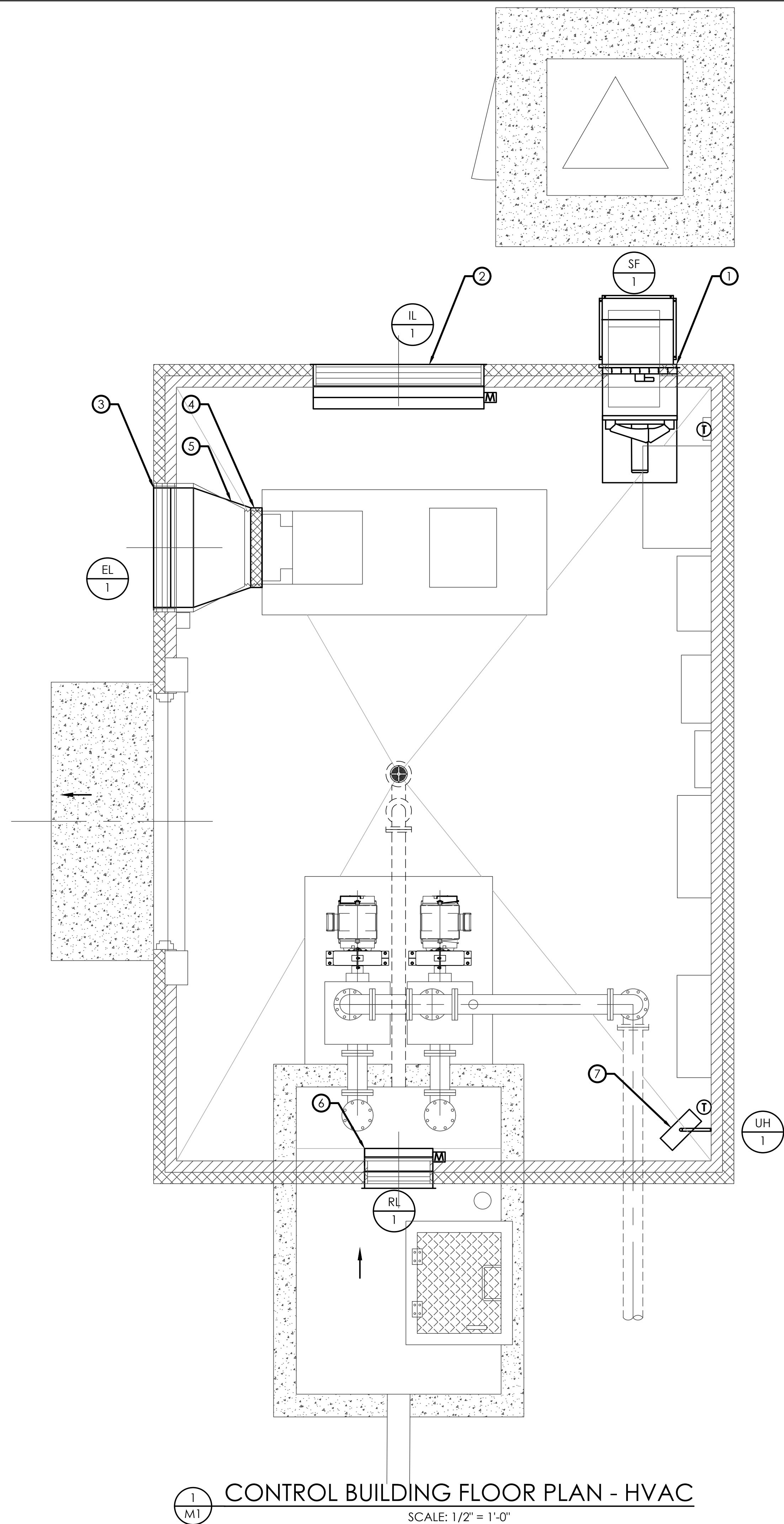
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NCC COMMENTS  
03-08-2023  
07-28-2023  
ISSUED FOR APPROVAL  
12-01-2023

