



NEW GENERATOR AND TEMPORARY GENERATOR CONNECTION FOR PUMPING STATIONS FT. ETHAN ALLEN

FINAL CONSTRUCTION DOCUMENTS
MAY 17, 2019



ENGINEERING
PROGRAM MANAGEMENT
CONSTRUCTION MANAGEMENT

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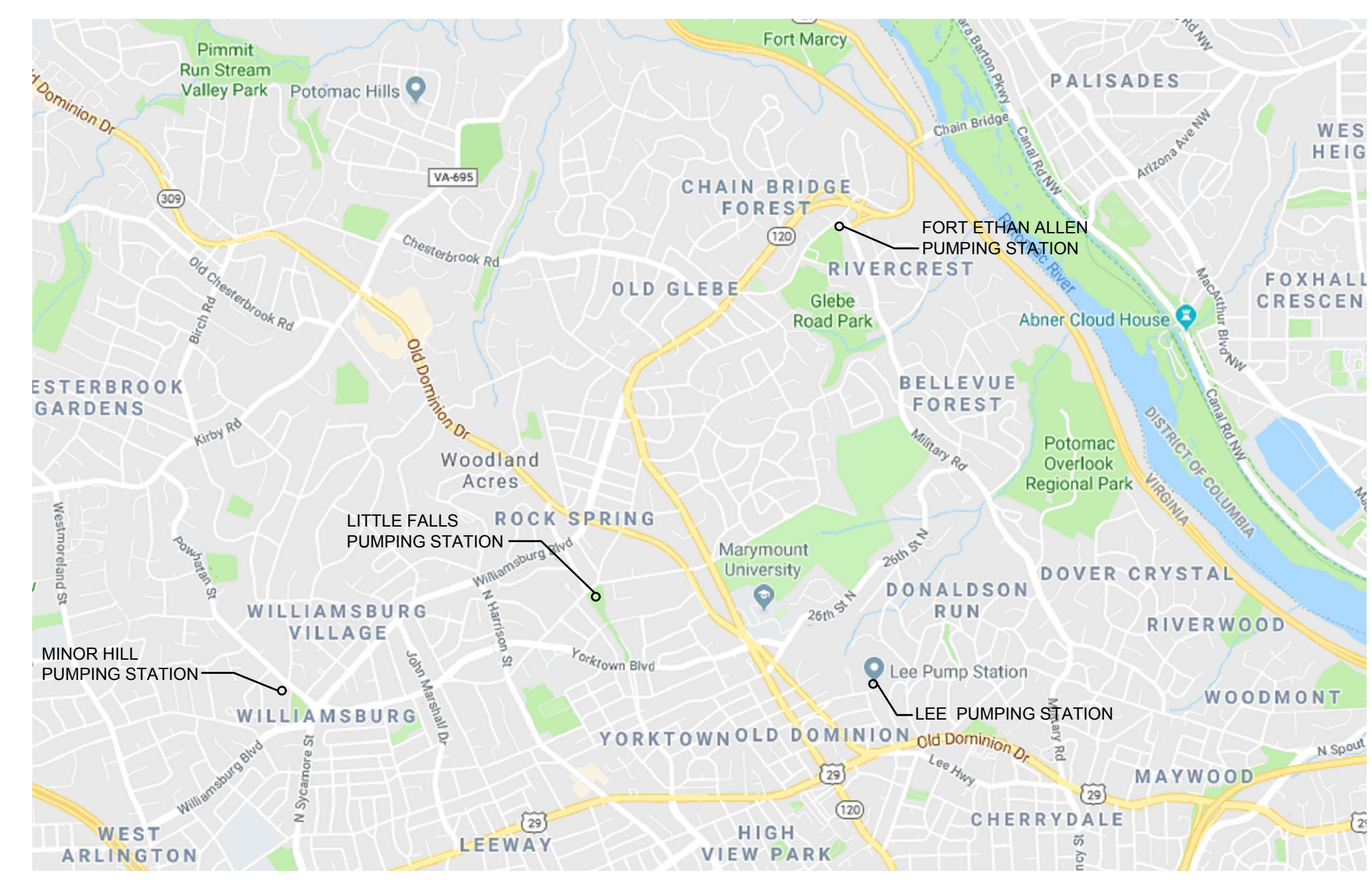
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PROJECT:

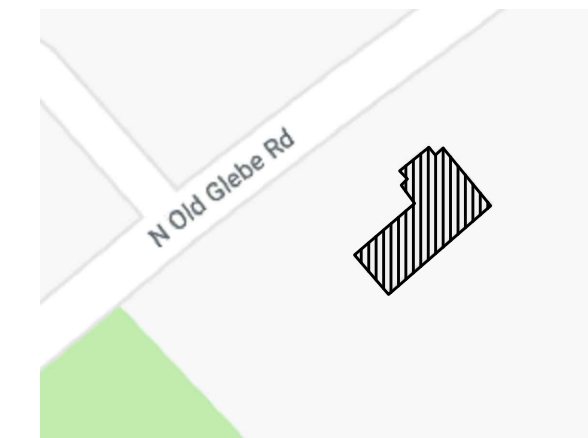
NEW GENERATOR AND
TEMPORARY GENERATOR
CONNECTION FOR
PUMPING STATIONS

REVISIONS:

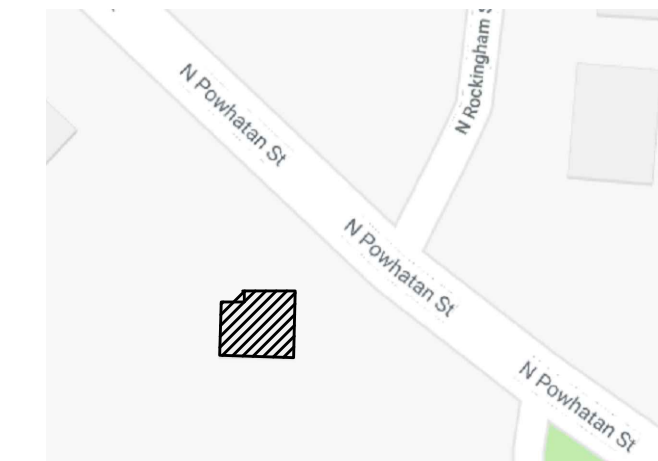
VICINITY MAP



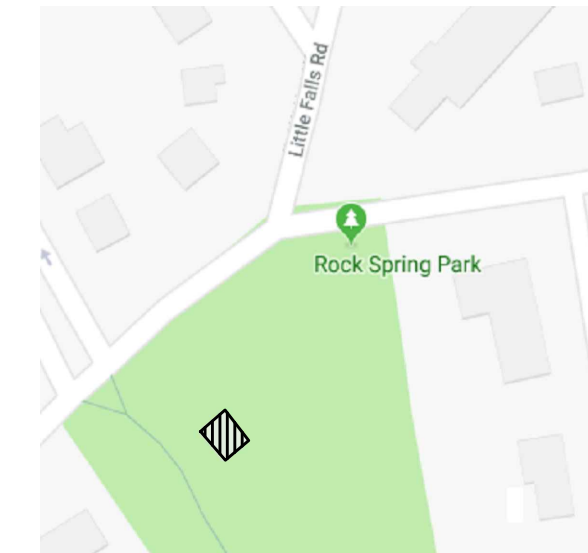
KEY PLAN



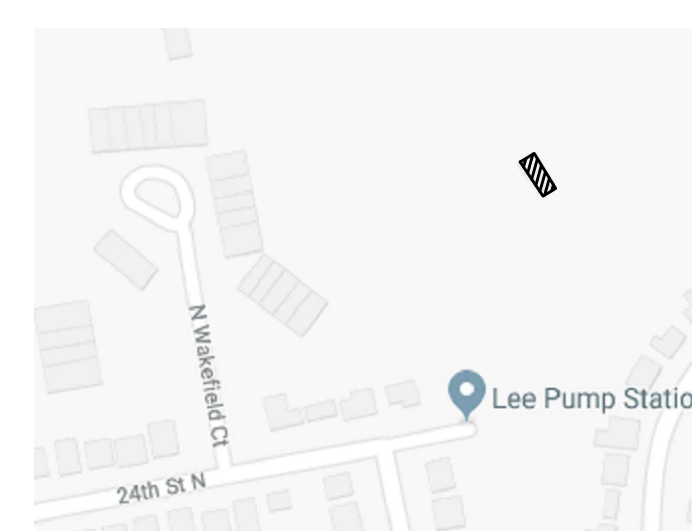
FORT ETHAN ALLEN PUMPING STATION
4401 N. Old Glebe Road
Arlington, VA 22207



MINOR HILL PUMPING STATION
3600 N. Powhatan Street
Arlington, VA 22213



LITTLE FALLS PUMPING STATION
5012 Little Falls Road
Arlington, VA 22207



LEE PUMPING STATION
2400 N. Wakefield Street
Arlington, VA 22207

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REGISTRATION:



DRAWN BY: CS

DATE: 05-17-2019

PROJECT NO.: F18-14

DRAWING TITLE:

