

ATTACHMENT B

COUNTY OF ROANOKE

REPLACEMENT GENERATOR PROJECT #1 GREEN RIDGE REC CENTER ROANOKE, VA



**ROANOKE
COUNTY VA**
PARKS, RECREATION
& TOURISM

ISSUED FOR CONSTRUCTION

SEPTEMBER 07, 2017

100048

Contract Drawings

GENERAL DRAWINGS

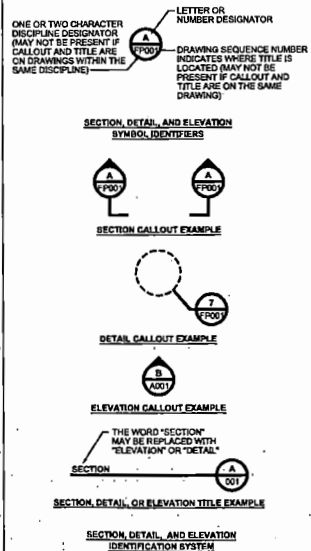
DWG. NO.	TITLE
	COVER-INDEX

MECHANICAL DRAWINGS

DWG. NO.	TITLE
M100	MECHANICAL LEGEND AND ABBREVIATIONS
MD101	MECHANICAL DEMOLITION PLAN
M101	MECHANICAL NEW WORK PLAN

ELECTRICAL DRAWINGS

DWG. NO.	TITLE
E001	ELECTRICAL SPECIFICATIONS AND GENERAL NOTES
ED101	DEMOLITION PLAN
E101	NEW WORK PLAN
ED001	DEMOLITION ONE-LINE DIAGRAM
E001	NEW WORK ONE-LINE DIAGRAM



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






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REPLACEMENT GENERATOR PROJECT #1

COVER-INDEX

PIPE LINE ACCESSORIES

-  GATE VALVE
-  BUTTERFLY VALVE
-  CHECK VALVE
-  BALL VALVE
-  PUMP
-  PRESSURE GAUGE
-  Y-TYPE STRAINER
-  REMOVABLE CAP
-  UNION
-  METER

COMPONENTS TO BE FURNISHED WITH EQUIPMENT








DETAIL/SECTION TITLE

NUMBER = DETAIL DESIGNATOR
LETTER = SECTION DESIGNATOR

DETAIL

DRAWING WHERE
DETAIL/SECTION IS TAKEN

CONSTRUCTION INTERFACE

-  DEMOLITION
-  EXISTING
-  NEW
-  EXISTING
-  EXISTING
-  NEW
-  DEMOLITION

MECHANICAL ABBREVIATIONS

- GPM GALLONS PER MINUTE
- HP HORSEPOWER
- HZ HERTZ
- IN INCHES
- OC ON CENTER
- NG NATURAL GAS
- V VOLTS

GENERAL NOTES:

- LEGEND IS GENERAL IN NATURE AND MAY INDICATE MORE INFORMATION THAN IS APPLICABLE TO PROJECT. SEE PLANS FOR SPECIFIC SYMBOLS AND ABBREVIATIONS.
- PROVIDE ALL MATERIALS, VALVES, AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED, AND AS REQUIRED BY CODE.
- INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
- COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH OTHER WORK (STRUCTURAL, CIVIL, ELECTRICAL WORK, ETC...) SHOWN ON CONTRACT DOCUMENT DRAWINGS.
- LOCATE ALL MECHANICAL EQUIPMENT FOR UNOBSTRUCTED ACCESS TO UNIT ACCESS PANELS, CONTROLS, AND VALVES. MAINTAIN UNOBSTRUCTED ALL AREAS AND CLEARANCES INDICATED BY EQUIPMENT MANUFACTURER FOR SERVICE.
- VERIFY DIMENSIONS AND CONNECTION SIZE WITH FURNISHED EQUIPMENT.
- ENSURE EQUIPMENT SUPPORTS AND CURBS ARE LEVEL PRIOR TO INSTALLING EQUIPMENT. INSTALL ALL EQUIPMENT LEVEL AND PLUMB UNLESS OTHERWISE INDICATED.

FUEL POLISHING UNIT OPERATIONS:

- EVERY 60 DAYS (ADJ) OR WHEN MANUALLY ENERGIZED, THE FUEL POLISHING UNTIL SHALL TURN-OVER THE ENTIRE VOLUME OF EACH TANK. FILTER THE TANK FOR 6 HOURS (ADJ) CONTINUOUSLY. FUEL POLISHING UNIT OPERATIONS SHALL BE DISABLED IF GENERATOR IS STARTED.

SPECIFICATIONS:

GENERAL:

- INSTALL AND TEST COMPONENTS IN ACCORDANCE WITH THE NFPA 31 (2016), MANUFACTURERS INSTRUCTIONS, AND APPROVED PRODUCT DATA SUBMITTALS.
- PIPING MATERIALS SHALL BARE LABEL, STAMP, OR OTHER MARKINGS OF SPECIFIED TESTING.
- CLEAN INTERIOR OF PIPING. REMOVE DIRT, RUST, AND DEBRIS AS WORK PROGRESSES.
- PROTECT PIPING DURING REMAINDER OF CONSTRUCTION PERIOD TO AVOID CLOGGING WITH DIRT, RUST, AND DEBRIS AND TO PREVENT DAMAGE FROM TRAFFIC AND CONSTRUCTION WORK.