Date: DECEMBER 2023  
Scale: AS NOTED  
Dwn.By: MG/EF  
Proj.No.: 0818CD48  
Dwg.No.:

**E4**

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ISSUED FOR REVIEW	05-26-2023
ISSUED FOR REVIEW	03-13-2023
ISSUED FOR REVIEW	10-21-2022

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1 CONTROL BUILDING FLOOR PLAN - HVAC  
M1 SCALE: 1/2" = 1'-0"

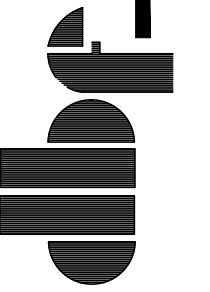
**DRAWING NOTES**  
(APPLIES TO THIS DRAWING)

- 1 INSTALL NEW SUPPLY FAN 12" BELOW CEILING TO TOP OF FAN. INTERLOCK FAN WITH VENTILATION TIMER AND THERMOSTAT PER DETAIL 1/M2.
- 2 INSTALL NEW GENERATOR AIR INTAKE LOUVER WITH MOTOR OPERATED DAMPER (SPRING RETURN OPEN). INTERLOCK WITH GENERATOR OPERATION PER DETAIL 2/M2.
- 3 INSTALL NEW GENERATOR RADIATOR EXHAUST LOUVER WITH BACKDRAFT DAMPER. INTERLOCK WITH GENERATOR OPERATION PER DETAIL 2/M2.
- 4 INSTALL FLEXIBLE CONNECTION TO GENERATOR RADIATOR. APPROXIMATE CONNECTION SIZE 32X36. COORDINATE SIZE AND LOCATION WITH GENERATOR SUPPLIER.
- 5 INSTALL TRANSITION FROM GENERATOR RADIATOR TO EXHAUST LOUVER, EL-1. DUCT SHALL BE FLAT ON BOTTOM AT ELEVATION OF RADIATOR OUTLET.
- 6 INSTALL NEW RELIEF AIR LOUVER, RL-1, AND MOTOR OPERATED DAMPER INTERLOCK FAN WITH VENTILATION TIMER AND THERMOSTAT PER DETAIL 1/M2.
- 7 INSTALL NEW ELECTRIC UNIT HEATER AND LOW VOLTAGE THERMOSTAT. SET AT 50 DEG F.

**LEGEND/ABBREVIATIONS:**

- M MOTOR OPERATED DAMPER
- T THERMOSTAT
- EL EXHAUST LOUVER
- IL INTAKE LOUVER
- RL RELIEF LOUVER
- SF SUPPLY FAN

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CONTROL BUILDING PLANS



**MONARCH**  
**ST. GEORGES HUNDRED**  
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**M1**

SUPPLY FAN SCHEDULE

MARK INFORMATION		FAN INFORMATION						MOTOR INFORMATION				
QTY	MARK	MODEL	VOLUME (CFM)	TOTAL EXTERNAL SP (IN WG)	FAN RPM	OPERATING POWER (HP)	WEIGHT (LB.)	SIZE (HP)	V/C/P	ENCLOSURE	MOTOR RPM	WINDINGS
1	SF-1	AER-20	560	0.533	1,750	0.16	262	0.167	115/60/1	OP	1750	1

SF-1 : SELECTED OPTIONS AND ACCESSORIES

Airflow Direction: Supply  
 Damper Mounted, VCD-20-PB-22X22, Not Coated, 115V  
 Motor Access: From Int. of Bldg.  
 Wall Collar Assembled  
 Switch, NEMA-1, Toggle, Shipped with Unit  
 Closure Angles  
 OSHA Approved Motor Side Guard  
 Weatherhood, Aluminum 90 deg. with Bird Screen

