

GENERATOR REPLACEMENT AT ELKRIDGE ELEMENTARY SCHOOL

7075 MONTGOMERY ROAD, ELKRIDGE, MD 21075

HOWARD COUNTY PUBLIC SCHOOL SYSTEM

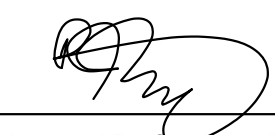
MECHANICAL / ELECTRICAL ENGINEERS

JAMES POSEY ASSOCIATES, INC.
3112 LORD BALTIMORE DRIVE
BALTIMORE, MD 21244
410.265.6100

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HOWARD COUNTY PUBLIC SCHOOL SYSTEM
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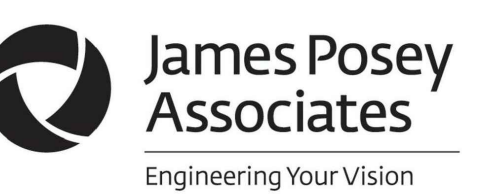
PROFESSIONAL CERTIFICATION

These contract documents for the project were prepared under my supervision and to the best of my knowledge, information, and belief, they comply with the relevant building codes of the State of Maryland.



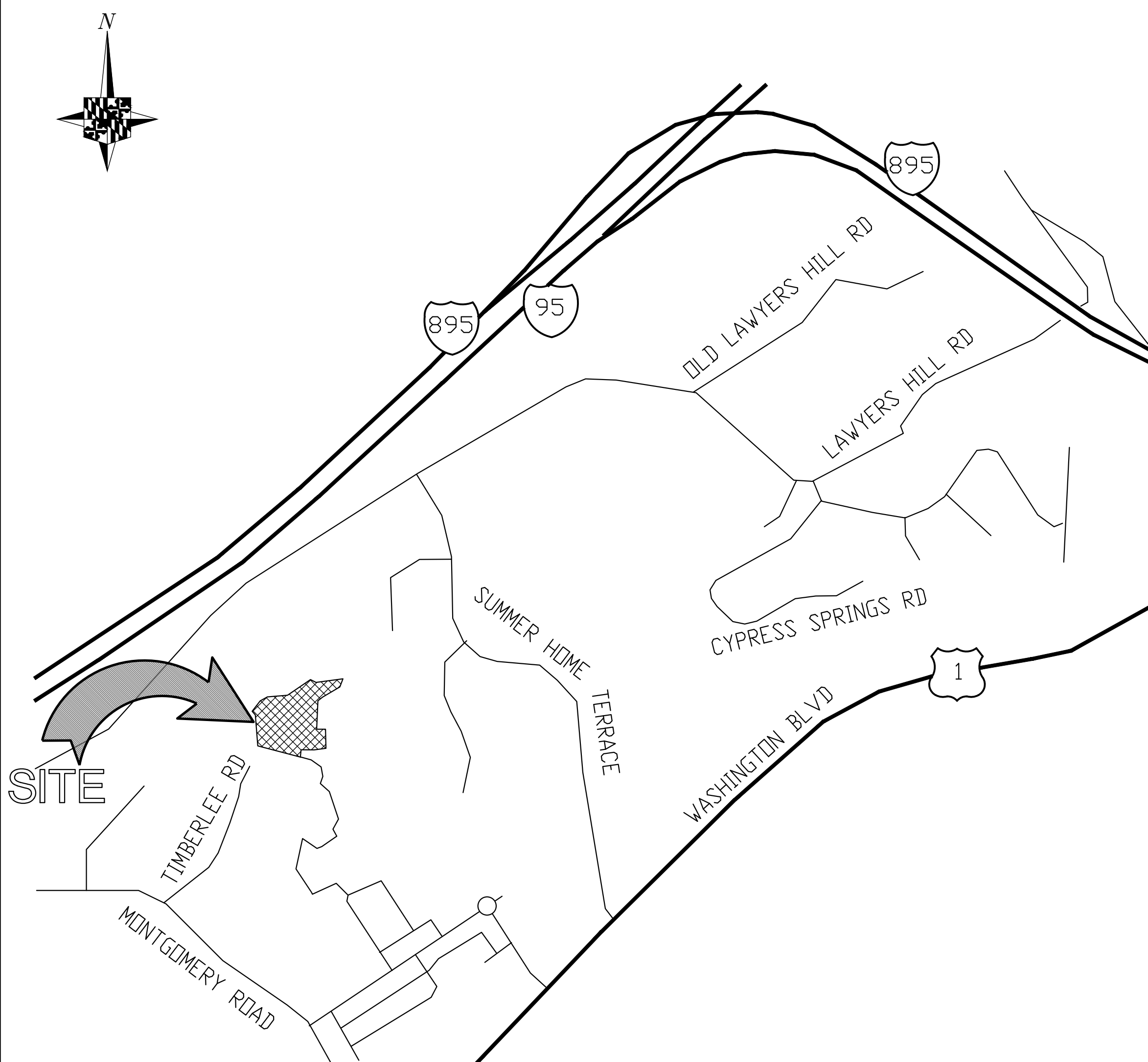
(Date) 10/5/18

Maryland Professional Engineer Registration No. 24861

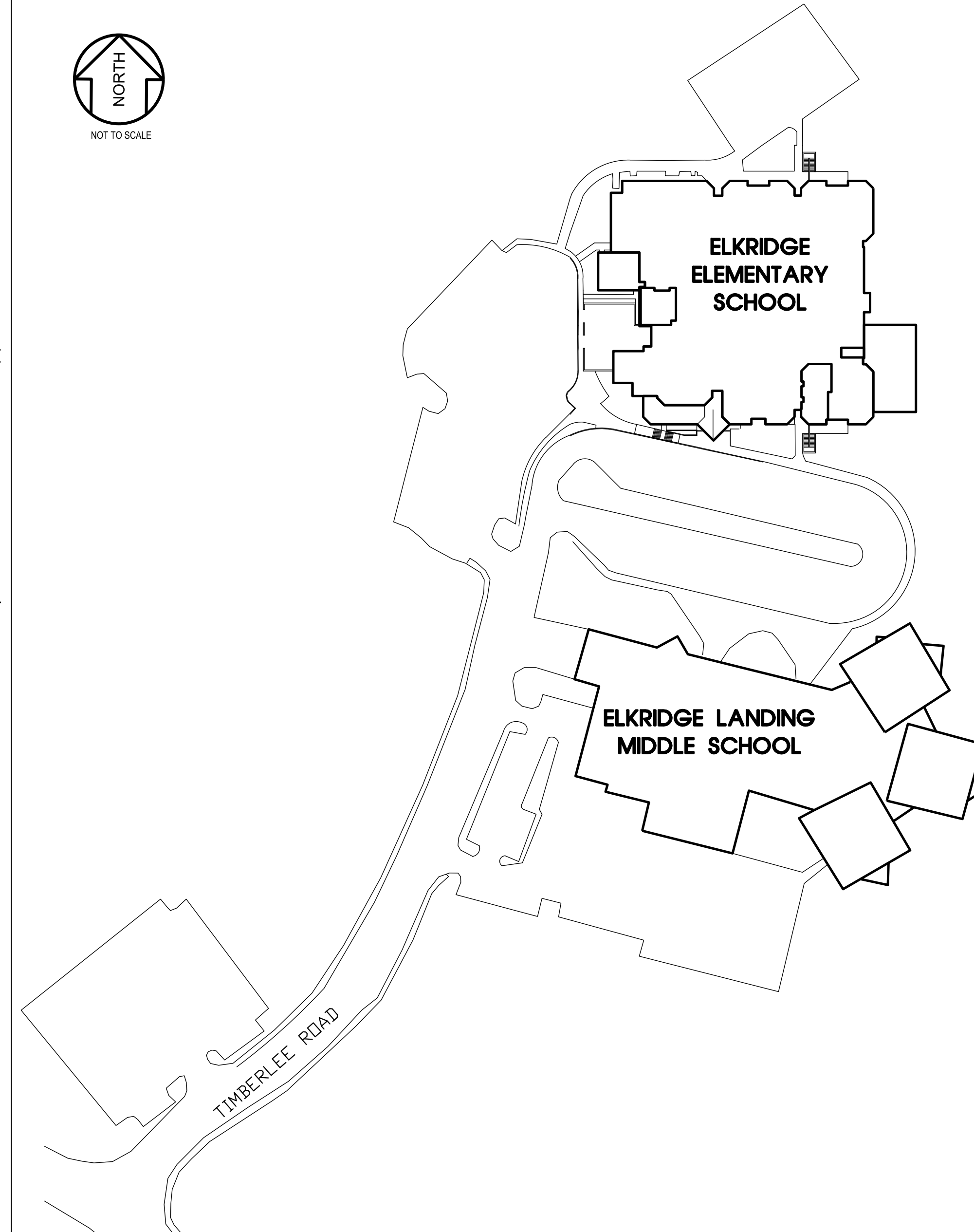


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VICINITY PLAN



SITE PLAN



DRAWING LIST

COVER SHEET

T0.1 TITLE SHEET

MECHANICAL

M1.1 PART FLOOR PLAN DEMOLITION AND NEW WORK

ELECTRICAL

- E0.1 SYMBOLS LIST, ABBREVIATIONS, AND DETAILS
- E1.1 PART FLOOR PLAN DEMOLITION
- E1.2 PART FLOOR PLAN NEW WORK
- E1.3 PART FLOOR PLAN NEW WORK (ALTERNATE 1)
- E6.1 POWER RISER DIAGRAMS
- E6.2 SCHEDULES

APPLICABLE CODES AND STANDARDS

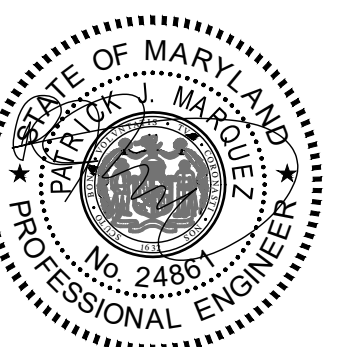
AMERICANS WITH DISABILITIES ACT (ADA) STANDARDS FOR ACCESSIBLE DESIGN, 2010
INTERNATIONAL BUILDING CODE (IBC), 2015 EDITION
LIFE SAFETY CODE (NFPA 101), 2015 EDITION
MARYLAND OCCUPATIONAL SAFETY AND HEALTH PROGRAM ACT (MOSH ACT)
NATIONAL ELECTRICAL CODE (NFPA 70) WITH LOCAL AMENDMENTS, 2017 EDITION
NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA) STANDARDS
NATIONAL FIRE ALARM AND SIGNALING CODE (NFPA 72), 2013 EDITION
NATIONAL FUEL GAS CODE (NFPA 54) WITH LOCAL AMENDMENTS, 2009 EDITION
NATIONAL STANDARD PLUMBING CODE (NSPC) WITH LOCAL AMENDMENTS, 2009 EDITION
STANDARD FOR EMERGENCY AND STANDBY POWER SYSTEMS (NFPA 110), 2013 EDITION

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. 24861, Expiration date: 02-24-2020.

Proj Bid No:

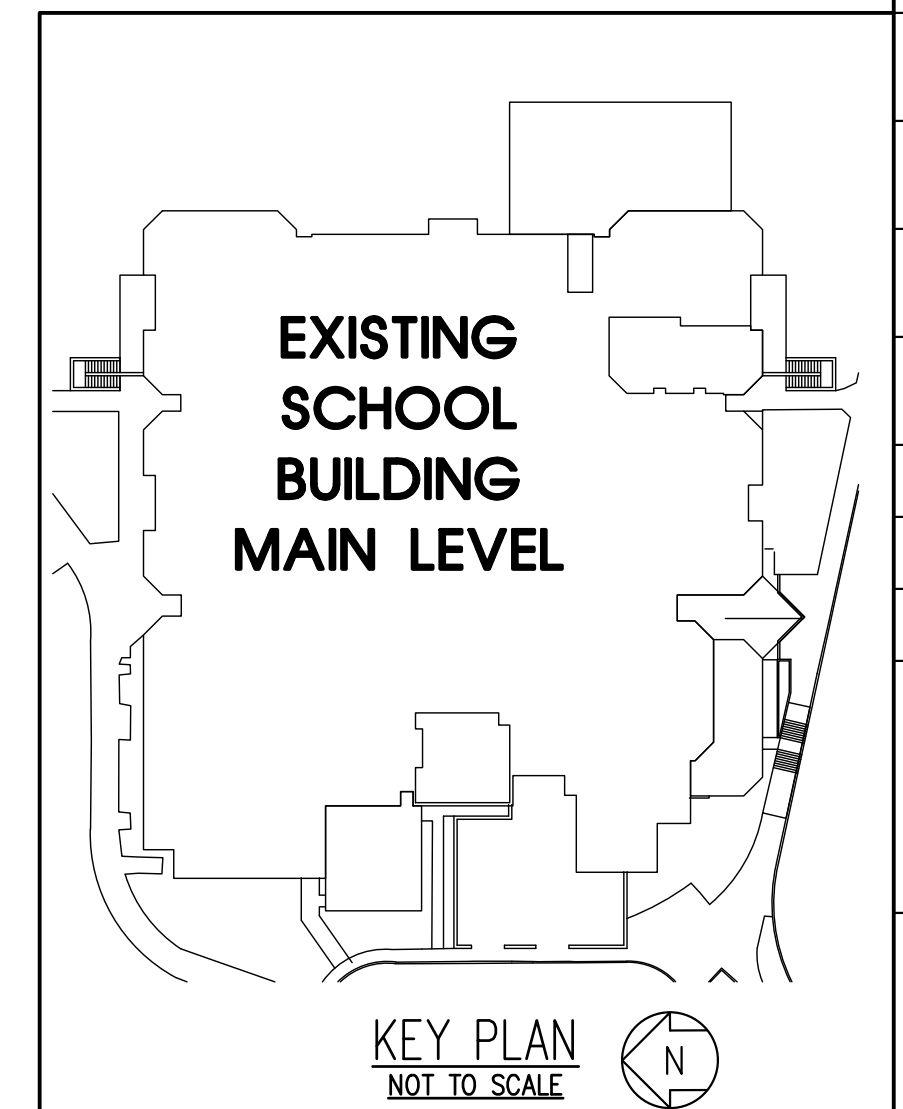
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	BID DOCUMENTS	10/5/18

