

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

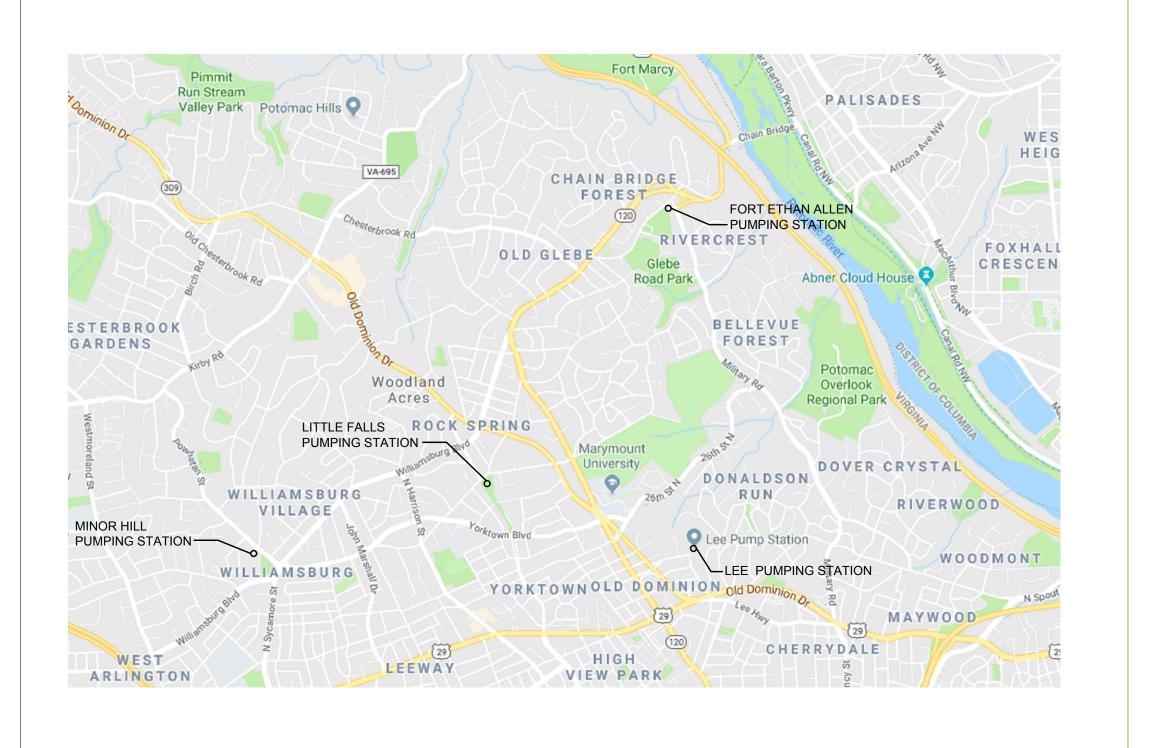
FINAL CONSTRUCTION DOCUMENTS MAY 17, 2019

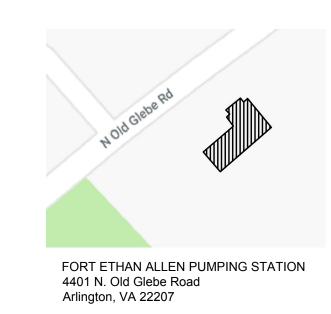


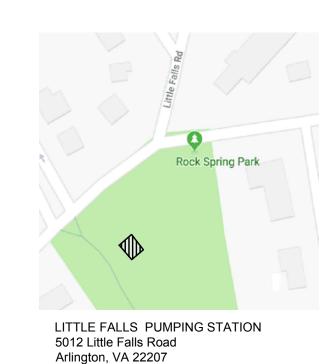
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**KEY PLAN VICINITY MAP** DRAWING INDEX









DRAWING TITLE

E120EA

**COVER SHEET** 

ELECTRICAL COVER SHEET

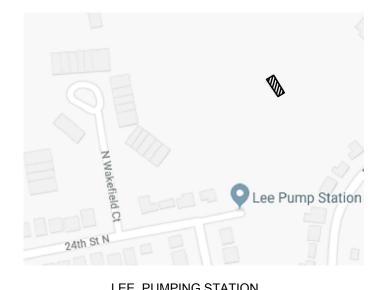
MECHANCIAL COVER SHEET

FLOOR PLAN AND SINGLE LINE DIAGRAM - EXISTING/DEMOLITION (ETHAN ALLEN)

FLOOR PLAN AND SINGLE LINE DIAGRAM - EXISTING/NEW (ETHAN ALLEN)

MECHANCIAL PLANS & SCHEMATICS (ETHAN ALLEN)

FT ETHAN ALLEN PUMPING STATION EQUIPMENT PADS



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

REGISTRATION:



DRAWN BY: CS 05-17-2019 PROJECT NO.: F18-14



**DRAWING TITLE:** 

**COVER SHEET** 

DRAWING NUMBER

G001

## **ELECTRICAL NOTES**

#### **GENERAL NOTES**

- 1. ALL WORK SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER.
- 2. 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.
- 3. ALL CERTIFICATES OF APPROVAL SHALL BE IN TRIPLICATE, DELIVERED TO THE ENGINEER, AND BECOME THE PROPERTY OF THE OWNER.
- 4. CONTRACTOR SHALL VERIFY ALL EQUIPMENT REQUIREMENTS BEFORE INSTALLING CONDUIT OR CONDUCTORS FROM POWER SOURCE TO EQUIPMENT TERMINATION.
- 5. 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.
- 6. 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
- 8. CONTRACTOR SHALL COORDINATE MOUNTING LOCATIONS OF ALL NEW ELECTRICAL

ALL ASPECTS OF THE DESIGN AFFECTING THE ELECTRICAL WORK.

DEVICES AND EQUIPMENT PRIOR TO COMMENCEMENT OF WORK.

- 9. 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.
- 10. ALL WORK SHALL BE SUBJECT TO THE APPROVAL OF THE OWNER OR OWNER'S AUTHORIZED REPRESENTATIVE.
- 11. 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.
- 12. 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.
- 13. 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.
- 14. 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.
- 15. 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.
- 16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR, AND SHALL INCUR FINANCIAL RESPONSIBILITY FOR ANY DAMAGES CAUSED BY, OR RESULTING FROM, DEFECTS IN HIS WORK
- 17. 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**

- D1. ALL EXISTING INSTALLATIONS WHICH ARE TO BE REMOVED, ABANDONED, RELOCATED, AND/OR CAPPED SHALL BE ABANDONED IN PLACE WITHOUT WRITTEN AUTHORIZATION FROM THE COUNTY.
- D2. IN ALL AREAS WHERE DEMOLITION WORK OCCUR, PATCH AND REPAIR TO MATCH NEW FINISH OR EXISTING FINISHES WHICH ARE TO REMAIN.
- D3. ALL DEMOLITION WORK SHALL BE COORDINATED WITH ARLINGTON COUNTY AND OTHER SECTIONS OF THE CONTRACT DOCUMENTS.
- D4. 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.
- D5. THE CONTRACTOR SHALL PROVIDE A PROPOSED SCHEDULE OF DEMOLITION WORK FOR REVIEW BY THE COUNTY.
- D6. 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.
- D7. 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
- O CEILING MOUNTED JUNCTION BOX.
- J→ 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 DISCONENCT.
- M = MOTOR, G = GENERATOR
- 208/120V SURFACE MOUNTED PANEL.
- 480/277V SURFACE MOUNTED PANEL.
- ENCLOSED CIRCUIT BREAKER.
- PB PULL BOX.
- BRANCH CIRCUIT HOMERUN, 2#12 + 1#12G, 3/4" C.
- ———— CONDUIT TURNING UP
- CONDUIT TURNING DOWN
- TRANSFORMER
- OR T
- AUTOMATIC TRANSFER SWITCH
- MOLDED CASE CIRCUIT BREAKER

## **ELECTRICAL LEGEND**

### GENERAL



INDICATES REVISION. CLOUDED AREA CONTAINS THE REVISION.

INDICATES ROOM NUMBER.

INDICATES PLAN NOTE.

