CITY OF STAUNTON

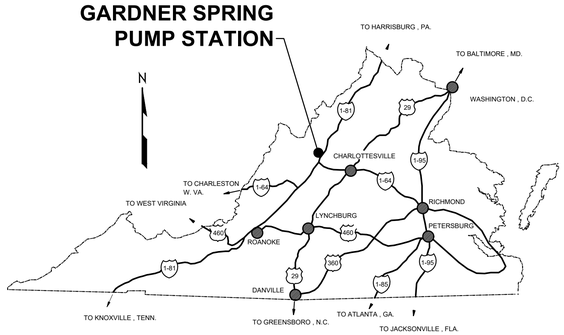
GARDNER SPRING PUMP STATION

STAUNTON, VIRGINIA

ISSUE FOR CONSTRUCTION

WILEY|WILSON COMM. NO.: 220117.00

MAY 27, 2022



VICINITY MAP

NOT TO SCALE

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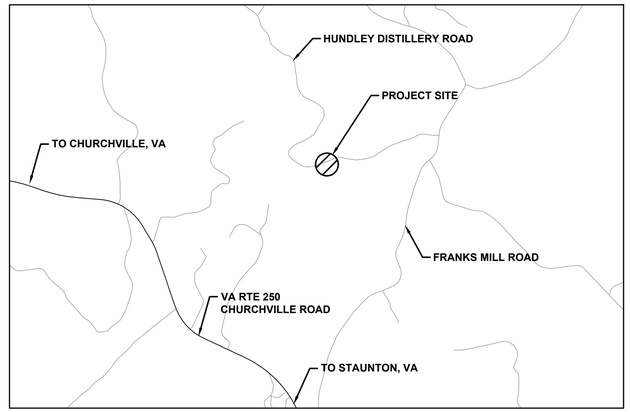

LOCATION MAP

1" = 2000'

OWNER - CITY OF STAUNTON
DAVID IRVIN
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COMMONWEALTH OF VIRGINIA
AARON SCOTT TICE
Lic. No. 047263
5/27/2022
PROFESSIONAL ENGINEER

CITY OF STAUNTON
GARDNER SPRING PUMP STATION
STAUNTON, VIRGINIA

MRK	DATE	REVISION DESCRIPTION

COMM NO:	220117
DATE:	05/27/2022
DRAWN: CTS	DESIGN: WRM
CHECK: AST	

SHEET TITLE

COVER SHEET

SHT. NO.	REV. NO.
G-001	0

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SURVEY/GENERAL NOTES:

1. THIS TOPOGRAPHIC SURVEY WAS COMPLETED UNDER THE DIRECT AND RESPONSIBLE CHARGE OF THOMAS W. DORR, FROM AN ACTUAL GROUND SURVEY MADE UNDER MY SUPERVISION; THAT THE IMAGERY AND/OR ORIGINAL DATA WAS OBTAINED ON JUNE 30 AND JULY 16, 2021 AND THAT THIS PLAT, MAP, OR DIGITAL GEOSPATIAL DATA INCLUDING METADATA MEETS MINIMUM ACCURACY STANDARDS UNLESS OTHERWISE NOTED.
2. SURVEY CONDUCTED BY EGS & ASSOCIATES, INC. ON JUNE 30 AND JULY 16, 2021. VERTICAL CONTROL: NAVD 88; HORIZONTAL CONTROL: NAD 83 VIRGINIA STATE PLANE COORDINATE SYSTEM, NORTH ZONE, U.S. SURVEY FOOT.
3. THE SURVEY PREMISES IS LOCATED IN FLOOD ZONE AE (SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL FLOOD CHANCE, BASED FLOOD ELEVATIONS DETERMINED) ACCORDING TO FIRM FOR THE COUNTY OF AUGUSTA, VIRGINIA COMMUNITY #510013, MAP NUMBER 510150330D, EFFECTIVE DATE SEPTEMBER 28,2007.
4. ALL EXISTING UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THESE PLANS ARE APPROXIMATE AND MAY NOT REPRESENT ALL UNDERGROUND UTILITIES OR SERVICE LINES. SOURCE OF EXISTING UTILITY MAPPING: UTILITY LOCATIONS ARE BASED ON QUALITY LEVEL "C" AS DEFINED BY ASCE STANDARD 38-02 "STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA". CONTRACTOR IS RESPONSIBLE FOR VERIFYING EXACT LOCATION, DEPTH, SIZE, AND TYPE OF UTILITIES SHOWN AND NOTIFYING ENGINEER OF DISCREPANCIES. CONTRACTOR IS SOLELY RESPONSIBLE FOR DAMAGE TO PROPERTY, UTILITIES, OR PHYSICAL IMPROVEMENTS.
5. MISS UTILITY WAS NOT CONTACTED PRIOR TO TOPOGRAPHIC SURVEY.
6. CONTRACTOR SHALL HAVE AN INDEPENDENT/THIRD PARTY UTILITY LOCATING FIRM LOCATE/MARK ALL UNDERGROUND UTILITIES ON SITE PRIOR TO BEGINNING ANY EXCAVATION OR DEMOLITION IN ACCORDANCE WITH THE VIRGINIA UNDERGROUND UTILITY DAMAGE PREVENTION ACT.
7. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND IS NOT INTENDED TO SHOW ALL EASEMENTS THAT MAY AFFECT THE PROPERTY.
8. ALL PROPERTY PINS DISTURBED BY CONTRACTOR ACTIVITIES SHALL BE REPLACED BY A VIRGINIA LICENSED LAND SURVEYOR.
9. THE EXISTENCE OF HAZARDOUS WASTE, VEGETATED WETLANDS, OR TIDAL WETLANDS WAS NEITHER INVESTIGATED NOR CONFIRMED DURING THE PERFORMANCE OF THIS SURVEY.
10. NO GRAVES OR PLACES OF BURIAL WERE NOTED DURING THIS SURVEY.
11. PROJECT SITE IS WITHIN THE FLOODPLAIN OVERLAY DISTRICT AND SOURCE WATER PROTECTION OVERLAY DISTRICT.
12. PER AUGUSTA COUNTY CODE 24-2 AND THE ISO NEEDED FIRE FLOW FORMULA, THE REQUIRED FIREFLOW FOR THE PUMP STATION IS 500 GPM.

ABBREVIATIONS

APPROX	APPROXIMATELY
BFV	BUTTERFLY VALVE
BLDG	BUILDING
BV	BALL VALVE
CF	CUBIC FEET
CIP	CAST IN PLACE
CY	CUBIC YARD
DB	DEED BOOK
DI	DUCTILE IRON
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DS	DOWNSPOUT
EA	EACH
EL	ELEVATION
ELEV	ELEVATION
EX	EXISTING
FFE	FINISHED FLOOR ELEVATION
FT	FOOT/FEET
GV	GATE VALVE
HORIZ	HORIZONTAL
HP	HIGH POINT
HWL	HIGH WATER LEVEL
IN	INCHES
INV	INVERT
IPF	IRON OIN FOUND
L	LENGTH
LF	LINEAR FEET
LWL	LOW WATER LEVEL
LP	LOW POINT
MIN	MINIMUM
MJ	MECHANICAL JOINT
MSL	MEAN SEA LEVEL
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OC	ON CENTER
PG	PAGE
PVC	POLYVINYL CHLORIDE
PRV	PRESSURE REGULATOR VALVE
RW	RAW WATER
SD	STORM DRAIN
STA	STATION
SY	SQUARE YARD
TM	TAX MAP
TYP	TYPICAL
VERT	VERTICAL
WL	WATERLINE

PROJECT NARRATIVE:

THIS PROJECT FOR THE CITY OF STAUNTON, VIRGINIA, IS TO CONSTRUCT A NEW RAW WATER PUMPING STATION TO REPLACE THE EXISTING GARDNER SPRING PUMP STATION. THE NEW PUMP STATION WILL BE LOCATED ADJACENT TO THE EXISTING PUMP STATION AND IS LOCATED ON THE SAME PARCEL. THE PROJECT CONSISTS OF THE NEW PUMP STATION, AND ALL THE ASSOCIATED YARD PIPING, VALVES, AND BELOW GRADE STRUCTURES.

SEQUENCE OF CONSTRUCTION:

1. THE RECOMMENDED SEQUENCE OF CONSTRUCTION IS PROVIDED TO ASSIST IN PERFORMING THE WORK WITH MINIMAL IMPACT ON FACILITY OPERATION. THE RECOMMENDED SEQUENCE OF CONSTRUCTION IS GENERAL IN NATURE, DOES NOT INCLUDE ALL STEPS OR DETAILS REQUIRED TO COMPLETE THE WORK AND IS NOT INTENDED TO DEFINE THE METHODS OF CONSTRUCTION
2. CONTRACTOR MUST FIELD VERIFY THE MATERIALS, LOCATION AND DIMENSIONS OF ALL EXISTING PIPES PRIOR TO ORDERING CONNECTION MATERIALS AND A MINIMUM OF 30 DAYS PRIOR TO OTHER SITE MOBILIZATION.
3. SEQUENCE OF OPERATIONS: EACH ACTIVITY MUST BE COMPLETE AND ACCEPTED IN WRITING BY ENGINEER BEFORE WORK BEGINS ON SUBSEQUENT ACTIVITIES.
   - A. ACTIVITY 1: WET WELL EXCAVATION COMPLETE
   - B. ACTIVITY 2: NEW PUMP STATION AND INFLUENT WATER LINES COMPLETE
   - C. ACTIVITY 3: COMPLETE TIE-IN OF NEW PUMP STATION TO 16-INCH RAW WATER LINE; SUBSTANTIAL COMPLETION OF NEW PUMP STATION
   - D. ACTIVITY 4: DEMOLISH EXISTING PUMP STATION
   - E. ACTIVITY 5: EMERGENCY GENERATOR SUBSTANTIALLY COMPLETE
4. CONSTRAINTS:
   - A. THE EXISTING 30-INCH INFLUENT WATER LINE CONNECTION TO THE EXISTING PUMP STATION MUST REMAIN IN SERVICE UNTIL THE NEW PUMP STATION IS SUBSTANTIALLY COMPLETE.
   - B. CONTRACTOR MUST ISOLATE THE EXISTING 24" RAW WATER LINE TO PREVENT BACKFLOW FROM THE EXISITNG PUMP STATION PRIOR TO DEMOLISHING THE LINE AND CONNECTING TO THE NEW PUMP STATION.
   - C. THE EXISTING PUMP STATION MUST REMAIN IN SERVICE UNTIL THE NEW PUMP STATION IS SUBSTANTIALLY COMPLETE.
   - D. CONTRACTOR MUST PROVIDE A MINIMUM OF TWO (2) WEEKS WRITTEN NOTICE TO THE OWNER PRIOR TO A PUMP STATION SHUT DOWN. THIS APPLIES TO THE EXISTING PUMP STATION UNTIL IT IS DEMOLISHED AND TO THE NEW PUMP STATION ONCE IT IS SUBSTANTIALLY COMPLETE. OWNER WILL PERFORM SHUT DOWN OF THE PUMP STATION. PUMP STATION SHUTDOWNS MUST NOT EXCEED EIGHT (8) HOURS. OWNER RESERVES THE RIGHT TO DELAY OR LIMIT THE DURATION OF PUMP STATION SHUTDOWNS BASED ON WATER SUPPLY LIMITATIONS.
   - E. THE EXISTING 16-INCH RAW WATER LINE DISCHARGE FROM THE EXISTING PUMP STATION MUST REMAIN IN SERVICE UNTIL THE NEW PUMP STATION IS SUBSTANTIALLY COMPLETE.
   - F. IN THE EVENT OF DAMAGE TO THE EXISTING 16-INCH RAW WATER LINE OR ANY OTHER EVENT THAT WOULD REQUIRE THE EXISTING 16-INCH RAW WATER LINE TO BE TAKEN OUT OF SERVICE FOR EMERGENCY REPAIRS, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE OWNER.
   - G. THE CONTRACTOR MUST PROTECT THE EXISTING 16-INCH RAW WATER LINE FROM DAMAGE DURING EXCAVATION AND ALL OTHER ON-SITE ACTIVITIES. CONTRACTOR IS RESPONSIBLE FOR COST OF REPAIR OF ANY AND ALL DAMAGE TO THE EXISTING 16-INCH WATER LINE CAUSED BY CONTRACTOR.
   - H. CONTRACTOR MUST PROVIDE 48 HOURS ADVANCE NOTICE TO THE OWNER PRIOR TO BEGINNING EXCAVATION IN PROXIMITY TO OR EXPOSING THE EXISTING 16-INCH RAW WATER LINE. DURING EXCAVATION ACTIVITIES, CONTRACTOR SHALL PROVIDE OWNER AND ENGINEER WITH DAILY PROGRESS UPDATES.
   - I. WET WELL EXCAVATION MUST BE COMPLETE PRIOR TO EXCAVATION WITHIN THE LIMITS OF THE EXISTING TRENCH OF THE 16-INCH RAW WATER LINE.
   - J. CONTRACTOR MUST MINIMIZE THE EXPOSED LENGTH OF THE 16-INCH RAW WATER LINE AT ALL TIMES AND MUST LIMIT THE EXPOSED LENGTH OF PIPE TO A MAXIMUM OF 8-FEET OF PIPE, AT ANY TIME A PUMP STATION IS IN OPERATION. MULTIPLE 8 FOOT (MAX) EXPOSURES ARE ACCEPTABLE AT EACH BUILDING FOOTING CROSSING IF THE INTERMEDIATE PIPE REMAINS BURIED.
   - K. CONTRACTOR AND OWNER MUST COORDINATE STOCKPILING OF EMERGENCY REPAIR MATERIALS FOR THE 16-INCH RAW WATER LINE ON-SITE ADJACENT TO THE 16-INCH RAW WATER LINE. THESE MATERIALS WILL BE PROVIDED BY AND REMAIN THE PROPERTY OF THE OWNER AND WILL ONLY BE UTILIZED BY THE OWNER'S PERSONNEL FOR EMERGENCY REPAIRS.

APPROVED CODE VARIANCE:

THE BOARD OF ZOING APPEALS MET ON DECEMBER 02, 2021.
THE FOLLOWING ZONING VARIANCES WERE APPROVED:
- SPECIAL USE APPROVED TO BUILD PUBLIC UTILITY IN AGRICULTURAL ZONE.
- MINIMUM FRONT YARD SETBACK REDUCTION APPROVED

AUGUSTA COUNTY SITE PLAN NOTES:

1. AS-BUILT PLANS WILL BE REQUIRED TO VERIFY CUT/FILL VOLUMES TO COINCIDE WITH POST-DEVELOPED FLOODPLAIN MODELING.
2. A VSMP/LDP APPLICATION WILL NEED TO BE COMPLETED AND RETURNED TO THE COMMUNITY DEVELOPMENT OFFICE.
3. AN ON-SITE PRE-CONSTRUCTION CONFERENCE WILL BE REQUIRED BEFORE THE FULL LAND DISTURBING PERMIT CAN BE ISSUED. A PERIMETER CONTROL PERMIT WILL BE ISSUED AFTER THE PLAN HAS BEEN APPROVED, VSMP/LDP APPLICATION AND FEE AND BONDS HAVE BEEN RECEIVED. THIS PERMIT IS ONLY GOOD FOR THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES. ALL PERIMETER CONTROLS (CONSTRUCTION ENTRANCE, RWD, SILT FENCE, DIVERSION DIKES, SEDIMENT TRAP, ETC.) WILL NEED TO BE IN PLACE PRIOR TO THE PRE-CONSTRUCTION MEETING. CLEARING AND GRUBBING SHOULD ONLY BE DONE IN AREAS THAT HAVE PERIMETER CONTROLS. IF THE CONTROLS ARE NOT INSTALLED CORRECTLY, THE LAND DISTURBING PERMIT WILL NOT BE ISSUED UNTIL THE CONTROLS ARE APPROVED.
4. AN EROSION AND SEDIMENT CONTROL BOND IS REQUIRED IN THE AMOUNT OF $5000. THIS MAY BE SUBMITTED IN THE FORM OF A CASHIER'S CHECK, PERFORMANCE BOND OR A LETTER OF CREDIT.

LEGEND:

EXISTING		PROPOSED	
⊠	BENCHMARK	——x——x——	FENCELINE
-(P)-	POWER POLE	——1000——	MAJOR CONTOURS
↓	GUY WIRE	——1001——	MINOR CONTOURS
● IPF	IRON PIN FOUND	——OHE——	OVERHEAD ELECTRIC
◈	SOIL BORING	——UGE——	UNDERGROUND ELECTRIC
——·——·——·——	EDGE OF WATER	——FO——	UNDERGROUND FIBER/COMM
——/——/——/——	EDGE OF PAVEMENT	——SD——	STORM DRAIN
——x——x——x——	FENCELINE	——FM——	SUMP PUMP DISCHARGE (FORCE MAIN)
~~	TREELINE		YARD HYDRANT
1000	MAJOR CONTOURS	Ⓑ	BOLLARD
1001	MINOR CONTOURS	●CO	CLEANOUT
OHE	OVERHEAD ELECTRIC		NEW GRAVEL ACCESS ROAD
UGE	UNDERGROUND ELECTRIC		GRAVEL TOPCOAT
UGT	UNDERGROUND TELEPHONE		RIPRAP
W	WATERLINE		CONCRETE
SD	STORM LINE		
	PROPERTY LINE		
	EASEMENT		

EROSION AND SEDIMENT CONTROL QUANTITIES

TYPE	QUANTITY	UNIT
CONSTRUCTION ENTRANCE	1	EA
SILT FENCE	190	LF
RIPRAP/OUTLET PROTECTION	23	CY
BLANKET MATTING	120	SY
TEMPORARY SEEDING	925	SY
PERMANENT SEEDING	925	SY

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COMMONWEALTH OF VIRGINIA
WAYNE R. MASSIE
Lic. No. 36495
05/27/22
ENGINEER
PROFESSIONAL

CITY OF STAUNTON
GARDNER SPRING PUMP STATION
STAUNTON, VIRGINIA

MRK	DATE	REVISION DESCRIPTION

COMM NO: 220117
DATE: 05/27/2022
DRAWN: CTS | DESIGN: WRM
CHECK: AST

SHEET TITLE
GENERAL NOTES, LEGEND, ABBREVIATIONS, & SEQUENCE OF OPERATIONS

SHT. NO. C-001 | REV. NO. 0

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Froehling & Robertson, Inc.

BORING LOG

Boring: BH-01 (1 of 1)

Project No: 71Y0194
Client: Wiley Wilson
Project: Staunton Pump Station
City/State: Augusta County, Virginia

Elevation: 1347 ±
Total Depth: 25.0'
Boring Location: See Boring Location Plan

Drilling Method: HSA
Hammer Type: Automatic
Date Drilled: 9/23/20
Driller: SDS

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
1346.6	0.4	Surficial Organics	2-4-10	0.0	14	
1345.5	1.5	Brown, Moist, Medium Dense, Silty SAND (SM), Some Gravel **ALLUVIUM**	REC=20% RQD=13%	1.5		Auger Refusal at 1.5 Feet
1344.7	2.3	Gray, Fine Grained, Slightly Weathered, Very Closely to Closely Fractured, Hard, Limestone **BEDROCK**				Switched to NQ Coring at 1.5 Feet
1342.2	4.8	Open or Soil Filled Cavity Gray, Fine Grained, Slightly Weathered, Very Closely to Closely Fractured, Hard, Limestone **BEDROCK**	REC=93% RQD=17%	6.5		
1335.5	11.5	Light Gray, Fine Grained, Very Slightly Weathered, Close to Moderately Closely Fractured, Very Hard, Limestone **BEDROCK**	REC=100% RQD=82%	11.5		
			REC=100% RQD=98%	16.5		
			REC=100% RQD=88%	21.5		
1322.0	25.0	Boring Terminated at 25 Feet		25.0		

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.

BORING_LOG LONG NAME| 71V0194.GPJ | F&R.GDT 10/13/20

Froehling & Robertson, Inc.

BORING LOG

Boring: B-1 (1 of 1)

Project No: 71V0232
Client: Wiley / Wilson
Project: Staunton Pump Station
City/State: Staunton, Virginia

Elevation: 1351 ±
Total Depth: 6.7'
Boring Location: See Boring Location Plan

Drilling Method: HSA
Hammer Type: Automatic
Date Drilled: 2/19/18
Driller: S. Martin

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
1350.9	0.1	Surficial Organics	2-2-8	0.0	10	
1348.5	2.5	Brown, Moist, Loose, Fine to Coarse, Silty SAND (SM), Little Gravel **FILL**	5-5-4	1.5 2.5		
1346.0	5.0	Brown, Moist, Loose, Fine to Medium, Silty SAND (SM), Trace Gravel **ALLUVIUM**	32-19-26	4.0 5.0	9	
1344.3	6.7	Gray, Wet, Dense, Fine to Coarse, Well Graded GRAVEL (GP) **RESIDUUM** Auger Refusal at 6.7 Feet		6.5	45	

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.

BORING_LOG LONG NAME| 71V0232.GPJ | F&R.GDT 2/21/18

Froehling & Robertson, Inc.

BORING LOG

Boring: B-2 (1 of 1)

Project No: 71V0232
Client: Wiley / Wilson
Project: Staunton Pump Station
City/State: Staunton, Virginia

Elevation: 1351 ±
Total Depth: 6.0'
Boring Location: See Boring Location Plan

Drilling Method: HSA
Hammer Type: Automatic
Date Drilled: 2/19/18
Driller: S. Martin

Elevation	Depth	Description of Materials (Classification)	* Sample Blows	Sample Depth (feet)	N-Value (blows/ft)	Remarks
1350.5	0.5	Surficial Organics	woh-2-2	0.0	4	
		Brown, Moist, Loose, Fine to Medium, Silty SAND (SM) **ALLUVIUM**	2-3-3	1.5 2.5	6	
1346.0	5.0	Brown, Moist, Soft, Sandy SILT (ML), Trace Gravel **ALLUVIUM**	1-50/5	4.0 5.0	100+	
1345.0	6.0	Auger Refusal at 6 Feet		5.9		

*Number of blows required for a 140 lb hammer dropping 30" to drive 2" O.D., 1.375" I.D. sampler a total of 18 inches in three 6" increments. The sum of the second and third increments of penetration is termed the standard penetration resistance, N-Value.

BORING_LOG LONG NAME| 71V0232.GPJ | F&R.GDT 2/21/18

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MRK	DATE	REVISION DESCRIPTION

COMM NO: 220117
DATE: 05/27/2022
DRAWN: CTS | DESIGN: WRM
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SHEET TITLE

BORING LOGS

SHT. NO. C-002 | REV. NO. 0

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DEMOLITION NOTES

1. REFER TO SHEET CD-101 AND CD-102 FOR EXISTING PUMP STATION BUILDING DEMOLITION PLAN.
2. REFER TO SEQUENCE OF CONSTRUCTION ON SHEET C-001 FOR DEMOLITION SEQUENCING.

WILLIAM B. TUNING, ETAL
D.B. 769-P. 353
WILL I.N. 030016664
TM 35-6
ZONING: GA

MODELED 100 YR. FLOOD PLAIN (PENDING FEMA REVIEW)

12" RCP
INV. 1356.59

40 - R/W
D.B. 558 - P. 218

HUNDLEY DISTILLERY ROAD (RTE. 728)

MODELED 100 YR. FLOOD PLAIN (PENDING FEMA REVIEW)

IPF

12" RCP
INV. 1355.17

3230 SF CLEARING AND GRUBBING

35' FRONT YARD SETBACK

25' SIDE YARD SETBACK

WOODS

DEMO EXISTING ELECTRICAL BUILDING. REMOVE ALL FOUNDATIONS AND CONDUITS TO 18" BELOW GRADE AND FILL WITH GRAVEL. SEE SHEET E-002 FOR ADDITIONAL ELECTRICAL DEMO.

DEMO CHAINLINK DOUBLE SWING GATE AND PEDESTRAIN GATE.

EX. ACCESS ROAD

BENCHMARK
N 6764415.32
E 1326942.58
ELEV. 1359.27

30' PRESCRIPTIVE EASEMENT

SEE SHEET E-002 FOR DEMOLITION OF EXISTING TRANSFORMER AND CONCRETE PAD

CHAIN LINK FENCE WITH BARBED WIRE

REMOVE EXISTING WOOD STOP BLOCK

DEMO APPROX. 160' SECTION OF CHAINLINK FENCING WITH BARBED WIRE

TELE. PED.

SEE SHEET CD-101 & CD-102 FOR DEMOLITION DETAILS OF EXISTING PUMP STATION

ROCK WALL

DEMOLISH CHLORINE ROOM BUILDING IN ITS ENTIRETY. REFER TO SHEET CD-101 & CD-102 FOR ADDITIONAL DEMOLITION REQUIREMENTS

DEMOLISH CONCRETE PAD

EX. 16" RW TO PLANT

DEMOLISH APPROX. 16' OF EXISTING 16" DIP WATERLINE

WATER LINE BY POTHOLE

VALVE
RIM=1357.83

TOP OF 16" W/L
1353.76 (STEEL)

1 STORY BRICK

FLOWABLE FILL 30" RCP FROM INSIDE EXISTING WETWELL TO NEW INTAKE CONTROL STRUCTURE ONCE EX. PUMP STATION IS DECOMMISSIONED

DUCTILE IRON
TOP OF PIPE 1342.93

GRASS

STEEL PIPE ENTERS CONC. THRUST BLOCK
TOP OF PIPE 1343.60

B-1

TOP OF PIPE 1350.77 (STEEL PIPE)

CAP EXISTING 30" RCP INSIDE OF INTAKE STRUCTURE ONCE NEW PUMP STATION IS COMMISSIONED.

EXISTING 20' WATERLINE EASEMENT

FLOW FILL EXISTING 16" PIPE TO EXISTING PUMP STATION AFTER COMMISSIONING OF NEW PUMP STATION.

DRAINAGE INLET
TOP 1351.97

DEMOLISH DRAINAGE INLET STRUCTURE

CONC. WALL

SEE CD-101 & CD-102 FOR WETWELL DEMOLITION

INSTALL NEW SPRING VAULT WHILE MAINTAINING FLOW THROUGH 30" RCP TO EXISTING WET WELL. SAWCUT AND REMOVE PORTION OF 30" RCP INSIDE OF INTAKE STRUCTURE JUST PRIOR TO NEW PUMP STATION COMMISSIONING TO ALLOW FLOW TO ENTER NEWLY CONSTRUCTED WET WELL.

WILLIAM B. TUNING, ETAL D.B. 769-P. 353
WILL I.N. 030016664
TM 35-6
ZONING: GA

BH-01

B-2

IPF

PLUG EXISTING WETWELL OPENING

DEMOLISH APPROX. 15' OF EXISTING 24" DIP WATERLINE

VAULT TO REMAIN WITH MODIFICATOINS, SAW CUT AND REMOVE THE EXISTING VAULT TOP AND PORTION OF WALLS. SEE SHEET D-501 FOR ADDITIONAL DEMOLITION REQUIREMENTS

CONTRACTOR SHALL COORDINATE WITH OWNER TO VERIFY THIS VALVE IS OPERATIONAL AND CAN BE USED TO ISOLATE THE SUPPLY FROM THE SPRING BOX

VALVE

MAC RENTALS, LLC.
I.N. 200010773
TM 35-7
ZONING: GA

CITY OF STAUNTON PUBLIC WORKS
D.B. 364 - P. 82
TM 35-6B
0.743 ACRES
ZONING: GA

425 SF CLEARING AND GRUBBING

WOODS/BRUSH

EX. RIVER VAULT
RIM = 1351.52

25' SIDE YARD SETBACK

EX. 30" SPRING WATERLINE

EX. 24" RAW WATER

IPF

CITY OF STAUNTON PUBLIC WORKS
D.B. 364 - P. 82
TM 35-6B
0.743 ACRES
ZONING: GA

INTAKE

MIDDLE RIVER

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0 10' 20'

SCALE: 1" = 10'

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COMMONWEALTH OF VIRGINIA
WAYNE R. MASSIE
Lic. No. 36495
05/27/22
PROFESSIONAL ENGINEER

CITY OF STAUNTON
GARDNER SPRING PUMP STATION
STAUNTON, VIRGINIA

MRK	DATE	REVISION DESCRIPTION

COMM NO:	220117
DATE:	05/27/2022
DRAWN: CTS	DESIGN: WRM
CHECK: AST	

SHEET TITLE

EXISTING CONDITIONS & DEMOLITION PLAN

SHT. NO.	REV. NO.
CD-100	0

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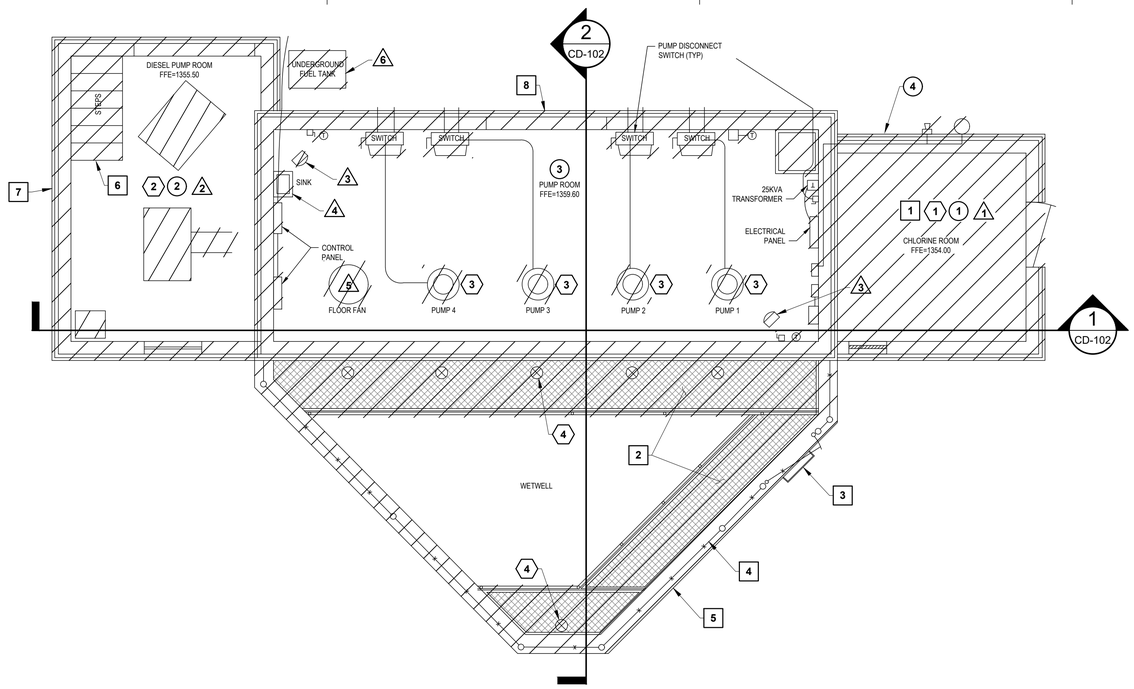
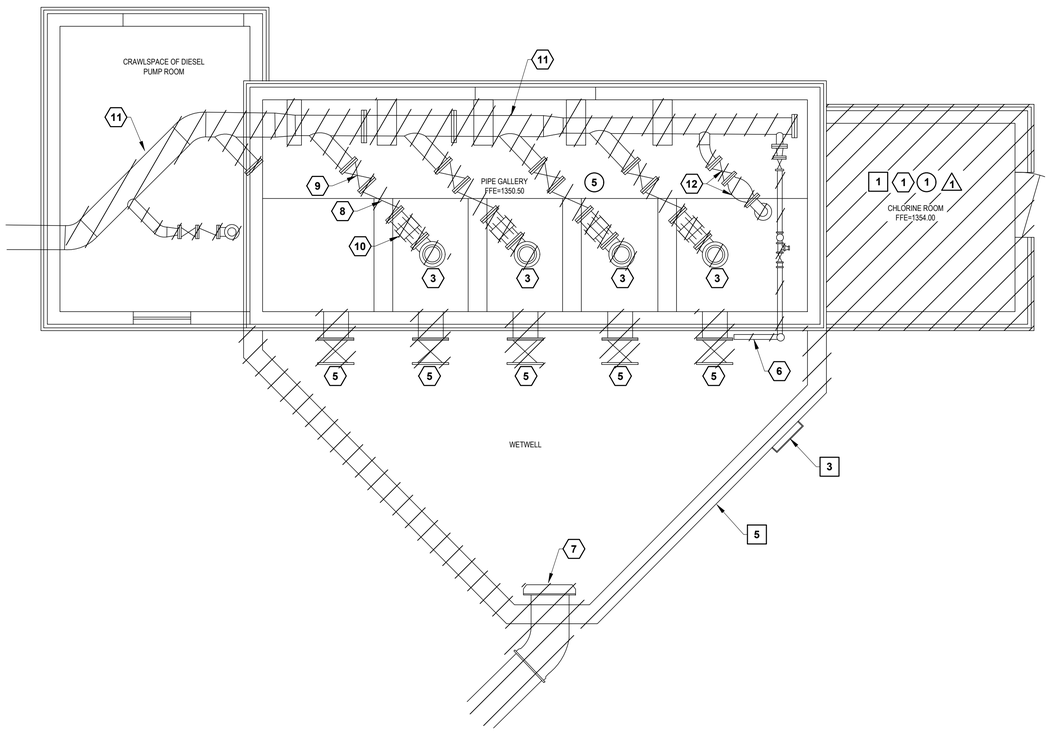


EXISTING PUMP STATION UPPER FLOOR DEMOLITION PLAN

NOT TO SCALE



EXISTING PUMP STATION LOWER FLOOR DEMOLITION PLAN

NOT TO SCALE

GENERAL DEMOLITION NOTES

1. DEMOLITION PLAN OF EXISITNG PUMP STATION IS TO GIVE THE CONTRACTOR A GENERAL IDEA OF DEMOLITION REQUIREMENTS. ALL DETAILS OF DEMOLITION WORK MAY NOT BE SHOWN.

⬡ CIVIL/PROCESS DEMOLITION KEYNOTES

1. DEMOLISH ALL PIPING AND ASSOCIATED APPURTENANCES REMAINING IN THE CHLORINE ROOM.
2. DEMOLISH ALL PIPING AND ASSOCIATED APPURTENANCES REMAINING IN THE DIESEL PUMP ROOM.
3. DEMOLISH PUMPS/PUMP SHAFTS (TYP OF 4)
4. DEMOLISH HANDWHEEL OPERATED FLOOR STAND AND STEMS (TYP OF 6).
5. DEMOLISH 16" GATE VALVE (TYP OF 5). GROUT FILL PIPE OPENINGS IN WALL.
6. DEMOLISH HOSE RACK
7. DEMOLISH SLUICE GATE AND 24" PIPE. GROUT FILL OPENING IN WALL.
8. DEMOLISH 10" CHECK VALVE (TYP OF 5)
9. DEMOLISH 10" GATE VALVE,STEMS, AND HANDWHEELS (TYP OF 5)
10. DEMOLISH 10" DISMANTLING JOINTS (TYP OF 5)
11. DEMOLISH HEADER PIPING (WELDED STEEL)
12. DEMOLISH 6" GATE VALVE AND SURGE ARRESTOR

☐ ARCHITECTURAL/STRUCTURAL DEMOLITION KEYNOTES

1. DEMOLISH CHLORINE ROOM FOUNDATION, WALLS, AND ROOF IN ITS ENTIRETY.
2. DEMOLISH ALUMINUM GRATING WALKWAY AND HANDRAIL
3. DEMOLISH ALUMINUM LADDER
4. DEMOLISH 7' CHANILINK FENCE WITH 3 STRANDS OF BARBED WIRE ALONG WETWELL WALL
5. DEMOLISH WETWELL WALLS TO 18" BELOW GRADE. SEE SECTION SHEET C-100B.
6. REMOVE STEPS
7. DEMOLISH BRICK WALLS AND ROOF OF DIESEL PUMP ROOM DOWN TO CONCRETE WALL AT ELEVATION 1359.60.
8. DEMOLISH BRICK WALLS AND ROOF OF PUMP ROOM DOWN TO CONCRETE WALL AT ELEVATION 1359.60.

△ MECHANICAL DEMOLITION KEYNOTES

1. DEMOLISH ALL MECHANICAL EQUIPMENT AND ASSOCIATED APPURTENANCES REMAINING IN CHLORINE ROOM.
2. DEMOLISH ALL MECHANICAL EQUIPMENT AND ASSOCIATED APPURTENANCES REMAINING IN DIESEL PUMP ROOM.
3. DEMOLISH UNIT HEATER (TYP OF 3)
4. DEMOLISH UTILITY SINK
5. DEMOLISH FLOOR FAN
6. DEMOLISH UNDERGROUND FUEL TANK

◯ ELECTRICAL/INSTRUMENTATION DEMOLITION KEYNOTES

1. DEMOLISH ALL ELECTRICAL EQUIPMENT AND ASSOCIATED APPURTENANCES REMAINING IN CHLORINE ROOM INCLUDING BUT NOT LIMITED TO LIGHTS/LIGHT SWITCHES, EXHAUST FAN/DISCONNECTS/THERMOSTATS, HEATERS, RECEPTACLES, CONDUIT AND WIRING.
2. DEMOLISH ALL ELECTRICAL EQUIPMENT AND ASSOCIATED APPURTENANCES REMAINING IN THE DIESEL PUMP INCLUDING BUT NOT LIMITED TO LIGHTS/LIGHT SWITCHES, EXHAUST FAN/DISCONNECTS/THERMOSTATS, HEATERS, RECEPTACLES, GENERATOR AND TRANSFER SWITCH AND CONDUIT AND WIRING.
3. DEMOLISH ALL ELECTRICAL EQUIPMENT AND ASSOCIATED APPURTENANCES REMAINING IN PUMP ROOM INCLUDING BUT NOT LIMITED TO LIGHTS/LIGHT SWITCHES, RECEPTACLES, EXHAUST FANS, HEATERS, STARTERS, DISCONNECTS, THRMOSTATS, CONTROL PANELS/CONTROLS, PUMP DISCONNECT SWITCHES, ELECTRICAL PANELBOARDS, AND ALL ASSOCIATED CONDUIT AND WIRING.
4. DEMOLISH ALL ELECTRICAL EQUIPMENT AND ASSOCIATED APPURTENANCES REMAINING ON THE EXTERIOR OF THE PUMP STATION INCLUDING BUT NOT LIMITED TO LIGHTS/LIGHT SWITCHES AND CONTROLS.
5. DEMOLISH ALL ELECTRICAL EQUIPMENT AND ASSOCIATED APPURTENANCES REMAINING IN THE PUMP STATION LOWER LEVEL INCLUDING BUT NOT LIMITED TO LIGHTS/LIGHT SWITCHES, CONTROLS, AND CONDUIT AND WIRING.

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WAYNE R. MASSIE
Lic. No. 36495
05/27/22
PROFESSIONAL ENGINEER

CITY OF STAUNTON
GARDNER SPRING PUMP STATION
STAUNTON, VIRGINIA

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EXISTING GSPS PUMP STATION DEMOLITION PLAN

SHT. NO.	REV. NO.
CD-101	0

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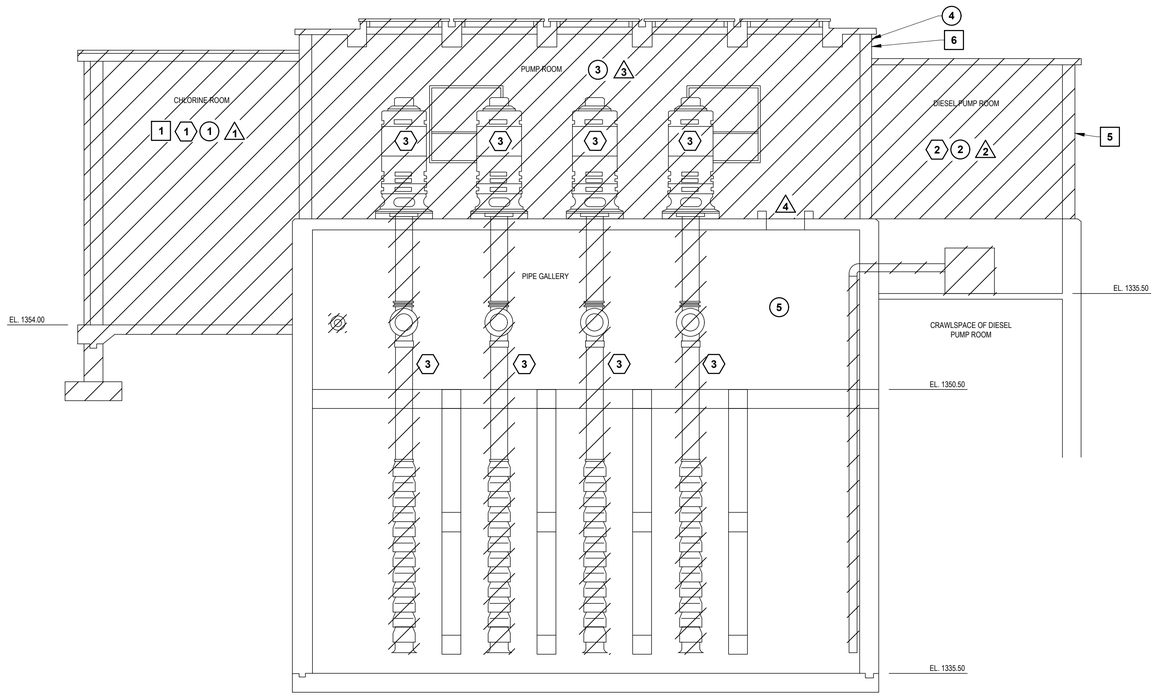
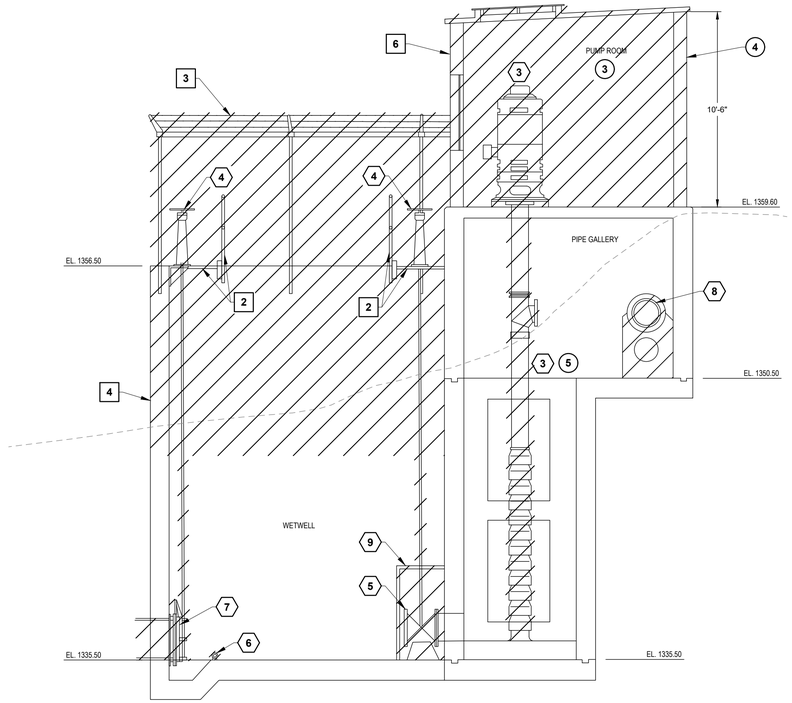


1 CD-101 EXISTING PUMP STATION DEMOLITION SECTION
NOT TO SCALE



2 CD-101 EXISTING PUMP STATION DEMOLITION SECTION
NOT TO SCALE

GENERAL DEMOLITION NOTES

1. DEMOLITION PLAN OF EXISITNG PUMP STATION IS TO GIVE THE CONTRACTOR A GENERAL IDEA OF DEMOLITION REQUIREMENTS. ALL DETAILS OF DEMOLITION WORK MAY NOT BE SHOWN.

CIVIL/PROCESS DEMOLITION KEYNOTES

1. DEMOLISH ALL PIPING AND ASSOCIATED APPURTENANCES REMAINING IN THE CHLORINE ROOM.
2. DEMOLISH ALL PIPING AND ASSOCIATED APPURTENANCES REMAINING IN THE DIESEL PUMP ROOM.
3. DEMOLISH PUMPS/PUMP SHAFTS (TYP OF 4)
4. DEMOLISH HANDWHEEL OPERATED FLOOR STAND AND STEMS (TYP OF 6).
5. DEMOLISH 16" GATE VALVE (TYP OF 5). GROUT FILL PIPE OPENINGS IN WALL.
6. DEMOLISH CHLORINE DIFFUSER
7. DEMOLISH SLUICE GATE AND 24" PIPE. GROUT FILL OPENING IN WALL.
8. DEMOLISH HEADER PIPING (WELDED STEEL)
9. DEMOLISH WIRE MESH SCREENS FROM AROUND GATE VALVES (TYP OF 5)

ARCHITECTURAL/STRUCTURAL DEMOLITION KEYNOTES

1. DEMOLISH CHLORINE ROOM FOUNDATION, WALLS, AND ROOF IN ITS ENTIRETY.
2. DEMOLISH ALUMINUM GRATING WALKWAY AND HANDRAIL
3. DEMOLISH 7' CHANILINK FENCE WITH 3 STRANDS OF BARBED WIRE ALONG WETWELL WALL
4. DEMOLISH WETWELL WALLS TO 18" BELOW GRADE
5. DEMOLISH BRICK WALLS AND ROOF OF DIESEL PUMP ROOM DOWN TO CONCRETE WALL AT ELEVATION 1359.60.
6. DEMOLISH BRICK WALLS AND ROOF OF PUMP ROOM DOWN TO CONCRETE WALL AT ELEVATION 1359.60.

MECHANICAL DEMOLITION KEYNOTES

1. DEMOLISH ALL MECHANICAL EQUIPMENT AND ASSOCIATED APPURTENANCES REMAINING IN CHLORINE ROOM.
2. DEMOLISH ALL MECHANICAL EQUIPMENT AND ASSOCIATED APPURTENANCES REMAINING IN DIESEL PUMP ROOM.
3. DEMOLISH ALL MECHANICAL EQUIPMENT AND ASSOCIATED APPURTENANCES REMAINING IN PUMP ROOM.
4. DEMOLISH FLOOR FAN

ELECTRICAL/INSTRUMENTATION DEMOLITION KEYNOTES

1. DEMOLISH ALL ELECTRICAL EQUIPMENT AND ASSOCIATED APPURTENANCES REMAINING IN CHLORINE ROOM INCLUDING BUT NOT LIMITED TO LIGHTS/LIGHT SWITCHES, EXHAUST FAN/DISCONNECTS/THERMOSTATS, HEATERS, RECEPTACLES, CONDUIT AND WIRING.
2. DEMOLISH ALL ELECTRICAL EQUIPMENT AND ASSOCIATED APPURTENANCES REMAINING IN THE DIESEL PUMP INCLUDING BUT NOT LIMITED TO LIGHTS/LIGHT SWITCHES, EXHAUST FAN/DISCONNECTS/THERMOSTATS, HEATERS, RECEPTACLES, GENERATOR AND TRANSFER SWITCH AND CONDUIT AND WIRING.
3. DEMOLISH ALL ELECTRICAL EQUIPMENT AND ASSOCIATED APPURTENANCES REMAINING IN PUMP ROOM INCLUDING BUT NOT LIMITED TO LIGHTS/LIGHT SWITCHES, RECEPTACLES, EXHAUST FANS, HEATERS, STARTERS, DISCONNECTS, THRMOSTATS, CONTROL PANELS/CONTROLS, PUMP DISCONNECT SWITCHES, ELECTRICAL PANELBOARDS, AND ALL ASSOCIATED CONDUIT AND WIRING.
4. DEMOLISH ALL ELECTRICAL EQUIPMENT AND ASSOCIATED APPURTENANCES REMAINING ON THE EXTERIOR OF THE PUMP STATION INCLUDING BUT NOT LIMITED TO LIGHTS/LIGHT SWITCHES AND CONTROLS.
5. DEMOLISH ALL ELECTRICAL EQUIPMENT AND ASSOCIATED APPURTENANCES REMAINING IN THE PUMP STATION LOWER LEVEL INCLUDING BUT NOT LIMITED TO LIGHTS/LIGHT SWITCHES, CONTROLS, AND CONDUIT AND WIRING.

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CITY OF STAUNTON
GARDNER SPRING PUMP STATION
STAUNTON, VIRGINIA

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EXISTING GSPS PUMP STATION DEMOLITION SECTIONS

SHT. NO. CD-102 | REV. NO. 0

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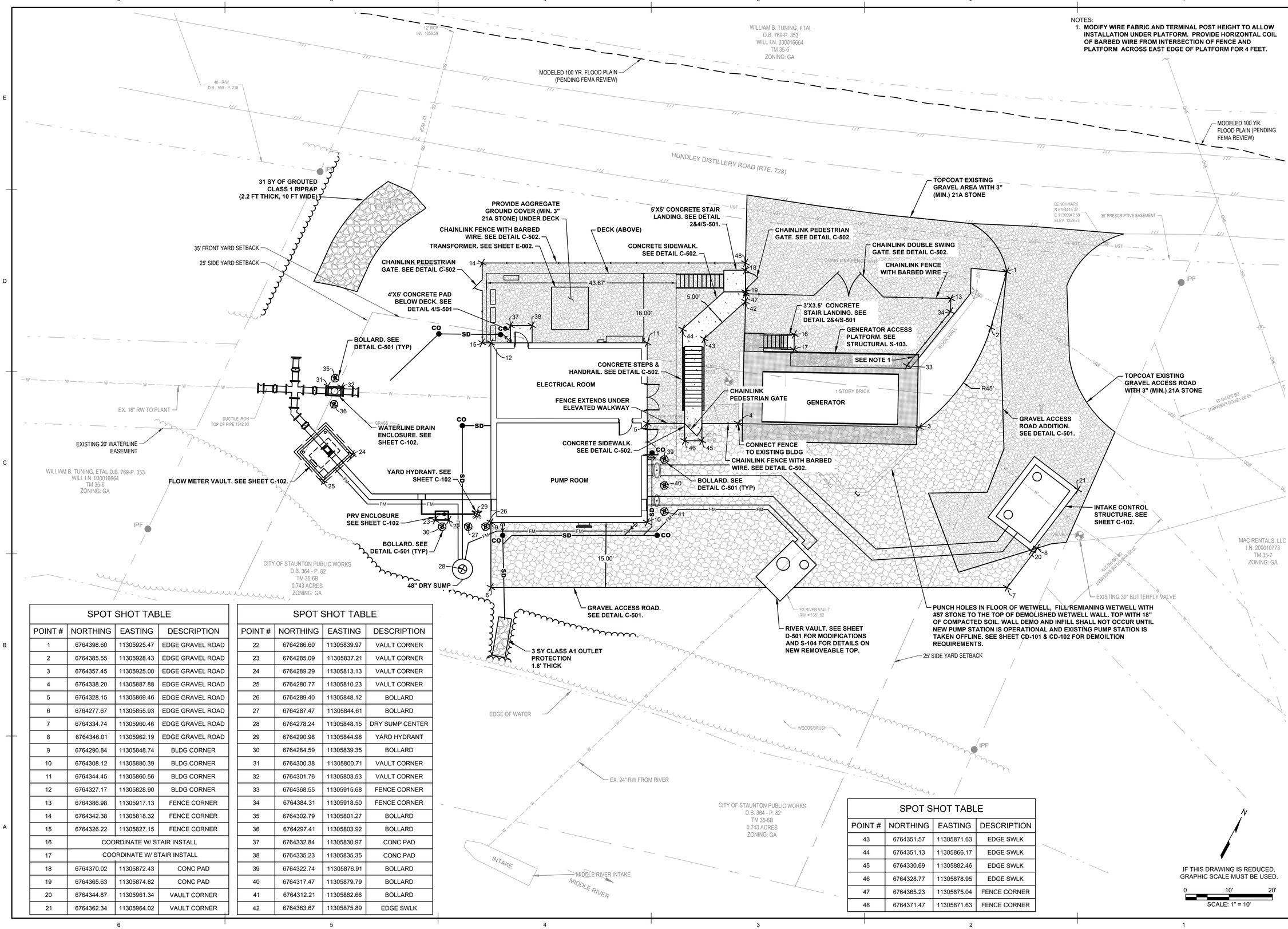
NOTES:
1. MODIFY WIRE FABRIC AND TERMINAL POST HEIGHT TO ALLOW INSTALLATION UNDER PLATFORM. PROVIDE HORIZONTAL COIL OF BARBED WIRE FROM INTERSECTION OF FENCE AND PLATFORM ACROSS EAST EDGE OF PLATFORM FOR 4 FEET.



SPOT SHOT TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
1	6764398.60	11305925.47	EDGE GRAVEL ROAD
2	6764385.55	11305928.43	EDGE GRAVEL ROAD
3	6764357.45	11305925.00	EDGE GRAVEL ROAD
4	6764338.20	11305887.88	EDGE GRAVEL ROAD
5	6764328.15	11305869.46	EDGE GRAVEL ROAD
6	6764277.67	11305855.93	EDGE GRAVEL ROAD
7	6764334.74	11305960.46	EDGE GRAVEL ROAD
8	6764346.01	11305962.19	EDGE GRAVEL ROAD
9	6764290.84	11305848.74	BLDG CORNER
10	6764308.12	11305880.39	BLDG CORNER
11	6764344.45	11305860.56	BLDG CORNER
12	6764327.17	11305828.90	BLDG CORNER
13	6764386.98	11305917.13	FENCE CORNER
14	6764342.38	11305818.32	FENCE CORNER
15	6764326.22	11305827.15	FENCE CORNER
16	COORDINATE W/ STAIR INSTALL		
17	COORDINATE W/ STAIR INSTALL		
18	6764370.02	11305872.43	CONC PAD
19	6764365.63	11305874.82	CONC PAD
20	6764344.87	11305961.34	VAULT CORNER
21	6764362.34	11305964.02	VAULT CORNER

SPOT SHOT TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
22	6764286.60	11305839.97	VAULT CORNER
23	6764285.09	11305837.21	VAULT CORNER
24	6764289.29	11305813.13	VAULT CORNER
25	6764280.77	11305810.23	VAULT CORNER
26	6764289.40	11305848.12	BOLLARD
27	6764287.47	11305844.61	BOLLARD
28	6764278.24	11305848.15	DRY SUMP CENTER
29	6764290.98	11305844.98	YARD HYDRANT
30	6764284.59	11305839.35	BOLLARD
31	6764300.38	11305800.71	VAULT CORNER
32	6764301.76	11305803.53	VAULT CORNER
33	6764368.55	11305915.68	FENCE CORNER
34	6764384.31	11305918.50	FENCE CORNER
35	6764302.79	11305801.27	BOLLARD
36	6764297.41	11305803.92	BOLLARD
37	6764332.84	11305830.97	CONC PAD
38	6764335.23	11305835.35	CONC PAD
39	6764322.74	11305876.91	BOLLARD
40	6764317.47	11305879.79	BOLLARD
41	6764312.21	11305882.66	BOLLARD
42	6764363.67	11305875.89	EDGE SWLK

SPOT SHOT TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
43	6764351.57	11305871.63	EDGE SWLK
44	6764351.13	11305866.17	EDGE SWLK
45	6764330.69	11305882.46	EDGE SWLK
46	6764328.77	11305878.95	EDGE SWLK
47	6764365.23	11305875.04	FENCE CORNER
48	6764371.47	11305871.63	FENCE CORNER

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SCALE: 1" = 10'

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05/27/22

CITY OF STAUNTON
GARDNER SPRING PUMP STATION
STAUNTON, VIRGINIA

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REV. NO. 0

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NOTES:
1. CONNECT TO EXISTING PIPING OUTSIDE THE EXISTING RIVER VAULT WITH 90° BEND. CONTRACTOR SHALL FIELD VERIFY EXISTING PIPE MATERIALS AND SIZE PRIOR TO ORDERING PIPE, FITTINGS, AND MATERIALS TO MAKE THIS TIE-IN CONNECTION.
2. CONTRACTOR SHALL PROVIDE AS-BUILT SURVEY OF CUT AND FILL VOLUMES. SEE DIVISION 1 SPECIFICATIONS FOR DETAILS.

WILLIAM B. TUNING, ETAL
D.B. 769-P. 353
WILL I.N. 030016664
TM 35-6
ZONING: GA

MODELED 100 YR. FLOOD PLAIN (PENDING FEMA REVIEW)

HUNDLEY DISTILLERY ROAD (RTE. 728)

12" RCP INV. 1356.59

40 - R/W D.B. 558 - P. 218

31 SY OF GROUTED CLASS 1 RIPRAP (2.2 FT THICK, 10 FT WIDE)

35' FRONT YARD SETBACK

25' SIDE YARD SETBACK

6" DOWNSPOUT DRAIN. PROVIDE 30" MIN, COVER AND 2% MIN. SLOPE. PROVIDE VERTICAL BEND AND DAYLIGHT AT BASE OF HILL

2" UNDERGROUND FIBER CONDUIT. SEE SHEET I-003 FOR DETAILS.

UGE. SEE SHEET E-002

SITE LIGTHING. SEE SHEET E-002

TOP PAD=1358.75'

DECK (ABOVE)

TRANSFORMER (ABOVE)

CHAIN LINK FENCE WITH BARBED WIRE

BENCHMARK
N 6764415.32
E 11305942.58
ELEV. 1359.27

30' PRESCRIPTIVE EASEMENT

TOP PAD=1355.80'

ELEV. 1358,33

UGE. SEE SHEET E-002

TOP PAD=1358.70'

TELE. PED.

TRANS PAD

ROCK WALL

1 STORY BRICK GENERATOR

TOP OF 16" WL 1353.79 (STEEL)

16" BFV-2

TIE INTO EX. 16" RAW WATERLINE

16" BFV-2

UGE. SEE SHEET E-002

30+00

SEE BLOWUP 1 THIS SHEET

EX. 16" RW TO PLANT

DUCTILE IRON TOP OF PIPE 1342.93

EXISTING 20' WATERLINE EASEMENT

WATERLINE DRAIN ENCLOSURE. SEE DETAIL C-502.

ELECTRICAL ROOM FFE = 1366.00

PUMP ROOM FFE = 1366.00

INV. OUT OF BLDG = 1345.50

ELEV. 1349.00

SITE LIGTHING. SEE SHEET E-002

FLOW METER VAULT. SEE DETAIL SHEET D-501.

16" FM-1

SUMP PUMP DISCHARGE TO DRY SUMP. PROVIDE 18" MIN. COVER.

16" DIP PUMP STATION DISCHARGE. SEE PROFILE 3 SHEET C-201.

DOWNSPOUT (TYP OF 4). SEE ARCHITECTURAL FOR DETAILS

6" DRAIN

6" DRAIN

6" DRAIN

2" SST

PRV VAULT. SEE DETAIL SHEET C-502

YARD HYDRANT. SEE DETAIL C-601

4" DRAIN. PROVIDE 36" MIN COVER, 2% MIN SLOPE.

8" DRAIN

SUMP PUMP DISCHARGE TO DRY SUMP. PROVIDE 18" MIN. COVER.

24" DIP RAW WATER. SEE PROFILE 2 SHEET C-201. (INV. ELEV. 1335.50 FT MSL)

CLEANOUT. SEE DETAIL C-501 (TYP)

SEE NOTE 1

INTAKE CONTROL STRUCTURE T/STRUCTURE=1352.30 SEE DETAIL D-501.

30" DIP SPRING. SEE PROFILE 1 SHEET C-201. (INV. ELEV. 1335.50 FT MSL)

EXISTING RIVER VAULT T/STRUCTURE=1347.90 SEE DETAIL D-501 FOR MODIFICATIONS.

EX RIVER VAULT RIM = 1351.52

48" DRY SUMP RIM = 1347.25 4" INV IN = 1343.75

DAYLIGHT DOWNSPOUT DRAIN WITH 30" MIN COVER, 2% MIN SLOPE

3 SY CLASS A1 OUTLET PROTECTION 1.6' THICK

WILLIAM B. TUNING, ETAL D.B. 769-P. 353 WILL I.N. 030016664 TM 35-6 ZONING: GA

CITY OF STAUNTON PUBLIC WORKS D.B. 364 - P. 82 TM 35-6B 0.743 ACRES ZONING: GA

MAC RENTALS, LLC. I.N. 200010773 TM 35-7 ZONING: GA

EXISTING 30" BUTTERFLY VALVE

25' SIDE YARD SETBACK

EDGE OF WATER

EX. 24" RW FROM RIVER

WOODS BRUSH

CITY OF STAUNTON PUBLIC WORKS D.B. 364 - P. 82 TM 35-6B 0.743 ACRES ZONING: GA

MIDDLE RIVER INTAKE

INTAKE

MIDDLE RIVER

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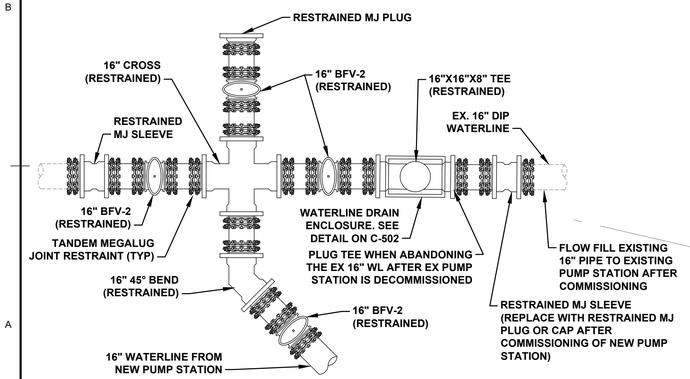
0 10' 20'

SCALE: 1" = 10'



NOTES:
1. TEST PIT AND CONFIRM PIPE SIZE AND MATERIAL OF EXISTING WATERLINE PRIOR TO ORDERING NEW WATERLINE MATERIALS.
2. REFER TO SEQUENCE OF CONSTRUCTION ON C-001 FOR ADDITIONAL REQUIREMENTS.

BLOWUP 1

SCALE: 1/4" = 1'

SPOT SHOT TABLE

POINT #	NORTHING	EASTING	DESCRIPTION
1	6764288.36	11305831.89	STA 30+50.9 - 16"X2" SERVICE SADDLE
2	6764282.72	11305821.56	STA 30+39.1 - 45° HORIZ BEND
3	6764289.93	11305800.43	STA 30+16.8 - 16" BFV-2
4	6764291.18	11305796.76	STA 30+12.9 - 16" 45° HORIZ BEND
5	6764296.04	11305794.37	STA 30+07.5 - 16" CROSS
6	6764300.15	11305792.35	STA 30+02.9 - 16" BFV-2
7	6764302.78	11305791.05	STA 30+00.0 - 16" MJ PLUG/END OF CONSTRUCTION
8	6764319.71	11305876.59	STA 10+02.3 - 30" BFV-1
9	6764333.73	11305902.25	STA 10+31.5 - 45° HORIZ BEND
10	6764326.66	11305929.85	STA 10+59.9 - 45° HORIZ BEND
11	6764342.22	11305954.44	STA 10+89.0 - 45° HORIZ BEND
12	6764313.57	11305879.95	STA 20+02.2 - 24" BFV-1
13	6764326.21	11305903.10	STA 20+28.6 - 45° HORIZ BEND
14	6764322.54	11305915.59	STA 20+41.6 - 90° HORIZ BEND. SEE NOTE 1

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COMMONWEALTH OF VIRGINIA WAYNE R. MASSIE Lic. No. 36495 PROFESSIONAL ENGINEER 05/27/22

CITY OF STAUNTON
GARDNER SPRING PUMP STATION
STAUNTON, VIRGINIA

MRK	DATE	REVISION DESCRIPTION

COMM NO: 220117
DATE: 05/27/2022
DRAWN: CTS DESIGN: WRM
CHECK: AST

SHEET TITLE
GRADING & SITE UTILITY PLAN

SHT. NO. C-102
REV. NO. 0

12/26/2013 6:33 AM
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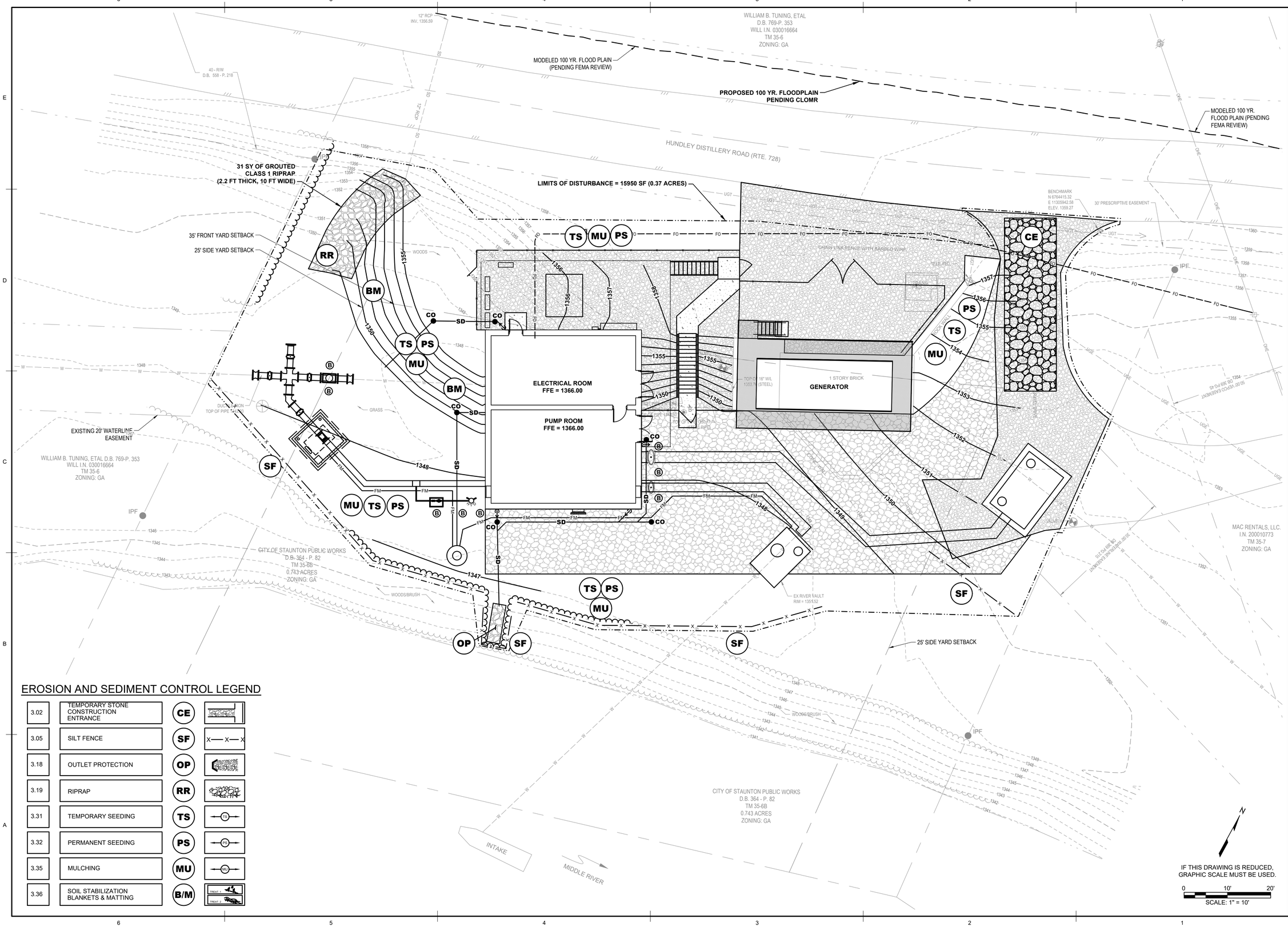

EROSION AND SEDIMENT CONTROL LEGEND

3.02	TEMPORARY STONE CONSTRUCTION ENTRANCE	CE	
3.05	SILT FENCE	SF	X—X—X
3.18	OUTLET PROTECTION	OP	
3.19	RIPRAP	RR	
3.31	TEMPORARY SEEDING	TS	
3.32	PERMANENT SEEDING	PS	
3.35	MULCHING	MU	
3.36	SOIL STABILIZATION BLANKETS & MATTING	B/M	

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SHEET TITLE

EROSION AND SEDIMENT CONTROL PLAN

SHT. NO.	REV. NO.
C-103	0

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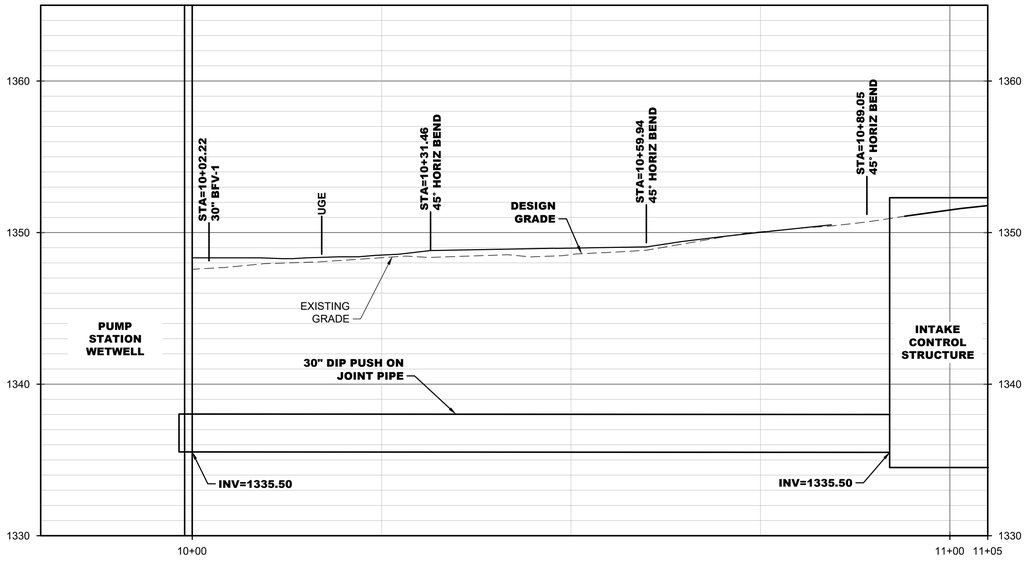
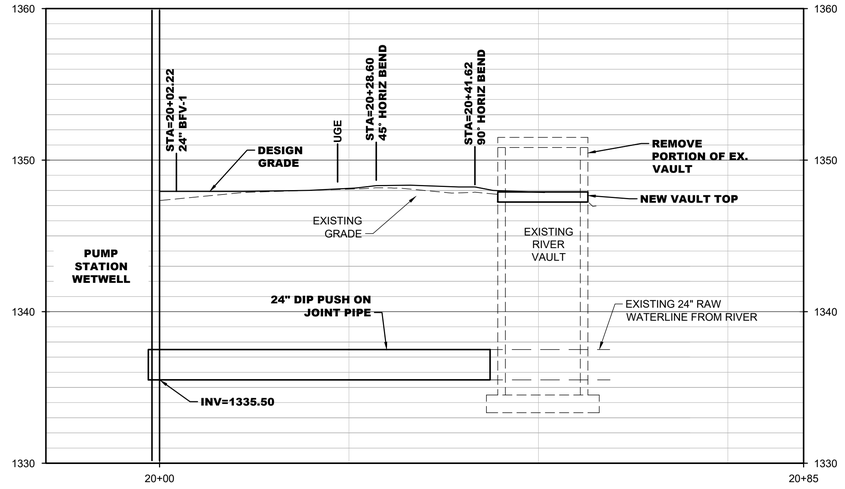


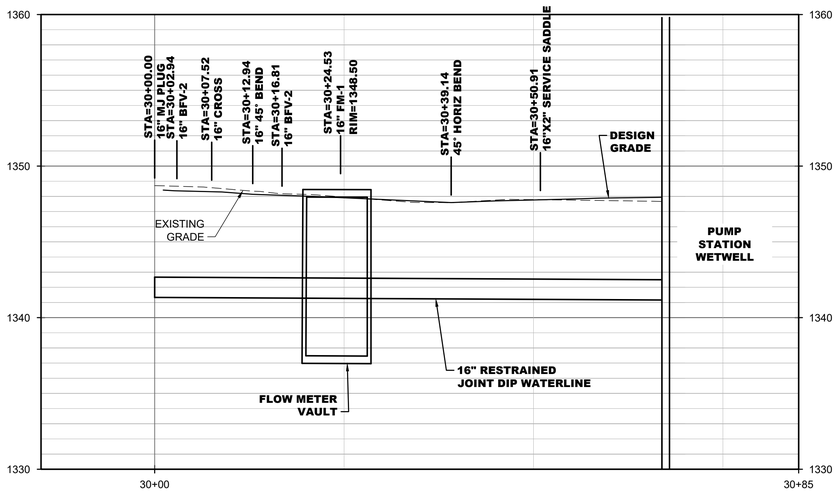
PROFILE 1 - 30" DIP (SPRING)

SCALE: 1" = 10' HORIZ. 1"= 5' VERT.



PROFILE 2 - 24" RAW WATER FROM RIVER

SCALE: 1" = 10' HORIZ. 1"= 5' VERT.



PROFILE 3 - 16" DIP PUMP STATION DISCHARGE

SCALE: 1" = 10' HORIZ. 1"= 5' VERT.

VERT: 1" = 5'
0 5' 10'
0 10' 20'
HORIZ: 1" = 10'

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CHECK: AST	

SHEET TITLE

PROFILES

SHT. NO.	REV. NO.
C-201	0

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EROSION & SEDIMENT CONTROL NARRATIVE

I. PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE CONSTRUCTION OF A NEW PUMP STATION BESIDE THE EXISTING PUMP STATION. THE PROJECT INVOLVES APPROXIMATELY 15950 SF (0.37 ACRES) OF LAND DISTURBANCE.

II. EXISTING SITE CONDITIONS

THIS SITE CONSISTS OF A MIX OF ASPHALT, GRAVEL, AND GRASSY OPEN SPACE. THERE IS AN EXISTING PUMP STATION ONSITE. THE GARDNER SPRINGS PUMP STATION SITE GENERALLY DRAINS IN A SOUTHEAST DIRECTION.

III. ADJACENT PROPERTIES

THE PROJECT SITE IS BOUNDED BY THE MIDDLE RIVER TO THE SOUTH AND HUNDLEY DISTILLERY ROAD TO THE NORTH.

IV. OFF-SITE AREAS

FILL MATERIAL WILL BE OBTAINED FROM AREAS OF EXCAVATION CONTAINED WITHIN THE SITE. UNSUITABLE MATERIAL WILL BE HAULED FROM THE SITE AND DISPOSED OF IN AN APPROVED MANNER. THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION AND SEDIMENT CONTROL PLAN TO THE EROSION AND SEDIMENT CONTROL REGULATOR PERTAINING TO OFF-SITE DISTURBED AREAS (IF ANY SUCH AREAS ARE REQUIRED) SUCH AS STOCKPILES, STAGING AREAS, AND SPOIL AREAS THAT ARE USED FOR THIS PROJECT.

V. SOILS

ACCORDING TO USDA NRCS SOIL MAPPING, THE PROJECT SITE LIES ON SOIL TYPES FREDERICK-CHRISTIAN AND WATER.

42E2 - FREDERICK-CHRISTIAN GRAVELLY SILT LOAMS, 25 TO 45 PERCENT SLOPES

COMPONENT: FREDERICK (50%)
THE FREDERICK COMPONENT MAKES UP 50 PERCENT OF THE MAP UNIT. SLOPES ARE 25 TO 45 PERCENT. THIS COMPONENT IS ON HILLS ON NORTHERN APPALACHIAN RIDGES AND VALLEYS UPLANDS. THE PARENT MATERIAL CONSISTS OF RESIDUUM WEATHERED FROM DOLOMITIC AND CHERTY LIMESTONE. DEPTH TO A ROOT RESTRICTIVE LAYER IS GREATER THAN 60 INCHES.THE NATURAL DRAINAGE CLASS IS WELL DRAINED. WATER MOVEMENT IN THE MOST RESTRICTIVE LAYER IS MODERATELY HIGH. AVAILABLE WATER TO A DEPTH OF 60 INCHES (OR RESTRICTED DEPTH) IS MODERATE. SHRINK-SWELL POTENTIAL IS MODERATE. THIS SOIL IS NOT FLOODED. IT IS NOT PONDED. THERE IS NO ZONE OF WATER SATURATION WITHIN A DEPTH OF 72 INCHES. ORGANIC MATTER CONTENT IN THE SURFACE HORIZON IS ABOUT 2 PERCENT. NONIRRIGATED LAND CAPABILITY CLASSIFICATION IS 7E. THIS SOIL DOES NOT MEET HYDRIC CRITERIA.

COMPONENT: CHRISTIAN (40%)
THE CHRISTIAN COMPONENT MAKES UP 40 PERCENT OF THE MAP UNIT. SLOPES ARE 25 TO 45 PERCENT. THIS COMPONENT IS ON HILLS ON NORTHERN APPALACHIAN RIDGES AND VALLEYS UPLANDS. THE PARENT MATERIAL CONSISTS OF RESIDUUM WEATHERED FROM LIMESTONE OR INTERBEDDED LIMESTONE AND SANDSTONE. DEPTH TO A ROOT RESTRICTIVE LAYER IS GREATER THAN 60 INCHES. THE NATURAL DRAINAGE CLASS IS WELL DRAINED. WATER MOVEMENT IN THE MOST RESTRICTIVE LAYER IS MODERATELY HIGH. AVAILABLE WATER TO A DEPTH OF 60 INCHES (OR RESTRICTED DEPTH) IS MODERATE. SHRINK-SWELL POTENTIAL IS MODERATE. THIS SOIL IS NOT FLOODED. IT IS NOT PONDED. THERE IS NO ZONE OF WATER SATURATION WITHIN A DEPTH OF 72 INCHES. ORGANIC MATTER CONTENT IN THE SURFACE HORIZON IS ABOUT 2 PERCENT. NONIRRIGATED LAND CAPABILITY CLASSIFICATION IS 7E. THIS SOIL DOES NOT MEET HYDRIC CRITERIA.

W - WATER

COMPONENT: WATER (100%)
GENERATED BRIEF SOIL DESCRIPTIONS ARE CREATED FOR MAJOR SOIL COMPONENTS. THE WATER IS A MISCELLANEOUS AREA.

VI. CRITICAL AREAS

THERE ARE SEVERAL CRITICAL AREAS ADDRESSED BY THIS EROSION AND SEDIMENT CONTROL PLAN. CARE WILL BE TAKEN TO PROVIDE PROTECTIVE MEASURES IN THESE AREAS TO ENSURE PROPER DRAINAGE AND TO STABILIZE THE SLOPES. SEDIMENT WILL BE TRAPPED ON SITE.

VII. EROSION AND SEDIMENT CONTROL MEASURES

ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED BY THE CONTRACTOR IN ACCORDANCE WITH THE LATEST EDITION OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK. SYMBOLS, DETAILS, AND DIMENSIONS USED ARE TAKEN FROM THE HANDBOOK, AS WELL AS THE LATEST EDITION OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION'S ROAD AND BRIDGE STANDARDS.

A. STRUCTURAL PRACTICES

1. TEMPORARY STONE CONSTRUCTION ENTRANCE (CE), SPEC. 3.02: A CONSTRUCTION ENTRANCE SHALL BE PROVIDED AS SHOWN ON THE PLANS AT THE EXISTING ROAD. EQUIPMENT WHEELS SHALL BE CLEAN WHEN ENTERING UPON A PAVED ROAD. ALL VEHICLES ENTERING AND EXITING THE PROJECT SITE SHALL USE A CONSTRUCTION ENTRANCE.
2. SILT FENCE (SF), SPEC. 3.05: SILT FENCE BARRIERS SHALL BE PROVIDED WHERE SHOWN AND AS NEEDED TO PREVENT SEDIMENT FROM LEAVING THE SITE.
3. OUTLET PROTECTION (OP), SPEC. 3.18: PROVIDE OUTLET PROTECTION FOR STORM WATER SYSTEM OUTLETS AS SHOWN ON THE PLANS.
4. RIPRAP (RR), SPEC. 3.19: RIPRAP SHALL BE USED WHERE NECESSARY AND AS INDICATED ON THE PLANS. PROVIDE RIPRAP TYPES AS SPECIFIED ON THE PLANS. ALL RIPRAP SHALL BE PLACED OVER A GEOTEXTILE FABRIC.
5. SOIL STABILIZATION BLANKETS AND MATTING (B/M), SPEC. 3.36: PROVIDE SOIL STABILIZATION BLANKETS AND MATTING ALONG THE STORM WATER CONVEYANCE CHANNELS AS SHOWN ON THE PLANS. IN AREAS WHERE SEEDING OR HYDROSEEDING OF SLOPES ARE UNSUCCESSFUL, PROVIDE EC-2 BLANKETS AND OVERSEED.

B. VEGETATIVE PRACTICES

1. TEMPORARY SEEDING (TS), SPEC. 3.31: TEMPORARY SEEDING SHALL BE PROVIDED ON SITE TO PROVIDE STABILIZATION UNTIL SITE DEVELOPMENT OCCURS. APPLY SEED BASED ON TEMPORARY SEEDING SCHEDULE SHOWN ON THE PLANS.
2. PERMANENT SEEDING (PS), SPEC. 3.32: PERMANENT SEEDING SHALL BE PROVIDED ON SITE TO PROVIDE STABILIZATION FOR ALL DISTURBED AREAS. APPLY SEED BASED ON PERMANENT SEEDING SCHEDULE SHOWN ON THE PLANS
3. MULCHING (MU), SPEC. 3.35: ALL PERMANENT AND TEMPORARY SEEDING SHALL BE STRAW MULCHED IMMEDIATELY UPON COMPLETION OF SEED APPLICATION. STRAW ON STEEP SLOPES SHALL BE ANCHORED UNLESS SEEDING WAS PROVIDED BY MEANS OF A HYDROSEEDING, IN WHICH CASE, MULCHING IS NOT REQUIRED.

C. MINIMUM STANDARDS

MS-1 STABILIZATION OF DENUDED AREAS:
PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 14 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.

MS-2 STABILIZATION OF SOIL STOCKPILES:
DURING CONSTRUCTION OF THE PROJECT, SOIL STOCK PILES AND BORROW AREAS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE APPLICANT IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS BORROW AREAS AND SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.

MS-3 PERMANENT VEGETATIVE COVER:
A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION.

MS-4 TIMING AND STABILIZATION OF SILT TRAPPING MEASURES:
SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND-DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.

MS-5 CONCENTRATED RUNOFF DOWN CUT OR FILLED SLOPES:
STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.

MS-6 SEDIMENT BASINS AND TRAPS:
SEDIMENT TRAPS AND SEDIMENT BASINS SHALL BE DESIGNED AND CONSTRUCTED BASED UPON THE TOTAL DRAINAGE AREA TO BE SERVED BY THE TRAP OR BASIN.
A. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT TRAP SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA AND THE TRAP SHALL ONLY CONTROL DRAINAGE AREAS LESS THAN THREE ACRES.
B. SURFACE RUNOFF FROM DISTURBED AREAS THAT IS COMPRISED OF FLOW FROM DRAINAGE AREAS GREATER THAN OR EQUAL TO THREE ACRES SHALL BE CONTROLLED BY A SEDIMENT BASIN. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT BASIN SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA. THE OUTFALL SYSTEM SHALL, AT A MINIMUM, MAINTAIN THE STRUCTURAL INTEGRITY OF THE BASIN DURING A 25-YEAR STORM OF 24-HOUR DURATION. RUNOFF COEFFICIENTS USED IN RUNOFF CALCULATIONS SHALL CORRESPOND TO A BARE EARTH CONDITION OR THOSE CONDITIONS EXPECTED TO EXIST WHILE THE SEDIMENT BASIN IS UTILIZED.

MS-7 CUT AND FILL SLOPES:
CUT AND FILL SLOPES SHALL BE DESIGNED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. SLOPES THAT ARE FOUND TO BE ERODING EXCESSIVELY WITHIN ONE YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZING MEASURES UNTIL THE PROBLEM IS CORRECTED.

MS-8 CONCENTRATED RUNOFF DOWN CUT OR FILL SLOPES:
CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR SLOPE DRAIN STRUCTURE.

MS-9 WATER SEEPAGE FROM A SLOPE FACE:
WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.