COVER SHEET

DRAWING NUMBER

G001

ELECTRICAL NOTES

GENERAL NOTES

- ALL WORK SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER.
- INSTALL A FIRE STOP OF ROCKWOOL FIBER OR SILICON FOAM SEALANT TO PROVIDE AN EFFECTIVE BARRIER AGAINST THE SPREAD OF FIRE AND SMOKE WHERE CONDUITS, WIREWAYS, AND OTHER ELECTRICAL RACEWAYS PASS THROUGH FIRE RATED PARTITIONS AND/OR SLABS.
- ALL CERTIFICATES OF APPROVAL SHALL BE IN TRIPPLICATE, DELIVERED TO THE ENGINEER, AND BECOME THE PROPERTY OF THE OWNER.
- CONTRACTOR SHALL VERIFY ALL EQUIPMENT REQUIREMENTS BEFORE INSTALLING CONDUIT OR CONDUCTORS FROM POWER SOURCE TO EQUIPMENT TERMINATION.
- ALL ELECTRICAL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE LATEST ADOPTED NATIONAL ELECTRICAL CODE AND ALL OTHER LOCAL CODES AND AUTHORITIES HAVING JURISDICTION.
- THE DRAWINGS, WHICH CONSTITUTE A PART OF THIS CONTRACT, INDICATE THE GENERAL ARRANGEMENT EQUIPMENT, CONDUIT AND OTHER WORK. ALL ITEMS NOT SPECIFICALLY MENTIONED HEREIN, WHICH ARE NECESSARY TO MAKE A COMPLETE WORKING INSTALLATION, SHALL BE INCLUDED AT NO EXTRA COST.
- IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO EXAMINE AND TO COORDINATE WITH THE STRUCTURAL AND MECHANICAL DRAWINGS IN ORDER TO BECOME FAMILIAR WITH ALL ASPECTS OF THE DESIGN AFFECTING THE ELECTRICAL WORK.
- CONTRACTOR SHALL COORDINATE MOUNTING LOCATIONS OF ALL NEW ELECTRICAL DEVICES AND EQUIPMENT PRIOR TO COMMENCEMENT OF WORK.
- ALL ELECTRICAL MATERIALS SHALL BE NEW EXCEPT WHERE SPECIFICALLY NOTED AS EXISTING TO BE REUSED. ALL MATERIAL SHALL BE LISTED BY THE UNDERWRITERS LABORATORIES, INC. (UL). DEFECTIVE EQUIPMENT AND/OR EQUIPMENT DAMAGED DURING INSTALLATION AND/OR TESTING SHALL BE REPLACED OR REPAIRED IN A MANNER MEETING THE APPROVAL OF THE ENGINEER.
- ALL WORK SHALL BE SUBJECT TO THE APPROVAL OF THE OWNER OR OWNERS AUTHORIZED REPRESENTATIVE.
- MODIFICATIONS TO EXISTING PANELBOARDS AND SWITCHBOARDS: THE CONTRACTOR SHALL PROVIDE NEW CIRCUIT BREAKERS AND/OR FUSED SWITCHES AS REQUIRED. NEW EQUIPMENT SHALL MATCH EXISTING INSTALLED EQUIPMENT AND SHALL BE OF THE SAME MANUFACTURER AND TYPE AS SIMILAR EXISTING EQUIPMENT. INTERRUPTING RATING OF EQUIPMENT SHALL BE THE SAME AS OF THE EXISTING EQUIPMENT.
- INTERRUPTION OF ELECTRICAL POWER: THE CONTRACTOR SHALL COORDINATE ALL WORK REQUIRING INTERRUPTION OF ELECTRICAL POWER WITH ARLINGTON COUNTY AND SHALL OBTAIN WRITTEN PERMISSION, PRIOR TO SHUTTING DOWN POWER TO ANY SWITCHBOARD.
- SITE VISIT: PRIOR TO SUBMITTING HIS BID, THE CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH ALL EXISTING CONDITIONS. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN ADVANCE OF ANY CONDITIONS THAT EXIST THAT WOULD PREVENT THE WORK HEREIN SPECIFIED OR SHOWN ON THE DRAWINGS FROM BEING PERFORMED. FAILURE TO SURVEY THE SITE PRIOR TO BID AND START OF CONSTRUCTION WILL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO INSTALL DESIGN WITHIN THE CONFINES OF THE EXISTING CONDITIONS.
- GUARANTEE: THE CONTRACTOR SHALL LEAVE THE ENTIRE ELECTRICAL SYSTEM INSTALLED UNDER THIS CONTRACT IN PROPER WORKING ORDER AND SHALL, WITHOUT CHARGE, REPLACE ANY WORK OR MATERIALS WHICH DEVELOP DEFECTS, EXCEPT FROM ORDINARY WEAR AND TEAR, WITHIN ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE. BENEFICIAL USE SHALL NOT BE CONSTRUED AS FINAL ACCEPTANCE. THE CONTRACTOR SHALL, DURING THE ONE YEAR GUARANTEE PERIOD, BE RESPONSIBLE FOR THE PROPER REPAIR AND ADJUSTMENTS OF ALL ELECTRICAL SYSTEMS AND EQUIPMENT, APPARATUS, DEVICES, ETC. INSTALLED BY HIM, AND DO ALL WORK NECESSARY TO ENSURE EFFICIENT AND PROPER FUNCTIONING. PRIOR TO THE EXPIRATION OF THE GUARANTEE PERIOD, APPROXIMATELY 11 MONTHS AFTER FINAL ACCEPTANCE OF THIS PROJECT, A POST CONSTRUCTION REVIEW OF THE PROJECT WILL BE MADE.
- THE CONTRACTOR SHALL FURNISH PERSONNEL TO ASSIST THE COUNTY IN THIS REVIEW. ANY ADJUSTMENTS, REPAIRS OR REPLACEMENTS FOUND NECESSARY DURING REVIEW SHALL BE DONE BY THE CONTRACTOR, AT NO ADDITIONAL COST TO THE COUNTY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR, AND SHALL INCUR FINANCIAL RESPONSIBILITY FOR ANY DAMAGES CAUSED BY, OR RESULTING FROM, DEFECTS IN HIS WORK.
- THE CONTRACTOR SHALL MAINTAIN AT THE SITE, FOR THE COUNTY, ONE COPY OF ALL DRAWINGS, ADDENDA, APPROVED SHOP DRAWINGS, REVISIONS AND OTHER MODIFICATIONS, IN GOOD ORDER AND MARKED TO RECORD ALL CHANGES MADE DURING CONSTRUCTION. THE REST OF DRAWINGS AND OTHER INFORMATION SHALL BE DELIVERED TO THE COUNTY AND ONE COPY GIVEN TO THE ENGINEER UPON COMPLETION OF WORK.

ELECTRICAL NOTES

DEMOLITION NOTES

- ALL EXISTING INSTALLATIONS WHICH ARE TO BE REMOVED, ABANDONED, RELOCATED, AND/OR CAPPED SHALL BE ABANDONED IN PLACE WITHOUT WRITTEN AUTHORIZATION FROM THE COUNTY.
- IN ALL AREAS WHERE DEMOLITION WORK OCCUR, PATCH AND REPAIR TO MATCH NEW FINISH OR EXISTING FINISHES WHICH ARE TO REMAIN.
- ALL DEMOLITION WORK SHALL BE COORDINATED WITH ARLINGTON COUNTY AND OTHER SECTIONS OF THE CONTRACT DOCUMENTS.
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING OF ANY DISCOVERED CONFLICTS BETWEEN EXISTING INSTALLATIONS WHICH ARE NOT SCHEDULED FOR DEMOLITION AND THE NEW WORK INDICATED WITHIN THE CONTRACT DOCUMENTS. SUCH NOTIFICATION SHALL BE ACCOMPANIED WITH A DRAWING DELINEATING THE PROPOSED SOLUTION PRIOR TO STARTING ANY WORK IN THE AFFECTED AREA.
- THE CONTRACTOR SHALL PROVIDE A PROPOSED SCHEDULE OF DEMOLITION WORK FOR REVIEW BY THE COUNTY.
- ANY ADDITIONAL DEMOLITION WORK DEEMED NECESSARY AND NOT INCLUDED WITHIN THE SCOPE OF THE CONTRACT DOCUMENTS SHALL BE EXECUTED ONLY UPON RECEIPT OF WRITTEN AUTHORIZATION FROM THE COUNTY.
- CONTRACTOR IS TO ASSURE THE CONTINUITY OF POWER TO REMAINING LIGHTING FIXTURES AND POWER EQUIPMENT AFFECTED BY THE DEMOLITION.

DEMOLITION




















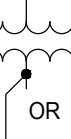
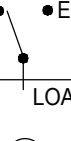

NOTE: REFER TO DEMOLITION DRAWINGS & NOTES FOR REQUIREMENTS.

- (R): EXISTING TO BE REMOVED.
 (E): EXISTING TO REMAIN.
 (ER): EXISTING TO BE RELOCATED.
 (RE) RELOCATED EXISTING DEVICE IN NEW LOCATION.
 ----- ITEMS SHOWN DASHED INDICATE EXISTING TO BE REMOVED.
 _____ LIGHT LINES INDICATE EXISTING TO REMAIN.

ELECTRICAL LEGEND




POWER

NOTES: REFER TO ARCHITECTURAL DRAWINGS AND ELEVATIONS FOR EXACT LOCATION AND MOUNTING HEIGHTS.

- WP: WEATHER PROOF (NEMA 3R)
 GFI: GROUND FAULT INTERRUPTER.
 WALL MOUNTED 20A SIMPLEX RECEPTACLE (18" AFF UON).
 WALL MOUNTED 20A DUPLEX RECEPTACLE (18" AFF UON).
 WALL 20A QUADRUPLEX RECEPTACLE (18" AFF UON).
 4 POLE PIN AND SLEEVE PLUG. REFER TO PLANS FOR RATING.
 CEILING MOUNTED JUNCTION BOX.
 WALL MOUNTED JUNCTION BOX.
 DISCONNECT SWITCH - NON-FUSED.
 FUSED DISCONNECT SWITCH. FUSE SIZE PER PLANS.
 COMBINATION STARTER/DISCONNECT SWITCH.
 VARIABLE FREQUENCY DRIVE.
 VARIABLE FREQUENCY DRIVE WITH INTEGRAL DISCONNECT.
 M = MOTOR, G = GENERATOR
 208/120V SURFACE MOUNTED PANEL.
 480/277V SURFACE MOUNTED PANEL.
 ENCLOSED CIRCUIT BREAKER.
 PULL BOX.
 BRANCH CIRCUIT HOMERUN, 2#12 + 1#12G, 3/4" C.
 CONDUIT TURNING UP
 CONDUIT TURNING DOWN
 GROUND
 TRANSFORMER
 AUTOMATIC TRANSFER SWITCH
 MOLDED CASE CIRCUIT BREAKER

ELECTRICAL LEGEND

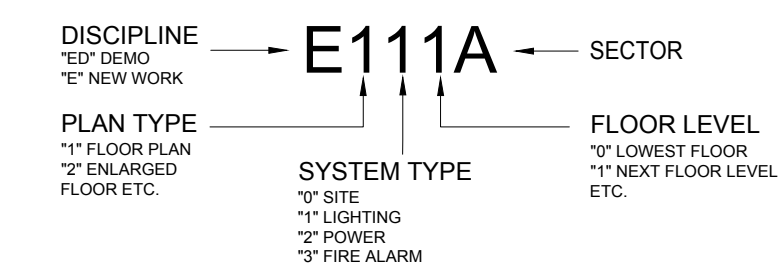
GENERAL

-  INDICATES PLAN NOTE.
 INDICATES REVISION. CLOUDED AREA CONTAINS THE REVISION.
 INDICATES ROOM NUMBER.

ABBREVIATIONS

A, AMP	AMPERES	G, GND	GROUND
AB	ABOVE	GC	GENERAL CONTRACTOR
AC	ALTERNATE CURRENT	GFI	GROUND FAULT INTERRUPTER
AFF	ABOVE FINISHED FLOOR	IG	ISOLATED GROUND
ARCH	ARCHITECTURAL ARCHITECT	INCAND	INCANDESCENT
BEL	BELOW	KAIC	KILOAMP INTERRUPTING CURRENT
BKR	BREAKER	KVA	KILOVOLT AMPERES
	CONDUIT	KW	KILOWATTS
CEIL	CEILING	LT(S)	LIGHT(S)
CKT	CIRCUIT	M	METER
CM	CENTIMETER	MECH	MECHANICAL
DC	DIRECT CURRENT	MH	MOUNTING HEIGHT
D/S	DISCONNECT SWITCH	MLO	MAIN LUGS ONLY
DISC	DISCONNECT SWITCH	MM	MILLIMETER
DWG	DRAWING	MTD	MOUNTED
EC	ELECTRICAL CONTRACTOR	NEC	NATIONAL ELECTRICAL CODE
EF	EXHAUST FAN	NO.#	NUMBER
ELEC	ELECTRICAL	NTS	NOT TO SCALE
EM	EMERGENCY	P	POLE
EQUIP	EQUIPMENT	PH, Ø	PHASE
EXIST	EXISTING	PNL	PANEL
FA	FIRE ALARM	RECEP	RECEPTACLE
FACP	FIRE ALARM CONTROL PANEL	RM	ROOM
FAAP	FIRE ALARM ANNUNCIATOR PANEL	TELE	TELEPHONE
FIXT	FIXTURE	TYP	TYPICAL
FLA	FULL LOAD AMPERES	UON	UNLESS OTHERWISE NOTED
FLUOR	FLUORESCENT	V	VOLTS
		W	WATTS
		W/	WITH
		WP	WEATHERPROOF