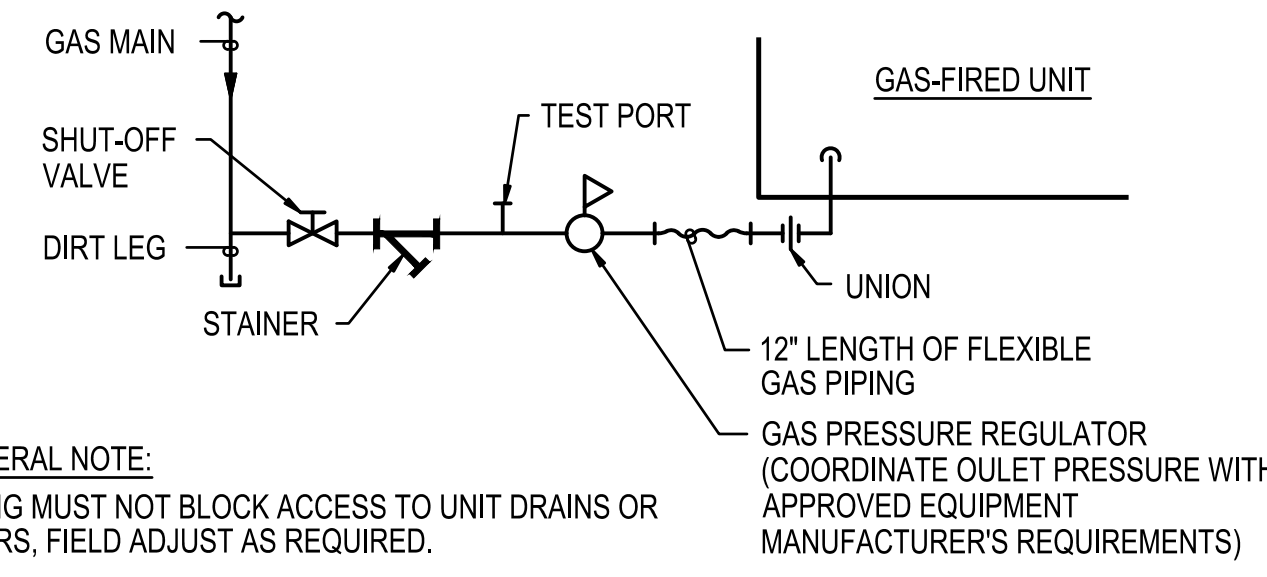
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Designed	VBP
Checked	FJM
Approved	FJM



Scale	AS NOTED
Project No.	7001-18
Date	OCTOBER 5, 2018
Drawing Title	TITLE SHEET

Sheet No:
T1.0





GENERAL NOTE:
 PIPING MUST NOT BLOCK ACCESS TO UNIT DRAINS OR DOORS, FIELD ADJUST AS REQUIRED.

GAS PIPING FOR EMERGENCY GENERATOR:
 PRIOR TO ANY INSTALLATION OR FABRICATION, THE CONTRACTOR SHALL ARRANGE TO MEET WITH A REPRESENTATIVE OF THE HOWARD COUNTY PUBLIC SCHOOL SYSTEM (HCPSS) TO DISCUSS THE FINAL ARRANGEMENT OF THE GAS PIPING TO THE GENERATOR. THE CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL OF THE FINAL ARRANGEMENT OF THE GAS PIPING FROM THE HCPSS REPRESENTATIVE.

DIAGRAM
 TYPICAL GAS PIPE CONNECTION TO GAS-FIRED UNITS
 NOT TO SCALE

MECHANICAL SYMBOLS AND ABBREVIATIONS			
	GAS PIPE	ABV	ABOVE
	PIPE CAP OR PLUG	BLW	BELOW
	UNION	CFH	CUBIC FEET PER HOUR
	FLANGED PIPE CONNECTION	CONC	CONCRETE
	FLOW DIRECTION ARROW	CONN	CONNECT, CONNECTION
	STRAINER	CONTN	CONTINUATION
	SHUT-OFF VALVE	DWG	DRAWING
	VALVE IN VERTICAL PIPE	ETR	EXISTING TO REMAIN
	PRESSURE REDUCING VALVE	EX	EXISTING
	PRESSURE GAUGE (NUMERALS INDICATE GRADUATION RANGE)	FL	FLOOR
	POINT OF CONNECTION, NEW TO EXISTING	G	GAS PIPE
	DEMOLITION WORK TERMINATION POINT	HP	HORSEPOWER
	SYMBOL FOR SPECIFIC NOTE, NOTE APPLIES TO DRAWING ON WHICH IT OCCURS.	PSI	POUNDS PER SQUARE INCH
		REQ'D	REQUIRED
		RX	REMOVE EXISTING
		TYP	TYPICAL

GENERAL NOTES:

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B. DEMOLITION SHALL INCLUDE REMOVAL AND OFF-SITE DISPOSAL OF MATERIALS. DO NOT ABANDON IN PLACE ANY MECHANICAL AND RELATED ELECTRICAL COMPONENTS UNLESS OTHERWISE NOTED ON DRAWINGS.

C. UNLESS OTHERWISE NOTED, MECHANICAL/PLUMBING ITEMS SHOWN HEAVY DASHED (---) SHALL BE REMOVED AND MECHANICAL/PLUMBING ITEMS SHOWN LIGHT SOLID (—) SHALL REMAIN.

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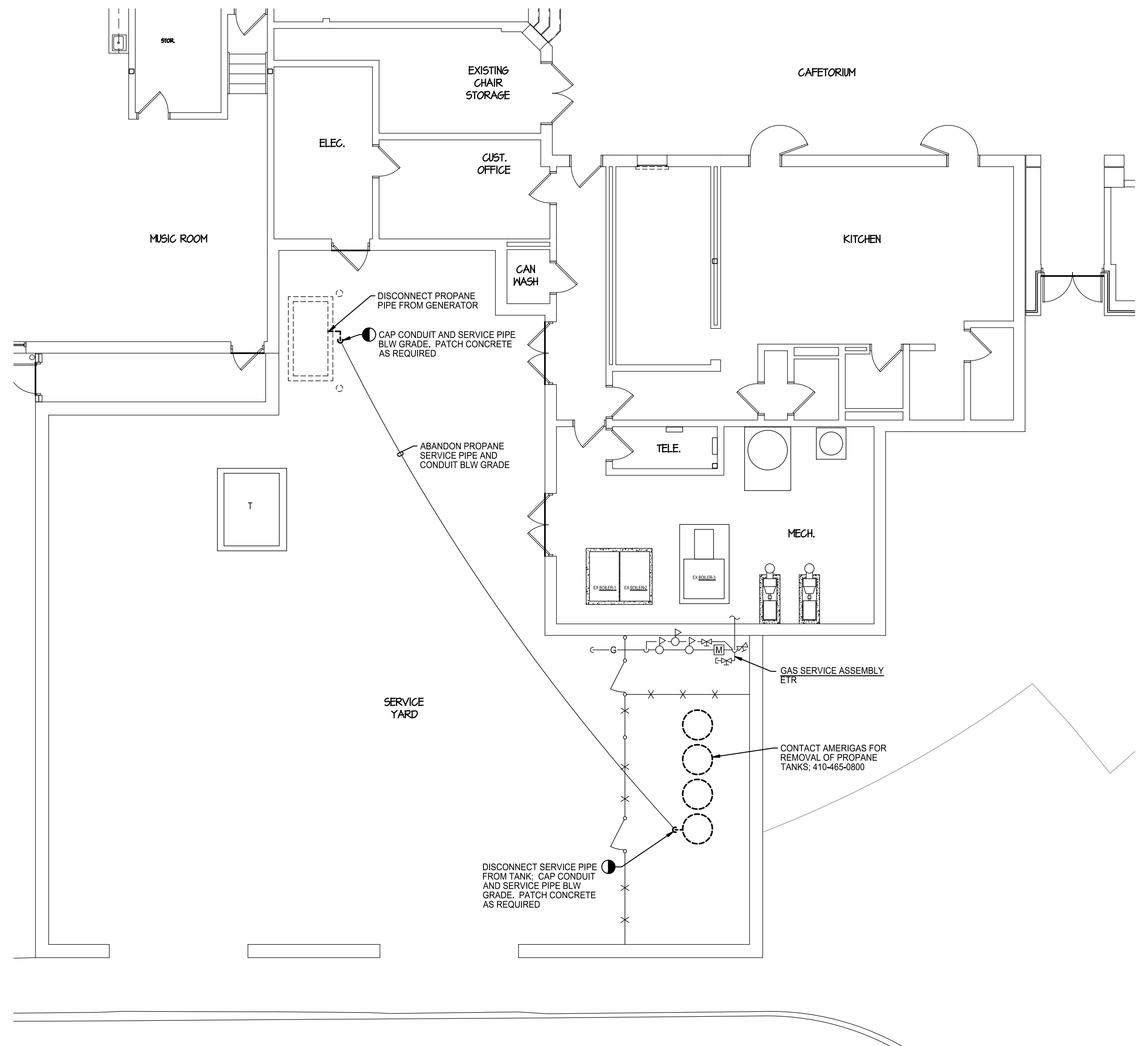
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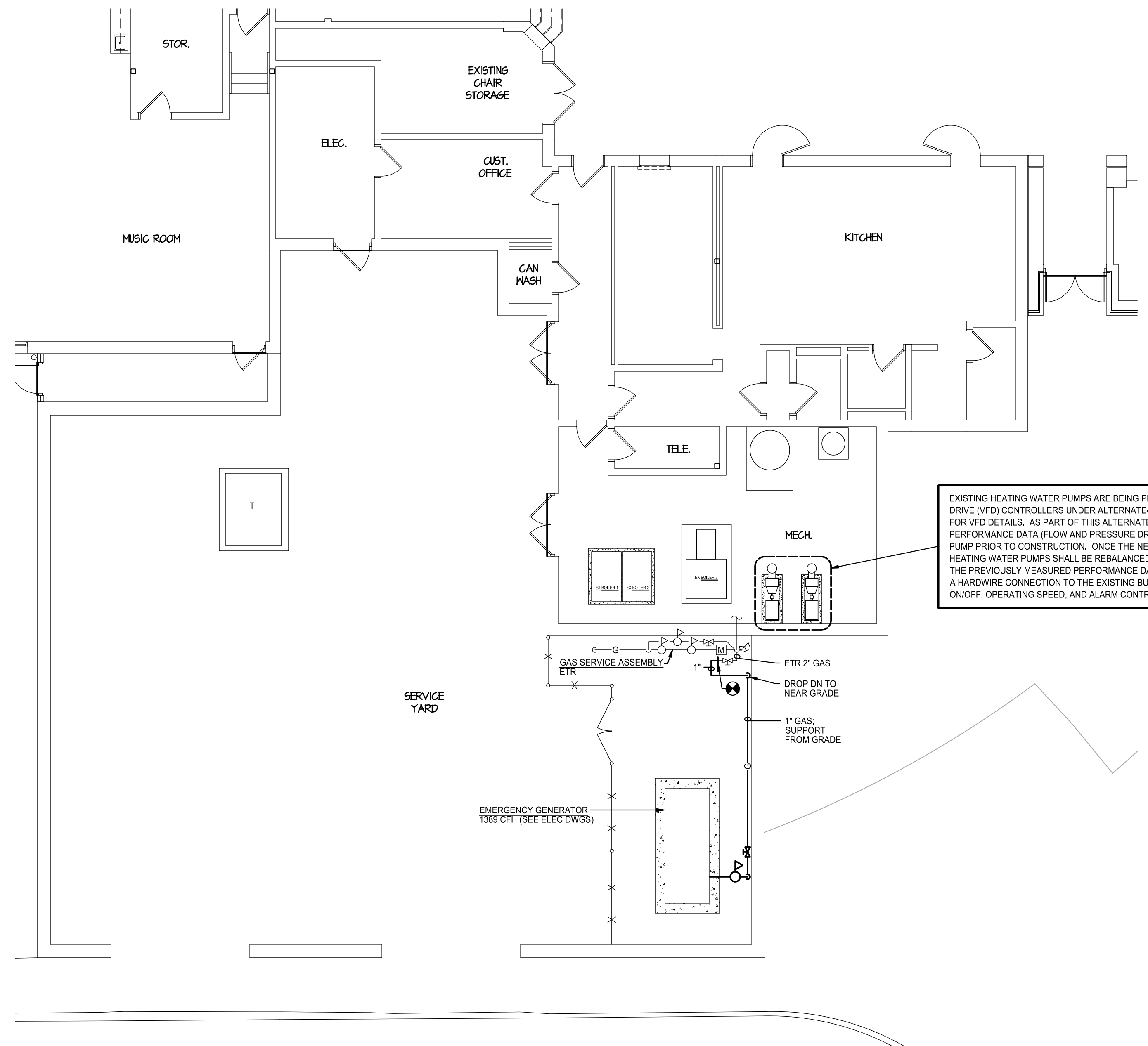
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the state of Maryland, license No. 33989, Expiration date: 01-16-2019.