UNIT HEATER SCHEDULE

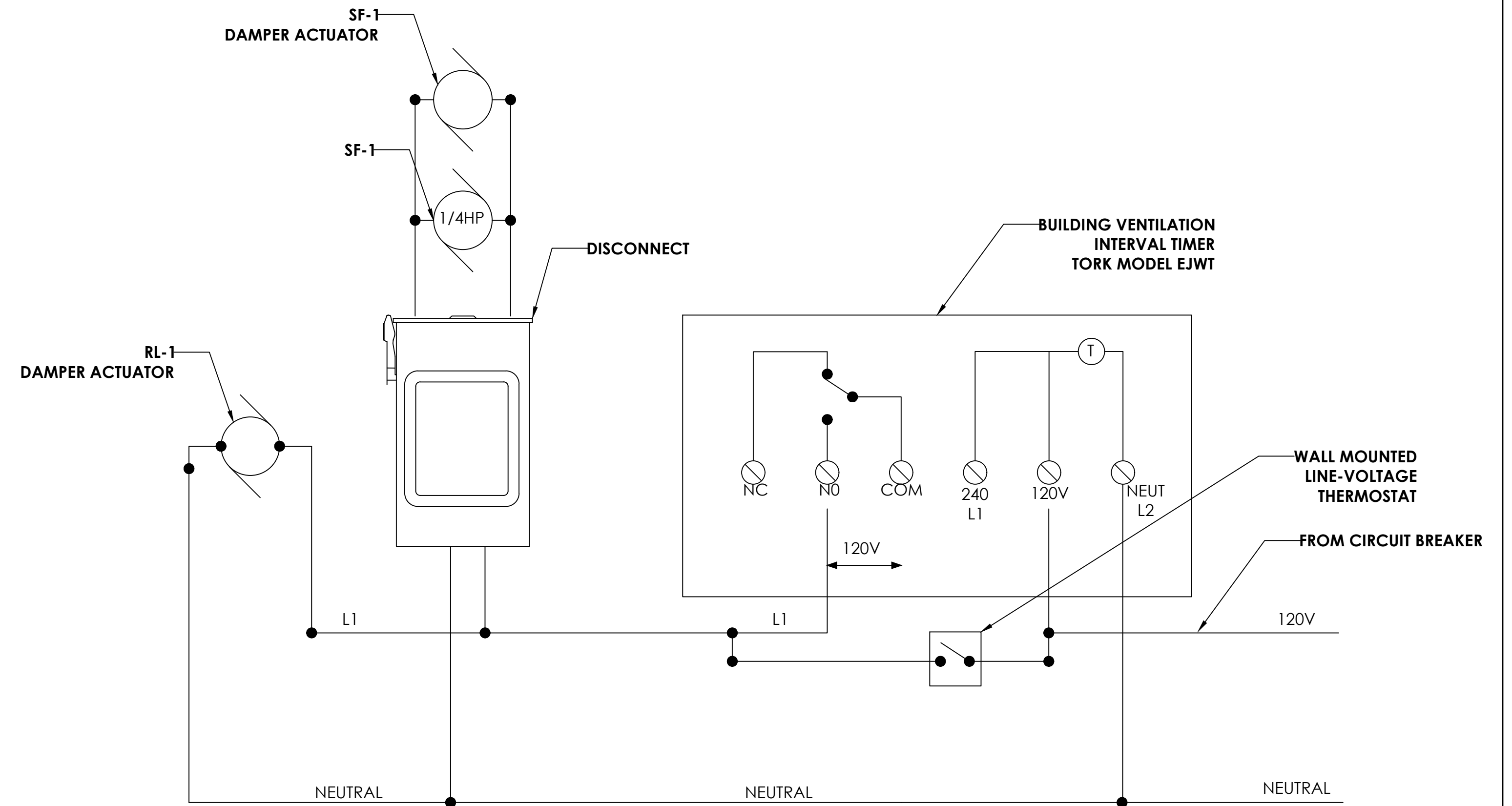
TAG	CFM	TEMP RISE (°F)	KW	MBH	VOLTA GE	A MPS	MFGR	MODEL
UH-1	400	40	5	17.1	208-3-60	13.9	TPI	F3F51SCA1

- NOTES:  
 1. PROVIDE 24V TRANSFORMER AND CONTACTOR.  
 2. PROVIDE SPST THERMOSTAT.  
 3. PROVIDE UNIVERSAL WALL/CEILING BRACKET.