SHEET NAMING LEGEND



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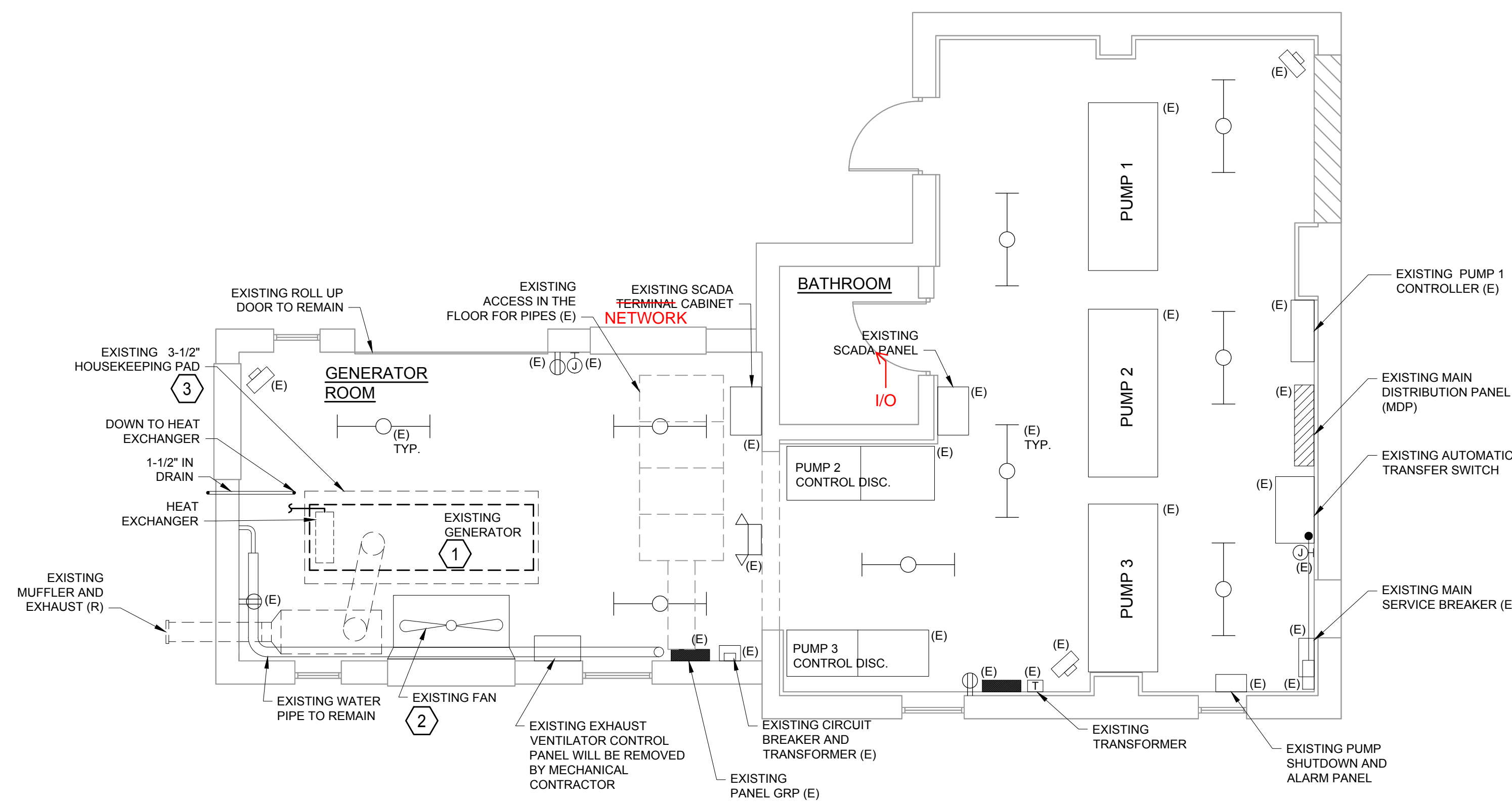
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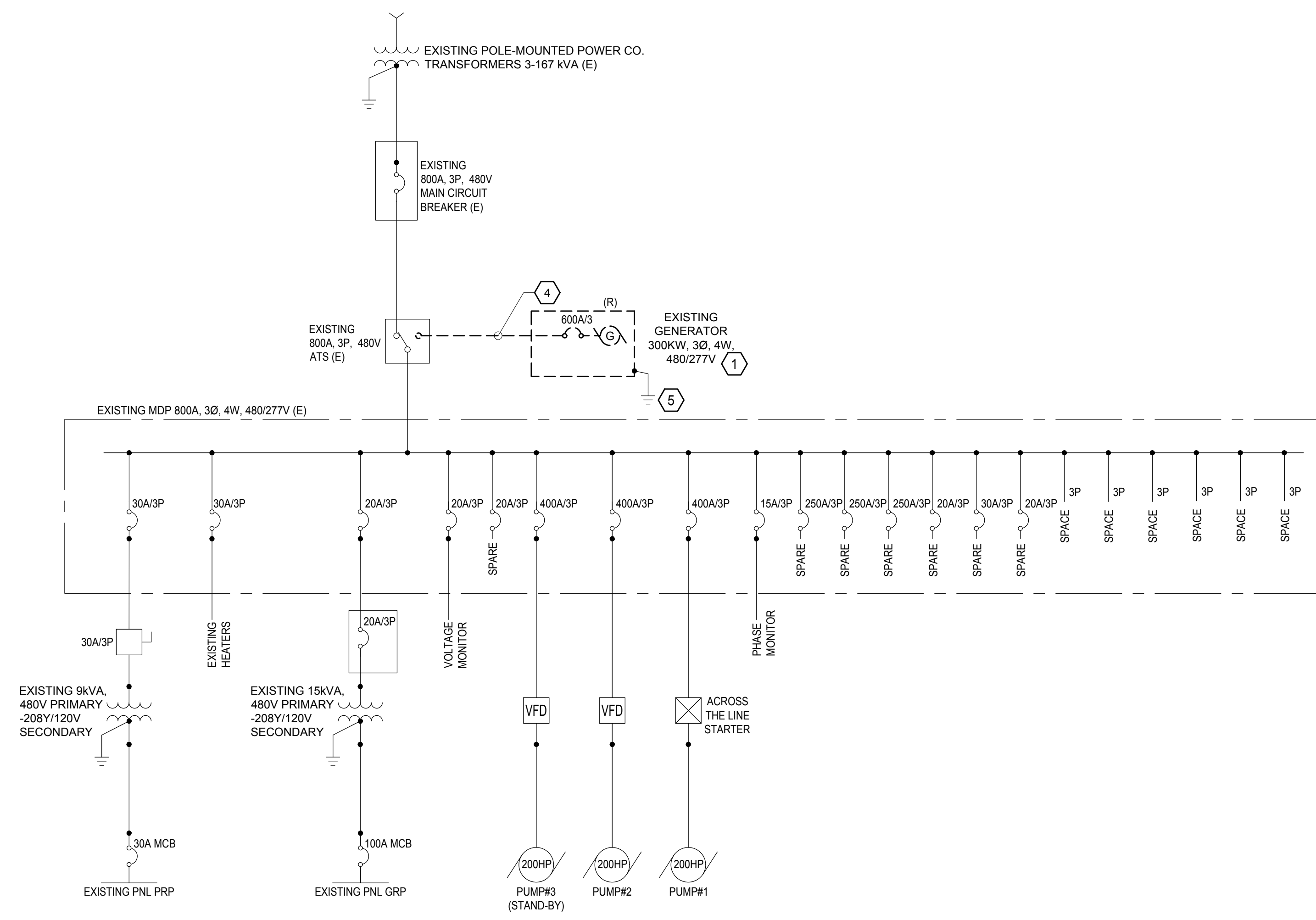
ELECTRICAL COVER SHEET

DRAWING NUMBER

E001



1 FT. ETHAN ALLEN - FLOOR PLAN - DEMOLITION
SCALE: 1/4" = 1'-0"



2 FT. ETHAN ALLEN - SINGLE LINE DIAGRAM - EXISTING/DEMOLITION
SCALE: NOT TO SCALE

GENERAL NOTES

- REFER TO E001 FOR GENERAL NOTES, SYMBOL LEGEND AND LIST OF ABBREVIATIONS.
- UNLESS OTHERWISE INDICATED ALL EXISTING DEVICES, EQUIPMENT, PUMPS, PUMP CONTROLLERS, LIGHT FIXTURES, RECEPTACLES AND LIGHTING TO REMAIN.
- CONTRACTOR SHALL BE CAREFUL NOT TO DAMAGE THE EXISTING RATED CEILING TILES OR WALL PANELS DURING DEMOLITION AND/OR NEW WORK.
- CONTRACTOR SHALL PROVIDE A CONTINUOUS TEMPORARY EMERGENCY GENERATOR WHILE WORKING IN THE STATION FOR THE DURATION OF CONSTRUCTION. THE STATION SHALL NOT BE WITHOUT NORMAL AND OR EMERGENCY POWER. COORDINATE THE SIZE OF THE TEMPORARY GENERATOR WITH EACH STATION.

KEYED NOTES

- DISCONNECT AND REMOVE EXISTING EMERGENCY GENERATOR. REFER TO E120EA FOR EXTEND OF NEW WORK. REFER TO M120EA FOR EXTEND OF MECHANICAL DEMOLITION WORK.
- DISCONNECT AND REMOVE EXISTING CIRCUIT WIRING AND CONDUIT BACK TO ITS SOURCE AFTER THE FANS ARE REMOVED. REFER TO E120EA AND M120EA FOR EXTEND OF NEW WORK.
- REFER TO S120EA FOR EXTEND OF NEW WORK.
- DISCONNECT AND REMOVE EXISTING NOTED FEEDERS. SALVAGE EXISTING CONDUITS ABOVE CEILING. REFER TO E120EA FOR EXTEND OF NEW WORK.
- DISCONNECT THE EXISTING GENERATOR FROM THE EXISTING GROUNDING. REFER TO E120EA FOR EXTEND OF NEW WORK.



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DRAWING TITLE:
FLOOR PLAN & SINGLE LINE DIAGRAM - EXIST./DEMOLITION
DRAWING NUMBER

ED120EA

PROJECT:

**NEW GENERATOR AND
TEMPORARY GENERATOR
CONNECTION FOR
PUMPING STATIONS
ETHAN ALLEN**

REVISIONS:

REGISTRATION:



DRAWN BY: CS

DATE: 05-17-2019

PROJECT NO.: F18-14

DRAWING TITLE:
**FLOOR PLAN &
SINGLE LINE
DIAGRAM -
EXISTING/NEW**
DRAWING NUMBER

E120EA

GENERAL NOTES

- REFER TO E001 FOR GENERAL NOTES, SYMBOL LEGEND AND LIST OF ABBREVIATIONS.
- UNLESS OTHERWISE INDICATED, ALL EXISTING DEVICES, EQUIPMENT, PUMPS, PUMP CONTROLLERS, LIGHT FIXTURES, RECEPTACLES AND LIGHTING TO REMAIN.
- GENERATOR LAYOUT IS BASED ON MTU GENERATOR MANUFACTURER DIMENSIONS (BASIS OF DESIGN). DUE TO LIMITED SPACES IN THE ROOM, THE PHYSICAL DIMENSION OF THE NEW GENERATOR SHALL NOT EXCEED FROM WHAT IS SHOWN ON THE PLAN. THE OVERALL HEIGHT OF EQUIPMENT SHALL NOT EXCEED 128" THAT WOULD INCLUDE: 4" CONCRETE PAD, FUEL TANK, ENGINE GENERATOR, MUFFLERS AND EXHAUST PIPES.
- CONTRACTOR SHALL BE CAREFUL NOT TO DAMAGE THE EXISTING RATED CEILING TILES OR WALL PANELS DURING DEMOLITION AND/OR NEW WORK.
- REFER TO M120EA FOR EXTEND OF MECHANICAL NEW WORK.
- CONTRACTOR SHALL PROVIDE A CONTINUOUS TEMPORARY EMERGENCY GENERATOR WHILE WORKING IN THE STATION FOR THE DURATION OF CONSTRUCTION. THE STATION SHALL NOT BE WITHOUT NORMAL AND OR EMERGENCY POWER. COORDINATE THE SIZE OF THE TEMPORARY GENERATOR WITH EACH STATION.

