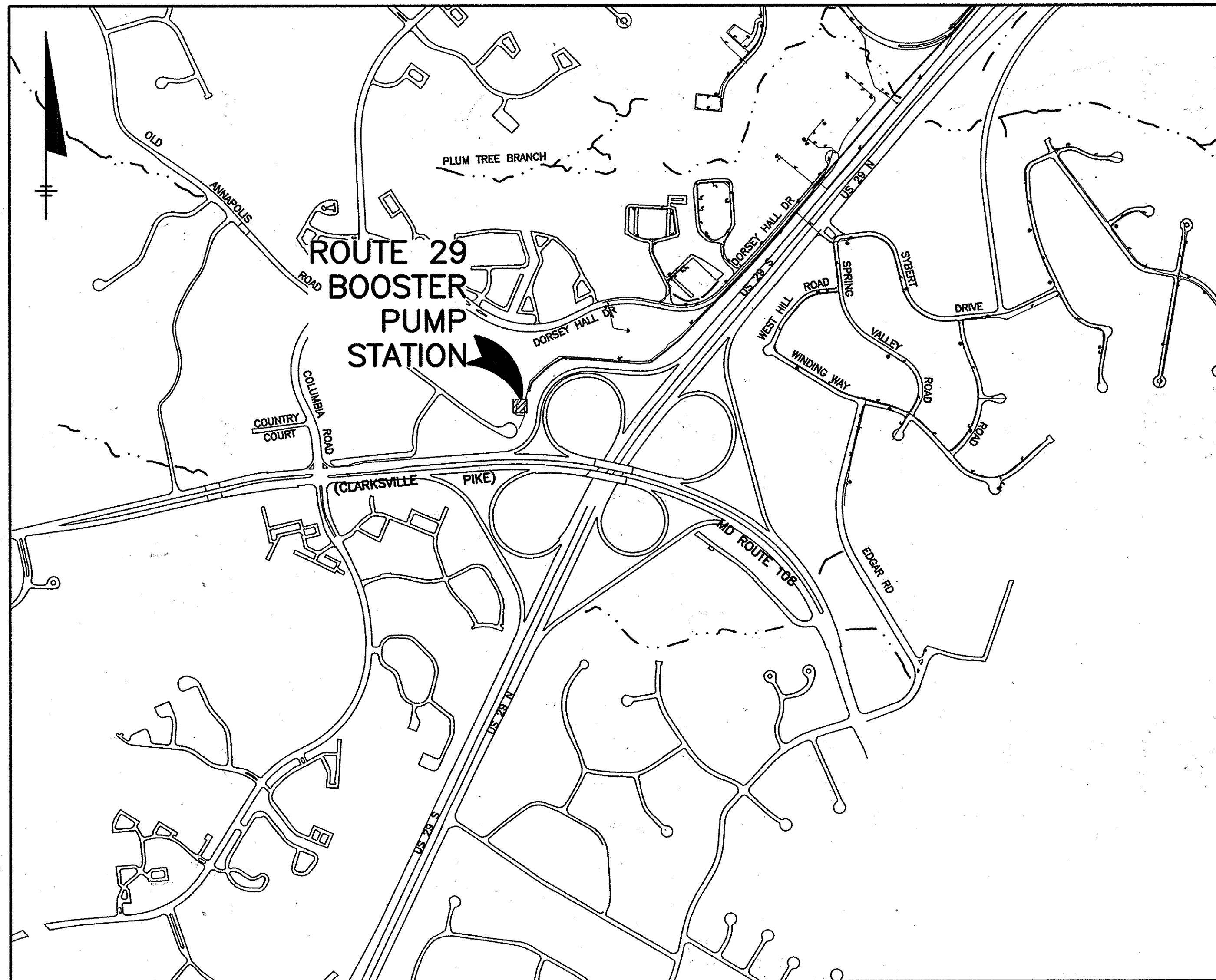


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GENERAL NOTES:

- ALL EXISTING EQUIPMENT AND APPURTENANCES SHOWN INSIDE THE PUMP STATION ARE BASED ON EXISTING RECORD DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY PRIOR TO COMMENCING WORK AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
- 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.
- APPROXIMATE LOCATION OF EXISTING MAINS ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENCIES AT LEAST FIVE WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS:

AT&T.....	1-800-252-1133
BGE (CONTRACTOR SERVICES).....	410-850-4620
BGE (UNDERGROUND DAMAGE CONTROL).....	410-787-9068
BGE (EMERGENCY).....	410-685-1400
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
MCI WORLD.COM.....	1-800-624-9675
- TREES AND SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO THE MAXIMUM EXTENT. ANY TREES, OUTSIDE OF EXISTING EASEMENTS, DISTURBED BY CONSTRUCTION SHALL BE REPLACED IN KIND (3" CALIPER MINIMUM). CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FROM THE COUNTY BEFORE REMOVING ANY EXISTING TREES OR SHRUBS.
- THE CONTRACTOR SHALL NOT OPERATE ANY WATER MAIN VALVES ON THE EXISTING WATER SYSTEM.
- EQUIPMENT SHOWN TO BE SALVAGED SHALL BE REMOVED AND DELIVERED TO THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS BUREAU OF UTILITIES AS DIRECTED BY THE ENGINEER OR COUNTY.



WATER AND SEWER CODE FOR COUNTY USE ONLY:	
WATER CODE NO.	F04
NO. OF CONNECTIONS	X
SEWER CODE NO.	N/A
NO. OF CONNECTIONS	0
DRAINAGE AREA	PATAPSCO

VICINITY MAP
SCALE: 1" = 600'

ROUTE 29 BOOSTER PUMP STATION UPGRADE

CAPITAL PROJECT: W-8200

CONTRACT NO.: 44-4661

HOWARD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS

INDEX OF DRAWINGS	
DRAWING NO.	TITLE
1	COVER SHEET, GENERAL NOTES & SITE PLAN
2	ABBREVIATIONS & SYMBOLS
3	SITE PLAN
4	PUMP STATION DEMOLITION PLAN
5	PUMP STATION NEW WORK PLAN
6	MCC ONE-LINE DIAGRAM
7	MOTOR CONTROL WIRING DIAGRAMS
8	SCHEDULES
9	ELECTRICAL DETAILS
10	ELECTRICAL MODIFICATIONS
11	MECHANICAL & STRUCTURAL DETAILS

ABBREVIATIONS/SYMBOLS

ALUM	ALUMINUM	MTG	MOUNTING
B.G.E	BALTIMORE GAS & ELECTRIC	N.C.	NORMALLY CLOSED
CL or CL	CENTERLINE	NO.	NUMBER
C.O	CLEANOUT	NPT	NATIONAL PIPE THREAD
CONC.	CONCRETE	NTS	NOT TO SCALE
CORP.	CORPORATION STOP	O.C.	ON CENTER
CV	CHECK VALVE	PSI	POUNDS PER SQUARE INCH
DET.	DETAIL	PRV	PRESSURE REDUCING VALVE
D.I.P. OR DIP	DUCTILE IRON PIPE	RED.	REDUCER
DN	DOWN	REINF.	REINFORCEMENT
DWG	DRAWING	SRV	SURGE RELIEF VALVE
ECC.	ECCENTRIC	SST, SS	STAINLESS STEEL
EQ.	EQUAL	STD.	STANDARD
EQUIP.	EQUIPMENT	T/	TOP OF
EL.	ELEVATION	TS&V	TAPPING SLEEVE AND VALVE
EXIST., EX.	EXISTING	TYP.	TYPICAL
EXP.	EXPANSION	V.B.	VERTICAL BEND
F.F.	FINISHED FLOOR	VFD	VARIABLE FREQUENCY DRIVE
FLG	FLANGE	W/	WITH
FT. OR "	FEET	Ø	DIAMETER
GV	GATE VALVE		
H.B.	HORIZONTAL BEND		
IN. OR "	INCH		
INV.	INVERT		
MANUF.	MANUFACTURER		
MECH.	MECHANICAL		
MIN.	MINIMUM		
MJ	MECHANICAL JOINT		

CIVIL SYMBOLS

	REMOVE/ABANDON		SECTION NOT TO SCALE		REFERENCE SECTION INDICATOR
	REGRADE		SECTION AND OR DETAIL INDICATOR		
	LOD		SILT FENCE/LIMIT OF DISTURBANCE		
	TREE LINE		CONTOUR AND SPOT ELEV.		
	54		PIPING		
	54.66		HIDDEN PIPING		
	CHAIN LINK FENCE		POST/BOLLARD		
	UTILITY POLE		SEWER MANHOLE		
	SEWER MANHOLE		DRAIN MANHOLE		
	DRAIN MANHOLE		TREE		
	DIRECTION NORTH		OVERHEAD ELECTRICAL & TELEPHONE		
	DETAIL NOT TO SCALE		REFERENCE DETAIL INDICATOR		

RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS. THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC.
BY: *Narayan Venkatesan*

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	
<i>John J. ...</i> DIRECTOR OF PUBLIC WORKS	<i>Thomas J. Butler</i> CHIEF, BUREAU OF ENGINEERING
<i>William C. ...</i> CHIEF, BUREAU OF UTILITIES	<i>...</i> CHIEF, UTILITY DESIGN DIVISION

O'BRIEN & GERE ENGINEERS, INC.
4201 Mitchellville Rd.
Suite 500
Bowie, Maryland 20716
(301) 731-5622
FAX: (301) 805-5984

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 12222 CORPORATION DATE 12/17/13

DSN. BY:	NV		
DRN. BY:	JFM		
CHK. BY:	RJD		
DATE:	SEPT. 2012		
RJD	0	BID READY	09/12
BY	NO.	REVISION	DATE

GENERAL
COVER SHEET
GENERAL NOTES AND SITE PLAN

ROUTE 29 BOOSTER PUMP STATION UPGRADE
CAPITAL PROJECT: W-8200
CONTRACT NO.: 44-4661
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET
1 OF 11

ELECTRICAL DIAGRAMS

SYMBOL	DESCRIPTIONS	SYMBOL	DESCRIPTIONS
	AUTOMATIC TRANSFER DEVICE, OPEN TRANSITION		N.O. MOMENTARY CONTACT PUSH BUTTON WITH NAMEPLATE AS INDICATED ON DIAGRAM
	AUTOMATIC TRANSFER DEVICE, CLOSED TRANSITION		N.C. MOMENTARY CONTACT PUSH BUTTON WITH NAMEPLATE AS INDICATED ON DIAGRAM
	METERING DEVICES: A-AMMETER, V-VOLTMETER, PF-POWER FACTOR, HZ-FREQUENCY METER		N.C. MAINTAINED CONTACT PUSH BUTTON WITH MUSHROOM BUTTON
	AMMETER SWITCH		TWO POSITION MAINTAINED CONTACT SELECTOR SWITCH WITH NAMEPLATE AS INDICATED ON DIAGRAMS
	VOLTMETER SWITCH		THREE POSITION MAINTAINED CONTACT SELECTOR SWITCH WITH NAMEPLATE AS INDICATED ON THE CONTROL DIAGRAMS. X = CLOSED 0 = OPEN
	DIGITAL METER		N.C. PRESSURE SWITCH - OPENS ON RISING PRESSURE
	FUSE, SIZE AS INDICATED		N.O. PRESSURE SWITCH - CLOSING ON RISING PRESSURE
	GROUND CONNECTION		N.C. TEMPERATURE SWITCH - OPENS ON RISING TEMPERATURE
	TRANSFORMER (DELTA - RESISTANCE GROUNDED WYE SHOWN)		N.O. TEMPERATURE SWITCH - CLOSING ON RISING TEMPERATURE
	CURRENT TRANSFORMER		N.C. FLOW SWITCH - OPENS ON RISING FLOW
	POTENTIAL TRANSFORMER		N.O. FLOW SWITCH - CLOSING ON RISING FLOW
	LIGHTNING ARRESTOR		N.C. TORQUE SWITCH - OPENS ON INCREASING TORQUE
	CAPACITOR		N.O. TORQUE SWITCH - CLOSING ON INCREASING TORQUE
	MOTOR STARTER CONTACTOR AND OVERLOAD RELAY, FVNR UON		N.C. LIMIT SWITCH (HELD OPEN)
	DISCONNECT SWITCH U.O.N		N.C. LIMIT SWITCH
	KIRK KEY INTERLOCK		N.O. LIMIT SWITCH
	ELECTRICAL INTERLOCK		N.O. LIMIT SWITCH (HELD CLOSED)
	CIRCUIT BREAKER WITH RATINGS AS INDICATED		SOLENOID VALVE OR RELAY COIL
	PLUG & SOCKET		RELAY OR CONTACTOR COIL WITH TAG NUMBER AS SHOWN
	DRAW OUT DEVICE		N.O. RELAY CONTACT
	DRAW OUT POWER CIRCUIT BREAKER		N.C. RELAY CONTACT
	TEST TERMINAL BLOCK		ON-DELAY OR OFF-DELAY RELAY
	WIRING TERMINAL BLOCK		ON-DELAY RELAY N.C. TIMED OPENING CONTACT
	VARIABLE FREQUENCY CONTROLLER		ON-DELAY RELAY N.O. TIMED CLOSING CONTACT
	MOTOR - SINGLE WINDING UNLESS OTHERWISE NOTED: 2S2W = 2 SPEED 2 WINDING 2S1W = 2 SPEED 1 WINDING NUMERALS (IF SHOWN) INDICATE HP		OFF-DELAY N.C. CONTACT (OPENS WHEN ENERGIZED, TIMED CLOSING AFTER DE-ENERGIZING)
	CONDUCTORS NOT CONNECTED		OFF-DELAY N.O. CONTACT (CLOSING WHEN ENERGIZED, TIMED OPENING AFTER DE-ENERGIZING)
	CONDUCTORS CONNECTED		MOTOR
	N.O. NORMALLY OPEN		INDICATOR OR PILOT LIGHT: R-RED, B-BLUE, W-WHITE, G-GREEN, A-AMBER O-ORANGE, C-CLEAR, NE-NEON, OP-OPALESCENT, P-PURPLE
	N.C. NORMALLY CLOSED		LATCHING RELAY L = LATCH COIL U = UNLATCH COIL
	LIMITS OF ELECTRICAL ENCLOSURE		FIELD WIRING TERMINAL
	ANSI DEVICE NO. 27 UNDERVOLTAGE RELAY		FIELD WIRING
	PHASE-BALANCE CURRENT RELAY WITH HARMONIC FILTER		ANTI-CONDENSATION HEATER
			ELAPSED TIME METER