MS-10 STORM SEWER INLET PROTECTION:
ALL STORM SEWER INLETS THAT ARE MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.

MS-11 STABILIZATION OF OUTLETS:
BEFORE NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS OR PIPES ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND RECEIVING CHANNEL.

MS-12 WORK IN LIVE WATERCOURSES:
WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. NONERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS.

MS-13 CROSSING A LIVE WATERCOURSE:
WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES MORE THAN TWICE IN ANY SIX-MONTH PERIOD, A TEMPORARY VEHICULAR STREAM CROSSING CONSTRUCTED OF NONERODIBLE MATERIAL SHALL BE PROVIDED.

MS-14 APPLICABLE REGULATIONS:
ALL APPLICABLE FEDERAL, STATE AND LOCAL REQUIREMENTS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.

MS-15 STABILIZATION OF BED AND BANKS:
THE BED AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.

MS-16 UNDERGROUND UTILITIES:
UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:
A. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
B. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
C. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.
D. MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
E. RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THIS CHAPTER.
F. APPLICABLE SAFETY REQUIREMENTS SHALL BE COMPLIED WITH.

MS-17 CONSTRUCTION ACCESS ROUTES:
WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED OR PUBLIC ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY VEHICULAR TRACKING ONTO THE PAVED SURFACE. WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE, THE ROAD SURFACE SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER. THIS PROVISION SHALL APPLY TO INDIVIDUAL DEVELOPMENT LOTS AS WELL AS TO LARGER LAND-DISTURBING ACTIVITIES.

MS-18 TEMPORARY E&S CONTROL MEASURE REMOVAL:
ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE VESCP AUTHORITY. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.

MS-19 ADEQUACY OF RECEIVING CHANNELS:
PROPERTIES AND WATERWAYS DOWNSTREAM FROM DEVELOPMENT SITES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION AND DAMAGE DUE TO INCREASES IN VOLUME, VELOCITY AND PEAK FLOW RATE OF STORMWATER RUNOFF FOR THE STATED FREQUENCY STORM OF 24-HOUR DURATION IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND CRITERIA. STREAM RESTORATION AND RELOCATION PROJECTS THAT INCORPORATE NATURAL CHANNEL DESIGN CONCEPTS ARE NOT MAN-MADE CHANNELS AND SHALL BE EXEMPT FROM ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS:
A. CONCENTRATED STORMWATER RUNOFF LEAVING A DEVELOPMENT SITE SHALL BE DISCHARGED DIRECTLY INTO AN ADEQUATE NATURAL OR MAN-MADE RECEIVING CHANNEL, PIPE OR STORM SEWER SYSTEM. FOR THOSE SITES WHERE RUNOFF IS DISCHARGED INTO A PIPE OR PIPE SYSTEM, DOWNSTREAM STABILITY ANALYSES AT THE OUTFALL OF THE PIPE OR PIPE SYSTEM SHALL BE PERFORMED.
B. ADEQUACY OF ALL CHANNELS AND PIPES SHALL BE VERIFIED IN THE FOLLOWING MANNER:
(1) THE APPLICANT SHALL DEMONSTRATE THAT THE TOTAL DRAINAGE AREA TO THE POINT OF ANALYSIS WITHIN THE CHANNEL IS ONE HUNDRED TIMES GREATER THAN THE CONTRIBUTING DRAINAGE AREA OF THE PROJECT IN QUESTION; OR
(2) (A) NATURAL CHANNELS SHALL BE ANALYZED BY THE USE OF A TWO-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP CHANNEL BANKS NOR CAUSE EROSION OF CHANNEL BED OR BANKS.
(B) ALL PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS SHALL BE ANALYZED BY THE USE OF A TEN-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP ITS BANKS AND BY THE USE OF A TWO-YEAR STORM TO DEMONSTRATE THAT STORMWATER WILL NOT CAUSE EROSION OF CHANNEL BED OR BANKS; AND
(C) PIPES AND STORM SEWER SYSTEMS SHALL BE ANALYZED BY THE USE OF A TEN-YEAR STORM TO VERIFY THAT STORMWATER WILL BE CONTAINED WITHIN THE PIPE OR SYSTEM.
C. IF EXISTING NATURAL RECEIVING CHANNELS OR PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS OR PIPES ARE NOT ADEQUATE, THE APPLICANT SHALL:
(1) IMPROVE THE CHANNELS TO A CONDITION WHERE A TEN-YEAR STORM WILL NOT OVERTOP THE BANKS AND A TWO-YEAR STORM WILL NOT CAUSE EROSION TO THE CHANNEL, THE BED, OR THE BANKS; OR
(2) IMPROVE THE PIPE OR PIPE SYSTEM TO A CONDITION WHERE THE TEN-YEAR STORM IS CONTAINED WITHIN THE APPURTENANCES;
(3) DEVELOP A SITE DESIGN THAT WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A TWO-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A NATURAL CHANNEL OR WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A TEN-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A MAN-MADE CHANNEL; OR
(4) PROVIDE A COMBINATION OF CHANNEL IMPROVEMENT, STORMWATER DETENTION OR OTHER MEASURES WHICH IS SATISFACTORY TO THE VESCP AUTHORITY TO PREVENT DOWNSTREAM EROSION.
D. THE APPLICANT SHALL PROVIDE EVIDENCE OF PERMISSION TO MAKE THE IMPROVEMENTS.
E. ALL HYDROLOGIC ANALYSES SHALL BE BASED ON THE EXISTING WATERSHED CHARACTERISTICS AND THE ULTIMATE DEVELOPMENT CONDITION OF THE SUBJECT PROJECT.
F. IF THE APPLICANT CHOOSES AN OPTION THAT INCLUDES STORMWATER DETENTION, HE SHALL OBTAIN APPROVAL FROM THE VESCP OF A PLAN FOR MAINTENANCE OF THE DETENTION FACILITIES. THE PLAN SHALL SET FORTH THE MAINTENANCE REQUIREMENTS OF THE FACILITY AND THE PERSON RESPONSIBLE FOR PERFORMING THE MAINTENANCE.
G. OUTFALL FROM A DETENTION FACILITY SHALL BE DISCHARGED TO A RECEIVING CHANNEL, AND ENERGY DISSIPATORS SHALL BE PLACED AT THE OUTFALL OF ALL DETENTION FACILITIES AS NECESSARY TO PROVIDE A STABILIZED TRANSITION FROM THE FACILITY TO THE RECEIVING CHANNEL.
H. ALL ON-SITE CHANNELS MUST BE VERIFIED TO BE ADEQUATE.
I. INCREASED VOLUMES OF SHEET FLOWS THAT MAY CAUSE EROSION OR SEDIMENTATION ON ADJACENT PROPERTY SHALL BE DIVERTED TO A STABLE OUTLET, ADEQUATE CHANNEL, PIPE OR PIPE SYSTEM, OR TO A DETENTION FACILITY.
J. IN APPLYING THESE STORMWATER MANAGEMENT CRITERIA, INDIVIDUAL LOTS OR PARCELS IN A RESIDENTIAL, COMMERCIAL OR INDUSTRIAL DEVELOPMENT SHALL NOT BE CONSIDERED TO BE SEPARATE DEVELOPMENT PROJECTS. INSTEAD, THE DEVELOPMENT, AS A WHOLE, SHALL BE CONSIDERED TO BE A SINGLE DEVELOPMENT PROJECT. HYDROLOGIC PARAMETERS THAT REFLECT THE ULTIMATE DEVELOPMENT CONDITION SHALL BE USED IN ALL ENGINEERING CALCULATIONS.
K ALL MEASURES USED TO PROTECT PROPERTIES AND WATERWAYS SHALL BE EMPLOYED IN A MANNER WHICH MINIMIZES IMPACTS ON THE PHYSICAL, CHEMICAL AND BIOLOGICAL INTEGRITY OF RIVERS, STREAMS AND OTHER WATERS OF THE STATE.
L. ANY PLAN APPROVED PRIOR TO JULY 1, 2014, THAT PROVIDES FOR STORMWATER MANAGEMENT THAT ADDRESSES ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS SHALL SATISFY THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS IF THE PRACTICES ARE DESIGNED TO (I) DETAIN THE WATER QUALITY VOLUME AND TO RELEASE IT OVER 48 HOURS; (II) DETAIN AND RELEASE OVER A 24-HOUR PERIOD THE EXPECTED RAINFALL RESULTING FROM THE ONE YEAR, 24-HOUR STORM; AND (III) REDUCE THE ALLOWABLE PEAK FLOW RATE RESULTING FROM THE 1.5, 2, AND 10-YEAR, 24-HOUR STORMS TO A LEVEL THAT IS LESS THAN OR EQUAL TO THE PEAK FLOW RATE FROM THE SITE ASSUMING IT WAS IN A GOOD FORESTED CONDITION, ACHIEVED THROUGH MULTIPLICATION OF THE FORESTED PEAK FLOW RATE BY A REDUCTION FACTOR THAT IS EQUAL TO THE RUNOFF VOLUME FROM THE SITE WHEN IT WAS IN A GOOD FORESTED CONDITION DIVIDED BY THE RUNOFF VOLUME FROM THE SITE IN ITS PROPOSED CONDITION, AND SHALL BE EXEMPT FROM ANY FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS FOR NATURAL OR MAN-MADE CHANNELS AS DEFINED IN ANY REGULATIONS PROMULGATED PURSUANT TO § 62.1-44.15:54 OR 62.1-44.15:65 OF THE ACT.
M. FOR PLANS APPROVED ON AND AFTER JULY 1, 2014, THE FLOW RATE CAPACITY AND VELOCITY REQUIREMENTS OF § 62.1-44.15:52 A OF THE ACT AND THIS SUBSECTION SHALL BE SATISFIED BY COMPLIANCE WITH WATER QUANTITY REQUIREMENTS IN THE STORMWATER MANAGEMENT ACT (§ 62.1-44.15:24 ET SEQ. OF THE CODE OF VIRGINIA) AND ATTENDANT REGULATIONS, UNLESS SUCH LAND-DISTURBING ACTIVITIES ARE IN ACCORDANCE WITH 9VAC25-870-48 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) REGULATIONS.
N. COMPLIANCE WITH THE WATER QUANTITY MINIMUM STANDARDS SET OUT IN 9VAC25-870-66 OF THE VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) REGULATIONS SHALL BE DEEMED TO SATISFY THE REQUIREMENTS OF SUBDIVISION 19 OF THIS SUBSECTION.

D. MAINTENANCE: ALL EROSION AND SEDIMENT CONTROL STRUCTURES AND SYSTEMS SHALL BE MAINTAINED, INSPECTED, AND REPAIRED AS NEEDED TO INSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CHECKED AT THE END OF EACH DAY AND AFTER EVERY RAINFALL EVENT.
1. DAMAGE TO EROSION CONTROL MEASURES CAUSED BY CONSTRUCTION TRAFFIC OR OTHER ACTIVITY SHALL BE REPAIRED BEFORE THE END OF EACH WORKING DAY.
2. MAINTAIN ALL SEEDED AREAS UNTIL A UNIFORM STAND IS ACCEPTED.
3. (SPEC. 3.01) SAFETY FENCE SHALL BE CHECKED REGULARLY FOR DAMAGE. CARE SHALL BE TAKEN TO SECURE ALL ACCESS POINTS AT THE END OF EACH WORKING DAY.
4. (SPEC. 3.02) PROVIDE FOR EQUIPMENT WASHING AS NEEDED TO PREVENT THE TRANSPORT OF SOIL ONTO EXISTING ASPHALT ROADWAYS. ANY SEDIMENT ON THE PAVEMENT SHALL BE REMOVED IMMEDIATELY.
5. (SPEC. 3.05) SILT FENCE BARRIERS WILL BE CHECKED DAILY FOR UNDERMINING OR DETERIORATION OF THE FABRIC. SEDIMENT SHALL BE REMOVED WHEN THE LEVEL REACHES HALF WAY TO THE TOP OF THE BARRIER.
6. (SPEC. 3.18 & 3.19) RIPRAP INSTALLATIONS SHOULD BE INSPECTED PERIODICALLY TO DETERMINE IF HIGH FLOWS HAVE CAUSED SCOUR BENEATH THE RIPRAP OR GEOTEXTILE FABRIC OR DISLODGED ANY OF THE STONE.
7. (SPEC. 3.29) ROUGHENED AREAS SHALL BE SEEDED AND MULCHED AS SOON AS POSSIBLE TO OBTAIN OPTIMUM SEED GERMINATION AND SEEDLING GROWTH.
8. (SPEC. 3.31 & 3.32) AREAS WHICH FAIL TO ESTABLISH VEGETATIVE COVER ADEQUATE TO PREVENT RILL EROSION WILL BE RESEEDED AS SOON AS SUCH AREAS ARE IDENTIFIED.
9. (SPEC. 3.35) WHERE EROSION OR WASHOUT IS OBSERVED IN MULCHED AREAS, ADDITIONAL MULCH SHOULD BE APPLIED.
10. (SPEC. 3.36) ALL SOIL STABILIZATION BLANKETS AND MATTING SHALL BE INSPECTED AFTER RAINSTORMS TO CHECK FOR EROSION AND UNDERMINING. IF WASHOUT OR BREAKAGE OCCURS, REINSTALL THE MATERIAL AFTER REPAIRING DAMAGE TO THE SLOPE OR DITCH.

VIII. PERMANENT STABILIZATION

ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH SEEDING FOLLOWING GRADING IN ACCORDANCE WITH THE MINIMUM STANDARDS. SEEDING SHALL BE IN ACCORDANCE WITH THE TEMPORARY OR PERMANENT SEEDING SCHEDULES SHOWN ON THIS PLAN. IN ALL SEEDING OPERATIONS, TOPSOIL, SEED, FERTILIZER AND LIME SHALL BE APPLIED PRIOR TO INSTALLATION OF MULCHING OR EROSION CONTROL BLANKETS AND MATTING.

IX. STORMWATER MANAGEMENT

MANAGEMENT OF STORMWATER RUNOFF DURING CONSTRUCTION WILL COMPLY WITH THE EXISTING VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS 9VAC25-840. THE EROSION AND SEDIMENT CONTROL PLANS INDICATE ALL ACTIVITIES AND STRATEGIES NECESSARY TO MINIMIZE EROSION AND SEDIMENTATION DURING CONSTRUCTION.

MANAGEMENT OF STORMWATER RUNOFF AFTER CONSTRUCTION WILL COMPLY WITH THE EXISTING VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) REGULATIONS 9VAC25-870. THE STORMWATER MANAGEMENT PLANS INDICATE ALL ACTIVITIES AND STRATEGIES NECESSARY TO COMPLY WITH THE VSMP REGULATIONS AFTER CONSTRUCTION.

X. SOIL STOCKPILES AND BORROW AREAS

FILL MATERIAL SHALL BE OBTAINED FROM AREAS OF EXCAVATION ON SITE. LOCATIONS OF SOIL STOCKPILES SHALL BE DETERMINED BY THE CONTRACTOR WITH THE APPROVAL OF THE OWNER/DEVELOPER. ALL STOCKPILES SHALL BE LOCATED ON SITE AND PROTECTED WITH SURROUNDING SILT FENCING AND STABILIZED WITH A VEGETATIVE COVER. THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION AND SEDIMENT CONTROL PLAN FOR ALL SOILS INTENTIONALLY TRANSPORTED OFFSITE IF THE TRANSPORTED MATERIAL DISTURBS MORE THAN 10,000 SQUARE FEET IN AREA.

XI. SEQUENCE OF CONSTRUCTION

1. CONSTRUCT THE TEMPORARY STONE CONSTRUCTION ENTRANCES.
2. INSTALL EROSION AND SEDIMENT CONTROL PRACTICES AS IS PRACTICABLE.
3. CLEAR THE PLANNED DISTURBED AREA AND REMOVE DEBRIS TO A SUITABLE LOCATION.
4. INSTALL UTILITIES, INLET AND OUTLET PROTECTION AS IS PRACTICABLE.
5. BRING GRADES TO DESIRED ELEVATION.
6. STABILIZE ALL DISTURBED AREAS WITH PERMANENT VEGETATION.
7. APPLY SURFACE TREATMENT AS DESIGNED.
8. EROSION CONTROL DEVICES SHALL REMAIN IN PLACE UNTIL RELEASED BY THE GOVERNING AGENCY.
9. REMOVE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES.
10. STABILIZE AREAS AFFECTED BY THE REMOVAL OF TEMPORARY E&S MEASURES.

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WAYNE R. MASSIE
Lic. No. 36495
05/27/22
ENGINEER
PROFESSIONAL

CITY OF STAUNTON
GARDNER SPRINGS PUMP STATION
STAUNTON, VIRGINIA

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EROSION AND SEDIMENT CONTROL NARRATIVE

SHT. NO. C-401 | REV. NO. 0

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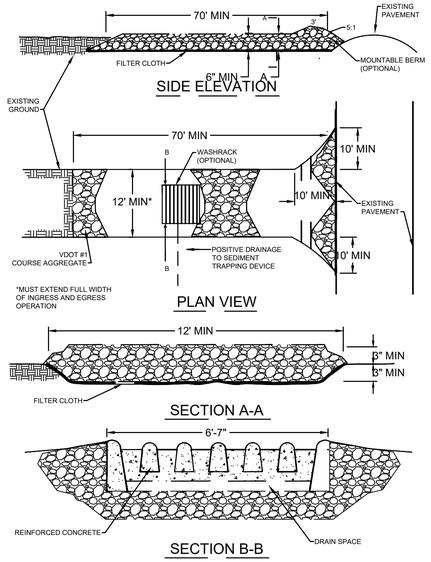
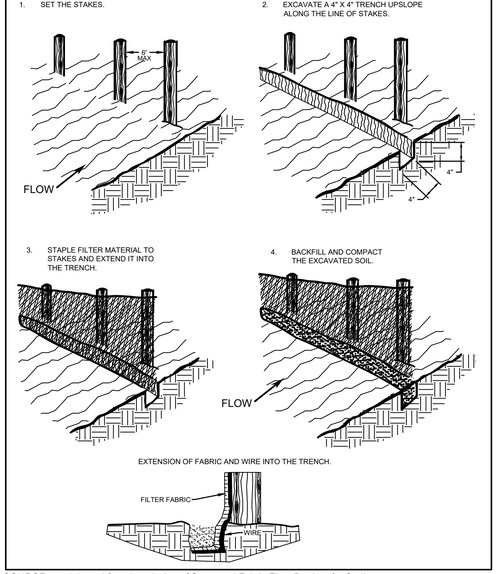
STONE CONSTRUCTION ENTRANCE



SOURCE: ADAPTED from 1983 Maryland Standards for Soil erosion and Sediment Control, and Va. DSWC

STONE CONSTRUCTION ENTRANCE (CE)
NOT TO SCALE — PLATE 3.02-1

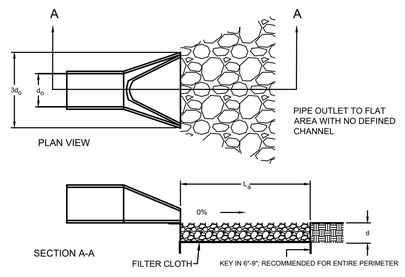
CONSTRUCTION OF A SILT FENCE (WITH WIRE SUPPORT)

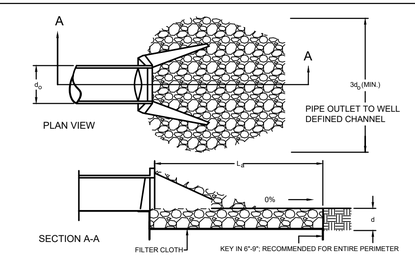


SOURCE: Adapted from Installation of Straw and Fabric Filter Barriers for Sediment Control, Sherwood & Wyant

SILT FENCE (SF)
NOT TO SCALE — PLATE 3.05-1

PIPE OUTLET CONDITIONS





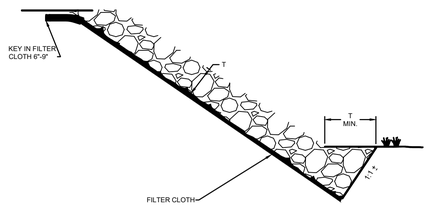
NOTES: 1. APRON LINING MAY BE RIPRAP, GROUTED RIPRAP, GABION BASKET, OR CONCRETE.
2. L_a IS THE LENGTH OF THE RIPRAP APRON AS CALCULATED USING PLATES 3.18-3 AND 3.18-4.
3. d = 1.5 TIMES THE MAXIMUM STONE DIAMETER, BUT NOT LESS THAN 6 INCHES.

Source: Va. DSWC

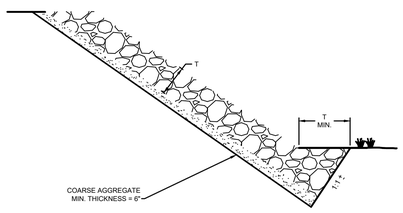
OUTLET PROTECTION (OP)
NOT TO SCALE — PLATE 3.18-1

TOE REQUIREMENTS FOR BANK STABILIZATION

FILTER CLOTH UNDERLINER (PREFERRED)



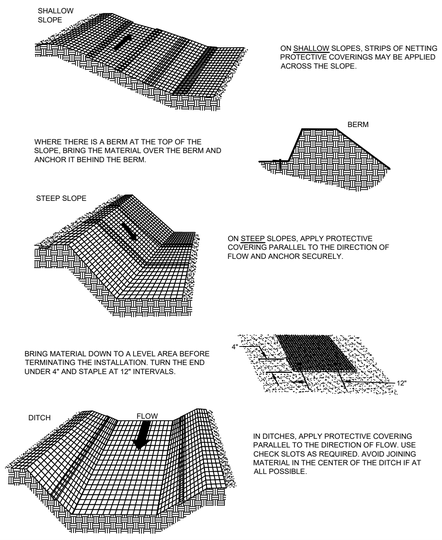
GRANULAR FILTER



SOURCE: Adapted from VDOT Drainage Manual

RIPRAP (RR)
NOT TO SCALE — PLATE 3.19-1

TYPICAL ORIENTATION OF TREATMENT - 1 (SOIL STABILIZATION BLANKET)



SOURCE: ADAPTED FROM LUDLOW PRODUCTS BROCHURE

SOIL STABILIZATION BLANKETS & MATTING (B/M)
NOT TO SCALE — PLATE 3.36-1

TS TEMPORARY SEEDING SCHEDULE

PLANTING SPECIES	SPECIES	RATE (LBS/ACRE)
SEPT 1 - FEB 15	50/50 MIX OF ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM) & CEREAL (WINTER) RYE (SECALE CEREALE)	50 - 100
FEB 16 - APR 30	ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM)	60 - 100
MAY 1 - AUG 31	GERMAN MILLET (SETARIA ITALICA)	50

PS PERMANENT SEEDING SCHEDULE

SITE SPECIFIC SEEDING MIXTURES FOR APPALACHIAN/MOUNTAIN AREA

	TOTAL POUNDS PER ACRE
MINIMUM LAWN CARE (COMMERCIAL OR RESIDENTIAL)	200-250 LBS
KENTUCKY 31 OR TURF-TYPE TALL FESCUE	95-100%
IMPROVED PERENNIAL RYEGRASS*	0-10%
KENTUCKY BLUEGRASS	0-10%
HIGH MAINTENANCE LAWN CARE	
MINIMUM OF THREE (3) UP TO FIVE (5) VARIETIES OF BLUEGRASS FROM APPROVED LIST FOR USE IN VIRGINIA	125 LBS
GENERAL SLOPE (3:1 OR LESS)	
KENTUCKY 31 FESCUE	128 LBS
INDIAN GRASS	2 LBS
SEASONAL NURSE CROP**	20 LBS
	150 LBS
LOW MAINTENANCE SLOPE (STEEPER THAN 3:1)	
KENTUCKY 31 FESCUE	108 LBS
ROUNDHEADED BUSHCLOVER	2 LBS
SEASONAL NURSE CROP**	20 LBS
INDIAN GRASS	20 LBS
	150 LBS

*PERENNIAL RYEGRASS WILL GERMINATE FASTER AND AT LOWER SOIL TEMPERATURES THAN FESCUE, THEREBY PROVIDING COVER AND EROSION RESISTANCE FOR SEEDBED.

**USE SEASONAL NURSE CROP IN ACCORDANCE WITH SEEDING DATES AS STATED BELOW:

ANNUAL RYE:	MARCH, APRIL THROUGH MAY 15TH
FOXTAIL MILLET:	MAY 16TH THROUGH AUGUST 15TH
ANNUAL RYE:	AUGUST 16TH THROUGH SEPTEMBER, OCTOBER
WINTER RYE:	NOVEMBER THROUGH FEBRUARY

LIME & FERTILIZER SPECIFICATIONS:

A SOILS TEST IS REQUIRED PRIOR TO FINAL SITE STABILIZATION, TO DETERMINE LIME AND FERTILIZER APPLICATION RATES FOR THE ESTABLISHMENT OF GRASS ON SITE. CONTACT VIRGINIA COOPERATIVE EXTENSION OR A GEOTECHNICAL FIRM WITH SOIL TESTING FACILITIES TO OBTAIN A SOILS REPORT FOR NUTRIENT APPLICATION.

INCORPORATION:
LIME AND FERTILIZER SHALL BE INCORPORATED INT0 THE TOP 4 INCHES OF TOPSOIL BY DISCING OR OTHER MEANS WHENEVER POSSIBLE. FOR EROSION CONTROL, WHEN APPLYING LIME AND FERTILIZER WITH A HYDROSEEDER, APPLY TO A ROUGH, LOOSE SURFACE.

MULCHING:
MULCH WITH STRAW AT A RATE OF 2 TONS/ACRE OR EQUIVALENT.

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CITY OF STAUNTON
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EROSION AND SEDIMENT CONTROL DETAILS

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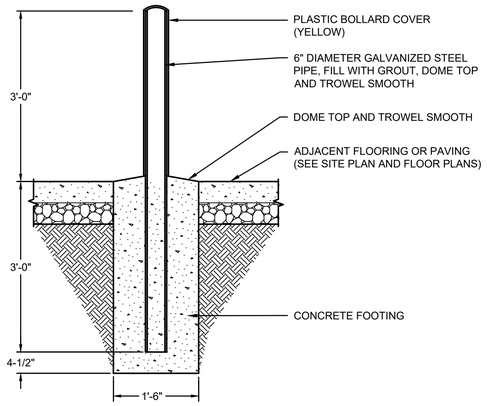
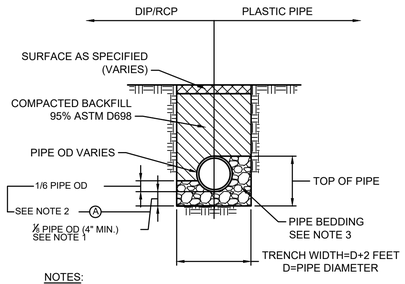


BOLLARD DETAIL
NOT TO SCALE

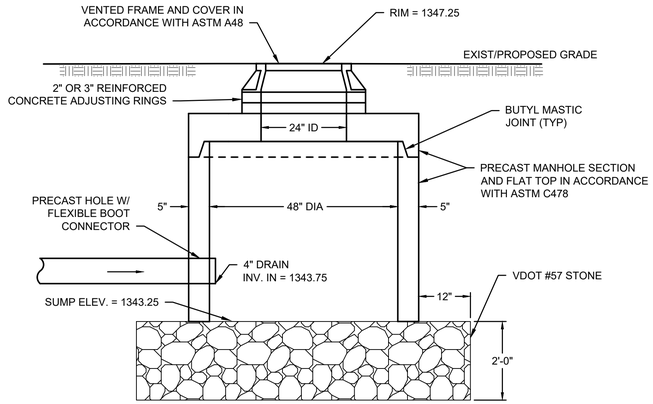


NOTES:

1. DEPTH OF BEDDING FOR DUCTILE IRON PIPE.
2. DEPTH OF BEDDING FOR REINFORCED CONCRETE AND PRESTRESSED CONCRETE CYLINDER PIPE. "A" DIMENSION IS DEFINED AS FOLLOWS:

   NORMAL SOIL: A = 4" MIN.
   ROCK FOUNDATION OR YEILDING SOIL: A = 9" MIN.
3. USE CLASS I BEDDING MATERIAL FOR PLASTIC PIPE.

PIPE TRENCH
NOT TO SCALE



DRY SUMP DETAIL
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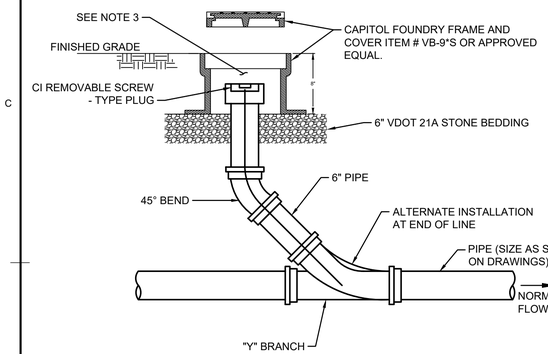
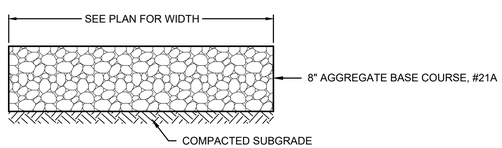


NOTES:
1. FOR USE IN ALL CLEANOUT INSTALLATIONS
2. CLEANOUT PIPING MATERIAL SHALL BE SCHEDULE 40 PVC.
3. A MINIMUM CLEARANCE OF 4 INCHES IS REQUIRED BETWEEN CLEANOUT CAP AND TOP OF COVER

CLEANOUT
NOT TO SCALE



STANDARD GRAVEL ACCESS ROAD SECTION
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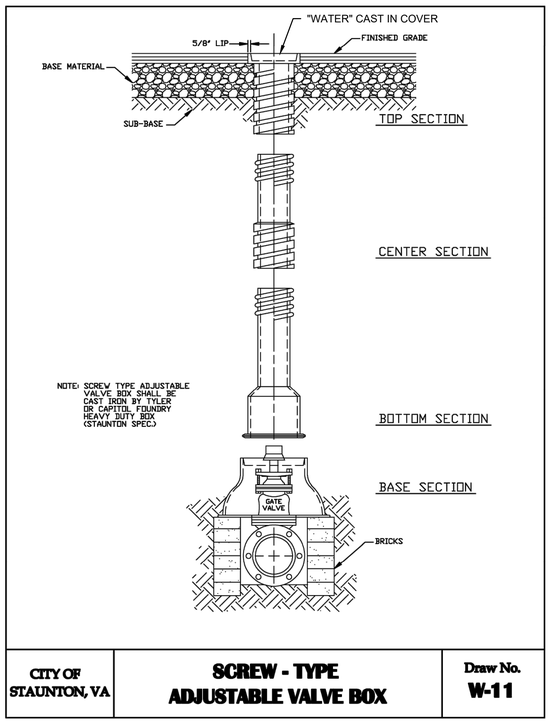
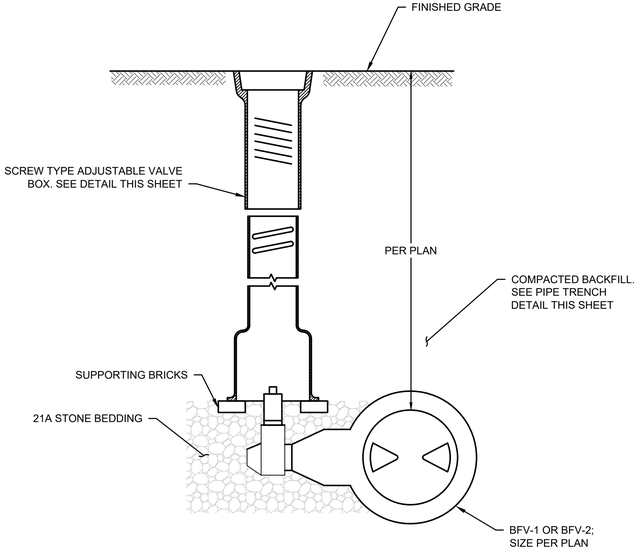


CITY OF STAUNTON, VA	SCREW - TYPE ADJUSTABLE VALVE BOX	Draw No. W-11



BUTTERFLY VALVE BOX DETAIL
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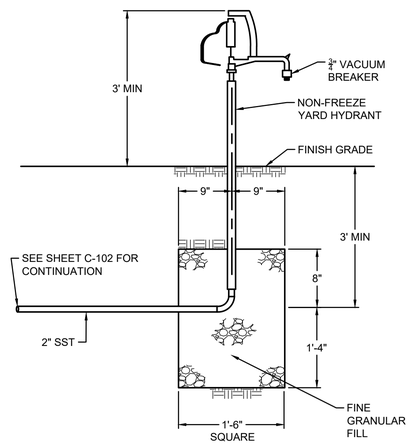

YARD HYDRANT
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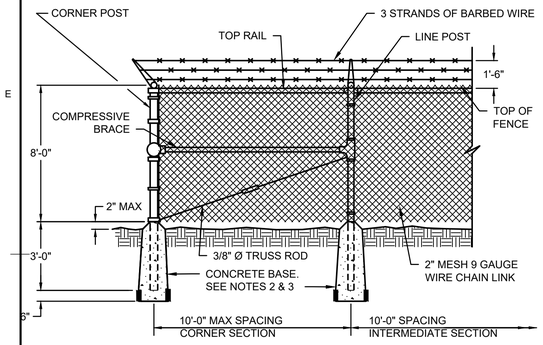
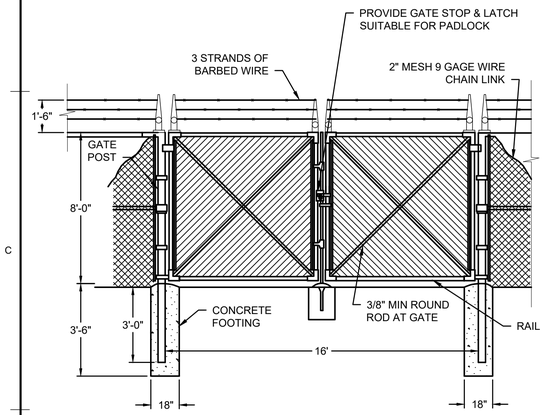


NOTE:
1. MIN. 28-DAY CONCRETE COMPRESSIVE STRENGTH SHALL BE 2500 PSI
2. MIN. 18" DIAMETER CONCRETE BASE ON CORNERS AND HINGE POSTS.
3. MIN. 12" DIAMETER CONCRETE BASE ON LINE POSTS.

CHAIN LINK FENCE DETAIL

SCALE: NOT TO SCALE



DOUBLE SWING GATE

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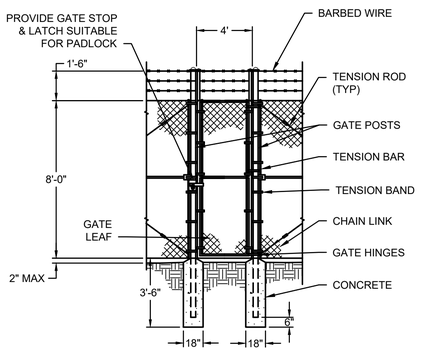

PEDESTRIAN GATE DETAIL

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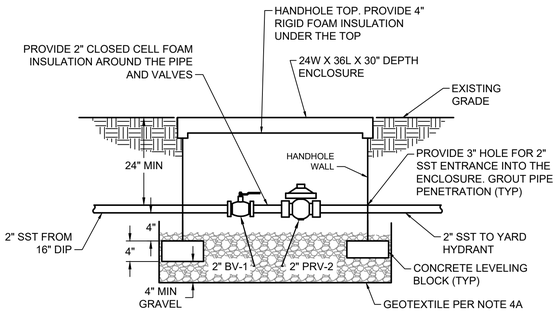
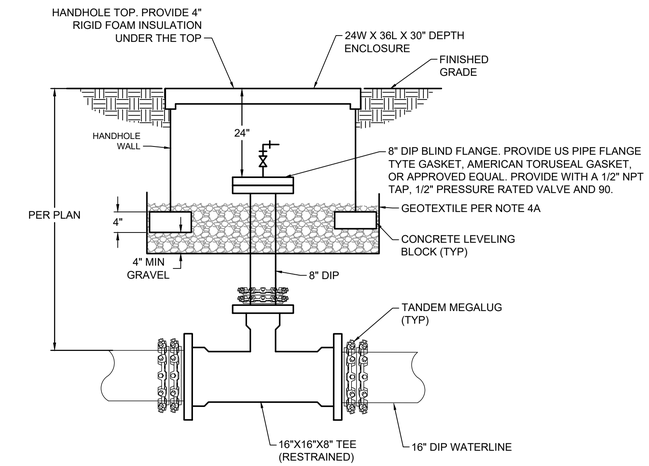


TYPICAL ENCLOSURE NOTES:

1. ENCLOSURE SHALL BE OLDCASTLE ENCLOSURE CHRISTY CONCRETE MODEL B1324 OR APPROVED EQUAL.
2. COVER LABEL : CAST IN LETTERS : "WATER"
3. CONTRACTOR TO PROVIDE 2-SETS OF HANDHOLE COVER REMOVAL TOOLS TO OWNER AS PART OF INSTALLATION (TEE BAR WITH SOCKET HEAD TO MATCH LIDS).
4. HANDHOLE INSTALLATION:
   A. CLEAN OUT LOOSE SOIL AND DEBRIS. TAMP BASE SOIL TO ESTABLISH FIRM SUBGRADE AND INSTALL TYPAR 340i GEOTEXTILE OR APPROVED EQUAL IN HANDHOLE EXCAVATION AREA (EXTEND GEOTEXTILE TO MID-POINT OF PIT).
   B. INSTALL 4" OF AGGREGATE (#57 STONE) HAND TAMPED IN PLACE AS FOUNDATION/DRAINAGE BASE FOR HANDHOLE.
   C. SET HANDHOLE ON CONCRETE BRICKS BEDDED IN AGGREGATE BASE.ADJUST AND LEVEL TOP OF STRUCTURE. LEVEL BASE STONE TO BRICKS.
   D. SET BOX AND FILL BASE WITH 4" OF #57 STONE TO PROVIDE A UNIFORM LEVEL INVERT WITHIN THE BOX.

PRV ENCLOSURE DETAIL

NOT TO SCALE



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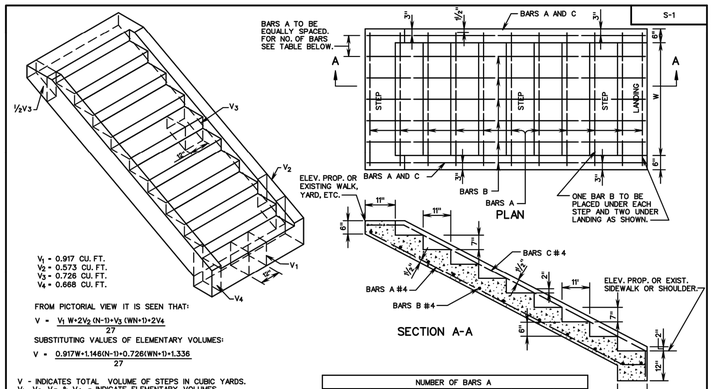
   B. INSTALL 4" OF AGGREGATE (#57 STONE) HAND TAMPED IN PLACE AS FOUNDATION/DRAINAGE BASE FOR HANDHOLE.
   C. SET HANDHOLE ON CONCRETE BRICKS BEDDED IN AGGREGATE BASE.ADJUST AND LEVEL TOP OF STRUCTURE. LEVEL BASE STONE TO BRICKS.
   D. SET BOX AND FILL BASE WITH 4" OF #57 STONE TO PROVIDE A UNIFORM LEVEL INVERT WITHIN THE BOX.

WATERLINE DRAIN ENCLOSURE DETAIL

NOT TO SCALE

2016 ROAD & BRIDGE STANDARDS

S-1



V1 = 0.917 CU. FT.
V2 = 0.573 CU. FT.
V3 = 0.726 CU. FT.
V4 = 0.668 CU. FT.

FROM PICTORIAL VIEW IT IS SEEN THAT:

$V = \frac{V_1 W + 2V_2 (N-1) + V_3 (WN+1) + 2V_4}{27}$

SUBSTITUTING VALUES OF ELEMENTARY VOLUMES:

$V = \frac{0.917W + 1.146(N-1) + 0.726(WN+1) + 1.336}{27}$

V - INDICATES TOTAL VOLUME OF STEPS IN CUBIC YARDS.
V1, V2, V3 & V4 - INDICATE ELEMENTARY VOLUMES USED IN COMPUTING V.
W - INDICATES CLEAR WIDTH OF STEPS, IN FEET, BETWEEN SIDEWALLS.
N - INDICATES NUMBER OF STEPS IN INSTALLATION EXCLUSIVE OF LANDING.
L1 - INDICATES LENGTH OF BARS A, IN INCHES. L1 = 13.038N + 8"
L2 - INDICATES LENGTH OF BARS B, IN INCHES. L2 = 12W + 9"
L3 - INDICATES LENGTH OF BARS C, IN INCHES. L3 = 13.038N + 18"

A LANDING IS TO BE PROVIDED WHERE 12 OR MORE STEPS ARE REQUIRED MINIMUM SIZE OF LANDING TO BE W + 1 FOOT X 4 FEET.

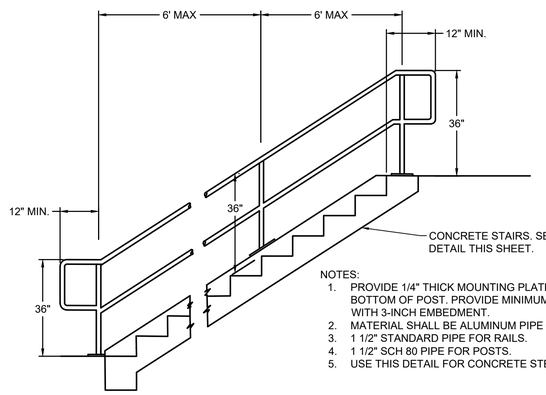
THIS ITEM MAY BE PRECAST OR CAST IN PLACE.
CONCRETE TO BE CLASS A3 IF CAST IN PLACE, 4000 PSI IF PRECAST.
FOR OTHER WIDTHS THE APPROXIMATE SPACING OF BARS A IN INCHES WILL BE EQUAL TO 80+ N WITH A MINIMUM SPACING OF 6".
REINFORCING BARS TO BE USED IN INSTALLATIONS OF 6 OR MORE STEPS.
FOR TABULATION OF CONCRETE AND STEEL QUANTITIES SEE SHEET 2.

NUMBER OF BARS A								
		N=1-5	N=6	N=7	N=8	N=9	N=10	N=11	N=12	N=13-25
W = 3'	NO STEEL	4	5	6	6	7	7	8
W = 4'		5	6	7	7	8	8	9	10
W = 5'		6	7	8	9	9	10	11	12

HANDRAIL IS TO BE PROVIDED FOR STEPS HAVING THREE OR MORE RISERS, AND WILL MEET THE FOLLOWING CONDITIONS:
1. ON STEPS LESS THAN 44 INCHES WIDE HAVING BOTH SIDES ENCLOSED, AT LEAST ONE HANDRAIL, PREFERABLY ON THE RIGHT SIDE DESCENDING.
2. ON STEPS LESS THAN 44 INCHES WIDE HAVING ONE SIDE OPEN, ONE HANDRAIL ON EACH SIDE.
3. ON STEPS LESS THAN 44 INCHES WIDE HAVING BOTH SIDES OPEN, ONE HANDRAIL ON EACH SIDE.
4. ON STEPS MORE THAN 44 INCHES WIDE BUT LESS THAN 88 INCHES WIDE, ONE HANDRAIL ON EACH SIDE.
5. ON STEPS 88 OR MORE INCHES WIDE, ONE HANDRAIL ON EACH SIDE, AND ONE INTERMEDIATE HANDRAIL LOCATED APPROXIMATELY MIDWAY OF THE WIDTH.

SPECIFICATION REFERENCE	STANDARD CONCRETE STEPS FOR 1½:1 SLOPE	VDOT ROAD AND BRIDGE STANDARDS
105 504	VIRGINIA DEPARTMENT OF TRANSPORTATION	REVISION DATE SHEET 1 OF 2 601.01

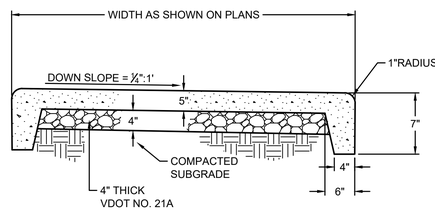
2016 ROAD & BRIDGE STANDARDS



NOTES:
1. PROVIDE 1/4" THICK MOUNTING PLATE WELDED TO BOTTOM OF POST. PROVIDE MINIMUM 4 ANCHOR BOLTS WITH 3-INCH EMBEDMENT.
2. MATERIAL SHALL BE ALUMINUM PIPE AND PLATE.
3. 1 1/2" STANDARD PIPE FOR RAILS.
4. 1 1/2" SCH 80 PIPE FOR POSTS.
5. USE THIS DETAIL FOR CONCRETE STEPS ONLY.

HANDRAIL (CONCRETE STEPS)

SCALE: NOT TO SCALE



NOTE:
CONCRETE MATERIAL SHALL BE VDOT STANDARD A4 AND SHALL BE INSTALLED AS PER VDOT STANDARDS

CONCRETE SIDEWALK

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CITY OF STAUNTON
GARDNER SPRING PUMP STATION
STAUNTON, VIRGINIA

MRK	DATE	REVISION DESCRIPTION

COMM NO: 220117
DATE: 05/27/2022
DRAWN: CTS | DESIGN: WRM
CHECK: AST

SHEET TITLE
CIVIL DETAILS

SHT. NO. C-502 | REV. NO. 0

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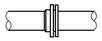
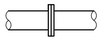
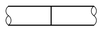
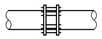
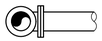
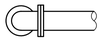
LIST OF ABBREVIATIONS

AB	ANCHOR BOLT
ABAN	ABANDONED
ABC	AGGREGATE BASE COURSE
AGGR	AGGREGATE
AI	AIR INSTRUMENT / VALVE
ALT	ALTERNATE
ALUM	ALUMINUM
AFF	ABOVE FINISH FLOOR
APPROX	APPROXIMATE
ARV	AIR RELEASE VALVE
ASPH	ASPHALT
BC	BACK OF CURB
BF	BEARING
BFP	BACKFLOW PREVENTER
BFV	BUTTERFLY VALVE
BL	BASE LINE
BLDG	BUILDING
BM	BEAM
BOT	BOTTOM
BP	BASE PLATE
BPV	BACK PRESSURE VALVE
BRG	BENCH MARK
BV	BALL VALVE
BYP	BYPASS
C/C	CENTER TO CENTER
CB	CATCH BASIN
CFM	CUBIC FEET PER MINUTE
CI	CAST IRON
CIP	CAST IRON PIPE
CJ	CONSTRUCTION JOINT
CL	CENTER LINE
CLJ	CONTROL JOINT
CLR	CLEAR
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
CP	CARRIER PIPE
CPLG	COUPLING
CS	CARBON STEEL
CU	COPPER
CU FT	CUBIC FEET
CV	CHECK VALVE
CYL	CYLINDER
DEMO	DEMOLITION
DET	DETAIL
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DIV	DIVISION
DMH	DROP MANHOLE
DN	DOWN
DR	DRAIN
DS	DOWNSPOUT
DWLS	DOWELS
EA	EACH
EB	EXPANSION BOLT OR ANCHOR
ECC	ECCENTRIC
ED	EQUIPMENT DRAIN
EF	EACH FACE
EL	ELEVATION
ELEC	ELECTRIC
ENGR	ENGINEER
EP	EDGE OF PAVEMENT
EQUIP	EQUIPMENT
ESMT	EASEMENT
EST	ESTABLISHED
EW	EACH WAY
EXIST	EXISTING
EXP	EXPANSION
EXPJ	EXPANSION JOINT
EXT	EXTERIOR
F/F	FACE TO FACE
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
FDN	FOUNDATION
FFE	FINISHED FLOOR ELEVATION
FGL	FIBERGLASS
FH	FIRE HYDRANT
FIN	FINISH
FL	FLOOR
FL	FLANGE
FLEX	FLEXIBLE
FM	FORCE MAIN
FPC	FLEXIBLE PIPE COUPLING
FPM	FEET PER MINUTE
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FEET
FTG	FITTING OR FOOTING
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GBT	GRAVITY BELT THICKENER
GFI	GROUND FAULT INDICATOR
GI	GRATE INLET
GND	GROUND
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE OR GRADE, GRADING
GRTG	GRATING
GSP	GALVANIZED STEEL PIPE
GV	GATE VALVE
H	HIGH
HB	HOSE BIB
HDPE	HIGH DENSITY POLYETHYLENE
HDR	HEADER
HMC	HARNESSED MECHANICAL COUPLING
HORIZ	HORIZONTAL
HP	HIGH POINT OR HORSEPOWER
HSTC	HARNESSED SLEEVE TYPE COUPLING
HT	HOLDING TANK
HVAC	HEATING, VENTILATING & AIR CONDITIONING
HWL	HIGH WATER LEVEL
HWO	HANDWHEEL OPERATED
HYD	HYDRANT OR HYDRAULIC
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IN	INCHES
INJ	INJECTION
INSTR	INSTRUMENT
INV	INVERT
IP	IRON PIPE
IPS	IRON PIPE SIZE
JT	JOINT
LAB	LABORATORY
LBS	POUNDS
LF	LINEAR FOOT
LG	LONG
LIN	LINEAR
LP	LOW POINT
LWL	LOW WATER LEVEL
MAX	MAXIMUM
MECH	MECHANICAL
MET	METHANOL
MFGR	MANUFACTURER
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MIN	MINIMUM
MJ	MECHANICAL JOINT
MJB	MECHANICAL JOINT BELL
MO	MASONRY OPENING
MTC	MECHANICAL-TYPE COUPLING
MW	MASONRY WALL
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NO.	NUMBER
NPS	NOMINAL PIPE SIZE
NPT	NATIONAL PIPE THREAD
NRS	NON-RISING STEM
NTS	NOT TO SCALE
NWL	NORMAL WATER LEVEL
O/O	OUT TO OUT
OC	ON CENTER
OD	OUTSIDE DIAMETER
OPER	OPERATOR, OPERATING
OPNG	OPENING
OPP	OPPOSITE
ORIG	ORIGINAL
P	PUMP
PC	PRECAST
PCCP	PRECAST CONCRETE CYLINDER PIPE
PCF	POUNDS PER CUBIC FOOT
PE	PLAIN END OR POLYETHYLENE
PERIM	PERIMETER
PERP	PERPENDICULAR
PG	PRESSURE GAGE
PL	PLATE OR PROPERTY LINE
PP	POLYPROPYLENE OR POWER POLE
PREFAB	PREFABRICATED
PRV	PRESSURE RELIEF VALVE
PRV	PRESSURE REGULATING VALVE
PS	PUMPING STATION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE PIPE
PVMT	PAVEMENT
QTY	QUANTITY
RAD, R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RD	ROOF DRAIN
RD	ROUND
RED	REDUCER
REINF	REINFORCE (D) (ING) (MENT)
REQ'D	REQUIRED
RMJ	RESTRAINED MECHANICAL JOINT
ROW	RIGHT OF WAY
RPO	RESTRAINED PUSH-ON JOINT
RS	RISING STEM
SAN	SANITARY
SAV	SURGE ANTICIPATING VALVE
SECT	SECTION
SF	SQUARE FOOT
SHT	SHEET
SI	SQUARE INCH
SMH	SANITARY MANHOLE
SPEC	SPECIFICATION
SQ	SQUARE
SQ FT	SQUARE FEET
SST	STAINLESS STEEL
STC	SLEEVE-TYPE COUPLING
STL	STEEL
STRUC	STRUCTURAL
SW	SOLVENT WELD JOINT
SY	SQUARE YARD
SYM	SYMMETRICAL
TBA	TO BE ABANDONED
T&B	TOP AND BOTTOM
TB	TOP OF BEAM
TBA	TO BE ABANDONED
TBE	THREAD BOTH ENDS
TBR	TO BE REMOVED
TC	OP OF CONCRETE
TC	TOP OF CURB
TEMP	TEMPERATURE
TF	TOP OF FOOTING
THD	THREADED
THK	THICK OR THICKNESS
TOP	TOP OF PIPE
TOS	TOP OF SLAB
TYP	TYPICAL
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
UV	ULTRAVIOLET
VAC	VACUUM
VC	VICTAULIC COUPLING
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
W/	WITH
W/L	WATER LEVEL
W/O	WITHOUT
W	WATER
W	WIDE
WC	WATER CLOSET
WD	WIDTH
WM	WATER MAIN
WSP	WELDED STEEL PIPE
WWTP	WASTEWATER TREATMENT PLANT
X-SECT	CROSS SECTION
XFMR	TRANSFORMER
YH	YARD HYDRANT

PIPE AND FITTING SYMBOLS

DOUBLE LINE	SINGLE LINE	
		MECHANICAL JOINT
		FLANGED JOINT
		WELDED JOINT
		DISMANTLING JOINT
		ELBOW UP
		ELBOW DOWN
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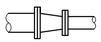
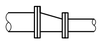
		TEE DOWN
		CONCENTRIC REDUCER
		ECCENTRIC REDUCER
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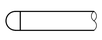
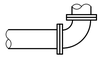
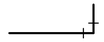
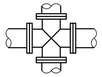
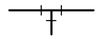
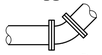
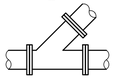
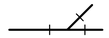
		CAP
		ELBOW, 90 DEGREE
		CROSS
		TEE
		ELBOW, 45 DEGREE
		WYE

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5/27/2022
PROFESSIONAL ENGINEER

CITY OF STAUNTON

GARDNER SPRING PUMP STATION

STAUNTON, VIRGINIA

MRK	DATE	REVISION DESCRIPTION

COMM NO: 220117
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DRAWN: CTS | DESIGN: WRM
CHECK: AST

SHEET TITLE

PROCESS GENERAL NOTES, LEGEND, & ABBREVIATIONS

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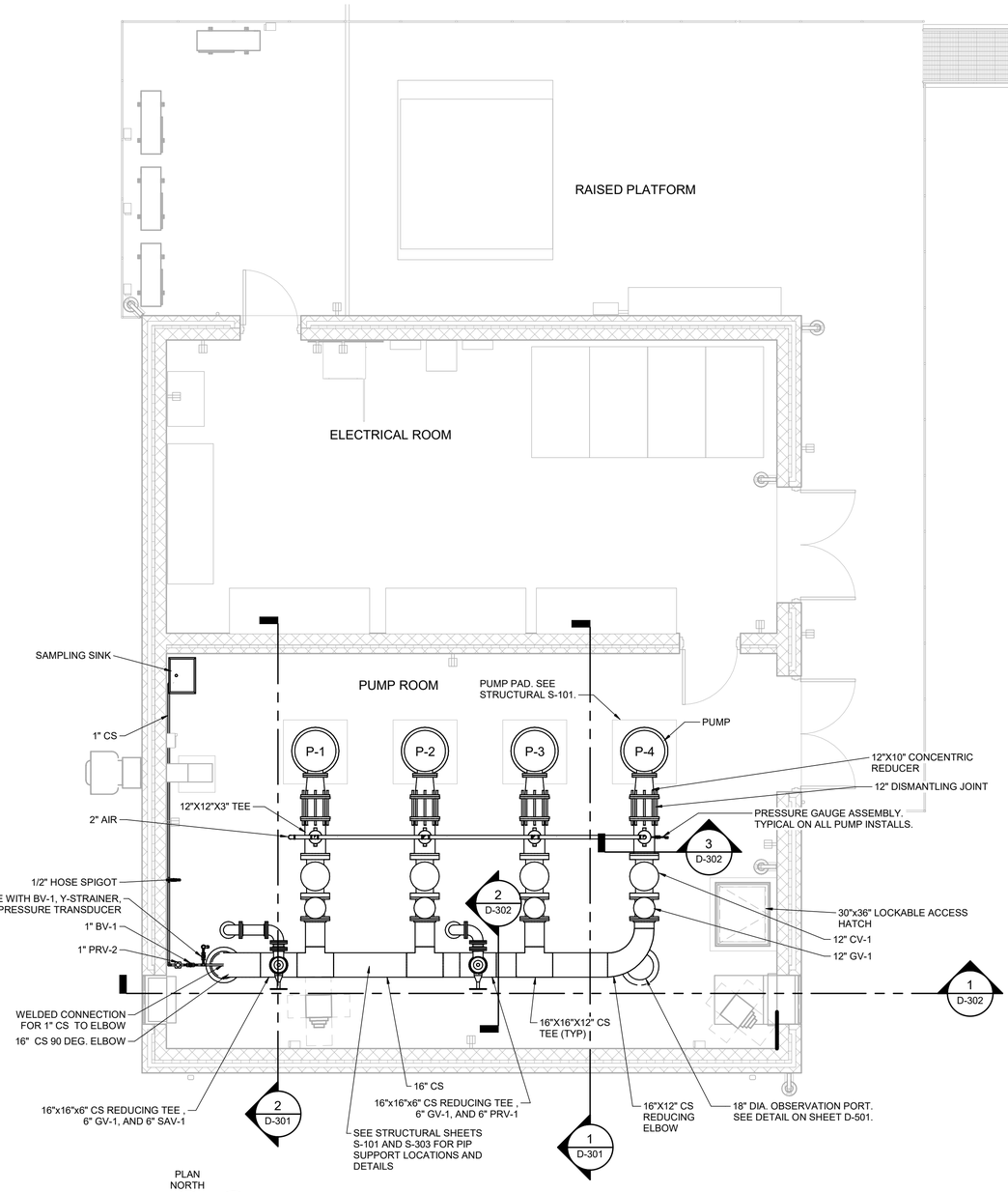


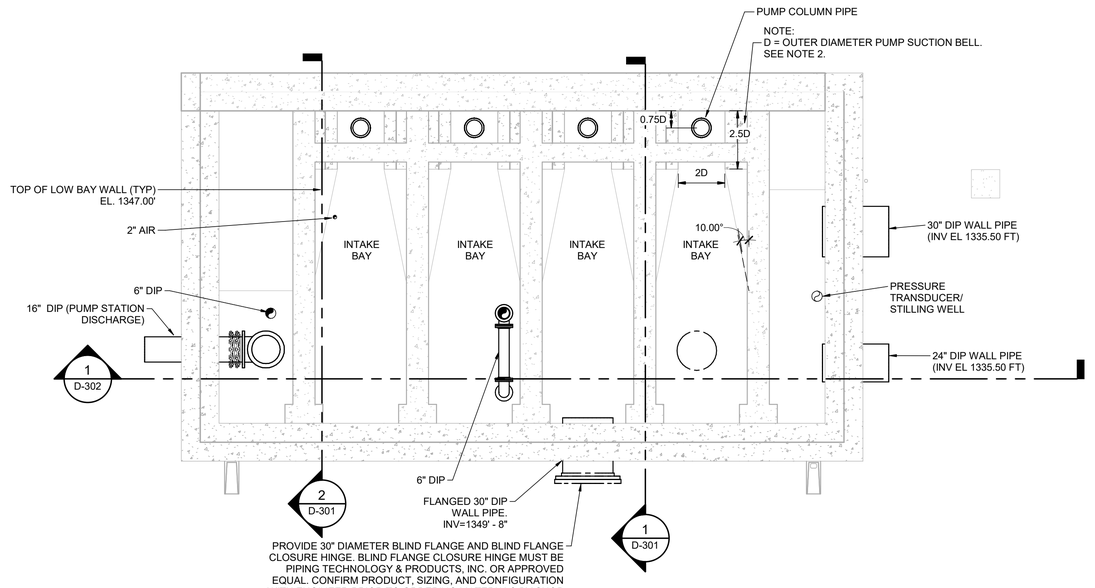
PLAN NORTH

1 PUMP ROOM FLOOR PLAN

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

GENERAL NOTES

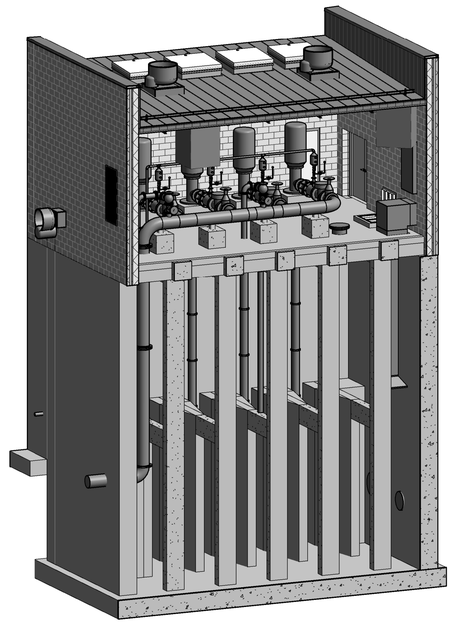
1. ALL FLANGE CONNECTIONS MUST UTILIZE US PIPE RING FLANGE-TYTE GASKET OR AMERICAN TORUSEAL FLANGE. GASKET SHALL BE RATED FOR 350 PSI WORKING PRESSURE AND COMPATIBLE WITH ASME/ANSI B16.1 CLASS 250/300 FLANGES.
2. PUMP BAY DIMENSIONS ARE APPROXIMATE AND BASED ON THE PUMP INLET BELL OUTSIDE DIAMETER "D". CONTRACTOR AND MANUFACTURER MUST COORDINATE AND PROVIDE PUMP BAY DIMENSIONS BASED ON THE FURNISHED PUMPS' DIMENSIONS. CONTRACTOR MUST PROVIDE THE RECOMMENDED CLEARANCES BETWEEN THE FURNISHED PUMPS AND THE WET WELL FLOOR AND WALLS IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE HYDRAULIC INSTITUTE IN THE MOST RECENT EDITION OF HI 9.8 "AMERICAN NATIONAL STANDARD FOR ROTODYNAMIC PUMPS FOR PUMP INTAKE DESIGN".
3. ISOMETRICS ARE PROVIDED FOR REFERENCE ONLY.



PLAN NORTH

2 WETWELL FLOOR PLAN

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



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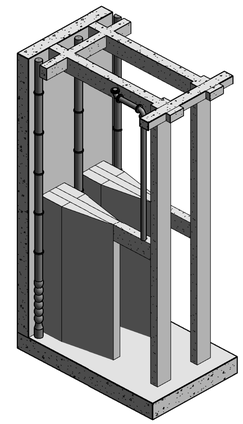

ISOMETRIC 2

0' 2' 4' 8'

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

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PUMP STATION LAYOUT

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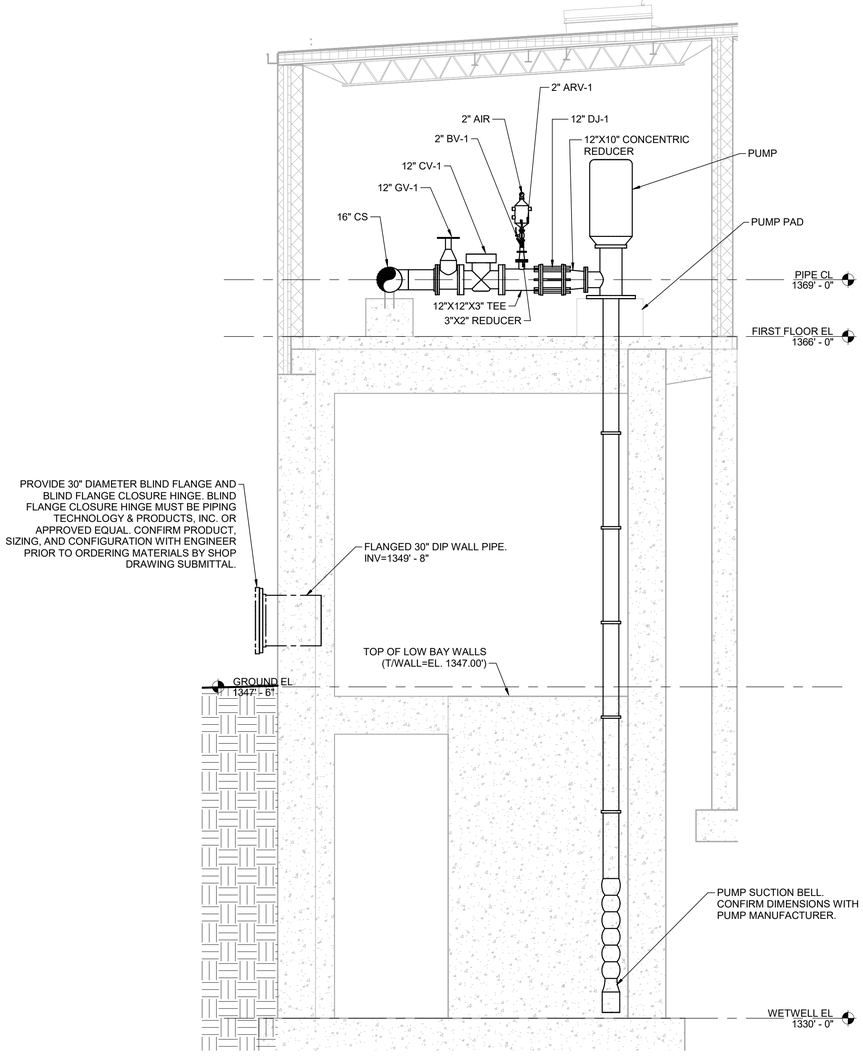
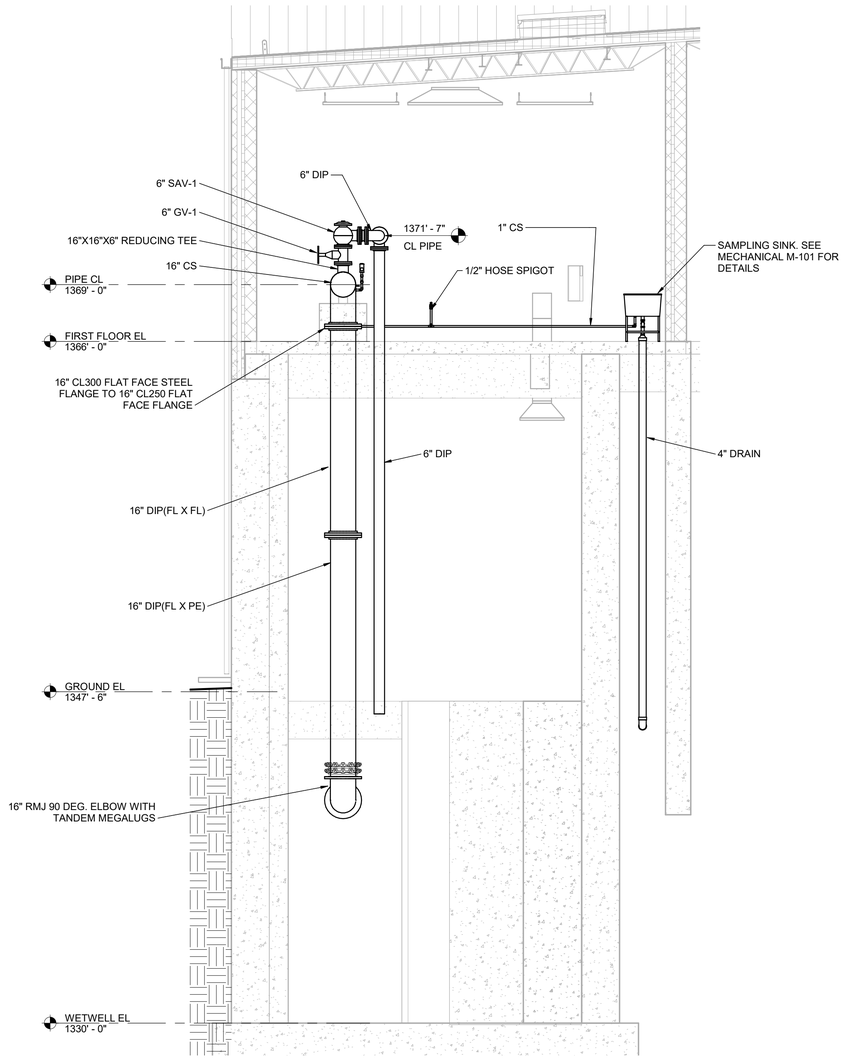
GENERAL NOTES
1. ALL FLANGE CONNECTIONS MUST UTILIZE US PIPE RING FLANGE-TYTE GASKET OR AMERICAN TORUSEAL FLANGE. GASKET SHALL BE RATED FOR 350 PSI WORKING PRESSURE AND COMPATIBLE WITH ASME/ANSI B16.1 CLASS 250/300 FLANGES.



1 D-101 SECTION
SCALE: 1/4" = 1'-0"



2 D-101 SECTION
SCALE: 1/4" = 1'-0"

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COMMONWEALTH OF VIRGINIA
AARON SCOTT TICE
Lic. No. 047263
5/27/2022
PROFESSIONAL ENGINEER

CITY OF STAUNTON
GARDNER SPRING PUMP STATION
STAUNTON, VIRGINIA

MRK	DATE	REVISION DESCRIPTION

COMM NO:	220117		
DATE:	05/27/2022		
DRAWN:	CTS	DESIGN:	MGM
CHECK:			AST

SHEET TITLE
SECTIONS

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D-301	

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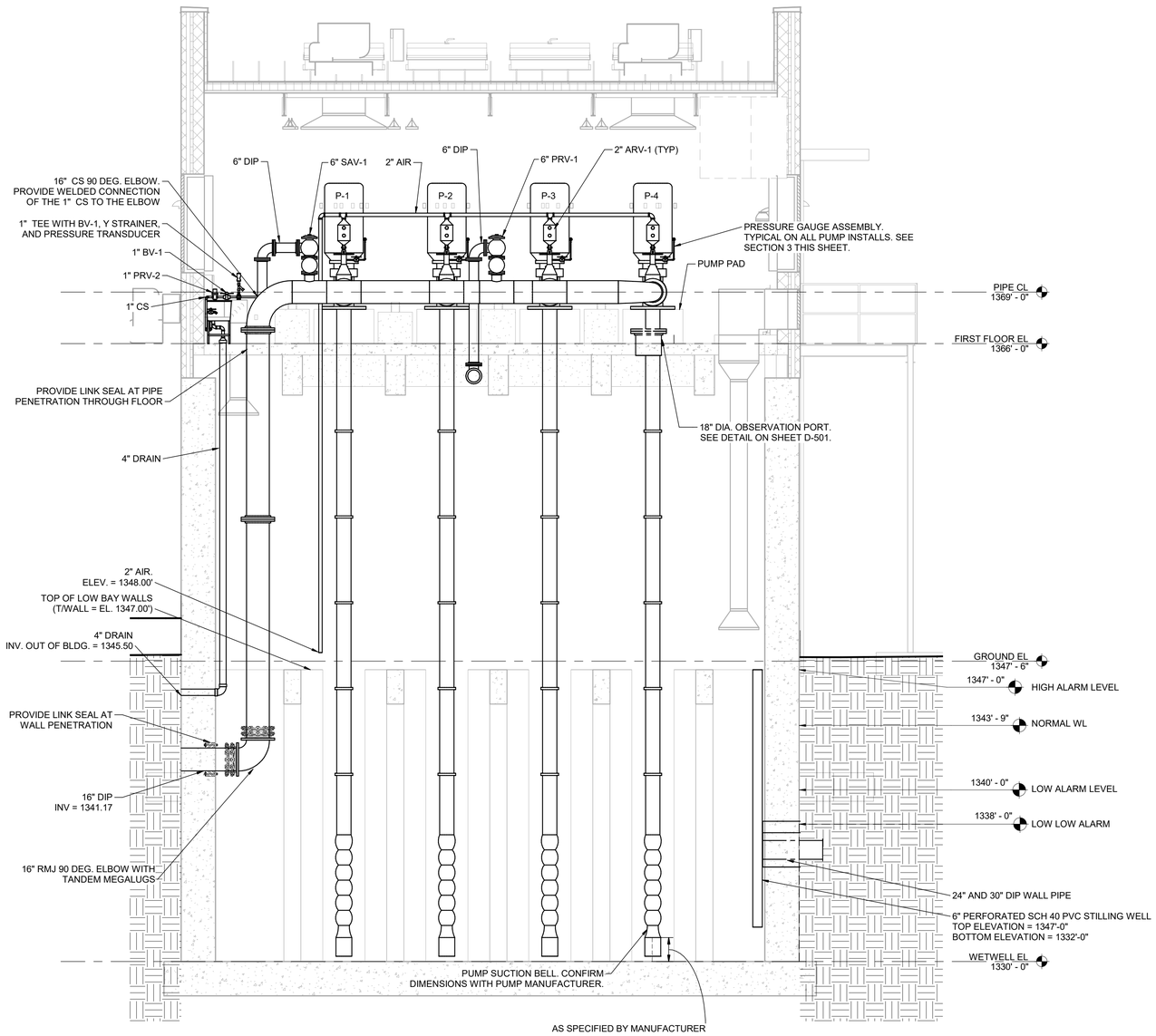

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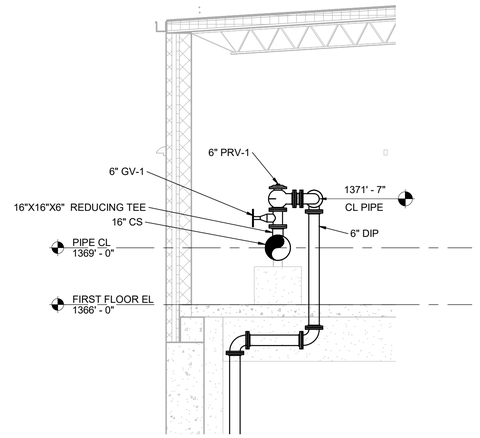

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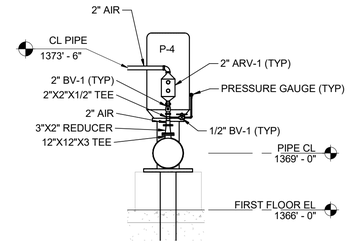

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SCALE: 1/4" = 1'-0"

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SHEET TITLE

SECTIONS

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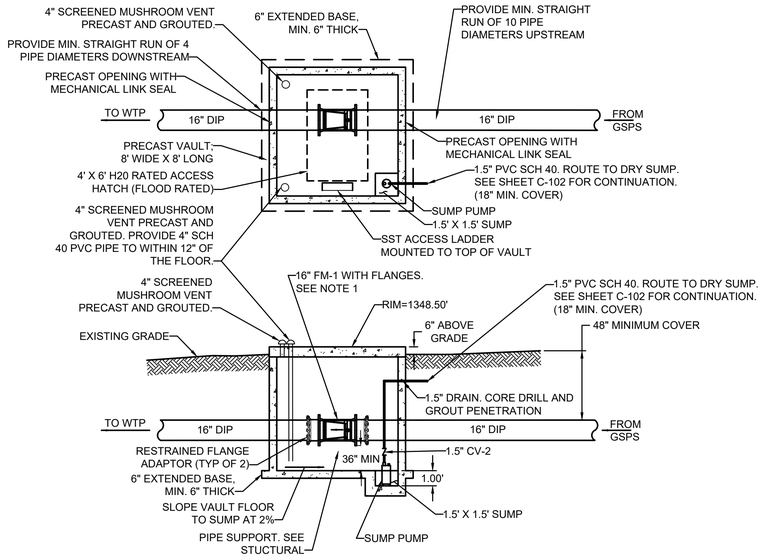


FLOW METER VAULT

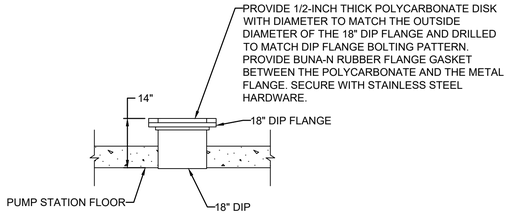
NOT TO SCALE

FLOW METER VAULT SPECIFICATIONS

A. SCOPE:
1. PROVIDE PRECAST CONCRETE UNDERGROUND UTILITY VAULTS AS SHOWN ON THE DRAWINGS.
2. ALL STRUCTURES SHALL BE PLACED ON A BED OF 8-INCHES OF VDOT #57 STONE.

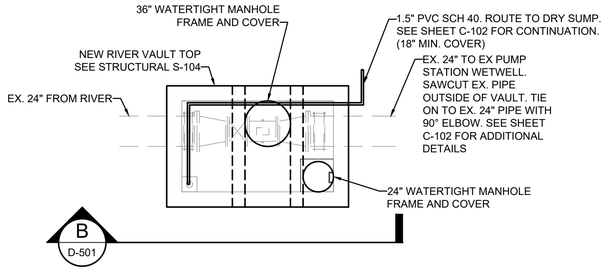
B. DESIGN:
1. THE UTILITY VAULTS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM C857 AND ACI-318 THE UTILITY VAULTS SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C858
2. THE UTILITY VAULTS SHALL BE DESIGNED FOR OCCASIONAL LOADING BY AN AASHTO HS-20 VEHICLE.
3. THE STRUCTURES SHALL BE DESIGNED TO RESIST UPLIFT ASSUMING THE WATER TABLE IS AT ELEVATION 1364.00 FEET ABOVE MEAN SEA LEVEL. CONTRACTOR SHALL COORDINATE TOP OF STRUCTURE/GRADE ELEVATIONS WITH THE MANUFACTURER WHEN ORDERING STRUCTURES.
4. MINIMUM CONCRETE COMPRESSIVE STRENGTH TO BE 5000 PSI
5. CEMENT SHALL CONFORM TO ASTM C150. FINE AND COARSE AGGREGATES SHALL CONFORM TO ASTM C33
6. REINFORCING STEEL SHALL CONSIST OF DEFORMED BARS OR WELDED WIRE FABRIC. DEFORMED BARS SHALL CONFORM TO ASTM A615, GRADE 60 AND WELDED WIRE FABRIC SHALL CONFORM TO ASTM A497, GRADE 65 MINIMUM.
7. MANUFACTURER SHALL PROVIDE DELEGATED DESIGN SUBMITTAL WITH STRUCTURAL CALCULATIONS AND DRAWINGS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF VIRGINIA.

