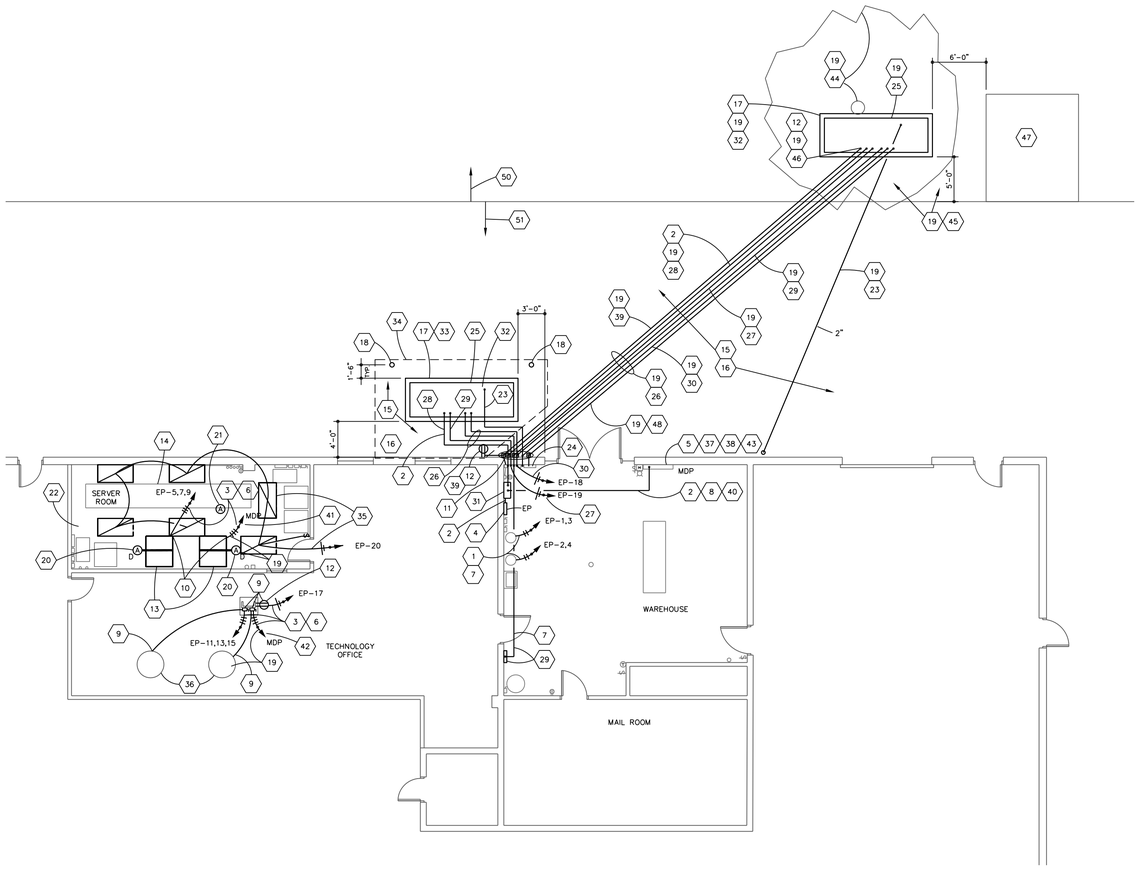


ELECTRICAL PLAN

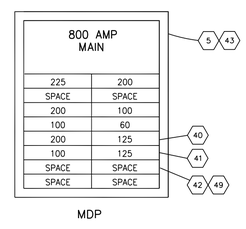
SCALE: 1/8" = 1'-0"

PANEL EP												
225 AMPS		MLO	208Y/120V	3 PHASE			4 WIRE +GRND		22,000 A RMS			MOUNT: SURFACE
BREAKER		DESCRIPTION	CIRCUIT			PHASE LOAD		CIRCUIT		DESCRIPTION	BREAKER	
A	P		KW	NO.	A	B	C	NO.	KW		A	P
125	2	EXISTING 25 KVA TRANSFORMER	9.0	1	9.0			2	9.0	EXISTING 25 KVA TRANSFORMER	125	2
/	/			3		9.0		4			/	/
60	3	COMPUTER ROOM AHU	20.5	5			6.84	6			20	1
/	/			7	6.84			8			20	1
/	/			9		6.84		10			20	1
45	3	CONDENSING UNIT	11.9	11			4.0	12			20	1
/	/			13	4.0			14			20	1
/	/			15		4.0		16			20	1
20	1	ROOFTOP RECEPTACLE	0.2	17			1.7	18	1.5	GENERATOR JACKET HEATER	20	1
20	1	GENERATOR BATTERY CHARGER	0.2	19	1.0			20	0.8	SERVER ROOM LIGHTS	20	1
20	1			21				22			20	1
20	1			23				24			20	1
20	1			25				26			20	1
20	1			27				28			20	1
20	1			29				30			20	1
20	1			31				32			20	1
20	1			33				34			20	1
20	1			35				36			20	1
20	1			37				38			20	1
20	1			39				40			20	1
20	1			41				42			20	1
			TOTALS		20.84	19.84	12.54					