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Sym.	REVISIONS
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Drawn	TOG
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Checked	MFS
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Project No.	7001-18
Date	OCTOBER 5, 2018
Drawing Title	PART FLOOR PLAN DEMOLITION AND NEW WORK
Sheet No:	M1.1

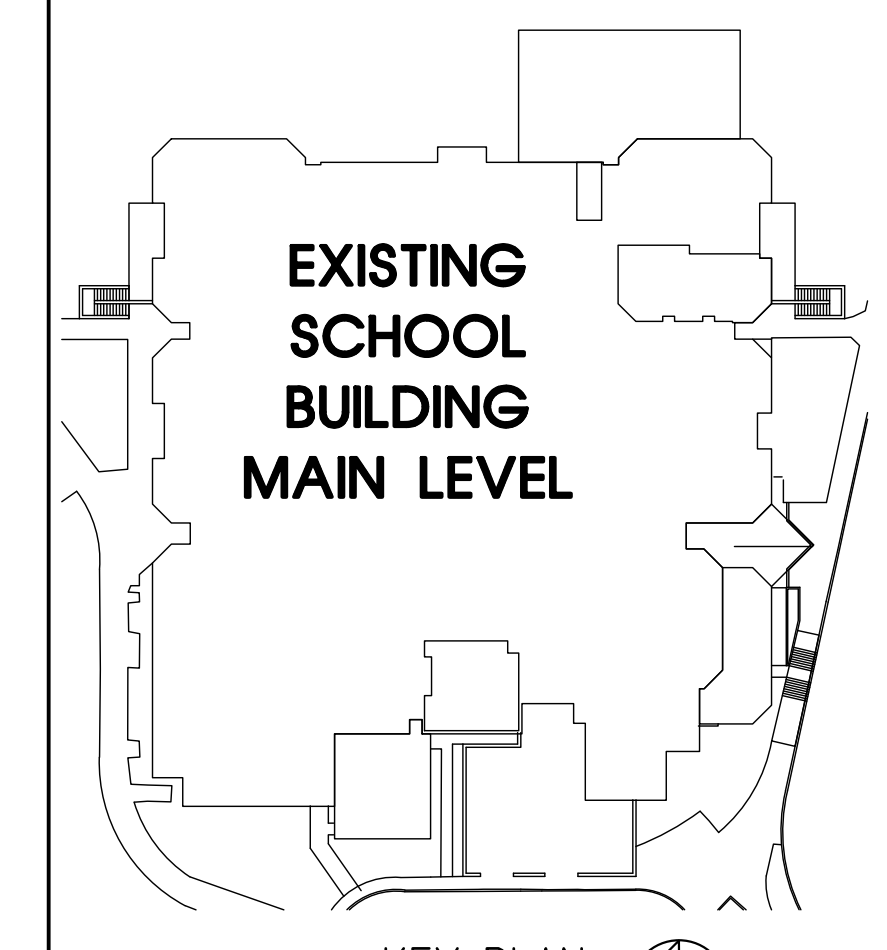


PARTIAL MAIN LEVEL FLOOR PLAN
 DEMOLITION
 SCALE: 1/8"=1'-0"

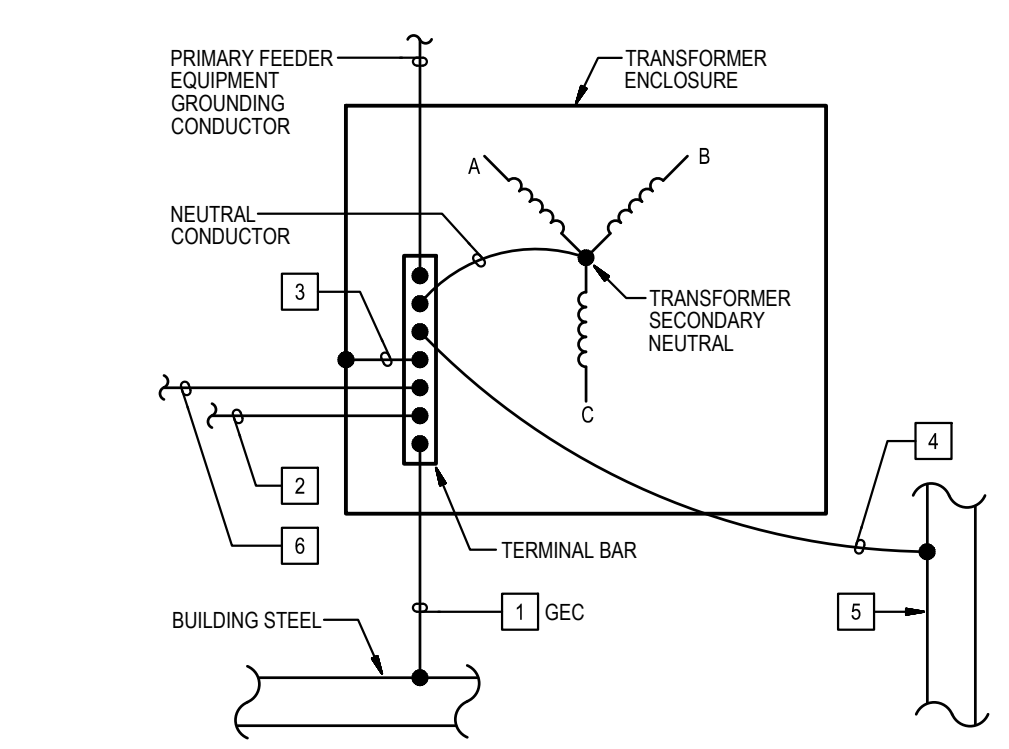
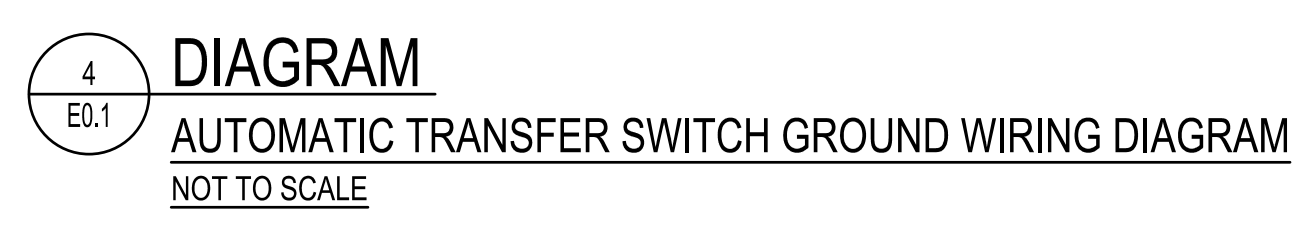
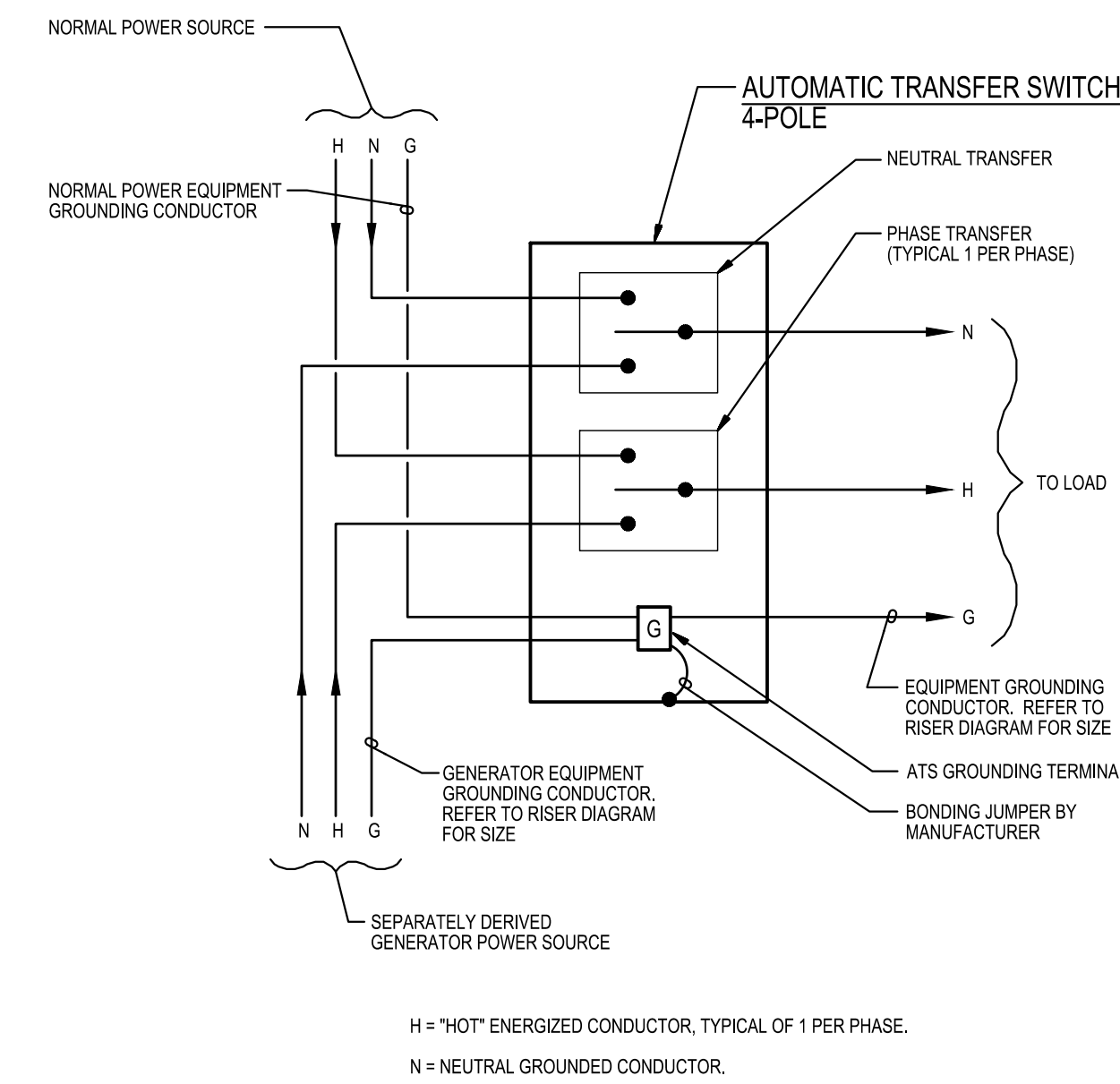
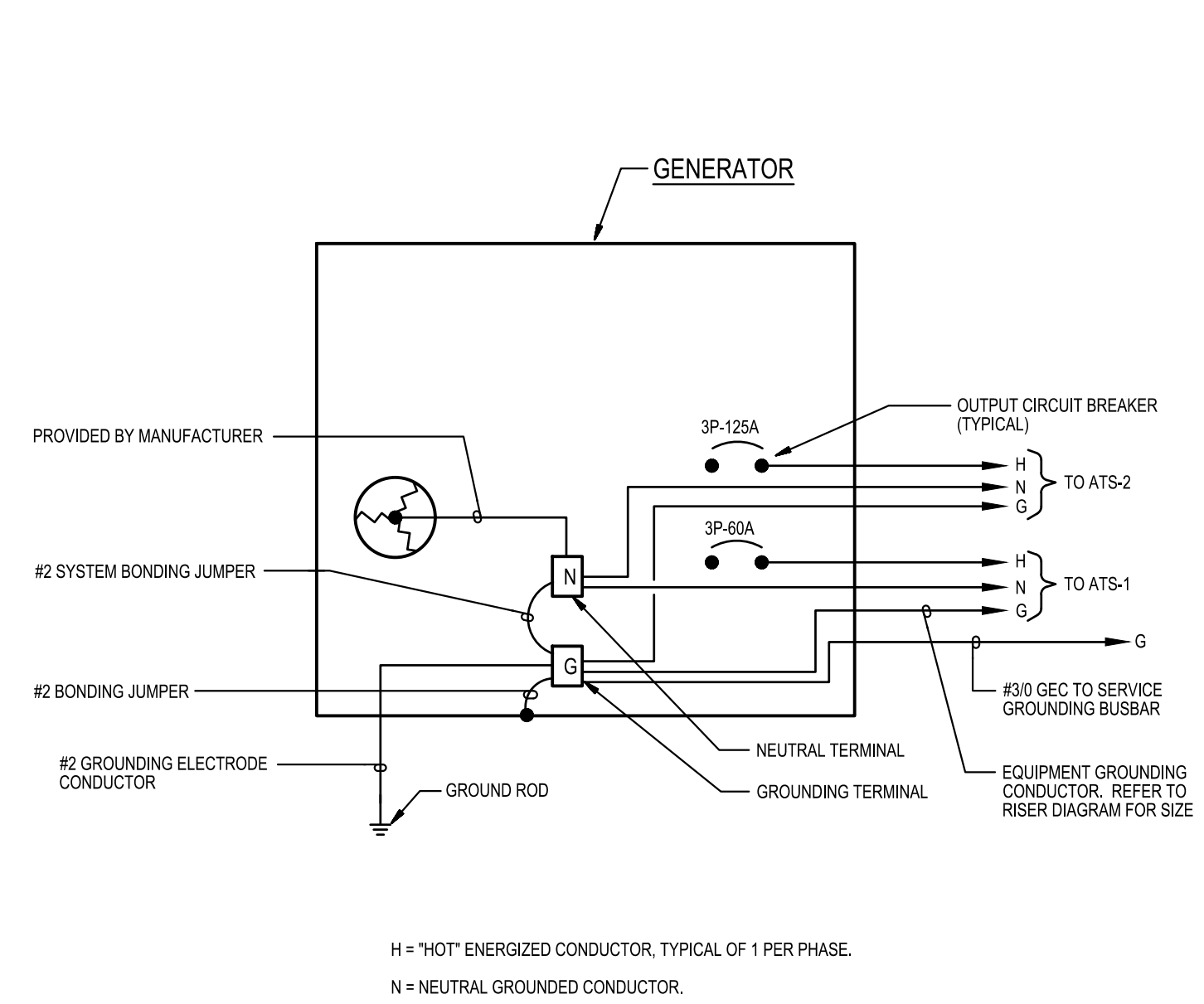
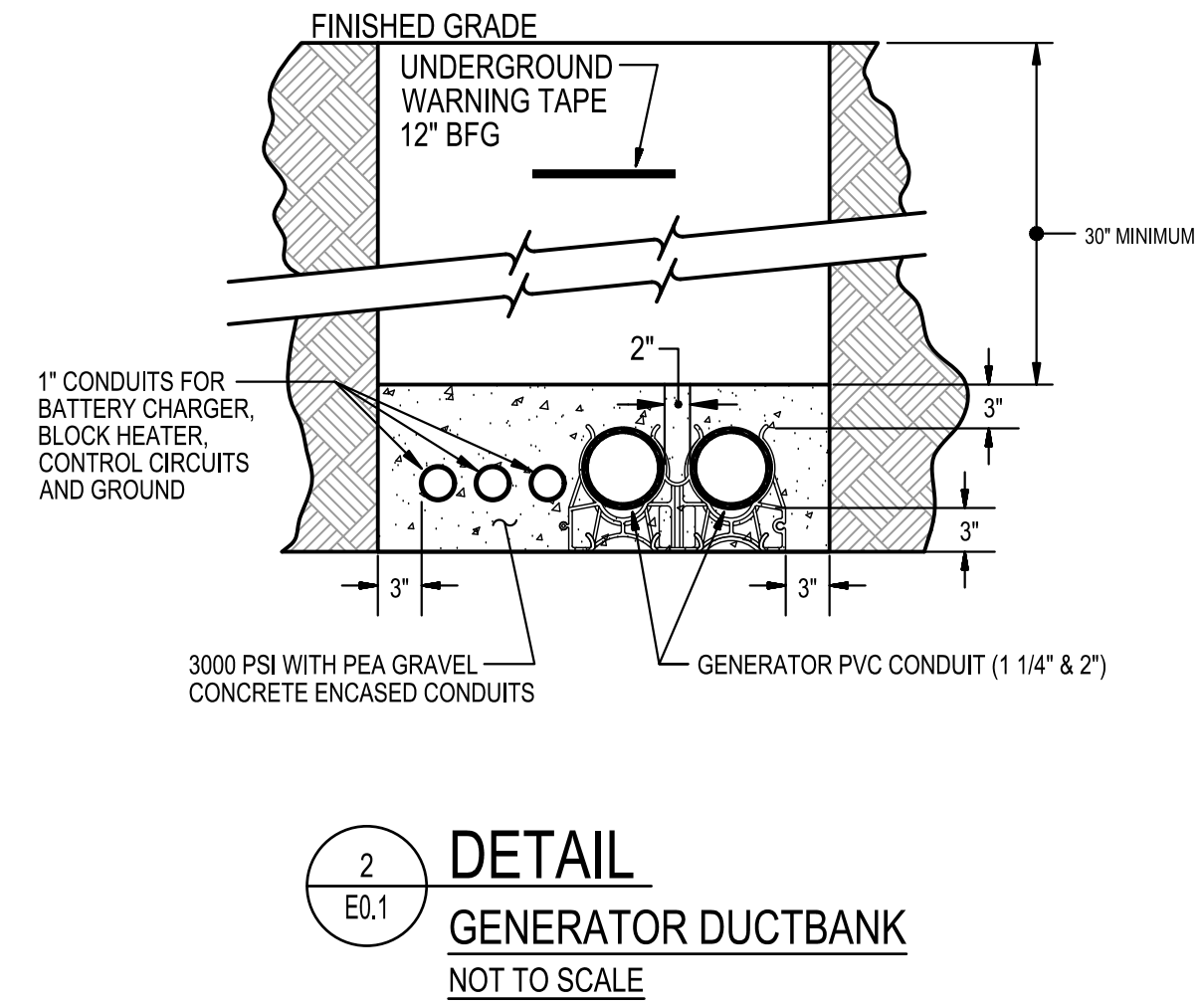
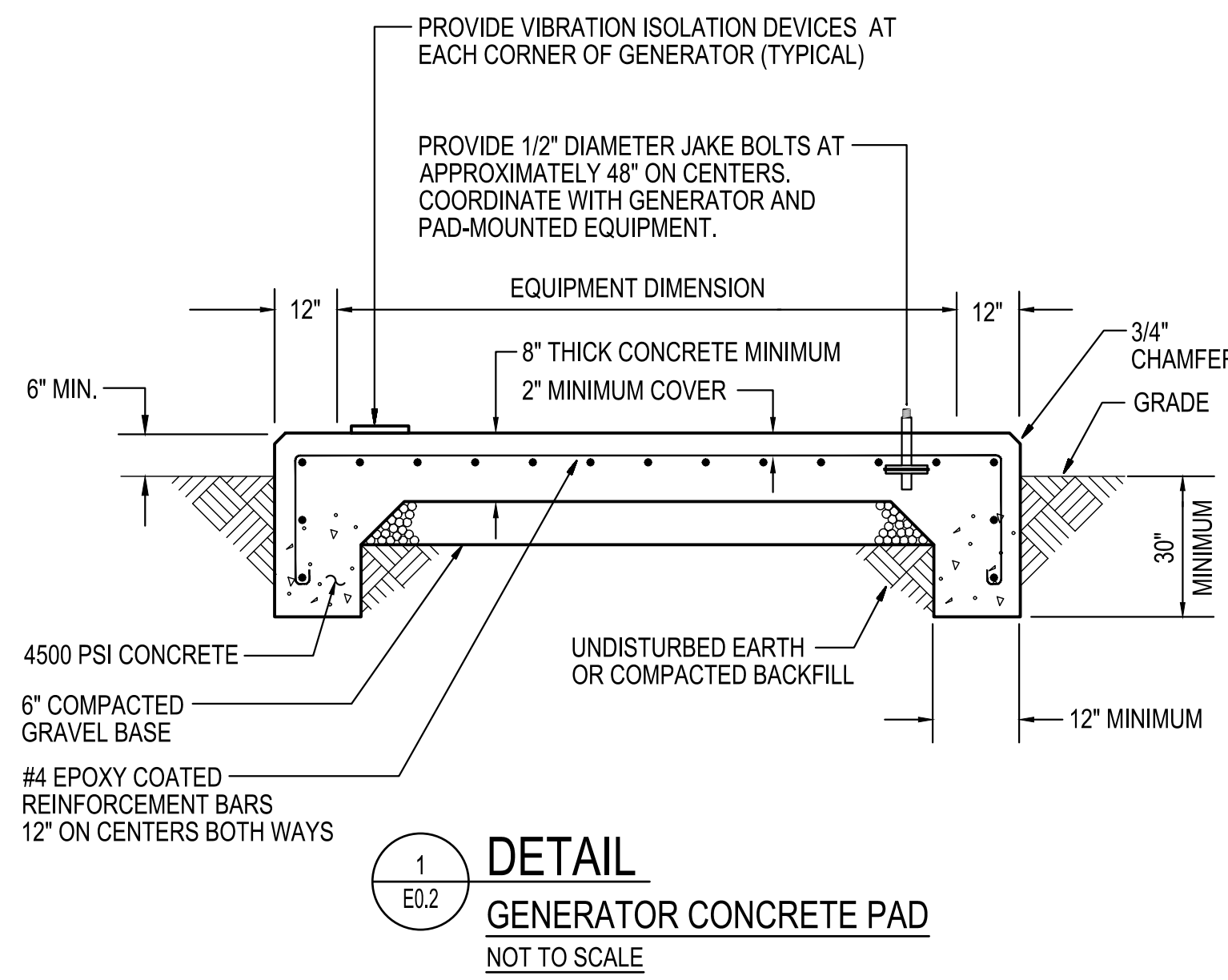


