

# ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE

## CAPITAL PROJECT NO. S6294 CONTRACT NO. 20-4954 HOWARD COUNTY, MARYLAND

### PURPOSE STATEMENT

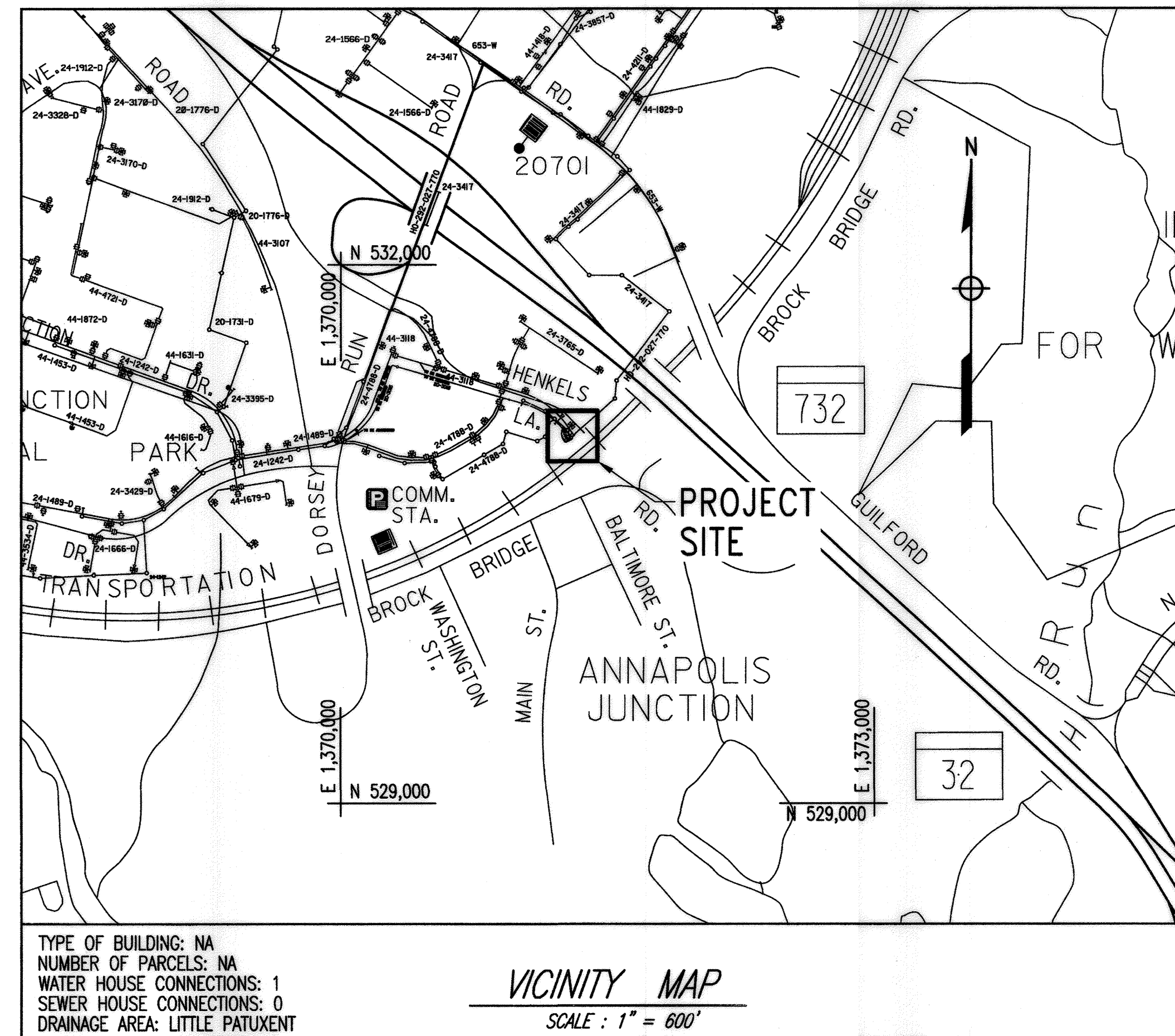
THE PURPOSE OF THIS PROJECT IS TO IMPROVE THE OVERALL OPERATION OF THE EXISTING PUMPING STATION AND TO ADD FLOW METERING. THE SCOPE OF WORK TO BE DONE UNDER THIS CONTRACT CONSISTS OF THE FURNISHING OF ALL MATERIALS AND THE CONSTRUCTION, COMPLETE IN PLACE OF THE ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE, INCLUDING, BUT IS NOT LIMITED TO, NEW BUILDING CONSTRUCTION; NEW WASTEWATER PUMPING UNITS; NEW GRINDER UNIT; NEW FLOW METERING VAULT; NEW GENERATOR; NEW ELECTRICAL WORK; NEW CONTROLS; SITE IMPROVEMENTS; NEW PAVING; MISCELLANEOUS STRUCTURAL AND INCIDENTAL ITEMS OF WORK AS SHOWN.

### ALTERNATE BID ITEMS

- CANOPY OVER WETWELL
- SUBMERSIBLE PUMPS SP1 & SP2

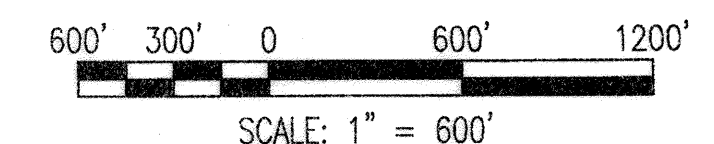
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DIRECTIONS: TAKE ROUTE 32 EAST FROM I-95, TRAVEL EAST ON ROUTE 32 TO EXIT 11, CROSS DORSEY ROAD ONTO HENKELS LANE.

NAME OF UTILITY CONTRACTOR:  
SEDIMENT CONTROL MEASURES FOR THIS CONTRACT WILL BE IMPLEMENTED IN ACCORDANCE WITH THE SPECIFICATIONS AND AS SHOWN ON THE DRAWINGS.  
PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 29228, EXPIRATION DATE: 6/17/21



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DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Raymond J. ...* 3/26/20  
 DIRECTOR OF PUBLIC WORKS DATE

*Marybeth ...* 3/26/20  
 CHIEF, BUREAU OF ENGINEERING DATE

*Paul ...* 3/26/20  
 CHIEF, UTILITY DESIGN DIVISION DATE

*[Signature]* 3-26-2020  
 CHIEF, BUREAU OF UTILITIES DATE

**WRA**  
Whitman, Requardt & Associates, LLP  
801 South Caroline Street, Baltimore, Maryland 21231



DES:	FJB			
DRN:	GWG			
CHK:	DCC			
BY	NO.	REVISION	DATE	

TITLE SHEET


600' SCALE MAP NO. 48 BLOCK NO. 19

ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE  
CAPITAL PROJECT NO. S6294  
CONTRACT NO. 20-4954  
6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

G-1  
SCALE AS SHOWN  
SHEET 1 OF 27



**GENERAL NOTES:**

- APPROXIMATE LOCATIONS OF EXISTING MAINS ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
- TOPOGRAPHIC FIELD SURVEYS WERE PERFORMED IN MAY 2015 BY WHITMAN, REQUARDT & ASSOCIATES, LLP.
- HORIZONTAL AND VERTICAL SURVEY CONTROLS: THE COORDINATES SHOWN ON THE DRAWINGS ARE BASED ON MARYLAND STATE REFERENCE SYSTEM NAD '83/'91 AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS NO. 50EM2 AND NO. 0002. ALL VERTICAL CONTROLS ARE BASED ON NAVD '88. VERTICAL CONTROLS PROVIDED ON THE DRAWINGS ARE 24-INCH STEEL REBARS DRIVEN FLUSH TO THE GROUND WITH A 1-INCH PLASTIC CAP STAMPED "WRA TRAV".
- ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED ON THE PLANS.
- CLEAR ALL UTILITIES BY A MINIMUM OF 12". CLEAR ALL POLES BY 5'-0" MINIMUM OR TUNNEL AS REQUIRED UNLESS OTHERWISE NOTED. THE OWNER HAS CONTACTED THE UTILITY COMPANIES AND HAS MADE ARRANGEMENTS FOR BRACING OF POLES AS SHOWN ON THE DRAWINGS. IN THE EVENT THE CONTRACTOR'S WORK REQUIRES THE BRACING OF ADDITIONAL POLES, ANY COST INCURRED BY THE OWNER FOR THE BRACING OF ADDITIONAL POLES OR DAMAGES SHALL BE DEDUCTED FROM MONIES OWED THE CONTRACTOR. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES TO SCHEDULE THE BRACING OF POLES.
- CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH HOWARD COUNTY VOLUME IV DESIGN MANUAL. FOR DETAILS NOT SHOWN ON THE DRAWINGS, AND FOR MATERIALS AND CONSTRUCTION METHODS, USE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (LATEST EDITION). THE CONTRACTOR SHALL HAVE A COPY OF VOLUME IV ON THE JOB.
- WHERE TEST PITS HAVE BEEN MADE ON EXISTING UTILITIES, THEY ARE NOTED BY THE SYMBOL  AT THE LOCATIONS OF THE TEST PITS. A NOTE OR NOTES CONTAINING THE RESULTS OF THE TEST PIT OR PITS IS INCLUDED ON THE DRAWINGS. EXISTING UTILITIES IN THE VICINITY OF THE PROPOSED WORK FOR WHICH TEST PITS HAVE NOT BEEN DUG SHALL BE LOCATED BY THE CONTRACTOR TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS AT HIS OWN EXPENSE.
- CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS.
 

AT&T .....	1-800-252-1133
BGE (CONTRACTOR SERVICES) .....	410-637-8713
BGE (EMERGENCY) .....	410-685-0123
BUREAU OF UTILITIES .....	410-313-4900
COLONIAL PIPELINE CO. ....	410-795-1390
MISS UTILITY .....	1-800-257-7777
STATE HIGHWAY ADMINISTRATION .....	410-531-5533
VERIZON .....	1-800-743-0033/410-224-9210
- TREES AND SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO THE MAXIMUM EXTENT. CONTRACTOR SHALL REMOVE TREES, STUMPS, AND ROOTS AS NECESSARY TO PERFORM THE WORK. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE VARIOUS ITEMS.
- THE CONTRACTOR SHALL REMOVE TREES, STUMPS AND ROOTS ALONG THE LINE OF EXCAVATION. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONSTRUCTION.
- THE CONTRACTOR SHALL NOTIFY THE BUREAU OF HIGHWAYS, HOWARD COUNTY, AT (410) 313-7450 AT LEAST FIVE WORKING DAYS BEFORE OPEN CUTTING OR BORING/JACKING OF ANY COUNTY ROAD FOR LAYING WATER/SEWER MAINS OR HOUSE CONNECTIONS. THE APPROVAL OF THESE DRAWINGS WILL CONSTITUTE COMPLIANCE WITH DPW REQUIREMENTS PER SECTION 18.114(g) OF THE HOWARD COUNTY CODE.

















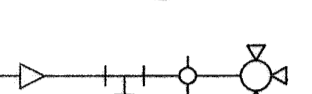


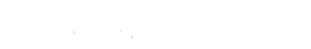










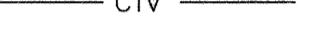










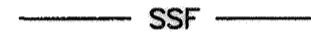
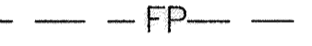

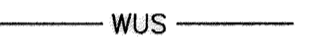



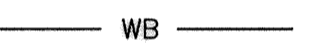

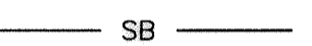






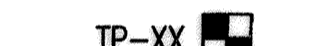











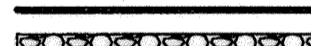


**SANITARY SEWER NOTES:**

- ALL SEWER MAINS SHALL BE D.I.P. OR P.V.C. UNLESS OTHERWISE NOTED.
- ALL MANHOLES SHALL BE 4'-0" INSIDE DIAMETER UNLESS OTHERWISE NOTED.
- FORCE MAIN SHALL BE D.I.P. ONLY.
- MANHOLES SHOWN WITH 12" AND 16" WALLS ARE FOR BRICK MANHOLES ONLY.
- MANHOLES DESIGNATED W.T. IN PLAN AND PROFILE SHALL HAVE WATERTIGHT FRAME AND COVER, STANDARD DETAIL G5.52. WHERE WATERTIGHT MANHOLE FRAMES AND COVERS ARE USED, SET TOP OF FRAME 1'-6" ABOVE FINISHED GRADE UNLESS OTHERWISE NOTED ON THE DRAWINGS.
- HOUSE(S) WITH THE SYMBOL "C.N.S." INDICATES THAT THE CELLAR CANNOT BE SERVED.
- SANITARY SEWER AND FORCEMAIN SHALL BE DUCTILE IRON CLASS 54, PROTECTO LINED UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL MAKE THE NECESSARY CONNECTIONS TO EXISTING AND PROPOSED MANHOLES USING MECHANICALLY WEDGED-IN-PLACE TYPE CONNECTIONS SUCH AS LINK-SEAL AS MANUFACTURED BY THUNDER LINE CORPORATION, Z-LOK SP AS MANUFACTURED BY A-LOK PRODUCTS, INC. OR KOR-N-SEAL AS MANUFACTURED BY NATIONAL POLLUTION CONTROL SYSTEMS, INC. ALL METAL PARTS, I.E. BOLTS, STRAPS, ETC. SHALL BE STAINLESS STEEL.
- THE CONTRACTOR IS RESPONSIBLE FOR PREVENTION OF SPILLAGE OF RAW WASTEWATER, AND SHALL HAVE MEANS AT HIS DISPOSAL (BY PASS PUMP SYSTEM, ETC.) TO USE AS NECESSARY.
- PROVIDE PIPE JOINT 5- FEET FROM THE FACE OF EACH SIDE OF ALL PROPOSED MANHOLES AND STRUCTURES.

**ABBREVIATIONS**

DESCRIPTION	ABBREVIATION	DESCRIPTION	ABBREVIATION
AMERICAN CONCRETE INSTITUTE	ACI	NATIONAL PIPE THREAD	NPT
ALTERNATE	ALT	NON-REINFORCED CIRCULAR CONCRETE PIPE	NRCP
ALUMINUM ALLOY	AA	NOT TO SCALE	NTS
ALUMINIZED CORRUGATED METAL PIPE	ACMP	ON CENTER	O/C
AREA OF STEEL	A	OUTSIDE DIAMETER	OD
AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS	AASHTO	OVERALL	OA
AMERICAN SOCIETY OF TESTING AND MATERIALS	ASTM	PRESTRESSED CONCRETE CYLINDER PIPE	PCCP
AMERICAN WIRE GAUGE	AWG	POLYTHYLENE PRE-COATED CORRUGATED STEEL PIPE	PESCP
AMERICAN WATER WORKS ASSOCIATION	AWWA	PRESSURE REDUCING VALVE	PRV
BITUMINOUS COATED CORRUGATED METAL PIPE	BCCMP	POUNDS PER SQUARE INCH	PSI
CAST IRON	CI	POLYVINYL CHLORIDE	PVC
CENTER TO CENTER	C/C	RADIUS	R.
CURB AND GUTTER	C&G	REINFORCED CONCRETE	R.C.
CENTERLINE	CL	REINFORCED CONCRETE ARCH PIPE	RCAP
CLEAR	CLR	REINFORCED CIRCULAR CONCRETE PIPE	RCCP
CLEARANCE	CL	REINFORCED CONCRETE ELLIPTICAL PIPE	RCEP
CONCRETE	CONC	REINFORCED CONCRETE PIPE	RCP
COUNTERSINK	CSK	REINFORCEMENT	REINF
CUBIC	CU	RIGHT OF WAY	R/W
CUBIC YARD	CY	STABILIZED CONSTRUCTION ENTRANCE	SCE
DRY FILM THICKNESS	DFT	SCHEDULE	SCH
DEGREE	°	MARYLAND STATE HIGHWAY ADMINISTRATION	SHA
DIAMETER	DIA	SEWER HOUSE CONNECTION	SHC
DIAMETER	Ø	STEEL PIPE	SP
DIAGONAL	DIAG	STRUCTURAL PLATE PIPE	SPP
DUCTILE IRON	DI	SQUARE	SQ
DUCTILE IRON PIPE	DIP	STAINLESS STEEL	SS
DEPARTMENT OF PUBLIC WORKS	DPW	STORM WATER MANAGEMENT	SWM
EACH WAY	EW	TERMINAL	TERM
EXISTING	EX	TYPICAL	TYP
EXPANSION	EXP	VOLTS	V
FEET	FT	COEFFICIENT OF FRICTION BETWEEN FILL MATERIAL AND SIDES OF TRENCH	μ'
FEET	'	SQUARE MEMBER	□
GRADED AGGREGATE BASE	GAB	C SHAPED MEMBER	┘
GALVANIZED	GALV		
GAUGE	GA		
HIGH DENSITY POLYTHYLENE	HDPE		
HOT MIX ASPHALT	HMA		
INSIDE DIAMETER	ID		
INCH	IN.		
INCH	"		
JOINT	JT		
RATIO OF ACTIVE LATERAL UNIT PRESSURE TO VERTICAL UNIT PRESSURE	K		
POUNDS	LBS		
LINEAR FOOT	LF		
MANHOLE	MH		
MAXIMUM	MAX		
MECHANICAL	MECH		
MECHANICAL JOINT	MJ		
MILLIMETERS	MIL		
MINIMUM	MIN		
NUMBER	NO.		
NUMBER	#		

**LEGEND**

EXISTING	PROPOSED	DESCRIPTION
		CONTOUR LINES - INTERMEDIATE INDEX
		CURB AND GUTTER
		SIGN
		TREELINE
		TREE - DECIDUOUS EVERGREEN
		SANITARY SEWER MAIN AND MANHOLE
		SANITARY SEWER FORCE MAIN
		SANITARY SEWER MANHOLE
		WATER REDUCER, TEE, VALVE & FIRE HYDRANT
		WATER AND NON-POTABLE WATER MAIN
		STORM DRAIN
		GAS MAIN AND MANHOLE
		ELECTRICAL CONDUIT AND MANHOLE
		TELEPHONE CONDUIT AND MANHOLE
		CABLE TELEVISION
		FENCE WIRE
		FENCE WOOD
		LIMIT OF DISTURBANCE
		SILT FENCE
		SUPER SILT FENCE
		100 YEAR FLOOD PLAIN
		WATERS OF THE UNITED STATES
		WETLAND BOUNDARY
		WETLAND BUFFER
		STREAM BANK 100 FOOT BUFFER
		TRAVERSE POINT
		BORING LOCATION AND NUMBER
		TEST PIT HOLE
		BENCHMARK
		PROPERTY LINE
		PERMANENT EASEMENT
		TEMPORARY CONSTRUCTION EASEMENT
		NEW PAVEMENT LIMITS
		RIP RAP
		EXISTING PIPE OR MANHOLE TO BE REMOVED
		ALTERNATE BID ITEM

**SUPPLEMENTAL NOTES:**

- STOCKPILE SPOILS FROM TRENCHING OPERATIONS ON THE UPHILL SIDE OF THE TRENCH, EXCEPT DO NOT STORE OR WASTE ANY SPOILS WITHIN 100-YEAR FLOOD PLAIN. ALL EXCESS MATERIALS SHALL BE REMOVED BY CONTRACTOR.
- THE CONTRACTOR SHALL PROVIDE ALL NECESSARY LINES, GRADES AND ELEVATIONS, AND CUT SHEETS SHALL BE PREPARED BASED ON THE LINES AND GRADES SHOWN ON THE CONTRACT DRAWINGS.
- THE CONTRACTOR SHALL PROVIDE A MAINTENANCE OF TRAFFIC PLAN, WHERE NECESSARY FOR APPROVAL PRIOR TO CONSTRUCTION.
- CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING STAGING AND STOCKPILE AREAS.
- SEWER FLOWS SHALL NOT BE INTRODUCED TO THE NEW SEWER OR FORCE MAIN PIPE UNTIL DIRECTED BY THE COUNTY. REFER TO THE SEQUENCE OF CONSTRUCTION.
- SANITARY SEWER AND FORCE MAIN SHALL BE DUCTILE IRON CLASS 54, PROTECTO LINED UNLESS OTHERWISE NOTED.

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 29228, EXPIRATION DATE: 6/17/21.

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Jan Miller* 3/26/20  
DIRECTOR OF PUBLIC WORKS DATE

*Thomas E. Rutler* 3/26/20  
CHIEF, BUREAU OF ENGINEERING DATE

*Paul Allen* 3/26/20  
CHIEF, UTILITY DESIGN DIVISION DATE

**WRA**  
Whitman, Requardt & Associates, LLP  
801 South Caroline Street, Baltimore, Maryland 21231

STATE OF MARYLAND  
DAVID CHI-KEUNG CHANG  
PROFESSIONAL ENGINEER  
No. 29228  
3/26/20

DES: FJB			
DRN: GWG			
CHK: DCC			
BY: NO.		REVISION	DATE

GENERAL NOTES, ABBREVIATIONS AND LEGEND

600' SCALE MAP NO. 48 | BLOCK NO. 19

ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE  
CAPITAL PROJECT NO. S6294  
CONTRACT NO. 20-4954

6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

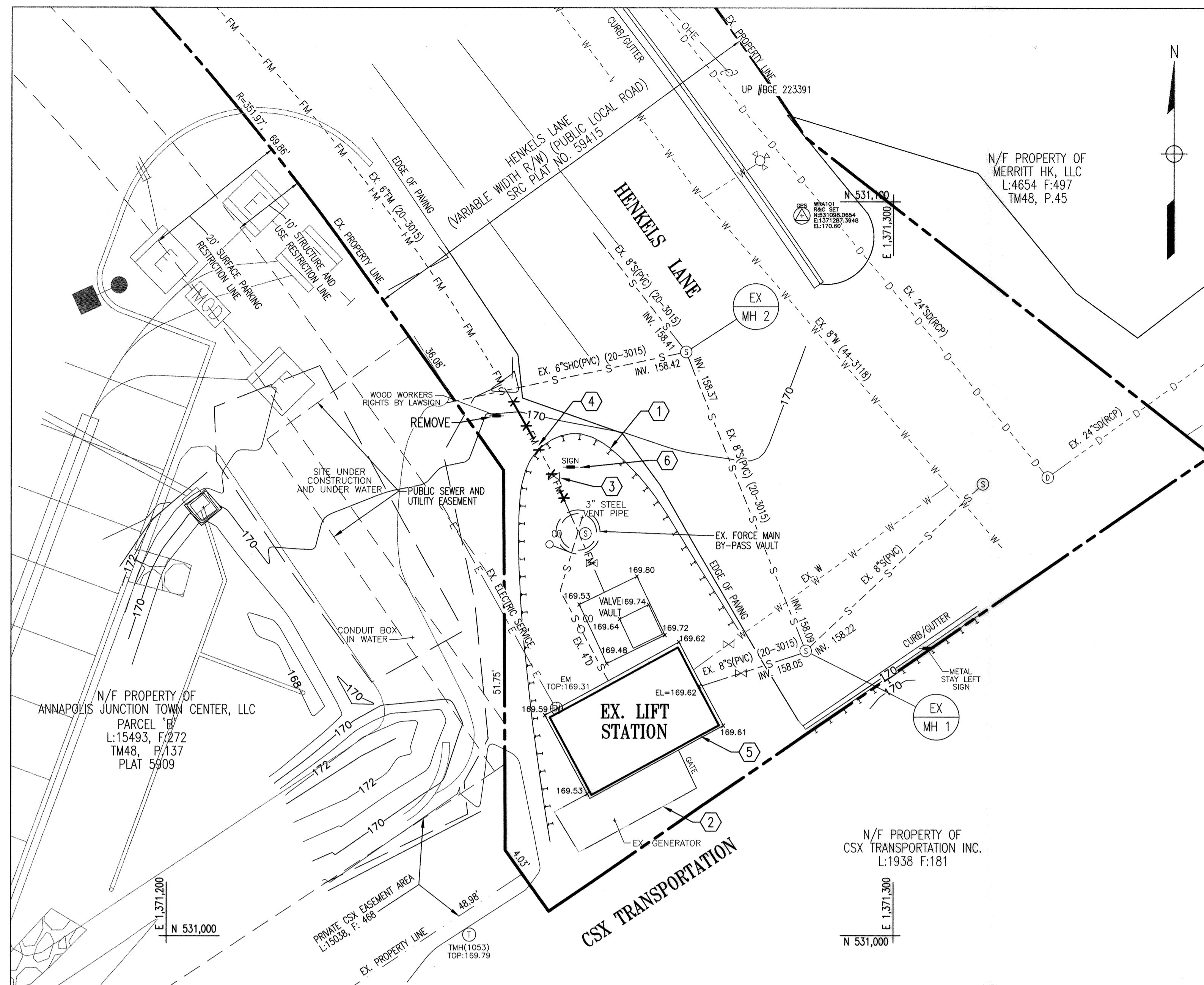
G-2

SCALE AS SHOWN

SHEET 2 OF 27

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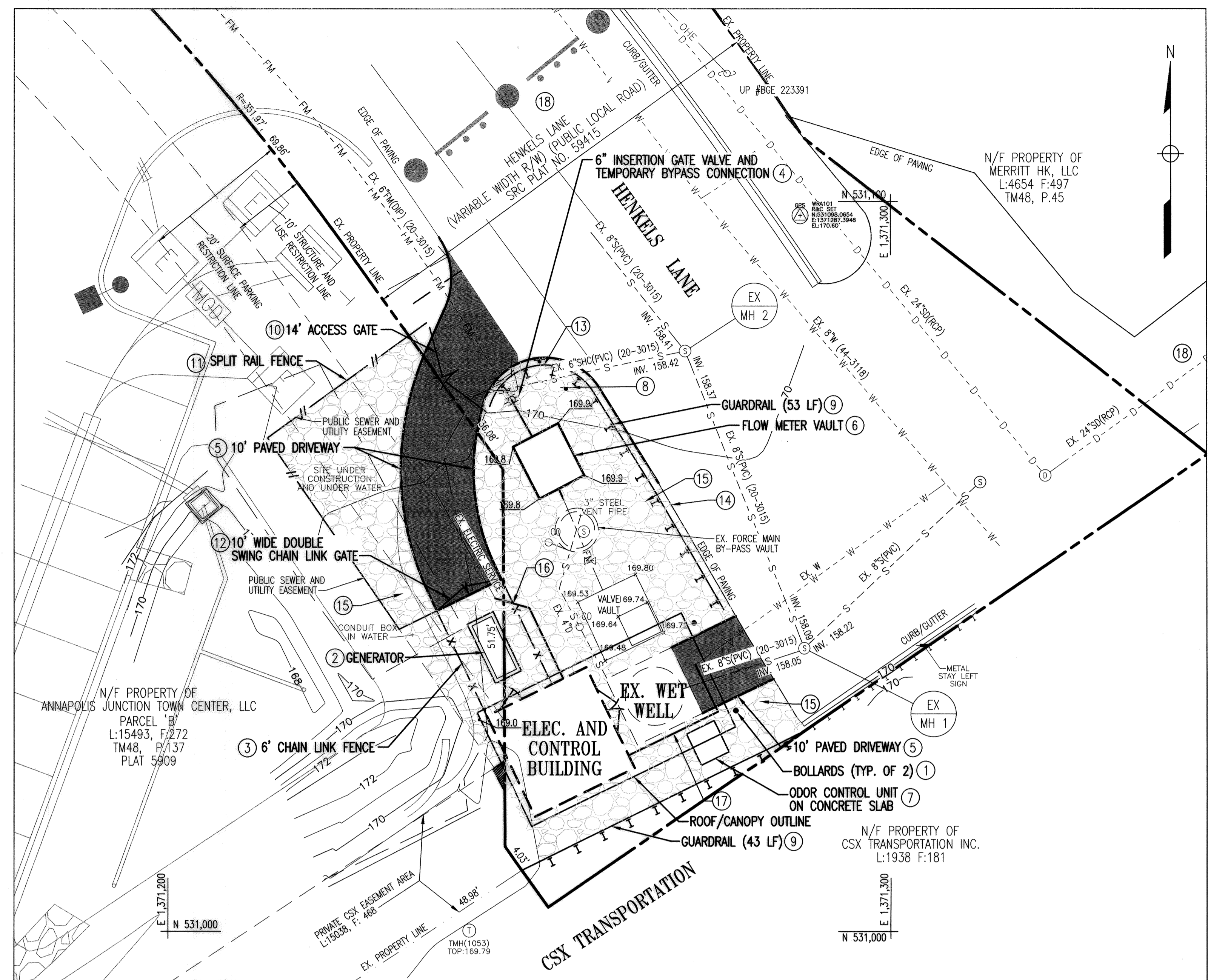




**DEMOLITION PLAN**  
SCALE: 1" = 10'

**DEMOLITION NOTES:**

- ① REMOVE EX. GUARDRAIL
- ② REMOVE EX. GENERATOR AND FENCE
- ③ REMOVE EX. VALVE
- ④ REMOVE EX. 6" FM (APPROX. 15 LF)
- ⑤ REFER TO M-2 FOR BUILDING DEMOLITION.
- ⑥ REMOVE AND RELOCATE EX. COUNTY SIGN

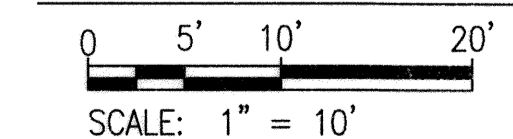


**SITE PLAN**  
SCALE: 1" = 10'

**CONSTRUCTION NOTES:**

- ① INSTALL BOLLARDS, SEE DETAIL ON DRAWING C-2.
- ② INSTALL GENERATOR, SEE ELECTRICAL PLANS FOR DETAILS. PROVIDE 4' OF CLEARANCE AROUND THE GENERATOR.
- ③ INSTALL 6'-0" CHAIN LINK FENCE, SEE HOWARD COUNTY STD. DET. G-7.21.
- ④ INSTALL 6" INSERTION GATE VALVE AND TEMPORARY BYPASS CONNECTION, SEE DETAIL ON DRAWING C-2.
- ⑤ INSTALL 10' WIDE PAVED DRIVEWAY, SEE HOWARD COUNTY STD. DET. R-2.01 SECTION P-3 (CBR 3 TO <5).
- ⑥ INSTALL FLOW METER VAULT, SEE MECHANICAL PLANS FOR DETAILS.
- ⑦ INSTALL ODOR CONTROL UNIT, SEE SHEETS S-2 AND M-3 FOR PLANS AND DETAILS.
- ⑧ RELOCATED COUNTY SIGN.
- ⑨ INSTALL GUARDRAIL, SEE DETAIL ON DRAWING C-2.
- ⑩ INSTALL 14' ACCESS GATE, SEE DETAIL ON DRAWING C-2.
- ⑪ INSTALL SPLIT RAIL FENCE, SEE DETAIL ON DRAWING C-2.
- ⑫ INSTALL 10' WIDE DOUBLE SWING CHAIN LINK GATE. SEE HOWARD COUNTY STANDARD DETAIL G-7.23.
- ⑬ INSTALL AN OM3-R OBJECT MARKER ON THE GUARDRAIL WHERE SHOWN.
- ⑭ AFTER CONSTRUCTION IS COMPLETE, REPAINT THE 5" WHITE LINE ALONG THE EDGE OF PAVING TO THE EXISTING CURB AND GUTTER AT THE END OF THE ROAD.
- ⑮ INSTALL 6" OF CRUSHER RUN.
- ⑯ INSTALL NEW ELECTRICAL SERVICE.
- ⑰ INSTALL NEW 2" WATER SERVICE.
- ⑱ PROVIDE TEMPORARY ROAD CLOSURE DURING CONSTRUCTION FOR HENKELS LANE AND ACCESS ALLEY BEHIND N/F PROPERTY OF MERRITT HK, LLC USING ROAD CLOSED SIGN, R11-2 48"x30" (10 S.F.) BK/W MOUNTED ON TYPE III BARRICADE.

**GRAPHIC SCALE**



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 27029, EXPIRATION DATE: 1/25/20

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

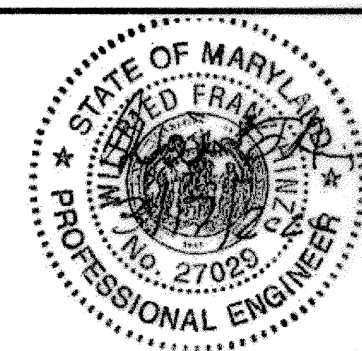
*[Signature]* 3/26/20  
DIRECTOR OF PUBLIC WORKS DATE

*[Signature]* 3/26/20  
CHIEF, BUREAU OF UTILITIES DATE

*[Signature]* 3/26/20  
CHIEF, BUREAU OF ENGINEERING DATE

*[Signature]* 3/26/20  
CHIEF, UTILITY DESIGN DIVISION DATE

**WRA**  
Whitman, Requardt & Associates, LLP  
801 South Caroline Street, Baltimore, Maryland 21231



DES:	FJB			
DRN:	GWG			
CHK:	WFH			
BY	NO.	REVISION	DATE	

DEMOLITION AND SITE PLAN

600' SCALE MAP NO. 48    BLOCK NO. 19

ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE  
CAPITAL PROJECT NO. S6294  
CONTRACT NO. 20-4954

6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

**C-1**

SCALE AS SHOWN

SHEET 3 OF 27





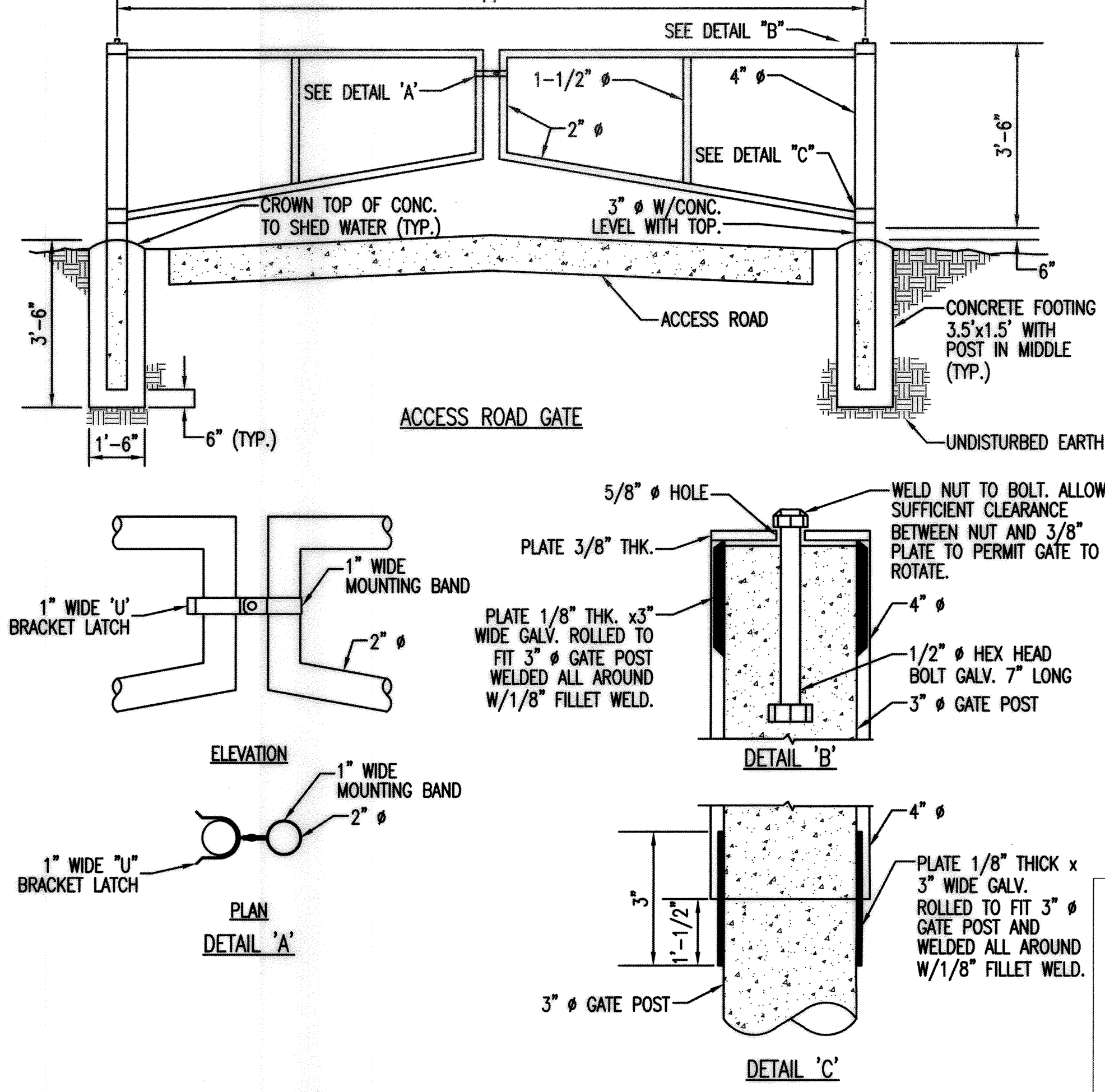
**EROSION AND SEDIMENT CONTROL PLAN**  
SCALE: 1" = 10'

**NOTES:**

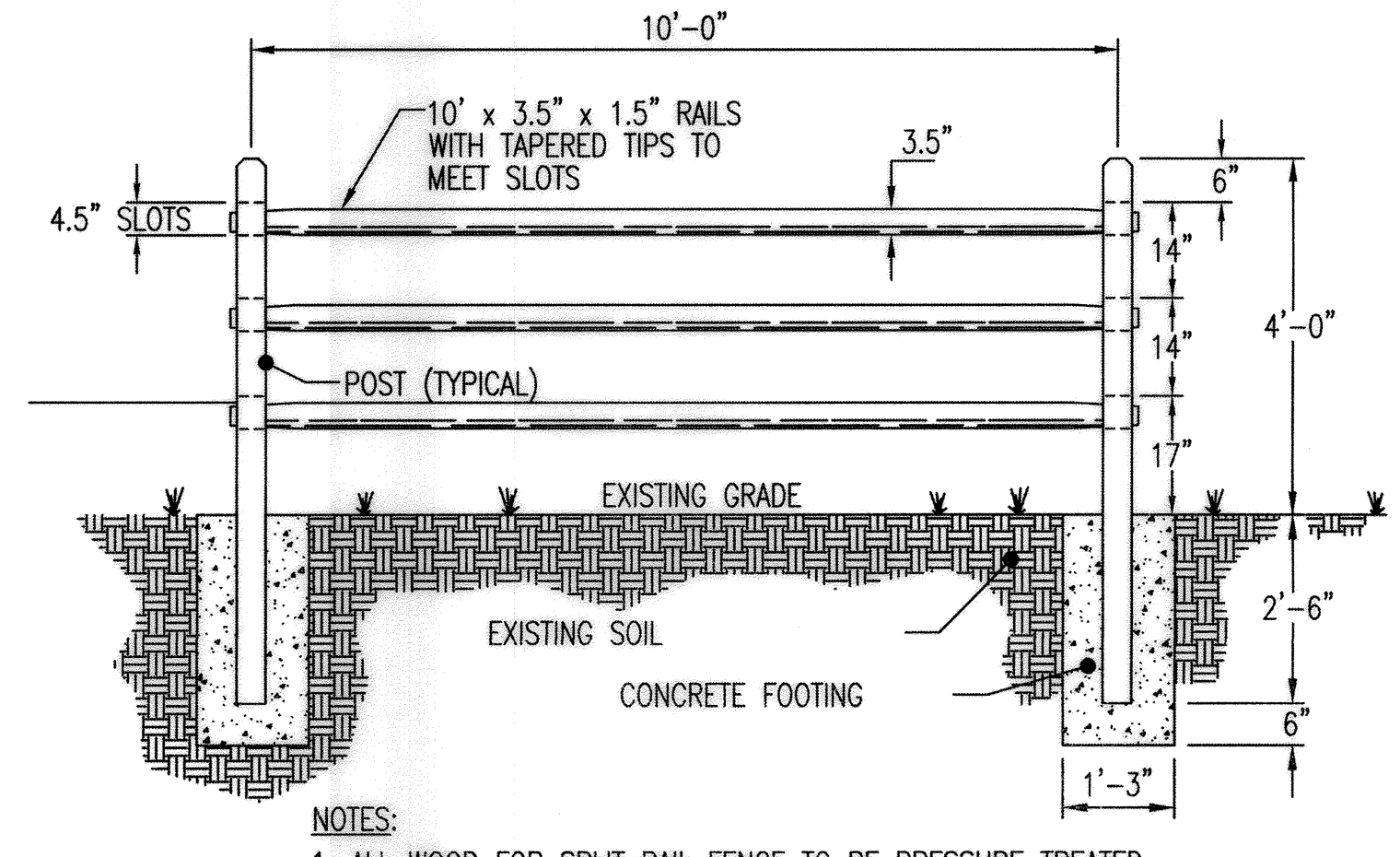
- 1. INSTALL SILT FENCE

**SITE ANALYSIS:**  
 TOTAL AREA OF SITE: 0.07 ACRES  
 AREA DISTURBED: 0.07 ACRES  
 AREA TO BE PAVED: 0.01 ACRES  
 AREA TO BE VEGETATIVELY STABILIZED: 0.0 ACRES  
 TOTAL CUT: 78 CU. YDS  
 TOTAL FILL: 62 CU. YDS

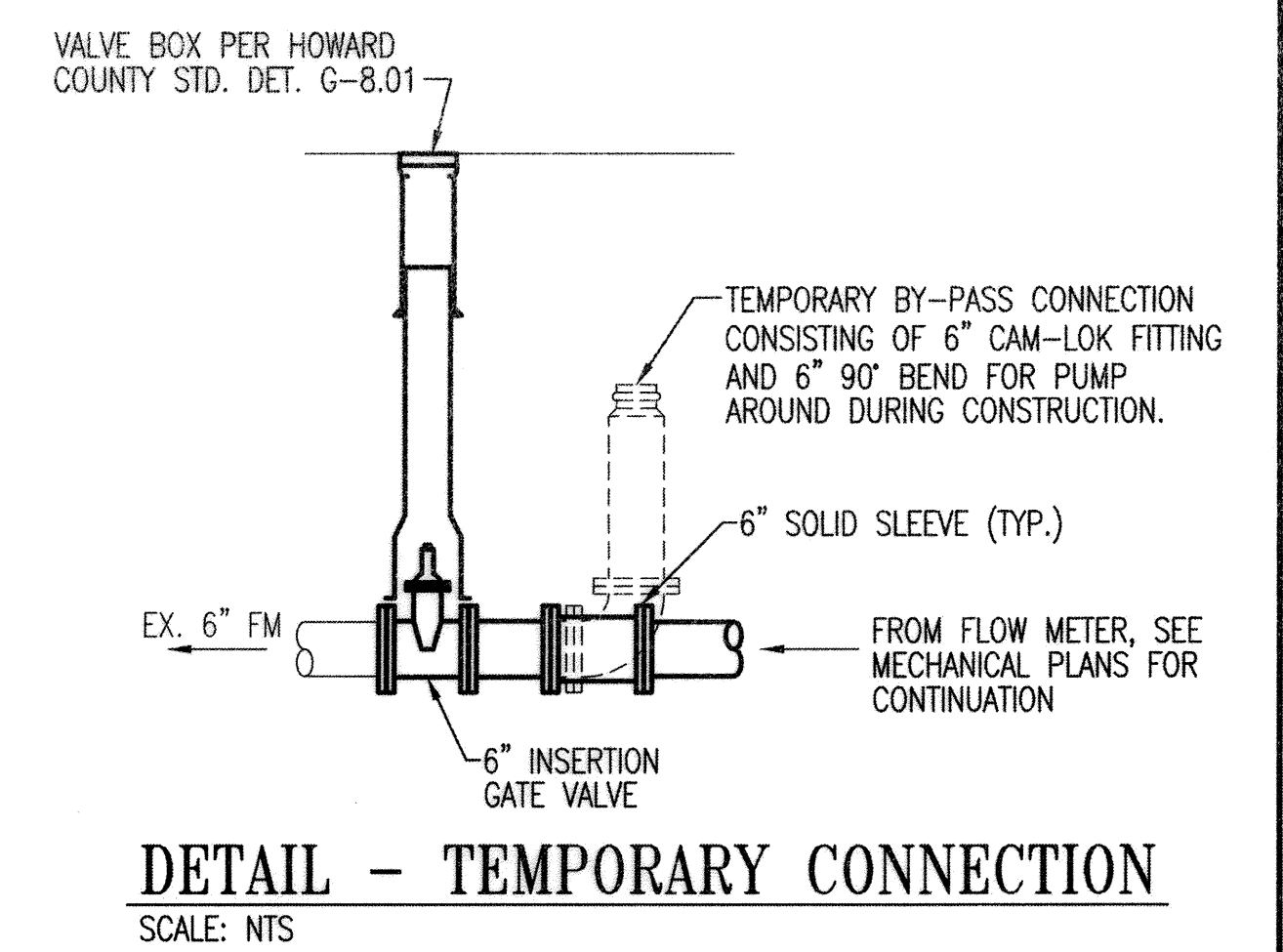
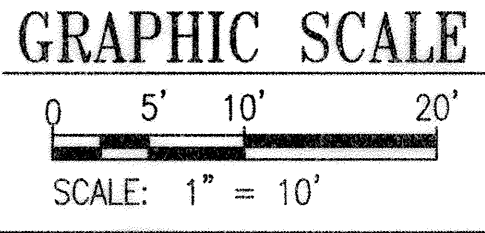
- NOTES**
1. ALL METAL USED IN THE MANUFACTURE OF THE ACCESS ROAD GATE TO BE HOT DIP GALVANIZED. ALL WELDS & PIPE TO BE PAINTED AND TOUCHED UP IN ACCORDANCE WITH STANDARD SPECIFICATION AND IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
  2. ALL JOINTS TO BE WELDED ALL AROUND WITH 3/16" WELDS.
  3. ALL PIPE TO BE SCHEDULE 40 STEEL. DIAMETERS SHOWN ARE NOMINAL PIPE SIZE.
  4. PADLOCK WILL BE FURNISHED BY HOWARD COUNTY.
  5. CONTRACTOR SHALL PROVIDE ADDITIONAL 2" Ø RODS. LOCATE TO HOLD GATE IN AN OPEN POSITION WITH LATCHES.
  6. GATE TO SWING IN TOWARDS HOWARD COUNTY'S PUBLIC SEWER AND UTILITY EASEMENT
  7. WIDTH OF GATE NOT TO EXCEED 16 FEET.