PIPING:

PROVIDE CARBON STEEL PIPE THAT COMPLIES WITH THE FOLLOWING, ASTM A53/A53M, TYPE E OR S, GRADE B, SEAMLESS OR ELECTRIC WELDED, SCHEDULE 80. END CONNECTIONS FOR PIPE OR FITTINGS SHALL BE FORGED, THREADED END CONNECTIONS, PROVIDE CONNECTIONS THAT CONFORM TO ASME B16.3, CLASS 150 OR ASME B16.11.

VALVES:

PROVIDE VALVES WITH BODIES, BONNETS, AND COVERS CONSTRUCTED OF CAST STEEL CONFORMING TO ASTM A216/A216M.

SWING TYPE CHECK VALVE SHALL BE THE FULL-OPENING, TILTING DISC, NON-SLAM, SWING TYPE THAT CONFORMS TO API SPEC 6D. DISCS AND SEATING RINGS SHALL BE RENEWABLE WITHOUT REMOVING FROM THE LINE. THE DISC SHALL BE GUIDED AND CONTROLLED TO CONTACT THE ENTIRE SEATING SURFACE.

BALL VALVE SHALL BE THE NON-LUBRICATED, DOUBLE SEATED, BALL TYPE THAT CONFORMS TO API SPEC 6D. VALVE SHALL MEET THE FIRE TEST REQUIREMENTS OF API SPEC 6FA. VALVE SHALL OPERATE FROM FULLY OPEN TO FULLY CLOSED WITH 90 DEGREE ROTATION OF THE BALL. VALVE SHALL BE CAPABLE OF 2-WAY SHUTOFF. VALVE BALL SHALL BE CONSTRUCTED OF STAINLESS STEEL. PROVIDE FULL BORE TYPE FOR ALL BALL VALVES.

PIPING ACCESSORIES:

STRAINER SHALL BE THE IN-LINE, CLEANABLE, SIMPLEX BASKET TYPE CONFIGURED IN EITHER AN "S" OR "T" PATTERN. STRAINER BODY SHALL BE FABRICATED OF CAST STEEL OR BRASS. PROVIDE STRAINER WITH A DRAIN AND WITH DRAIN PIPING THAT IS INCLUSIVE OF A BALL VALVE. STRAINER SHALL BE EQUIPPED WITH A REMOVABLE COVER, FLANGED END CONNECTIONS, AN AIR ELIMINATOR, PORTS FOR CONNECTION OF DIFFERENTIAL PRESSURE SENSOR TUBE, AND ARROWS CLEARLY CAST ON THE STRAINER SIDES THAT INDICATE THE DIRECTION OF FLOW. STRAINERS SHALL HAVE A REMOVABLE, 60 MESH, TYPE 316 STAINLESS STEEL WIRE SEDIMENT SCREEN.

PRESSURE GAUGE SHALL BE THE SINGLE STYLE TYPE THAT CONFORM TO ASME B40.100. GAUGE SHALL HAVE A 4-1/2 INCHES DIAL, A STAINLESS STEEL CASE AND TUBE, A STAINLESS STEEL BALL VALVE, PRESSURE SNUBBERS, AND A SCALE RANGE AS INDICATED. GAUGE SHALL BE LIQUID-FILLED WITH GLYCERIN OR SILICONE.

EQUIPMENT:

FUEL POLISHING UNIT
NEMA 4 RATED ENCLOSURE WITH HINGED DOORS AND HANDLE WITH KEYED LOCK. MANUAL AIR PURGE VALVE, LEAK SENSOR WITH ALARM, WATER SENSOR AND COALESCING FILTER. BASIS OF DESIGN SHALL BE RCI TECHNOLOGIES FR5+6.