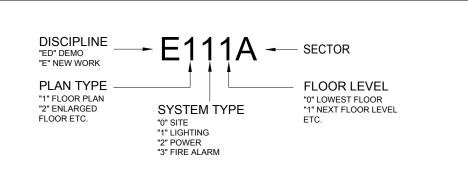
#### **ABBREVIATIONS**

A, AMP AMPERES G, GND GROUND ABOVE GENERAL CONTRACTOR ALTERNATE CURRENT GROUND FAULT INRERRUPTER ABOVE FINISHED FLOOR ISOLATED GROUND ARCH ARCHITECTURAL, ARCHITECT INCAND INCANDESCENT KAIC KILOAMP INTERRUPTING CURRENT BKR BREAKER KVA KILOVOLT AMPERES CONDUIT KW KILOWATTS CEILING LT(S) LIGHT(S) CIRCUIT METER CENTIMETER MECHANICAL DIRECT CURRENT MOUNTING HEIGHT DISCONNECT SWITCH MAIN LUGS ONLY DISCONNECT SWITCH MM MILLIMETER DRAWING MTD MOUNTED ELECTRICAL CONTRACTOR NEC NATIONAL ELECTRICAL CODE EXHAUST FAN NO.,# NUMBER ELEC NOT TO SCALE ELECTRICAL NTS POLE **EMERGENCY EQUIP** EQUIPMENT PH, Ø PHASE EXIST EXISTING PNL PANEL FIRE ALARM RECEP RECEPTACLE FIRE ALARM CONTROL PANEL RM ROOM FIRE ALARM ANNUNCIATOR PANEL TELE TELEPHONE FIXTURE TYP TYPICAL

## SHEET NAMING LEGEND

FULL LOAD AMPERES

FLUOR FLUORESCENT



UON

UNLESS OTHERWISE NOTED

VOLTS

WATTS

WEATHERPROOF

WITH



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NEW GENERATOR AND TEMPORARY GENERATOR CONNECTION FOR PUMPING STATIONS ETHAN ALLEN

REVISIONS:

-

FARSHAD MAJIDIAN No. 0402 029158

DRAWN BY: CS

DATE: 05-17-2019

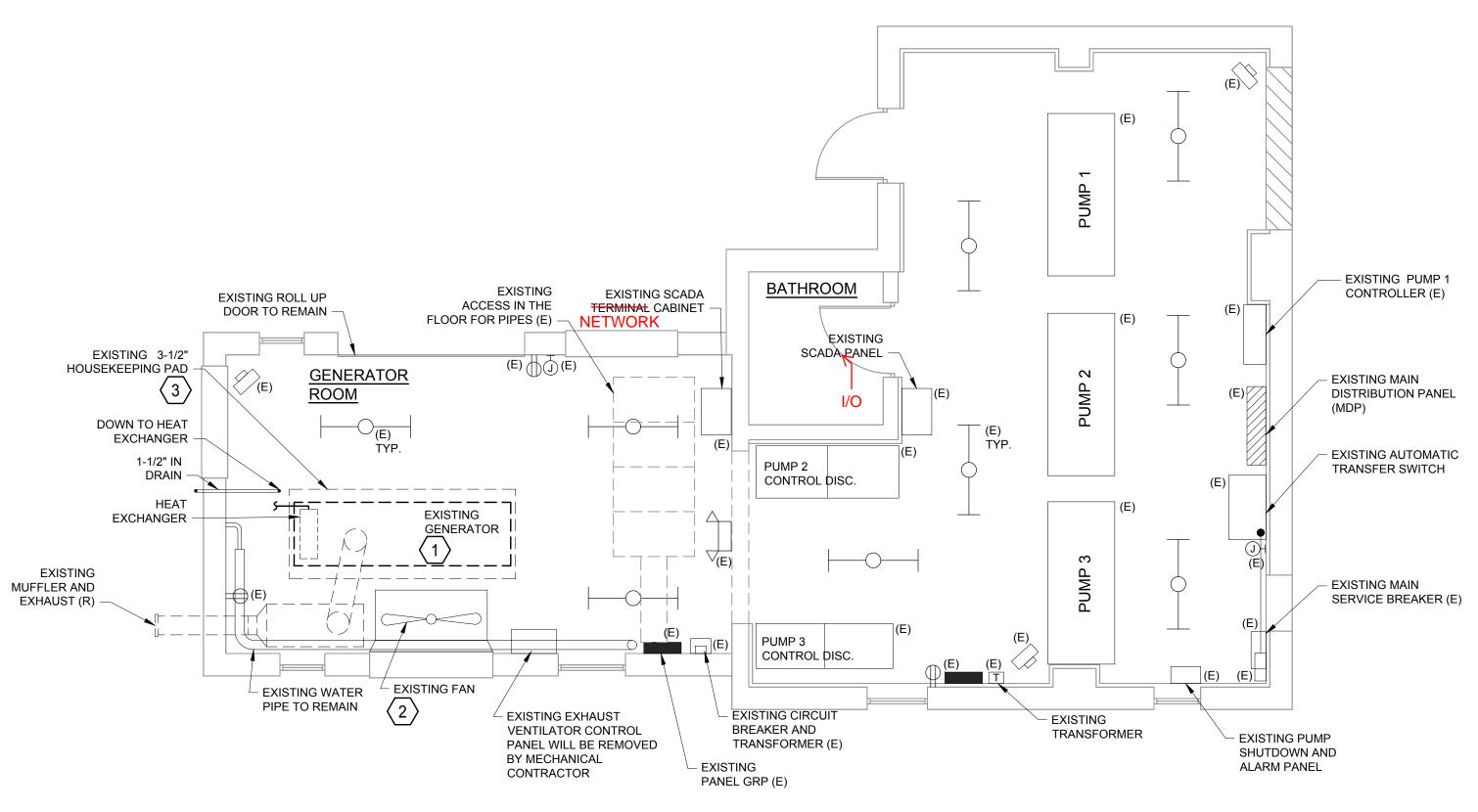
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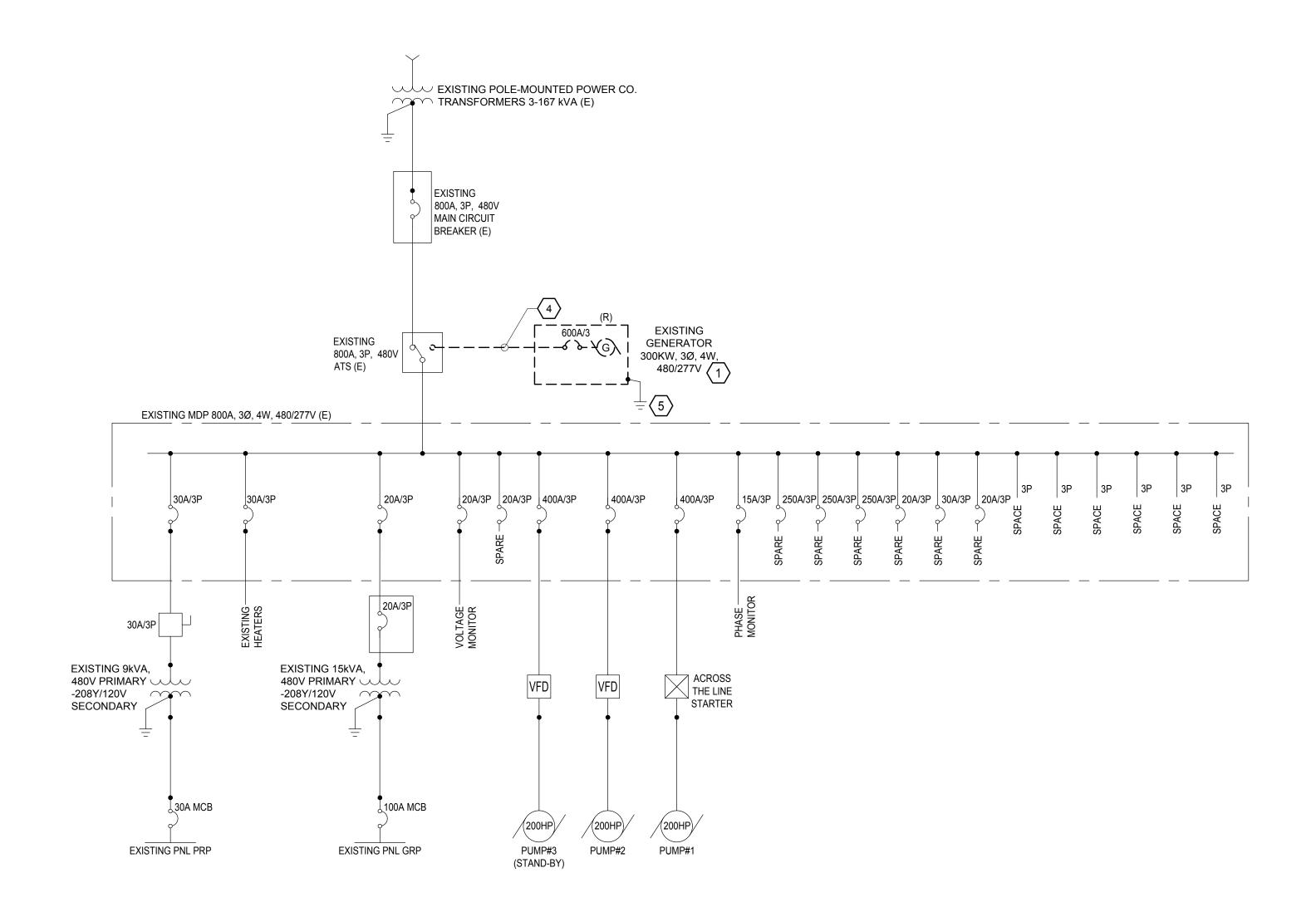
ELECTRICAL COVER SHEET

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.
- 2. UNLESS OTHERWISE INDICATED ALL EXISTING DEVICES, EQUIPMENT, PUMPS, PUMP CONTROLLERS, LIGHT FIXTURES, RECEPTACLES AND LIGHTING TO REMAIN.
- 3. CONTRACTOR SHALL BE CAREFUL NOT TO DAMAGE THE EXISTING RATED CEILING TILES OR WALL PANELS DURING DEMOLITION AND/OR NEW WORK.
- 4. 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**

- 1. DISCONNECT AND REMOVE EXISTING EMERGENCY GENERATOR. REFER TO E120EA FOR EXTEND OF NEW WORK. REFER TO MD120EA FOR EXTEND OF MECHANICAL DEMOLITION WORK.
- 2. 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.
- 3. REFER TO S120EA FOR EXTEND OF NEW WORK.
- 4. 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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DRAWN BY: CS