PARTIAL MAIN LEVEL FLOOR PLAN
 NEW WORK
 SCALE: 1/8"=1'-0"

EXISTING HEATING WATER PUMPS ARE BEING PROVIDED WITH VARIABLE FREQUENCY DRIVE (VFD) CONTROLLERS UNDER ALTERNATE-1. REFER TO THE ELECTRICAL DRAWINGS FOR VFD DETAILS. AS PART OF THIS ALTERNATE, THE EXISTING HEATING WATER PUMP PERFORMANCE DATA (FLOW AND PRESSURE DROP) SHALL BE RECORDED FOR EACH PUMP PRIOR TO CONSTRUCTION. ONCE THE NEW VFDs ARE OPERATIONAL, THE EXISTING HEATING WATER PUMPS SHALL BE REBALANCED THROUGH THEIR RESPECTIVE VFD TO THE PREVIOUSLY MEASURED PERFORMANCE DATA. NEW VFDs SHALL BE PROVIDED WITH A HARDWIRE CONNECTION TO THE EXISTING BUILDING AUTOMATION SYSTEM FOR VFD ON/OFF, OPERATING SPEED, AND ALARM CONTROL FUNCTIONS.



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



- DETAIL NOTES:**
- GROUNDING ELECTRODE CONDUCTOR (GEC), SIZED PER SCHEDULE OF TRANSFORMERS ON DRAWING E2.1.
 - SUPPLY-SIDE BONDING JUMPER, 2017 NEC TABLE 250.102(C)(1), SIZED PER SCHEDULE OF TRANSFORMERS ON DRAWING E2.1, TO EQUIPMENT GROUNDING BAR OF PANELBOARD SUPPLIED BY TRANSFORMER.
 - SYSTEM BONDING JUMPER, SIZED PER SUPPLY-SIDE BONDING JUMPER.
 - SYSTEM BONDING CONDUCTOR, SIZED PER SUPPLY-SIDE BONDING JUMPER.
 - METAL WATER PIPING SYSTEM (TYPICAL FOR EACH SYSTEM IN AREA SERVED BY TRANSFORMER).
 - NEUTRAL CONDUCTOR, TO NEUTRAL BUS BAR (ISOLATED NEUTRAL TERMINAL) OF PANELBOARD SUPPLIED BY TRANSFORMER.