no.	date	by	chkd	description
060717	RMB	MAS		ISSUED FOR CONSTRUCTION



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date	09/07/17	designed	JRR
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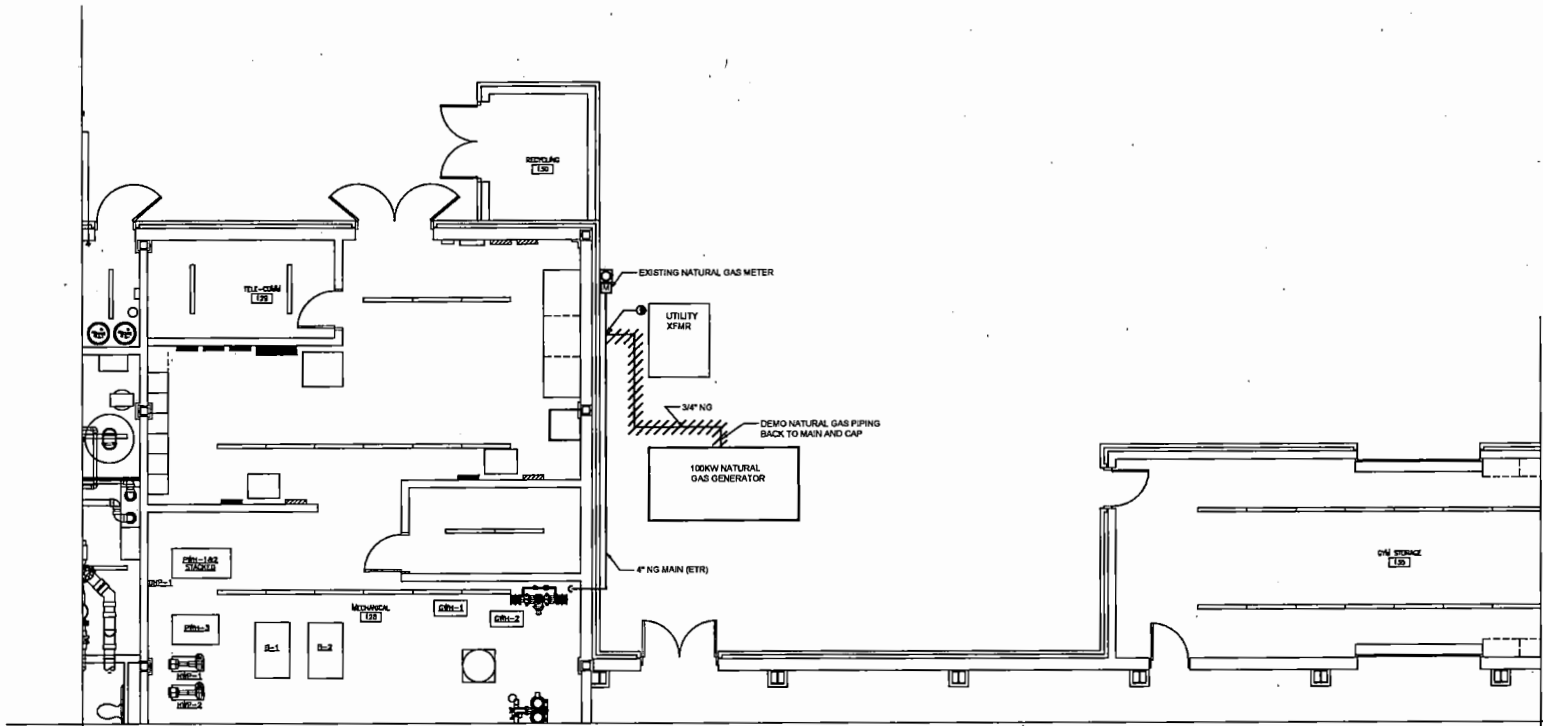


ROANOKE, VA	
GENERATOR REPLACEMENT PROJECT #1 MECHANICAL LEGEND AND ABBREVIATIONS	
project	100649
contract	
drawing	M100
rev.	0
sheet	2 of 9
check	

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

GENERAL NOTES
 1. ALL EQUIPMENT IS EXISTING TO REMAIN UNLESS OTHERWISE NOTED.
 2. REFER TO DRAWING M001 FOR MECHANICAL LEGEND, ABBREVIATIONS AND NOTES.

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090717	RMB	MAS		ISSUED FOR CONSTRUCTION



FIRST FLOOR DEMOLITION PLAN A
 MD101

0 2 4 6 8
 SCALE IN FEET

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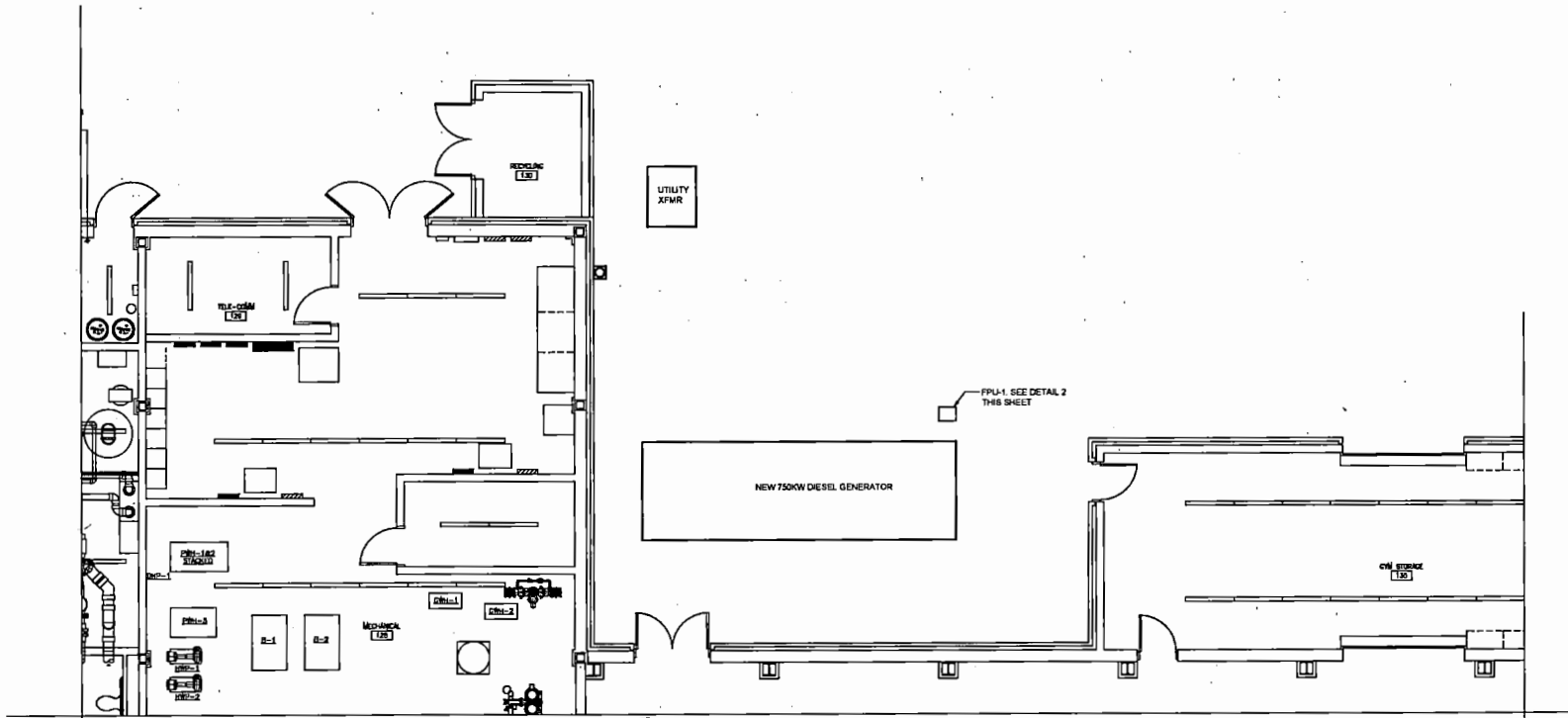
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detailed	JRR				