DATE: 05-17-2019

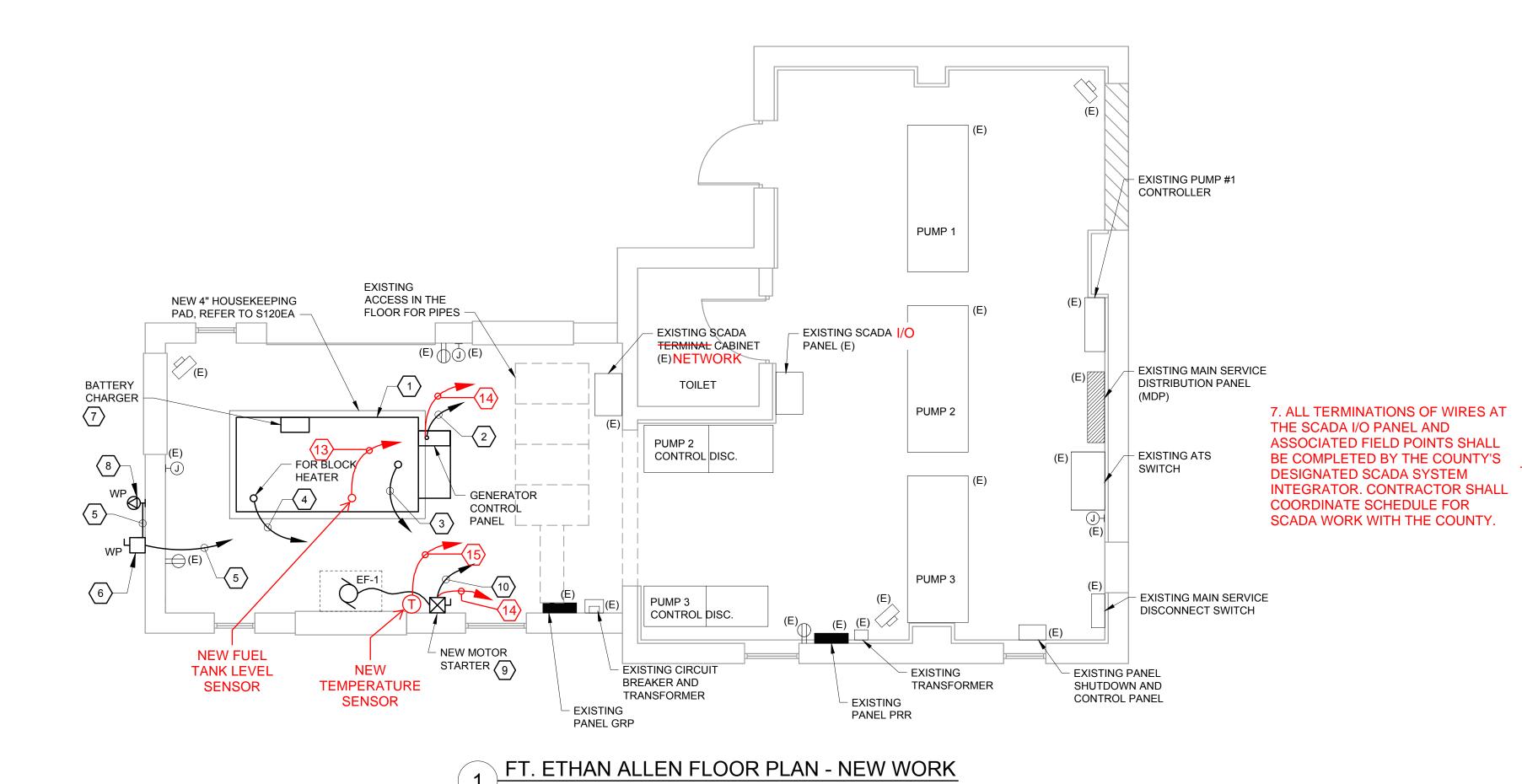
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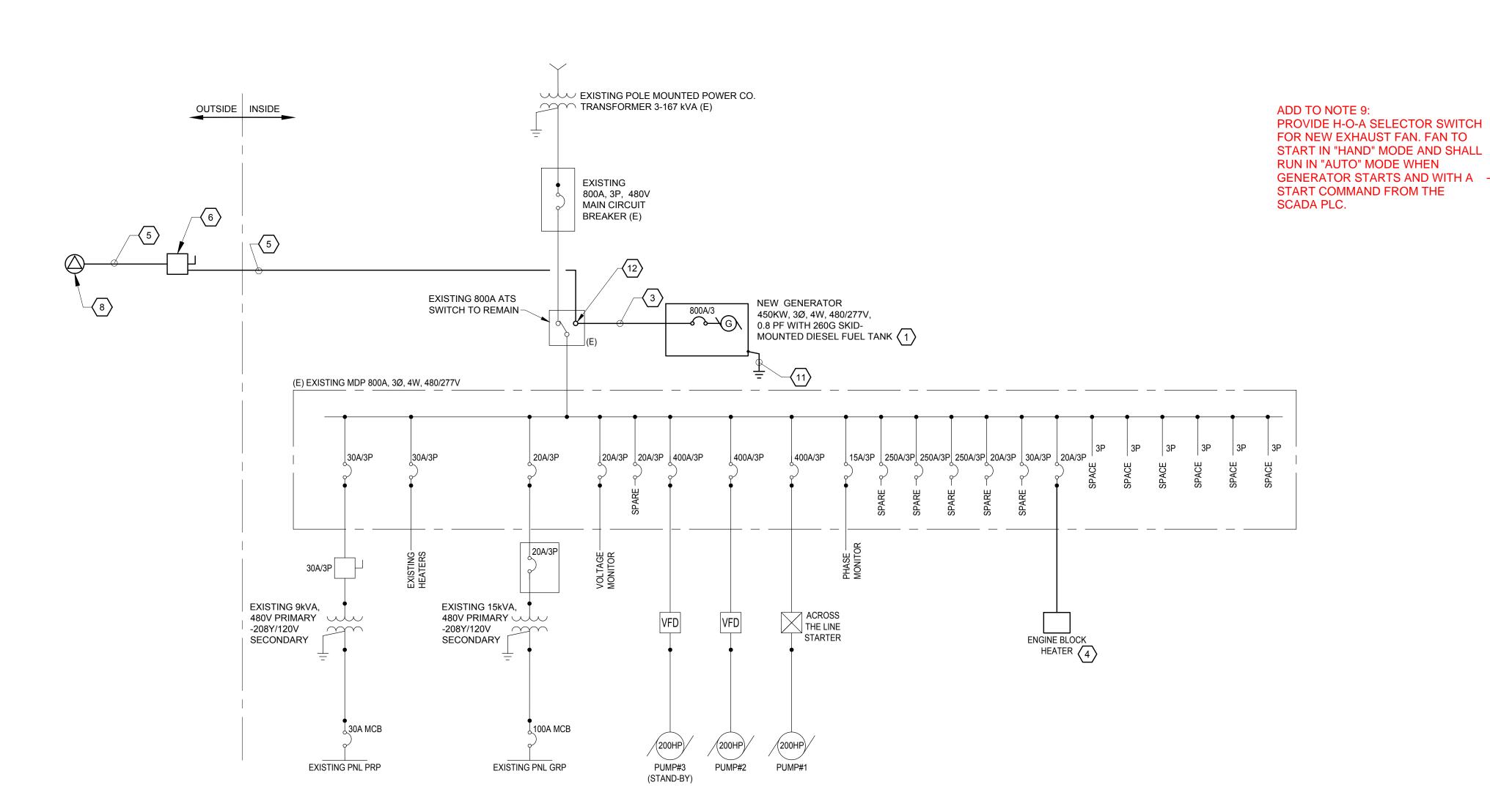
PROJECT NO.: F18

FLOOR PLAN &
SINGLE LINE
DIAGRAM - EXIST./

DEMOLITION
DRAWING NUMBER

ED120EA





#### **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.
- 3. 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.
- 4. CONTRACTOR SHALL BE CAREFUL NOT TO DAMAGE THE EXISTING RATED CEILING TILES OR WALL PANELS DURING DEMOLITION AND/OR NEW WORK.
- 5. REFER TO M120EA FOR EXTEND OF MECHANICAL NEW WORK.
- 6. 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.
- 2. UTILIZE EXISTING CONDUIT AND INSTALL NEW #14 CONTROL WIRING (GENERATOR START) FROM THE NEW GENERATOR TO EXISTING ATS SWITCH. EXTEND CONDUIT IF NEEDED.
- 3. INSTALL THREE SETS OF 4-350KCMIL + 1 #1/0G 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.
- 3/4" C TO AN EXISTING 20A, 3P SPARE CIRCUIT BREAKER IN MDP. COORDINATE POWER REQUIREMENTS WITH EQUIPMENT MANUFACTURER.
- 5. INSTALL ONE SET OF 4-500KCMIL + 1 #3 G IN 4" C AS SHOWN. USE RGS CONDUIT OUTSIDE.

ENGINE BLOCK HEATER CIRCUIT. PROVIDE 3#12 + 1#12 G,

- 6. PROVIDE A 400A, 3P, 480V DISCONNECT SWITCH IN A LOCKABLE NEMA 4X STAINLESS STEEL ENCLOSURE.
- 7. 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.
- 8. 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 APPLETON.
- 9. 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.
- 10. 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.
- 11. 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).
- 12. 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. LEAVER AT LEAST 6' WIRE AT BOTH ENDS FOR TERMINATION BY OTHERS.