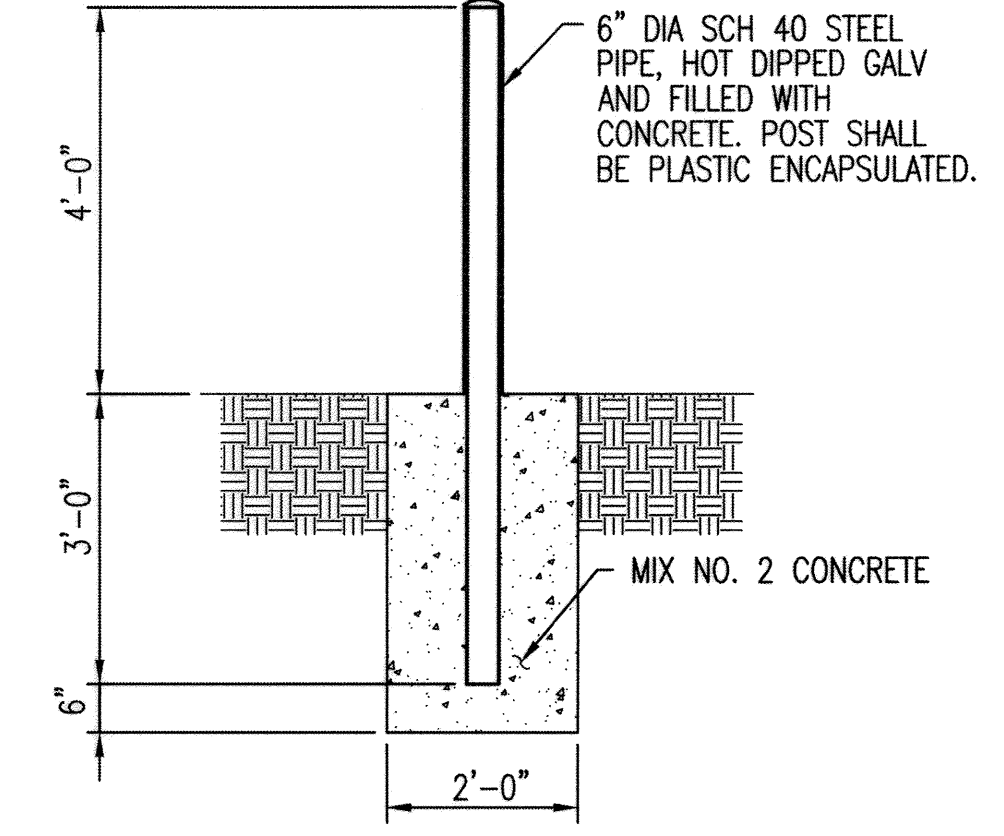
**DETAILS - ACCESS GATE**  
SCALE: NONE



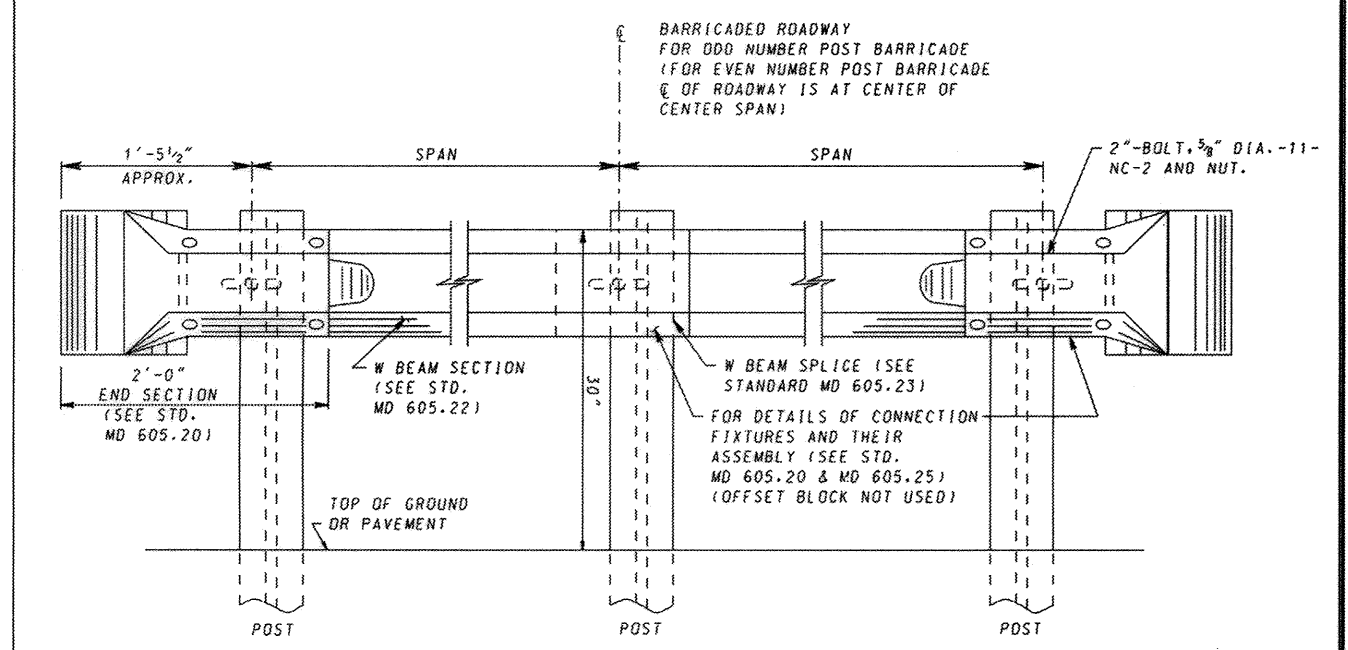
**DETAIL - SPLIT RAIL FENCE**  
SCALE: NTS



**DETAIL - TEMPORARY CONNECTION**  
SCALE: NTS



**DETAIL - BOLLARD**  
SCALE: NTS



**NOTE**  
 TRAFFIC BARRIER W BEAM BARRICADE SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAR FOOT. THE CONTRACT PRICE DID NOT INCLUDE THE FURNISHING AND INSTALLATION OF ALL POSTS, W BEAM, POST AND SPLICE RODS WITH NUTS, END SECTIONS, GALVANIZING, THE COST OF ALL EXCAVATION, BACKFILLING AND TAMPING INCIDENTAL TO SETTING THE POSTS, OR THE COST OF DRIVING THE POSTS, THE COST OF THE REMOVAL OF EXISTING PAVEMENT WHERE NECESSARY, AS WELL AS THE COST OF ALL LABOR, APPROVED TOOLS AND EQUIPMENT INCIDENTAL TO FURNISHING AND INSTALLING THE BARRICADE AT LOCATIONS NOTED ON THE PLANS OR WHERE DIRECTED BY THE ENGINEER. FOR MATERIAL, SEE LATEST S.W.A. SPECIFICATIONS FOR TRAFFIC BARRIER W BEAM.

SPECIFICATION	CATEGORY CODE ITEMS	<b>Maryland Department of Transportation</b> <b>STATE HIGHWAY ADMINISTRATION</b> STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES <b>TRAFFIC BARRIER W BEAM BARRICADE</b> STANDARD NO. MD 605.27
605		
APPROVED	<i>Kyle M...</i>	<b>C-2</b> SCALE AS SHOWN SHEET 4 OF 27
APPROVED	<i>Mon...</i>	
APPROVED	<i>Paul...</i>	
APPROVED	<i>...</i>	

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 27029, EXPIRATION DATE: 1/25/20

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

*Director* PUBLIC WORKS DATE *3-24-2020*  
 CHIEF, BUREAU OF UTILITIES DATE

*Chief* BUREAU OF ENGINEERING DATE *3/24/20*  
 CHIEF, UTILITY DESIGN DIVISION DATE

**Whitman, Reardon & Associates, LLP**  
 801 South Caroline Street, Baltimore, Maryland 21231



DES:	FJB			
DRN:	GWG			
CHK:	WFH			
BY:	NO.	REVISION	DATE	

EROSION AND SEDIMENT CONTROL PLAN,  
 AND CIVIL DETAILS

600' SCALE MAP NO. 48 BLOCK NO. 19

ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE  
 CAPITAL PROJECT NO. S6294  
 CONTRACT NO. 20-4954  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

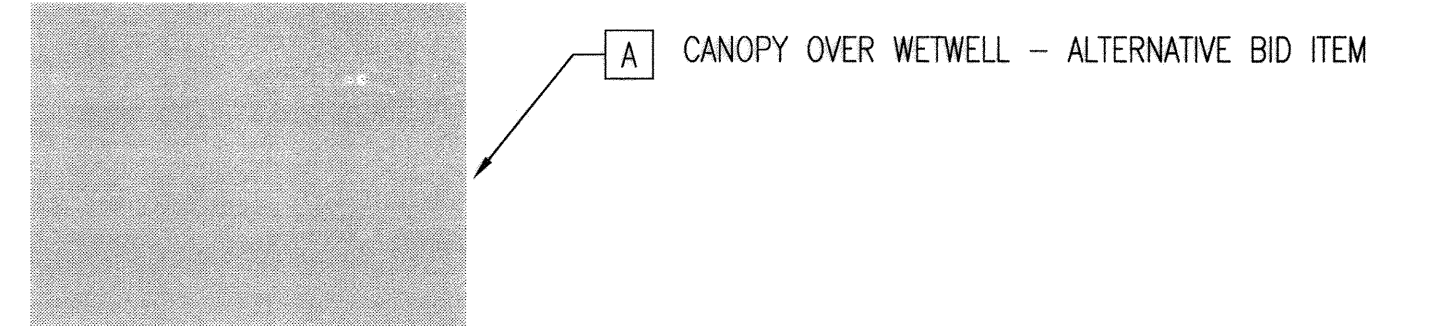
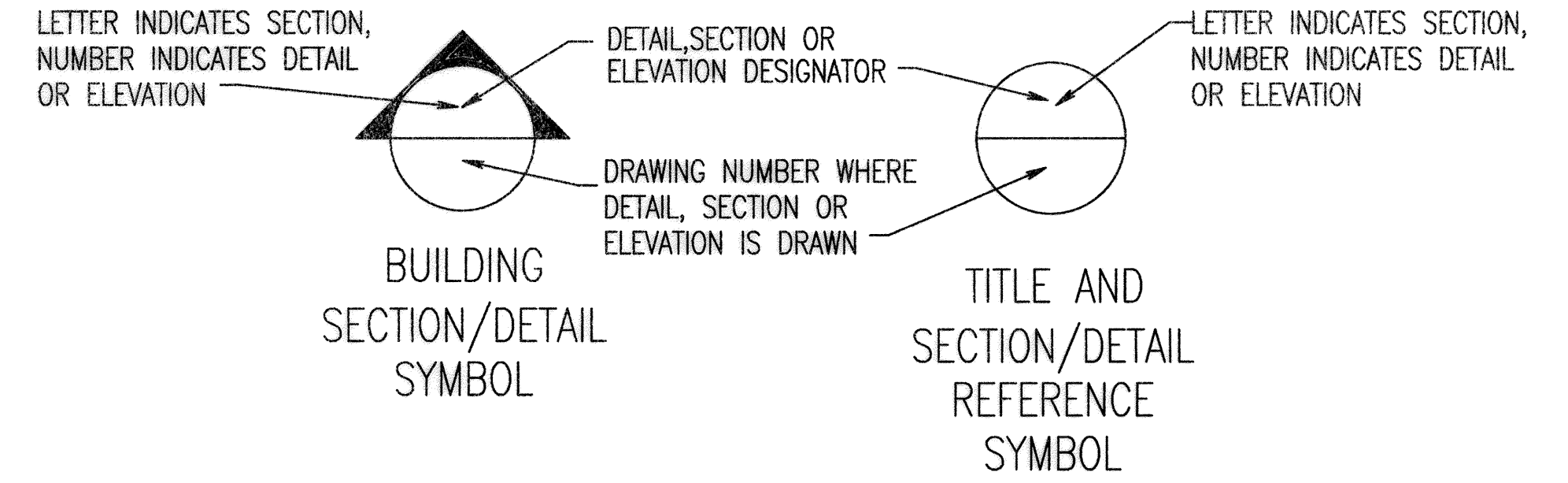


ARCHITECTURAL/STRUCTURAL ABBREVIATIONS

ABV ABOVE	F FILLER	OPNG OPRNG
AC AIR CONDITIONING (CONDITIONER)	FC FAN COIL UNIT	OPP OPPOSITE
AD ACCESS DOOR (OR PANEL)	FD FLOOR DRAIN OR FIRE DAMPER	OZ OUNCE
ADA AMERICAN WITH DISABILITIES ACT	FDR FOLDING DOOR (WOOD OR FABRIC)	PAV PAVER TILE
ADD ADDENDUM	FE FIRE EXTINGUISHER ON BRACKET	PC PIECE
ADJ ADJACENT	FG FIBERGLASS	PF PLASTIC FABRICATION
AES ABOVE EXISTING SLAB	FE FIRE EXTINGUISHER	PL PLATE
AF ACCESS FLOOR	FEC FIRE EXTINGUISHER CABINET	PLAM PLASTIC LAMINATE
AFF ABOVE FINISHED FLOOR	FIN FINISH OR FINISHED	PLAS PLASTER
AHU AIR HANDLING UNIT	FIX FIXTURE	PREFAB PREFABRICATED
ALT ALTERNATE	FL FLASHING	PRES T PRESSURE TREATED
ALUM ALUMINUM	FLM FULL LENGTH MIRROR	PT PAINT
APC ACOUSTICAL PANEL CEILING (LAY-IN)	FLR FLOOR	PTD PAPER TOWEL DISPENSER
APPROX APPROXIMATE	FR FIRE RATED	PTN PARTITION
ARCH ARCHITECTURAL	FRC FIBER-REINFORCED COATING	PVC POLYVINYL CHLORIDE
ASB ASBESTOS	FS FOLDING SHOWER SEAT	QT QUARRY TILE
ASP ASPHALT	FSS FOOT OR FEET	QTY QUANTITY
ATC ACOUSTICAL TILE CEILING (CONCEALED SUSPENSION)	FT FOOTING	R RISER OR RADIUS
AWP ACOUSTICAL WALL PANEL	FTG FABRIC-WRAPPED PANEL (FABRICATED; TACKABLE; ACOUSTICAL PANEL)	RB RESILIENT WALL BASE AND ACCESSORIES (VINYL BASE; RUBBER BASE; TREADS; NOSINGS; EDGINGS)
BB BULLETIN BOARD (GLASS COVERED)	FWP	RCP REINFORCED CONCRETE PIPE
BC BOTTOM OF CURB	GA GAUGE	RD ROOF DRAIN OR ROUND
BD BOARD	GALV GALVANIZED	REQ'D REQUIRED
BEN BENCH	GB GRAB BAR	RESIL RESILIENT FLOORING (VINYL; RUBBER; VINYL COMPOSITION TILE; SHEET FLOORING)
BETW BETWEEN	GEN GENERAL	REBAR REINFORCING BAR
BLDG BUILDING	GL GLASS	REINF REINFORCED OR REINFORCING
BLKG BLOCKING	GLM GLASS UNIT MASONRY (GLASS BLOCK)	RESF RESINOUS FLOORING
BM BEAM	GMU GLAZED MASONRY UNIT	REQ'D REQUIRED
BOT BOTTOM	GRD GROUND	RET RETURN
BR BRICK	GP GYPSUM PLASTER	REV REVISION
BR/S BACKER ROD AND SEALANT	GRT GROUT	RH ROBE HOOK
C CONDUIT	GVP GYPSUM VENEER PLASTER	RM ROOM
C/C CENTER TO CENTER	GYPB GYPSUM BOARD (WALL OR CEILING)	RO ROUGH OPENING
CB CHALKBOARD	GYPBS GYPSUM BOARD SHAFT-WALL ASSEMBLY	RWR RECESSED WASTE RECEPTACLE
CAB CABINET	H HEAD	RV ROOF VENT
CARP CARPET	HB HORIZONTAL BLIND	RX REMOVE EXISTING
CARPT CARPET TILE	HDW HARDWARE	S SILL, SOUTH OR SINGLE
CEM CEMENT	HM HOLLOW METAL	SC SPECIAL COATING (OTHER THAN PAINT SYSTEMS)
CER CERAMIC	HOR HORIZONTAL	SCH SCHEDULE OR SCHEDULED
CI CAST IRON	HP HIGH POINT	SCR SHOWER CURTAIN ROD
CG CORNER GUARD	HR HOUR	SD SOAP DISPENSER OR STORM DRAIN
CH CEILING HEIGHT	HT HEIGHT	SECT SECTION
CJ CONTROL JOINT	HTR HEATER	SF SQUARE FLOOR
CL CENTERLINE	HVAC HEATING, VENTILATION AND AIR CONDITIONING	SFT STRUCTURAL FACING TILE
CLOS CLOSET	HW HOT WATER	SH SHOWER
CLG CEILING	ID INSIDE DIAMETER	SHT SHEET
CLR CLEAR	IN INCH	SIM SIMILAR
CMP CORRUGATED METAL PIPE	INSUL INSULATION	SJ STEEL JOIST
CMU CONCRETE MASONRY UNIT	INT INTERIOR	SND SANITARY NAPKIN DISPOSAL
CO CLEAR OPENING	INV INVERT	SOD SECTIONAL OVERHEAD DOOR
COL COLUMN	J JAMB	SPEC SPECIFICATIONS
COMP COMPACTED	JC JANITOR'S CLOSET	SP STAND PIPE
CONC CONCRETE	JT JOINT	SQ SQUARE
CONSTR CONSTRUCTION	KIT KITCHEN	SS STAINLESS STEEL OR SERVICE SINK
CONT CONTINUOUS	L LINTEL	SSM SOLID SURFACE MATERIAL
CONV CONVECTOR	LAB LABORATORY	STAT STATIONARY
CR COLD ROLLED	LAV LAVATORY	STL STEEL
CSK COUNTERSUNK	LG LONG	STRUCT STRUCTURAL OR STRUCTURE
CSPE CHLOROSULFONATED POLYETHYLENE ELASTOMER	LIN LINOLEUM FLOOR COVERING	SUSP SUSPENDED
CT CERAMIC TILE	LLV LOG LEG VERTICAL	SWR SURFACE-MOUNTED WASTE RECEPTACLE
CTR COUNTER	LOC LOCATION	SYS SYSTEM
CW COLD WATER	LOCK LOCKER	T TILE
CX CONNECT TO EXISTING	LP LOW POINT	TOB TOWEL BAR
D DOUBLE	LT LIGHT	T&B TOP & BOTTOM
DEG DEGREE	LTG LIGHTING	T&G TONGUE & GROOVE
DEMO DEMOLITION	LV LOUVER	TC TOP OF CURB
DET DETAIL	M MIRROR OR MEN	TCB TOILET SEAT COVER DISPENSER
DF DRINKING FOUNTAIN	MACH MACHINE	TEL TELEPHONE
DIA DIAMETER	MAS MASONRY	TER TERRAZZO
DIR DIRECTORY	MATL MATERIAL	TH THICK
DN DOWN	MAX MAXIMUM	TO TOP OF
DO DOOR OPENING	MC MEDICINE CABINET	TOS TOP STEEL
DR DOOR	MDF MEDIUM DENSITY FIBERBOARD	TOW TOP OF WALL
DS DOWNSPOUT	MFB FIBERBOARD	TP TOILET PARTITION (WATER CLOSET; URINAL; SHOWER; SCREEN)
DWG DRAWING	MECH MECHANICAL	TR TREAD
E EAST	MET METAL	TYP TYPICAL
EA EACH	MFR MANUFACTURER	U UNIT
EF EACH FACE	MH MANHOLE	UNO UNLESS NOTED OTHERWISE
EFS EXTERIOR FINISH SYSTEM	MIN MINIMUM	UR URINAL
EIFS EXTERIOR INSULATION AND FINISH SYSTEM	MISC MISCELLANEOUS	V VENT
EJ EXPANSION JOINT	MK MARK	VB VERTICAL BLIND
EL ELEVATION	MO MASONRY OPENING	VDB VISUAL DISPLAY BOARD (HINGED CONFERENCE UNIT)
ELEC ELECTRIC OR ELECTRICAL	MP METAL PANEL	VERT VERTICAL
ELEV ELEVATOR	MR MOUNTED	VEST VESTIBULE
EM ENTRY MAT	MTD MOUNTED	VIF VERIFY IN FIELD
EP ETHYLENE PROPYLENE-BASED (SINGLE PLY ROOFING)	MTL METAL	VP VAPOR BARRIER
EPB ELECTRICAL PANEL BOX	N NORTH	VS VERTICAL STANDPIPE
EPDM ETHYLENE-PROPYLENE-DIENE MEMBRANE	NA NOT APPLICABLE	W WOMEN, WIDTH, WEST OR WOVEN
EPS EXPANDED POLYSTYRENE	ND SANITARY NAPKIN DISPENSER	W/ WITH
EPX EPOXY	NIC NOT IN CONTRACT	WC WATER CLOSET OR WALL COVERING (VINYL OR TEXTILE COVERING; WALL PAPER)
EQ EQUAL	NO NUMBER	WD WOOD
EQUIP EQUIPMENT	NOM NOMINAL	WH WEEP HOLE
EST ESTIMATE	NTS NOT TO SCALE	WHT WHITE
EUH ELECTRIC UNIT HEATER	OA OVERALL	WO WINDOW OPENING
EW EACH WAY	OC ON CENTER	WP WATERPROOF OR WORKING POINT
EWC ELECTRIC WATER COOLER	OD OUTSIDE DIAMETER	WR WATER RESISTANT OR WASTE RECEPTACLE
EWCA ELECTRIC WATER COOLER - ACCESSIBLE	OFF OFFICE	
EXIST EXISTING	OHD OVERHEAD COILING DOOR	
EXP EXPANSION OR EXPOSED		
EXT EXTERIOR		

LEGEND

	BRICK
	CONCRETE MASONRY UNITS
	STRUCTURAL CLAY UNITS
	GYPSUM BOARD PARTITIONS
	WOOD-FINISH GRADE
	WOOD BLOCKING
	RIGID WALL/PERIMETER INSULATION
	RIGID ROOF INSULATION
	BATT INSULATION
	CONCRETE
	POROUS FILL
	EARTH
	METAL PATTERN
	DOOR NUMBER SYMBOL
	LOUVER NUMBER SYMBOL
	WINDOW NUMBER SYMBOL
	ROOM NUMBER SYMBOL
	WALL/BUILDING SECTION SYMBOL
	TITLE AND DETAIL REFERENCE SYMBOL
	PARTITION TYPES
	NUMBER-DRAWING NOTE
	REVISION
	NORTH ARROW (CONSTRUCTION NORTH)



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PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 3466-A, EXPIRATION DATE: 11-24-21.

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND  
 Director of Public Works: *John J. ...* DATE: *3/26/20*  
 Chief, Bureau of Engineering: *Thomas P. ...* DATE: *3/24/20*  
 Chief, Bureau of Utilities: *Paul ...* DATE: *2/10/20*  
 Chief, Utility Design Division: *Paul ...* DATE: *2/10/20*

**Whitman, Reardon & Associates, LLP**  
 801 South Caroline Street, Baltimore, Maryland 21231

ARCHITECTURAL REGISTRATION BOARD  
 2469-A  
 STATE OF MARYLAND

DES: RK			
DRN: PKI			
CHK: DAK			
BY	NO.	REVISION	DATE

ARCHITECTURAL ABBREVIATIONS AND LEGEND  
 60' SCALE MAP NO. 48 BLOCK NO. 19

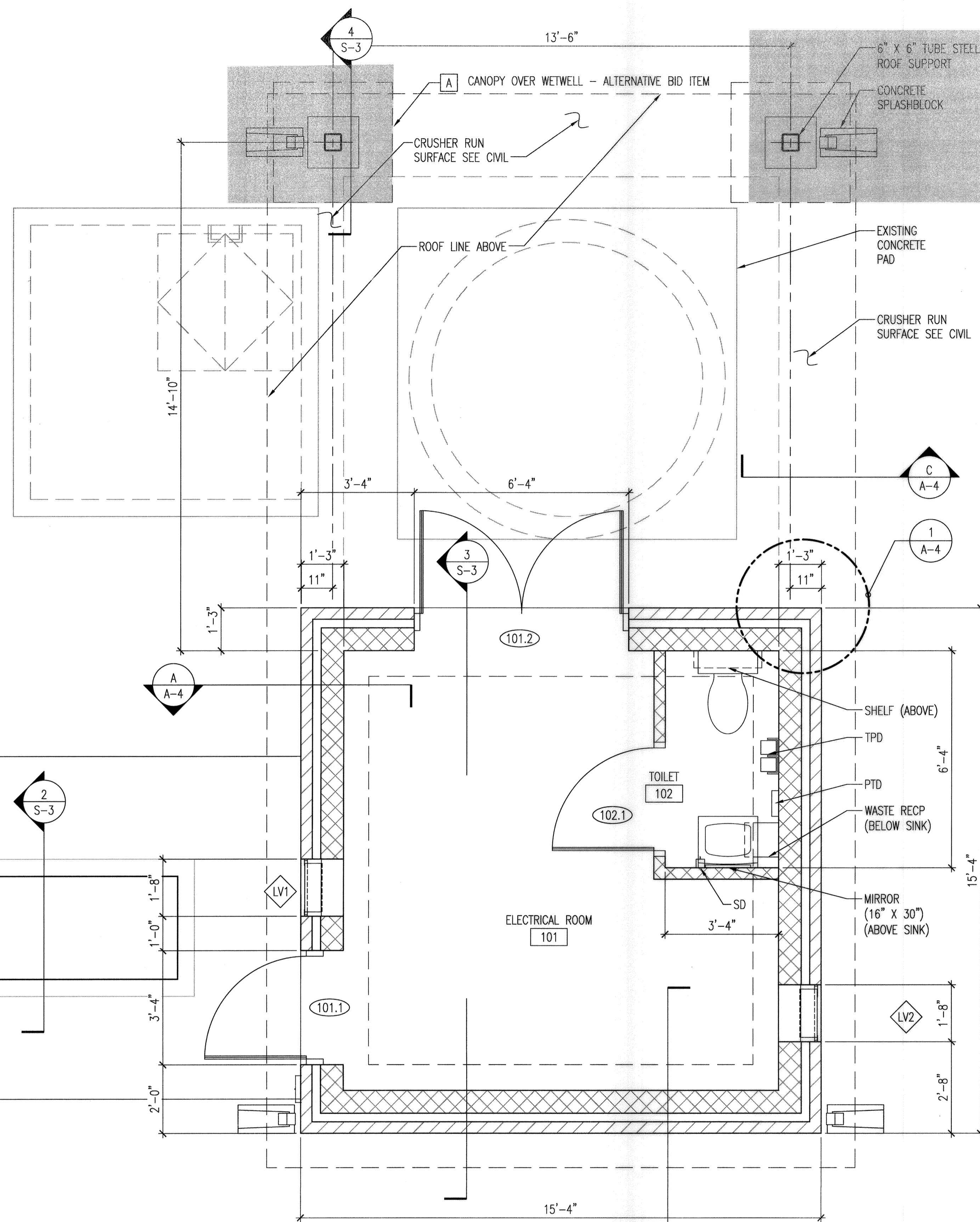
ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE  
 CAPITAL PROJECT NO. S6294  
 CONTRACT NO. 20-4954  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

A-1  
 SCALE AS SHOWN  
 SHEET 5 OF 27

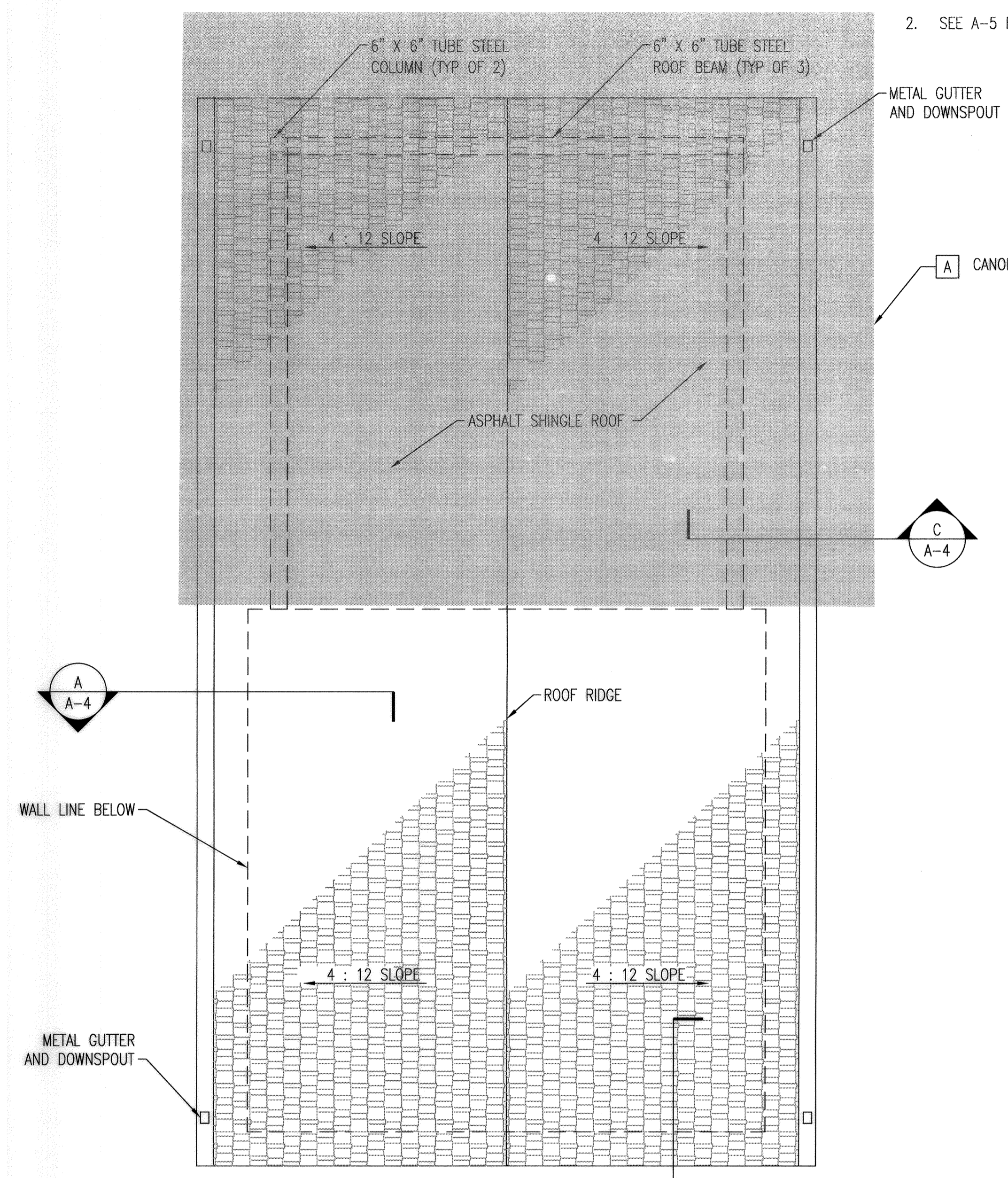


**GENERAL NOTES:**

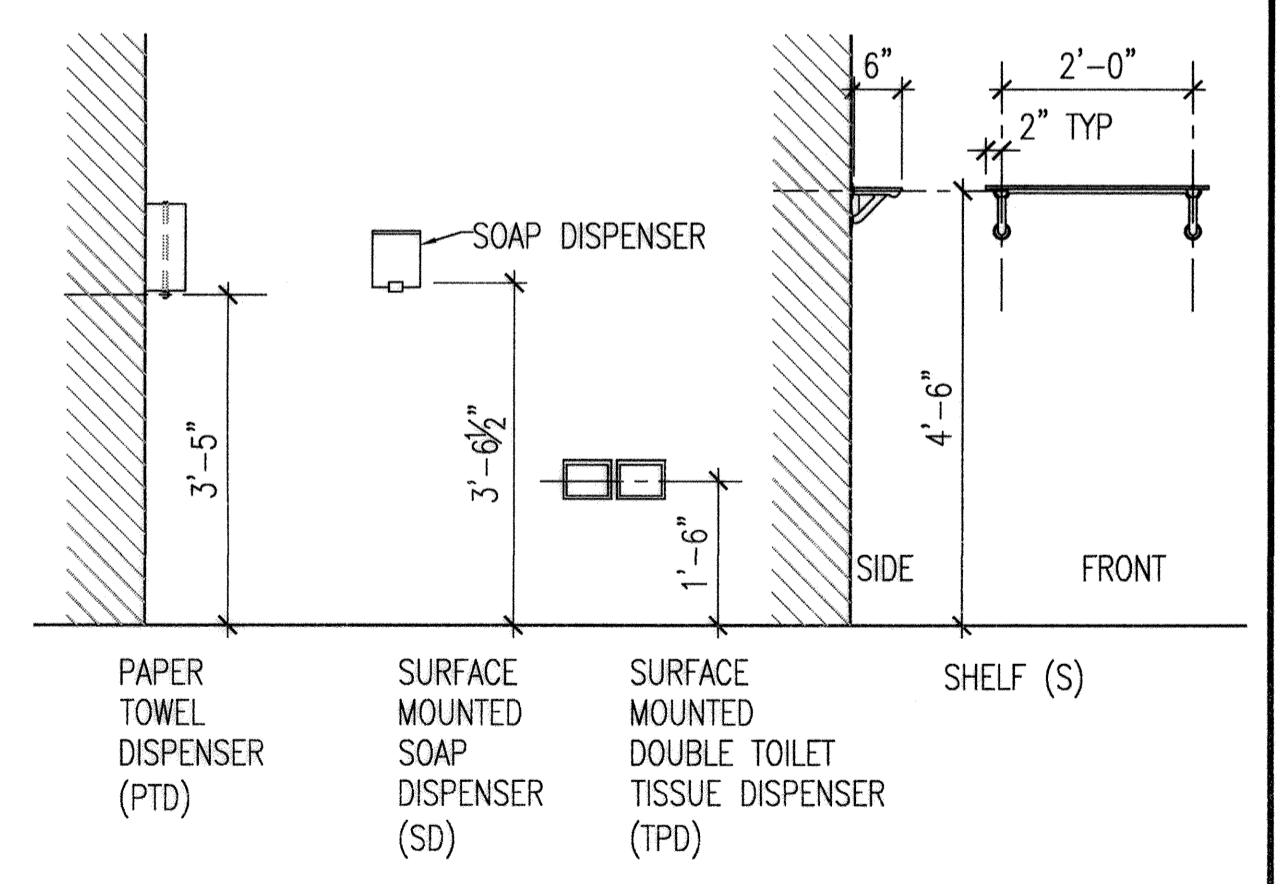
1. CONTRACTOR RESPONSIBLE FOR FIELD VERIFICATION OF ALL DIMENSIONS.
2. SEE A-5 FOR DOOR AND LOUVER SCHEDULES.



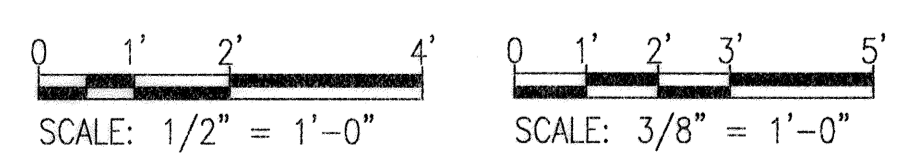
**1 GRADE LEVEL FLOOR PLAN**  
 A-2 SCALE: 1/2" = 1' - 0"  
 REF:



**2 ROOF PLAN**  
 A-2 SCALE: 3/8" = 1' - 0"  
 REF:



**3 TOILET ACCESSORY DETAIL**  
 A-2 SCALE: 1/2" = 1' - 0"  
 REF:



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DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

*John P. [Signature]* 3/24/20  
 DIRECTOR PUBLIC WORKS DATE  
*Thomas P. [Signature]* 3/24/20  
 CHIEF, BUREAU OF ENGINEERING DATE  
*Paul [Signature]* 3/24/20  
 CHIEF, UTILITY DESIGN DIVISION DATE

**WRA**  
 Whitman, Reardon & Associates, LLP  
 801 South Caroline Street, Baltimore, Maryland 21231



DES:	RK			
DRN:	PKI			
CHK:	DAK			
BY:	NO.	REVISION	DATE	

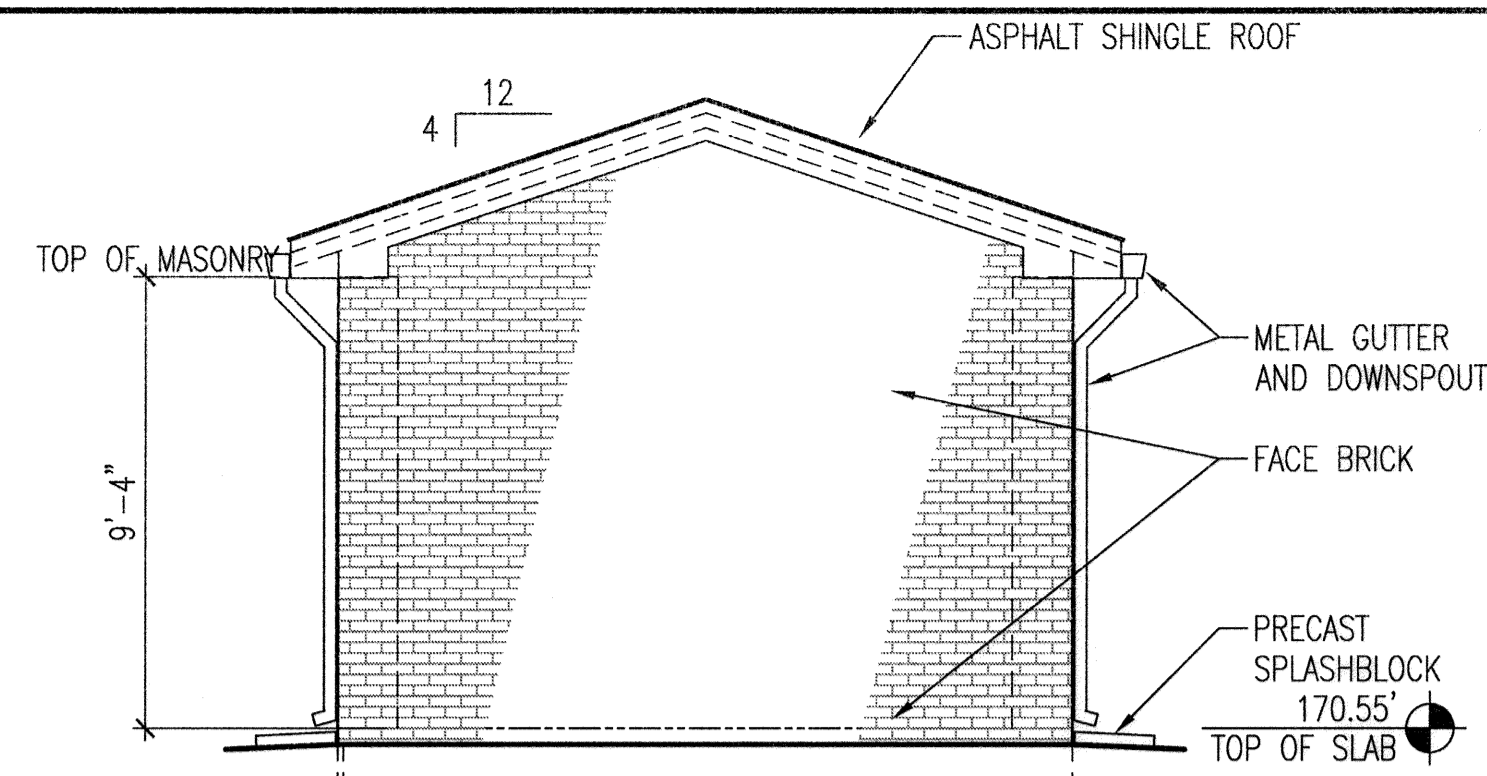
FLOOR PLAN AND ROOF PLAN

600' SCALE MAP NO. 48 BLOCK NO. 19

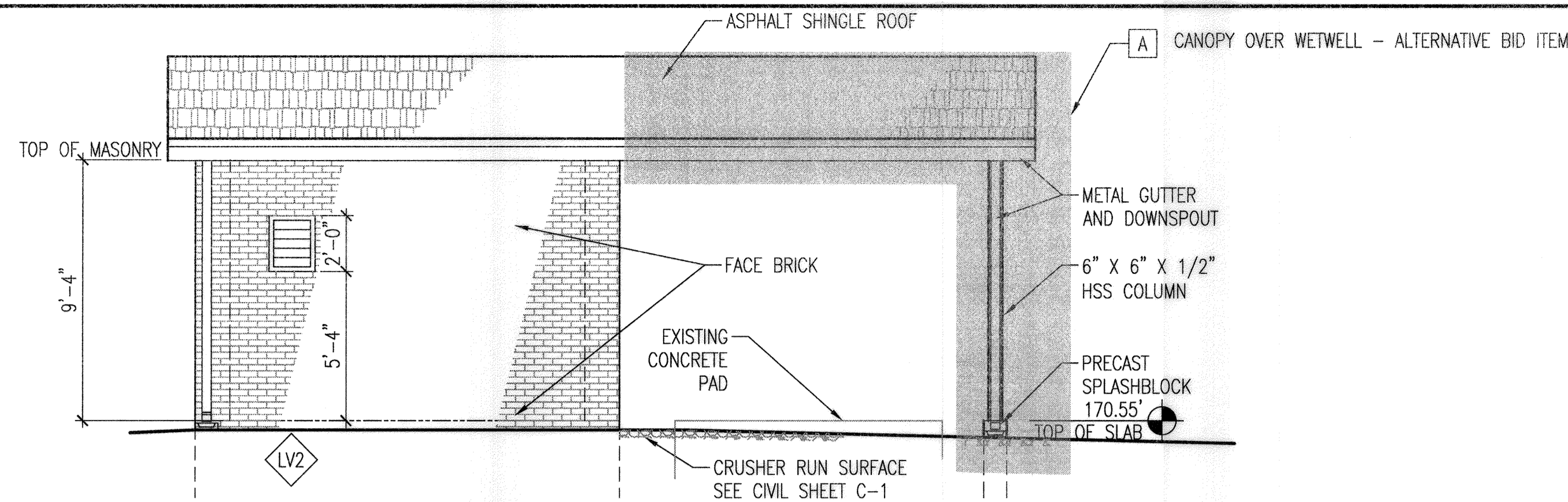
**ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE**  
 CAPITAL PROJECT NO. S6294  
 CONTRACT NO. 20-4954  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

**A-2**  
 SCALE AS SHOWN  
 SHEET 6 OF 27

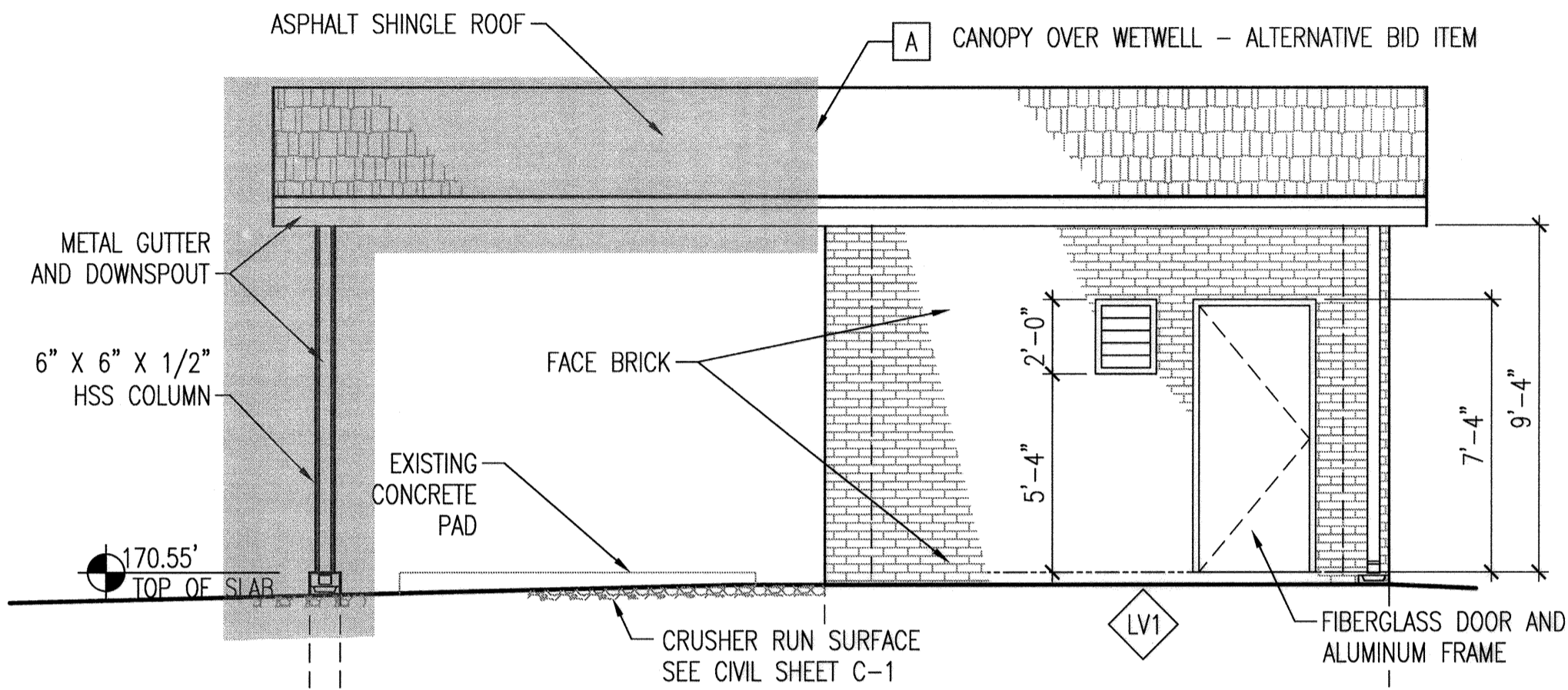




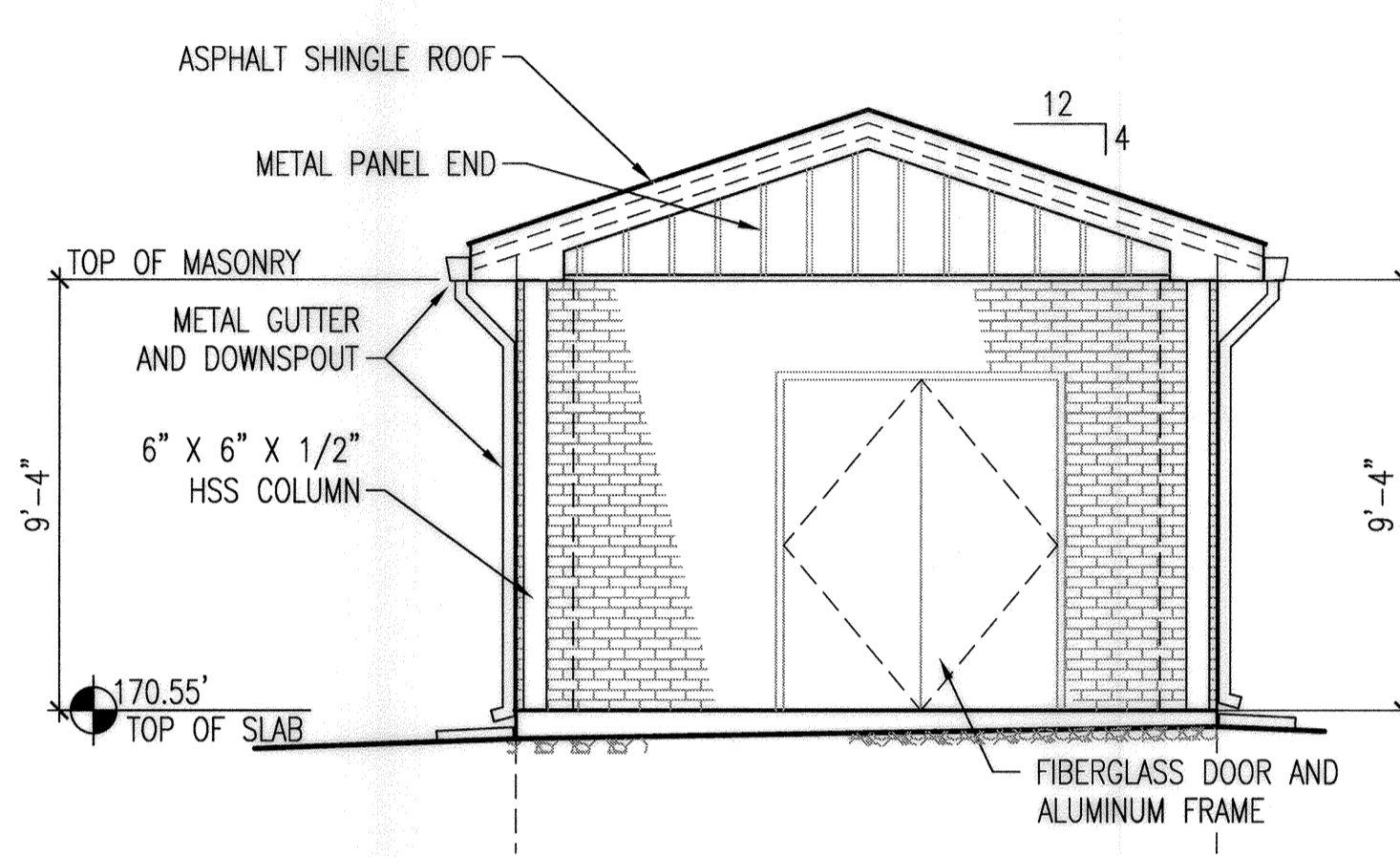
1 NORTH ELEVATION  
A-3 SCALE: 1/4" = 1'-0"  
REF:



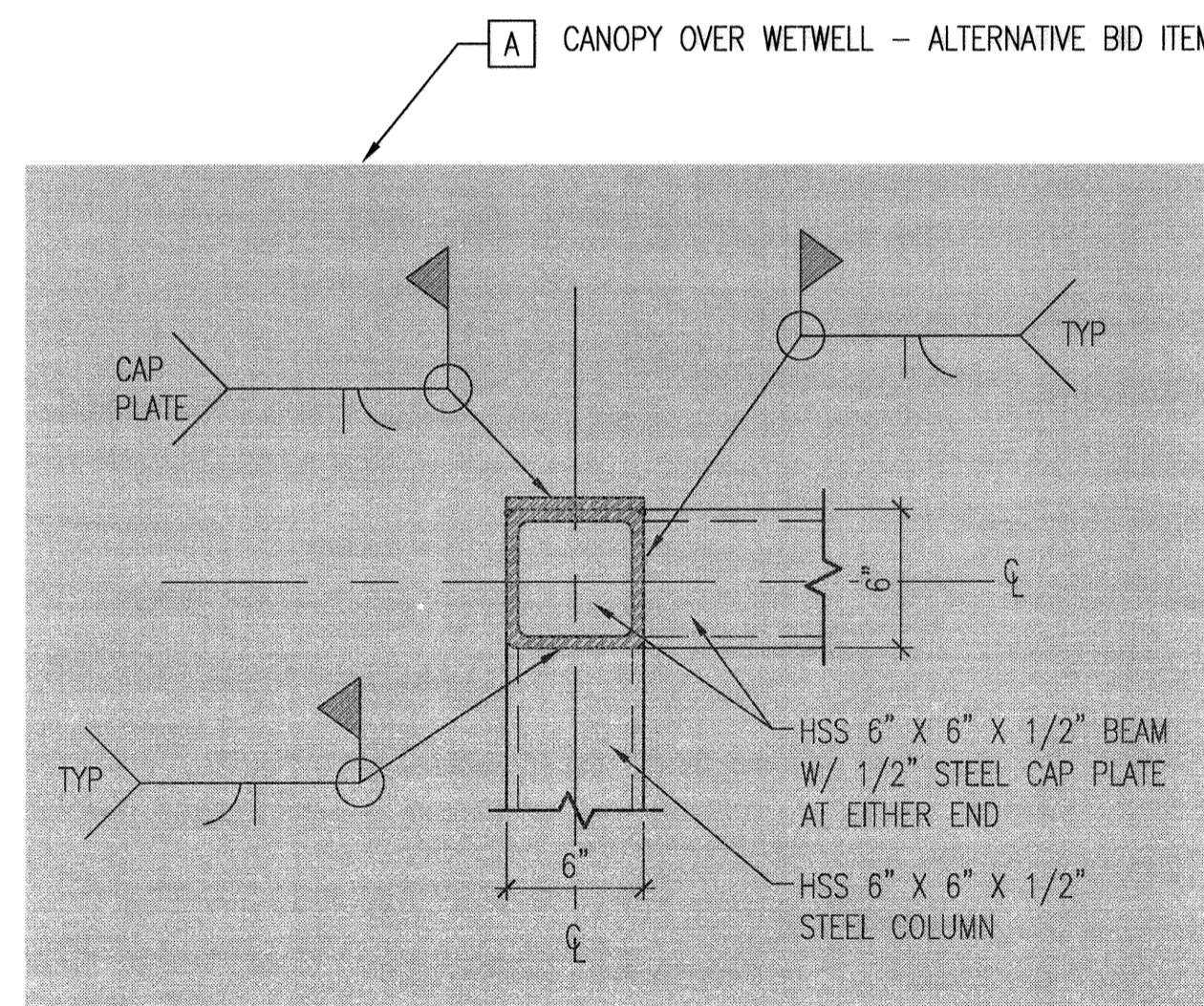
2 EAST ELEVATION  
A-3 SCALE: 1/4" = 1'-0"  
REF:



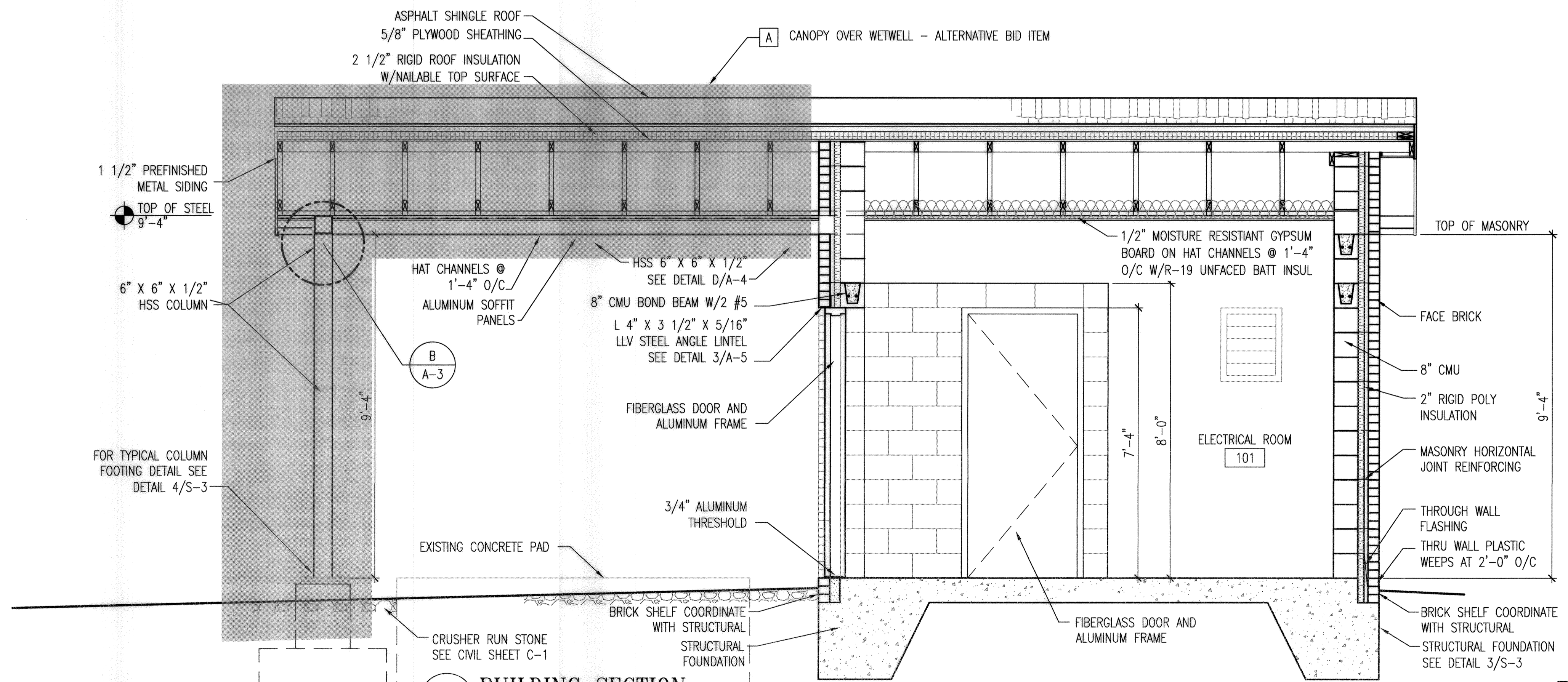
3 WEST ELEVATION  
A-3 SCALE: 1/4" = 1'-0"  
REF:



4 SOUTH ELEVATION  
A-3 SCALE: 1/4" = 1'-0"  
REF:



B DETAIL SECTION  
A-3 SCALE: 1 1/2" = 1'-0"  
REF: A-3



A BUILDING SECTION  
A-3 SCALE: 1/2" = 1'-0"  
REF: A-2

0 4" 8" 16" SCALE: 1 1/2" = 1'-0"  
0 1' 2' 4' SCALE: 1/2" = 1'-0"  
0 2' 4' 8' SCALE: 1/4" = 1'-0"

A-3

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 3466-A, EXPIRATION DATE: 11-24-21.