ROANOKE, VA	
GENERATOR REPLACEMENT PROJECT #1 MECHANICAL DEMOLITION PLAN	
project	100048
contract	
drawing	MD101
rev.	0
sheet	3 of 8
sheets	

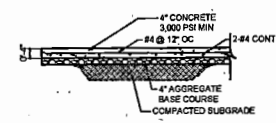


GENERAL NOTES
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 2. REFER TO DRAWING M001 FOR MECHANICAL LEGEND, ABBREVIATIONS AND NOTES.

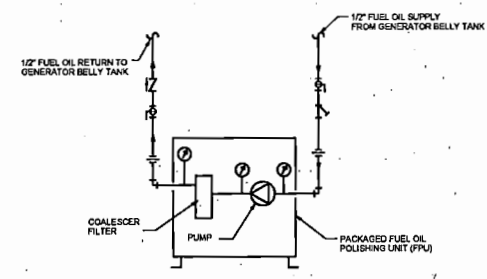
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FIRST FLOOR NEW WORK PLAN
 A M101
 SCALE IN FEET



1 NEW FUEL OIL POLISHING UNIT CONCRETE EQUIPMENT PAD DETAIL
 SCALE: NOT TO SCALE



2 NEW FUEL POLISHING UNIT DETAIL (FPU)
 SCALE: NOT TO SCALE

FUEL OIL POLISHING UNIT SCHEDULE										
MARK	DESCRIPTION	TYPE	CAPACITY (GPM)	MOTOR HP	VOLATAGE	PHASE	INLET CONNECTION	OUTLET CONNECTION	SUCTION CAPACITY	REMARKS
FPU-1	FUEL OIL POLISHING UNIT	SIMPLEX	6	1/2	120	1	1/2	1/2	20 FEET VERTICAL	NEMA 4 ENCLOSURE

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GENERATOR REPLACEMENT PROJECT #1	
MECHANICAL NEW WORK PLAN	
project	100048
contract	
drawing	M101
sheet	4 of 9
sheet no.	0