C. ACCESSORIES
1. SUMP PUMP
   a. SUMP PUMP SHALL BE SUBMERSIBLE STYLE PUMP WITH 1/3 HP, 120V, 1PH MOTOR WITH 1.5" FEMALE NPT DISCHARGE PIPING CONNECTION.
   b. PUMP CONTROLS SHALL BE VERTICAL FLOAT STYLE AND INTEGRATED INTO THE PUMP FROM THE FACTORY.
   c. PUMP SHALL BE COMPATIBLE WITH A SUMP SIZED AT 18-INCHES LONG X 18-INCHES WIDE X 12-INCHES DEEP.
   d. MANUFACTURERS AND MODELS:
      1) BARNES MODEL SP33VF
      2) APPROVED EQUAL
2. ALUMINUM ACCESS HATCHES
   a. ALL HATCHES SHALL BE CAST INTO THE TOP SLAB OF THE UTILITY VAULT AS SHOWN ON THE DRAWING DETAILS.
   b. ALL ACCESS HATCHES SHALL BE DESIGNED FOR H-20 LOADING.
   c. ALL ACCESS HATCHES SHALL BE RATED TO WITHSTAND FLOOD CONDITIONS.
   d. ALL ACCESS HATCHES SHALL INCLUDE COLLAPSABLE LADDER EXTENSIONS.
   e. ACCESS HATCH DIMENSIONS SHALL BE IN ACCORDANCE WITH THE DRAWINGS.
   f. MANUFACTURERS:
      1) BILCO
      2) HALLIDAY
      3) APPROVED EQUAL
3. ALUMINUM ACCESS LADDER
   a. LADDER SHALL CONSIST OF HEAVY DUTY ALUMINUM IN A CONFIGURATION APPROVED BY OSHA
   b. THE LADDER SHALL BE SECURED TO THE WALL AND FLOOR OF THE VAULT USING CONCRETE ANCHORS APPROVED BY THE MANUFACTURER.
   c. MANUFACTURERS:
      1) BILCO
      2) APPROVED EQUAL

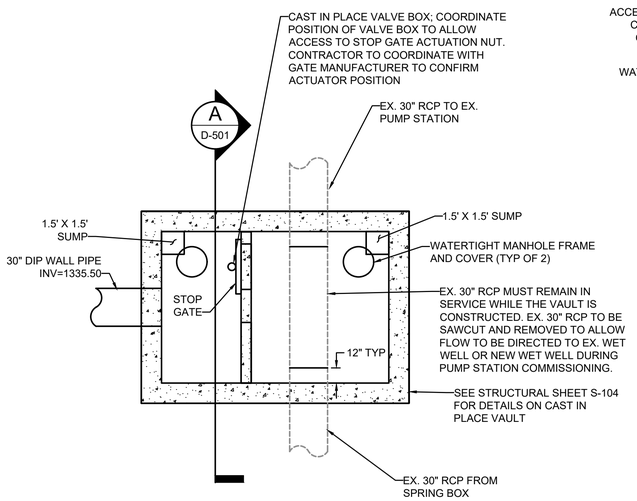


18" DIA. OBSERVATION PORT DETAIL

NOT TO SCALE



PLAN



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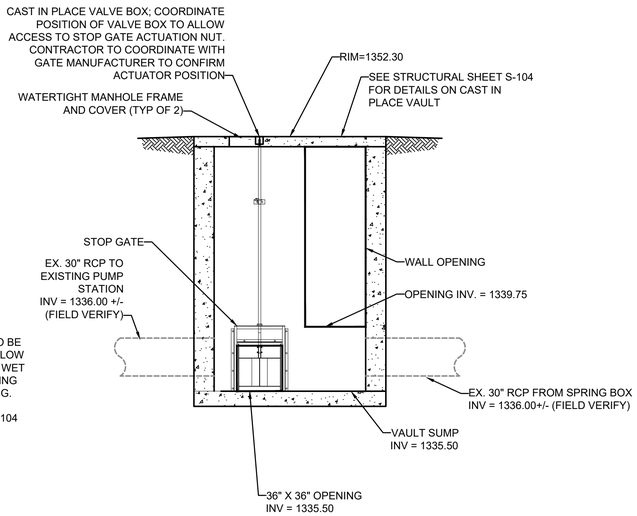
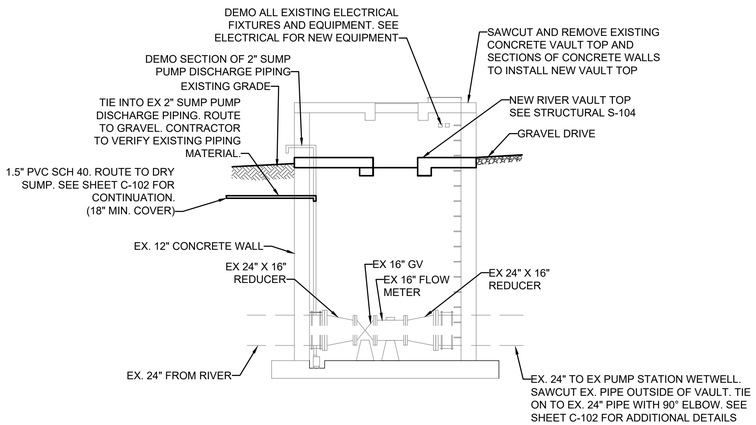


A SECTION



B SECTION

INTAKE CONTROL STRUCTURE

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RIVER VAULT

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CHECK: AST	

SHEET TITLE

PROCESS DETAILS

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STANDARD ARCHITECTURAL ABBREVIATIONS

A

A/C - AIR CONDITION
AB - ANCHOR BOLT
ABBRV - ABBREVIATION
AC - ACOUSTICAL
ACC - ACCESSIBLE
ACS PNL - ACCESS PANEL
ACT - ACOUSTICAL CEILING TILE
ACOUS - ACOUSTIC(AL)
ACU - AIR CONDITIONING UNIT
ADA - AMERICAN WITH DISABILITIES ACT
ADDM - ADDENDUM
ADJ - ADJUSTABLE, ADJACENT
AED - AUTOMATIC EXTERNAL DEFIBRILLATOR
AFF - ABOVE FINISH FLOOR
AHU - AIR HANDLING UNIT
ALT - ALTERNATE
ALUM - ALUMINUM
ANOD - ANODIZE
APP - APPLICABLE
APPROX - APPROXIMATE
ARCH - ARCHITECT(URAL)
ASB - ASBESTOS
ASWG - AMERICAN STEEL WIRE GAUGE
AVE - AVERAGE
AWC - ACRYLIC WALL COVERING

B

B - BOTTOM
B LABEL - CLASS B DOOR
BAT - BATTEN, BATTERY
BD - BOARD
BDRY - BOUNDARY
BKBD - BACKBOARD
BKD - BACKING
BLDG - BUILDING
BLW - BELOW
BM - BEAM
BMS - BEAMS
BOT - BOTTOM
BR - BEDROOM
BRG - BEARING
BS - BOTH SIDES
BTWN - BETWEEN
BUR - BUILT UP ROOFING
BW - BOTH WAYS
B-U - BUILT-UP

C

C - CONTINUED
C LABEL - CLASS C DOOR
C TO C - CENTER TO CENTER
CAB - CABINET
CALC - CALCULATE(D)
CB - CERAMIC BASE
CEM - CEMENT
CER - CERAMIC
CF - CUBIC FEET
CFCI - CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CFS - COLD FORMED STEEL
CG - CORNER GUARD
CIR - CIRCLE
CJ - CONSTRUCTION/CONTROL JOINT
CL - CENTER LINE
CL D - CLOTHES DRYER
CLG - CEILING
CLO - CLOSET
CLR - CLEAR
CNTR - COUNTER
CMU - CONCRETE MASONRY UNIT
COL - COLUMN
COMM - COMMUNICATION
CONC - CONCRETE
CONST - CONSTRUCTION
CONT - CONTINUOUS
CONTR - CONTRACTOR
COORD - COORDINATE
CORR - CORRIDOR
COTR - CONTRACTING OFFICER'S TECHNICAL REPRESENTATIVE
COV - COVER
CPT - CARPET, COMMON PATH OF TRAVEL
CRS - COURSE
CSWK - CASEWORK
CT - CERAMIC TILE
CTG - COATING
CTR - CENTER
CUST - CUSTODIAN

D

D - DEEP/DEPTH, DRYER
DBL - DOUBLE
DEG - DEGREE
DEMO - DEMOLITION
DEG - DEGREE
DET - DETAIL
DF - DRINKING FOUNTAIN
DH - DOUBLE HUNG (DOOR WINDOW)
DIA(M) - DIAMETER
DIAG - DIAGONAL
DIM - DIMENSION
DIST - DISTANCE
DN - DOWN
DR - DOOR
DS - DOWN SPOUT
DUPL - DUPLICATE
DW - DISHWASHER
DWG(S) - DRAWING(S)

E

EA - EACH
EJ - EXPANSION JOINT
EL(EV) - ELEVATION, ELEVATOR
ELEC - ELECTRICAL, ELECTRIC
ENCL - ENCLOSURE
ENGR - ENGINEER
ENVIR - ENVIRONMENT
EP - ELECTRICAL PANELBOARD
EPDM - ETHYLENE PROPYLENE DIENE MONOMER
EQ - EQUAL
EQ(UIP) - EQUIPMENT
ETC - ETCETERA
EW - EACH WAY
EWC - ELECTRIC WATER COOLER
EWH - ELECTRIC WATER HEATER
EXH - EXHAUST
EX(IST) - EXISTING
EXP - EXPOSED
EXT - EXTERIOR

F

F - FEMALE
FCU - FAN COIL UNIT
FD - FLOOR DRAIN
FDTN - FOUNDATION
FE - FIRE EXTINGUISHER
FEC - FIRE EXTINGUISHER CABINET
FF - FINISH FLOOR
FF&E - FURNITURE, FIXTURE & EQUIPMENT
FIN - FINISH
FIXT - FIXTURE
FLASH - FLASHING
FL(R) - FLOOR
FLOUR - FLUORESCENT
FNV - FEMALE NAPKIN/TAMPON VENDOR
FR - FIRE RATING, FRAME
FRMG - FRAMING
FRT - FIRE RETARDANT TREATED
FSTNR - FASTENER
FT - FEET (FOOT)
FTD - FACIAL TISSUE DISPENSER
FUR - FURRING
FURG - FURRING
FURN - FURNITURE
FWC - FABRIC WALLCOVERING

G

GA - GAUGE
GALV - GALVANIZED
GB - GRAB BAR
GC - GENERAL CONTRACTOR
GEN - GENERAL
GFCI - GOVERNMENT FURNISHED, CONTRACTOR INSTALLED
GFGI - GOVERNMENT FURNISHED, GOVERNMENT INSTALLED
GLZ - GLAZING
GOVT (GOV'T) - GOVERNMENT
GP - GLAZED PARTITION
GR - GRILLE
GWB - GYPSUM WALL BOARD
GYP - GYPSUM

H

H - HIGH
HB - HOSE BIB
HC - HANDICAP/HOLLOW CORE
HDR - HEADER
HDW - HARDWARE
HM - HOLLOW METAL
HNDRL - HANDRAIL
HORIZ - HORIZONTAL
HR - HOUR
H(G)T - HEIGHT
HVAC - HEATING VENTILATION AIR CONDITIONING

I

IBC - INTERNATIONAL BUILDING CODE
IBC - INTERNATIONAL BUILDING CODE
ID - INSIDE DIMENSIONS
IN. - INCHES
INFO - INFORMATION
INS(UL) - INSULATION/INSULATED
INSTL - INSTALL
INT - INTERIOR
INV - INVERT

J

JAN - JANITOR
JS - JANITOR'S CLOSET
JST - JOIST
JT - JOINT

K

KIT - KITCHEN

L

L - LENGTH
LAM - LAMINATE(D)
LAV - LAVATORY
LB - POUND
LF - LINEAR FEET (FOOT)
LLH - LONG LEG HORIZONTAL
LLV - LONG LEG VERTICAL
LOC - LOCATION
LR - LIVING ROOM
LRG - LARGE
LT - LIGHT

M

M - MALE
MACH - MACHINE
MAINT - MAINTENANCE
MAS - MASONRY
MAT(L) - MATERIAL
MAX - MAXIMUM
MECH - MECHANICAL
MEZZ - MEZZANINE
MFR - MANUFACTURER
MH - MOUNTING HEIGHT
MIN - MINIMUM
MISC - MISCELLANEOUS
MO - MASONRY OPENING
MOD - MODIFY, MODEL
MRT - MARBLE THRESHOLD
MT - METAL THRESHOLD
MTL - METAL

N

N - NORTH
N(/)A - NOT APPLICABLE
NIC - NOT IN CONTRACT
NL - NIGHT LIGHT
NO. - NUMBER
NOM - NOMINAL
NTS - NOT TO SCALE

O

OA - OVERALL
OC - ON CENTER
OCC - OCCUPANT/OCCUPANCY
OD - OUTSIDE DIAMETER
OH - OVERHEAD/ OVERHANG
OPNG - OPENING
OPP - OPPOSITE
OPH - OPPOSITE HAND
ORD - OVERFLOW ROOF DRAIN

P

PANEL'G - PANELING
PART - PARTIAL
PCF - POUNDS PER CUBIC FOOT
PEMB - PRE-ENGINEERED METAL BUILDING
PL - PLATE
PLAS - PLASTER, PLASTIC
PLAM - PLASTIC LAMINATE
PLBG - PLUMBING
PL(Y)WD - PLYWOOD
PNL - PANEL
PR - PAIR
PREFIN - PREFINISH(ED)
PRMLD - PREMOLDED
PSF - POUNDS PER SQUARE FOOT
PT - PRESSURE TREATED / PAINT
PTD - PAPER TOWEL DISPENSER
PTN - PARTITION
PTR - PAPER TOWEL RECEPTACLE

R

R - RISER/RADIUS
RA - RETURN AIR
RB - RUBBER BASE
RCP - REFLECTED CEILING PLAN
RD - ROOF DRAIN
REC - RECOMMEND(ED)
REF - REFRIGERATOR, REFERENCE
REFL - REFLECT
REINF - REINFORCING
REPL - REPLACE
REQ('D) - REQUIRE(D)
RESIL - RESILIENT
RG - RETURN AIR GRILLE
RM - ROOM
RND - ROUND
RO - ROUGH OPENING

S

S - STEEL
S/L - STEEL LINE
SC - SOLID CORE
SCH(ED) - SCHEDULE
SCWD - SOLID CORE WOOD DOOR
SECT - SECTION
SF - SQUARE FOOT (FEET)
SGL - SINGLE
SHR - SHOWER
SHT - SHEET
SIM - SIMILAR
SND - SOUND
SPEC(S) - SPECIFICATIONS
SQ - SQUARE
SST - STAINLESS STEEL
ST - STREET/ STAIRS
STC - SOUND TRANSMISSION COEFFICIENT
STD - STANDARD
STD(NT) - STUDENT
STL - STEEL
STOR - STORAGE
STR - STRUCTURE, STRUCTURAL
SUSP - SUSPEND, SUSPENDED

T

T - TREAD
T.O. - TOP OF
TB - TOWEL BAR
TBD - TO BE DETERMINED
TC - TOP OF CURB
TD - TOWEL DISPENSER
TECH - TECHNOLOGY/ TECHNICAL
TEL - TELEPHONE
TEMP - TEMPORARY, TEMPERATURE
THK - THICKNESS
THRESH - THRESHOLD
THRU - THROUGH
TOB - TOP OF BEAM
TOC - TOP OF CONCRETE
TOF - TOP OF FLOOR
TOM - TOP OF MASONRY
TOS - TOP OF SLAB, TOP OF STEEL
TOW - TOP OF WALL
TPD - TOILET PAPER DISPENSER
TPH - TOILET PAPER HOLDER
TRANS - TRANSLUCENT
TWC - TEXTILE WALL COVERING
TYP - TYPICAL

U

UL - UNDERWRITERS LABORATORY
UON - UNLESS OTHERWISE NOTED
UNO - UNLESS NOTED OTHERWISE

V

VAR - VARIES
VB - VINYL BASE
VCT - VINYL COMPOSITION TILE
VERT - VERTICAL
VEST - VESTIBULE
VIF - VERIFY IN FIELD
VR - VAPOR RETARDER
VTR - VENT TROUGH ROOF
VWC - VINYL WALL COVERING

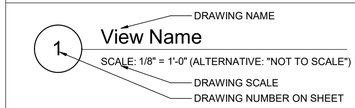
W

W - WIDE, WASH, WASHER
W/ - WITH
W/O - WITHOUT
WB - WOOD BASE
WC - WALL COVERING/ WATER CLOSET
WD - WOOD/ WOOD DOOR
WF - WIDE FLANGE/ WATER FOUNTAIN
WP - WORK POINT, WATER PUMP
WR - WATER RESISTANT
WWF - WELDED WIRE FABRIC

SYMBOLS

& AND
@ AT
∠ ANGLE
℄ CENTERLINE
±, +/- MORE OR LESS, APPROXIMATELY
POUND (WEIGHT)/ REFERENCE NUMBER
X REFERENCE LETTER
℄ STEEL LINE

ARCHITECTURAL DRAWING SYMBOLS



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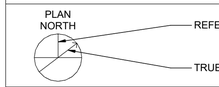

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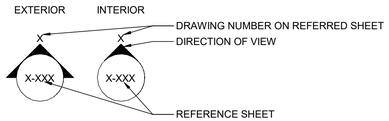

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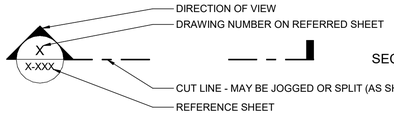

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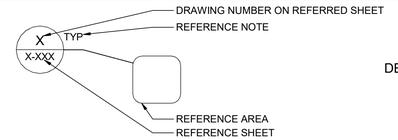

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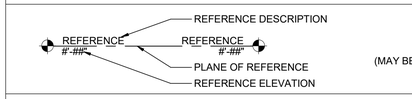
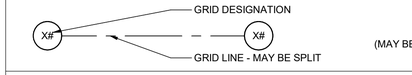
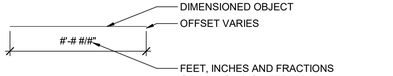


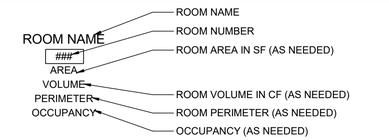
ELEVATION DESIGNATION
(MAY BE SHOWN ON EITHER OR BOTH SIDES)



COLUMN LINE DESIGNATION
(MAY BE SHOWN ON EITHER OR BOTH SIDES)



DIMENSIONS



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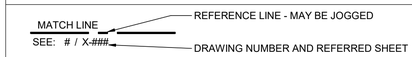

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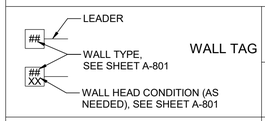

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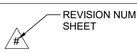
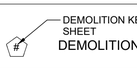


REVISION TAG

KEYNOTE TAG

DOOR TAG



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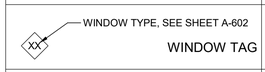
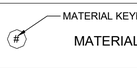


WINDOW TAG

RENOVATION KEYNOTE TAG

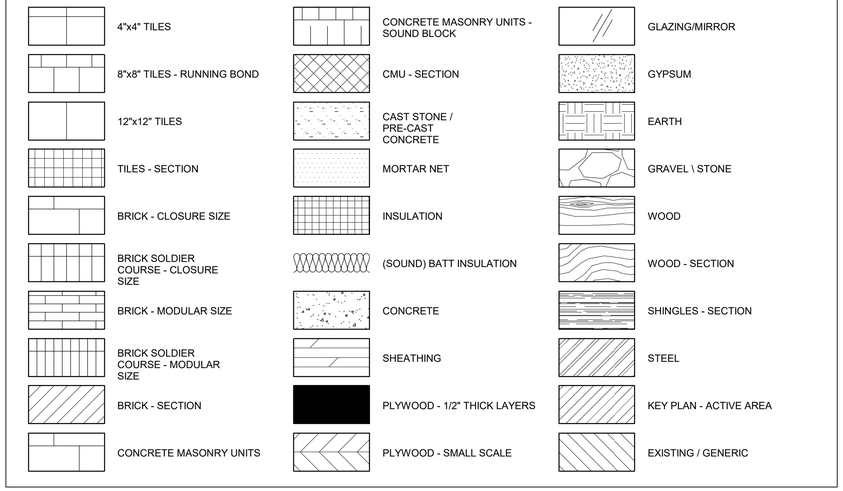
EQUIPMENT TAG



MATERIAL KEYNOTE TAG

ACCESSORY TAG

STANDARD ARCHITECTURAL MATERIALS LEGEND



GENERAL PROJECT NOTES

1. THE DRAWINGS ARE PREPARED AND COORDINATED WITH THE PROJECT MANUAL WHICH INCLUDE TECHNICAL SPECIFICATIONS. THEY, ALONG WITH OTHER DOCUMENTS ISSUED BY WILEY | WILSON AND ENUMERATED IN THE OWNER-CONTRACTOR AGREEMENT, SHALL FORM THE CONSTRUCTION DOCUMENTS. A DIRECTIVE STATED IN ONE DOCUMENT SHALL BE UNDERSTOOD AS STATED IN ALL. ANY AMBIGUITIES OR INCONSISTENCIES SHALL BE RESOLVED BY WILEY | WILSON.
2. MANUFACTURER'S NAMES AND/OR MODEL NUMBERS CITED ARE USED TO PROVIDE AN INDICATION OF QUALITY, STYLE AND/OR SIZE DESIRED. OTHER MANUFACTURERS ARE ACCEPTABLE IF PRODUCTS ARE EQUAL IN QUALITY, STYLE AND SIZE.
3. MANUFACTURER'S NAMEPLATES, INCLUDING TRADEMARK AND OTHER IDENTIFYING SYMBOLS, SHALL NOT BE PERMITTED IN SURFACES VISIBLE TO THE PUBLIC, UNLESS OTHERWISE INDICATED IN THE CONTRACT DOCUMENTS.
4. ALL WORK INDICATED SHALL INCLUDE ALL LABOR, MATERIALS AND FINISHED ASSEMBLIES NECESSARY TO MAKE A COMPLETE, PROPERLY WORKING AND FINISHED INSTALLATION.
5. THE OWNER RESERVES THE RIGHT TO REJECT MATERIAL AND OR WORK THAT IS NOT IN STRICT ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. ALL WORK SHALL BE IN ACCORDANCE WITH ACCEPTED HIGH QUALITY CONSTRUCTION PRACTICES AND STANDARDS AND DONE IN A WORKMAN-LIKE MANNER.
7. THE CONTRACTOR OR ANY OF HIS EMPLOYEES, OR SUB-CONTRACTORS SHALL NOT SCALE THESE DRAWINGS FOR DIMENSIONS. IF THERE IS ANY QUESTION CONCERNING THE DIMENSIONS THE CONTRACTOR SHALL CONTACT THE ARCHITECT TO CLARIFY THE DIMENSIONS.
8. ANY DISCREPANCIES BETWEEN THE EXISTING CONDITIONS AND THE CONTRACT DOCUMENTS, OR ANY AMBIGUITIES OR INCONSISTENCIES CONTAINED THEREIN, SHALL BE REPORTED TO THE ARCHITECT IMMEDIATELY, AND A SUITABLE RESOLUTION ESTABLISHED PRIOR TO THE SUBMITTAL OF BIDS OR THE BEGINNING OF THE AFFECTED WORK. WORK THAT PROCEEDS IN VIOLATION OF THIS PRINCIPLE IS AT THE CONTRACTOR'S OWN RISK, AND THE COST OF ANY CHANGES REQUIRED BY THE CLIENT TO SUITABLY MODIFY SUCH WORK SHALL BE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.
9. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE AND GOVERNING CODES AND REGULATIONS; AND SHALL COMPLY WITH ALL LIFE SAFETY REQUIREMENTS OF APPLICABLE GOVERNING AUTHORITIES. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES AND ORDINANCES. SEE SHEET AL101 FOR ADDITIONAL CODE INFORMATION.
10. THE CONTRACTOR SHALL CONFIRM AND VERIFY WITH THE OWNER PRIOR TO STARTING WORK ANY RULES OR REGULATIONS FOR THE USE AND CONSTRUCTION ON THE PROPERTY WITH RESPECT TO BUT NOT LIMITED TO HOURS OF CONSTRUCTION, LIMITS OF WORK, OPERATIONS OF THE BUILDING, SAFETY OF THE OWNERS EMPLOYEES OR GENERAL LOCATIONS OF DUMPSTERS, USE OF THE OWNER'S UTILITIES AND FACILITIES, SCHEDULING OF DELIVERIES, ETC.
11. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER ALL WORK SO AS TO AVOID DISRUPTION TO THE NORMAL OPERATIONS AND WORK OF THE OWNER.
12. THE CONTRACTOR SHALL SAFEGUARD THE OWNERS' PROPERTY AND ADJACENT PROPERTIES DURING CONSTRUCTION AND SHALL PROTECT FROM DAMAGE ANY EXISTING OR ADJACENT FINISHES, MATERIALS, FIXTURES OR BUILDING ASSEMBLIES. REPAIR ALL AREAS AFFECTED BY THE CONSTRUCTION AS REQUIRED TO MAINTAIN THEIR EXISTING APPEARANCE, UNLESS NOTED OTHERWISE.
13. THE CONTRACTOR SHALL VERIFY THAT THERE ARE NO UTILITIES IN THE AREA OF CONSTRUCTION BEFORE ANY WORK IS STARTED.
14. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND CLEARANCES PRIOR TO THE COMMENCEMENT OF WORK OR ORDERING OF MATERIALS. ANY DEVIATIONS FROM THE CONTRACT DOCUMENTS SHALL BE REPORTED TO THE ARCHITECT IN WRITING PRIOR TO THE PROCEEDING WITH THAT PORTION OF WORK.
15. THE CONTRACTOR SHALL REMOVE ALL CONSTRUCTION AND/OR DEMOLITION DEBRIS FROM THE JOB SITE TO MAINTAIN A CLEAN AND SAFE ENVIRONMENT AND TO PREVENT THE POSSIBILITY OF A FIRE OR LIFE SAFETY HAZARD.
16. THE CONTRACTOR SHALL COORDINATE ALL WORK INCLUDING, SOFFIT FRAMING AS NEEDED WITH ALL WORK SHOWN ON THE MECHANICAL, PLUMBING, FIRE-PROTECTION, ELECTRICAL AND STRUCTURAL DRAWINGS.
17. THE CONTRACTOR SHALL NOT REMOVE, ALTER, LOAD, PENETRATE OR ADD TO ANY EXISTING BUILDING ASSEMBLY OR STRUCTURE WHICH MAY COMPROMISE ITS INTEGRITY OR STRUCTURAL STABILITY OR THE INTEGRITY AND STRUCTURAL STABILITY OF ADJACENT BUILDING ASSEMBLIES WITHOUT PRIOR INVESTIGATION, REMEDY OR ACTION.
18. THE CONTRACTOR SHALL INSTALL ALL MANUFACTURER'S INSTRUCTIONS.
19. DRAWING REFERENCES ARE FOR CONVENIENCE ONLY AND DO NOT LIMIT THE EXTENT OF APPLICATION OF THE DRAWINGS OR DETAILS. ALL DIMENSIONS, DESCRIPTIONS AND/OR SYMBOLS WITHIN A DRAWING ARE COMPLEMENTARY. DRAWINGS AND SPECIFICATIONS WHETHER TAKEN SEPARATELY OR TOGETHER ARE TO BE INTERPRETED ACCORDING TO THEIR FULL INTENT, MEANING, AND SPIRIT; AND SHALL BE DEEMED TO EXPLAIN MUTUALLY EACH OTHER AND TO BE DESCRIPTIVE OF THE WORK TO BE DONE UNDER THE CONTACT.
20. ALL INTERIOR DIMENSIONS ARE FROM THE FACE OF MASONRY STRUCTURE, UNLESS OTHERWISE NOTED.
21. ALL EXTERIOR DIMENSIONS ARE FROM THE EXTERIOR FACE OF WALL.

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GARDNER SPRING PUMP STATION

STAUNTON, VIRGINIA

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GENERAL NOTES, SYMBOLS AND ABBREVIATIONS

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2018 IBC

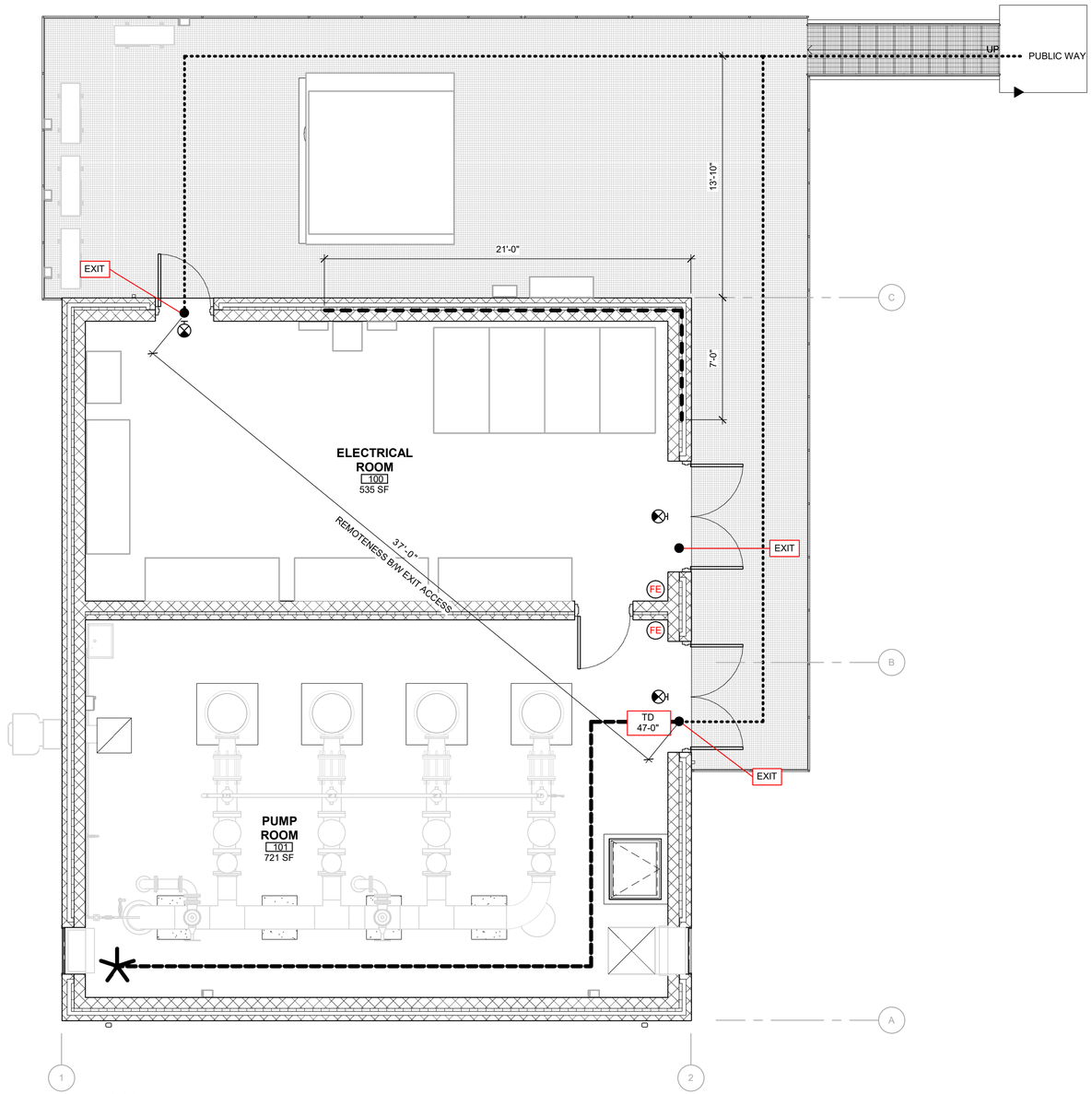
APPLICABLE CODES AND STANDARDS

USBC 2018: VIRGINIA UNIFORM STATEWIDE BUILDING CODE
IBC 2018: INTERNATIONAL BUILDING CODE 2018 EDITION
VIRGINIA STATEWIDE FIRE PREVENTION CODE 2018 EDITION
NFPA 10: FIRE EXTINGUISHERS
NFPA 70: NATIONAL ELECTRIC CODE
NFPA 72: FIRE ALARM AND SIGNALING CODE
NFPA 80: FIRE DOORS AND OTHER OPENING PROTECTIVES
NFPA 90A: STANDARD FOR THE INSTALLATION OF AIR-CONDITIONING AND VENTILATING SYSTEMS, 2018 EDITION

BUILDING INFORMATION:	
FLOOR AREA PER IBC:	1,488 SF
MEAN HEIGHT:	26'-10"
NUMBER OF STORIES:	ONE
OPEN PERIMETER:	28'-0"
TOTAL PERIMETER:	154'-8"
USE GROUP CLASSIFICATIONS:	SINGLE-OCCUPANCY, ONE STORY
BUILDING USE CLASSIFICATION:	F-1
CONSTRUCTION TYPE:	IIB
CHAPTER 5:	
ALLOWABLE AREA:	15,500 SF
ALLOWABLE HEIGHT:	55 FT
ALLOWABLE # OF STORIES:	TWO
TABLE 601 (RATINGS):	
STRUCTURAL FRAME:	0 HR
EXTERIOR WALLS:	0 HR
ROOF CONSTRUCTION:	0 HR
FLOOR CONSTRUCTION:	0 HR
TABLE 602 (RATINGS):	
FIRE SEPARATION DISTANCE GREATER/EQUAL TO 10' AND LESS THAN 30':	0 HR
AUTOMATIC SPRINKLERS:	
SECTION 903.2.4 (GROUP F-1):	NOT REQUIRED
SECTION 906.1: (FIRE EXTINGUISHER)	
CLASS A:	2-A MIN
CLASS B:	10-B
CLASS C:	COVERED BY A:B
TABLE 1004.5: (OCCUPANT LOAD FACTORS)	
INDUSTRIAL	100 GROSS
CALCULATED OCCUPANT LOAD:	
ELECTRICAL EQUIPMENT ROOM:	6 OCC
PUMP ROOM:	8 OCC
EXPECTED OCCUPANT LOAD:	14 OCC
SECTION 1005: (MEANS OF EGRESS)	0.2 IN X OCC (DOORS/CORR) 0.3 IN X OCC (STAIRWAY)
CALCULATED DOOR CAPACITY:	2.8" MIN. CALCULATED (33" PROVIDED)
CALCULATED STAIRWAY CAPACITY:	4.2" MIN. CALCULATED (36" PROVIDED)
EGRESS FROM SPACE:	
SECTION 1006.2.1 (MIN. # OF EXITS):	ONE EXIT THREE (ACTUAL)
TABLE 1006.2.1: (COMMON PATH OF TRAVEL)	75 FT MAX.
LONGEST COMMON PATH OF TRAVEL:	47'-0" (ACTUAL)
TABLE 1017.2: (EXIT ACCESS TRAVEL DIST.)	200 FT MAX.
LONGEST EXIT ACCESS TRAVEL DISTANCE:	47'-0" (ACTUAL)

SPACE TABULATION

ROOM #	SPACE NAME	ACTUAL NET AREA (SF)	OCCUPANCY PER IBC NET AREA (SF)	OCC
100	ELECTRICAL ROOM	535 SF	100 SF	6
101	PUMP ROOM	721 SF	100 SF	8
102	WET WELL	Not Enclosed	0 SF	0



PLAN NORTH

1 LIFE SAFETY FIRST FLOOR PLAN

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

LIFE SAFETY NOTES

1. SURFACE MOUNTED FIRE EXTINGUISHER CABINETS ARE REQUIRED IN MECHANICAL AND ELECTRICAL SPACES ONLY.
2. ALL ROOM OCCUPANT LOADS ARE BASED ON USBC 2018 CALCULATIONS.
3. SEE DOOR SCHEDULE FOR DOOR/FRAME RATINGS.
4. REFER TO CIVIL DRAWINGS FOR THE LOCATION OF THE ADJACENT BUILDINGS.
5. REFER TO CIVIL DRAWINGS FOR FIRE DEPARTMENT VEHICLE ACCESS.

LIFE SAFETY LEGEND

- OPEN PERIMETER
- STARTING POINT
- EXIT — EXIT DISCHARGE
- TD XX'-X" — TRAVEL DISTANCE
- FE — FIRE EXTINGUISHER
- EXIT LIGHT (WALL MOUNTED)
- F — FIRE ALARM PULL STATION

IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.

0' 2' 4' 8'

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

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CODE, AREA CALCULATIONS, & LIFE SAFETY PLAN

SHT. NO.	REV. NO.
AL101	

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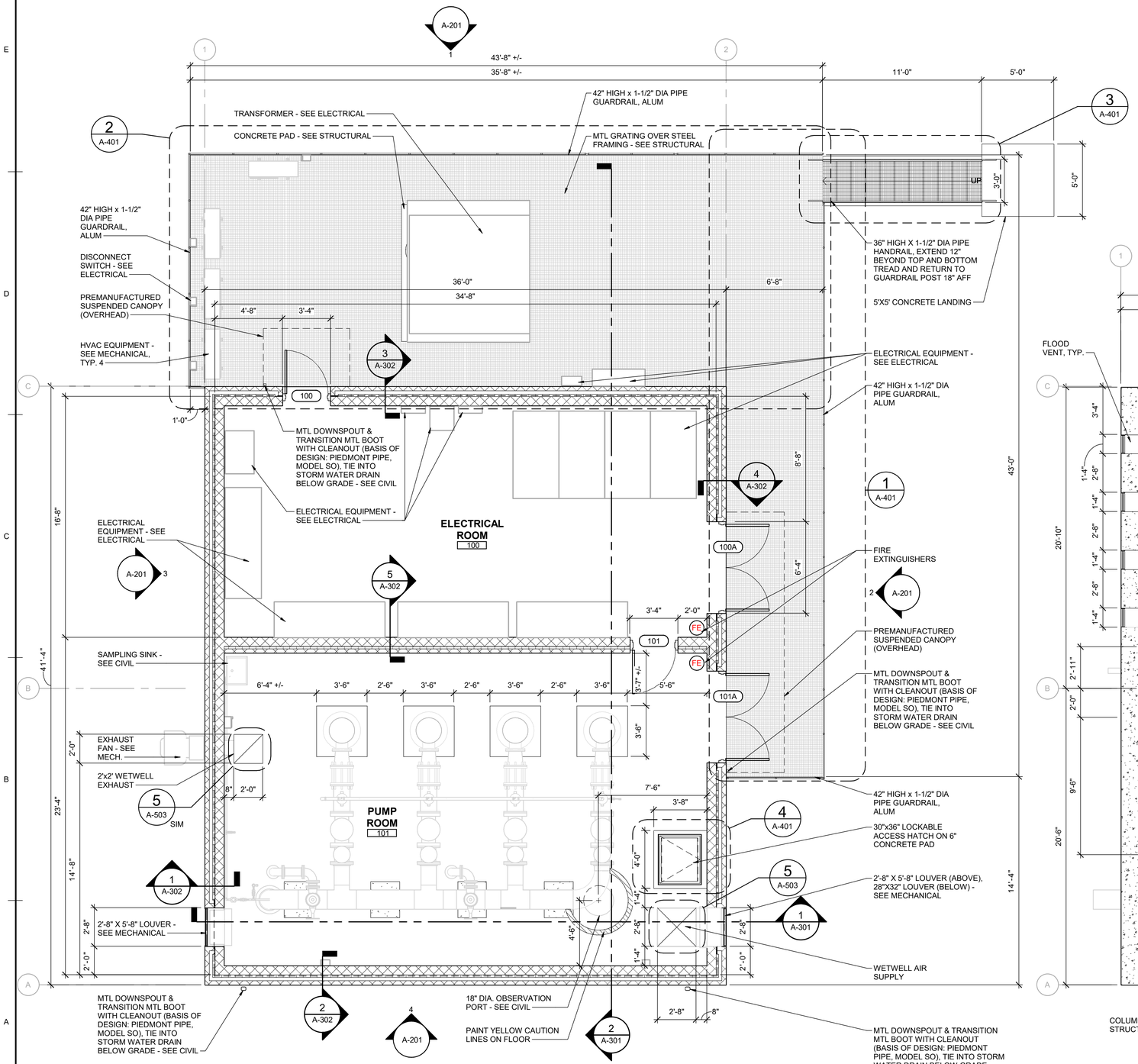
EXTERIOR FINISH SCHEDULE

STANDARD CMU:	NITTERHOUSE MASONRY PRODUCTS, LLC: RECYCLED CONCRETE BLOCK; COLOR: GRAY A-13R
METAL ROOF:	FIRESTONE: UC-4; COLOR: BONE WHITE
SNOW GUARD:	ATAS INTERNATIONAL, INC.; COLORGARD W/ S-5; COLOR: CLEAR ANODIZED
METAL COPING:	ATAS INTERNATIONAL, INC.; CONTINUOUS CLEAT COPING; COLOR: CLEAR ANODIZED
CANOPY:	MAPES ARCHITECTURAL CANOPIES: SUPER LUMIDECK; COLOR: CLEAR ANODIZED
GUTTER/DOWNSPOUT:	COLOR: COLOR MATCH METAL COPING, CLEAR ANODIZED
LOUVERS: COLOR:	CLEAR ANODIZED
DOORS/FRAMES:	COLOR: GRAY
VENTS/HATCHES:	COLOR: GRAY

EXTERIOR FINISH SCHEDULE

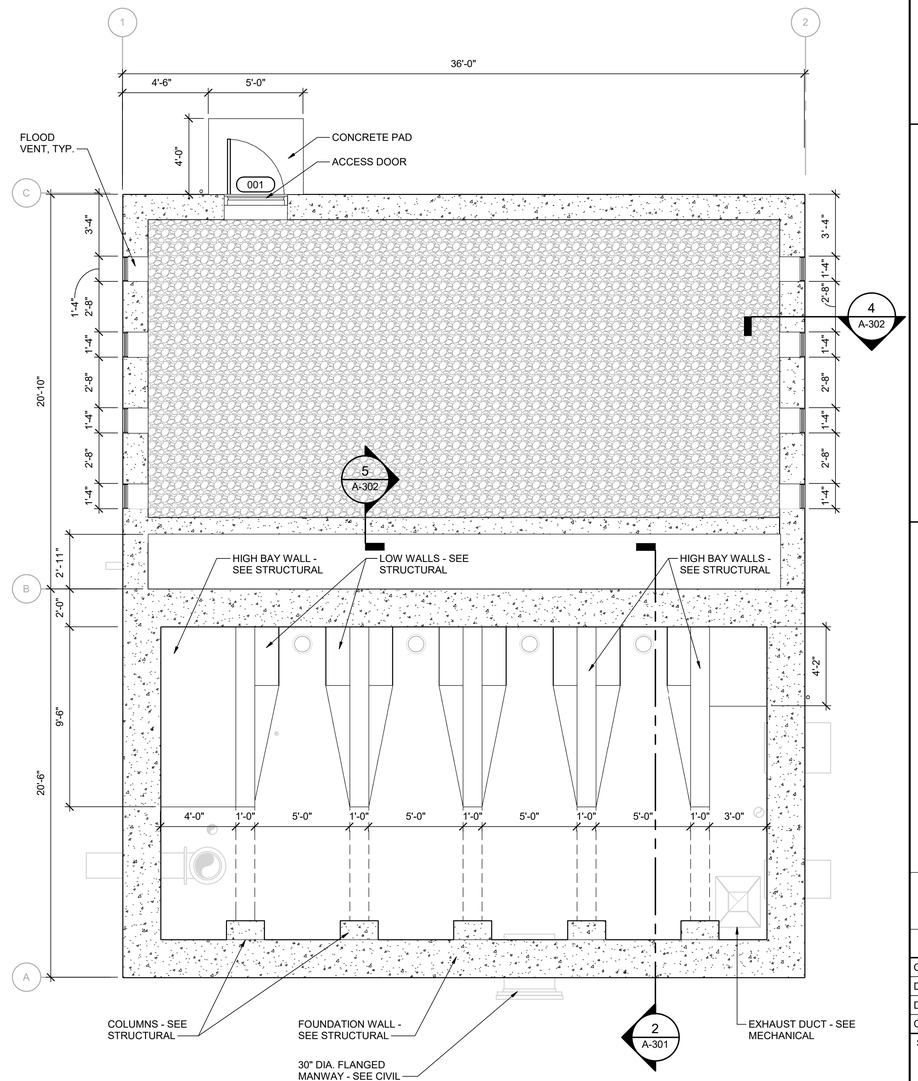
STANDARD CMU:	WHITE
STRUCTURAL STEEL:	GRAY



PLAN NORTH 1

FIRST FLOOR PLAN

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



PLAN NORTH 2

WETWELL PLAN

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

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0' 2' 4' 8'

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

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FLOOR PLANS

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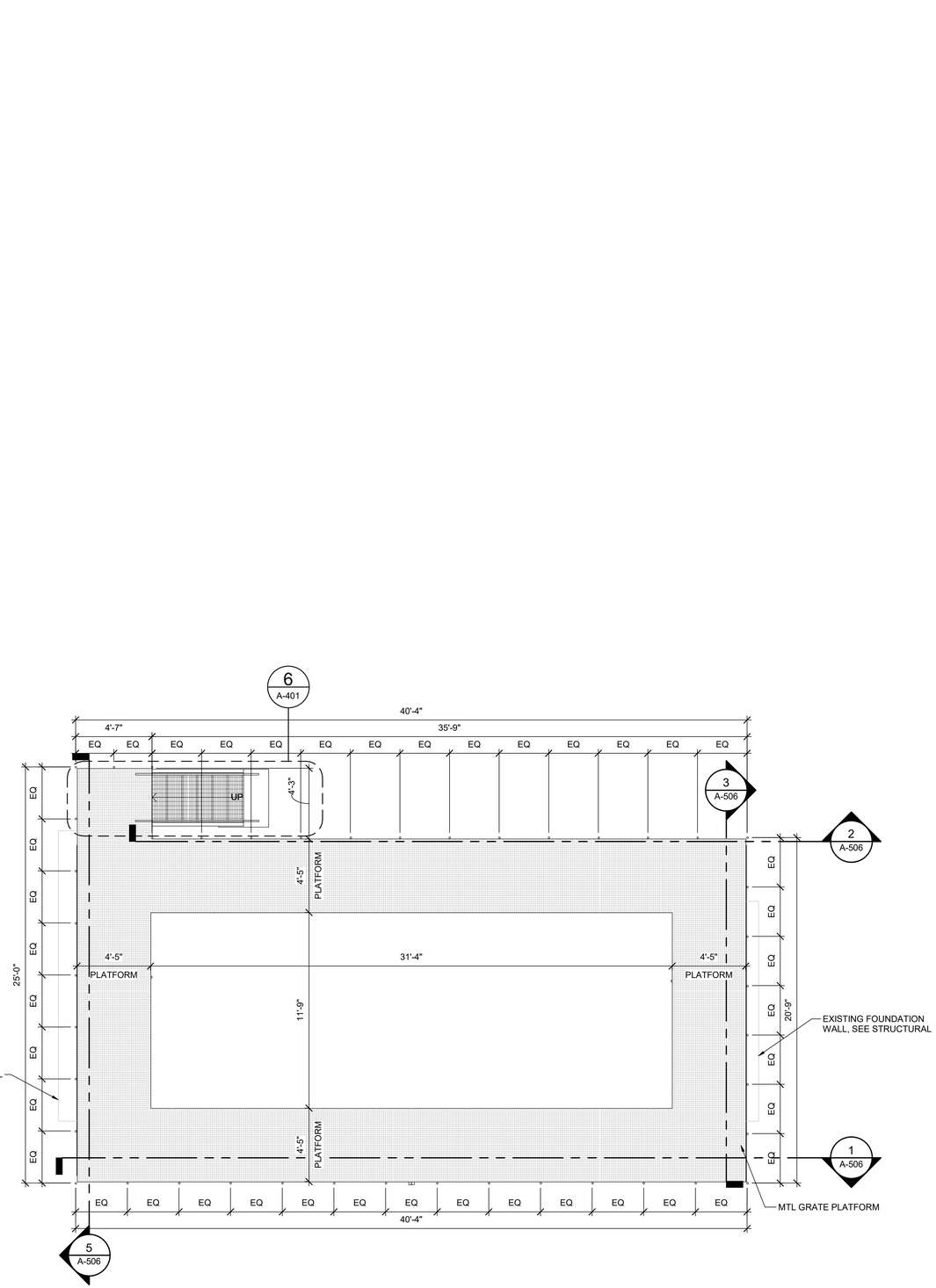

1 GENERATOR PAD PLAN

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

IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.

0' 2' 4' 8'

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

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FLOOR PLAN

SHT. NO.	REV. NO.
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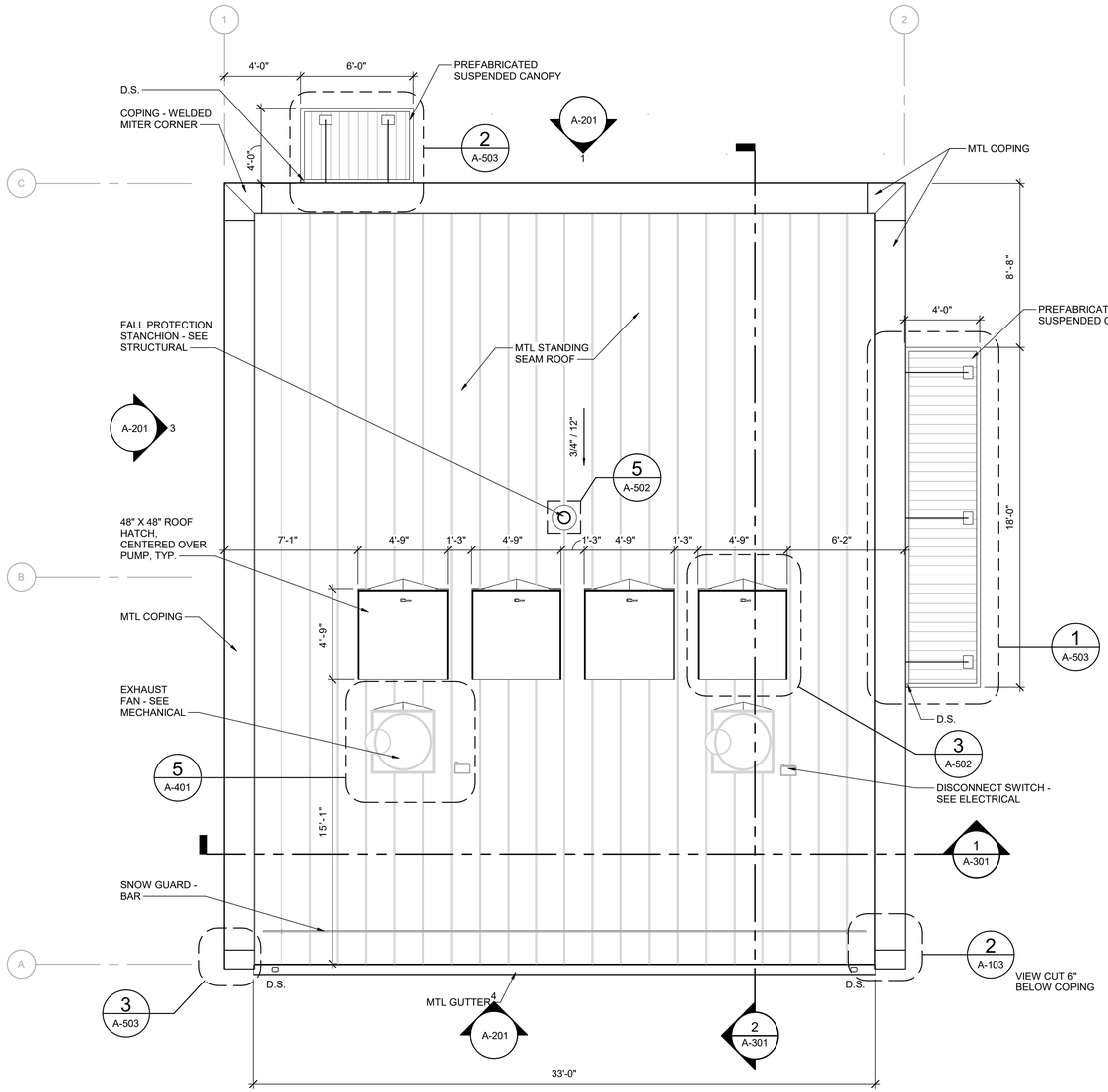
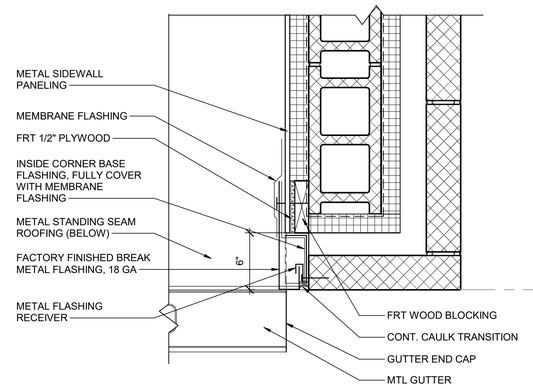


1 ROOF PLAN

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



2 PARAPET FLASHING DETAIL PLAN

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

IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.

0' 2' 4' 8'

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

0' 6" 1' 18"

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

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ROOF PLAN

SHT. NO. A-103

REV. NO.

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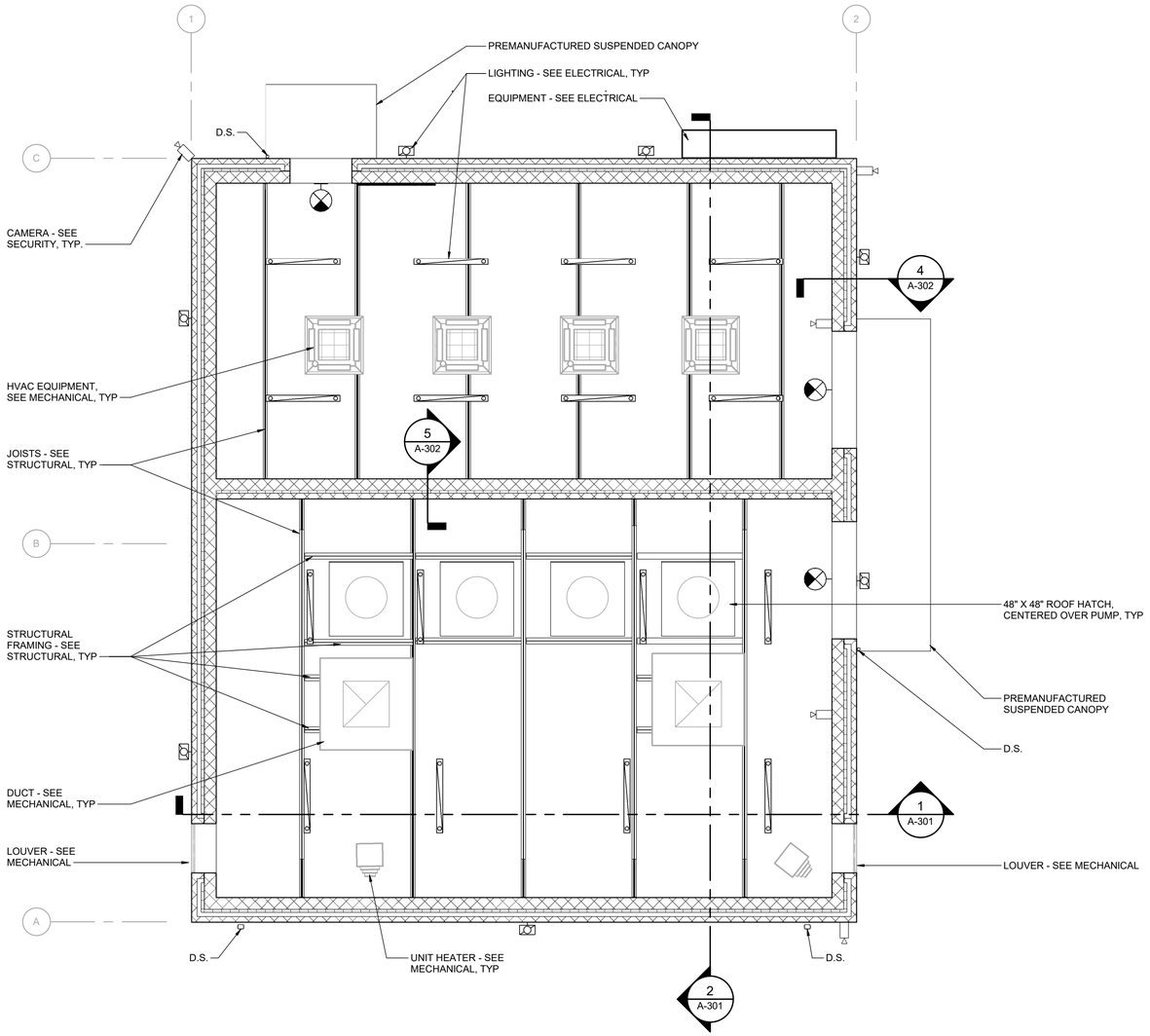

1 FIRST FLOOR REFLECTED CEILING PLAN

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

IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.

0' 2' 4' 8'

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

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REFLECTED CEILING PLAN

SHT. NO.	REV. NO.
A-104	

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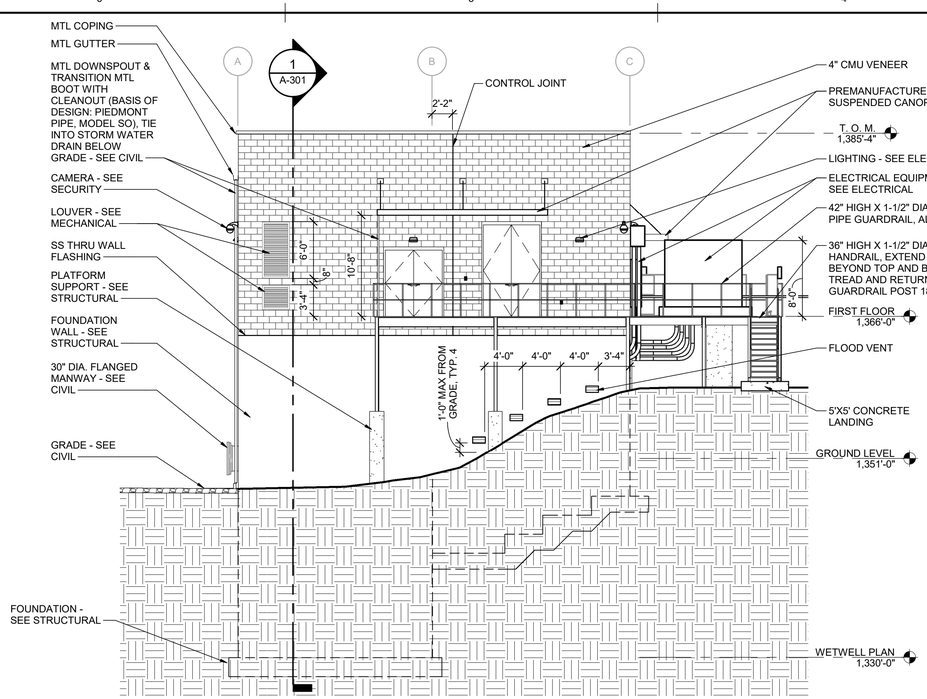
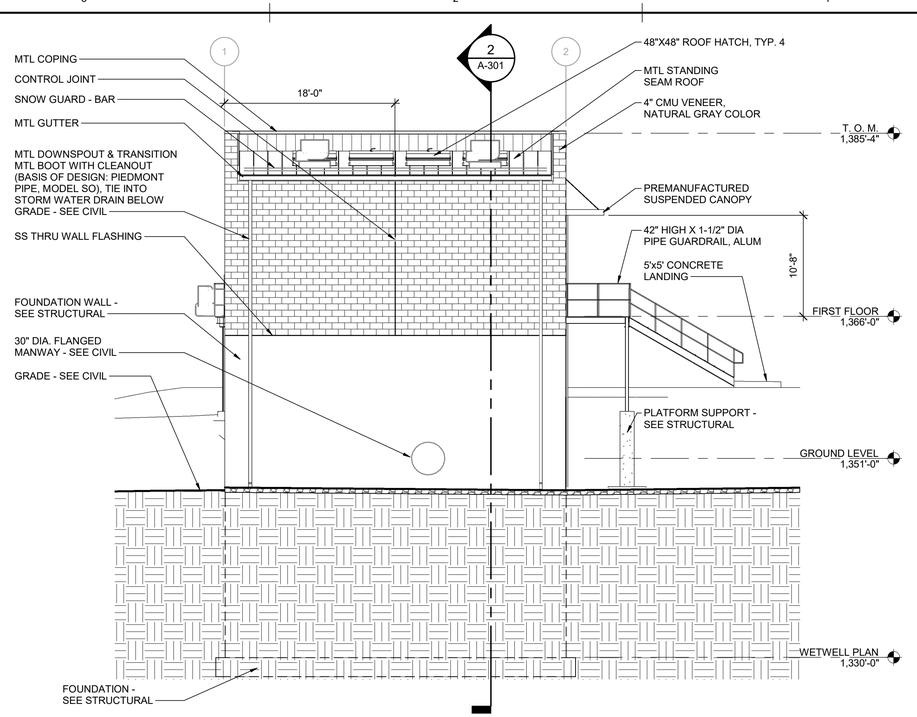
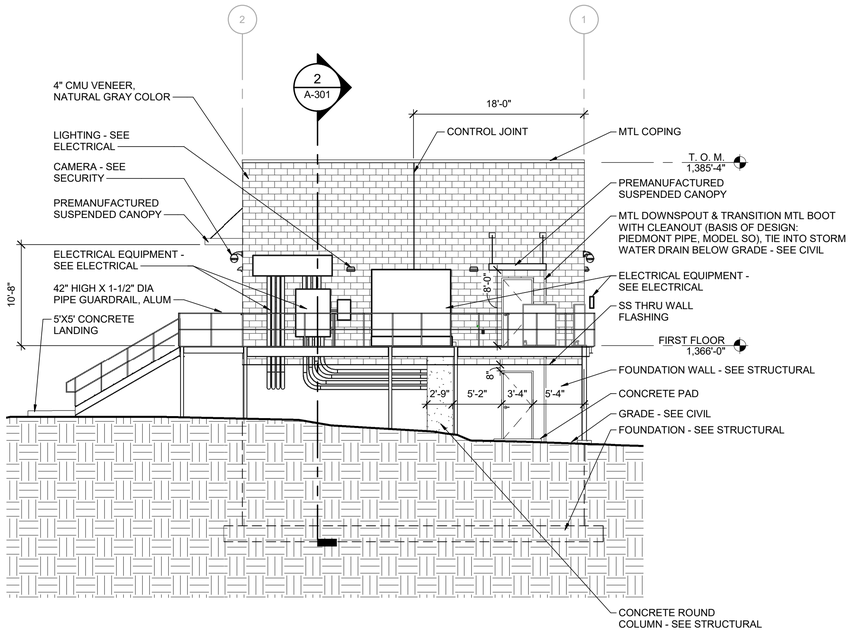


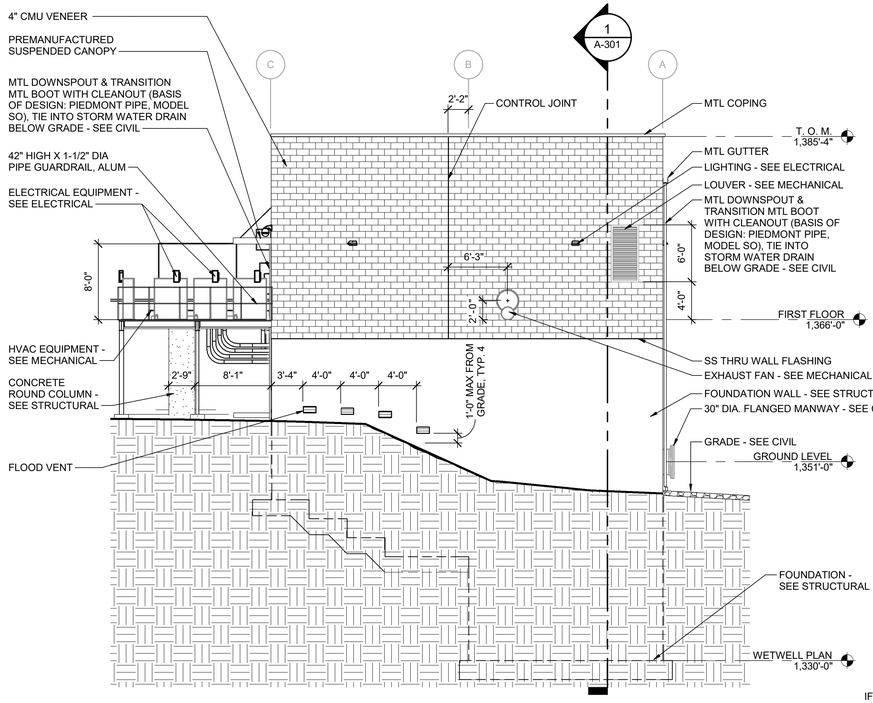
2 A-101 **EAST ELEVATION**
SCALE: 1/8" = 1'-0"



4 A-101 **SOUTH ELEVATION**
SCALE: 1/8" = 1'-0"



1 A-101 **NORTH ELEVATION**
SCALE: 1/8" = 1'-0"



3 A-101 **WEST ELEVATION**
SCALE: 1/8" = 1'-0"

IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.
0' 4' 8' 16'
SCALE: 1/8"=1'-0"

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SHEET TITLE
EXTERIOR ELEVATIONS

SHT. NO. A-201
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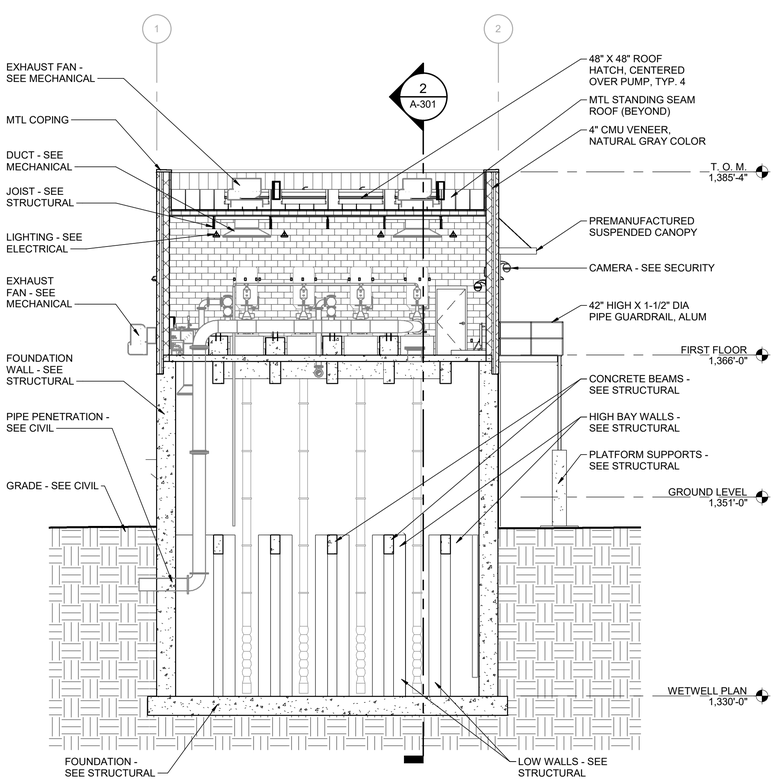
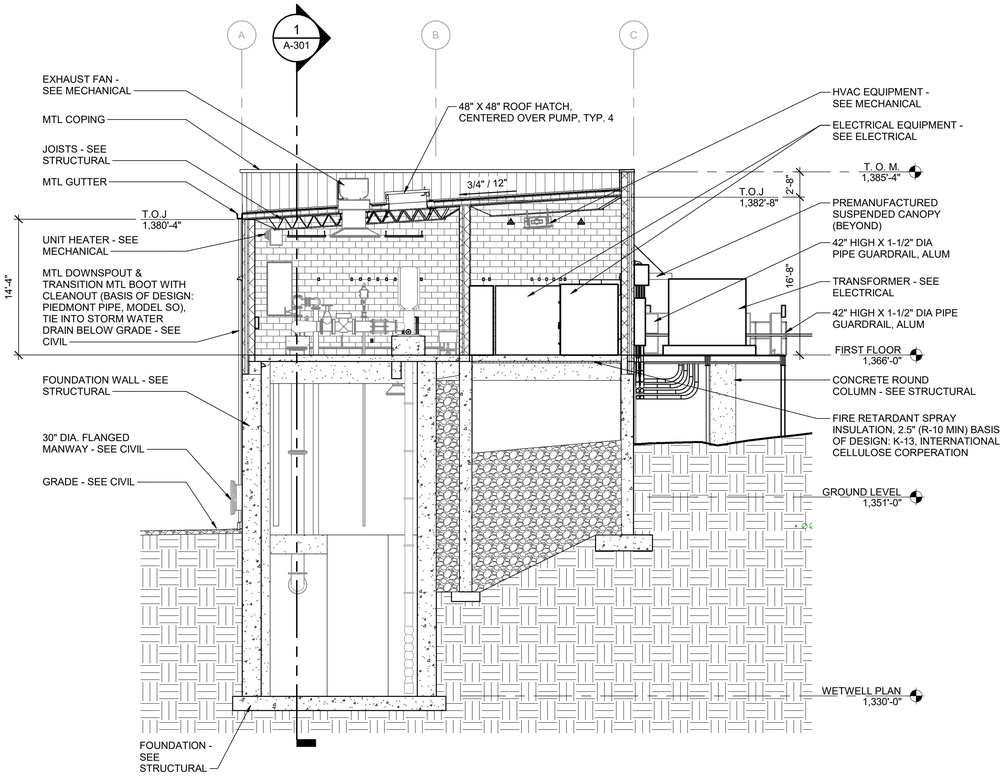


1 A-101 BUILDING SECTION 1

SCALE: 1/8" = 1'-0"



2 A-101 BUILDING SECTION 2

SCALE: 1/8" = 1'-0"

IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.

0' 4' 8' 16'

SCALE: 1/8"=1'-0"

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05/27/2022
ARCHITECT

CITY OF STAUNTON
GARDNER SPRING PUMP STATION
STAUNTON, VIRGINIA

MRK	DATE	REVISION DESCRIPTION

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SHEET TITLE

BUILDING SECTIONS

SHT. NO. A-301

REV. NO.

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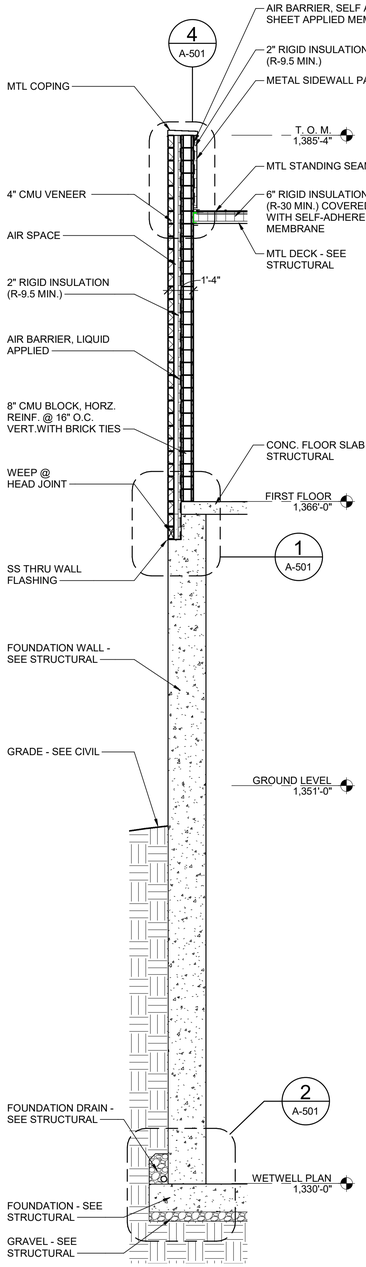
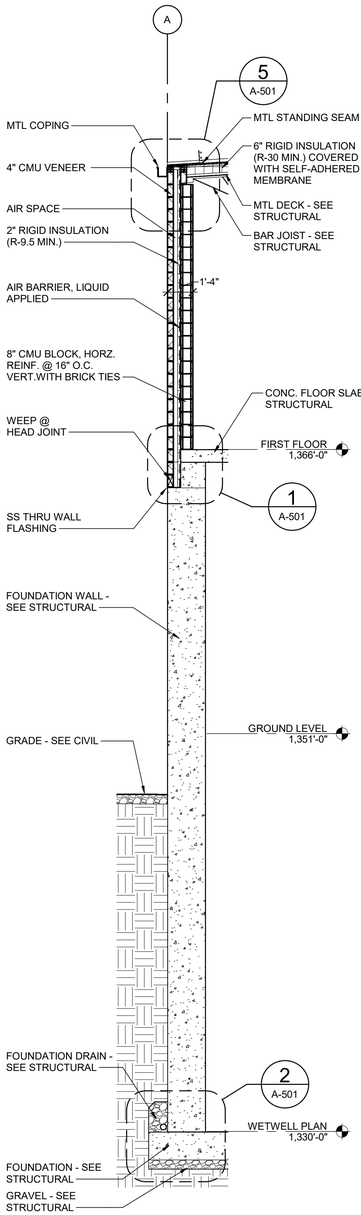


1 A-101 WALL SECTION 1
SCALE: 1/4" = 1'-0"



2 A-101 WALL SECTION 2
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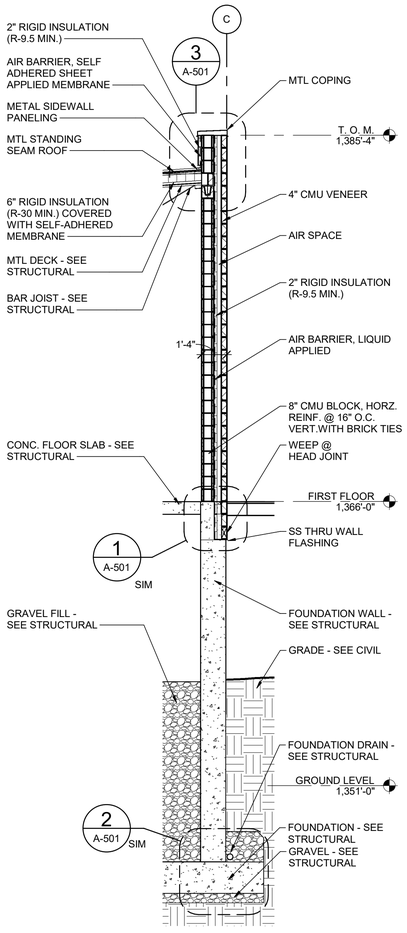

3 A-101 WALL SECTION 3
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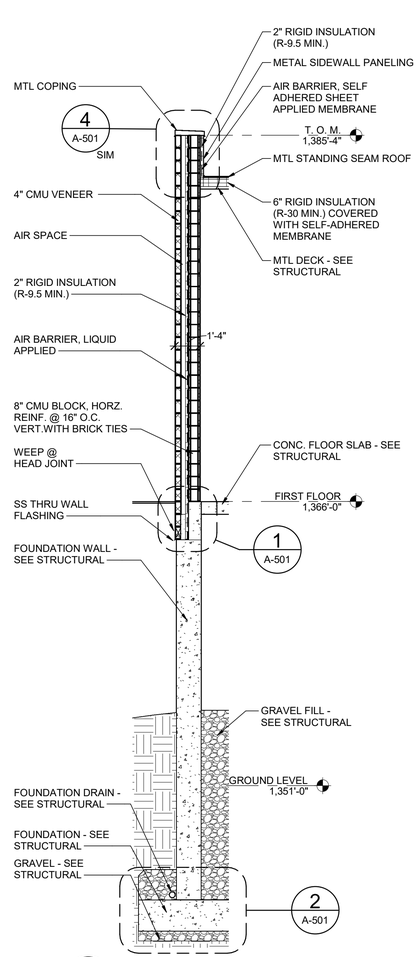
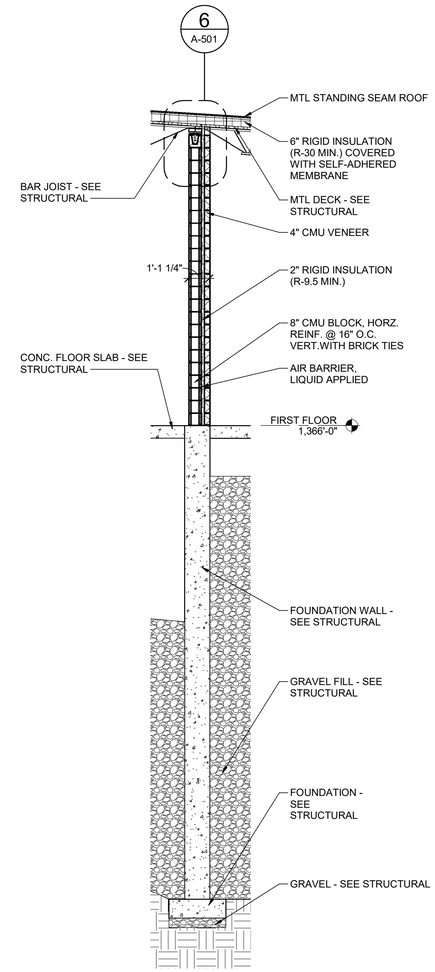


4 A-101 WALL SECTION 4
SCALE: 1/4" = 1'-0"



5 A-101 WALL SECTION 5
SCALE: 1/4" = 1'-0"

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

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SHEET TITLE
WALL SECTIONS

SHT. NO. A-302
REV. NO.

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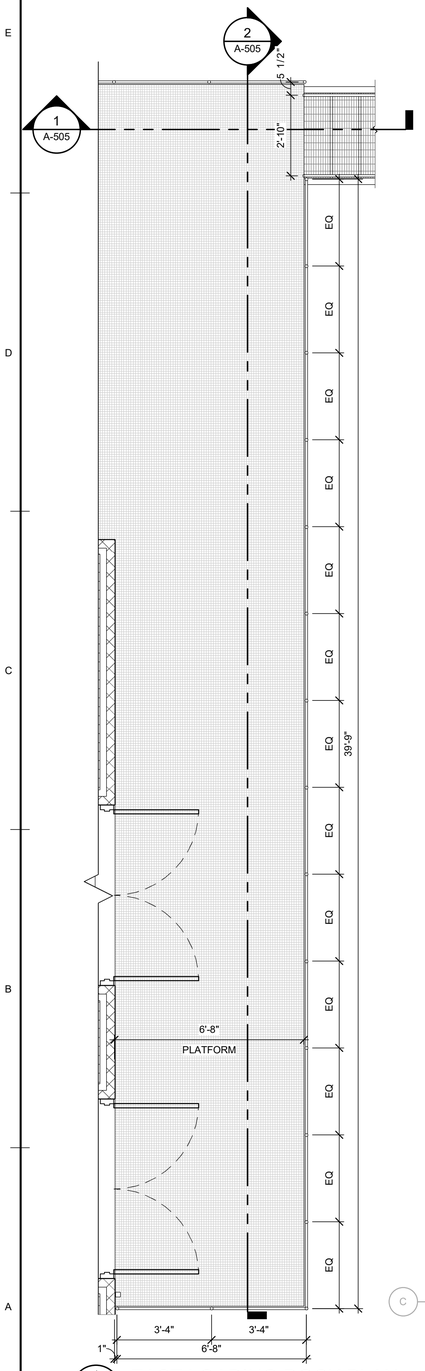
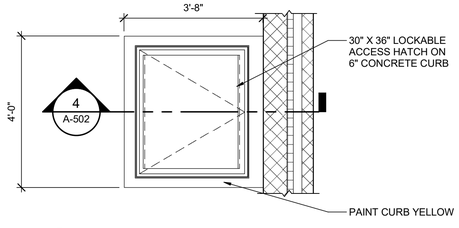
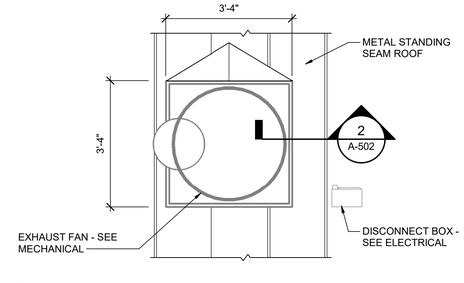


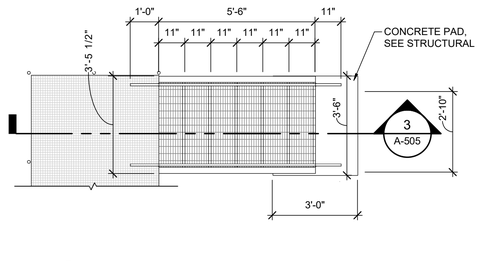
1 EAST LOADING DOCK PLAN
A-101 SCALE: 3/8" = 1'-0"



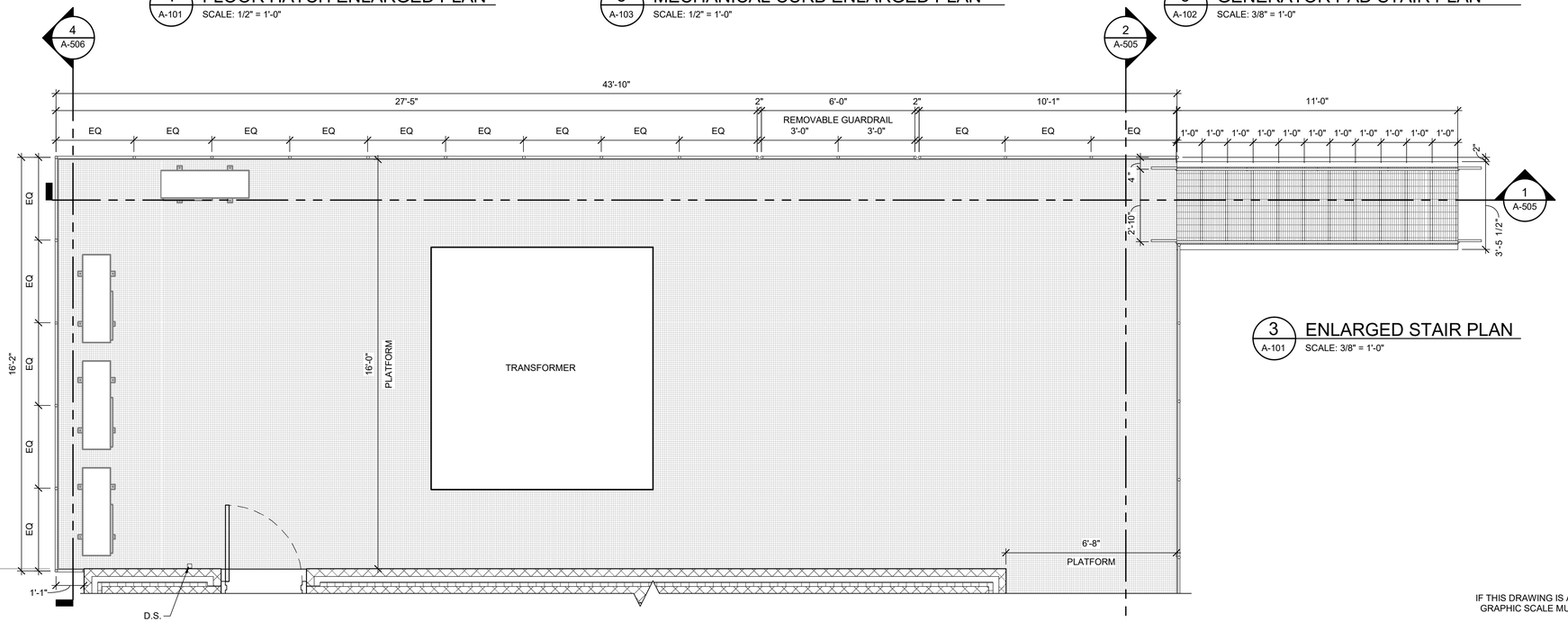
4 FLOOR HATCH ENLARGED PLAN
A-101 SCALE: 1/2" = 1'-0"



5 MECHANICAL CURB ENLARGED PLAN
A-103 SCALE: 1/2" = 1'-0"



6 GENERATOR PAD STAIR PLAN
A-102 SCALE: 3/8" = 1'-0"



2 NORTH LOADING DOCK PLAN
A-101 SCALE: 3/8" = 1'-0"

3 ENLARGED STAIR PLAN
A-101 SCALE: 3/8" = 1'-0"

IF THIS DRAWING IS A REDUCTION,
GRAPHIC SCALE MUST BE USED.

0' 2' 4' 6'
SCALE: 3/8"=1'-0"

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

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SHEET TITLE
ENLARGED PLANS

SHT. NO. A-401
REV. NO.

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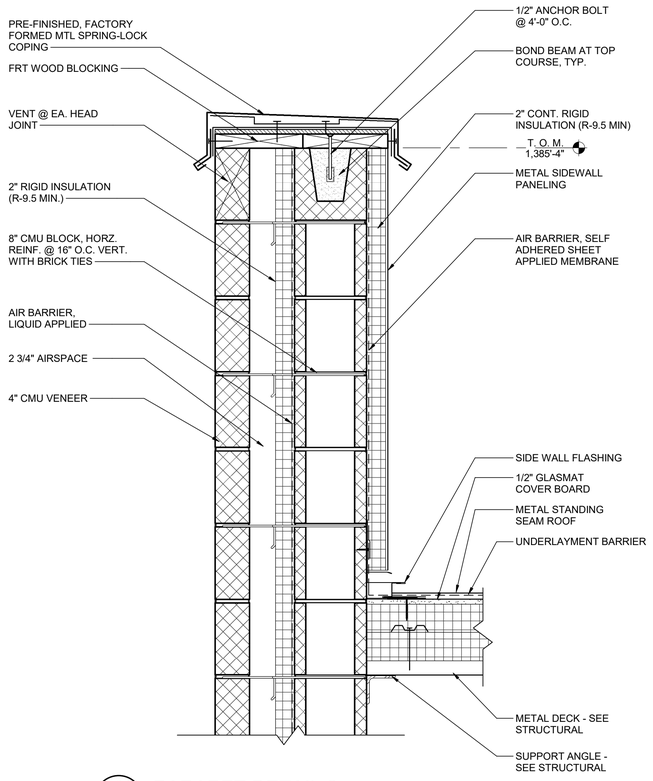
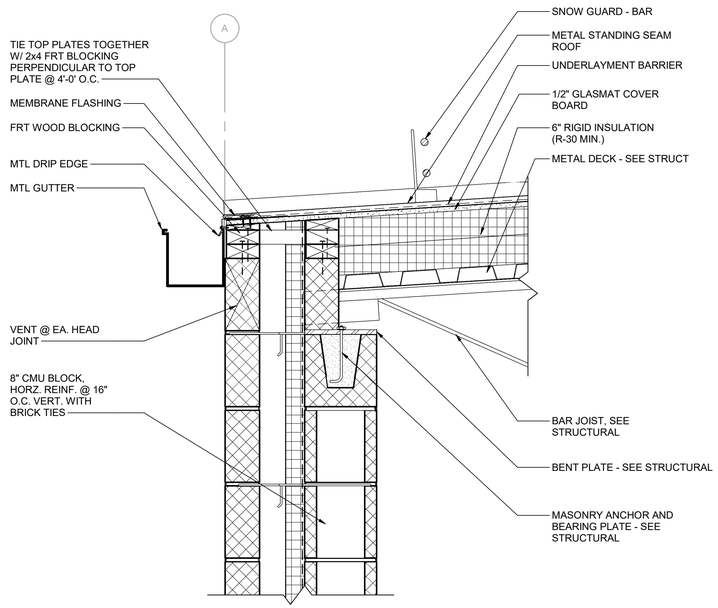
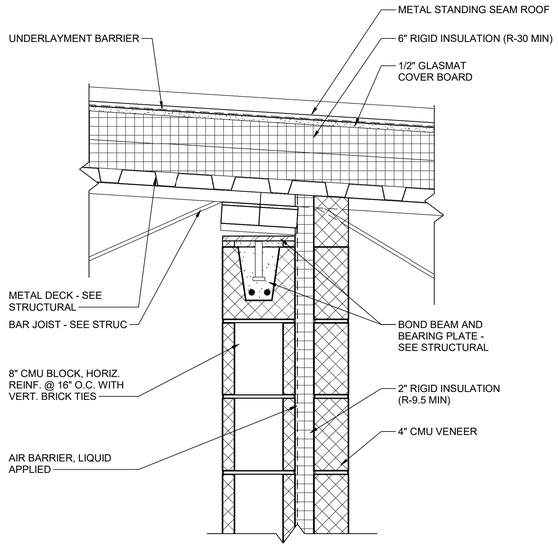


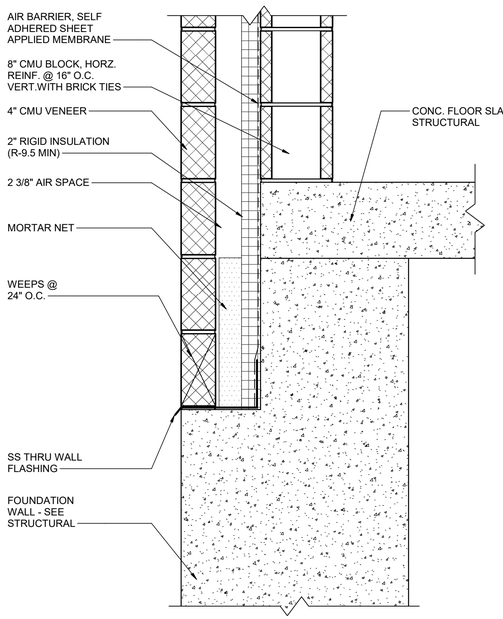
4 A-302 PARAPET DETAIL 2
SCALE: 1 1/2" = 1'-0"



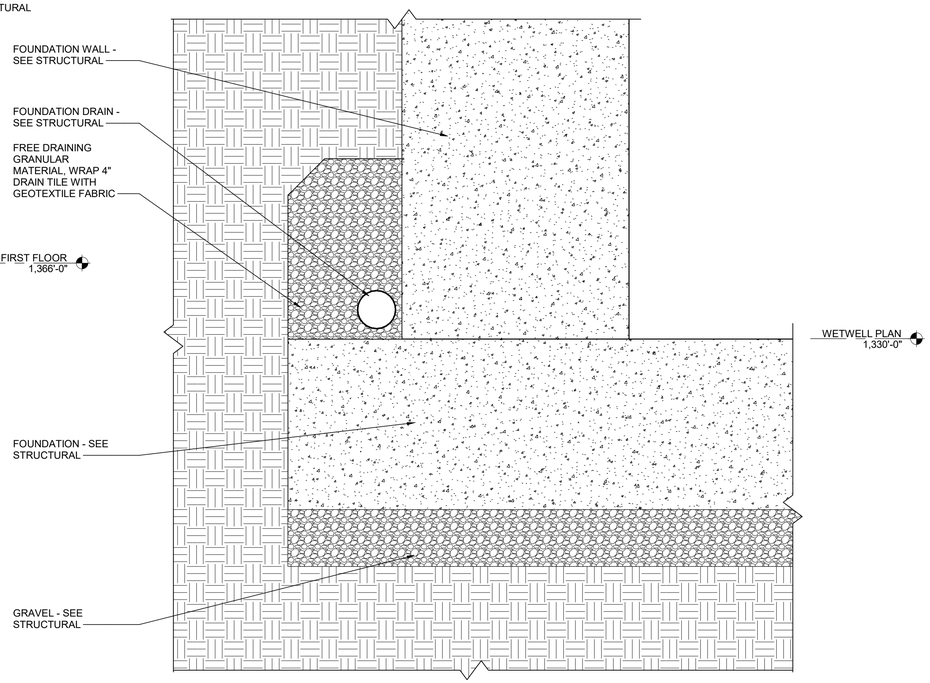
5 A-302 GUTTER DETAIL
SCALE: 1 1/2" = 1'-0"



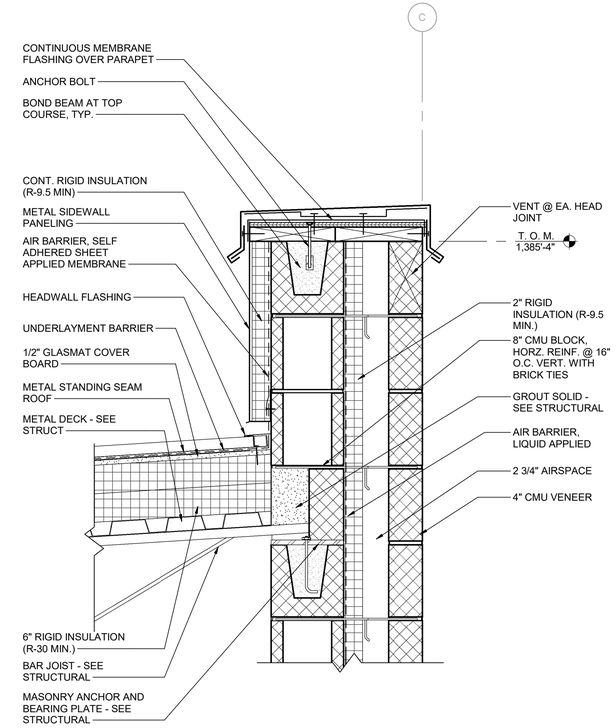
6 A-302 WALL SECTION @ ROOF
SCALE: 1 1/2" = 1'-0"



1 A-302 WALL DETAIL @ SLAB
SCALE: 1 1/2" = 1'-0"



2 A-302 TYPICAL FOUNDATION DETAIL
SCALE: 1 1/2" = 1'-0"



3 A-302 PARAPET DETAIL 1
SCALE: 1 1/2" = 1'-0"

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0' 6" 1' 18"
SCALE: 1-1/2"=1'-0"

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DETAILS

SHT. NO. A-501
REV. NO.