ELECTRICAL SYMBOLS AND ABBREVIATIONS

GENERAL	POWER
<p>① DENOTES REFERENCE TO SPECIFIC NOTE ON DRAWING.</p> <p>② DENOTES REFERENCE TO DETAIL, DIAGRAM, OR PLAN NUMBER.</p> <p>③ DRAWING NUMBER WHERE DETAIL, DIAGRAM, OR PLAN IS LOCATED.</p> <p>#/E### REFERENCE: DETAIL, DIAGRAM, OR PLAN NUMBER/DRAWING NUMBER</p> <p>④ DENOTES REFERENCE TO DETAIL OR DIAGRAM NOTE ON SHEET.</p> <p>GENERAL NOTES:</p> <p>A. MOUNTING HEIGHTS ARE CENTERLINE TO WIRING DEVICES UNLESS OTHERWISE INDICATED.</p> <p>B. PROVIDE DEDICATED NEUTRAL CONDUCTOR FOR EACH BRANCH CIRCUIT.</p>	<p>■ ELECTRIC PANELBOARD (120/208V), SURFACE MOUNTED.</p> <p>■ ELECTRIC PANELBOARD (277/480V), SURFACE MOUNTED.</p> <p>□ BOX OR CABINET AS NOTED, SIZE AS REQUIRED, SURFACE OR RECESSED MOUNTED.</p> <p>□ TRANSFORMER.</p> <p>□ ENCLOSED CIRCUIT BREAKER IN NEMA TYPE 1 ENCLOSURE, UON. MOUNT IN GENERATOR PER MANUFACTURER'S REQUIREMENTS. SIZE AS NOTED.</p> <p>□ ENCLOSED SWITCH (DISCONNECT/SAFETY SWITCH) IN NEMA TYPE 1 ENCLOSURE, UON. MOUNT 5'-6" AF TO TOP OF ENCLOSURE, UON. RATING AND FUSING AS NOTED.</p> <p>Ⓜ VARIABLE FREQUENCY DRIVE.</p> <p>⊕ ELECTRIC MOTOR CONNECTION.</p> <p>⊕ HARD WIRED ELECTRICAL CONNECTION. CONNECT TO EQUIPMENT AS NOTED.</p> <p>⊕ DUPLEX GFCCI-TYPE RECEPTACLE (NEMA 5-20R), SURFACE MOUNTED 18" AF, UON.</p> <p>⊕ DUPLEX GFCCI-TYPE RECEPTACLE (NEMA 5-20R), SURFACE MOUNTED 48" AF, UON.</p> <p>⊕ WP DUPLEX GFCCI-TYPE RECEPTACLE (NEMA 5-20R), WEATHER-RESISTANT TYPE WITH WEATHERPROOF WHILE-IN-USE COVER, SURFACE MOUNTED 18" AF, UON.</p>
DEMOLITION	FIRE ALARM
<p>⊖ REMOVE EXISTING BOX OR CABINET.</p> <p>⊖ REMOVE EXISTING ENCLOSED CIRCUIT BREAKER.</p> <p>⊖ REMOVE EXISTING HOMERUN TO PANELBOARD. NUMBER OF ARROW HEADS INDICATES NUMBER OF CIRCUITS. NUMBER OF HASH MARKS INDICATES NUMBER OF CONDUCTORS.</p> <p>⊖ REMOVE EXISTING WIRING AND CONDUIT.</p> <p>⊖ REMOVE EXISTING COMBINATION MOTOR STARTER AND DISCONNECT.</p> <p>⊖ DISCONNECT EXISTING EQUIPMENT.</p> <p>⊖ REMOVE EXISTING FIRE ALARM SYSTEM MONITORING MODULE.</p>	<p>Ⓜ MONITOR MODULE. CONNECT TO EXISTING FIRE ALARM CONTROL PANEL.</p>
EXISTING	ABBREVIATIONS
<p>○ EXISTING TO REMAIN WALL OUTLET AND LUMINAIRE.</p> <p>Ⓜ EXISTING TO REMAIN BGE METER.</p> <p>Ⓜ EXISTING TO REMAIN TIME CLOCK.</p> <p>Ⓜ EXISTING TO REMAIN JUNCTION BOX.</p> <p>Ⓜ EXISTING TO REMAIN HOMERUN TO PANELBOARD. NUMBER OF ARROW HEADS INDICATES NUMBER OF CIRCUITS. NUMBER OF HASH MARKS INDICATES NUMBER OF CONDUCTORS.</p> <p>Ⓜ EXISTING TO REMAIN WIRING AND CONDUIT.</p> <p>Ⓜ EXISTING TO REMAIN MANUAL MOTOR STARTER SWITCH.</p> <p>Ⓜ EXISTING TO REMAIN COMBINATION MOTOR STARTER AND DISCONNECT.</p> <p>Ⓜ EXISTING TO REMAIN ENCLOSED SWITCH (DISCONNECT/SAFETY SWITCH).</p> <p>Ⓜ EXISTING TO REMAIN EQUIPMENT CONNECTION AS NOTED.</p> <p>Ⓜ EXISTING TO REMAIN RECEPTACLE.</p> <p>Ⓜ EXISTING TO REMAIN BOILER SHUT-DOWN SWITCH.</p> <p>Ⓜ EXISTING TO REMAIN ELECTRIC PANELBOARD (277/480V), SURFACE MOUNTED.</p> <p>Ⓜ EXISTING TO REMAIN ELECTRIC PANELBOARD (120/208V), SURFACE OR RECESSED MOUNTED.</p> <p>Ⓜ EXISTING TO REMAIN TRANSFORMER.</p> <p>Ⓜ EXISTING TO REMAIN CONTROL PANEL.</p>	<p>A, AMP AMPERE</p> <p>AF ABOVE FLOOR</p> <p>AIC AMPERES INTERRUPTING CAPACITY</p> <p>ATC AUTOMATIC TEMPERATURE CONTROLS</p> <p>ATS AUTOMATIC TRANSFER SWITCH</p> <p>AWG AMERICAN WIRE GAUGE</p> <p>BFG BELOW FINISHED GRADE</p> <p>BGE BALTIMORE GAS AND ELECTRIC</p> <p>C CONDUIT</p> <p>CB CIRCUIT BREAKER</p> <p>CT CURRENT TRANSFORMER</p> <p>DIST DISTRIBUTION</p> <p>DWG DRAWING</p> <p>DX DISCONNECT EXISTING</p> <p>ETR EXISTING TO REMAIN</p> <p>EX EXISTING</p> <p>FA FIRE ALARM</p> <p>FACP FIRE ALARM CONTROL PANEL</p> <p>G GROUND</p> <p>GDS GENERATOR DOCKING STATION</p> <p>GEC GROUNDING ELECTRODE CONDUCTOR</p> <p>GFCCI GROUND FAULT CIRCUIT INTERRUPTER</p> <p>HCPSS HOWARD COUNTY PUBLIC SCHOOL SYSTEM</p> <p>HP HORSEPOWER</p> <p>KCMIL THOUSAND CIRCULAR MILS</p> <p>KVA KILOWATT</p> <p>LP LIQUID PROPANE</p> <p>MDP MAIN DISTRIBUTION PANEL</p> <p>N "NEUTRAL" GROUNDING CONDUCTOR</p> <p>NEC NATIONAL ELECTRICAL CODE</p> <p>NEMA NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION</p> <p>PSI POUNDS PER SQUARE INCH</p> <p>P POLE, POLES OR PUMP</p> <p>PVC POLYVINYL CHLORIDE</p> <p>RM ROOM</p> <p>RX REMOVE EXISTING</p> <p>TYP TYPICAL</p> <p>UON UNLESS OTHERWISE NOTED</p> <p>V VOLT, VOLTS</p> <p>W WATTS/WIRE, WIRES</p> <p>WP WEATHERPROOF</p> <p>XFMR TRANSFORMER</p> <p>∅ PHASE</p> <p>& AND</p>
WIRING	
<p>Ⓜ HOMERUN TO PANELBOARD. NUMBER OF HASH MARKS INDICATES NUMBER OF CONDUCTORS. WHERE NO HASH MARKS APPEAR, PROVIDE TWO (2) CONDUCTORS PLUS GROUND. REFER TO PANEL SCHEDULES FOR CONDUCTOR SIZES. PROVIDE GROUND CONDUCTORS IN EVERY RACEWAY AND CONDUIT. PROVIDE SEPARATE NEUTRAL CONDUCTOR FOR EACH LIGHTING CIRCUIT AND BRANCH CIRCUIT.</p> <p>— CONDUIT AND WIRING RUN EXPOSED IN OPEN CEILINGS, UON. PROVIDE GROUND CONDUCTORS IN CONDUITS.</p> <p>--- GROUNDING CONDUCTOR RUN UNDERGROUND WHERE SHOWN ON FLOOR PLAN.</p> <p>→ CONDUIT TURNING DOWN.</p> <p>↗ CONDUIT TURNING UP.</p> <p>Ⓜ PULLBOX, SIZED AS REQUIRED.</p> <p>Ⓜ JUNCTION BOX WITH BLANK COVER PLATE, CEILING MOUNTED.</p> <p>Ⓜ SINGLE-GANG OUTLET BOX WITH BLANK COVER PLATE, RECESSED WALL MOUNTED, TO GROUND.</p>	
LIGHTING	
<p>Ⓜ WALL OUTLET AND LUMINAIRE ON EMERGENCY CIRCUIT, TYPE AS DESIGNATED.</p>	

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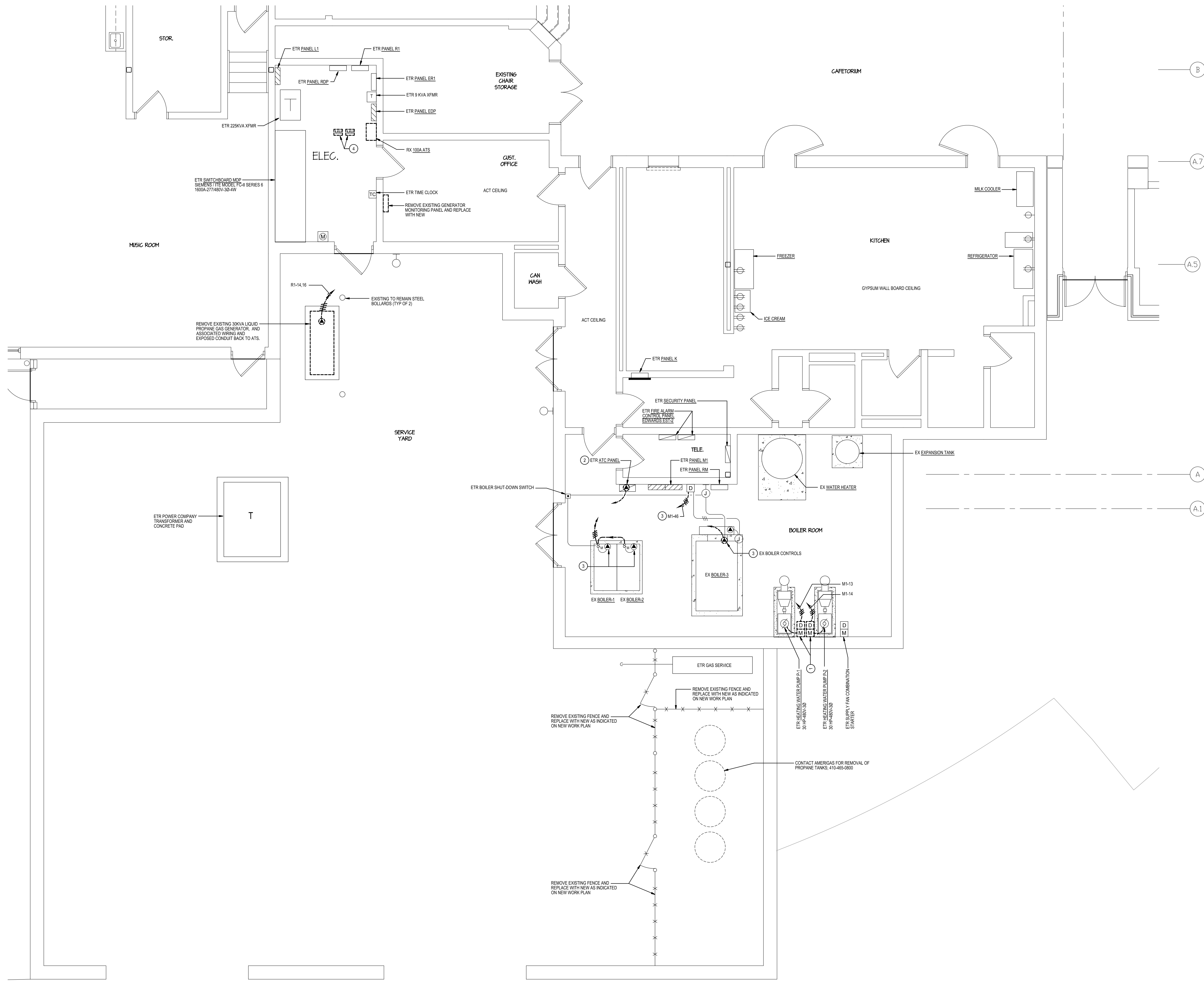
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 - WHERE EQUIPMENT IS NOTED "DISCONNECT" OR "REMOVE", REMOVE ASSOCIATED WIRE AND CONDUIT BACK TO SOURCE, UNLESS OTHERWISE NOTED.
 - REMOVE EXISTING EQUIPMENT AND DEVICES INDICATED, INCLUDING ASSOCIATED WIRE AND CONDUIT BACK TO SOURCE UNLESS OTHERWISE NOTED.
 - EXISTING CIRCUITS INTERRUPTED BY DEMOLITION, BUT ARE TO REMAIN, SHALL BE MADE CONTINUOUS.
 - IN BLOCK OR CONCRETE WALLS TO REMAIN, PROVIDE STAINLESS STEEL BLANK COVER PLATES FOR DEVICES REMOVED.
 - WHERE CIRCUITS ARE REMOVED BACK TO PANELS, ASSOCIATED BREAKERS WILL BE UTILIZED FOR NEW CIRCUITING OR LABELED AS SPARE.
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 - UNLESS OTHERWISE NOTED, ELECTRICAL ITEMS SHOWN HEAVY DASHED (---) SHALL BE REMOVED AND ELECTRICAL ITEMS SHOWN LIGHT SOLID (—) SHALL REMAIN.
 - THE EXISTING FACILITY WILL REMAIN IN OPERATION DURING RENOVATION. INTERRUPTION TO THE EXISTING BUILDING ELECTRIC SERVICE MUST BE COORDINATED WITH THE USER TO MINIMIZE DISRUPTION. INTERRUPTION OF UTILITIES MAY NOT OCCUR DURING SCHOOL WORKING HOURS.

- SPECIFIC NOTES:**
- ALTERNATE 1: REMOVE EXISTING COMBINATION MOTOR STARTERS AND REPLACE WITH NEW VARIABLE FREQUENCY DRIVES UNDER ALTERNATE 1.
 - ALTERNATE 1: DISCONNECT EXISTING ATC PANEL AND REMOVE CONDUIT AND WIRING BACK TO SOURCE AND RECONNECT TO STANDBY PANEL UNDER ALTERNATE 1.
 - ALTERNATE 1: DISCONNECT EXISTING BOILER AND REMOVE CONDUIT AND WIRING BACK TO SOURCE AND RECONNECT TO STANDBY PANEL UNDER ALTERNATE 1.
 - REMOVE EXISTING FIRE ALARM SYSTEM MONITOR MODULES CONNECTED TO EXISTING GENERATOR TO BE REMOVED. COORDINATE EXACT LOCATION OF EXISTING FIRE ALARM SYSTEM MONITORING MODULES IN FIELD.