ELECTRICAL PLANS & SECTIONS

SYMBOL	DESCRIPTIONS	SYMBOL	DESCRIPTIONS
	SIMPLEX RECEPTACLE		ENCLOSED CIRCUIT BREAKER
	DUPLEX RECEPTACLE (15 AMP UNLESS OTHERWISE NOTED)		NON-FUSED DISCONNECT SWITCH
	DUPLEX RECEPTACLE WITH WATERPROOF COVER		FUSED DISCONNECT SWITCH - FUSE SIZE AS INDICATED (40A)
	GROUND FAULT INTERRUPTER TYPE RECEPTACLE		480V RECEPTACLE WITH AUX CONTACTS
	DOUBLE DUPLEX RECEPTACLE WITH SINGLE PLATE		COMBINATION MAGNETIC MOTOR STARTER. ABBREVIATION INDICATES TYPE: FVNR, FVR, RVAT, 2S1W, 2S2W, SST
	DUPLEX RECEPTACLE FLOOR MOUNTED		MOTOR
	SPECIAL RECEPTACLE: 20A, 2P, 3W, 208V NEMA 6-20R		GENERATOR
	SPECIAL RECEPTACLE: 30A, 2P, 3W, 208V NEMA 6-30R		MANUAL MOTOR STARTER WITH THERMAL OVERLOADS
	SPECIAL RECEPTACLE: 20A, 3P, 4W, 208/120V NEMA 14-20		CONTROL PANEL - TYPE AS INDICATED
	SPECIAL RECEPTACLE: 30A, 3P, 4W, 208V NEMA 15-30		CONTROL STATION
	SPECIAL RECEPTACLE: 30A, 3P, 4W, 208V NEMA L23-30R		TWO-POSITION DRUM SWITCH
	SPECIAL RECEPTACLE: 50A, 2P, 3W, 208V NEMA 6-50P		MOMENTARY CONTACT START-STOP PUSH BUTTON STATION
	EMERGENCY POWER OFF SWITCH		MAINTAINED CONTACT START-STOP PUSH BUTTON STATION
	JUNCTION BOX		MAINTAINED CONTACT EMERGENCY STOP PUSH BUTTON STATION OR PULL CORD
	CLOCK HANGER OUTLET		SOLENOID VALVE
	SINGLE POLE TOGGLE SWITCH		TORQUE SWITCH
	SWITCH - SUPERScript INDICATES FIXTURES CONTROLLED		ROTATION SENSOR (ZERO-SPEED SWITCH)
	DOUBLE POLE TOGGLE SWITCH		PANELBOARD
	THREE - WAY TOGGLE SWITCH (SPDT)		TRANSFORMER
	4-WAY TOGGLE SWITCH		MOTORIZED VALVE ACTUATOR
	KEY OPERATED SWITCH		INSTRUMENT
	SWITCH WITH PILOT LIGHT		BUS DUCT OR CABLE TRAY UP OR TOWARDS
	MOMENTARY CONTACT SWITCH		SURFACE METAL RACEWAY WITH DEVICES AS INDICATED
	OCCUPANCY SENSOR		BUS DUCT OR CABLE TRAY DOWN OR AWAY
	FIRE ALARM BELL		CONCRETE ENCASED DUCTBANK BELOW GRADE
	FIRE ALARM FLASHING STROBE LIGHT - WALL MOUNTED		EX. CONCRETE ENCASED DUCTBANK BELOW GRADE
	FIRE ALARM HORN		FLEXIBLE CONDUIT
	HORN TYPE SPEAKER		RACEWAY "UP" OR "TOWARDS"
	COMBINATION FIRE ALARM HORN AND FLASHING STROBE LIGHT		RACEWAY "DOWN" OR "AWAY"
	FIRE SUPPRESSION CONTROL PANEL		HEAT TRACE CABLE
	FIRE ALARM ANNUNCIATOR PANEL		LIGHTING CIRCUIT. NO. OF TICK MARKS = NO. OF CONDUCTORS (NOT INCLUDING GROUND) LONG TICK MARK = NEUTRAL (SEE PANEL SCHEDULE FOR CONDUIT AND WIRE SIZES).
	FIRE ALARM CONTROL PANEL		RACEWAY CONCEALED IN OR BELOW SLAB OR BELOW GRADE.
	CEILING SPEAKER		BRANCH CIRCUIT HOMERUN TO PANELBOARD. QUANTITY OF CIRCUITS INDICATED BY ARROWS. SEE SPECIFICATIONS FOR CIRCUIT REQUIREMENTS
	FIRE ALARM PULL STATION		RACEWAY RUN EXPOSED. CONDUCTORS SHALL BE MINIMUM 2#12 AWG AND 1#12 AWG GROUND IN 3/4" CONDUIT, UON.
	HEAT DETECTOR		EXISTING LINE TYPE
	SMOKE DETECTOR (PHOTOELECTRIC)		NEW ELECTRICAL WORK LINE TYPE
	SMOKE DETECTOR (IONIZATION)		DEMOLITION LINE TYPE ON DEMOLITION DRAWINGS
	DUCT SMOKE DETECTOR		FUTURE ELECTRICAL WORK LINE TYPE
	ADDRESSABLE RELAY - CONTROL		
	SYSTEM ADDRESSABLE RELAY - MONITOR		
	FLOW SWITCH		
	TAMPER SWITCH		
	PRESSURE SWITCH		
	PROJECTED BEAM RECEIVER		
	PROJECTED BEAM TRANSMITTER		

SYMBOL	DESCRIPTIONS
	FLUORESCENT LIGHTING FIXTURE (TYPE B SHOWN)
	FLUORESCENT LIGHTING FIXTURE (EMERGENCY OR NIGHT LIGHT)
	CEILING MOUNTED LIGHTING FIXTURE (TYPE N SHOWN)
	WALL MOUNTED LIGHTING FIXTURE
	70W HID WALL PACK
	EMERGENCY BATTERY UNIT WITH NO. OF HEADS INDICATED
	EMERGENCY BATTERY UNIT (WITH REMOTE HEADS)
	REMOTE EMERGENCY LIGHT HEAD
	EXIT SIGN - CEILING OR PENDANT MOUNTED (SHADED PORTION INDICATES FACE)
	EXIT SIGN - WALL MOUNTED
	EXIT SIGN WITH DIRECTIONAL ARROWS
	POLE MOUNTED LIGHTING FIXTURE - SINGLE, DOUBLE HEAD
	TELEPHONE OUTLET
	TELEPHONE OUTLET, WALL MOUNTED
	TELEPHONE OUTLET, FLOOR MOUNTED
	TELEPHONE/DATA OUTLET
	TELEPHONE/DATA OUTLET, FLOOR MOUNTED
	DATA OUTLET, FLOOR MOUNTED
	DATA OUTLET
	TELEPHONE POLE
	CARD READER
	DOOR LIMIT SWITCH
	DOOR RELEASE
	MAGNETIC LOCK
	GROUND ROD
	TRANSIENT VOLTAGE SURGE SUPPRESSOR
	DRAWING NOTE NUMBER 2
	COMPARTMENT NUMBER 2
	NEC ARTICLE 500 HAZARDOUS (CLASSIFIED) AREA DEFINITION

GENERAL NOTES:

- THIS IS A STANDARD SYMBOL LIST, SOME SYMBOLS MAY NOT APPEAR ON THE ACCOMPANYING DRAWINGS.
- REFER TO SPECIFICATIONS FOR DETAILED REQUIREMENTS.
- PLAN & SECTION SYMBOLS MAY ALSO BE USED ON DIAGRAMS.
- ON ONE LINE DIAGRAMS FOR 3 PHASE SYSTEMS, DEVICE QUANTITY = 3 UNLESS OTHERWISE NOTED.
- WIRE SIZES SHOWN ARE AWG (AMERICAN WIRE GAUGE).

RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS. THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC.
BY: *[Signature]*

ELECTRICAL ABBREVIATIONS

A. AMP	- AMPERE
AC	- ALTERNATING CURRENT
AF	- AMPS INTERRUPTING CAPACITY
AMF	- AMF FRAME
AMP TRIP	- AMP TRIP
ATS	- AUTOMATIC TRANSFER SWITCH
AWG	- AMERICAN WIRE GAUGE
C	- CONDUIT
CCTV	- CLOSED CIRCUIT TELEVISION
CEP	- CONCRETE EQUIPMENT PAD
CIRCUIT	- CIRCUIT
CMH	- COMMUNICATION MANHOLE
COND	- CONDUCTOR
CU	- COPPER
CWA	- CONSTANT WATTAGE AUTOTRANSFORMER
DC	- DIRECT CURRENT
DISC	- DISCONNECT
DP	- DISTRIBUTION PANEL
DPST	- DOUBLE POLE SINGLE THROW
DPDT	- DOUBLE POLE DOUBLE THROW
DS	- DISCONNECT SWITCH
DT	- DOUBLE THROW
E. EMERG	- EMERGENCY
EC	- EMPTY CONDUIT
EMT	- ELECTRICAL METALLIC TUBING
ETM	- ELAPSED TIME METER
FA	- FIRE ALARM
FAAP	- FIRE ALARM ANNUNCIATOR PANEL
FACP	- FIRE ALARM CONTROL PANEL
FDR	- FEEDER
FLA	- FULL LOAD AMPERES
FMC	- FLEXIBLE METAL CONDUIT
FS	- FLOW SWITCH
FU	- FUSED OR FUSIBLE
FVR	- FULL VOLTAGE REVERSING
FVNR	- FULL VOLTAGE NON-REVERSING
G. GRD	- GROUND
GFI	- GROUND FAULT INTERRUPTER
GFR	- GROUND FAULT RELAY
GRS	- GALVANIZED RIGID STEEL CONDUIT
HH	- HANDHOLE
HPS	- HIGH PRESSURE SODIUM
HV	- HIGH VOLTAGE
Hz	- HERTZ
IC	- INTERRUPTING CAPACITY
IG	- ISOLATED GROUND
I/I	- CURRENT/CURRENT TRANSducer
I/O	- CURRENT/PNEUMATIC TRANSducer
IMP	- INPUT/OUTPUT
IMC	- INTERMEDIATE METAL CONDUIT
IT	- INSTANTANEOUS TRIP or INTERCHANGEABLE TRIP
JB	- JUNCTION BOX
KCMIL	- THOUSAND CIRCULAR MILS
KV	- KILVOLTS
KVA	- KILOVOLT AMPERES
KVAR	- KILOVOLT AMPERES REACTIVE
KW	- KILOWATTS
KWH	- KILOWATT HOUR
LA	- LIGHTNING ARRESTOR
LPMC	- LIQUID TIGHT FLEXIBLE METAL CONDUIT
LOR	- LOCAL-OFF-REMOTE
LP	- LIGHT POLE
LS	- LIMIT SWITCH
LTG	- LIGHTING
mA	- MILLIAMPS
MCB	- MAIN CIRCUIT BREAKER
MCP	- MOTOR CIRCUIT PROTECTOR
MH	- MANHOLE
MLO	- MAIN LUGS ONLY
MV	- MERCURY VAPOR
NC	- NORMALLY CLOSED
NF	- NON-FUSED
NFSS	- NON-FUSED SAFETY SWITCH
NGR	- NEUTRAL GROUNDING RESISTOR
NPO	- NORMALLY OPEN
ODP	- OPEN DRIP PROOF
OL	- OVERLOAD
()	- NUMBER OF POLES
Φ, PH	- PHASE
P/I	- PNEUMATIC/CURRENT TRANSducer
PB	- PUSHBUTTON
PF	- POWER FACTOR
PFCC	- POWER FACTOR CORRECTION CAPACITOR
PHH	- POWER HANDHOLE
PL	- PILOT LIGHT
PLC	- PROGRAMMABLE LOGIC CONTROLLER
PS	- PRESSURE SWITCH
PT	- POTENTIAL TRANSFORMER
RFI	- RADIO FREQUENCY INTERFERENCE
RGSC	- RIGID GALVANIZED STEEL CONDUIT
RLA	- RUNNING LOAD AMPERES
RMC	- RIGID METAL CONDUIT
RMS	- ROOT MEAN SQUARE
RSC	- RIGID STEEL CONDUIT
RVAT	- REDUCED VOLTAGE AUTO TRANSFORMER
SC	- SURGE CAPACITOR
SS	- SAFETY SWITCH OR STAINLESS STEEL
SST	- SOLID STATE (SOFT START)
ST	- SINGLE THROW
SWBD	- SWITCHBOARD
SWGR	- SWITCHGEAR
T-STAT, T	- THERMOSTAT
TEL or TELE	- TELEPHONE
THH	- TELECOM HANDHOLE
TR	- TIMING RELAY
TRANS	- TRANSFORMER
TS	- TEMPERATURE SWITCH
TSP	- TWISTED SHIELDED PAIR
TST	- TWISTED SHIELDED TRIPLE
UTP	- UNSHIELDED TWISTED PAIR
V	- VOLTS
VA	- VOLT - AMPERES
VFC	- VARIABLE FREQUENCY CONTROLLER
VS	- VIBRATION SWITCH
W	- WATTS, WIRE
XFMR	- TRANSFORMER
2S1W	- 2 SPEED SINGLE WINDING
2S2W	- 2 SPEED TWO WINDING

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 9/16/12
DIRECTOR OF PUBLIC WORKS DATE
[Signature] 9/17/12
CHIEF, BUREAU OF UTILITIES DATE
[Signature] 9/16/12
CHIEF, BUREAU OF ENGINEERING DATE
[Signature] 9/16/12
CHIEF, UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE ENGINEERS, INC.
4201 Mitchellville Rd.
Suite 500
Bowie, Maryland 20716
(301) 731-5622
FAX: (301) 805-5984

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. 22412. EXPIRATION DATE: JAN 9, 2015.

DSN. BY: JWK					
DRN. BY: JFM					
CHK. BY: JWK					
DATE: SEPT. 2012					
R/D	0	BID READY	09/12		
BY	NO.	REVISION	DATE	600' SCALE MAP NO. 30	BLOCK NO. 10

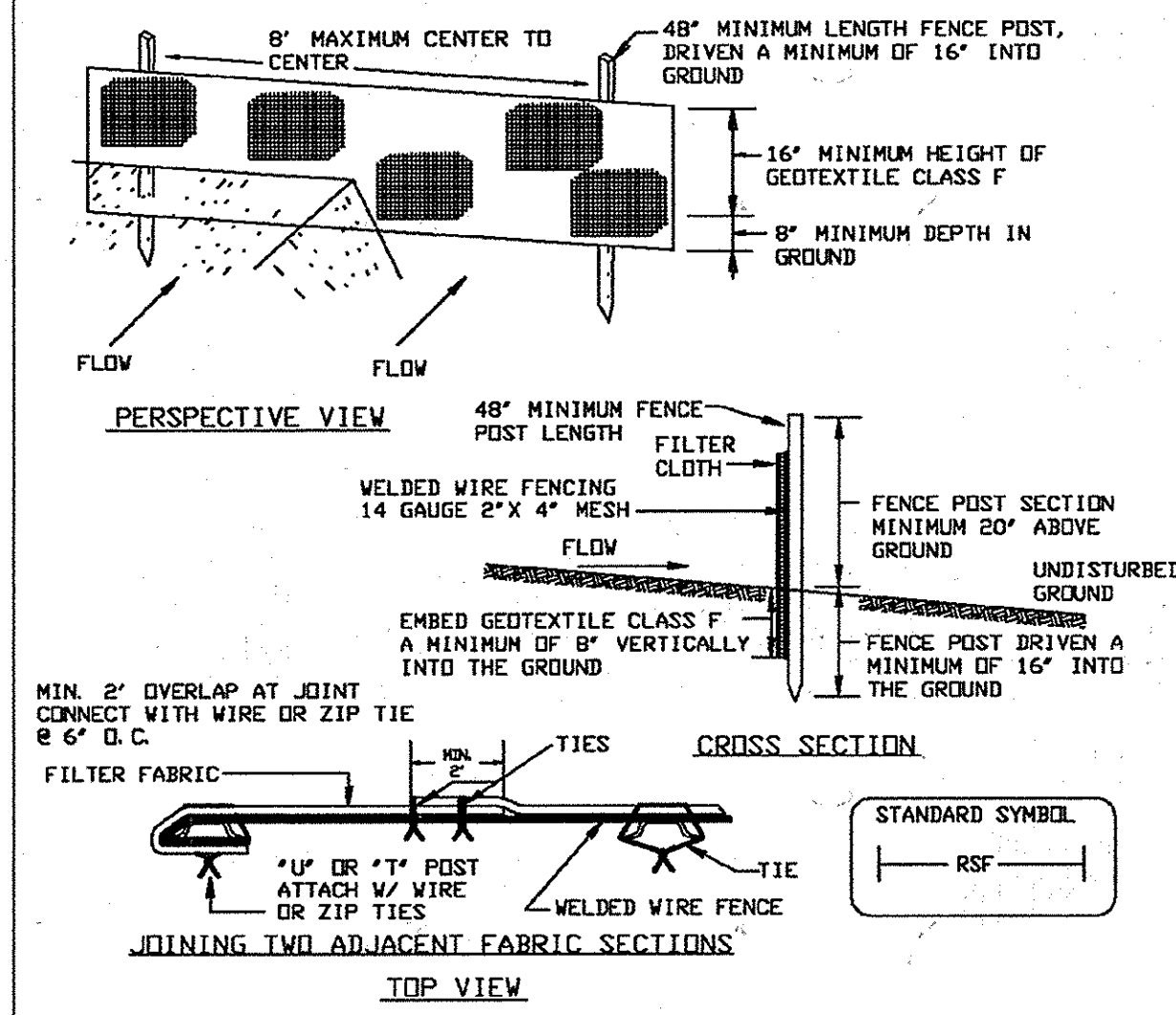
ELECTRICAL ABBREVIATIONS & SYMBOLS

ROUTE 29 BOOSTER PUMP STATION UPGRADE
CAPITAL PROJECT: W-8200
CONTRACT NO.: 44-4661
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 2 OF 11