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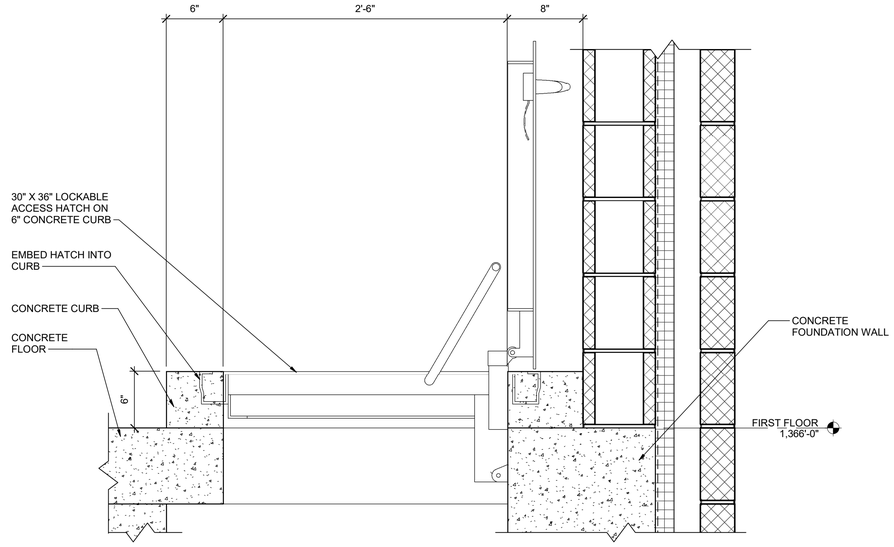
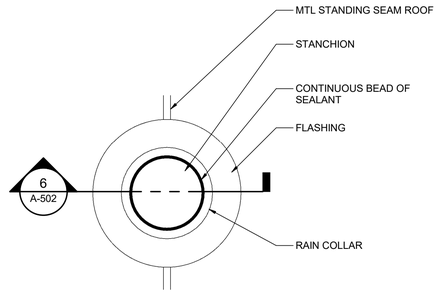
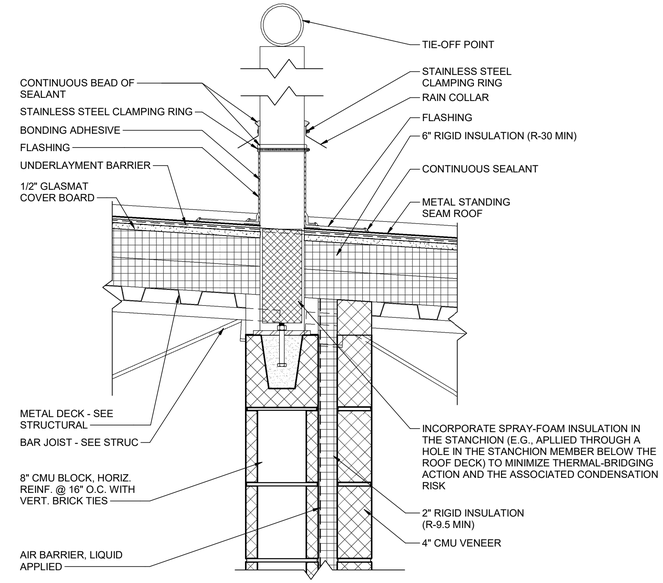


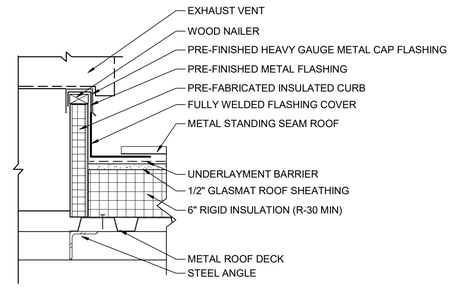
4 FLOOR HATCH DETAIL SECTION
A-401 — SCALE: 1 1/2" = 1'-0"



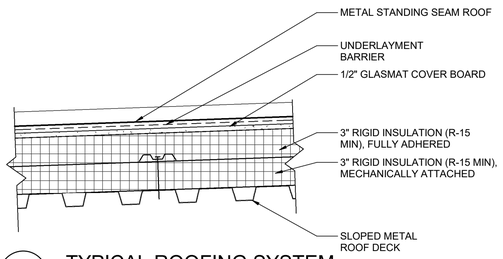
5 STANCHION DETAIL PLAN
A-103 — SCALE: 1 1/2" = 1'-0"



6 TYPICAL STANCHION TERMINATION
A-502 — SCALE: 1 1/2" = 1'-0"

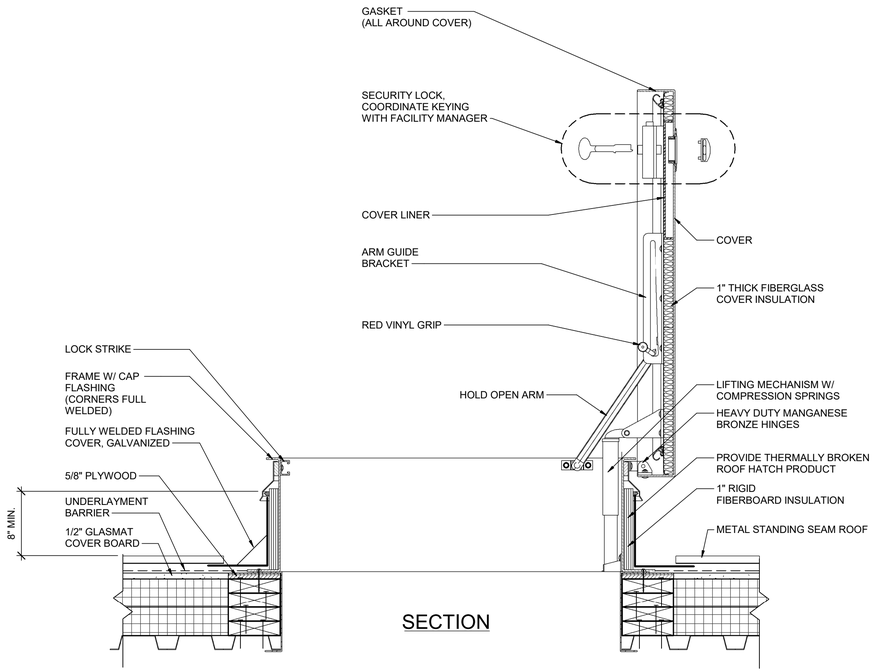


2 TYPICAL EXHAUST VENT CURB
A-401 — SCALE: 1 1/2" = 1'-0"



1 TYPICAL ROOFING SYSTEM
SCALE: 1 1/2" = 1'-0"

3 TYPICAL ROOF SCUTTLE
A-103 — SCALE: 1 1/2" = 1'-0"



SECTION

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0' 6" 1' 18"

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

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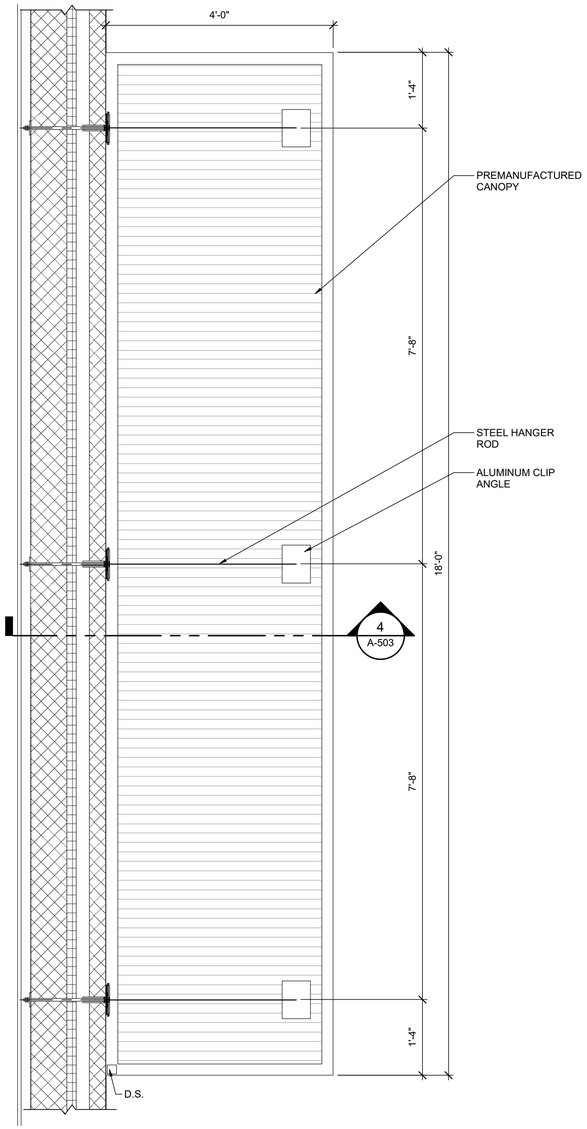
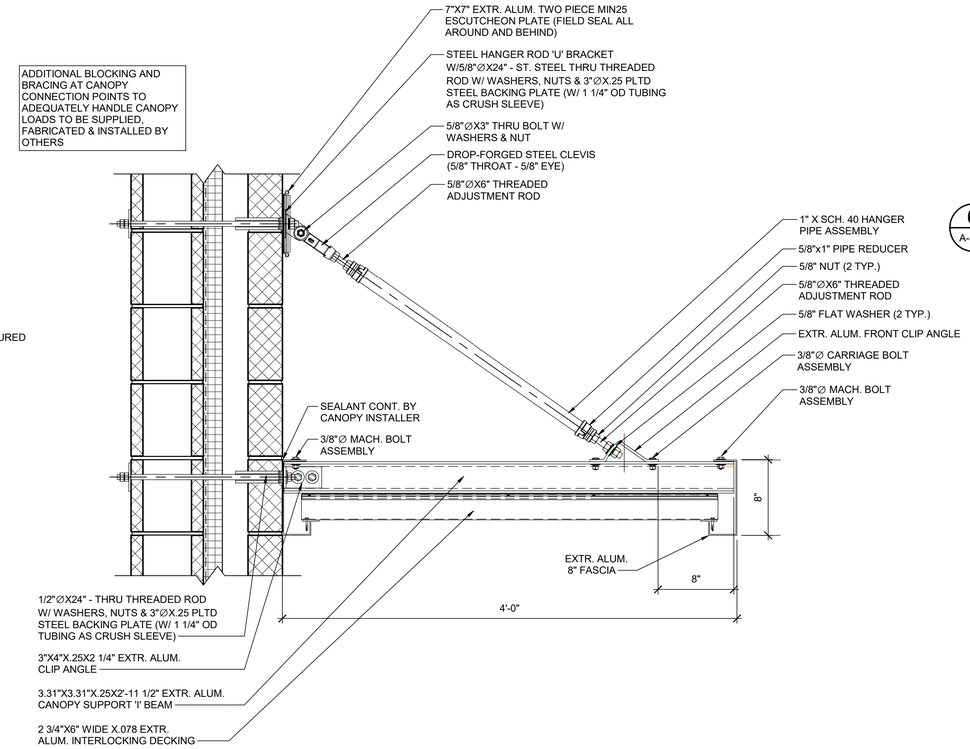
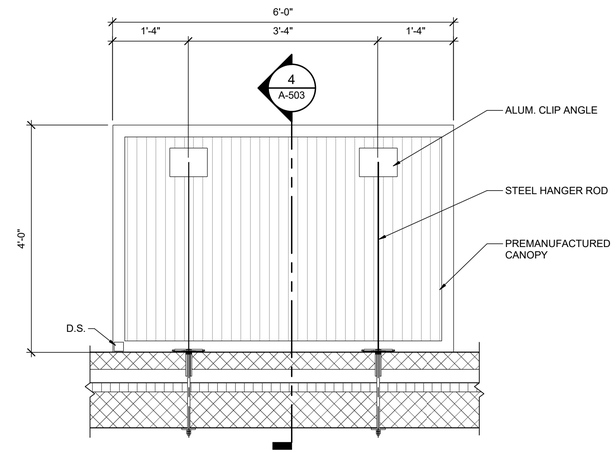


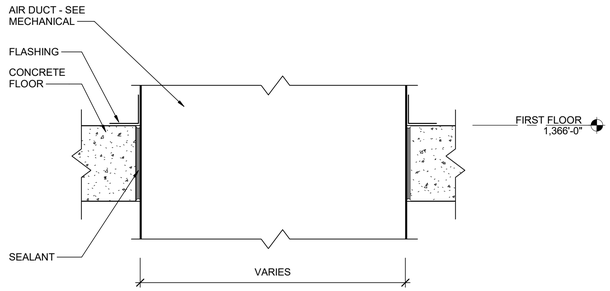
1 EAST CANOPY PLAN
A-103 SCALE: 3/4" = 1'-0"



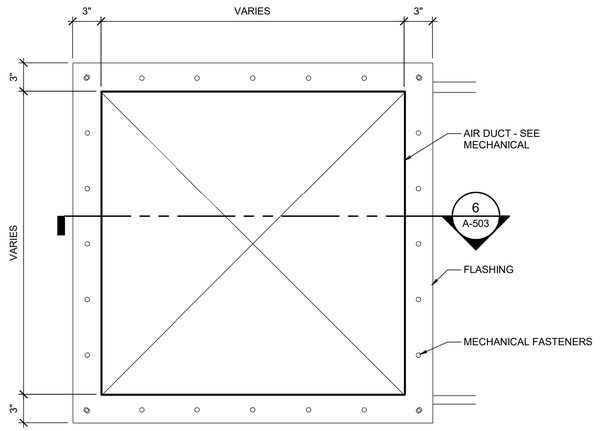
4 TYPICAL CANOPY SECTION
A-503 SCALE: 1 1/2" = 1'-0"



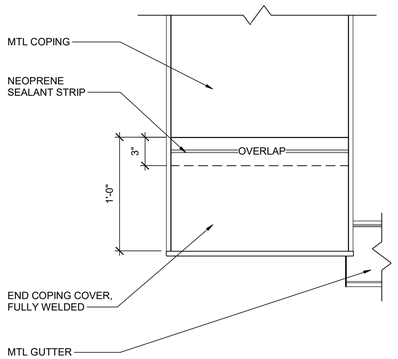
2 NORTH CANOPY PLAN
A-103 SCALE: 3/4" = 1'-0"



6 MECHANICAL DUCT DETAIL SECTION
A-503 SCALE: 1 1/2" = 1'-0"



5 MECHANICAL DUCT DETAIL PLAN
A-101 SCALE: 1 1/2" = 1'-0"



3 COPING COVER DETAIL
A-103 SCALE: 1 1/2" = 1'-0"

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

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REV. NO.

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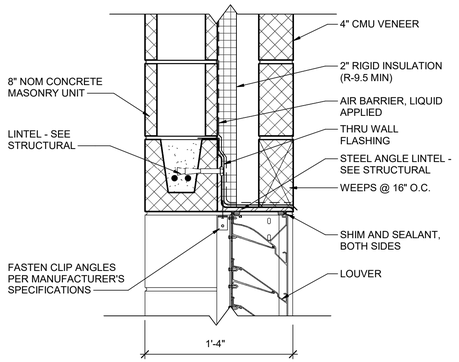
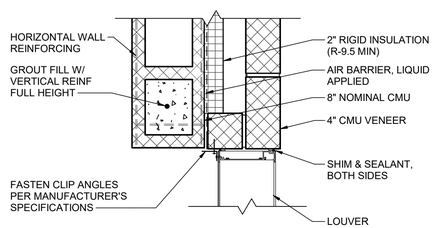


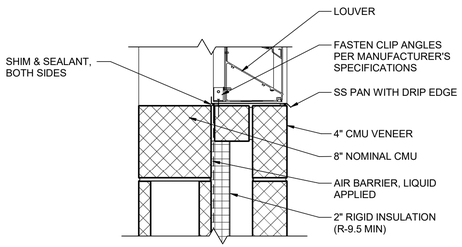
3 LOUVER HEAD @ EXTERIOR WALL

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



2 LOUVER JAMB @ EXTERIOR WALL

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



1 LOUVER SILL @ EXTERIOR WALL

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

IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.

0' 1' 2' 3'

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

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DETAILS

SHT. NO. A-504

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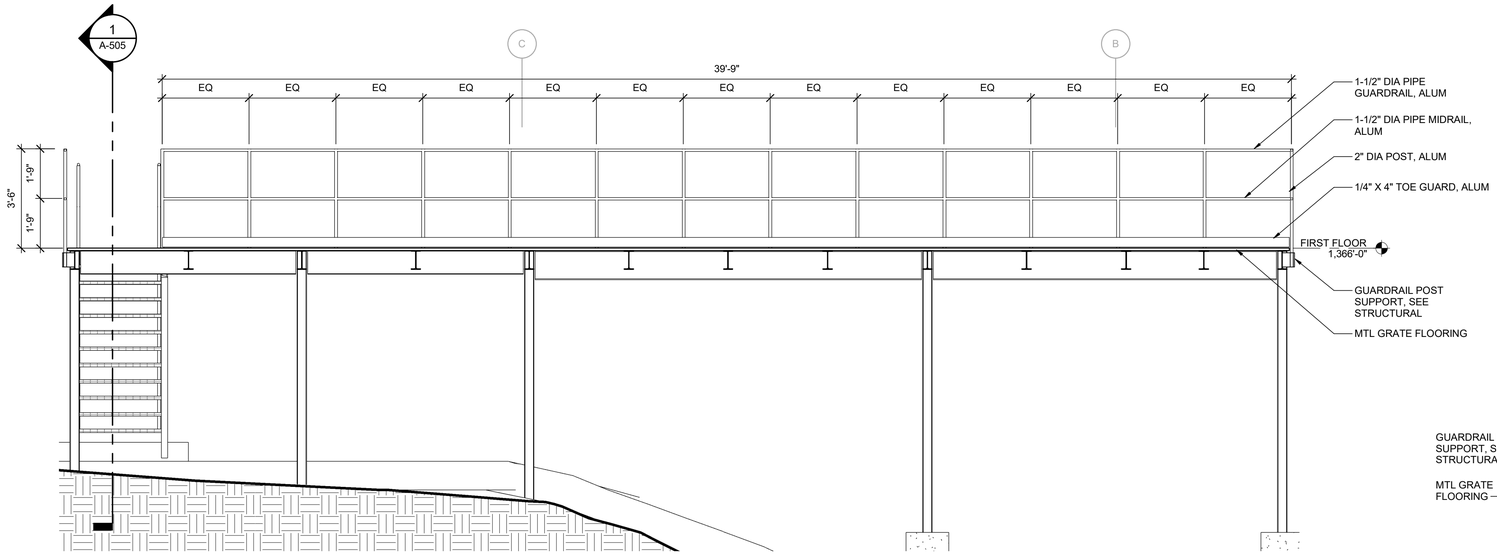
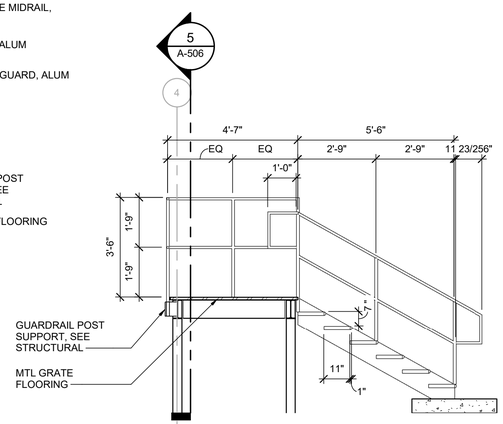


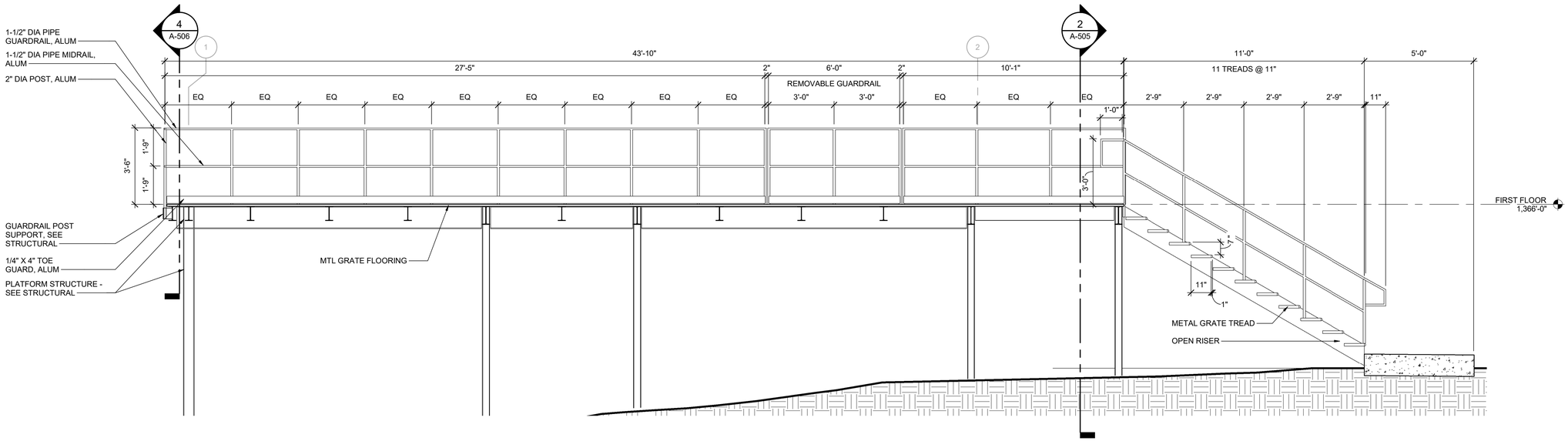
2 A-401 METAL GRATE PLATFORM - SECTION 2

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



3 A-401 GENERATOR PAD STAIR SECTION

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



1 A-401 METAL GRATE PLATFORM - SECTION 1

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

IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.

0' 2' 4' 6'

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

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MICHAEL P. ERVI
Lic. No. 017004
05/27/2022
ARCHITECT

CITY OF STAUNTON

GARDNER SPRING PUMP STATION

STAUNTON, VIRGINIA

MRK	DATE	REVISION DESCRIPTION

COMM NO:	220117
DATE:	05/27/2022
DRAWN: MJR	DESIGN: ME
CHECK:	JRM

SHEET TITLE

DETAILS

SHT. NO.	REV. NO.
A-505	

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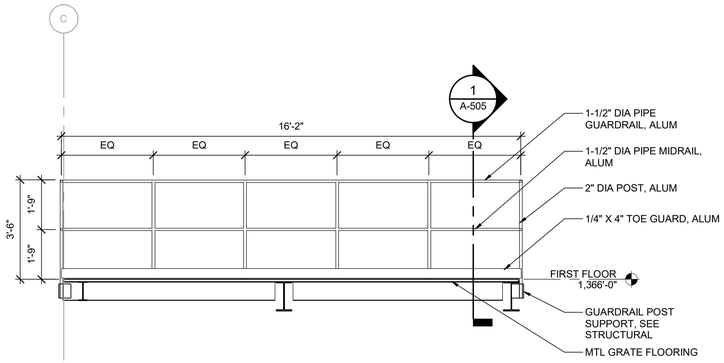
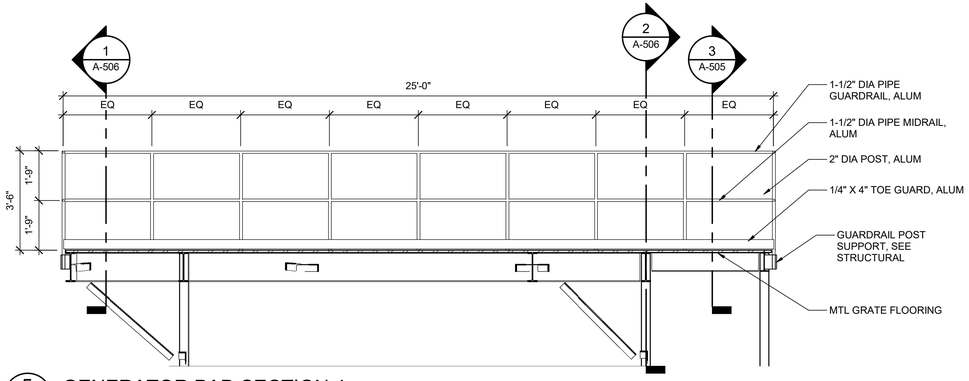
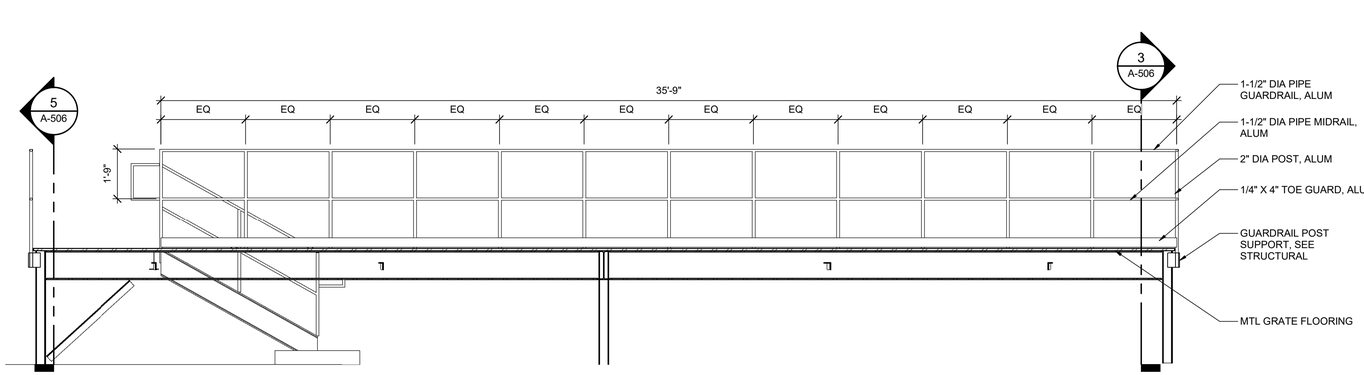


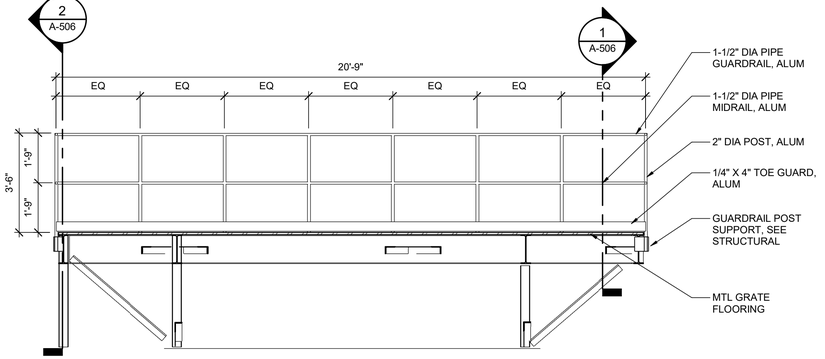
4 A-401 METAL GRATE PLATFORM - SECTION 3
SCALE: 3/8" = 1'-0"



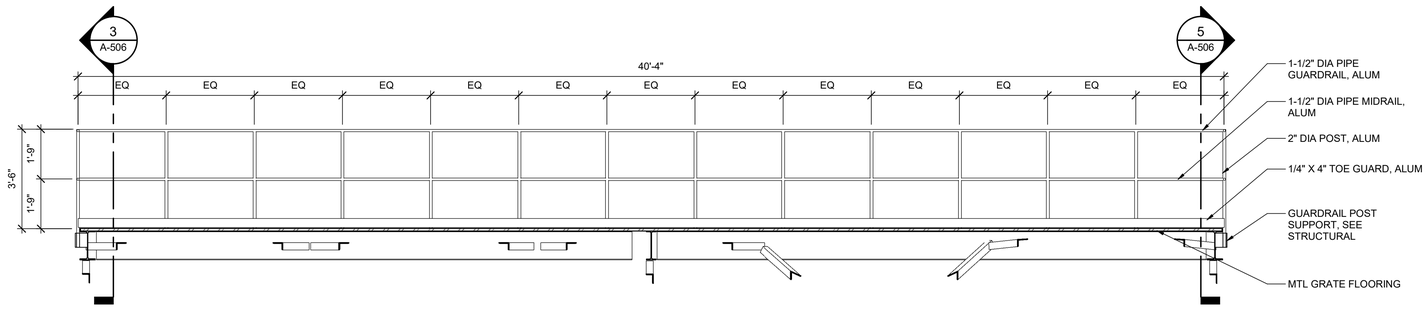
5 A-102 GENERATOR PAD SECTION 4
SCALE: 3/8" = 1'-0"



2 A-102 GENERATOR PAD SECTION 2
SCALE: 3/8" = 1'-0"



3 A-102 GENERATOR PAD SECTION 3
SCALE: 3/8" = 1'-0"



1 A-102 GENERATOR PAD SECTION 1
SCALE: 3/8" = 1'-0"

IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.
0' 2' 4' 6'
SCALE: 3/8"=1'-0"

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DRAWN: MJR	DESIGN: ME
CHECK:	JRM

SHEET TITLE
DETAILS

SHT. NO. A-506
REV. NO.

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DOOR SCHEDULE

DOOR NO	DOOR SIZE WIDTH	DOOR SIZE HEIGHT	DOOR SIZE THCK	DOOR MATL	DOOR TYPE	FRAME MATL	FRAME TYPE	FRAME FINISH	FRAME DETAIL HEAD	FRAME DETAIL JAMB	FRAME DETAIL SILL	FIRE RATING	HDW SET	COMMENTS
001	3'-0"	7'-0"	1 3/4"	HM	F	HM	1	FACTORY	9	8	7		1	
100	3'-0"	7'-0"	1 3/4"	HM	F	HM	1	FACTORY	3	2	1		3	
100A	6'-0"	9'-8"	1 3/4"	HM	FF	HM	2	FACTORY	3	2	1		2	
101	3'-0"	7'-0"	1 3/4"	HM	N	HM	1	FACTORY	6	5	4		1	
101A	6'-0"	7'-0"	1 3/4"	HM	FF	HM	2	FACTORY	3	2	1		2	

HARDWARE SET 1

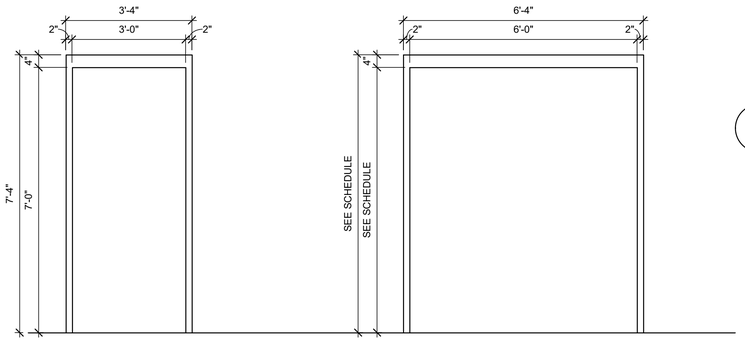
3	HEAVY WEIGHT HINGE BB5006 5 X 4 1/2 A	630	BM
1	STOREROOM LOCKSET 45H-7D15R	626	TR
1	CLOSER 8916 S-DS	689	DM
NOTE: INSTALL ON ACTIVE LEAF			
1	OVERHEAD STOP 9020 SERIES US32D		AB
NOTE: INSTALL ON INACTIVE LEAF			
1	KICK PLATE K0050 10"X1" LDW x CSK x B4E-HEAVY	630	TR
1	DUSTPROOF STRIKE 3910	626	TR
1	DRIP CAP 16A - 4" ODW		NA
1	WEATHERSTRIP 700SA X HEAD X JAMBS X LAR		NA
2	DOOR SWEEP C699 X LAR		NA
1	SADDLE THRESHOLD 425 X LAR X 10-24 SSMS/LA	AL	NA

HARDWARE SET 2

6	HEAVY WEIGHT HINGE BB5006 5 X 4 1/2 A	630	BM
1	FLUSH BOLT 3917	626	TR
1	STOREROOM LOCKSET 45H-7D15R PATD	626	BE
1	CLOSER 8916 S-DS	689	DM
NOTE: INSTALL ON ACTIVE LEAF			
1	OVERHEAD STOP 9020 SERIES US32D		AB
NOTE: INSTALL ON INACTIVE LEAF			
2	KICK PLATE K0050 10"X1" LDW x CSK x B4E-HEAVY	630	TR
1	DUSTPROOF STRIKE 3910	626	TR
1	DRIP CAP 16A - 4" ODW		NA
1	WEATHERSTRIP 700SA X HEAD X JAMBS X LAR		NA
2	DOOR SWEEP C699 X LAR		NA
1	SADDLE THRESHOLD 425 X LAR X 10-24 SSMS/LA	AL	NA
2	POSITION SWITCH SD-70	WHT	TA

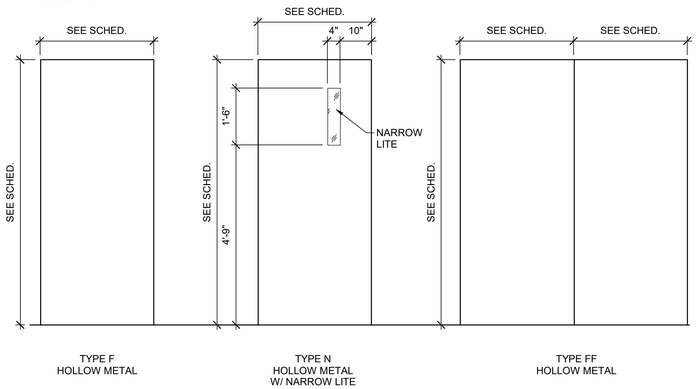
HARDWARE SET 3

3	HEAVY WEIGHT HINGE BB5006 5 X 4 1/2 A	630	BM
1	STOREROOM LOCKSET 45H-7D15R	626	TR
1	CLOSER 8916 S-DS	689	DM
NOTE: INSTALL ON ACTIVE LEAF			
1	OVERHEAD STOP 9020 SERIES US32D		AB
NOTE: INSTALL ON INACTIVE LEAF			
1	KICK PLATE K0050 10"X1" LDW x CSK x B4E-HEAVY	630	TR
1	DUSTPROOF STRIKE 3910	626	TR
1	DRIP CAP 16A - 4" ODW		NA
1	WEATHERSTRIP 700SA X HEAD X JAMBS X LAR		NA
2	DOOR SWEEP C699 X LAR		NA
1	SADDLE THRESHOLD 425 X LAR X 10-24 SSMS/LA	AL	NA
1	POSITION SWITCH SD-70	WHT	TA



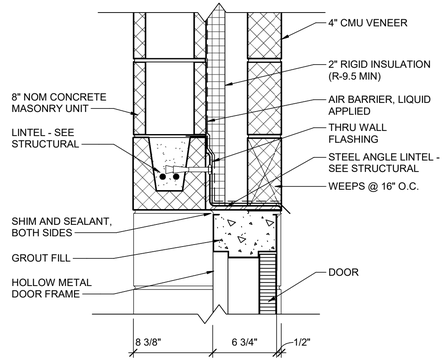
DOOR FRAME TYPES

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



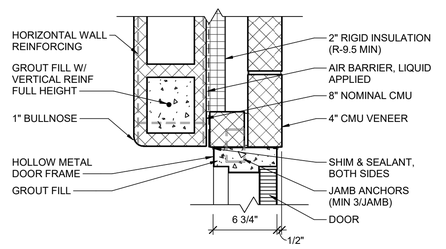
DOOR PANEL TYPES

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



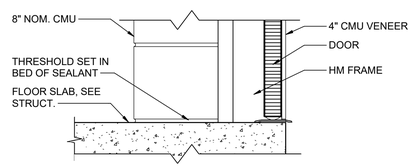
3 DOOR HEAD @ EXTERIOR WALL

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



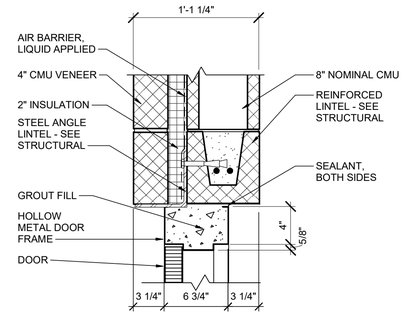
2 DOOR JAMB @ EXTERIOR WALL

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



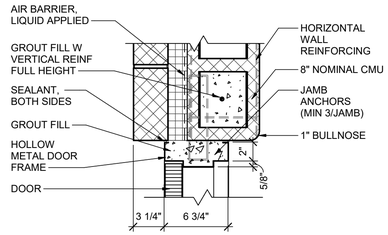
1 DOOR SILL @ EXTERIOR WALL

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



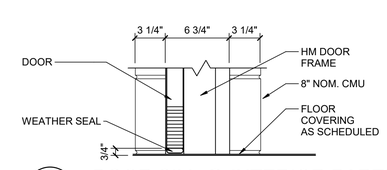
6 DOOR HEAD @ INTERIOR PARTITION

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



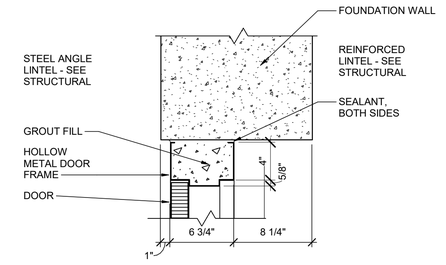
5 DOOR JAMB @ INTERIOR PARTITION

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



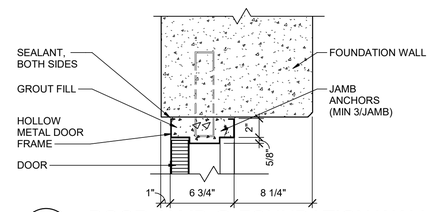
4 DOOR SILL @ INTERIOR PARTITION

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



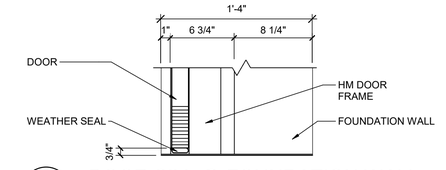
9 DOOR HEAD @ FOUNDATION WALL

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



8 DOOR JAMB @ FOUNDATION WALL

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



7 DOOR SILL @ FOUNDATION WALL

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

IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.

0' 1' 2' 4'

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

0' 6" 1' 18"

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

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MRK	DATE	REVISION DESCRIPTION

COMM NO:	220117
DATE:	05/27/2022
DRAWN: MJR	DESIGN: ME
CHECK:	JRM

SHEET TITLE

DOOR SCHEDULE

SHT. NO. A-601

REV. NO.

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STRUCTURAL GENERAL NOTES

A. GENERAL

1. STRUCTURAL GENERAL NOTES ARE INTENDED TO HIGHLIGHT OR IN SOME CASES SUPPLEMENT PROJECT SPECIFICATIONS. REFER TO THE PROJECT SPECIFICATIONS FOR COMPLETE WORK COVERAGE.

2. THE DESIGN OF THE STRUCTURE COMPLIES WITH THE 2018 INTERNATIONAL BUILDING CODE AND THE VIRGINIA UNIFORM STATEWIDE BUILDING CODE "USBC" 2018 EDITION.

3. GRAVITY DESIGN LOADS ARE AS FOLLOWS:

a. SUPERIMPOSED DEAD LOADS

FINISHES	ACTUAL
MECHANICAL AND CEILING	5 PSF
ROOFING – RIGID INSULATION AND STANDING METAL SEAM	1 PSF

b. LIVE LOADS

PLATFORMS	60 PSF
MECHANICAL SPACE	125 PSF
STAIRS AND EXITS	100 PSF
ROOF	20 PSF

4. HANDRAILS AND GUARDRAILS MUST BE DESIGNED FOR A LINEAR LOAD OF 50 POUNDS PER FOOT OR CONCENTRATED LOAD OF 200 LBS, EACH APPLIED NON-CONCURRENTLY TO THE TOP OF THE HANDRAIL, IN ANY DIRECTION TO CREATE THE WORST LOAD EFFECT. BALUSTERS, PANEL FILLERS, AND GUARDRAIL INFILL COMPONENTS, INCLUDING ALL RAILS EXCEPT THE HANDRAIL AND TOP RAIL, MUST BE DESIGNED FOR A HORIZONTAL LOAD OF 50 LB OVER A 12 INCH x 12 INCH AREA LOCATED TO CREATE THE WORST LOAD EFFECT.

5. IN ACCORDANCE WITH INTERNATIONAL BUILDING CODE'S SECTION1607.4, THE FLOOR SYSTEM IS DESIGNED TO WITHSTAND CONCENTRATED LOADS ASSUMED ACTING UNIFORMLY ON A 2-1/2 FEET SQUARE AREA AND LOCATED TO PRODUCE THE MAXIMUM EFFECT IN STRUCTURAL MEMBERS.

6. EXCEPT FOR AREAS OF USE GROUPS A AND E, AND EXCEPT FOR LIVE LOADS WHICH EXCEED 100 PSF, FLOOR LIVE LOADS ARE REDUCED FOR BEAMS, GIRDERS, COLUMNS, AND FOOTINGS HAVE BEEN REDUCED IN ACCORDANCE WITH THE REQUIREMENTS OF THE INTERNATIONAL BUILDING, SECTION 1607.9.1.

7. THE DESIGN OF THE STRUCTURE TO RESIST SNOW LOADS IS IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE'S SECTION 1608 AND ASCE 7 CHAPTER 7.

DESIGN INFORMATION IS AS FOLLOWS:

GROUND SNOW LOAD	Pg = 43.0 PSF
FLAT ROOF SNOW LOAD	Pf = 39.0 PSF
SNOW EXPOSURE FACTOR (FIGURE 7.3.1	Ce = 0.9
SNOW LOAD IMPORTANCE FACTOR (TABLE 1.5-2)	Is = 1.2
ROOF THERMAL FACTOR (FIGURE 7.3.2)	Ct = 1.2
ROOF SLOPE FACTOR (FIGURE 7.4.1)	Cs= 1.0

THE DESIGN OF THE STRUCTURE TO RESIST DRIFT LOADS ON LOWER ROOFS IS IN ACCORDANCE WITH INTERNATIONAL BUILDING CODE'S SECTION 1608 AND ASCE 7 SECTION 7-7.

8. THE DESIGN OF THE STRUCTURE TO RESIST WIND PRESSURES IS IN ACCORDANCE WITH INTERNATIONAL BUILDING CODE'S SECTION 1609.0, WHICH IS BASED ON ASCE 7, CHAPTER 26. DESIGN INFORMATION IS AS FOLLOWS:

BASIC DESIGN WIND SPEED (ULTIMATE)	120 MPH
BASIC DESIGN WIND SPEED (SERVICE)	93 MPH
WIND EXPOSURE CATEGORY FOR MAIN RESISTING SYSTEM	B
INTERNAL PRESSURE COEFFICIENT	GCpi = +/- 0.18
COMPONENTS AND CLADDING	SEE PLAN

10. THE DESIGN OF THE STRUCTURE TO RESIST SEISMIC FORCES IS IN ACCORDANCE WITH INTERNATIONAL BUILDING CODE'S SECTION 1613 AND ASCE 7.

OCCUPANCY RISK CATEGORY	IV
SEISMIC IMPORTANCE FACTOR	Ie = 1.5
SPECTRAL RESPONSE ACCELERATIONS	
USGS SEISMIC HAZARDS PROGRAM	
AT SHORT PERIODS	Ss = 0.139 g
AT ONE SECOND PERIOD	S1 = 0.054 g
SITE CLASS	C
SPECTRAL RESPONSE COEFFICIENTS	
AT SHORT PERIODS	Sds = 0.120 g
AT ONE SECOND PERIOD	Sd1 = 0.054 g
SEISMIC DESIGN CATEGORY	A
BASIC SEISMIC FORCE-RESISTING-SYS	ORDINARY REINF MASONRY SHEAR WALLS
RESPONSE MODIFICATION FACTOR	R = 2
SEISMIC RESPONSE COEFFICIENT	Cs = 0.083
DESIGN BASE SHEAR	205 KIPS
ANALYSIS PROCEDURE	EQUIVALENT LATERAL-FORCE

11. THE FOLLOWING ESTIMATED MECHANICAL EQUIPMENT WEIGHTS ARE COORDINATED WITH THE MECHANICAL ENGINEERS' BASIS OF DESIGN:

a. EF-1 = 282 POUNDS
b. EF-2 = 282 POUNDS
c. EF-3 = 65 POUNDS
d. FOR CASES WHERE THE PURCHASED EQUIPMENT EXCEEDS THE LISTED ESTIMATED EQUIPMENT WEIGHT BY 10%, CONTACT THE STRUCTURAL ENGINEER TO DETERMINE IF STRUCTURAL STRENGTHENING IS REQUIRED.

12. IMPOSED CONSTRUCTION LOADS INCLUDING CRANE LOADS. IN EXCESS OF STATED DESIGN LOADS MUST BE APPROVED BY THE STRUCTURAL ENGINEER PRIOR TO THE IMPOSITION OF SUCH LOADS.

13. THE GENERAL CONTRACTOR AND SUB-CONTRACTORS MUST DETERMINE THE SCOPE OF THE STRUCTURAL WORK FROM THE CONTRACT DOCUMENTS TAKEN AS A WHOLE. THE STRUCTURAL DRAWINGS MUST NOT BE CONSIDERED SEPARATELY FOR PURPOSES OF BIDDING THE STRUCTURAL WORK. DUE CONSIDERATION MUST BE GIVEN TO OTHER STRUCTURAL WORK OR WORK RELATED TO THE STRUCTURE, INCLUDING NECESSARY COORDINATION DESCRIBED OR IMPLIED BY THE ARCHITECTURAL, CIVIL, AND MECHANICAL DRAWINGS.

14. REPRODUCTION OF THE STRUCTURAL CONTRACT DOCUMENTS IN ANY FASHION AS STRUCTURAL SHOP DRAWING DOCUMENTS IS PROHIBITED.

15. SCALES NOTED ON THE DRAWINGS ARE FOR GENERAL INFORMATION ONLY. NO DIMENSIONAL INFORMATION MAY BE OBTAINED BY DIRECT SCALING OF THE DRAWINGS.

16. DETAILS, SECTIONS AND NOTES SHOWN ON THESE DRAWINGS ARE INTENDED TO BE TYPICAL AND WILL APPLY TO SIMILAR CONDITIONS ELSEWHERE UNLESS OTHERWISE SHOWN OR NOTED.

17. STRUCTURAL MEMBERS HAVE BEEN LOCATED AND DESIGNED TO ACCOMMODATE THE MECHANICAL EQUIPMENT AND OPENINGS SPECIFIED BY THE MECHANICAL ENGINEER. ANY SUBSTITUTIONS RESULTING IN REVISIONS TO THE STRUCTURE WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE STRUCTURAL ENGINEER.

18. COORDINATE STRUCTURAL SUPPORT LOCATIONS WITH EQUIPMENT SERVICE ACCESS CLEARANCES PER EACH EQUIPMENT MANUFACTURER AND PER BUILDING CODE.

19. PRINCIPAL OPENINGS IN THE STRUCTURE ARE INDICATED ON THE CONTRACT DOCUMENTS. REFER TO THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR SLEEVES, CURBS, INSERT, ETC. NOT HEREIN INDICATED. OPENINGS IN SLABS WITH A MAXIMUM SIDE DIMENSION OR DIAMETER OF 12 INCHES OR LESS DOES NOT REQUIRE ADDITIONAL FRAMING OR REINFORCEMENT, UNLESS NOTED OTHERWISE. LOCATION OF SLEEVES OR OPENINGS IN STRUCTURAL MEMBERS MUST BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR APPROVAL.

20. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF ALL RESULTING REVISIONS TO THE STRUCTURAL SYSTEM AS A RESULT OF ACCEPTANCE OF CONTRACTOR PROPOSED ALTERNATIVES OR SUBSTITUTIONS.

21. THE GENERAL CONTRACTOR (OR CONSTRUCTION MANAGER) MUST SUBMIT SHOP DRAWINGS FOR ALL STRUCTURAL ELEMENTS SHOWN ONTHE CONTRACT DOCUMENTS FOR APPROVAL. THE STRUCTURAL ENGINEER WILL NOT BE RESPONSIBLE FOR THE STRUCTURAL CERTIFICATION AND DESIGN OF THE PROJECT IF THE GENERAL CONTRACTOR FAILS TO OBTAIN APPROVAL OF THE SHOP DRAWINGS. SHOP DRAWINGS ARE REVIEWED AS A CONVENIENCE TO THE GENERAL CONTRACTOR AND ARE NOT A CONTRACT DOCUMENT. THE GENERAL CONTRACTOR MUST STATE ON THE SHOP DRAWINGS THAT CONTRACT DOCUMENT REQUIREMENTS HAVE BEEN MET AND THAT ALL DIMENSIONS, CONDITIONS AND QUANTITIES HAVE BEEN REVIEWED AND VERIFIED AS SHOWN AND/OR CORRECTED ON THE SHOP DRAWINGS.

22. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING TEMPORARY BRACING AND SHORING, AS REQUIRED, TO ENSURE VERTICAL AND LATERAL STABILITY OF THE ENTIRE STRUCTURE OR PORTION THEREOF DURING CONSTRUCTION.

23. TEMPORARY BRACING MUST BE PROVIDED FOR ALL WALLS SUBJECT TO UNBALANCED BACKFILL. BRACE WALL PLUMB UNTIL STABILIZING ELEMENT ABOVE IS IN PLACE.

24. ALL WALLS ARE DESIGNED AS LATERALLY BRACED BY THE FLOOR SYSTEMS. CONTRACTOR MUST ENSURE THAT WALLS ARE ADEQUATELY BRACED DURING CONSTRUCTION.

25. ALL COLUMNS AND FOOTINGS MUST BE CENTERED ON GRIDLINES IN EACH DIRECTION, UNLESS NOTED OTHERWISE.

26. THE CONTRACTOR MUST MEASURE AND PROVIDE ALL DIMENSIONS, ELEVATIONS AND CONDITIONS AT THE JOB SITE PRIOR TO CONSTRUCTION AND THE SUBMISSION OF SHOP DRAWINGS AND MUST NOTIFY THE ARCHITECT AND/OR STRUCTURAL ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.

27. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR FITTING NEW WORK WITH EXISTING CONSTRUCTION. INFORMATION ON EXISTING BUILDING SHOWN IN THESE DRAWINGS WAS BASED UPON THE INFORMATION SUPPLIED TO WILEY WILSON, INC. THIS INFORMATION IS NOT AS-BUILT DATA AND THE ACTUAL AS-BUILT CONSTRUCTION MAY DIFFER FROM THAT REPRESENTED IN THE DRAWINGS. CONTRACTOR MUST VERIFY ALL INFORMATION. VARIATIONS FROM THE DIMENSIONS INDICATED ON THE CONTRACT DOCUMENTS MUST BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND/OR THE STRUCTURAL ENGINEER.

28. INFORMATION ON THE EXISTING BUILDING IS TAKEN FROM STRUCTURAL SHEETS BY JOHNSON AND WILLIAMS CONSULTING ENGINEERS. DATED AUGUST 8, 1978.

29. METHODS, PROCEDURES, AND SEQUENCES OF CONSTRUCTION ARE THE RESPONSIBLILITY OF THE CONTRACTOR. THE CONTRACTOR MUST TAKE ALL NECESSARY PRECAUTIONS TO MAINTAIN AND INSURE THE INTEGRITY OF THE STRUCTURE AT ALL STAGES OF CONSTRUCTION.

30. THE STRUCTURE HAS BEEN DESIGNED FOR THE IN-SERVICE LOADS ONLY. THE METHODS, PROCEDURES, AND SEQUENCES OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. SUPPORTING FORMWORK FOR THE CONCRETE CONSTRUCTION MUST NOT BE REMOVED BEFORE THE CONCRETE HAS GAINED SUFFICIENT STRENGTH TO SAFELY SUPPORT THE DEAD AND SUPERIMPOSED LOADS WHICH WOULD BE SUBSEQUENTLY APPLIED. THE CONTRACTOR MUST TAKE ALL NECESSARY PRECAUTIONS TO MAINTAIN AND INSURE THE INTEGRITY OF THE STRUCTURE AT ALL STAGES OF CONSTRUCTION.

31. CONTRACTOR MUST FABRICATE AND ERECT STEEL IN ACCORDANCE WITH OSHA'S SAFETY REQUIREMENTS, 29 CFR 1926 SAFETY STANDARDS FOR STEEL ERECTION; FINAL RULE.

32. FOR UTILITY LINES SUPPORTED FROM BAR JOIST FRAMING THAT RUN PARALLEL TO JOIST, PLACE 6" AND 8" DIAMETER LINES EQUALLY BETWEEN TWO JOISTS. FOR LINES 10" DIAMETER OR LARGER, CONTACT THE STRUCTURAL ENGINEER FOR PLACEMENT. SUBMIT SHOP DRAWING LAYOUT INDICATING DIMENSIONED SUPPORT LOCATIONS TO STRUCTURAL ENGINEER FOR REVIEW.

33. A REGISTERED ENGINEER MUST DESIGN ALL NON-PRIMARY STRUCTURAL ELEMENTS SUCH AS STAIRS AND RAILINGS TO MEET THE REQUIREMENTS OF THE LOCAL GOVERNING JURISDICTION. SUBMIT CALCULATIONS AND SHOP DRAWINGS WITH THE RESPONSIBLE ENGINEER'S SEAL AND SIGNATURE FOR THE STATE WHERE THE CONSTRUCTION TAKES PLACE.

B. FOUNDATIONS AND EARTHWORK

1. GEOTECHNICAL INFORMATION IS CONTAINED IN A REPORT PREPARED BY FROEHLING & ROBERTSON, REPORT NUMBER 1871-0274G REV2, DATED AUG 19, 2020. BORING LOGS AND LABORATORY TEST RESULTS ARE INCLUDED FOR REFERENCE IN THE PROJECT MANUAL.

2. THE CONTRACTOR MUST COMPLY WITH THE RECOMMENDATIONS CONTAINED IN THE GEOTECHNICAL REPORT AND THE PROJECT SPECIFICATIONS WHEN PERFORMING EXCAVATIONS, FOOTING CONSTRUCTION, AND PREPARING THE SUBGRADE UNDER THE SLAB ON GRADE.

3. GROUNDWATER WAS ENCOUNTERED AT SHALLOW DEPTHS DURING THE GEOTECHNICAL INVESTIGATION, DEWATERING OF THE SITE WILL LIKELY BE REQUIRED DURING WET WELL AND PIPE INSTLALLATION, SEE GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION.

4. ROCK WAS ENCOUNTERED AT SHALLOW DEPTHS IN BORINGS AND IS EXPECTED TO BE ENCOUNTERED DURING EXCAVATION FOR THE BUILDING AND PIPING. SEE GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION.

5. IF CONSTRUCTION FOUNDATION CONDITIONS VARY FROM THE GEOTECHNICAL REPORT, BEFORE CONTINUING CONSTRUCTION, NOTIFY THE GEOTECHNICAL ENGINEER, STRUCTURAL ENGINEER AND ARCHITECT.

6. THE FOUNDATION DESIGN FOR THE STRUCTURE IS FOR AN ALLOWABLE SOIL BEARING PRESSURE OF 2500 PSF. FOUNDATIONS EXPOSED TO FROST MUST BEAR A MINIMUM OF 24 INCHES BELOW FINISHED GRADE.

7. WHERE LATERAL EARTH PRESSURES ARE SUPERIMPOSED ON THE FOUNDATION, THE STRUCTURE IS DESIGNED FOR THE FOLLOWING LATERAL EARTH PRESSURES:

a. ACTIVE PRESSURE (CANTILEVER WALLS) 74 PCF
b. AT-REST PRESSURE (TOP RESTRAINED WALLS) 82 PCF
c. COEFFICIENT OF FRICTION 0.34

8. THE ABOVE LATERAL EARTH PRESSURES ARE BASED ON PROVIDING A GRAVITY DRAINAGE SYSTEM CONSISTING OF THE FOLLOWING:

a. CLEAN, WELL-GRADED GRANULAR BACKFILL WITH A FILTER FABRIC SEPARATING THE GRANULAR MATERIAL FROM THE BACKFILL.
b. DRAINAGE MATERIAL WITH A FILTER FABRIC PLACED AGAINST THE BACKFILL SIDE OF THE WALL.
c. INTERCEPTOR DRAIN SYSTEM AT THE TOP OF THE FOOTING ON THE BACKFILL SIDE.
d. WATER COLLECTION INTO SUMPS FOR DISCHARGE INTO STORM SEWER.

9. RETAINING WALL DESIGNS ARE FOR IN SERVICE LOADS ONLY. TEMPORARILY SHORE THE WALL PLUMB UNTIL OBTAINING THE SPECIFIED 28-DAY CONCRETE COMPRESSIVE STRENGTH (f'c) AND ALL SUPPORTING ELEMENTS ARE IN PLACE WITH COMPACTED BACKFILL.

B. FOUNDATIONS AND EARTHWORK - CONTINUED

8. DO NOT OVER EXCAVATE THE FOOTPRINT OF SPREAD AND STRIP FOOTINGS. IF OVER EXCAVATION IS REQUIRED BEYOND THE 3 INCH CONSTRUCTION TOLERANCE, FORM THE SIDES OF THE FOOTING.

9. CLEAN AND TAMP SHALLOW FOUNDATION EXCAVATIONS TO A UNIFORM SURFACE. IF PLACEMENT OF CONCRETE IS NOT WITHIN 24 HOURS OF FOUNDATION EXCAVATION, TEMPORARILY PROTECT SIDES AND BOTTOMS OF FOUNDATION EXCAVATIONS WITH A POLYETHYLENE MEMBRANE.

10. PLACE CONCRETE FOR WALL FOOTINGS MONOLITHICALLY WITH COLUMN FOOTINGS. CONSTRUCTION JOINTS IN WALL FOOTINGS MUST BE MADE ONLY MIDWAY BETWEEN COLUMN FOOTINGS.

11. ALWAYS PROVIDE POSITIVE SURFACE WATER DRAINAGE AWAY FROM THE STRUCTURE.

C. ROCK ANCHOR FOUNDATIONS

1. SEE GEOTECHNICAL REPORT PREPARED BY FROEHLING & ROBERTSON, INC, REPORT NUMBER 71Y0194, DATED OCT 15, 2020.

2. ROCK ANCHOR FOUNDATIONS WILL BE DESIGNED BY A SPECIALTY ENGINEER REGISTERED IN THE COMMONWEALTH OF VIRGINIA. SUBMITTAL MUST INCLUDE SIGNED AND SEALED DRAWINGS AND CALCULATIONS.

3. THE TYPICAL FOUNDATION SYSTEM WILL CONSIST OF ROCK ANCHOR FOUNDATIONS SOCKETED INTO BEDROCK. REFER TO THE GEOTECHNICAL REPORT FOR MORE DETAILS.

4. ROCK ANCHOR FOUNDATIONS WILL BE DESIGNED IN ACCORDANCE WITH THE "RECOMMENDATIONS FOR PRESTRESSED ROCK AND SOIL ANCHORS" BY THE POST TENSIONING INSTITUTE USING AN ULTIMATE BOND STRESS BETWEEN THE ROCK AND GROUT OF 250 PSI, PER THE GEOTECHNICAL REPORT.

5. PRE-PRODUCTION LOAD TESTING OF AT LEAST ONE ROCK ANCHOR FOUNDATION IN COMPRESSION WILL BE REQUIRED. ADDITIONALLY, PROOF LOADING OF A MINIMUM OF 5% OF THE PRODUCTION ROCK ANCHOR FOUNDATIONS MUST BE PERFORMED TO CONFIRM THE DESIGN CAPACITY AND INSTALLATION INSTRUCTIONS. SEE SPECIAL INSPECTIONS LIST FOR COMPLETE LIST.

6. ROCK ANCHOR FOUNDATIONS WILL BE SOCKETED INTO COMPETENT ROCK THE MINIMUM DEPTH DETERMINED BY THE SPECIALTY ENGINEER. THE SPECIALTY ENGINEER WILL DETERMINE THIS DEPTH BASED ON THEIR DESIGN AS WELL AS THE RESULTS OF THE PRE-PRODUCTION TEST LOADING.

D. CONCRETE

1. ALL CONCRETE WORK MUST BE IN ACCORDANCE WITH ACI 301, ACI 318, ACI 302, AND ACI 350.

2. PROVIDE CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH (f'c) AT 28 DAYS MAXIMUM WATER/CEMENT RATIO, AND DURABILITY EXPOSURE CATEGORIES AS FOLLOWS:

a. BEAM AND JOIST FLOOR SYSTEMS	4,500 PSI	0.45	F0, S1, W0, C0
b. FOOTINGS	4,000 PSI	0.45	F0, S1, W0, C1
c. PILASTERS	4,500 PSI	0.45	F2, S1, W0, C1
d. SLABS ON GRADE	4,000 PSI	0.45	F2, S1, W0, C1
e. STRUCTURAL SLABS	4,500 PSI	0.45	F2, S1, W1, C1
f. OTHER CONCRETE EXPOSED TO FREEZING	4,500 PSI	0.45	F2, S1, W0, C1
g. STRUCTURAL WALLS	4,500 PSI	0.45	F2, S1, W1, C1
h. CONCRETE PIPE SUPPORT PIERS	5,000 PSI	0.40	F0, S1, W0, C1

USE NORMAL WEIGHT AGGREGATES CONFORMING TO ASTM C33 AND TYPE II PORTLAND CEMENT CONFORMING TO ASTM C150. CONCRETE EXPOSED TO FREEZING MUST MEET ACI 318, SECTION 19.3.

3. FLY ASH CONFORMING TO ASTM C618, TYPE C OR F MAY BE USED AS TO REPLACE A PORTION OF THE PORTLAND CEMENT IN A CONCRETE MIX. THE AMOUNT OF PORTLAND CEMENT CONTENT MUST NOT BE LESS THAN 70 PERCENT OF THE TOTAL AMOUNT OF CEMENTITIOUS MATERIAL IN THE MIX.

4. GROUND GRANULATED BLAST-FURNACE SLAG CONFORMING TO ASTM C989, MAY BE USED AS TO REPLACE A PORTION OF THE PORTLAND CEMENT IN A CONCRETE MIX. THE AMOUNT OF PORTLAND CEMENT CONTENT SHALL NOT BE LESS THAN 70 PERCENT OF THE TOTAL AMOUNT OF CEMENTITIOUS MATERIAL IN THE MIX.

5. CONCRETE REINFORCEMENT BARS MUST CONFORM TO ASTM A615, GRADE 60. REINFORCEMENT BARS MAY NOT BE TACK WELDED, WELDED, HEATED OR CUT UNLESS INDICATED ON THE CONTRACT DOCUMENTS OR APPROVED BY THE STRUCTURAL ENGINEER.

6. PROVIDE WELDED WIRE FABRIC CONFORMING TO ASTM A1064 IN FLAT SHEETS. LAP FABRIC TWO MESHES AT SPLICES.

7. GROUT UNDER ALL COLUMN BASE PLATES AND BEAM BEARING PLATES WITH NON-SHRINK, N ON-METALLIC GROUT WHICH CONFORMS TO CORPS OF ENGINEERS SPECIFICATION CRD-C 621-82 OR ASTM C1107.

8. DETAILING OF CONCRETE REINFORCEMENT BARS AND ACCESSORIES MUST CONFORM TO THE RECOMMENDATIONS OF ACI 315 "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT" AND ACI SP-66 "DETAILING MANUAL". PLACING OF REINFORCING BARS MUST CONFORM TO THE RECOMMENDATIONS OF ACI 315R "MANUAL OF ENGINEERING AND PLACING DRAWINGS FOR REINFORCED CONCRETE STRUCTURES" AND CRSI "MANUAL OF STANDARD PRACTICE".

9. MIX, TRANSPORT AND PLACE CONCRETE PER THE RECOMMENDATIONS OF ACI 301.

D. CONCRETE - CONTINUED

10. PROVIDE CONCRETE COVER PROTECTION OF REINFORCEMENT PER ACI 318 SECTION 20.6 WITH STANDARD BAR CHAIRS AND SPACERS REQUIRED TO MAINTAIN MINIMUM CONCRETE PROTECTION. COMMON MINIMUM CONCRETE COVERS APPLYING TO THIS PROJECT:

a. CAST AGAINST AND PERMANENTLY EXPOSED EARTH 3 IN
b. CONCRETE EXPOSED TO EARTH OR WEATHER
- #6 BARS AND LARGER 2 IN
- #5 BARS AND SMALLER 1 ½ IN
CONCRETE NOT EXPOSED TO WEATHER OR GROUND CONTACT

c. SLABS, WALLS OR JOISTS
- #14 BARS AND LARGER 1 ½ IN
- #11 BARS AND SMALLER ¾ IN
d. BEAMS OR COLUMNS
- PRIMARY REINFORCEMENT 1 ½ IN
- TIES, STIRRUPS, SPIRALS 1 ½ IN
e. IN ADDITION, COVERS MUST NOT EXCEED THE FOLLOWING:
- GRADE BEAMS
  - TOP 1 ½ IN
  - EARTH FORMED SIDES 3 IN
  - BOARD FORMED SIDES 2 IN
- BOTTOM 3 IN
- PILASTERS AND PLINTHS 2 IN
- WALLS BELOW GRADE (BACKFILLED SIDE) 2 IN
- WALLS BELOW GRADE (NO BACKFILL) ¾ IN
- SLABS ON GRADE 2 IN (TOP)
- SLABS ON METAL FORMS ¾ IN(TOP)
- COLUMNS 1 ½ IN
- BEAMS 1 ½ IN

11. WELDING OF REINFORCEMENT BARS IS NOT PERMITTED.

12. REINFORCEMENT DESIGNATED AS "CONTINUOUS" MUST LAP 48 BAR DIAMETERS AT SPLICES UNLESS NOTED OTHERWISE. REINFORCEMENT BAR SPLICES IN GRADE BEAMS MUST BE LOCATED AT THE CENTERLINE OF SUPPORTS FOR BOTTOM BARS AND AT MIDSPAN FOR TOP BARS. PROVIDE STANDARD ACI HOOKS FOR TOP AND BOTTOM BARS AT DISCONTINUOUS ENDS OF ALL GRADE BEAMS.

13. HORIZONTAL FOOTING AND HORIZONTAL WALL REINFORCEMENT MUST BE CONTINUOUS AND MUST HAVE 90-DEGREE BENDS AND EXTENSIONS, OR CORNER BARS OF EQUIVALENT SIZE LAPPED 48 BAR DIAMETERS, AT CORNERS AND INTERSECTIONS.

14. PROVIDE CORNER BARS AT ALL WALL INTERSECTIONS WITH SIZE AND SPACING TO MATCH HORIZONTAL WALL REINFORCEMENT.

15. TIE DOWELS IN PLACE BEFORE PLACING CONCRETE. DO NOT STAB OR "WET-SET" DOWELS.

16. HORIZONTAL JOINTS WILL NOT BE PERMITTED IN CONCRETE CONSTRUCTION EXCEPT AS SHOWN ON THE CONTRACT DOCUMENTS. VERTICAL JOINTS MUST OCCUR AT CENTER OF SPANS AT LOCATIONS APPROVED BY THE STRUCTURAL ENGINEER.

17. PROVIDE HORIZONTAL CONSTRUCTION JOINTS ONLY WHERE SHOWN IN THE CONTRACT DOCUMENTS. AT HORIZONTAL JOINTS, ROUGHEN THE LOWER CONTACT SURFACE WITH ABOUT A ¼ INCH AMPLITUDE. REMOVE ANY LAITANCE FROM THE HARDENED CONTACT SURFACE AND MAINTAIN A CLEAN CONTACT SURFACE FOR THE ADJOINING POUR.

18. CHAMFER EXPOSED EDGES OF CONCRETE ¾" UNLESS OTHERWISE NOTED.

19. SHORING UNDER FORMS MUST NOT BE REMOVED UNTIL THE CONCRETE IT SUPPORTS IS CAPABLE OF SUPPORTING ITSELF AND ALL SUPERIMPOSED LOADS.

20. PROTECT AND CURE ALL CONCRETE SURFACES. BEGIN CURING WALLS IMMEDIATELY AFTER STRIPPING FORMS AND FLATWORK IMMEDIATELY AFTER FINISHING.

21. INSTALL AND SECURE EMBEDMENTS SUCH AS ANCHOR BOLTS AND EMBEDMENT PLATES WITHIN SPECIFIED TOLERANCES BEFORE CONCRETE PLACEMENT.

22. DO NOT SLEEVE BEAMS OR COLUMNS WHERE NOT SHOWN ON THE STRUCTURAL DRAWINGS WITHOUT PRIOR APPROVAL OF THE STRUCTURAL ENGINEER.

23. DO NOT PLACE CONDUIT OR PIPES IN ANY CONCRETE ELEMENTS INCLUDING SLABS, BEAMS, WALLS OR COLUMNS UNLESS INDICATED IN THE STRUCTURAL DOCUMENTS.

24. UNLESS OTHERWISE INDICATED, ALL CONDUITS MUST BE HUNG UNDER THE SLAB ON CONDUIT SUPPORTS OR TRAPEZES.

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COMMONWEALTH OF VIRGINIA
JACQUELINE W. ROSSER
Lic. No. 49425
05/27/2022
PROFESSIONAL ENGINEER

CITY OF STAUNTON
GARDNER SPRING PUMP STATION
STAUNTON, VIRGINIA

MRK	DATE	REVISION DESCRIPTION

COMM NO:	220117		
DATE:	03/09/2022		
DRAWN:	RMA	DESIGN:	RMA
CHECK:			JWR

SHEET TITLE

GENERAL NOTES

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E. STRUCTURAL STEEL

1. UNLESS NOTED OTHERWISE, STRUCTURAL STEEL MUST CONFORM TO THE FOLLOWING:

a.	ANCHOR BOLTS	ASTM F1554, GRADE 36
b.	WIDE FLANGE SHAPES	ASTM A992-01, 50 KSI
c.	ANGLES	ASTM A36
d.	CHANNELS	ASTM A36
e.	PLATES	ASTM A36
f.	HSS RECTANGULAR	ASTM A500, GRADE B (Fy = 46 KSI)
g.	HSS ROUND	ASTM A500, GRADE C (Fy = 46 KSI)
h.	ROUND BAR	ASTM A36

2. SUBMIT MILL TEST REPORTS FOR REVIEW.
3. BOLTS FOR STRUCTURAL STEEL CONNECTIONS MUST BE HIGH STRENGTH BOLTS PER THE REQUIREMENTS OF ASTM A325, TYPE N, OR X. UNLESS NOTED OTHERWISE, PROVIDE BOLTS DESIGNED AS BEARING TYPE BOLTS AND INSTALL PER THE "SNUG TIGHT" CONDITION. INSTALL A HARDENED WASHER UNDER THE ELEMENT TO BE TIGHTENED.
4. DETAIL, FABRICATE AND ERECT STRUCTURAL STEEL PER THE AISC "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS," THE AISC "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES" AND THE SAFETY REQUIREMENTS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION AND THE LOCAL JURISDICTION. PROVIDE TEMPORARY SEATS TO FACILITATE SAFE ERECTION.
5. PERFORM WELDING IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY STANDARD D1.1. PROVIDE ELECTRODES FOR SHOP AND FIELD WELDS IN ACCORDANCE WITH AWS A5.1 OR AWS A5.5, CLASS E70XX, LOW HYDROGEN. ALL WELDS MUST USE FILLER METAL WITH A MINIMUM CVN VALUE OF 20 FT-LBS AT -20 DEGREES FAHRENHEIT.
6. ALL SHOP AND FIELD WELDING MUST BE EXECUTED BY WELDERS AND WELDING OPERATORS WHO HAVE BEEN PREVIOUSLY QUALIFIED BY TEST AS PRESCRIBED IN AWS D1.1 OF THE AMERICAN WELDING SOCIETY TO PERFORM THE TYPES OF WELDS REQUIRED ON THE PROJECT.
7. SHOP OR FIELD WELDS AT NON-BOLTED CONNECTIONS THAT ARE NOT SPECIFICALLY DETAILED MUST BE 3/16" CONTINUOUS FILLETS AT EACH CONTACT EDGE OR SURFACE.
8. RETURN ALL WELDS AT CORNERS TWICE THE NOMINAL SIZE OF THE WELD MINIMUM, UNLESS OTHERWISE NOTED.
9. ALL COPES, BLOCKS, CUT-OUTS, AND OTHER CUTTING OF STRUCTURAL MEMBERS MUST HAVE ALL RE-ENTRANT CORNERS SHAPED, NOTCHED FREE TO A RADIUS OF AT LEAST ½".
10. SEE ARCHITECTURAL AND OTHER ENGINEERING DRAWINGS FOR MISCELLANEOUS STEEL NOT SHOWN ON THE STRUCTURAL DRAWINGS.
11. NO FABRICATION MUST PROCEED PRIOR TO SHOP DRAWING APPROVAL.
12. NO OPENINGS IN BEAMS OR COLUMNS ARE PERMITTED WITHOUT STRUCTURAL ENGINEER'S WRITTEN APPROVAL.
13. SPLICING OF STRUCTURAL STEEL MEMBERS WHERE NOT DETAILED ON THE CONTRACT DOCUMENTS IS PROHIBITED WITHOUT PRIOR APPROVAL OF THE STRUCTURAL ENGINEER AS TO LOCATION, TYPE OF SPLICE AND CONNECTION TO BE MADE.
14. THE CONTRACTOR MUST NOTIFY WILEY WILSON, INC. OF ANY MISFABRICATION STRUCTURAL STEEL PRIOR TO ERECTION OF SAME.
15. WHERE NO UPWARD CAMBER IS SHOWN ON THE CONTRACT DOCUMENTS, ANY MILL CAMBER MUST BE DETAILED UPWARD IN THE BEAMS.
16. ONE 1.5 MIL COAT OF SHOP PAINT MUST BE APPLIED TO ALL STRUCTURAL STEEL WITH THE EXCEPTION OF AREAS TO BE WELDED.
17. STRUCTURAL STEEL CAST INTO OR IN CONTACT WITH CONCRETE MUST NOT BE PAINTED.
18. STEEL MUST BE HOT DIPPED GALVANIZED WHERE INDICATED. STEEL SHAPES, PLATES AND BARS MUST BE GALVANIZED PER ASTM A123. STEEL BOLTS, NUTS AND WASHERS MUST BE GALVANIZED PER ASTM A153, CLASS C.
19. PROVIDE STANDARD AISC ANGLE WALL ANCHORS FOR STEEL BEAMS SUPPORTED IN MASONRY POCKETS.

F. ALUMINUM

1. UNLESS NOTED OTHERWISE, STRUCTURAL ALUMINUM SHALL MEET THE REQUIREMENTS OF ALUMINUM ALLOY TYPE 6061-T6. SUBMIT MILL TEST REPORTS FOR REVIEW.
2. DETAIL, FABRICATE AND ERECT STRUCTURAL ALUMINUM PER THE ALUMINUM DESIGN MANUAL AND THE SAFETY REQUIREMENTS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION AND THE LOCAL JURISDICTION.
3. ALL WELDING SHALL CONFORM WITH AWS D1.2, LATEST STRUCTURAL WELDING CODE-ALUMINUM.
4. WHERE THE CONTACT OF DISSIMILAR METALS MAY CAUSE CORROSION OR WHERE ALUMINUM WILL COME IN CONTACT WITH CONRETE, MORTAR, OR PLASTER, THE CONTACT SURFACE OF THE ALUMINUM SHALL BE COATED WITH 1 COAT OF ZINC CHROMATE PRIMER AND ONE HEAVY COAT OF ALUMINUM PIGMENTED ASPHALT PAINT.

G. ROOF DECK

1. ROOF DECK MUST BE TYPE B ROOF DECK. TYPE B DECK MUST BE 20 GAGE COLD FORMED STEEL CONFORMING TO ASTM A653 SQ GRADE 33, COATING DESIGNATION G60 FOR GALVANIZED DECK METAL DECK MUST BE 1-1/2 INCHES DEEP WITH A MINIMUM SECTION MODULUS (SP) OF 0.234 INCHES CUBED PER FOOT OF WIDTH.
2. CONTRACTOR MUST PROVIDE MATERIALS, DESIGN AND INSTALLATION OF DECK FOR THE REQUIREMENTS OF STEEL DECK INSTITUTE'S "DESIGN MANUAL FOR COMPOSITE DECKS, FORM DECKS AND ROOF DECKS." DECK PROPERTIES MUST BE COMPUTED USING THE LATEST EDITION OF AISI SPECIFICATIONS FOR THE "DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS."
3. STEEL DECK MUST BE INSTALLED CONTINUOUS OVER 3 SPANS MINIMUM (UNLESS OTHERWISE NOTED) AND MUST BEAR AT LEAST 2 INCHES ON STEEL SUPPORTS. WHERE 3 SPANS INSTALLATION IS NOT POSSIBLE, SHORING MUST BE PROVIDED TO ACHIEVE THE 3 SPAN CAPACITY OF THE DECK.
4. THE CONTRACTOR MUST PROVIDE SUPPLEMENTAL FRAMING L4 X 4 X 3/8 AS NECESSARY FOR THE SUPPORT OF METAL DECK WHERE NOT SHOWN ON DRAWINGS UNLESS OTHERWISE INDICATED.
5. METAL FORMS FOR ROOF DECK MUST BE VENTED, PROVIDING AN OPEN AREA OF AT LEAST 1.5 PERCENT. VENTING MUST BE ACCOMPLISHED BY A SERIES OF OUTLET SLOTS IN THE INTERIOR VALLEYS OF THE CORRUGATED SECTIONS.

H. BAR JOISTS

1. BAR JOISTS MUST BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE STEEL JOIST INSTITUTE. HORIZONTAL JOIST BRIDGING MUST BE INSTALLED PER STEEL JOIST INSTITUTE REQUIREMENTS.
2. BAR JOISTS MUST BE DESIGNED BY THE MANUFACTURER'S ENGINEER FOR THE LOADS GIVEN IN ACCORDANCE WITH THE LATEST EDITION OF THE STEEL JOIST INSTITUTE'S STANDARD SPECIFICATIONS, LOAD TABLES AND WEIGHT TABLES FOR STEEL JOISTS AND JOIST GIRDERS. SUBMIT TO THE STRUCTURAL ENGINEER BAR JOISTS SHOP DRAWINGS AND CALCULATIONS PREPARED UNDER AND BEARING THE STAMP OF A PROFESSIONAL STRUCTURAL ENGINEER REGISTERED IN STATE WHERE THE CONSTRUCTION TAKES PLACE.
3. BRIDGING MUST BE CONTINUOUS THROUGH BAR JOISTS AND BE ANCHORED TO WALLS OR BEAMS. PROVIDE DIAGONAL BRIDGING WITH BOLTED CONNECTIONS AT CHORDS AND INTERSECTIONS WHERE REQUIRED BY STEEL JOIST INSTITUTE.
4. BRIDGING AND ANCHORING MUST BE SECURED IN PLACE PRIOR TO THE APPLICATION OF ANY CONSTRUCTION LOADS. ANY TEMPORARY LOADS MUST BE DISTRIBUTED SO THAT THE LIVE LOAD CAPACITY OF ANY JOIST IS NOT EXCEED.
5. BAR JOISTS MUST BE WELDED TO SUPPORTING STEEL MEMBERS.
6. CAMBER ALL BAR JOISTS THE AMOUNT RECOMMENDED BY THE STEEL JOIST INSTITUTE.
7. BAR JOISTS MARKED "SPECIAL" OR "SP" MUST BE DESIGNED BY THE JOIST MANUFACTURER TO SUPPORT THE DEAD AND LIVE UNIFORM AND CONCENTRATED LOADS AND/OR NET UPLIFT LOADS NOTED IN THE DRAWINGS.
8. WHERE BAR JOISTS ARE SUBJECT TO UPLIFT FORCES, MANUFACTURER MUST CONSIDER THE APPLICABLE UPLIFT FORCES RESULTING FROM THE NOTED COMPONENTS & CLADDING WIND PRESSURES ON SHEET S-601 IN THE DESIGN. ALSO, THE DESIGNER MUST PROVIDE BOTTOM CHORD BRIDGING ADJACENT THE FIRST BOTTOM CHORD PANEL POINT.
9. PROVIDE JOIST BEARING PLATES PER STEEL JOIST INSTITUTE RECOMMENDATIONS.
10. ALL CONCENTRATED LOADS ON BAR JOISTS EXCEEDING 100 LBS MUST BE LOCATED AT NODE POINTS. LOADS IN EXCESS OF 500 LBS MUST BE SUBMITTED TO THE JOIST MANUFACTURER FOR APPROVAL.
11. HUNG LOADS FROM MECHANICAL, ARCHITECTURAL, OR OTHER SYSTEMS MUST BE ATTACHED BY HANGERS THAT LOAD THE JOIST CHORD CONCENTRICALLY (LOAD IS EVENLY DISTRIBUTED TO THE MEMBERS THAT MAKE UP THE TOP OR BOTTOM CHORD).
12. CONTRACTOR MUST FURNISH ALL REQUIRED BAR JOIST BEARING AND CONNECTION ACCESSORIES TO SUPPORT SLOPED BAR JOISTS.