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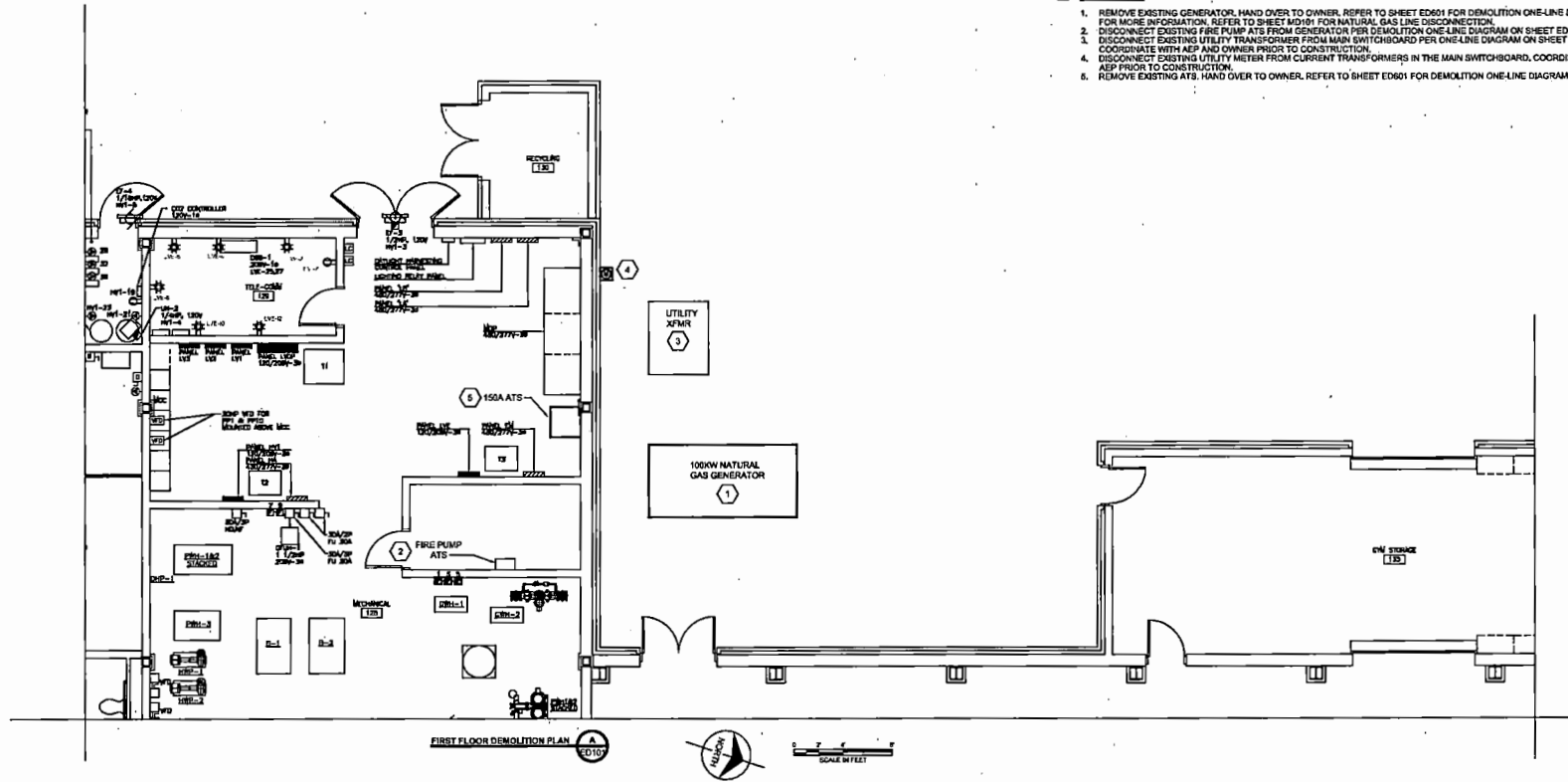
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06/07/19	KMS	JMR		ISSUED FOR CONSTRUCTION

GENERAL NOTES

A. ALL EQUIPMENT IS EXISTING TO REMAIN UNLESS OTHERWISE NOTED.

KEYED NOTES:

1. REMOVE EXISTING GENERATOR, HAND OVER TO OWNER, REFER TO SHEET ED601 FOR DEMOLITION ONE-LINE DIAGRAM FOR MORE INFORMATION. REFER TO SHEET MD101 FOR NATURAL GAS LINE DISCONNECTION.
2. DISCONNECT EXISTING FIRE PUMP ATS FROM GENERATOR PER DEMOLITION ONE-LINE DIAGRAM ON SHEET ED601.
3. DISCONNECT EXISTING UTILITY TRANSFORMER FROM MAIN SWITCHBOARD PER ONE-LINE DIAGRAM ON SHEET ED601. COORDINATE WITH MEP AND OWNER PRIOR TO CONSTRUCTION.
4. DISCONNECT EXISTING UTILITY METER FROM CURRENT TRANSFORMERS IN THE MAIN SWITCHBOARD, COORDINATE WITH MEP PRIOR TO CONSTRUCTION.
5. REMOVE EXISTING ATS, HAND OVER TO OWNER, REFER TO SHEET ED601 FOR DEMOLITION ONE-LINE DIAGRAM.