DETAIL 22A - REINFORCED SILT FENCE APPROVED BY MDE 2-7-05

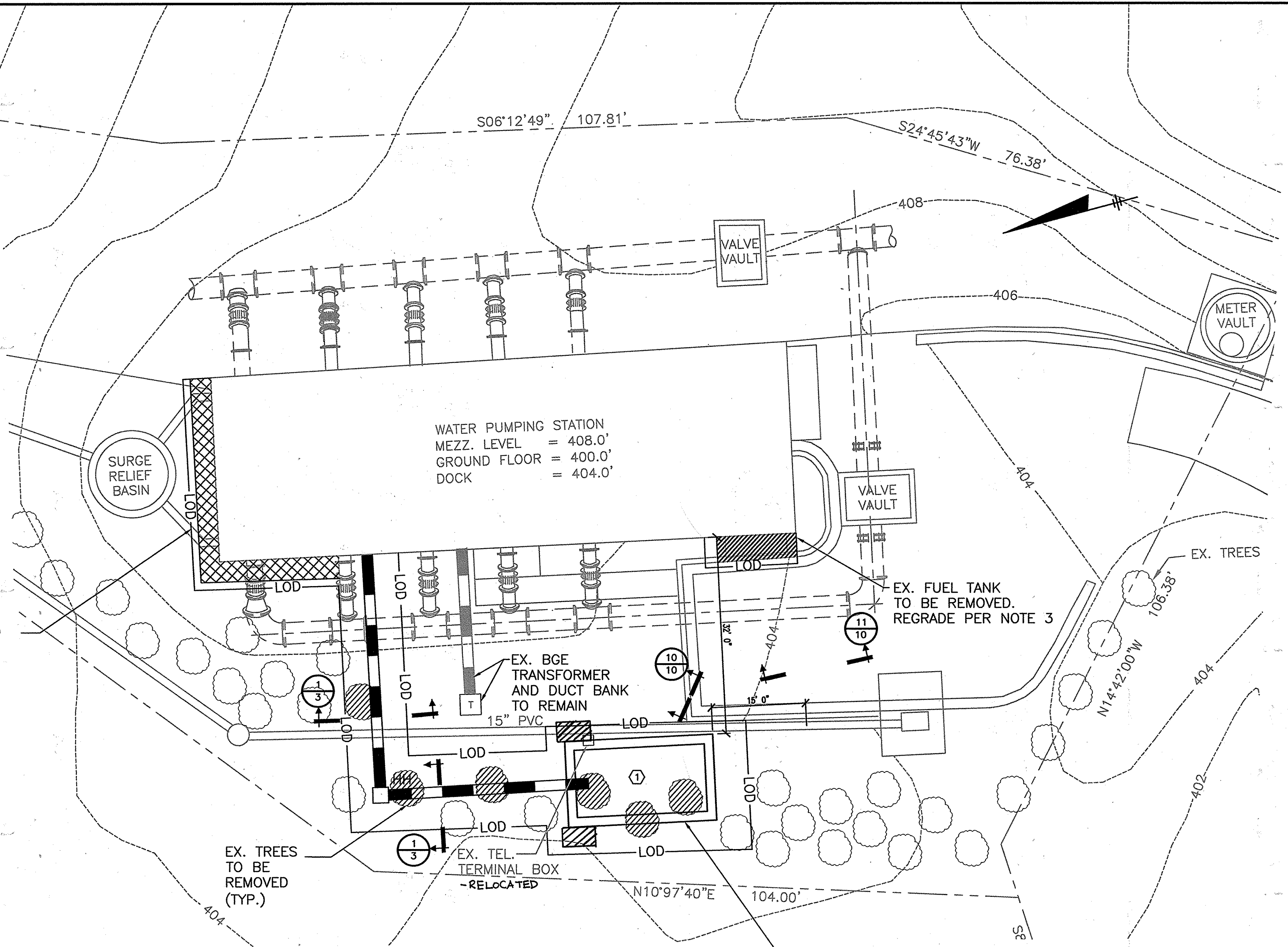


- Construction Specifications**
1. Metal fence post shall be a minimum of 48" long driven 16" minimum into the ground. Post shall be standard T or U section weighting not less than 1.00 pound per linear foot.
 2. Geotextile shall be fastened securely to each fence post with wire ties or zip ties at top and mid section and shall meet the following requirements for geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: NSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: NSMT 509
Flow Rate	0.3 gal ft ² /minute (max.)	Test: NSMT 322
Filtering Efficiency	75% (min.)	Test: NSMT 322
 3. Where ends of geotextile fabric come together, they shall be overlapped, folded and wired tied or zip tied to prevent sediment bypass.
 4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

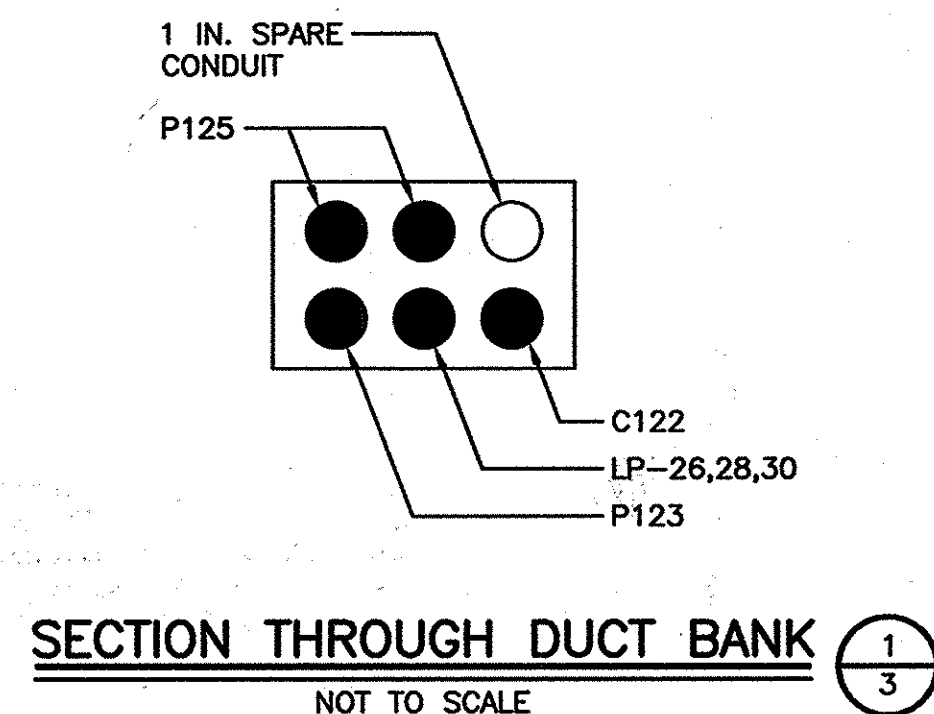
PAGE 15 OF 33 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

LIMITS OF REGRADING (SEE NOTE 3)



SITE PLAN
SCALE: 1"=10'-0"

GENERATOR SET ON CONCRETE EQUIPMENT PAD. COORDINATE PAD SIZE WITH GENERATOR. PAD SHALL EXTEND 2' ON ALL SIDES OF GENERATOR; SEE SHEET 11



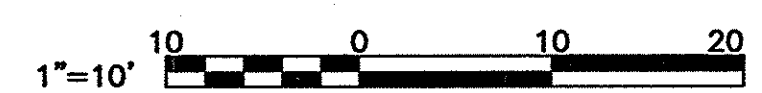
GENERAL NOTES:

1. FOR DUCT BANK CONDUIT & WIRE REQUIREMENTS, SEE SHEET 8.
2. FOR DUCT BANK CONSTRUCTION REQUIREMENTS, SEE "TYPICAL DUCT BANK" ON SHEET 9.
3. CONTRACTOR SHALL REGRADE IN THE AREA SHOWN SUCH THAT THE GRADE SLOPES AWAY FROM THE BUILDING AT A SLOPE OF 1/8" / FOOT UPTO A DISTANCE OF 4' FROM THE BUILDING WALLS.

DRAWING NOTES:

1. INSTALL GROUND RING AND MANHOLE SET. SEE SHEET 9. TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC.
BY: *[Signature]*



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 9/12/12
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 9/12/12
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 9/12/12
CHIEF, UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE ENGINEERS, INC.

4201 Mitchellville Rd.
Suite 500
Bowie, Maryland 20716
(301) 731-5622
FAX: (301) 805-5984

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. 12222. EXPIRATION DATE 12/31/13

[Signature]
PROFESSIONAL ENGINEER

DSN. BY:	JWK				
DRN. BY:	JFM				
CHK. BY:	RJD				
DATE:	SEPT. 2012	RJD 0		BID READY	09/12
		BY NO.		REVISION	DATE

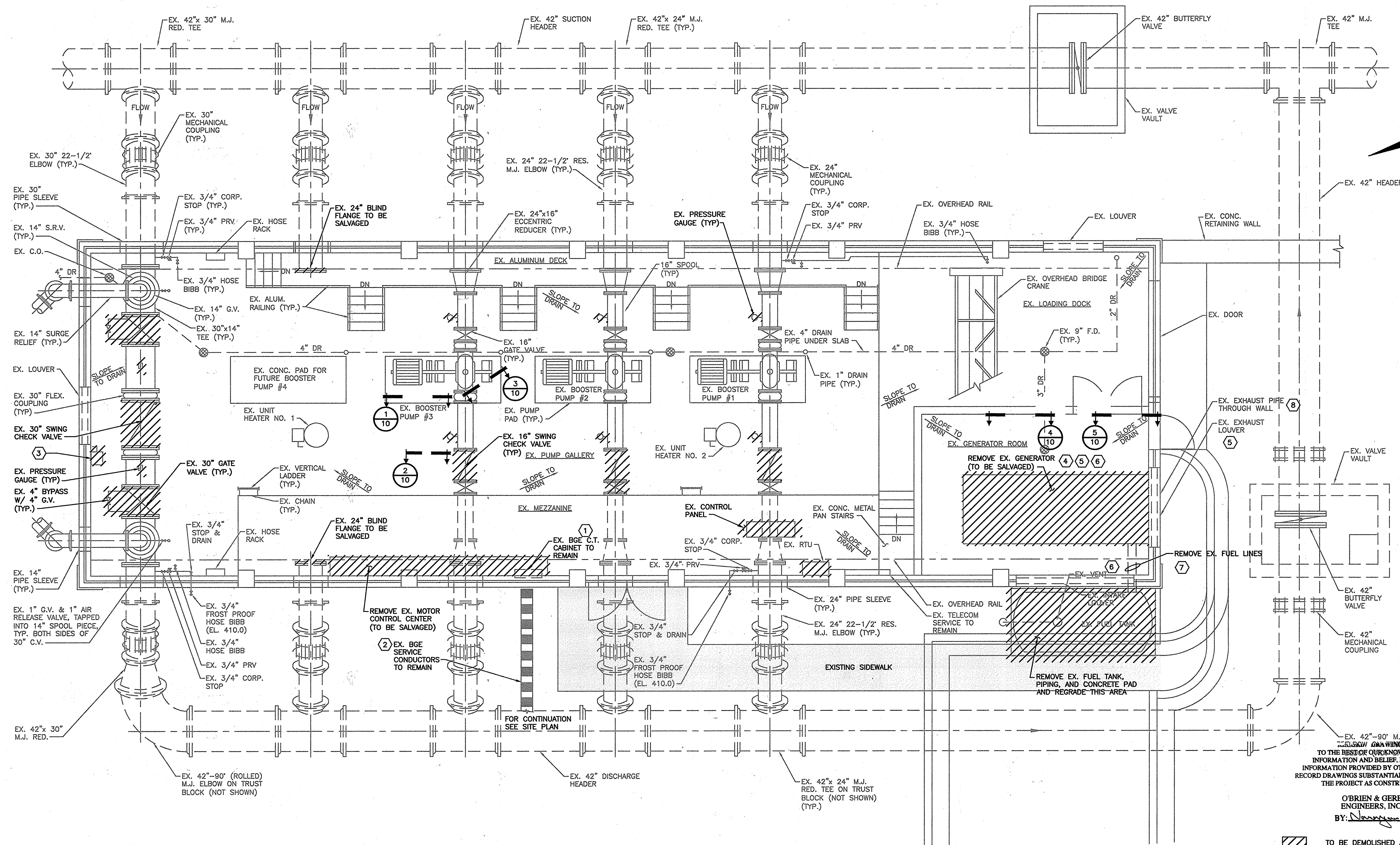
600' SCALE MAP NO.	30	BLOCK NO.	10
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SITE PLAN

ROUTE 29
BOOSTER PUMP STATION UPGRADE

CAPITAL PROJECT: W-8200
CONTRACT NO.: 44-4661
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 3 OF 11



TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC.
BY: *[Signature]*

TO BE DEMOLISHED AND REMOVED

4. CONTRACTOR SHALL REMOVE THE CONCRETE PAD UNDER THE EXISTING CONTROL PANEL. DEMOLISH 1" INTO EXISTING MEZZANINE, CLEAN, APPLY BONDING AGENT AND APPLY 1" SELF-CONSOLIDATING 4000PSI CONCRETE.

1/4" = 1'-0"

GENERAL NOTES:

- FOR ADDITIONAL DEMOLITION REQUIREMENTS, REFER TO PROJECT SPECIFICATIONS.
- THE SECTIONS SHOWN ON THIS SHEET REFER TO DETAILS SHOWN ON SHEET 10.
- REMOVE PIPE SUPPORTS UNDER ALL EXISTING VALVES SHOWN TO BE DEMOLISHED.

DRAWING NOTES:

- RE-USE EX. BGE C.T. CABINET. SEE ONE-LINE DIAGRAMS.
- RE-USE EX. BGE SERVICE CONDUCTORS. SEE ONE-LINE DIAGRAMS.
- INSTALL NEW J.B. IN PLACE OF EXISTING EXHAUST FAN DISCONNECT SWITCH.
- REMOVE EX. GENERATOR SET, BATTERIES, BATTERY CHARGER, AND GENERATOR SET ACCESSORIES, NOT INCLUDING FUEL PIPING EXTERNAL TO ENGINE.
- REMOVE EX. DUCTWORK BETWEEN ENGINE RADIATOR AND LOUVER. BLANK OFF EX. LOUVER WITH 10 GAUGE GALVANIZED STEEL AND 2 INCHES OF FOAM INSULATION COVERED WITH 14 GAUGE GALVANIZED STEEL FASTENED TO WALL.
- REMOVE EX. DAMPER ACTUATORS AND BOLT DAMPER OPERATING MECHANISM IN CLOSED POSITION. INSULATE WITH 2 INCHES OF FOAM INSULATION COVERED 14 GAUGE GALVANIZED STEEL FASTENED TO WALL.
- SEE SPECIFICATION DIVISION 2 SECTION "DEMOLITION" FOR ADDITIONAL REQUIREMENTS.
- BREAK OUT ROUND HOLE AND PATCH HOLE WITH BRICK TO MATCH EXISTING.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 9/12/12
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 9/12/12
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 9/6/12
CHIEF, UTILITY DESIGN DIVISION PSD DATE

O'BRIEN & GERE ENGINEERS, INC.