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
Director of Public Works: *Tommy R. Butler* 3/24/20  
Date: 3-22-2020  
Chief, Bureau of Engineering: *Paul Sheu* 3/25/20  
Date: 3-22-2020  
Chief, Bureau of Utilities: *Paul Sheu* 3/25/20  
Date: 3-22-2020

**WRA**  
Whitman, Reardon & Associates, LLP  
801 South Caroline Street, Baltimore, Maryland 21231



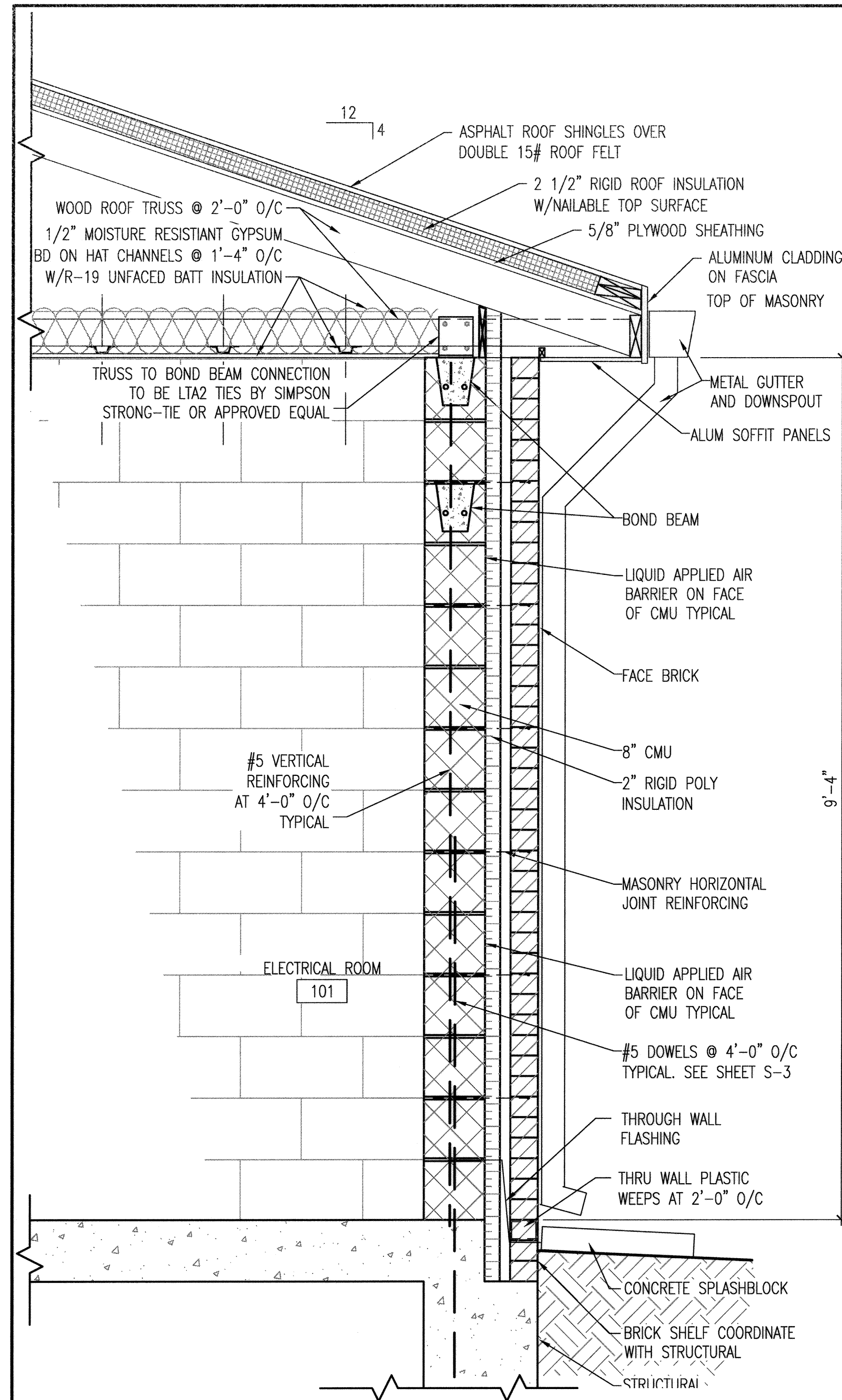
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DRN:	PKI		
CHK:	DAK		
BY:	NO.	REVISION	DATE

BUILDING ELEVATIONS AND BUILDING SECTION  
600' SCALE MAP NO. 48 BLOCK NO. 19

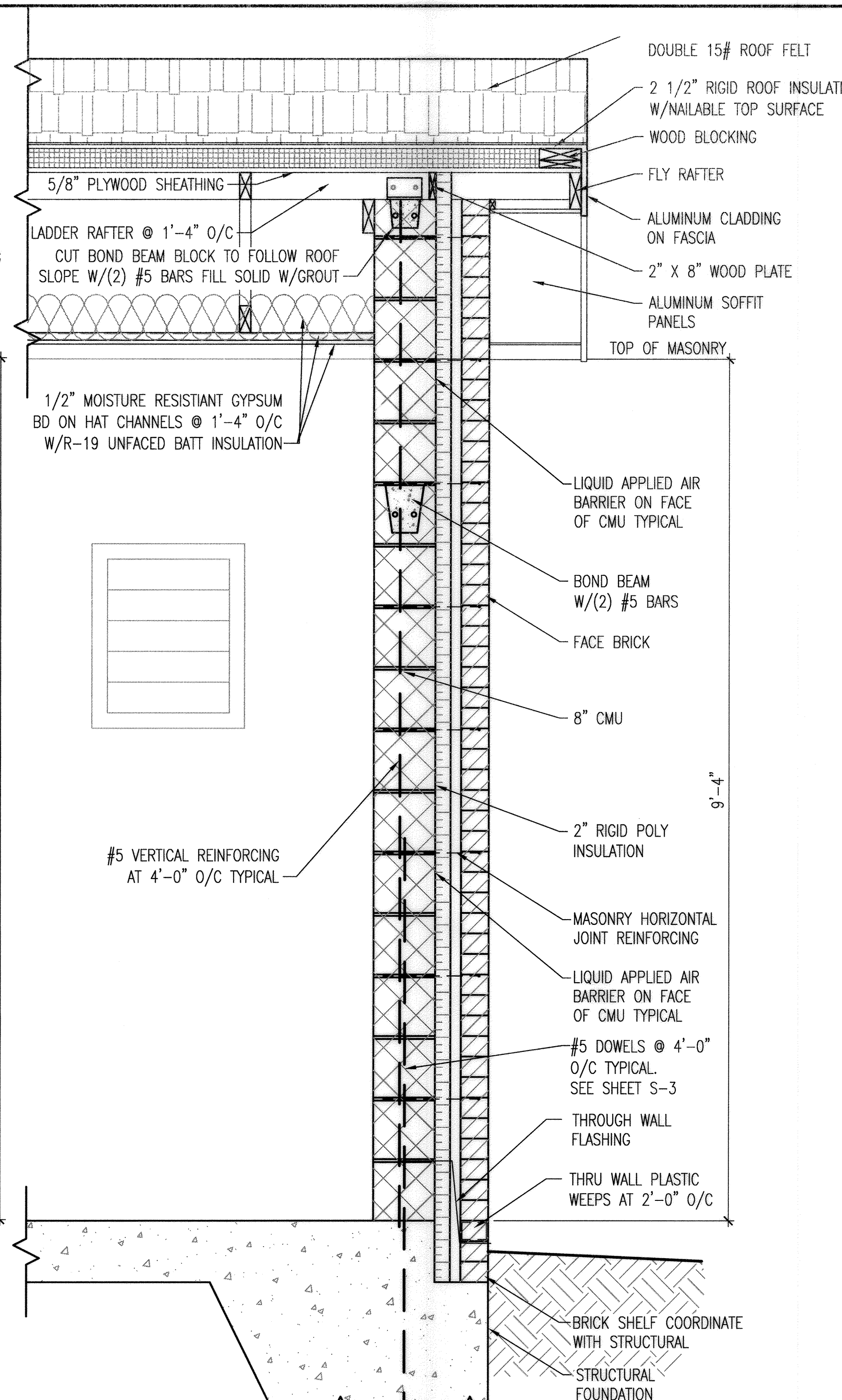
ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE  
CAPITAL PROJECT NO. S6294  
CONTRACT NO. 20-4954  
6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET 7 OF 27

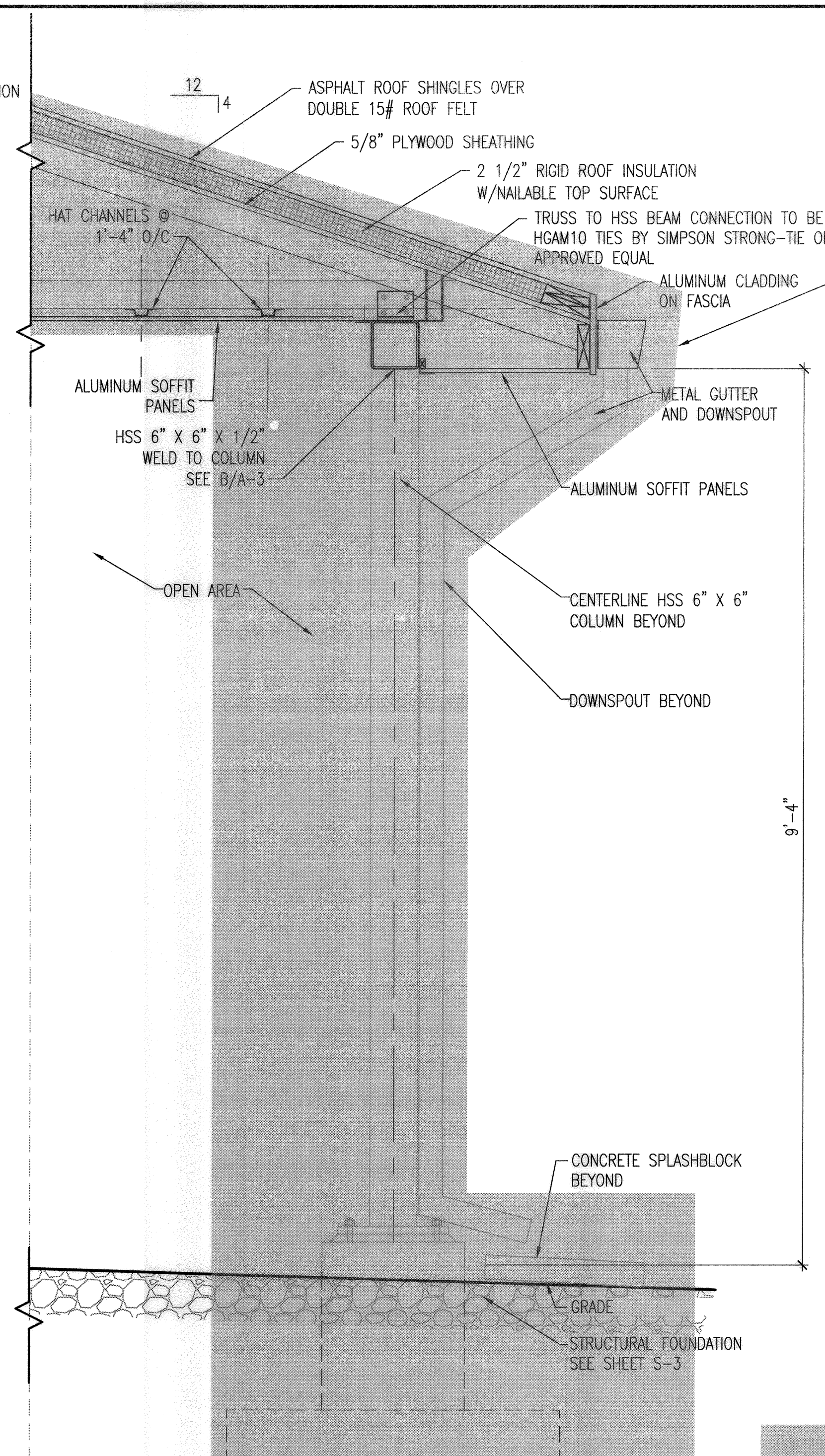




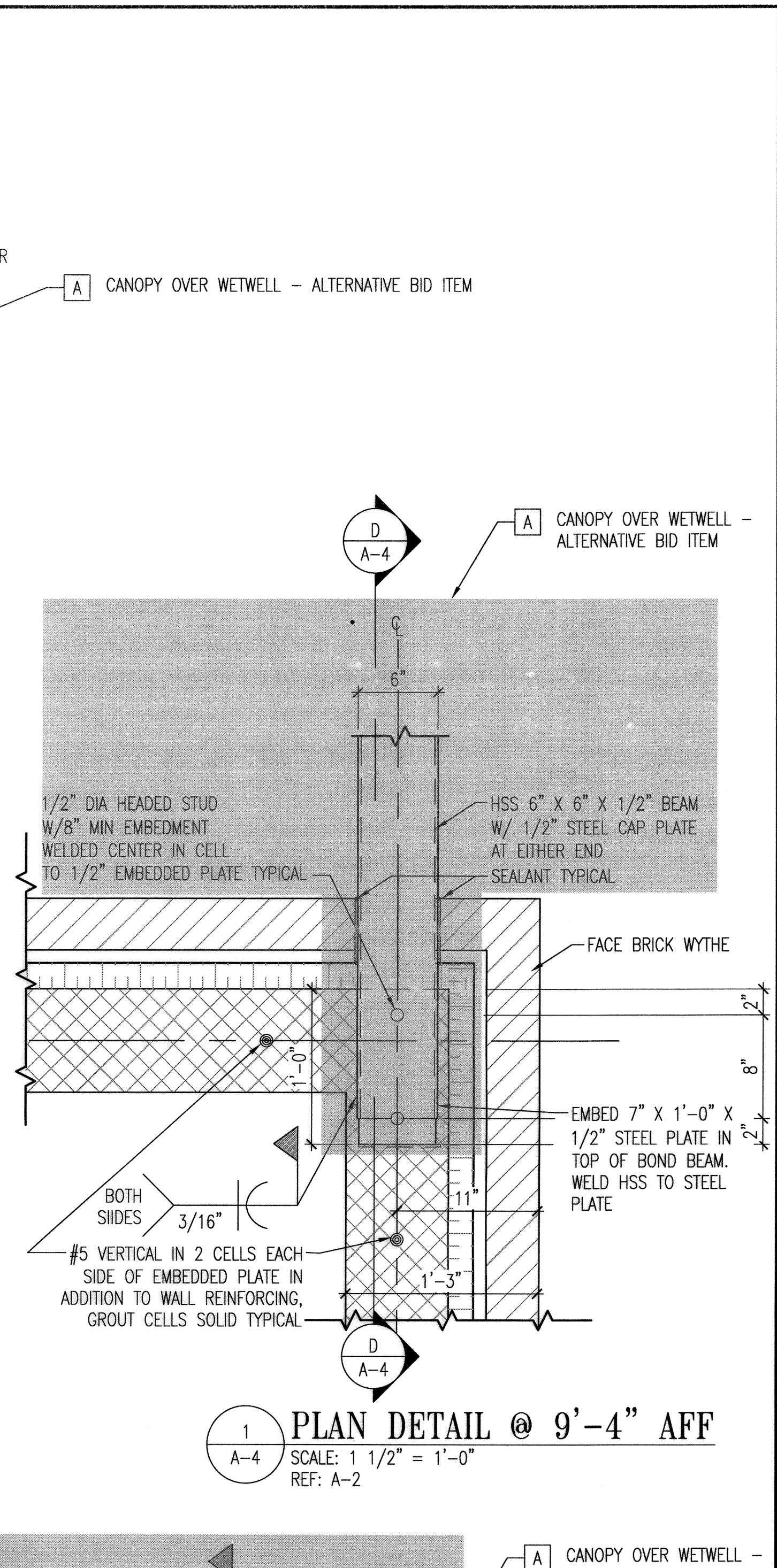
**A WALL SECTION**  
 SCALE: 1" = 1'-0"  
 REF: A-2



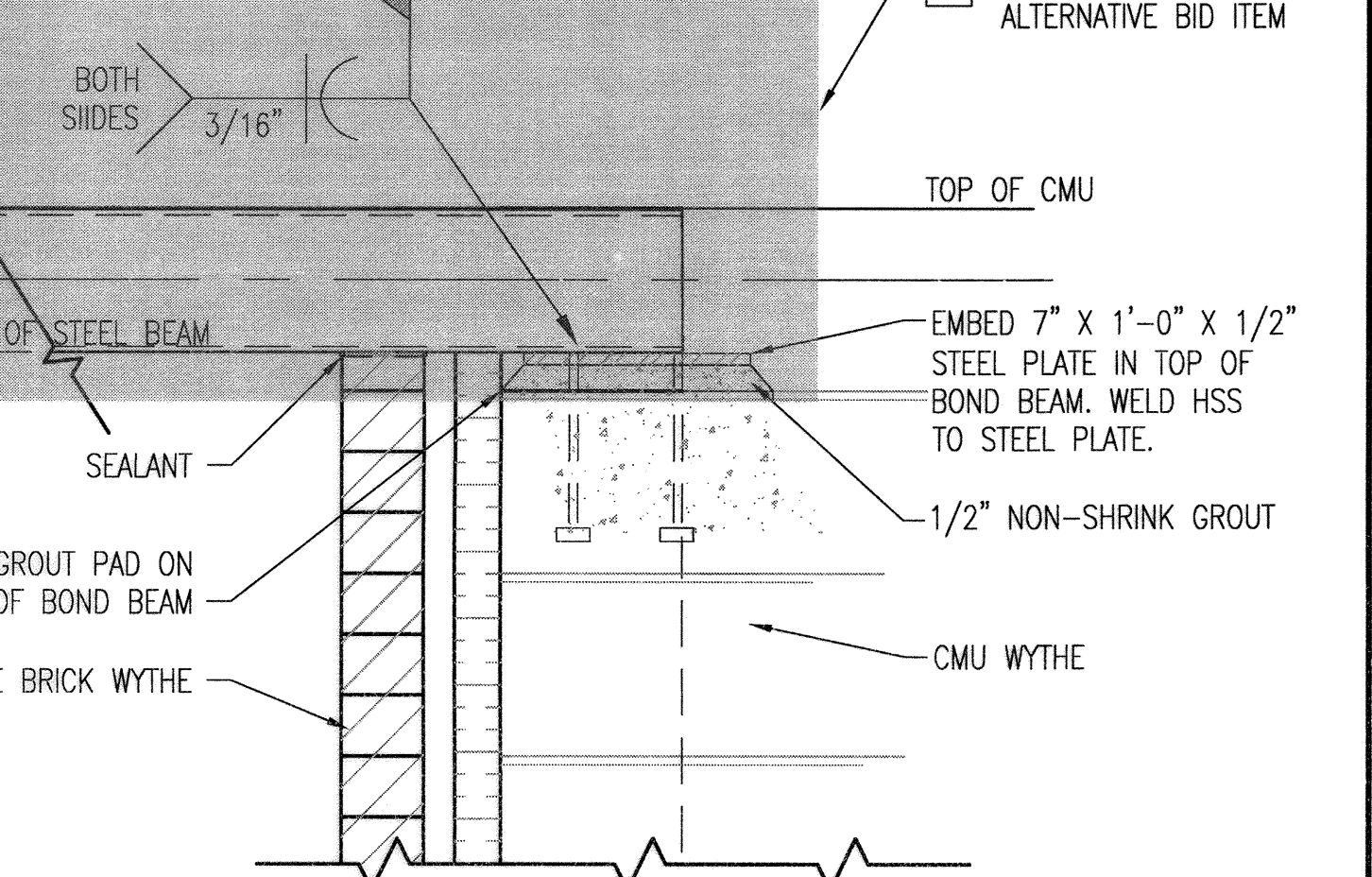
**B WALL SECTION**  
 SCALE: 1" = 1'-0"  
 REF: A-2



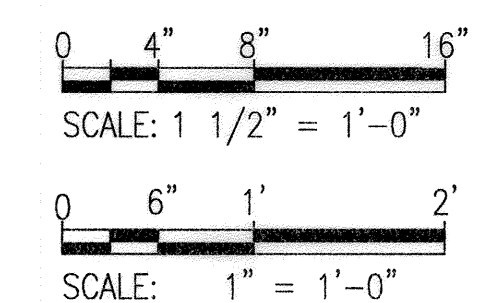
**C WALL SECTION**  
 SCALE: 1" = 1'-0"  
 REF: A-2



**1 PLAN DETAIL @ 9'-4" AFF**  
 SCALE: 1 1/2" = 1'-0"  
 REF: A-2



**D SECTION DETAIL**  
 SCALE: 1 1/2" = 1'-0"  
 REF: A-4



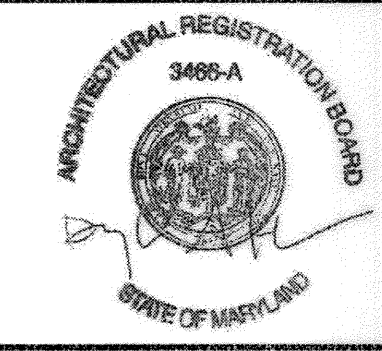
PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 3466-A, EXPIRATION DATE: 11-24-21.

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

*Raymond J. Sullivan* 3/26/20  
 DIRECTOR OF PUBLIC WORKS DATE  
 CHIEF, BUREAU OF ENGINEERING

*Paul J. Sullivan* 3/26/20  
 CHIEF, BUREAU OF UTILITIES DATE  
 CHIEF, UTILITY DESIGN DIVISION

**WRA**  
 Whitman, Requardt & Associates, LLP  
 801 South Caroline Street, Baltimore, Maryland 21231



DES:	RK			
DRN:	PKI			
CHK:	DAK			
BY:	NO.	REVISION	DATE	

WALL SECTIONS AND DETAILS

600' SCALE MAP NO. 48 BLOCK NO. 19

ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE  
 CAPITAL PROJECT NO. S6294  
 CONTRACT NO. 20-4954  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

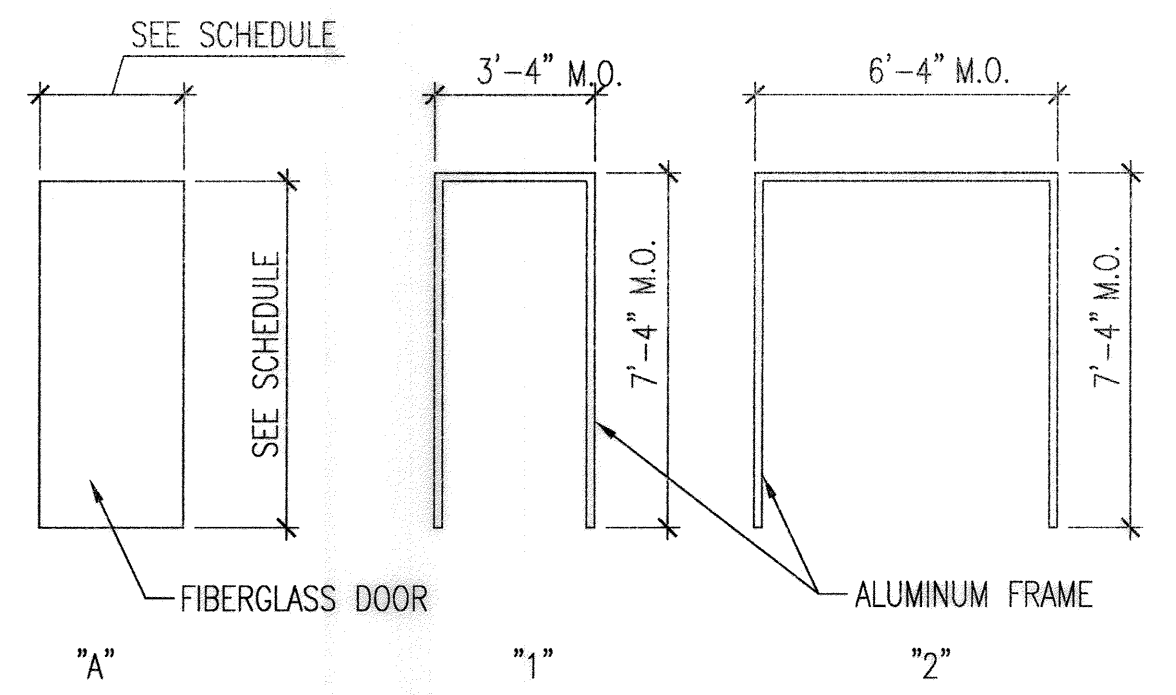
**A-4**  
 SCALE AS SHOWN  
 SHEET 8 OF 27



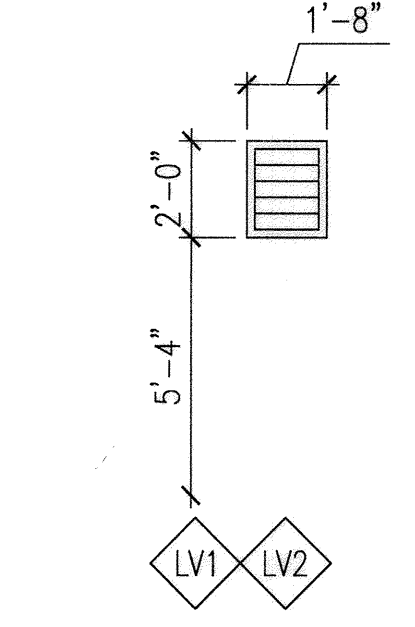
LOCATION	DOOR SCHEDULE															
	DOOR NO	HARDWARE SET	WIDTH X HEIGHT (NOMINAL)	LOCATION	TYPE	MATERIAL	FRAMES			FIRE RATING LABEL	LINTEL	REMARKS	FINISH			
							TYPE	MATERIAL	HEAD	JAMB	SILL				DOOR	FRAME
	101.1	HW-1	3'-0" X 7'-2"	ELECTRICAL ROOM 101	A	FG	1	ALUM	3/A-5	3/A-5	3/A-5	-	-	-	PT	PT
	101.2	HW-2	(2) 3'-0" X 7'-2"	ELECTRICAL ROOM 101	A	FG	2	ALUM	3/A-5	3/A-5	3/A-5	-	-	-	PT	PT
	102.1	HW-3	3'-0" X 7'-2"	TOILET ROOM 102	A	FG	1	ALUM	4/A-5	4/A-5	4/A-5	-	-	-	PT	PT

LOCATION	LOUVER SCHEDULE									
	LOUVER NO	SIZE (L X H)	TYPE	MATERIAL	DEPTH	DETAILS			LINTEL	REMARKS
						HEAD	JAMB	SILL		
	LV-1	1'-8" X 2'-0"	45 DEG	ALUM	6"	5/A-5	5/A-5	5/A-5	-	-
	LV-2	1'-8" X 2'-0"	45 DEG	ALUM	6"	5/A-5	5/A-5	5/A-5	-	-

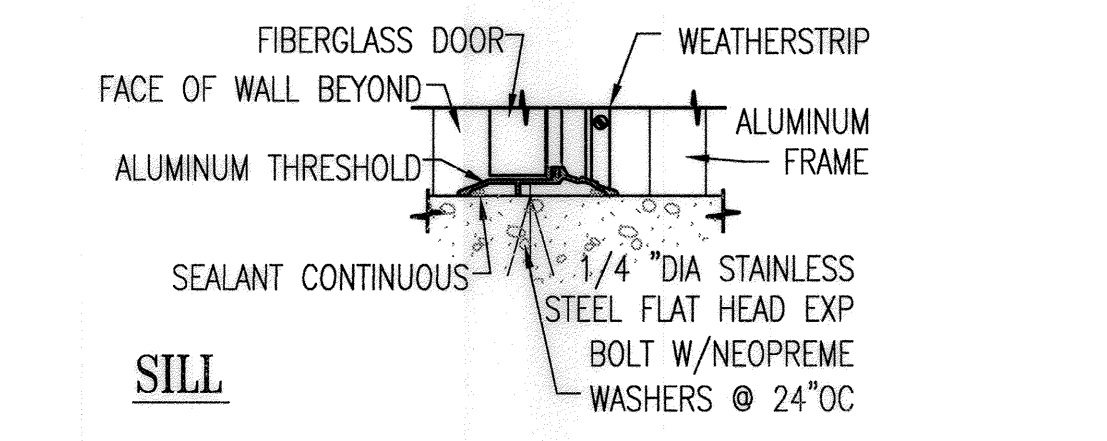
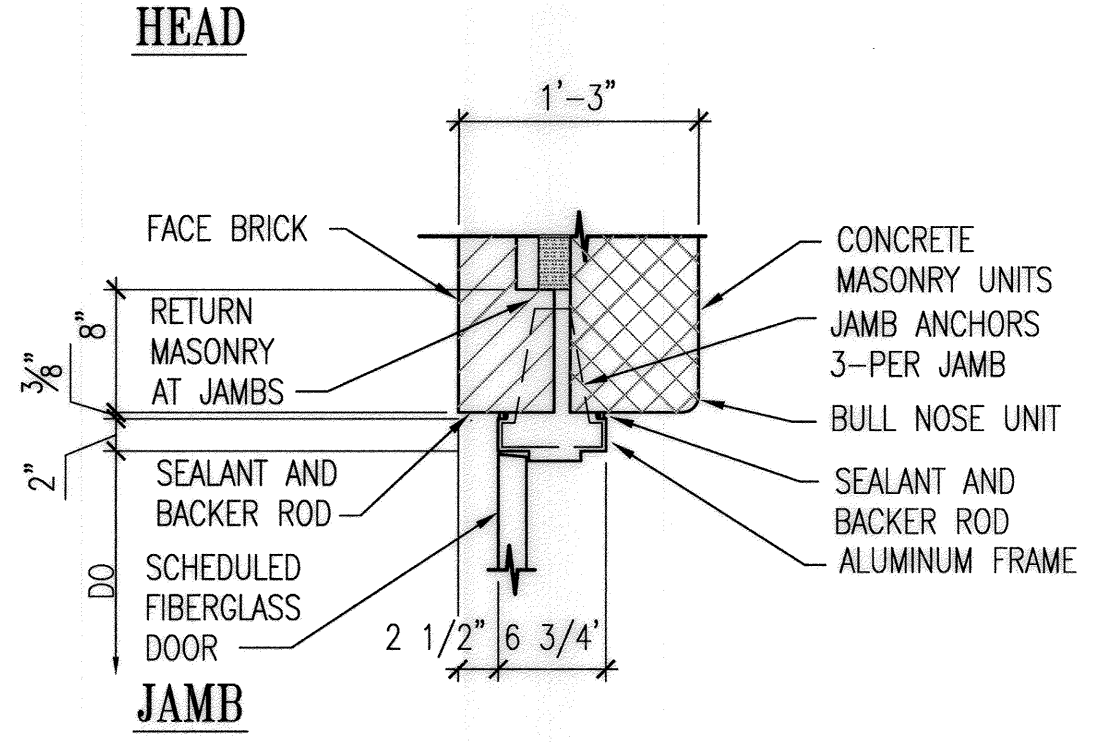
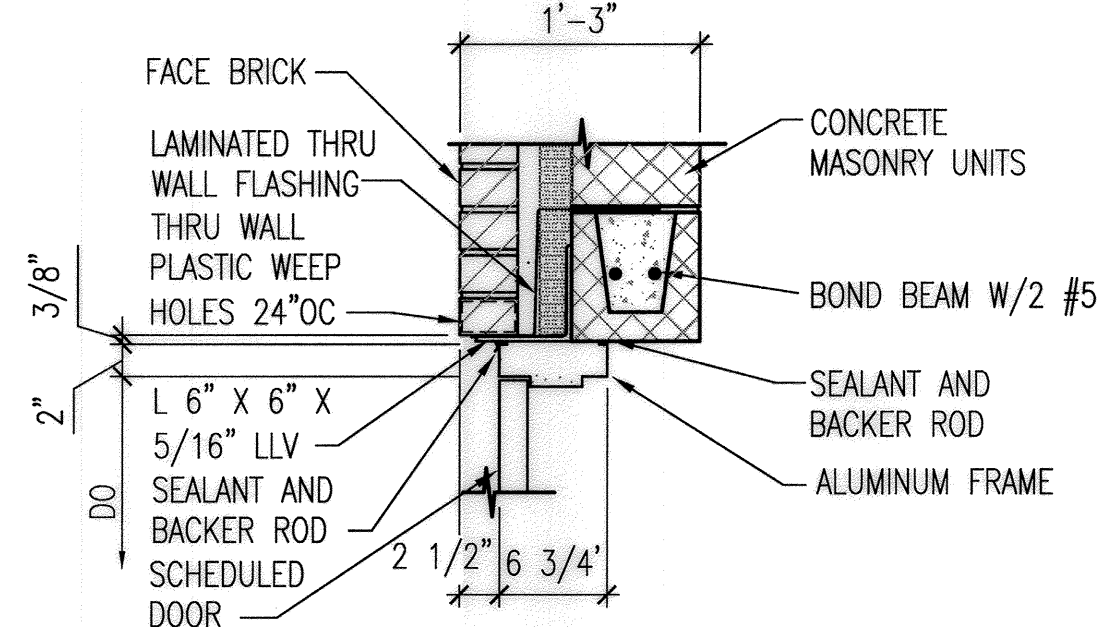
LOCATION	ROOM FINISH SCHEDULE										
	ROOM NO	DESCRIPTION	FLOOR	BASE	WALLS				CEILING		REMARKS
					NORTH	EAST	SOUTH	WEST	TYPE	HEIGHT	
	101	ELECTRICAL ROOM	CONC	CONC	PAINT	PAINT	PAINT	PAINT	GYP-BD PAINTED	9'-4"	-
	102	TOILET ROOM	CONC	CONC	PAINT	PAINT	PAINT	PAINT	GYP-BD PAINTED	9'-4"	-



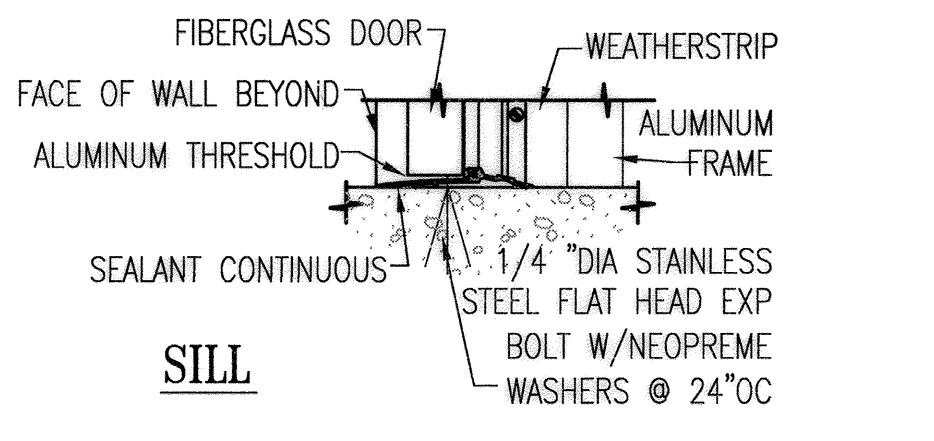
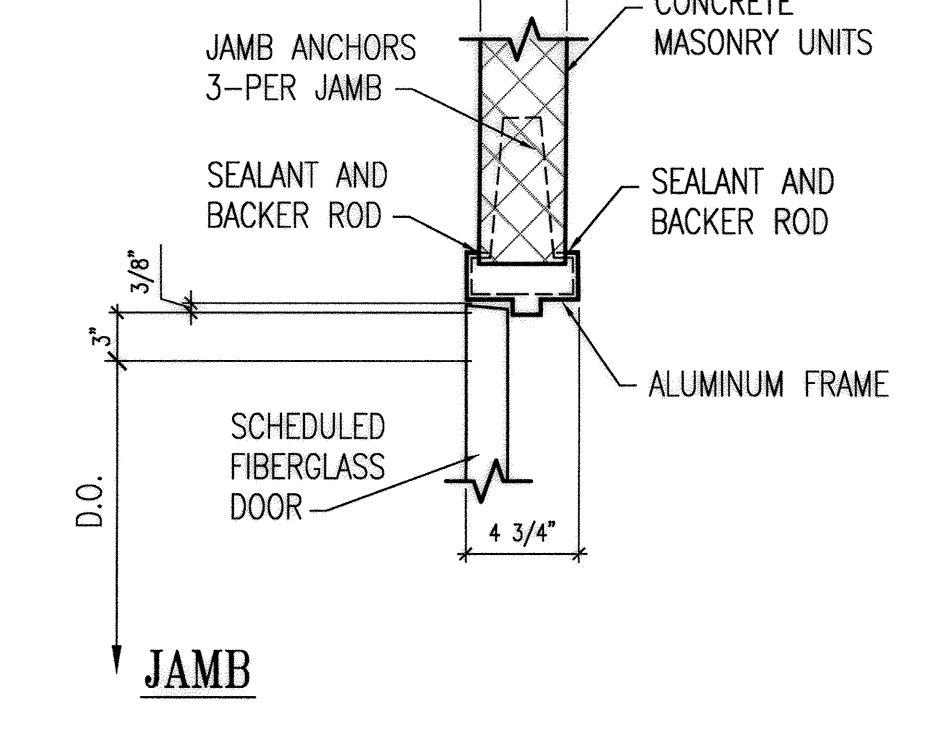
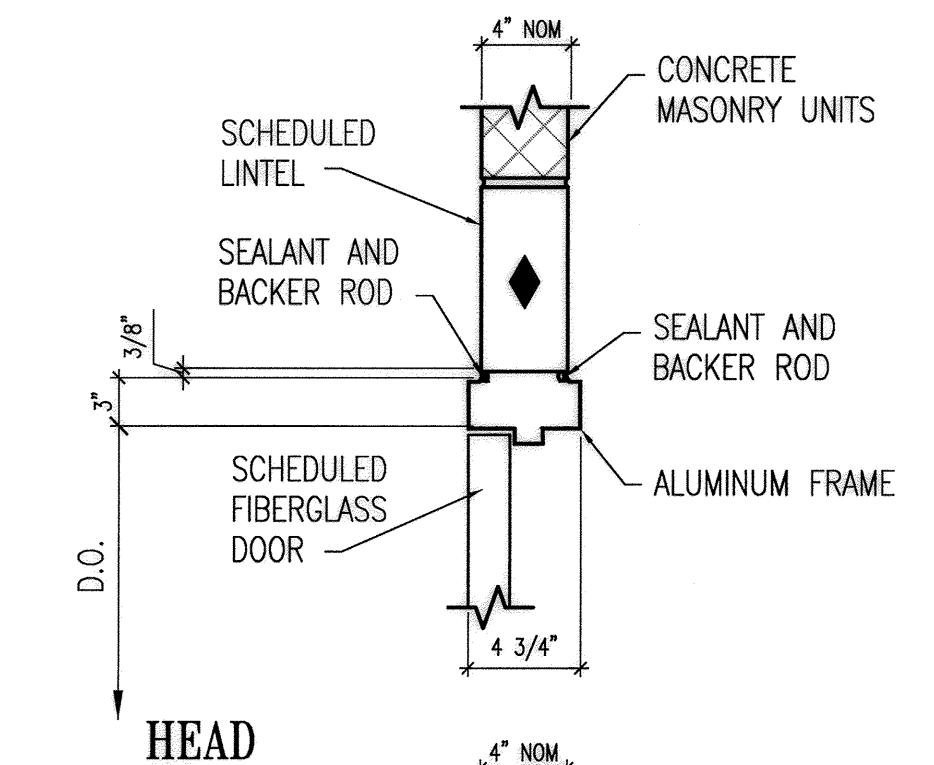
1 DOOR AND FRAME TYPES  
A-5 SCALE: 1/4" = 1'-0"



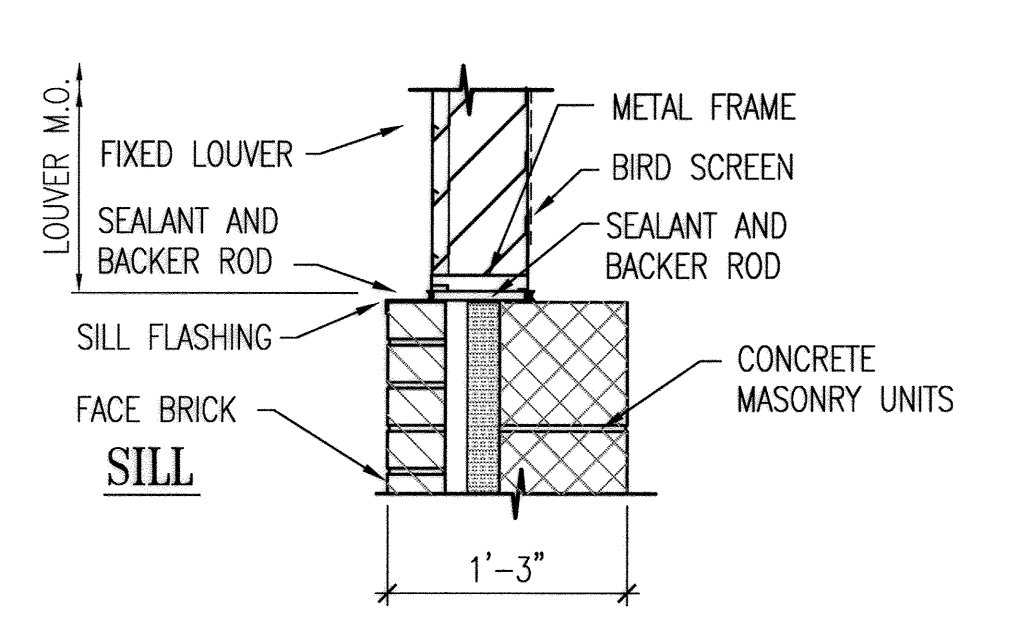
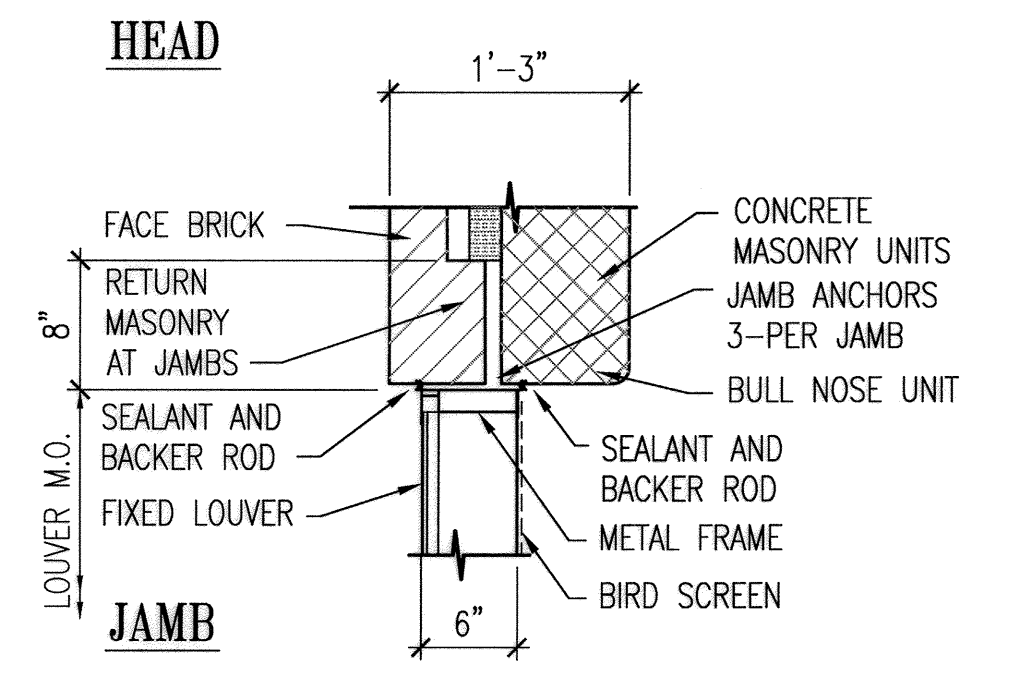
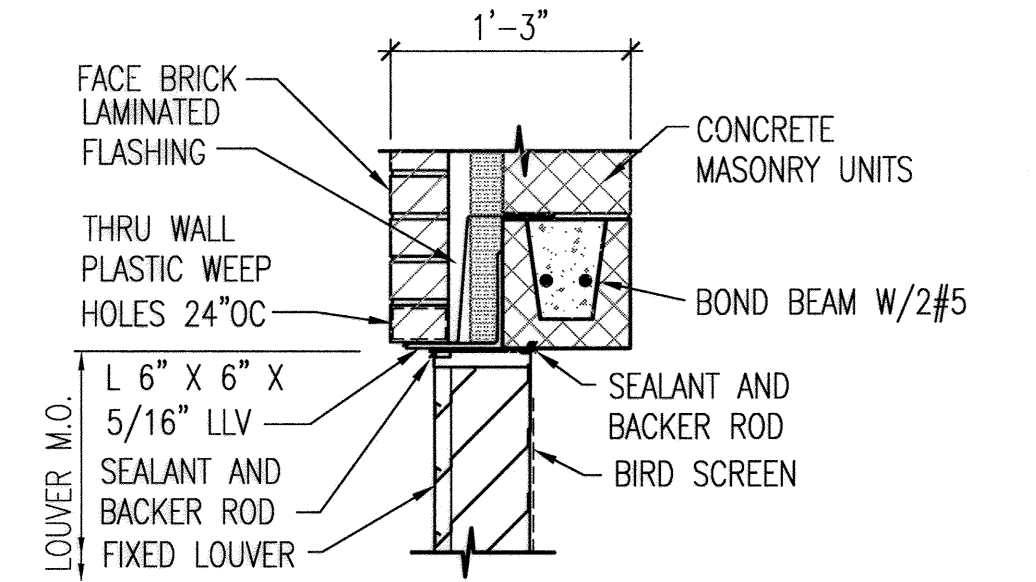
2 LOUVER TYPES  
A-5 SCALE: 1/4" = 1'-0"



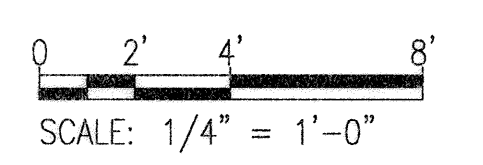
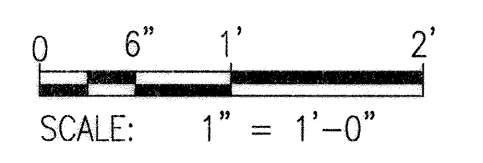
3 DOOR DETAIL  
A-5 SCALE: 1" = 1'-0"



4 DOOR DETAIL  
A-5 SCALE: 1" = 1'-0"



5 LOUVER DETAIL  
A-5 SCALE: 1" = 1'-0"

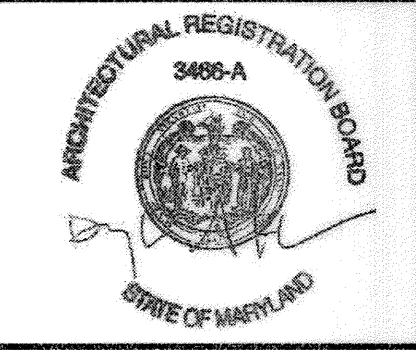


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PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 3466-A, EXPIRATION DATE: 11-24-21.

DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND  
 Director of Public Works: *[Signature]* DATE: 3-20-2020  
 Chief, Bureau of Engineering: *[Signature]* DATE: 3/20/20  
 Chief, Utility Design Division: *[Signature]* DATE: ACT

**WRA**  
 Whitman, Reardon & Associates, LLP  
 801 South Caroline Street, Baltimore, Maryland 21231



DES:	
DRN:	
CHK:	
BY:	
NO.	
REVISION	
DATE	

SCHEDULES AND DETAILS

600' SCALE MAP NO. 48 BLOCK NO. 19

ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE  
 CAPITAL PROJECT NO. S6294  
 CONTRACT NO. 20-4954  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

A-5  
 SCALE AS SHOWN  
 SHEET 9 OF 27



**GENERAL STRUCTURAL NOTES**

**GENERAL:**

- FIELD VERIFY ALL DIMENSIONS, LOCATIONS AND ELEVATIONS SHOWN ON CONTRACT DRAWINGS FOR EXISTING STRUCTURES. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
- THE SIZES AND LOCATIONS OF EQUIPMENT PADS AND PEDESTALS, AS WELL AS EQUIPMENT-RELATED FLOOR AND WALL OPENINGS, ARE DEPENDENT ON THE ACTUAL EQUIPMENT FURNISHED. VERIFY AND COORDINATE ALL SUCH ITEMS. DIMENSIONS INDICATED ON THESE DRAWINGS SHALL NOT BE ALTERED WITHOUT APPROVAL OF THE ENGINEER. STRUCTURAL DRAWINGS MAY NOT SHOW ALL EQUIPMENT PADS AND OTHER EQUIPMENT SUPPORTS REQUIRED. REFER TO CIVIL, MECHANICAL AND ELECTRICAL DRAWINGS.
- LOCATIONS OF BORINGS ARE SHOWN ON CIVIL DRAWINGS. BORING LOGS ARE INCLUDED IN SPECIFICATIONS.
- FOR NOTES PERTAINING TO INDIVIDUAL STRUCTURES, SEE DRAWINGS FOR THOSE STRUCTURES.
- DEMO EXISTING CMU PARTITION WALL AND REMOVE/DEMOLISH ANY MORTAR, GROUT OR DOWEL BARS. CUT ANY EXISTING AND REMAINING DOWEL BARS FLUSH WITH TOP OF EXISTING SLAB. ALL REMAINING MORTAR OR GROUT SHALL BE REMOVED TO PROVIDE A CLEAN AND CLEAR SURFACE ON TOP OF EXISTING SLAB.
- COORDINATE ALL ACTIVITIES, INCLUDING THOSE OF SUBCONTRACTORS, WITH THE OWNER'S ACTIVITIES.

**FOUNDATION:**

- FOUNDATIONS SHALL BEAR UPON UNDISTURBED SOIL OR COMPACTED ENGINEERED FILL WITH A MINIMUM ALLOWABLE BEARING CAPACITY OF 1800 PSF. THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A GEOTECHNICAL ENGINEER LICENSED IN THE STATE OF MARYLAND WHO IS RESPONSIBLE FOR VERIFICATION OF THE SPECIFIED MINIMUM ALLOWABLE BEARING CAPACITY.
- PLACE A LAYER OF A 6" LAYER OF NO. 57 AGGREGATE UNDER ALL SLABS ON GRADE. SUBGRADE FOR SLABS ON GRADE SHALL BE INSPECTED AND APPROVED BY THE ENGINEER BEFORE PLACING ANY CONCRETE OR CRUSHED STONE.
- FOOTING ELEVATIONS GIVEN ON PLANS ARE TO BE CONSIDERED MINIMUM DEPTHS. FURTHER EXCAVATION SHALL BE MADE AS REQUIRED TO REACH THE SPECIFIED ALLOWABLE BEARING CAPACITIES. THE ENGINEER SHALL BE NOTIFIED OF ANY CONDITIONS THAT REQUIRE CHANGES IN FOOTING ELEVATIONS.
- FOOTINGS SHALL BE CUT INTO UNDISTURBED SOIL OR COMPACTED ENGINEERED FILL AND PLACED IN THE SAME DAY. IF THE BEARING SURFACE FOR FOOTINGS IS LEFT UNPROTECTED AND IS EXPOSED TO WEATHER, THE BOTTOM OF THE EXCAVATION SHALL BE EXCAVATED AN ADDITIONAL 6" OR UNTIL A SUITABLE BEARING SURFACE IS REACHED AND FILLED WITH LEAN CONCRETE FILL WITH A COMPRESSIVE STRENGTH OF  $F_c=2500$  PSI.
- ALL UNSATISFACTORY SOILS BELOW FOOTINGS, GRADE BEAMS AND SLABS-ON-GRADE SHALL BE REMOVED TO A COMPETENT SOIL STRATUM AND REPLACED WITH COMPACTED ENGINEERED FILL.
- WHERE REQUIRED, COMPACTED ENGINEERED FILL IS TO BE USED TO ACHIEVE THE REQUIRED SUBGRADE ELEVATIONS.
- MINIMUM DEPTH BELOW GRADE FOR FOUNDATIONS FOR FROST PROTECTION IS 30".
- FOR MECHANICAL AND ELECTRICAL WORK TO BE INCORPORATED IN FOUNDATION WORK, SEE MECHANICAL AND ELECTRICAL DRAWINGS.
- DO NOT PLACE BACKFILL AGAINST SUBSTRUCTURE WALLS UNTIL UPPER BRACING FLOORS ARE IN PLACE FOR A MINIMUM OF SEVEN DAYS.

**CONCRETE MASONRY:**

- CONSTRUCT MASONRY IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE TMS 402/602, (2016) "BUILDING CODE REQUIREMENTS AND SPECIFICATION FOR MASONRY STRUCTURES."
- PROVIDE HOLLOW LIGHTWEIGHT LOAD-BEARING CONCRETE MASONRY UNITS MEETING THE REQUIREMENTS OF ASTM C 90, WITH A SPECIFIED MINIMUM NET AREA COMPRESSIVE STRENGTH OF 2,800 PSI.
- PROVIDE MORTAR CONFORMING TO THE REQUIREMENTS OF ASTM C-270, TYPE M OR S. CEMENT USED FOR MORTAR SHALL BE PORTLAND CEMENT.
- PROVIDE GROUT CONFORMING TO THE REQUIREMENTS OF ASTM C 476 COARSE GROUT, WITH A MINIMUM COMPRESSIVE STRENGTH OF 2,000 PSI AT 28 DAYS.
- PROVIDE CONCRETE MASONRY WITH A MINIMUM COMPRESSIVE STRENGTH ( $F_m$ ) OF 2,000 PSI.
- PROVIDE REINFORCING BARS CONFORMING TO ASTM A 615, GRADE 60.
- IN ADDITION TO THE MASONRY WALL REINFORCEMENT SHOWN ON THE DRAWINGS, FURNISH THE FOLLOWING:  
#5 VERTICAL REINFORCEMENT SHALL BE PROVIDED AT CORNERS, WITHIN 16 INCHES OF EACH SIDE OF OPENINGS, WITHIN 8 INCHES OF EACH SIDE OF MOVEMENT JOINTS AND WITHIN 8 INCHES OF THE ENDS OF THE WALLS.
- LAP SPLICE FOR #5 BAR IN CMU SHALL BE 30" MINIMUM. LEGS FOR #5 BAR STANDARD HOOK SHALL BE 9" MINIMUM.
- PROVIDE DOWEL AT BOTTOM OF CMU MATCHING SIZE AND SPACING AT WALL REINFORCING. LAP DOWEL BARS WITH VERTICAL BARS, AND PROVIDE DOWEL STANDARD HOOK INTO SUPPORTING CONCRETE BELOW.

**CONCRETE:**

- PROVIDE CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF 4500 PSI AT 28 DAYS.
- DETAIL AND CONSTRUCT REINFORCED CONCRETE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE ACI 301, "SPECIFICATION FOR STRUCTURAL CONCRETE."
- DETAIL REINFORCING STEEL IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE SP-66, "ACI DETAILING MANUAL," WHICH INCLUDES ACI 315, "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT."
- PROVIDE REINFORCING CONFORMING TO ASTM A 615, GRADE 60, DEFORMED BARS.
- PROVIDE WELDED WIRE FABRIC CONFORMING TO ASTM A 1064.
- UNLESS NOTED OTHERWISE ON THE DRAWINGS, THE CONCRETE COVER FOR REINFORCING SHALL BE AS FOLLOWS:  
A. BOTTOM BARS IN FOOTINGS AND IN SLABS ON EARTH OR GRAVEL: 3".  
B. BEAMS, SLABS, COLUMNS AND WALLS EXPOSED TO GROUND, WEATHER, PROCESS LIQUID OR VAPORS AFTER REMOVAL OF FORMS: 2".
- SUBMIT REINFORCING STEEL DETAILS (SHOP DRAWINGS) AND RECEIVE APPROVAL BEFORE PROCEEDING WITH FABRICATION.
- CHAMFER ALL EXPOSED CONCRETE EDGES 3/4" UNLESS OTHERWISE NOTED.
- DETAIL ALL SPLICES FOR REINFORCING BARS NOT DIMENSIONED ON THE DRAWINGS AS TABULATED ON THIS DRAWING.
- POUR CONCRETE SLABS AND WALLS BETWEEN INDICATED JOINTS, ALLOWING A MINIMUM ELAPSED PERIOD OF 3 DAYS BETWEEN ADJACENT POURS.
- PROVIDE JOINTS AS DETAILED ON THE DRAWINGS. NO ADDITIONAL JOINTS SHALL BE USED NOR ANY OMITTED EXCEPT BY WRITTEN AUTHORIZATION FROM THE ENGINEER. APPROVED ADDITIONAL JOINTS SHALL NOT RESULT IN ADDITIONAL EXPENSE TO THE OWNER.
- WHERE A SLAB IS SLOPED (TOP AND/OR BOTTOM), PROVIDE SLOPED REINFORCING PARALLEL TO THE CONCRETE SURFACE.
- SIZE AND LOCATE ANCHOR BOLTS AND EQUIPMENT PADS OR PEDESTALS TO SUIT EQUIPMENT FURNISHED.
- REVIEW ALL DRAWINGS FROM OTHER DISCIPLINES AND COORDINATE ALL OPENINGS AND EMBEDDED ITEMS SUCH AS SLEEVES, ANCHORS, CONDUIT, ETC. THAT WILL BE INCORPORATED INTO CONCRETE WORK.

**PRECAST CONCRETE:**

- PRECAST CONCRETE STRUCTURES AND COMPONENTS OF STRUCTURES SHALL MEET THE REQUIREMENTS OF SPECIFICATION SECTION 03410 "PRECAST CONCRETE STRUCTURES."
- PROVIDE CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT 28 DAYS.
- DETAIL AND CONSTRUCT REINFORCED CONCRETE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE ACI 310, "SPECIFICATION FOR STRUCTURAL CONCRETE."
- DETAIL REINFORCING STEEL IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE SP-66, "ACI DETAILING MANUAL," WHICH INCLUDES ACI 315, "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT."
- PROVIDE REINFORCING CONFORMING TO ASTM A 615, GRADE 60, DEFORMED BARS.
- PROVIDE WELDED WIRE FABRIC CONFORMING TO ASTM A 1064.
- PROVIDED NORMAL WEIGHT AGGREGATES CONFORMING TO ASTM C33, CLASS 3S.
- UNLESS NOTED OTHERWISE ON THE DRAWINGS, THE CONCRETE COVER FOR REINFORCING SHALL BE AS FOLLOWS:  
A. BOTTOM BARS IN FOOTINGS AND IN SLABS ON EARTH OR GRAVEL: 3".  
B. BEAMS, SLABS, COLUMNS AND WALLS: 1 1/2".
- SUBMIT REINFORCING STEEL DETAILS (SHOP DRAWINGS) AND RECEIVE APPROVAL BEFORE PROCEEDING WITH FABRICATION.
- CHAMFER ALL EXPOSED CONCRETE EDGES 3/4" UNLESS OTHERWISE NOTED.

**WOOD TRUSSES:**

- THE CONTRACTOR WILL BE RESPONSIBLE FOR THE DESIGN FABRICATION AND ERECTION OF THE ROOF TRUSSES, IN ACCORDANCE WITH THE LATEST GOVERNING BUILDING CODE AND SPECIFICATIONS.
- THE CONTRACTOR WILL DESIGN ALL TRUSSES FOR THE LOADS INDICATED, PLUS APPLICABLE SNOW DRIFT/SLIDING, AS REQUIRED BY CODE.
- TRUSS DESIGN WILL INCLUDE TEMPORARY AND PERMANENT BRACING, AS REQUIRED. PERMANENT BRACING WILL BE ATTACHED TO THE WALLS.
- TRUSS LAYOUT AND CONFIGURATIONS SHOWN ARE SUGGESTIONS ONLY. THE TRUSS MANUFACTURER WILL BE RESPONSIBLE FOR THE FINAL LAYOUT, CONFIGURATION AND COORDINATION WITH ARCHITECTURAL REQUIREMENTS (I.E., PITCH, HEIGHT, SOFFITS, ETC.).
- CONNECTORS TO BE USED IN STRICT ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS. ALL CONNECTORS WILL BE STAINLESS STEEL UNLESS OTHERWISE NOTED.

**POST-INSTALLED ANCHORS:**

- EXCEPT WHERE INDICATED ON THE DRAWINGS, POST-INSTALLED ANCHORS SHALL CONSIST OF THE FOLLOWING ANCHOR TYPES:  
A. ANCHORAGE TO SOLID GROUTED MASONRY AND CONCRETE - "ADHESIVE" ANCHORS FOR CRACKED AND UNCRACKED CONCRETE USE:  
HILTI HIT-HY 200 ADHESIVE ANCHORING SYSTEM PER ICC ESR-3187 OR EQUIVALENT, SEE NOTE 3 BELOW.  
B. ANCHORAGE TO SOLID GROUT MASONRY AND CONCRETE - "EXPANSION" ANCHORS FOR CRACKED AND UNCRACKED CONCRETE USE:  
HILTI KWIK BOLT TZ EXPANSION ANCHORING SYSTEM PER ICC ESR-31917 OR EQUIVALENT, SEE NOTE 3 BELOW.
- INSTALL ANCHORS PER THE MANUFACTURER'S INSTRUCTIONS.
- OBTAIN WRITTEN APPROVAL FROM CONTRACTING OFFICER FOR SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS PRIOR TO USE. PROVIDE CALCULATIONS DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERFORMANCE VALUES OF THE SPECIFIED PRODUCT. SUBSTITUTIONS WILL BE EVALUATED BY THEIR HAVING AN ICC ESR SHOWING COMPLIANCE WITH THE RELEVANT BUILDING CODE FOR SEISMIC USES, LOAD RESISTANCE, INSTALLATION CATEGORY, AND AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS. ADHESIVE ANCHOR EVALUATION WILL ALSO CONSIDER CREEP, IN-SERVICE TEMPERATURE AND INSTALLATION TEMPERATURE.
- ARRANGE AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL OF THEIR ANCHORING PRODUCTS SPECIFIED. THE STRUCTURAL ENGINEER OF RECORD MUST RECEIVE DOCUMENTED CONFIRMATION THAT ALL OF THE CONTRACTOR'S PERSONNEL WHO INSTALL ANCHORS ARE TRAINED PRIOR TO THE COMMENCEMENT OF INSTALLING ANCHORS.
- INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS.
- ALL ANCHORS TO BE STAINLESS STEEL TYPE 316.

**STRUCTURAL STEEL:**

- FABRICATE AND ERECT STRUCTURAL STEEL CONFORMING TO THE REQUIREMENTS OF AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), "STEEL CONSTRUCTION MANUAL", 14TH EDITION, AISC 360-10.
- SUBMIT ERECTION PLANS AND SHOP DETAILS AND RECEIVE APPROVAL BEFORE PROCEEDING WITH FABRICATION.
- PROVIDE STRUCTURAL STEEL WIDE-FLANGE SHAPES CONFORMING TO ASTM A992 ( $F_y=50$  KSI), HSS MEMBERS CONFORMING TO ASTM A500, GRADE B (RECTANGULAR/SQUARE HSS,  $F_y=46$  KSI; ROUND HSS,  $F_y=42$  KSI) AND ALL OTHER MEMBERS CONFORMING TO ASTM A36 ( $F_y=36$  KSI).
- ALL BOLTED SHEAR CONNECTIONS ARE HIGH-STRENGTH BOLTS, 3/4" DIAMETER MINIMUM, CONFORMING TO ASTM F3125, GRADE A325, UNLESS OTHERWISE NOTED.
- PROVIDE ALL SPLICED CONNECTIONS WITH COMPRESSIBLE-WASHER-TYPE DIRECT-TENSION INDICATORS CONFORMING TO ASTM F959.
- WELD IN COMPLIANCE WITH AMERICAN WELDING SOCIETY AWS D1.1, "STRUCTURAL WELDING CODE." WELD ALL SHOP CONNECTIONS WITH CLASS E-70 SERIES ELECTRODES. PROVIDE FIELD CONNECTIONS WITH HIGH STRENGTH BOLTED CONNECTIONS EXCEPT WHERE NOTED.
- MILL BOTTOM OF ALL COLUMNS AND FINISH TOP OF ALL BASE PLATES IN ACCORDANCE WITH AISC SPECIFICATIONS. WELD BASE PLATES TO BOTTOM OF COLUMNS.
- DO NOT SHOP-PRIME STEEL SURFACES TO BE EMBEDDED IN CONCRETE, OR AT DESIGNATED FIELD-WELD LOCATIONS.
- ALL EXPOSED STRUCTURAL STEEL TO RECEIVE PROTECTIVE COATINGS IN ACCORDANCE WITH SPECIFICATION SECTION 09960, "HIGH PERFORMANCE COATINGS" AND COMPLY WITH SPECIFICATION SECTION 05121, "ARCHITECTURALLY EXPOSED STRUCTURAL STEEL."

**WOOD:**

- MANUFACTURERS QUALIFICATIONS SHALL INCLUDE CERTIFICATION BY THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION (AITC) OR THE AMERICAN PLYWOOD ASSOCIATION (APA).
- SAWN TIMBER MEMBERS SHALL BE SOUTHERN PINE GRADE SELECT STRUCTURAL, VISUALLY GRADED, OR APPROVED EQUAL. THE REFERENCE DESIGN VALUES SHALL MEET OR EXCEED THE VALUES FOR "SOUTHERN PINE, SELECT STRUCTURAL" AS INDICATED IN NDS 2015 "DESIGN VALUES FOR WOOD CONSTRUCTION."
- PROVIDE STAINLESS STEEL CONNECTORS FOR ALL WOOD CONNECTIONS UNLESS OTHERWISE SPECIFIED OR INDICATED ON DRAWINGS.
- PROVIDE STEEL PLATES CONFORMING TO ASTM A36 FOR ALL CONNECTION FABRICATIONS. ALL STEEL PLATES FOR CONNECTION FABRICATIONS SHALL BE HOT-DIP GALVANIZED.
- ALL STRUCTURAL WOOD DECKING MEMBERS (DECKING, SHEATHING, POSTS BEAMS, JOISTS, RAFTERS) SHALL BE TREATED WITH PRESERVATIVES.
- UNLESS OTHERWISE NOTED ON DRAWINGS, CONNECTIONS FOR WOOD MEMBERS SHALL BE IN ACCORDANCE WITH IBC, TABLE 2304.10.1.

**WOOD (CONTINUED):**

- SIMPSON STRONG-TIE CONNECTORS (OR APPROVED EQUAL) SPECIFIED IN THE DRAWINGS SHALL BE FASTENED TO WOOD MEMBERS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ALWAYS USE THE LARGEST SIZE AND NUMBER OF MANUFACTURER-SPECIFIED FASTENERS.
- ROOF PLYWOOD (STRUCTURAL PANEL) CONSTRUCTION:  
A. PLYWOOD THICKNESS: 5/8"  
B. PLYWOOD GRADE: STRUCTURAL I  
C. PLYWOOD PANEL LAYOUT: STAGGERED HORIZONTAL JOINTS  
D. NAIL SIZE: 10D (GALVANIZED)  
E. MAXIMUM NAIL SPACING: 6" DIAPHRAGM BOUNDARY AND ALL SUPPORTING PANEL EDGES 12" AT ALL INTERMEDIATE FRAMING MEMBERS  
F. FASTENER PENETRATION INTO SUPPORTING FRAMING: MINIMUM 1-1/2"

**CODES AND STANDARDS:**


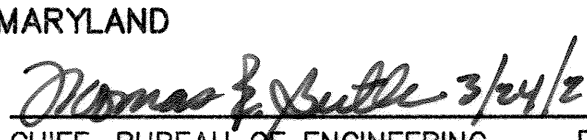

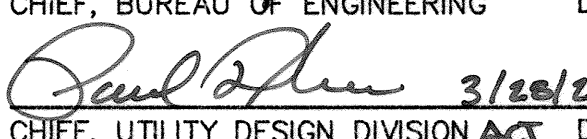
- INTERNATIONAL BUILDING CODE IBC (2018) INCLUDING THE MODIFICATIONS MADE BY LOCAL JURISDICTION.
- AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC 360) (2016) "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS."
- AMERICAN CONCRETE INSTITUTE ACI-318 (2014), "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE."
- AMERICAN CONCRETE INSTITUTE ACI-350 (2006), "ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES."
- ALUMINUM ASSOCIATION "ALUMINUM DESIGN MANUAL" (2015).
- AMERICAN SOCIETY OF CIVIL ENGINEERS ASCE 7 (2016), "MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES."
- THE MASONRY SOCIETY TMS 402/602 (2016), "BUILDING CODE REQUIREMENTS AND SPECIFICATION FOR MASONRY STRUCTURES."

**DESIGN LOADS:**

ALL LOADS INDICATED BELOW ARE UNFACTORED LOADS.

- DEAD LOADS:  
A. STRUCTURES: ACTUAL WEIGHT  
B. HANGING (MEP) - 20 PSF
- LIVE LOADS:  
A. FLOORS - 150 PSF IN AREAS NOT OCCUPIED BY EQUIPMENT OR TRUCK LOADING.  
B. EQUIPMENT - ACTUAL WEIGHT OF EQUIPMENT OR 150 PSF, WHICHEVER IS GREATER.  
C. LADDERS: 300 PSF  
D. SLAB ON GRADE: 250 PSF
- ROOF LIVE LOADS: 40 PSF
- ROOF SNOW LOAD:  
A. GROUND SNOW LOAD ( $P_g$ ): 25 PSF.  
B. REQUIRED FLAT-ROOF SNOW LOAD 23 PSF  
C. SNOW EXPOSURE FACTOR ( $C_e$ ): 1.0  
D. SNOW LOAD IMPORTANCE FACTOR ( $I$ ): 1.10  
E. THERMAL FACTOR ( $C_t$ ): 1.2
- WIND LOAD:  
A. ULTIMATE WIND SPEED ( $V_{ult}$ ): 120 MPH.  
B. NOMINAL WIND SPEED ( $V_{asd}$ ): 93 MPH.  
C. RISK CATEGORY: III  
D. WIND EXPOSURE: C  
E. INTERNAL PRESSURE COEFFICIENT: +/- 0.18
- SEISMIC LOAD:  
A. RISK CATEGORY : III  
B. SEISMIC IMPORTANCE FACTOR  $I_e$ : 1.25  
C. MAPPED SPECTRAL RESPONSE ACCELERATIONS:  $S_s=0.134$  g, AND  $S_1=0.043$  g.  
D. SITE CLASS: D  
E. SPECTRAL RESPONSE COEFFICIENT:  $S_{DS}=0.143$  g;  $S_{D1}=0.068$  g.  
F. SEISMIC DESIGN CATEGORY: B  
G. BASIC SEISMIC-FORCE RESISTING SYSTEM(S): ORDINARY REINFORCED MASONRY SHEAR WALLS  
H. SEISMIC RESPONSE COEFFICIENT(S) ( $C_s$ ): 0.0894  
I. RESPONSE MODIFICATION FACTOR(S) (R): 2  
J. ANALYSIS PROCEDURE USED: EQUIVALENT FORCE METHOD

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 29926, EXPIRATION DATE: 01/11/2020.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  DATE: <u>3-22-2020</u>		 DATE: <u>3/24/20</u>	
DIRECTOR OF PUBLIC WORKS		CHIEF, BUREAU OF ENGINEERING	
 DATE: <u>3-22-2020</u>		 DATE: <u>3/22/20</u>	
CHIEF, BUREAU OF UTILITIES		CHIEF, UTILITY DESIGN DIVISION	



**Whitman, Reardon & Associates, LLP**  
 801 South Caroline Street, Baltimore, Maryland 21213



DES:	RBG			
DRN:	CJS			
CHK:	JFG			
BY	NO.	REVISION	DATE	

GENERAL STRUCTURAL NOTES, BUILDING CODES AND DESIGN LOADS

60' SCALE MAP NO. 48      BLOCK NO. 19

**ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE**

CAPITAL PROJECT NO. S6294  
 CONTRACT NO. 20-4954

6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

**S-1**

SCALE AS SHOWN

SHEET 10 OF 27

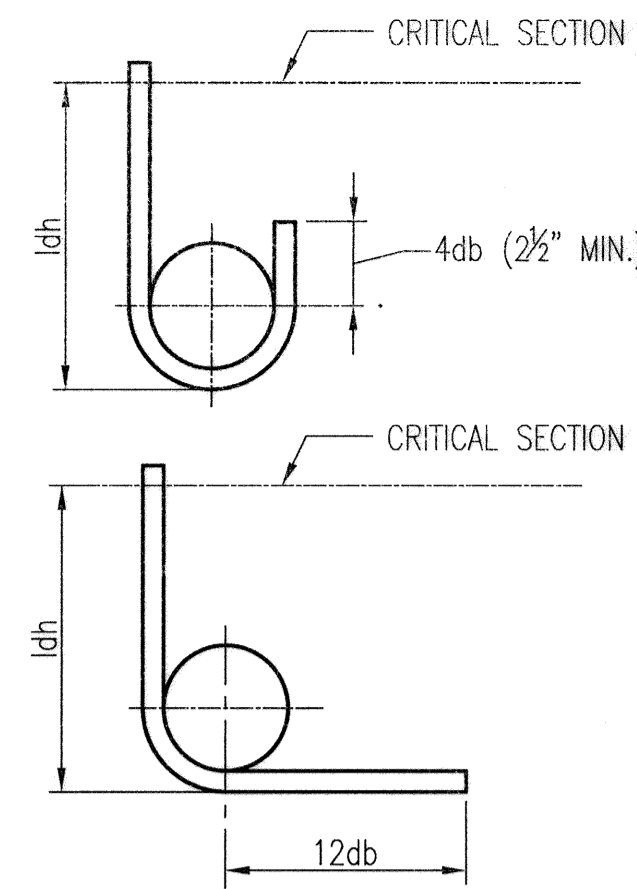
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 Nov 13, 2019 - 9:54am



LAP SPLICE LENGTH						MINIMUM TENSION EMBEDMENTS			
BAR SIZE		SLAB AND WALL		BEAM		STD 90° HOOK		STD 180° HOOK	
SOFT METRIC	ENGLISH	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	ldh	12db	ldh	4db
#10	#3	12"	14"	12"	12"	5"	5"	5"	2"
#13	#4	14"	19"	12"	15"	7"	6"	7"	2"
#16	#5	18"	23"	18"	23"	8"	8"	8"	3"
#19	#6	21"	28"	26"	33"	10"	9"	10"	3"
#22	#7	35"	45"	43"	56"	11"	11"	11"	4"
#25	#8	44"	57"	56"	73"	13"	12"	13"	4"
#29	#9	54"	70"	66"	86"	15"	14"	15"	5"
#32	#10	66"	86"	74"	96"	16"	16"	16"	6"
#36	#11	79"	103"	82"	107"	18"	17"	18"	6"

**LAP SPLICE ASSUMPTIONS:**

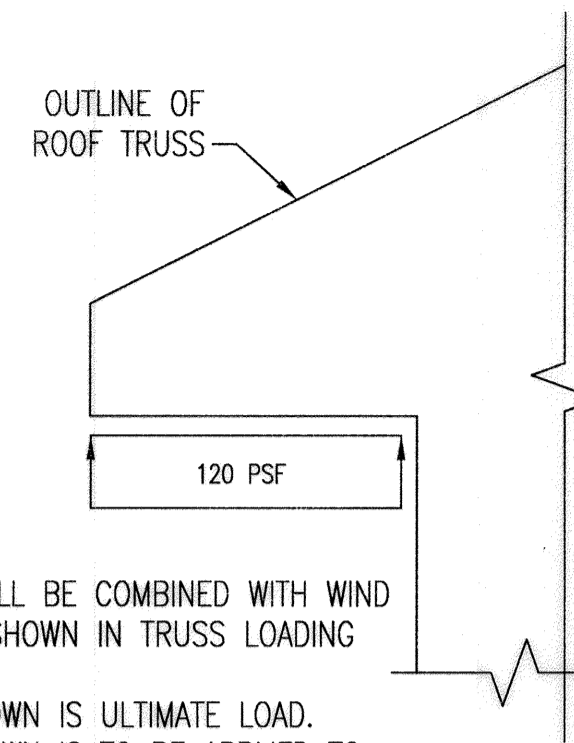
CONCRETE: 4500 PSI COMPRESSIVE STRENGTH (NORMALWEIGHT CONCRETE)  
 SLAB AND WALL: 6" MINIMUM REBAR SPACING WITH CONCRETE COVER = 1.5" CLEAR  
 BEAM: MINIMUM CLEAR SPACING BETWEEN BARS = 1.5 db (1.5" MIN). MINIMUM CONCRETE COVER = 1.5" CLEAR. MINIMUM STIRRUP #4@12" PROVIDED.  
 TOP BAR: TOP BAR FOR SLAB AND BEAM SHALL BE DEFINED AS REINFORCEMENT SO PLACED THAT MORE THAN 12" OF CONCRETE IS CAST BELOW THE SPLICE.



**STANDARD HOOK ASSUMPTIONS:**

SIDE COVER SHALL NOT BE LESS THAN 2.5"  
 END COVER ON 90° HOOK SHALL NOT BE LESS THAN 2"

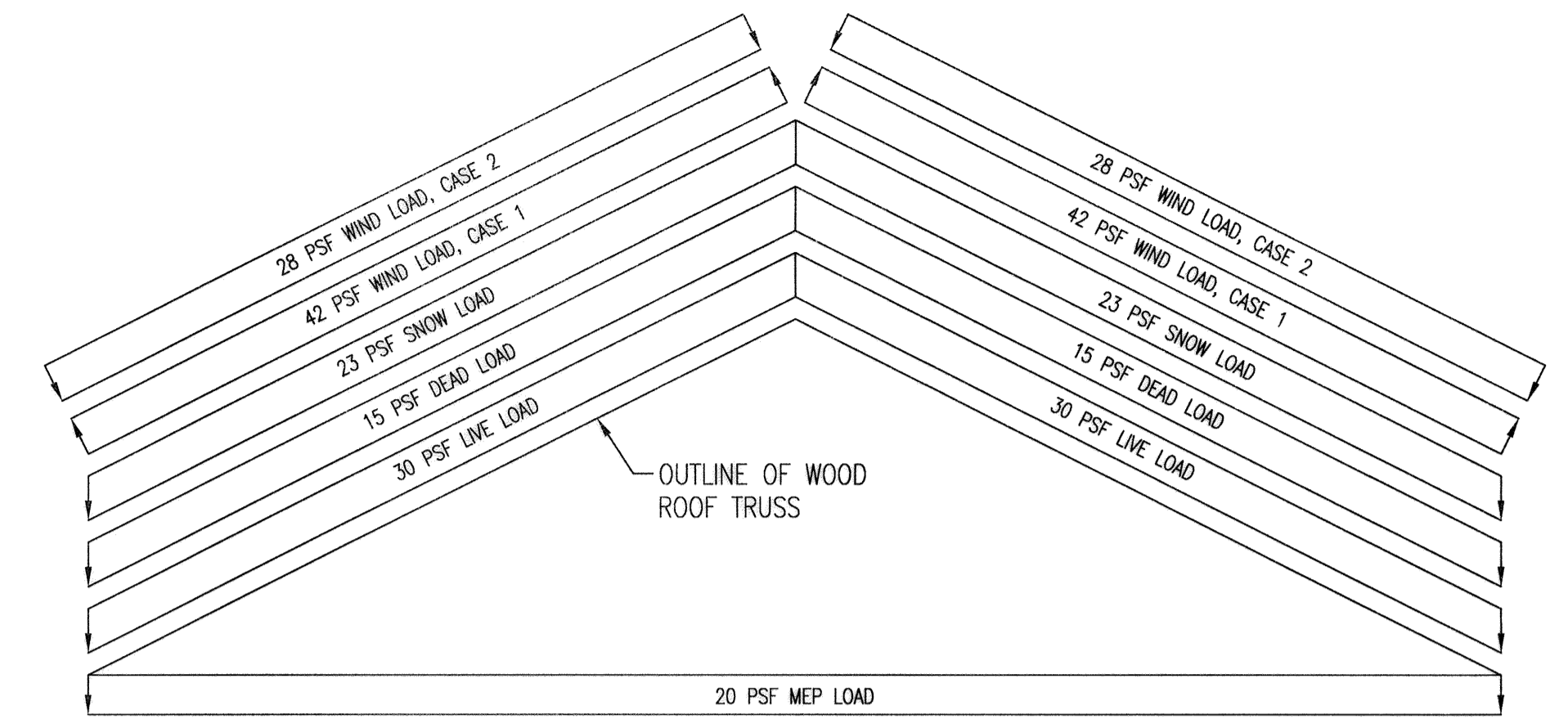
**STANDARD 180° AND 90° END HOOKS**



- NOTES:**
- LOAD SHALL BE COMBINED WITH WIND LOADING SHOWN IN TRUSS LOADING DIAGRAM.
  - LOAD SHOWN IS ULTIMATE LOAD.
  - LOAD SHOWN IS TO BE APPLIED TO WINDWARD SIDE OF STRUCTURE AND CAN OCCUR AT ALL OVERHANG LOCATIONS.

**ROOF OVERHANG WIND LOADING DIAGRAM**

SCALE: NOT TO SCALE



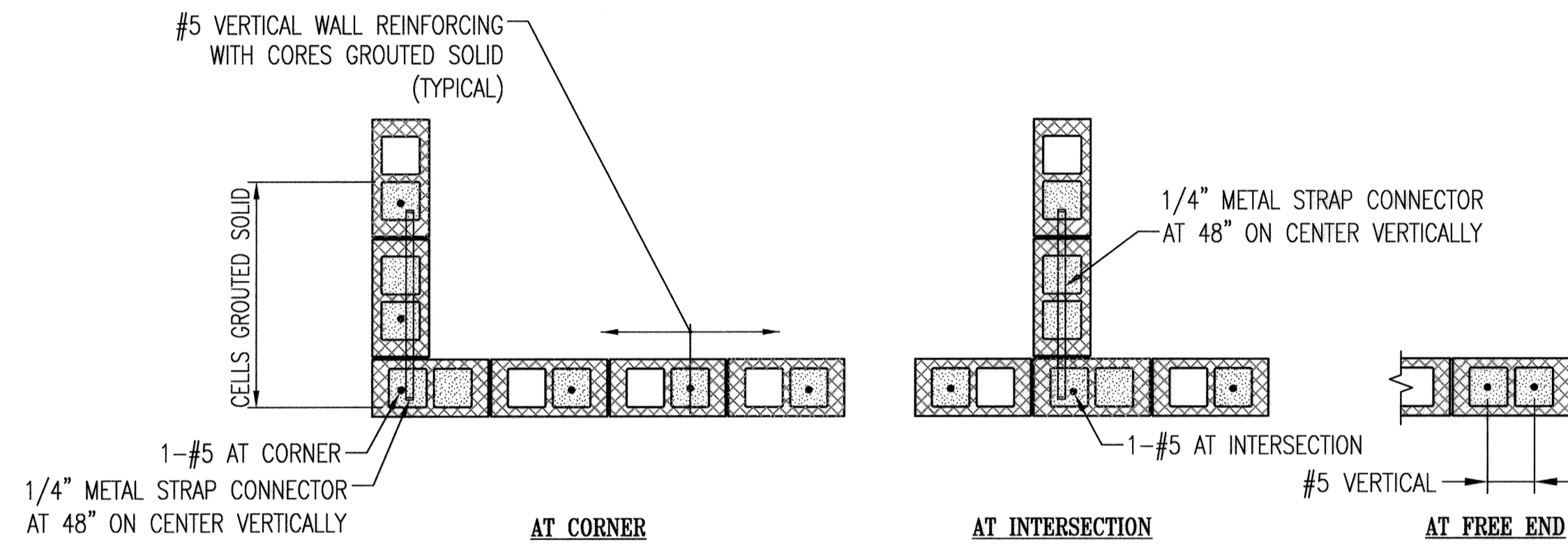
- NOTES:**
- SEE DRAWINGS FOR TRUSS PROFILE GEOMETRY, SPACING, AND SUPPORT CONDITIONS.
  - ALL LOADS SHOWN ARE UNFACTORED LOADS.
  - SELF WEIGHT OF ROOF TRUSS EXCLUDED.

**ROOF TRUSS LOADING DIAGRAM**

SCALE: NOT TO SCALE

**TENSION LAP SPLICE AND STANDARD HOOK LENGTH (ACI 318-14/ACI 350-06)**

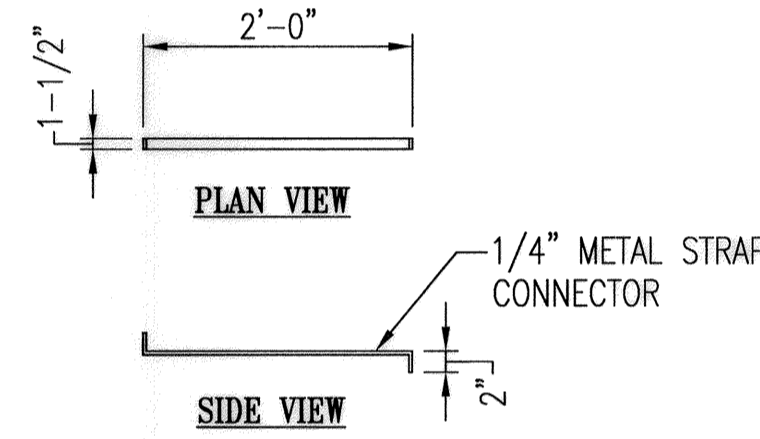
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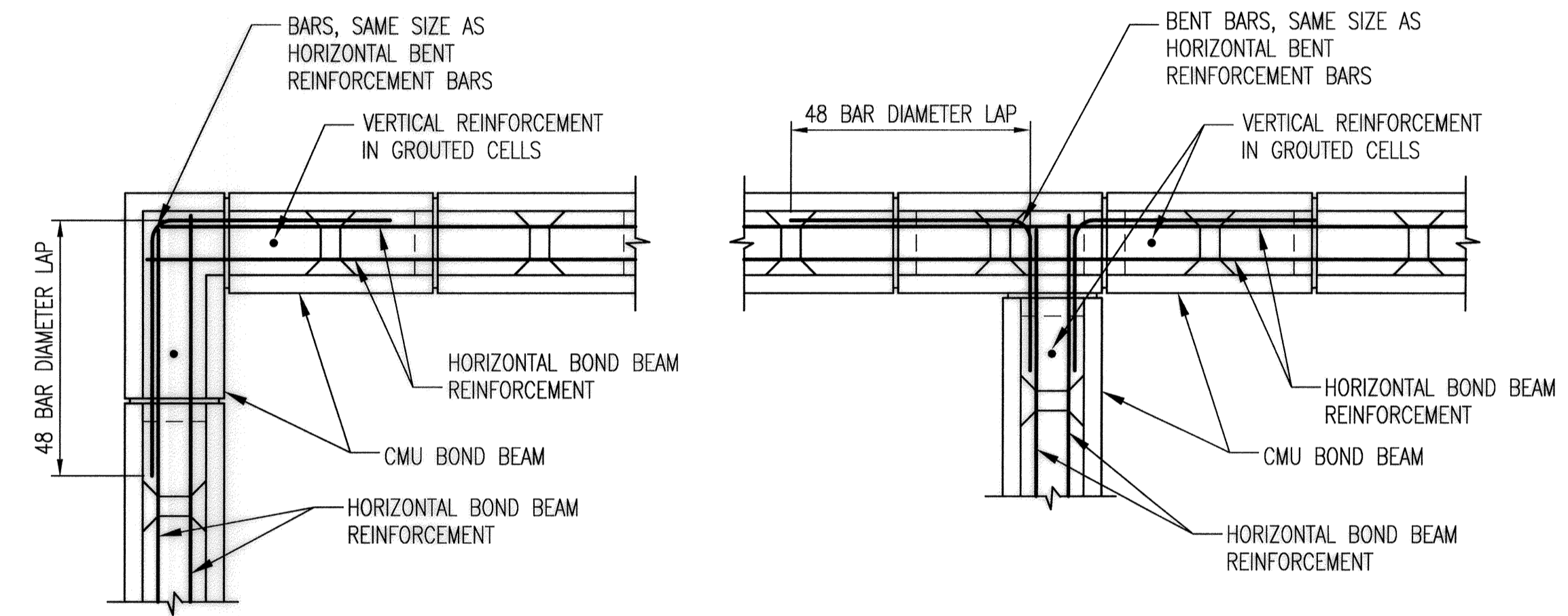
**NOTE:**  
 ALTERNATIVE TO THE METAL STRAP CONNECTOR, AT LEAST 50% OF MASONRY UNITS AT THE INTERSECTIONS SHALL INTERLOCK

**TYPICAL CMU WALL REINFORCING DETAILS**

SCALE: NOT TO SCALE

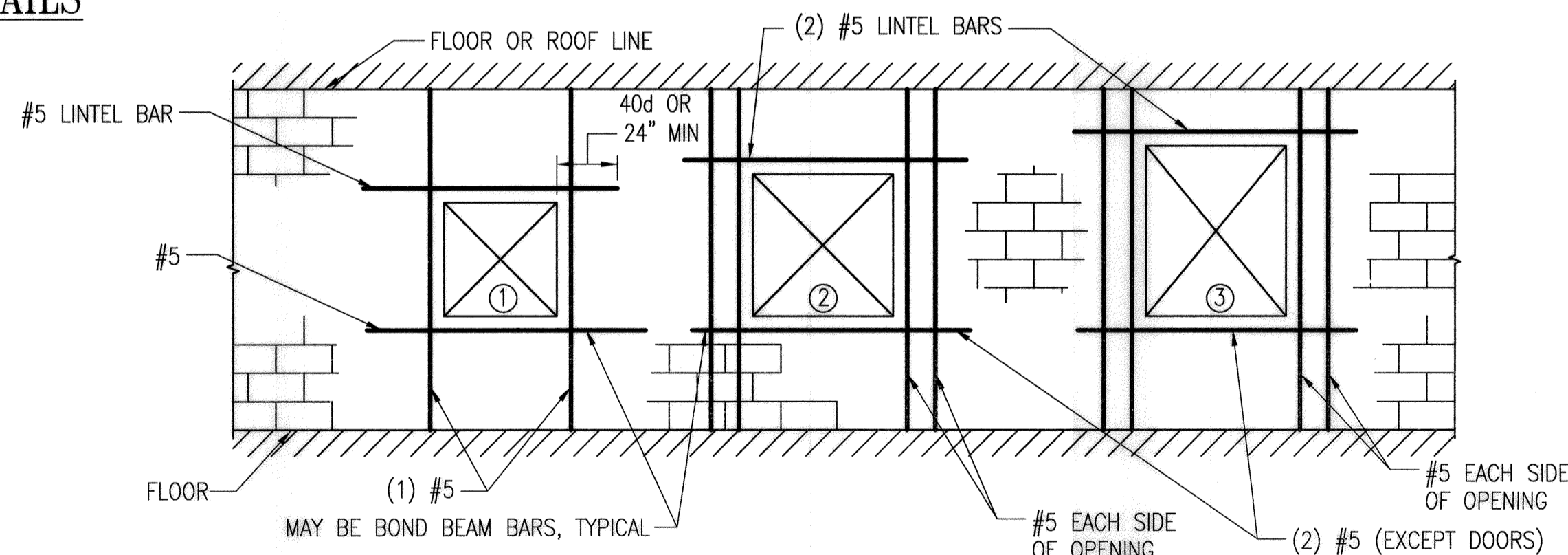


**METAL STRAP DETAILS**



**CMU BOND BEAM REINFORCING DETAIL**

SCALE: NOT TO SCALE



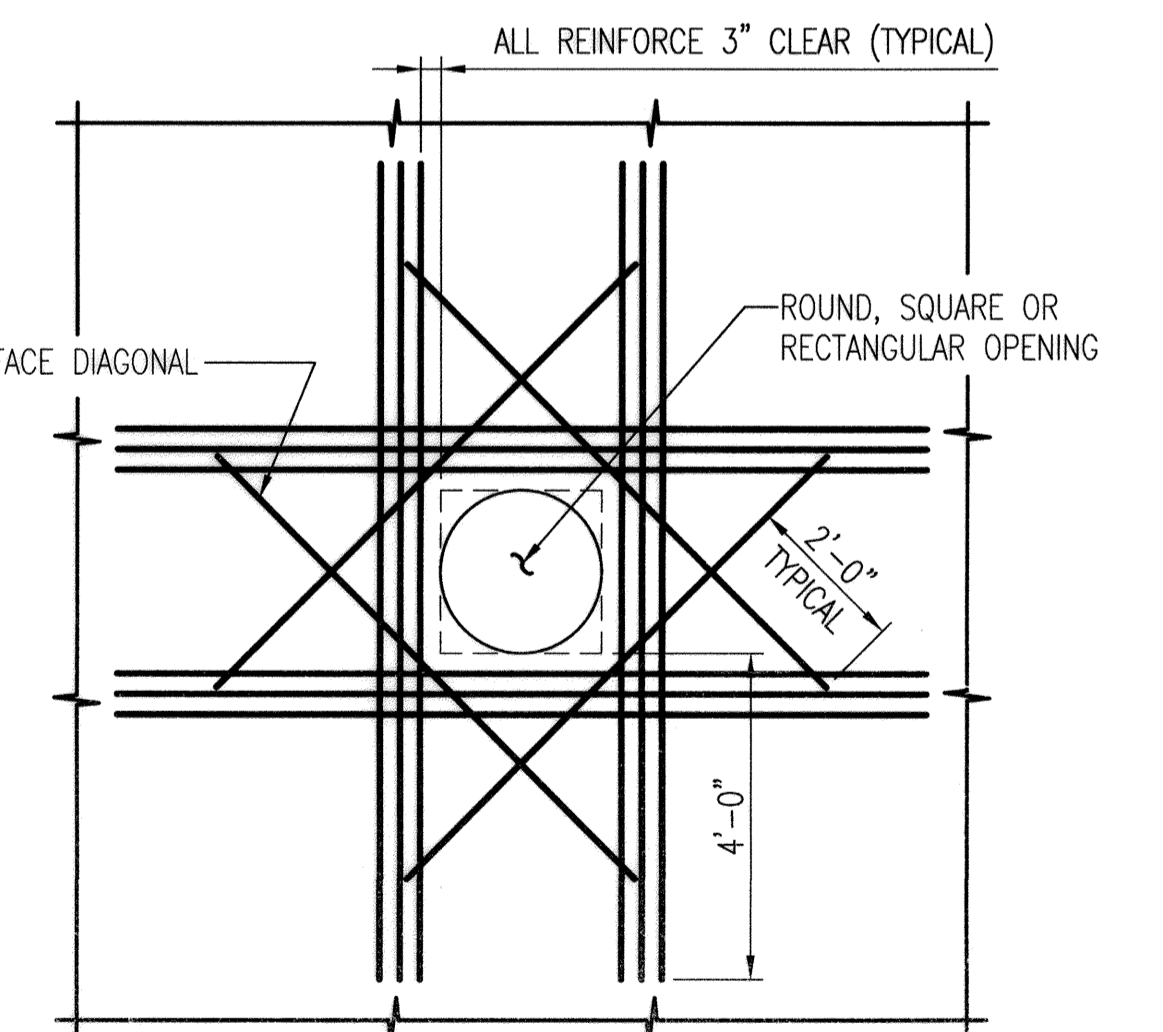
**NOTES:**

- GROUT LINTELS SOLID FOR 1' (MINIMUM) BEYOND OPENING.
- FOR ① OPENINGS, CMU LINTEL IS 8" DEEP  
 FOR ② OPENINGS, CMU LINTEL IS 16" DEEP  
 FOR ③ OPENINGS, CMU LINTEL IS 24" DEEP, UNLESS OTHERWISE NOTED.
- BOND BEAM REINFORCEMENT NOT SHOWN FOR CLARITY.