KEYED NOTES

- INSTALL NEW 450KW EMERGENCY GENERATOR WITH 250 G (8HRS) SKID-MOUNTED FUEL TANK ON A NEW 4" CONCRETE PAD AS SHOWN.
- UTILIZE EXISTING CONDUIT AND INSTALL NEW #14 CONTROL WIRING (GENERATOR START) FROM THE NEW GENERATOR TO EXISTING ATS SWITCH. EXTEND CONDUIT IF NEEDED.
- INSTALL THREE SETS OF 4-350KCMIL + 1 #1/8 IN 3" CONDUIT. EXISTING TWO CONDUIT SHOULD BE UTILIZED. THE THIRD CONDUIT CAN BE INSTALLED EXPOSED (NOT TO DISTURB THE CEILING TILES) WITH PROPER SUPPORTS.
- ENGINE BLOCK HEATER CIRCUIT. PROVIDE 3#12 + 1#12 G, 3/4" C TO AN EXISTING 20A, 3P SPARE CIRCUIT BREAKER IN MDP. COORDINATE POWER REQUIREMENTS WITH EQUIPMENT MANUFACTURER.
- INSTALL ONE SET OF 4-500KCMIL + 1 #3 G IN 4" C AS SHOWN. USE RGS CONDUIT OUTSIDE.
- PROVIDE A 400A, 3P, 480V DISCONNECT SWITCH IN A LOCKABLE NEMA 4X STAINLESS STEEL ENCLOSURE.
- UTILIZE EXISTING CIRCUIT CONDUIT FOR THE BATTERY CHARGER. PROVIDE NEW 2#10 + 1#10 G FROM THE CHARGER TO EXISTING CIRCUIT BREAKER IN PANEL. EXTEND THE CIRCUIT TO THE CHARGER ON THE GENERATOR SKID. COORDINATE EXACT LOCATION IN FIELD.
- INSTALL A NEW NEMA 3R 400A, 480V, 3W, 4POLE PIN AND SLEEVE TYPE RECEPTACLE (PLUG) WITH ANGLE AND BACK BOX (JUNCTION BOX). THE RECEPTACLE SHALL BE SIMILAR TO CATALOG NUMBER AJA40034400RS, STYLE 2. MANUFACTURED BY APPLTONE.
- PROVIDE A FACTORY-ASSEMBLED COMBINATION OF MAGNETIC MOTOR STARTER WITH DISCONNECT SWITCH, OVERLOAD RELAYS AND RED LED PILOT LIGHTS FOR THE NEW EXHAUST FAN AS SHOWN. THE STARTER SHALL BE SURFACE MOUNTED. UL 489, NEMA AB 1, NEMA AB 3 WITH AUXILIARY CONTACTS 'A' & 'B' ARRANGED TO ACTIVATE WITH MCP HANDLE. INTERLOCK THE STARTER WITH THE GENERATOR AND THE EXISTING LOUVERS SO THAT WHEN THE GENERATOR STARTS, THE FAN SHALL TURN ON AND THE LOUVERS TO OPEN. REFER TO M120EA FOR ADDITIONAL INFORMATION. COORDINATE THE STARTER SIZE WITH ASSOCIATED MOTOR HP. ACCEPTABLE MANUFACTURERS ARE: ROCKWELL AUTOMATION, INC., ALLEN-BRADLEY, SIEMENS ENERGY AND SQUARE - D.
- UTILIZE EXISTING EF POWER CONDUIT FOR NEW FAN. INSTALL 3#10 + 1#10 G FROM THE STARTER TO PANEL GRP. REPLACE EXISTING 20A, 3P CIRCUIT BREAKER IN PANEL GRP WITH A 30A, 3P CIRCUIT BREAKER.
- CONNECT THE NEW GENERATOR TO EXISTING GROUNDING SYSTEM IN THE PUMPING STATION AS PER NEC 250.30(A). IF NECESSARY, INSTALL NEW COPPER GROUND ROD (10"x3/4") IN ORDER TO MEET THE GROUNDING REQUIREMENTS OF NEC 250.30(A).
- CONNECT THE NEW CONDUCTORS TO ATS LUGS AS SHOWN. REPLACE THE LUGS TO ACCOMMODATE FOR ADDITIONAL CONDUCTORS, IF NECESSARY.

13. PROVIDE (1)#18 TSP IN 3/4" CONDUIT FROM GENERATOR FUEL TANK LEVEL SENSOR TO EXISTING SCADA I/O PANEL. LEAVE AT LEAST 6' OF SPARE WIRE AT BOTH ENDS FOR TERMINATIONS BY OTHERS.

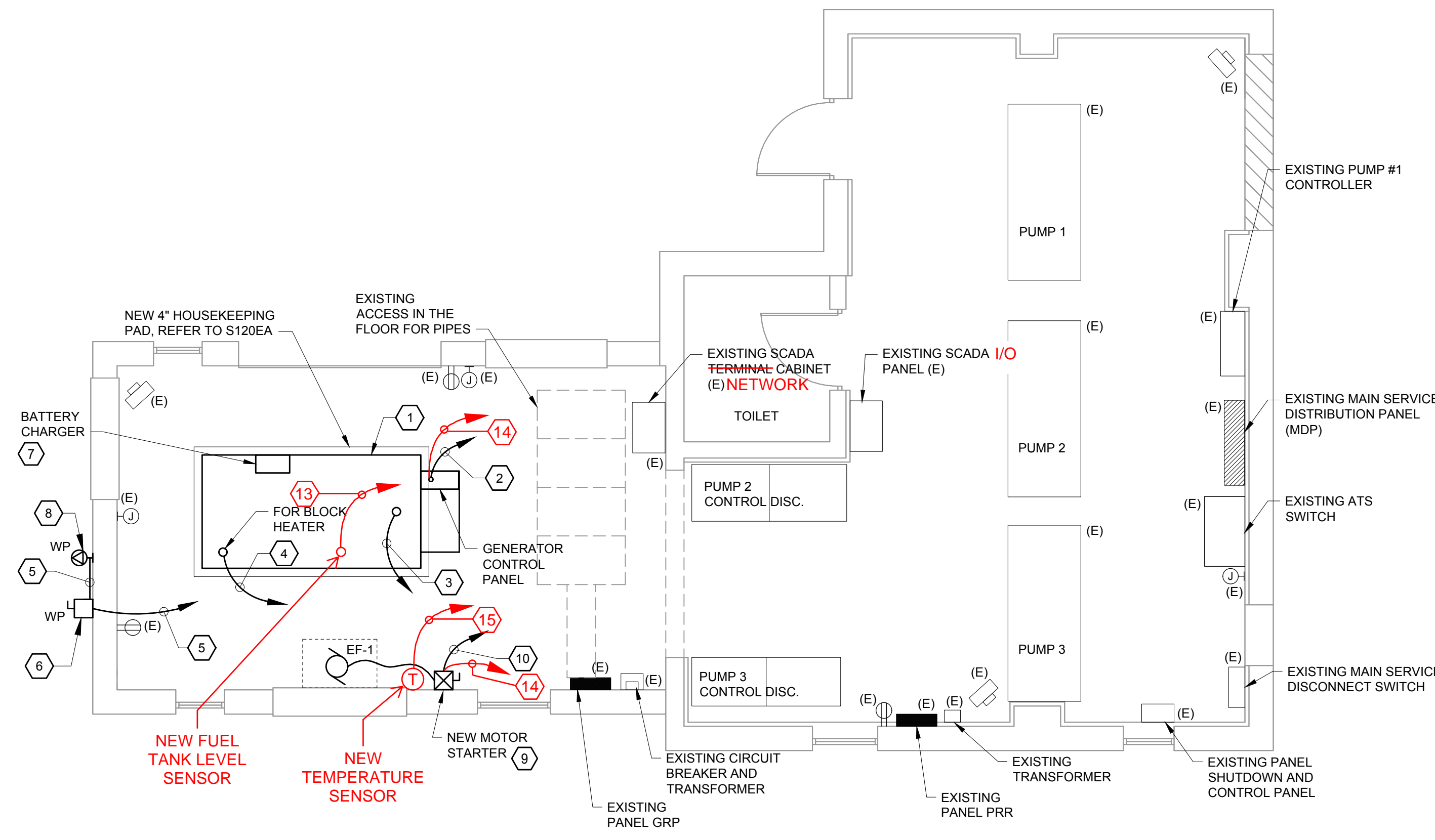
14. PROVIDE (6)#14+#14 GND IN 3/4" CONDUIT FROM GENERATOR CONTROL PANEL TO EXISTING SCADA I/O PANEL. LEAVE AT LEAST 6' SPARE WIRE AT BOTH ENDS FOR TERMINATION BY OTHERS.

15. PROVIDE (1)#18 TSP IN 3/4" CONDUIT FROM TEMPERATURE SENSOR TO EXISTING SCADA I/O PANEL. LEAVE AT LEAST 6' OF SPARE WIRE T BOTH ENDS FOR TERMINATION BY OTHERS.

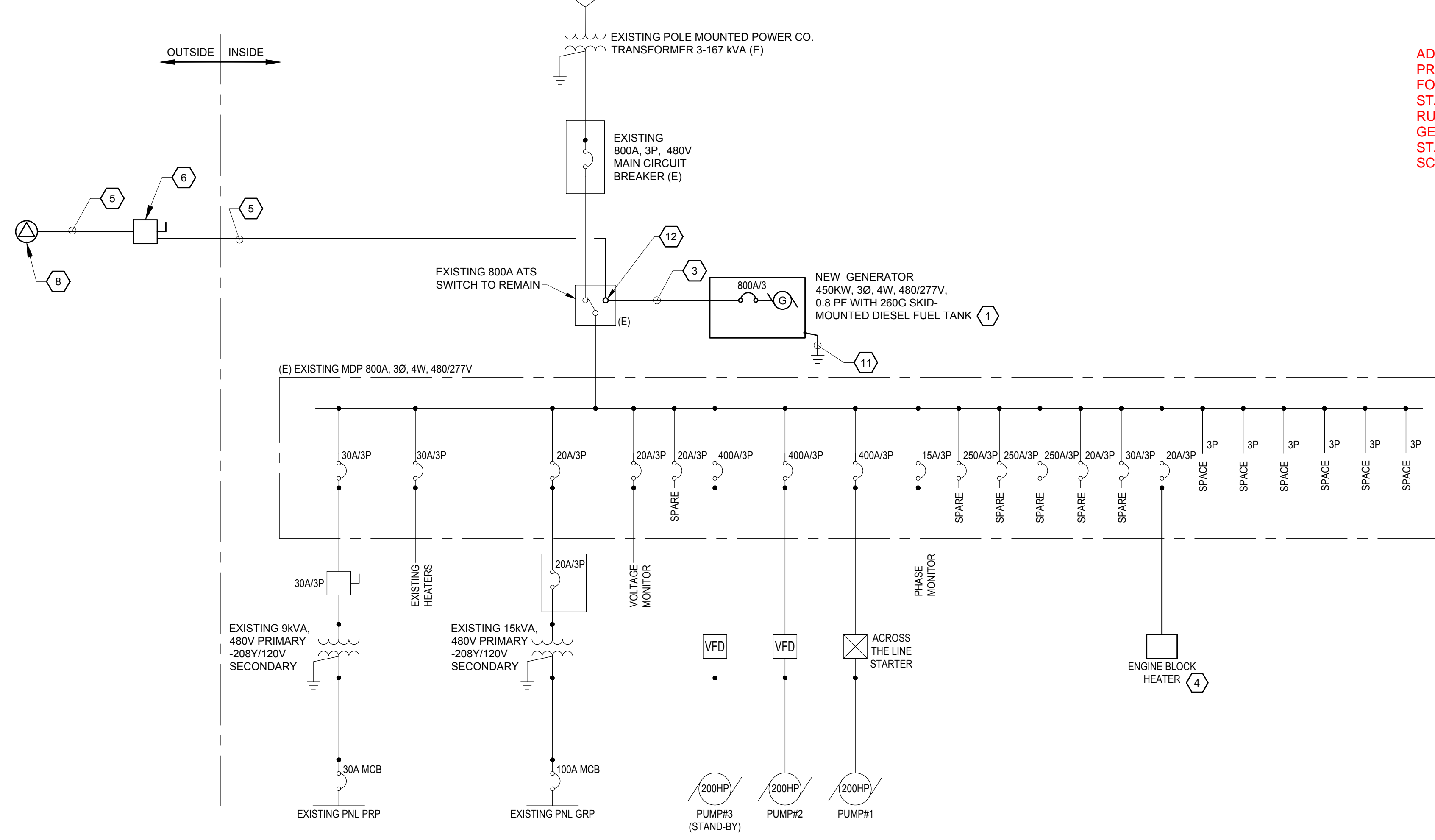
16. PROVIDE (8)#14+#14GND IN 3/4" CONDUIT FROM MOTOR STARTER CONTROL PANEL TO EXISTING SCADA I/O PANEL. LEAVE AT LEAST 6' WIRE AT BOTH ENDS FOR TERMINATION BY OTHERS.