4201 Mitchellville Rd.
Suite 500
Bowie, Maryland 20716
(301) 731-5622
FAX: (301) 805-5984

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. 18223. EXPIRATION DATE 12/12/13

DSN. BY: NV
DRN. BY: JFM
CHK. BY: RJD
DATE: SEPT. 2012

RJD 0
BY NO. REVISION

BID READY 09/12

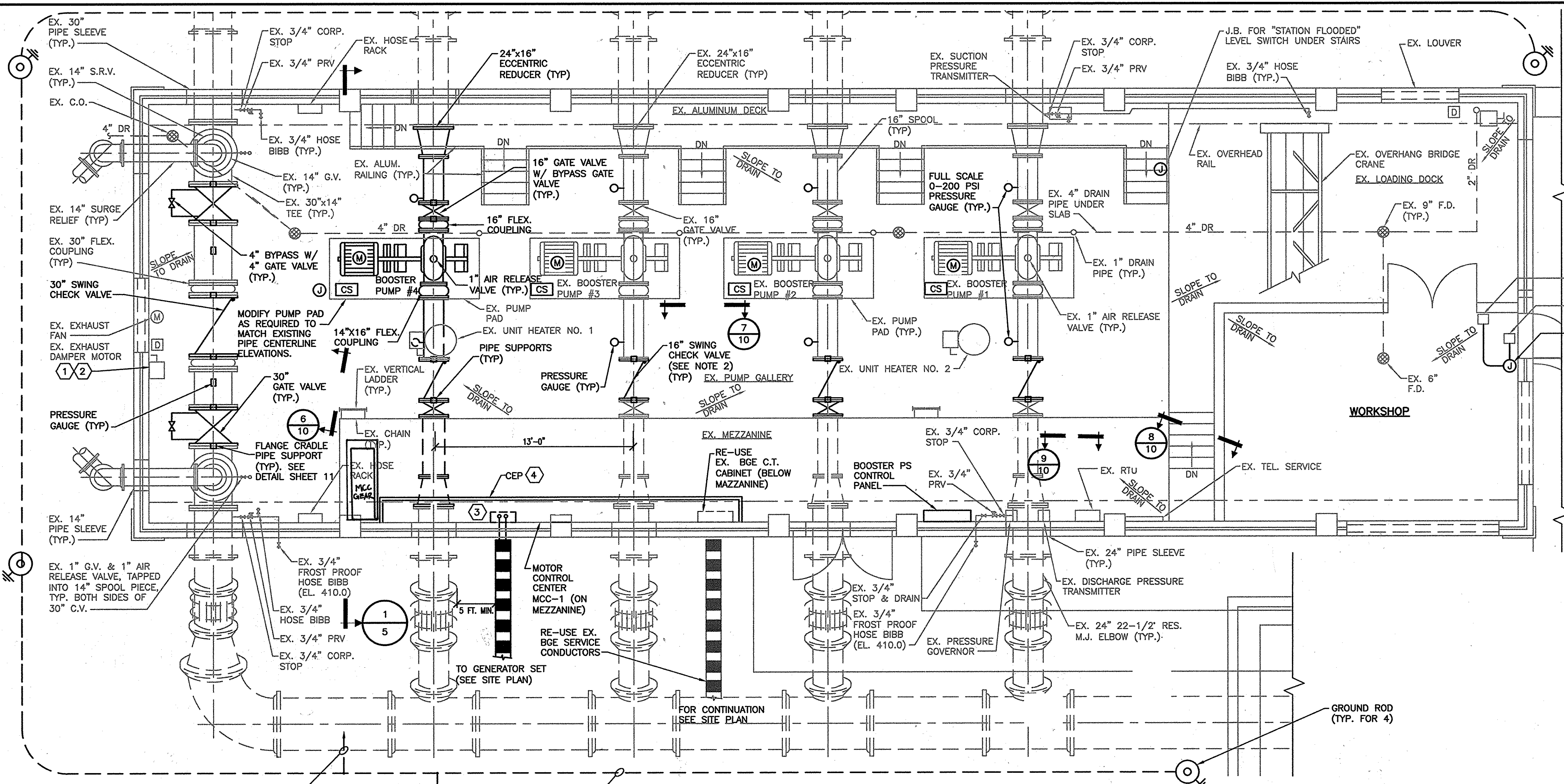
600' SCALE MAP NO. 30 BLOCK NO. 10

PUMP STATION DEMOLITION PLAN

ROUTE 29
BOOSTER PUMP STATION UPGRADE

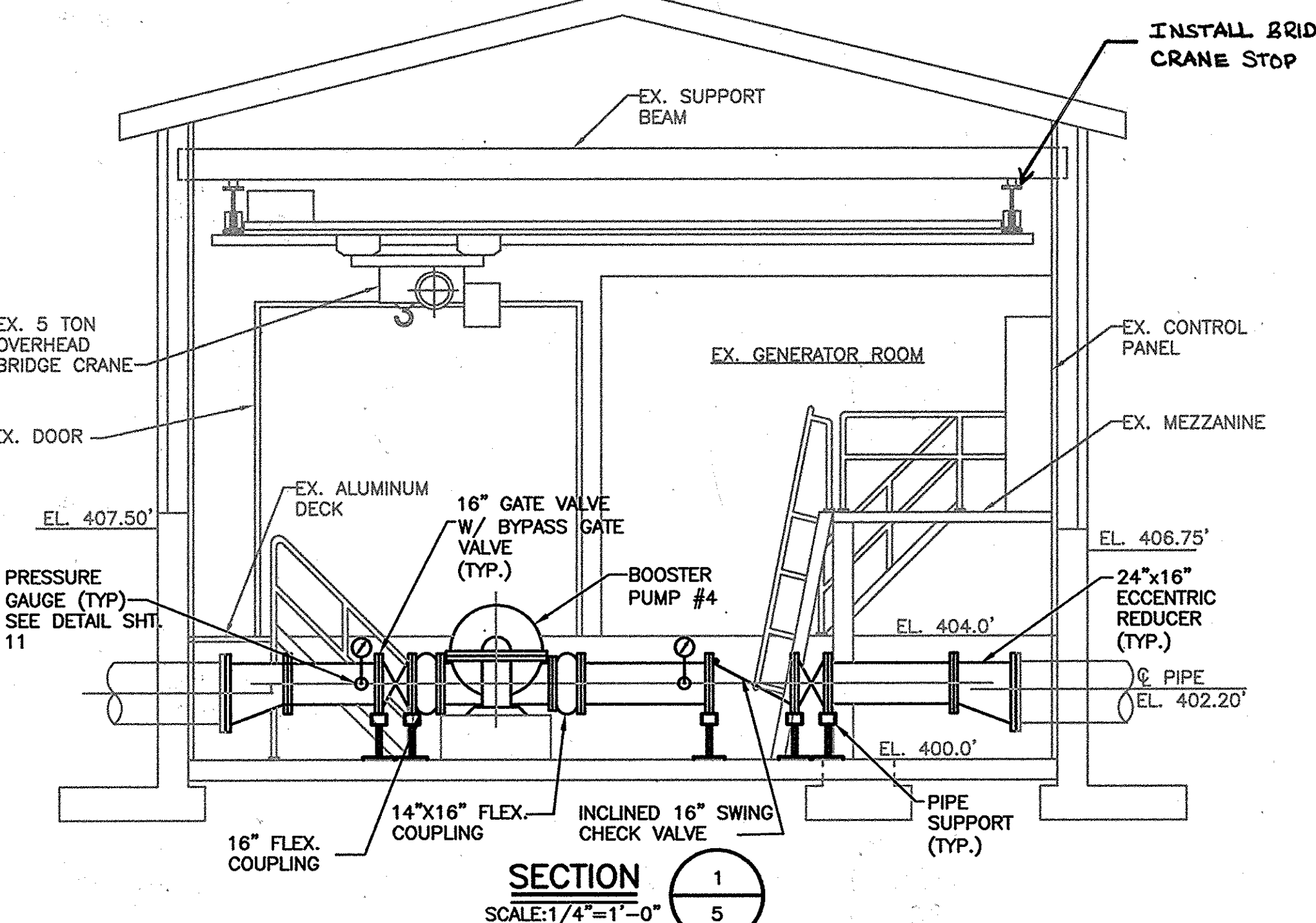
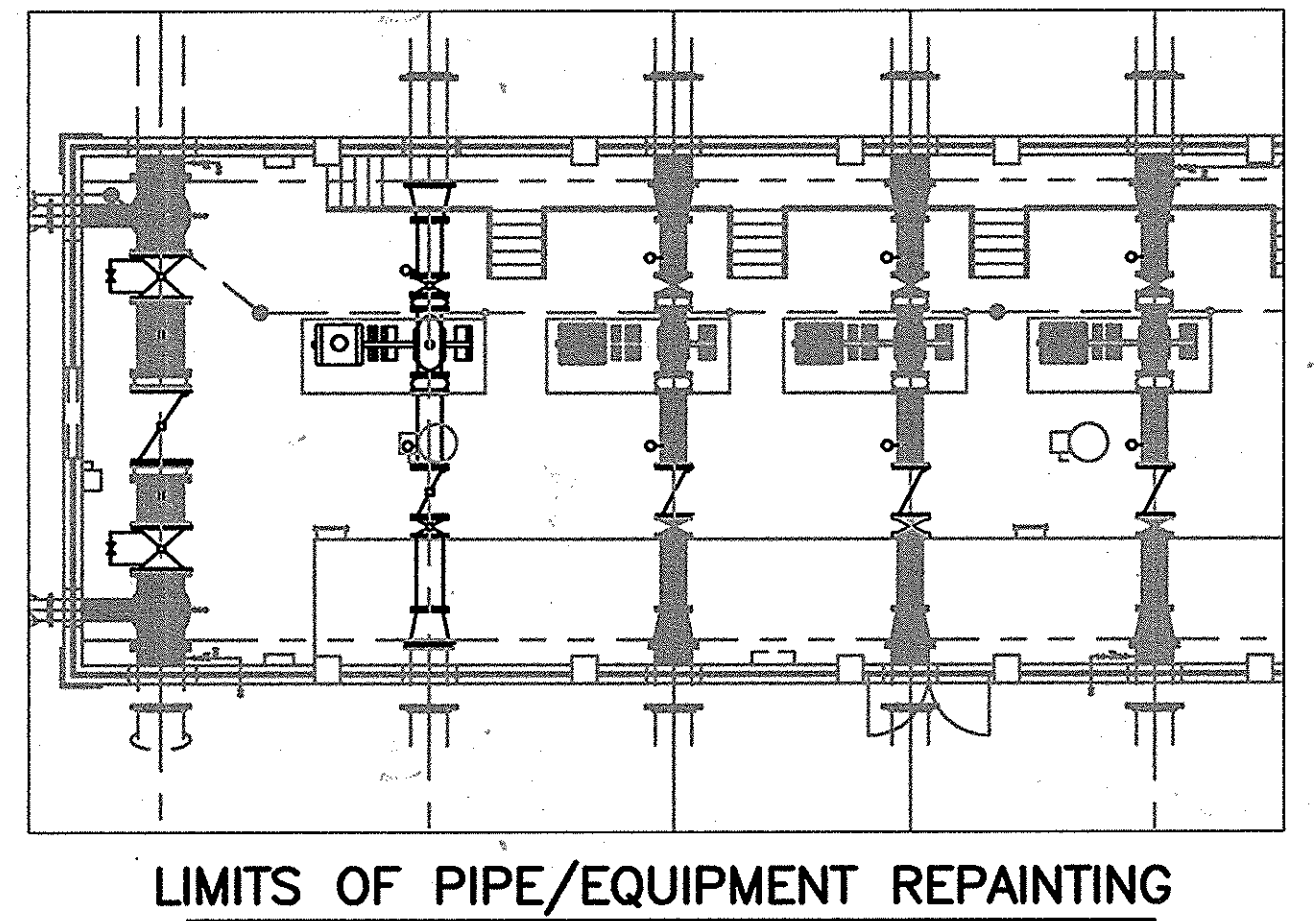
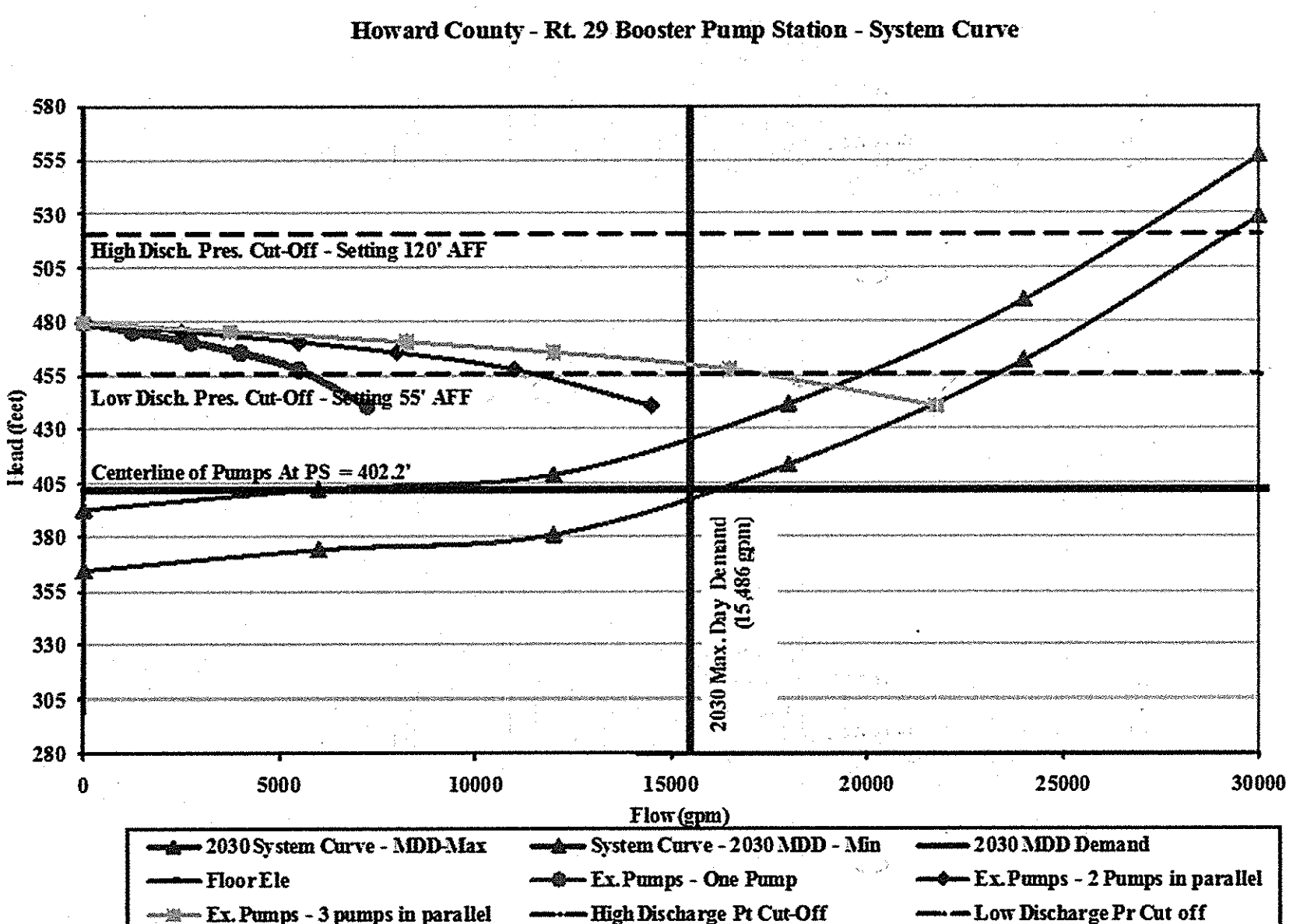
CAPITAL PROJECT: W-8200
CONTRACT NO.: 44-4661
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 4 OF 11



- LEGEND:**
 — NEW WORK
 — EXISTING CONDITIONS
- DRAWING NOTES:**
- 1 MOUNT NEMA 4 DISCONNECT SWITCH FOR EXHAUST FAN 60" A.F.F. AND RUN WITH WIRE IN CONDUIT FROM NEW DISCONNECT SWITCH TO J.B. AT FAN (SEE DEMOLITION DWGS.)
 - 2 INSTALL NEW J.B. IN PLACE OF EXISTING EXHAUST FAN DISCONNECT SWITCH.
 - 3 CORE DRILL HOLES FOR DUCT BANK CONDUITS. SEE DETAIL ON SHEET 9.
 - 4 EXTEND EX. CONCRETE EQUIPMENT PAD TO SUIT NEW MOTOR CONTROL CENTER.