- ① OPENING 2'-0" OR LESS
- ② OPENING 2'-0" BUT LESS THAN 4'-0"
- ③ OPENING EQUALS 4'-0"

**TYPICAL CMU OPENING REINFORCEMENT DETAIL**

SCALE: NOT TO SCALE



**NOTE:**  
 FOR OPENINGS LESS THAN 12" DIAMETER, NO ADDITIONAL REINFORCING IS REQUIRED PROVIDED NO REINFORCING IS INTERRUPTED BY THE OPENING

PROVIDE ADDITIONAL REINFORCING, (MINIMUM OF ONE-HALF THE NUMBER OF PRINCIPLE REINFORCING BARS INTERRUPTED BY THE OPENING) ON EACH SIDE AND EACH FACE OF THE OPENING.

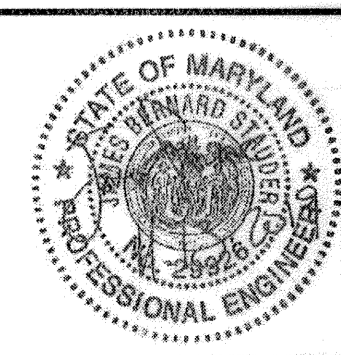
**ADDITIONAL REINFORCING AROUND OPENINGS IN CONCRETE**

NO SCALE

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DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND  
 Director of Public Works: [Signature] 3/26/20  
 Chief, Bureau of Engineering: [Signature] 3/26/20  
 Chief, Bureau of Utilities: [Signature] 3/26/20  
 Chief, Utility Design Division: [Signature] 3/25/20

**WRA**  
 Whitman, Requardt & Associates, LLP  
 801 South Caroline Street, Baltimore, Maryland 21231



DES:	RBG			
DRN:	CJS			
CHK:	JFG			
BY:	NO.	REVISION	DATE	

**TYPICAL STRUCTURAL DETAILS**

600' SCALE MAP NO. 48 BLOCK NO. 19

**ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE**

CAPITAL PROJECT NO. S6294  
 CONTRACT NO. 20-4954

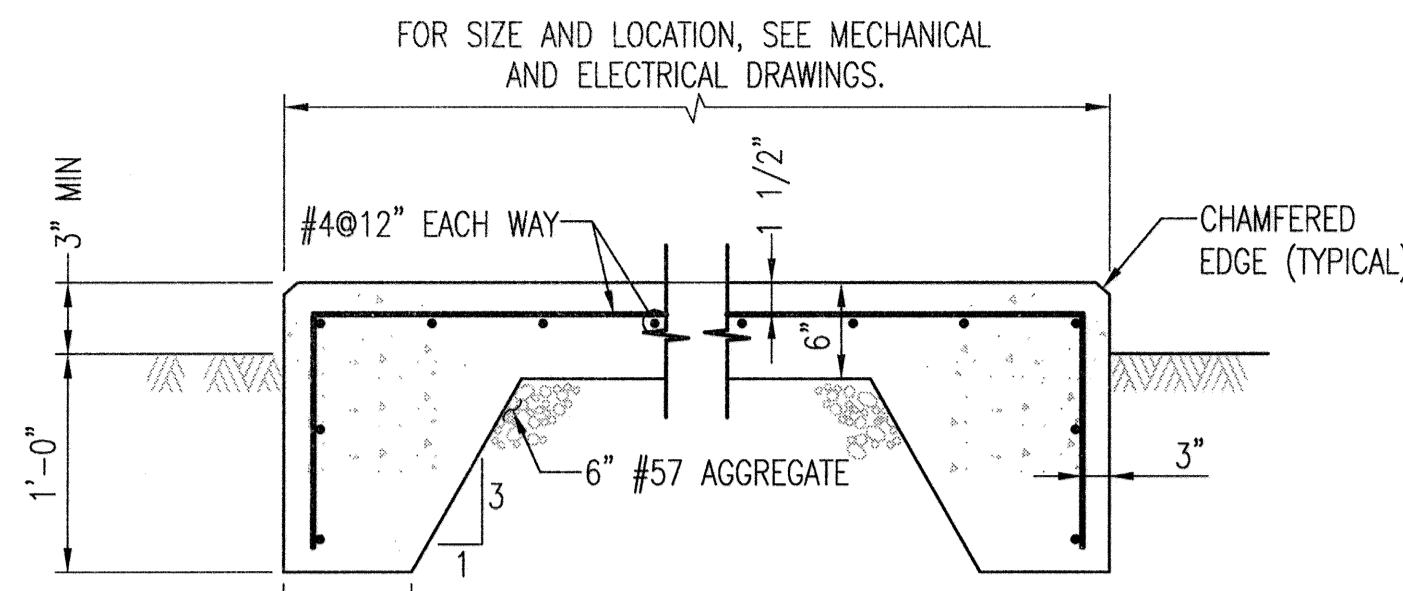
6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

S-2

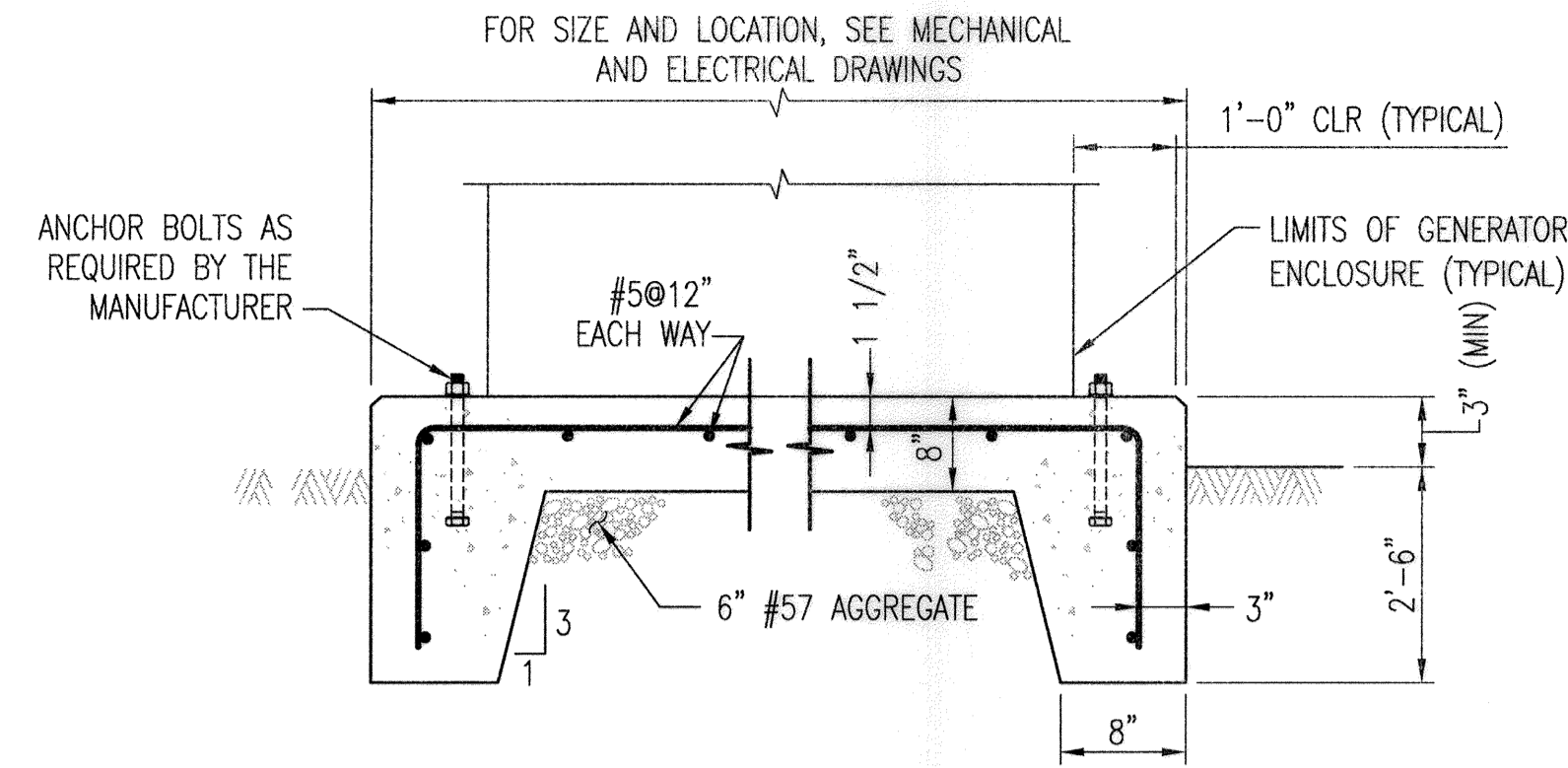
SCALE AS SHOWN

SHEET 11 OF 27

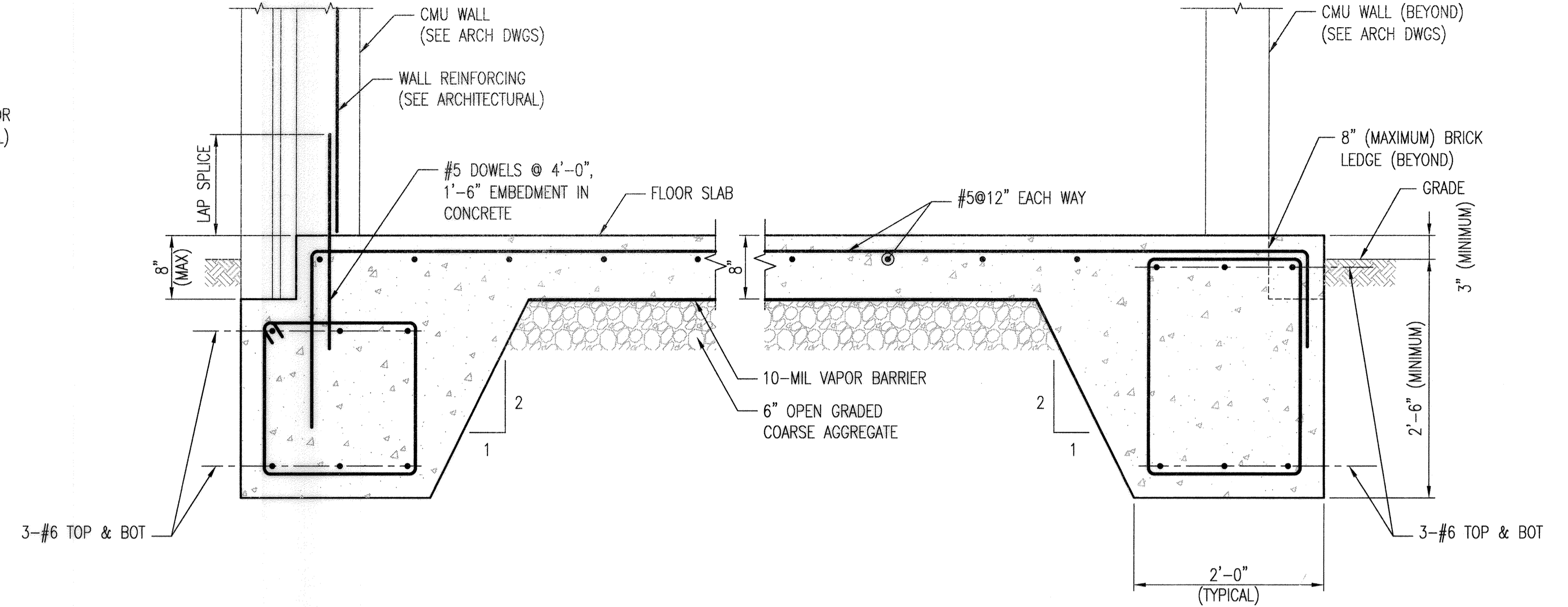




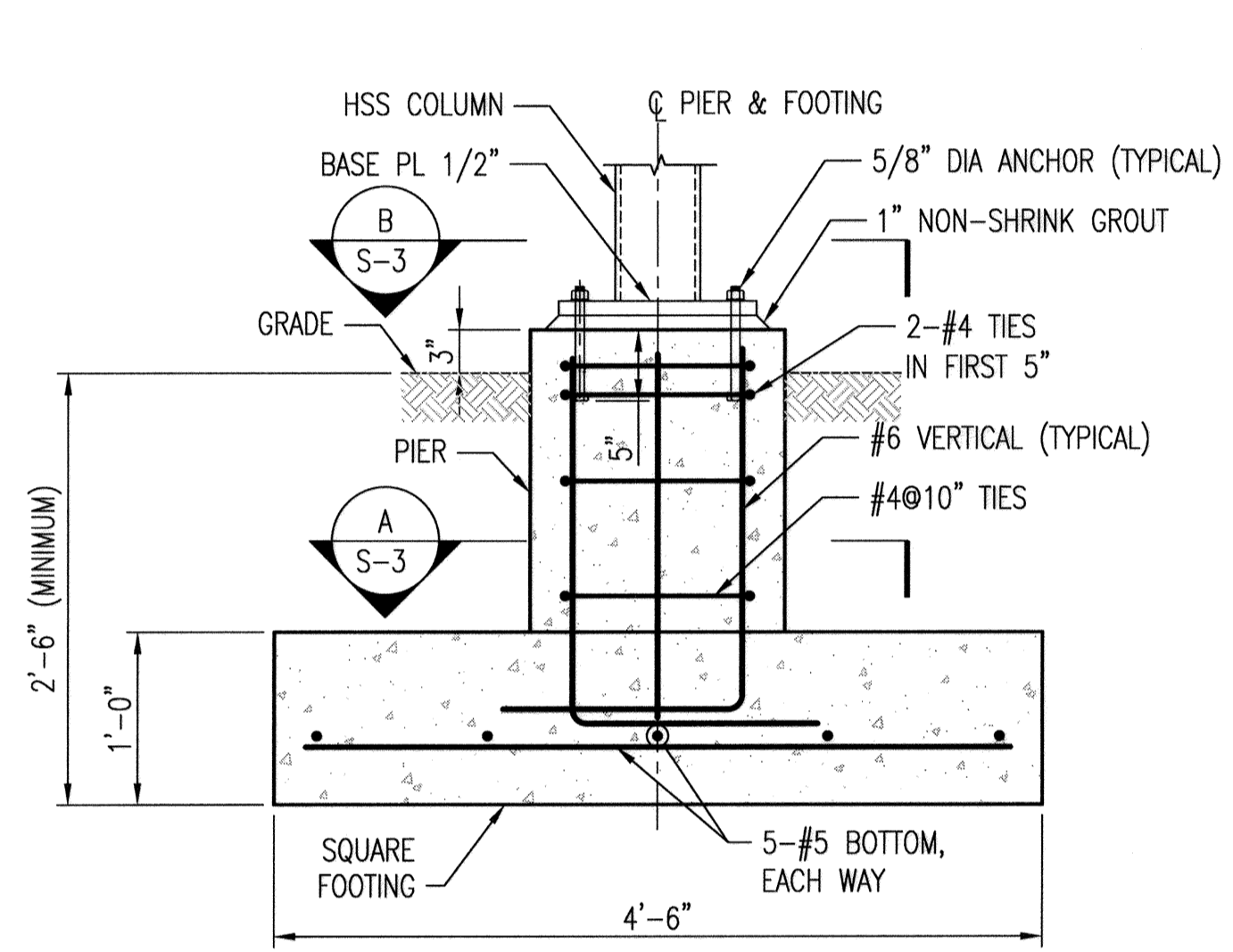
1 TYPICAL ODOR CONTROL SUPPORT PAD  
S-3 SCALE: NO SCALE



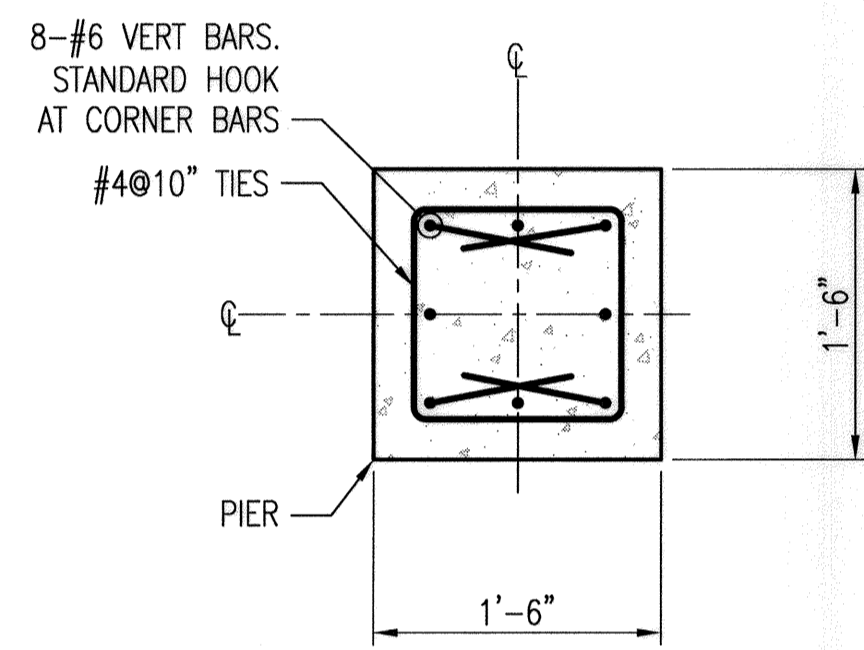
2 TYPICAL GENERATOR PAD DETAIL  
S-3 SCALE: NO SCALE



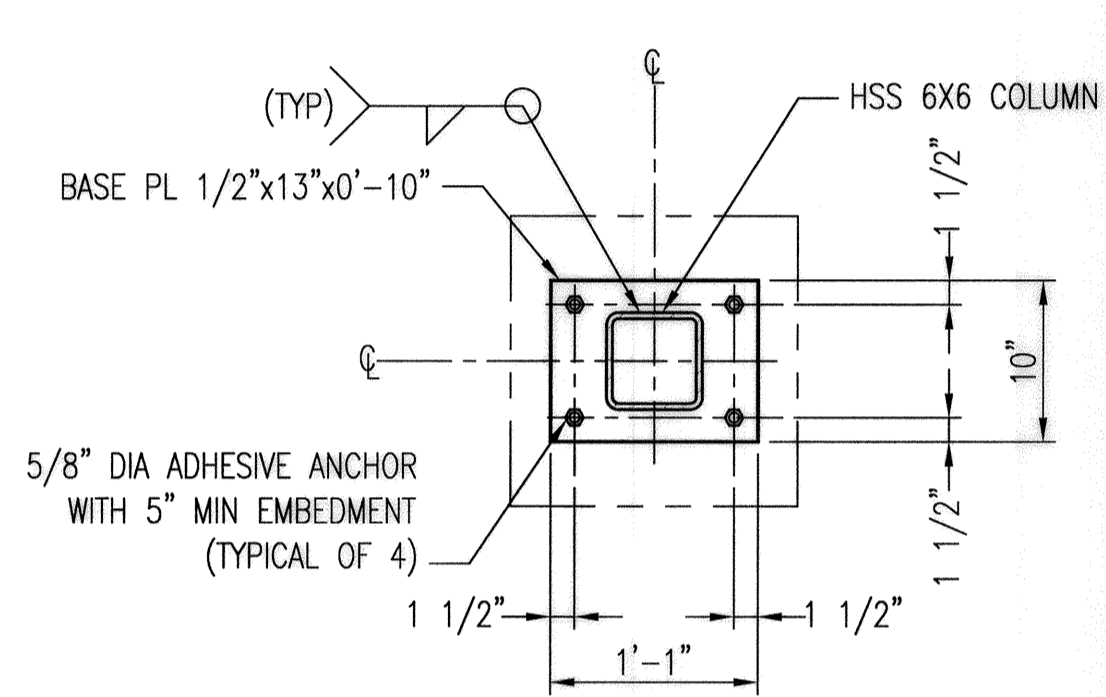
3 TYPICAL SLAB-ON-GROUND WITH THICKENED EDGES  
S-3 SCALE: 1"=1'-0"



4 TYPICAL COLUMN FOOTING DETAIL  
S-3 SCALE: 1"=1'-0"



A SECTION  
S-3 SCALE: 1"=1'-0"  
REF: S-3



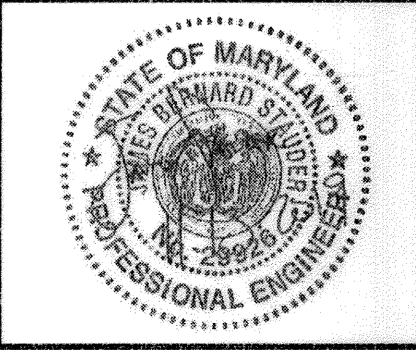
B SECTION  
S-3 SCALE: 1"=1'-0"  
REF: S-3

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 Nov 13, 2019 9:54am

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DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND  
 Director of Public Works: *[Signature]* DATE: 3-25-2020  
 Chief, Bureau of Utilities: *[Signature]* DATE:

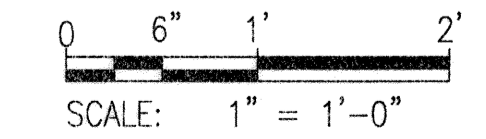
**WRA**  
**Whitman, Reardon & Associates, LLP**  
 801 South Caroline Street, Baltimore, Maryland 21231



DES:	RBG			
DRN:	CJS			
CHK:	JFC			
BY:	NO.	REVISION	DATE	

TYPICAL STRUCTURAL DETAILS

ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE  
 CAPITAL PROJECT NO. S6294  
 CONTRACT NO. 20-4954  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND



**S-3**  
 SCALE AS SHOWN  
 SHEET 12 OF 27



**PIPING SYMBOLS**

DOUBLE LINE	DESCRIPTION
	FLANGED JOINT
	MECHANICAL JOINT
	FLEXIBLE COUPLING
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	ELBOW, 90 DEGREE
	TEE
	WATERSTOP OR THRUST COLLAR AS INDICATED ON PLANS OR SECTIONS

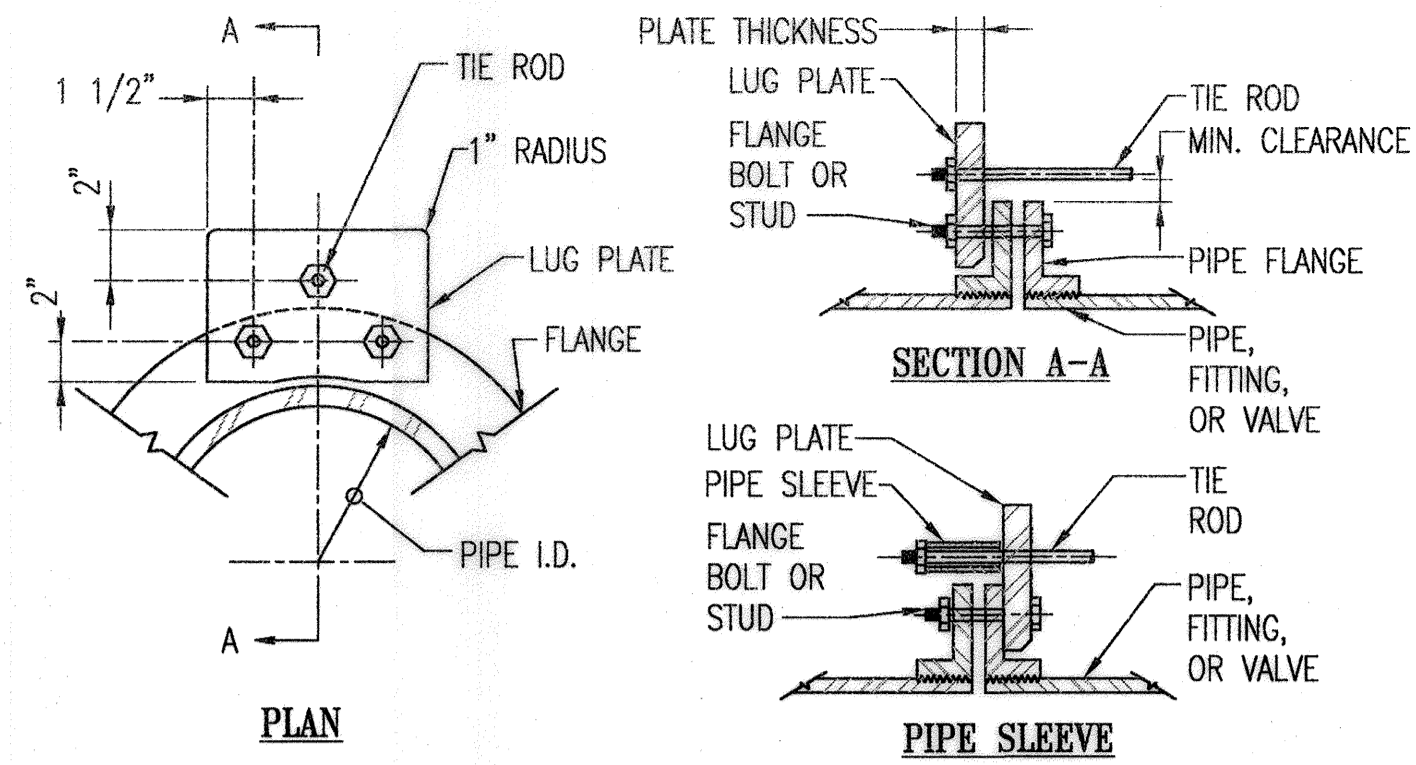
SINGLE LINE	DESCRIPTION
	GATE VALVE
	BACKFLOW PREVENTER
	REDUCER
	PRESSURE REDUCING VALVE
	HOSE BIBB
	NON-FREEZE WALL HYDRANT
	ANGLE VALVE

**ABBREVIATIONS**

ABBREVIATION	DESCRIPTION
ASTM	AMERICAN STANDARD FOR TESTING AND MATERIALS
B	BELT
CFM	CUBIC FEET PER MINUTE
CL	CENTER LINE
EF	EXHAUST FAN
EL	ELEVATION
EUH	ELECTRIC UNIT HEATER
ETC.	ET CETERA
EX	EXISTING
FLG	FLANGE
FT.	FEET
GBD	GRAVITY BACKDRAFT DAMPER
GPM	GALLONS PER MINUTE
HP	HORSEPOWER
HZ	HERTZ
ID	IDENTIFICATION
I.D.	INSIDE DIAMETER
INV.	INVERT
MAX.	MAXIMUM
MGD	MILLION GALLONS PER DAY
MIN.	MINIMUM
NO.	NUMBER
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
P	PROPELLER
PE	PLAIN END
PH	PHASE
PSI	POUNDS PER SQUARE INCH
RPM	REVOLUTIONS PER MINUTE
S.P.	STATIC PRESSURE
S.S.	STAINLESS STEEL
TYP.	TYPICAL
W/	WITH
W.C.	WATER COLUMN

**GENERAL NOTES**

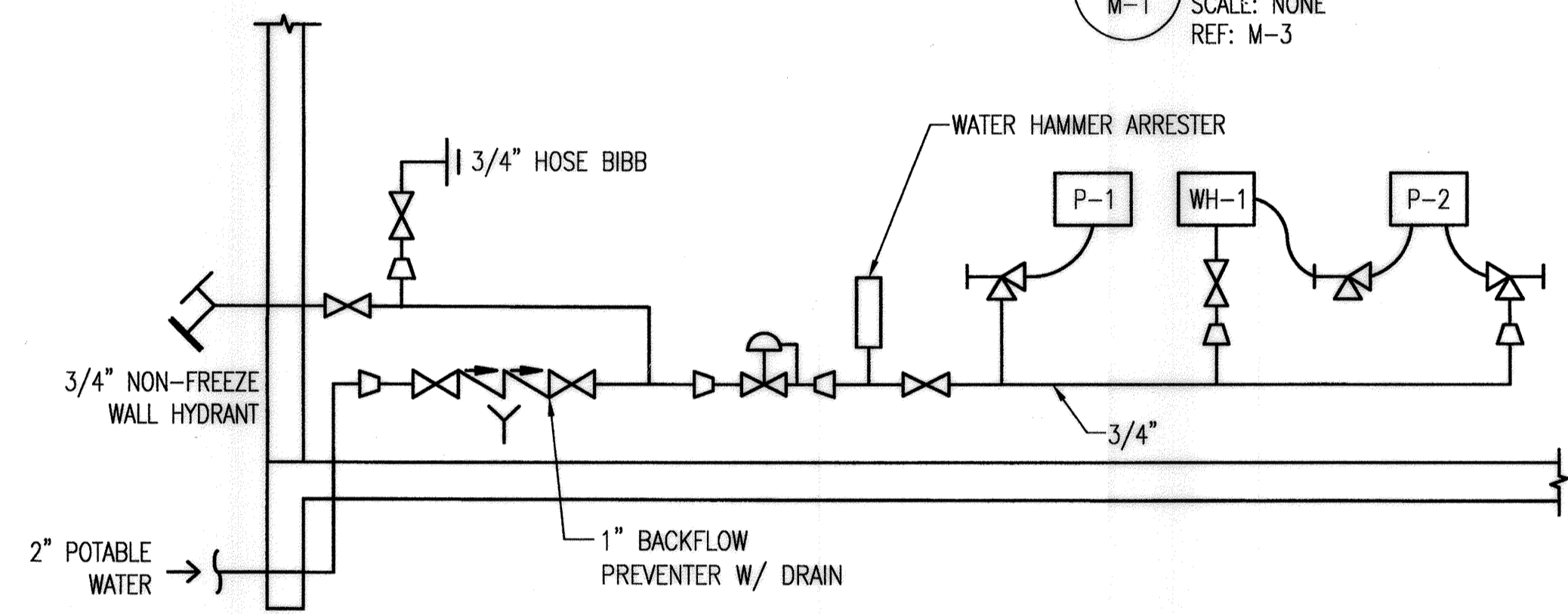
- PIPING CONNECTIONS 3 INCH AND SMALLER HAVE BEEN SCHEMATICALLY SHOWN ON PLAN AND SECTION DRAWINGS. PROVIDE DETAILED PIPE ROUTING AND ALL APPURTENANCES IN ACCORDANCE WITH RESPECTIVE SCHEMATICS. PROVIDE ALL NECESSARY FITTINGS TO MAKE CONNECTIONS.
- ALL EXPANSION JOINTS, FLANGE ADAPTERS AND FLEXIBLE COUPLINGS SHALL HAVE TIE-RODS AS SHOWN ON TYPICAL DETAILS.
- UNLESS OTHERWISE NOTED, ECCENTRIC REDUCERS SHALL BE INSTALLED FLAT SIDE ON TOP.
- UNLESS OTHERWISE NOTED, ALL DUCTILE IRON PIPING INTERNAL TO FACILITY(IES) SHALL HAVE FLANGED CONNECTIONS.
- VALVES ARE NORMALLY OPEN (N.O.) UNLESS NOTED AS NORMALLY CLOSED (N.C.).
- UNLESS OTHERWISE NOTED, ALL EQUIPMENT SHALL BE PROVIDED WITH A MINIMUM 4-INCH CONCRETE HOUSEKEEPING PAD SIZED TO SUIT EQUIPMENT.
- SUPPORTS AND HANGERS ARE ONLY SHOWN WHERE SPECIFIC TYPES OR LOCATIONS ARE REQUIRED. ADDITIONAL SUPPORTS AND HANGERS SHALL BE REQUIRED AS SPECIFIED.
- SEE STRUCTURAL DRAWINGS FOR CONCRETE PIPE SUPPORT AND PEDESTAL DETAILS.



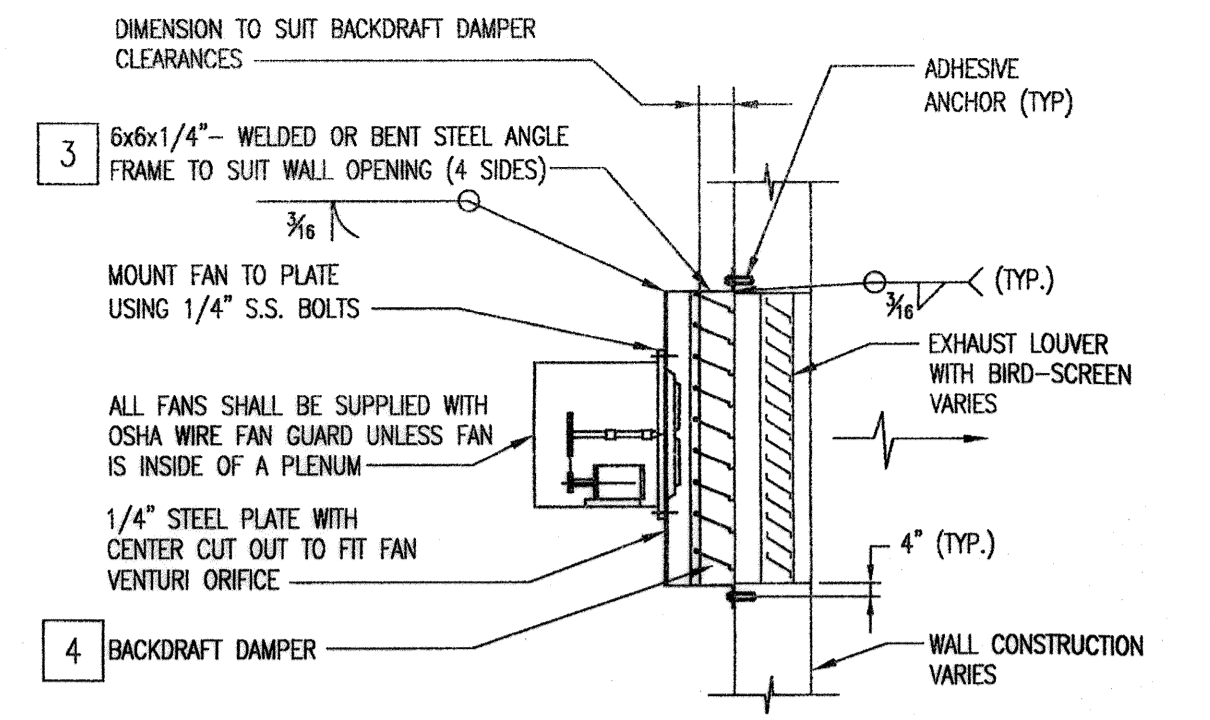
- NOTES:**
- ONE FLANGE CONNECTION IS SHOWN FOR CLARITY. DETAIL IS TYPICAL FOR BOTH FLANGES.
  - IF PLATE IS REQUIRED TO BE MOUNTED ON REVERSE SIDE OF FLANGE, PROVIDE A PIPE SLEEVE AND WASHER ON THE END OF THE TIE ROD SO THAT THE MAXIMUM CLEARANCE BETWEEN THE SLEEVE AND THE FLANGE CAN BE MAINTAINED.
  - FLANGE SURFACE IN CONTACT WITH LUG PLATE SHALL BE GROUND SMOOTH TO CLEAR THE CASTING IRREGULARITY AND EMBOSSED LETTERING. CONTACT SURFACE OF LUG PLATE SHALL BE MACHINED TO A ONE DEGREE TAPER FOR PIPE DIAMETERS 12-INCH AND LARGER.
  - MATERIALS SHALL BE AS FOLLOWS:  
 ROD MATERIAL - ASTM A193, GRADE B7  
 PLATE MATERIAL - ASTM A36  
 SLEEVE MATERIAL - SCHEDULE 40 STEEL PIPE

PIPE SIZE	NUMBER OF RODS	DIAMETER OF RODS	LUG PLATE THICKNESS	PIPE SLEEVE (IF REQUIRED)	DESIGN PRESSURE PSI
6"	2	3/4"	1"	1"	150

**A TIE ROD DETAIL**  
SCALE: NONE  
REF: M-3

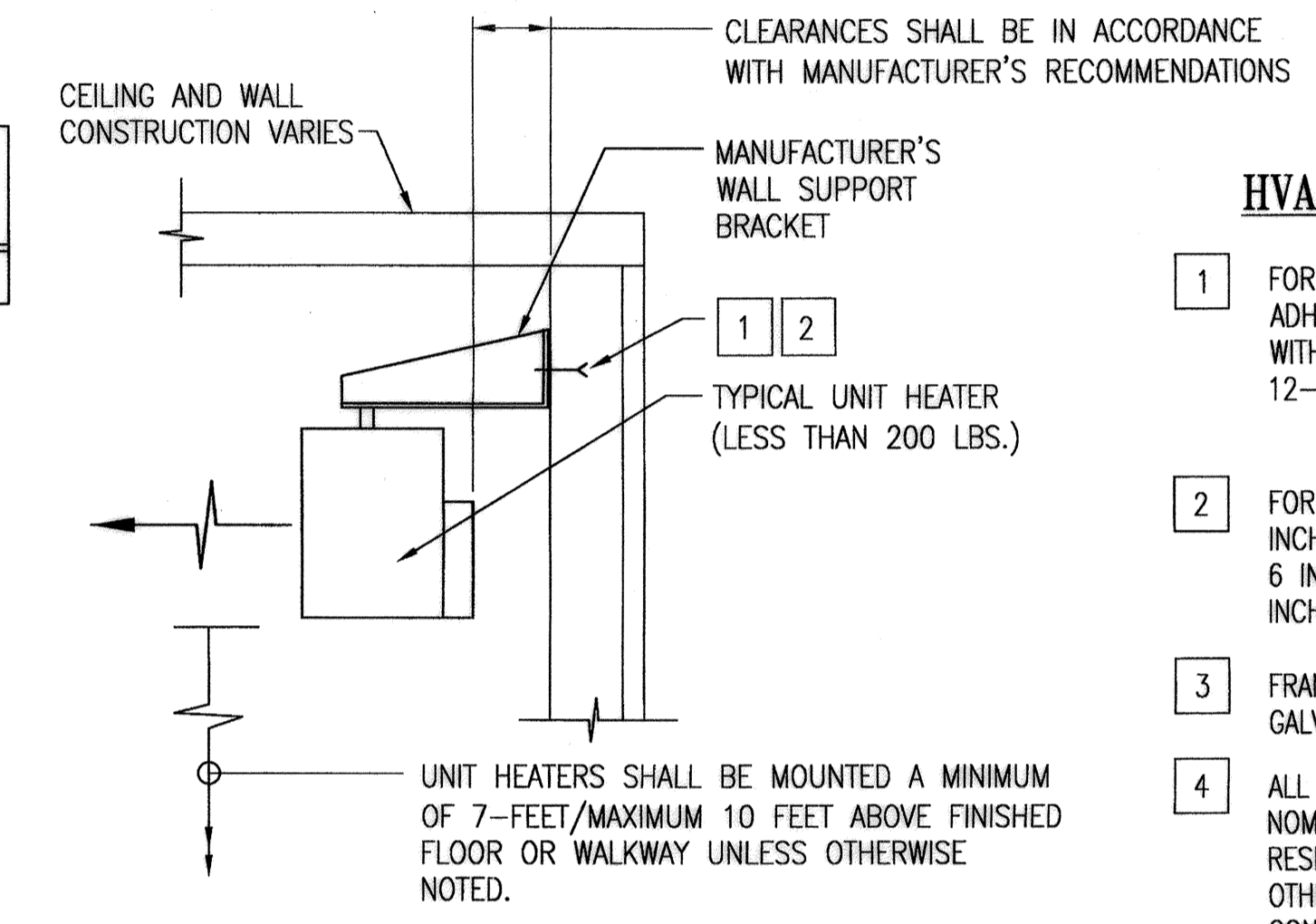


**C DOMESTIC RISER DIAGRAM**  
SCALE: NONE  
REF: M-3



- NOTES:**
- FRAME AND PLATE SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
  - ALL DAMPERS SHALL MATCH IN NOMINAL SIZE WITH THEIR RESPECTIVE LOUVERS UNLESS OTHERWISE INDICATED ON THE CONTRACT DRAWINGS. WHERE MULTIPLE FANS SHARE A LOUVER, THE BACKDRAFT DAMPERS SHALL BE PARTITIONED FOR EACH RESPECTIVE FAN. SEAL AS REQUIRED.

**B TYPICAL EXHAUST FAN DETAIL**  
SCALE: NONE  
REF: M-3



**D TYPICAL WALL MOUNT UNIT HEATER DETAIL**  
SCALE: NONE  
REF: M-6

**HVAC NOTES**

- FOR BLOCK WALL ANCHORING USE ADHESIVE ANCHOR FOR MASONRY, S.S. WITH 6-INCH EMBEDMENT SPACED AT 12-INCHES ON-CENTER.
- FOR CONCRETE WALL ANCHORING USE 1/2 INCH DIA. S.S. ADHESIVE ANCHORS WITH 6 INCH EMBEDMENT SPACED AT 12 INCHES ON CENTER.
- FRAME AND PLATE SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
- ALL DAMPERS SHALL MATCH IN NOMINAL SIZE WITH THEIR RESPECTIVE LOUVERS UNLESS OTHERWISE INDICATED ON THE CONTRACT DRAWINGS. WHERE MULTIPLE FANS SHARE A LOUVER, THE BACKDRAFT DAMPERS SHALL BE PARTITIONED FOR EACH RESPECTIVE FAN. SEAL AS REQUIRED.

**FAN SCHEDULE**

UNIT I.D.	TYPE	DRIVE	TOTAL CAPACITY CFM	TOTAL S.P. IN W.C.	MAX. FAN RPM	ELECTRICAL CHARACTERISTICS VOLTS/PH/Hz	MAX MOTOR HP	DAMPER	(LOCATION, CLASSIFICATION, ETC.)
EF-1	P	D	750	0.25	1800	120/1/60	0.25	BDD	ELECTRIC ROOM, NEMA 12

**ELECTRIC UNIT HEATER SCHEDULE**

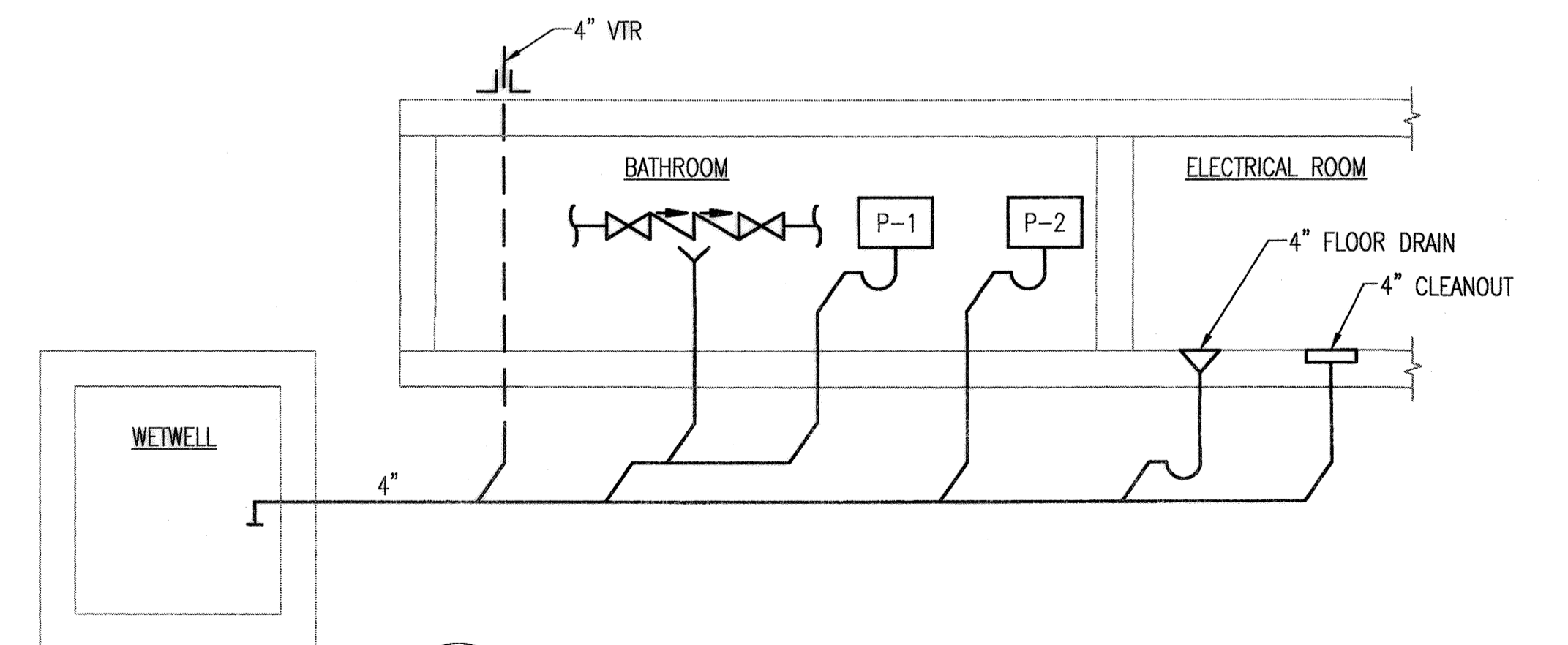
UNIT I.D.	KW	AMPS	ELECTRICAL CHARACTERISTICS VOLTS/PH/Hz	THERMOSTAT INTEGRAL(I) OR REMOTE WALL(R)	REMARKS (LOCATION, TYPE, ETC.)
EUH-1	4	12.0	208/3/60	I	NEMA 12, ELECTRICAL ROOM

**PLUMBING FIXTURE SCHEDULE**

FIXTURE	DESCRIPTION	CW	HW	VENT	SAN	REMARKS
P-1	TOILET	1/2"	-	4"	4"	BATHROOM, BOTTOM OUTLET
P-2	LAVATORY SINK	1/2"	1/2"	1 1/2"	1 1/2"	-

**WATER HEATER SCHEDULE**

UNIT I.D.	TYPE	TEMP. RISE	VOLTS/PHASE	KW	AMPS	REMARKS (LOCATION, CLASSIFICATION, ETC.)
WH-1	INST.	56 DEG AT 0.5 GPM	208/1	4.1	20	BATHROOM



**E SANITARY RISER DIAGRAM**  
SCALE: NONE  
REF: M-3

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DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND  
 Director of Public Works: *John J. Van...* DATE: 3/26/20  
 Chief, Bureau of Engineering: *Morgan S. Butler* DATE: 3/24/20  
 Chief, Bureau of Utilities: *Paul...* DATE: 3/26/20  
 Chief, Utility Design Division: *ACT* DATE:

**WRA**  
 Whitman, Reardon & Associates, LLP  
 801 South Caroline Street, Baltimore, Maryland 21231



DES:	RHM				
DRN:	EMS				
CHK:	DCC				
BY:	NO.	REVISION	DATE	600' SCALE MAP NO. 48	BLOCK NO. 19

MECHANICAL LEGEND,  
 ABBREVIATIONS, AND DETAILS

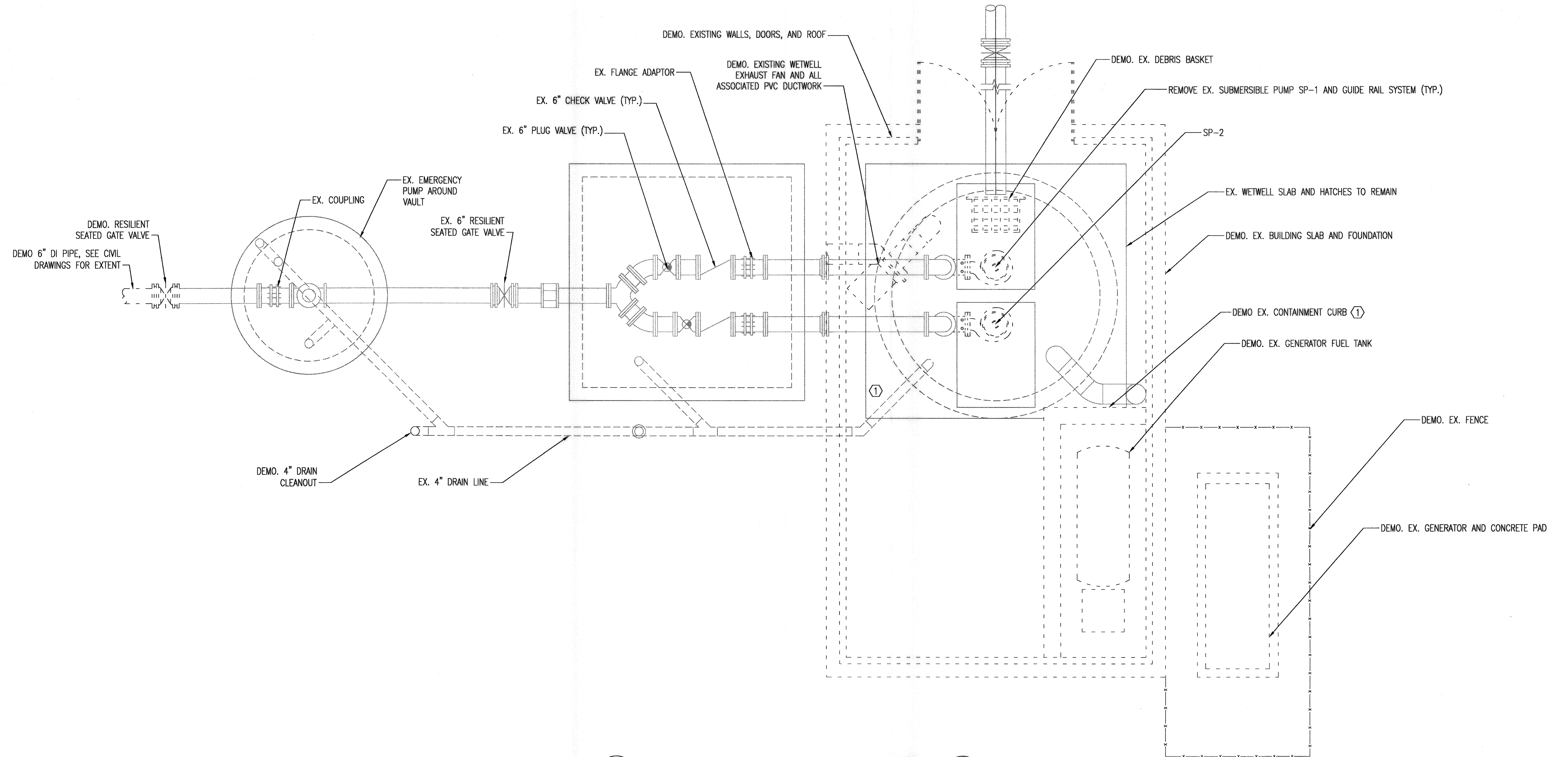
**ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE**  
 CAPITAL PROJECT NO. S6294  
 CONTRACT NO. 20-4954  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND


**M-1**  
 SCALE AS SHOWN  
 SHEET 13 OF 27  
 NOVEMBER 2019



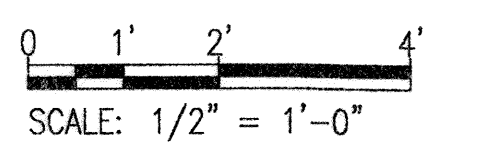
**DEMOLITION NOTES:**

① ALL BASE SLAB SURFACES SHALL BE SMOOTH AND CLEAN WHERE EXISTING CONTAINMENT WALLS WERE LOCATED. ANY VOIDS SHALL BE FILLED WITH APPROPRIATE GROUT MATERIAL.