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REGISTRATION:



DRAWN BY:	CS
DATE:	05-17-2019
PROJECT NO.:	F18-14

DRAWING TITLE:
FLOOR PLAN &
SINGLE LINE

DIAGRAM -EXISTING/NEW

DRAWING NUMBER

E120EA

#### MECHANICAL GENERAL NOTES

- THE INTENT OF THESE DRAWINGS IS TO PROVIDE COMPLETE AND PROPERLY FUNCTIONING HVAC SYSTEMS. PROVIDE ALL LABOR AND MATERIAL NECESSARY TO ACHIEVE SUCH ENDS. CONTRACTOR IS OBLIGATED TO EXAMINE PLANS. ANY OBSERVED FAULTS OR AMBIGUITY IN THESE PLANS SHALL BE CALLED TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE IMMEDIATELY, SO THAT THE MATTER MAY BE RESOLVED PRIOR TO SUBMISSION OF BIDS. BY SUBMISSION OF BID, THE CONTRACTOR SHALL ACKNOWLEDGE ACCEPTANCE OF THESE PLANS AS AN ADEQUATE DEFINITION OF THE SCOPE OF WORK AND EXTRA COST CLAIMS BASED ON INADEQUACY OF PLANS WILL NOT BE CONSIDERED.
- THE ELECTRICAL CONTRACTOR IS REQUIRED TO PROVIDE POWER FOR ALL MECHANICAL EQUIPMENT. DURING BID PERIOD AND AGAIN PRIOR TO EQUIPMENT ORDERING, THE (GENERAL CONTRACTOR AND THE) MECHANICAL CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL CONTRACTOR TO VERIFY THAT ALL EQUIPMENT ARE POWERED, AND PROPER VOLTAGE/WIRING/CAPACITY IS PROVIDED. IN THE EVENT OF REQUIREMENTS AMBIGUITY OR CONFLICT BETWEEN TRADES, THE CONTRACTOR IS REQUIRED TO GENERATE AN RFI ADDRESSING THE ISSUE AND REQUESTING CLARIFICATION. FAILURE TO DO SO WILL NEGATE HIS RIGHT FOR A CHANGE ORDER OR REQUEST FOR ADDITIONAL FUNDS DURING CONSTRUCTION RELATING TO THIS
- ALL WORK ON THIS PROJECT SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST APPLICABLE CODES AND REGULATIONS.
- THESE DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO DEPICT THE GENERAL LOCATION OF HVAC SYSTEM COMPONENTS. CONSULT THE ELECTRICAL PLANS FOR PROPER DIMENSIONS AND LOCATION OF EQUIPMENT.
- THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF HVAC WORK WITH EXISTING CONDITIONS AND THE WORK OF OTHER TRADES. MINOR DEVIATIONS FROM THE PLANS MAY BE MADE TO AVOID MINOR CONFLICTS. WHEN MAJOR CONFLICTS ARE APPARENT, THE ENGINEER SHALL BE ADVISED IMMEDIATELY, AND AFFECTED WORK SHALL NOT BE INSTALLED UNTIL THE CONFLICT HAS BEEN RESOLVED.
- THE CONTRACTOR SHALL OBTAIN AND PAY FOR PERMITS AND ARRANGE FOR INSPECTIONS BY LOCAL AUTHORITIES HAVING JURISDICTION.
- PROVIDE OPENINGS IN BUILDING CONSTRUCTION FOR PASSAGE OF DUCTWORK. DO NOT PENETRATE STRUCTURAL MEMBERS WITHOUT PRIOR APPROVAL OF STRUCTURAL ENGINEER. VERIFY SLAB PENETRATION LOCATIONS PRIOR TO PROCEEDING WITH WORK IN ORDER TO LOCATE OBSTRUCTIONS EMBEDDED IN SLAB. SUBMIT DRAWING OF ALL SLAB PENETRATIONS FOR LANDLORD/ARCHITECT/ENGINEER APPROVAL PRIOR TO PROCEEDING WITH WORK.
- ALL NECESSARY ALLOWANCES AND PROVISIONS SHALL BE MADE BY THIS CONTRACTOR FOR BEAMS, COLUMNS OR OTHER OBSTRUCTIONS OF THE BUILDING OR THE WORK OF OTHER CONTRACTORS, WHETHER OR NOT SAME IS INDICATED. WHERE NECESSARY TO AVOID OBSTRUCTIONS THE DUCTS SHALL BE TRANSFORMED, DIVIDED, OFFSET, RAISED OR LOWERED WITH THE REQUIRED FREE AREA BEING MAINTAINED.
- INSTALL ALL EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- CONTROLS: THE CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY WIRING, CONTROLS, HARDWARE, FITTINGS, PARTS AND ACCESSORIES INCLUDING ALL SAFETY DEVICES REQUIRED FOR PROPER INSTALLATION AND OPERATION OF SYSTEM IN ACCORDANCE WITH ALL LOCAL CODE REQUIREMENTS. THE CONTROLS CONTRACTOR SHALL PROVIDE ELECTRICAL POWER TO ALL CONTROL DEVICES AND EQUIPMENT FROM THE NEAREST POWER SOURCE INDICATED FOR CONTROLS POWER AND IDENTIFIED ON ELECTRICAL DRAWINGS. THE CONTRACTOR SHALL VERIFY ALL VOLTAGE AND POWER REQUIREMENTS AND COORDINATE WITH ALL TRADES AS REQUIRED. FOR DDC APPLICATION THESE DEVICES SHALL BE DDC READY. PROVIDE 24VOLT TRANSFORMER, SWITCHES AND WIRING FOR A COMPLETE INSTALLATION THAT MEETS THE DESIGN INTENT OF THE SYSTEM OPERATION.
- PROVIDE MOTOR STARTERS, ELECTRICAL DISCONNECTS, CONTROL WIRING AND ALL OTHER REQUIRED ACCESSORIES NECESSARY FOR AUTOMATIC OPERATION OF MECHANICAL EQUIPMENT.
- MECHANICAL CONTRACTOR SHALL THOROUGHLY CLEAN HIS WORK AREA DAILY. MECHANICAL CONTRACTOR SHALL ALSO REMOVE ALL TRASH AFTER WORK COMPLETION.
- 13. WHERE EXISTING FIELD CONDITIONS ARE DIFFERENT THAN SHOWN, THE CONTRACTOR SHALL ADVISE THE ENGINEER OF DISCREPANCIES WHICH WILL AFFECT THE PROPOSED WORK PRIOR TO
- PRIOR TO INSTALLATION OF NEW WORK, CONTRACTOR SHALL VERIFY THAT ALL DUCTWORK, EQUIPMENT, PIPING, ETC., SHALL BE FREE FROM INTERFERENCE WITH EXISTING CONDITIONS. WHERE CONFLICTS OCCUR. CONTRACTOR SHALL IMMEDIATELY CONTACT THE OWNER, WHERE THE WORK OF VARIOUS TRADES WILL BE INSTALLED IN CLOSE PROXIMITY TO ONE ANOTHER, OR WHERE THERE IS EVIDENCE THAT THE WORK OF ONE TRADE WILL INTERFERE WITH WORK OF OTHER TRADES, THE CONTRACTOR SHALL ASSIST IN WORKING OUT SPACE CONDITIONS TO MAKE A SATISFACTORY ADJUSTMENT. IF THE CONTRACTOR ALLOWS ONE TRADE TO INSTALL HIS WORK BEFORE COORDINATING WITH WORK OF OTHER TRADES, THE CONTRACTOR SHALL MAKE NECESSARY CHANGES TO CORRECT THE CONDITION WITHOUT EXTRA CHARGE.
- THE CONTRACTOR SHALL LOCATE ALL EQUIPMENT WHICH MUST BE SERVICED, OPERATED, MAINTAINED IN FULLY ACCESSIBLE POSITION. EQUIPMENT SHALL INCLUDE, BUT NOT BE LIMITED TO, VALVES, TRAPS, CLEANOUTS, CONTROLLERS, DRAIN POINTS, ETC. IF REQUIRED FOR ACCESSIBILITY, FURNISH ACCESS DOORS FOR THIS PURPOSE. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ALLOW FOR BETTER ACCESSIBILITY.
- ALL EQUIPMENT WHICH REQUIRES INTERFACE WITH THE ELECTRICAL TRADE, SUCH AS MOTORS, DISCONNECTING SWITCHES, CONTROLLING DEVICES, ETC., SHALL BE FULLY COORDINATED BETWEEN ALL TRADES.
- AS USED IN DRAWINGS AND SPECIFICATIONS FOR MECHANICAL WORK, CERTAIN NON-TECHNICAL WORDS SHALL BE UNDERSTOOD TO HAVE SPECIFIC MEANINGS AS FOLLOWS REGARDLESS OF INDICATIONS TO THE CONTRARY IN THE GENERAL CONDITION OR OTHER DOCUMENTS GOVERNING THE MECHANICAL WORK.

"FURNISH" - PURCHASE AND DELIVER TO THE PROJECT SITE COMPLETE WITH EVERY NECESSARY APPURTENANCE AND SUPPORT, ALL AS PART OF THE MECHANICAL WORK. PURCHASING SHALL INCLUDE PAYMENT OF ALL SALES TAXES AND OTHER SURCHARGES AS MAY BE REQUIRED TO ASSURE THAT PURCHASED ITEMS ARE FREE OF ALL LIENS, CLAIMS OR ENCUMBRANCES.

"INSTALL" - UNLOAD AT THE DELIVERY POINT AT THE SITE AND PERFORM EVERY OPERATION NECESSARY TO ESTABLISH SECURE MOUNTING AND CORRECT OPERATION AT THE PROPER LOCATION IN THE PROJECT, ALL AS PART OF THE MECHANICAL WORK.