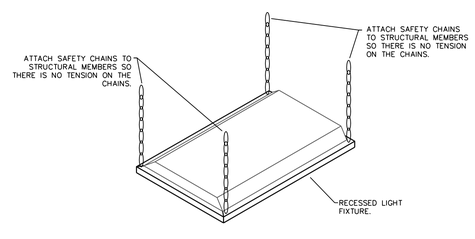
49

REMARKS:
1. FULLY RATED

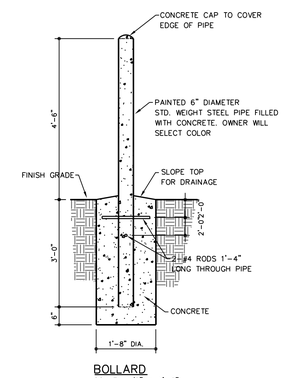
TOTAL LOADS	NEC LOAD
0	MOTOR
52.2	EQUIPMENT
1.0	LIGHT
0.2	RECEPTACLE
53.4	WATTS
149	AMPS



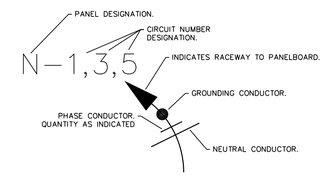
MDP



CHAIN MOUNTING FOR RECESSED LIGHTS
NOT TO SCALE



BOLLARD
SCALE: 1/2" = 1'-0"