① **PUMPING STATION DEMOLITION PLAN**  
 M-2 SCALE: 1/2" = 1'-0" 

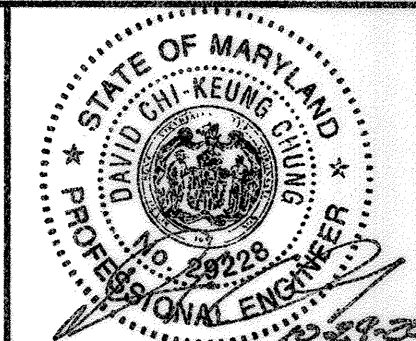
**GRAPHIC SCALE:**



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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	
DIRECTOR OF PUBLIC WORKS DATE: <u>3/26/20</u>	CHIEF, BUREAU OF ENGINEERING DATE: <u>3/24/20</u>
CHIEF, BUREAU UTILITIES DATE: <u>3-26-2020</u>	CHIEF, UTILITY DESIGN DIVISION DATE: <u>3/25/20</u>

**WRA**  
 Whitman, Requardt & Associates, LLP  
 801 South Caroline Street, Baltimore, Maryland 21231



DES:	RHM			
DRN:	EMS			
CHK:	DCC			
BY:	NO.	REVISION	DATE	

PUMPING STATION DEMOLITION PLAN  
 600' SCALE MAP NO. 48 BLOCK NO. 19

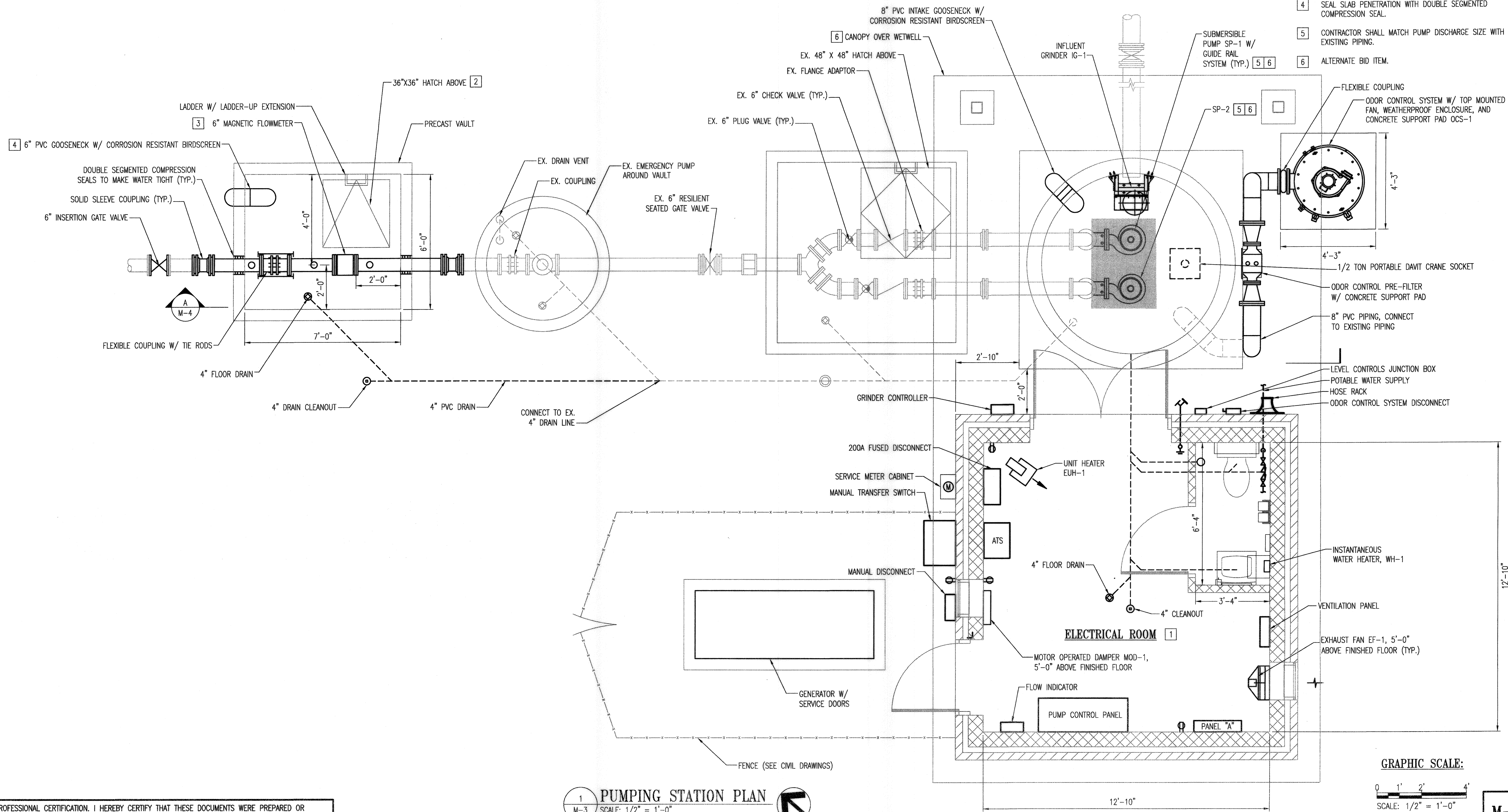
**ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE**  
 CAPITAL PROJECT NO. S6294  
 CONTRACT NO. 20-4954  
 6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

**M-2**  
 SCALE AS SHOWN  
 SHEET 14 OF 27



**CONSTRUCTION NOTES:**

- 1 AREA SHALL BE NEMA 12 RATED. ALL EXISTING CONTROL PANELS AND ELECTRICAL EQUIPMENT SHALL BE RELOCATED TO THE ELECTRICAL ROOM.
- 2 HATCH DRAIN SHALL BE PIPED TO FLOW METER VAULT FLOOR DRAIN WITH 1 1/2" PVC PIPE.
- 3 PROVIDE FILLER SPOOL PIECE FOR MAINTENANCE PURPOSES.
- 4 SEAL SLAB PENETRATION WITH DOUBLE SEGMENTED COMPRESSION SEAL.
- 5 CONTRACTOR SHALL MATCH PUMP DISCHARGE SIZE WITH EXISTING PIPING.
- 6 ALTERNATE BID ITEM.



**1 PUMPING STATION PLAN**  
M-3 SCALE: 1/2" = 1'-0"

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

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DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*James P. Buttle* 3/21/20  
CHIEF, BUREAU OF ENGINEERING DATE

*Paul J. Shaw* 2/25/20  
CHIEF, UTILITY DESIGN DIVISION DATE

*Paul J. Shaw* 3-25-2020  
CHIEF, BUREAU UTILITIES DATE

**WRA**  
Whitman, Requardt & Associates, LLP  
801 South Caroline Street, Baltimore, Maryland 21231



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DRN:	EMS			
CHK:	DCC			
BY:	NO.	REVISION	DATE	

PUMPING STATION PLAN

600' SCALE MAP NO. 48 BLOCK NO. 19

**ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE**

CAPITAL PROJECT NO. S6294  
CONTRACT NO. 20-4954

6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

**M-3**

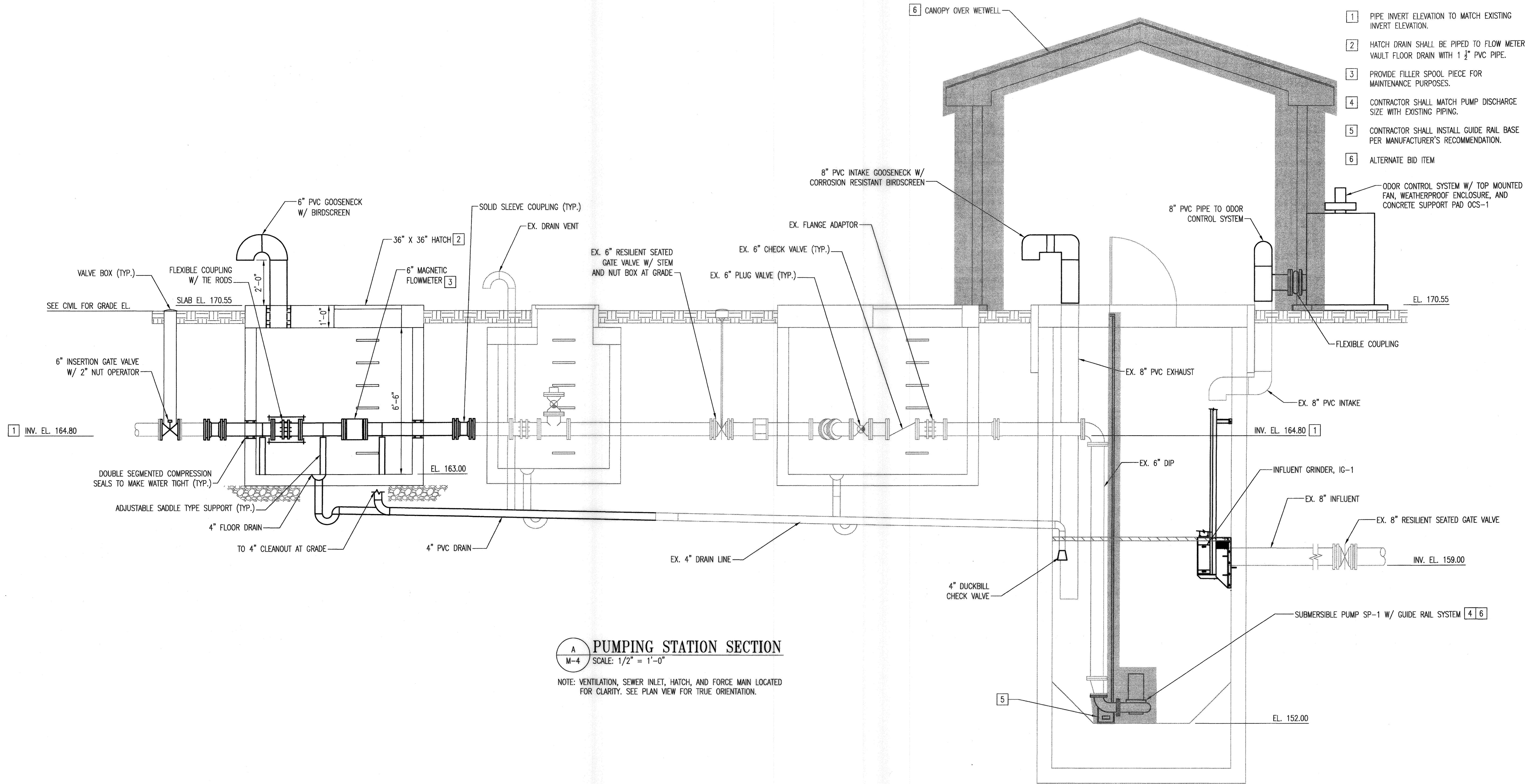
SCALE AS SHOWN

SHEET 15 OF 27



**CONSTRUCTION NOTES:**

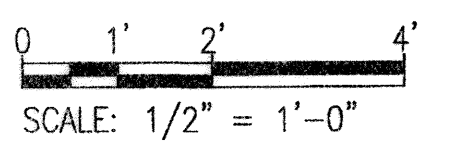
- [1] PIPE INVERT ELEVATION TO MATCH EXISTING INVERT ELEVATION.
- [2] HATCH DRAIN SHALL BE PIPED TO FLOW METER VAULT FLOOR DRAIN WITH 1 1/2" PVC PIPE.
- [3] PROVIDE FILLER SPOOL PIECE FOR MAINTENANCE PURPOSES.
- [4] CONTRACTOR SHALL MATCH PUMP DISCHARGE SIZE WITH EXISTING PIPING.
- [5] CONTRACTOR SHALL INSTALL GUIDE RAIL BASE PER MANUFACTURER'S RECOMMENDATION.
- [6] ALTERNATE BID ITEM



**A PUMPING STATION SECTION**  
M-4 SCALE: 1/2" = 1'-0"

NOTE: VENTILATION, SEWER INLET, HATCH, AND FORCE MAIN LOCATED FOR CLARITY. SEE PLAN VIEW FOR TRUE ORIENTATION.

**GRAPHIC SCALE:**



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DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

Director of Public Works: *[Signature]* 3/26/20  
Date: 3/26/20

Chief, Bureau of Engineering: *[Signature]* 3/26/20  
Date: 3/26/20

Chief, Bureau of Utilities: *[Signature]* 3/26/20  
Date: 3/26/20

**WRA**  
Whitman, Requardt & Associates, LLP  
801 South Caroline Street, Baltimore, Maryland 21231



DES:	RHM			
DRN:	EMS			
CHK:	DCC			
BY:	NO.	REVISION	DATE	

PUMPING STATION SECTION

600' SCALE MAP NO. 48 BLOCK NO. 19

**ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE**  
CAPITAL PROJECT NO. S6294  
CONTRACT NO. 20-4954

6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

**M-4**

SCALE AS SHOWN






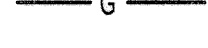
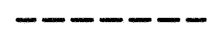
















SHEET 18 OF 27



**GENERAL NOTES:**

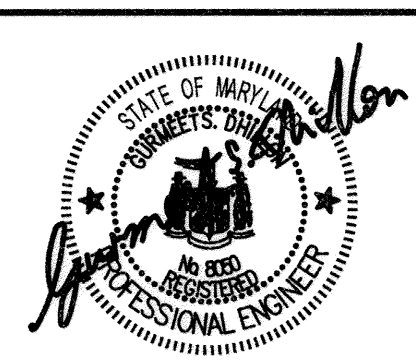
- CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL WORK WITH ELECTRIC POWER AND TELEPHONE UTILITY COMPANY.
- ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE LATEST EDITION OF NATIONAL ELECTRICAL CODE AND APPLICABLE LOCAL CODES, RULES AND REGULATIONS.
- ALL CONDUITS AND EQUIPMENT SHALL BE INSTALLED, WIRED AND GROUNDED IN ACCORDANCE WITH THE LATEST RULES AND REGULATIONS OF NATIONAL ELECTRICAL CODE (NEC) AND LOCAL CODES.
- CONDUIT RUNS ARE SHOWN DIAGRAMATICALLY ONLY AND SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH OTHER EQUIPMENT. EXPOSED CONDUITS SHALL BE RUN ON THE WALLS HORIZONTALLY AND VERTICALLY.
- CONDUITS SHALL BE TERMINATED SO AS TO PERMIT NEAT CONNECTION TO EQUIPMENT. CONDUIT ENDS SHALL BE SUITABLY SEALED TO PREVENT TRANSGRESS OF MOISTURE THROUGH CONDUITS FROM ONE EQUIPMENT TO OTHER.
- CONDUITS AND WIRES SHALL BE SIZED IN ACCORDANCE WITH NEC UON. MINIMUM CONDUIT SIZE SHALL BE 3/4" UON, AND MINIMUM WIRE SIZE SHALL BE #12 AWG UON FOR POWER CIRCUITS.
- CONDUITS INSTALLED EXPOSED ON EXTERIOR/INTERIOR OF BUILDING SHALL BE GRS.
- WALL AND FLOOR PENETRATIONS FOR ELECTRICAL CONDUITS SHALL BE CORE DRILLED. PROVIDE SEGMENTED RUBBER COMPRESSION SEALS ON BOTH SIDES.
- PROVIDE ALL REQUIRED PULL AND JUNCTION BOXES FOR INSTALLATION OF THE WIRING IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS THOUGH THE BOXES MAY NOT BE INDICATED ON THE DRAWINGS. ALL JUNCTION AND PULL BOXES SHALL BE LABELED WITH THEIR VOLTAGE AND USAGE.
- FINAL LOCATION FOR ALL ELECTRICAL EQUIPMENT, INCLUDING RECEPTACLES, JUNCTION BOXES FOR SPECIFIED EQUIPMENT, LIGHTING FIXTURES, SWITCHES, ETC. SHALL BE APPROVED BY THE OWNER PRIOR TO INSTALLATION.
- THE WIRING DIAGRAMS, QUANTITY AND SIZE OF WIRES AND CONDUITS ARE BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. MODIFICATIONS APPROVED BY THE COUNTY MAY BE MADE BY THE CONTRACTOR AT HIS EXPENSE TO ACCOMMODATE EQUIPMENT ACTUALLY PURCHASED.
- ALL ALARM INDICATION AND CONTROL WIRING IN JUNCTION BOXES SHALL BE WIRED TO NUMBERED TERMINAL STRIPS AND IDENTIFIED AS TO START AND END OF RUN.
- ALL ELECTRICAL EQUIPMENT INSTALLED AGAINST CONCRETE OR MASONRY WALLS SHALL BE INSTALLED WITH 1/4" SPACERS BETWEEN THE EQUIPMENT AND THE MOUNTING SURFACE. SPACERS SHALL BE STAINLESS STEEL, PVC, OR NYLON.
- ELECTRICAL ENCLOSURES LOCATED OUTDOORS SHALL BE WEATHERPROOF NEMA 4X, UON.
- THE CIRCUIT NUMBERS ARE FOR IDENTIFICATION PURPOSES ONLY. THE CONTRACTOR IS RESPONSIBLE FOR BALANCING LOADS AND CORRECTLY PHASING CIRCUITS IN PANELBOARDS.
- ALL CONDUIT TERMINATIONS IN PULL BOXES OR EQUIPMENT SHALL BE MADE USING "MYERS HUBS" FOR EQUIPMENT RATED OTHER THAN NEMA 1 OR 11.
- REFER TO "I" DRAWINGS FOR ADDITIONAL REQUIREMENTS FOR ELECTRICAL CONDUITS AND CONDUCTORS.
- REFER INSTRUMENTATION DRAWINGS FOR STARTERS AND COMBINATION STARTERS DETAILS.

**LEGEND:**

-  COMBINATION STARTER, SIZE AS NOTED
-  JUNCTION BOX
-  MOTOR; HP AS NOTED
-  GROUND
-  FUSE
-  ELECTRIC GROUND GRID DIRECT BURIED
-  CONDUIT UNDER FLOOR SLAB OR EMBEDDED, STUB-UP ENDS AT 4" AFF
-  CIRCUIT BREAKER
-  WALL SWITCH 20A, 120V IN NEMA-12 ENCLOSURE, UON
-  MANUAL STARTER WITH HOA SWITCH IN NEMA-12 ENCLOSURE, UON, COMPATIBLE WITH MOTOR
-  DISCONNECT SWITCH NON-FUSED, 30A, 3P, 208V, NEMA-12 ENCLOSURE, UON
-  GROUND ROD
-  DUPLEX RECEPTACLE 20A, 125V, NEMA 5-20R, MH 1'-6" AFF
-  GROUND FAULT RECEPTACLE 20A, 125V, NEMA 5-20R, 6" ABOVE SINK
-  WEATHER PROOF GROUND FAULT RECEPTACLE IN IN-USE WEATHER PROOF COVER, 20A, 125V, NEMA 5-20R, 18" AFF
-  ELECTRIC UNIT HEATER - EUH
-  ELECTRICAL HOMERUNS TO PANELBOARD/SWITCHBOARD
-  EXISTING ELECTRICAL MANHOLE
-  FLUORESCENT LUMINAIRE, 2'x4' MODULAR
-  EMERGENCY BATTERY PACK, 2 HEADS
-  SURFACE MOUNTED LUMINAIRE
-  WALL MOUNTED LUMINAIRE
-  WALL MOUNTED EXTERIOR LUMINAIRE

**ELECTRICAL ABBREVIATIONS:**

- A, AMP AMPERE
- AC ALTERNATING CURRENT
- AF AMPERE FRAME
- AFF ABOVE FINISHED FLOOR
- AIC AMPS INTERRUPTING CAPACITY
- AT AMPERE TRIP
- ATS AUTOMATIC TRANSFER SWITCH
- C CONDUIT
- CB CIRCUIT BREAKER
- CKT CIRCUIT
- CONN CONNECTION OR CONNECT
- DET DETAIL
- DWG DRAWING
- EF EXHAUST FAN
- ELECT ELECTRICAL
- EUH ELECTRIC UNIT HEATER
- EX EXISTING
- FVNR FULL VOLTAGE NON-REVERSING
- G, GRD GROUND
- GRS GALVANIZED RIGID STEEL CONDUIT
- HP HEAT PUMP/HORSEPOWER
- Hz HERTZ
- I INSTRUMENTATIONS
- KA KILO AMPERES
- KAIC KILOAMPERES INTERRUPTING CAPACITY
- KCMIL THOUSAND CIRCULAR MILLS
- KW KILOWATT
- KVA KILOVOLT AMPERE
- MAX MAXIMUM
- MCCB MOLDED CASE CIRCUIT BREAKER
- MIN MINIMUM
- MOT MOTOR
- N NEUTRAL
- NEC NATIONAL ELECTRICAL CODE
- P POLE
- PB PULL BOX
- PCP PUMP CONTROL PANEL
- PNL PANEL
- PWR POWER
- PVC POLYVINYL CHLORIDE
- REC/RECP RECEPTACLE
- RMC RIGID METAL CONDUIT
- SCH SCHEDULE
- SF SUPPLY FAN
- SPD SURGE PROTECTION DEVICE
- SS STAINLESS STEEL
- TSP TWISTED SHIELDED PAIR
- TYP TYPICAL
- UG UNDERGROUND
- UON UNLESS OTHERWISE NOTED
- V VOLTS
- VA VOLT AMPERE
- W WATTS
- WP WEATHER PROOF



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DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Paul J. Reardon* 3/24/20  
DIRECTOR OF PUBLIC WORKS DATE  
CHIEF, BUREAU OF ENGINEERING

*Paul J. Reardon* 3/24/20  
CHIEF, BUREAU OF UTILITIES DATE  
CHIEF, UTILITY DESIGN DIVISION ACT DATE



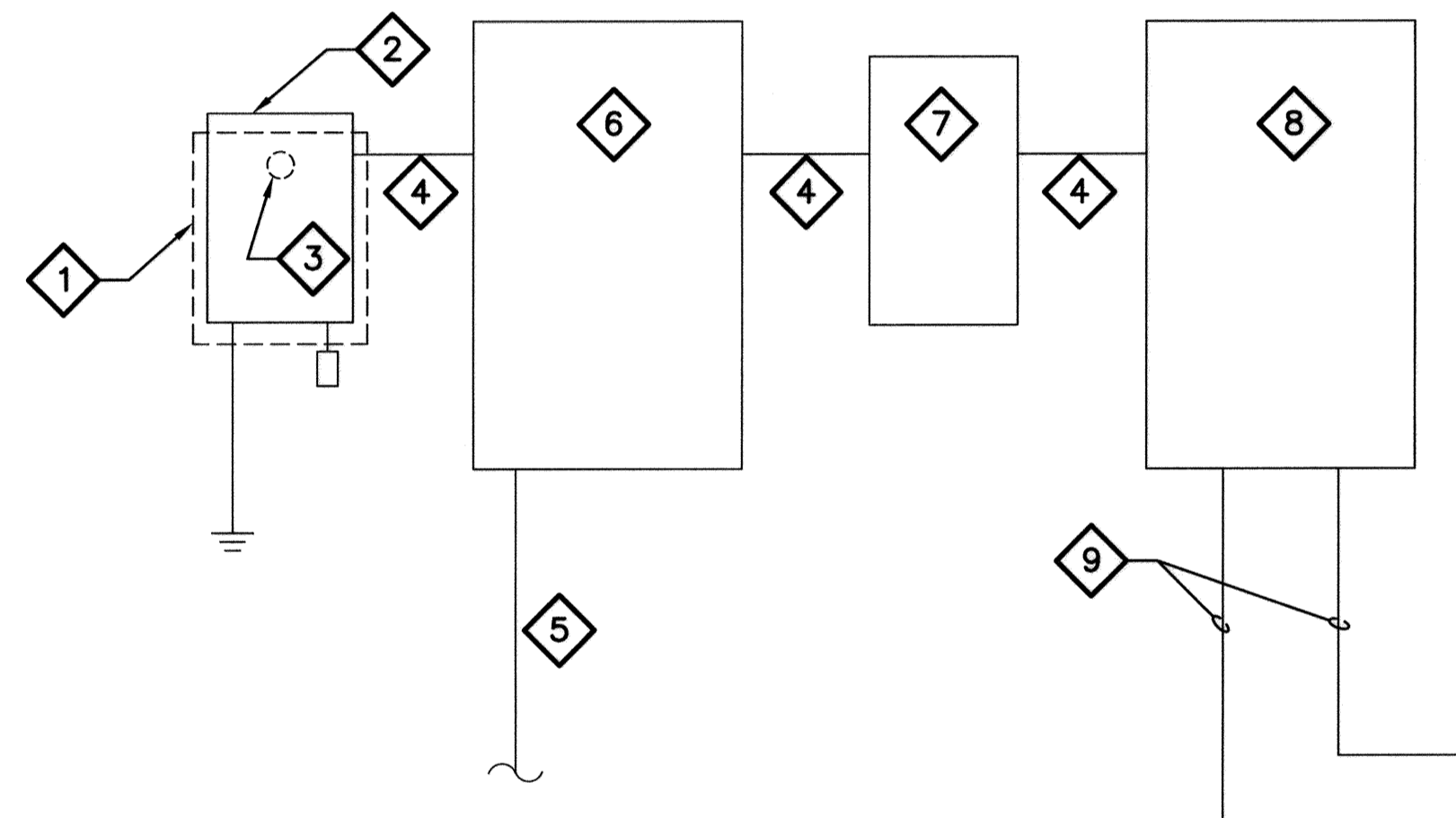
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BY	NO.	REVISION	DATE		

**ELECTRICAL GENERAL NOTES, LEGENDS, AND ABBREVIATIONS**

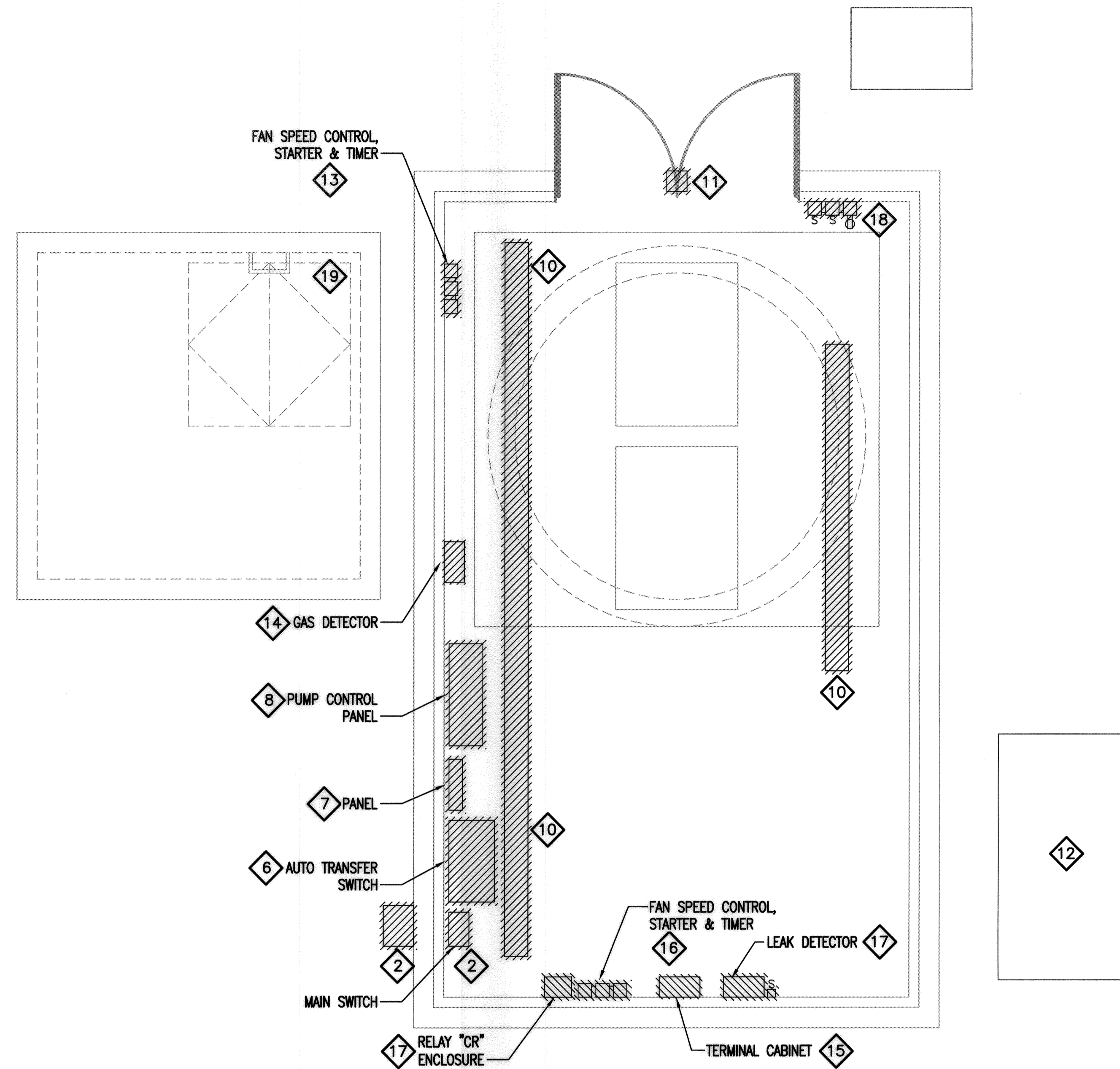
ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE  
CAPITAL PROJECT NO. S6294  
CONTRACT NO. 20-4954  
6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

E-1  
SCALE AS SHOWN  
SHEET 17 OF 27





1 EXISTING ONE-LINE DEMOLITION DIAGRAM  
E-2 NOT TO SCALE



2 PUMPING STATION ELECTRICAL DEMOLITION PLAN  
E-2 1/2"=1'-0"

**SPECIFIC NOTES**

1. CONTACT UTILITY COMPANY TO REMOVE EXISTING METER SOCKET.
2. REMOVE EXISTING SERVICE DISCONNECT.
3. METER (OUTSIDE) TO BE REMOVED BY UTILITY COMPANY.
4. REMOVE EXISTING RACEWAY AND WIRING.
5. REMOVE EXISTING GENERATOR FEEDER.
6. REMOVE EXISTING AUTO-TRANSFER SWITCH.
7. REMOVE EXISTING ELECTRICAL PANEL "LP" ALONG WITH BREAKERS AND BRANCH CIRCUITS "UON".
8. REMOVE EXISTING PUMP CONTROL AND POWER WIRES FROM PANEL.
9. EXISTING PUMP CONTROL RACEWAY AND WIRING TO BE REMOVED.
10. REMOVE EXISTING CEILING MOUNTED FLUORESCENT LIGHT FIXTURE ALONG WITH RACEWAY, WIRING AND CONTROL SWITCH FROM SOURCE PANEL.
11. REMOVE EXISTING WALL MOUNT OUTDOOR LIGHT FIXTURE ALONG WITH RACEWAY, WIRING AND CONTROL SWITCH FROM SOURCE PANEL.
12. REMOVE EXISTING PAD MOUNT GENERATOR ALONG WITH ITS FEEDER, CONTROL WIRING AND FUEL PIPES. REMOVE PAD TO 12" BELOW GRADE LEVEL.
13. REMOVE EXISTING WET WELL EXHAUST FAN SPEED CONTROL AND STARTER.
14. EXISTING GAS DETECTOR AND OUTDOOR ALARM LIGHT TO REMAIN.
15. REMOVE EXISTING TERMINAL CABINET AND WIRES.
16. EXISTING BUILDING FAN SPEED CONTROL AND STARTER TO BE REMOVED.
17. REMOVE EXISTING LEAK DETECTOR AND CONTROL RELAY.
18. REMOVE EXISTING LIGHT SWITCHES, RECEPTACLE AND WIRE WAY.
19. RETAIN EXISTING LIGHTS IN VAULT AND RECONNECT TO NEW PANEL.



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DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Thomas E. Buller* 3/24/20  
CHIEF, BUREAU OF ENGINEERING DATE

*Paul D. Shaw* 3/25/20  
CHIEF, UTILITY DESIGN DIVISION DATE

*Gregory* 3-25-2020  
CHIEF, BUREAU OF UTILITIES DATE

**WRA**  
Whitman, Requardt & Associates, LLP  
801 South Caroline Street, Baltimore, Maryland 21231

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DRN:	OM			
CHK:	RDK			
BY:	NO.	REVISION	DATE	

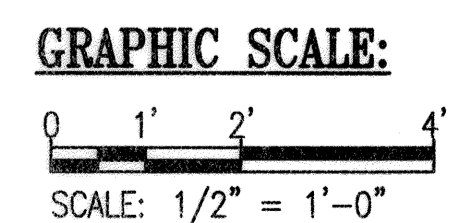
**PUMPING STATION ELECTRICAL DEMOLITION PLAN**

600' SCALE MAP NO. 48 BLOCK NO. 19

**ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE**

CAPITAL PROJECT NO. S6294  
CONTRACT NO. 20-4954

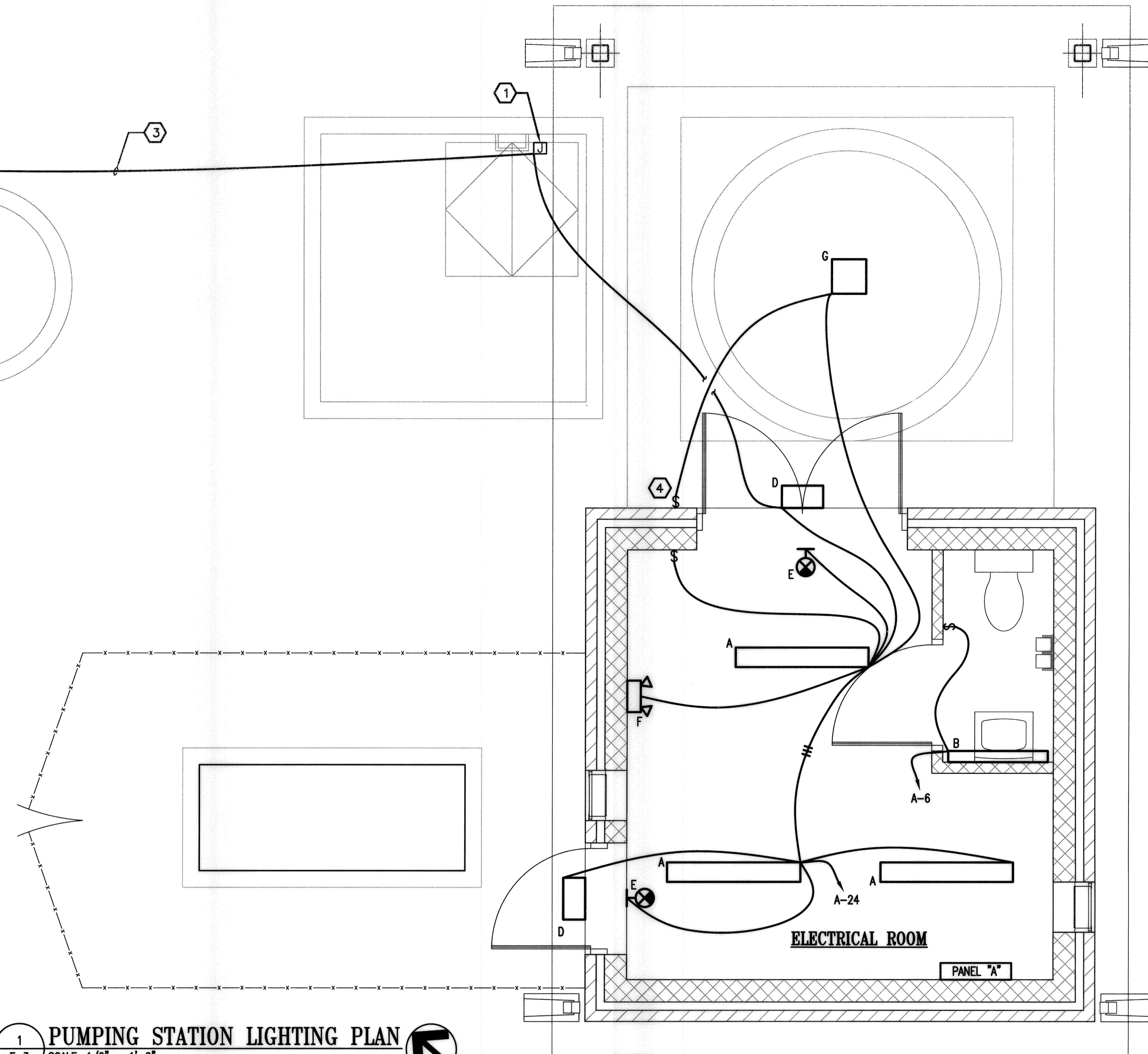
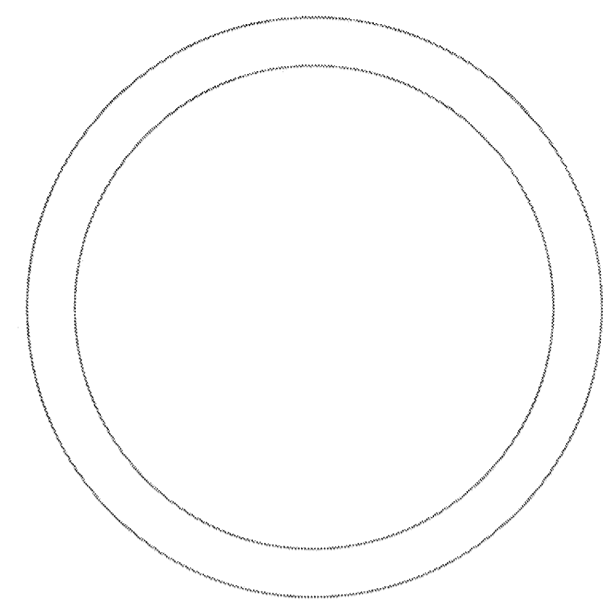
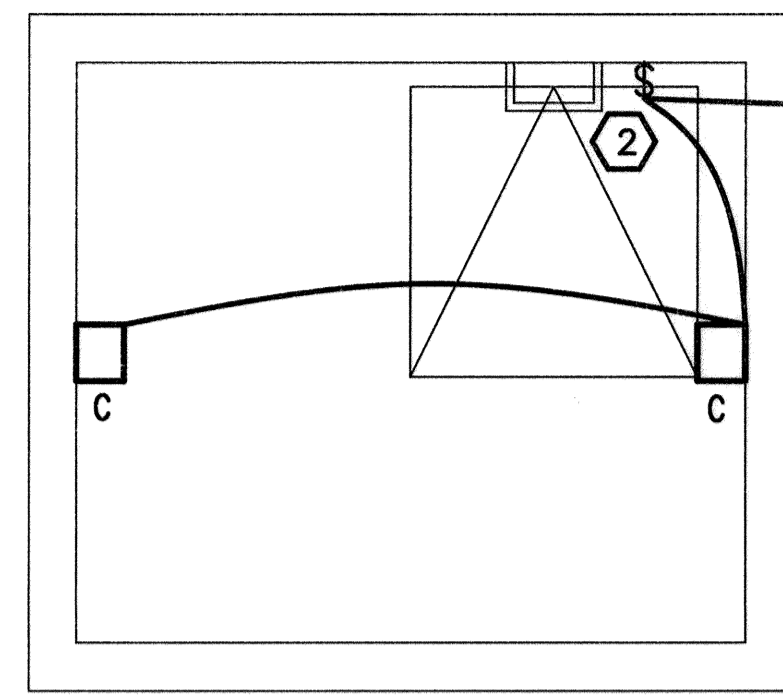
6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND



E-2

SCALE AS SHOWN  
SHEET 18 OF 27





**GENERAL NOTES:**

1. SEE DRAWING E-4 FOR LOCATION OF ELECTRICAL PANELS.

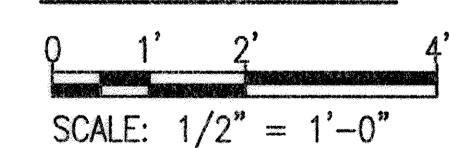
**SPECIFIC NOTES (X):**

1. JUNCTION BOX TO CONNECT EXISTING LIGHTS IN VAULT. PROVIDE RACEWAY AND WIRING AS REQUIRED TO CONTROL LIGHTS THRU EXISTING SWITCH.
2. PROVIDE SWITCH IN WEATHER PROOF BOX AT VAULT ENTRANCE.
3. DIRECT BURIED 1" PVC SCH 40 MINIMUM 30" COVER.
4. SWITCH IN NEMA-4X WEATHER PROOF COVERED ENCLOSURE 4' AFF.

1 PUMPING STATION LIGHTING PLAN  
E-3 SCALE: 1/2" = 1'-0"

TYPE	MANUFACTURER	CATALOG NO.	LAMP				MOUNTING	REMARKS
			TYPE	NO.	WATT	VOLT		
A	COLUMBIA OR EQUAL	LXEM4-40ML-RFA-EU	LED	-	47	120	SURFACE	LED ENCLOSED AND GASKETED
B	LITHONIA OR EQUAL	FMVTSL 36IN 120 30K 90CRI BN	LED	-	34	120	WALL MOUNT	VANITY LED. TO BE MOUNTED ABOVE MIRROR
C	HUBBELL OR EQUAL	NRG-312LU-5K-BZ	LED	-	18	120	WALL MOUNT	WALL PACK WET LOCATION LISTED
D	HUBBELL OR EQUAL	PVL3-30L-1-3K-BZ-PC	LED	-	73	120	WALL MOUNT	WALL PACK WET LOCATION LISTED WITH PHOTOCELL
E	LITHONIA OR EQUAL	LE SW (1 OR 2) G ELN	LED	2	3	120	UNIVERSAL	DIE CAST ALUMINUM LED TYPE EXIT LIGHT WITH NI-CAD BATTERY BACK-UP
F	LITHONIA OR EQUAL	ELM2 LED	LED	2	5	120	UNIVERSAL	WALL MOUNT EMERGENCY LIGHT WITH NI-CAD BATTERY BACK-UP
G	LITHONIA OR EQUAL	VRC-LED-1-50K-MVOLT	LED	-	41	120	SURFACE	ENCLOSED AND GASKETED

**GRAPHIC SCALE:**



**DHILLON**  
ENGINEERING, INC.  
10902 REISTERSTOWN ROAD, # 204  
OWINGS MILLS, MD 21117  
(P)410.356.1095 (F)410.363.4675



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DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Paul J. ...* 2/20/20  
DIRECTOR, PUBLIC WORKS DATE

*Thomas B. Buller* 3/24/20  
CHIEF, BUREAU OF ENGINEERING DATE

*Paul J. ...* 3-20-2020  
CHIEF, BUREAU OF UTILITIES DATE

*Paul J. ...* 3/25/20  
CHIEF, UTILITY DESIGN DIVISION DATE

**WRA**  
Whitman, Requardt & Associates, LLP  
801 South Caroline Street, Baltimore, Maryland 21231

DES:	RDK				
DRN:	OM				
CHK:	RDK				
BY:	NO.	REVISION	DATE		

**PUMPING STATION LIGHTING PLAN**

600' SCALE MAP NO. 48 BLOCK NO. 19

**ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE**  
CAPITAL PROJECT NO. S6294  
CONTRACT NO. 20-4954  
6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

**E-3**

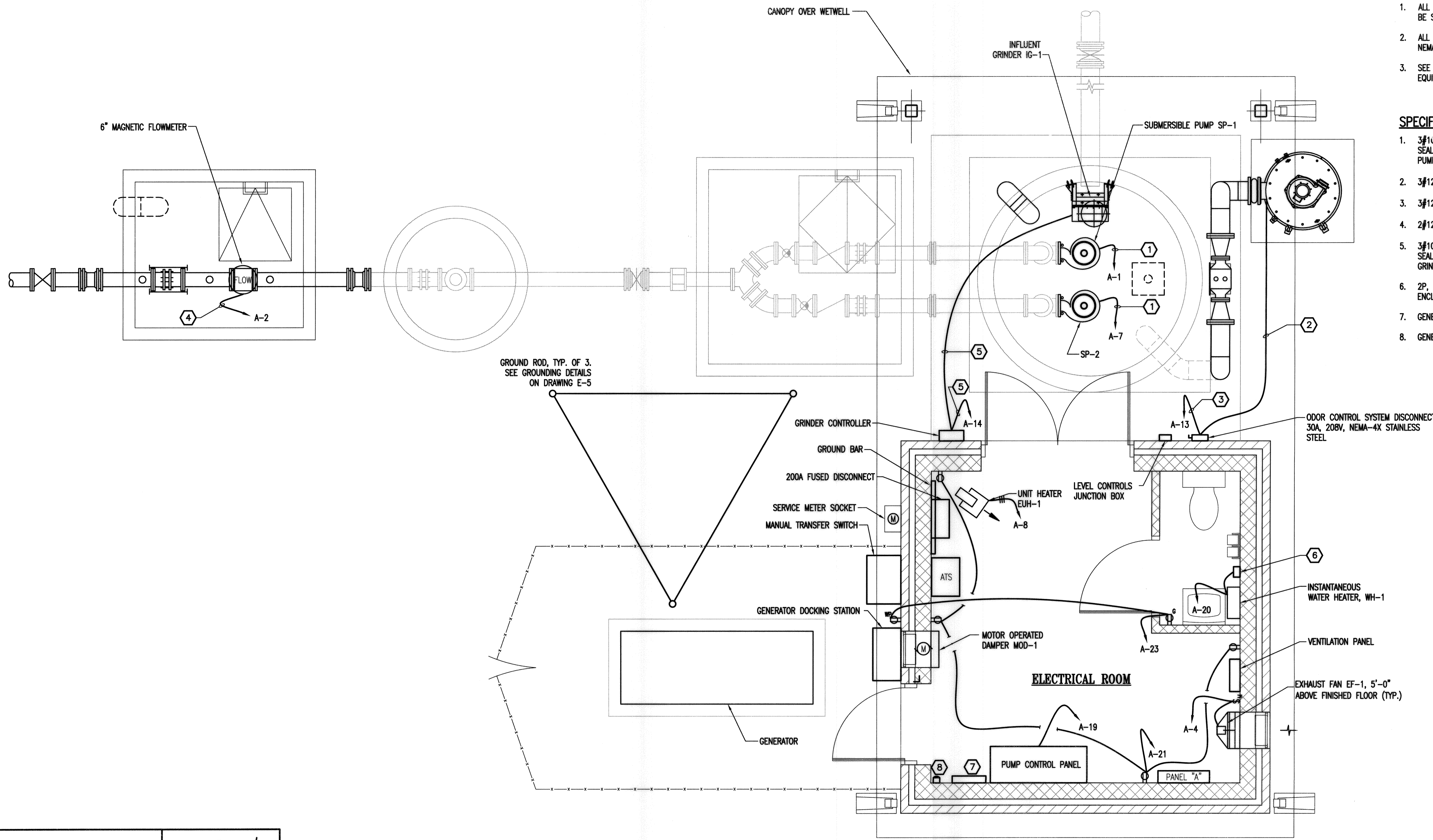
SCALE AS SHOWN

SHEET 19 OF 27

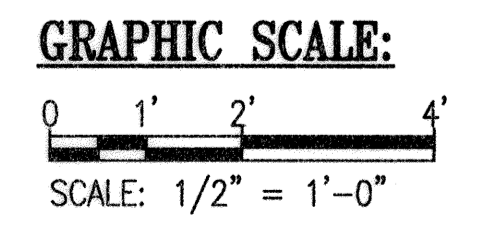


- GENERAL NOTES:**
1. ALL RACEWAY AND WIRING INSIDE WETWELL ROOM SHALL BE SUITABLE FOR NEC CLASS 1 DIVISION 2 APPLICATIONS.
  2. ALL NEW ENCLOSURES IN ELECTRICAL ROOM SHALL BE NEMA-12, UON.
  3. SEE DRAWING E-5 FOR POWER ONE-LINE DIAGRAM AND EQUIPMENT RATINGS.