"PROVIDE" - "FURNISH" AND "INSTALL".

"NEW" - MANUFACTURED WITHIN THE PAST TWO YEARS AND NEVER BEFORE USED.

ALL MATERIAL, EQUIPMENT AND ACCESSORIES, FURNISHED AND INSTALLED SHALL BE NEW AND EQUAL TO OR SURPASS THE QUALITY OF SIMILAR MATERIALS AS SCHEDULES. ALL MATERIALS, EQUIPMENT AND METHODS SHALL BE AS SPECIFIED IN THE BASE BUILDING CONTRACT DOCUMENTS UNLESS NOTED OTHERWISE.

#### **DEMOLITION**

- ANY DISCOVERED DISCREPANCY BETWEEN THE CONTRACT DOCUMENTS AND ACTUAL SITE CONDITIONS MAY BE BROUGHT TO THE ENGINEER'S ATTENTION PRIOR TO BID FOR CLARIFICATION. AFTER A CONTRACT IS EXECUTED CONTRACTOR SHALL SUBMIT A REQUEST FOR INFORMATION.
- THE REQUIRED DEMOLITION SHALL NOT BE LIMITED TO THAT PORTION SHOWN ON THE PLANS ALONE, BUT SHALL INCLUDE ALL NECESSARY WORK COINCIDENTAL THERETO AND/OR WORK INDICATED ELSEWHERE ON THE DRAWINGS OR IN THE SPECIFICATIONS.
- CONTRACTOR SHALL NOT VIOLATE THE PHYSICAL SECURITY OF THE BUILDING DURING DEMOLITION OR ASSOCIATED OPERATIONS. SECURITY SHALL BE CLOSELY COORDINATED WITH THE OWNER'S REPRESENTATIVE.
- CONTRACTOR SHALL SCHEDULE ALL WORK, INCLUDING INTERRUPTION OF EXISTING UTILITIES, WITH THE OWNER, PRIOR TO STARTING WORK.
- DO NOT ALTER THE EXISTING SYSTEMS WHICH ARE LOCATED IN AREAS NOT IN SCOPE OF WORK UNLESS SPECIFICALLY INDICATED. PROTECT EXISTING SYSTEMS WITHIN THE LIMITS OF WORK WHICH ARE TO BE RETAINED. ANY DAMAGE TO THE EXISTING SYSTEMS DUE TO CONTRACTOR NEGLIGENCE SHALL BE REPAIRED AND/OR REPLACED TO ITS ORIGINAL CONDITION TO THE COMPLETE SATISFACTION OF THE OWNER, AND AT NO COST TO THE OWNER.
- UNLESS OTHERWISE NOTED, ALL FIXTURES/EQUIPMENT INDICATED TO BE REMOVED SHALL ALSO HAVE ALL ASSOCIATED PIPING REMOVED BACK TO THE NEAREST HORIZONTAL MAIN, RISER, OR STACK CONNECTION AND CAPPED IN A CONCEALED LOCATION.
- UNLESS OTHERWISE INDICATED, EXISTING PIPING TO REMAIN FOLLOWING REMOVAL OF ADJACENT PORTIONS OF PIPING SHALL BE CAPPED/PLUGGED IN A CONCEALED LOCATION OR MADE READY FOR EXTENSION UNDER NEW WORK. FOR AREAS WITHOUT AN EXISTING CEILING IN WHICH A NEW CEILING WILL NOT BE INSTALLED, THE PIPING SHALL BE CAPPED/PLUGGED IN A LOCATION TO PROVIDE THE MAXIMUM POSSIBLE HEADROOM. UNDER NO CIRCUMSTANCE MAY AN EXISTING PIPE BE LEFT OPEN.
- UNLESS OTHERWISE INDICATED, ALL FIXTURES, EQUIPMENT, PIPING, AND ACCESSORIES WHICH HAVE TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE PROJECT SITE AS SOON AS POSSIBLE.
- COPPER AND STEEL PIPING SHALL BE CAPPED USING COMMERCIALLY MANUFACTURED "CAPS". CAST IRON SOIL PIPE SHALL BE PLUGGED USING COMMERCIALLY MANUFACTURED "BLIND PLUGS". CAP/PLUG INSTALLATION SHALL BE IN ACCORDANCE WITH NEW WORK INSTALLATION PROCEDURES. CRIMPING OF TUBING IS NOT ACCEPTABLE.
- ALL EXISTING TO REMAIN PIPING SHALL BE COORDINATED WITH THE MECHANICAL DUCTWORK, AND IF REQUIRED PIPING SHALL BE REMOVED AND RELOCATED TO BETTER LOCATION.

#### **GENERATOR EXHAUST SYSTEM**

- INSTALLATION SHALL FOLLOW MANUFACTURER'S RECOMMENDATIONS.
- EXHAUST PIPE SHALL BE SIZED TO KEEP BACK PRESSURE WITHIN THE ENGINE'S LIMITS. ALL PIPE SHALL BE INSTALLED WITH A MINIMUM CLEARANCE OF 9 INCHES FROM COMBUSTIBLE MATERIALS.
- MUFFLER AND EXHAUST FLEX CONNECTOR SHALL BE SUPPLIED BY DIV 26, AND INSTALLED BY DIV 23. COORDINATE GENERATOR EXHAUST SYSTEM INSTALLATION WITH ELECTRICAL CONTRACTOR AND GENERATOR MANUFACTURER.
- EXHAUST PIPE SHALL NOT BE SUPPORTED DIRECTLY BY THE ENGINE BLOCK OR ENGINE COMPONENTS. ALLOWANCES SHALL BE MADE FOR SYSTEM MOVEMENT AND VIBRATION ISOLATION BY USING SUITABLE FLEXIBLE COMPONENTS SUCH AS RUBBER DAMPERS OR SPRINGS.
- INSTALL METAL THIMBLE GUARDS FOR EXHAUST PIPE PASSING THROUGH WOODEN WALLS OR ROOFS. CUT EXHAUST PIPE OUTLETS AT 30 TO 45 DEG ANGLES, TO REDUCE EXHAUST GAS TURBULENCE AND NOISE.
- 6. PROVIDE INSULATION WITH ALUMINUM SHEATH SURROUNDING THE PIPE AND MUFFLER.

	SYMBO		
EXISTING/	NEW WORK	PIPE FITTING	GS/CONNECTIONS
	EXISTING TO REMAIN	——————————————————————————————————————	FLANGE CONNECTION
<i></i>	EXISTING TO BE REMOVED		FLEXIBLE CONNECTOR
<u> </u>	EXISTING TO BE REMOVED	<del></del>	PIPE CONNECTION - BOTTOM
•	LIMIT OF DEMOLITION		PIPE CONNECTION - TOP
	NEW WORK	G	PIPE DOWN PIPE END CAP
$oldsymbol{\Theta}$	POINT OF CONNECTION NEW TO EXISTING		PIPE END CAP  PIPE REDUCER - CONCENTRIC
EQUI	PMENT	N	PIPE REDUCER - ECCENTRIC
	PUMP	0	PIPE UP
		——————————————————————————————————————	UNION CONNECTION
	RETURN/EXHAUST GRILLE	PIPIN	NG VALVES
$\square$	SUPPLY DIFFUSER	——	BALL VALVE
	VAV TERMINALLINIT, COOLING ONLY	——————————————————————————————————————	BUTTERFLY VALVE
	VAV TERMINAL UNIT - COOLING ONLY	—— <u>¬</u>	CHECK VALVE
	FPT TERMINAL UNIT WITH REHEAT	——————————————————————————————————————	GLOBE VALVE SHUT-OFF VALVE
	VAV TERMINAL UNIT WITH REHEAT COIL		PRESSURE REDUCING VALVE
GENERAL	DUCTWORK		DELIFE VALVE
Ø	DIAMETER OF ROUND DUCT	<u> </u>	RELIEF VALVE
	RECTANGULAR DUCT BREAK (DOUBLE LINE)		SOLENOID VALVE
	DUCT BREAK (SINGLE LINE)	<u> </u>	VALVE IN RISER
	RECTANGULAR EXHAUST DOWN	<del></del>	Y STRAINER
		—   <sub>Mp</sub>	Y STRAINER (WITH VALVE)
	RECTANGULAR EXHAUST UP	\$	2-WAY AUTOMATIC CONTROL VALVI
	RECTANGULAR RETURN DOWN	<u> </u>	3-WAY AUTOMATIC CONTROL VALVI
	RECTANGULAR RETURN UP	PIPING INS	STRUMENTATION
[><[	RECTANGULAR SUPPLY DOWN		PRESSURE GAUGE WITH GAUGE COCK
	RECTANGULAR SUPPLY UP	Д	THERMOMETER
	ROUND DUCT BREAK (DOUBLE LINE)	CC	ONTROLS
$\hookrightarrow$ $\bigcirc$	ROUND EXHAUST/RETURN/SUPPLY DOWN		THERMOSTAT (MOUNT 48" AFF)
50 S	ROUND EXHAUST/RETURN/SUPPLY UP	<del>_</del>	FERENCE
<u> </u>	ACCESSORIES		
BDD —	BACKDRAFT DAMPER		DETAIL
<u>'</u>	FIRE DAMPER	$\bigoplus$	SECTION
FD▼			
FSD	FIRE/SMOKE DAMPER		
<u>M</u>	MOTORIZED DAMPER		
SD	SMOKE DAMPER		
	VOLUME DAMPER		
∪→ GENER	AL PIPING		
<u> </u>	AUTOMATIC AIR VENT		
<del></del>	DIRECTION OF PIPE PITCH		
	FLOOR DRAIN		
	FLOW DIRECTION		
<u></u>	MANUAL AIR VENT		
5	PIPE CONTINUES		
CD	CONDENSATE DRAIN		
D HWR	DRAIN HOT WATER RETURN		

