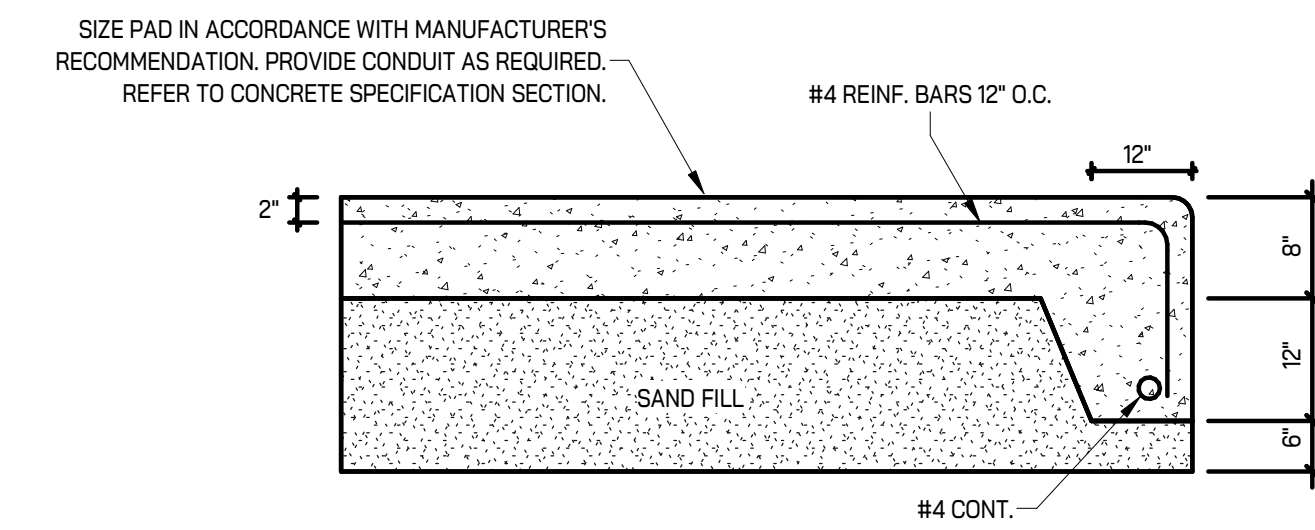
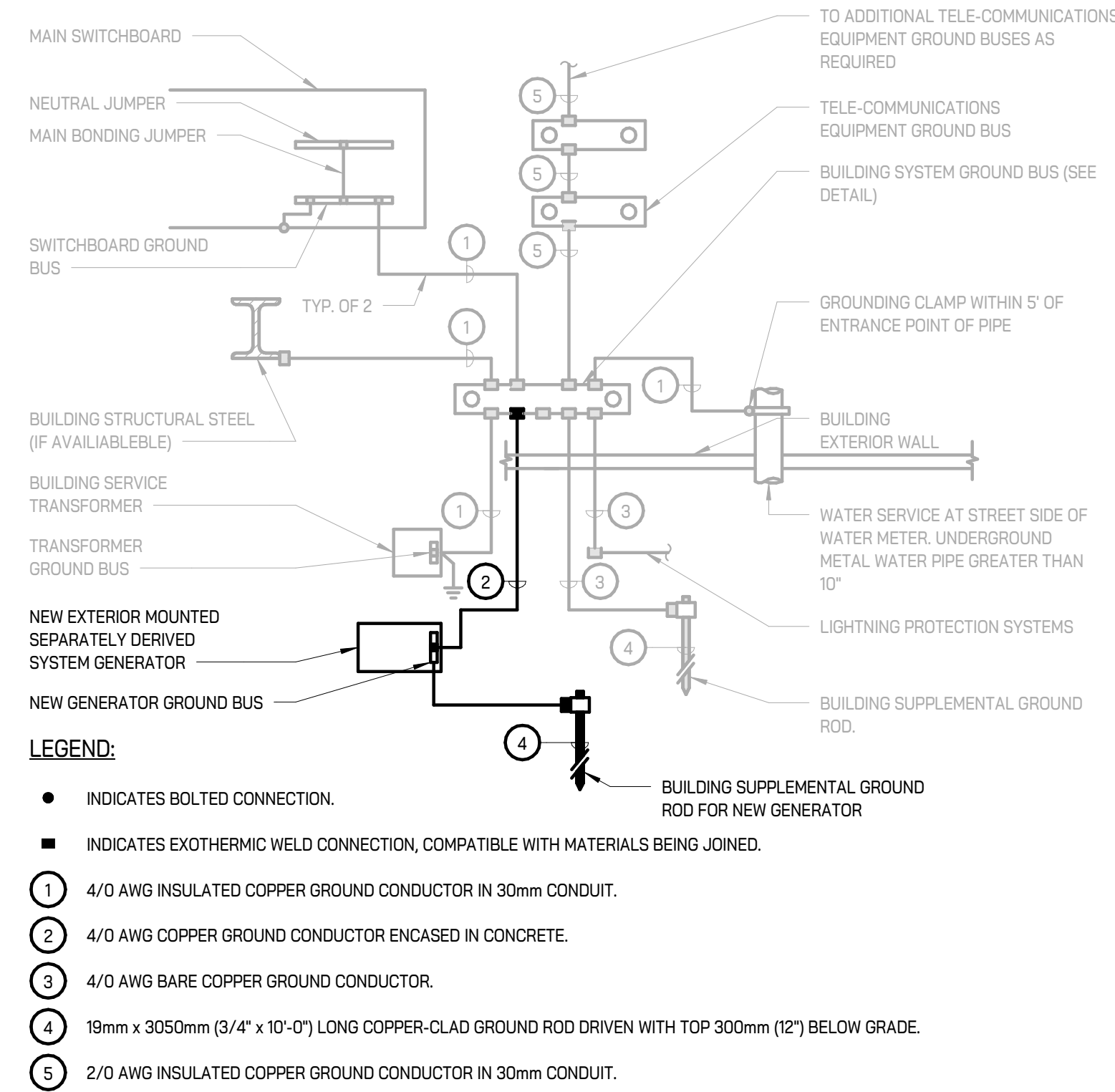


ELECTRICAL PANEL FEEDER SCHEDULE										
PANELBOARD	FED FROM			FEEDER INFORMATION						
	PANEL - CIRCUIT	LOAD CURRENT	BREAKER / POLES	# OF RUNS	WIRE	NEUTRAL	GROUND	CONDUIT		
480Y/277										
ATS-EM	GBS - 1	23 A	100 A / 3	1	#3	#3	#8	2" C		
ATS-MDP	GEN-1 - 2,4,6	346 A	800 A / 3	2	600kcmil	600kcmil	1/0	3-1/2" C		