PUMP STATION NEW WORK PLAN
 SCALE: 1/4" = 1'-0"



- GENERAL NOTES:**
1. NEW WORK IS SHOWN WITH A HEAVY LINE WEIGHT AND EXISTING WITH GRAY LINES ON THIS SHEET.
 2. PROVIDE FILLER FLANGES AS NECESSARY TO INSTALL APPURTENANCES ON EXISTING PIPING.
 3. REMOVE PAINT ON ALL EXISTING PIPING & APPURTENANCES AND REPAINT IN ACCORDANCE WITH PROJECT SPECIFICATIONS. SEE THIS SHEET FOR LIMITS OF PAINTING.
 4. CRACKS LOCATED ON EXISTING PUMP STATION WALLS, (ESTIMATED TOTAL OF 5), APPROXIMATELY 12" BELOW CEILING AND 12" LONG, SHALL BE FILLED WITH GROUT. CRACKS IN WALLS SHALL BE REPAIRED AS PER PROJECT SPECIFICATIONS.
 5. CONTRACTOR SHALL REUSE/REPLACE THE EXISTING PIPE SPOOL BASED ON THE DIMENSIONS OF THE CHECK VALVE TO BE INSTALLED (TYP. FOR PUMPS #1, #2 AND #3).
 6. EX. 5 TON BRIDGE CRANE MAY BE USED UNDER COUNTY SUPERVISION.
 7. CORE DRILL HOLES IN MEZZANINE FLOOR UNDER MCC FOR CONDUITS AS NEEDED. MAINTAIN MIN. 8 IN. EDGE-TO-EDGE.
- RECORD DRAWINGS**
 TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.
- O'BRIEN & GERE ENGINEERS, INC.
 BY: *[Signature]*

1/4" = 1'-0"

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

[Signature] 9/6/12
 DIRECTOR OF PUBLIC WORKS DATE

[Signature] 9/6/12
 CHIEF, BUREAU OF UTILITIES DATE

[Signature] 9/6/12
 CHIEF, UTILITY DESIGN DIVISION DATE

O'BRIEN & GERE ENGINEERS, INC.

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 Suite 500
 Bowie, Maryland 20716
 (301) 731-5622
 FAX: (301) 805-5984

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[Signature]
 DATE: 9/12/12

DSN. BY: NV			
DRN. BY: JFM			
CHK. BY: RJD			
DATE: SEPT. 2012			
R/D 0	BID READY	09/12	
BY NO.	REVISION	DATE	

GENERAL PUMP STATION NEW WORK PLAN

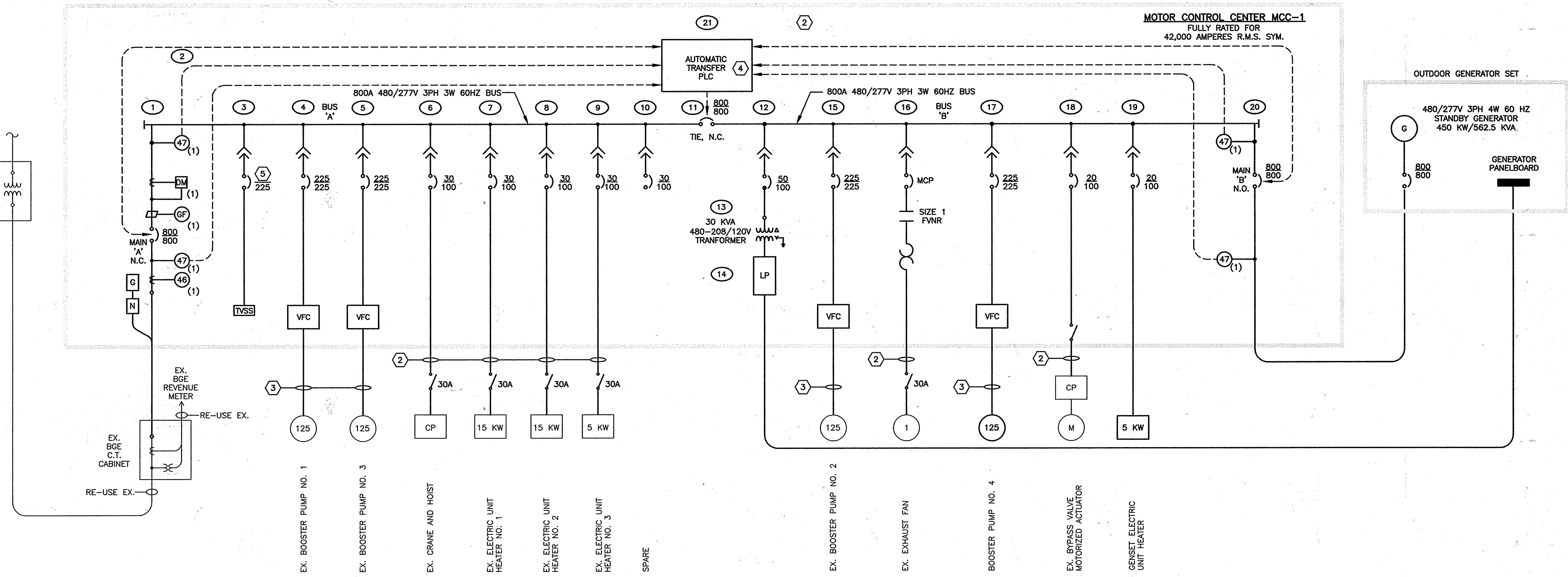
600' SCALE MAP NO. 30 BLOCK NO. 10

ROUTE 29 BOOSTER PUMP STATION UPGRADE

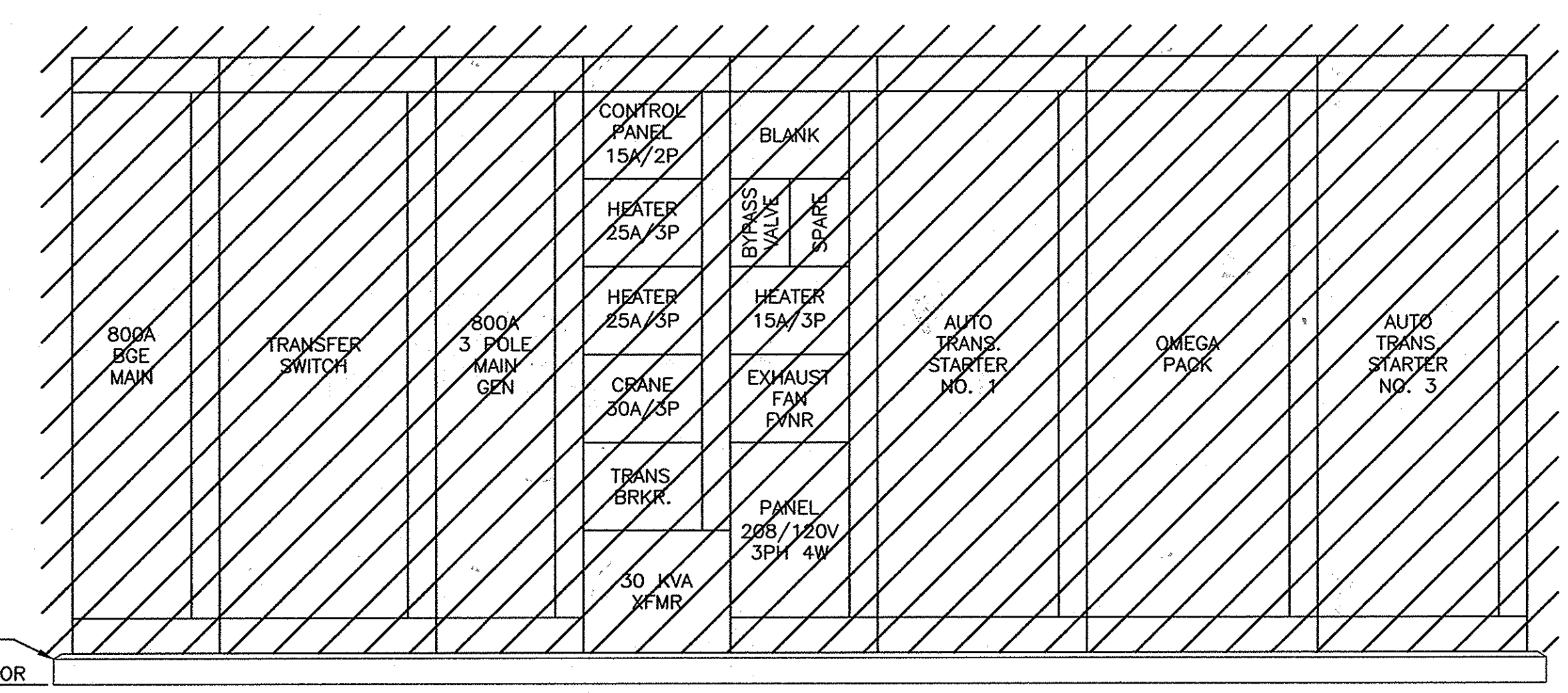
CAPITAL PROJECT: W-8200
 CONTRACT NO.: 44-4661
 ELECTION DISTRICT NO. 2
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 5 OF 11

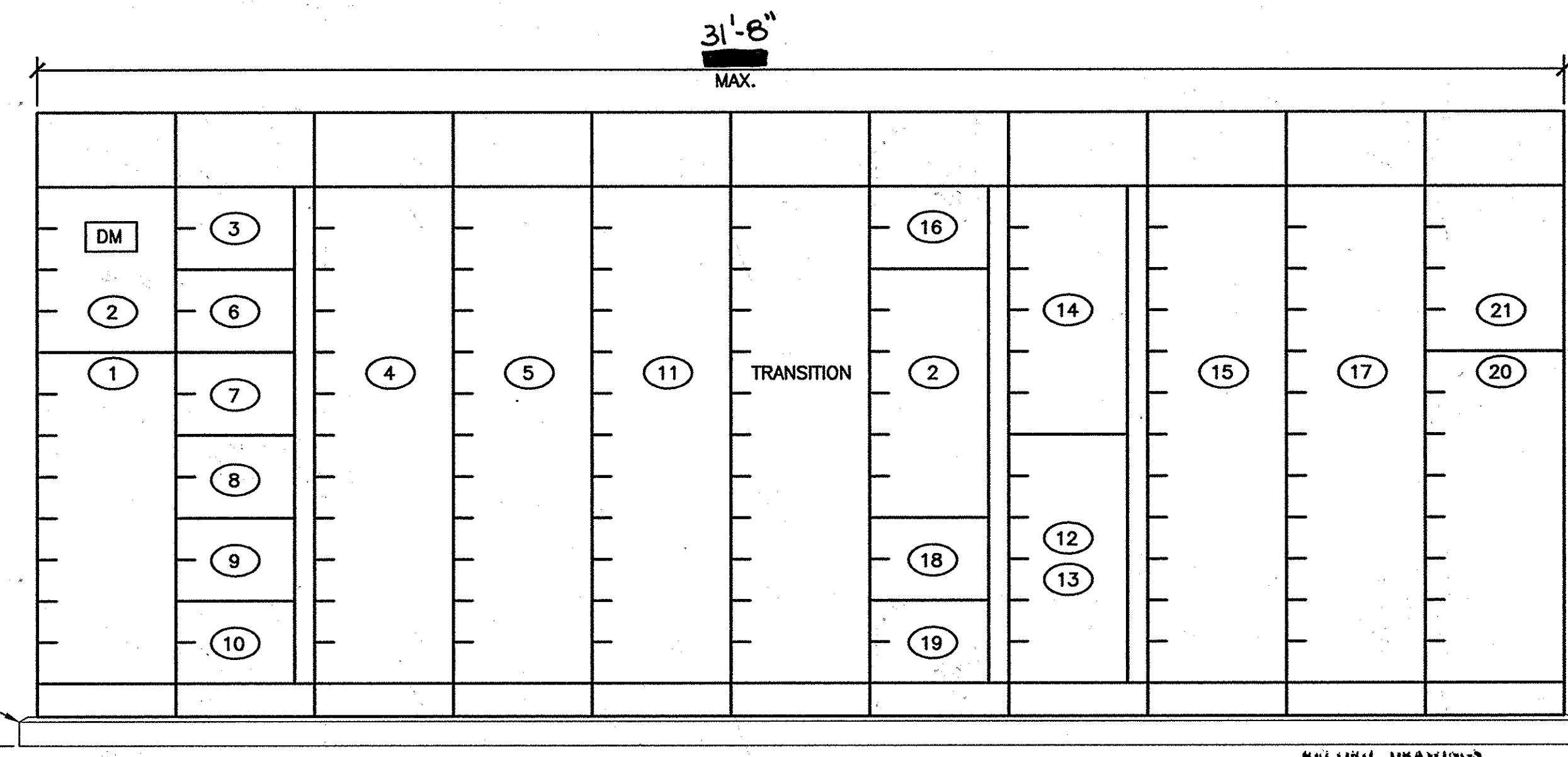
I:\HOWARD-CO.2343\44956.RT-29-BOOSTER-P\DOCS\DWG\SHEETS\44956-E002.DWG



MCC-1 ONE-LINE DIAGRAM
NOT TO SCALE



EX. MOTOR CONTROL CENTER
NOT TO SCALE



MOTOR CONTROL CENTER MCC-1
NOT TO SCALE

- DRAWING NOTES:**
- ① DISCONNECT AND REMOVE EX. MCC.
 - ② RE-USE EX. CONDUITS TO EX. LOADS.
 - ③ RE-USE EX. UNDER-SLAB CONDUITS TO EX. BOOSTER PUMP MOTORS AND CONTROL STATIONS.
 - ④ PROVIDE THE FOLLOWING OUTPUTS TO THE BOOSTER P.S. CONTROL PANEL:
- UTILITY POWER ON
- UTILITY POWER FAILURE
- GENERATOR CALLED TO RUN
 - ⑤ TRIP RATING BY TVSS MANUFACTURER.

- GENERAL NOTES:**
- 1. SEE 'NEW WORK PLAN' FOR EQUIPMENT LOCATIONS.
 - 2. PROVIDE WIRING FOR ALL MCC-MOUNTED COMPONENTS AS INDICATED AND SPECIFIED.
 - 3. EACH BOOSTER PUMP VFC SHALL BE FITTED WITH A SOFT-START BYPASS. SEE MOTOR CONTROL WIRING DIAGRAMS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC.
BY: *[Signature]*

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 9/12/12
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 9/12/12
CHIEF, BUREAU OF ENGINEERING DATE

[Signature] 9/12/12
CHIEF, BUREAU OF UTILITIES DATE

O'BRIEN & GERE ENGINEERS, INC.

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Bowie, Maryland 20716
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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 PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 242414. EXPIRATION DATE: 12/31/12.