A 4 D 0	ABBREV	1	
AABC	ASSOCIATED AIR BALANCE COUNCIL	LB/HR LRA	POUNDS PER HOUR LOCKED ROTOR AMP
AAV ABV	AUTOMATIC AIR VENT ABOVE	LWT	LEAVING WATER TEMPERATURE
AC ACT	AIR CONDITIONING UNIT ACOUSTICAL CEILING TILE	M MA	MOTORIZED DAMPER MIXED AIR
AD	ACCESS DOOR	MAT	MIXED AIR TEMPERATURE
ADDT'L ADJ	ADDITIONAL ADJUST	MAX MBH	MAXIMUM ONE THOUSAND BTUH
AFC AFCP	ABOVE FINISHED CEILING AIR FLOW CONTROL PANEL	MC MCC	MECHANICAL CONTRACTOR MOTOR CONTROL CENTER
AFF	ABOVE FINISHED FLOOR	MD	MANUAL DAMPER
AFM AHU	AIR FLOW MEASURING STATION AIR HANDLING UNIT	MECH MER	MECHANICAL MECHANICAL EQUIPMENT ROOM
AL AMB	ALUMINUM AMBIENT	MFGR MIN	MANUFACTURER MINIMUM
AMT	AMOUNT	MUA	MAKE-UP AIR
APD ARCH	AIR PRESSURE DROP ARCHITECT	MUAU	MAKE-UP AIR UNIT
ARI	AMERICAN REFRIGERATION INSTITUTE	N/A NC	NOT APPLICABLE NORMALLY CLOSED/NOISE CRITERIA
AS	AIR SEPARATOR	NEC	NATIONAL ELECTRICAL CODE
ASHRAE	AMERICAN SOCIETY OF REFRIGERATION AND	NG NO	NATURAL GAS NUMBER/NORMALLY OPEN
A CTN 4	AIR CONDITIONING ENGINEERS	NTS	NOT TO SCALE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	OA	OUTSIDE AIR
ATU AUTO	AIR TERMINAL UNIT AUTOMATIC	OAF OAL	OUTSIDE AIR FAN OUTSIDE AIR LOUVER
		OBD	OPPOSED BLADE DAMPER
B BAL	BOILER BALANCE/ING	OCC OCC	ON CENTER OCCUPIED
BCU BHP	BUILDING CONTROL UNIT BOILER HORSEPOWER/BRAKE	OF OPP	OVERFLOW OPPOSITE
	HORSEPOWER	ORIG	ORIGINAL
BOP BLDG	BOTTOM OF PIPE BUILDING	O&M	OPERATION AND MAINTENANCE
BLW	BELOW	P PC	PUMP PLUMBING CONTRACTOR
BOS BPD	BOTTOM OF STEEL BACK PRESSURE DAMPER	PD	PRESSURE DROP
BTUH	BRITISH THERMAL UNIT PER HOUR	PDCV	PRESSURE DIFFERENTIAL CONTROL VALVE
CA	COMBUSTION AIR	PH	PHASE
CAD CAL	CEILING AIR DIFFUSER COMBUSTION AIR LOUVER	PRV PPH	PRESSURE REDUCING VALVE POUNDS PER HOUR
CAP	CAPACITY CONSTANT AIR VOLUME	PRESS PSI	PRESSURE POUNDS PER SQUARE INCH
CAV CC	COOLING COIL	PSIG	POUNDS PER SQUARE INCH GAUGE
CF CFM	CENTRIFUGAL FAN CUBIC FEET PER MINUTE	PVC	POLYVINYL CHLORIDE
CLG	CEILING	QTY	QUANTITY
CO CONC	CLEAN OUT CONCRETE	RA	RETURN AIR
COND CONN	CONDITIONING CONNECT/CONNECTION	RAG RAR	RETURN AIR GRILLE RETURN AIR REGISTER
CONT	CONTINUATION	REF	REFER/REFERENCE
CP CSR	CIRCULATING PUMP CEILING SUPPLY REGISTER	REG RF	REGISTER RETURN/RELIEF FAN
CU	CONDENSING UNIT	RLA RLAD	RATED LOAD AMP
CV	CONTROL VALVE COLD WATER	RM	RETURN LINEAR AIR DIFFUSER ROOM
DB	DRY BULB	RPM	REVOLUTIONS PER MINUTE
dB	DECIBEL	SA SAG	SUPPLY AIR SUPPLY AIR GRILLE
DDC ΔP	DIRECT DIGITAL CONTROL PRESSURE DROP	SAN	SANITARY
DIA DIFF	DIAMETER DIFFERENCE	SAR SC	SUPPLY AIR REGISTER SHADING COEFFICIENT
DISC SW	DISCONNECT SWITCH	SD	SMOKE DAMPER/SPLITTER DAMPER
DN DP	DOWN DEW POINT	SDC SEER	SOUND DIGITAL CONTROLLER SEASONAL ENERGY EFFICIENCY RATIO
DTL	DETAIL	SF SIM	SUPPLY FAN SIMILIAR
DWG DX	DRAWING DIRECT EXPANSION	SLAD	SLOT LINEAR AIR DIFFUSER
(E)	EXISTING TO REMAIN	SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS
EA	EXHAUST AIR/EACH	80	NATIONAL ASSOCIATION
EAL EAR	EXHAUST AIR LOUVER EXHAUST AIR REGISTER	SO SP	SCREENED OPENING STATIC PRESSURE
EAT EC	ENTERING AIR TEMPERATURE	SPEC SQ FT	SPECIFICATION SQUARE FEET
ECON	ELECTRICAL CONTRACTOR ECONOMIZER	SQ IN	SQUARE INCHES
EER EF	ENERGY EFFICIENCY RATIO EXHAUST FAN	SRV SS	STEAM RELIEF VENT STAINLESS STEEL
EFF	EFFICIENCY	STL	STEEL
ELEV ELL	ELEVATION ELBOW	STN SUSP	SECTION SUSPENSION
ENT EQUIP	ENTERING EQUIPMENT	SWR SYM	SIDE WALL REGISTER SYMBOL
EQUIV	EQUIVALENT		
ESP EST	EXTERNAL STATIC PRESSURE ESTIMATED	T TCC	THERMOSTAT TEMPERATURE CONTROL
EWH	ELECTRIC WALL HEATER		CONTRACTOR
EWT	ENTERING WATER TEMPERATURE	TD TEMP	TEMPERATURE DIFFERENCE TEMPERATURE
EXH EXIST	EXHAUST EXISTING	TG TOS	TRANSFER GRILLE TOP OF STEEL
		TOT	TOTAL
°F FC	DEGREES FAHRENHEIT FLEXIBLE CONNECTION	TSP TV	TOTAL STATIC PRESSURE TURNING VANE
FD	FIRE DAMPER	TXV	THERMAL EXPANSION VALVE
FFE FLA	FINISHED FLOOR ELEVATION FULL LOAD AMP	TYP	TYPICAL
FLEX FLG	FLEXIBLE FLANGE	UC UG	UNDERCUT UNDERGROUND
FLR	FLOOR	UL	UNDERWRITERS LABORATORY
FM FPM	FACTORY MUTUAL FEET PER MINUTE	UNOCC	UNOCCUPIED
FT	FEET	V VAV	VOLTS VARIABLE AIR VOLUME
FT WG	FEET OF WATER GAUGE	VD	VOLUME DAMPER
GA GAL	GAUGE GALLONS	VDR VFD	VANED RETURN REGISTER VARIABLE FREQUENCY DRIVE
GC	GENERAL CONTRACTOR	VOL	VOLUME
GPM	GALLONS PER MINUTE	VTR	VENT THROUGH ROOF
HD	HEIGHT	W W/	WATT WITH
HD HP	HEAD HORSEPOWER	WB	WET BULB
HVAC	HEATING, VENTILATION & AIR CONDITIONING	WG WPD	WATER GAUGE WATER PRESSURE DROP
HZ	HERTZ	W/O	WITHOUT
IN	INCHES	<b>A</b>	
INSUL IWG	INSULATE/INSULATION INCHES WATER GAUGE	SHEET	NUMBERING LEGEND
		DISCIPLINE	- M111A SECTOR
KW	KILOWATT	"MD" DEMO "M" NEW WORK	IVI I I I
LAT	LEAVING AIR TEMPERATURE	PLAN TYPE - "1" FLOOR PLAN	SYSTEM TYPE FLOOR LEVEL
LB	POUND	"2" ENLARGED	A TALE NO LARPE U LUWESI FLUUR



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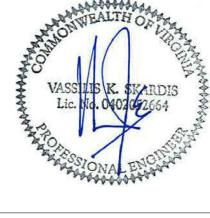
PROGRAM MANAGEMENT