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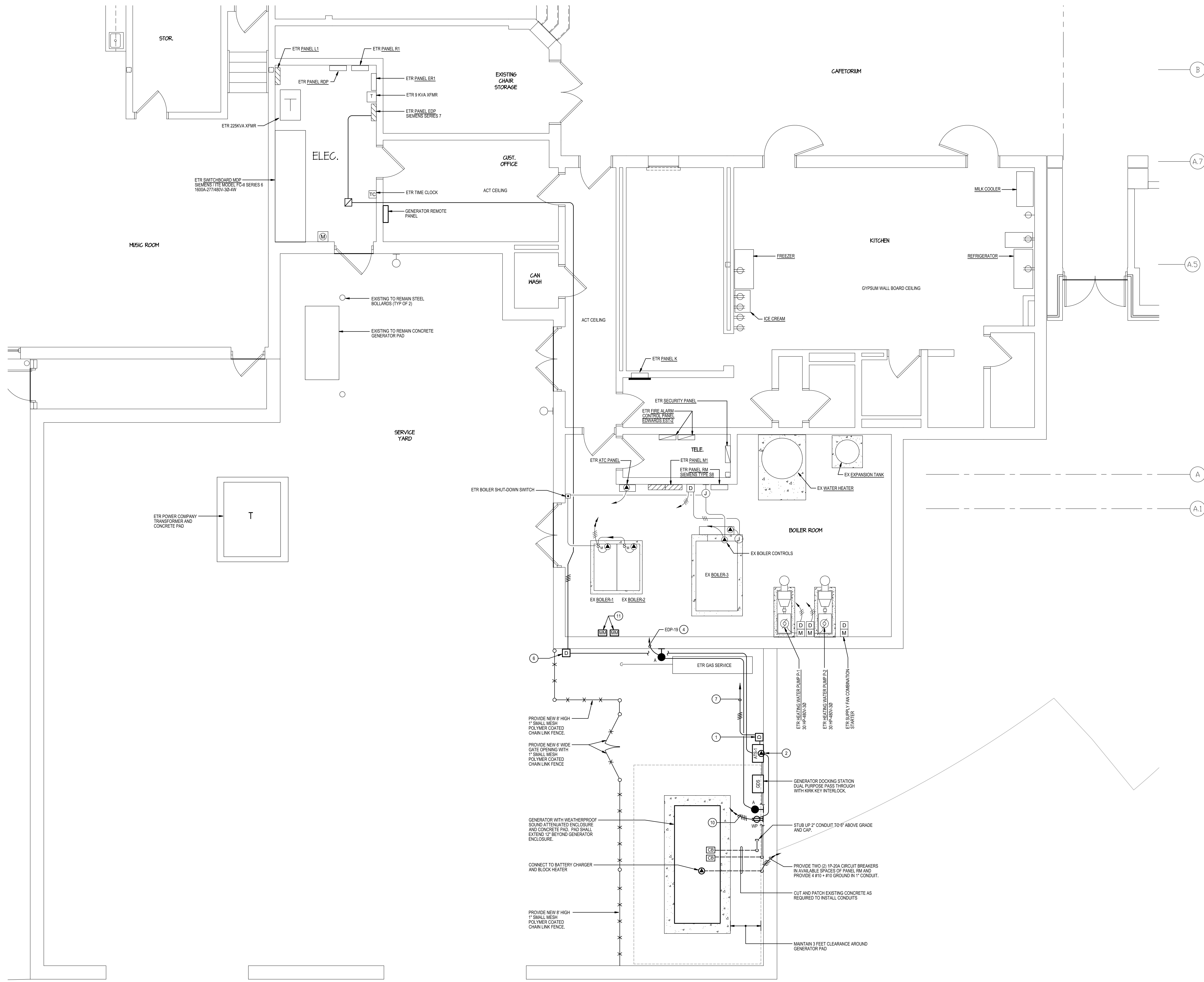
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PARTIAL MAIN LEVEL FLOOR PLAN
 DEMOLITION
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4 2 0 4 8
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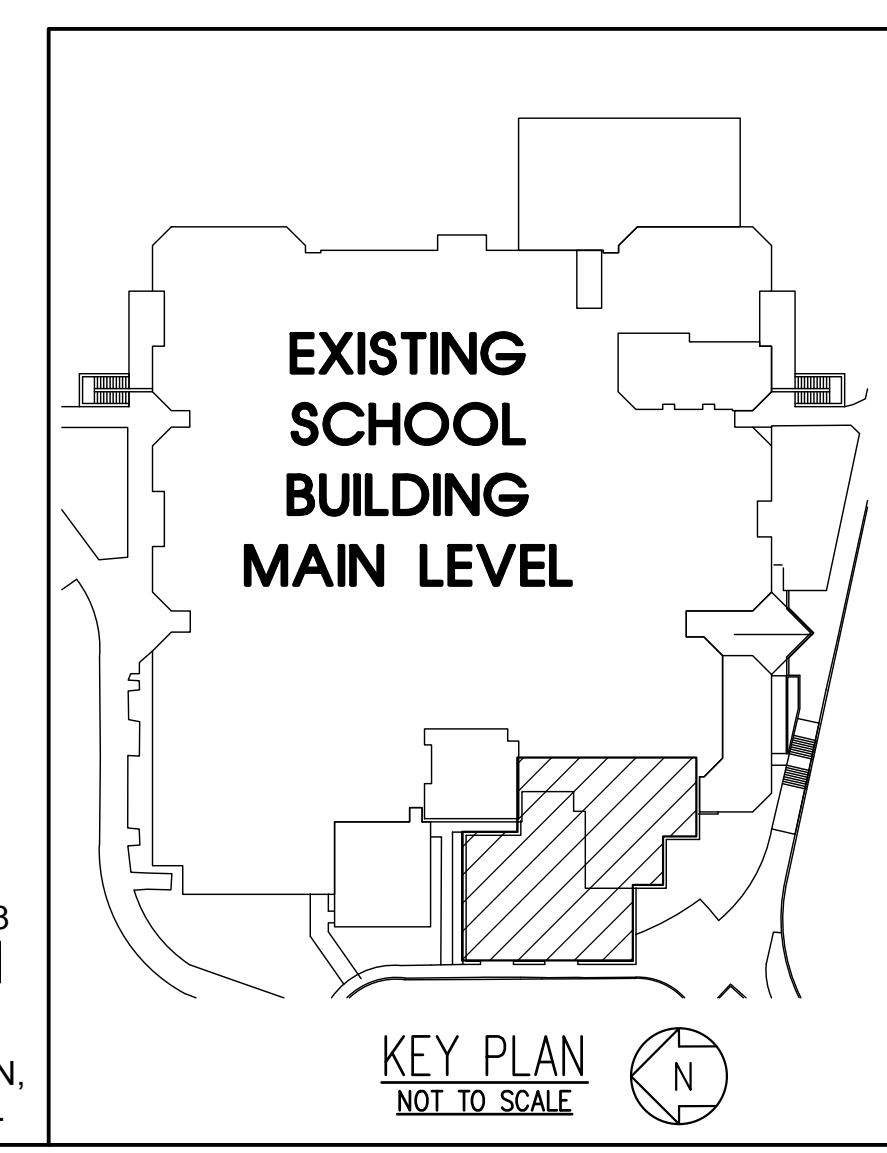
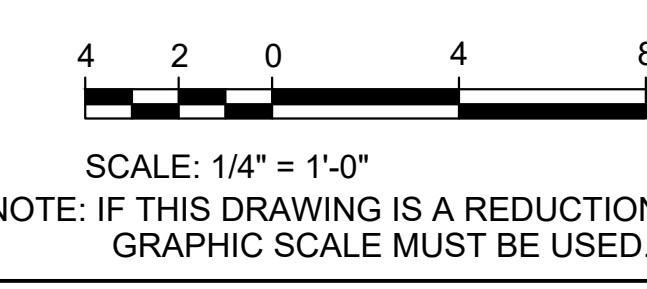
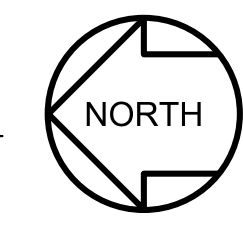
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B. THE EXISTING FACILITY WILL REMAIN IN OPERATION DURING RENOVATION. INTERRUPTION TO THE EXISTING BUILDING ELECTRICAL SERVICE MUST BE COORDINATED WITH THE USER TO MINIMIZE DISRUPTION. INTERRUPTION OF UTILITIES MAY NOT OCCUR DURING SCHOOL WORKING HOURS.

- SPECIFIC NOTES:**
1. PROVIDE 3P-60A-600V DISCONNECT SWITCH FUSED AT 60A IN NEMA 4X STAINLESS STEEL ENCLOSURE.
 2. CONNECT TO 120V STRIP HEATER IN TRANSFER SWITCH.
 3. NOT USED.
 4. PROVIDE 1P-20A CIRCUIT BREAKER IN AVAILABLE SPACE AND PROVIDE 2 #12 + #12 GROUND IN 3/4" CONDUIT.
 5. NOT USED.
 6. PROVIDE 3P-60A-600V NON-FUSED DISCONNECT SWITCH IN NEMA 4X STAINLESS STEEL ENCLOSURE.
 7. CONNECT TO EXISTING 3P-60A BREAKER IN EXISTING SWITCHBOARD MDP.
 8. NOT USED.
 9. NOT USED.
 10. PROVIDE TWO (2) 1P-20A CIRCUIT BREAKERS IN AVAILABLE SPACES OF PANEL RM AND PROVIDE 4 #10 + #10 GROUND IN 3/4" CONDUIT.
 11. PROVIDE FIRE ALARM MONITOR MODULES FOR GENERATOR RUNNING AND GENERATOR FAULT. MAKE CONNECTIONS TO GENERATOR NECESSARY FOR COMPLETE INSTALLATION.

PARTIAL MAIN LEVEL FLOOR PLAN
 NEW WORK
 SCALE: 1/4" = 1'-0"



GENERATOR REPLACEMENT AT
ELKBRIDGE ELEMENTARY SCHOOL
 HOWARD COUNTY PUBLIC SCHOOL SYSTEM
 7075 MONTGOMERY ROAD
 ELKBRIDGE, MD 21075

James Posey Associates
 Engineering Your Vision

Mechanical & Electrical Consulting Engineers

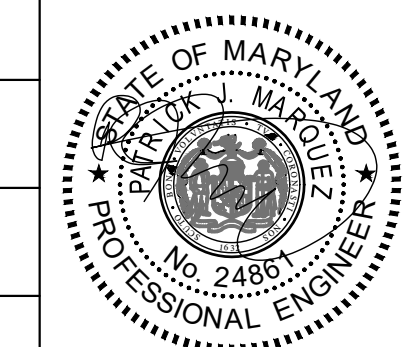
3112 Lord Baltimore Drive
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tel 410-262-6100
 fax 410-298-9820
 jamesposey.com

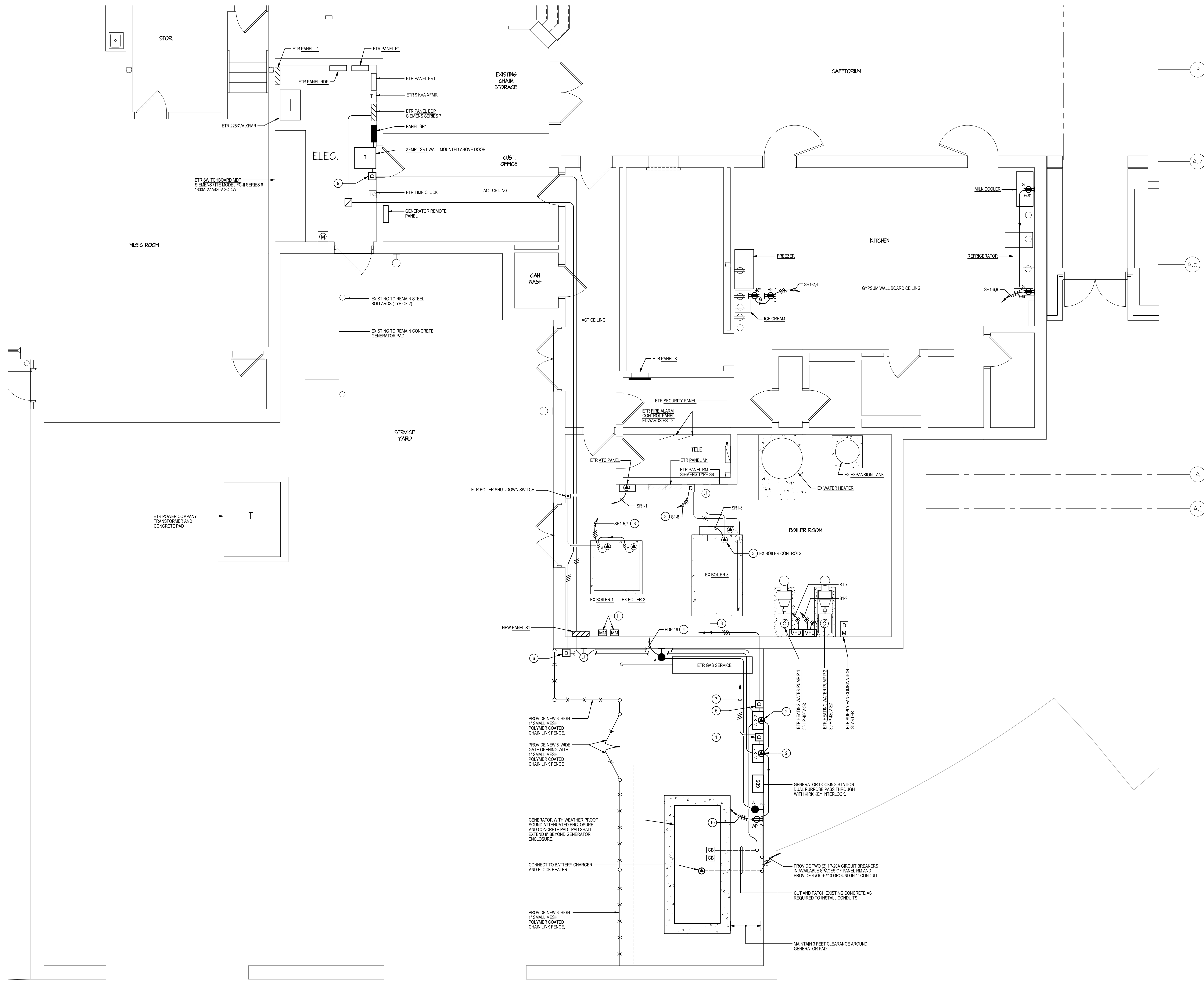
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Proj Bid No:	
Sym.	REVISIONS
BID DOCUMENTS	10/5/18