I. CONCRETE MASONRY

1. MASONRY CONSTRUCTION MUST BE PERFORMED IN ACCORDANCE WITH ACI 530 "BUILDING CODE REQUIREMENTS FOR CONCRETE MASONRY STRUCTURES" AND ACI 530.1, SPECIFICATIONS FOR MASONRY STRUCTURES."
2. CONCRETE MASONRY UNITS MUST CONFORM TO ASTM C90, GRADE N-1 UNLESS OTHERWISE NOTED. COMPRESSIVE STRENGTH ON NET CROSS SECTIONAL AREA OF INDIVIDUAL MASONRY UNITS MUST BE 1,900 PSI. NET AREA COMPRESSIVE STRENGTH OF MASONRY (f'm) MUST BE 1,500 PSI.
3. MASONRY MUST BE LAID IN ASTM C270, TYPE "S" MORTAR, UNLESS NOTED OTHERWISE AND MUST HAVE FULL MORTAR COVERAGE OF THE FACE SHELLS IN BOTH HORIZONTAL AND VERTICAL JOINTS.
4. GROUT FOR REINFORCED MASONRY MUST CONFORM TO ASTM C476.
5. GROUT FOR REINFORCED MASONRY MUST HAVE A COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS AND MUST CONFORM TO THE FOLLOWING:

a.	GROUT IN SPACES 3" X 4" AND GREATER MUST HAVE A SLUMP OF 9" TO 11" WITH 3/8" MAXIMUM AGGREGATE SIZE.
b.	GROUT IN SPACES 2" X 4" AND SMALLER MUST HAVE A SLUMP OF 5" AND CONFORM TO ASTM C476.

7. GALVANIZED HORIZONTAL JOINT REINFORCEMENT MUST BE PLACED IMMEDIATELY ABOVE AND BELOW ALL OPENINGS AND AT 16 INCHES ON CENTER VERTICALLY. REINFORCEMENT MUST BE LADDER TYPE, AND WHERE SPLICED, MUST LAP A MINIMUM OF 6 INCHES. REINFORCEMENT MUST CONFORM TO ATSM A82.

J. CONCRETE MASONRY-CONTINUED

8. EXCEPT FOR WALL PILASTERS, VERTICAL MASONRY REINFORCEMENT MUST BE FIELD CUT FOR 4'-0" LIFTS AND LAPPED SPLICED A MINIMUM OF 48 BAR DIAMETERS. MASONRY CORES CONTAINING VERTICAL REINFORCEMENT MUST BE GROUTED SOLID.
9. CELLS TO BE GROUTED MUST BE CLEAN AND FREE OF EXCESS MORTAR AND FOREIGN MATERIALS.
10. GROUT ALL CELLS THAT INCLUDE REINFORCEMENT, ANCHORS OR STRUCTURAL EMBEDMENTS. PLACE GROUT IN 4'-0" LIFTS. CONSOLIDATE ALL GROUT PLACEMENTS BY MECHANICAL VIBRATION. PROVIDE CLEANOUTS FOR TOTAL GROUT PLACEMENT HEIGHT OVER 5'-0".
11. PROVIDE 2 COURSES OF SOLID CMU PER ASTM C145 OR GROUT-FILLED CMU BENEATH ALL BEAMS AND HEADER BEARING POINTS.
12. PROVIDE MASONRY ACCESSORIES TO SECURE VERTICAL REINFORCEMENT IN PLACE AND CORRECTLY POSITIONED. VERTICAL REINFORCEMENT IS TO BE CENTERED IN THE MASONRY CELLS UNLESS INDICATED OTHERWISE.
13. REINFORCEMENT MUST CONFORM TO THE STANDARDS SPECIFIED IN THE CONCRETE NOTES. REINFORCEMENT MUST BE LAP SPLICED A MINIMUM OF 48 BAR DIAMETERS UNLESS NOTED OTHERWISE.
14. THE MASONRY CONTRACTOR MUST PROVIDE AND PLACE SUCH SPECIAL UNITS AS MAY BE REQUIRED TO FORM ALL CORNERS, RETURNS, AND OFFSETS WHILE MAINTAINING THE PROPER BOND.
15. WHERE INTERIOR CONCRETE MASONRY PARTITIONS INTERSECT WITH OTHER INTERIOR PARTITIONS OR EXTERIOR WALLS, A MASONRY BOND, OR THE EQUILVALENT IN APPROVED METAL TIES, MUST BE PROVIDED UNLESS NOTED OTHERWISE ON THE DRAWINGS.
16. REINFORCE ALL JAMB CELLS, CORNER CELLS, TEE CELLS, END CELLS AND AT EACH SIDE OF CONTROL JOINTS FULL HEIGHT – MATCH TYPICAL WALL REINFORCING UNLESS OTHERWISE NOTED.
17. FACE SHELL BEDDING MUST BE USED WITH COMPLETE COVERAGE OF FACE SHELLS. FURROWING OF THE MORTAR MUST NOT BE PERMITTED.
18. MORTAR JOINTS MUST BE 3/8" THICK WITH FULL MORTAR COVERAGE ON VERTICAL AND HORIZONTAL FACE SHELLS.
19. PROVIDE 2 #5 CONTINUOUS IN BOND BEAMS UNLESS NOTED OTHERWISE ON THE DRAWINGS. REINFORCEMENT PLACED IN BOND BEAMS MUST BE LAPPED A MINIMUM OF 48 BAR DIAMETERS AT SPLICES. PROVIDE CORNER BARS OF EQUIVALENT SIZE LAPPED 48 BAR DIAMETERS AT CORNERS AND INTERSECTIONS OF WALLS.
20. PLACE CONTROL JOINTS IN MASONRY WALLS SO THAT PANEL LENGTH TO HEIGHT RATIO DOES NOT EXCEED 1.5, AND THE MAXIMUM PANEL LENGTH DOES NOT EXCEED 25 FEET. SEE TEK 10-2B, PUBLISHED BY THE NATIONAL CONCRETE MASONRY ASSOCIATION. ADDITIONAL PARAMETERS ARE AS FOLLOWS:

a.	PLACE ADDITIONAL CONTROL JOINTS AT ABRUPT CHANGES IN WALL SECTION INCLUDING AT SIDES OF WINDOW AND DOOR OPENINGS AND AT CHANGES IN WALL HEIGHT.
b.	PLACE ADDITIONAL CONTROL JOINTS AT ALL CHANGES IN WALL THICKNESS.
c.	INSTALL AND CENTER CONTROL JOINTS OVER JOINTS IN FOUNDATION AND FLOORS.
d.	INSTALL AND CENTER CONTROL JOINTS BELOW JOINTS IN ROOFS AND FLOOR THAT BEAR ON MASONRY WALLS.
e.	PROVIDE JOINTS AT A DISTANCE NOT OVER ONE-HALF THE REQUIRED JOINT SPACING FROM CORNERS, WALL INTERSECTIONS AND CHANGES IN WALL DIRECTION.
f.	FOR WALL OPENINGS SIX FEET OR LESS IN WIDTH, PLACE JOINTS AT END OF LINTELS AND SILLS ON ONE SIDE OF OPENING. FOR WALL OPENINGS GREATER THAN SIX FEET IN WIDTH, PLACE JOINTS AT END OF LINTELS AND SILLS ON BOTH SIDES OF OPENINGS.

21. WHERE MASONRY WALLS EXCEED AN EIGHT FOOT HEIGHT, SUBMIT SHOP DRAWINGS AND CALCULATIONS FOR TEMPORARY WALL BRACING SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE JURISDICTION OF CONSTRUCTION.
22. SECURE MASONRY VENEER TO SUPPORTING WALLS OR COLUMNS AT 16" ON CENTER VERTICAL AND HORIZONTAL WITH APPROVED TIES AND/OR ANCHORS.

K. POST-INSTALLED ANCHORS

1. POST-INSTALLED ANCHORS MUST ONLY BE USED WHERE SPECIFIED ON THE CONSTRUCTION DOCUMENTS.
2. THE CONTRACTOR MUST OBTAIN APPROVAL FROM THE ENGINEER-OF-RECORD PRIOR TO INSTALLING POST-INSTALLED ANCHORS IN PLACE OF MISSING OR MISPLACED CAST-IN-PLACE ANCHORS.
3. ANCHORAGE TO CONCRETE:

a.	MECHANICAL ANCHORS MUST HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.2 AND ICC-ES AC193 FOR CRACKED AND UNCRACKED CONCRETE RECOGNITION.
b.	ADHESIVE ANCHORS MUST HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACE 355.4 AND ICC-ES AC 308 FOR CRACKED AND UNCRACKED CONCRETE RECOGNITION.

4. ANCHORAGE TO SOLID-GROUTED CONCRETE MASONRY:

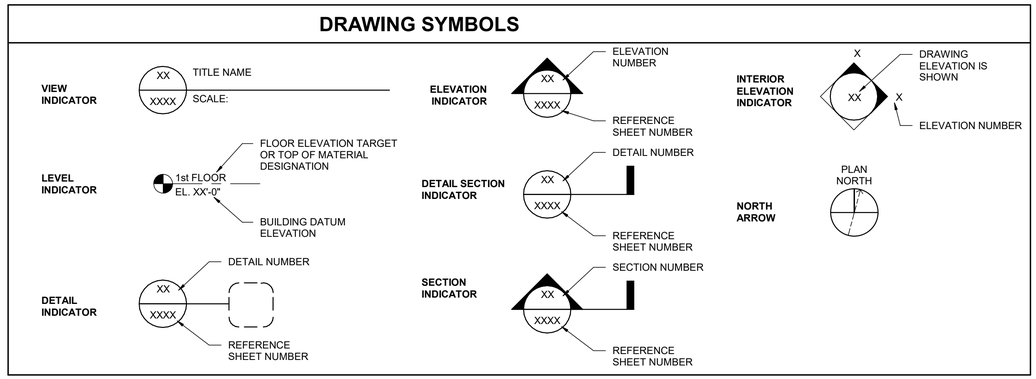
a.	MECHANICAL ANCHORS MUST HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC01 OR AC106.
b.	ADHESIVE ANCHORS MUST HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC58.

5. ANCHORAGE TO HOLLOW CONCRETE MASONRY / UNREINFORCED CLAY BRICK MASONRY:

a.	ADHESIVE ANCHORS WITH SCREEN TUBES MUST BE TESTED AND QUALIFIED IN ACCORDANCE WITH ICC-ES AC58 OR AC60, AS APPROPRIATE. THE APPROPRIATE SCREEN TUBE MUST BE USED AS RECOMMENDED BY THE ADHESIVE MANUFACTURER.

6. INSTALL ANCHORS PER THE MANUFACTURER INSTRUCTIONS, AS INCLUDED IN THE ANCHOR PACKAGING.
7. CAPACITY IS DEPENDANT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGE OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS.
8. EXISTING REINFORCING BARS IN THE CONCRETE STRUCTURE MAY CONFLICT WITH SPECIFIC ANCHOR LOCATIONS. UNLESS NOTED ON THE DRAWINGS THAT THE BARS CAN BE CUT, THE CONTRACTOR MUST REVIEW THE EXISTING STRUCTURAL DRAWINGS AND MUST UNDERTAKE TO LOCATE THE POSITION OF THE REINFORCING BARS AT THE LOCATIONS OF THE CONCRETE ANCHORS.
9. THE CONTRACTOR MUST TAKE MEASURES TO COORDINATE THE CONSTRUCTION SUCH THAT INTERFERENCE OF EXISTING REINFORCING STEEL WITH PLACEMENT OF NEW ANCHORS (DOWELS, EXPANSION BOLTS, ADHESIVE ANCHORS) DOES NOT OCCUR. IF EXISTING REINFORCING STEEL IS ENCOUNTERED DURING DRILLING, ADJUST THE ANCHOR LOCATION IF POSSIBLE AND NOTIFY THE STRUCTURAL ENGINEER. ABANDONED HOLES MUST BE FILLED WITH GROUT. ANCHORS MUST BE SET WITHIN 3 INCHES OF THEIR SPECIFIED LOCATION, BUT AT LEAST 1 INCH FROM ANY ABANDONED HOLE. CARE MUST BE TAKEN NOT TO BREAK OR DAMAGE REINFORCING STEEL DURING DRILLING, UNLESS OTHERWISE DIRECTED BY THE STRUCTURAL ENGINEER.

DRAWING SYMBOLS



L. ABBREVIATIONS

#	NUMBER
&	AND
=	EQUAL, EQUALS
@	AT
AB	ANCHOR BOLT
ACI	AMERICAN CONCRETE INSTITUTE
ADD'L	ADDITIONAL
ADJ	ADJACENT
AFF	ABOVE FINISEHD FLOOR
AH, AHU	AIR HANDLING UNIT
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ALT	ALTERNATE
ALUM	ALUMINUM
APPROX	APPROXIMATELY
ARCH	ARCHITECTURAL
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWS	AMERICAN WELDING SOCIETY
BET	BETWEEN
BM	BEAM
BOF	BOTTOM OF FOOTING
BOT, B/	BOTTOM
BRG	BEARING
C	CHANNEL
CENT	CENTERED
CIP	CAST IN PLACE
CJ	CONTROL JOINT
CJP	COMPLETE JOINT PENETRATION
CL	CENTERLINE
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
COND	CONDITION
CONN	CONNECT, CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
COORD	COORDINATE
DEG	DEGREE
DEM	DEMOLISH, DEMOLITION
DEP	DEPRESSED
DET	DETAIL
DIA	DIAMETER
DIAG	DIAGONAL
DIP	DUCTILE IRON PIPE
DL	DEADLOAD
DWG(S)	DRAWINGS
DWL	DOWEL
EA	EACH
EF	EACH FACE
ELEC	ELECTRICAL
ELEV	ELEVATION
EQ	EQUAL
EQUIP	EQUIPMENT
ES	EACH SIDE
EW	EACH WAY
EXIST	EXISTING
EXT	EXTERNAL, EXTERIOR
FF	FAR FACE
FFE	FINISH FLOOR ELEVATION
FG	FINISH GRADE
FMG	FRAMING
FND	FOUNDATION
FOC	FACE OF CONCRETE
FOM	FACE OF MASONRY
FS	FAR SIDE
FT, '	FOOT
FTG	FOOTING
Fy	YIELD STRESS
GA	GAUGE
GEN	GENERATOR
GUSS	GUSSET
HK	HOOK
HORIZ	HORIZONTAL
HP	HIGH POINT
HSS	HOLLOW STRUCTURAL SECTION
HT	HEIGHT
HVAC	HEATNG/ VENTILATING/ AIR CONDITIONING
I	MOMENT OF INERTIA
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIAMETER
IN, "	INCH
INCL	INCLUDE
INFO	INFORMATION
JST	JOIST
K, KIPS	THOUSAND POUNDS
L	LENGTH, ANGLE
LB	POUND
LG	LONG
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LOC	LOCATE, LOCATION
LONG	LONGITUDINAL
LP	LOW POINT
LW	LIGHT WEIGHT
MAS	MASONRY
MBR	MEMBER
MECH	MECHANICAL
MED	MEDIUM
MEZZ	MEZZANINE
MF	MOMENT FRAME
MFG, MANUF	MANUFACTURING
MIN	MINIMUM
MO	MASONRY OPENING
MOD	MODIFY, MODIFIED
MRF	MANUFACTURER
NF	NEAR FACE
NOM	NOMINAL
NS	NEAR SIDE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OH	OPPOSITE HAND, OVERHEAD
OWSJ	OPEN WEB STEEL JOIST
PAR	PARALLEL
PCF	POUNDS PER CUBIC FOOT
PEN	PENETRATION
PFJ	PERIMETER FELT JOINT
PL	PLATE
PLUMB	PLUMBING
PNL	PANEL
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
RCP	REINFORCED CONCRETE PIPE
REINF	REINFORCING, REINFORCED
REQ	REQUIRED
RET	RETURN, RETAINING
REV	REVISION, REVISED
RF	ROOF
S	SECTION MODULUS
SC	SLIP CRITICAL
SCBRW	SEGMENTAL CONCRETE BLOCK RETAINING WALL
SCHED	SCHEDULE
SDI	STEEL DECK INSTITUTE
SECT	SECTION
SEIS	SEISMIC
SEP	SEPARATION
SHT	SHEET
SIM	SIMILAR
SJI	STEEL JOIST INSTITUTE
SPEC(S)	SPECIFICATION(S)
SPRT	SUPPORT
SQ	SQUARE
SS	STAINLESS STEEL
ST	SNUG TIGHT
STD	STANDARD
STIF/STIFF	STIFFENER
STL	STEEL
STRUCT	STRUCTURAL, STRUCTURE
SUSP	SUSPENDED
SYM	SYMMETRICAL
T&B	TOP AND BOTTOM
T/	TOP OF
THK	THICK, THICKNESS
TL	TOTAL LOAD
TOB	TOP OF BEAM
TOC	TOP OF CONCRETE
TOF	TOP OF FOOTING
TOW	TOP OF WALL
TRNSVRS	TRANSVERSE
TYP	TYPICAL
UFC	UNITED FACILITES CRITERIA
UNO	UNLESS NOTED OTHERWISE
UON	UNLESS OTHERWISE NOTED
VB	VAPOR BARRIER
VERT	VERTICAL
W	WIDTH, WEST, WIDE FLANGE
w/	WITH
WF	WIDE FLANGE
WPT	WORKING POINT
WWF	WELDED WIRE FABRIC
x	BY, TIMES

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STAUNTON, VIRGINIA

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GENERAL NOTES

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GEOTECHNICAL - SOILS INSPECTION SECTION

SOILS INSPECTION - VERIFY THE FOLLOWING ARE IN COMPLIANCE
IBC 1705.6

INSPECTION REQ (Y/N)		TASK	INSPECTION TYPE	DESCRIPTION
Y	1.	MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY	OBSERVE	
Y	2.	EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL	OBSERVE	
Y	3.	VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL	CONTINUOUS	
Y	4.	PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY	OBSERVE	DURING FILL PLACEMENT, THE SPECIAL INSPECTOR SHALL VERIFY THAT PROPER MATERIALS AND PROCEDURES ARE USED IN ACCORDANCE WITH THE PROVISIONS OF THE APPROVED GEOTECHNICAL REPORT

GEOTECHNICAL - DRILLED ROCK ANCHOR FOUNDATIONS SPECIAL INSPECTIONS

INSPECTION REQ (Y/N)	TASK	INSPECTION TYPE	
DRILLED ROCK ANCHOR FOUNDATIONS INSPECTION - VERIFY THE FOLLOWING ARE IN COMPLIANCE W/ IBC 1705.8 AND OTHER APPLICABLE SPECIFICATIONS			IBC REFERENCE
Y	1. INSPECT DRILLING OPERATIONS AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH ELEMENT.	CONTINUOUS	TABLE 1705.8
Y	2. VERIFY PLACEMENT LOCATIONS AND PLUMBNESS, CONFIRM ELEMENT DIAMETERS, LENGTHS, EMBEDMENT INTO BEDROCK, AND ADEQUATE END BEARING STRATA CAPACITY. RECORD GROUT VOLUMES.	CONTIUOUS	TABLE 1705.8
Y	3. GROUT TEMPERATURE: ASTM C 1064; ONE TEST HOURLY WHEN AIR TEMPERATURE IS 40 DEG F (4.4 DEG C) AND BELOW AND WHEN 80 DEG F (27 DEG C) AND ABOVE, AND ONE TEST FOR EACH SET OF COMPRESSIVE-STRENGTH SPECIMENS.	OBSERVE	
Y	4. GROUT COMPRESSION TEST SPECIMENS: ASTM C109; ONE SET OF THREE 2" CUBES FOR A 7 DAY AND 28 DAY COMPRESSIVE-STRENGTH TEST, UNLESS OTHERWISE INDICATED. MOLD AND STORE CUBES FOR LABORATORY-CURED TEST SPECIMENS.	OBSERVE	
Y	5. GROUT COMPRESSIVE-STRENGTH TESTS: ASTM C 39; ONE SET FOR EACH MICROPILE. ONE SPECIMEN WILL BE TESTED AT 7 DAYS, 2 SPECIMENS WILL BE TESTED AT 28 DAYS, AND ONE SPECIMEN WILL BE RETAINED IN RESERVE FOR LATER TESTING IF REQUIRED.	OBSERVE	
Y	6. INCLUDE TIME WATER WAS ADDED TO CEMENT WHEN MAKING THE GROUT BATCH AND TIME WHEN PLACEMENT OF GROUT WAS FINISHED.	OBSERVE	
Y	7. INSPECT ALL GROUT PLACEMENT, INCLUDING MIXING, CONVEYING AND PLACING.	OBSERVE	
Y	8. STRUCTURAL STEEL: INSPECT PLATES, NUTS, WASHERS AT THE TOP OF MICROPILE REINFORCING. VERIFY THAT SIZES AND EMBEDMENT ARE AS SPECIFIED	OBSERVE	
Y	9. PROOF TESTING: PER ASTM D 1143-81 AND PROJECT SPECIFICATION 316333. TEST A MINIMUM OF 1 PER EVERY 10 PRODUCTION PILES, MINIMUM OF ONE PILE PER DAY.	OBSERVE	

STRUCTURAL - CONCRETE CONSTRUCTION SECTION

CONCRETE CONSTRUCTION, INCLUDING COMPOSITE DECK - VERIFY THE FOLLOWING ARE IN COMPLIANCE
IBC 1705.3, 1(ACI 318 REFERENCES NOTED IN IBC TABLE)

INSPECTION REQ (Y/N)		TASK	INSPECTION TYPE	DESCRIPTION
Y	1.	INSPECT REINFORCEMENT AND VERIFY PLACEMENT	OBSERVE	VERIFY PRIOR TO PLACING CONCRETE THAT REINFORCING IS OF SPECIFIED TYPE, GRADE AND SIZE; THAT IS FREE OF OIL, DIRT AND UNACCEPTABLE RUST; THAT IS LOCATED AND SPACED PROPERLY; THAT HOOKS, BENDS, TIES, STIRRUPS AND SUPPLEMENTAL REINFORCEMENT ARE PLACED CORRECTLY; THAT LAP LENGTHS, STAGGER AND OFFSETS ARE PROVIDED; AND THAT ALL MECHANICAL CONNECTIONS ARE INSTALLED PER THE MANUFACTURER'S INSTRUCTIONS AND/OR EVALUATION REPORT
N	2.	REINFORCING BAR WELDING	OBSERVE	-VERIFY WELDABILITY OF REINFORCING BARS OTHER THA ASTM A 706 -INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM 5/16" IN ACCORDANCE WITH AWS D1.4
Y	3.	ALL OTHER WELDING	CONTINUOUS	VISUALLY INSPECT ALL WELDS IN ACCORDANCE WITH AWS D1.4
Y	4.	CAST IN PLACE ANCHORS AND POST INSTALLED DRILLED ANCHORS (DOWNWARD INCLINED)	OBSERVE	VERIFY PRIOR TO PLACING CONCRETE THAT CAST IN PLACE ANCHOR AND POST INSTALLED DRILLED ANCHORS HAVE PROPER EMBEDMENT, SPACING AND EDGE DISTANCE
Y	5.	POST-INSTALLED ADHESIVE ANCHORS IN HORIZONTAL OR UPWARD INCLINED ORIENTATION	CONTINUOUS & DOCUMENT	-INSPECT AS REQUIRED PER APPROVED ICC-ES REPORT -VERIFY THAT INSTALLER IS CERTIFIED FOR INSTALLATION OF HORIZONTAL AND OVERHEAD APPLICATIONS -INSPECT PROOF LOADING AS REQUIRED BY THE CONTRACT DOCUMENTS
Y	6.	VERIFY USE OF REQUIRED MIX DESIGN	OBSERVE	VERIFY THAT ALL MIXES USED COMPLY WITH THE APPROVED CONSTRUCTION DOCUMENTS
Y	7.	PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORMSLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE	CONTINUOUS	AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TEST VERIFY THESE TESTS ARE PERFORMED BY QUALIFIED TECHNICIANS
Y	8.	INSPECT CONCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES	CONTINUOUS	VERIFY PROPER APPLICATION TECHNIQUES ARE USED DURING CONCRETE CONVEYANCE AND DEPOSITING AVOIDS SEGREGATION OR CONTAMINATION. VERIFY THAT CONCRETE IS PROPERLY CONSOLIDATED
Y	9.	VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUE	OBSERVE	INSPECT CURING, COLD WEATHER PROTECTION, AND HOT WEATHER PROTECTION PROCEDURES
Y	10.	INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED	OBSERVE	

STRUCTURAL - MASONRY CONSTRUCTION SECTION (ALL RISK CATEGORIES)

MASONRY CONSTRUCTION - VERIFY THE FOLLOWING ARE IN COMPLIANCE AT START OF CONSTRUCTION
IBC 1705.4 (TMS 402 & TMS 602)

INSPECTION REQ (Y/N)		TASK	INSPECTION TYPE	DESCRIPTION
Y	1.	COMPLIANCE WITH APPROVED SUBMITTALS PRIOR TO...	OBSERVE	
Y	2.	PROPORTIONS OF SITE-MIXED MORTAR	OBSERVE	
Y	3.	GRADE AND TYPE OF REINFORCEMENT, ANCHOR BOLTS, AND ANCHORAGES	OBSERVE	

MASONRY CONSTRUCTION - VERIFY THE FOLLOWING ARE IN COMPLIANCE PRIOR TO GROUTING
IBC 1705.4 (TMS 402 & TMS 602)

INSPECTION REQ (Y/N)		TASK	INSPECTION TYPE	DESCRIPTION
Y	4.	GROUT SPACE	OBSERVE	
Y	5.	PLACEMENT OF MASONRY UNITS AND MORTAR JOINTS	OBSERVE	
N	6.	WELDING OF REINFORCEMENT	CONTINUOUS	

MASONRY
SDI/QA/QC-2011, APPENDIX 1, TABLE 1.8

INSPECTION REQ (Y/N)		TASK	INSPECTION TYPE	DESCRIPTION
Y	7.	SIZE AND LOCATION OF STRUCTURAL ELEMENTS IS IN COMPLIANCE	OBSERVE	
Y	8.	PREPARATION, CONSTRUCTION, AND PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40 DEGREES (4.4 DEGREES CELSIUS) OR HOT WEATHER (TEMP ABOVE 9 DEGREES FARENHEIT 932.2 DEGRESS CELSIUS)	OBSERVE	
Y	9.	OBSERVE PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS, AND/OR PRISMS	OBSERVE	
Y	10.	TYPE, SIZE AND PLACEMENT OF REINFORCEMENT, CONNECTORS, ANCHOR BOLTS AND ANCHORAGES, INDLUDING DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES, OR OTHER CONSTRUCTION	OBSERVE	

STEEL SPECIAL INSPECTIONS - BOLTING

INSPECTION REQ...	VERIFICATION AND INSPECTION TASK	INSPECTION FREQUENCY		
		OBSERVE ON A RANDOM BASIS	PERFORM THESE TASKS FOR EACH WELDED JOINT	REFERENCED STANDARD
	PRIOR TO BOLTING			
Y	1. MANUFACTURER'S CERTIFICATIONS AVAILABLE FOR FASTENER MATERIALS.	X	---	AISC 360: TABLE N5.6-1
Y	2. FASTENERS MARKED IN ACCORDANCE WITH ASTM REQUIREMENTS.	X	---	AISC 360: TABLE N5.6-1
Y	3. PROPER FASTENERS SELECTED FOR THE JOINT DETAIL (GRADE, TYPE, BOLT LENGTH IF THREADS ARE TO BE EXCLUDED FROM SHEAR PLANE)	X	---	AISC 360: TABLE N5.6-1
Y	4. PROPER BOLTING PROCEDURE SELECTED FOR JOINT DETAIL	X	---	AISC 360: TABLE N5.6-1
Y	5. CONNECTING ELEMENTS, INCLUDING THE APPROPRIATE FAYING SUFRACE CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET APPLICABLE REQUIREMENTS	X	---	AISC 360: TABLE N5.6-1
Y	6. PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL OBSERVED AND DOCUMENTED FOR FASTENER ASSEMBLIES AND METHODS USED.	---	X	AISC 360: TABLE N5.6-1
Y	7. PROPER STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS AND OTHER FASTENER COMPONENTS.	X	---	AISC 360: TABLE N5.6-1
	DURING BOLTING			
Y	1. FASTENER ASSEMBLIES, OF SUITABLE CONDITION, PLACED IN ALL HOLES AND WASHERS (IF REQUIRED) ARE POSITIONED AS REQUIRED	X	---	ASIC 360: TABLE N5.6-2
Y	2. JOINT BROUGHT TO THE SNUG-TIGHT CONDITION PRIOR TO THE PRETENSIONING OPERATION	X	---	AISC 360: TABLE N5.6-2
Y	3. FASTENER COMPONENT NOT TURNED BY THE WRENCH PREVENTED FROM ROTATING	X	---	AISC 360: TABLE N5.6-2
Y	4. FASTENERS ARE PRETENSIONED IN ACCORDANCE WITH THE RCSC SPFECIFICATION, PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD THE FREE EDGES	X	---	AISC 360: TABLE N5.6-2
	AFTER BOLTING			
Y	1. DOCUMENT ACCEPTANCE OR REJECTION OF BOLTED CONNECTIONS	---	X	AISC 360: TABLE N5.6-3

STRUCTURAL - STEEL - OTHER INSPECTIONS

NONDESTRUCTIVE TESTING OF WELDED JOINTS-VERIFY THE FOLLOWING ARE IN COMPLIANCE IBC 1705.2.1, AISC 360-10: SECTION N5.5

INSPECTION REQ (Y/N)	TASK	INSPECTION TYPE	DESCRIPTION
Y	ANCHOR RODS AND OTHER EMBEDMENTS SUPPORTING STRUCTURAL STEEL	PERFORM	VERIFY THE DIAMETER, GRADE, TYPE, AND LENGTH OF THE ANCHOR ROD OR EMBEDDED ITEM, AND THE EXTENT OR DEPTH OF EMBEDMENT PRIOR TO PLACEMENT OF CONCRETE

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STEEL SPECIAL INSPECTIONS - WELDING

INSPECTION REQ Y/N	VERIFICATION AND INSPECTION TASK	INSPECTION FREQUENCY		
		OBSERVE ON A RANDOM BASIS	PERFORM THESE TASKS FOR EACH WELDED JOINT	AISC 360 REFERENCED SECTION
	PRIOR TO WELDING			
Y	1. WELDING PROCEDURE SPECIFICATIONS (WPS) AVAILABLE	---	X	TABLE N5.4-1
Y	2. MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES AVAILABLE.	---	X	TABLE N5.4-1
Y	3. MATERIAL IDENTIFICATION (TYPE/GRADE)	X	---	TABLE N5.4-1
Y	4. WELDER IDENTIFICATION SYSTEM	X	---	TABLE N5.4-1
Y	5. FIT-UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY)	X	---	TABLE N5.4-1
	JOINT PREPARATION			
	DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL)			
	CLEANLINESS (CONDITION OF STEEL SURFACES)			
	TACKING (TACK WELD QUALITY AND LOCATION)			
	BACKING TYPE AND FIT (IF APPLICABLE)			
N	6. CONFIGURATION AND FINISH OF ACCESS HOLES	X	---	TABLE N5.4-1
Y	7. FIT-UP OF FILLET WELDS	X	---	TABLE N5.4-1
	DIMENSIONS (ALIGNMENT, GAPS AT ROOT)			
	CLEANLINESS (CONDITION OF STEEL SURFACES)			
	TACKING (TACK WELD QUALITY AND LOCATION)			
Y	8. CHECK WELDING EQUIPMENT	X	---	TABLE N5.4-1
	DURING WELDING			
Y	1. USE OF QUALIFIED WELDERS	X	---	TABLE N5.4-2
Y	2. CONTROL AND HANDLING OF WELDING CONSUMABLES	X	---	TABLE N5.4-2
	PACKAGING			
	EXPOSURE CONTROL			
Y	NO WELDING OVER CRACKED TACK WELDS	X	---	TABLE N5.4-2
Y	ENVIRONMENTAL CONDITIONS	X	---	TABLE N5.4-2
	WIND SPEED WITHIN LIMITS			
	PRECIPITATION AND TEMPERATURE			
Y	WPS FOLLOWED	X	---	TABLE N5.4-2
	SETTINGS ON WELDING EQUIPMENT			
	TRAVEL SPEED			
	SELECTED WELDING MATERIALS			
	SHIELDING GAS TYPE/FLOW RATE			
	PREHEAT APPLIED			
	INTERPASS TEMPERATURE MAINTAINED (MIN/MAX)			
	PROPER POSITION (F, V, H, OH)			
Y	WELDING TECHNIQUES	X	---	TABLE N5.4-2
	INTERPASS AND FINAL CLEANING			
	EACH PASS WITHIN PROFILE LIMITATIONS			
	EACH PASS MEETS QUALITY REQUIREMENTS			
	INSPECTION TASKS AFTER WELDING			
Y	1. WELDS CLEANED	X	___	TABLE N5.4-3
Y	2. SIZE, LENGTH AND LOCATION OF WELDS	---	X	TABLE N5.4-3
Y	3. WELDS MEET VISUAL ACCEPTANCE CRITERIA	---	X	TABLE N5.4-3
	CRACK PROHIBITION			
	WELD/BASE-METAL FUSION			
	CRATER CROSS SECTION			
	WELD PROFILES			
	WELD SIZE			
	UNDERCUT			
	POROSITY			
Y	4. ARC STRIKES	---	X	TABLE N5.4-3
Y	5. k-AREA	---	X	TABLE N5.4-3
Y	6. BACKING REMOVED AND WELD TABS REMOVED (IF REQUIRED)	---	X	TABLE N5.4-3
Y	7. REPAIR ACTIVITIES	---	X	TABLE N5.4-3
Y	8. DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT OR MEMBER	---	X	TABLE N5.4-3

STRUCTURAL - STEEL - COLD-FORMED METAL DECK - PLACEMENT SECTION

METAL DECK INSPECTION PRIOR TO DECK PLACEMENT-VERIFY THE FOLLOWING ARE IN COMPLIANCE SDI QA/Q-2011, APPENDIX 1, TABLE 1.1			
INSPECTION REQ (Y/N)		INSPECTION TYPE	DESCRIPTION
Y	VERIFY COMPLIANCE OF MATERIALS (DECK AND ALL DECK ACCESSORIES) WITH CONSRUCTION DOCUMENTS, INCLUDING PROFILES, MATERIAL PROPERTIES, AND BASE METAL THICKNESS	PERFORM	
Y	DOCUMENT ACCEPTANCE OR REJECTION OF DECK AND DECK ACCESORIES	DOCUMENT	
METAL DECK INSPECTION DURING DECK PLACEMENT-VERIFY THE FOLLOWING ARE IN COMPLIANCE SDI QA/QC-2011, APPENDIX 1, TABLE 1.2			
TASK		INSPECTION TYPE	DESCRIPTION
Y	VERIFY COMPLIANCE OF DECK AND ALL DECK ACCESSORIES INSTALLATION WITH CONSTRUCTION DOCUMENTS	PERFORM	
Y	VERIFY DECK MATERIALS ARE REPRESENTED BY THE MILL CERTIFICATIONS THAT COMPLY WITH THE CONSTRUCTION DOCUMETS	PERFORM	
Y	DOCUMENT ACCEPTANCE OR REJECTION OF INSTALLATION OF DECK AND DECK ACCESSORIES	DOCUMENT	
METAL DECK INSPECTION AFTER DECK PLACEMENT-VERIFY THE FOLLOWING ARE IN COMPLIANCE SDI/QA/QC-2011, APPENDIX 1, TABLE 1.3			
TASK		INSPECTION TYPE	DESCRIPTION
Y	WELDING PROCEDURE SPECIFICATION (WPS) AVAILABLE	PERFORM	
Y	MANUFACTURER'S CERTIFICATIONS FOR WELDING CONSUMABLES...	OBSERVE	
Y	MATERIAL IDENTIFICATION (TYPE/GRADE)	OBSERVE	
Y	CHECK WELDING EQUIPMENT	OBSERVE	

STRUCTURAL - STEEL - COLD-FORMED METAL DECK - FASTENING SECTION

METAL DECK INSPECTION BEFORE MECHANICAL FASTENING-VERIFY THE FOLLOWING ARE IN COMPLIANCE SDI QA/Q-2011, APPENDIX 1, TABLE 1.6			
INSPECTION REQ (Y/N)	**TASK**	**INSPECTION TYPE**	**DESCRIPTION**
Y	1. MANUFACTURER'S INSTALLATION INSTRUCTIONS AVAILABLE FOR MECHANICAL FASTENER'S	OBSERVE	
Y	2. PROPER TOOLS AVAILABLE FOR FASTENER INSTALLATION	OBSERVE	
METAL DECK INSPECTION DURING MECHANICAL FASTENING-VERIFY THE FOLLOWING ARE IN COMPLIANCE SDI QA/QC-2011, APPENDIX 1, TABLE 1.7			
INSPECTION REQ (Y/N)	**TASK**	**INSPECTION TYPE**	**DESCRIPTION**
Y	3. FASTENERS ARE POSITIONED AS REQUIRED	OBSERVE	
Y	4. FASTENERS ARE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS	OBSERVE	
METAL DECK INSPECTION AFTER MECHANICAL FASTENING-VERIFY THE FOLLOWING ARE IN COMPLIANCE SDI/QA/QC-2011, APPENDIX 1, TABLE 1.8			
INSPECTION REQ (Y/N)	**TASK**	**INSPECTION TYPE**	**DESCRIPTION**
Y	5. CHECK SPACING, TYPE, AND INSTALLATION OF SUPPORT FASTENER'S	PERFORM	
Y	6. CHECK SPACING, TYPE, AND INSTALLATION OF SIDELAP FASTENERS	PERFORM	
Y	7. CHECK SPACING, TYPE, AND INSTALLATION OF PERIMETER...	PERFORM	
Y	8. VERIFY REPAIR ACTIVITIES	PERFORM	
Y	9. DOCUMENT ACCEPTANCE OR REJECTION OF MECHANICAL...	DOCUMENT	

STRUCTURAL - STEEL - COLD-FORMED METAL DECK - WELDING SECTION

METAL DECK INSPECTION DURING WELDING-VERIFY THE FOLLOWING ARE IN COMPLIANCE SDI QA/Q-2011, APPENDIX 1, TABLE 1.4			
INSPECTION REQ (Y/N)	**TASK**	**INSPECTION TYPE**	**DESCRIPTION**
Y	1. USE OF QUALIFIED WELDERS	OBSERVE	
Y	2. CONTROL AND HANDLING OF WELDING CONSUMABLES	OBSERVE	
Y	3. ENVIRONMENTAL CONDITIONS (WIND SPEED, MOISTURE, TEMPERATURE)	OBSERVE	
Y	4. WPS FOLLOWED	OBSERVE	
METAL DECK INSPECTION AFTER WELDING-VERIFY THE FOLLOWING ARE IN COMPLIANCE SDI QA/QC-2011, APPENDIX 1, TABLE 1.5			
INSPECTION REQ (Y/N)	**TASK**	**INSPECTION TYPE**	**DESCRIPTION**
Y	5. VERIFY SIZE AND LOCATION OF WELDS, INCLUDING SUPPORT, SIDELAP, AND PERIMETER WELDS	PERFORM	
Y	6. WELDS MEET VISUAL ACCEPTANCE CRITERIAL	PERFORM	
Y	7. VERIFY REPAIR ACTIVITIES	OBSERVE	
Y	8. DOCUMENT ACCEPTANCE OR REJECTION OF WELDS	DOCUMENT	

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05/27/2022
PROFESSIONAL ENGINEER

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GARDNER SPRING PUMP STATION
STAUNTON, VIRGINIA

MRK	DATE	REVISION DESCRIPTION

COMM NO: 220117
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SHEET TITLE
SPECIAL INSPECTIONS CONTINUED

SHT. NO. S-004
REV. NO.

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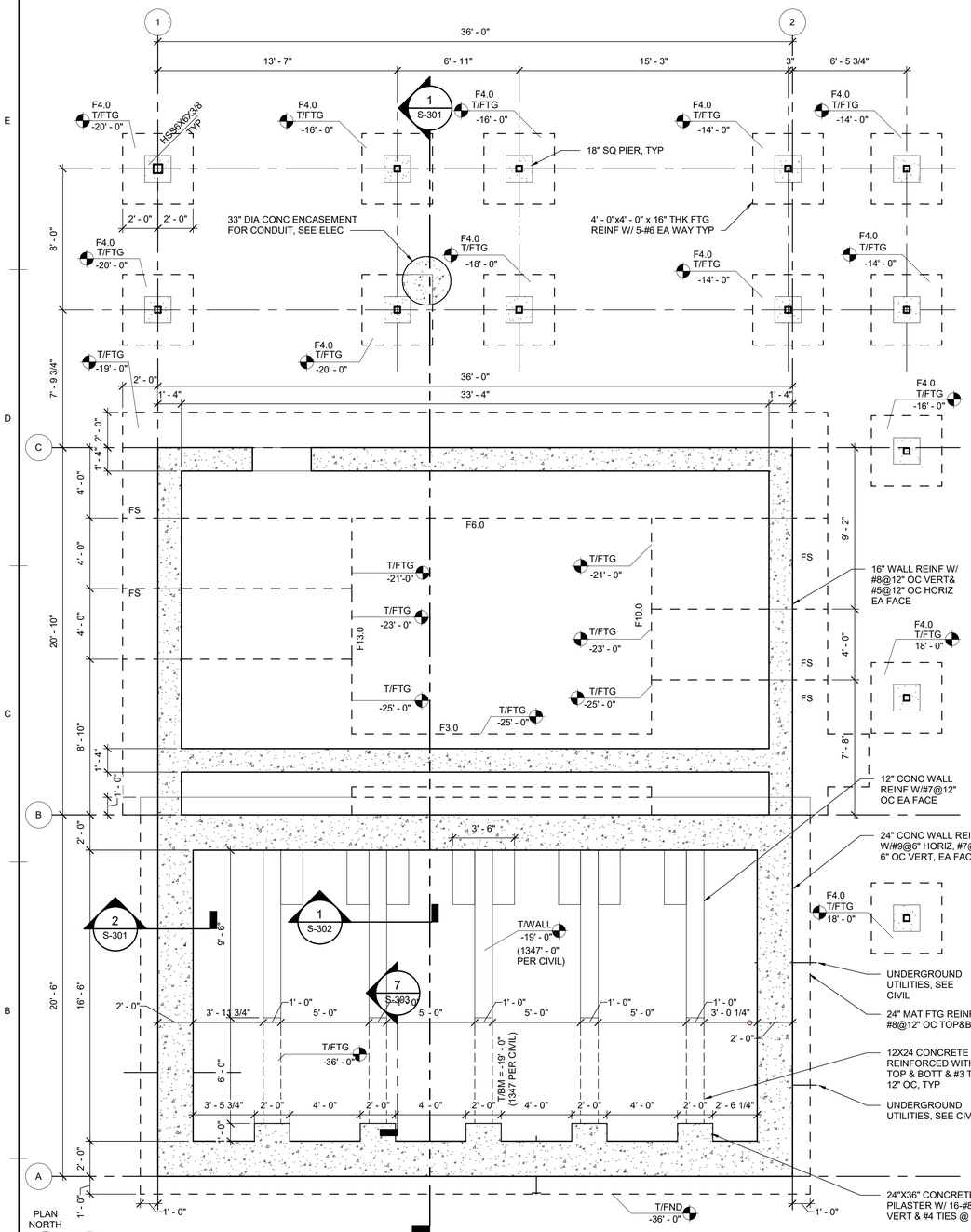
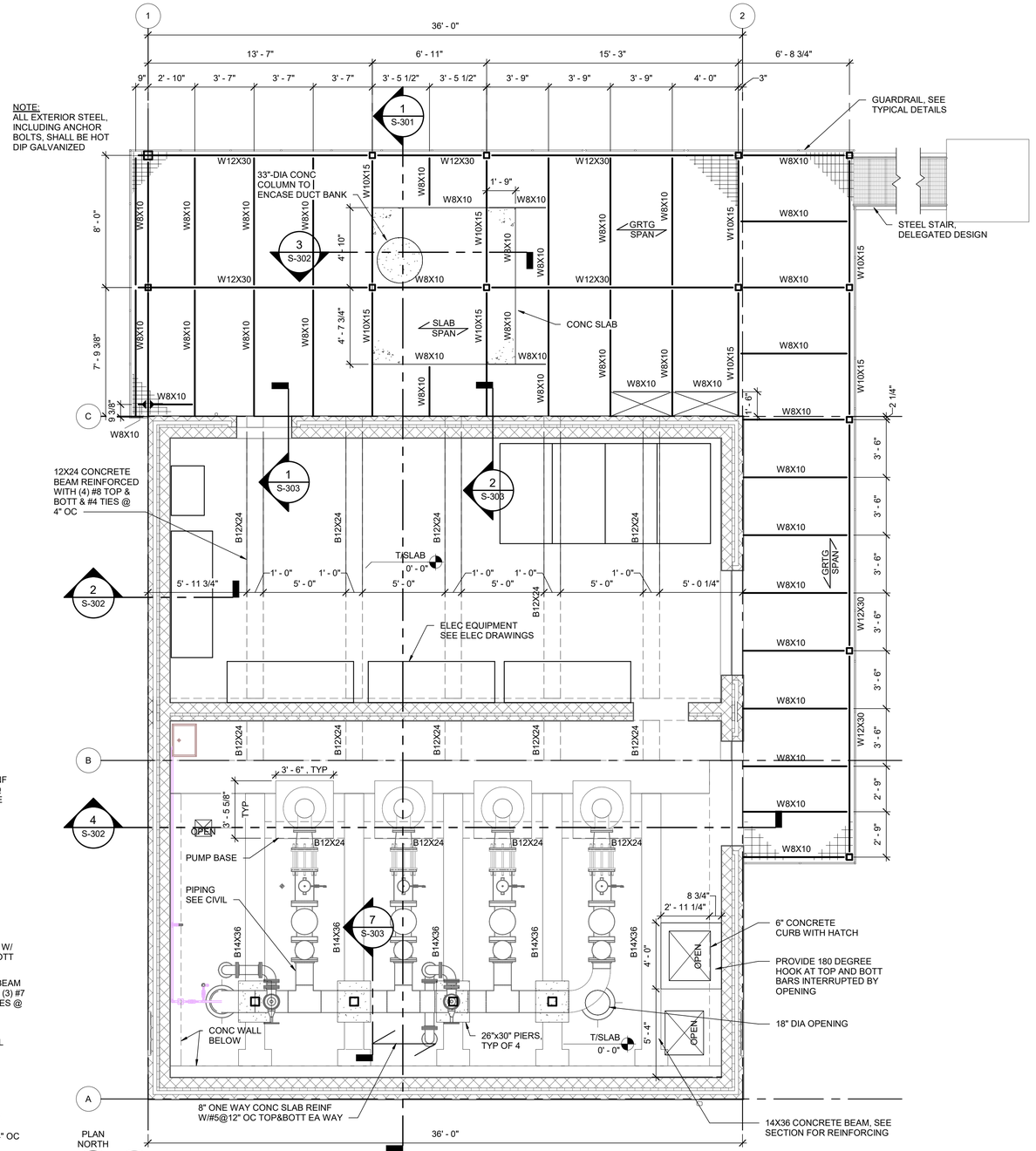


1 WET WELL & ELECTRICAL ROOM FOUNDATION PLAN

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

NOTES

1. ALL ELEVATIONS ARE RELATIVE TO THE REFERENCE FINISH FLOOR ELEVATION= 0'-0" (ACTUAL = 1366' - SEE CIVIL FOR ADDITIONAL INFORMATION.)
2. ELEVATED SLAB MUST BE 8" THICK REINF W/#5@12" OC EA WAY TOP&BOTT
3. UTILITIES SHOWN ON DRAWINGS ARE FOR REFERENCE ONLY. THE CONTRACTOR MUST COORDINATE ALL UTILITIES IN THE FIELD. NO CONCRETE PIERS MAY CONFLICT WITH UTILITIES.
4. (X'-X") EXAMPLE, DENOTES THE TOP OF FOOTING.
5. FX.0 EXAMPLE, DENOTES FOOTING SIZE. SEE FOOTING SCHEDULE, THIS SHEET
6. "TOS= -X'-X" EXAMPLE , DENOTES TOP OF SLAB ELEVATION.
7. ---------- EXAMPLE, DENOTES CONTROL JOINT TO BE PROVIDED IN SLAB ON GRADE. REFER TO STRUCTURAL NOTES FOR ADDITIONAL INFORMATION AND TYPICAL DETAIL 1/S-501. REFER TO STRUCTURAL NOTES FOR SPACING LIMITATIONS.
8. FS EXAMPLE, DENOTES FOOTING STEP SEE S/S-501 FOR ADDITIONAL INFO
9. BAR GRATING MUST BE NAAM 19-W-4 1"X3/16" GALVANIZED BAR GRATING



2 PUMP ROOM & ELECTRICAL ROOM FLOOR PLAN

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

FOOTING SCHEDULE					
	DIMENSIONS			REINFORCING	
MARK	WIDTH	LENGTH	DEPTH		REMARKS
F3.0	3' - 0"	3' - 0"	1' - 8"	#6@12"OC LONG, #5@12"OC TRNVRS	
F4.0	4' - 0"	4' - 0"'	1' - 4"	5-#6 T&B, EW	
F6.0	6' - 0"	6' - 0"	1' - 8"	#6@12"OC LONG, #5@12"OC TRNVRS	
F10.0	10' - 0"	10' - 0"	1' - 8"	#6@12"OC LONG, #5@12"OC TRNVRS	
F13.0	13' - 0"	13' - 0"	1' - 8"	#6@12"OC LONG, #5@12"OC TRNVRS	

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SHEET TITLE

WET WELL & ELECTRICAL ROOM FOUNDATION PLAN & PUMP ROOM & ELECTRICAL ROOM FLOOR PLAN

SHT. NO. S-101

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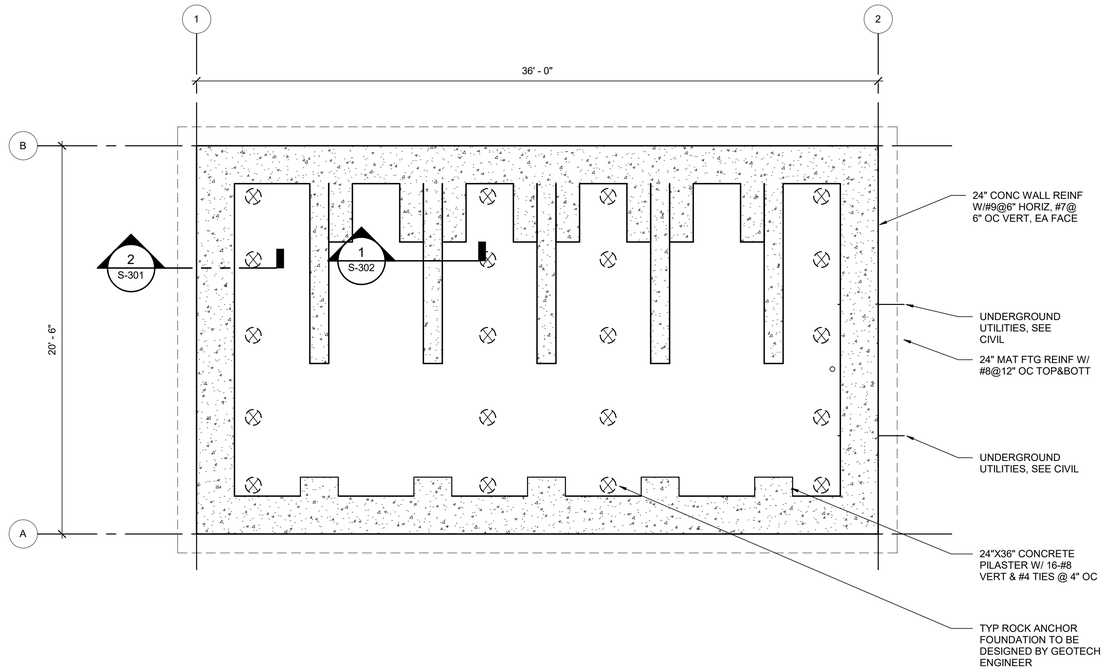


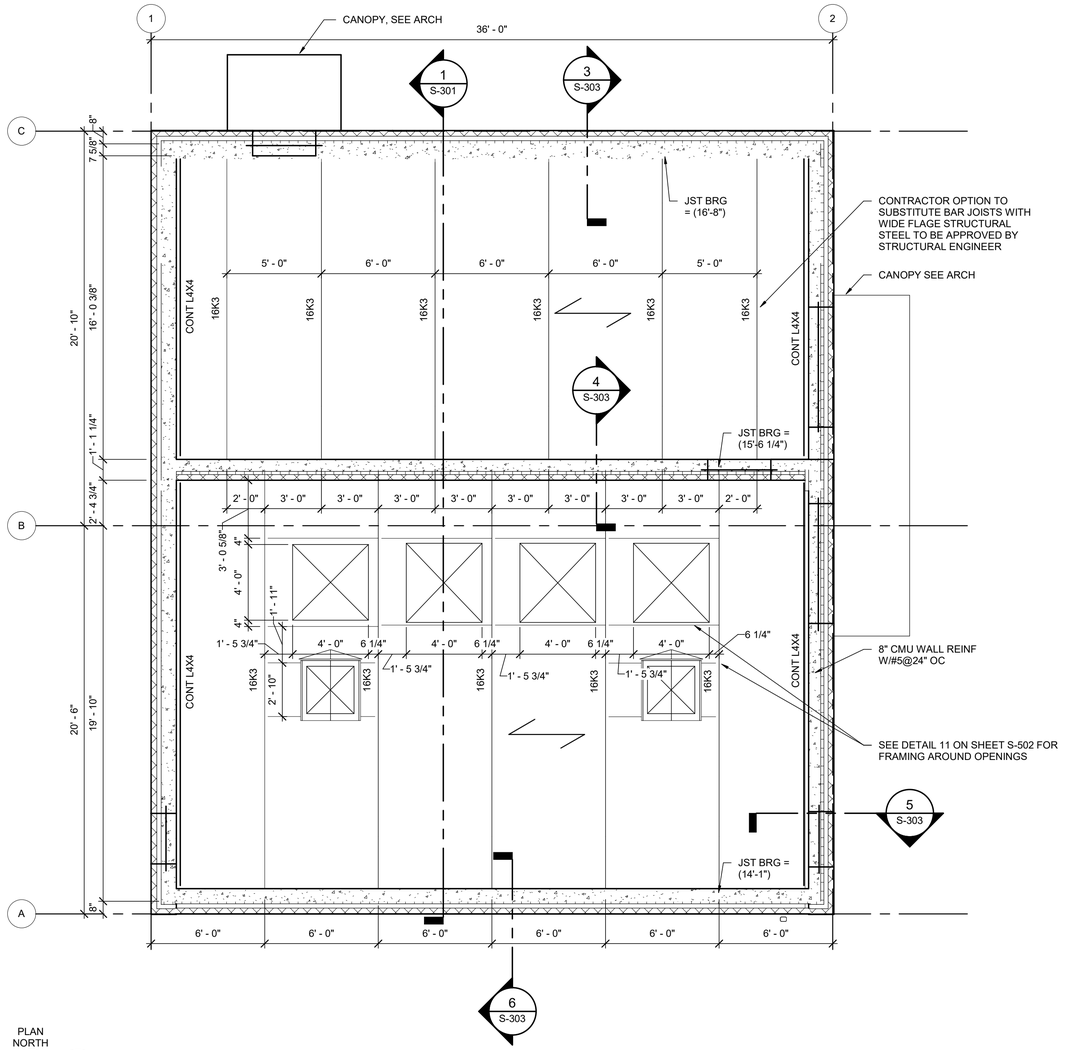
NOTES:

1. THE ARRANGEMENT,QUANTITY, AND SIZE OF ROCK ANCHOR FOUNDATIONS SHOWN IS ONLY MEANT TO PROVIDE FURTHER VISUAL CLARIFICATION AND SHOULD BE INSTALLED ACCORDING TO THE DESIGN OF THE SPECIALTY ENGINEER.

PLAN NORTH

1 ROCK ANCHOR FOUNDATION PLAN

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



PLAN NORTH

2 ROOF FRAMING PLAN

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

NOTES

1. TOP OF ROOF DECK= +0'-5" RELATIVE TO THE REFERENCED ELEVATION UNLESS OTHERWISE NOTED.
3. (X'-X"), DENOTES TOP OF JOIST ELEVATION RELATIVE TO THE REFERENCE FINISH FLOOR.
5. INDICATES SPAN OF DECK

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MRK	DATE	REVISION DESCRIPTION

COMM NO:	220117		
DATE:	03/09/2022		
DRAWN:	RMA	DESIGN:	RMA
CHECK:			JWR

SHEET TITLE

WETWELL ROCK ANCHOR FOUNDATION PLAN & PUMP STATION ROOF FRAMING PLAN

SHT. NO.	REV. NO.
S-102	

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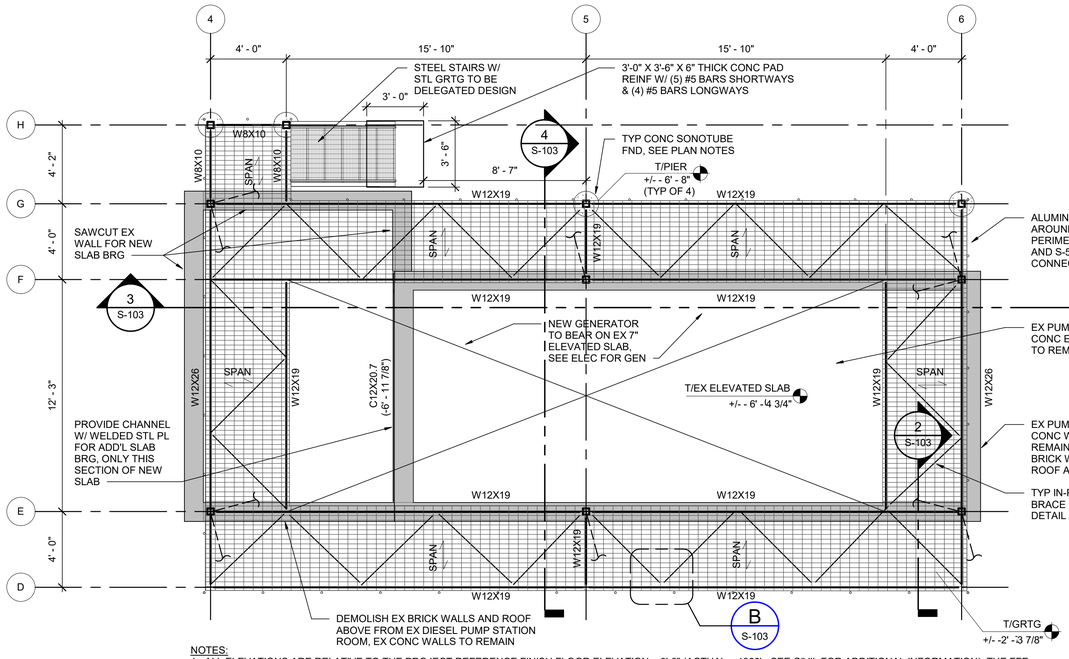
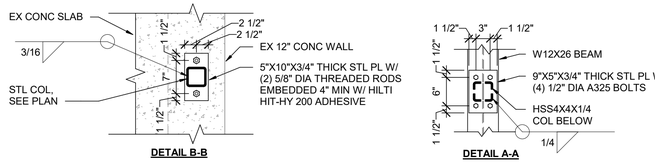


NOTES:
1. ALL ELEVATIONS ARE RELATIVE TO THE PROJECT REFERENCE FINISH FLOOR ELEVATION = 0'-0" (ACTUAL = 1366' - SEE CIVIL FOR ADDITIONAL INFORMATION). THE FFE OF THE EX PUMP STATION ELEVATED SLAB IS APPROXIMATELY 1359.60'. T/PLATFORM WILL BE 4'-1" ABOVE EX PUMP STATION FFE (APPROX ELEVATION OF 1363.68').
2. DEMOLISH EXISTING PUMP ROOM AND DIESEL PUMP ROOM IN EXISTING PUMP STATION BUILDING DOWN TO EXISTING CONCRETE ELEVATED SLAB, INCLUDING ROOF AND BRICK WALLS, SEE CD-101 & CD-102 FOR DEMOLITION PLANS.
3. COMPLETELY DEMOLISH EXISTING CHLORINE ROOM IN EX PUMP STATION BUILDING (CHLORINE ROOM NOT SHOWN FOR CLARITY, SEE CD-101 & CD-102FOR DEMOLITION PLANS).
4. ALL GENERATOR PLATFORM STRUCTURAL STEEL MEMBERS, BOLTS, PLATES, GRATING ETC, WILL BE HOT-DIPPED GALVANIZED.
5. TYP COLUMNS ARE HSS4X4X1/4. COLS NOT BEARING ON EX WALLS OR EX SLAB WILL BEAR ON CONC SONOTUBE FNDS REINF W/ (7) # 5 VERT BARS & #4 TIES @ 8" OC.
6. STL GRATING WILL BE 1"X3/16" 19-W-4 STL GRATING, TYP.
7. THE FOLLOWING SYMBOL DENOTES AN L3X3X1/4 DIAGONAL ANGLE BRACE:

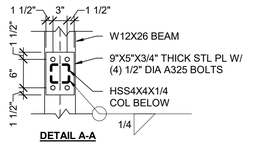
PLAN NORTH

1 PUMP STATION GENERATOR ACCESS PLATFORM FRAMING PLAN

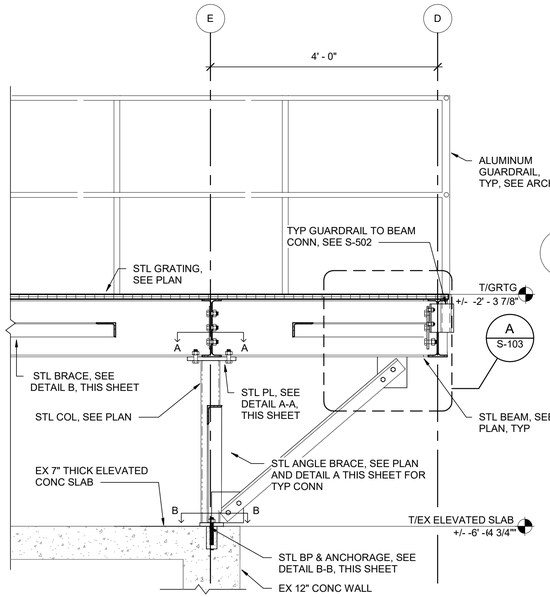
SCALE: 1/4" = 1'-0"

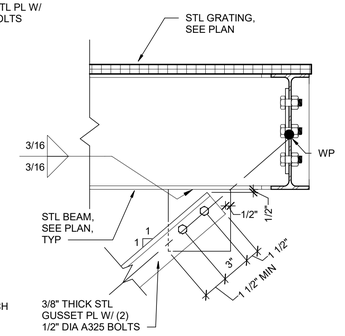


DETAIL B-B



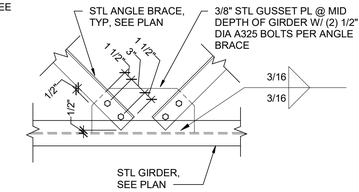
DETAIL A-A





A DETAIL - DIAG BRACE CONN

NOT TO SCALE



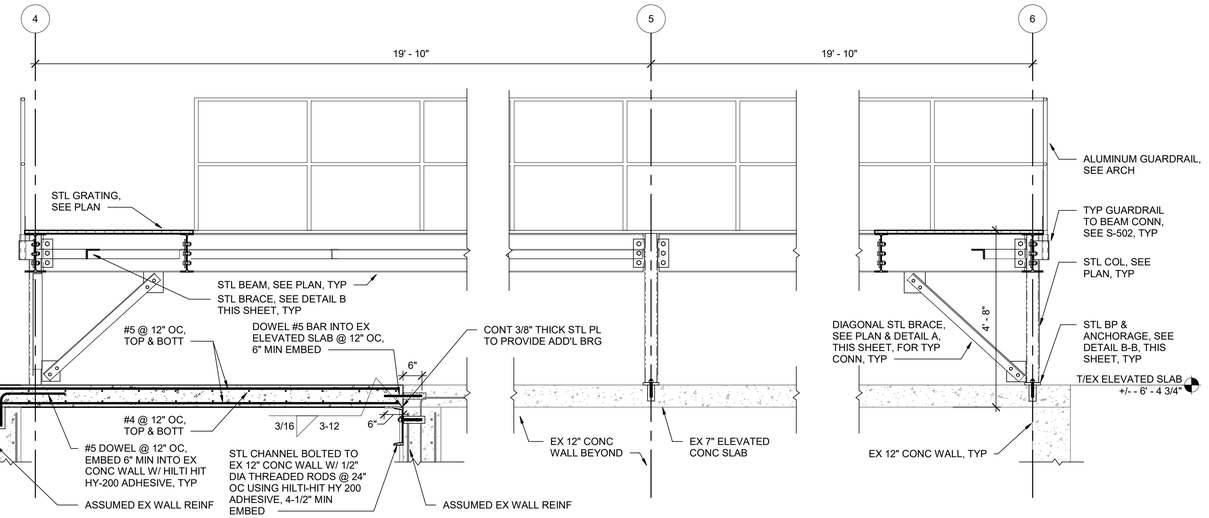
2 SECTION

S-103

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

B DETAIL - IN-PLANE PLATFORM BRACE

NOT TO SCALE

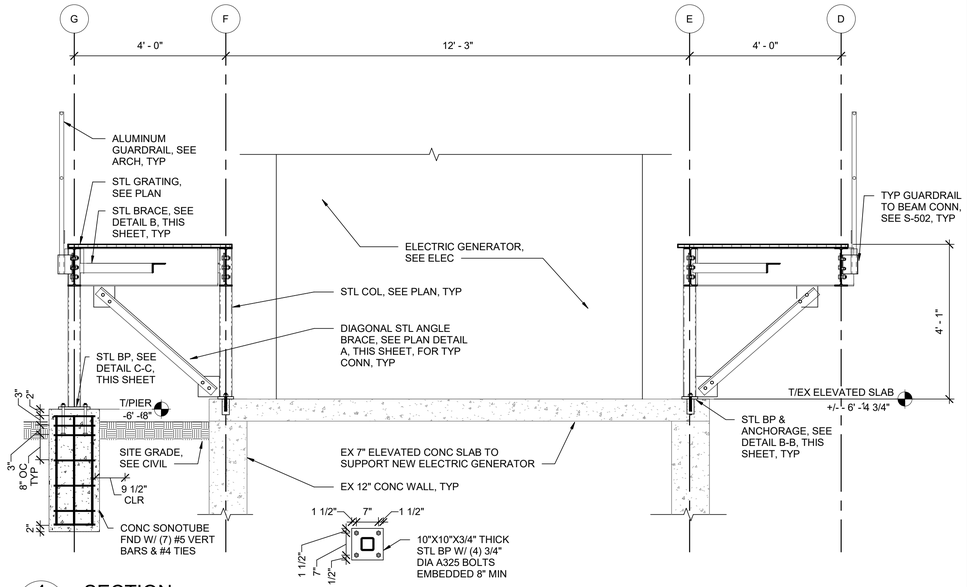


NOTES:
1. ELECTRIC GENERATOR NOT SHOWN FOR CLARITY.

3 SECTION

S-103

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



DETAIL C-C

4 SECTION

S-103

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

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EXISTING PUMP STATION ACCESS PLATFORM FRAMING PLAN, SECTIONS, & DETAILS

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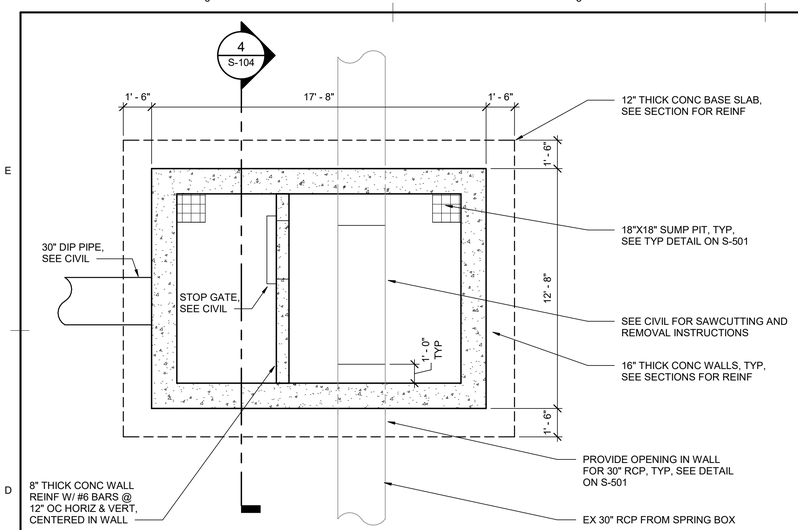
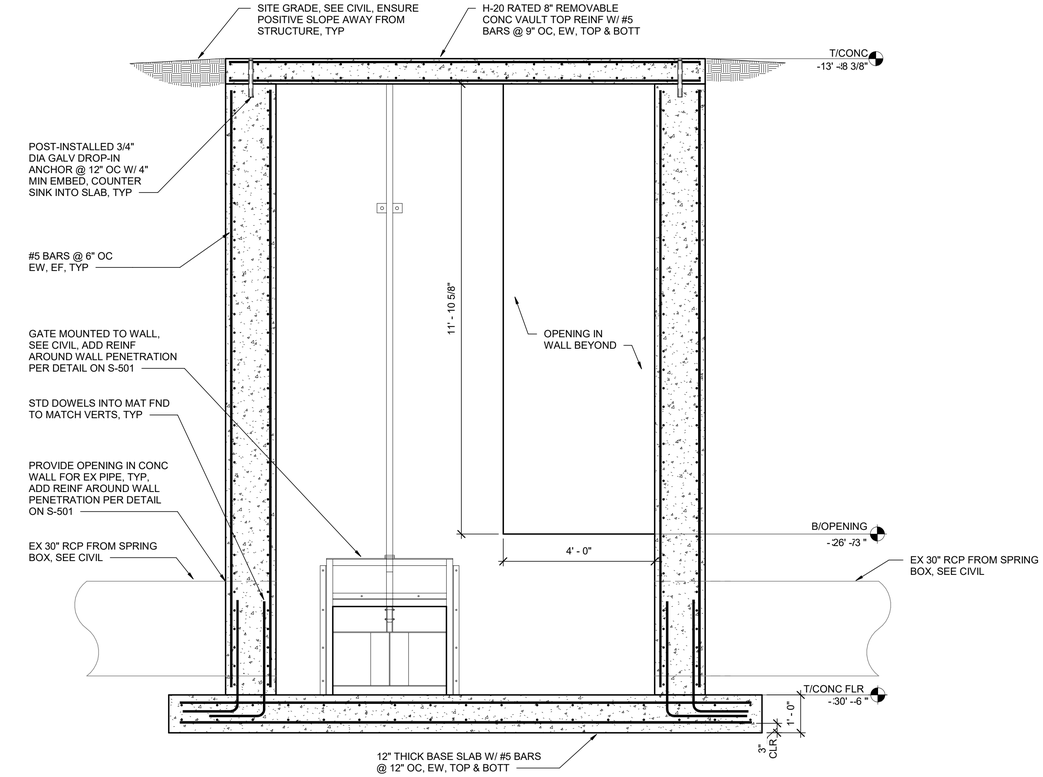


NOTES:
1. VAULT TOP NOT SHOWN FOR CLARITY, SEE SECTION.
2. REFER TO CIVIL SHEET D-501 FOR MORE DETAIL ABOUT INTAKE CONTROL STRUCTURE.

1 INTAKE CONTROL STRUCTURE FND PLAN

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



NOTES:
1. ALL ELEVATIONS ARE RELATIVE TO THE PROJECT REFERENCE FINISH FLOOR ELEVATION = 0'-0" (ACTUAL = 1366' - SEE CIVIL FOR ADDITIONAL INFORMATION.)

4 INTAKE CONTROL STRUCTURE VAULT SECTION

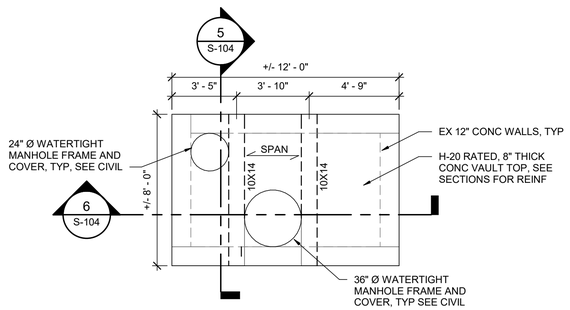
S-104 SCALE: 1/2" = 1'-0"

2 INTAKE CONTROL STRUCTURE TOP PLAN

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

A DETAIL - REINF AROUND MANHOLE OPNG

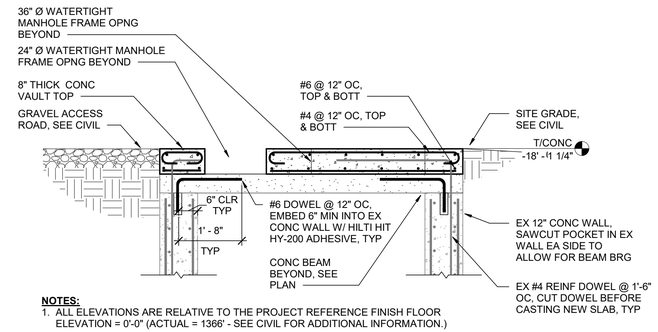
NOT TO SCALE



NOTES:
1. REFER TO CIVIL SHEET D-501 FOR MORE DETAIL ABOUT RIVER VAULT INTAKE CONTROL STRUCTURE.

3 RIVER VAULT TOP PLAN

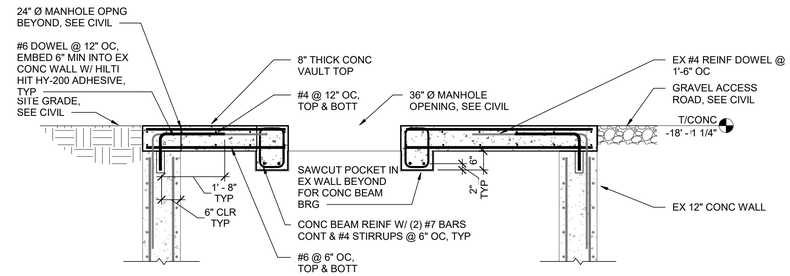
SCALE: 1/4" = 1'-0"



NOTES:
1. ALL ELEVATIONS ARE RELATIVE TO THE PROJECT REFERENCE FINISH FLOOR ELEVATION = 0'-0" (ACTUAL = 1366' - SEE CIVIL FOR ADDITIONAL INFORMATION.)

5 RIVER VAULT SECTION

S-104 SCALE: 1/2" = 1'-0"



NOTES:
1. ALL ELEVATIONS ARE RELATIVE TO THE PROJECT REFERENCE FINISH FLOOR ELEVATION = 0'-0" (ACTUAL = 1366' - SEE CIVIL FOR ADDITIONAL INFORMATION.)

6 RIVER VAULT SECTION

S-104 SCALE: 1/2" = 1'-0"

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INTAKE CONTROL STRUCTURE & RIVER VAULT PLANS AND SECTIONS

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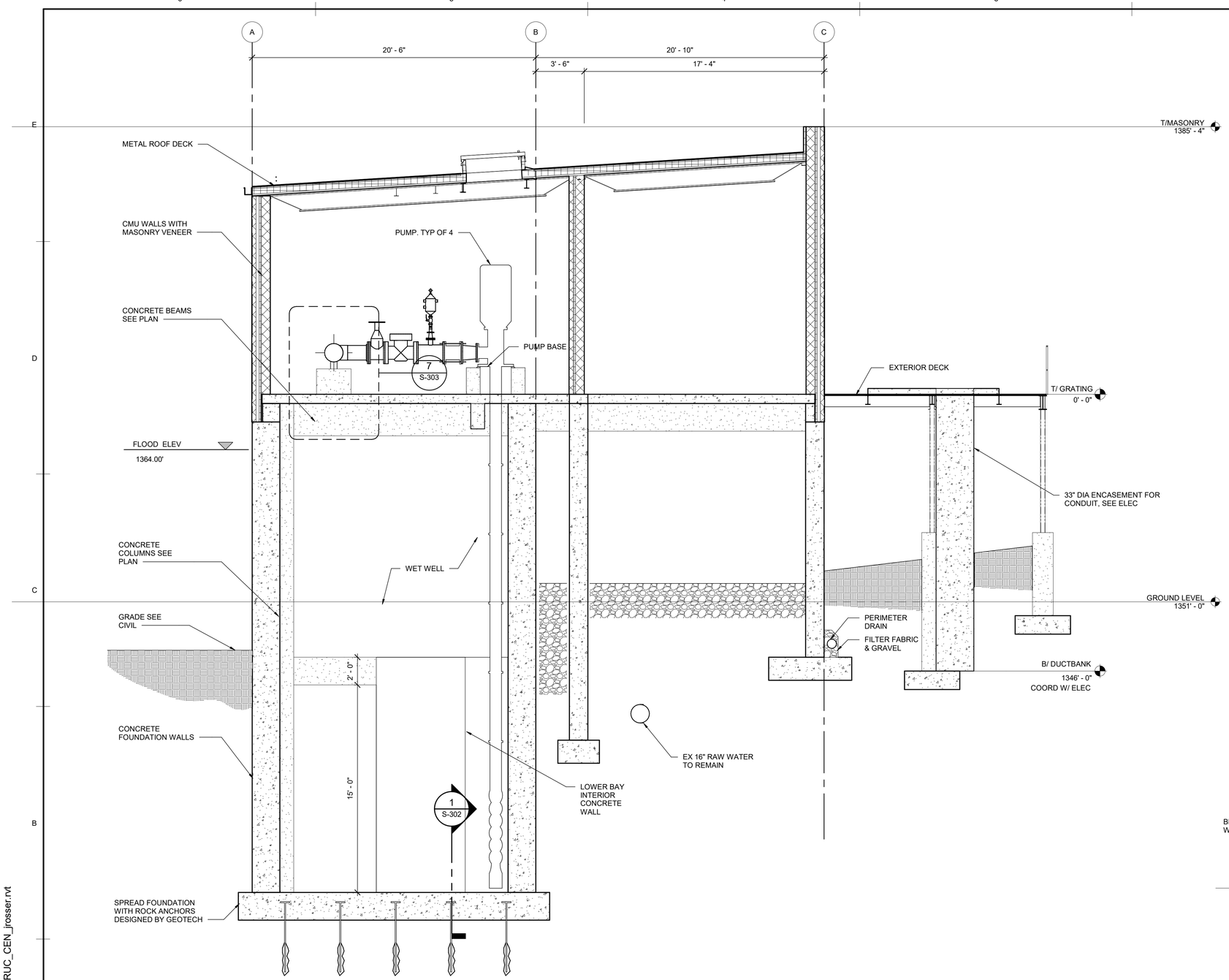
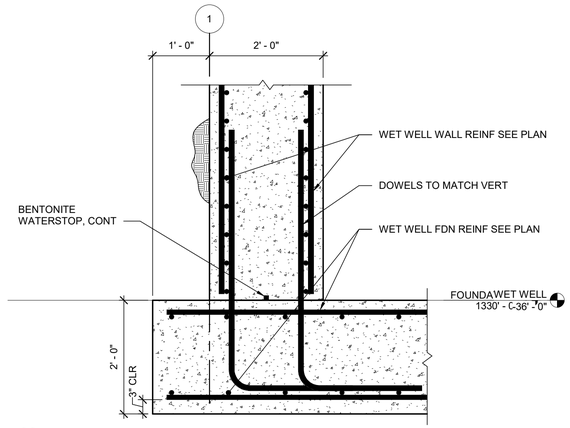


1 S-101 **SECTION**

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



2 S-101 **SECTION**

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

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SHEET TITLE

SECTIONS

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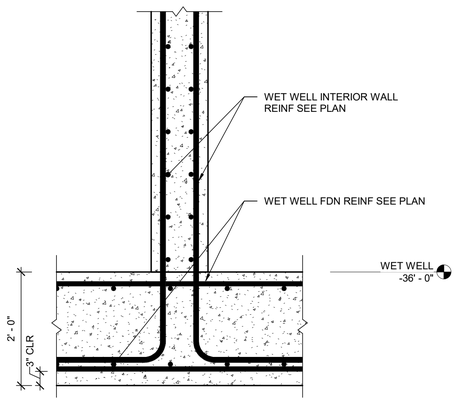
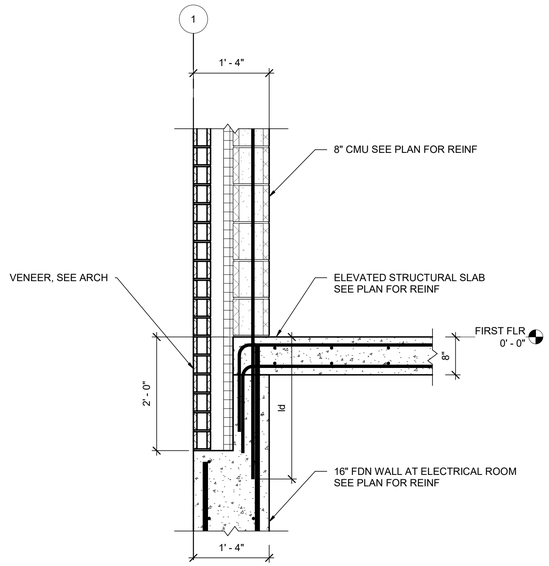


1 SECTION
S-101
SCALE: 3/4" = 1'-0"



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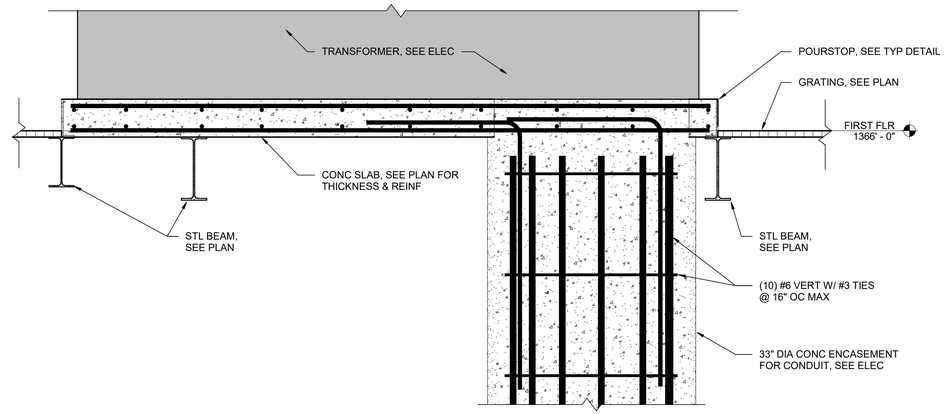
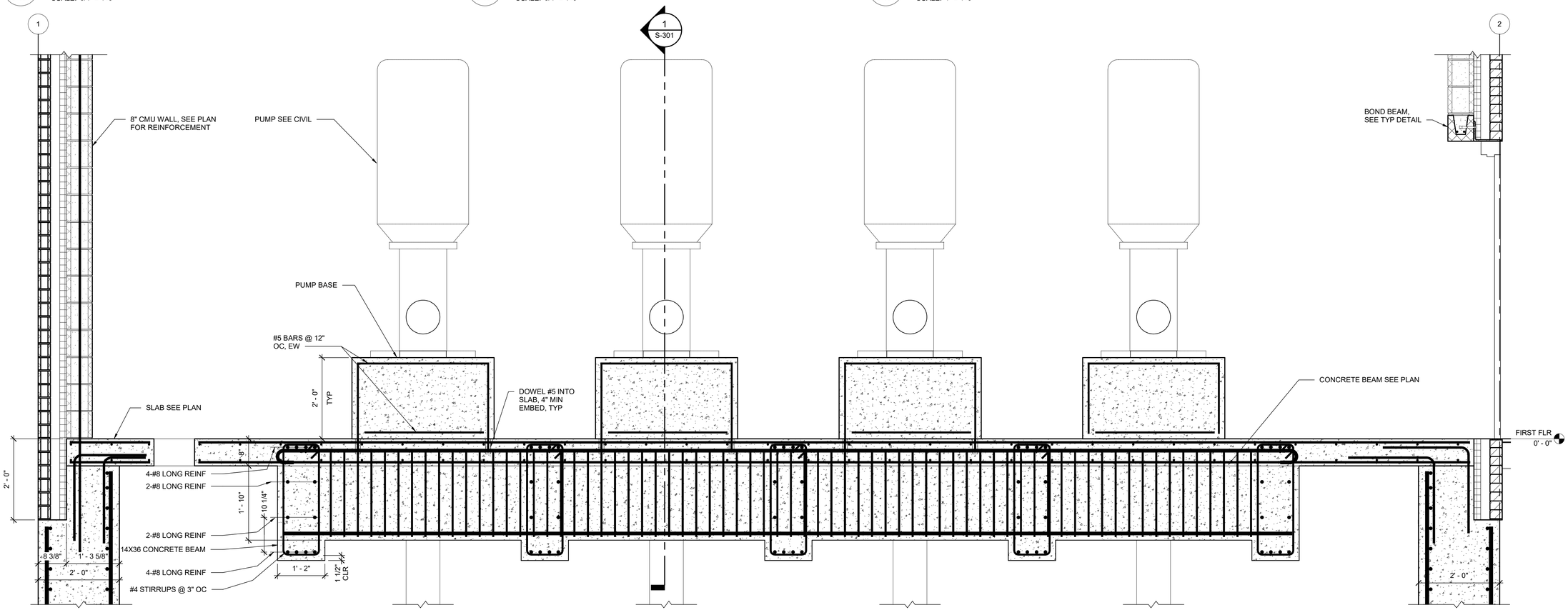


3 SECTION
S-101
SCALE: 1" = 1'-0"



4 SECTION
S-101
SCALE: 3/4" = 1'-0"

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COMMONWEALTH OF VIRGINIA
JACQUELINE W. ROSSER
Lic. No. 49425
05/27/2022
PROFESSIONAL ENGINEER

CITY OF STAUNTON
GARDNER SPRING PUMP STATION
STAUNTON, VIRGINIA

MRK	DATE	REVISION DESCRIPTION

COMM NO:	220117
DATE:	03/09/2022
DRAWN: RMA	DESIGN: RMA
CHECK:	JWR

SHEET TITLE
SECTIONS

SHT. NO. S-302
REV. NO.