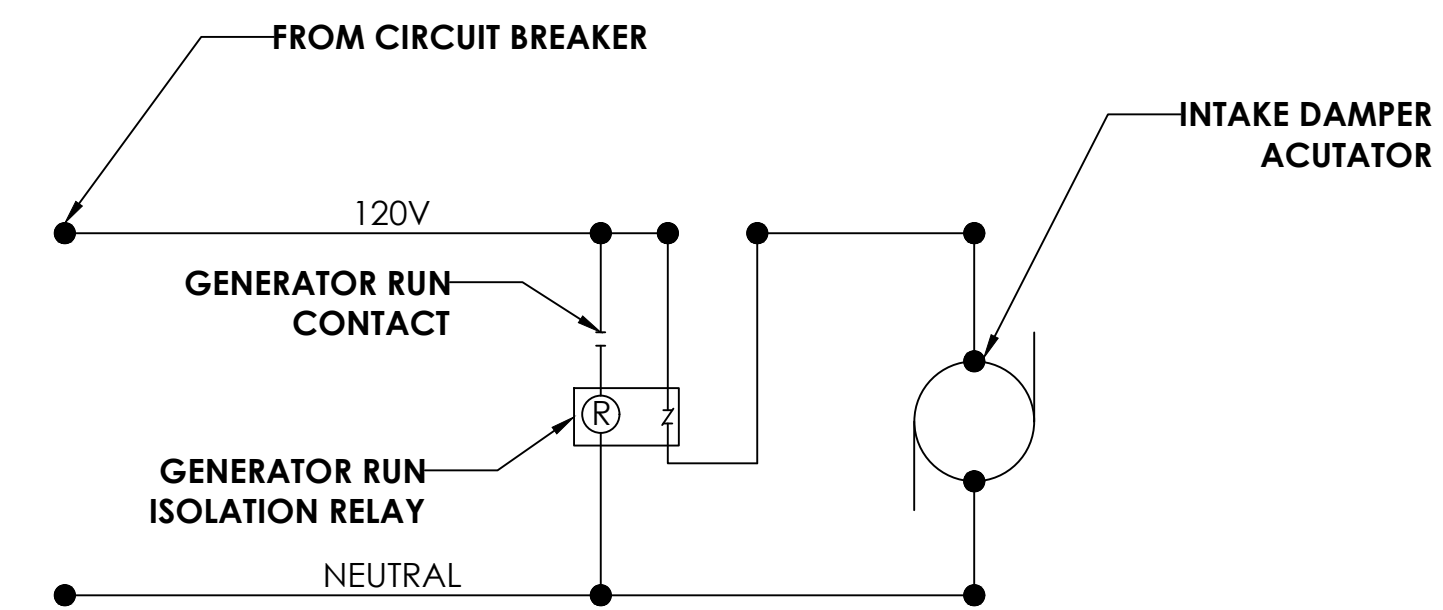
LOUVER SCHEDULE

TAG	BLADE	CFM	WIDTH (IN)	HEIGHT (IN)	FREE AREA (SQ FT)	PRESSURE DROP (IN WC)	VELOCITY (FPM)	MFGR	MODEL
EL-1	DRAINABLE	3290	42	42	6.18	0.04	523	GREENHECK	ESD-603
IL-1	DRAINABLE	3290	60	60	13.34	0.01	244	GREENHECK	ESD-603
RL-1	DRAINABLE	560	24	24	1.63	0.03	439	GREENHECK	ESD-603

- NOTES:  
 1. PROVIDE 12" ALUMINUM SLEEVE.  
 2. PROVIDE 2-COAT, 70% KYNAR FINISH. COLOR TO BE DETERMINED BY ARCHITECT.  
 3. PROVIDE .75" X .75" BIRDSCREEN.  
 4. PROVIDE FLANGED FRAME.  
 5. EL-1: PROVIDE ALUMINUM BACK DRAFT DAMPER.  
 6. IL-1: PROVIDE ALUMINUM DAMPER WITH 115V OPERATOR (SPRING RETURN OPEN).  
 7. RL-1: PROVIDE ALUMINUM DAMPER WITH 115V OPERATOR (SPRING RETURN CLOSED).  
 7. DAMPERS TO HAVE TPE BLADE SEALS AND EPDM JAMB SEALS.