DETAIL OF ELECTRICAL CIRCUIT WIRING
NOT TO SCALE

ELECTRICAL PLAN KEYNOTES

1. PROVIDE 125 AMP FEEDER, TWO NO. 1 AWG THHN/THWN COPPER CONDUCTORS PLUS NO. 6 COPPER GROUNDING CONDUCTOR IN 1-1/4 INCH CONDUIT.
2. PROVIDE 225 AMP FEEDER, FOUR 4/0 THHN/THWN COPPER CONDUCTORS PLUS NO. 4 AWG COPPER GROUNDING CONDUCTOR IN 2-1/2 INCH CONDUIT
3. PROVIDE ALL OFFSETS NECESSARY TO AVOID OBSTRUCTIONS. PROVIDE PULL BOXES AS REQUIRED BY THE NEC FOR LIMITING BENDS.
4. PROVIDE PANELBOARD.
5. EXISTING, TO REMAIN.
6. ABOVE CEILING.
7. EXPOSED, OVERHEAD.
8. IN JOIST SPACE.
9. PROVIDE VERTICAL RACEWAY THROUGH ROOF DECK AND ROOF CURB ABOVE TO TERMINATION TO EQUIPMENT OR DEVICE ON ROOF. REFER TO SECTION ON MECHANICAL DRAWINGS.
10. PROVIDE VERTICAL RACEWAY FROM UNIT UP THROUGH CEILING ABOVE.
11. PROVIDE PULL BOX.
12. PROVIDE GFCI RECEPTACLE WITH WEATHER PROOF COVER, UL LISTED FOR WET LOCATIONS.
13. EQUIPMENT FURNISHED BY THE MECHANICAL CONTRACTOR WITH A FACTORY INSTALLED DISCONNECT. CONNECT POWER WIRING.
14. EXISTING TECHNOLOGY EQUIPMENT AND RACK TO REMAIN IN PLACE DURING CONSTRUCTION.
15. UNDERGROUND ITEMS EXIST IN THIS AREA. THE CONTRACTOR SHALL IDENTIFY AND LOCATE ALL UNDERGROUND ITEMS BEFORE BEGINNING EXCAVATION. NOTIFY UTILITY OWNERS AND UNDERGROUND UTILITY IDENTIFICATION SERVICE BEFORE BEGINNING EXCAVATION.
16. SAWCUT AND PATCH PAVEMENT FOR UNDERGROUND UTILITIES INSTALLATION.
17. PROVIDE 12 INCH THICK LEVEL CONCRETE PAD EXTENDING 4 INCHES BEYOND GENERATOR ON ALL SIDES. TOP OF PAD SHALL BE 4 INCHES ABOVE GRADE AND ALL EDGES SHALL HAVE 1 INCH CHAMFER. PROVIDE NO. 5 REINFORCING BARS 12 INCHES ON CENTER EACH WAY CENTERED IN SLAB THICKNESS. INSTALL PAD ON TOP OF 4 INCHES OF COMPACTED GRANULAR MATERIAL ON COMPACTED SUBGRADE.
18. PROVIDE PAINTED BOLLARD.
19. REFER TO ALTERNATES.
20. PROVIDE SMOKE DETECTOR UL LISTED FOR USE WITH THE EXISTING FIRE ALARM SYSTEM IN THE RETURN PLENUM OF THE COMPUTER ROOM AIR HANDLING UNIT. WIRE THE SMOKE DETECTOR TO THE FIRE ALARM PANEL IN ACCORDANCE WITH THE FIRE ALARM PANEL MANUFACTURER'S RECOMMENDATIONS. DETECTOR SHALL BE EST MODEL ESD-W4.
21. REINSTALL AREA SMOKE DETECTOR ON CEILING AFTER CEILING IS REINSTALLED.
22. IN THIS ROOM REINSTALL ALL EXISTING LIGHTING FIXTURES IN THE REINSTALLED CEILING IN SAME LOCATION AS EXISTING UNLESS OTHERWISE INDICATED.
23. PROVIDE 2 INCH UNDERGROUND GAS PIPING TO GENERATOR PAD PENETRATION. REFER TO MECHANICAL DRAWINGS FOR CONTINUATION.
24. EXISTING FIRE ALARM PANEL PYROTRONICS MODEL CP-400.
25. PROVIDE 80 KW MINIMUM RATED NATURAL GAS STANDBY GENERATOR WITH WEATHER ENCLOSURE, 208Y/120 VOLTS, 3 PHASE, 4 WIRE. THE ENCLOSURE SHALL HOUSE THE BATTERIES, THE BATTERY CHARGER, AND THE GENERATOR CONTROLLER. ENCLOSURE DIMENSIONS SHALL NOT EXCEED 46 INCHES WIDE OR 139 INCHES LOONG. PROVIDE GROUNDING OF THE GENERATOR AND POWER SYSTEM TO MEET ALL REQUIREMENTS OF THE NEC. THE GENERATOR WILL POWER ONLY LOADS CLASSIFIED AS OPTIONAL BY THE NEC.
26. EXTEND ALL WIRING TO CONNECT TO THE GENERATOR UNDERGROUND IN RIGID STEEL CONDUITS. PROVIDE WIRING FOR THE GENERATOR FEEDER, THE COOLANT JACKET HEATER, THE BATTERY CHARGER THE START INITIATION CIRCUIT, AND THE REMOTE ANNUNCIATOR, EACH IN ITS OWN SEPARATE CONDUIT.
27. PROVIDE GENERATOR BATTERY CHARGER WIRING.
28. PROVIDE GENERATOR FEEDER.
29. PROVIDE REMOTE GENERATOR ANNUNCIATOR AND WIRING MEETING THE RECOMMENDATIONS OF THE GENERATOR MANUFACTURER. COORDINATE EXACT MOUNTING LOCATION AND HEIGHT WITH THE OWNER.
30. PROVIDE WIRING TO THE GENERATOR COOLANT JACKET HEATER.
31. PROVIDE AUTOMATIC TRANSFER SWITCH FOR OPTIONAL GENERATOR LOADS.
32. VERIFY ALL PAD PENETRATION LOCATIONS WITH GENERATOR MANUFACTURER.
33. PATCH AND REPAIR PAVEMENT AROUND GENERATOR PAD.
34. PROVIDE THIS WORK ONLY UNDER THE BASE BID. DELETE THIS WORK AND DELETE THE COST OF THIS WORK FROM THE BID FOR THE GENERATOR YARD LOCATION ALTERNATE.
35. PROVIDE NEW WIRING FROM PANEL EP TO THE EXISTING LIGHTING FIXTURES AND CONTROLS IN THE SERVER ROOM.
36. PROVIDE POWER WIRING TO ROOF MOUNTED MECHANICAL EQUIPMENT.
37. FIELD VERIFY ALL DESTINATIONS OF REMAINING BRANCH CIRCUIT CONDUCTORS. PROVIDE NEW CIRCUIT BREAKERS FOR ALL NEW CIRCUITS. PROVIDE A NEW ACCURATE AND COMPLETE PANELBOARD DIRECTORY AFTER COMPLETION OF CONSTRUCTION. LABEL ALL UNUSED CIRCUIT BREAKERS AS "SPARE".
38. PROVIDE NEW CIRCUIT BREAKERS FOR ALL NEW CIRCUITS OR FEEDERS POWERED FROM THIS PANELBOARD. CIRCUIT BREAKERS SHALL BE SPECIFICALLY MANUFACTURED FOR, AND UL LISTED FOR, INSTALLATION IN THIS BRAND AND MODEL OF PANELBOARD.
39. PROVIDE 20 AMP CIRCUIT WIRING FROM EXISTING 20 AMP CIRCUIT WIRING IN JUNCTION BOX TO NEW RECEPTACLE.
40. REPLACE EXISTING 125 AMP 2-POLE CIRCUIT BREAKER IN MDP MADE OBSOLETE BY THIS WORK WITH A NEW 225 AMP 3-POLE CIRCUIT BREAKER TO PROTECT THE FEEDER SERVING THE NEW TRANSFER SWITCH.
41. AS PART OF THE SECOND COMPUTER ROOM AHU ALTERNATE REPLACE EXISTING 125 AMP 2-POLE CIRCUIT BREAKER IN MDP MADE OBSOLETE BY THIS WORK WITH A NEW 60 AMP 3-POLE CIRCUIT BREAKER TO PROTECT THE FEEDER SERVING THE ALTERNATE COMPUTER ROOM AHU.
42. AS PART OF THE SECOND COMPUTER ROOM AHU ALTERNATE PROVIDE A 45 AMP 3-POLE CIRCUIT BREAKER TO PROTECT THE FEEDER SERVING THE ALTERNATE ROOFTOP CONDENSING UNIT. INSTALL THE CIRCUIT BREAKER IN AN UNUSED SPACE IN MDP.
43. THE ELECTRICAL LOAD ON EXISTING MDP IS NOT BEING SIGNIFICANTLY INCREASED BY THE WORK OF THIS PROJECT. THE TWO NEW 5-TON COOLING SYSTEMS REPLACE EXISTING 6-TON COOLING SYSTEM PLUS A PORTABLE 5-TON COOLING UNIT. THE ONLY ADDED LOADS IN ADDITION TO THE REPLACEMENT COOLING SYSTEMS ARE TWO RECEPTACLES, A GENERATOR BATTERY CHARGING CIRCUIT, AND A CIRCUIT SERVING THE 1500 WATT GENERATOR JACKET HEATER.
44. REMOVE TREE, APPROXIMATELY 20 INCH DIAMETER. REMOVE STUMP.
45. TOPSOIL AND SEED ALL DISTURBED AREAS.
46. CONDUIT SHALL PENETRATE CONCRETE SLAB IN AN ACCESSIBLE LOCATION WITHIN THE GENERATOR ENCLOSURE. MOUNT RECEPTACLE INSIDE OR MOUNTED ON GENERATOR ENCLOSURE. COORDINATE RECEPTACLE LOCATION WITH OWNER.
47. EXISTING CONCRETE PAD FOR EXISTING SHED.
48. PROVIDE SPARE 2 INCH CONDUIT, RIGID GALVANIZED STEEL. STUB AND CAP 2 INCHES INSIDE THE BUILDING AND ABOVE THE GENERATOR PAD IN ACCESSIBLE LOCATIONS.
49. PROVIDE HACR LABELED CIRCUIT BREAKER.
50. EXISTING GRASS.
51. EXISTING ASPHALT PAVEMENT.