Drawn	VBP
Designed	VBP
Checked	FJM
Approved	FJM
Scale	AS NOTED
Project No.	7001-18
Date	OCTOBER 5, 2018
Drawing Title	PART FLOOR PLAN NEW WORK
Sheet No:	E1.2



October 05, 2018 11:59 AM
 7075 MONTGOMERY ROAD
 ELKBRIDGE, MD 21075



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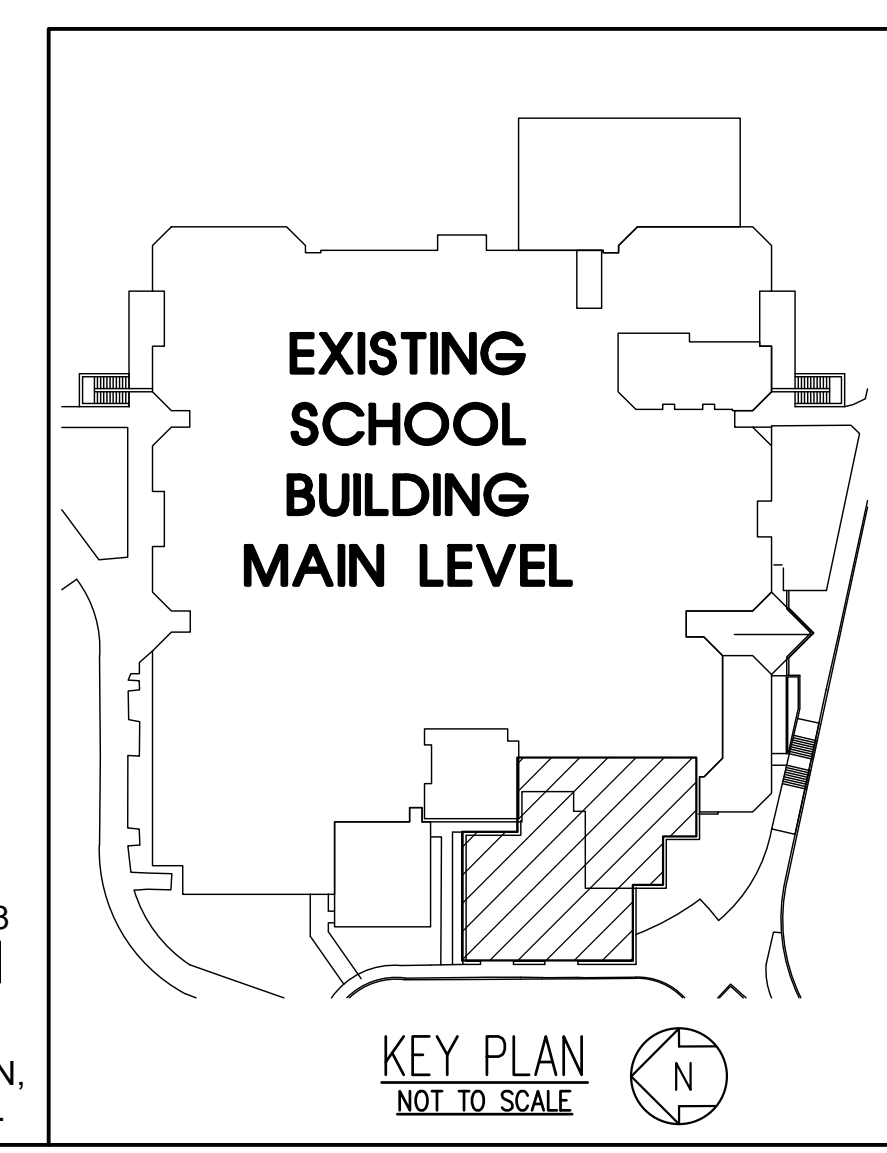
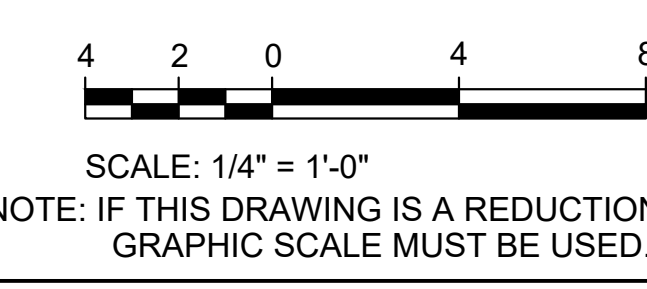
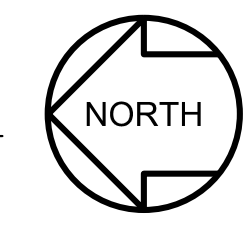
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C. IN KITCHEN, SURFACE MOUNTED CONDUIT SERVING SURFACE MOUNTED RECEPTACLES SHALL BE INSTALLED SUCH THAT THERE IS A MINIMUM OF 3/4" SPACE BETWEEN THE CONDUIT AND THE WALL.

SPECIFIC NOTES:

1. PROVIDE 3P-60A-600V DISCONNECT SWITCH FUSED AT 60A IN NEMA 4X STAINLESS STEEL ENCLOSURE.
2. CONNECT TO 120V STRIP HEATER IN TRANSFER SWITCH.
3. CONNECT EXISTING BOILERS TO STANDBY POWER AND CONNECT TO EXISTING EMERGENCY BOILERS SHUT-DOWN SWITCH.
4. PROVIDE 1P-20A CIRCUIT BREAKER IN AVAILABLE SPACE AND PROVIDE 2 #12 + #12 GROUND IN 3/4" CONDUIT.
5. PROVIDE 3P-200A-600V DISCONNECT SWITCH FUSED AT 125A IN NEMA 4X STAINLESS STEEL ENCLOSURE.
6. PROVIDE 3P-60A-600V NON-FUSED DISCONNECT SWITCH IN NEMA 4X STAINLESS STEEL ENCLOSURE.
7. CONNECT TO EXISTING 3P-60A BREAKER IN EXISTING SWITCHBOARD MDP.
8. PROVIDE 3P-125A CIRCUIT BREAKER IN EXISTING SWITCHBOARD MDP AND MAKE CONNECTIONS.
9. PROVIDE 3P-60A-600V NON-FUSED DISCONNECT SWITCH MOUNTED ADJACENT TO TRANSFORMER.
10. PROVIDE TWO (2) 1P-20A CIRCUIT BREAKERS IN AVAILABLE SPACES OF PANEL RM AND PROVIDE 4 #10 + #10 GROUND IN 3/4" CONDUIT.
11. PROVIDE FIRE ALARM MONITOR MODULES FOR GENERATOR RUNNING AND GENERATOR FAULT. MAKE CONNECTIONS TO GENERATOR NECESSARY FOR COMPLETE INSTALLATION.

PARTIAL MAIN LEVEL FLOOR PLAN
NEW WORK (ALTERNATE 1)
 SCALE: 1/4"=1'-0"



GENERATOR REPLACEMENT AT
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 HOWARD COUNTY PUBLIC SCHOOL SYSTEM
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 ELKRIDGE, MD 21075

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Scale AS NOTED	
Project No. 7001-18	Drawing Title PART FLOOR PLAN NEW WORK (ALTERNATE 1)
Date OCTOBER 5, 2018	Sheet No: E1.3

GENERATOR REPLACEMENT AT
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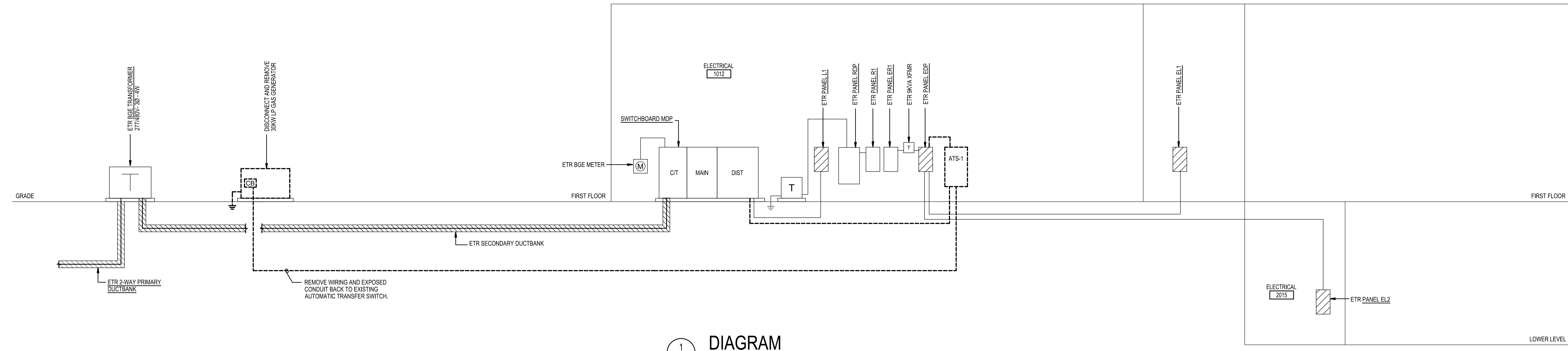
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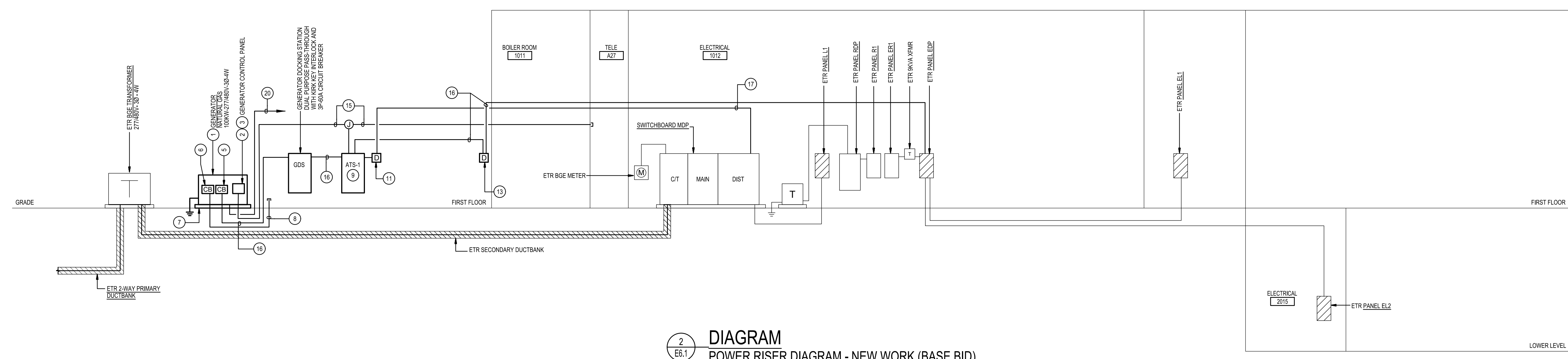
Drawn VBP	
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Approved FJM	
Scale AS NOTED	
Project No. 7001-18	
Date OCTOBER 5, 2018	
Drawing Title POWER RISER DIAGRAMS	
Sheet No: E6.1	

- GENERAL NOTES:**
- A. INFORMATION SHOWN ON THIS DRAWING PERTAINING TO EXISTING CONDITIONS HAS BEEN OBTAINED FROM AVAILABLE BUILDING DRAWINGS OR GENERAL FIELD OBSERVATIONS AND MAY NOT INDICATE ACTUAL EXISTING CONDITIONS IN DETAIL OR DIMENSION. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL EXISTING CONDITIONS PRIOR TO FABRICATION OR PERFORMANCE OF ANY WORK. SHOULD CONDITIONS BE DISCOVERED THAT PREVENT EXECUTION OF THE WORK AS INDICATED IMMEDIATELY NOTIFY THE ENGINEER IN WRITING AND AWAIT DIRECTION BEFORE PROCEEDING WITH THE WORK.
 - B. THE EXISTING FACILITY WILL REMAIN IN OPERATION DURING RENOVATION. INTERFERENCE TO THE EXISTING BUILDING ELECTRIC SERVICE MUST BE COORDINATED WITH THE USER TO MINIMIZE DISRUPTION. INTERRUPTION OF UTILITIES MAY NOT OCCUR DURING SCHOOL WORKING HOURS.