7. ALL TERMINATIONS OF WIRES AT THE SCADA I/O PANEL AND ASSOCIATED FIELD POINTS SHALL BE COMPLETED BY THE COUNTY'S DESIGNATED SCADA SYSTEM INTEGRATOR. CONTRACTOR SHALL COORDINATE SCHEDULE FOR SCADA WORK WITH THE COUNTY.

ADD TO NOTE 9: PROVIDE H-O-A SELECTOR SWITCH FOR NEW EXHAUST FAN. FAN TO START IN "HAND" MODE AND SHALL RUN IN "AUTO" MODE WHEN GENERATOR STARTS AND WITH A START COMMAND FROM THE SCADA PLC.



1 FT. ETHAN ALLEN FLOOR PLAN - NEW WORK
SCALE: 1/4" = 1'-0"



2 FT. ETHAN ALLEN - SINGLE LINE DIAGRAM - EXISTING/NEW
SCALE: NOT TO SCALE



GENERAL NOTES

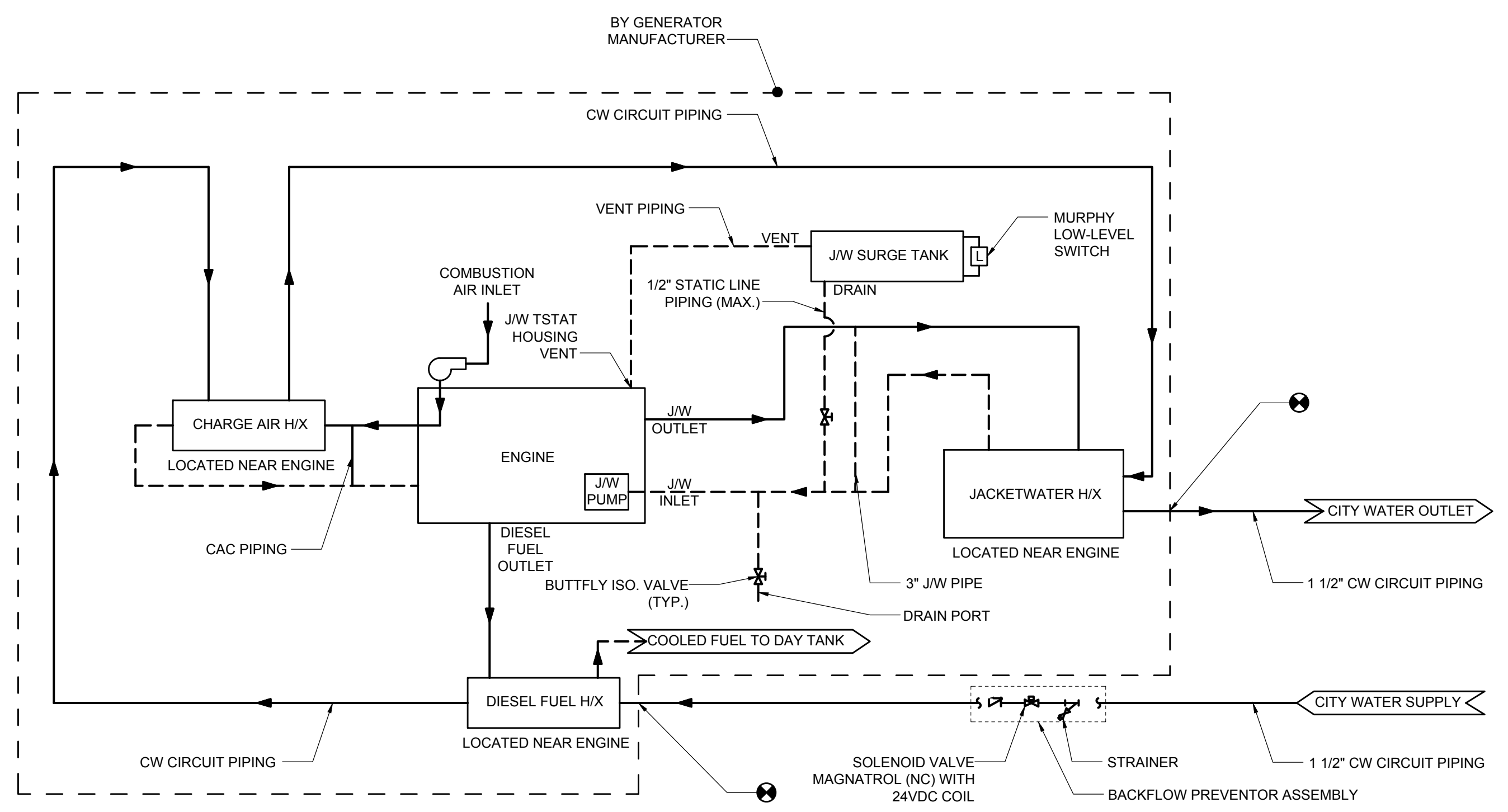
- REFER TO M001 FOR GENERAL NOTES, SYMBOL LEGEND AND LIST OF ABBREVIATIONS.
- PIPING ROUTING ARE SCHEMATICS ONLY, AND GENERATOR COOLING SYSTEM INSTALLATION SHALL FOLLOW GENERATOR MANUFACTURER'S RECOMMENDATIONS.
- MUFFLER AND EXHAUST FLEX CONNECTOR SHALL BE SUPPLIED BY DIV 26, AND INSTALLED BY DIV 23. COORDINATE WITH ELECTRICAL CONTRACTOR AND GENERATOR MANUFACTURER. GENERATOR EXHAUST SYSTEM INSTALLATION SHALL FOLLOW MANUFACTURER'S RECOMMENDATIONS.
- PROVIDE MINIMALLY REQUIRED SUPPORT FROM CEILING ABOVE, PROTECT PENETRATION WITH FIRE PROTECTION MATERIALS.
- COORDINATE NEW EXHAUST PIPE HEIGHT WITH AVAILABLE CEILING SPACE (APPROX. 128" AFF).

KEYED NOTES

- DEMOLISH TWO EXHAUST FANS, ASSOCIATED CONTROLS AND THE SCREEN GUARD.
- DEMOLISH VENTILATOR FAN CONTROL PANEL. PROTECT THE CONTROL WIRES OF EXISTING OA LOUVER DAMPERS FOR NEW FAN CONNECTION.
- DEMOLISH GENERATOR EXHAUST PIPE AND MUFFLER. FILL WALL PENETRATION AND MATCH WITH EXISTING WALL FINISH. USE FIRE STOPPING MATERIALS AS NECESSARY.
- PROVIDE EXHAUST FAN (SIMILAR TO GREENHECK SBCE-3H36-50) WITH DDC CONTROLS, INTERLOCK NEW EF WITH GENERATOR. PROVIDE OSHA MOTOR SIDE GUARD. PROVIDE HARDWARE FOR SIDE WALL MOUNTING.
- PROVIDE BACKFLOW PREVENTER ASSEMBLY. SOLENOID VALVE (NORMALLY CLOSED WITH 24VDC COIL) IS SIMILAR TO MAGNATROL 35A46. PROVIDE STRAINER WATTS MODEL 2-77-DFI-125, 2" FNPT THREADED, OR APPROVED EQUAL.
- PROVIDE SEAMLESS BLACK STEEL SCHEDULE 80 EXHAUST PIPE WITH WELDED JOINTS AND BUTT WELDING FITTINGS. INSULATE EXHAUST PIPE AND MUFFLER WITH MINERAL-FIBER INSULATION. COORDINATE EXHAUST PIPE SIZES AND CONNECTIONS TO GENERATOR WITH ELECTRICAL CONTRACTOR AND GENERATOR MANUFACTURER. PROVIDE EXTERIOR WALL PENETRATION FOR EXHAUST PIPE.
- INTERLOCK EXISTING OA LOUVER DAMPERS WITH NEW EF. CLEAN AND REMOVE DUST FROM THE LOUVER. REPAIR BROKEN BLADE IF ANY.
- EXTEND AND CONNECT VENT PIPE TO GENERATOR FUEL TANK.
- HEAT EXCHANGERS INSTALLED BY GENERATOR MANUFACTURER.
- CONTRACTOR SHALL IDENTIFY ISOLATION VALVE FOR THE BRANCH PIPING AND ISOLATE FOR CONNECTION NEW PIPING TO EXISTING.

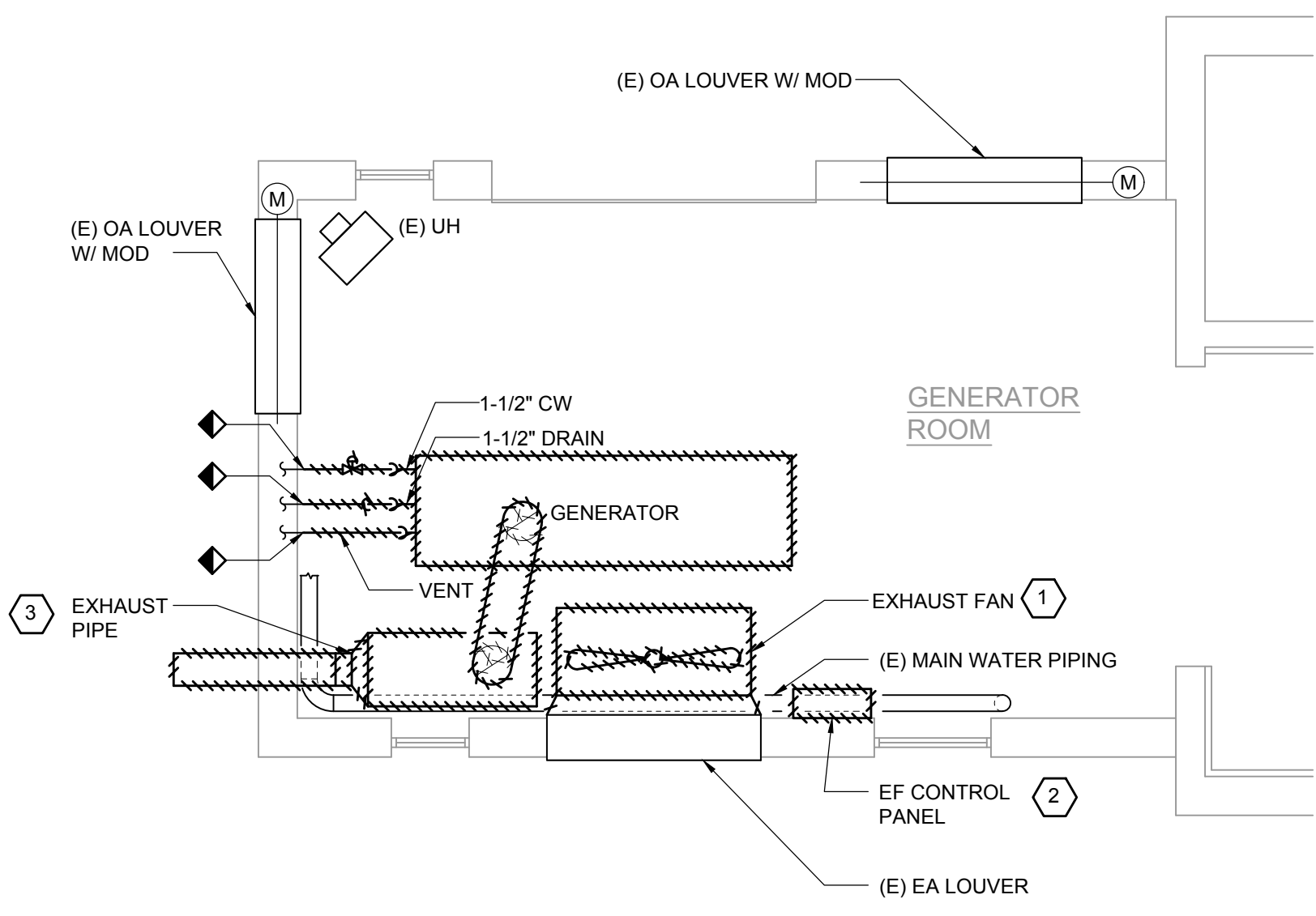
CONTROLS NOTES

- GENERATOR SHALL BE INTERLOCKED WITH OUTDOOR AIR LOUVER DAMPER, NEW EXHAUST FAN. EXHAUST FAN SHALL BE INTERLOCKED WITH EXHAUST AIR LOUVER DAMPER. WHEN GENERATOR IS ENERGIZED, OA LOUVER DAMPER SHALL OPEN, EA LOUVER DAMPER SHALL OPEN, EF SHALL BE ENERGIZED. WHEN GENERATOR IS DE-ENERGIZED, OA LOUVER DAMPER SHALL CLOSE, EA LOUVER DAMPER SHALL CLOSE, EF SHALL BE DE-ENERGIZED.