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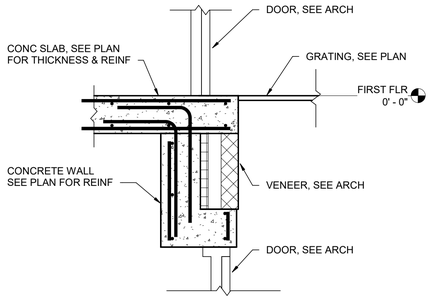

1 S-101 **SECTION**

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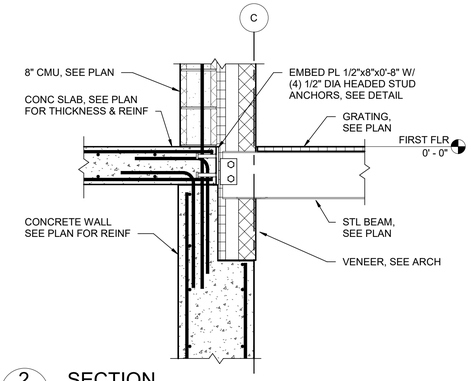
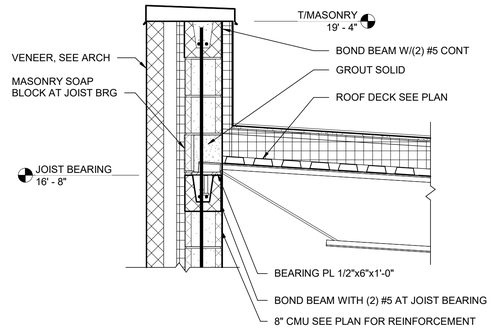


2 S-101 **SECTION**

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



3 S-102 **SECTION**

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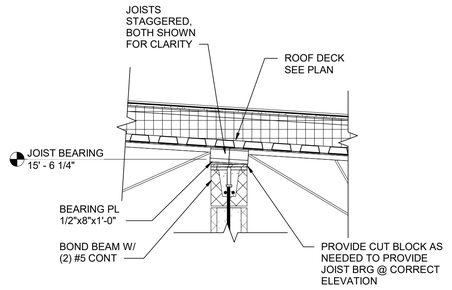

4 S-102 **SECTION**

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

5 S-102 **SECTION**

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

6 S-102 **SECTION**

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

NOTE: BASE PLATE MAY BE EMBED PLATE WITH HEADED STUDS OF EQUAL SIZE TO SPECIFIED ANCHORS.
CONC f'c =5,000 PSI FOR PIERS.

7 S-101 **PIPE SUPPORT**

NOT TO SCALE

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CITY OF STAUNTON

GARDNER SPRING PUMP STATION

STAUNTON, VIRGINIA

MRK	DATE	REVISION DESCRIPTION

COMM NO:	220117
DATE:	03/09/2022
DRAWN: RMA	DESIGN: RMA
CHECK:	JWR

SHEET TITLE

SECTIONS

SHT. NO. S-303

REV. NO.

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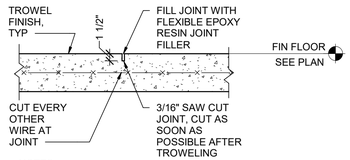
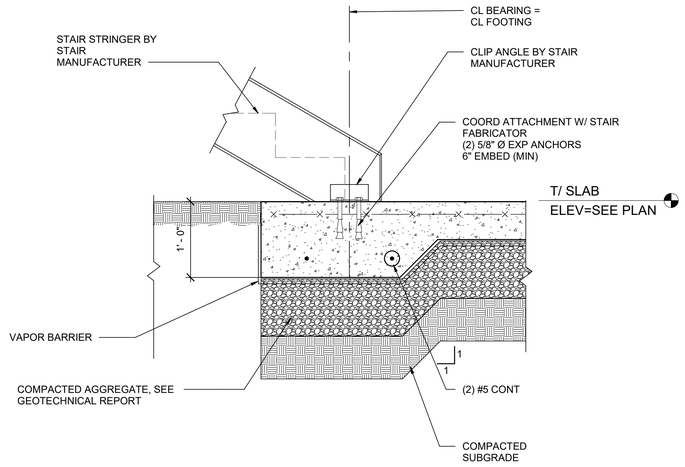


CONTROL JOINT (CJ)

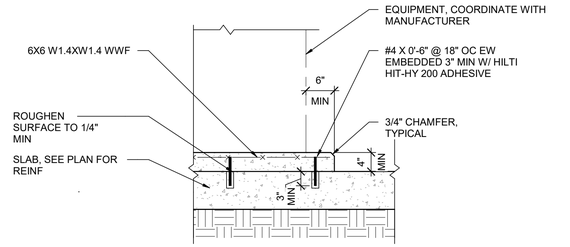
1 DETAIL - SLAB ON GRADE CONTROL JOINT

NOT TO SCALE



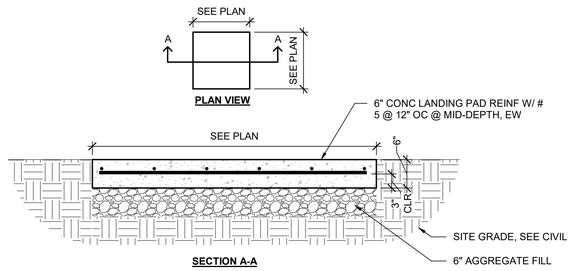
2 DETAIL - METAL STAIR THICKENED SLAB

NOT TO SCALE



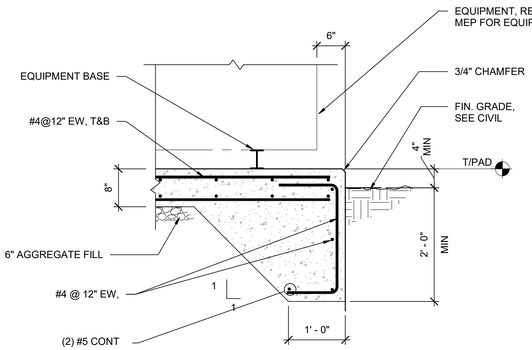
3 DETAIL - TYPICAL INTERIOR EQUIPMENT PAD

NOT TO SCALE



4 DETAIL - TYPICAL EXTERIOR CONC LANDING PAD

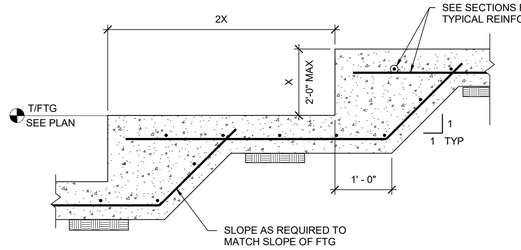
NOT TO SCALE



NOTE:
1. SEE CIVIL DRAWINGS FOR PAD LOCATION AND EXTENT.
2. COORD PAD DIM W/ ACTUAL EQUIP DIMS MANUF REQ.

5 DETAIL - TYPICAL EXTERIOR LARGE EQUIPMENT PAD

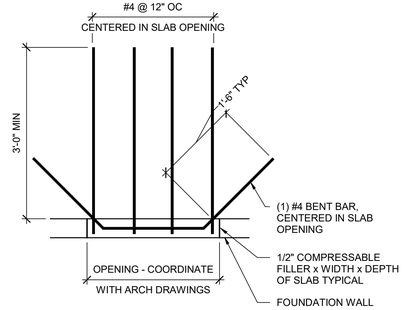
NOT TO SCALE



NOTE:
1. SEE PLAN FOR LOCATION OF STEPS.
2. DETAILS FOR SINGLE STEP SIMILAR.

6 DETAIL - TYPICAL FOOTING STEP

NOT TO SCALE

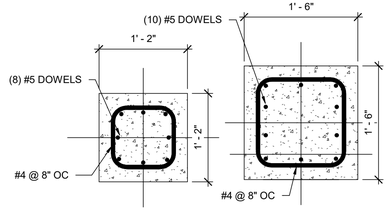


7 DETAIL - TYP SLAB ON GRADE REINF @ OPENINGS

NOT TO SCALE

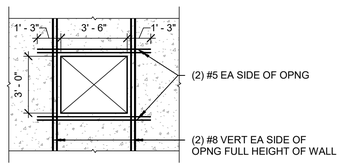
8 DETAIL - FOOTING/WALL CORNER

NOT TO SCALE



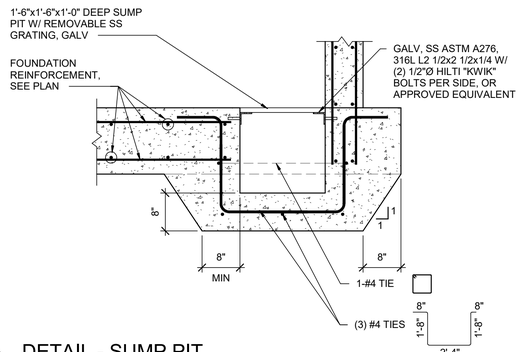
9 DETAIL - TYP CONC PIERS

NOT TO SCALE



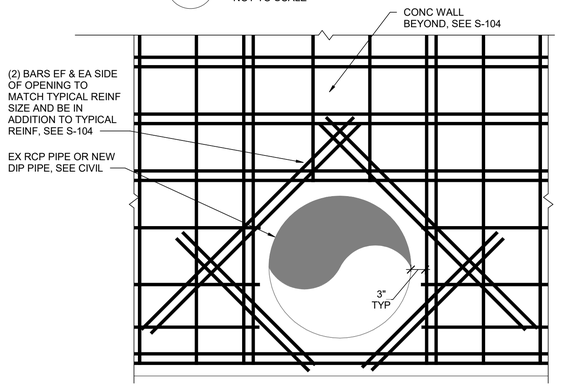
10 DETAIL - TYPICAL OPENING IN CONC WALL

NOT TO SCALE



11 DETAIL - SUMP PIT

NOT TO SCALE



12 SPRING VAULT WALL PENETRATION

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PROFESSIONAL ENGINEER

CITY OF STAUNTON

GARDNER SPRING PUMP STATION

STAUNTON, VIRGINIA

MRK	DATE	REVISION DESCRIPTION

COMM NO:	220117		
DATE:	03/09/2022		
DRAWN:	RMA	DESIGN:	RMA
CHECK:			JWR

SHEET TITLE

CONCRETE TYPICAL DETAILS

SHT. NO.	REV. NO.
S-501	

6/2/2022 7:53:12 AM
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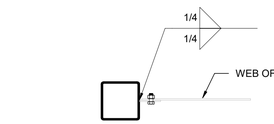
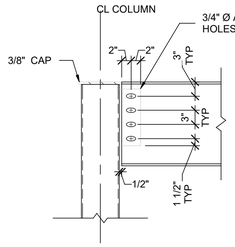
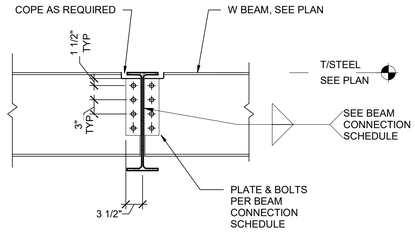




BEAM CONNECTION SCHD	
NOMINAL DEPTH OF FRAMING BEAM	NO. OF BOLT ROWS
W12	3
W18	4
W21,24	5

1 DETAIL - STEEL SHEAR CONNECTION

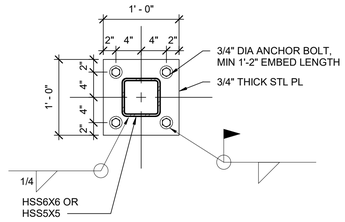
NOT TO SCALE



BEAM CONNECTION SCHEDULE			
NOMINAL DEPTH OF FRAMING BEAM	NO. OF BOLT ROWS	SHEAR PLATE THICKNESS	ATTACHMENT WELD (EA. SIDE)
W8,10	2	3/8"	3/16"
W12,14	3	3/8"	1/4"
W16, W18	4	3/8"	1/4"
W21	6	5/16"	1/4"

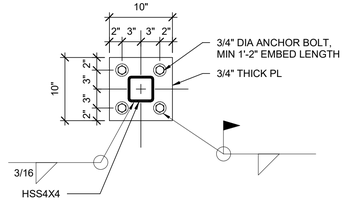
2 DETAIL - BEAM TO BEAM CONN

NOT TO SCALE



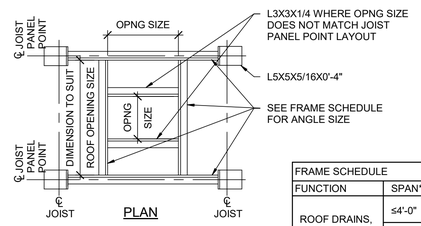
7 DETAIL - HSS6X6 BASE PLATE

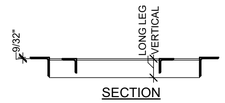
NOT TO SCALE



8 DETAIL - HSS4X4 BASE PLATE

NOT TO SCALE





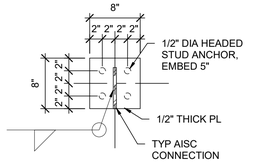
FRAME SCHEDULE		
FUNCTION	SPAN*	SIZE
ROOF DRAINS, DUCT OPENING, PIPE CHASES, ETC.	≤4'-0"	L3X3X1/4
	≤6'-0"	L4X3X5/16
	≤8'-0"	L5X3-1/2X3/8
LIGHTWEIGHT EQUIPMENT SUPPORTS (<1000 LB.)	≤4'-0"	L3-1/2X3X1/4
	≤6'-0"	L5X3-1/2X3/8
	≤8'-0"	L6X3-1/2X3/8
* = LENGTH OF ANGLE		

NOTES:
1. FRAME SHALL BE ALL WELDED CONSTRUCTION. WELDS SHALL BE INDICATED ON SHOP DRAWINGS. FRAME SHALL BE WELDED TO JOIST.

1. USE THIS DETAIL AT ALL ROOF OPENINGS HAVING LARGEST DIMENSION OF AT LEAST 6 INCHES

11 DETAIL - TYPICAL SLAB OPENING

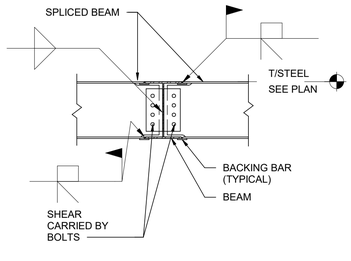
NOT TO SCALE



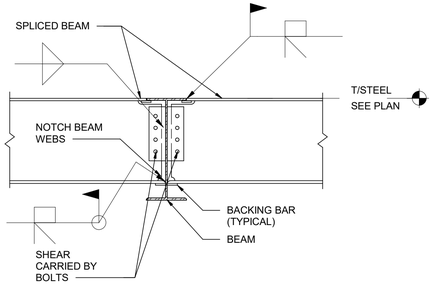
12 DETAIL - EMBED PLATE

NOT TO SCALE

EQUAL DEPTH BEAMS



UNEQUAL DEPTH BEAMS

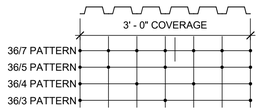


5 DETAIL - BEAM TO BEAM MOMENT CONNECTION

NOT TO SCALE

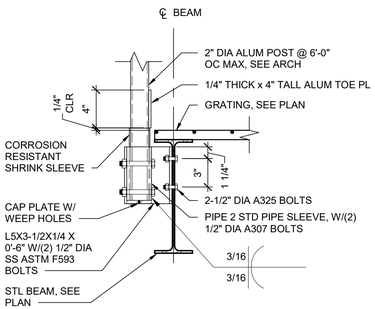
DIAPHRAGM ATTACHMENT SCHEDULE			
STORY	WELD SIZE	ATTACHMENT PATTERN	SIDE LAP FASTENING
ROOF	5/8" DIA	36/5	5 - #14 PER SPAN

1.5 (B.F.A.VL)



6 DIAPHRAGM ATTACHMENT SCHEDULE

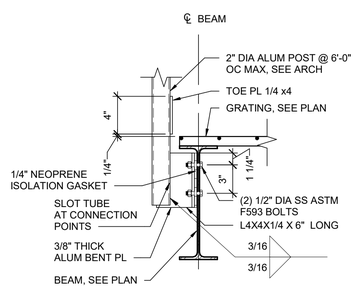
NOT TO SCALE



NOTES:
1. SEE ARCHITECTURAL DRAWINGS FOR LOCATION OF REMOVABLE AND NON REMOVABLE GUARDRAILS

3 DETAIL - REMOVEABLE GUARDRAIL

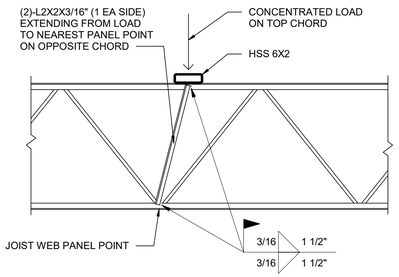
NOT TO SCALE



NOTES:
1. SEE ARCHITECTURAL DRAWINGS FOR LOCATION OF REMOVABLE AND NON REMOVABLE GUARDRAILS

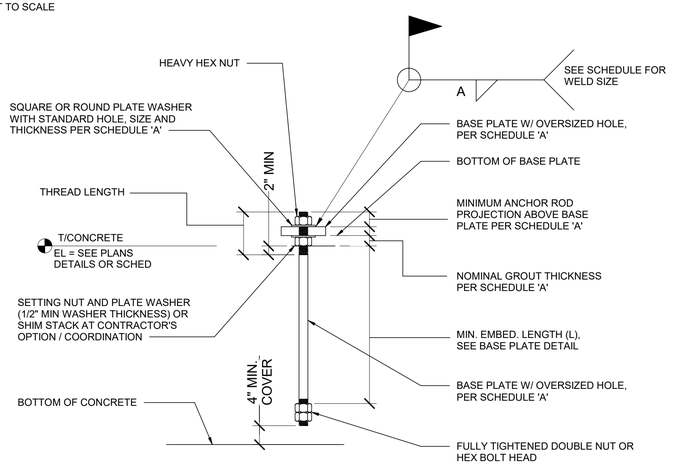
4 DETAIL - NON-REMOVEABLE GUARDRAIL

NOT TO SCALE



9 DETAIL - JOIST REINFORCEMENT

NOT TO SCALE



SCHEDULE 'A'						
ANCHOR ROD DIAMETER	BASE PL HOLE DIA	MIN WASHER SIZE (EDGE OR DIAMETER)	MIN WASHER t	WELD SIZE	MIN PROJ ABOVE BASE PL	NOMINAL GROUT THICKNESS
3/4"	1-5/16"	2"	1/4"	1/4"	3"	2"

10 TYPICAL ANCHOR ROD DETAIL

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COMMONWEALTH OF VIRGINIA JACQUELINE W. ROSSER Lic. No. 49425 05/27/2022 PROFESSIONAL ENGINEER

CITY OF STAUNTON
GARDNER SPRING PUMP STATION
STAUNTON, VIRGINIA

MRK	DATE	REVISION DESCRIPTION

COMM NO:	220117
DATE:	03/09/2022
DRAWN: RMA	DESIGN: RMA
CHECK:	JWR

SHEET TITLE

STRUCTURAL STEEL DETAILS

SHT. NO.	REV. NO.
S-502	

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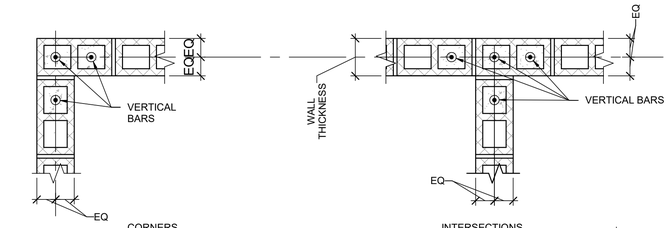
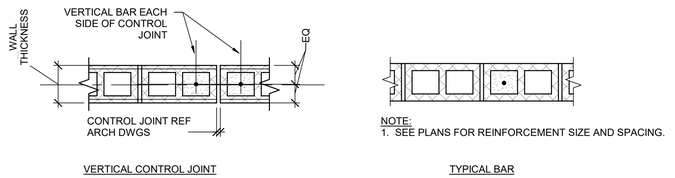


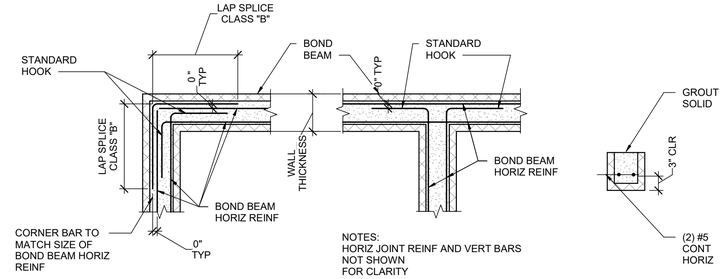


NOTE:
1. SEE PLANS FOR REINFORCEMENT SIZE AND SPACING.

NOTES (ALL DETAILS):
1. WALL REINFORCING SHOWN IS IN ADDITION TO TYPICAL WALL REINFORCING SHOWN IN SECTIONS.
2. VERTICAL BAR SIZE TO MATCH SIZE OF TYPICAL WALL REINFORCING, UNLESS NOTED OTHERWISE.
3. HORIZONTAL WALL REINFORCING NOT SHOWN FOR CLARITY.

1 DETAIL - TYPICAL MASONRY WALL REINFORCING

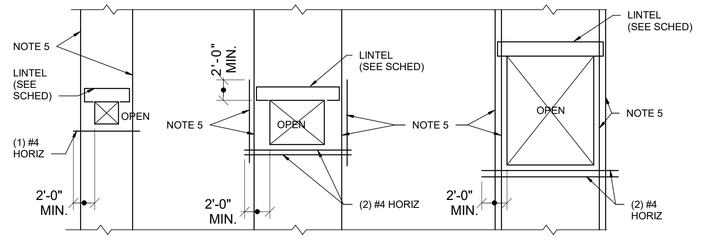
NOT TO SCALE



BOND BEAM NOTES:
1. PROVIDE 8" BEARING EACH END OF LINTEL.
2. REFER TO ARCHITECTURAL DRAWINGS FOR SIZE AND LOCATION OF OPENINGS.
3. FOR DUCT OPENINGS REFER TO MECHANICAL DRAWINGS.
4. REFER TO ARCHITECTURAL DRAWINGS FOR WIDTH OF LINTEL. SCHEDULE APPLIES ONLY TO LINTELS NOT OTHERWISE SHOWN ON THE DRAWINGS.
5. FOR HEAD DETAILS, SEE ARCHITECTURAL DRAWINGS.

2 DETAIL - TYPICAL MASONRY BOND BEAM

NOT TO SCALE



NOTES:
1. CASE 1 - APPLIES TO OPENINGS IN INTERIOR WALLS OVER 100 SQUARE INCHES, AND OPENINGS IN EXTERIOR WALLS WHICH ARE 2 FEET OR LESS BOTH WAYS, BUT VER 100 SQUARE INCHES IN AREA.

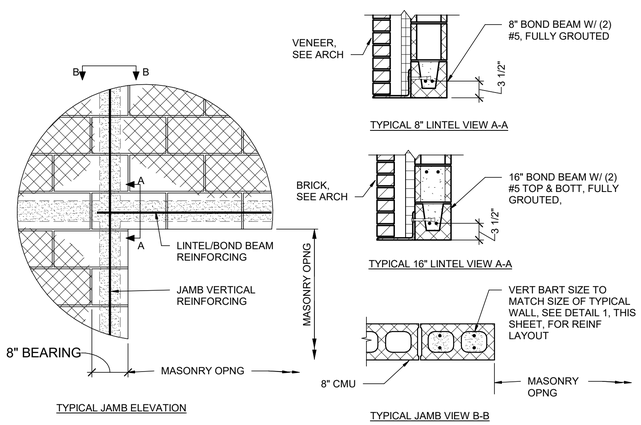
   CASE 2 - APPLIES TO OPENINGS IN WALLS WHICH EXCEED 2 FEET BUT ARE LESS THAN 4 FEET IN ANY DIRECTION.

   CASE 3 - APPLIES TO OPENINGS IN WALLS WHICH EXCEED 4 FEET BUT ARE LESS THAN 8 FEET IN ANY DIRECTION.

2. REINFORCEMENT SHOWN ABOVE IS IN ADDITION TO THE TYPICAL WALL REINFORCEMENT.
3. ALL VERTICAL BARS TO BE FULL HEIGHT UNO IN DETAIL.
4. WHERE LINTEL IS NOT PROVIDED AND TOP OF OPENING ABUTS BOTTOM OF STRUCTURAL MEMBER, LOCATE VERTICAL JAMB BARS SHOWN IN FIRST ADJACENT MASONRY CELL EACH SIDE OF OPENING.
5. SEE TYPICAL CMU VERTICAL REINFORCEMENT DETAILS, THIS SHEET.
6. WHERE STEEL LINTELS ARE USED, PLACE JOINT REINFORCEMENT IN THE FIRST BED JOINT ABOVE THE OPENING AND EXTEND 24" ON EACH SIDE OF OPENING.

3 DETAIL - TYPICAL MASONRY OPENING REINFORCEMENT

NOT TO SCALE



TYPICAL CMU LINTEL SCHEDULE	
CLEAR SPAN	REMARKS
LESS THAN 5'-0"	8" BOND BEAM W/(2) #5
5'-0" TO 12'-0"	16" BOND BEAM W/(2) #5
TYPICAL BRICK LINTEL SCHEDULE	
LESS THAN 4'-0"	L8x6x7/16 LLH
4'-0" TO LESS THAN 8'-0"	L8x6x7/16 LLH
8'-0" TO LESS THAN 12'-0"	L8x6x7/16 LLH

DETAIL NOTES:

1. ALL BOND BEAMS ARE KNOCK OUT TYPE AT VERTICAL REBAR
2. COORDINATE LOCATION & ROUGH OPNG SIZE FOR ALL WALL OPENINGS WITH PLAN DRAWINGS.
3. LINTEL SCHEDULE IS APPLICABLE ONLY WHERE MASONRY ABOVE THE OPENINGS EXCEEDS LINTEL CLEAR SPAN LENGTH.
4. ALL STEEL IN EXTERIOR WALLS MUST BE GALVANIZED.

4 DETAIL - TYPICAL JAMB AND LINTEL DETAILS FOR NON-BEARING MASONRY WALLS

NOT TO SCALE

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05/27/2022
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CITY OF STAUNTON

GARDNER SPRING PUMP STATION

STAUNTON, VIRGINIA

MRK	DATE	REVISION DESCRIPTION

COMM NO:	220117
DATE:	03/09/2022
DRAWN: RMA	DESIGN: RMA
CHECK:	JWR

SHEET TITLE

MASONRY TYPICAL DETAILS

SHT. NO. S-503

REV. NO.

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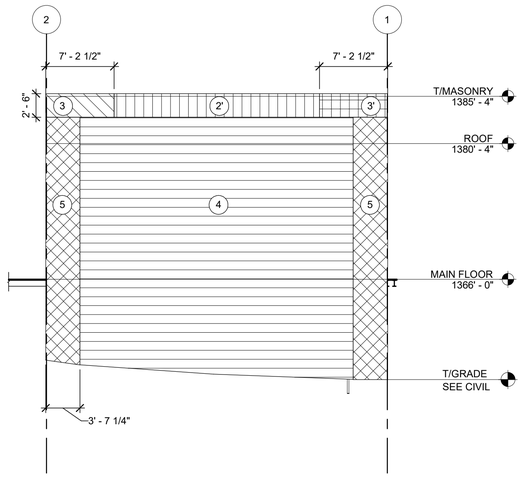
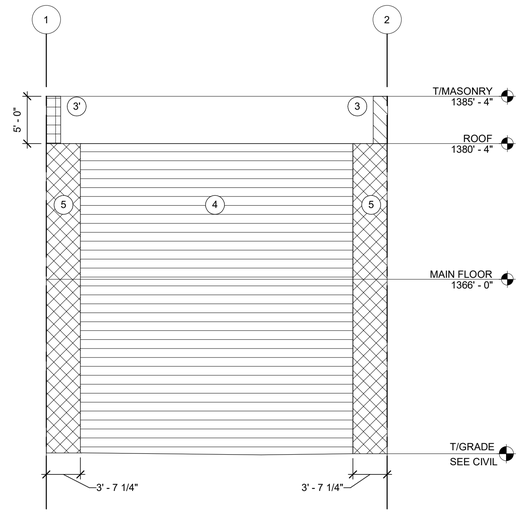


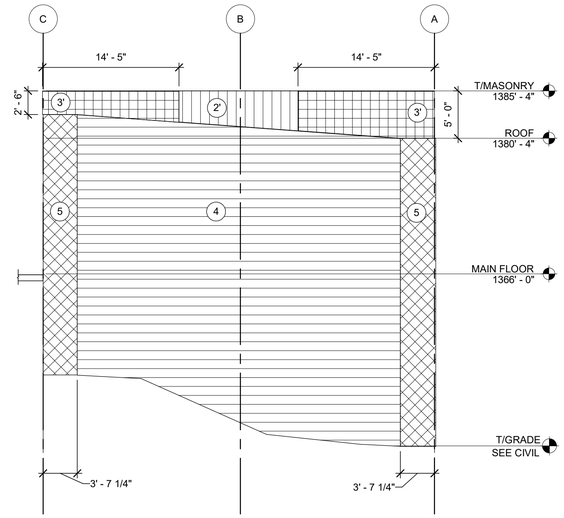
1 WALL PRESSURE ELVATION - PLAN NORTH

NOT TO SCALE



2 WALL PRESSURE ELEVATION - PLAN SOUTH

NOT TO SCALE



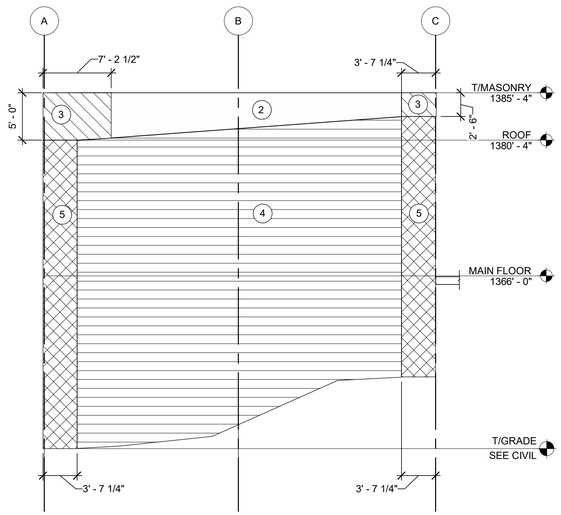
3 WALL PRESSURE ELEVATION - PLAN WEST

NOT TO SCALE

WALL COMPONENTS AND CLADDING SCHED		
LOCATION	WIND PRESSURES, PSF	
	EFFECTIVE AREA < =10 FT^2	EFFECTIVE AREA > = 500 FT^2
2'	58.6	50.0
3	63.3	42.9
3'	82.1	52.3
4	-26.8/+24.7	-20.6/+24.7
5	-33.0/+24.7	-20.6/+24.7
NOTE: FOR OTHER EFFECTIVE AREAS, LINEAR INTERPOLATION IS PERMITTED		

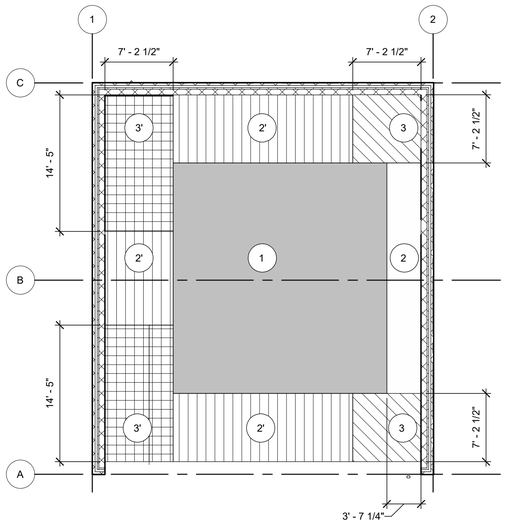
NOTES:

1. WIND PRESSURES SHOWN ARE ULTIMATE WIND LOADS PER ASCE 7-16. THE USE OF A 0.6 FACTOR TO CONVERT DESIGN LEVEL WIND LOADS TO SERVICE LEVEL WIND LOADS IS PERMITTED.
2. LINEAR INTERPOLATION IS PERMITTED.
3. (-) NEGATIVE PRESSURES ACT OUTWARD (AWAY) FROM THE BUILDING.
4. (+) POSITIVE PRESSURES ACT INWARD (TOWARDS) THE BUILDING.
5. WALL COMPONENTS AND FASTENERS SHALL BE DESIGNED FOR THE WIND PRESSURES SHOWN IN THE TABLE AND DIAGRAM.



4 WALL PRESSURE ELEVATION - PLAN EAST

NOT TO SCALE



5 ROOF PRESSURES PLAN

NOT TO SCALE

ROOF WIND PRESSURE LOCATIONS	ROOF WIND PRESSURES, PSF	
	EFFECTIVE AREA < =10 FT^2	EFFECTIVE AREA > = 500 FT^2
1	-29.3/+16.0	-29.3/+16.0
2	-33.9/+16.0	-33.9/+16.0
2'	-40.8/+16.0	-38.5/+16.0
3	-45.4/+16.0	-31.6/+16.0
3'	-63.7/+16.0	-40.8/+16.0
NOTE: FOR OTHER EFFECTIVE AREAS, LINEAR INTERPOLATION IS PERMITTED		

NOTES:

1. WIND PRESSURES SHOWN ARE ULTIMATE WIND LOADS PER ASCE 7-16. THE USE OF A 0.6 FACTOR TO CONVERT DESIGN LEVEL WIND LOADS TO SERVICE LEVEL WIND LOADS IS PERMITTED.
2. LINEAR INTERPOLATION IS PERMITTED.
3. (-) NEGATIVE PRESSURES ACT OUTWARD (AWAY) FROM THE BUILDING.
4. (+) POSITIVE PRESSURES ACT INWARD (TOWARDS) THE BUILDING.
5. ROOF COMPONENTS AND FASTENERS SHALL BE DESIGNED FOR THE WIND PRESSURES SHOWN IN THE TABLE AND DIAGRAM.

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CHECK:			JWR

SHEET TITLE

COMPONENTS AND CLADDING WIND PRESSURE ELEVATIONS AND ROOF PLAN

SHT. NO.	REV. NO.
S-601	

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GENERAL NOTES:

1. THESE DRAWINGS ARE SCHEMATIC IN NATURE AND INDICATE THE GENERAL AND APPROXIMATE LOCATION OF EQUIPMENT, PIPING AND DUCTWORK. THEY ARE NOT INTENDED TO SHOW ALL POSSIBLE CONDITIONS. IT IS INTENDED THAT A COMPLETE HEATING, VENTILATING AND AIR CONDITIONING SYSTEM (HVAC) BE PROVIDED WITH ALL NECESSARY EQUIPMENT, APPURTENANCES AND CONTROLS. THE CONTRACTOR SHALL CAREFULLY REVIEW ALL THE CONTRACT DOCUMENTS AND COORDINATE BETWEEN ALL TRADES PRIOR TO SUBMITTING SHOP DRAWINGS. THE CONTRACTOR SHALL VERIFY ALL SIZES, MATERIALS, TEMPERATURE AND PRESSURE RATINGS BEFORE ORDERING OR INSTALLING ANY MATERIALS OR EQUIPMENT. THE CONTRACTOR SHALL PREPARE INSTALLATION INSTRUCTIONS AND FABRICATION DRAWINGS PRIOR TO ACTUAL INSTALLATION.
2. REFER TO EACH DRAWING FOR NOTES SPECIFIC TO THAT DRAWING SHEET.
3. DO NOT SCALE FOR DUCT, PIPE OR EQUIPMENT LOCATIONS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF CONTRACTOR'S PERSONNEL EMPLOYED ON THIS PROJECT AND IN PARTICULAR, WHEN WORKING IN CONFINED SPACES. THE CONTRACTOR SHALL COMPLY WITH ALL OCCUPATIONAL SAFETY HEALTH ADMINISTRATION (OSHA) REQUIREMENTS.
5. ALL MISCELLANEOUS MATERIAL REQUIRED TO ENSURE PROPER INSTALLATION AND IS SHOWN IN DETAILS FOR PIPING, DUCTS, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.
6. ALL MECHANICAL EQUIPMENT AND SYSTEMS SHALL BE INSTALLED IN A MANNER WHICH MINIMIZES NOISE AND VIBRATION.
7. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF WORK WITH THE WORK OF OTHER TRADES. MINOR DEVIATIONS FROM THE PLANS MAY BE MADE TO AVOID CONFLICTS.
8. COORDINATE DUCTWORK AND PIPING WITH ELECTRICAL, CIVIL, STRUCTURAL, AND ARCHITECTURAL DISCIPLINES. MAKE OFFSETS AND TRANSITIONS TO COORDINATE WITH OTHER TRADES WITHOUT ADDITIONAL EXPENSE TO THE OWNER.
9. COORDINATE MECHANICAL EQUIPMENT AND MATERIAL LOCATIONS WITH ELECTRICAL, CIVIL, STRUCTURAL AND ARCHITECTURAL PLANS TO AVOID CONFLICTS.
10. COORDINATE THE VOLTAGE AND PHASE OF EACH PIECE OF EQUIPMENT WITH DIVISION 26 (ELECTRICAL CONTRACT DOCUMENTS) PRIOR TO ORDERING. PROVIDE WRITTEN VERIFICATION OF COORDINATION WITH DIVISION 26 PRIOR TO INSTALLATION OF EQUIPMENT.
11. REFER TO THE ARCHITECTURAL PLANS FOR EXACT LOCATION OF ALL LOUVERS, VENTS, DUCTS, AND PIPING THAT PENETRATE EXTERIOR WALLS.
12. PROVIDE OPENINGS IN BUILDING CONSTRUCTION FOR PASSAGE OF PIPING AND DUCTWORK. DO NOT PENETRATE STRUCTURAL MEMBERS WITHOUT PRIOR APPROVAL OF STRUCTURAL ENGINEER.
13. ALL NECESSARY ALLOWANCES AND PROVISIONS SHALL BE MADE BY THIS CONTRACTOR FOR BEAMS, COLUMNS, TRUSSES OR OTHER OBSTRUCTIONS OF THE BUILDING OR THE WORK OF OTHER CONTRACTORS, WHETHER OR NOT SAME IS INDICATED. WHERE NECESSARY TO AVOID OBSTRUCTIONS, THE DUCTS SHALL BE TRANSFORMED, DIVIDED, OFFSET, RAISED OR LOWERED WITH THE REQUIRED FREE AREA BEING MAINTAINED.
14. DUCT SIZES ARE SHOWN AS INSIDE CLEAR DIMENSIONS. WHERE INTERNAL INSULATION IS CALLED FOR, DIMENSIONS SHALL BE INCREASED FOR THE THICKNESS OF THE INSULATION. SEE SPECIFICATION FOR THICKNESS.
15. ALL BRANCH DUCTWORK SHALL BE SIZED TO MATCH THE TERMINAL CONNECTION SERVED UNLESS NOTED OTHERWISE.
16. ALL DUCT TRANSITIONS FROM SQUARE TO ROUND SHALL BE SMOOTH SQUARE TO ROUND TRANSITIONS.
17. SEE REFLECTED CEILING PLANS FOR EXACT LOCATION OF AIR DEVICES.
18. ALL DAMPERS, DAMPER OPERATORS, AND FANS SHALL BE ACCESSIBLE. LOCATE ALL EQUIPMENT OR APPURTENANCES IN AREAS WITH ACCESSIBLE CEILINGS. THE CONTRACTOR MAY UTILIZE ACCESS PANELS FOR THOSE AREAS NOT EASILY ACCESSIBLE. ALL ACCESS PANEL LOCATIONS SHALL BE COORDINATED WITH THE CONTRACT DOCUMENTS AND APPROVED BY THE OWNER PRIOR TO INSTALLATION OF EQUIPMENT.
19. ALL OPEN ENDED DUCTS SHALL BE REINFORCED WITH STEEL ANGLES (1-1/2" X 1-1/2" X 1/8") BOLTED OR RIVETED 6" ON CENTER (MAXIMUM) ALL AROUND THE PERIMETER OF THE DUCT MINIMUM 2 PER SIDE.
20. ALL DUCTWORK SHALL BE SLEEVED THROUGH WALL OR FLOOR PENETRATIONS.
21. PROVIDE AIR TURNING DEVICES IN DUCTWORK AT ANY CHANGES INDIRECTION OF 30 DEGREES OR GREATER.
22. PROVIDE CONICAL TEES FOR ROUND AND FLAT OVAL DUCT TAKE-OFFS.
23. SLOPE CONDENSATE DRAINS AT 1/8 INCHES FALL PER FOOT MINIMUM IN THE DIRECTION OF FLOW. PROVIDE DRAINAGE TYPE FITTINGS.
24. ALL PIPING SHALL BE SLEEVED THROUGH WALL PENETRATIONS.
25. SIZE AND ROUTE REFRIGERANT PIPING PER EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.
26. INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
27. ALL MECHANICAL EQUIPMENT SHALL BE INSTALLED IN SUCH A MANNER SO THAT ALL FILTERS, VALVES, MOTORS, DAMPERS, ETC., ARE COMPLETELY ACCESSIBLE AND SERVICEABLE, INCLUDING ACCESS DOORS IF REQUIRED.
28. COMPLETE AND PROPER INSTALLATION OF THERMOSTATS AND ALL OTHER NECESSARY FIELD MOUNTED CONTROL COMPONENTS SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. THE EQUIPMENT MANUFACTURERS SHALL FURNISH COMPLETE WIRING CONTROLS. ALL CONTROL WIRING SHALL BE IN CONDUIT AND INSTALLED PER DIVISION 26 OF THE SPECIFICATIONS.
29. PROVIDE FLEXIBLE CONNECTIONS BETWEEN HVAC EQUIPMENT AND SHEET METAL DUCTWORK.

SPECIFICATIONS:

REFRIGERANT PIPING, FITTINGS & ACCESSORIES:

1. REFRIGERANT PIPING 2 INCH AND SMALLER SHALL BE TYPE L COPPER, SUITABLE FOR REFRIGERATION USE. CONNECTIONS SHALL BE BRASS FLARED TYPE OR BRAZED INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS. A LIQUID LINE SIGHT GLASS SHALL BE INSTALLED AT THE INLET TO EACH EXPANSION VALVE.
2. CONDENSATE DRAIN PIPING SHALL BE SCHEDULE 40 PVC PLASTIC PIPE AND FITTINGS WITH SOLVENT-WELDED JOINTS. JOIN PVC PIPING IN ACCORDANCE WITH ASTM D2855.
3. PROVIDE HANGERS AND SUPPORTS PER MSS (MANUFACTURERS STANDARDIZATION SOCIETY FOR THE VALVE AND FITTINGS INDUSTRY, INC).
4. PERFORM THE FOLLOWING PRESSURE TESTS AND INSPECTIONS.
   1. COMPLY WITH ASME B31.5, CHAPTER VI.
   2. TEST PIPING WITH VACUUM TO REMOVE AIR AND MOISTURE FROM PIPING PRIOR TO CHARGING.
   3. PRESSURE TEST PIPING:
      i. CHARGE THE SYSTEM WITH REFRIGERANT TO OPERATING PRESSURE AND OPERATE UNIT WHERE PIPING IS SUBJECT TO THE SATURATED VAPOR PRESSURE OF THE REFRIGERANT.
      ii. TEST JOINTS AND FITTINGS WITH ELECTRONIC LEAK DETECTOR OR BY BRUSHING A SMALL AMOUNT OF SOAP AND GLYCERIN SOLUTION OVER JOINTS.
      iii. REMAKE LEAKING JOINTS USING NEW MATERIALS, AND RETEST UNTIL SATISFACTORY RESULTS ARE ACHIEVED.

REFRIGERANT PIPING INSULATION FOR HP-1/ACU-1, HP-2/ACU-2, HP-3/ACU-3, & HP-4/ACU-4 :

1. SUCTION LINE PIPING AND CONDENSATE DRAIN PIPING SHALL BE INSULATED WITH 25mm THICK CLOSED CELL FOAM INSULATION WITH A MINIMUM K-FACTOR OF 0.245. THE INSULATION SHALL HAVE A FLAME SPREAD RATING LESS THAN 25 AND A SMOKE DEVELOPED RATING LESS THAN 50 WHEN TESTED TO ASTM E84. PROVIDE A CONTINUOUS VAPOR BARRIER. SEAL JOINTS, SEAMS AND PENETRATIONS IN INSULATION AT HANGERS, SUPPORTS AND OTHER PROJECTIONS WITH RECOMMENDED CEMENT. PIPE INSULATION INSTALLED EXTERIOR TO THE BUILDING SHALL BE PAINTED WITH TWO COATS OF APPROVED UV RESISTANT PAINT.
2. EXTERIOR REFRIGERANT PIPING SHALL BE INSTALLED WITH A LINE-SET COVER MADE OF PVC (POLYVINYL CHLORIDE) WITH WHITE FINISH.

DUCTLESS SPLIT SYSTEM UNIT:

1. DUCTLESS SPLIT SYSTEMS (HP-1/ACU-1, HP-2/ACU-2, HP-3/ACU-3, & HP-4/ACU-4) SHALL BE AS SCHEDULED ON THIS DRAWING OR APPROVED EQUAL.
2. PERFORM THE FOLLOWING TESTS AND INSPECTIONS:
   A. LEAK TEST: AFTER INSTALLATION, CHARGE THE SYSTEM AND TEST FOR LEAKS. REPAIR LEAKS AND RETEST UNTIL NO LEAKS EXIST.
   B. OPERATIONAL TEST: AFTER ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED, START UNITS TO CONFIRM PROPER MOTOR ROTATION AND UNIT OPERATION.
   C. TEST AND ADJUST CONTROLS AND SAFETIES. REPLACE DAMAGED AND MALFUNCTIONING CONTROLS AND EQUIPMENT.
   D. REMOVE AND REPLACE MALFUNCTIONING UNITS AND RETEST AS SPECIFIED ABOVE.

UNIT HEATER:

1. PROVIDE ELECTRIC UNIT HEATERS (UH-1 AND UH-2) PER ELECTRIC UNIT HEATER SCHEDULE ON THIS DRAWING OR APPROVED EQUAL.

EXHAUST FAN:

1. PROVIDE EXHAUST FANS (EF-1, EF-2, AND EF-3) PER FAN SCHEDULE ON THIS OR APPROVED EQUAL.

DUCTWORK SHEET METAL:

1. DUCT SYSTEMS SHALL BE IN ACCORDANCE WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS-METAL AND FLEXIBLE" LATEST EDITION. COMPLY WITH SMACNA FOR ACCEPTABLE MATERIALS, MATERIAL THICKNESS, DUCT CONSTRUCTION METHODS, SUPPORT AND INSTALLATION UNLESS OTHERWISE INDICATED. SHEET METAL MATERIALS SHALL BE FREE OF PITTING, SEAM MARKS, ROLLER MARKS, STAINS, DISCOLORATIONS AND OTHER IMPERFECTIONS.
2. DUCTWORK SHEET METAL SHALL BE ALUMINUM BASE ALLOY SHEETS MEETING ASTM B209, LOCK FORMING QUALITY.

LOUVERS:

1. OUTDOOR AIR INTAKE LOUVERS SHALL BE RUSKIN ELF 6350DMP DRAINABLE ALUMINIUM STATIONARY LOUVER WITH BIRD SCREEN OR APPROVED EQUAL. FIELD VERIFY SIZE OF WINDOW OPENING. INSTALL PER MANUFACTURER'S INSTALLATION GUIDE. FINISH/COLOR TO BE 204-R1 CLEAR ANODIZE FINISH COMPLYING WITH ALUMINUM ASSOCIATION CODE-C22A31.

DUCTLESS SPLIT SYSTEM UNIT SCHEDULE

DESIGNATION		HP-1, 2, 3, & 4 / ACU-1, 2, 3, & 4
AREA SERVED		ELECTRICAL ROOM
BASIS OF DESIGN - MANUFACTURER		MITSUBISHI
BASIS OF DESIGN - MODEL (INDOOR / OUTDOOR)		PLA-A42EA7 / PUZ-A42NKA7
INDOOR UNIT TYPE		CEILING CASSETTE
NOMINAL COOLING CAPACITY - BTU/H		42,000
NOMINAL HEATING CAPACITY - BTU/H		45,000
COOLING EFFICIENCY - IEER/EER		21.0
ELECTRICAL	VOLTAGE	208
	PHASE	1
	FREQUENCY - Hz	60
	MCA	25
WEIGHT (INDOOR UNIT / OUTDOOR UNIT) - LBS		56 / 214
REFRIGERANT		R-410A

REMARKS:
1. COOLING CAPACITY BASED ON 95 DEG F DB AND 75 DEG F WB OUTSIDE AIR TEMPERATURE.
2. HEATING CAPACITY BASED ON 47 DEG F DB OUTSIDE AIR TEMPERATURE.
3. INDOOR UNIT POWERED BY OUTDOOR UNIT BY FIELD SUPPLIED INTERCONNECTED WIRING.
4. PROVIDE WITH WALL MOUNTED WIRED THERMOSTAT FROM MANUFACTURER.
5. PROVIDE WITH LOW-AMBIENT BAFFLE KIT FOR OUTDOOR OPERATION DOWN TO 5 DEG F.
6. MOUNT INDOOR UNITS AT SAME ELEVATION AS THE OVERHEAD LIGHTING PER THE ELECTRICAL DRAWINGS.
7. PROVIDE WALL KNOCK OUT FOR ACU-4 OA INTAKE AND BRANCH DUCT.
8. PROVIDE ANALOG INPUT SIGNAL TO SCADA FOR ZONE TEMPERATURE FROM THERMOSTAT.

ELECTRIC UNIT HEATER SCHEDULE

DESIGNATION	UH-1 & UH-2
AREA SERVED	PUMP ROOM
BASIS OF DESIGN - MANUFACTURER	MODINE
BASIS OF DESIGN - MODEL NUMBER	HER50
UNIT TYPE	HORIZONTAL FAN FORCED UNIT HEATER
HEATING CAPACITY - KW	5
AIRFLOW - CFM	380
ELECTRICAL - VOLT/HZ/PHASE	480/60/3

REMARKS:
1. PROVIDE WALL MOUNTING. KIT AND UNIT MOUNTED THERMOSTAT
2. MOUNT BOTTOM OF UNIT HEATER 8'-0" ABOVE FINISH FLOOR
3. PROVIDE THE LISTED MANUFACTURER OR EQUAL

FAN SCHEDULE

DESIGNATION	EF-1	EF-2	EF-3
AREA SERVED	PUMP HOUSE	PUMP HOUSE	WETWELL
TYPE OF SERVICE	GENERAL VENTILATION	GENERAL VENTILATION	GENERAL VENTILATION
UNIT LOCATION	ROOF MOUNTED	ROOF MOUNTED	WALL MOUNTED
BASIS OF DESIGN - MANUFACTURER	GREENHECK	GREENHECK	GREENHECK
BASIS OF DESIGN - MODEL NUMBER	G-300-VG	G-300-VG	G-133-A
CONSTRUCTION	ALUMINUM HOUSING AND WHEEL	ALUMINUM HOUSING AND WHEEL	ALUMINUM HOUSING AND WHEEL
DRIVE TYPE	DIRECT	DIRECT	DIRECT
FAN SPEED - RPM	570	570	1725
AIRFLOW - CFM	7250	7250	1800
EXTERNAL STATIC PRESSURE - IN H2O	0.5	0.5	0.75
ELECTRICAL - VOLT/HZ/PHASE	460 / 60 / 3	460 / 60 / 3	460 / 60 / 3
FLA - AMPS	7.4	7.4	1.6
MOTOR HORSEPOWER - HP	5	5	3 / 4

REMARKS:
1. EF-1 AND EF-2 TO BE CONTROLLED PER CONTROL DIAGRAM ON DRAWING M-701.
2. EF-3 TO BE CONTROLLED BY MANUAL SWITCH. SEE ELECTRICAL DRAWINGS.
3. PROVIDE MANUFACTURER-SUPPLIED MOUNTING BRACKET FOR EF-3.

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STAUNTON, VA

MRK	DATE	REVISION DESCRIPTION

COMM NO: 220117
DATE: 05/27/2022
DRAWN: JVS | DESIGN: ALE
CHECK: KEL

SHEET TITLE

GENERAL NOTES, SPECFICIATIONS, AND SCHEDULES

SHT. NO. M-001 | REV. NO. 0

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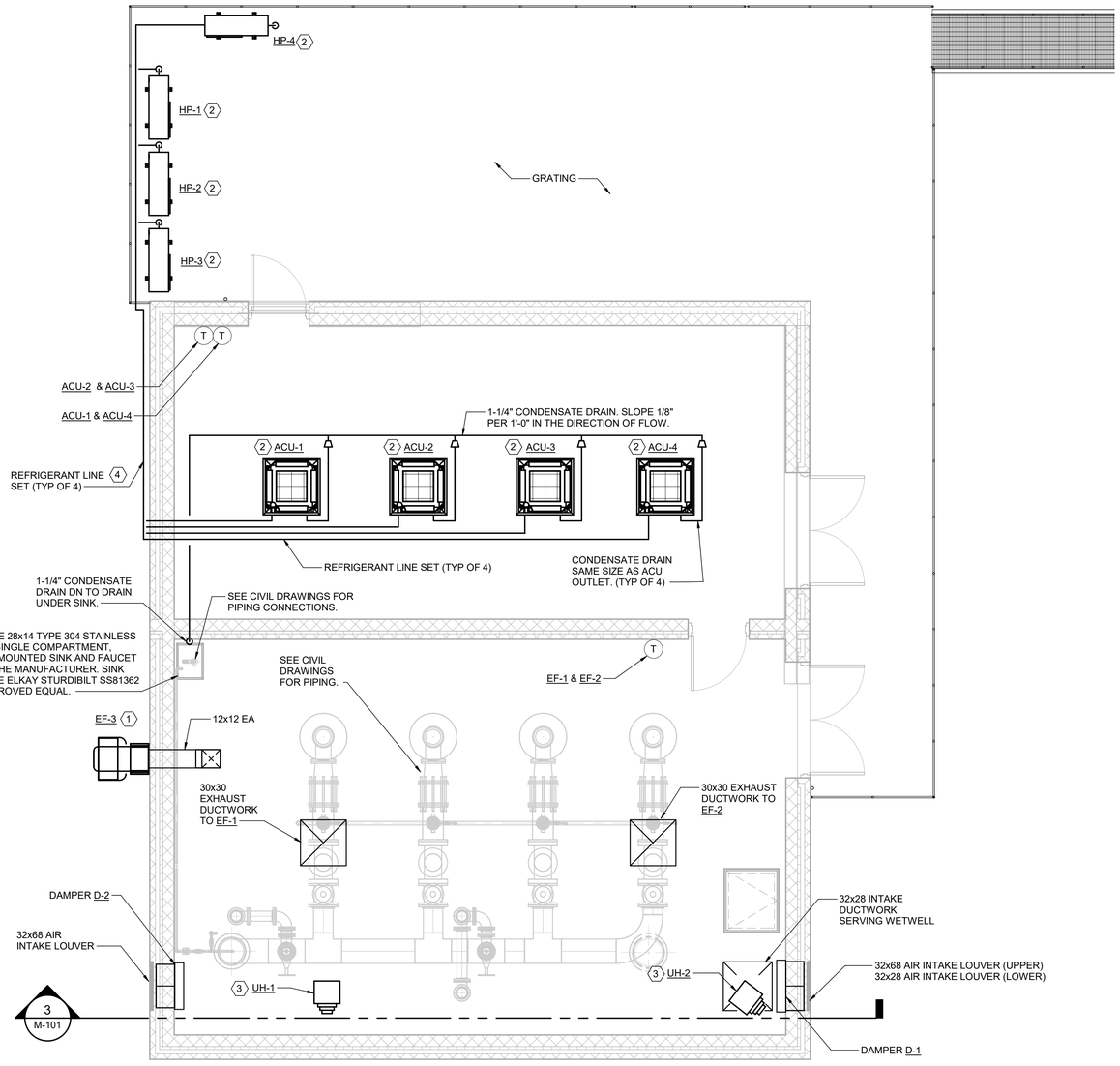
NEW WORK NOTES:

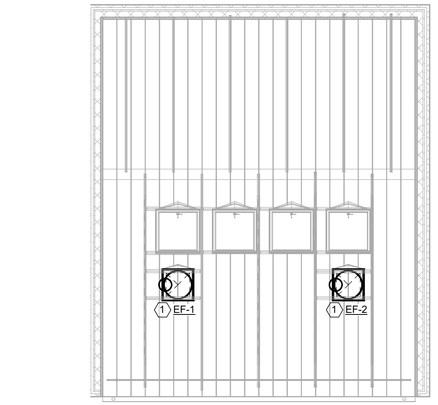
1. PROVIDE EXHAUST FAN PER FAN SCHEDULE ON DRAWING M-001, ROOF MOUNTED EXHAUST FAN DETAIL 2 ON DRAWING A-502 AND CONTROL DIAGRAM ON DRAWING M-701.
2. PROVIDE DUCTLESS SPLIT SYSTEM PER DUCTLESS SPLIT SYSTEM SCHEDULE ON DRAWING M-001 AND CONTROL DIAGRAM ON DRAWING M-701. PROVIDE SPLIT SYSTEM EQUIPMENT PAD FOR OUTDOOR UNIT FROM MANUFACTURER.
3. PROVIDE UNIT HEATER PER ELECTRIC UNIT HEATER SCHEUDLE ON DRAWING M-001 AND CONTROL DIAGRAM ON DRAWING M-701.
4. PROVIDE PVC LINE SET COVER FOR ALL EXTERIOR MOUNTED REFRIGERANT LINE SETS.



PLAN NORTH

1 FIRST FLOOR MECHANICAL PLAN

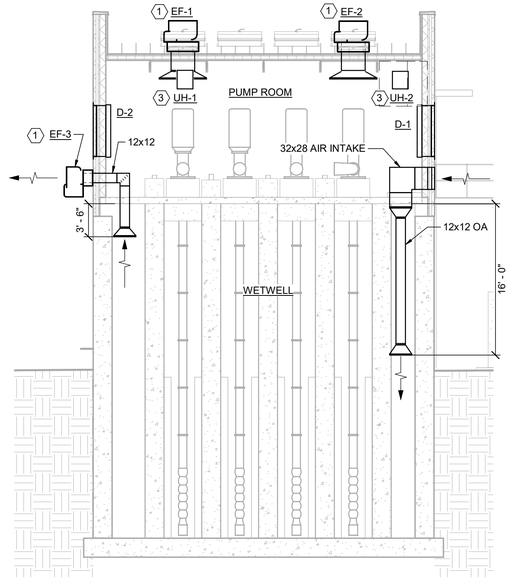
SCALE: 1/4" = 1'-0"



PLAN NORTH

2 ROOF MECHANICAL PLAN

SCALE: 1/8" = 1'-0"



3 M-101 MECHANICAL WETWELL EXHAUST SECTION

SCALE: 1/8" = 1'-0"

0' 2' 4' 8'

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

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FIRST FLOOR AND ROOF MECHANICAL PLAN AND SECTION

SHT. NO.	REV. NO.
M-101	0

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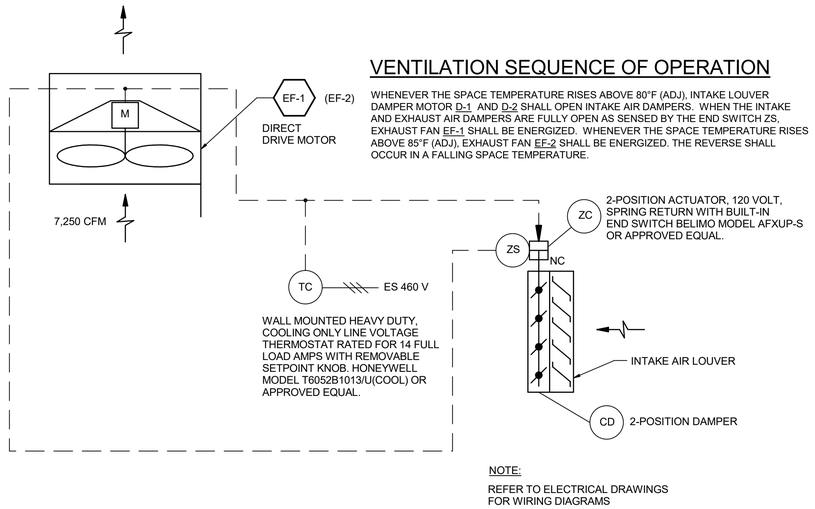


VENTILATION SEQUENCE OF OPERATION

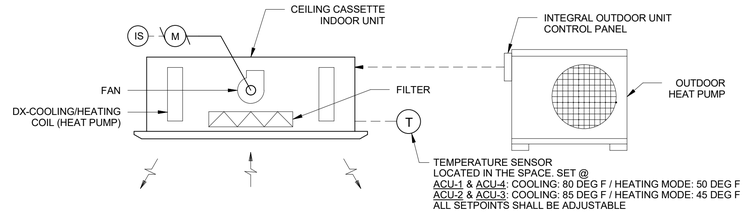
WHENEVER THE SPACE TEMPERATURE RISES ABOVE 80°F (ADJ), INTAKE LOUVER DAMPER MOTOR D-1 AND D-2 SHALL OPEN INTAKE AIR DAMPERS. WHEN THE INTAKE AND EXHAUST AIR DAMPERS ARE FULLY OPEN AS SENSED BY THE END SWITCH ZS, EXHAUST FAN EF-1 SHALL BE ENERGIZED. WHENEVER THE SPACE TEMPERATURE RISES ABOVE 85°F (ADJ), EXHAUST FAN EF-2 SHALL BE ENERGIZED. THE REVERSE SHALL OCCUR IN A FALLING SPACE TEMPERATURE.

NOTE:

REFER TO ELECTRICAL DRAWINGS FOR WIRING DIAGRAMS

EF-1, EF-2 VENTILATION CONTROL DIAGRAM

SCALE: NONE



DUCTLESS SPLIT SYSTEM UNIT DIAGRAM - (HP-1/ACU-1, HP-2/ACU-2, HP-3/ACU-3, & HP-4/ACU-4)

NOT TO SCALE

SEQUENCE OF OPERATION - DUCTLESS SPLIT SYSTEM

GENERAL:

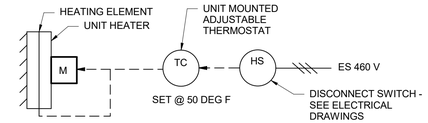
THE DUCTLESS SPLIT SYSTEM SHALL BE CONTROLLED BY ROOM THERMOSTAT AND UNIT MOUNTED CONTROLS. BUILDING OCCUPANCY AND OPERATION SCHEDULES SHALL BE PROVIDED BY THE OWNER.

ROOM TEMPERATURE CONTROL:

THE ROOM THERMOSTAT SHALL CONTROL THE DUCTLESS SPLIT SYSTEM HEAT PUMP COMPRESSOR AND REVERSING VALVE TO MAINTAIN COOLING AND HEATING SETPOINTS.

DUCTLESS SPLIT SYSTEM UNIT CONTROL DIAGRAM

NOT TO SCALE



SEQUENCE OF OPERATION

GENERAL:

THE UNIT HEATER SHALL BE CONTROLLED BY UNIT MOUNTED ADJUSTABLE THERMOSTAT.

ALL TEMPERATURE SETPOINTS SHALL BE ADJUSTABLE.

UNIT HEATER CONTROL:

THE THERMOSTAT SHALL ENERGIZE THE UNIT HEATER FAN AND ELECTRIC RESISTIVE HEATER TO MAINTAIN ROOM TEMPERATURE SETPOINT.

UNIT HEATER CONTROL DIAGRAM

NOT TO SCALE

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GARDNER SPRINGS PUMP STATION

STAUNTON, VA

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CONTROL DIAGRAMS AND SEQUENCE OF OPERATIONS

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CONDUIT/WIRING

X-1 →	HOMERUN - TO PANEL X, CIRCUIT NO. 1
———	CONDUIT ROUTING
– – – –	CONDUIT RUN UNDERGROUND
———o	CONDUIT TURNING UP
———o	CONDUIT TURNING DOWN
'X' = PANEL TAG AS INDICATED ON PANEL SCHEDULES, PLANS AND SINGLE LINE DIAGRAM	

ONE LINE DIAGRAM

	MOLDED CASE CIRCUIT BREAKER
	CIRCUIT BREAKER LOW VOLTAGE DRAWOUT
	TRANSFORMER
	ATS (AUTOMATIC TRANSFER SWITCH)
M	MOTOR/PUMP
	SWITCH
	CONTROLLER
	CONTROLLER WITH INTEGRAL DISCONNECT
VFD	VARIABLE FREQUENCY DRIVE

WIRING DEVICES

$	SINGLE POLE LIGHT SWITCH, 20A, 277V
$3	THREE WAY LIGHT SWITCH, 20A, 277V
	SPECIAL PURPOSE RECEPTACLE.
	DUPLEX RECEPTACLE. MOUNTING HEIGHT WHERE NOTED.
	QUADRAPLEX RECEPTACLE. MOUNTING HEIGHT WHERE NOTED.
	SURFACE MOUNTED DUPLEX RECEPTACLE

LIGHTING

'X' = TYPE AS INDICATED ON FIXTURE SCHEDULE

H-1 X	WALL MOUNTED LED FIXTURE. EMERGENCY BACK-UP BATTERY. X INDICATES FIXTURE TYPE AND H-1 INDICATES CIRCUIT
H-1 X	EMERGENCY WALL MOUNTED LED FIXTURE. EMERGENCY BACK-UP BATTERY. X INDICATES FIXTURE TYPE AND H-1 INDICATES CIRCUIT
X H-1	PENDANT HUNG LED LIGHT FIXTURE. X INDICATES FIXTURE TYPE AND H-1 INDICATES CIRCUIT
X H-1	EMERGENCY BATTERY BACKUP PENDANT LIGHT FIXTURE. X INDICATES FIXTURE TYPE AND H-1 INDICATES CIRCUIT
X H-1	EXIT LIGHT. X INDICATES FIXTURE TYPE AND H-1 INDICATES CIRCUIT.
X H-1	POLE MOUNTED LIGHT. X INDICATES FIXTURE TYPE AND H-1 INDICATES CIRCUIT.

SITE PLAN

X ▲▲ X	DUCT BANK SECTION, "X" INDICATES SECTION LETTER

MISCELLANEOUS POWER

	PANELBOARD
	NON-FUSED DISCONNECT SWITCH
	FUSIBLE DISCONNECT SWITCH
J	JUNCTION BOX
	COMBINATION MOTOR STARTER

ABBREVIATIONS:

A, AMP	AMPERE	KVA	KILOVOLT-AMPERE
ACU	AIR CONDENSER UNIT	KW	KILOWATT
AF	AMPERE FRAME	LTS	LIGHTS
AFF	ABOVE FINISHED FLOOR	MCB	MAIN CIRCUIT BREAKER
AT	AMPERE TRIP	MIN	MINIMUM
ATS	AUTOMATIC TRANSFER SWITCH	MLO	MAIN LUGS ONLY
AWG	AMERICAN WIRE GAUGE	N	NORTH
BCSD	BARE COPPER SOFT DRAWN	NE	NORTH EAST
BKR	BREAKER	NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
BLDG	BUILDING	NEU	NEUTRAL
C	CONDUIT	NW	NORTH WEST
CB	CIRCUIT BREAKER	OC	ON CENTER
CKT	CIRCUIT	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
CLR	CLEAR	P	POLE
CO.	COMPANY	PH	PHASE
COND	CONDUIT	PLC	PROGRAMMABLE LOGIC CONTROLLER
CONN	CONNECTED	PNL	PANEL
CP	CONTROL PANEL	PSI	POUNDS PER SQUARE INCH
CT	CURRENT TRANSFORMER	PVC	POLYVINYL CHLORIDE
CU	COPPER	QTY	QUANTITY
DWG	DRAWING	RCPT,REC	RECEPTACLE
EF	EXHAUST FAN	RM	ROOM
EGC	EQUIPMENT GROUNDING CONDUCTOR	S	SOUTH
ELEC	ELECTRICAL	SCH	SCHEDULE
EW	EACH WAY	SE	SOUTH EAST
EXIST	EXISTING	SECT	SECTION
GEC	GROUND ELECTRODE CONDUCTOR	SN	SOLID NEUTRAL
GEN	GENERATOR	SPEC	SPECIFICATION
GFI	GROUND FAULT INTERRUPTER	SW	SOUTH WEST
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	SWBD	SWITCHBOARD
GB	GROUNDING BAR	TYP	TYPICAL
GND	GROUND	UH	UNIT HEATER
HP	HEAT PUMP UNIT	V	VOLT
HT	HEAT TRACE	VFD	VARIABLE FREQUENCY DRIVE
kaic	THOUSAND AMPS INTERRUPTING CAPACITY	W	WIRE, WEST, AS APPLICABLE
kCMIL	THOUSAND CIRCULAR MILS	WP	WEATHERPROOF
kV	KILOVOLT	XFMR, XF	TRANSFORMER

LIGHTING FIXTURE SCHEDULE

SYMBOL	MANUFACTURER	CATALOG NUMBER	LAMP	VOLTAGE	WATTS	MOUNTING	NOTES
A	LITHONIA	MSL 4000LM SBL MVOLT GZ10 40K 80CRI	LED	277	75	PENDANT/ SUSPEND	INSTALL FIXTURE 12'-8" AFF TO BOTTOM UNLESS OTHERWISE NOTED
AE	LITHONIA	MSL 4000LM SBL MVOLT GZ10 40K 80CRI E7W	LED	277	75	PENDANT/ SUSPEND	INSTALL FIXTURE 12'-8" AFF TO BOTTOM UNLESS OTHERWISE NOTED, REFER TO NOTE 2
B	LITHONIA	ZL1N L48 3000LM FST MVOLT 40K 80CRI WH	LED	277	25	PENDANT/ SUSPEND	INSTALL FIXTURE 14' AFF TO BOTTOM UNLESS OTHERWISE NOTED
BE	LITHONIA	ZL1N L48 3000LM FST MVOLT 40K 80CRI E7W WH	LED	277	25	PENDANT/ SUSPEND	INSTALL FIXTURE 14' AFF TO BOTTOM UNLESS OTHERWISE NOTED, REFER TO NOTE 2
C	LITHONIA	ARC2LED P3 30K MVOLT PE DDBXD	LED	277	51	WALL	FIXTURE MOUNTING HEIGHT IS NOTED ON LIGHTING PLAN, DARK SKY APPROVED, INTEGRAL PHOTOCELL NOTE 2
CE	LITHONIA	ARC2LED P3 30K MVOLT PE E8WC DDBXD	LED	277	51	WALL	FIXTURE MOUNTING HEIGHT IS NOTED ON LIGHTING PLAN, DARK SKY APPROVED, INTEGRAL PHOTOCELL NOTE 2
D	LITHONIA	TFX2 LED 40K MVOLT 4K DDBXD LED	LED	277	94	WALL	MOUNT 1'-0" TO TOP OF FIXTURE FROM 1ST FLOOR IN WETWELL
E	LITHONIA	KADLED 30C 70030K R4 MVOLT SPD04 DDLXD DLL127F 1.5JU	LED	277	69	POLE	PROVIDE WITH 20' ALUMINUM 4" SQUARE POLE, INTEGRAL PHOTOCELL, DARK SKY APPROVED
EX	LITHONIA	LQM S W 3 R 120/277 EL N SD	LED	277	0.9	WALL	INSTALL 12" ABOVE DOOR. REFER TO NOTES 2, 3, AND 4.
F	KENALI	H1212FL	LED	120	0.9	SURFACE	

1. LIGHTING FIXTURES WITH EQUAL PERFORMANCE AND QUALITY CHARACTERISTICS MAY BE USED IN LIEU OF THOSE LISTED HERE. FIXTURES OF EQUAL PERFORMANCE AND QUALITY MUST HAVE EQUAL OR GREATER LUMENS BOTH FOR EMERGENCY AND NORMAL OPERATION.
2. PROVIDE WITH BATTERY BACKUP. LUMINAIRES WITH EMERGENCY LIGHTING BATTERY PACK SHALL BE CONNECTED TO UNSWITCHED HOT CONDUCTOR TAPPED AHEAD OF LOCAL SWITCHING TO ENSURE SENSING OF POWER LOSS AND OPERATION EVEN WHEN SWITCHED TO "OFF".
3. EXIT SIGNAGE SHALL BE CONNECTED TO LOCAL LIGHTING CIRCUIT SERVING AREA AHEAD OF ANY SWITCHING.
4. PROVIDE WITH INTEGRAL TEST SWITCH.

GENERAL NOTES

1. PERFORM WORK IN ACCORDANCE WITH THE FOLLOWING CODES AND STANDARDS:
   -VIRGINIA UNIFORM STATEWIDE BUILDING CODE 2018 (VUSBC)
   -NATIONAL ELECTRICAL CODE 2017 (NFPA 70)
   -CONSTRUCTION AND PROFESSIONAL SERVICES MANUAL (CPSM), 2020 REV 0 (ISSUED 07/01/2020)
   -VIRGINIA ENERGY CONSERVATION CODE 2018 (VECC)
   -THE LIFE SAFETY CODE 2015 (NFPA 101)
   -ADA STANDARDS FOR ACCESSIBLE DESIGN (2010)
2. FIELD VERIFY DIMENSIONS AND ELEVATIONS IN THE AREA OF WORK PRIOR TO THE START OF WORK.
3. MODIFICATIONS TO THESE DOCUMENTS DUE TO UNFORESEEN FIELD CONDITIONS MUST BE APPROVED BY THE ENGINEER OF RECORD AND INDICATED ON THE AS-BUILT DRAWINGS.
4. PROVIDE NEW EQUIPMENT LISTED AND LABELED FOR ITS INTENDED USE UNLESS INSTRUCTED OTHERWISE.
5. SEAL PENETRATIONS OF FIRE RATED CONSTRUCTION WITH U.L. APPROVED FIRE STOPPING MATERIAL TO RESTORE THE ORIGINAL FIRE RESISTANCE RATING OF THE PENETRATED CONSTRUCTION.
6. WHERE PROVIDED, EQUIPMENT MODEL NUMBERS INDICATE THE BASIS OF DESIGN EQUIPMENT. PRODUCTS FROM LISTED APPROVED EQUAL MANUFACTURERS ARE ACCEPTABLE.
7. THESE DOCUMENTS CALL FOR FINISHED WORK, TESTED AND READY FOR OPERATION. THE TERM "PROVIDE" MEANS "FURNISHED AND INSTALLED COMPLETE AND READY FOR USE." COORDINATE EXACT LOCATIONS OF DEVICES WITH EQUIPMENT VENDORS PRIOR TO INSTALLATION.
8. PROVIDE EQUIPMENT GROUNDING CONDUCTOR FOR EACH CIRCUIT INDICATED IN PANEL SCHEDULES.
9. PROVIDE NYLON PULL STRING IN EMPTY CONDUITS.
10. LABEL JUNCTION BOXES WITH PANEL DESIGNATION AND CIRCUIT NUMBER.
11. PRIOR TO FINAL ACCEPTANCE; CLEAN DEVICES, DEVICE PLATES, CABINETS, LUMINARIES, AND OTHER EQUIPMENT PROVIDED UNDER THIS CONTRACT; ENSURE THAT PANEL DIRECTORIES ARE REVISED AND/OR COMPLETED AND IN PLACE; AND THAT MARKING AND IDENTIFICATION OF COMPONENT IS COMPLETE.
12. REPAIR OR REPLACE, AND AT NO ADDITIONAL COST, ITEMS DAMAGED DURING THE COURSE OF THE WORK.
13. REPLACE AND RETEST DEFECTIVE WIRING, DEVICES, AND EQUIPMENT THAT IS ENCOUNTERED DURING THE COURSE OF TESTING.
14. MOUNTING HEIGHTS ARE MEASURED FROM FINISHED FLOOR TO CENTER OF DEVICE UNLESS NOTED OTHERWISE.
15. MAKE FINAL CONNECTIONS TO DEVICES AND EQUIPMENT FURNISHED BY OTHER TRADES.
16. CONTRACTOR IS RESPONSIBLE FOR PROVIDING COORDINATION DRAWINGS FOR ALL CONDUITS CAST IN CONCRETE.
17. IN ACCORDANCE WITH NEC ARTICLE 300.7, PROVIDE REQUIRED SEALING WHERE PORTIONS OF A RACEWAY OR SLEEVE ARE KNOWN TO BE SUBJECTED TO DIFFERENT TEMPERATURES. WHERE PASSING FROM THE INTERIOR TO THE EXTERIOR OF A BUILDING, THE RACEWAY OR SLEEVE SHALL BE FILLED WITH AN APPROVED MATERIAL TO PREVENT THE CIRCULATION OF WARM AIR TO A COLDER SECTION OF THE RACEWAY OR SLEEVE.
18. ALL CONDUCTORS, RACEWAYS AND CABLES SHALL BE CONCEALED IN CEILING OR WALLS IN FINISHED SPACES.
19. ALL RACEWAYS RUNNING THROUGH BUILDING EXPANSION JOINTS SHALL BE EQUIPPED WITH EXPANSION FITTINGS.
20. WHERE SHOWN WIRE CONNECTIONS ARE DIAGRAMMATIC.

DEMOLITION GENERAL NOTES

1. SEE DRAWING CD-101 AND CD-102 FOR DEMOLITION IN THE EXISTING PUMP STATION.
2. THE EXISTING METAL BUILDING SHOWN ON THE ELECTRICAL SITE PLAN WILL REQUIRE DEMOLITION WORK. THE ELECTRICAL GEAR, PANELBOARD, DISCONNECTS, STARTERS, CONTROL PANELS, AND GENERAL POWER SHALL BE REMOVED AFTER NEW PUMP STATION IS IN OPERATION AND BEFORE NEW GENERATOR IS INSTALLED.
3. THE POWER SHALL NOT BE INTERRUPTED TO THE EXISTING ELECTRICAL EQUIPMENT. THE EXISTING PUMPS AND VALVES MUST REMAIN IN OPERATION DURING CONSTRUCTION UNTIL THE NEW PUMP STATION IS IN OPERATION. DOMINION ENERGY WILL DE-ENERGIZE EXISTING TRANSFORMER AND REMOVE POWER COMPANY OWNED CONDUCTORS TO SWITCHGEAR IN METAL BUILDING.
4. THE CONTRACTOR SHALL VISIT THE PROJECT LOCATION AND FIELD VERIFY THE EXISTING CONDITIONS PRIOR TO BEGINNING WORK.
5. DEMOLITION WORK SHALL BE COORDINATED WITH THE OWNER'S REPRESENTATIVE AND SHALL NOT INTERFERE WITH ACTIVITIES IN OTHER BUILDING AREAS. DEMOLISHED MATERIALS, UNLESS SPECIFICALLY INDICATED TO REMAIN OR BE TURNED OVER TO THE OWNER, SHALL PROMPTLY AND APPROPRIATELY REMOVED DISPOSED OF. PARTICULARLY MATERIALS CONTAINING HAZARDOUS MATERIALS SUCH AS LAMPS CONTAINING MERCURY OR TRANSFORMERS CONTAINING PCB'S. CONTRACTOR SHALL COORDINATE APPROPRIATE STAGING AREA WITH OWNER.
6. SHUTDOWNS OR SERVICE INTERRUPTIONS SHALL BE COORDINATED WITH AND APPROVED BY THE OWNER'S REPRESENTATIVE. PROVIDE NOTICE AND WORK PLAN TEN(10) WORKING DAYS PRIOR TO SHUTDOWN OR SERVICE INTERRUPTION.
7. REMOVE EACH EQUIPMENT ITEM, DEVICE, AND FIXTURES AS REQUIRED. REMOVE ALL ASSOCIATED CIRCUITRY BACK TO PROTECTIVE DEVICE IN THE PANEL, SWITCHBOARD, OR CONTROLLER. REMOVE ALL SIGNAL CABLING BACK TO THE SOURCE EQUIPMENT, RACK OR PANELBOARD.
8. ASSOCIATED CIRCUITRY SHALL BE DEFINED TO INCLUDE ALL RACEWAYS, CONDUCTORS, BOXES, WIRING DEVICES, WALL PLATES, LAMPS, FIXTURES, SWITCHES, STARTERS, SUPPORTS, ETC. WHICH ARE ASSOCIATED WITH THE ITEM TO BE REMOVED.
9. WHERE CONDUIT ASSOCIATED WITH AN ITEM TO BE REMOVED IS IN AN INACCESSIBLE AREA, SUCH AS WHERE ENCASED IN CONCRETE, THE INACCESSIBLE CONDUIT SHALL BE ABANDONED IN PLACE, UNLESS INDICATED TO BE REUSED. ALL CONDUCTORS SHALL BE REMOVED AND CONDUIT SHALL BE CUT OFF FLUSH AND SEALED OR CAPPED.