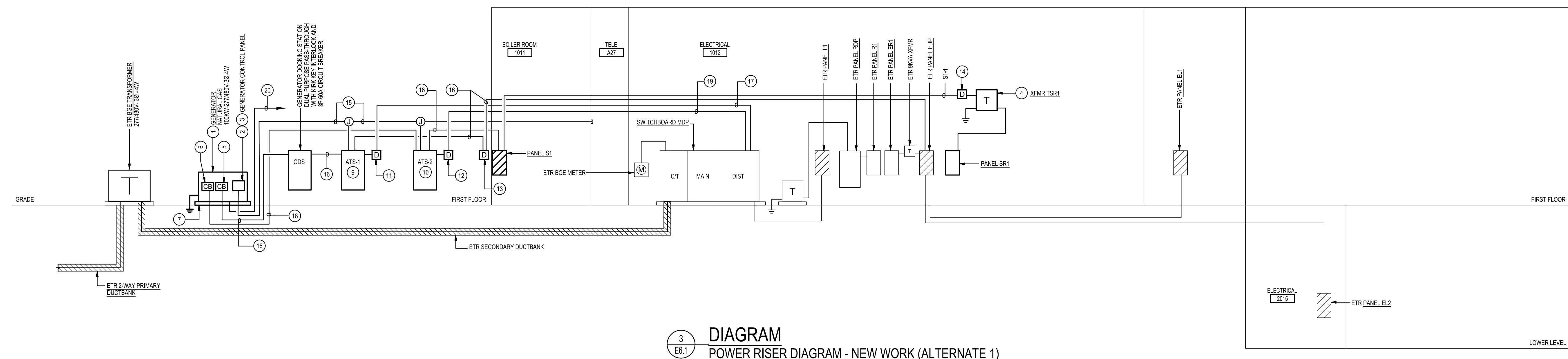
- SPECIFIC NOTES:**
1. PROVIDE TYPE 10 GENERATOR, PER NFPA 110. THE GENERATOR SHALL BE ABLE TO PROVIDE GENERATOR POWER TO THE SCHOOL WITHIN 10 SECONDS AFTER A UTILITY POWER OUTAGE (TYPE 10).
 2. PROVIDE GENERATOR CONTROL WIRING IN CONDUIT BETWEEN GENERATOR CONTROL PANEL AND ASSOCIATED AUTOMATIC TRANSFER SWITCHES. MAKE CONNECTIONS NECESSARY FOR COMPLETE INSTALLATION. GENERATOR CONTROL WIRING SHALL BE AS PER GENERATOR MANUFACTURER'S RECOMMENDATIONS.
 3. PROVIDE WIRING IN CONDUIT FROM GENERATOR CONTROL PANEL TO GENERATOR REMOTE ALARM INDICATOR PANEL. WIRING SHALL BE AS PER GENERATOR MANUFACTURER'S RECOMMENDATIONS. LOCATE GENERATOR REMOTE ALARM INDICATOR PANEL IN CUSTOMER'S OFFICE.
 4. REFER TO TRANSFORMER SCHEDULE ON DRAWING E6.2 FOR ADDITIONAL INFORMATION ON TRANSFORMER AS NOTED AND FOR NUMBER AND SIZE OF WIRE AND CONDUIT OF PRIMARY AND SECONDARY FEEDERS FOR TRANSFORMER AS NOTED.
 5. PROVIDE 3P-40A-150A FRAME MICROLOGIC AMMETER TRIP CIRCUIT BREAKER TO SERVE GENERATOR LIFE SAFETY LOADS. MOUNT CIRCUIT BREAKER WITHIN GENERATOR ENCLOSURE AND MAKE CONNECTIONS. COORDINATE LOCATION OF CIRCUIT BREAKER WITH GENERATOR MANUFACTURER.
 6. PROVIDE 3P-125A CIRCUIT BREAKER TO SERVE GENERATOR STANDBY LOADS. MOUNT CIRCUIT BREAKER WITHIN GENERATOR ENCLOSURE AND MAKE CONNECTIONS. COORDINATE LOCATION OF CIRCUIT BREAKER WITH GENERATOR MANUFACTURER. PROVIDE UNDER BASE BID.
 7. GENERATOR CONCRETE PAD.
 8. PROVIDE 2" CONDUIT WITH PULL ROPE FROM BREAKER AND STUB UP 6" ABOVE GRADE AND CAP UNDER BASE BID.
 9. PROVIDE 4P-80A AUTOMATIC TRANSFER SWITCH (ATS) WITH STRIP HEATER IN NEMA 3R ENCLOSURE TO SERVE LIFE SAFETY LOADS. ATS SHALL HAVE A MINIMUM LL 100% WITHSTAND AND CLOSING RATING OF 180AC.
 10. PROVIDE 4P-150A AUTOMATIC TRANSFER SWITCH (ATS) WITH STRIP HEATER IN NEMA 3R ENCLOSURE TO SERVE STANDBY LOADS. ATS SHALL HAVE A MINIMUM LL 100% WITHSTAND AND CLOSING RATING OF 180AC.
 11. PROVIDE 3P-100A-480V FUSED DISCONNECT SWITCH FUSED AT 60A IN NEMA 4X ENCLOSURE.
 12. PROVIDE 3P-200A-480V FUSED DISCONNECT SWITCH FUSED AT 125A IN NEMA 4X ENCLOSURE.
 13. PROVIDE 3P-60A-480V NON-FUSED DISCONNECT SWITCH IN NEMA 4X ENCLOSURE.
 14. PROVIDE 3P-40A-480V NON-FUSED DISCONNECT SWITCH MOUNTED ADJACENT TO TRANSFORMER.
 15. PROVIDE 1" CONDUIT FOR CONTROL WIRING. EXTEND CONDUIT TO TELE ROOM.
 16. PROVIDE 4 #6 + #10 GROUND IN 1-1/4" CONDUIT.
 17. PROVIDE 4 #6 + #10 GROUND IN 1-1/4" CONDUIT AND CONNECT TO EXISTING 3P-40A CIRCUIT BREAKER IN SWITCHBOARD MDP.
 18. PROVIDE 4 #1 + #4 GROUND IN 2" CONDUIT.
 19. PROVIDE 3P-125A CIRCUIT BREAKER IN EXISTING SWITCHBOARD MDP AND PROVIDE 4 #1 + #4 GROUND IN 2" CONDUIT.
 20. PROVIDE #3/8 GROUNDING ELECTRODE CONDUCTOR IN 1" CONDUIT AND CONNECT TO SERVICE GROUNDING BUSBAR.



1
 E6.1
DIAGRAM
POWER RISER DIAGRAM - DEMOLITION
 NOT TO SCALE



2
 E6.1
DIAGRAM
POWER RISER DIAGRAM - NEW WORK (BASE BID)
 NOT TO SCALE



3
 E6.1
DIAGRAM
POWER RISER DIAGRAM - NEW WORK (ALTERNATE 1)
 NOT TO SCALE

WIRING SCHEDULE: PANEL S1 (PROVIDE UNDER ALTERNATE 1)

277/480 VOLTS		3 PHASE 4 WIRE			125 AMP BUS			SURFACE MOUNTED				
CIR- CUT	POLE	DESCRIPTION	WIRE/ CONDUIT	BREAKER POLE AMP	AØ	BØ	CØ	CIR- CUT	POLE	DESCRIPTION	WIRE/ CONDUIT	BREAKER POLE AMP
1	1	PANEL SR1 VIA TSR1	3 #6 + #10G 1" C	3 60	5.2	10.6		2	2	PUMP P-2	3 #4 + #8G -1 1/4" C	3 90
-	3					1.7	10.6	-	4			
-	5						2.9	10.6	-	6		
7	7	PUMP P-1	3 #4 + #8G -1 1/4" C	3 90	10.6	1.6		8	8	BOILER 3	3 #12-#12G -3/4" C	3 15
-	9						10.6	1.6				
-	11							10.6	1.6			
13	13	SPARE		1 20	-	-		14	14	SPARE		1 20
15	15	SPARE		1 20	-	-		16	16	SPARE		1 20
17	17	SPARE		1 20	-	-		18	18	SPARE		1 20
-	19	SPACE AND PROVISIONS	-	1 -	-	-	-	-	20	SPACE AND PROVISIONS	-	1 -
-	21	SPACE AND PROVISIONS	-	1 -	-	-	-	-	22	SPACE AND PROVISIONS	-	1 -
-	23	SPACE AND PROVISIONS	-	1 -	-	-	-	-	24	SPACE AND PROVISIONS	-	1 -
-	25	SPACE AND PROVISIONS	-	1 -	-	-	-	-	26	SPACE AND PROVISIONS	-	1 -
-	27	SPACE AND PROVISIONS	-	1 -	-	-	-	-	28	SPACE AND PROVISIONS	-	1 -
-	29	SPACE AND PROVISIONS	-	1 -	-	-	-	-	30	SPACE AND PROVISIONS	-	1 -
CONNECTED LOAD = 78.2 KVA					15.8	12.2	12.3	12.2	13.5	12.2	MAIN BREAKER 125 AMPS	
DEMAND LOAD = 46.6 KVA												
MIN A/C RATING = 22,000 AMPS SYMMETRICAL					LOCATION BOILER RM							

WIRING SCHEDULE: PANEL SR1 (PROVIDE UNDER ALTERNATE 1)

120/208 VOLTS		3 PHASE 4 WIRE			100 AMP BUS			SURFACE MOUNTED				
CIR- CUT	POLE	DESCRIPTION	WIRE/ CONDUIT	BREAKER POLE AMP	AØ	BØ	CØ	CIR- CUT	POLE	DESCRIPTION	WIRE/ CONDUIT	BREAKER POLE AMP
1	1	ATC	#10-3/4" C	1 20	1.0	1.8		2	2	KITCHEN - FREEZER	#10-3/4" C	1 20
3	3	BOILER 3 CONTROL	#12-3/4" C	1 20		0.7	1.0	4	4	KITCHEN - ICE CREAM	#10-3/4" C	1 20
5	5	BOILER 1	#10-3/4" C	1 20			1.4	1.5	6	KITCHEN - REFRIGERATOR	#10-3/4" C	1 20
7	7	BOILER 2	#10-3/4" C	1 20	1.4	1.0		8	8	KITCHEN - MILK COOLER	#10-3/4" C	1 20
9	9	SPARE		1 20	-	-		10	10	SPARE		1 20
11	11	SPARE		1 20	-	-		12	12	SPARE		1 20
13	13	SPARE		1 20	-	-		14	14	SPARE		1 20
15	15	SPARE		1 20	-	-		16	16	SPARE		1 20
17	17	SPARE		1 20	-	-		18	18	SPARE		1 20
-	19	SPACE AND PROVISIONS	-	1 -	-	-	-	-	20	SPACE AND PROVISIONS	-	1 -
-	21	SPACE AND PROVISIONS	-	1 -	-	-	-	-	22	SPACE AND PROVISIONS	-	1 -
-	23	SPACE AND PROVISIONS	-	1 -	-	-	-	-	24	SPACE AND PROVISIONS	-	1 -
-	25	SPACE AND PROVISIONS	-	1 -	-	-	-	-	26	SPACE AND PROVISIONS	-	1 -
-	27	SPACE AND PROVISIONS	-	1 -	-	-	-	-	28	SPACE AND PROVISIONS	-	1 -
-	29	SPACE AND PROVISIONS	-	1 -	-	-	-	-	30	SPACE AND PROVISIONS	-	1 -
CONNECTED LOAD = 9.8 KVA					2.4	2.8	0.7	1.0	1.4	1.5	MAIN BREAKER 100 AMPS	
DEMAND LOAD = 10.0 KVA												
MIN A/C RATING = 10,000 AMPS SYMMETRICAL					LOCATION MAIN ELEC							

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	LAMP	MINIMUM LUMENS	MAXIMUM WATTAGE	BASIS-OF-DESIGN		APPROVED EQUAL (NOTE A)	APPROVED EQUAL (NOTE A)	VOLT	MOUNTING	NOTES
					MANUFACTURER	CATALOG NO.					
A	LED WALL SCONCE WITH TYPE IV DISTRIBUTION, DARK BRONZE FINISH WITH INTEGRAL PHOTOCELL	LED 3000K	1500 LM	65 W	LITHONIX	WST LED P1 30K VF 277 DDBXD PE	COOPER INVUE (ENC SERIES)	LSLIGHTING (PWM SERIES)	277	WALL	1

GENERAL NOTES:
A. LISTED EQUALS MANUFACTURERS FOUND TO OFFER PRODUCTS SIMILAR TO THE BASIS-OF-DESIGN PRODUCT, INCLUDING PERFORMANCE, APPEARANCE, AND QUALITY. LISTED EQUALS MUST BE AVAILABLE WITH LUMEN OUTPUT WITHIN +/- 5% OF DESIGN LUMENS AND SHALL COMPLY WITH MAXIMUM WATTAGE. ADDITIONAL DOCUMENTATION AND CALCULATIONS DEMONSTRATING COMPLIANCE SHOULD BE MADE AVAILABLE UPON REQUEST.
B. LIGHTING FIXTURES SHALL HAVE A COLOR RENDERING INDEX (CRI) OF 80 OR GREATER, UNLESS OTHERWISE NOTED IN SCHEDULE ABOVE.

SPECIFIC NOTES:
1. INSTALL LIGHT FIXTURE AT SAME ELEVATIONS AS EXISTING LIGHT FIXTURES.

SCHEDULE OF TRANSFORMERS

TRANSFORMER DESIG.	KVA	LOCATION	PRIMARY FEEDER	SECONDARY TAP WIRING & CONDUIT (GENERAL NOTE A)	GROUNDING ELECTRODE CONDUCTOR	EQUIPMENT SERVED	SPECIFIC NOTES
TSR1	30	ELEC RM	S1-1	#3 + #6 SSBJ - 1 1/2" C	#6	PANEL SR1	1,2

GENERAL NOTES:
A. TRANSFORMER SECONDARY TAP, CONDUCTORS INDICATED REFLECT PHASE, NEUTRAL (IN WYE CONFIGURATION), AND SUPPLY-SIDE BONDING JUMPER (SSBJ) IN ACCORDANCE WITH NEC ARTICLES 450, 240.21, AND 250.30.
B. TRANSFORMER SHALL HAVE 480-VOLT, 3-PHASE, DELTA PRIMARY AND 120/208-VOLT, 3-PHASE, WYE SECONDARY.

SPECIFIC NOTES:
1. PROVIDE WITH FACTORY WALL MOUNTING KIT.
2. PROVIDE UNDER ALTERNATE 1


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Scale AS NOTED
Project No. 7001-18
Date OCTOBER 5, 2018
Drawing Title
SCHEDULES

Sheet No:
E6.2

SCHEDULE KEY

S1	SR1
LTG	XFMR