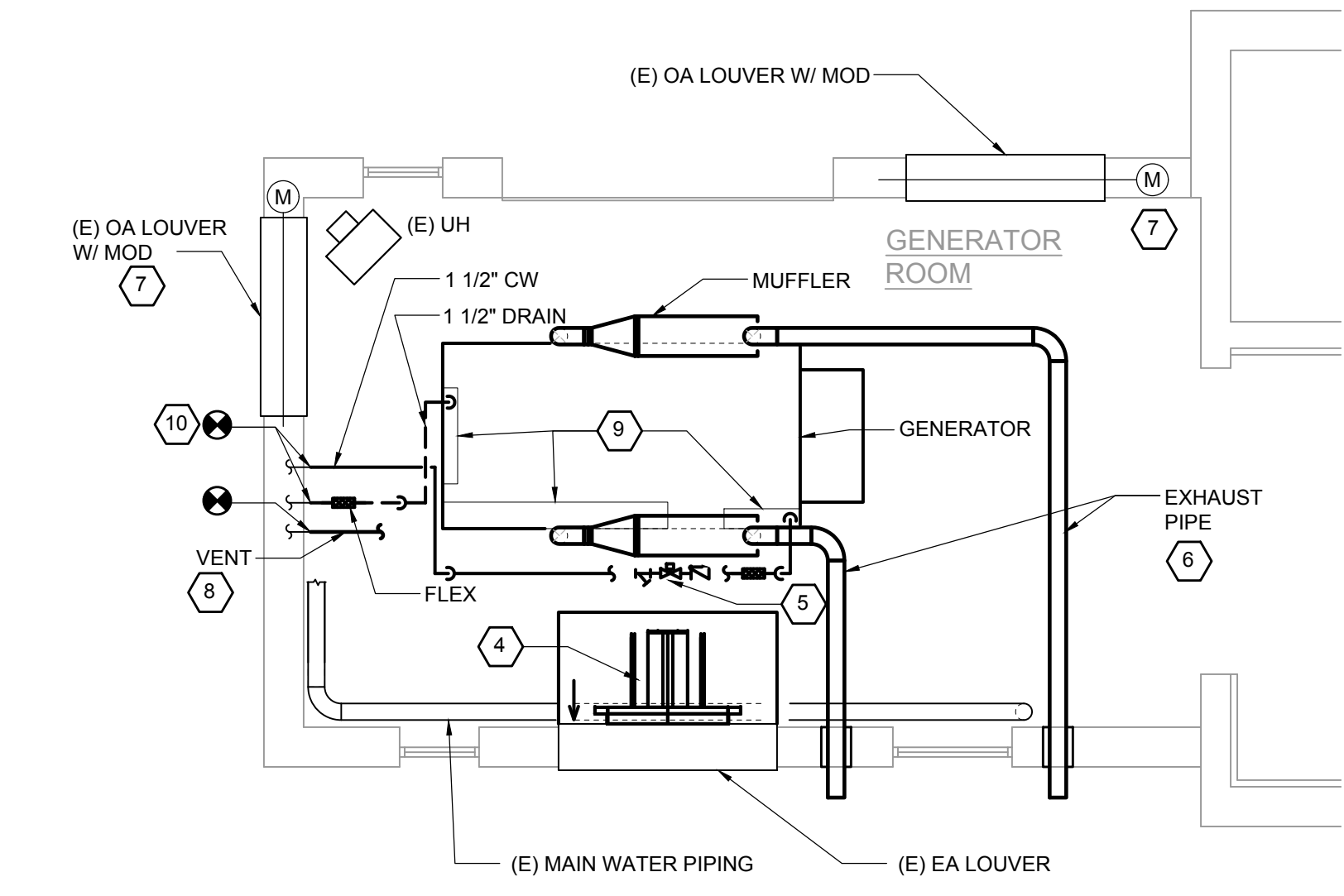


- NOTES:**
- GENERATOR CITY WATER COOLING SYSTEM SCHEMATIC IS BY "BOULDEN ENERGY SYSTEMS" AND IS SHOWN HERE FOR DEMONSTRATION AND REFERENCE PURPOSES.
 - COOLING SYSTEM EQUIPMENT DESIGN AND SELECTIONS ARE BY "BOULDEN ENERGY SYSTEMS". CONTRACTOR IS RESPONSIBLE FOR THE DESIGN INTEND OF THESE DETAILS IF "BOULDEN ENERGY SYSTEMS" IS NOT SELECTED.
 - GENERATOR MANUFACTURER SHALL LOCATE AND SUPPORT THE HEAT EXCHANGERS (DIESEL FUEL HX, CHARGE AIR HX, JACKET WATER HX) AND SURGE TANK.
 - GENERATOR MANUFACTURER SHALL INSTALL FUEL PIPING, CHARGE AIR PIPING, JACKET WATER PIPING, VENT PIPE, AND ACCESSORIES IN COOLING SYSTEM AS INDICATED ABOVE WITHIN THE DASHED LINE.
 - DIESEL FUEL HX - SIMILAR TO "THERMAL TRANSFER PRODUCTS" MODEL SB-702-A6-O, CHARGE AIR HX - SIMILAR TO "THERMAL TRANSFER PRODUCTS" MODEL CC-1660-C4-1, JACKET WATER HX - SIMILAR TO "THERMAL TRANSFER PRODUCTS" MODEL C-1724-8-4-6-F, SURGE TANK - SIMILAR TO "ROCORE" 8 GAL.

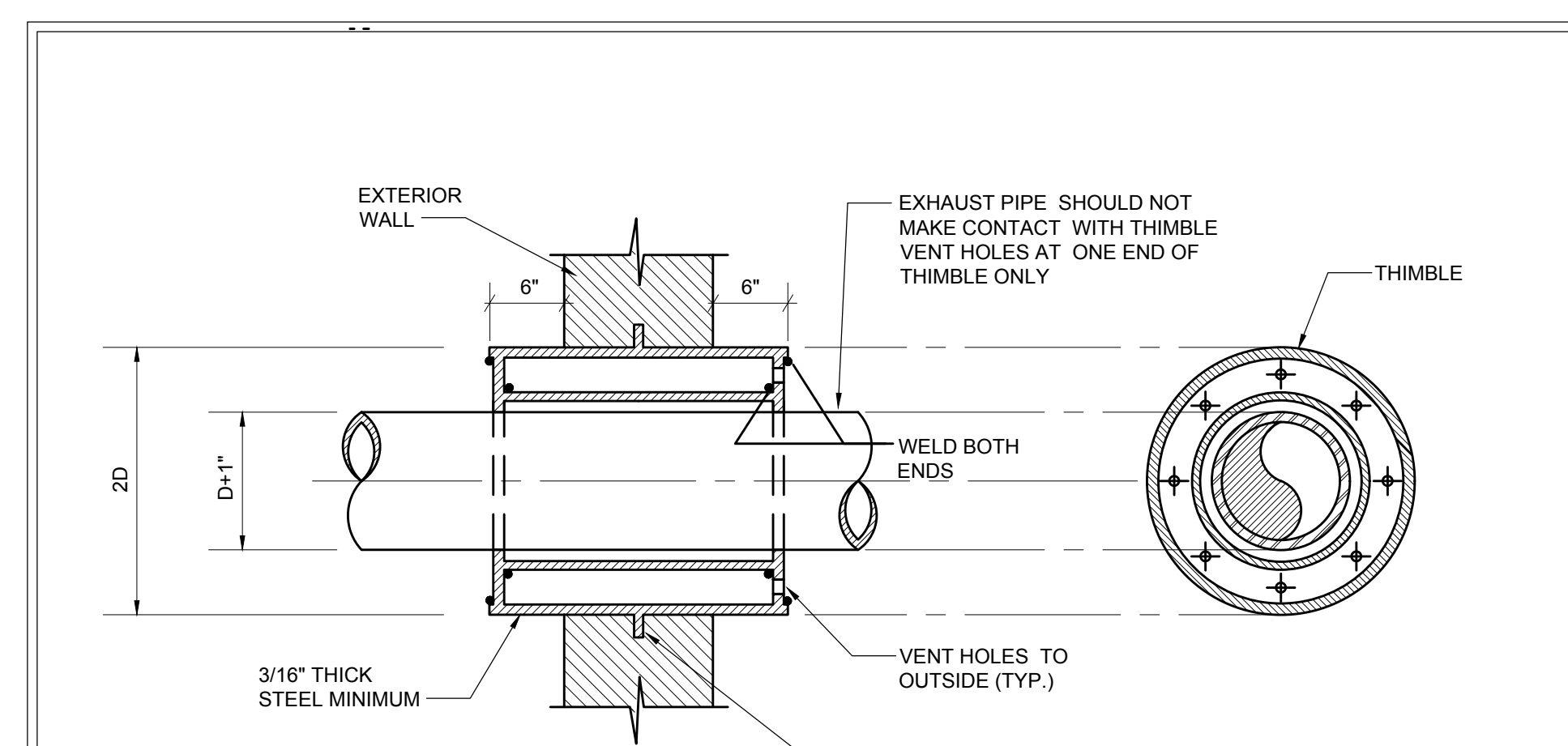
3 FT. ETHAN ALLEN - CITY WATER COOLING SYSTEM SCHEMATIC
SCALE: NOT TO SCALE



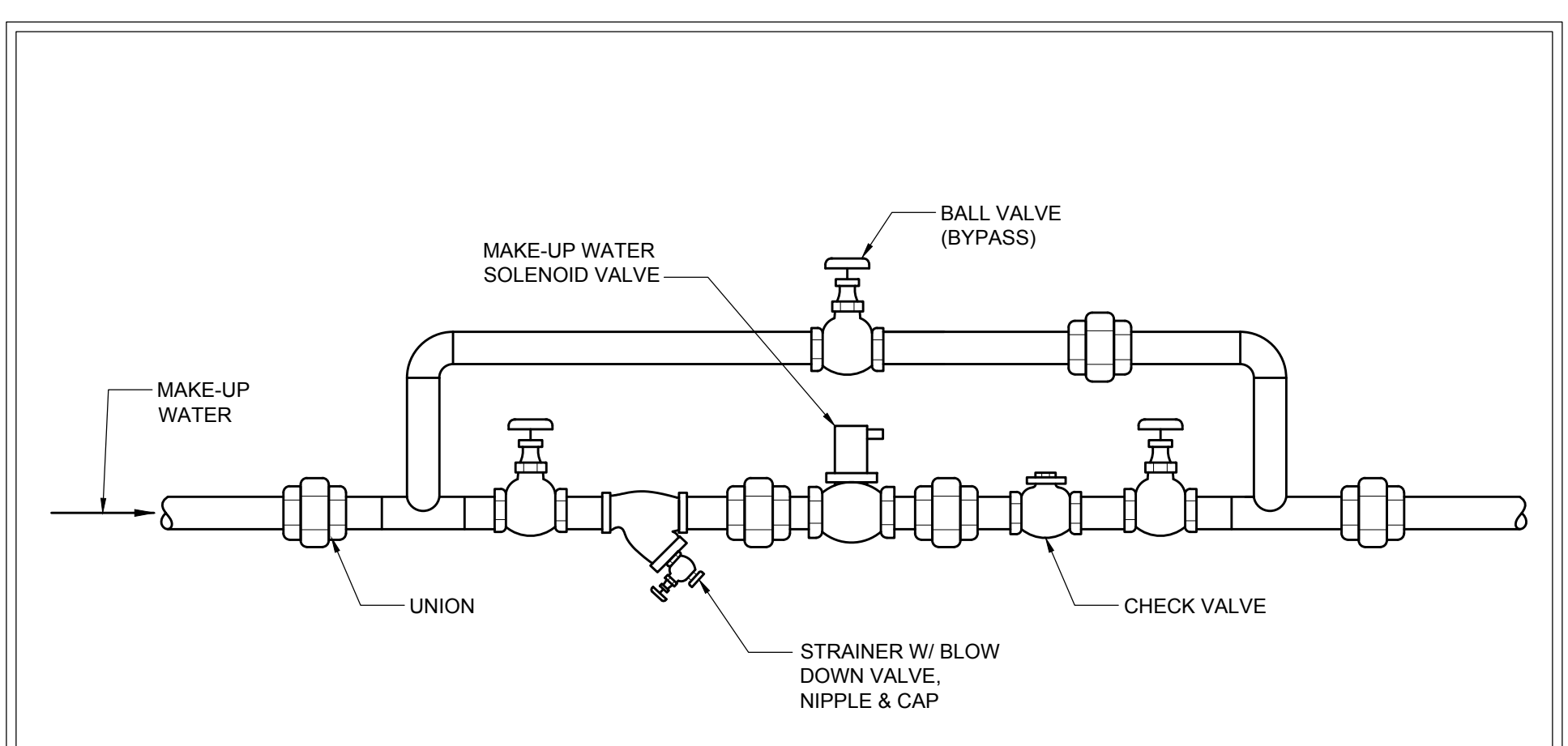
1 FT. ETHAN ALLEN - MECHANICAL FLOOR PLAN - DEMOLITION
SCALE: 1/4" = 1'-0"