DSN. BY:	JWK				
DRN. BY:	JFM				
CHK. BY:	JWK				
DATE:	SEPT. 2012	JWK	0	BID READY	09/12
		BY	NO.	REVISION	DATE

MCC ONE-LINE DIAGRAM

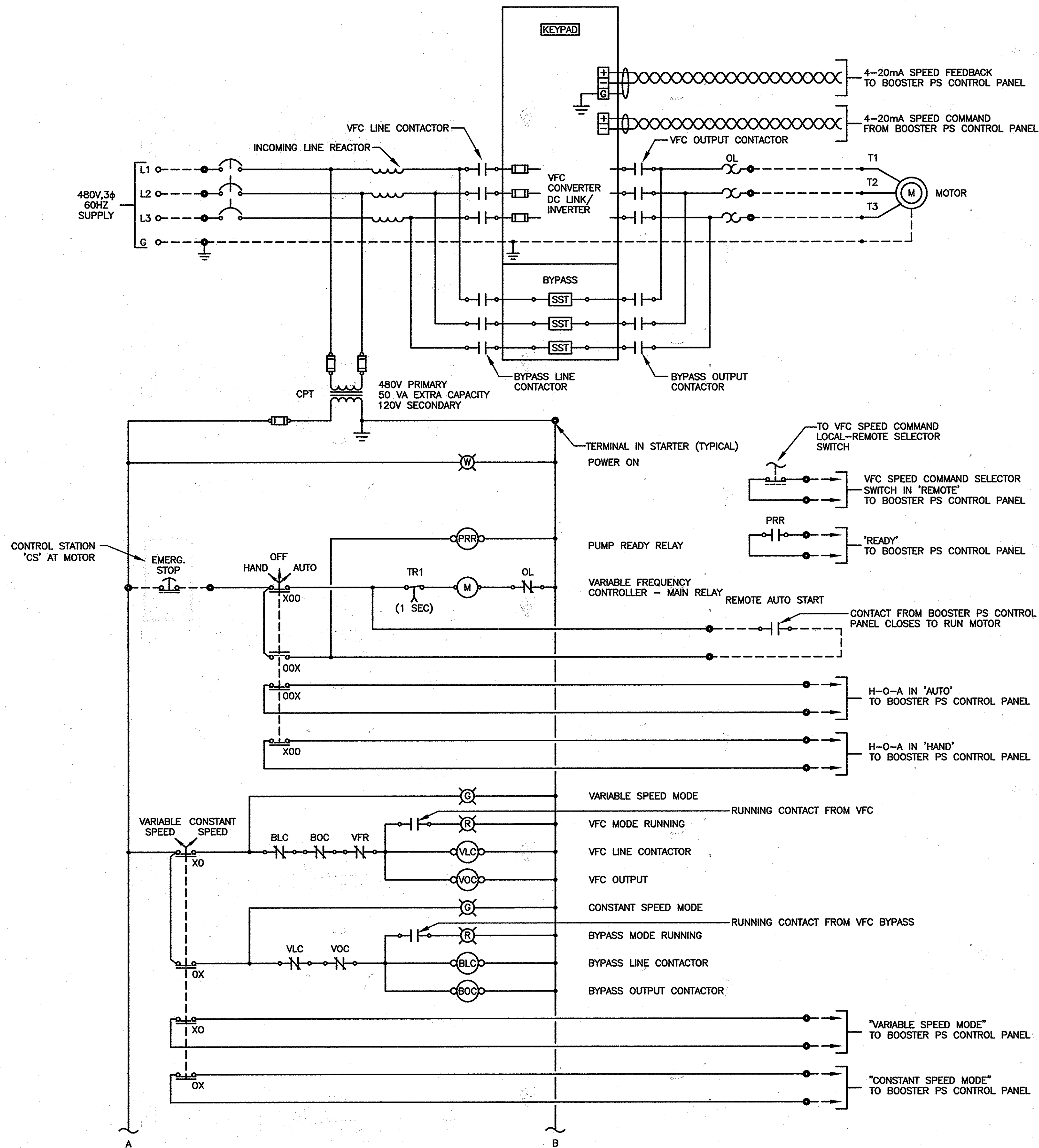
600' SCALE MAP NO. 30 BLOCK NO. 10

ROUTE 29
BOOSTER PUMP STATION UPGRADE

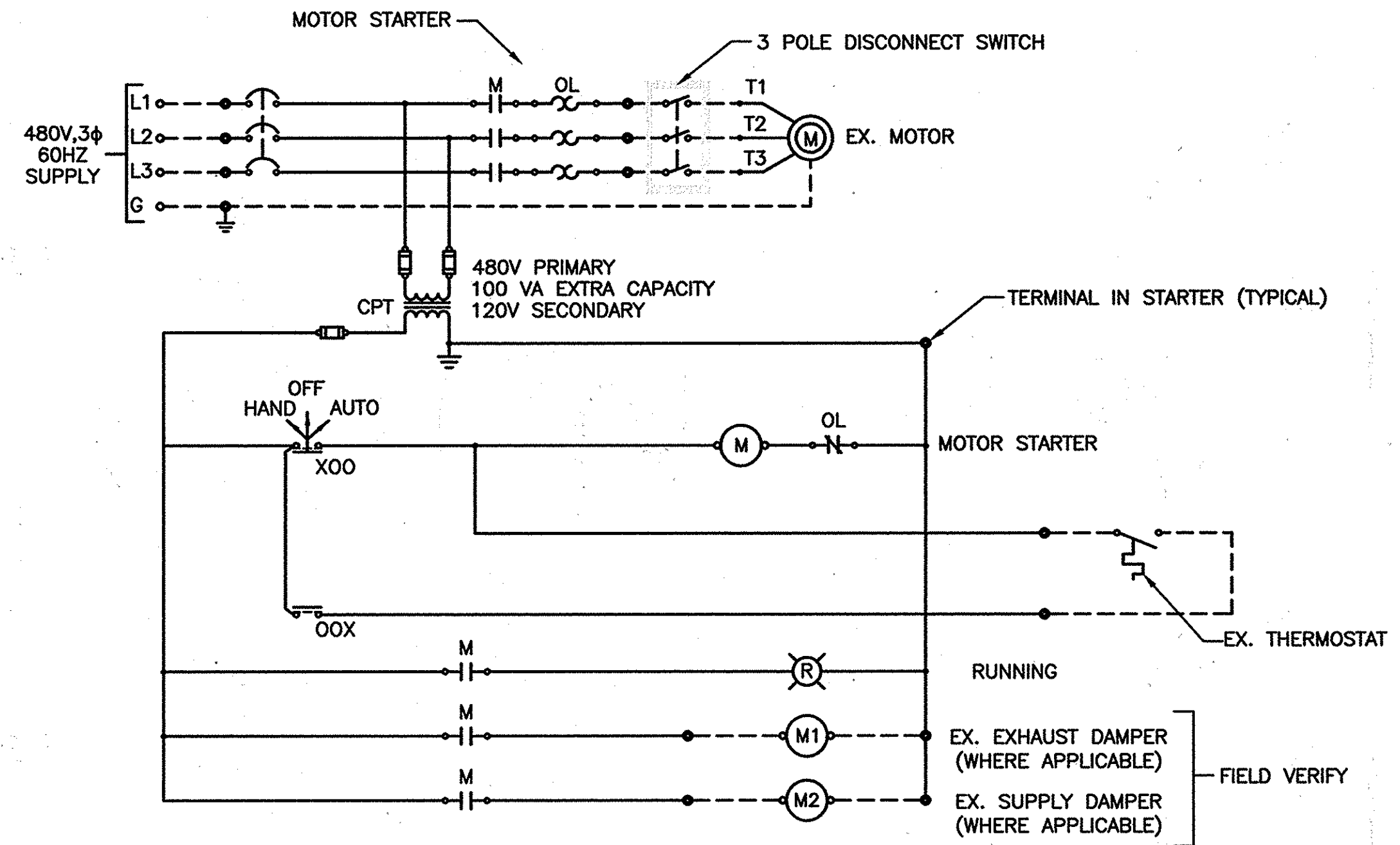
CAPITAL PROJECT: W-8200
CONTRACT NO.: 44-4661
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

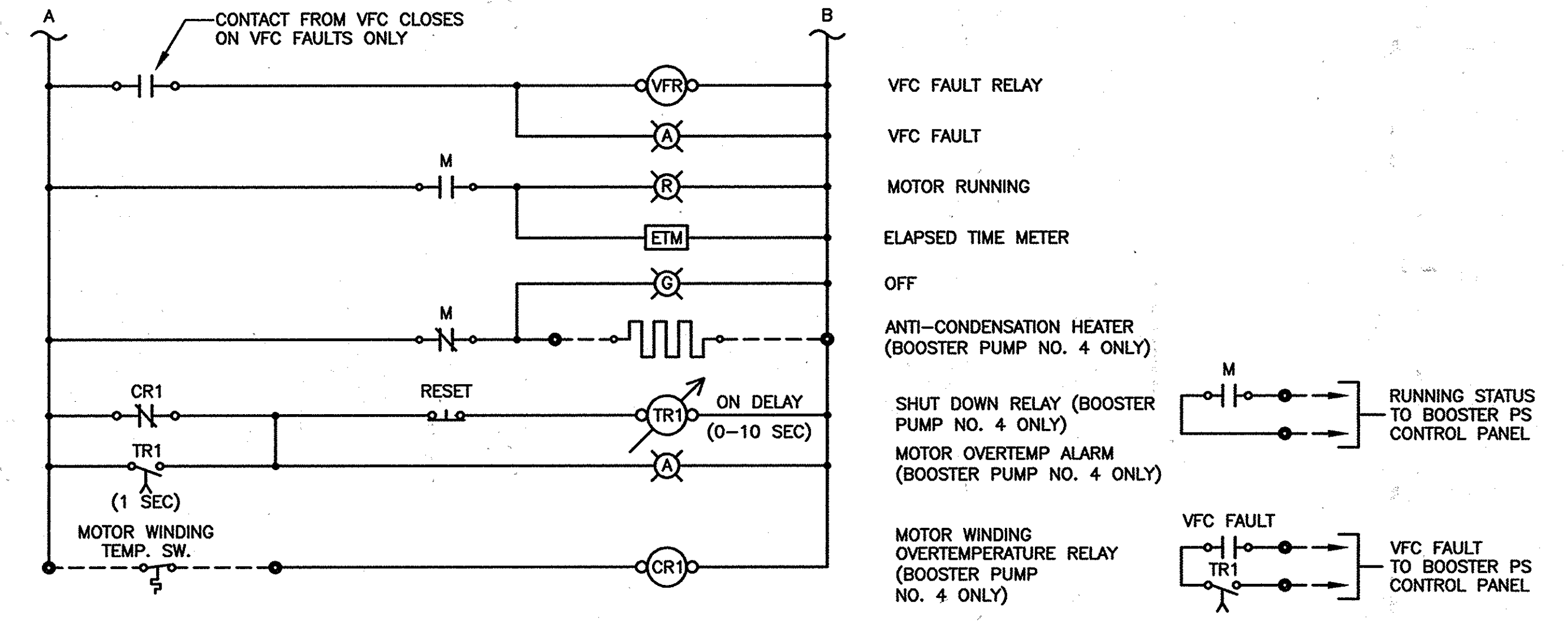
SHEET 6 OF 11



**TYPICAL BOOSTER PUMP
MOTOR CONTROL WIRING DIAGRAM**
NOT TO SCALE



**TYPICAL EXHAUST FAN
MOTOR CONTROL WIRING DIAGRAM**
NOT TO SCALE



RECORD DRAWINGS
TO THE BEST OF OUR KNOWLEDGE,
INFORMATION AND BELIEF, BASED ON
INFORMATION PROVIDED BY OTHERS, THESE
RECORD DRAWINGS SUBSTANTIALLY REPRESENT
THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE
ENGINEERS, INC.
BY: *[Signature]*

GENERAL NOTES:

- REFER TO SPECIFICATIONS FOR MOTOR CONTROLLER DETAILS.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] DATE *9/12/12*
CHIEF, BUREAU OF UTILITIES

[Signature] DATE *9/12/12*
CHIEF, UTILITY DESIGN DIVISION

O'BRIEN & GERE
ENGINEERS, INC.

4201 Mitchellville Rd.
Suite 500
Bowie, Maryland 20716
FAX: (301) 805-5984

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.
23412. EXPIRATION
DATE *12/1/12*

DSN. BY:	JWK			
DRN. BY:	JFM			
CHK. BY:	JWK			
DATE:	SEPT. 2012	JWK	0	BID READY
		BY	NO.	REVISION
				09/12

**MOTOR CONTROL
WIRING DIAGRAMS**

600' SCALE MAP NO. 30 BLOCK NO. 10

ROUTE 29
BOOSTER PUMP STATION UPGRADE

CAPITAL PROJECT: W-8200
CONTRACT NO.: 44-4661
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