CONSTRUCTION MANAGEMENT 6700A ROCKLEDGE DRIVE, SUITE 301 BETHESDA, MARYLAND 20817 (T) 301-216-2871 (F) 301-216-9671

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

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)	
	REGISTRATION:
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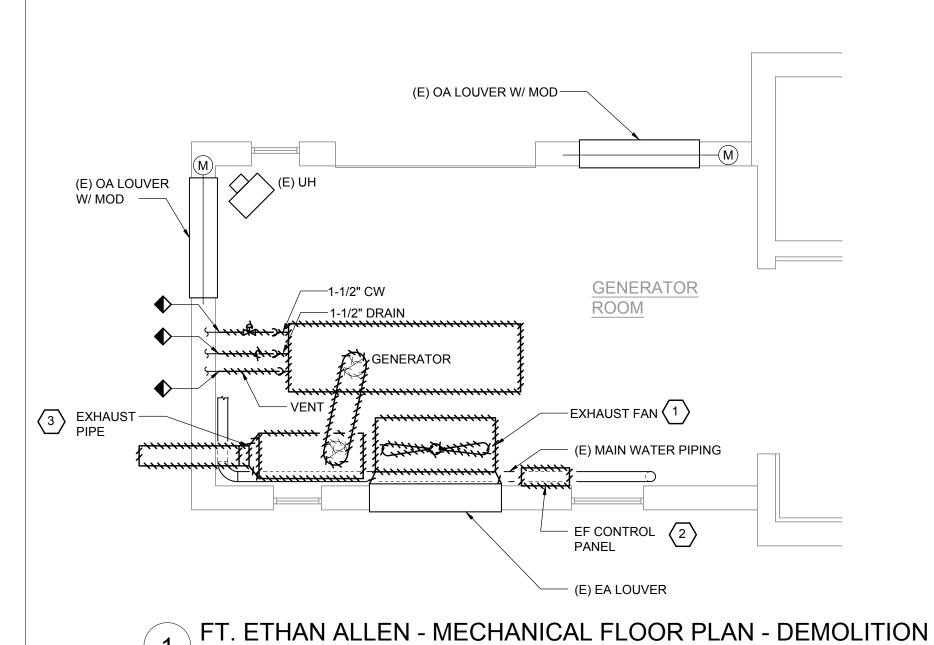
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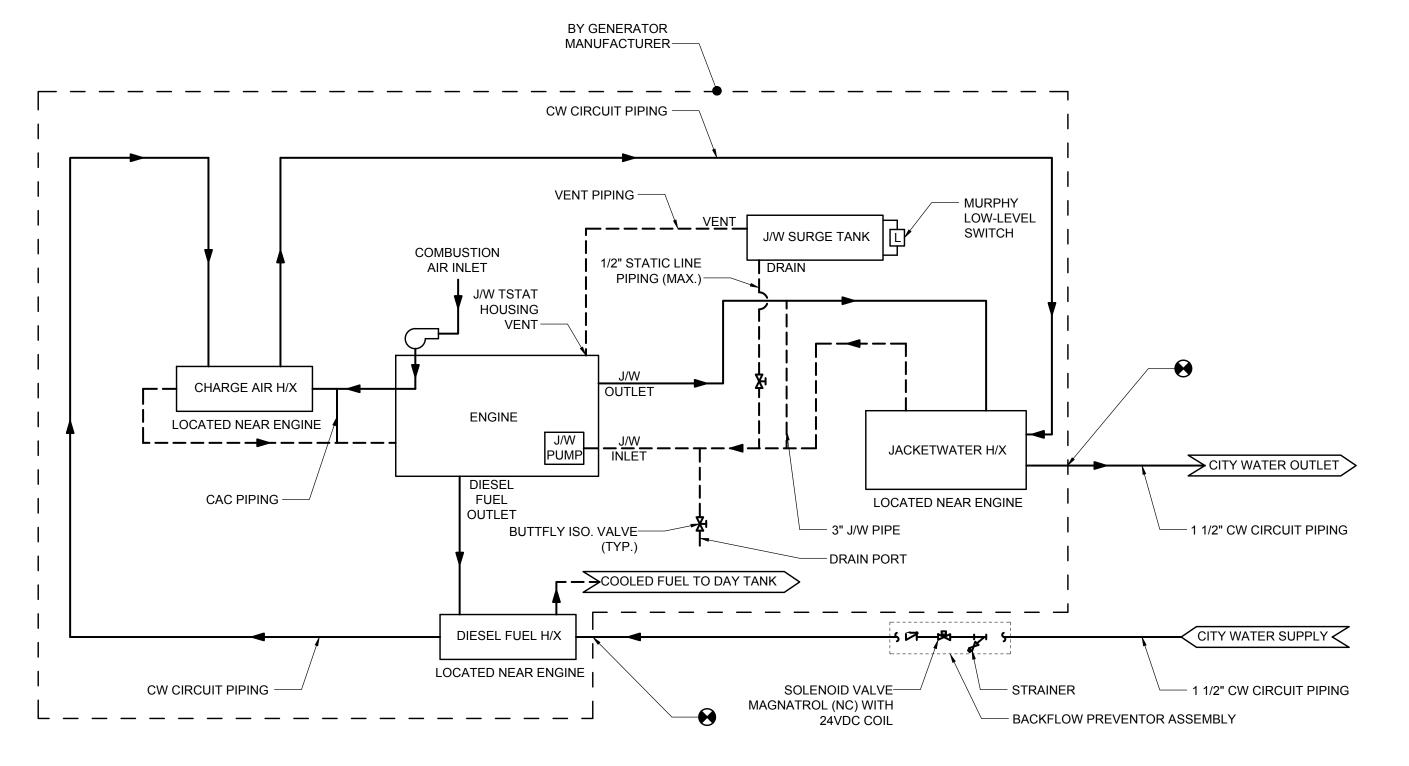
**MECHANICAL** 

**COVER SHEET** 

DRAWING NUMBER

M001





#### 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.
- 3. GENERATOR MANUFACTURER SHALL LOCATE AND SUPPORT THE HEAT EXCHANGERS (DIESEL FUEL HX, CHARGE AIR HX, JACKET WATER HX) AND SURGE TANK.
  4. GENERATOR MANUFACTURER SHALL INSTALL FUEL PIPING, CHARGE AIR PIPING, JACKET WATER PIPING, VENT PIPE, AND ACCESSORIES IN COOLING SYSTEM AS INDICATED ABOVE
- 5. 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, JACKETWATER HX SIMILAR TO "THERMAL TRANSFER PRODUCTS" MODEL C-1724-8.4-6-F, SURGE TANK SIMILAR TO "ROCORE" 8 GAL.

FT. ETHAN ALLEN - CITY WATER COOLING SYSTEM SCHEMATIC

## **GENERAL NOTES**

- REFER TO M001 FOR GENERAL NOTES, SYMBOL LEGEND AND LIST OF ABBREVIATIONS.
- 2. PIPING ROUTING ARE SCHEMATICS ONLY, AND GENERATOR COOLING SYSTEM INSTALLATION SHALL FOLLOW GENERATOR MANUFACTURER'S RECOMMENDATIONS.
- 3. 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.
- 4. PROVIDE MINIMALLY REQUIRED SUPPORT FROM CEILING ABOVE, PROTECT PENETRATION WITH FIRE PROTECTION MATERIALS.
- 5. COORDINATE NEW EXHAUST PIPE HEIGHT WITH AVAILABLE CEILING SPACE (APPROX. 128" AFF).