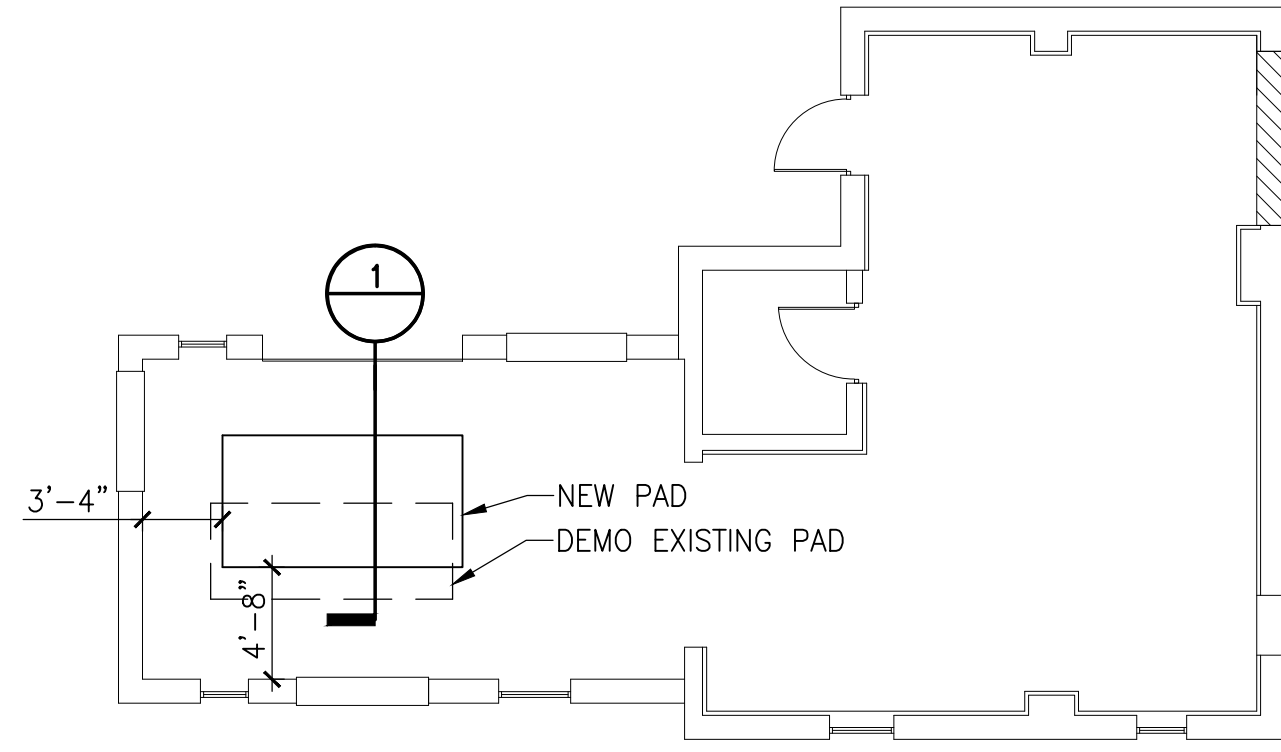
2 FT. ETHAN ALLEN - MECHANICAL FLOOR PLAN - NEW WORK
SCALE: 1/4" = 1'-0"



4 GENERATOR THIMBLE DETAIL
SCALE: NOT TO SCALE

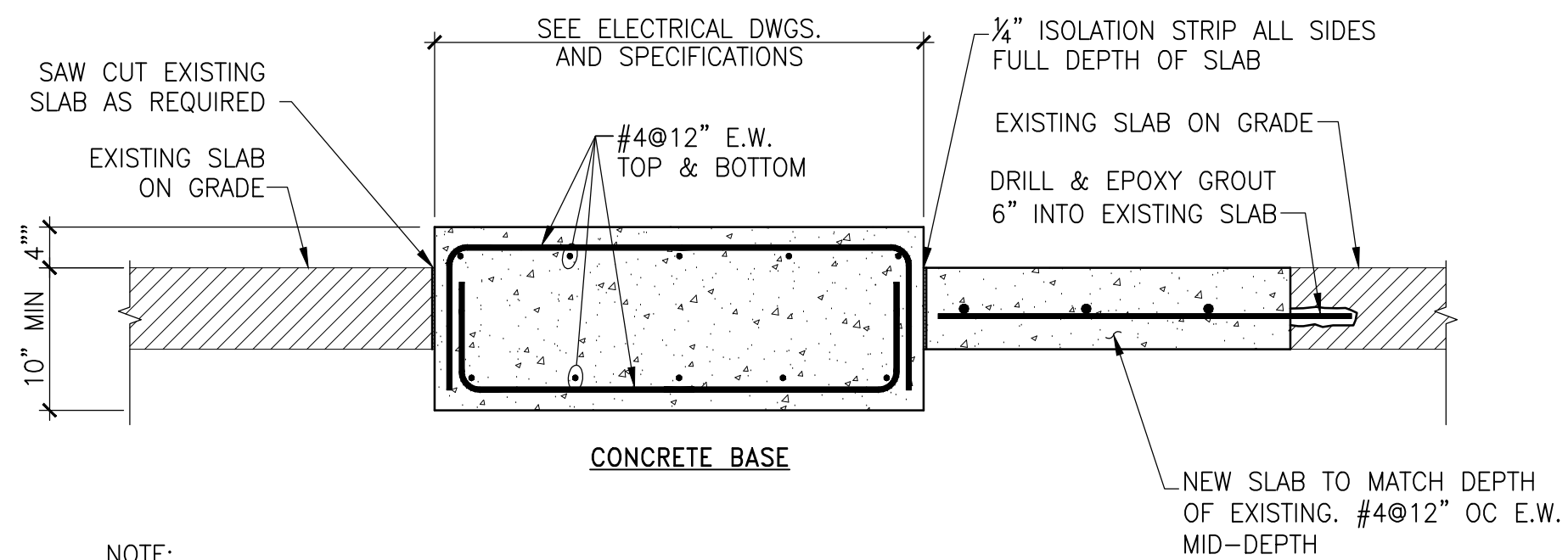


5 BACKFLOW PREVENTER ASSEMBLY DETAIL
SCALE: NOT TO SCALE



FT. ETHAN ALLEN – FLOOR PLAN

1/8" = 1'-0"



NOTE:

1. ADHESIVE GROUTED DOWELS ACCEPTABLE. MATCH REBAR SIZE AND LOCATIONS SHOWN AND EMBED A MINIMUM OF 2 1/2".
2. VERIFY ALL BASE AND PAD LOCATIONS, DIMENSIONS AND ADEQUACY WITH THE ELECTRICAL ENGINEER AND THE INDIVIDUAL EQUIPMENT REQUIREMENTS. ELECTRICAL ENGINEER TO SPECIFY ISOLATION DATA.

1 CONCRETE BASE AND PAD FOR EQUIPMENT AT EXISTING SLAB
NTS.

SPECIFICATIONS

1. THE WORK SHOWN ON THESE DRAWINGS ADDRESSES STRUCTURAL INFORMATION ONLY. THE STRUCTURAL DOCUMENTS INCLUDE THESE S-SERIES DRAWINGS AND GENERAL NOTES. THERE ARE NO TECHNICAL SPECIFICATIONS IN ADDITION TO THESE GENERAL NOTES.

BUILDING CODE

1. THE FOLLOWING BUILDING CODES AND STANDARDS, INCLUDING ALL SPECIFICATIONS REFERENCED WITHIN, SHALL APPLY TO THE DESIGN, CONSTRUCTION, QUALITY CONTROL, AND SAFETY OF ALL WORK PERFORMED ON THE PROJECT.
 - A. "2015 VIRGINIA UNIFORM STATEWIDE BUILDING CODE," VIRGINIA BOARD OF HOUSING AND COMMUNITY DEVELOPMENT.
 - B. "INTERNATIONAL BUILDING CODE – 2015," INTERNATIONAL CODE COUNCIL, INCLUDING LOCAL JURISDICTION AMENDMENTS.
 - C. "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES," (ANSI/ASCE 7 – 10, 2010), AMERICAN SOCIETY OF CIVIL ENGINEERS.
 - D. ADDITIONAL CODES AND STANDARDS FOR DIFFERENT MATERIALS ARE LISTED IN THE SECTIONS THAT FOLLOW.

DESIGN LOADS

1. EQUIPMENT LOADS – SEE CUT SHEETS OF PURCHASED UNITS

GENERAL

1. THESE DRAWINGS REPRESENT THE COMPLETED PROJECT WHICH HAS BEEN DESIGNED FOR THE WEIGHTS OF MATERIALS, FOR THE SUPERIMPOSED LOADS INDICATED IN THE DESIGN LOAD CRITERIA ABOVE, AND FOR LOADS INDICATED ON THE DRAWINGS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALLOWABLE CONSTRUCTION LOADS.
2. DEVELOPING AND IMPLEMENTING JOB SITE SAFETY AND CONSTRUCTION PROCEDURES ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.
3. ALL COSTS OF INVESTIGATION AND REDESIGN DUE TO CONTRACTOR MIS-LOCATION OF STRUCTURAL ELEMENTS OR OTHER LACK OF CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS SHALL BE AT THE CONTRACTOR'S EXPENSE.
4. CONTRACTOR SHALL REFER TO OTHER DISCIPLINES' DRAWINGS INCLUDING, BUT NOT LIMITED TO MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR SIZE AND LOCATION OF GENERATORS AND ATTACHMENT POINTS
5. IN CASE OF CONFLICT BETWEEN THE GENERAL NOTES AND DETAILS, THE MOST STRINGENT SHALL GOVERN.
6. WORK IN SOME AREAS IS NOT EXPLICITLY DETAILED ON THE DRAWINGS BUT IS IMPLIED TO BE SIMILAR TO CORRESPONDING AREAS. WORK IN THESE AREAS SHALL BE THE SAME AS THAT SHOWN AT THE CORRESPONDING LOCATIONS.