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CITY OF STAUNTON
GARDNER SPRING PUMP STATION
STAUNTON, VIRGINIA

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LEGEND, ABBREVIATIONS, AND GENERAL NOTES

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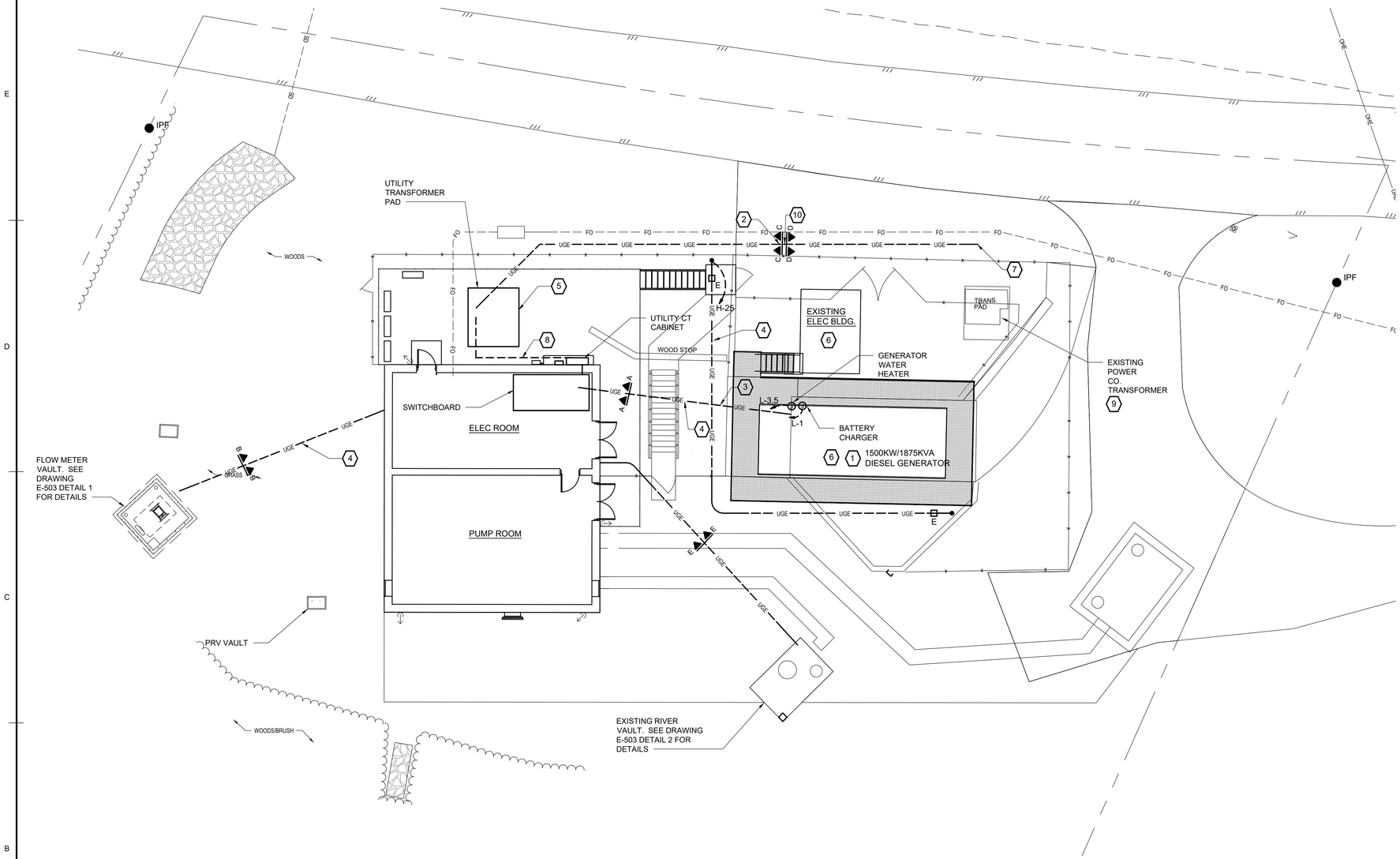

PLAN NORTH

1 SITE PLAN - ELECTRICAL

SCALE: 1" = 10'

GENERAL NOTES:

1. COORDINATE UTILITY WORK WITH DOMINION ENERGY.
2. COORDINATE INSTALLATION WITH OTHER TRADES. ADJUST DEPTH OF DUCT BANKS TO ALLOW FOR CLEARANCES OF OTHER UNDERGROUND INSTALLATIONS.
3. REFER TO FLOOR PLANS FOR EQUIPMENT LOCATIONS WHEN DETERMINING CONDUIT STUB-UP LOCATIONS. COORDINATE CONDUIT STUB-UPS WITH EQUIPMENT SHOP DRAWINGS.
4. SEE DUCTBANK SCHEDULE ON DRAWING E-503 FOR DUCTBANK SECTIONS AND CONDUITS.

KEY NOTES:

1. PROVIDE A STANDBY GENERATOR WITH SUB-BASE FUEL TANK AND WEATHER-PROOF ENCLOSURE. COORDINATE CONSTRUCTION SEQUENCE SO THAT GENERATOR IS INSTALLED AFTER COMPLETION OF NEW PUMP STATION AND DEMOLITION OF EXISTING PUMP STATION.
2. DOMINION ENERGY WILL FURNISH 2-6" PVC CONDUITS AND 1-2" PVC CONDUIT FOR CONTRACTOR TO INSTALL FOR SERVICE CONDUCTORS. DOMINION ENERGY WILL PROVIDE THE CONDUCTORS. INSTALL THE 1-2" CONDUIT FROM THE NEW UTILITY TRANSFORMER TO LOCATION SHOWN BETWEEN THE EXISTING TRANSFORMER AND THE NEW TRANSFORMER, SEE NOTE 10. ALL DOMINION ENERGY CONDUIT SHALL BE DIRECT BURIED A MINIMUM OF 30" BELOW GRADE. ALL CONDUITS SHALL BE CAPPED, WITH PULL STRINGS AND BALL MARKERS AT THE ENDS OF EACH CONDUIT. DOMINION ENERGY WILL PROVIDE BALL MARKERS. THE 2-6" CONDUITS SHALL TERMINATE 7'-0" FROM OUTSIDE OF EXISTING TRANSFORMER, SEE KEYNOTE 10.
3. COORDINATE GENERATOR CONDUIT INSTALLATION WITH REQUIRED PHASING. DURING INITIAL CONSTRUCTION OF NEW ELECTRICAL ROOM, INSTALL UNDERGROUND CONDUITS FROM ATS TO A POINT NEAR THE FUTURE GENERATOR LOCATION. INSTALL A TEMPORARY MARKER TO IDENTIFY END OF CONDUIT RUN. UPON COMPLETION OF DEMOLITION OF EXISTING PUMP BUILDING , EXTEND CONDUITS TO THEIR FINAL STUB-UP LOCATION. COORDINATE STUB-UP LOCATION WITH GENERATOR SHOP DRAWINGS.
4. COORDINATE DEPTH OF DUCT BANK WITH OTHER UTILITY CROSSINGS. CONDUIT SHALL BE ROUTED ABOVE UTILITY CROSSING AND WITH A MINIMUM OF 12" OF SEPARATION.
5. TRANSFORMER FURNISHED AND PLACED BY DOMINION ENERGY. PROVIDE TRANSFORMER SUPPORT STRUCTURE, TRANSFORMER GROUNDING, AND ALL OTHER ACCESSORIES REQUIRED PER DOMINION ENERGY REQUIREMENTS. SEE CONCRETE PAD DETAIL ON DRAWING E-501.
6. DEMOLISH ALL ELECTRICAL SYSTEMS ASSOCIATED WITH THE EXISTING BUILDING AND EQUIPMENT SCHEDULED FOR REMOVAL. COORDINATE WITH OWNER AND WORK OF OTHER TRADES. REFER TO CD-101 AND CD-102 FOR ADDITIONAL DETAILS. DEMOLITION WORK WILL OCCUR AFTER THE NEW PUMP STATION IS IN SERVICE. PHASE NEW WORK AND DEMOLITION AS FOLLOWS.
   - 6.1. INSTALL, TEST, AND PERFORM STARTUP ON ALL EQUIPMENT, EXCLUDING GENERATOR, IN NEW PUMP STATION. COORDINATE WITH ATS MANUFACTURER REQUIREMENTS FOR TEMPORARY OPERATIONS WITHOUT A GENERATOR CONNECTED TO THE EMERGENCY SIDE OF THE ATS. PUMP STATION MUST BE OPERATIONAL PRIOR TO THE START OF ANY DEMOLITION WORK.
   - 6.2. DEMOLISH EXISTING ELECTRICAL BUILDING IN ITS ENTIRETY. DEMOLISH ALL EQUIPMENT WITHIN THE BUILDING, INCLUDING BUT NOT LIMITED TO SWITCHBOARD, MOTOR CONTROL CENTERS, MOTOR STARTERS, VFDS, LIGHTING, RECEPTACLES, BRANCH CIRCUITS, AND FEEDERS. UNDERGROUND CONDUITS ARE PERMITTED TO BE ABANDONED IN PLACE. CUT CONDUITS BELOW GRADE AND SEAL ENDS WITH CONCRETE OR NON-CORROSIVE CAPS.
   - 6.3. DEMOLISH COMPLETE ELECTRICAL INSTALLATION OF EXISTING PUMP STATION. REFER TO SHEETS CD-101 AND CD-102.
   - 6.4. INSTALL GENERATOR ON EXISTING PUMP BUILDING FOUNDATION AFTER STRUCTURAL MODIFICATIONS ARE COMPLETE. COORDINATE INSTALLATION AND CONDUIT STUB-UPS WITH STRUCTURAL CONTRACTOR. FINALIZE TESTING AND STARTUP OF GENERATOR AND ATS.
7. DOMINION ENERGY WILL PROVIDE CONDUIT TO 7'-0" FROM EXISTING TRANSFORMER. THE LOCATION SHOWN IS WHERE THE CONTRACTOR STOPS INSTALLING DOMINION CONDUITS.
8. PROVIDE 8-4" CONDUITS BETWEEN NEW TRANSFORMER AND CT CABINET. DOMINION ENERGY WILL PROVIDE SERVICE CONDUCTORS FROM TRANSFORMER TO CT CABINET.
9. DOMINION ENERGY WILL REMOVE TRANSFORMER AND ALL EQUIPMENT ASSOCIATED WITH TRANSFORMER. REMOVAL OF EXISTING TRANSFORMER WILL TAKE PLACE AFTER CONSTRUCTION OF NEW PUMP STATION IS COMPLETE AND THE PUMP STATION IS FULLY OPERATIONAL.
10. THE 2" CONDUIT WILL END AT THE LOCATION SHOWN.

IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.

10' 0 10'

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SITE PLAN ELECTRICAL

SHT. NO. E-002

REV. NO. 0

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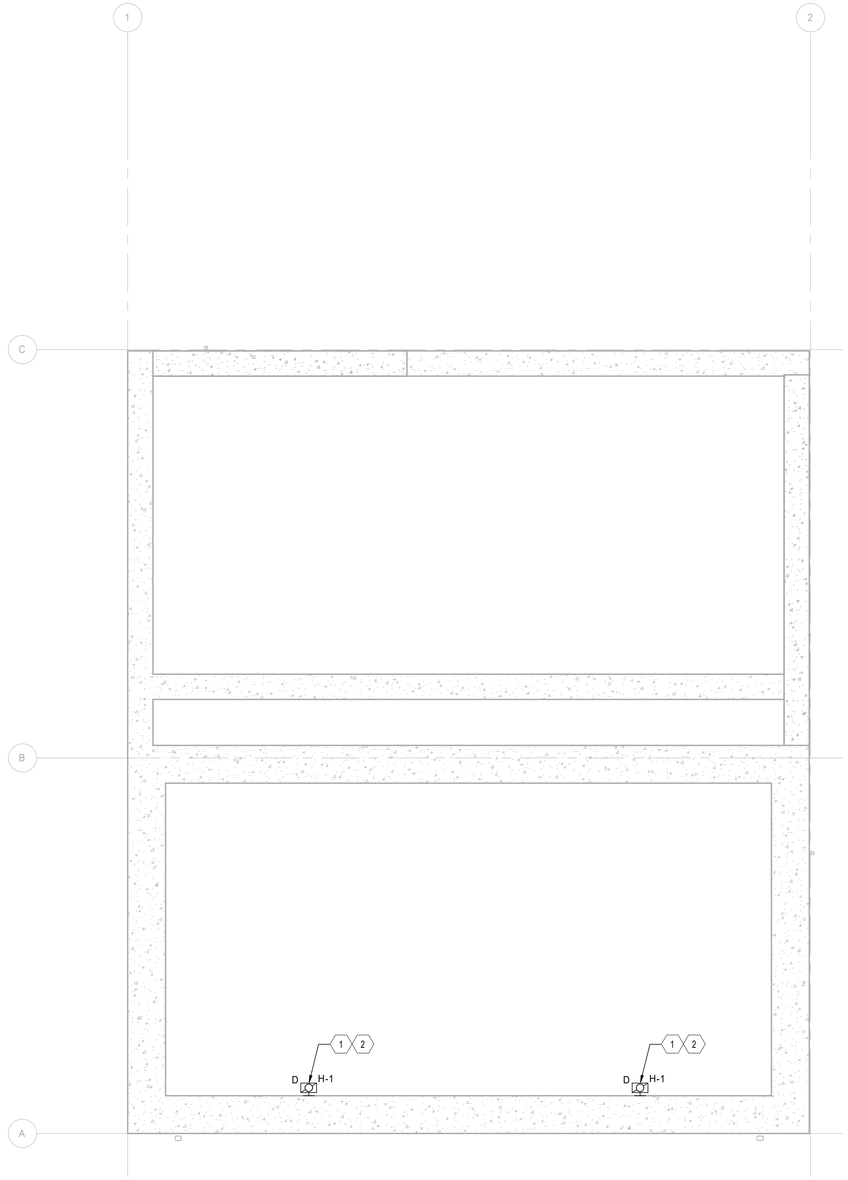
SHEET KEYNOTES

1. WALL MOUNT WITH FIXTURE AIMING DOWN.
2. LIGHT FIXTURES SHALL BE CONTROLLED BY THE LIGHT SWITCH LOCATED ON THE FIRST FLOOR ON DRAWING E-102.



PLAN NORTH

1 WETWELL LIGHTING PLAN

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

0' 2' 4' 8'

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

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WETWELL LIGHTING PLAN

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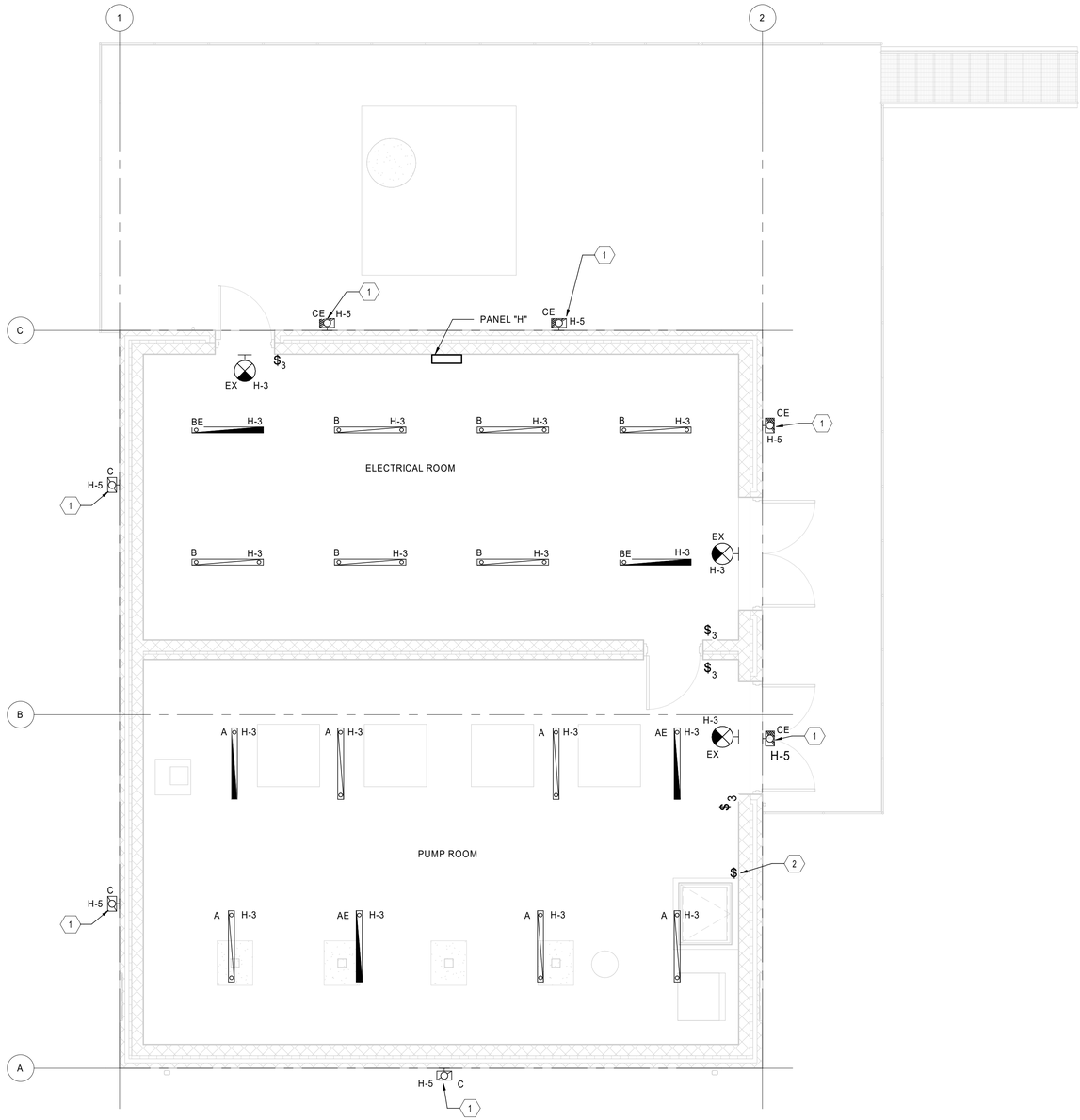
GENERAL PLAN NOTES

1. PROVIDE EXTERIOR FIXTURES WITH INTEGRAL PHOTOCELL TO CONTROL FIXTURES ON/OFF DUSK TO DAWN.

SHEET KEYNOTES

1. MOUNT FIXTURE 8'-0" ABOVE FINISHED FIRST FLOOR.
2. PROVIDE LIGHT SWITCH AT LOCATION SHOWN FOR LIGHTS IN WETWELL.



PLAN NORTH

1 FIRST FLOOR LIGHTING PLAN

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

0' 2' 4' 8'

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

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PROFESSIONAL ENGINEER
05/27/2022

CITY OF STAUNTON
GARDNER SPRING PUMP STATION
STAUNTON, VIRGINIA

MRK	DATE	REVISION DESCRIPTION

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DATE:	05/27/2022
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CHECK:	RCC

SHEET TITLE

FIRST FLOOR LIGHTING PLAN

SHT. NO.	REV. NO.
E-102	

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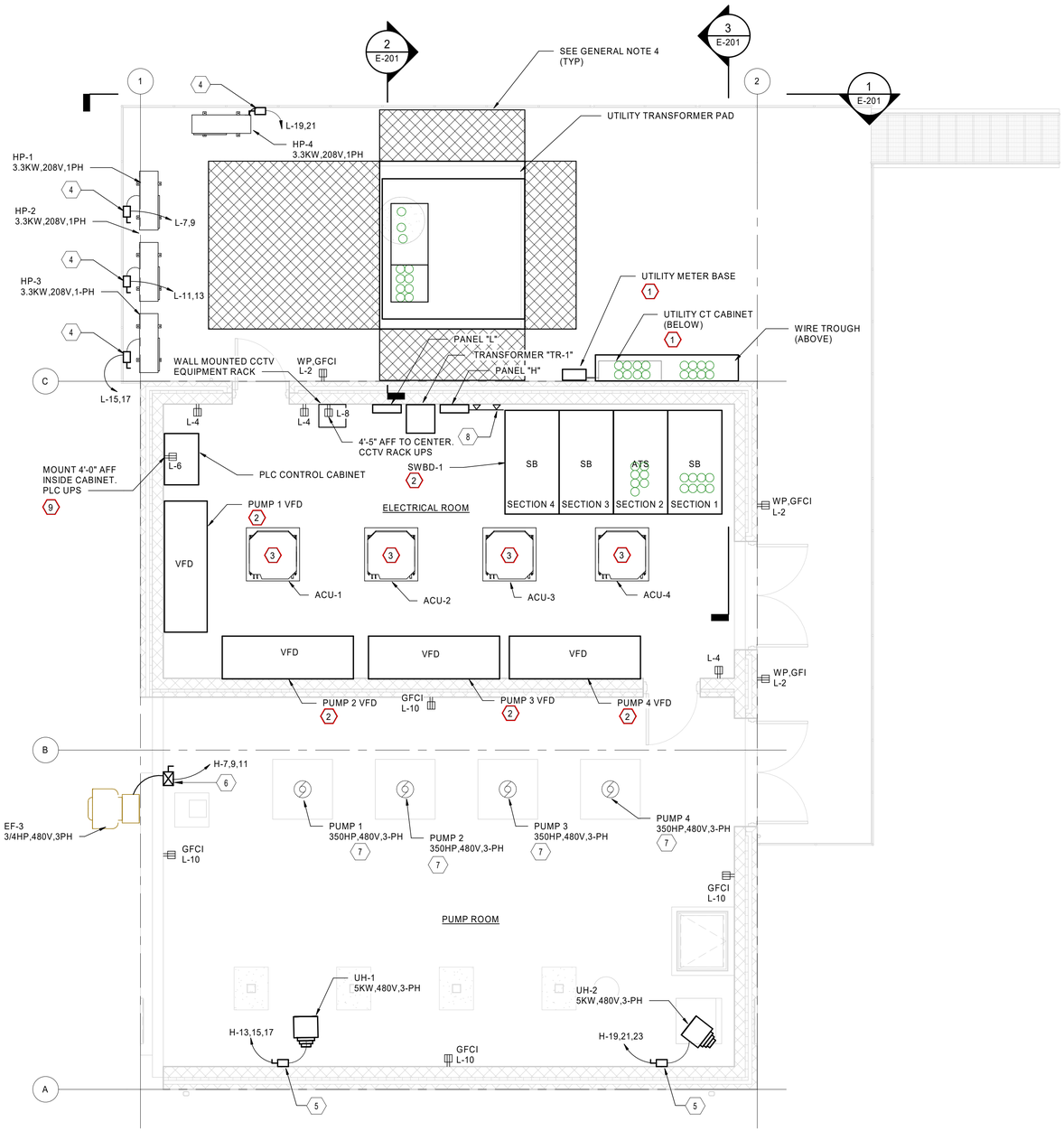

PLAN NORTH

1 FIRST FLOOR POWER PLAN

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

GENERAL PLAN NOTES

1. PROVIDE PUMP CIRCUIT BREAKERS WITH LOCK OUT CAPABILITIES TO LOCK OUT PUMPS.
2. ROUTE CONDUIT IN CONCRETE SLAB TO THE EXTENT POSSIBLE INSIDE OF THE BUILDING.
3. COORDINATE LOCATION OF EQUIPMENT WITH OTHER TRADES.
4. HATCHING INDICATES REQUIRED CLEARANCES AROUND UTILITY TRANSFORMER.
5. PROVIDE GROUNDING SYSTEM AND GROUNDING TEST IN ACCORDANCE WITH PROJECT SPECIFICATIONS AND DETAIL 1 ON SHEET E-502. FIELD LOCATE GROUND ROD TRIAD AND TEST WELL. BOND ALL STRUCTURAL STEEL, INCLUDING BUILDING STEEL, METAL STAIRS, AND ELEVATED PLATFORMS.

(X) SHEET KEYNOTES

1. INSTALL UTILITY CT CABINET AND UTILITY METER BASE FURNISHED BY DOMINION ENERGY. PROVIDE 1-1/2" CONDUIT BETWEEN CT CABINET AND METER. METER TO BE INSTALLED BY DOMINION ENERGY.
2. PROVIDE 4" HIGH EQUIPMENT PAD.
3. ACU UNITS ARE POWERED FROM THE OUTDOOR HEAT PUMP UNITS. ACU'S ARE TO BE PROVIDED WITH A FACTORY INTEGRAL DISCONNECT.
4. PROVIDE A 2-POLE, NON-FUSED 30AMP DISCONNECT SWITCH IN A NEMA 3R ENCLOSURE.
5. PROVIDE A 30AMP, 3-POLE, NON-FUSED DISCONNECT SWITCH IN A NEMA 3R ENCLOSURE FOR UNIT HEATERS.
6. PROVIDE A NEMA SIZE 0, 3-PHASE COMBINATION STARTER/DISCONNECT FOR EXHAUST FAN EF-3 IN A NEMA 3R ENCLOSURE. MOUNT ON 1ST FLOOR. PROVIDE RED "RUN" INDICATION AND A "GREEN" STOP INDICATION AND AN H-O-A SWITCH.
7. PUMPS 1,2,3, AND 4 ARE POWERED FROM THE SWITCHBOARD THROUGH THE VFD'S. SEE SWITCHBOARD SCHEDULE FOR CIRCUIT BREAKERS, CONDUCTORS AND CONDUIT SIZES.
8. PROVIDE A 1/4"x4"x20" GROUND BUS BAR MOUNTED ON WALL 12" ABOVE FINISHED FLOOR TO BOTTOM.
9. COORDINATE RECEPTACLE WITH PLC CABINET SO THAT RECEPTACLE IS WITHIN ENCLOSURE.

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FIRST FLOOR POWER PLAN

SHT. NO. E-103 | REV. NO.

0' 2' 4' 8'

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

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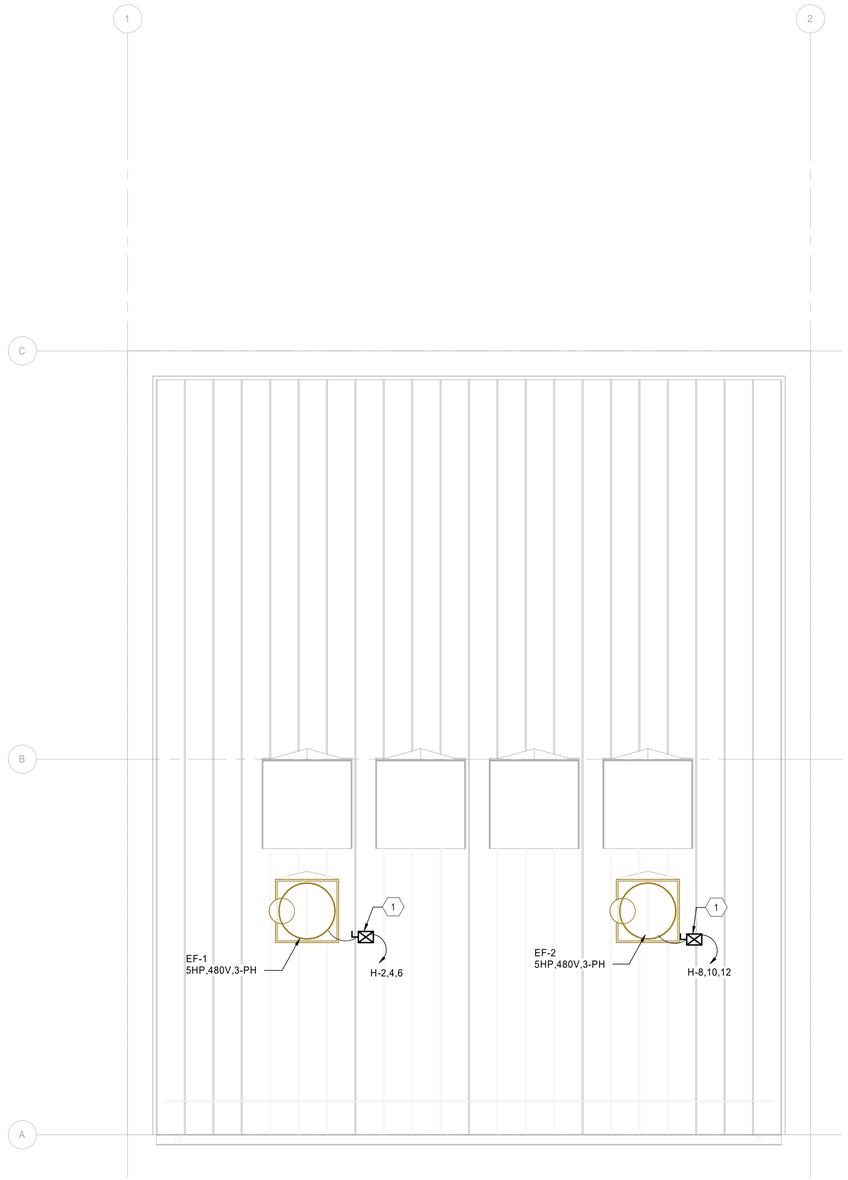
GENERAL PLAN NOTES

1. COORDINATE EQUIPMENT LOCATION WITH OTHER TRADES.

SHEET KEYNOTES

1. PROVIDE A NEMA SIZE 0 COMBINATION STARTER/DISCONNECT IN A NEMA 3R ENCLOSURE. STARTER SHALL HAVE A RED "RUN" INDICATION, A GREEN "STOP" INDICATION AND AN H-O-A SWITCH ON ENCLOSURE. MOUNT ON A SLOTTED CHANNEL FRAME ON ROOF.



PLAN NORTH

1 ROOF PLAN

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

0' 2' 4' 8'

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

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ROOF PLAN

SHT. NO. E-104

REV. NO.

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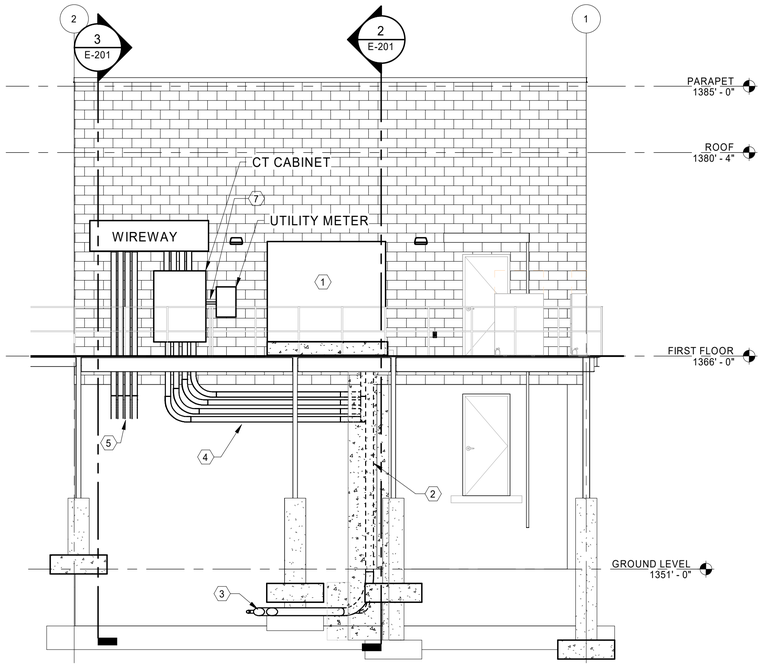
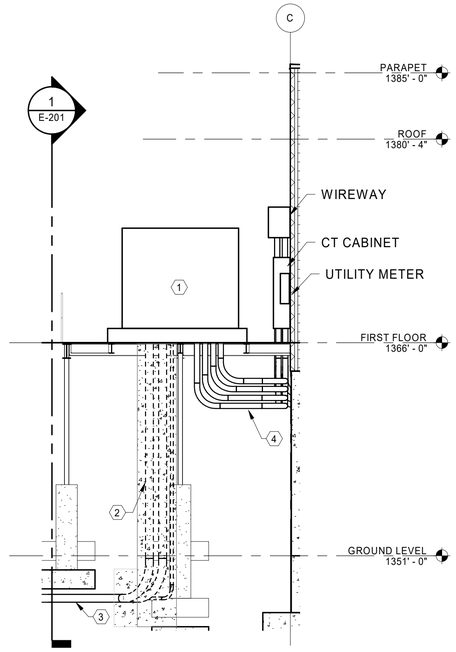


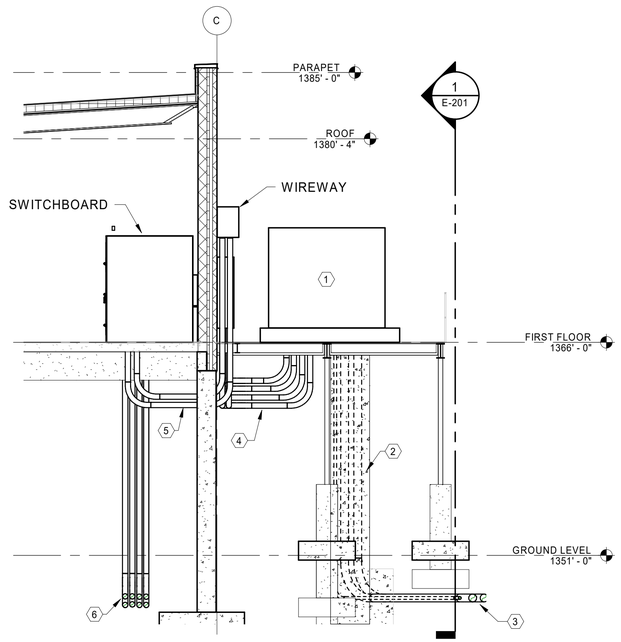
1 E-103 NORTHWEST ELEVATION

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



2 E-103 SOUTHWEST ELEVATION

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



3 E-103 NORTHEAST ELEVATION

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

GENERAL PLAN NOTES

1. REFER TO E-002 FOR UNDERGROUND CONDUIT ROUTING.
2. REFER TO STRUCTURAL DRAWINGS FOR CONCRETE ENCASEMENT DETAILS OF VERTICAL CONCRETE COLUMN.

SHEET KEYNOTES

1. UTILITY TRANSFORMER.
2. CONCRETE ENCASE CONDUITS UNDER TRANSFORMER. CONCRETE ENCASEMENT MUST CONTAIN THE COMPLETE VERTICAL RUN OF CONDUITS. SECONDARY CONDUITS TURNING HORZIONTIAL ARE PERMITTED TO EXIT THE CONCRETE ENCASEMENT. EXTEND ENCASEMENT BELOW GRADE TO FULLY ENCASE ELBOWS. REFER TO STRUCTURAL SHEET S-302 DETAIL 3 FOR CONCRETE ENCASEMENT DETAILS.
3. QTY. 2 - 6" PRIMARY CONDUITS AND QTY. 1 - 2" GROUNDING CONDUIT. REFER TO SHEET E-002 FOR ROUTING.
4. QTY. 8 - 4" CONDUITS FROM TRANSFORMER TO CT CABINET.
5. QTY. 8 - 4" CONDUITS FROM WIREWAY TO SWITCHBOARD.
6. QTY. 8 - 4" CONDUITS FROM SWITCHBOARD TO GENERATOR.
7. QTY. 1 - 1-1/2" CONDUIT BETWEEN CT CABINET AND UTILITY METER BASE.

0' 4' 8' 12'

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

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ELEVATIONS

SHT. NO. E-201

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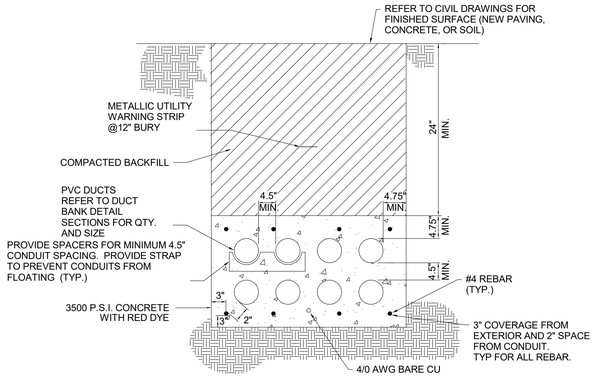
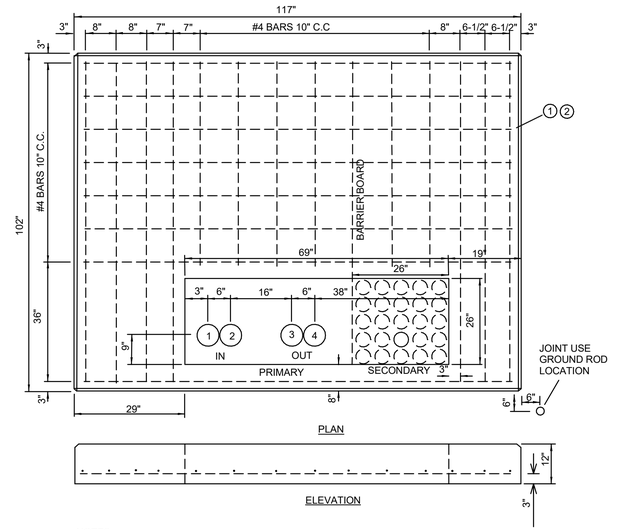


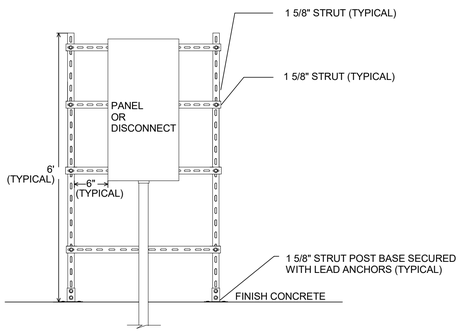
1 TYPICAL DUCTBANK SECTION DETAIL
NOT TO SCALE



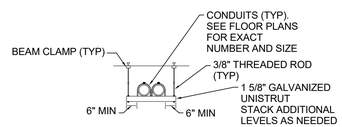
NOTES:

1. CONCRETE SHALL HAVE A MINIMUM ULTIMATE 28 DAY COMPRESSIVE STRENGTH OF NOT LESS THAN 3000PSI OR 4500PSI IF PRECAST (2-3/4 CU YDS)
2. GROUT SHALL NOT BE SUBSTITUTED FOR CONCRETE MIX.
3. ALL EDGES OF CONCRETE EXPOSED ABOVE GROUND SHALL HAVE 1" CHAMFER.
4. PADS SHALL BE REINFORCED WITH #4 RODS (16S')
5. ANY DISTURBED EARTH OR FILL SHALL BE COMPACTED PRIOR TO INSTALLING PAD.
6. GROUT INSIDE OF CABINET AROUND BASE TO MAKE IT TAMPER PROOF.
7. THIS PAD WILL FIT MOST 1000, 1500, 2000, AND 2500KVA TRANSFORMERS BUILT SINCE 1977 AND OLDER 1000KVA TRANSFORMERS.
8. A MAXIMUM OF 25 - 4" SECONDARY CONDUITS MAY BE INSTALLED IN THIS PAD.
9. ALL 3 PHASE CABLES MUST BE INSTALLED IN THE SAME CONDUIT; OUTSIDE CONDUIT (POSITIONS 1 & 4) PREFERRED.

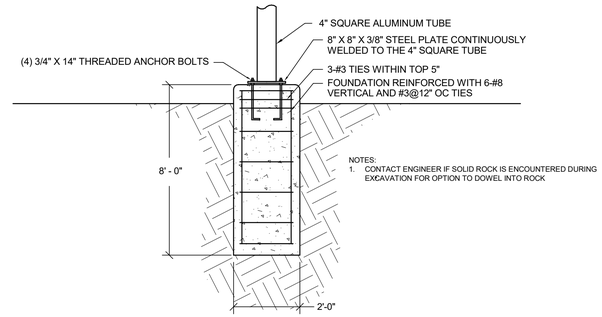
4 DOMINION ENERGY TRANSFORMER PAD DETAIL
NOT TO SCALE



2 TYPICAL SLOTTED CHANNEL SUPPORT FRAME DETAIL
NOT TO SCALE



3 CONDUIT TRAPEZE SUPPORT
NOT TO SCALE



5 POLE BASE DETAIL
NOT TO SCALE

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SHT. NO. E-501
REV. NO.

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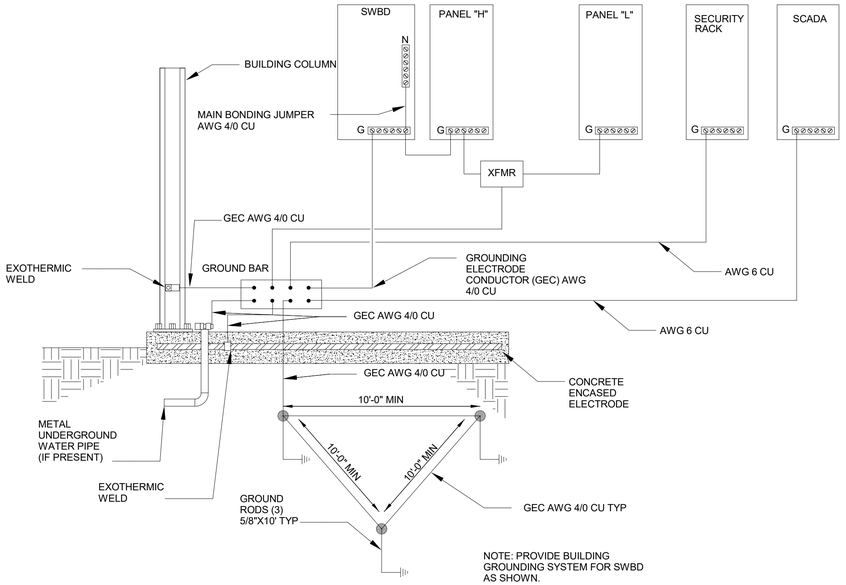
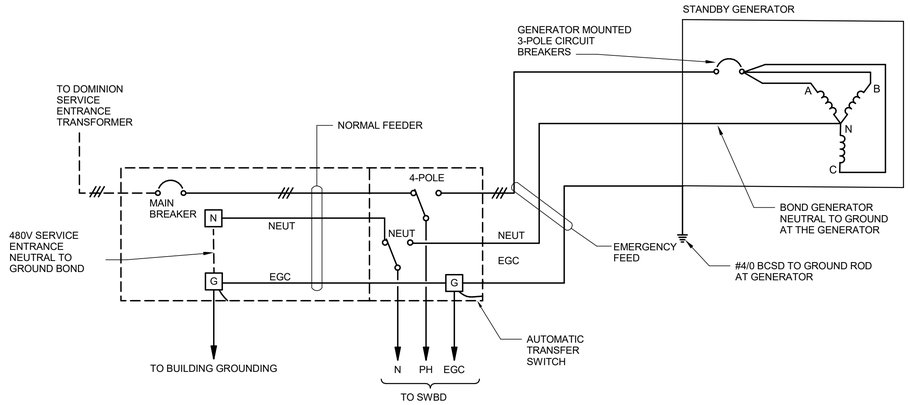
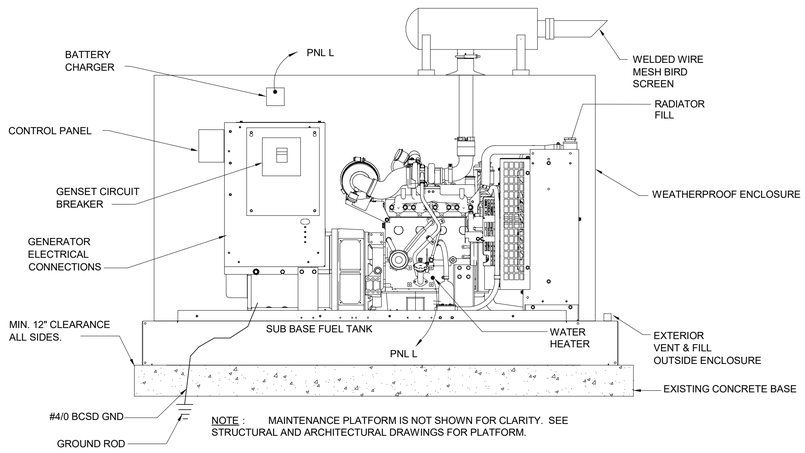


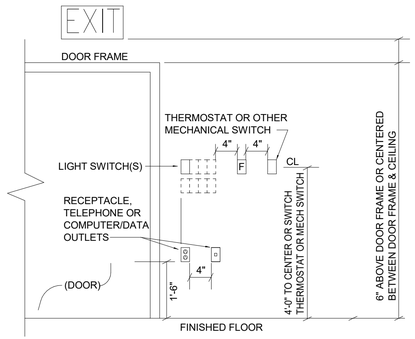
1 TYPICAL GROUNDING DIAGRAM
NOT TO SCALE



2 DETAIL - NEUTRAL AND GROUND RISER
SCALE: NOT TO SCALE



3 GENERATOR INSTALLATION
SCALE: NONE



OUTLET BOX DETAIL NOTES :

1. WHERE MULTIPLE SWITCHES ARE USED, PROVIDE MULTIPLE GANG BOXES AS REQUIRED UP TO SIX GANGS. FOR GREATER NUMBER OF SWITCHES OR LIGHT CONTROL DIMMERS, USE ADDITIONAL ROWS AT 8" LOWER HEIGHT. DIVIDE MULTIPLE SWITCHES EVENLY, FOR MATCHING BOX GANGS.
2. RECEPTACLES AND OTHER OUTLETS SHALL ALIGN VERTICALLY WITH LIGHT SWITCHES AND OTHER DEVICES MOUNTED ABOVE.
3. RECEPTACLES SHOWN AT 48" HEIGHT MAY BE INCORPORATED INTO SAME SWITCHPLATE WITH LIGHT SWITCH.
4. RECEPTACLES AND OTHER OUTLETS AT SAME ELEVATION SHOWN SIDE BY SIDE ON PLANS SHALL BE MOUNTED 4" APART IN WALL UNLESS OTHERWISE REQUIRED BY FIRE ASSEMBLY DETAILS.

4 TYPICAL MOUNTING HEIGHTS
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E-502	

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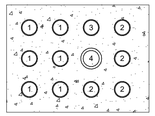
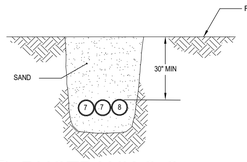
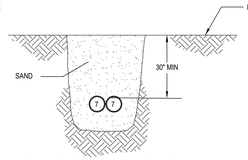


3 DUCTBANK A-A
NOT TO SCALE

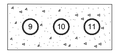
4 DUCTBANK B-B
NOT TO SCALE



5 DUCTBANK C-C
NOT TO SCALE



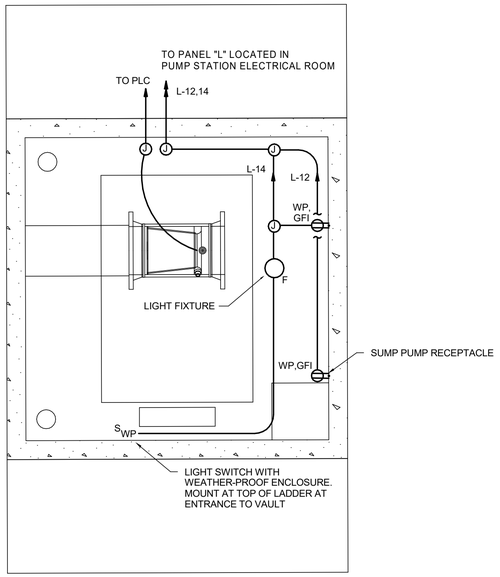
6 DUCTBANK D-D
NOT TO SCALE



7 DUCTBANK E-E
NOT TO SCALE

DUCT BANK CONDUIT SCHEDULE

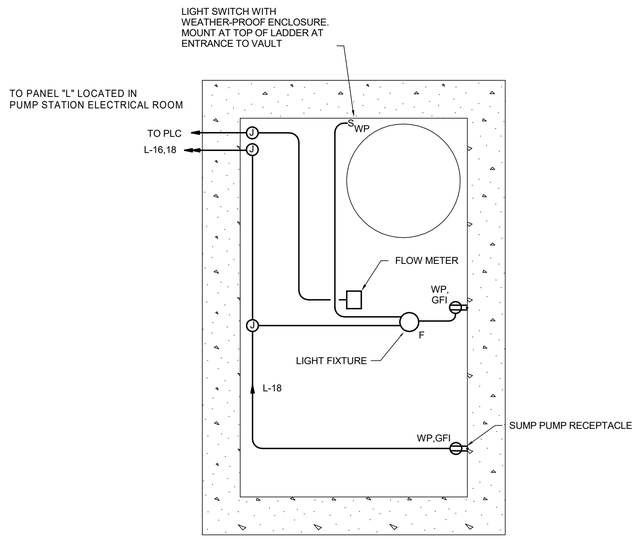
CONDUIT NO.	FROM:	TO:	SIZE	CONDUIT TYPE	NOTES
1	GENERATOR	SWITCHBOARD	4"	PVC SCH 40	
2	GENERATOR	SWITCHBOARD	4"	PVC SCH 40	SPARE
3	GENERATOR HTR, BATTERY CHARGER	PANEL L	4"	PVC SCH 40	
4	GENERATOR CONTROLS	SWITCHBOARD ATS	4"	PVC SCH 40	
5	METERING VAULT	PANEL L	1"	PVC SCH 40	
6	METERING VAULT	PLC CABINET	1"	PVC SCH 40	CONTROLS
7	NEW UTLITY TRANSFORMER	7FT OUTSIDE OF EXISTING XFMR	6"	PVC SCH 40	
8	NEW UTLITY TRANSFORMER	HALF WAY BETWEEN UTILITY XFMRS	2"	PVC SCH 40	
9	EXISTING METERING VAULT	PANEL L	1"	PVC SCH 40	
10	EXISTING METERING VAULT	PLC CABINET	1"	PVC SCH 40	
11	EXISTING METERING VAULT	PLC CABINET	1"	PVC SCH 40	SPARE



NOTES:

1. ALL RECEPTACLES ARE NEMA 5-20R.
2. PROVIDE A METAL WEATHER-PROOF "WHILE IN USE" RECEPTACLE COVER PLATE ON ALL RECEPTACLES.
4. PROVIDE A 3/4"x10' COPPER-CLAD STEEL GROUND ROD IN BOTTOM OF VAULT A BUS BAR LOCATED IN VAULT.
5. PROVIDE A GROUND BUS BAR IN VAULT.
6. LIGHT SWITCH SHALL CONTROL TYPE F LIGHT FIXTURES BUT NOT RECEPTACLES. RECEPTACLES SHALL REMAIN ENERGIZED AT ALL TIMES.

1 FLOW METER VAULT ELECTRICAL PLAN
1/2" = 1'-0"



NOTES:

1. ALL RECEPTACLES ARE NEMA 5-20R.
2. PROVIDE A METAL WEATHER-PROOF "WHILE IN USE" RECEPTACLE COVER PLATE ON ALL RECEPTACLES.

2 EXISTING RIVER VAULT ELECTRICAL PLAN
1/2" = 1'-0"

0' 1' 2' 4'

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

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DETAILS

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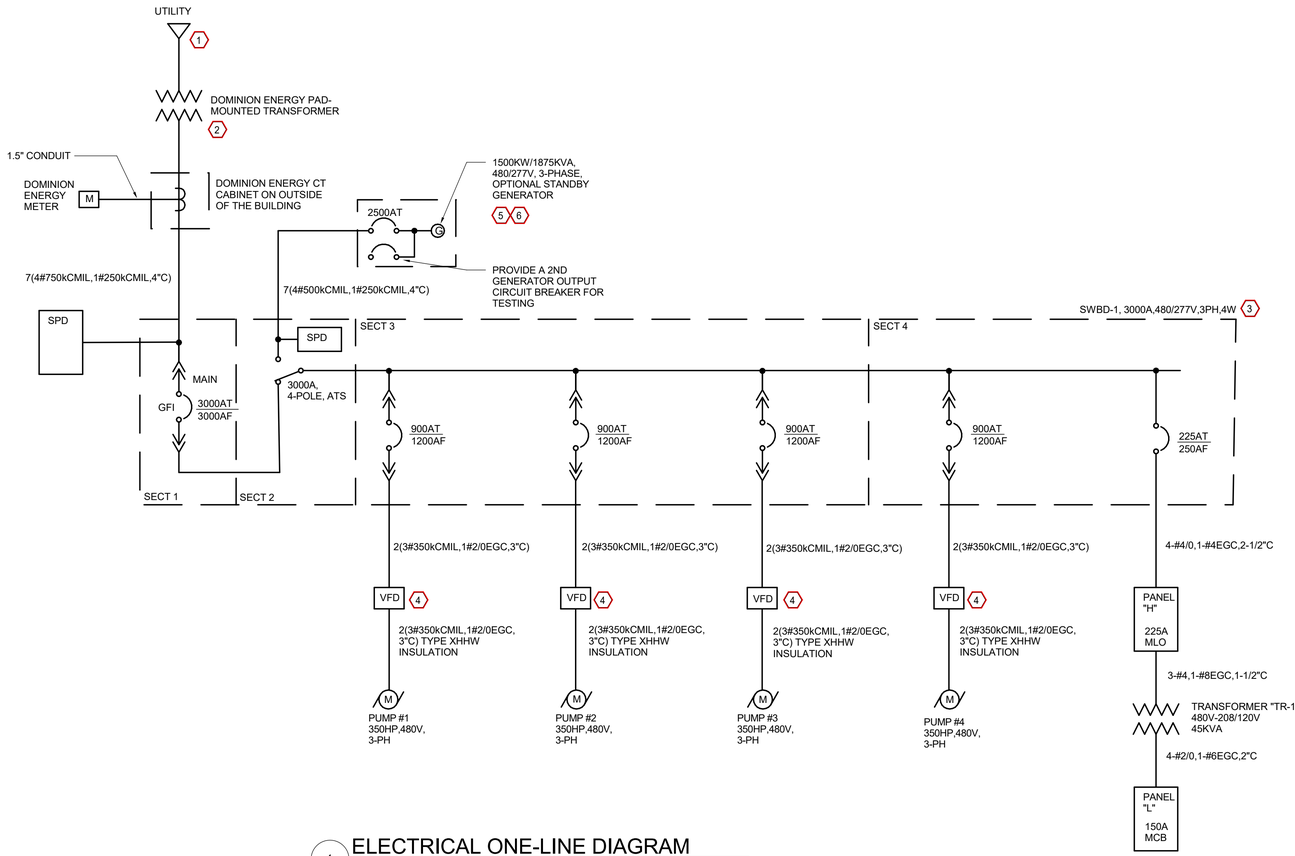

1 ELECTRICAL ONE-LINE DIAGRAM
NOT TO SCALE

KEYED NOTES:

1. PRIMARY UTILITY CONDUIT FURNISHED BY DOMINION ENERGY AND CONDUCTORS TO TRANSFORMER PROVIDED BY DOMINION ENERGY. SEE NOTES ON E-002 FOR DETAILS.
2. PROVIDE TRANSFORMER PAD AND TRANSFORMER GROUNDING. TRANSFORMER IS BY DOMINION ENERGY. DOMINION ENERGY WILL PROVIDE SECONDARY WIRING IN CONTRACTOR PROVIDED CONDUIT AND PULL INTO TRANSFORMER. SECONDARY TERMINATIONS INSIDE TRANSFORMER ARE BY DOMINION ENERGY. DOMINION ENERGY WILL MAKE ALL CONNECTION IN THE CT CABINET.
3. PROVIDE SWITCHBOARD WITH INTEGRAL POWER METER. CONNECT POWER METERING TO SCADA SYSTEM.
4. PROVIDE 350HP VFD WITH INTEGRATED SOFT-START BY-PASS AND HARMONIC MITIGATION.
5. GENERATOR IS SIZED TO OPERATE 3 OF THE 4 PUMPS SIMULTANEOUSLY. WHILE RUNNING ON GENERATOR, SCADA SYSTEM SHALL ONLY PERMIT THE OPERATION OF UP TO THREE PUMPS AT A GIVEN TIME. PROVIDE STARTUP DELAYS IN THE PLC CONTROL SYSTEM TO ENSURE THAT THE PUMPS CANNOT START SIMULTANEOUSLY.
6. PROVIDE DIESEL GENERATOR WITH A SUB-BASE FUEL TANK SIZED TO RUN 24 HOURS AT FULL LOAD. GENERATOR POWERS THREE PUMPS AND GENERAL OPERATING LOADS.

GENERATOR/ATS SEQUENCE OF OPERATIONS:

1. ATS IS IN "NORMAL" POSITION UNDER NORMAL CONDITIONS WHERE UTILITY POWER IS AVAILABLE.
2. UPON LOSS OF NORMAL POWER, ATS SENDS START SIGNAL TO GENERATOR AND THE PLC SIGNALS TO PUMP VFDS TO SHUT DOWN. ATS TRANSFERS TO "EMERGENCY" POSITION WHEN THE GENERATOR IS OPERATING AND AVAILABLE TO ACCEPT LOAD.
3. UPON TRANSFER OF ATS TO "EMERGENCY" POSITION, ALL LOADS, WITH THE EXCEPTION OF PUMP MOTORS, WILL BE CONNECTED TO THE GENERATOR AND ENERGIZED. PUMP MOTORS ARE TO BE INDIVIDUALLY BROUGHT ONLINE WITH A TIME DELAY PRIOR TO STARTING EACH PUMP. THE PLC WILL START THE FIRST PUMP MOTOR AFTER A 1 MINUTE TIME DELAY. WHEN THE FIRST PUMP HAS REACHED OPERATING SPEED, THE PLC WILL START A SECOND PUMP AFTER AN 1 MINUTE DELAY. WHEN THE SECOND PUMP HAS REACHED OPERATING SPEED, THE PLC WILL START A THIRD PUMP AFTER A 1 MINUTE TIME DELAY. THE PLC WILL NOT PERMIT THE STARTING OF A FOURTH PUMP WHILE THE ATS IS IN "EMERGENCY" POSITION. AT NO POINT SHALL TWO MOTORS START WITHIN A PERIOD OF LESS THAN 1 MINUTE.
4. PUMP MOTORS ARE PERMITTED TO STOP AND START AS REQUIRED BY PROCESS DEMAND. EACH START OPERATION OF A MOTOR MUST BE PERFORMED WITH A 1 MINUTE DELAY.
5. UPON RETURN OF UTILITY POWER, THE ATS SHALL TRANSFER BACK TO NORMAL POWER AND INITIATE A COOL-DOWN OF THE GENERATOR.

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COMMONWEALTH OF VIRGINIA
GREGORY S. FRANCA
Lic. No. 59368
PROFESSIONAL ENGINEER
05/27/2022

CITY OF STAUNTON
GARDNER SPRING PUMP STATION
STAUNTON, VIRGINIA

MRK	DATE	REVISION DESCRIPTION

COMM NO:	220117
DATE:	05/27/2022
DRAWN: JWG	DESIGN: JWG
CHECK:	RCC

SHEET TITLE
ELECTRICAL ONE-LINE DIAGRAM

SHT. NO. E-601 | REV. NO.

5/27/2022 9:09:58 AM
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LOCATED IN ELEC ROOM
NEMA 12 ENCLOSURE

SERVICE ENTRANCE RATED
FRONT ONLY MAINTENANCE ACCESS

SWITCHBOARD "SWBD-1" SCHEDULE

RATING: 480 VOLTS, 3 PHASE, 4 WIRE
MINIMUM BUS BRACING & OVERCURRENT DEVICE
INTERRUPTING RATING: 65,000 SYM RMS AMPS
BUS RATINGS: 3000 AMP MAIN BUS, 3000 AMP
NEUTRAL BUS, 3000 AMP GROUND BUS

SPACE CKT No.	LOAD DESCRIPTION	kVA	CONN AMPERES			POLE	OVERCURRENT DEVICE RATING		FEEDER CIRCUIT			
			A	B	C		FRAME	SENSOR	PHASE	NEUTRAL	EGC	CONDUIT(S)
1	PUMP #1	344.2	414	414	414	3	1200	900	SEE ONE-LINE DIAGRAM FOR SIZES			
2	PUMP #2	344.2	414	414	414	3	1200	900	SEE ONE-LINE DIAGRAM FOR SIZES			
3	PUMP #3	344.2	414	414	414	3	1200	900	SEE ONE-LINE DIAGRAM FOR SIZES			
4	PUMP #4	344.2	414	414	414	3	1200	900	SEE ONE-LINE DIAGRAM FOR SIZES			
5	PANEL H	49.7	60.6	62.1	56.7	3	250	225	SEE ONE-LINE DIAGRAM FOR SIZES			
	TOTAL CONNECTED	1426.6	1716.6	1718.1	1712.3							
	TOTAL DEMAND AND GENERATOR LOAD	1082.4	1302.6	1304.1	1298.3							

NOTE:

1. SEE ONE-LINE DIAGRAM ON E-601 FOR MAIN BREAKER AND THE ATS INFORMATION.

PANEL H SCHEDULE

225A, MLO, 480/277V, 3PH, 4W, SN, GB — MOUNT: SURFACE — LOCATION: ELEC ROOM — 65.0 kaic

LOAD DESCRIPTION	LOAD (KVA) A	B	C	BKR TRIP	WIRE SIZE	NEU SIZE	GND SIZE	COND SIZE	CKT NO.	PHASE A B C	CKT NO.	COND SIZE	GND SIZE	NEU SIZE	WIRE SIZE	BKR TRIP	LOAD (KVA) A	B	C	LOAD DESCRIPTION
WETWELL LIGHTS	**0.3**	—	—	20	12	12	12	3/4"	1	A	2						**2.0**	—	—	
LTS ELEC RM PUMP RM	—	**0.9**	—	20	12	12	12	3/4"	3	B	4	3/4"	12	-	12	15	—	**2.0**	—	EXH FAN EF-1
OUTDOOR LTS	—	—	**0.3**	20	12	12	12	3/4"	5	C	6						—	—	**2.0**	
EXH FAN EF-3	**1.3**	—	—	15	12	-	12	3/4"	7	A	8						**2.0**	—	—	
	—	**1.3**	—						9	B	10	3/4"	12	-	12	15	—	**2.0**	—	EXH FAN EF-2
	—	—	**1.3**						11	C	12						—	—	**2.0**	
UNIT HEATER UH-1	**1.7**	—	—	15	12	-	12	3/4"	13	A	14	-	-	-	-	20		—	—	SPARE
	—	**1.7**	—						15	B	16	-	-	-	-	20	—			SPARE
	—	—	**1.7**						17	C	18	-	-	-	-	20	—	—		SPARE
UNIT HEATER UH-2	**1.7**	—	—	15	12	-	12	3/4"	19	A	20	-	-	-	-	20		—	—	SPARE
	—	**1.7**	—						21	B	22	-	-	-	-	20	—		—	SPARE
	—	—	**1.7**						23	C	24	-	-	-	-	20	—	—		SPARE
OUTDOOR POLE LIGHTS	**0.2**	—	—	20	10	10	10	1"	25	A	26	-	-	-	-	-		—	—	SPACE
SPARE	—		—	20	-	-	-	-	27	B	28	-	-	-	-	-	—		—	SPACE
SPARE	—	—		20	-	-	-	-	29	C	30	-	-	-	-	-	—	—		SPACE
SPARE		—	—	20	-	-	-	-	31	A	32	-	-	-	-	-		—	—	SPACE
SPARE	—		—	20	-	-	-	-	33	B	34	-	-	-	-	-	—		—	SPACE
SPACE	—	—		-	-	-	-	-	35	C	36	-	-	-	-	-	—	—		SPACE
SPACE		—	—	-	-	-	-	-	37	A	38	SEE ONE-LINE FOR FEEDER INFORMATION				70	**7.6**	—	—	XFMR TO PANEL L
SPACE	—		—	-	-	-	-	-	39	B	40						—	**7.6**	—	
SPACE	—	—		-	-	-	-	-	41	C	42						—	—	**6.7**	
TOTAL	**5.2**	**5.6**	**5.0**														**11.6**	**11.6**	**10.7**	TOTAL

CONN. LOAD: 49.7 KVA 59.9 A — TOTAL PHASE KVA: A: 16.8 B: 17.2 C: 15.7
DEMAND LOAD: 49.7 KVA 59.9 A — TOTAL PHASE AMPS: A: 60.6 B: 62.1 C: 56.7

PANEL L SCHEDULE

150A, MCB, 208/120V, 3PH, 4W, SN, GB — MOUNT: SURFACE — LOCATION: ELEC ROOM — 10.0 kaic

LOAD DESCRIPTION	LOAD (KVA) A	B	C	BKR TRIP	WIRE SIZE	NEU SIZE	GND SIZE	COND SIZE	CKT NO.	PHASE A B C	CKT NO.	COND SIZE	GND SIZE	NEU SIZE	WIRE SIZE	BKR TRIP	LOAD (KVA) A	B	C	LOAD DESCRIPTION
GEN BATTERY CHARGER	**1.0**	—	—	20	12	12	12	3/4"	1	A	2	3/4"	12	12	12	20	**0.5**	—	—	EXTERIOR RECEPTS
GEN WATER HTR	—	**1.0**	—	30	10	-	10	3/4"	3	B	4	3/4"	12	12	12	20	—	**0.5**	—	RECEPTS ELEC RM
	—	—	**1.0**						5	C	6	3/4"	12	12	12	20	—	—	**0.5**	UPS IN PLC CABINET
HEAT PUMP HP-1	**1.7**	—	—	30	10	-	10	3/4"	7	A	8	3/4"	12	12	12	20	**0.8**	—	—	UPS FOR SECURITY CABINET
	—	**1.7**	—						9	B	10	3/4"	12	12	12	20	—	**0.7**	—	RECEPTS PUMP ROOM
HEAT PUMP HP-2	—	—	**1.7**	30	10	-	10	3/4"	11	C	12	1"	10	10	10	20	—	—	**0.9**	METERING VAULT SUMP
	1.7	—	—						13	A	14		10	10	10	20	**0.3**	—	—	VAULT RECEPT/LIGHT
HEAT PUMP HP-3	—	**1.7**	—	30	10	-	10	3/4"	15	B	16	1"	10	10	10	20	—	**0.3**	—	EXISTING METER VAULT
	—	—	**1.7**						17	C	18		10	10	10	20	—	—	**0.9**	(E) METER VAULT SUMP
HEAT PUMP HP-4	**1.7**	—	—	30	10	-	10	3/4"	19	A	20	-	-	-	-	20		—	—	SPARE
	—	**1.7**	—						21	B	22	-	-	-	-	20	—		—	SPARE
SPARE	—	—		20	-	-	-	-	23	C	24	-	-	-	-	20	—	—		SPARE
SPARE		—	—	20	-	-	-	-	25	A	26	-	-	-	-	20		—	—	SPARE
SPARE	—		—	20	-	-	-	-	27	B	28	-	-	-	-	20	—		—	SPARE
SPARE	—	—		20	-	-	-	-	29	C	30	-	-	-	-	20	—	—		SPARE
TOTAL	**6.1**	**6.1**	**4.4**														**1.6**	**1.5**	**2.3**	TOTAL

CONN. LOAD: 22.0 KVA 61.1 A — TOTAL PHASE KVA: A: 7.7 B: 7.6 C: 6.7
DEMAND LOAD: 22.0 KVA 61.1 A — TOTAL PHASE AMPS: A: 64.2 B: 63.3 C: 55.8

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COMMONWEALTH OF VIRGINIA — GREGORY S. FRANCA — Lic. No. 59368 — PROFESSIONAL ENGINEER — 05/27/2022

CITY OF STAUNTON
GARDNER SPRING PUMP STATION
STAUNTON, VIRGINIA

REVISION DESCRIPTION | DATE | MRK

COMM NO: 220117
DATE: 05/27/2022
DRAWN: JWG DESIGN: JWG
CHECK: RCC

SHEET TITLE
PANEL SCHEDULES

SHT. NO. E-701 | REV. NO. 0

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INSTRUMENT IDENTIFICATION LETTERS

	FIRST LETTER	SUCCEEDING LETTERS
	MEASURED OR INITIATED VARIABLE	READOUT PASSIVE OR OUTPUT FUNCTION
A	ANALYSIS	ALARM
B	BURNER FLAME	
C	USER'S CHOICE	CONTROL OR CLOSED
D	DENSITY OR SPECIFIC GRAVITY	DIFFERENTIAL
E	VOLTAGE (EMF)	PRIMARY ELEMENT
F	FLOW RATE	RATIO (FRACTION)
G	USER'S CHOICE	GLASS
H	HAND (MANUALLY INITIATED)	HIGH OR OPEN
I	CURRENT (ELECTRICAL)	INDICATE
J	POWER	SCAN
K	TIME	CONTROL STATION
L	LEVEL	LOW OR LIGHT (PILOT) OR CLOSED
M	USER'S CHOICE	MIDDLE OR INTERMEDIATE
N	USER'S CHOICE	
O	USER'S CHOICE	ORIFICE, RESTRICTION OR OPEN
P	PRESSURE OR VACUUM	POINT OR TEST CONNECTION
Q	QUANTITY	INTEGRATE OR TOTALIZE
R	RADIOACTIVITY	RECORD OR PRINT
S	SPEED OR FREQUENCY	SAFETY OR SWITCH
T	TEMPERATURE	TRANSMIT
U	MULTI-VARIABLE	MULTI-FUNCTION
V	VIBRATION	VALVE, DAMPER OR LOUVER
W	WEIGHT, FORCE OR TORQUE	WELL
X	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT OR STATE	RELAY, COMPUTE OR CONVERT
Z	POSITION OR DIMENSION	DRIVE, ACTUATE OR UNCL. FINAL ELEMENT

NOTES:

1. INSTRUMENT IDENTIFICATION IS MADE UP OF TWO TO FOUR LETTERS FROM THIS TABLE
2. THE GRAMMATICAL FORM OF THE SUCCEEDING LETTER MEANINGS MAY BE MODIFIED AS REQUIRED, FOR EXAMPLE, INDICATE MAY BE APPLIED AS INDICATOR OR INDICATING, TRANSMIT AS TRANSMITTER OR TRANSMITTING, ETC.
3. FIRST LETTER "A" FOR ANALYSIS COVERS ALL ANALYSES THAT ARE NOT LISTED IN THE TABLE. THE TYPE OF ANALYSIS IN EACH INSTANCE WILL BE DEFINED OUTSIDE THE TAGGING BALLOON ON THE FLOW DIAGRAM FOR EXAMPLE, pH, O , ORP, CO, BOD, ETC.

TI 73 —— TEMPERATURE INDICATION, LOOP NUMBER 73

TYPICAL INSTRUMENTATION TAG DESCRIPTION

PROCESS	
	CONNECTION TO PROCESS, MECHANICAL LINKAGE, OR AIR SUPPLY
	ELECTRICAL/ELECTRONIC SIGNAL
	COMMUNICATIONS LINK AND SYSTEM BUS, BETWEEN DEVICES AND FUNCTIONS OF A SHARED CONTROL SYSTEM.
	UN GUIDED ELECTROMAGNETIC SIGNALS, LIGHT, RADIATION, RADIO, SOUND, WIRELESS, ETC.
	FIBER OPTIC CABLE
I	INTERLOCK (HARDWIRED)
	INSTRUMENT LOCATED IN FIELD
	PANEL MOUNTED INSTRUMENT OR DEVICE NORMALLY ACCESSIBLE TO OPERATOR
	INSTRUMENT OR DEVICE MOUNTED INSIDE PANEL NORMALLY INACCESSIBLE TO OPERATOR
	SCADA COMPUTER FUNCTION NORMALLY ACCESSIBLE TO OPERATOR
	VENTURI FLOW METER
	DIAPHRAGM PRESSURE SEAL
M	MOTORIZED (ROTARY ACTUATED) VALVE
S	SOLENOID VALVE
M	MOTOR
	PRESSURE RELIEF VALVE

I/O INSTRUMENTATION INPUT/OUTPUT POINT LOCATED ON PLAN. REFERENCE I/O POINT VIA TAG TO P&ID DRAWINGS AND INDIVIDUAL SPECIFICATIONS.

2 INSTRUMENTATION LEGEND

SCALE: NONE

INSTRUMENTATION GENERAL NOTES

1. INTENT OF THE DRAWINGS - THE DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL LOCATION OF DEVICES, RACEWAYS, AND EQUIPMENT. THE DRAWINGS DO NOT SHOW ALL NECESSARY OFFSETS, JUNCTION BOXES, CONDUIT AND ADJUSTMENTS NECESSITATED BY COORDINATION WITH OTHER TRADES. PROVIDE ALL OFFSETS, RACEWAY, COMPONENTS, ACCESSORIES, AND ADJUSTMENTS NECESSITATED BY COORDINATION WITH OTHER TRADES.
2. COORDINATION WITH OTHER TRADES - EXAMINE AND REVIEW THE CONTRACT DOCUMENTS OF ALL DIVISIONS IN ORDER TO COORDINATE THE INSTALLATION WORK. USE DIMENSIONED ARCHITECTURAL AND STRUCTURAL CONTRACT DRAWINGS TO VERIFY THE SPACE NECESSARY FOR LOCATING DEVICES, RACEWAYS, AND EXACT EQUIPMENT. USE FIELD MEASUREMENTS TO VERIFY DIMENSIONS WHERE AREAS ARE CONGESTED, AND EXACT LOCATION IS CRITICAL TO ASSURE PROPER INSTALLATION. COORDINATION SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO, VERIFYING THE LOCATION AND SIZE OF OPENINGS FOR PENETRATIONS IN FLOORS, WALLS, PARTITIONS, CEILINGS, AND ROOFS WITH THE INSTALLING TRADES; ALLOCATION OF SPACE WITH OTHER TRADES INSTALLING WORK IN CHASES, SHAFTS, CEILING INTERSTITIAL SPACES, AND EQUIPMENT SPACES; AND THE PHASING OF INSTALLATION WORK WITH THAT OF OTHER TRADES.
3. WORKMANSHIP - INSTALL ALL WORK IN A WORKMANLIKE MANNER THAT PROVIDES A FIRST CLASS COMPLETED INSTALLATION. REMOVE, CORRECT AND REPLACE ANY WORK DEEMED UNACCEPTABLE AT THE DISCRETION OF THE CONTRACTING OFFICER.
4. EQUIPMENT - INSTALL ALL EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS, THE SPECIFICATIONS, AND APPROVED SHOP DRAWINGS. PROVIDE SERVICE AND OPERATING CLEARANCES AROUND ALL SIDES OF EACH PIECE OF EQUIPMENT IN ACCORDANCE WITH REGULATORY REQUIREMENTS, MANUFACTURER'S PRINTED REQUIREMENTS AND RECOMMENDATIONS.
5. LARGE EQUIPMENT - SOME LARGE EQUIPMENT MAY REQUIRE DISASSEMBLY IN ORDER TO INSTALL IN THE BUILDING. SECURE THE SERVICES OF THE MANUFACTURER FOR REASSEMBLY WHERE NECESSARY TO MAINTAIN WARRANTIES IN EFFECT.
6. ALL THE SYMBOLS IN THE LEGEND MAY NOT HAVE BEEN USED ON THE PLANS. SYMBOLS NOT LISTED IN LEGEND ARE IDENTIFIED WHERE THEY OCCUR.
7. FOLLOW APPLICABLE RATINGS OF THE TYPE OF CONSTRUCTION BEING PENETRATED. COORDINATE WITH SPECIAL WALL PLANS FOR PENETRATION LOCATIONS.
8. PROVIDE PULL CORD HAVING AT LEAST A 90KG TENSILE STRENGTH IN ALL INSTRUMENTATION INDOOR CONDUITS.
9. ALL LOW VOLTAGE SYSTEMS' BONDING BACKBONE CONDUCTORS SHALL BE INSULATED, COPPER CONDUCTOR. INSTALL GROUNDING CONDUCTORS IN CONDUIT TO PROVIDE PROTECTION FROM PHYSICAL DAMAGE. WHERE GROUNDING CONDUCTORS ARE INSTALLED IN METALLIC CONDUIT, BOND BOTH ENDS WITH A LISTED BONDING BUSHING. TERMINATE GROUNDING CONDUCTORS ON GROUND BARS WITH A LISTED TWO-HOLE COMPRESSION CONNECTOR.
10. INSTRUMENTATION PULL BOXES SHALL BE IN STRAIGHT SECTIONS OF CONDUIT. DO NOT USE BOXES IN LIEU OF ELBOWS OR BENDS. NOT ALL PULL BOXES ARE SHOWN. BEYOND THOSE SHOWN PROVIDE BOXES WHEN: 1. RACEWAY SECTION INCLUDES (2) TWO OR MORE 90 DEGREE BENDS OR EQUIVALENT. 2. LENGTH OF RACEWAY SECTION IS GREATER THAN 100 FEET.
11. PROVIDE METALLIC CONDUIT WITH INSULATED BUSHINGS AT TERMINATIONS.
12. FACTORY ELBOWS OR FIELD BENDS SHALL HAVE AN INTERNAL RADIUS OF NOT LESS THAN (6) TIMES THE DIAMETER OF THE CONDUIT LESS THAN 2". INTERNAL RADIUS SHALL BE (10) TIMES THE DIAMETER FOR CONDUITS GREATER THAN 2". NO HARD 90 DEGREE TURNS PERMITTED IN ANY TELECOM CONDUIT.
13. CONDUITS HAVE BEEN SIZED BASED ON THE NEC, AS WELL AS ANSI/EIA/TIA 569-C. WHERE INSTALLATION VARIES, INCREASE CONDUITS SIZES ACCORDING TO MAXIMUM NUMBER OF CABLES BASED ON ALLOWABLE FILL TABLE.
14. PROVIDE WARNING OR CAUTION LABELS ON ALL ENCLOSURES THAT USE OR CONTAIN FIBER OPTIC CABLING.
15. LABEL ALL CABLES WITHIN 4" OF EACH TERMINATION. PROVIDE 12" LONG SERVICE LOOP AT THE DEVICE END OF EACH CABLE.
16. FURNISH ADDITIONAL MATERIALS AS IDENTIFIED HEREIN AND WITHIN PROJECT SPECIFICATIONS.
17. LABEL ALL CABLES WITHIN 4" OF EACH TERMINATION. PROVIDE 6' LONG SERVICE LOOP AT THE PLC ENCLOSURE FOR FINAL ROUTING AND TERMINATIONS.
18. PROVIDE VELCRO CABLE TIES TO ATTACH CABLES TO WIRE MANAGEMENT AND OTHER SUPPORT MEANS.
19. PROVIDE TESTING OF ALL CABLING AFTER INSTALLATION PER SPECIFICATIONS.
20. PROVIDE JACKETING, SHEATHING, ARMORING AND FILLING COMPOUNDS FOR OUTSIDE PLANT CABLES IN ACCORDANCE WITH THE CONTRACT DOCUMENT SPECIFICATION REQUIREMENTS. PROVIDE OUTSIDE PLANT CABLES SUITABLE FOR USE IN EXTERIOR APPLICATIONS AND IN ACCORDANCE WITH THE CABLES LISTING AND LABELING APPLICATIONS. UNLESS NOTED OTHERWISE, OUTSIDE PLANT APPLICATIONS SHALL BE CONSIDERED TO BE APPLICABLE FOR: CABLING INSTALLED BEYOND THE EXTERIOR WALLS OF A BUILDING, EITHER ABOVE OR BELOW GRADE, AND/OR BETWEEN BUILDING ENTRANCE PROTECTORS.
21. THE LOCATIONS AND ELEVATIONS OF TECHNOLOGY DEVICES SHOWN ON THESE DRAWINGS ARE SCHEMATIC UNLESS ACTUAL DIMENSIONS ARE SHOWN ON THE DRAWINGS. REFER TO THE ARCHITECTURAL PLANS AND OBTAIN THE APPROVAL OF THE OWNER'S REPRESENTATIVE FOR THE ACTUAL LOCATIONS AND ELEVATIONS OF ALL DEVICES.
22. PROVIDE SUPPORTS AND ANCHORING FOR CONDUIT, EQUIPMENT AND OTHER NON-STRUCTURAL ELEMENTS. SEE TECHNOLOGY AND INSTRUMENTATION SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
23. ALL TELECOMMUNICATIONS AND INSTRUMENTATION CONDUIT, DEVICES AND EQUIPMENT RACKS/ENCLOSURES SHALL BE BONDED TO BUILDING GROUND SYSTEM PER NEC 250 AND ANSI/TIA-607-C.
24. PROVIDE PROTECTIVE BUSHINGS ON ALL COMMUNICATIONS AND INSTRUMENTATION CONDUITS AND WHERE CABLING ROUTES THROUGH METAL STUDS.
25. PROVIDE LOW-VOLTAGE CABLES IN CONDUITS, WIREWAYS OR OTHER APPROVED CABLE MANAGEMENT DEVICES OR SYSTEMS. THE CONTRACTOR SHALL NOT INSTALL CABLING SUPPORTED BY CEILING SYSTEMS (CEILING TILE OR GRID, GYPSUM BOARD, LATH & PLASTER), HVAC DUCTS OR PIPES, LIGHTING FIXTURES, ELECTRICAL CONDUITS OR CABLES, PLUMBING/FIRE PROTECTION PIPES, OR ANY OTHER DEVICES NOT INTENDED FOR THE SUPPORT OF LOW-VOLTAGE CABLING.
26. REUSABLE VELCRO TIES SHALL BE USED TO BUNDLE OR MANAGE CABLES. PLASTIC ZIP TIES SHALL NOT BE PERMITTED.
27. ALL OUTSIDE CONDUITS SHALL BE INSTALLED WITH NYLON PULL LINES HAVING 1200 LB MINIMUM TENSILE STRENGTH AND NUMBERED FOOT MARKINGS.
28. INSTRUMENTATION DEVICES IDENTIFIED AS OFCI IN THE INSTRUMENTATION SCHEDULES WILL BE PROVIDED BY THE OWNER'S CONTROLS & INSTRUMENTATION INSTALLER. CONDUIT, JUNCTION BOXES AND PULL WIRES SHALL BE INSTALLED BY THE CONTRACTOR. COORDINATE FINAL JUNCTION BOX AND INSTRUMENTATION DEVICE PLACEMENT WITH THE OWNER'S C&I INSTALLER. CABLING AND FINAL TERMINATIONS BY THE OWNERS' C&I INSTALLER.

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CITY OF STAUNTON
GARDNER SPRING PUMP STATION
STAUNTON, VIRGINIA

REVISION DESCRIPTION	DATE	MRK.