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ROANOKE, VA
 GENERATOR REPLACEMENT PROJECT #1
 DEMOLITION PLAN

project	100048	contract	
drawing	ED101	rev.	0
sheet	6	of 8	sheets
no.	ED191.dwg		



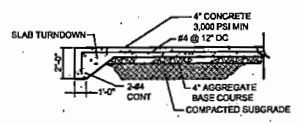
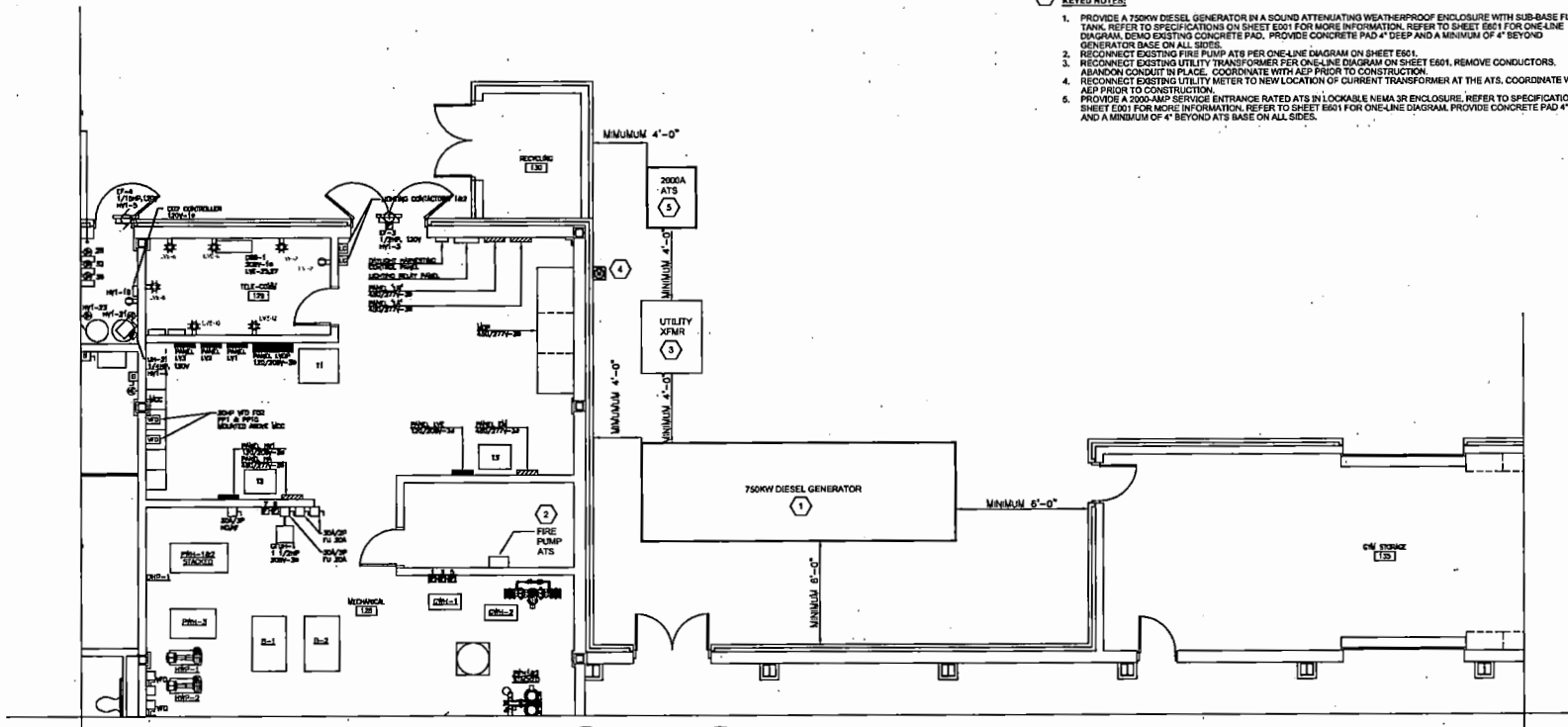
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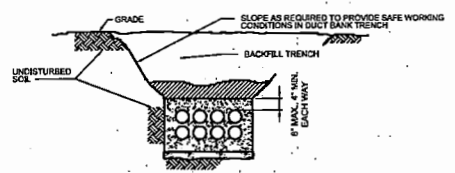
GENERAL NOTES
 A. ALL EQUIPMENT IS EXISTING TO REMAIN UNLESS OTHERWISE NOTED.

KEYED NOTES:

1. PROVIDE A 750KW DIESEL GENERATOR IN A SOUND ATTENUATING WEATHERPROOF ENCLOSURE WITH SUB-BASE FUEL TANK. REFER TO SPECIFICATIONS ON SHEET E001 FOR MORE INFORMATION. REFER TO SHEET E001 FOR ONE-LINE DIAGRAM. DEMO EXISTING CONCRETE PAD. PROVIDE CONCRETE PAD 4" DEEP AND A MINIMUM OF 4" BEYOND GENERATOR BASE ON ALL SIDES.
2. RECONNECT EXISTING FIRE PUMP ATS PER ONE-LINE DIAGRAM ON SHEET E001.
3. RECONNECT EXISTING UTILITY TRANSFORMER PER ONE-LINE DIAGRAM ON SHEET E001, REMOVE CONDUCTORS. ABANDON CONDUIT IN PLACE. COORDINATE WITH AEP PRIOR TO CONSTRUCTION.
4. RECONNECT EXISTING UTILITY METER TO NEW LOCATION OF CURRENT TRANSFORMER AT THE ATS. COORDINATE WITH AEP PRIOR TO CONSTRUCTION.
5. PROVIDE A 2000-AMP SERVICE ENTRANCE RATED ATS IN LOCKABLE NEMA 3R ENCLOSURE. REFER TO SPECIFICATIONS ON SHEET E001 FOR MORE INFORMATION. REFER TO SHEET E001 FOR ONE-LINE DIAGRAM. PROVIDE CONCRETE PAD 4" DEEP AND A MINIMUM OF 4" BEYOND ATS BASE ON ALL SIDES.