SUBMITTALS

1. SHOP DRAWINGS FOR ALL STRUCTURAL ELEMENTS SHOWN ON THE CONTRACT DOCUMENTS ARE REQUIRED TO BE SUBMITTED BY THE CONTRACTOR AND REVIEWED BY THE STRUCTURAL ENGINEER.
2. SHOP DRAWINGS SHALL BE SUBMITTED ELECTRONICALLY IN PORTABLE DOCUMENT FORMAT (PDF). A MARKED-UP PDF COPY OF THE SHOP DRAWINGS WITH THE STRUCTURAL ENGINEER'S COMMENTS WILL BE RETURNED TO THE CONTRACTOR.
3. ALLOW 10 BUSINESS DAYS FOR STRUCTURAL REVIEW OF SHOP DRAWINGS. THIS TIME SHOULD BE ALLOTTED IN THE CONTRACTOR'S SCHEDULE.
4. SHOP DRAWINGS SHALL BEAR THE CONTRACTOR'S STAMP OF APPROVAL WHICH SHALL CONSTITUTE CERTIFICATION THAT THEY HAVE VERIFIED ALL FIELD MEASUREMENTS, CONSTRUCTION CRITERIA, MATERIALS, AND SIMILAR DATA AND HAVE CHECKED EACH DRAWING FOR COMPLETENESS, COORDINATION, AND COMPLIANCE WITH THE CONTRACT DOCUMENTS. SHOP DRAWINGS NOT REVIEWED BY THE CONTRACTOR WILL NOT BE REVIEWED BY SIMPSON GUMPERTZ & HEGER.

CONCRETE WORK

1. CODES AND STANDARDS:
 - A. "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, ACI 318–14," AMERICAN CONCRETE INSTITUTE.
 - B. "ACI MANUAL OF CONCRETE PRACTICE – PARTS 1 THROUGH 5," AMERICAN CONCRETE INSTITUTE.
2. STANDARD SPECIFICATIONS AND REFERENCE STANDARDS:
 - A. "MANUAL OF STANDARD PRACTICE," CONCRETE REINFORCING STEEL INSTITUTE.
 - B. FOLLOW THE LATEST RECOMMENDATIONS AND SPECIFICATIONS OF THE AMERICAN CONCRETE INSTITUTE:
 - 1) ACI 301 SPECIFICATIONS FOR STRUCTURAL CONCRETE
 - 2) ACI 302 CONCRETE FLOOR AND SLAB CONSTRUCTION
 - 3) ACI 304 MEASURING, MIXING, TRANSPORTING, AND PLACING CONCRETE
 - 4) ACI 305 HOT WEATHER CONCRETING
 - 5) ACI 306 COLD WEATHER CONCRETING
 - 6) ACI 315 DETAILING REINFORCING STEEL
 - 7) ACI 318 GENERAL DESIGN OF ITEMS NOT OTHERWISE SPECIFIED
 - 8) ACI 347 FORMWORK

3. CONCRETE MIX PROPERTIES:
 - A. ELEMENT (NORMAL WEIGHT UNO) 28-DAY STRENGTH W/C MAX AIR CONTENT
 - 1) EQUIPMENT PADS 4,500 PSI 0.45 3%+/-1.5
 - B. PORTLAND CEMENT: ASTM C150, TYPE I, II, OR I/II.
 - C. FLY ASH: ASTM C618, TYPE C OR F
 - D. SLAG CEMENT: ASTM C989, GRADE 100
 - 1) LIMIT TO 50% MAXIMUM REPLACEMENT BY WEIGHT OF PORTLAND CEMENT FOR MIXTURES INCLUDING BOTH FLY ASH AND SLAG CEMENT
 - E. NORMAL WEIGHT AGGREGATES: ASTM C33
 - 1) LIMIT REPLACEMENT BY WEIGHT OF PORTLAND CEMENT TO 50% MAXIMUM.
 - F. NORMAL WEIGHT CONCRETE DENSITY: 145 PCF
 - H. AIR-ENTRAIMENT: ASTM C260
4. STEEL REINFORCEMENT:
 - A. DEFORMED REINFORCING BARS: ASTM A615 GRADE 60
5. CONCRETE COVER:
 - A. MILD REINFORCED CONCRETE
 - 1) CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3 IN.
 - 2) CONCRETE EXPOSED TO EARTH OR WEATHER:
 - a. #6 BAR OR LARGER 2 IN.
 - b. #5 BAR OR SMALLER 1 1/2 IN.
 - 3) CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
 - a. SLABS, WALLS, AND JOISTS: #11 BAR OR SMALLER 3/4 IN.
 - b. BEAMS AND COLUMNS (TO TIES, STIRRUPS, OR SPIRALS): 1 1/2 IN.
6. GENERAL REQUIREMENTS:
 - A. EXISTING SURFACE TREATMENT: ROUGHEN ALL EXISTING CONCRETE SURFACES COMMON WITH NEW CONCRETE TO AMPLITUDE OF 1/4 IN.
 - B. FORMWORK, SHORING, AND RESHORING: SHALL BE DESIGNED AND SUBMITTED BY THE CONTRACTOR'S ENGINEER REGISTERED IN THE PROJECT'S JURISDICTION WITH ALL SUBMISSIONS BEARING THE ENGINEER'S SEAL AND SIGNATURE. REFER TO SUBMITTALS SECTION FOR ADDITIONAL REQUIREMENTS.
 - C. INSERTS AND SLEEVES: CONTRACTOR SHALL FURNISH DIMENSIONED SHOP DRAWINGS SHOWING LOCATIONS OF ALL CAST-IN-PLACE SLEEVES AND INSERTS REQUIRED BY ALL TRADES FOR REVIEW BY THE MEP AND STRUCTURAL ENGINEER.
 - D. CORES AND DRILLED FASTENERS:
 - 1) DRILLED OR POWDER DRIVEN FASTENERS WILL BE PERMITTED WHEN PROVEN TO THE SATISFACTION OF THE STRUCTURAL ENGINEER THAT THE FASTENERS WILL NOT SPALL THE CONCRETE OR DAMAGE EXISTING REINFORCEMENT.
 - 2) WHEN INSTALLING POST-INSTALLED FASTENERS, THE CONTRACTOR SHALL TAKE MEASURES TO AVOID DRILLING OR CUTTING OF ANY EXISTING REINFORCING AND DESTRUCTION OF CONCRETE. ALL FASTENERS SHALL BE INSTALLED PER THE RELEVANT ICC-ES ESR REPORT AND THE MANUFACTURER'S SPECIFICATIONS.
 - E. CHAMFER ALL EXPOSED CONCRETE CORNERS, 3/4 IN. X 3/4 IN. MINIMUM.
7. SPLICING AND PLACEMENT OF REINFORCEMENT:
 - A. REINFORCEMENT SPLICES ARE NOT PERMITTED EXCEPT AS DETAILED OR AUTHORIZED BY THE STRUCTURAL ENGINEER. MAKE BARS CONTINUOUS AROUND CORNERS. WHEN PERMITTED, SPLICES SHALL BE MADE BY CONTACT TENSION LAP SPLICE, UNLESS NOTED OTHERWISE.
 - B. REINFORCEMENT WELDING IS NOT PERMITTED UNLESS SPECIFICALLY DETAILED OR APPROVED IN WRITING BY THE STRUCTURAL ENGINEER.
 - C. PROVIDE #4 CHAIR BARS, HIGH CHAIRS, TIES, SLAB BOLSTERS, AND OTHER ACCESSORIES WHERE NOT SPECIFIED ON THE DRAWINGS IN ACCORDANCE WITH MANUAL OF STANDARD PRACTICE OR DETAILING REINFORCING CONCRETE STRUCTURES ACI 315 OR CRSI-WRSI MANUAL OF STANDARD PRACTICE. USE PLASTIC TIPS ON ALL CHAIRS PLACED ON THE CONCRETE FORMWORK.
 - D. PROVIDE PLASTIC TIPPED BOLSTERS AND CHAIRS AT ALL LOCATIONS WHERE THE CONCRETE SURFACE IS EXPOSED.
8. REINFORCEMENT SHOP DRAWINGS:
 - A. SUBMIT FOR APPROVAL, COMPLETE BENDING AND PLACING DETAILS OF ALL REINFORCEMENT, INCLUDING WELDED WIRE REINFORCEMENT, INDICATING POSITION OF SPLICES. INCLUDE ACCESSORY DRAWINGS.
9. HOUSEKEEPING PADS AND CURBS:
 - A. PADS AND CURBS SHOWN ON PLAN ARE FOR REFERENCE ONLY. SEE ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR LOCATIONS AND COORDINATE WITH EQUIPMENT MANUFACTURER'S REQUIREMENTS. USE SAME CONCRETE MIXTURE AS BASE SLAB, UNLESS DETAILED OTHERWISE.
10. INSPECTION AND TESTING:
 - A. THE CONTRACTOR SHALL ENGAGE A QUALIFIED TESTING AGENCY TO PROVIDE SERVICES IN ACCORDANCE WITH THE LATEST EDITIONS OF ACI 311.6 AND ACI 311.7 AND AS INDICATED BELOW AND TO SUBMIT REPORTS.
 - B. CAST-IN-PLACE CONCRETE:
 - 1) THE AGENCY SHALL INSPECT THE FORMWORK, REINFORCING STEEL, CONCRETE PLACEMENT, ETC. FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS, APPLICABLE CODES AND STANDARDS, AND THE SHOP DRAWINGS.
 - 2) SAMPLE AND TEST FRESH CONCRETE FOR EACH MIXTURE PLACED EACH DAY, ONCE AT INITIAL DELIVERY AND REPEATED FOR EACH [50 OR 100] CUBIC YARDS PLACED.
 - 3) CAST, CURE, AND TEST COMPOSITE SAMPLES OF STANDARD CYLINDERS. ONE COMPOSITE SAMPLE SHALL CONSIST OF (2)6"x12" OR (3)4"x8" STANDARD CYLINDERS. NUMBER OF COMPOSITE SAMPLES AT EACH TEST SHALL BE AS FOLLOWS:
 - a. FOOTINGS AND OTHER STRUCTURAL CONCRETE:
 - (1) LAB CURED 1@7 DAYS, 1@28 DAYS
 - b. THE AGENCY WILL MAKE ADDITIONAL TEST OF IN-PLACE CONCRETE AT THE CONTRACTOR'S EXPENSE WHEN THE TEST RESULTS INDICATE SPECIFIED CONCRETE STRENGTHS HAVE NOT BEEN ATTAINED, AS DIRECTED BY THE STRUCTURAL ENGINEER.
 - C. POST-INSTALLED DOWELS:
 - 1) INSPECT INITIAL INSTALLATIONS WITH ADHESIVE AND PERIODICALLY THROUGHOUT PROJECT.
 - 2) MINIMUM INSPECTION SHALL INCLUDE:
 - a. INSTALLER CERTIFICATION WHERE REQUIRED (VERTICAL/OVERHEAD)
 - b. HOLE DRILLING METHOD AND LOCATION, DIAMETER AND DEPTH OF HOLE
 - c. HOLE CLEANING
 - d. ADHESIVE IDENTIFICATION AND EXPIRATION
 - e. ADHESIVE AND ANCHOR INSTALLATION



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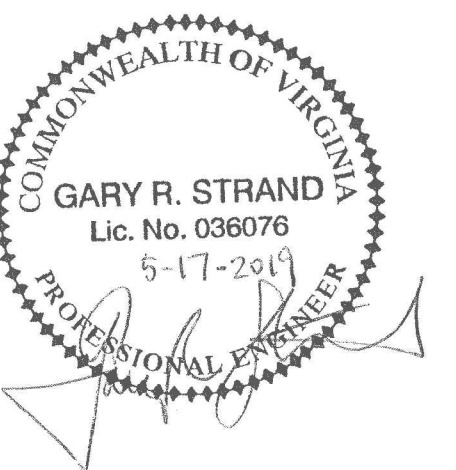
PROJECT:

NEW GENERATOR AND TEMPORARY GENERATOR CONNECTION FOR PUMPING STATIONS

ETHAN ALLEN

REVISIONS:

REGISTRATION:



DRAWN BY: DS

DATE: 05-17-2019

PROJECT NO.: 181519

NORTH ARROW: MISC INFO:

DRAWING TITLE:

FT. ETHAN ALLEN PUMPING STATION EQUIPMENT PADS

DRAWING NUMBER

S120EA