1 M-2 PUMP STATION VENTILATION-WIRING DETAIL  
 SCALE: NONE

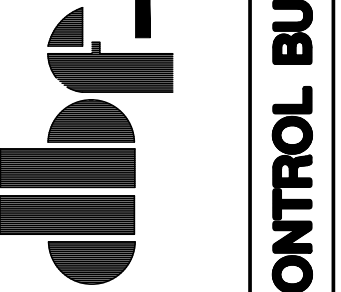


2 M-2 GENERATOR LOUVER-WIRING DETAIL  
 SCALE: NONE

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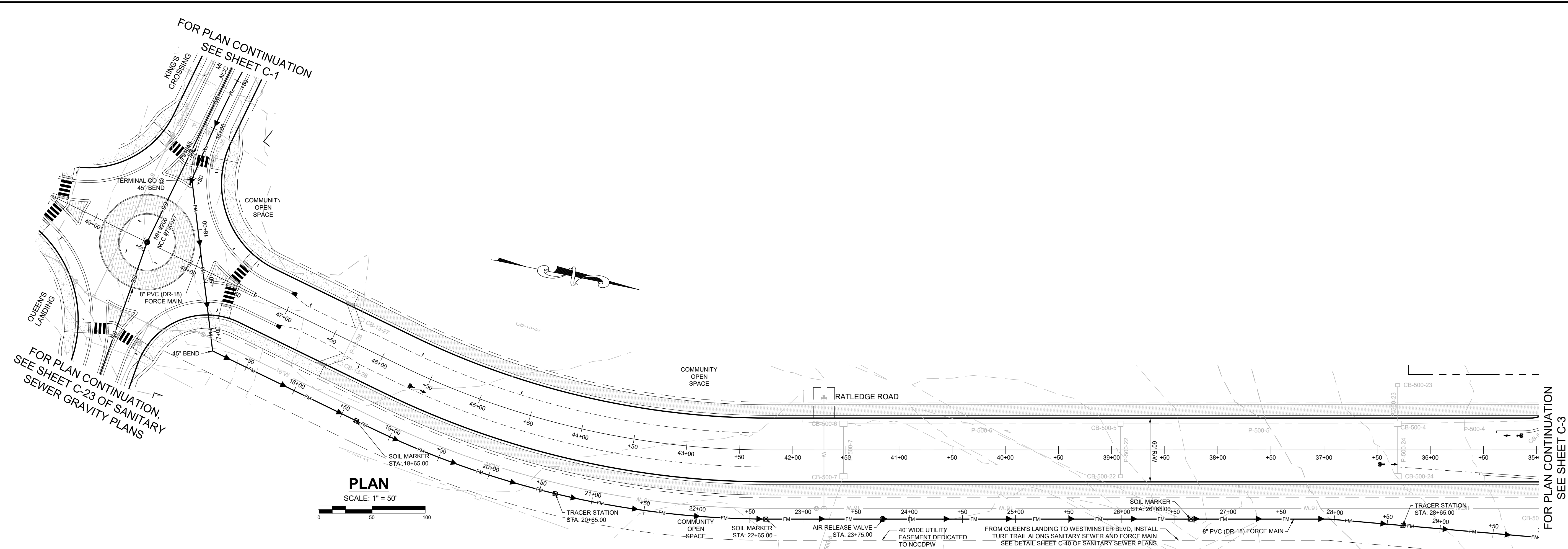
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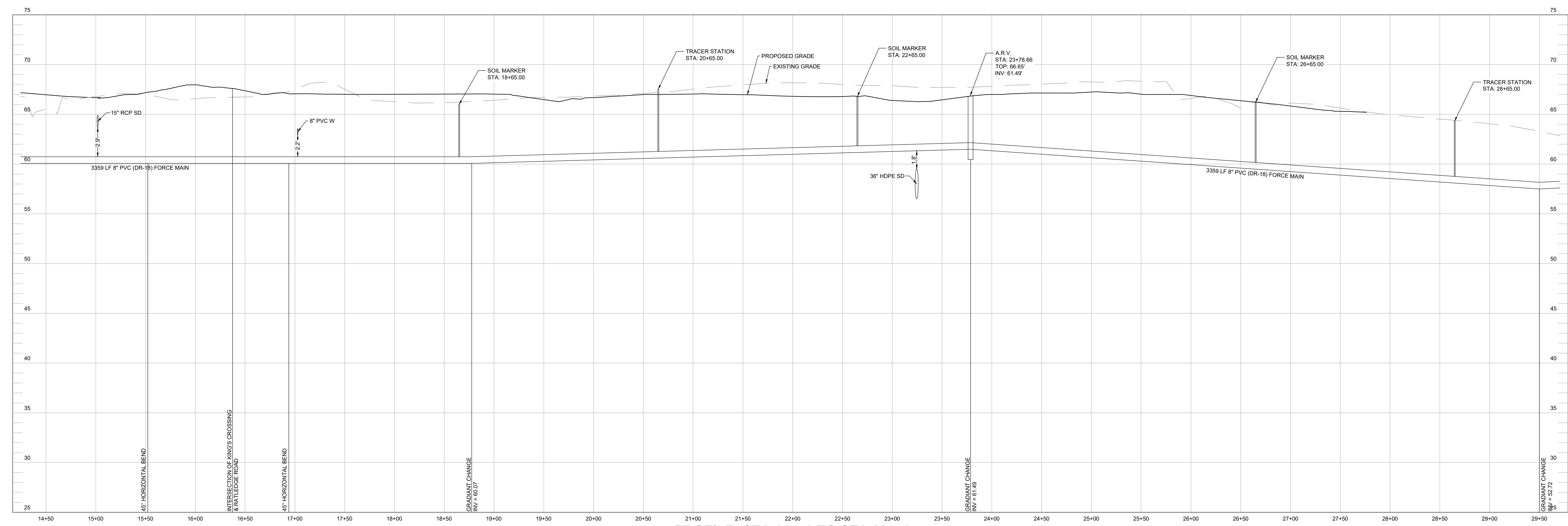
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**M2**