- SPECIFIC NOTES (X):**
1. 3#10 & #10G IN 1" RGS. PROVIDE EXPLOSION PROOF SEAL REQUIRED PER NEC. RUN CIRCUIT THROUGH PUMP CONTROL PANEL.
  2. 3#12 & #12G IN 1" PVC SCH-40 30" U/G.
  3. 3#12 & #12G IN 3/4" RGS.
  4. 2#12 & #12G IN 1" PVC SCH-40 30" U/G.
  5. 3#10 & #10G IN 1" RGS. PROVIDE EXPLOSION PROOF SEAL REQUIRED PER NEC. RUN CONDUIT THROUGH GRINDER CONTROLLER.
  6. 2P, 208V, 20A SINGLE PHASE BREAKER IN NEMA-4X ENCLOSURE FOR WH-1 DISCONNECT.
  7. GENERATOR ANNUNCIATOR.
  8. GENERATOR EMERGENCY STOP BUTTON.



1 PUMPING STATION POWER PLAN  
E-4 SCALE: 1/2" = 1'-0"



**DHILLON**  
ENGINEERING, INC.  
10902 REISTERSTOWN ROAD, # 204  
OWINGS MILLS, MD 21117  
(P) 410.356.1095 (F) 410.363.4675



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DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Paul J. Miller* 3/24/20  
DIRECTOR OF PUBLIC WORKS DATE  
*James S. Butler* 3/24/20  
CHIEF, BUREAU OF ENGINEERING DATE

*Paul J. Miller* 3/24/20  
CHIEF, BUREAU OF UTILITIES DATE  
*Paul J. Miller* 3/24/20  
CHIEF, UTILITY DESIGN DIVISION DATE

**WRA**  
Whitman, Requardt & Associates, LLP  
801 South Caroline Street, Baltimore, Maryland 21231

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BY:		NO.	REVISION	DATE

**PUMPING STATION POWER PLAN**

600' SCALE MAP NO. 48 BLOCK NO. 19

**ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE**

CAPITAL PROJECT NO. S6294  
CONTRACT NO. 20-4954

6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

**E-4**

SCALE AS SHOWN

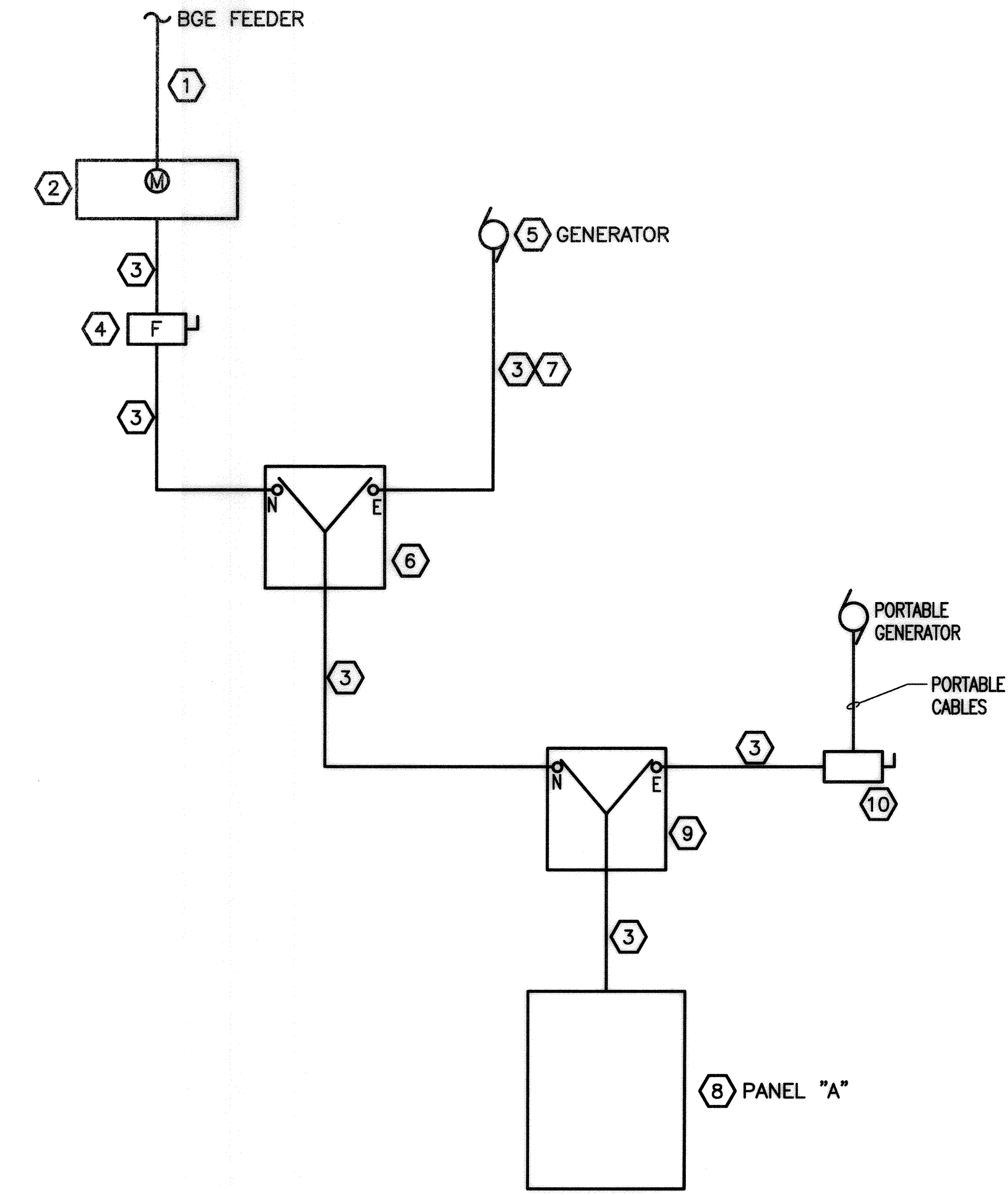
SHEET 20 OF 27



PANEL SCHEDULE																	
PANELBOARD: "A"		BUS RATING		225A		PHASE		3		MAIN OC DEVICE		150A, 3P		WIRE		4	
MIN. AIC		22 KA		VOLTS		120/208V		MOUNTING		SURFACE		BRANCH CKT. DEVICE		BOLT ON			
ENCL. NEMA		12		NOTES		SOLID NEUTRAL AND COPPER GROUND BUS											
LOCATION		ELECTRICAL ROOM															
CKT NO	DESCRIPTION	LOAD (VA)	COND.	WIRE	C.B.	WIRE	C.B.	WIRE	COND.	LOAD (VA)	DESCRIPTION	CKT NO					
1	SP-1	2000	1"	#10	3#10	100	35	3	1"	40	MAGNETIC FLOW METER	2					
3	-	2000	-	-	-	-	-	-	-	700	EF-1	4					
5	-	2000	-	-	-	-	-	-	-	74	TOILET LIGHTING	6					
7	SP-2	2000	1"	#10	3#10	100	35	3	1"	667	EUH-1	8					
9	-	2000	-	-	-	-	-	-	-	667	-	10					
11	-	2000	-	-	-	-	-	-	-	667	-	12					
13	ODOR CONTROL SYSTEM	1267	3/4"	#12	3#12	100	20	3	1"	2000	GRINDER IG-1	14					
15	-	1267	-	-	-	-	-	-	-	2000	-	16					
17	-	1267	-	-	-	-	-	-	-	2000	-	18					
19	PUMP CONTROL PANEL	1000	3/4"	#12	2#12	100	20	1	1"	1456	WH-1	20					
21	RECEPTACLE ELECTRICAL ROOM	720	3/4"	#12	2#12	100	20	1	1"	1456	-	22					
23	RECEPTACLE TOILET AND OUTDOOR	360	3/4"	#12	2#12	100	20	1	1"	423	LIGHTING ELECTRICAL ROOM, OUTDOOR & VAULTS	24					
25	BATTERY CHARGER	444	3/4"	#12	2#12	100	20	1	1"	-	SPARE	26					
27	STRIP HEATER	200	3/4"	#12	2#12	100	20	1	1"	-	SPARE	28					
29	BLOCK HEATER	500	3/4"	#12	2#12	100	20	1	1"	-	SPARE	30					
31	SPARE	-	-	-	-	-	-	-	-	-	SPARE	32					
33	SPARE	-	-	-	-	-	-	-	-	-	SPARE	34					
35	SPARE	-	-	-	-	-	-	-	-	-	SPARE	36					
37	SPACE	-	-	-	-	-	-	-	-	-	SPACE	38					
39	SPACE	-	-	-	-	-	-	-	-	-	SPACE	40					
41	SPACE	-	-	-	-	-	-	-	-	-	SPACE	42					

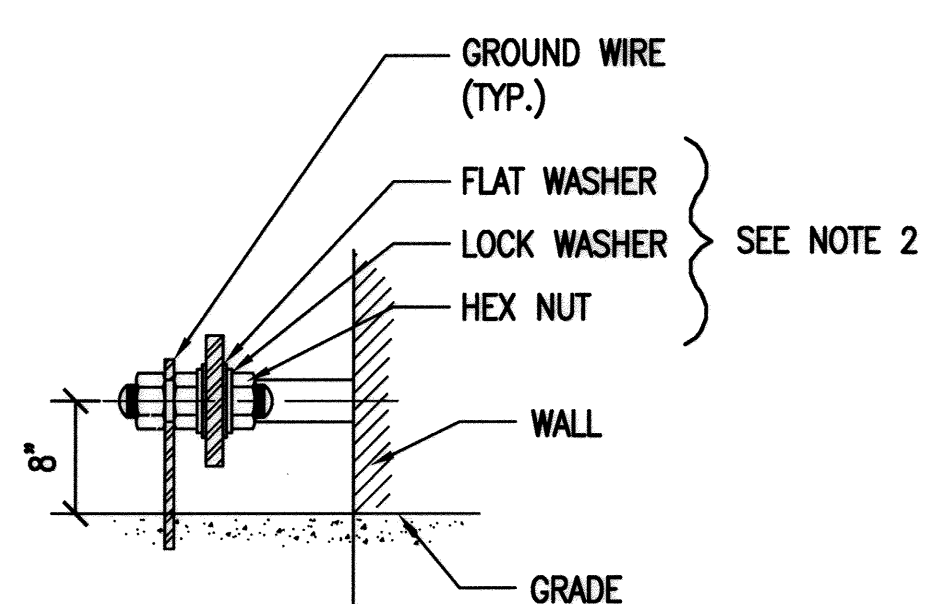
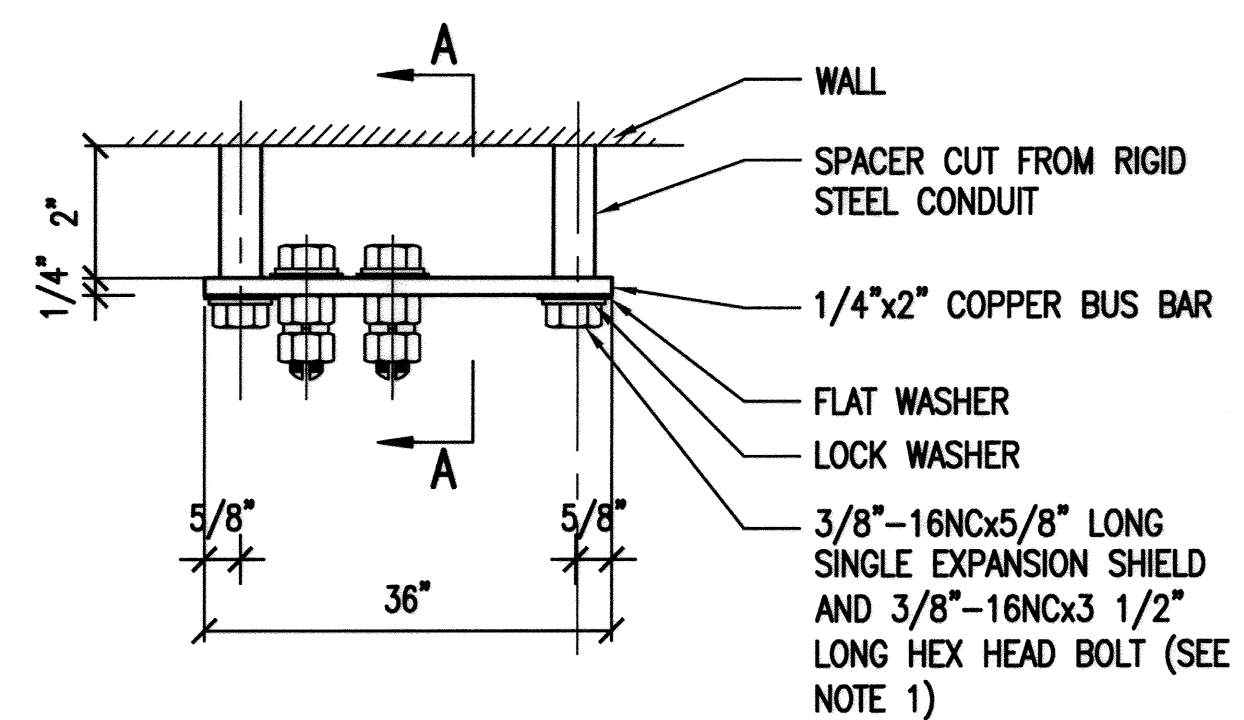
  

CONNECTED LOAD PHASE	A= 10,874	REMARKS: COPPER BUSING
	B= 11,010	
	C= 9,291	
TOTAL CONNECTED VA:	31175	
TOTAL CONNECTED AMPS:	86.50	

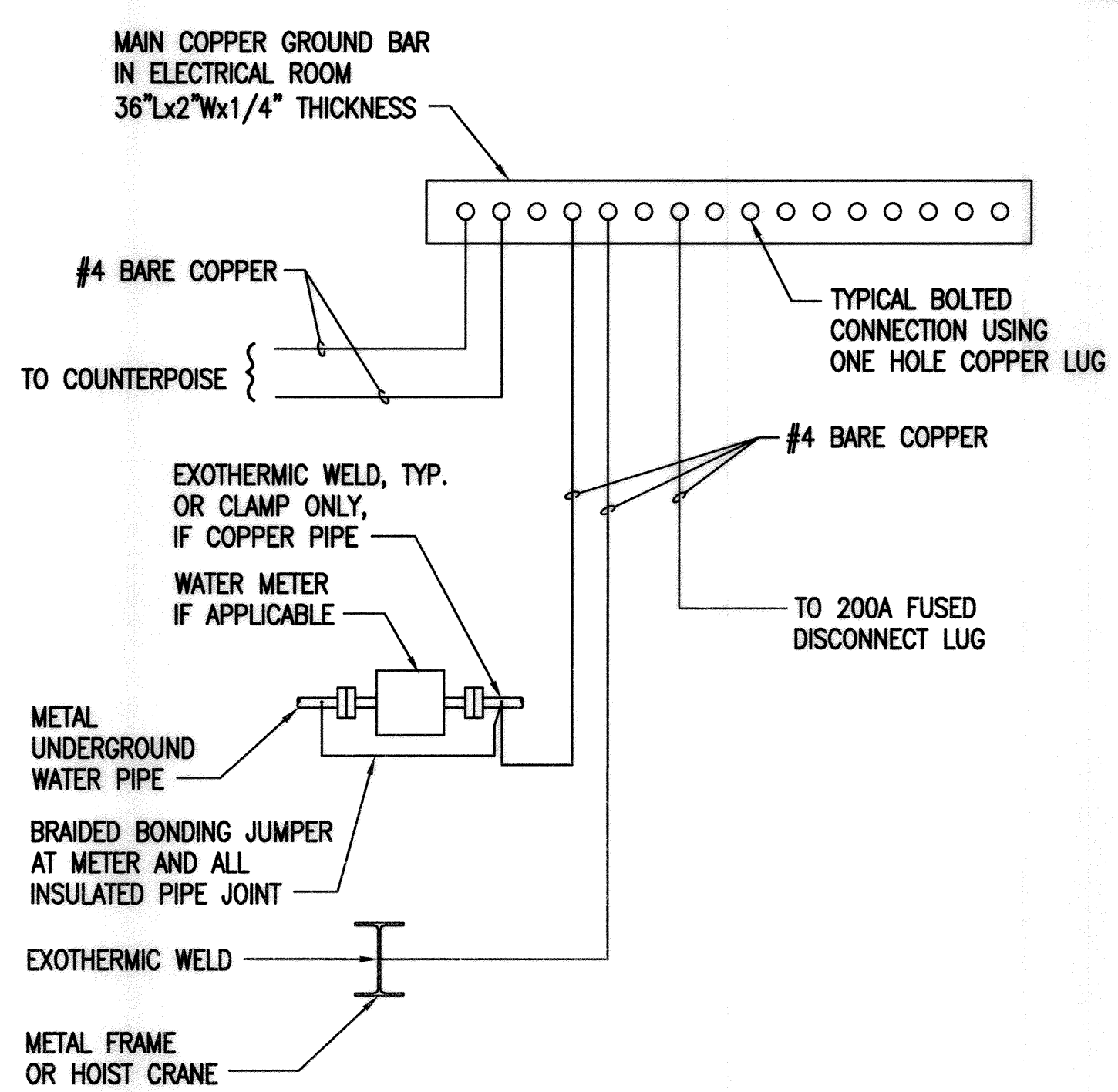


- SPECIFIC NOTES (X):**
- CONTACT BGE AND PROVIDE RACEWAY AS REQUIRED BY THEM.
  - PROVIDE AND INSTALL METER SOCKET AS PER BGE REQUIREMENTS. METER BY BGE.
  - 4#1/0 AND #6 G IN 2".
  - 200A FUSED DISCONNECT IN NEMA-12 ENCLOSURE 120/208 V, 3P, 4 W, 4' AFF WITH 3-150 A FUSES, SUITABLE FOR SERVICE.
  - STAND BY GENERATOR 40 KW, 120/208 V, 3 PH, 4 W IN LOCKABLE WEATHER PROOF ENCLOSURE, PAD MOUNT. GENERATOR SHALL HAVE 132 GALLON SUB-BASE DIESEL TANK. PROVIDE 150 A, 3 P, 208V BREAKER INSIDE ENCLOSURE FOR GENERATOR PROTECTION.
  - AUTO TRANSFER SWITCH 150 A, 120/208 V, 3 P, 4 W IN NEMA-12 ENCLOSURE, 4' AFF, 25 000 AIC WITH SURGE PROTECTION DEVICE, SUITABLE FOR SERVICE.
  - RACEWAY SHALL HAVE 30" COVER.
  - ELECTRICAL PANEL "A", 225 A, 120/208V, 3 P, 4 W IN NEMA-12 ENCLOSURE, BOTTOM OF PANEL 4'-6" AFF. SEE PANEL SCHEDULE.
  - MANUAL TRANSFER SWITCH 150 A, 120/208V, 3 PH, 4 W IN NEMA-4X STAINLESS STEEL ENCLOSURE, 4' AFF.
  - GENERATOR DOCKING STATION EQUIVALENT TO TRYSTAR GDS-023W-LM, 200A, 120/208V, 3PH, 4W IN NEMA-4X ENCLOSURE.

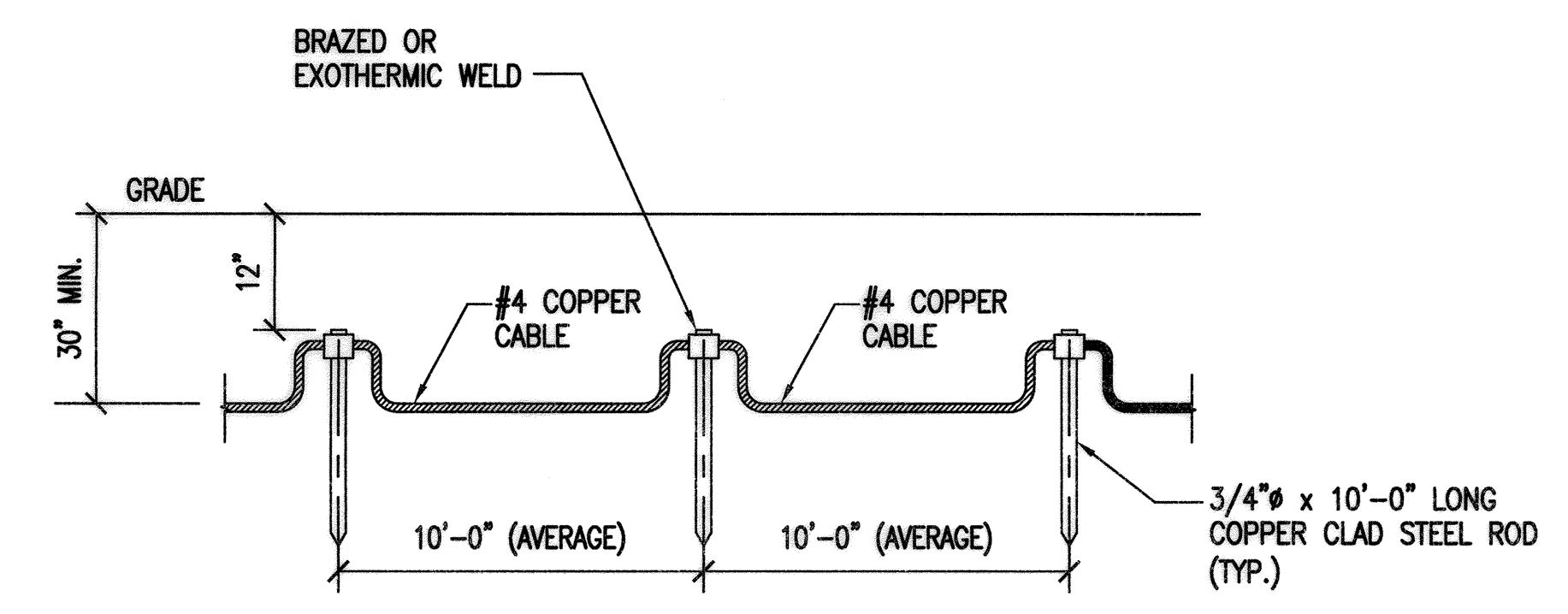
**1 ELECTRICAL POWER ONE LINE DIAGRAM**  
E-5 SCALE: NOT TO SCALE



**GROUNDING BAR DETAILS**  
NOT TO SCALE



**TYPICAL BUILDING GROUND ELECTRODE SYSTEM DETAIL**  
NOT TO SCALE



**GROUNDING ROD INSTALLATION DETAIL**  
NOT TO SCALE

- NOTES:**
- BOLTS AND WASHERS USED TO SECURE THE GROUND BUS TO THE WALL SHALL BE CADMIUM STEEL OR 304 STAINLESS STEEL.
  - BOLTS, NUTS, WASHERS TO CONNECT GROUND WIRE TO GROUND BUS SHALL BE STAINLESS STEEL.

**DHILLON**  
ENGINEERING, INC.  
10902 REISTERSTOWN ROAD, # 204  
OWINGS MILLS, MD 21117  
(P) 410.356.1095 (F) 410.363.4675

STATE OF MARYLAND  
DONALD E. SILLER  
PROFESSIONAL ENGINEER  
No. 880  
EXPIRES 12/31/2021

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 8050, EXPIRATION DATE: 08/19/2021.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND		 <b>Whitman, Requardt &amp; Associates, LLP</b> 801 South Caroline Street, Baltimore, Maryland 21231	
<i>John J. Van</i> DIRECTOR OF PUBLIC WORKS DATE	<i>Donald E. Siller</i> CHIEF, BUREAU OF ENGINEERING DATE		
<i>Paul J. Siller</i> CHIEF, BUREAU OF UTILITIES DATE	<i>Paul J. Siller</i> CHIEF, UTILITY DESIGN DIVISION DATE		

DES:	RDK			
DRN:	OM			
CHK:	RDK			
BY:	NO.	REVISION	DATE	

**ELECTRICAL POWER ONE-LINE DIAGRAM,  
PANEL SCHEDULE AND GROUNDING  
DETAILS**

600' SCALE MAP NO. 48 BLOCK NO. 19

**ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE**  
CAPITAL PROJECT NO. S6294  
CONTRACT NO. 20-4954  
6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

**E-5**  
SCALE AS SHOWN  
SHEET 21 OF 27



**ABBREVIATIONS**

- AI = ANALOG INPUT
- AO = ANALOG OUTPUT
- AUTO = AUTOMATIC
- ATS = AUTOMATIC TRANSFER SWITCH
- CB = CIRCUIT BREAKER
- CP = CONTROL PANEL
- CPT = CONTROL POWER TRANSFORMER
- CPU = CENTRAL PROCESSING UNIT
- DI = DISCRETE INPUT
- DO = DISCRETE OUTPUT
- DPDT = DOUBLE POLE-DOUBLE THROW
- ECD = ELEMENTARY CONTROL DIAGRAM
- ETM = ELAPSED TIME METER
- ES = ETHERNET SWITCH
- FO = FIBER OPTIC
- FVNR = FULL VOLTAGE, NON REVERSING
- GRS = GALVANIZED RIGID STEEL
- HMI = HUMAN MACHINE INTERFACE
- ISB = INTRINSICALLY SAFE BARRIER
- ISR = INTRINSICALLY SAFE RELAY
- I/O = INPUT/OUTPUT
- JB = JUNCTION BOX
- MMS = MANUAL MOTOR STARTER
- MS = MOTOR STARTER
- MOD = MOTOR OPERATED DAMPER
- N.O. = NORMAL OPEN
- N.C. = NORMAL CLOSED
- OIT = OPERATOR INTERFACE TERMINAL
- PLC = PROGRAMMABLE LOGIC CONTROLLER
- PVCC = PVC COATED
- PS-X = POWER SUPPLY WITH NUMBER
- RSP = RAW SEWAGE PUMP
- RTU = REMOTE TERMINAL UNIT
- RVSS = REDUCED VOLTAGE SOFT START
- S-ST = STAINLESS STEEL
- SSRV = SOLID STATE REDUCED VOLTAGE
- TCU = TELEMETRY CONTROL UNIT
- TEMP = TEMPERATURE
- TSP = TWISTED SHIELDED PAIR
- TYP = TYPICAL
- TVSS = TRANSIENT VOLTAGE SURGE SUPPRESSOR
- UPS = UNINTERRUPTIBLE POWER SUPPLY
- VAC = VOLTS/ALTERNATING CURRENT
- VDC = VOLTS/DIRECT CURRENT

**ELEMENTARY WIRING SYMBOLS**

- CONTROL RELAY
- NORMALLY OPEN CONTACT
- NORMALLY CLOSED CONTACT
- FUSE
- CIRCUIT BREAKER
- DISCONNECT SWITCH WITH ENCLOSURE DOOR MOUNTED HANDLE OPERATOR
- SELECTOR SWITCH  
XOO= REPRESENT THE NUMBER OF SWITCH POSITIONS
- NORMALLY OPEN PUSH BUTTON
- NORMALLY CLOSED PUSH BUTTON
- EMERGENCY STOP PUSH BUTTON
- PUSH-TO-TEST PILOT LIGHT  
R=RED, G=GREEN, A=AMBER, W=WHITE
- PLC OUTPUT VIA INTERPOSING RELAY
- MOTOR
- TERMINAL BLOCK
- THERMOSTAT CLOSE ON RISING/TEMPERATURE
- NORMALLY OPEN LIMIT SWITCH
- NORMALLY OPEN TIMED CLOSED CONTACT
- NORMALLY CLOSE CONTACT TIMED OPEN
- FLOAT SWITCH
- SEAL LEAK SENSOR
- MANUAL MOTOR STARTER WITH OVERLOAD AND SELECTOR SWITCH
- GROUND
- CONTROL WIRE
- FIELD WIRE

**INSTRUMENTATION IDENTIFICATION SCHEDULE**

FIRST LETTER		SUCCEEDING LETTER		
VARIABLE	MODIFIER	PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS	ALARM		AUTOMATIC
B	BREAKER	USER'S CHOICE	CLOSE OR STOP	BYPASS
C	COMMUNICATIONS		CONTROL	
D	DENSITY		OPEN OR START	
E	VOLTAGE (EMF)	PRIMARY ELEMENT	SENSOR	
F	FLOW RATE	FAIL	FAIL	FAIL
G	GAUGING	GLASS		LOCAL/MANUAL/HAND
H	HAND			HIGH OR OPEN
I	CURRENT	INDICATE		INTERMEDIATE
J	POWER			
K	TIME		CONTROL STATION	
L	LEVEL	LIGHT		LOW OR CLOSE
M	MOTOR		MOTOR	MIDDLE
N	USER'S CHOICE	INPUT	FORWARD	ON OR OPERATE
O			OFF	OVERLOAD
P	PRESSURE	POINT (TEST)	POSITION	
Q	QUANTITY OR EVENT		EMERGENCY/ABNORMAL	
R	RADIOACTIVITY	RECORD OR PRINT	REMOTE	RUN
S	SPEED OR FREQUENCY	SWITCH	SWITCH	STOP
T	TEMPERATURE		TRANSMIT	
U	MULTIVARIABLE	MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VARIABLE OR VISCOSITY		VALVE OR DAMPER	VFD / VALVE
W	WEIGHT OR FORCE	WELL		
X	MOD, LIGHT OR VALVE	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	INTERLOCK		RELAY OR COMPUTE	RESET
Z	POSITION		DRIVE OR ACTUATOR	

**GENERAL NOTES**

1. ALL WORK SHOWN SHALL BE NEW UNLESS OTHERWISE NOTED AS EXISTING.
2. SEE ELECTRICAL DRAWINGS FOR POWER DISTRIBUTION, DISCONNECT REQUIREMENTS, EQUIPMENT LOCATIONS AND FEEDER REQUIREMENTS.
3. MOTOR STARTER ELEMENTARY DIAGRAMS SHOWN ARE INTENDED TO DEPICT THE GENERAL CONTROLS REQUIREMENT FOR THAT PARTICULAR PIECE OF EQUIPMENT AND DO NOT NECESSARILY INDICATE ALL THE REQUIREMENTS FOR THE SPECIFIC MANUFACTURE OF THE MOTOR STARTER. SEE ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL MOTOR STARTER REQUIREMENTS.
4. SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR FIELD INSTRUMENT LOCATIONS.
5. ENCLOSURE DIMENSIONS SHOWN ARE MINIMUM REQUIREMENTS. ENCLOSURES SHALL BE SIZED TO ACCOMMODATE EQUIPMENT, CONTROLS AND COMPONENTS AS SHOWN, SPECIFIED AND REQUIRED FOR AN OPERABLE SYSTEM. CONTRACTOR SHALL COORDINATE ALL PANEL SIZES AND SPACE CONSTRAINTS DURING CONSTRUCTION.
6. CIRCUITS SHOWN SHALL BE INSTALLED 3/4" CONDUITS UNLESS INDICATED OTHERWISE.
7. ALL PENETRATIONS THROUGH SOLID CONCRETE STRUCTURES WHERE SLEEVES HAVE NOT BEEN PROVIDED SHALL BE CORE DRILLED AND SIZED TO ACCEPT MECHANICAL LINK SEALS. THROUGH NON-FIRE RATED WALLS, CORE HOLES AND SEAL AROUND CONDUIT WITH NON-SHRINK GROUT. THROUGH EXTERIOR WALL, SEAL WATERTIGHT WITH SILICONE MASONRY SEALANT.
8. CONDUITS ARE SHOWN DIAGRAMMATICALLY. EXACT LOCATIONS OF CONDUIT RUNS SHALL BE DETERMINED BY THE CONTRACTOR IN THE FIELD.
9. REFER TO ELECTRICAL DRAWINGS FOR INSTALLATION REQUIREMENTS OF CONDUIT, WIRE AND OTHER ELECTRICAL EQUIPMENT.
10. AREAS DESIGNATED AS HAZARDOUS LOCATIONS ARE SPECIFIED AND/OR SHOWN ON THE CONTRACT DRAWINGS. WORK INSTALLED IN AREAS DESIGNATED AS CLASS 1, GROUP D, DIVISION 1 OR CLASS 1, GROUP D, DIVISION 2 HAZARDOUS LOCATIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF ARTICLE 500 OF THE NATIONAL ELECTRIC CODE. THE LIMITS FOR CLASS 1, GROUP D, DIVISION 1 HAZARDOUS LOCATIONS SHALL EXTEND BEYOND THE ENCLOSED AREA FOR A 3" ENVELOPE OUTSIDE EXTERIOR DOORS, ACCESS HATCHES, AND OTHER OPENINGS. THE LIMITS FOR DIVISION 2 HAZARDOUS LOCATIONS FOR OUTDOOR TANKS AND BASINS SHALL EXTEND 18" ABOVE TANK WALLS AND SHALL INCLUDE AN 18" HIGH ENVELOPE AROUND A 10' PERIMETER OF TANK OR BASIN.

**PLAN/P&ID SYMBOLS**

- CONDUIT HOMERUN
- SEE CABLE/CONDUIT SCHEDULE
- JUNCTION BOX
- CONTROL ENCLOSURE
- COMMUNICATION CABLE
- PLC I/O SIGNAL
- ELECTRICAL SIGNAL
- DISCRETE INPUT
- DISCRETE OUTPUT
- ANALOG INPUT
- ANALOG OUTPUT
- PUMP
- PRESSURE SWITCH HIGH
- PRESSURE TRANSMITTER
- LEVEL TRANSDUCER
- FLOW METER
- FLOW SWITCH
- LEAK SENSOR
- FLOAT LEVEL SWITCH (LOW)
- FLOAT LEVEL SWITCH (HIGH)
- LIMIT SWITCH OPEN
- LIMIT SWITCH CLOSED
- THERMOSTAT
- FREEZESTAT
- ELECTRONICALLY ACTUATED VALVE
- HAND VALVE
- VALVE ACTUATOR OPEN
- VALVE ACTUATOR CLOSED

**GENERAL CIRCUIT/CONDUIT TAG IDENTIFICATION**

TAG	CONDUIT SIZE	CONDUCTORS	NOTES
C-X (Y)	3/4" (X=2 THRU 18) 1" (X=19 THRU 30) 2" (X=31 THRU 100)	X-#14, 1-#12G	(Y) DENOTES ADDITIONAL SPARES
P-X (Y)	3/4" (X=2 THRU 14) 1" (X=15 THRU 24) 2" (X=25 THRU 80)	X-#12, 1-#12G	(Y) DENOTES ADDITIONAL SPARES
TSP-X (Y)	3/4" (X=1,2) 1" (X=3,4) 2" (X=5 THRU 16)	X-#18 TWISTED SHIELDED PAIR	(Y) DENOTES ADDITIONAL SPARES
AC-X (Y)	2" (X=1,2)	X-ANTENNA CABLE	(Y) DENOTES ADDITIONAL SPARES
FO-X	1" (X=2-18) 2" (X=18-48)	X-# OF MULTIMODE FIBER OPTIC STRANDS	COORDINATE CONDUIT AND INSTALLATION REQUIREMENTS WITH F.O. CABLE MANUFACTURER CABLE SIZES AND BEND RADIUS REQUIREMENTS
M-X	CONDUIT SIZE AS REQUIRED	X-MANUFACTURER SUPPLIED CABLE	CABLE AS PROVIDED OR RECOMMENDED BY MANUFACTURER. COORDINATE CONDUIT AND INSTALLATION REQUIREMENTS WITH MANUFACTURER
TEL-X	CONDUIT SIZE AS REQUIRED	TELEPHONE LINE IN ACCORDANCE WITH EXISTING COUNTY BRIDGE CONNECTIONS. COORDINATE TELEPHONE LINE WITH VERIZON AND COUNTY B.O.U., AS REQUIRED	
COM-X (Y)	1" (X=1,2)	X-COMMUNICATION/DATA CABLE	(Y) DENOTES COM TYPE

TOTAL CONDUCTORS REQUIRED = X + Y

**INSTRUMENT, EQUIPMENT AND CONTROL DEVICE EXAMPLES**

- FE = FLOW ELEMENT
- FIT = FLOW INDICATING TRANSMITTER
- PE = PRESSURE ELEMENT
- PIT = PRESSURE INDICATING TRANSMITTER
- TSH = TEMPERATURE SWITCH HIGH
- TSL = TEMPERATURE SWITCH LOW
- ZSC = POSITION SWITCH CLOSED
- ZSO = POSITION SWITCH OPEN
- FS = FLOW SWITCH
- LSL = LEVEL SWITCH LOW
- LSH = LEVEL SWITCH HIGH

**MISCELLANEOUS**

- # - DESIGNATION OF PLAN/SHEET NUMBER (1, 2, ETC.)
- X - DESIGNATION OF SECTION LETTER (A, B, ETC.)

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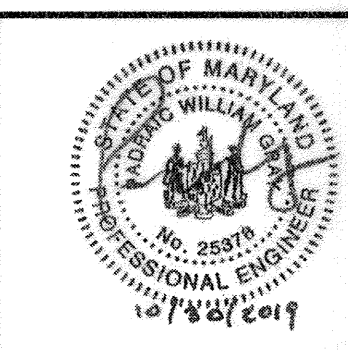
DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*John J. Van* DIRECTOR PUBLIC WORKS DATE *3-26-2020*

*Monica E. Suttler* CHIEF, BUREAU OF ENGINEERING DATE *3/26/20*

*Paul J. Shaw* CHIEF, UTILITY DESIGN DIVISION DATE *3/26/20*

**WRA**  
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801 South Caroline Street, Baltimore, Maryland 21231



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DRN: DLA			
CHK: PWG			
BY NO.	REVISION	DATE	

INSTRUMENTATION AND CONTROLS ABBREVIATIONS AND LEGENDS

600' SCALE MAP NO. 48 BLOCK NO. 19

ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE  
CAPITAL PROJECT NO. S6294  
CONTRACT NO. 20-4954  
6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

I-1  
SCALE AS SHOWN  
SHEET 22 OF 27

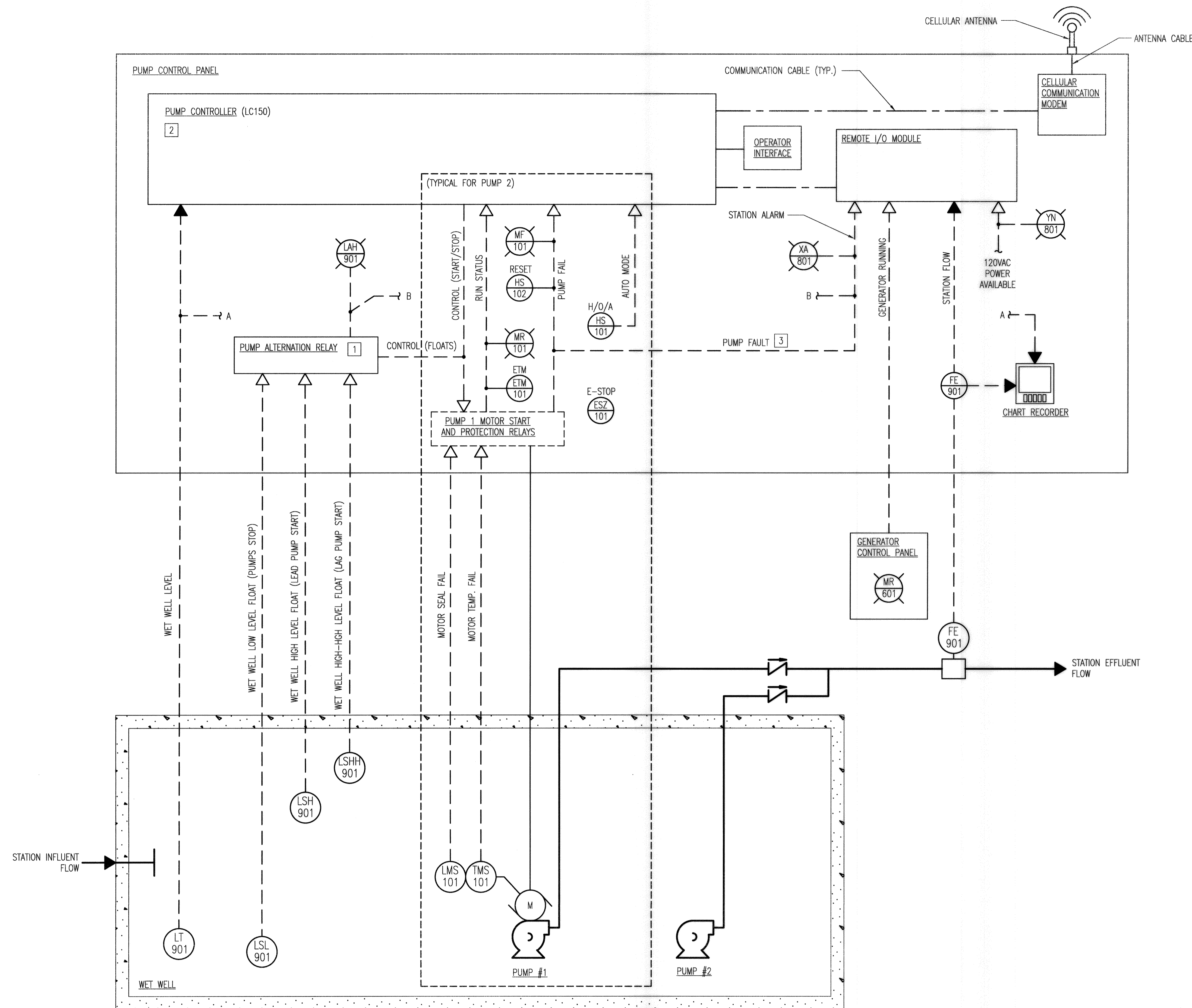


**GENERAL SHEET NOTES**

- UNLESS OTHERWISE INDICATED EACH SIGNAL BROUGHT FROM THE FIELD TO THE PUMP CONTROL PANEL SHALL BE PROVIDED WITH AN INTERPOSING RELAY TO ISOLATE THE DEVICE FROM THE PANEL CONTROL POWER, WHERE APPLICABLE.
- SIGNALS SHOWN TO THE SCADA SYSTEM SHALL BE VIA THE CELLULAR NETWORK CONNECTION.

**SHEET KEYNOTES**

- HARDWIRED PUMP ALTERNATION RELAY TO PROVIDE LEAD/LAG CONTROL FOR PUMPS WHEN OPERATING ON FLOAT CONTROL.
- 120VAC POWER CIRCUIT REQUIRED FROM THE ELECTRICAL POWER PANEL. SEE ELECTRICAL DRAWINGS FOR PANEL DETAILS AND CIRCUIT IDENTIFICATION.
- TYPICAL PUMP FAULT SIGNAL FROM EACH PUMP TO THE "STATION ALARM" SCADA SIGNAL.