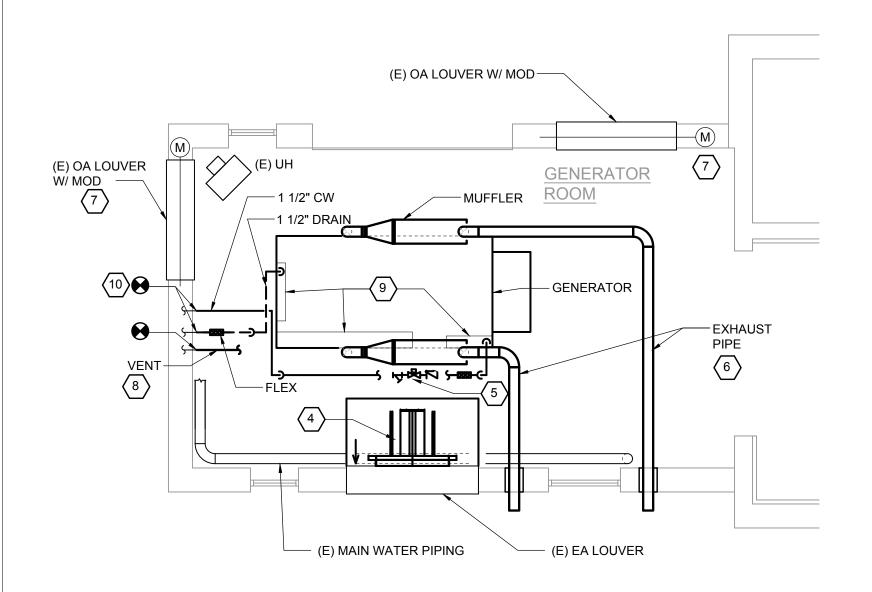
#### (#) KEYED NOTES

1. DEMOLISH TWO EXHAUST FANS, ASSOCIATED CONTROLS AND THE SCREEN GUARD.

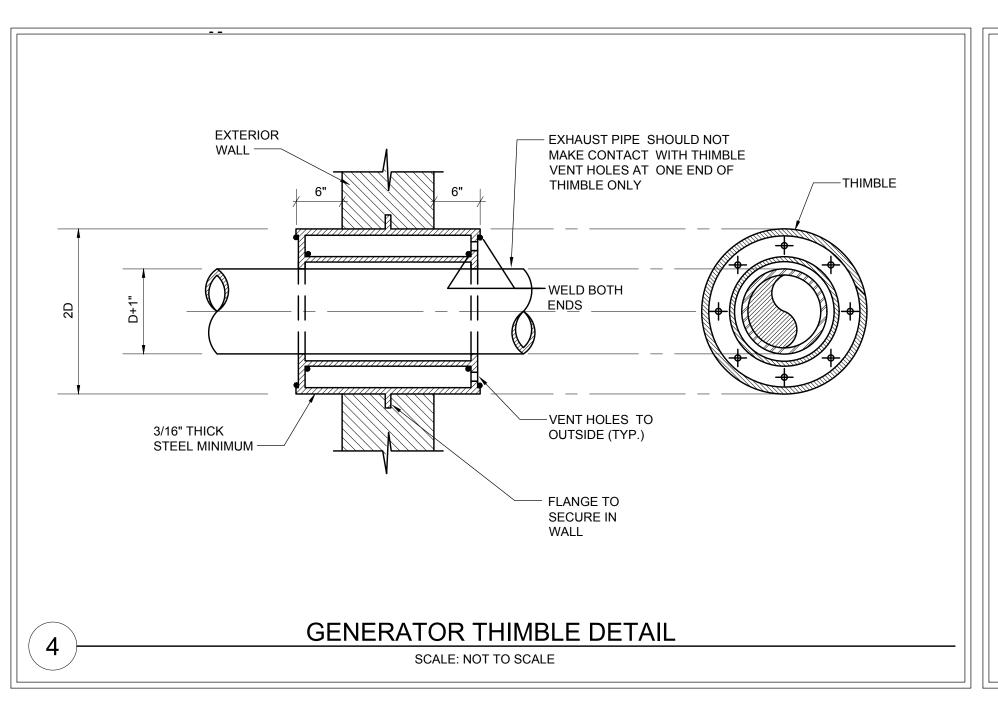
- 2. DEMOLISH VENTILATOR FAN CONTROL PANEL. PROTECT THE CONTROL WIRES OF EXISTING OA LOUVER DAMPERS FOR NEW FAN CONNECTION.
- 3. DEMOLISH GENERATOR EXHAUST PIPE AND MUFFLER. FILL WALL PENETRATION AND MATCH WITH EXISTING WALL FINISH. USE FIRE STOPPING MATERIALS AS NECESSARY.
- 4. PROVIDE EXHAUST FAN (SIMILAR 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.
- 6. 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.
- 8. EXTEND AND CONNECT VENT PIPE TO GENERATOR FUEL TANK.
- 9. HEAT EXCHANGERS INSTALLED BY GENERATOR MANUFACTURER.
- CONTRACTOR SHALL IDENTIFY ISOLATION VALVE FOR THE BRANCH PIPING AND ISOLATE FOR CONNECTION NEW PIPING TO EXISTING.

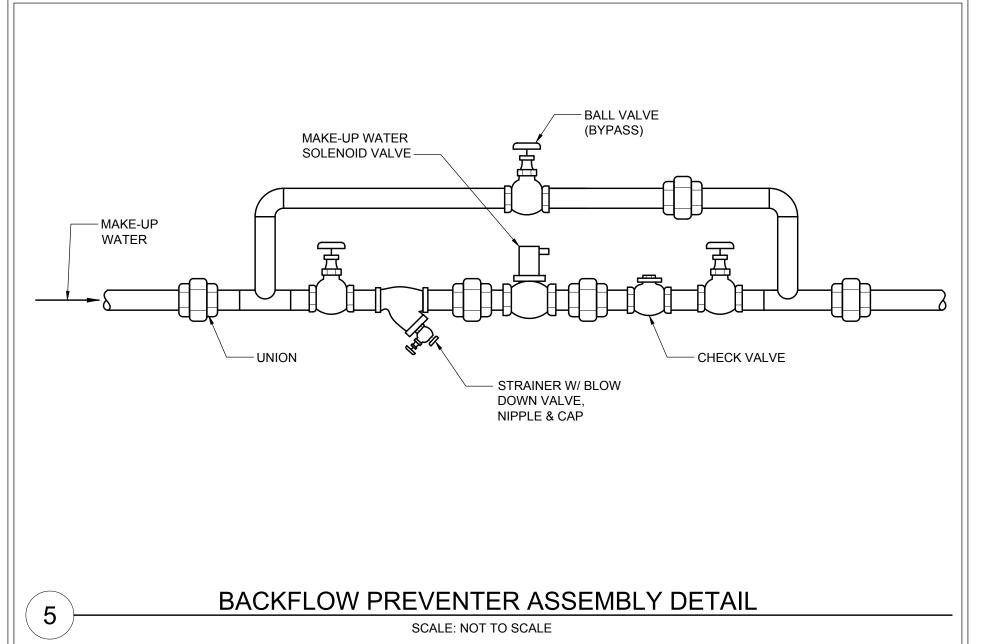
## **CONTROLS NOTES**

1. 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.



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







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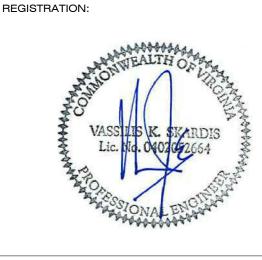
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PROJECT:

NEW GENERATOR AND TEMPORARY GENERATOR CONNECTION FOR PUMPING STATIONS ETHAN ALLEN

REVISIONS:

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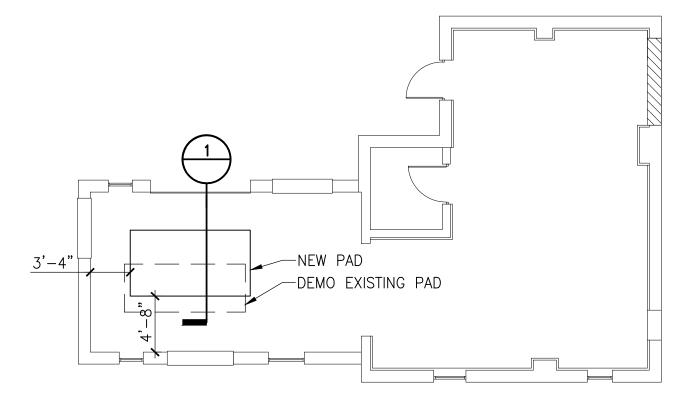
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PLANS &
SCHEMATICS

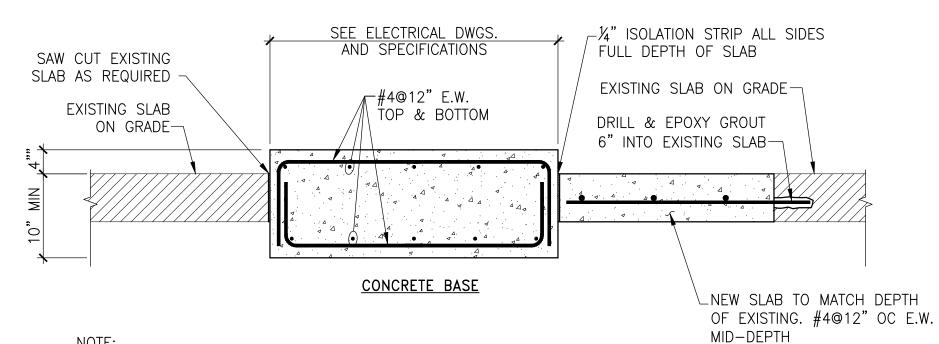
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#### FT. ETHAN ALLEN — FLOOR PLAN

1/8" = 1'-0'



1. ADHESIVE GROUTED DOWELS ACCEPTABLE. MATCH REBAR SIZE AND

LOCATIONS SHOWN AND EMBED A MINIMUM OF 2½".

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

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.

#### <u>DESIGN LOADS</u>

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.

#### <u>CONCRETE WORK</u>

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:
C. FLY ASH:

ASTM C150, TYPE I, II, OR I/II.
ASTM C618, TYPE C OR F

1) LIMIT TO 30% MAXIMUM REPLACEMENT OF PORTLAND CEMENT

D. SLAG CEMENT:

ASTM C989, GRADE 100

1) LIMIT TO 50% MAXIMUM REPLACEMENT BY WEIGHT OF PORTLAND CEMENT

E. FOR MIXTURES INCLUDING BOTH FLY ASH AND SLAG CEMENT

1) LIMIT REPLACEMENT BY WEIGHT OF PORTLAND CEMENT TO 50% MAXIMUM.

NORMAL WEIGHT AGGREGATES: ASTM C33

G. NORMAL WEIGHT CONCRETE DENSITY: 145 PCF

H. AIR-ENTRAINMENT: ASTM C260

4. STEEL REINFORCEMENT:

A. DEFORMED REINFORCING BARS: ASTM A615 GRADE 60

5. CONCRETE COVER:
A. MILD REINFORCED CONCRETE

CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3 IN.
 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:

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 DA

(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:

. 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

ARLINGTON VIRGINIA

DEPARTMENT OF ENVIRONMENTAL SERVICES

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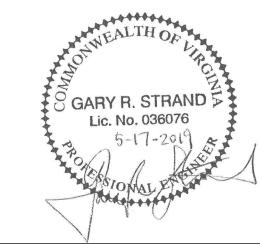
NEW GENERATOR AND TEMPORARY GENERATOR CONNECTION FOR PUMPING STATIONS

ETHAN ALLEN

REVISIONS:

-

REGISTRATION:



DRAWN BY: DS

DATE: 05-17-2019

PROJECT NO.: 181519

NORTH ARROW:

DRAWING TITLE:

FT. ETHAN ALLEN
PUMPING STATION
EQUIPMENT PADS

DRAWING NUMBER

S120EA