CONDUIT & WIRE SCHEDULE									
CIRCUIT NO.	FROM:	TO:	CONDUIT QUANTITIES AND MIN. SIZES	QTY. OF PHASE AND NEUTRAL CONDUCTORS	EACH PHASE & NEUTRAL AWG	EQUIP. GROUND AWG	CONTROL WIRES QTY AWG	NOTES	
C101	MOTOR CONTROL CENTER MCC-1	BOOSTER PUMP NO. 4 J.B.	3/4"	---	---	---	8 #14	CONTROL STATION AT MOTOR, MOTOR ANTI-CONDENSATION HEATER, MWTS, 2 SPARE (RE-USE EX. UNDER-SLAB CONDUIT)	
C102	BOOSTER PUMP NO. 4 J.B.	BOOSTER PUMP NO. 4 CONTROL STATION	3/4"	---	---	---	4 #14	EMERGENCY STOP, 2 SPARE	
C103	BOOSTER PUMP NO. 4 J.B.	BOOSTER PUMP NO. 4 MOTOR	3/4"	---	---	---	4 #14	MOTOR ANTI-CONDENSATION HEATER, MWTS	
P104	MOTOR CONTROL CENTER MCC-1	BOOSTER PUMP NO. 4 MOTOR	2"	3	#30	#4	---	RE-USE EX. UNDER-SLAB CONDUIT	
P105	MOTOR CONTROL CENTER MCC-1	EX. BOOSTER PUMP NO. 1 MOTOR	2"	3	#30	#4	---	RE-USE EX. UNDER-SLAB CONDUIT	
C106	MOTOR CONTROL CENTER MCC-1	EX. BOOSTER PUMP NO. 1 MOTOR	3/4"	---	---	---	4 #14	CONTROL STATION AT MOTOR, 2 SPARE (RE-USE EX. UNDER-SLAB CONDUIT)	
P107	MOTOR CONTROL CENTER MCC-1	EX. BOOSTER PUMP NO. 2 MOTOR	2"	---	---	---	---	RE-USE EX. UNDER-SLAB CONDUIT	
C108	MOTOR CONTROL CENTER MCC-1	EX. BOOSTER PUMP NO. 2 MOTOR	3/4"	---	---	---	4 #14	CONTROL STATION AT MOTOR, 2 SPARE (RE-USE EX. UNDER-SLAB CONDUIT)	
P109	MOTOR CONTROL CENTER MCC-1	EX. BOOSTER PUMP NO. 3 MOTOR	2"	3	#30	#4	---	RE-USE EX. UNDER-SLAB CONDUIT	
C110	MOTOR CONTROL CENTER MCC-1	EX. BOOSTER PUMP NO. 3 MOTOR	3/4"	---	---	---	4 #14	CONTROL STATION AT MOTOR, 2 SPARE (RE-USE EX. UNDER-SLAB CONDUIT)	
P111	MOTOR CONTROL CENTER MCC-1	EX. BYPASS VALVE MOTORIZED ACTUATOR	3/4"	3	#12	#12	---	---	
P112	MOTOR CONTROL CENTER MCC-1	EX. CRAIN & HOIST	3/4"	3	#8	#10	---	---	
S113	BOOSTER PS CONTROL PANEL	EX. DISCHARGE PRESSURE TRANSMITTER	3/4"	---	---	---	2 TSP	DISCHARGE PRESSURE, SPARE	
P114	MOTOR CONTROL CENTER MCC-1	EX. ELECTRIC UNIT HEATER NO. 1	3/4"	3	#10	#10	---	---	
P115	MOTOR CONTROL CENTER MCC-1	EX. ELECTRIC UNIT HEATER NO. 2	3/4"	3	#10	#10	---	---	
P116	MOTOR CONTROL CENTER MCC-1	EX. ELECTRIC UNIT HEATER NO. 3	3/4"	3	#12	#12	---	---	
P117	MOTOR CONTROL CENTER MCC-1	EX. EXHAUST FAN	3/4"	3	#12	#12	6 #14	POWER VIA NEW DISC. SW., RECONNECT DAMPER CONTROLS	
S118	BOOSTER PS CONTROL PANEL	EX. FLOW TRANSMITTER	3/4"	---	---	---	2 TSP	FLOW, SPARE	
C119	BOOSTER PS CONTROL PANEL	EX. INTRUSION ALARM SWITCH AND AUTHORIZED ENTRY SWITCH J.B.	3/4"	---	---	---	8 #14	INTRUSION ALARM SWITCH, AUTHORIZED ENTRY SWITCH, 4 SPARES	
C120	BOOSTER PS CONTROL PANEL	EX. STATION FLOODED LEVEL SWITCH	3/4"	---	---	---	2 #14	HIGH LEVEL SWITCH	
S121	BOOSTER PS CONTROL PANEL	EX. SUCTION PRESSURE TRANSMITTER	3/4"	---	---	---	2 TSP	SUCTION PRESSURE, SPARE	
C122	MOTOR CONTROL CENTER MCC-1	GENERATOR CONTROL PANEL	1"	---	---	---	10 #14	GENERATOR START COMMAND, GENERATOR RUNNING, GENERATOR TROUBLE, GENERATOR FAILURE, 4 SPARES; VIA DUCT BANK	
P123	MOTOR CONTROL CENTER MCC-1	GENERATOR SET ELECTRIC UNIT HEATER	1"	3	#12	#12	---	VIA DUCT BANK	
P124	EX. BGE C.T. CABINET	MOTOR CONTROL CENTER MCC-1	2-3"	3-N	2-500 KCMIL	#10	---	---	
P125	GENERATOR SET	MOTOR CONTROL CENTER MCC-1	2-3"	3-N	2-500 KCMIL	#10	---	VIA DUCT BANK AND PULL BOX	
C126	BOOSTER PS CONTROL PANEL	MOTOR CONTROL CENTER MCC-1	3/4"	---	---	---	10 #14	GENERATOR RUNNING, GENERATOR TROUBLE, GENERATOR FAILURE, 4 SPARES	
C127	BOOSTER PS CONTROL PANEL	MOTOR CONTROL CENTER MCC-1	2"	---	---	---	86 #14	UTILITY POWER ON, UTILITY POWER FAILURE, GENERATOR CALLED TO RUN; BOOSTER PUMP NOS. 1-4 READY, RUN COMMAND, H-O-A IN HAND, H-O-A IN AUTO, VARIABLE SPEED MODE SELECTED, CONSTANT SPEED MODE SELECTED, VFC SPEED COMMAND SELECTOR SWITCH IN REMOTE, PUMP RUNNING, VFC FAULT; 8 SPARE	
C128	BOOSTER PS CONTROL PANEL	MOTOR CONTROL CENTER MCC-1	3/4"	---	---	---	4 #14	UTILITY POWER FAILURE, 2 SPARE	
S129	BOOSTER PS CONTROL PANEL	MOTOR CONTROL CENTER MCC-1	1-1/2"	---	---	---	8 TSP	BOOSTER PUMP NOS. 1-4 PUMP SPEED COMMAND AND ISOLATED SPEED FEEDBACK	
S130	BOOSTER PS CONTROL PANEL	EX. TELECOM SERVICE	3/4"	1	CAT 5	---	---	DATA HIGHWAY FROM RTU TO MTU	

PANEL NO.:		EX. PANELBOARD 'A'	
USAGE:		LIGHTING PANELBOARD	
LOCATION:		INSIDE EX. MCC	
PHASE / FREQUENCY:		3 60 Hz	
L-L VOLTS		208	
L-N VOLTS		120	
BUS AMPS		225	
FAULT CURRENT RATING:		10,000	
MAIN CB AMPS		100	

CONDUIT SIZE	PHASE & NEUTRAL SIZE	EGC SIZE	LOAD DESCRIPTION	C.B. TRIP / POLES	CIRCUIT NUMBER A B C	C.B. TRIP / POLES	LOAD DESCRIPTION	CONDUIT SIZE	PHASE & NEUTRAL SIZE	EGC SIZE
-	#12 AWG	#12 AWG	LIGHTS - N. END OVER PUMPS	20/1	1 A 2	20/1	LIGHTS - MIDDLE OVER PUMPS	EX.	#12 AWG	#12 AWG
-	#12 AWG	#12 AWG	LIGHTS - MEZZANINE & S. END	20/1	3 B 4	20/1	LIGHTS - GENERATOR ROOM	EX.	#12 AWG	#12 AWG
-	#12 AWG	#12 AWG	LIGHTS UNDER MEZZANINE	20/1	5 C 6	20/1	LIGHTS - OUTDOOR FLOOD	EX.	#12 AWG	#12 AWG
-	#12 AWG	#12 AWG	RECEPT. - EAST WALL	20/1	7 A 8	20/1	EMERGENCY LIGHTS	EX.	#12 AWG	#12 AWG
-	#12 AWG	#12 AWG	RECEPT. UNDER MEZZANINE	20/1	9 B 10	20/1	GARAGE DOOR	EX.	#12 AWG	#12 AWG
-	#12 AWG	#12 AWG	RECEPT. - GENERATOR ROOM	20/1	11 C 12	20/1	BATTERY CHARGER	EX.	#12 AWG	#12 AWG
-	#12 AWG	#12 AWG	GENERATOR CONTROLS	20/1	13 A 14	20/1	DAY TANK	EX.	#12 AWG	#12 AWG
-	#12 AWG	#12 AWG	WATER JACKET HEATER	20/1	15 B 16	20/1	WATER HEATER	EX.	#12 AWG	#12 AWG
-	#12 AWG	#12 AWG	FLOW METER VAULT	20/1	17 C 18	20/1	CONTROL EXHAUST FAN LOUVERS	EX.	#12 AWG	#12 AWG
-	#12 AWG	#12 AWG	SCADA & CONTROL PANEL LIGHT	20/1	19 A 20	20/1	NOT LABELED	EX.	#12 AWG	#12 AWG
-	#10 AWG	#10 AWG	NOT LABELED	30/2	21 B 22	15/1**	NOT LABELED	EX.	#12 AWG	#12 AWG
-	#10 AWG	-	NOT LABELED	30/2	23 C 24	20/1	SPARE	-	-	-
-	-	-	SPACE	-	25 A 26	-	SPACE	-	-	-
-	-	-	SPACE	-	27 B 28	-	SPACE	-	-	-
-	-	-	SPACE	-	29 C 30	-	SPACE	-	-	-

EX. PANEL 'A' IN MCC (TO BE DEMOLISHED)

NOT TO SCALE

PANEL NO.:		PANELBOARD 'LP'	
USAGE:		LIGHTING PANEL WITH TVSS	
LOCATION:		INSIDE NEW MCC	
PHASE / FREQUENCY:		3 60 Hz	
L-L VOLTS		208	
L-N VOLTS		120	
BUS AMPS		225	
FAULT CURRENT RATING:		10,000	
MAIN CB AMPS		100	

MOUNTING:		SURFACE	
PANEL TYPE:		SEE SPECIFICATIONS	
PANEL NOTES:			
EQUIPPED WITH GROUND BUS			
EQUIPPED WITH FULL SIZE NEUTRAL BUS			
*- INDICATES C.B. EQUIPPED WITH "LOCK-ON" DEVICE			
**- INDICATES C.B. IS GFCI TYPE 5 mA FOR RECEPTACLE CIRCUITS, 30 mA FOR HEAT TRACING CIRCUITS			

CONDUIT SIZE	PHASE & NEUTRAL SIZE	EGC SIZE	LOAD DESCRIPTION	C.B. TRIP / POLES	CIRCUIT NUMBER A B C	C.B. TRIP / POLES	LOAD DESCRIPTION	CONDUIT SIZE	PHASE & NEUTRAL SIZE	EGC SIZE
RE-USE EX	#12	#12	LIGHTS - N. END OVER PUMPS	20/1	1 A 2	20/1	LIGHTS - MIDDLE OVER PUMPS	RE-USE EX	#12	#12
RE-USE EX	#12	#12	LIGHTS - MEZZANINE & S. END	20/1	3 B 4	20/1	LIGHTS - GENERATOR ROOM	RE-USE EX	#12	#12
RE-USE EX	#12	#12	LIGHTS UNDER MEZZANINE	20/1	5 C 6	20/1	LIGHTS - OUTDOOR FLOOD	RE-USE EX	#12	#12
RE-USE EX	#12	#12	RECEPT. - EAST WALL	20/1	7 A 8	20/1	EMERGENCY LIGHTS	RE-USE EX	#12	#12
RE-USE EX	#12	#12	RECEPT. UNDER MEZZANINE	20/1	9 B 10	20/1	GARAGE DOOR	RE-USE EX	#12	#12
RE-USE EX	#12	#12	RECEPT. - GENERATOR ROOM	20/1	11 C 12	20/1	SPARE	-	-	-
3/4"	#12	#12	BOOSTER PS CONTROL PANEL	20/1	13 A 14	20/1	BOOSTER PS CONTROL PANEL	RE-USE EX	#12	#12
-	-	-	SPARE	20/1	15 B 16	20/1	WATER HEATER	RE-USE EX	#12	#12
RE-USE EX	#12	#12	FLOW METER VAULT	20/1	17 C 18	20/1	CONTROL EXHAUST FAN LOUVERS	RE-USE EX	#12	#12
-	-	-	SPARE	20/1	19 A 20	20/1	TRACE & LABEL	-	3/4"	#12
3/4"	#10	#10	TRACE & LABEL	30/2	21 B 22	15/1**	TRACE & LABEL	-	3/4"	#12
-	#10	-	TRACE & LABEL	-	23 C 24	20/1	SPARE	-	-	-
-	-	-	SPACE	20/1	25 A 26	100-60/3	SUBFEED TO	-	1"	#6
-	-	-	SPACE	20/1	27 B 28	-	OUTDOOR GENERATOR	-	#6	-
-	-	-	SPACE	20/1	29 C 30	-	PANELBOARD	-	#6	-

NEW PANELBOARD 'LP' IN NEW MCC

NOT TO SCALE

GENERAL NOTES:

- TRACE AND IDENTIFY ALL CIRCUITS FROM LOAD TO SOURCE PRIOR TO DISCONNECTING EX. MCC.

RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS. THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC.

BY: *Dorothy V. Johnson*

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Janet R. Allen 7/6/12
DATE: 7/6/12
CHIEF, BUREAU OF UTILITIES

Thomas J. Butler 7/6/12
DATE: 7/6/12
CHIEF, BUREAU OF ENGINEERING

Chris D. Jones 7/6/12
DATE: 7/6/12
CHIEF, UTILITY DESIGN DIVISION

O'BRIEN & GERE ENGINEERS, INC.

4201 Mitchellville Rd.
Suite 500
Bowie, Maryland 20716
(301) 731-5622
FAX: (301) 805-5984

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. 24188. EXPIRATION DATE: 12/31/2012.

JWK

DSN. BY: JWK

DRN. BY: RMM

CHK. BY: JWK

DATE: SEPT. 2012

JWK 0
BY NO.

BID READY 09/12

REVISION

DATE

SCHEDULES

600' SCALE MAP NO. 30 BLOCK NO. 10

ROUTE 29 BOOSTER PUMP STATION UPGRADE

CAPITAL PROJECT: W-8200
CONTRACT NO.: 44-4661
ELECTION DISTRICT NO. 2
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 8 OF 11

RE-USE EX. CONDUIT & WIRE

REMOVE EX. MCC

SECTION 1
NOT TO SCALE

REMOVE EX. PUMP DISCONNECT SWITCHES

RE-USE EX. BELOW SLAB CONDUITS TO PUMPS

SECTION 2
NOT TO SCALE

REMOVE EX. PUMP STATION CONTROL PANEL

SECTION 3
NOT TO SCALE

REMOVE EX. GENERATOR SET AND APPURTENANCES

SECTION 4
NOT TO SCALE

REMOVE EX. DUCT CONNECTION TO LOUVER

SECTION 5
NOT TO SCALE

RELOCATE EX. EXHAUST FAN DISCONNECT SWITCH

SECTION 6
NOT TO SCALE

EX. UTILITY CT CABINET TO REMAIN

SECTION 7
NOT TO SCALE

EX. TELECOM SERVICE TO REMAIN

SECTION 8
NOT TO SCALE

EX. TELEMETRY CABINET TO REMAIN

SECTION 9
NOT TO SCALE

RE-USE EX. UTILITY SERVICE TRANSFORMER

RE-USE EX. REVENUE METERING

SECTION 10
NOT TO SCALE

REMOVE EX. GENERATOR FUEL TANK

SECTION 11
NOT TO SCALE

RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS, THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC.
BY: *[Signature]*

DRAWING NOTES:

1 CONNECT TELEPHONE WIRE TO TERMINAL BLOCK. DISCONNECT AND REMOVE ALL OTHER DEVICES WITHIN THE CABINET.

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DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature] 9/10/12
DIRECTOR OF PUBLIC WORKS DATE

[Signature] 9/10/12
CHIEF, BUREAU OF UTILITIES DATE

[Signature] 9/10/12
CHIEF, UTILITY DESIGN DIVISION PSD DATE

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[Professional Seal]