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DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Thomas E. Butler* 3/24/20  
CHIEF, BUREAU OF ENGINEERING DATE

*Paul J. ...* 3/25/20  
CHIEF, UTILITY DESIGN DIVISION DATE

*...* 3-22-2020  
CHIEF, BUREAU OF UTILITIES DATE

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801 South Caroline Street, Baltimore, Maryland 21231



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PROCESS AND INSTRUMENTATION DIAGRAM

600' SCALE MAP NO. 48 BLOCK NO. 19

ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE  
CAPITAL PROJECT NO. S6294  
CONTRACT NO. 20-4954  
6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

I-2  
SCALE AS SHOWN  
SHEET 23 OF 27

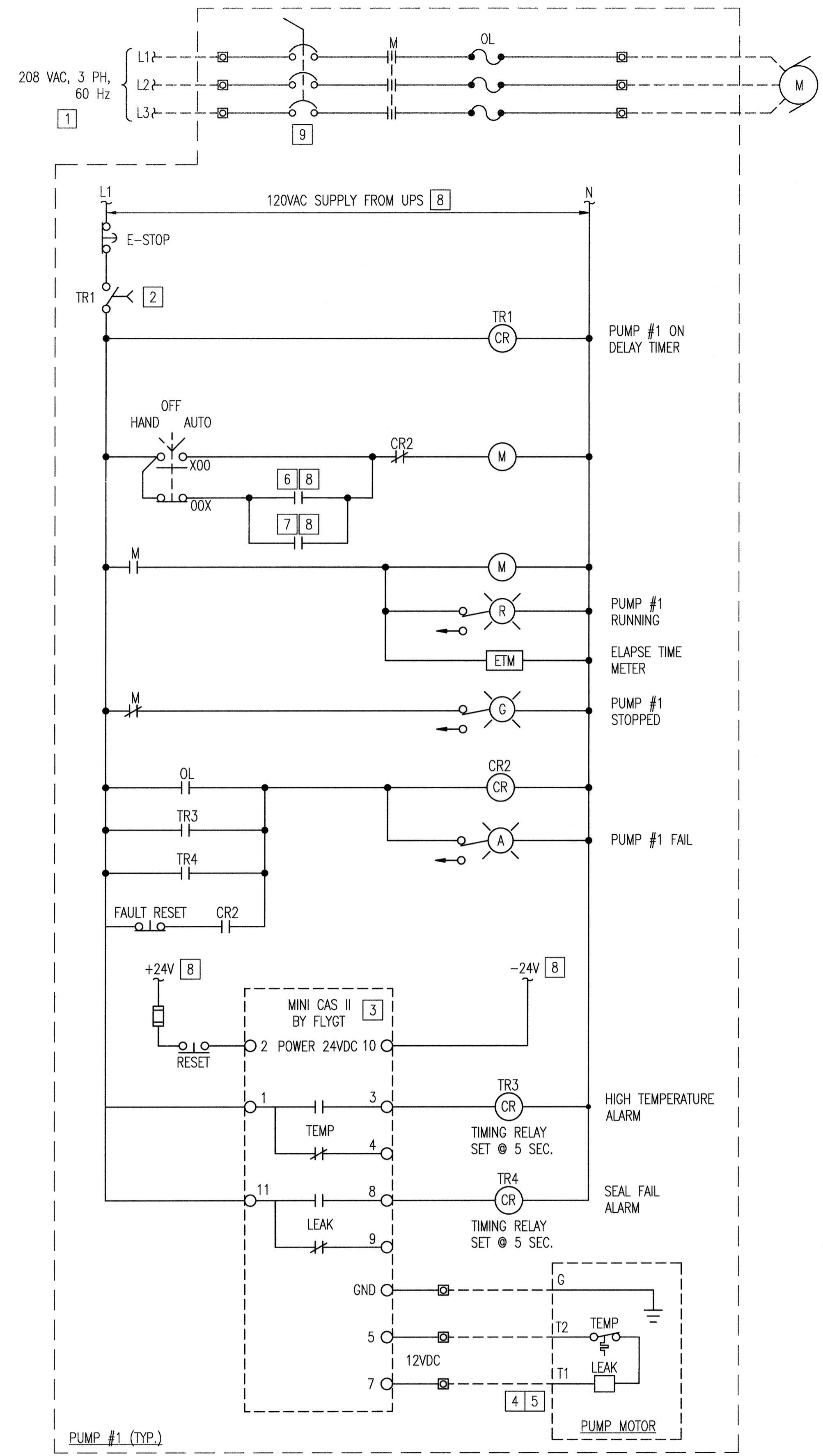


**GENERAL SHEET NOTES**

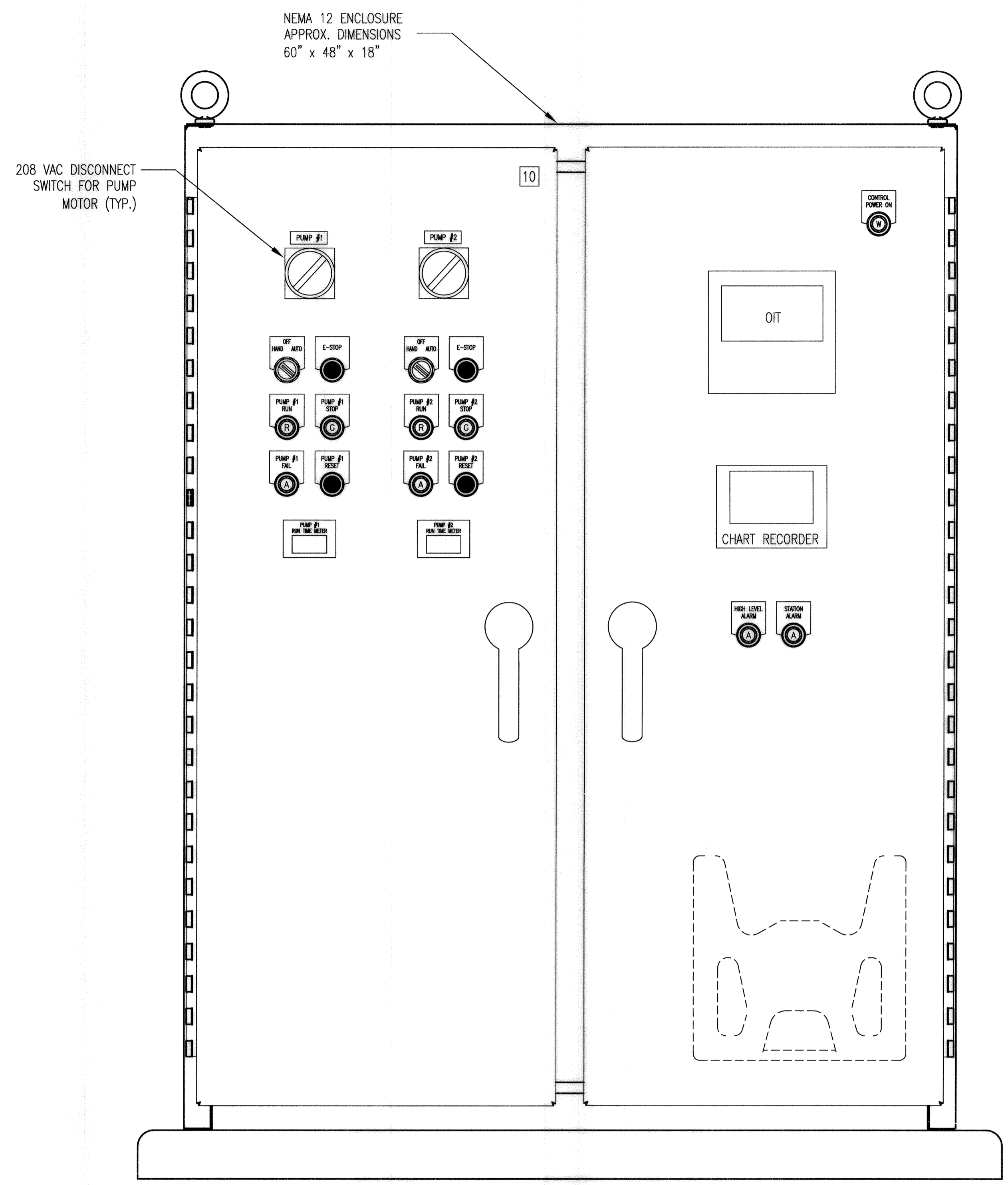
1. REFER TO ELECTRICAL DRAWINGS FOR MCC CIRCUITS.
2. LABEL ALL EQUIPMENT WITHIN THE CONTROL PANEL INCLUDING TERMINAL BLOCKS, RELAYS, AND CIRCUIT BREAKERS WITH ASSOCIATED CIRCUIT OR ID NUMBER.
3. MOTOR STARTER, CONTROLS AND SCADA LOCATED IN PUMP CONTROL PANEL.

**SHEET KEYNOTES**

- 1 STARTER POWER MAIN CIRCUIT BREAKER.
- 2 SET AT 10 SECONDS FOR PUMP #1 AND 20 SECONDS FOR PUMP #2.
- 3 MOTOR PROTECTION RELAY SHALL BE SUPPLIED BY MOTOR/PUMP MANUFACTURER TO THE PUMP CONTROL SYSTEM SUPPLIER FOR INTEGRATION INTO THE PUMP CONTROL PANEL.
- 4 MOTOR SENSOR FURNISHED WITH AND LOCATED AT MOTOR. SENSORS ARE FACTORY CONNECTED TO CONTROL CABLE WITH THE PUMP.
- 5 PROVIDE SHIELDED CABLE FOR THE CONNECTION AT PROTECTION RELAY. CONNECT SHIELDS ON CONDUCTORS PER MANUFACTURER RECOMMENDATIONS.
- 6 PUMP 1 FLOAT CONTROL CONTACT FROM ALTERNATION RELAY.
- 7 PUMP 1 CONTROL RELAY CONTACT FROM PUMP CONTROLLER.
- 8 SEE DRAWING I-4 FOR CONNECTIONS.
- 9 DISCONNECT SWITCH SHALL BE LOCATED ON PUMP CONTROL PANEL. SWITCH SHALL BE THROUGH-THE-DOOR TYPE WITH DOOR INTERLOCK.
- 10 PUMP CONTROL PANEL HAS MULTIPLE SOURCES OF POWER.



**1 MOTOR CONTROL ELEMENTARY**  
1-3 NOT TO SCALE



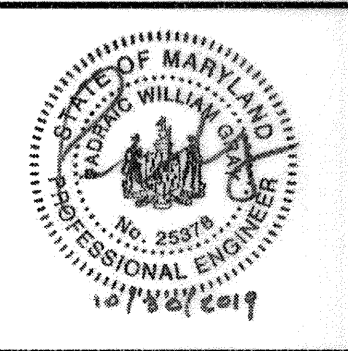
**2 PUMP CONTROL PANEL ELEVATION**  
1-3 NOT TO SCALE

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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	
<i>[Signature]</i> DIRECTOR OF PUBLIC WORKS DATE: 3-26-2020	<i>[Signature]</i> CHIEF, BUREAU OF ENGINEERING DATE: 3/25/20
<i>[Signature]</i> CHIEF, BUREAU OF UTILITIES DATE: 3/25/20	<i>[Signature]</i> CHIEF, UTILITY DESIGN DIVISION DATE: 3/25/20

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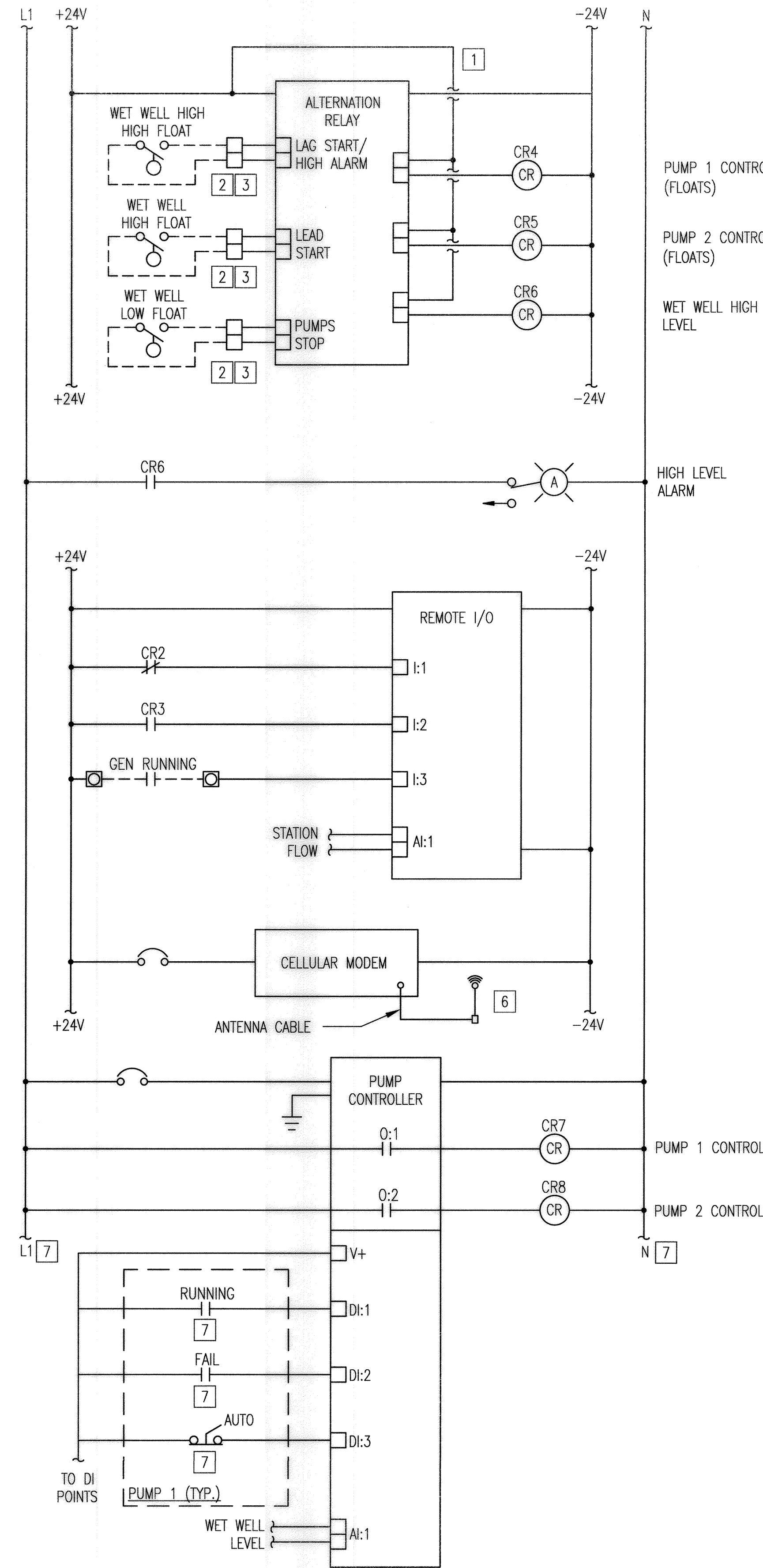
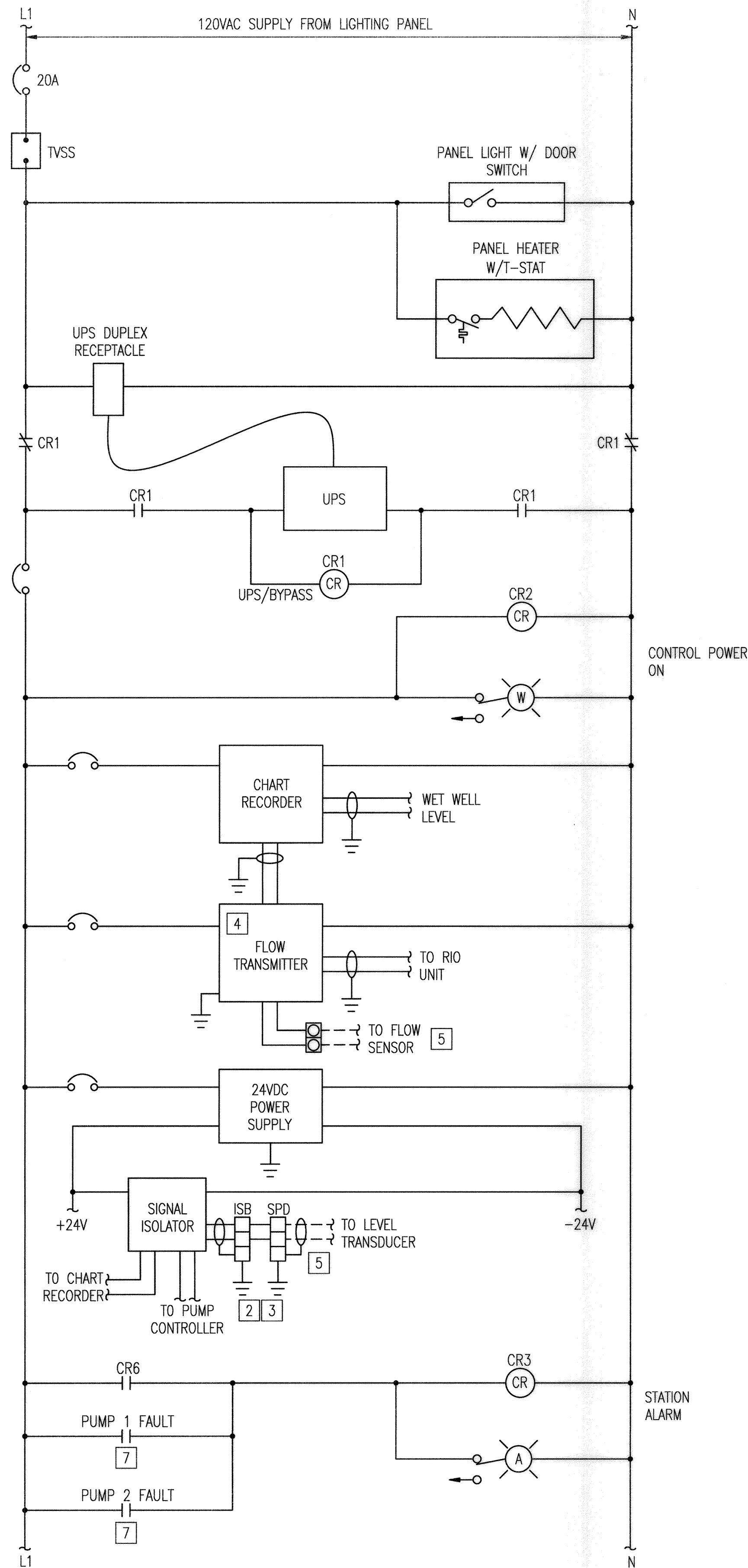
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CHK:	PWG			
BY:	NO.	REVISION	DATE	

MOTOR CONTROL  
600' SCALE MAP NO. 48  
BLOCK NO. 19

**ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE**  
CAPITAL PROJECT NO. S6294  
CONTRACT NO. 20-4954  
6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

**I-3**  
SCALE AS SHOWN  
SHEET 24 OF 27





**GENERAL SHEET NOTES**

1. REFER TO ELECTRICAL DRAWINGS FOR PANELBOARD CIRCUITS.
2. LABEL ALL EQUIPMENT WITHIN THE CONTROL PANEL INCLUDING TERMINAL BLOCKS, RELAYS, AND CIRCUIT BREAKERS WITH ASSOCIATED CIRCUIT OR ID NUMBER.
3. MOTOR STARTER, CONTROLS AND SCADA LOCATED IN PUMP CONTROL PANEL.

**SHEET KEYNOTES**

1. FLOAT CONTROLLER AND ALTERNATION RELAY PROVIDE LEAD/LAG CONTROL FOR PUMPS AND HIGH LEVEL ALARM INDICATION.
2. ALL INTRINSICALLY SAFE BARRIER RELAYS SHALL BE MOUNTED IN THE SAME LOCATION WITHIN THE PUMP CONTROL PANEL AND SHALL BE PHYSICALLY SEPARATED BY A METAL BARRIER FROM CONTROL PANEL COMPONENTS. PROVIDE PERMANENT NAMEPLATE IN ACCORDANCE WITH UL-698A AT LOCATION INDICATING "INTRINSICALLY SAFE RELAYS AND CIRCUITRY".
3. INTRINSICALLY SAFE WIRING CIRCUITS SHALL ENTER THE CONTROL PANEL AT THE SAME LOCATION, SHALL BE PHYSICALLY SEPARATED FROM ALL OTHER PANEL WIRING BY A MINIMUM OF 2" AND SHALL BE INSTALLED IN ACCORDANCE WITH APPLICABLE NEC AND UL-698A REQUIREMENTS. PROVIDE POWER AND GROUNDING IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
4. FLOW TRANSMITTER LOCATED IN THE PUMP CONTROL PANEL.
5. MANUFACTURERS CABLE, PROVIDE VAPOR TIGHT SEALS AT POINTS WHERE INDIVIDUAL CONDUCTORS ARE SEPARATED FROM THE SHEATH.
6. CELLULAR ANTENNA TO BE MOUNTED ON THE EXTERIOR OF THE BUILDING.
7. SEE DRAWING I-3 FOR CONNECTIONS.

1-4 PUMP CONTROL PANEL ELEMENTARY NOT TO SCALE

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DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*Paul Steen* 3/26/2020  
CHIEF, BUREAU OF UTILITIES DATE

*Thomas E. Butler* 3/24/20  
CHIEF, BUREAU OF ENGINEERING DATE

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801 South Caroline Street, Baltimore, Maryland 21231



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PUMP CONTROL PANEL

600' SCALE MAP NO. 48 BLOCK NO. 19

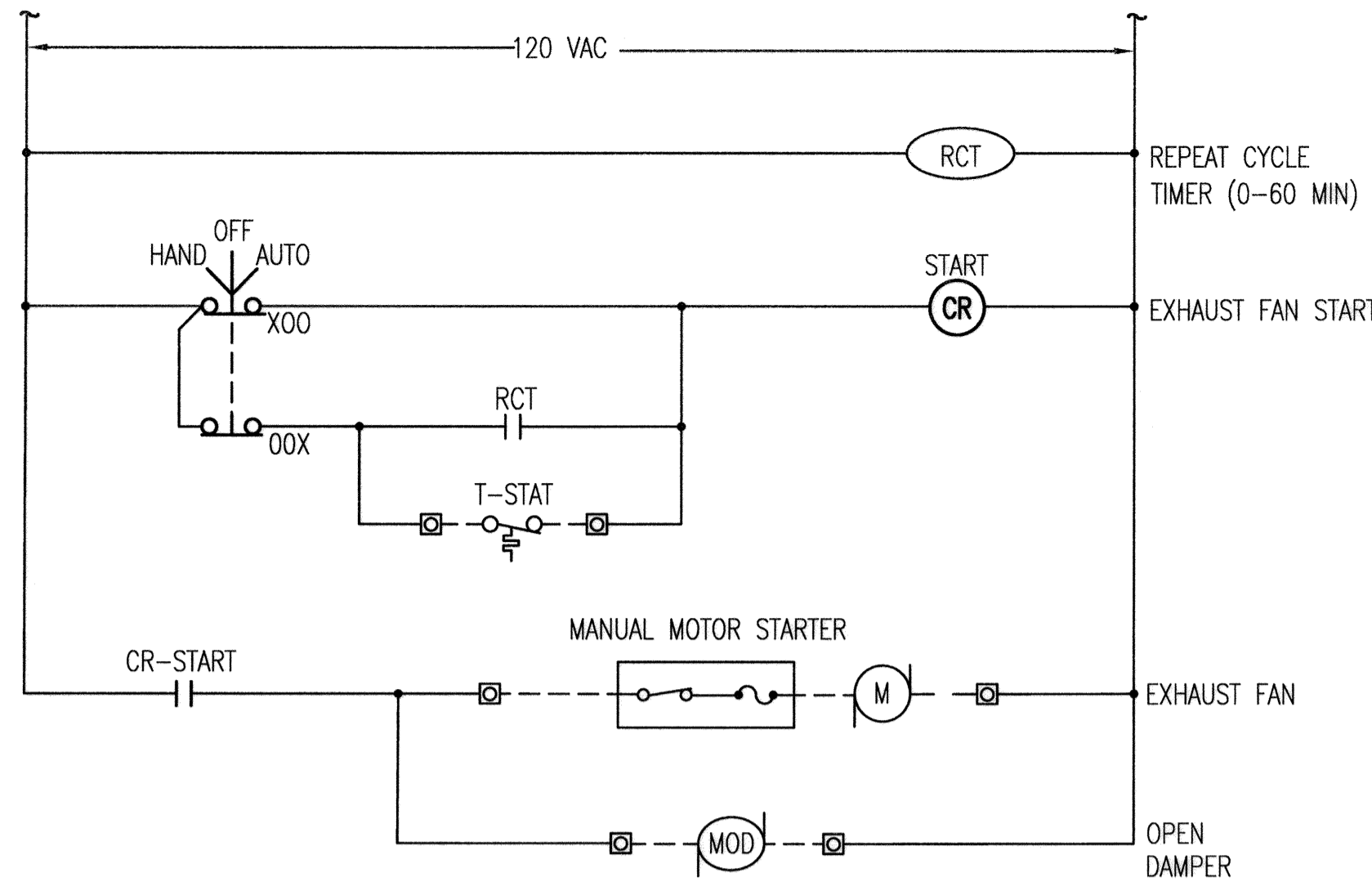
ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE  
CAPITAL PROJECT NO. S6294  
CONTRACT NO. 20-4954  
6TH ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

I-4  
SCALE AS SHOWN  
SHEET 25 OF 27

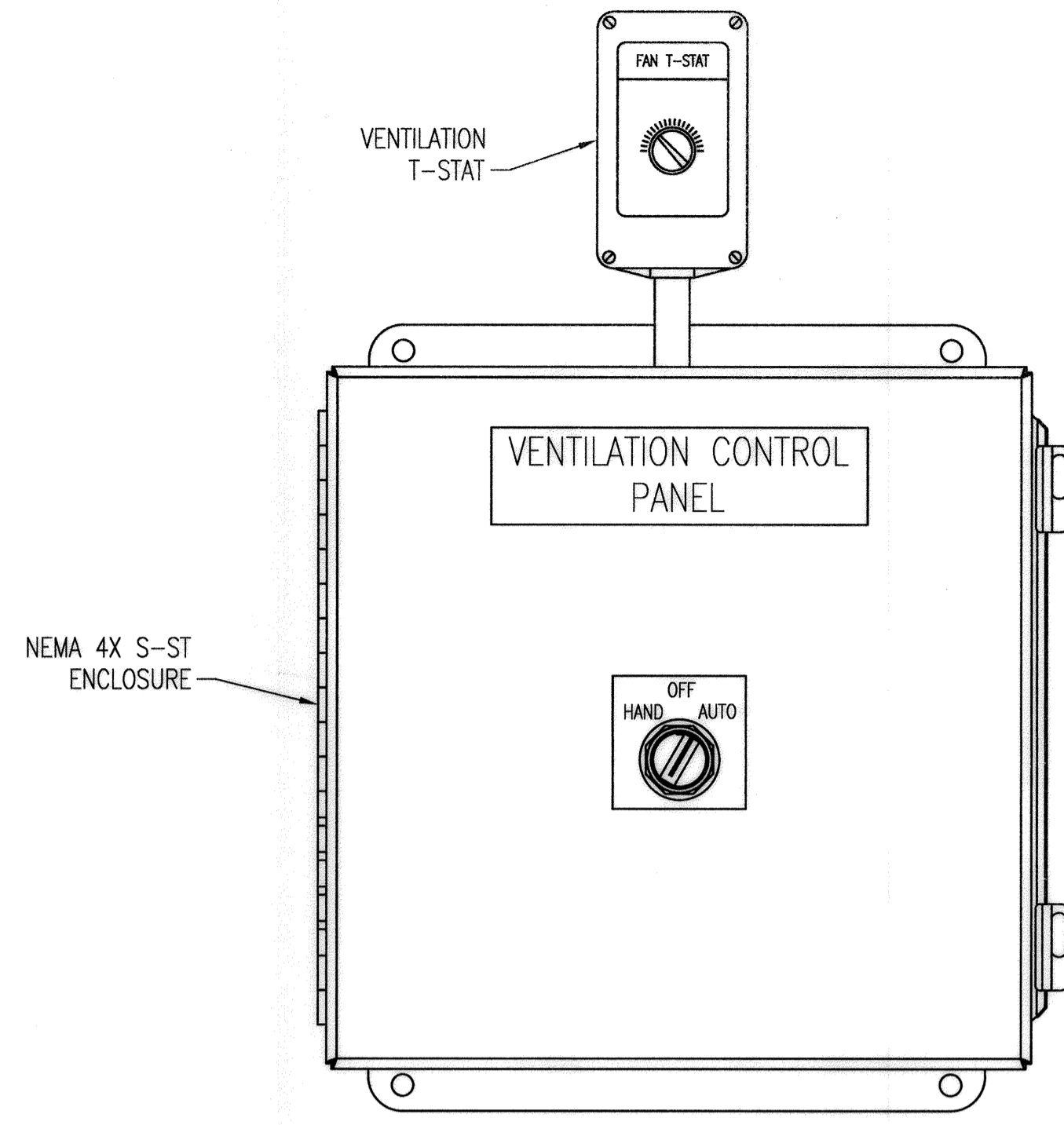


**GENERAL SHEET NOTES**

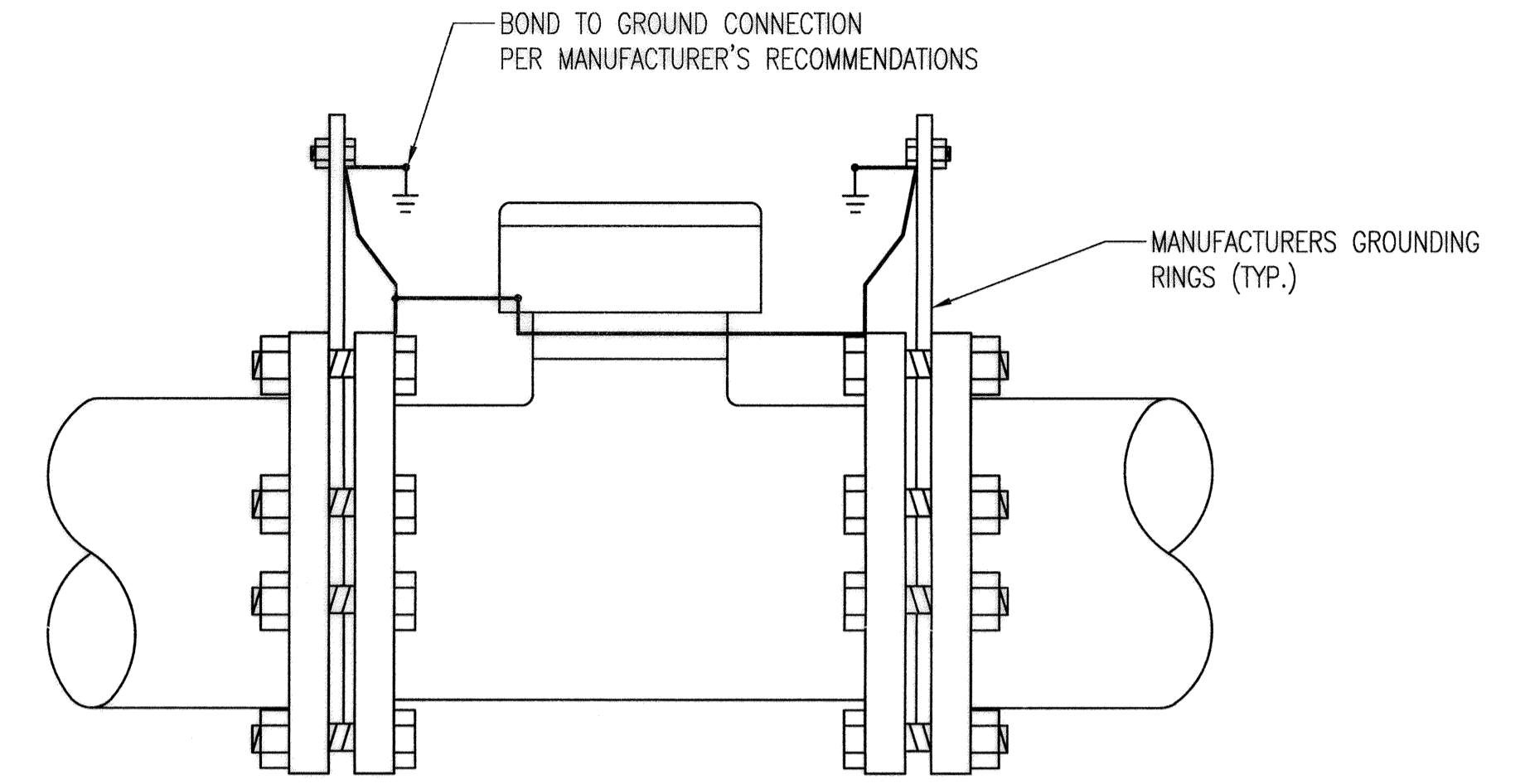
1. REFER TO ELECTRICAL DRAWINGS FOR PANEL BOARD CIRCUITS.
2. LABEL ALL EQUIPMENT WITHIN THE CONTROL PANEL INCLUDING TERMINAL BLOCKS, RELAYS AND CIRCUIT BREAKERS WITH ASSOCIATED CIRCUIT OR ID NUMBER.



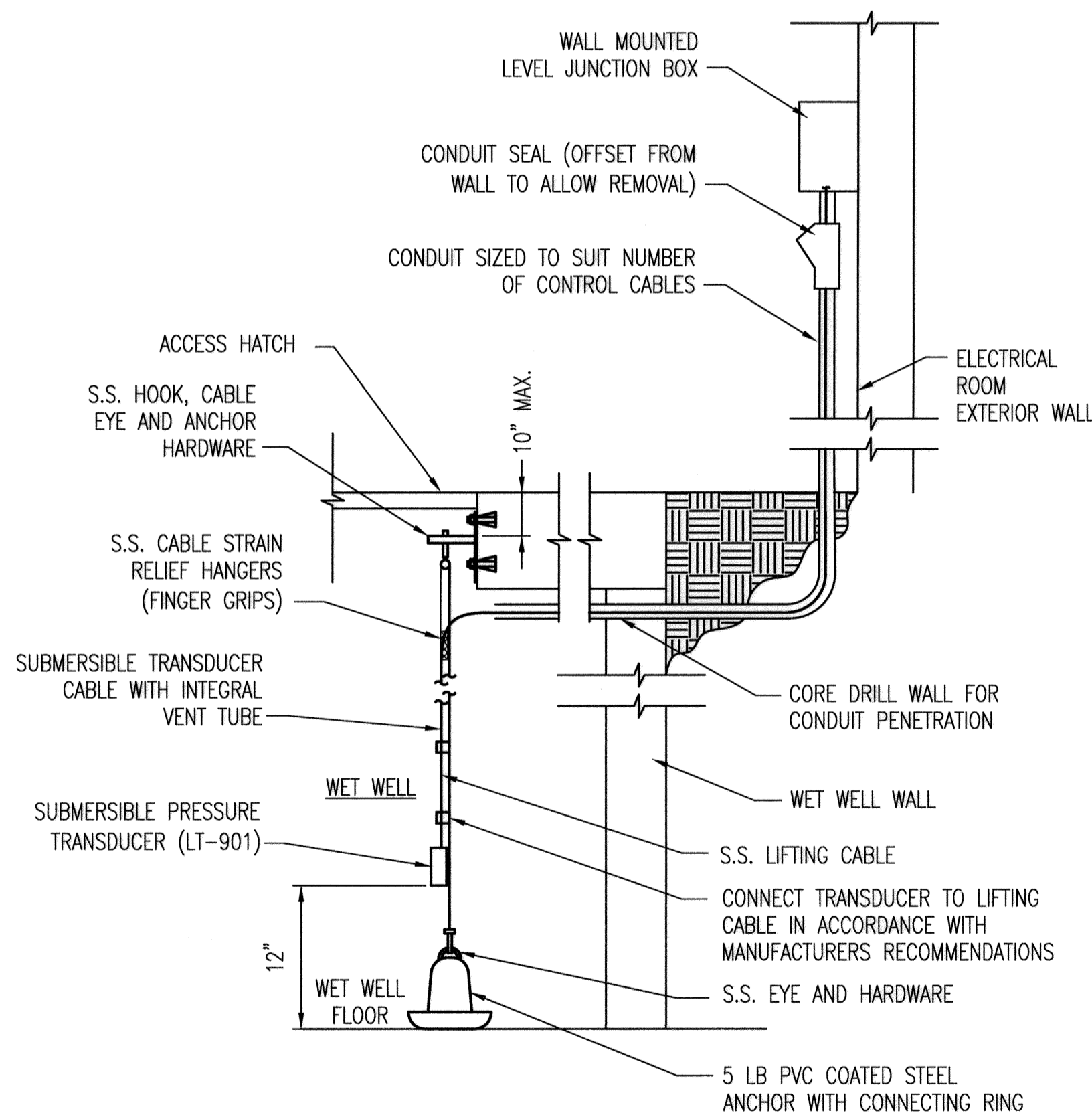
**1 VENTILATION CONTROL DIAGRAM**  
1-5 NOT TO SCALE



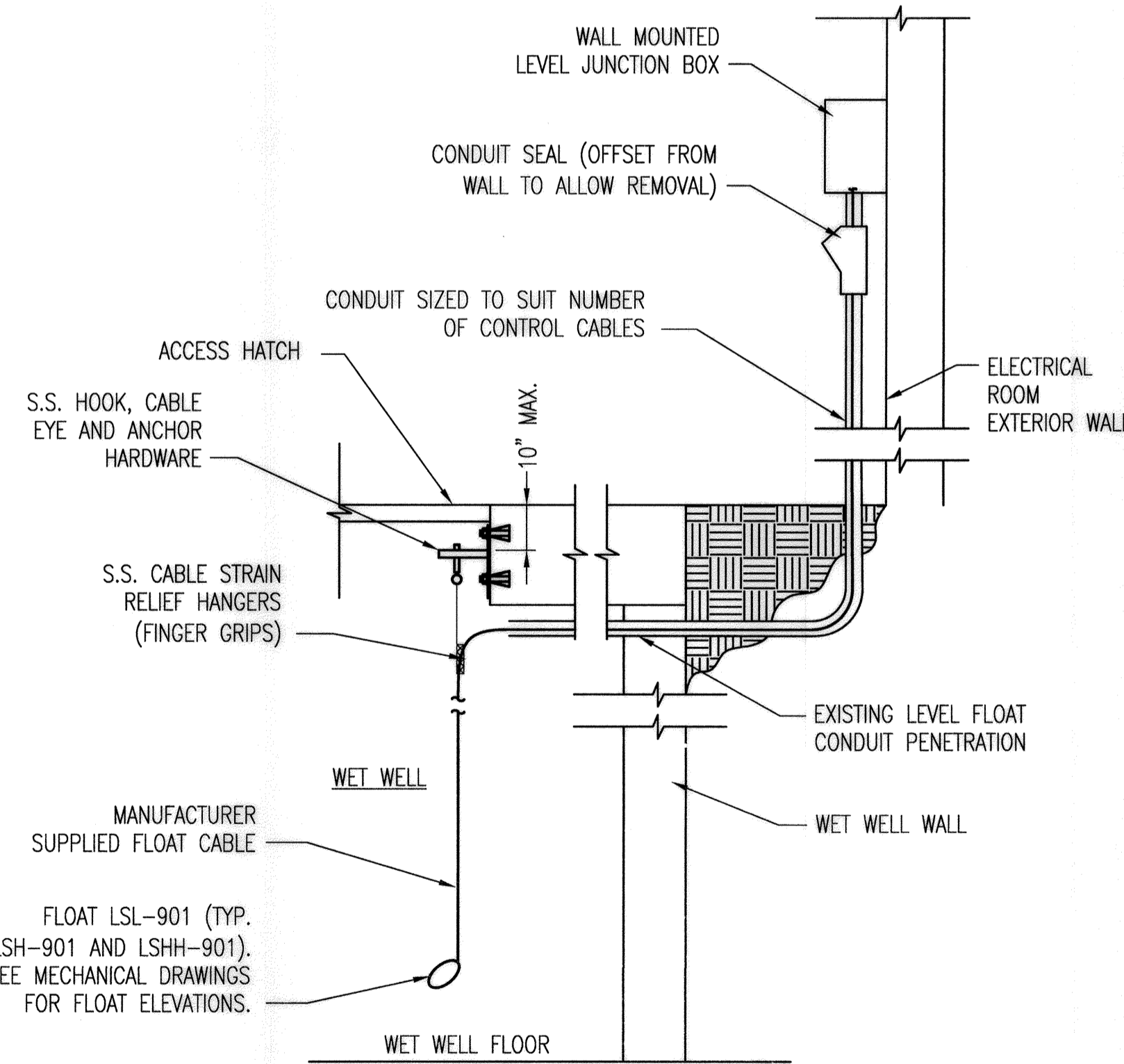
**2 VENTILATION CONTROL PANEL**  
1-5 NOT TO SCALE



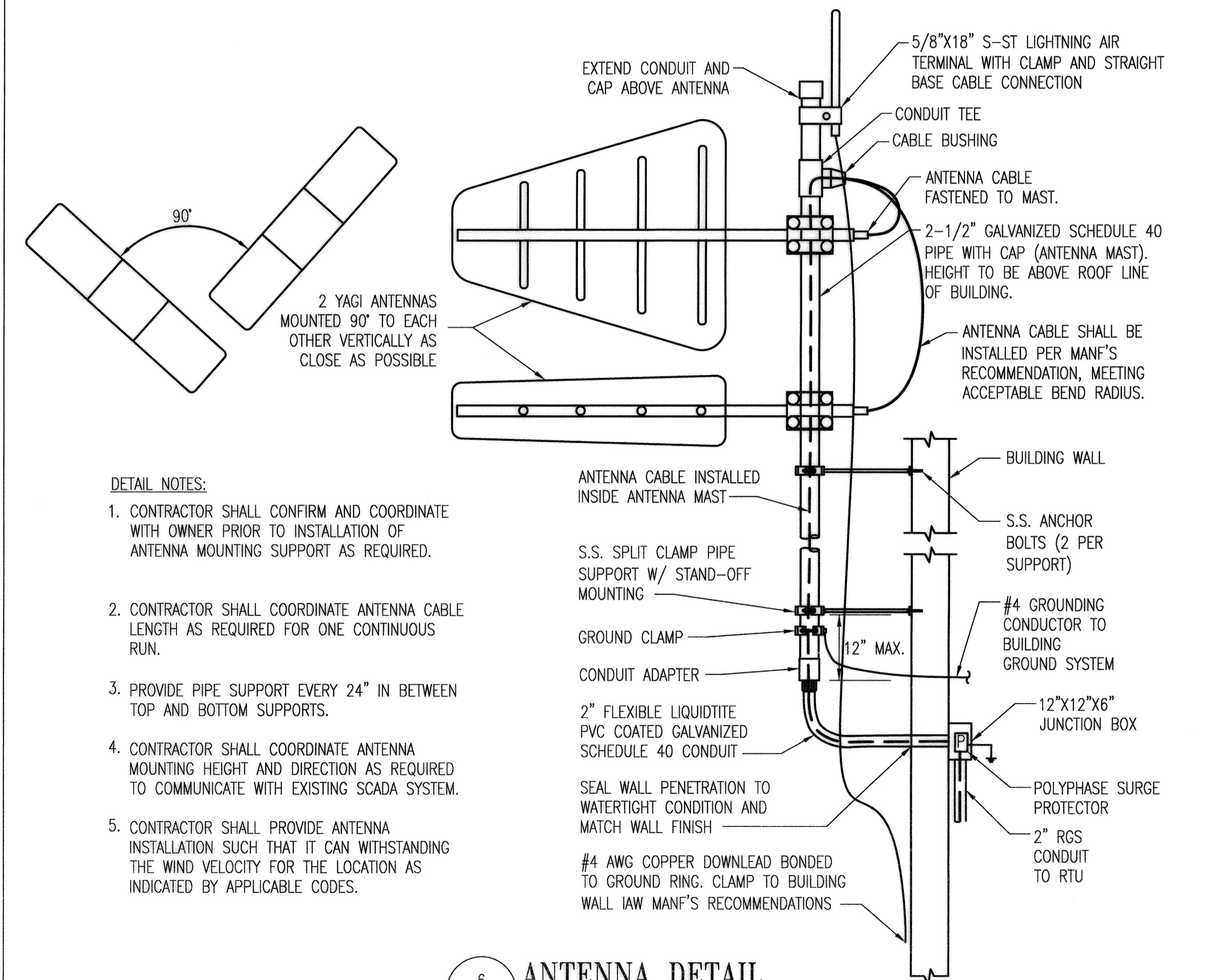
**3 MAGNETIC FLOW METER GROUNDING DETAIL**  
1-5 NOT TO SCALE



**4 LEVEL TRANSDUCER INSTALLATION DETAIL**  
1-5 NOT TO SCALE



**5 LEVEL FLOAT INSTALLATION DETAIL**  
1-5 NOT TO SCALE



**DETAIL NOTES:**

1. CONTRACTOR SHALL CONFIRM AND COORDINATE WITH OWNER PRIOR TO INSTALLATION OF ANTENNA MOUNTING SUPPORT AS REQUIRED.
2. CONTRACTOR SHALL COORDINATE ANTENNA CABLE LENGTH AS REQUIRED FOR ONE CONTINUOUS RUN.
3. PROVIDE PIPE SUPPORT EVERY 24" IN BETWEEN TOP AND BOTTOM SUPPORTS.
4. CONTRACTOR SHALL COORDINATE ANTENNA MOUNTING HEIGHT AND DIRECTION AS REQUIRED TO COMMUNICATE WITH EXISTING SCADA SYSTEM.
5. CONTRACTOR SHALL PROVIDE ANTENNA INSTALLATION SUCH THAT IT CAN WITHSTANDING THE WIND VELOCITY FOR THE LOCATION AS INDICATED BY APPLICABLE CODES.

**6 ANTENNA DETAIL**  
1-5 NOT TO SCALE

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 25378, EXPIRATION DATE: 7/14/2020

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND  
DIRECTOR OF PUBLIC WORKS DATE  
*Thomas E. Butler 3/14/20*  
CHIEF, BUREAU OF ENGINEERING DATE  
CHIEF, BUREAU OF UTILITIES DATE  
*Paul J. Han 3/15/20*  
CHIEF, UTILITY DESIGN DIVISION DATE

**WRA**  
Whitman, Reardon & Associates, LLP  
801 South Caroline Street, Baltimore, Maryland 21231



DES:	GAH				
DRN:	DLA				
CHK:	PWG				
BY:	NO.	REVISION	DATE		

MISCELLANEOUS SCHEMATICS  
600' SCALE MAP NO. 48 BLOCK NO. 19

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**I-5**  
SCALE AS SHOWN  
SHEET 28 OF 27

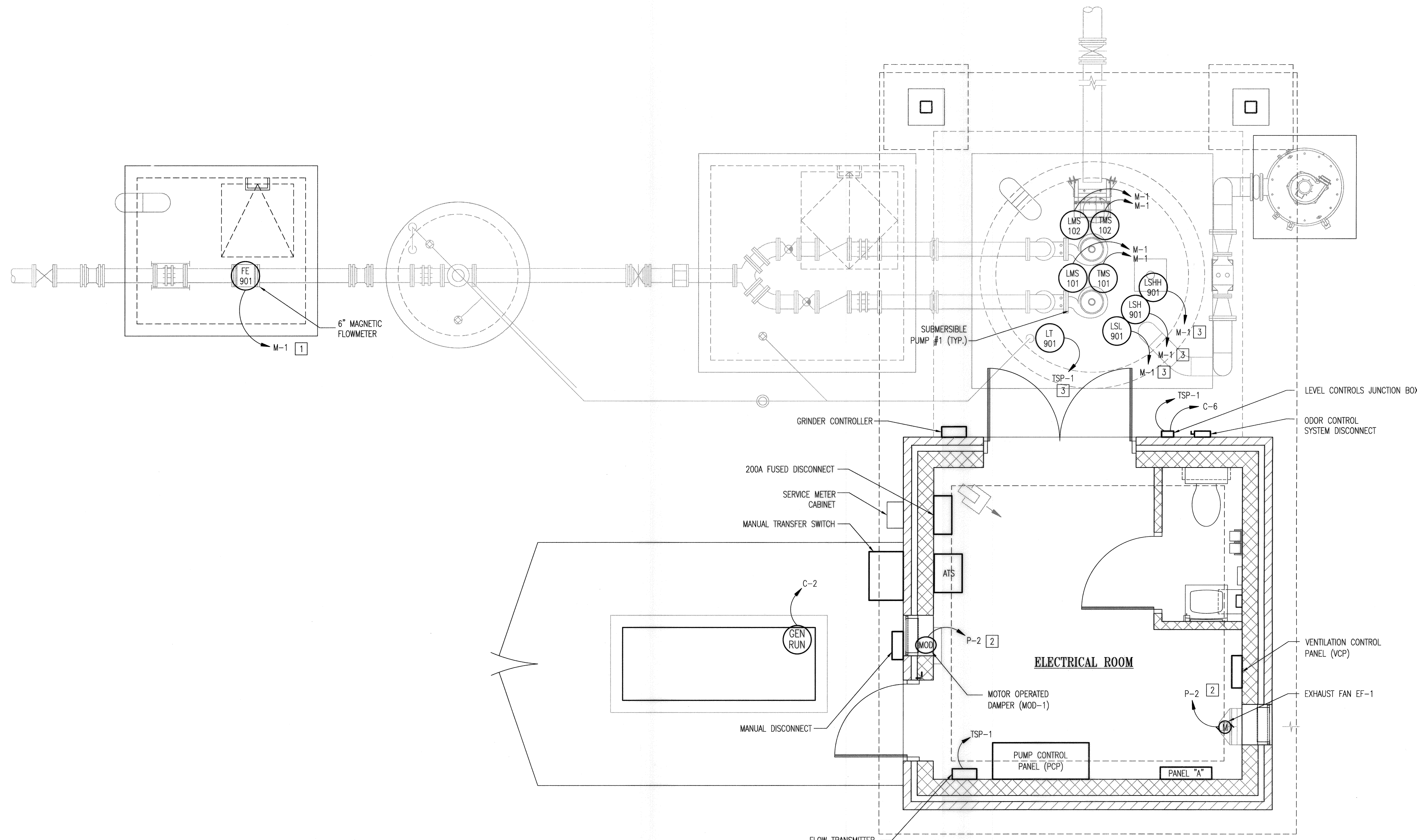


**GENERAL SHEET NOTES**

1. REFER TO DRAWING I-1 FOR GENERAL NOTES, ABBREVIATIONS, SYMBOLS, AND LEGEND.
2. REFER TO INSTALLATION DETAILS FOR ADDITIONAL REQUIREMENTS.
3. ALL CONDUIT SHOWN TO PUMP CONTROL PANEL UNLESS OTHERWISE NOTED.

**SHEET KEYNOTES**

- 1 CONDUIT TO FLOW TRANSMITTER.
- 2 CONDUIT TO VENTILATION CONTROL PANEL.
- 3 CONDUIT TO LEVEL JUNCTION BOX.



**1 PUMPING STATION PLAN**  
 I-6 SCALE: 1/2" = 1'-0"

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DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

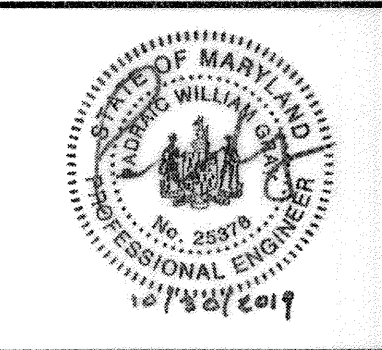
*[Signature]* 3/26/2018  
 DIRECTOR OF PUBLIC WORKS DATE

*[Signature]* 3/25/2018  
 CHIEF, BUREAU OF UTILITIES DATE

*[Signature]* 3/25/2018  
 CHIEF, BUREAU OF ENGINEERING DATE

*[Signature]* 3/25/2018  
 CHIEF, UTILITY DESIGN DIVISION DATE

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PUMPING STATION PLAN

600' SCALE MAP NO. 48 BLOCK NO. 19

**ANNAPOLIS JUNCTION WASTEWATER PUMPING STATION UPGRADE**

CAPITAL PROJECT NO. S6294  
 CONTRACT NO. 20-4954

6TH ELECTION DISTRICT  
 HOWARD COUNTY, MARYLAND

I-6

SCALE AS SHOWN

SHEET 27 OF 27