ELECTRICAL SYMBOLS AND ABBREVIATIONS

NEC	NATIONAL ELECTRIC CODE.
F.A.C.P.	FIRE ALARM CONTROL PANEL.
W.P.	WEATHER PROOF.
A.F.F.	ABOVE FINISH FLOOR.
GFCI	GROUND FAULT CIRCUIT INTERRUPTER.
HP	HORSE POWER.
$	1 POLE SWITCH
	DUPLEX RECEPTACLE
	PANELBOARD.
	FUSED DISCONNECT
F	FIRE ALARM PULL STATION
H	HORN STROBE
A	AREA SMOKE DETECTOR.
A D	DUCT SMOKE DETECTOR.

DON R. MILLER ENGINEERING
ENGINEERING SERVICES
2529 NEW MADISON-COLETOWN ROAD
NEW MADISON, OHIO 45346
TELEPHONE (937) 621-9323
EMAIL: DON@DONRMILLERPE.COM

DON R. MILLER REGISTERED NO. PE60860109 STATE OF INDIANA PROFESSIONAL ENGINEER

SERVER SUPPORT SYSTEMS IMPROVEMENTS
ADMINISTRATION BUILDING
RICHMOND COMMUNITY SCHOOLS
300 HUB ETCHISON PARKWAY
RICHMOND, INDIANA 47374

ELECTRICAL PLAN

PROJECT NO.	E17013
DESIGNED BY	D.R.M.
DRAWN BY	D.A.L.
CHECKED BY	D.R.M.
DATE	10/05/2017
FILE NO.	
REVISIONS	

DRAWING OF E101