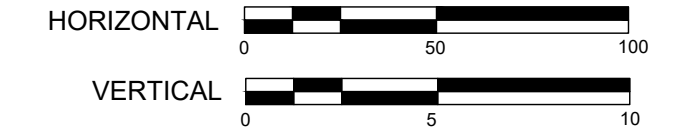


**PLAN**  
SCALE: 1" = 50'



**PROFILE: STA 14+50 TO STA 29+50**

SCALE: HORIZ.: 1" = 50' VERT.: 1" = 5'



DATE	REVISIONS
01/17/24	REVISED PER NCCDPW COMMENTS 01/10/24
08/16/23	REVISED PER NCCDPW COMMENTS 08/22/23
08/01/23	REVISED PER NCCDPW COMMENTS 08/22/23
05/12/23	REVISED PER NCCDPW COMMENTS 04/23/23
04/05/23	REVISED PER DELDOT COMMENTS 03/27/23
03/03/23	REVISED PER DELDOT COMMENTS 02/27/23

OWNER/DEVELOPER:  
SB NORTH LLC  
3074 PHILLIPS ST  
REHOBOTH BEACH, DE 19871

ENGINEERS - PLANNERS - SURVEYORS  
KCI TECHNOLOGIES, INC.  
1332 MARRONS RD., SUITE 100 - NEWARK, DELAWARE 19711  
PHONE: (302) 731-9176 FAX: (302) 731-8807 Website: www.kci.com