TYPICAL CONCRETE PAD DETAIL



TYPICAL DUCT BANK TRENCH SECTION DETAIL

- NOTES:**
1. DUCT BANKS MAY BE BENCH FORMED WITH UNDISTURBED EARTH PROVIDED THE EARTH WILL STAND TO A NEAR VERTICAL SLOPE. IF TRENCH IS OVER-EXCAVATED, COMPACT AS SPECIFIED.
 2. REFER TO ONE-LINE DIAGRAM FOR NUMBER AND SIZE OF CONDUIT.
 3. TIE DOWN CONDUITS AS REQUIRED TO PREVENT THE CONDUIT FROM FLOATING DURING CONCRETE PLACEMENT.
 4. CONDUIT SPACING TO BE 3 INCHES.
 5. ALL DUCT BANKS ARE TO BE ENCLOSED IN CONCRETE AND SHALL BE SMOOTH FORMED A MINIMUM OF 3'-0" FROM TOP OF STRUCTURE.

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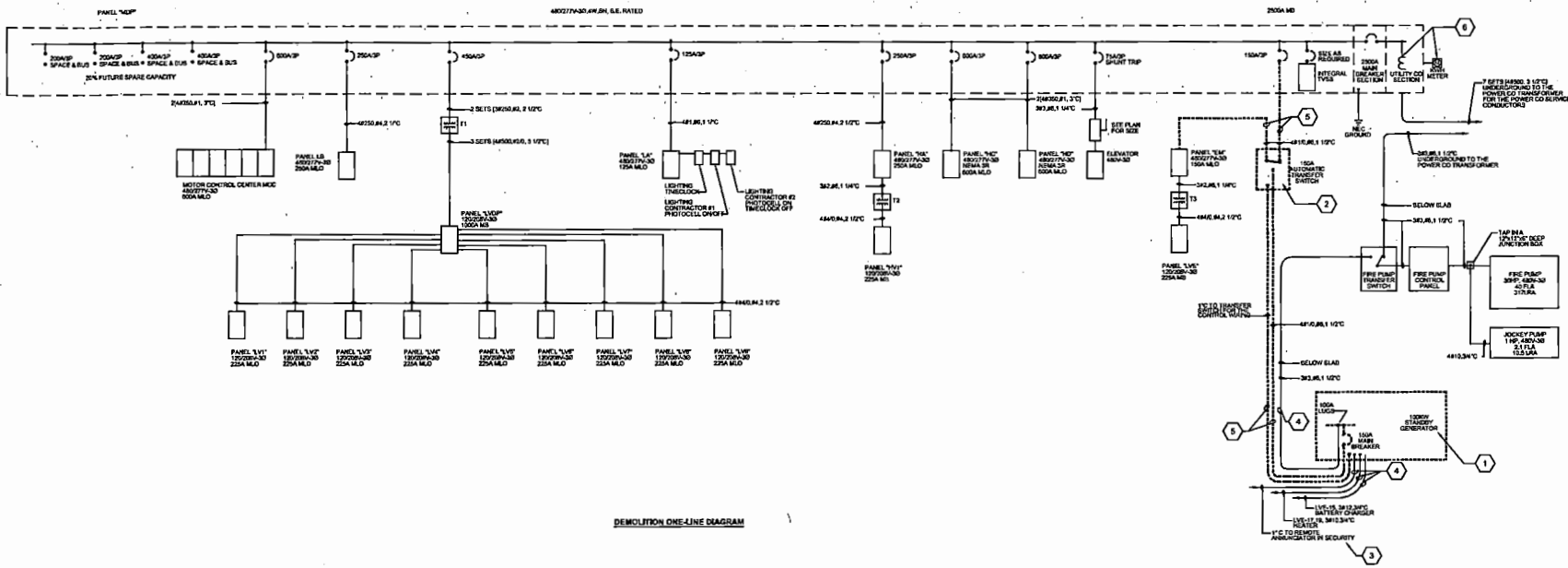
date	09/07/17	checked	JCS
designed	KMS	checked	JMR

ROANOKE, VA
 GENERATOR REPLACEMENT PROJECT #1
 NEW WORK PLAN

project	100048	contract	
drawing	E101	rev.	0
sheet	7	of	8
file	E101.dwg		



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DEMOLITION ONE-LINE DIAGRAM

GENERAL NOTES

- A. ALL COMPONENTS ARE EXISTING TO REMAIN UNLESS OTHERWISE NOTED.

KEYED NOTES:

1. REMOVE EXISTING GENERATOR. HAND OVER TO OWNER.
2. REMOVE EXISTING ATS. HAND OVER TO OWNER.
3. REMOVE EXISTING REMOTE ANNUNCIATOR. HAND OVER TO OWNER.
4. RETAIN CIRCUIT FOR CONNECTION TO NEW GENERATOR. REFER TO SHEET E601 FOR INFORMATION ON RECONNECTION.
5. REMOVE WIRING. REMOVE CONDUIT ABOVE GRADE. CAP AND SEAL CONDUIT BELOW GRADE.
6. DISCONNECT CURRENT TRANSFORMER AND METER. REFER TO SHEET E601 FOR INFORMATION ON RECONNECTION.