COMM NO:	220117		
DATE:	05/27/2022		
DRAWN:	JWG	DESIGN:	JWG
CHECK:			RCC

SHEET TITLE

INSTRUMENTATION LEGEND AND NOTES

SHT. NO.	REV. NO.
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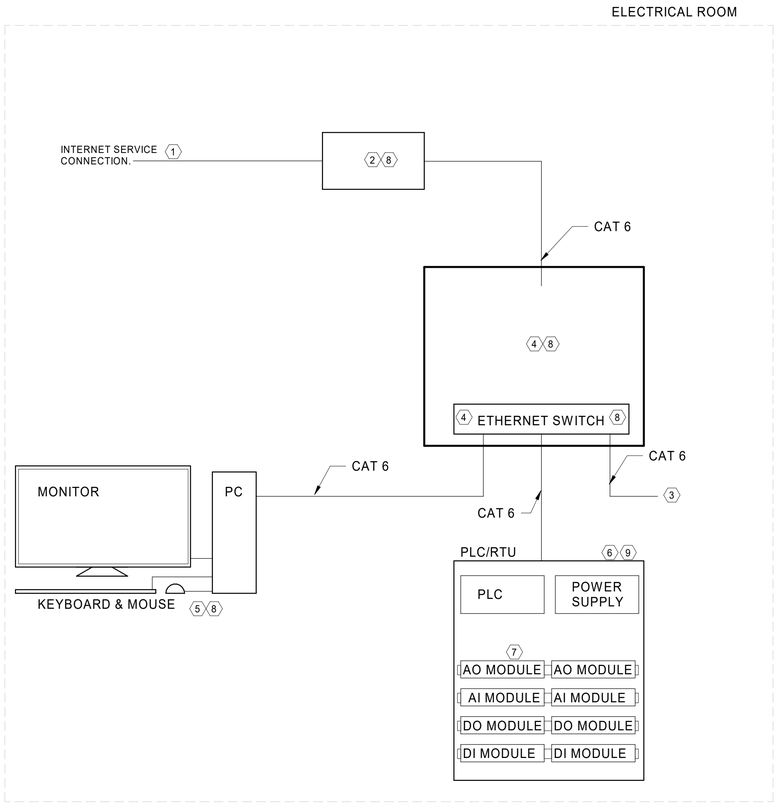

1 INSTRUMENTATION RISER

SCALE: NONE

KEYNOTES:

1. OPTICAL FIBER TO PUMP STATION FURNISHED AND INSTALLED BY THE SERVICE PROVIDER. SEE I-101 FOR CONDUIT REQUIREMENT FROM ELECTRICAL ROOM TO EXISTING UTILITY POLE FOR USE BY THE SERVICE PROVIDER FOR OPTICAL FIBER INSTALLATION.
2. BUILDING ETHERNET ACCESS SYSTEM BOX PROVIDED BY SERVICE PROVIDER. COORDINATE INSTALLATION OF BOX, POWER AND OPTICAL FIBER WITH SERVICE PROVIDER.
3. REFER TO SECURITY RISER AND INSTRUMENTATION RISER FOR CONNECTIVITY TO THE ETHERNET SWITCH.
4. EQUIPMENT WITHIN THIS BOX, INCLUDING THE ETHERNET SWITCH, WILL BE FURNISHED BY THE OWNER AND INSTALLED BY THE CONTRACTOR (OFCI). COORDINATE EQUIPMENT INSTALLATION OF EQUIPMENT WITH OWNER. REFER TO INSTRUMENTATION PLANS FOR RACK LOCATION IN THE ELECTRICAL ROOM.
5. PROVIDE MAIN SCADA OPERATOR WORKSTATION AND INSTALL BELOW CCTV EQUIPMENT RACK.
6. PROVIDE A NEMA 12 ENCLOSURE FOR PLC AND RTU. PROVIDE SUFFICIENT ROOM TO SUPPORT ALL IO CARDS, POWER SUPPLIES AND COMMUNCIATIONS EQUIPMENT AS SPECIFIED.
7. PROVIDE QUANTITIES OF EACH IO MODULE AS REQUIRED TO SUPPORT THE INDICATED INPUTS AND OUTPUTS ON THE PLANS AND P&ID DIAGRAMS. PROVIDE AN ADDITIONAL 25% OF EACH TYPE OF IO FOR FUTURE EXPANSION.
8. UPS IS OFCI. CONNECT TO THE UPS INSTALLED BELOW THE CCTV EQUIPMENT RACK. CCTV EQUIPMENT AND DEVICES/EQUIPMENT INDICATED SHALL BE POWERED BY THE UPS. COORDINATE POWER CONNECTIVITY WITH ELECTRICAL CONTRACTOR.
9. UPS IN PLC ENCOLOSURE PROVIDED AS PART OF THE ENCLOSURE EQUIPMENT (OFCI) COORDINATE INSTALLATION OF ENCLOSURE AND POWER REQUIREMENTS WITH THE OWNER'S AUTOMATION EQUIPMENT INSTALLER.

SEQUENCE OF OPERATIONS:

1. PROVIDE A THREE POSITION "HAND-OFF-AUTO" SWITCH WITHIN EACH VFD TO ALLOW PUMPS P-1, P-2, P-3 AND P-4 TO BE OPERATED LOCALLY IN "HAND" OR "AUTO" MODES. PROVIDE LOCAL CONTROL AT VFD CONTROL PANEL WHEN IN "HAND" MODE. PROVIDE CONTROLS AS DESCRIBED BELOW WHEN IN "AUTO" MODE. LOCK OUT EACH VFD/PUMP TO PREVENT STARTING FROM LOCAL CONTROLS, OR SCADA, WHEN IN "OFF" MODE.

2. PROVIDE LOCAL DISPLAY/CONTROL, AS WELL AS SCADA DISPLAY/CONTROL, FOR THE FOLLOWING ALARM CONDITIONS: DISCHARGE PRESSURE, DISCHARGE FLOW RATE, MOTOR TEMPERATURE, MOTOR VIBRATION (ALARM AND SHUTDOWN), HIGH WATER LEVEL, LOW WATER LEVEL AND LOW LOW WATER LEVEL. PROVIDE OPERATOR ADJUSTABLE WARNING LEVEL AND HIGH LEVEL SETPOINTS, LOCALLY AND REMOTELY, FOR HIGH PRESSURE AND HIGH MOTOR TEMPERATURE ALARM CONDITIONS, HIGH WATER LEVEL, LOW WATER LEVEL AND LOW LOW WATER LEVEL.

   A. PREVENT PUMP OPERATION AND SHUT DOWN RUNNING PUMPS IN A SEQUENTIAL MANNER FOLLOWING NORMAL SHUTDOWN PROCEDURES UPON LOW WATER LEVEL ALARM. PUMPS SHALL REMAIN SHUT DOWN UNTIL ALARM IS ACKNOWLEDGED AND CLEARED.
   B. SHUT DOWN PUMPS IMMEDIATELY UPON LOW LOW WATER LEVEL ALARM. PUMPS SHALL REMAIN SHUT DOWN UNTIL ALARM IS ACKNOWLEDGED AND CLEARED.

3. IF THE "HAND-OFF-AUTO" SWITCH IS IN THE "AUTO" POSITION, THE PUMP MAY BE RUN MANUALLY OR AUTOMATICALLY FROM THE CONTROL PANEL HMI OR WATER TREATMENT PLANT (WTP) SCADA. IN MANUAL MODE, OPERATORS CAN START, STOP AND INPUT FLOW RATE TARGET AT THE CONTROL PANEL HMI OR WTP SCADA COMPUTER AND THE FOLLOWING SEQUENCE OF OPERATION SHALL BE IMPLEMENTED. ALTERNATE LEAD/LAG PUMPS AT EACH START FROM THE CONTROL PANEL.

   A. THE FIRST PUMP SHALL ACTIVATE AND RAMP UP TO INITIAL SPEED.
   B. THE SECOND PUMP, IF REQUIRED, SHALL RAMP UP TO INITIAL SPEED.
   C. THE THIRD PUMP, IF REQUIRED, SHALL RAMP UP TO INITIAL SPEED.
   D. THE FOURTH PUMP WILL REMAIN OFF DURING OPERATION OF THE STATION.
   E. WHEN ALL PUMPS REACH INITIAL SPEED, THE PUMPS WILL SEEK SPEED BASED ON TARGET FLOW RATE.
   F. IF PUMPS ARE STOPPED FROM THE CONTROL PANEL HMI OR WTP SCADA COMPUTER, ALL ACTIVE PUMPS WILL RAMP DOWN TO INITIAL SPEED AND SHUT OFF SEQUENTIALLY.
   G. IF FLOW RATES INCREASE AND ADDITIONAL PUMPS ARE TO BE STARTED, ALL ACTIVE PUMPS SHALL RAMP DOWN TO INITIAL SPEED, NEW PUMPS MUST BE STARTED SEQUENTIALLY AND RAMP TO MINIMUM SPEED. WHEN ALL PUMPS ARE AT MINIMUM SPEED RAMP UP ALL PUMPS TOGETHER TO SEEK FLOW RATE.
   H. IF FLOW RATES DECREASE AND PUMPS ARE TO BE SHUT DOWN, ALL ACTIVE PUMPS SHALL RAMP DOWN TO INITIAL SPEED, SHUT DOWN UNNEEDED PUMP AND THEN RAMP REMAINING PUMPS BACK UP TOGETHER TO SEEK FLOW RATE.

4. DISABLE MANUAL BYPASS MODE ON ALL PUMP VFD'S WHEN GENERATOR IS RUNNING. MANUAL BYPASS MODE CAN ONLY BE USED WHEN PUMP STATION IS ON UTILITY.

5. PROVIDE A SHUT DOWN SIGNAL FROM THE MPR TO THE AFFECTED VFD UPON MOTOR THERMISTOR ALARM OR LOW WATER LEVEL ALARM.

6. PROVIDE A SHUT DOWN SIGNAL FROM THE MPR TO THE AFFECTED VFD UPON MOTOR VIBRATION OUT OF TOLERANCE ALARM.

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CITY OF STAUNTON
GARDNER SPRING PUMP STATION
STAUNTON, VIRGINIA

MRK	DATE	REVISION DESCRIPTION

COMM NO:	220117		
DATE:	05/27/2022		
DRAWN:	TDG	DESIGN:	TDG
CHECK:			JM

SHEET TITLE

CONTROL SYSTEM ARCHITECTURE

SHT. NO.	REV. NO.
I-002	

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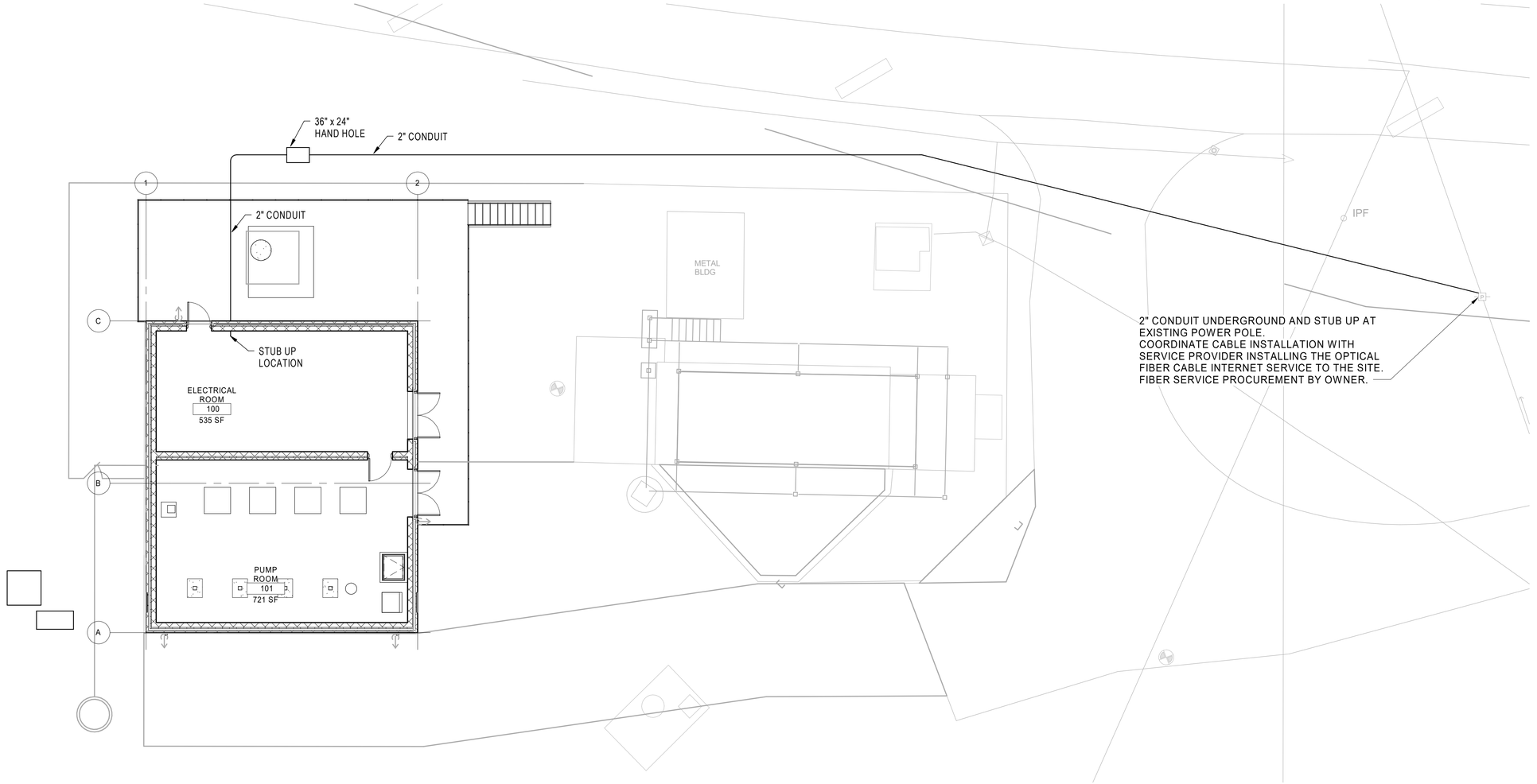
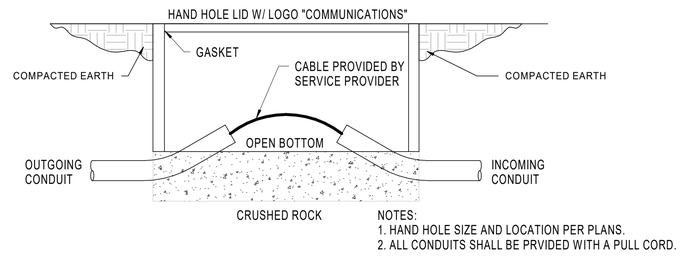


1 SITE PLAN

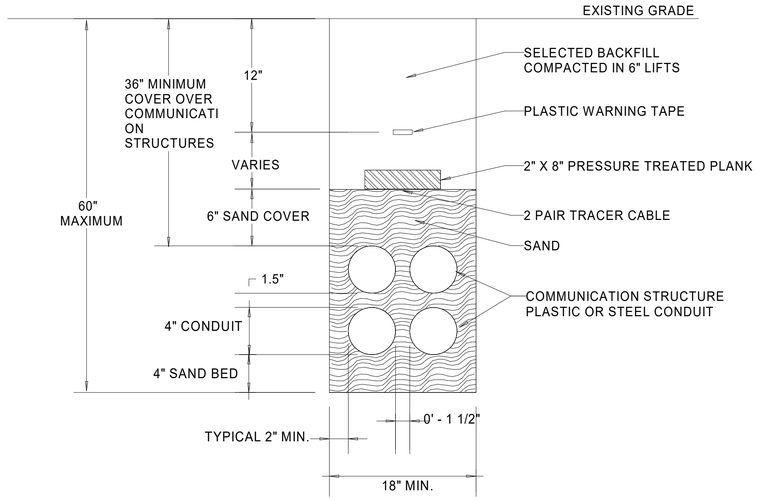
SCALE: 1/8" = 1'-0"



NOTES:
1. HAND HOLE SIZE AND LOCATION PER PLANS.
2. ALL CONDUITS SHALL BE PRVIDED WITH A PULL CORD.

3 HAND HOLE SECTION

SCALE: NONE



2 SITE TRENCH DETAIL

SCALE: NONE

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STAUNTON, VIRGINIA

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SITE PLAN

SHT. NO.	REV. NO.
I-003	

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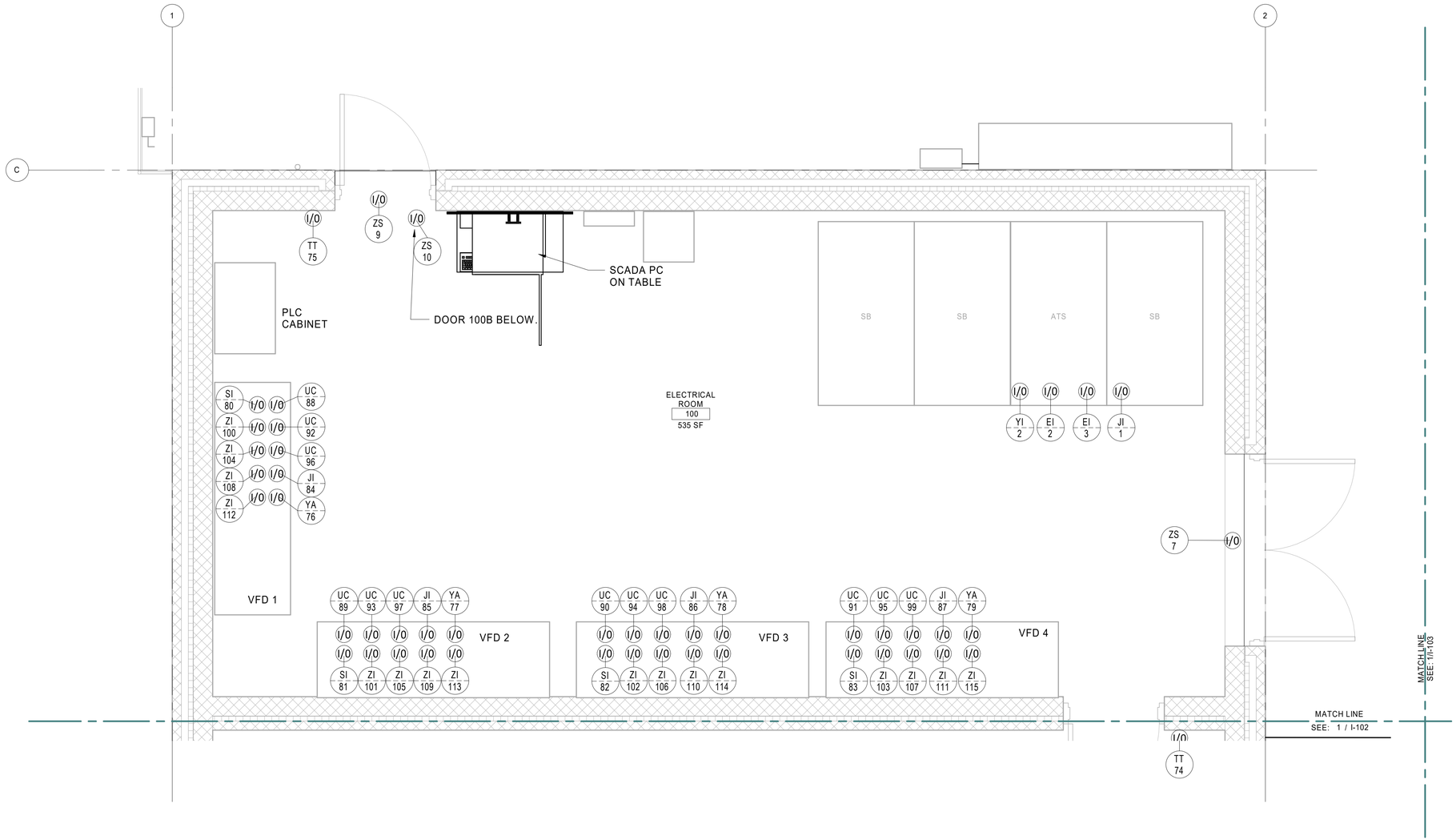
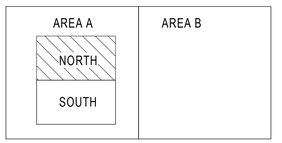


1 PARTIAL INSTRUMENTATION PLAN - AREA A NORTH

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



KEY PLAN

0' 1' 2' 4'

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

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INSTRUMENTATION PLAN - AREA A

SHT. NO.	REV. NO.
I-101	

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VFD 2

VFD 3

VFD 4

MATCH LINE
SEE: 1 / I-101

MATCH LINE
SEE: 1/I-103

MATCH LINE
SEE: 1/I-103

PUMP 1

PUMP 2

PUMP 3

PUMP 4

YI 53 · YA 57 · TSH 61

YI 54 · YA 58 · TSH 62

YI 55 · YA 59 · TSH 63

YI 56 · YA 60 · TSH 64

TI 25 · TI 29 · TI 33 · TI 33A · TI 33B · TI 34 · TI 34A · TI 34B

VI 17 · VI 18 · VI 19 · ESL 49 · II 45 · TI 35 · TI 35A · TI 35B

TI 26 · TI 30 · TI 36 · TI 36A · TI 36B · TI 37 · TI 37A · TI 37B

VI 14 · VI 15 · VI 16 · ESL 50 · II 46 · TI 38 · TI 38A · TI 38B

TI 27 · TI 31 · TI 39 · TI 39A · TI 39B · TI 40 · TI 40A · TI 40B

VI 11 · VI 12 · VI 13 · ESL 51 · II 47 · TI 41 · TI 41A · TI 41B

TI 28 · TI 32 · TI 42 · TI 42A · TI 42B · TI 43 · TI 43A · TI 43B

VI 20 · VI 21 · VI 22 · ESL 52 · II 48 · TI 44 · TI 44A · TI 44B

I/O · TT 74

ZS 8

LT 70 · LE 70

LEVEL SENSOR IN WETWELL BELOW. REFERENCE SHEET D-302, SECTION 1 DETAIL FOR STILLING WELL AND INSTALLATION OF LEVEL SENSOR.

YI 117 · YI 118 · YI 119 · YI 120

PIT 71

PUMP ROOM 101
721 SF

1 PARTIAL INSTRUMENTATION PLAN - AREA A SOUTH

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

AREA A
NORTH
SOUTH
AREA B

KEY PLAN

0' 1' 2' 4'

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

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CHECK: Checker

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INSTRUMENTATION PLAN - AREA A

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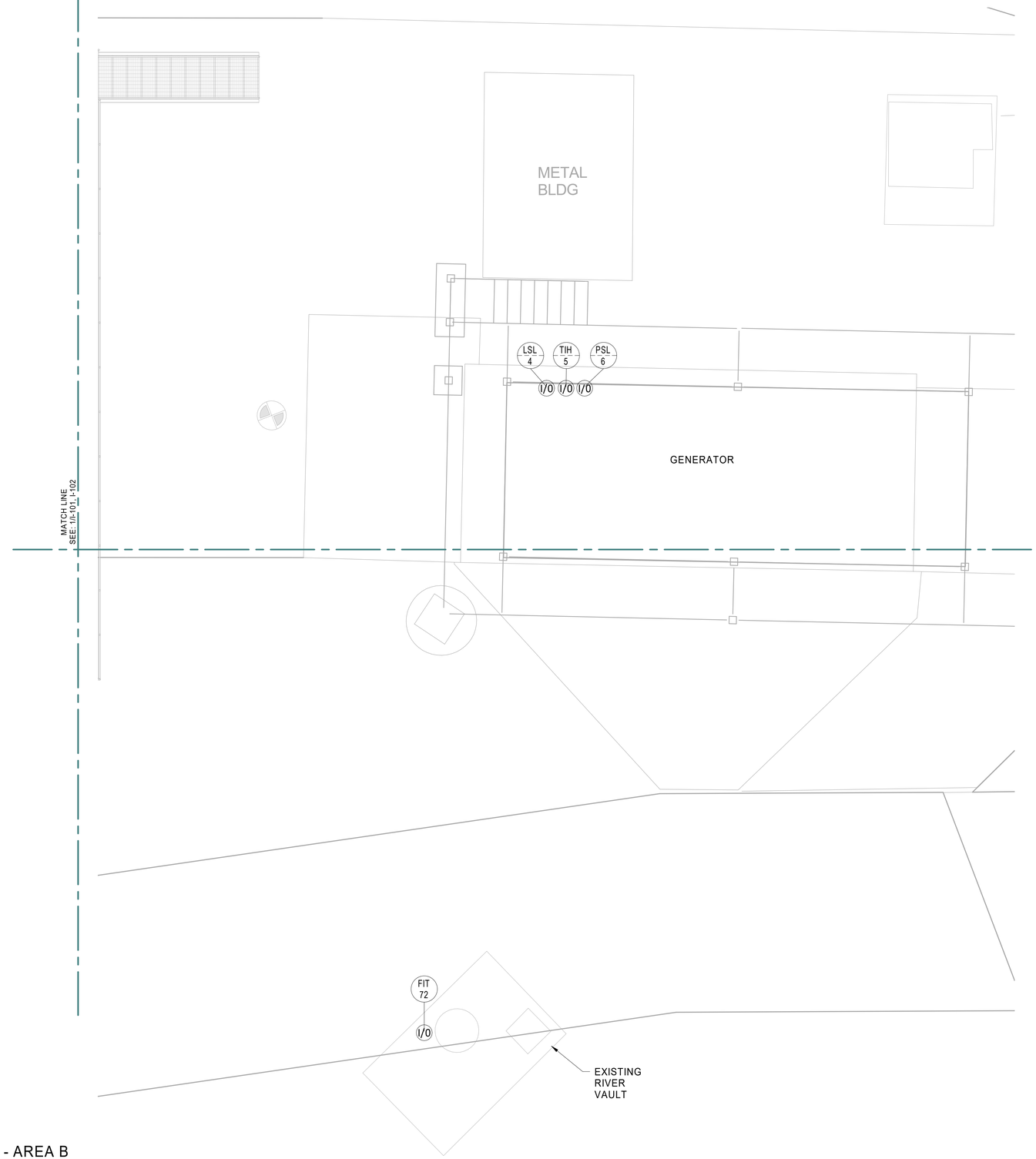
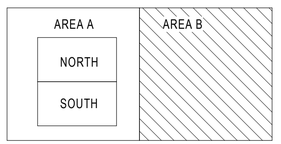


1 PARTIAL INSTRUMENTATION PLAN - AREA B

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



KEY PLAN

0' 2' 4' 8'

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

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INSTRUMENTATION PLAN - AREA B

SHT. NO.	REV. NO.
I-103	

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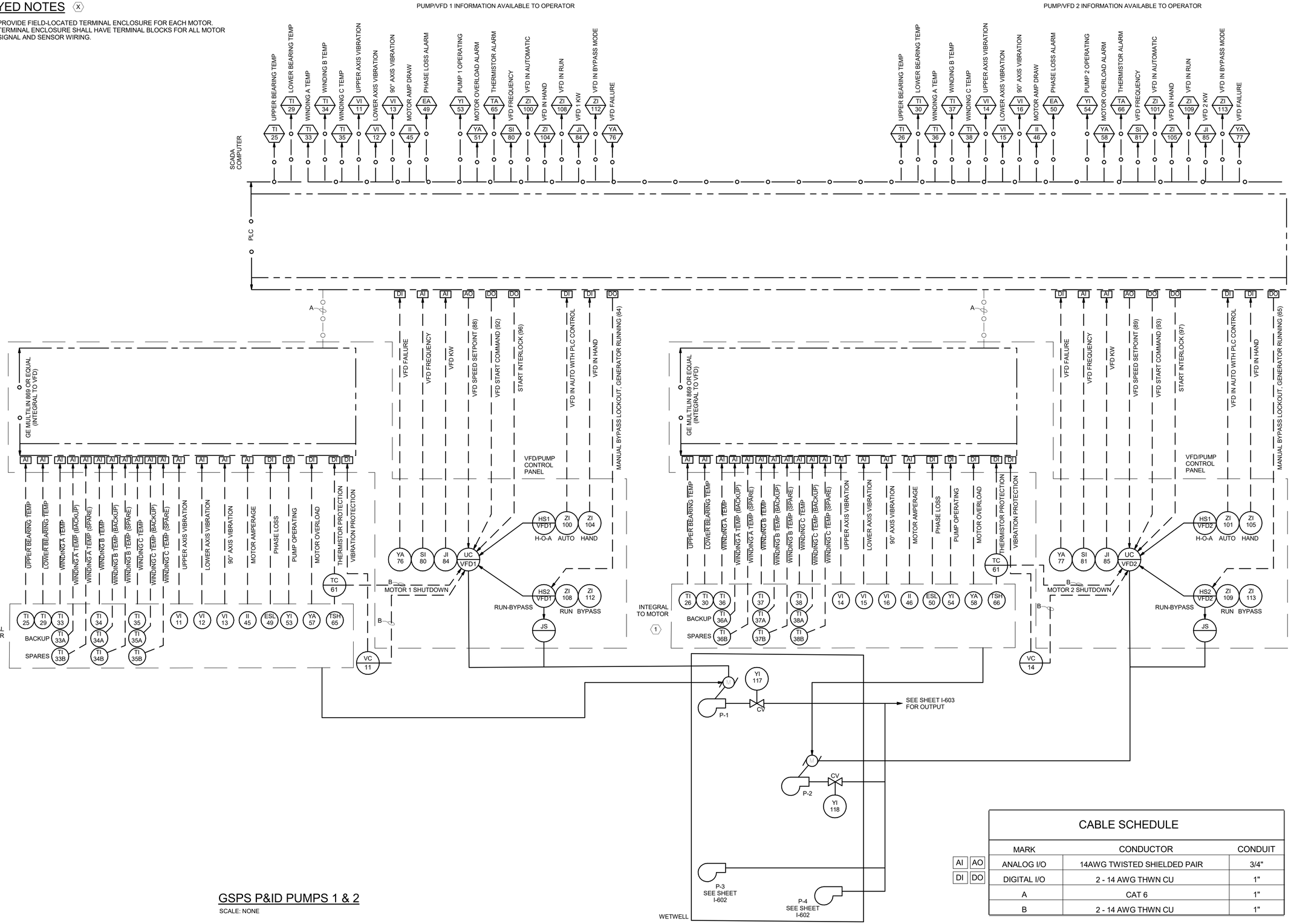
KEYED NOTES (X)

1. PROVIDE FIELD-LOCATED TERMINAL ENCLOSURE FOR EACH MOTOR. TERMINAL ENCLOSURE SHALL HAVE TERMINAL BLOCKS FOR ALL MOTOR SIGNAL AND SENSOR WIRING.



GSPS P&ID PUMPS 1 & 2

SCALE: NONE

CABLE SCHEDULE

MARK	CONDUCTOR	CONDUIT
AI AO	ANALOG I/O	14AWG TWISTED SHIELDED PAIR	3/4"
DI DO	DIGITAL I/O	2 - 14 AWG THWN CU	1"
A	CAT 6	1"
B	2 - 14 AWG THWN CU	1"

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SHEET TITLE
GSPS P&ID PUMPS 1 & 2

SHT. NO. I-601 | REV. NO.

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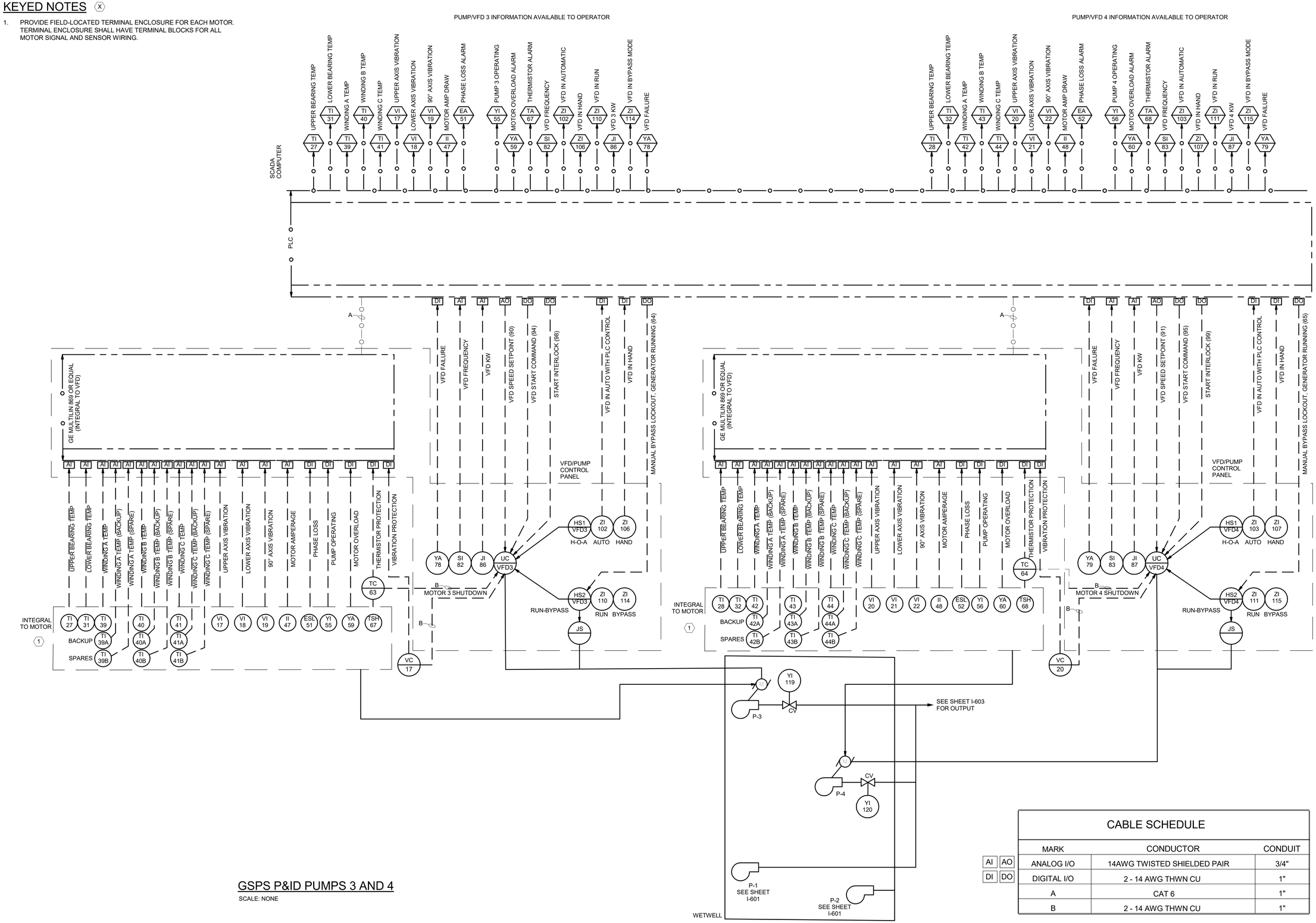
KEYED NOTES (X)

1. PROVIDE FIELD-LOCATED TERMINAL ENCLOSURE FOR EACH MOTOR. TERMINAL ENCLOSURE SHALL HAVE TERMINAL BLOCKS FOR ALL MOTOR SIGNAL AND SENSOR WIRING.



GSPS P&ID PUMPS 3 AND 4

SCALE: NONE

CABLE SCHEDULE

AI AO DI DO

MARK	CONDUCTOR	CONDUIT
ANALOG I/O	14AWG TWISTED SHIELDED PAIR	3/4"
DIGITAL I/O	2 - 14 AWG THWN CU	1"
A	CAT 6	1"
B	2 - 14 AWG THWN CU	1"

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SHEET TITLE: GSPS P&ID PUMPS 3 & 4

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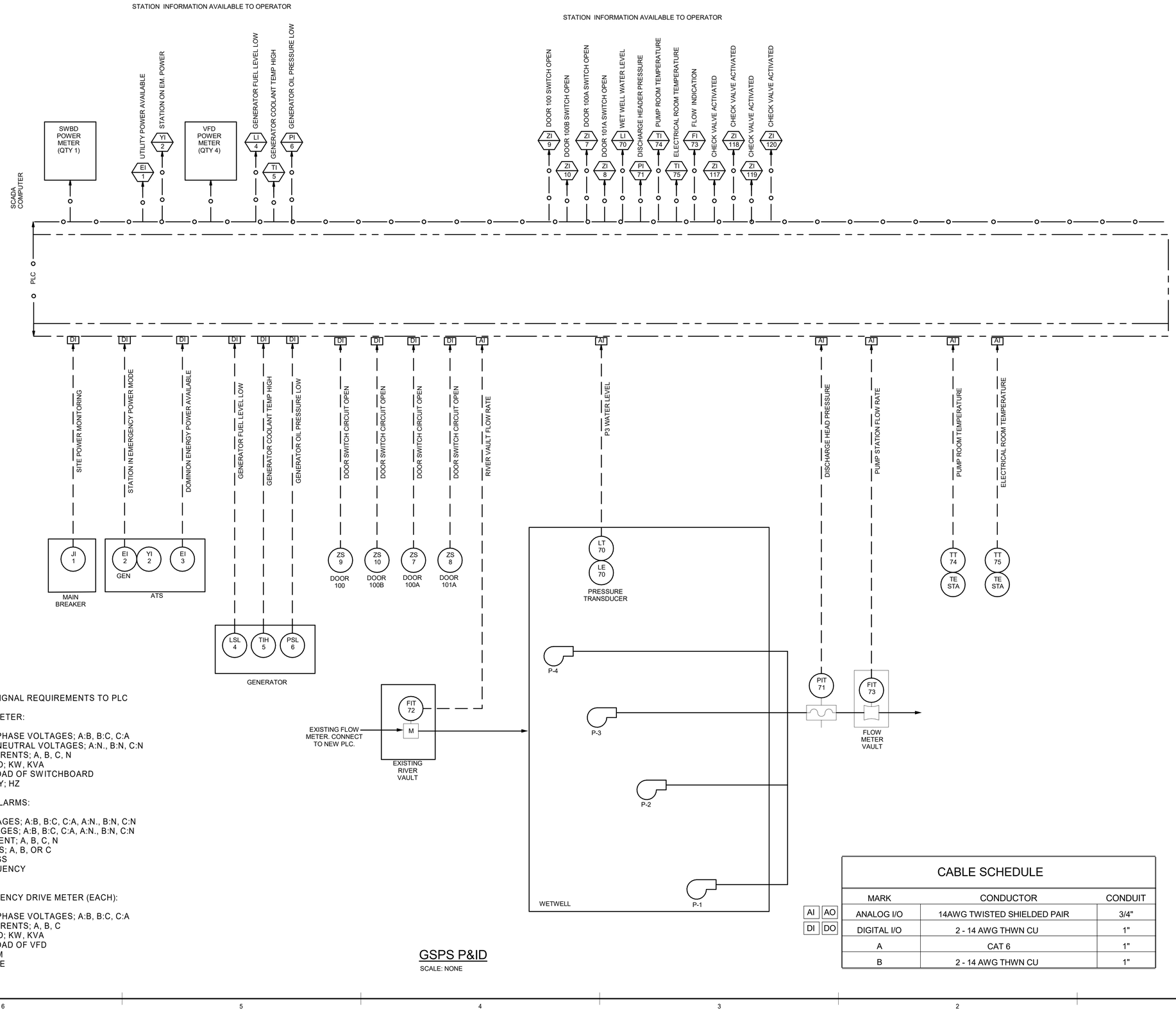

POWER METER SIGNAL REQUIREMENTS TO PLC

SWITCHBOARD METER:

1. PHASE TO PHASE VOLTAGES; A:B, B:C, C:A
2. PHASE TO NEUTRAL VOLTAGES; A:N., B:N, C:N
3. PHASE CURRENTS; A, B, C, N
4. TOTAL LOAD; KW, KVA
5. % TOTAL LOAD OF SWITCHBOARD
6. FREQUENCY; HZ

SWITCHBOARD ALARMS:

A. HIGH VOLTAGES; A:B, B:C, C:A, A:N., B:N, C:N
B. LOW VOLTAGES; A:B, B:C, C:A, A:N., B:N, C:N
C. HIGH CURRENT; A, B, C, N
D. PHASE LOSS; A, B, OR C
E. UTILITY LOSS
F. LOW FREQUENCY

VARIABLE FREQUENCY DRIVE METER (EACH):

1. PHASE TO PHASE VOLTAGES; A:B, B:C, C:A
2. PHASE CURRENTS; A, B, C
3. TOTAL LOAD; KW, KVA
4. % TOTAL LOAD OF VFD
5. SPEED; RPM
6. DC VOLTAGE

GSPS P&ID

SCALE: NONE

CABLE SCHEDULE		
MARK	CONDUCTOR	CONDUIT
ANALOG I/O	14AWG TWISTED SHIELDED PAIR	3/4"
DIGITAL I/O	2 - 14 AWG THWN CU	1"
A	CAT 6	1"
B	2 - 14 AWG THWN CU	1"

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INSTRUMENTATION SCHEDULE

LABEL	DESCRIPTION	BOD MANUFACTURER	BOD MODEL	LOCATION	CONNECTED TO	REMARKS
JI-1	MAIN BREAKER STATUS	SECTION 26 24 13	INTEGRAL TO BREAKER	SWITCHBOARD	PLC	
YI-2	STATION IN EMERGENCY POWER MODE	SECTION 26 24 13	OUTPUT FROM ATS	SWITCHBOARD/ATS	PLC	
EI-2	STATION IN EMERGENCY POWER MODE	SECTION 26 24 13	OUTPUT FROM ATS	SWITCHBOARD/ATS	PLC	
EI-3	NORMAL POWER AVAILABLE	SECTION 26 24 13	SEE SPECIFICATIONS	SWITCHBOARD/ATS	PLC	
LSL-4	GENERATOR FUEL LEVEL LOW	SECTION 26 32 13.13	SEE SPECIFICATIONS	GENERATOR	PLC	
TIH-5	GENERATOR COOLANT TEMPERATURE HIGH	SECTION 26 32 13.13	SEE SPECIFICATIONS	GENERATOR	PLC	
PSL-6	GENERATOR PRESSURE LOW	SECTION 26 32 13.13	SEE SPECIFICATIONS	GENERATOR	PLC	
ZS-7	(2) DOOR SWITCH - CONNECT IN PARALLEL	OFCI	OFCI	DOOR 100A	PLC	
ZS-8	(2) DOOR SWITCH - CONNECT IN PARALLEL	OFCI	OFCI	DOOR 101A	PLC	
ZS-9	DOOR SWITCH	OFCI	OFCI	DOOR 100	PLC	
ZS-10	DOOR SWITCH	OFCI	OFCI	DOOR 100B	PLC	
LT-70	P3 WATER LEVEL	OFCI - SECTION 40 72 76	OFCI	WETWELL	PLC	INSTALL WITHIN STILLING WELL PER SHEET D-302
LE-70	P3 WATER LEVEL	OFCI - SECTION 40 72 76	OFCI	WETWELL	PLC	INSTALL WITHIN STILLING WELL PER SHEET D-302
PIT-71	DISCHARGE HEAD PRESSURE	OFCI - SECTION 40 73 00	OFCI	OUTLET PIPE	PLC	
FIT-72	EXISTING FLOW METER	EXISTING	EXISTING	EXISTING RIVER VAULT	PLC	
FIT-73	FLOW METER	SECTION 40 71 23	VENTURI FLOW METER	FLOW METER VAULT	PLC	
TT-74	PUMP ROOM TEMPERATURE	OFCI - SECTION 40 74 63	OFCI	PUMP ROOM	PLC	
TT-75	ELECTRICAL ROOM TEMPERATURE	OFCI - SECTION 40 74 63	OFCI	SWITCHBOARD	PLC	
YA-76	VFD FAILURE	SECTION 26 29 23	SEE SPECIFICATIONS	VFD1	PLC	
YA-77	VFD FAILURE	SECTION 26 29 23	SEE SPECIFICATIONS	VFD2	PLC	
YA-78	VFD FAILURE	SECTION 26 29 23	SEE SPECIFICATIONS	VFD3	PLC	
YA-79	VFD FAILURE	SECTION 26 29 23	SEE SPECIFICATIONS	VFD4	PLC	
SI-80	VFD FREQUENCY	SECTION 26 29 23	SEE SPECIFICATIONS	VFD1	PLC	
SI-81	VFD FREQUENCY	SECTION 26 29 23	SEE SPECIFICATIONS	VFD2	PLC	
SI-82	VFD FREQUENCY	SECTION 26 29 23	SEE SPECIFICATIONS	VFD3	PLC	
SI-83	VFD FREQUENCY	SECTION 26 29 23	SEE SPECIFICATIONS	VFD4	PLC	
JI-84	VFD KW	SECTION 26 29 23	SEE SPECIFICATIONS	VFD1	PLC	
JI-85	VFD KW	SECTION 26 29 23	SEE SPECIFICATIONS	VFD2	PLC	
JI-86	VFD KW	SECTION 26 29 23	SEE SPECIFICATIONS	VFD3	PLC	
JI-87	VFD KW	SECTION 26 29 23	SEE SPECIFICATIONS	VFD4	PLC	
UC-88	VFD SPEED SETPOINT	SECTION 26 29 23	SEE SPECIFICATIONS	VFD1	PLC	
UC-89	VFD SPEED SETPOINT	SECTION 26 29 23	SEE SPECIFICATIONS	VFD2	PLC	
UC-90	VFD SPEED SETPOINT	SECTION 26 29 23	SEE SPECIFICATIONS	VFD3	PLC	
UC-91	VFD SPEED SETPOINT	SECTION 26 29 23	SEE SPECIFICATIONS	VFD4	PLC	
UC-92	VFD START COMMAND	SECTION 26 29 23	SEE SPECIFICATIONS	VFD1	PLC	
UC-93	VFD START COMMAND	SECTION 26 29 23	SEE SPECIFICATIONS	VFD2	PLC	
UC-94	VFD START COMMAND	SECTION 26 29 23	SEE SPECIFICATIONS	VFD3	PLC	
UC-95	VFD START COMMAND	SECTION 26 29 23	SEE SPECIFICATIONS	VFD4	PLC	
UC-96	VFD START INTERLOCK	SECTION 26 29 23	SEE SPECIFICATIONS	VFD1	PLC	
UC-97	VFD START INTERLOCK	SECTION 26 29 23	SEE SPECIFICATIONS	VFD2	PLC	
UC-98	VFD START INTERLOCK	SECTION 26 29 23	SEE SPECIFICATIONS	VFD3	PLC	
UC-99	VFD START INTERLOCK	SECTION 26 29 23	SEE SPECIFICATIONS	VFD4	PLC	
ZI-100	VFD IN AUTOMATIC	SECTION 26 29 23	SEE SPECIFICATIONS	VFD1	PLC	
ZI-101	VFD IN AUTOMATIC	SECTION 26 29 23	SEE SPECIFICATIONS	VFD2	PLC	
ZI-102	VFD IN AUTOMATIC	SECTION 26 29 23	SEE SPECIFICATIONS	VFD3	PLC	
ZI-103	VFD IN AUTOMATIC	SECTION 26 29 23	SEE SPECIFICATIONS	VFD4	PLC	
ZI-104	VFD IN HAND	SECTION 26 29 23	SEE SPECIFICATIONS	VFD1	PLC	
ZI-105	VFD IN HAND	SECTION 26 29 23	SEE SPECIFICATIONS	VFD2	PLC	
ZI-106	VFD IN HAND	SECTION 26 29 23	SEE SPECIFICATIONS	VFD3	PLC	
ZI-107	VFD IN HAND	SECTION 26 29 23	SEE SPECIFICATIONS	VFD4	PLC	
ZI-108	VFD IN RUN	SECTION 26 29 23	SEE SPECIFICATIONS	VFD1	PLC	
ZI-109	VFD IN RUN	SECTION 26 29 23	SEE SPECIFICATIONS	VFD2	PLC	
ZI-110	VFD IN RUN	SECTION 26 29 23	SEE SPECIFICATIONS	VFD3	PLC	
ZI-111	VFD IN RUN	SECTION 26 29 23	SEE SPECIFICATIONS	VFD4	PLC	
ZI-112	VFD IN BYPASS MODE	SECTION 26 29 23	SEE SPECIFICATIONS	VFD1	PLC	
ZI-113	VFD IN BYPASS MODE	SECTION 26 29 23	SEE SPECIFICATIONS	VFD2	PLC	
ZI-114	VFD IN BYPASS MODE	SECTION 26 29 23	SEE SPECIFICATIONS	VFD3	PLC	
ZI-115	VFD IN BYPASS MODE	SECTION 26 29 23	SEE SPECIFICATIONS	VFD4	PLC	
YI-117	CHECK VALVE OPEN/CLOSE STATUS	SECTION 15 20 20	INTEGRAL TO CHECK VALVE	PUMP 1 CHECK VALVE	PLC	
YI-118	CHECK VALVE OPEN/CLOSE STATUS	SECTION 15 20 20	INTEGRAL TO CHECK VALVE	PUMP 2 CHECK VALVE	PLC	
YI-119	CHECK VALVE OPEN/CLOSE STATUS	SECTION 15 20 20	INTEGRAL TO CHECK VALVE	PUMP 3 CHECK VALVE	PLC	
YI-120	CHECK VALVE OPEN/CLOSE STATUS	SECTION 15 20 20	INTEGRAL TO CHECK VALVE	PUMP 4 CHECK VALVE	PLC	

INSTRUMENTATION SCHEDULE MOTOR PROTECTION RELAY (MPR) INPUTS

LABEL	DESCRIPTION	BOD MANUFACTURER	BOD MODEL	LOCATION	CONNECTED TO	REMARKS
VI-11	UPPER AXIS VIBRATION	SECTION 33 28 31	SEE SPECIFICATIONS	PUMP 3	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
VI-12	LOWER AXIS VIBRATION	SECTION 33 28 31	SEE SPECIFICATIONS	PUMP 3	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
VI-13	90 DEG. AXIS VIBRATION	SECTION 33 28 31	SEE SPECIFICATIONS	PUMP 3	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
VI-14	UPPER AXIS VIBRATION	SECTION 33 28 31	SEE SPECIFICATIONS	PUMP 2	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
VI-15	LOWER AXIS VIBRATION	SECTION 33 28 31	SEE SPECIFICATIONS	PUMP 2	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
VI-16	90 DEG. AXIS VIBRATION	SECTION 33 28 31	SEE SPECIFICATIONS	PUMP 2	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
VI-17	UPPER AXIS VIBRATION	SECTION 33 28 31	SEE SPECIFICATIONS	PUMP 1	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
VI-18	LOWER AXIS VIBRATION	SECTION 33 28 31	SEE SPECIFICATIONS	PUMP 1	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
VI-19	90 DEG. AXIS VIBRATION	SECTION 33 28 31	SEE SPECIFICATIONS	PUMP 1	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
VI-20	UPPER AXIS VIBRATION	SECTION 33 28 31	SEE SPECIFICATIONS	PUMP 4	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
VI-21	LOWER AXIS VIBRATION	SECTION 33 28 31	SEE SPECIFICATIONS	PUMP 4	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
VI-22	90 DEG. AXIS VIBRATION	SECTION 33 28 31	SEE SPECIFICATIONS	PUMP 4	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-25	UPPER BEARING TEMP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 1	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-26	UPPER BEARING TEMP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 2	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-27	UPPER BEARING TEMP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 3	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-28	UPPER BEARING TEMP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 4	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-29	LOWER BEARING TEMP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 1	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-30	LOWER BEARING TEMP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 2	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-31	LOWER BEARING TEMP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 3	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-32	LOWER BEARING TEMP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 4	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-33	WINDING A TEMP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 1	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-33A	WINDING A TEMP - BACKUP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 1	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-33B	WINDING A TEMP - SPARE	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 1	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-34	WINDING B TEMP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 1	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-34A	WINDING B TEMP - BACKUP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 1	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-34B	WINDING B TEMP - SPARE	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 1	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-35	WINDING C TEMP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 1	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-35A	WINDING C TEMP - BACKUP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 1	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-35B	WINDING C TEMP - SPARE	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 1	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-36	WINDING A TEMP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 2	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-36A	WINDING A TEMP - BACKUP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 2	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-36B	WINDING A TEMP - SPARE	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 2	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-37	WINDING B TEMP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 2	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-37A	WINDING B TEMP - BACKUP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 2	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-37B	WINDING B TEMP - SPARE	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 2	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-38	WINDING C TEMP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 2	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-38A	WINDING C TEMP - BACKUP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 2	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-38B	WINDING C TEMP - SPARE	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 2	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-39	WINDING A TEMP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 3	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-39A	WINDING A TEMP - BACKUP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 3	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-39B	WINDING A TEMP - SPARE	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 3	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-40	WINDING B TEMP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 3	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-40A	WINDING B TEMP - BACKUP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 3	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-40B	WINDING B TEMP - SPARE	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 3	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-41	WINDING C TEMP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 3	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-41A	WINDING C TEMP - BACKUP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 3	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-41B	WINDING C TEMP - SPARE	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 3	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-42	WINDING A TEMP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 4	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-42A	WINDING A TEMP - BACKUP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 4	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-42B	WINDING A TEMP - SPARE	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 4	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-43	WINDING B TEMP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 4	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-43A	WINDING B TEMP - BACKUP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 4	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-43B	WINDING B TEMP - SPARE	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 4	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-44	WINDING C TEMP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 4	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-44A	WINDING C TEMP - BACKUP	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 4	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TI-44B	WINDING C TEMP - SPARE	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 4	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
II-45	MOTOR AMPERAGE	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 1	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
II-46	MOTOR AMPERAGE	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 2	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
II-47	MOTOR AMPERAGE	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 3	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
II-48	MOTOR AMPERAGE	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 4	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
ESL-49	PHASE LOSS	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 1	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
ESL-50	PHASE LOSS	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 2	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
ESL-51	PHASE LOSS	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 3	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
ESL-52	PHASE LOSS	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 4	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
YI-53	PUMP OPERATING	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 1	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
YI-54	PUMP OPERATING	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 2	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
YI-55	PUMP OPERATING	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 3	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
YI-56	PUMP OPERATING	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 4	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
YA-57	MOTOR OVERLOAD	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 1	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
YA-58	MOTOR OVERLOAD	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 2	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
YA-59	MOTOR OVERLOAD	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 3	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
YA-60	MOTOR OVERLOAD	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 4	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TSH-61	THERMISTOR PROTECTION	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 1	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TSH-62	THERMISTOR PROTECTION	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 2	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TSH-63	THERMISTOR PROTECTION	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 3	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE
TSH-64	THERMISTOR PROTECTION	SECTION 33 28 31	INTEGRAL TO MOTOR	PUMP 4	MPR	MPR INSTALLED WITHIN VFD ENCLOSURE

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MRK.	DATE	REVISION DESCRIPTION

COMM NO: 220117
DATE: 05/27/2022
DRAWN: TDG | DESIGN: TDG
CHECK: JM

SHEET TITLE
INSTRUMENTATION SCHEDULES

SHT. NO. I-604 | REV. NO.

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ELECTRONIC SECURITY GENERAL NOTES

1. THE ELECTRONIC SECURITY SUBCONTRACTOR (ESS) SHALL PROVIDE, DOCUMENT, AND TEST A FULLY INTEGRATED SECURITY SYSTEM FOR THE OWNER. THE INTEGRATED SECURITY SYSTEM SHALL INCLUDE A CLOSED CIRCUIT TELEVISION SYSTEM, VARIOUS ASSOCIATED CONTROL AND/OR SUPPORT EQUIPMENT, AND ALL REQUIRED CABLING AND WIRING.
2. SECURITY SYSTEM CONDUCTORS SHALL BE PROVIDED BY CONTRACTOR, AS NOTED HEREIN. CONDUITS AND WALLBOXES FOR THE SECURITY SYSTEM WILL BE PROVIDED BY CONTRACTOR.
3. THE ESS SHALL BE RESPONSIBLE FOR COORDINATING FINAL SECURITY EQUIPMENT LAYOUT AND ROUTING OF CONDUIT AS SHOWN ON THE PROJECT DRAWINGS. ANY COORDINATION CONFLICTS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF WILEY|WILSON, WHO SHALL APPROVE ALL CHANGES PRIOR TO THE INITIATION OF WORK. ESS SHALL SUBMIT CONDUIT AND WIRE LAYOUT DRAWING SHOWING CIRCUIT NUMBERS, WIRING, ACTUATOR POWER SUPPLY(S) WITH BATTERY BACKUP, AND CONDUIT ROUTINGS FOR APPROVAL PRIOR TO THE INITIATION OF WORK.
4. ALL REQUIRED EQUIPMENT AND HARDWARE MAY NOT BE INDICATED ON DRAWINGS, DEPENDING ON THE SPECIFIC MANUFACTURER SUBMITTED FOR APPROVAL. CONTRACTOR SHALL PROVIDE ALL REQUIRED EQUIPMENT AND HARDWARE IN ORDER TO MEET THE INTENT OF DESIGN AND SHALL PROVIDE THE OWNER WITH A COMPLETE AND FULLY OPERATIONAL ELECTRONIC SECURITY SYSTEM. QUESTIONS REGARDING THE INTENT OF DESIGN SHALL BE PROMPTLY BROUGHT TO THE ATTENTION OF WILEY|WILSON.
5. CONDUCTORS SHALL NOT BE LESS THAN #18 AWG, UNLESS OTHERWISE INDICATED. EXCEPTIONS INCLUDE MANUFACTURER-PROVIDED LEADS AND INTERNAL EQUIPMENT WIRING.
6. SECURITY SYSTEM SIGNAL CONDUCTORS SHALL NOT, UNDER ANY CIRCUMSTANCE, BE INSTALLED IN THE SAME CONDUIT AS POWER CONDUCTORS.
7. WIRE FILL, CONDUCTORS, AND CONDUIT SHALL BE SIZED BY THE CONTRACTOR, EXCEPT WHERE SIZE IS INDICATED, AND SHALL BE INSTALLED ACCORDING TO THE NATIONAL ELECTRICAL CODE, AS WELL AS ALL STATE AND LOCAL CODES HAVING JURISDICTION. NUMBER OF CONDUCTORS REQUIRED MAY VARY BASED ON THE SPECIFIC MANUFACTURER'S EQUIPMENT SELECTED BY THE CONTRACTOR. MINIMUM CONDUIT SIZE SHALL BE 1/2 INCH.
8. ALL 120 VOLT INPUT POWER FOR POWER SUPPLIES AND OTHER SYSTEM COMPONENTS SHALL BE PROVIDED. THE ESS SHALL BE RESPONSIBLE FOR COORDINATION OF SECURITY SYSTEM POWER REQUIREMENTS.
9. ALL SECURITY WIRING SHALL BE CONSISTENTLY COLOR-CODED AND TAGGED. COORDINATION OF EXACT WIRE CODING AND TAGGING IS MANDATORY. THE ESS IS DIRECTLY RESPONSIBLE FOR COORDINATING WIRING FROM EQUIPMENT HARDWARE MANUFACTURERS TERMINAL STRIPS TO THE FINAL CONNECTION POINTS OF EQUIPMENT WITHIN SCOPE OF THE PROJECT.
10. THE ESS SHALL PROVIDE ALL REQUIRED PROGRAMMING, AND SHALL COORDINATE WITH THE OWNER ALL HARDWARE AND SOFTWARE PROGRAMMING FEATURES WHICH DICTATE OR OTHERWISE INFLUENCE USER OPERATION OR FUNCTIONALITY OF THE ELECTRONIC SECURITY SYSTEM.
11. REQUIREMENTS FOR CONDUCTORS AND CONDUITS SIZES AND QUANTITIES MAY VARY WITH THE SELECTION AND PLACEMENT OF SECURITY EQUIPMENT. CONDUCTORS AND CONDUIT SIZES AND QUANTITIES ARE SUGGESTIVE ONLY AND DO NOT NECESSARILY REPRESENT WHAT WILL OR SHOULD BE INSTALLED. ESS SHALL BE RESPONSIBLE FOR PROVIDING ACTUAL CONDUCTOR AND CONDUIT SIZES AND QUANTITIES ON SHOP DRAWING SUBMITTAL. ESS SHALL COORDINATE WITH THE DIVISION 26 SUBCONTRACTOR, ALL CONDUIT SIZES, QUANTITIES, AND LOCATIONS, AS WELL AS ALL POWER SUPPLY AND EQUIPMENT LOCATIONS THAT NEED A CIRCUIT NOT SHOWN ON THE PLANS.

ELECTRONIC SECURITY SYMBOL LEGEND

- WALL MOUNTED, PENDANT STYLE, CAMERA. REFER TO LABELS AND DETAILS FOR MORE INFORMATION.
- MD — MOTION DETECTOR - INTRUSION DETECTION
- BAT — BATTERY
- BMS — BALANCED MAGNETIC SWITCH DOOR SENSOR - INTRUSION DETECTION
- GB — GLASS BREAK - INTRUSION DETECTION
- KP — ALARM KEYPAD - INTRUSION DETECTION
- PCU — PREMISE CONTROL UNIT - INTRUSION DETECTION
- SND — SOUNDER - INTRUSION DETECTION
- VOL — VOLUMETRIC - INTRUSION DETECTION
- CR/KP — CARD READER (CAC/PIV COMPATIBLE PROX) - ACCESS CONTROL - MOUNTED AT 42" AFF UNO
- LR — ELECTRONIC LATCH RETRACTION ACCESS CONTROL DOOR
- ES — ELECTRIC STRIKE - ACCESS CONTROL
- KEY — AUTOMATED KEY BOX - ACCESS CONTROL
- REX — REQUEST FOR EXIT - ACCESS CONTROL
- VIC — VIDEO INTERCOM DOOR STATION - ACCESS CONTROL
- VIM — VIDEO INTERCOM MONITORING STATION - ACCESS CONTROL
- JB — WALL MOUNTED JUNCTION BOX
- JB — CEILING MOUNTED JUNCTION BOX
- EY — SECURITY SITE CONDUIT
- HH — HANDHOLE
- MH — NEW MANHOLE
- CONDUIT SLEEVE WITH BUSHINGS. 4" DIAMETER UON.
- CONDUIT OR CONDUIT SLEEVE 'UP'
- CONDUIT OR CONDUIT SLEEVE 'DOWN'
- 1 — PLAN REFERENCE NOTE, REFER TO NOTE # INDICATED
- 1 / EY501 — DETAIL SYMBOL, LETTER INDICATES DETAIL DESIGNATION; THE DRAWING WHERE DETAIL IS DRAWN

ELECTRONIC SECURITY ABBREVIATIONS

ACU	INTELLIGENT CONTROLLERS
AFF	ABOVE FINISHED FLOOR
CCTV	CLOSED CIRCUIT TELEVISION
CNTL	CONTROL
CPU	CENTRAL PROCESSING UNIT
CR	CARD READER
CR/KP	CARD READER/KEYPAD
CRP	CARD READER W/PIN
CWE	CAMERA, WALL-MOUNT, EXTERIOR
CWI	CAMERA, WALL-MOUNT, INTERIOR
DEPB	DELAY EGRESS PANIC BAR
RI	READER INTERFACE
DWG	DRAWING
DVMS	DIGITAL VIDEO MANAGEMENT SYSTEM
DVRS	DIGITAL VIDEO RECORDING SYSTEM
EC	ELECTRICAL CONDUIT
ES	ELECTRIC STRIKE
EML	ELECTROMAGNETIC LOCK
EML-TD	ELECTROMAGNETIC LOCK-TIME DELAY
EPT/ADL	ELECTRIC POWER TRANSFER/ARMORED DOOR LOOP
EX	EXISTING
FORX	FIBER OPTIC RECEIVER
FOTCVR	FIBER OPTIC TRANSCEIVER
FOTX	FIBER OPTIC TRANSMITTER
FWN	FIXED WEDGE NEW CAMERA
FWR	FIXED WEDGE EXISTING CAMERA TO BE REPLACED
GB	GLASSBREAK DETECTOR
HH	HANDHOLE
HRN/STRB	HORN AND OR STROBE
HV	HIGH VOLTAGE
IC	INTERCOM
IM	INPUT MODULE
IDF	INTERMEDIATE DISTRIBUTION FRAME
IRE	INFRARED EXISTING CAMERA
SC	SYSTEM CONTROLLER
JB	JUNCTION BOX
KS	KEYSWITCH
LAN	LOCAL AREA NETWORK
LSR	LIFE AND SAFETY ROOM
LV	LOW VOLTAGE
MBN	NEW BULLET CAMERA WITH MOTORIZED LENS
MC	MAGNETIC CONTACTS
MCNV	MEDIA CONVERTER
MDF	MAIN DISTRIBUTION FRAME
MH	MANHOLE
NTS	NOT TO SCALE
NVR	NETWORK VIDEO RECORDER
OM	OUTPUT MODULE
PB	PUSH BUTTON
PEB	PHOTO ELECTRIC BEAM
PIR	PASSIVE INFRARED
PMCNV	POWER OVER ETHERNET MEDIA CONVERTER
POE	POWER OVER ETHERNET
PS	POWER SUPPLY
PTZ	PAN/TILT/ZOOM
RF	RADIO FREQUENCY
RU	RACK UNITS
SMCS	SECURITY MANAGEMENT CONTROL SYSTEM
SOC	SECURITY OPEREATIONS CENTER
RI	READER INTERFACE
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
TYP.	TYPICAL
TXFMR	TRANSFORMER
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
VMS	VIDEO MANAGEMENT SERVER
VRS	VIDEO RECORDING SERVER
WA	WARNING ANNUNCIATOR
WMC	WIDE GAP MAGNETIC CONTACTS

MINIMUM PULLBOX SIZING

TRADE SIZE	BOX DIMENSIONS			WIDTH INCREASE FOR EACH ADDITIONAL CONDUIT
	WIDTH	LENGTH	DEPTH	
IN	IN	IN	IN	IN
1"	4"	16"	3"	2"
1-1/4"	6"	20"	3"	3"
1-1/2"	8"	27"	4"	4"
2"	8"	36"	4"	5"
2-1/2"	10"	42"	5"	6"
3"	12"	48"	5"	6"
3-1/2"	12"	54"	6"	6"
4"	15"	60"	8"	8"

NOTES:

1. DIMENSIONS BASED ON ANSI/EIA/TIA 569B

CONDUIT FILL SCHEDULE

CONDUIT TRADE SIZE	MAX QUANTITY OF CABLES @40% FILL CABLE OUTSIDE DIAMETER									
	0.13	0.18	0.22	0.24	0.29	0.31	0.37	0.53	0.62	0.7 in
1/2"	1	1	0	0	0	0	0	0	0	0
3/4"	6	5	4	3	2	2	1	0	0	0
1"	8	8	7	6	3	3	2	1	0	0
1-1/4"	16	14	12	10	6	4	3	1	1	1
1-1/2"	20	18	16	15	7	6	4	2	1	1
2"	30	26	22	20	14	12	7	4	3	2
2-1/2"	45	40	36	30	17	14	12	6	3	3
3"	70	60	50	40	20	20	17	7	6	6
3-1/2"	-	-	-	-	-	-	22	12	7	6
4"	-	-	-	-	-	-	30	14	12	7

NOTES:

1. BASED ON ANSI/EIA/TIA 569B TABLE 9

LEGEND NOTES

1. SYMBOLS ORIENTATION DOES NOT IMPLY DEVICE OR EQUIPMENT ORIENTATION. UNLESS NOTED AS SUCH. SEE REFLECTED CEILING PLANS FOR ALL CEILING MOUNTED DEVICE POSITIONS AND ORIENTATIONS.
2. SYMBOL SIZE DOES NOT IMPLY EQUIPMENT SIZE, UON.
3. MOUNTING HEIGHT INDICATED IN LEGEND AND ON THE DRAWINGS MUST BE THE DISTANCE MEASURED FROM THE CENTER OF THE DEVICE TO THE FINISHED FLOOR.
4. NOT ALL SYMBOLS ARE USED.

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MRK.	DATE	REVISION DESCRIPTION

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LEGEND, ABBREVIATIONS, AND GENERAL NOTES

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SPECIFICATIONS - VIDEO SURVEILLANCE

PART 1 - GENERAL

1.1 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include dimensions and data on features, performance, electrical characteristics, ratings, and finishes.
B. Shop Drawings: For video surveillance. Include plans, elevations, sections, details, and attachments to other work.
1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
2. Functional Block Diagram: Show single-line interconnections between components for signal transmission and control. Show cable types and sizes.
3. Dimensioned plan and elevations of equipment racks, control panels, and consoles. Show access and workspace requirements.
4. UPS: Sizing calculations.
5. Wiring Diagrams: For power, signal, and control wiring.
C. Design Data: Include an equipment list consisting of every piece of equipment by model number, manufacturer, serial number, location, and date of original installation. Add pretesting record of each piece of equipment, listing name of person testing, date of test, set points of adjustments, name and description of the view of preset positions, description of alarms, and description of unit output responses to an alarm.

1.2 CLOSEOUT SUBMITTALS
A. Operation and Maintenance Data: For cameras, power supplies, infrared illuminators, monitors, videotape recorders, digital video recorders, video switches, and control-station components to include in emergency, operation, and maintenance manuals. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:
1. Lists of spare parts and replacement components recommended to be stored at the site for ready access.

1.3 WARRANTY
A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of cameras, equipment related to camera operation, and control-station equipment that fail in materials or workmanship within specified warranty period.
1. Warranty Period: Three years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SYSTEM REQUIREMENTS

A. Video-signal format shall comply with NTSC standard, composite interlaced video. Composite video-signal termination shall be 75 ohms.
B. Surge Protection: Protect components from voltage surges originating external to equipment housing and entering through power, communication, signal, control, or sensing leads. Include surge protection for external wiring of each conductor's entry connection to components.
1. Minimum Protection for Power Connections 120 V and More: Auxiliary panel suppressors complying with requirements in Section 264313 "Surge Protection for Low-Voltage Electrical Power Circuits."
2. Minimum Protection for Communication, Signal, Control, and Low-Voltage Power Connections: Comply with requirements in Section 264313 "Surge Protection for Low-Voltage Electrical Power Circuits" as recommended by manufacturer for type of line being protected.
C. Tamper Protection: Tamper switches on enclosures, control units, pull boxes, junction boxes, cabinets, and other system components shall initiate a tamper-alarm signal when unit is opened or partially disassembled. Control-station, control-unit alarm display shall identify tamper alarms and indicate locations.

2.2 STANDARD CAMERAS

A. Color Camera:
1. Pickup Device: CCD interline transfer, 380,000 771(H) by 492(V) pixels.
2. Horizontal Resolution: 480 lines.
3. Signal-to-Noise Ratio: Not less than 50 dB, with camera AGC off.
4. With AGC, manually selectable on or off.
5. Sensitivity: Camera shall provide usable images in low-light conditions.
6. Manually selectable modes for backlight compensation or normal lighting.
7. Scanning Synchronization: Determined by external synch over the coaxial cable. Camera shall revert to internally generated synchronization on loss of external synch signal.
8. White Balance: Auto-tracing white balance, with manually settable fixed balance option.
9. Motion Detector: Built-in digital.
B. Automatic Color Dome Camera: Assembled and tested as a manufactured unit, containing dome assembly, color camera, motorized pan and tilt, zoom lens, and receiver/driver.
1. Pickup Device: CCD interline transfer, 380,000 768(H) by 494(V) pixels.
2. Horizontal Resolution: 480 lines.
3. Signal-to-Noise Ratio: Not less than 50 dB, with camera AGC off.
4. With AGC, manually selectable on or off.
5. Sensitivity: Camera shall provide usable images in low-light conditions.
6. Manually selectable modes for backlight compensation or normal lighting.
7. Pan and Tilt: Direct-drive motor, 360-degree rotation angle, and 180-degree tilt angle. Pan-and-tilt speed shall be controlled by operator. Movement from preset positions shall be not less than 300 degrees per second.
8. Preset Positioning: Eight user-definable scenes, each allowing 16-character titles. Controls shall include the following:
a. In "sequence mode," camera shall continuously sequence through preset positions, with dwell time and sequencing under operator control.
b. Motion detection shall be available at each camera position.
c. Up to four preset positions may be selected to be activated by an alarm. Each of the alarm positions may be programmed to output a response signal.
9. Scanning Synchronization: Determined by external synch over the coaxial cable. Camera shall revert to internally generated synchronization on loss of external synch signal.
10. White Balance: Auto-tracing white balance, with manually settable fixed balance option.
11. Motion Detector: Built-in digital.
12. Dome shall support multiplexed control communications using coaxial cable recommended by manufacturer.

2.3 LENSES
A. Description: Optical-quality coated lens, designed specifically for video-surveillance applications and matched to specified camera. Provide color-corrected lenses with color cameras.
1. Auto-Iris Lens: Electrically controlled iris with circuit set to maintain a constant video level in varying lighting conditions.
2. Fixed Lens: With calibrated focus ring.
3. Zoom Lens: Motorized, remote-controlled unit, rated as "quiet operating." Features include the following:
a. Electrical Leads: Filtered to minimize video signal interference.
b. Motor Speed: Variable.
c. Lens shall be available with preset positioning capability to recall the position of specific scenes.

2.4 POWER SUPPLIES
A. Low-voltage power supplies matched for voltage and current requirements of cameras and accessories, and of type as recommended by manufacturer of camera and lens.
1. Enclosure: NEMA 250, Type 1.

2.5 CAMERA-SUPPORTING EQUIPMENT
A. Pan-and-Tilt Units: Motorized units arranged to provide remote-controlled aiming of cameras with smooth and silent operation and equipped with matching mounting brackets.
1. Panning Rotation: 0 to 355 degrees, with adjustable stops.
2. Tilt Movement: 90 degrees, plus or minus 5 degrees, with adjustable stops.
3. Speed: 12 degrees per second in both horizontal and vertical planes.
4. Wiring: Factory prewired for camera and zoom lens functions and pan-and-tilt power and control.
5. Built-in encoders or potentiometers for position feedback.
6. Pan-and-tilt unit shall be available with preset positioning capability to recall the position of a specific scene.
B. Mounting Brackets for Fixed Cameras: Type matched to items supported and mounting conditions. Include manual pan-and-tilt adjustment.
C. Protective Housings for Fixed and Movable Cameras: Steel enclosures with internal camera mounting and connecting provisions that are matched to camera/lens combination and mounting and installing arrangement of camera to be housed.
1. Camera Viewing Window: Polycarbonate window, aligned with camera lens.
2. Duplex Receptacle: Internally mounted.
3. Alignment Provisions: Camera mounting shall provide for field aiming of camera and permit removal and reinstallation of camera lens without disturbing camera alignment.
4. Sun shield shall not interfere with normal airflow around the housing.
5. Mounting bracket and hardware for wall or ceiling mounting of the housing. Bracket shall be of same material as the housing; mounting hardware shall be stainless steel.
6. Finish: Housing and mounting bracket shall be factory finished using manufacturer's standard finishing process suitable for the environment.
7. Enclosure Rating: NEMA 1.

2.6 MONITORS
A. Color:
1. Metal cabinet units designed for continuous operation.
2. Horizontal Resolution: 300 lines.
3. Minimum Front Panel Devices and Controls: Power switch; power-on indicator; and brightness, contrast, color, and tint controls.
4. Degaussing: Automatic.
5. Mounting: Single, 14-inch (356-mm), vertical, EIA 19-inch (483-mm) electronic equipment rack or cabinet complying with CEA 310-E.
Electrical: 120-V ac, 60 Hz.

2.7 IP VIDEO SYSTEMS
A. Description:
1. System shall provide high-quality delivery and processing of IP-based video, audio, and control data using standard Ethernet-based networks.
2. System shall have seamless integration of all video surveillance and control functions.
3. Graphical user interface software shall manage all IP-based video matrix switching and camera control functions, two-way audio communication, alarm monitoring and control, and recording and archive/retrieval management. IP system shall also be capable of integrating into larger system environments.
4. System design shall include all necessary compression software for high-performance, dual-stream, MPEG-2/MPEG-4 video. Unit shall provide connections for all video cameras, camera PTZ control data, bidirectional audio, discreet sensor inputs, and control system outputs.
5. All camera signals shall be compressed, encoded, and delivered onto the network for processing and control by the IP video-management software.
6. Camera system units shall be ruggedly built and designed for extreme adverse environments, complying with NEMA Type environmental standards.
7. Encoder/decoder combinations shall place video, audio, and data network stream that can be managed from multiple workstations on the user's LAN or WAN.
8. All system interconnect cables, workstation PCs, PTZ joysticks, and network intermediate devices shall be provided for full performance of specified system.

PART 3 - EXECUTION

3.1 Tests and Inspections:
1. Inspection: Verify that units and controls are properly installed, connected, and labeled, and that interconnecting wires and terminals are identified.
2. Pretesting: Align and adjust system and pretest components, wiring, and functions to verify that they comply with specified requirements. Conduct tests at varying lighting levels, including day and night scenes as applicable. Prepare video-surveillance equipment for acceptance and operational testing as follows:
a. Prepare equipment list described in "Informational Submittals" Article.
b. Verify operation of auto-iris lenses.
c. Set back-focus of fixed focal length lenses. At focus set to infinity, simulate nighttime lighting conditions by using a dark glass filter of a density that produces a clear image. Adjust until image is in focus with and without the filter.
d. Set back-focus of zoom lenses. At focus set to infinity, simulate nighttime lighting conditions by using a dark glass filter of a density that produces a clear image. Additionally, set zoom to full wide angle and aim camera at an object 50 to 75 feet (17 to 23 m) away. Adjust until image is in focus from full wide angle to full telephoto, with the filter in place.
e. Set and name all preset positions; consult Owner's personnel.
f. Set sensitivity of motion detection.
g. Connect and verify responses to alarms.
h. Verify operation of control-station equipment.
3. Test Schedule: Schedule tests after pretesting has been successfully completed and system has been in normal functional operation for at least 14 days. Provide a minimum of 10 days' notice of test schedule.
4. Operational Tests: Perform operational system tests to verify that system complies with Specifications. Include all modes of system operation. Test equipment for proper operation in all functional modes.

3.2 ADJUSTING
A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose. Tasks shall include, but are not limited to, the following:
1. Check cable connections.
2. Check proper operation of cameras and lenses. Verify operation of auto-iris lenses and adjust back-focus as needed.
3. Adjust all preset positions; consult Owner's personnel.
4. Recommend changes to cameras, lenses, and associated equipment to improve Owner's use of video surveillance system.
5. Provide a written report of adjustments and recommendations.
3.3 CLEANING
A. Clean installed items using methods and materials recommended in writing by manufacturer.
B. Clean video-surveillance-system components, including camera-housing windows, lenses, and monitor screens.
3.4 DEMONSTRATION
A. Train Owner's maintenance personnel to adjust, operate, and maintain video-surveillance equipment.

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CITY OF STAUNTON
GARDNER SPRING PUMP STATION
STAUNTON, VIRGINIA

MRK	DATE	REVISION DESCRIPTION

COMM NO: 220117
DATE: 05/27/2022
DRAWN: TDG DESIGN: TDG
CHECK: JM

SHEET TITLE
VIDEO SURVEILLLANCE SPECIFICATIONS

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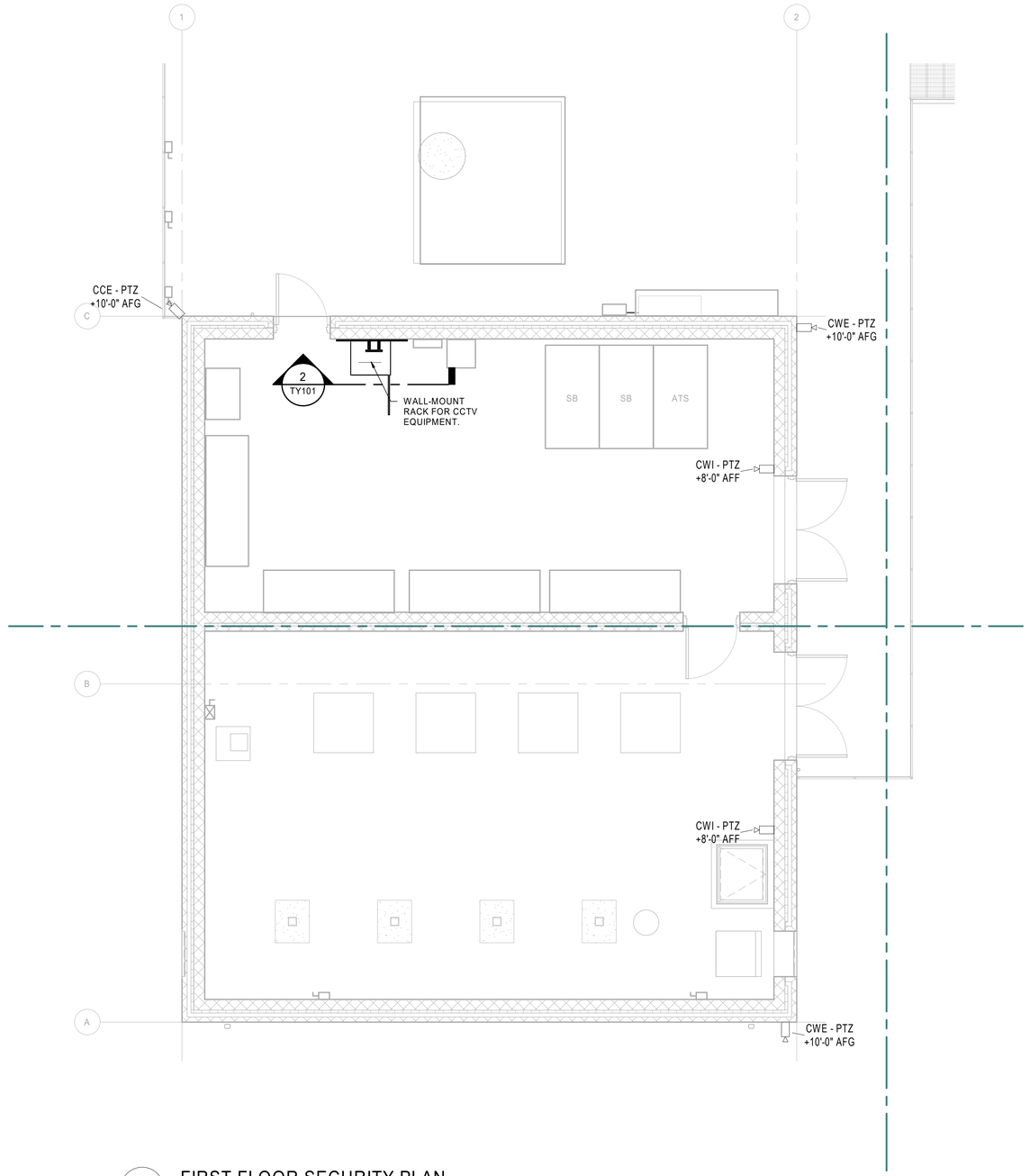
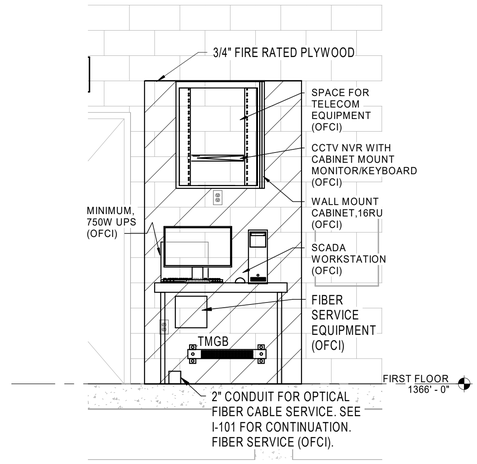


1 FIRST FLOOR SECURITY PLAN

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



2 CCTV WALL ELEVATION
TY101 1/2" = 1'-0"

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

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

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FIRST FLOOR SECURITY PLAN

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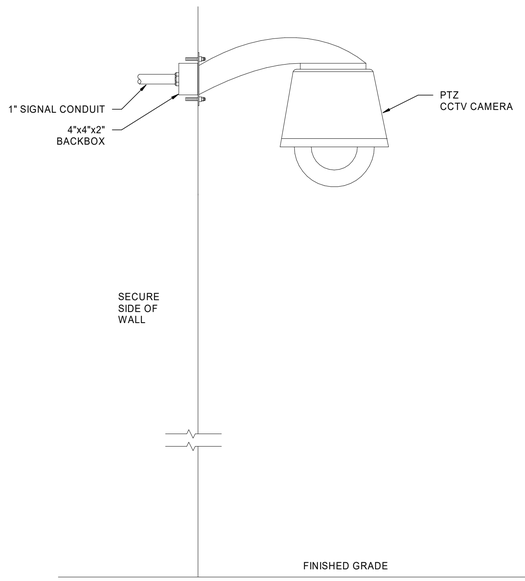
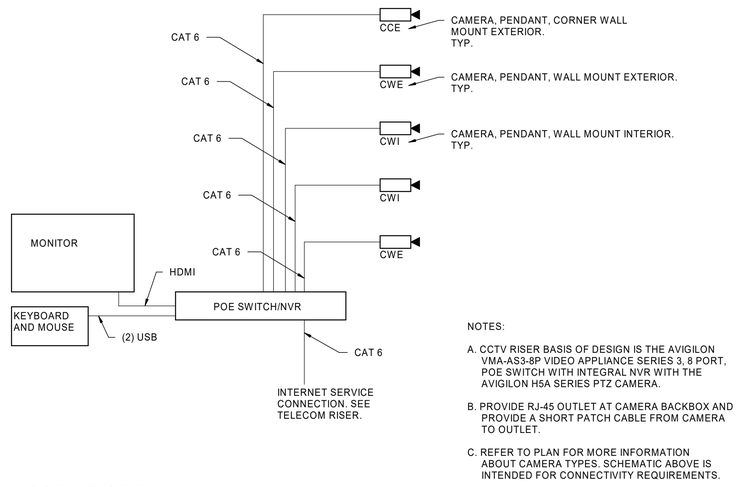


1 WALL MOUNTED, PENDANT STYLE CAMERA

SCALE: NONE



NOTES:

A. CCTV RISER BASIS OF DESIGN IS THE AVIGILON VMA-AS3-8P VIDEO APPLIANCE SERIES 3, 8 PORT, POE SWITCH WITH INTEGRAL NVR WITH THE AVIGILON H5A SERIES PTZ CAMERA.

B. PROVIDE RJ-45 OUTLET AT CAMERA BACKBOX AND PROVIDE A SHORT PATCH CABLE FROM CAMERA TO OUTLET.

C. REFER TO PLAN FOR MORE INFORMATION ABOUT CAMERA TYPES. SCHEMATIC ABOVE IS INTENDED FOR CONNECTIVITY REQUIREMENTS.

2 CCTV RISER

SCALE: NONE

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DETAILS

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