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**FORCE MAIN PLAN AND PROFILE**  
**KING'S CROSSING PUMP STATION**

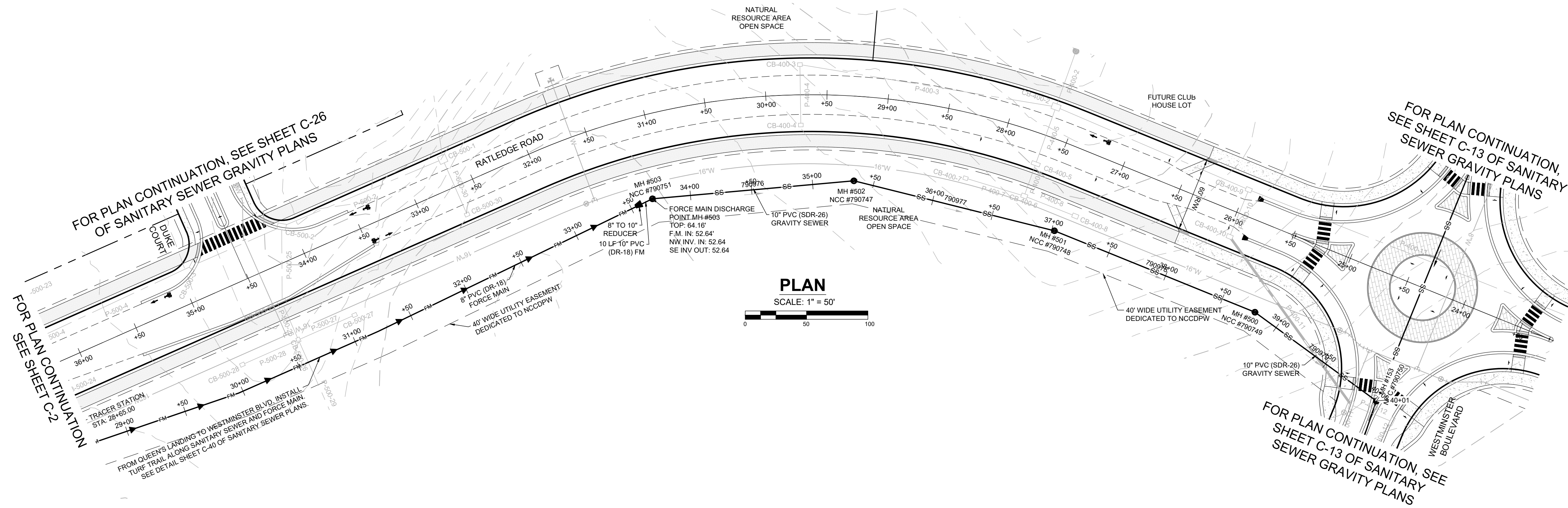
**FOR**

**MONARCH**

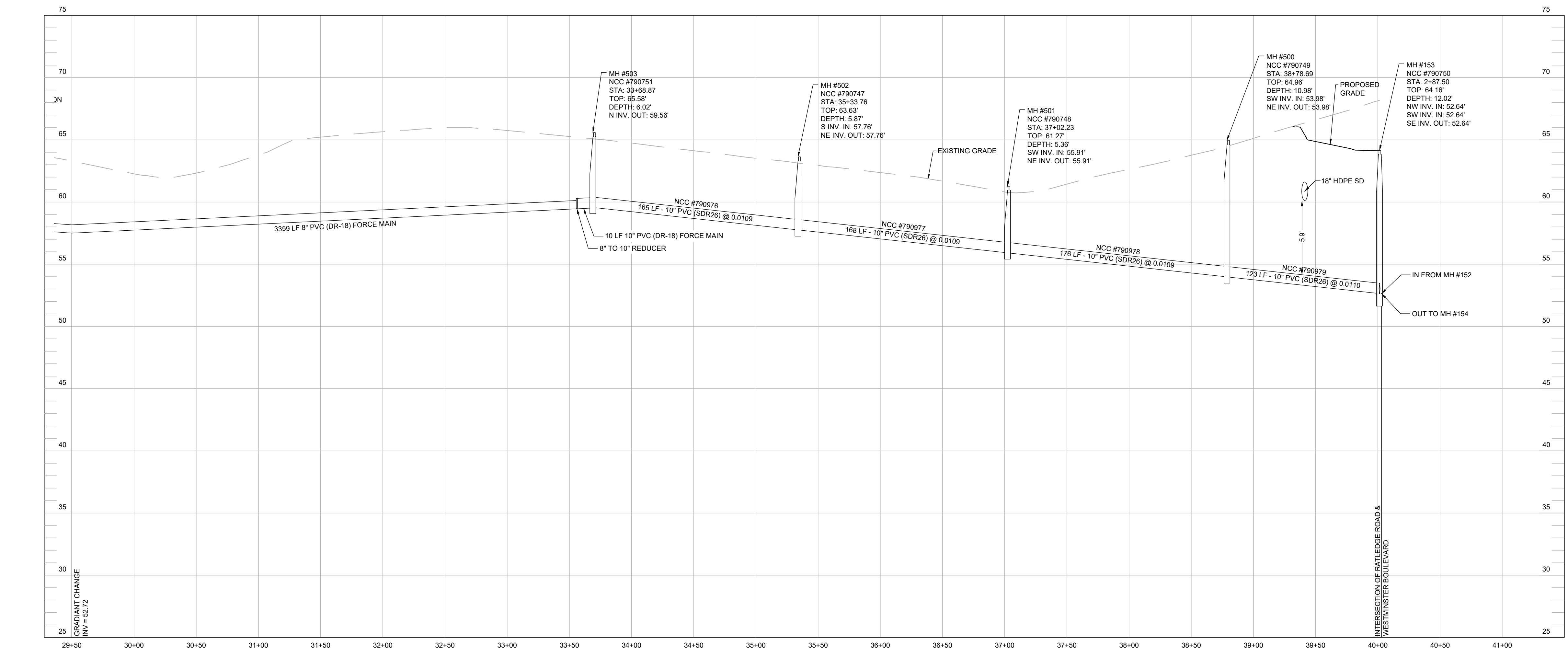
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Design: VRF	Check: JC
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KCI JOB #: 271904607.SP	
SHEET: C-2	

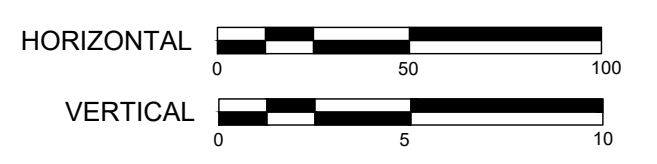




**PLAN**  
SCALE: 1" = 50'



**PROFILE: STA 29+50 TO STA 39+96**  
SCALE: HORIZ.: 1" = 50' VERT.: 1" = 5'



FOR PLAN CONTINUATION, SEE SHEET C-26  
OF SANITARY SEWER GRAVITY PLANS

FOR PLAN CONTINUATION,  
SEE SHEET C-2

FOR PLAN CONTINUATION,  
SEE SHEET C-13 OF SANITARY  
SEWER GRAVITY PLANS

FOR PLAN CONTINUATION, SEE  
SHEET C-13 OF SANITARY  
SEWER GRAVITY PLANS

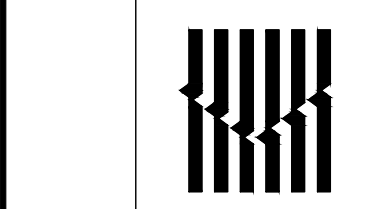
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SB NORTH LLC  
38 PHILLIPS ST  
REHOBOTH BEACH, DE 19871

CA NORTH LLC  
1849 COASTAL HIGHWAY  
REHOBOTH BEACH, DE 19871

CA JOY RUN LLC  
1849 COASTAL HIGHWAY  
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**FORCE MAIN PLAN AND PROFILE**  
KING'S CROSSING PUMP STATION  
FOR  
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NEW CASTLE DELAWARE  
ST. GEORGES HUNDRED

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