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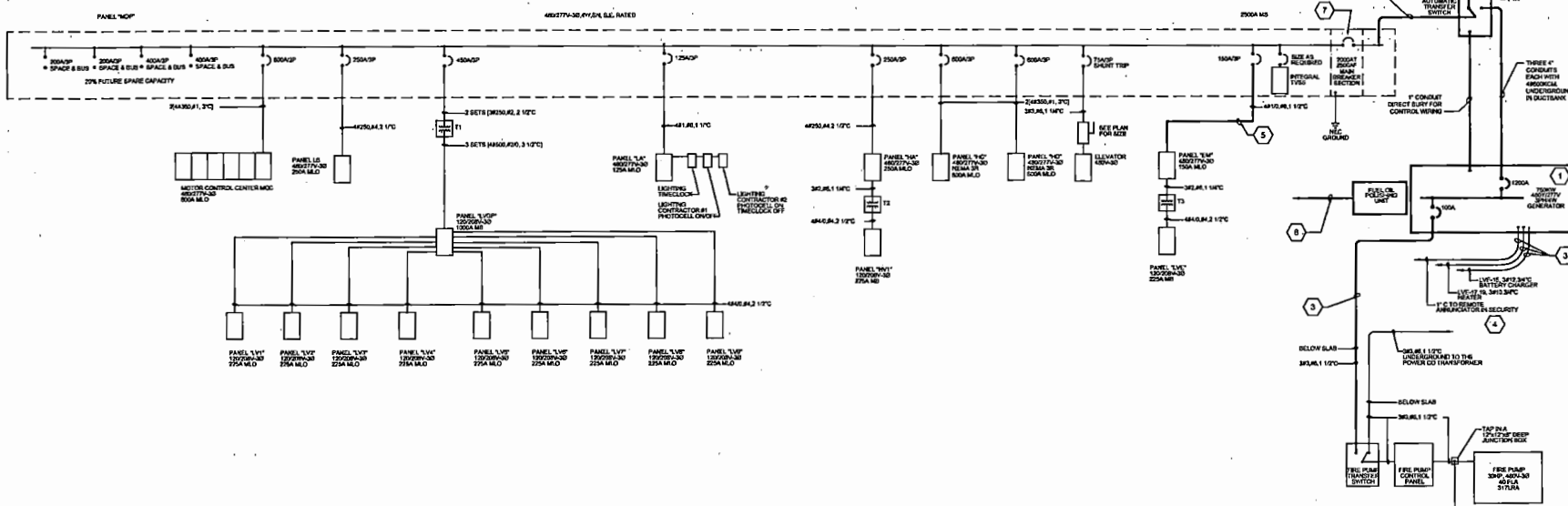
date	09/07/17	created	JCB
designer	KMS	checked	JMR

GENERATOR REPLACEMENT PROJECT #1 DEMOLITION ONE-LINE DIAGRAM			
project	1000B	contract	
drawing	ED601	rev.	0
sheet	5	of 8	sheets
file	ED601.dwg		



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NEW WORK ONE-LINE DIAGRAM

GENERAL NOTES

- A. ALL COMPONENTS ARE EXISTING TO REMAIN UNLESS OTHERWISE NOTED.

KEYED NOTES:

1. PROVIDE NEW GENERATOR. REFER TO SHEET E001 AND E101 FOR MORE INFORMATION. PROVIDE EQUIPMENT GROUNDING PER NEC. DO NOT BOND THE NEUTRAL TO GROUND AT THE GENERATOR.
2. PROVIDE NEW SERVICE ENTRANCE RATED ATS. THE ATS SHALL BE 3-POLE WITH SOLID NEUTRAL AND THE NEUTRAL IS BONDED TO THE GROUND AT THE SWITCHBOARD. REFER TO SHEET E001 AND E101 FOR MORE INFORMATION.
3. RECONNECT EXISTING CIRCUIT TO NEW GENERATOR. IF SLACK IN EXISTING CABLE IS INSUFFICIENT, REMOVE CABLE AND REPLACE WITH NEW SO THAT THERE ARE NO SPLICES IN THE CIRCUIT.
4. PROVIDE NEW REMOTE ANNUNCIATOR. MOUNT IN SECURITY ROOM IN SAME LOCATION AS EXISTING.
5. PROVIDE NEW WIRE AND CONDUIT AND RECONNECT PANEL TO EXISTING SWITCHBOARD CIRCUIT BREAKER.
6. PROVIDE NEW OR RELOCATE EXISTING CURRENT TRANSFORMERS. LOCATED IN THE EXISTING SWITCHBOARD. MOUNT EITHER WITHIN THE ATS ENCLOSURE OR EXTERNAL IN A NEMA 3R ENCLOSURE. CONNECT TO THE INCOMING UTILITY SIDE OF THE ATS. RECONNECT EXISTING METER TO THE CURRENT TRANSFORMERS.
7. ADJUST SETTING OF BREAKER TO 2000 AMP 125C.
8. CONNECT FUEL OIL POLISHING UNIT TO EXISTING 20A, 1-POLE SPARE CIRCUIT BREAKER IN PANEL LIVE WITH 2#12, 1#12 GROUND IN 1" CONDUIT, DIRECT BURIED.

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GENERATOR REPLACEMENT PROJECT #1
 NEW WORK ONE-LINE DIAGRAM

project	100048	contract	
drawing	E601	rev.	0
sheet	9	of 9	sheets
for	E001.dwg		



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