DSN. BY:	JWK				
DRN. BY:	RMM				
CHK. BY:	JWK				
DATE:	SEPT. 2012	JWK	0	BID READY	09/12
		BY	NO.	REVISION	DATE

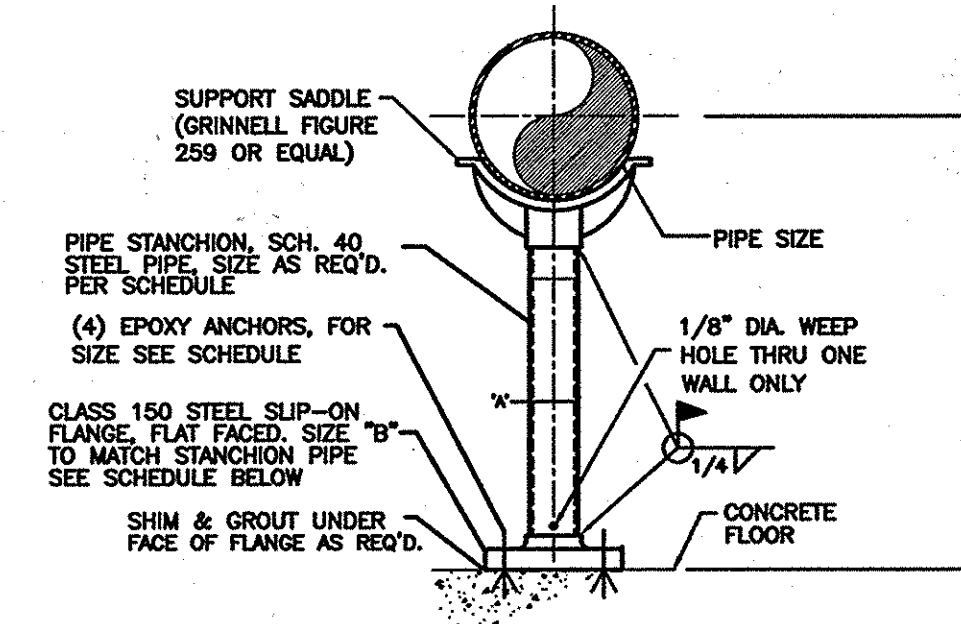
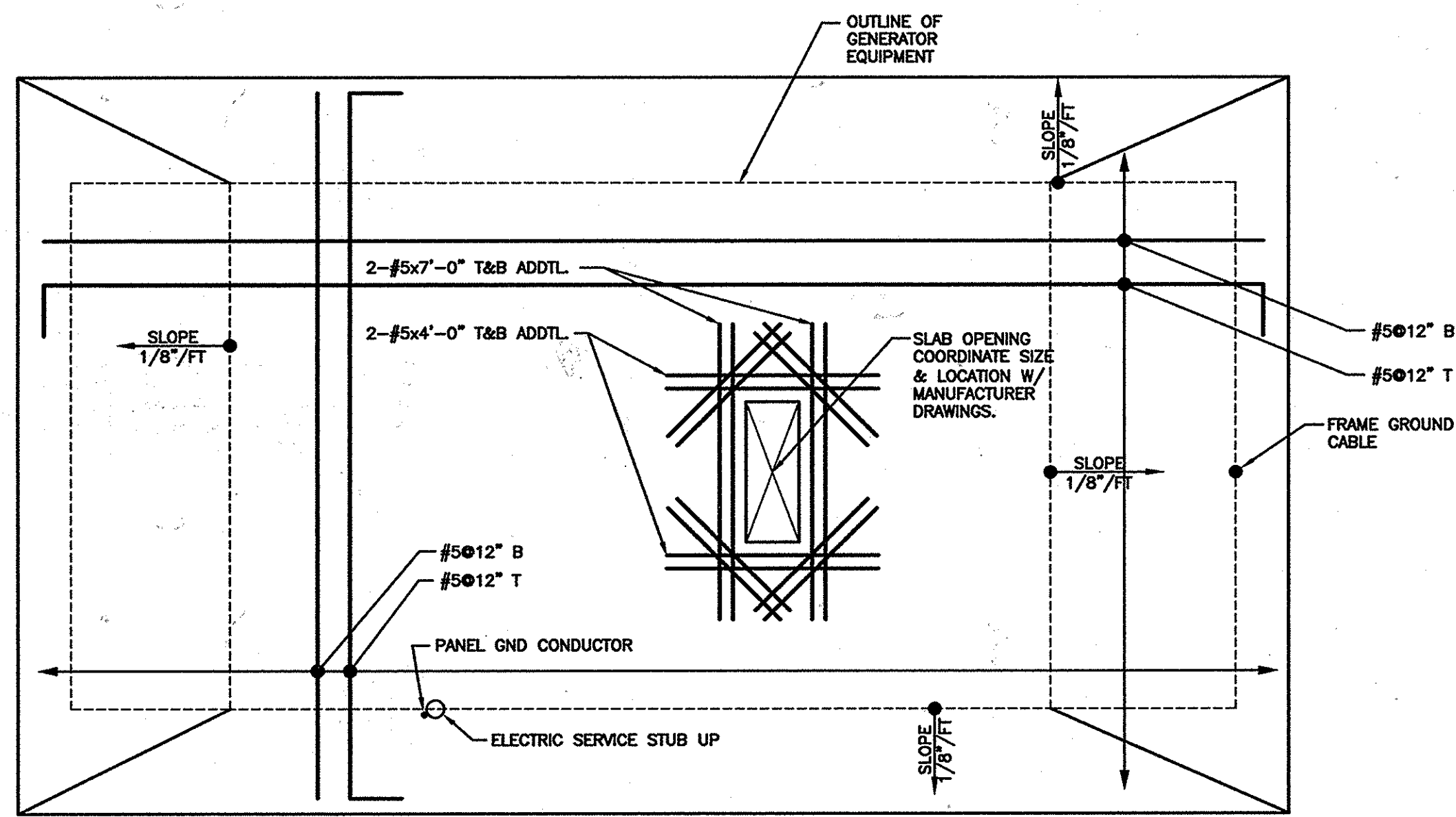
ELECTRICAL MODIFICATIONS

600' SCALE MAP NO. 30 BLOCK NO. 10

ROUTE 29 BOOSTER PUMP STATION UPGRADE

CAPITAL PROJECT: W-8200
CONTRACT NO.: 44-4661
ELECTION DISTRICT NO.: 2
HOWARD COUNTY, MARYLAND

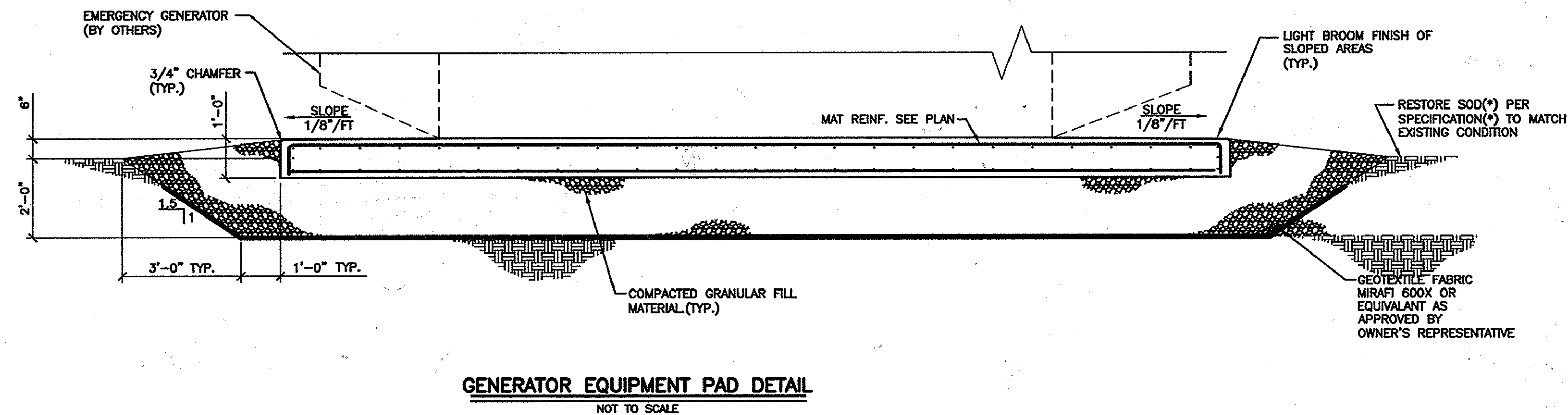
SCALE AS SHOWN
SHEET 10 OF 11



SUPPORT DIMENSIONS SCHEDULE			
PIPE SIZE (INCHES)	"A"	"B" (MIN.)	ANCHOR SIZE
14 - 16	4	9	0.625
18 - 36	6	11	0.75

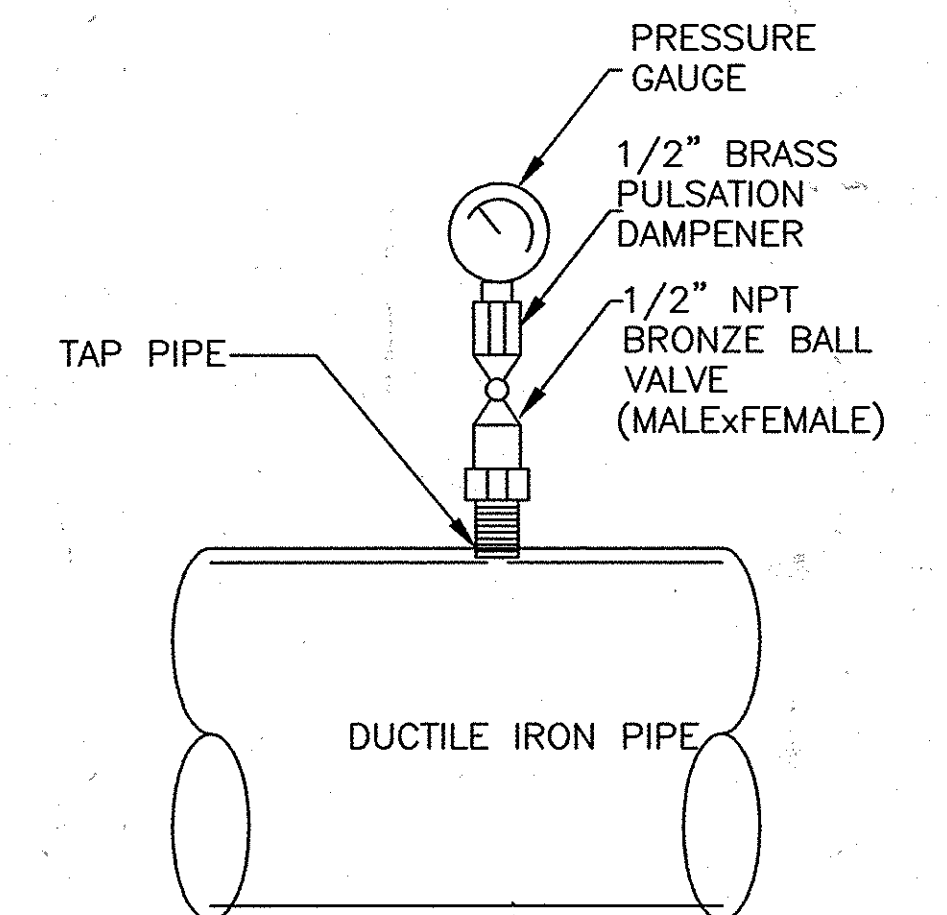
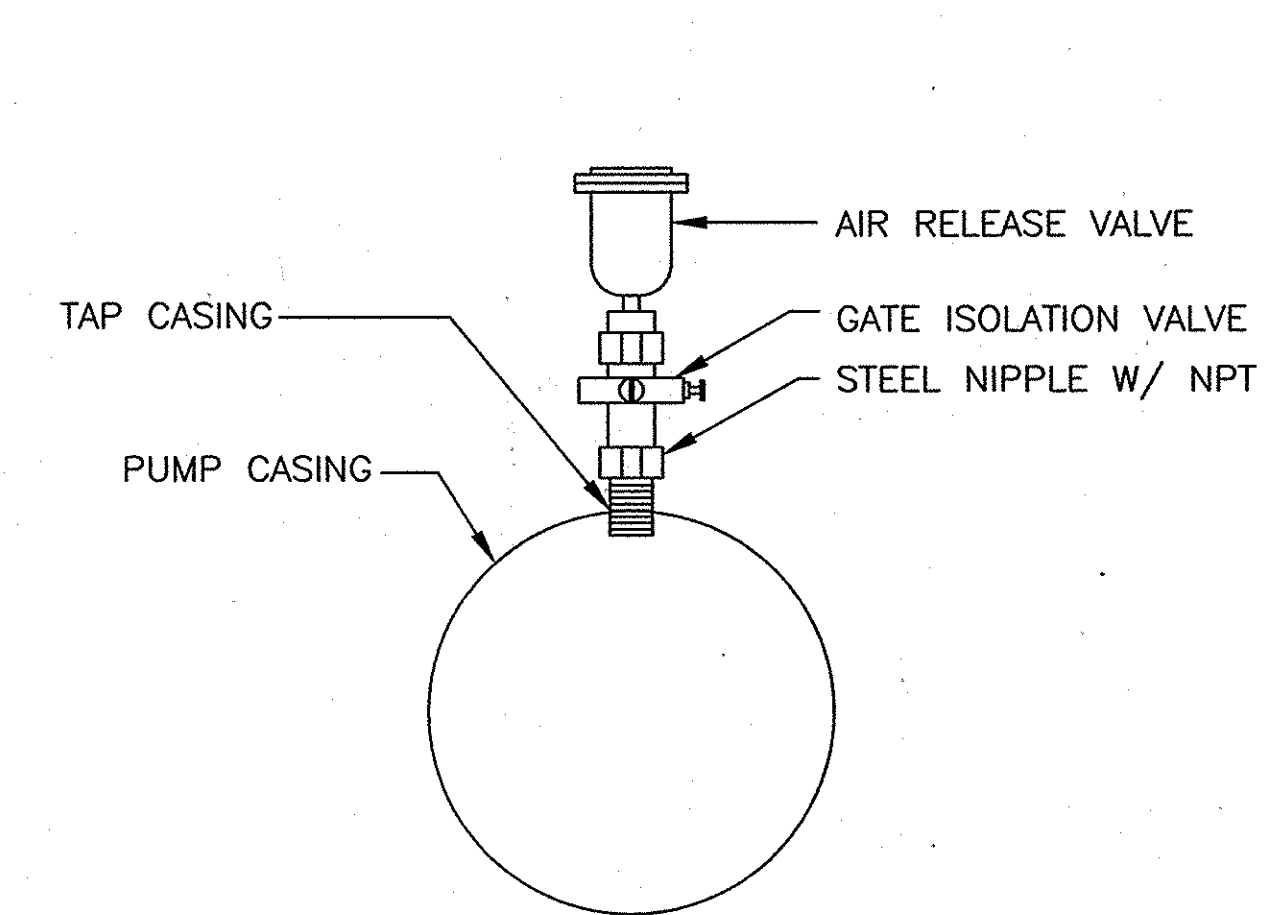
DETAIL NOTES:
1. STANCHION STYLE PIPE SUPPORTS TO BE PAINTED PER SECTION 09900.

STANCHION STYLE PIPE SUPPORT DETAIL
N.T.S.



DETAIL NOTES

1. FOLLOW A.C.I. 301 AND 318 FOR CONCRETE WORK. FOLLOW A.C.I. 315 FOR CONCRETE REINFORCING AND ACCESSORIES.
2. MINIMUM 28-DAY CONCRETE COMPRESSIVE STRENGTH SHALL BE 4,500 PSI.
3. AIR ENTRAINMENT SHALL BE 5%-7%, WATER/CEMENT RATIO SHALL BE 0.45, AND SLUMP SHALL BE 1-3"
4. CONCRETE REINFORCING: DEFORMED BARS, ASTM A-615, GRADE 60
5. CHAMFER EXPOSED CORNERS OF CONCRETE 3/4"
6. COORDINATE LOCATION OF ANY ACCESSORIES AND/OR REQUIRED PENETRATIONS WITH ELECTRICAL
7. BASE MATERIAL SHALL BE COMPACTED TO 95% MODIFIED PROCTOR, AND SHALL NOT CONTAIN ANY STANDING WATER PRIOR TO PLACEMENT OF CONCRETE



NOTES:
1. STEEL NIPPLE AND GATE VALVE SHALL BE SAME SIZE AS AIR RELEASE VALVE

RECORD DRAWINGS TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, BASED ON INFORMATION PROVIDED BY OTHERS. THESE RECORD DRAWINGS SUBSTANTIALLY REPRESENT THE PROJECT AS CONSTRUCTED.

O'BRIEN & GERE ENGINEERS, INC.
BY: *William VanKatsen*

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

John A. ... 9/12/12
DIRECTOR OF PUBLIC WORKS DATE

Mona E. ... 9/16/12
CHIEF, BUREAU OF ENGINEERING DATE

Ed ... 9/16/12
CHIEF, UTILITY DESIGN DIVISION DATE

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STATE OF MARYLAND PROFESSIONAL ENGINEER

DSN. BY:	NV				
DRN. BY:	JFM				
CHK. BY:	RJD				
DATE:	SEPT. 2012	RJD	0	BID READY	09/12
		BY	NO.	REVISION	DATE

MECHANICAL & STRUCTURAL
DETAILS

600' SCALE MAP NO. 30 BLOCK NO. 10

ROUTE 29
BOOSTER PUMP STATION UPGRADE

CAPITAL PROJECT: W-8200
CONTRACT NO.: 44-4661
ELECTION DISTRICT NO.: 2
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 11 OF 11