GBS	GEN-1 - 1,3,5	23 A	100 A / 3	1	#3	#3	#8	1-1/4" C		
MDP	ATS-MDP - 1	346 A	800 A / 3	2	600kcmil	600kcmil	1/0	3-1/2" C		

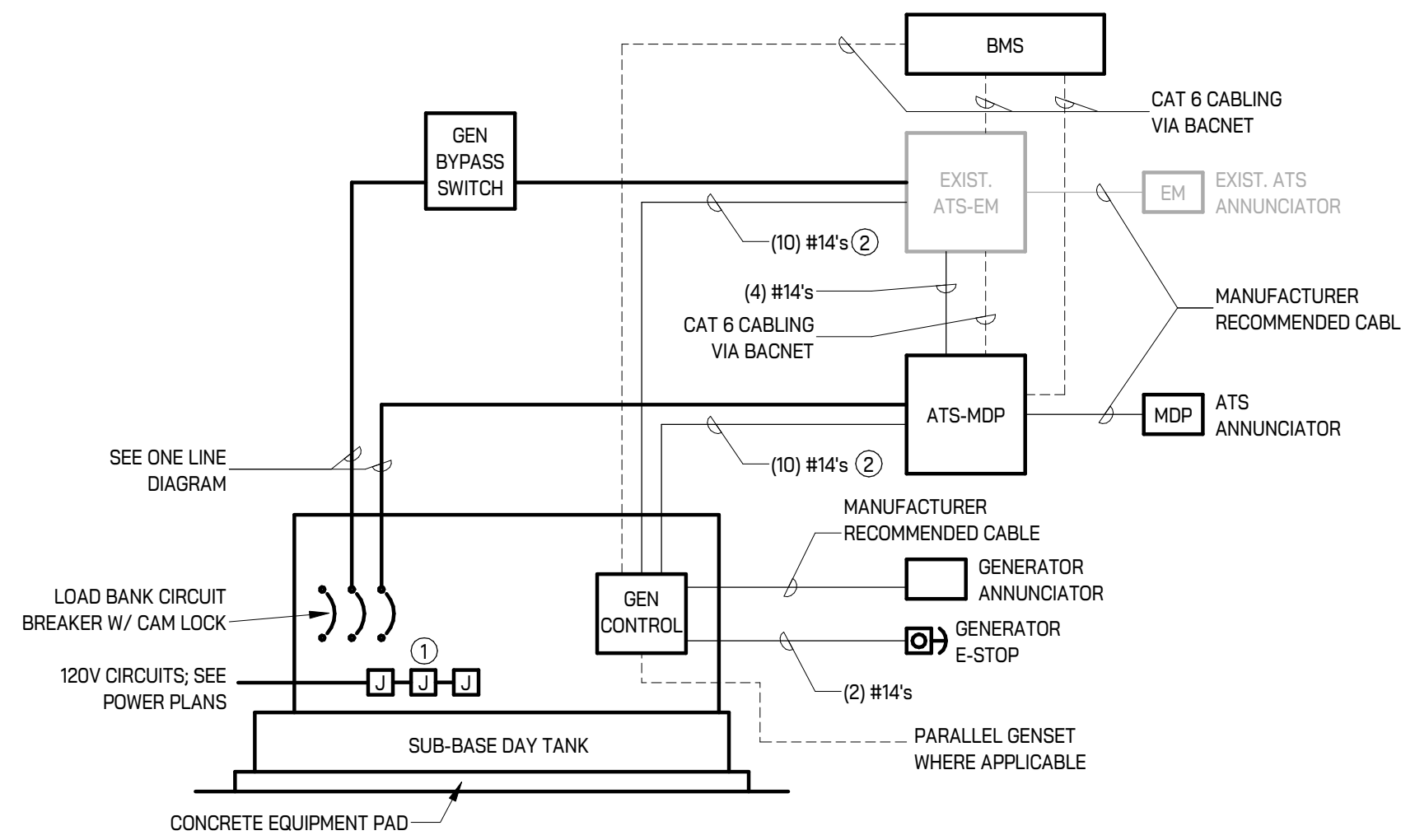
NOTES:
1. FOR ALL AUTOMATIC TRANSFER SWITCHES, PROVIDE CONDUIT AND FEEDER SIZES FROM BOTH NORMAL AND EMERGENCY SOURCES AS INDICATED IN THE SCHEDULE ABOVE.
2. FOR LIFE SAFETY FEEDERS, PROVIDE 2-HOUR RATED RHH TYPE CABLE WHEN ROUTED WITHIN BUILDING.



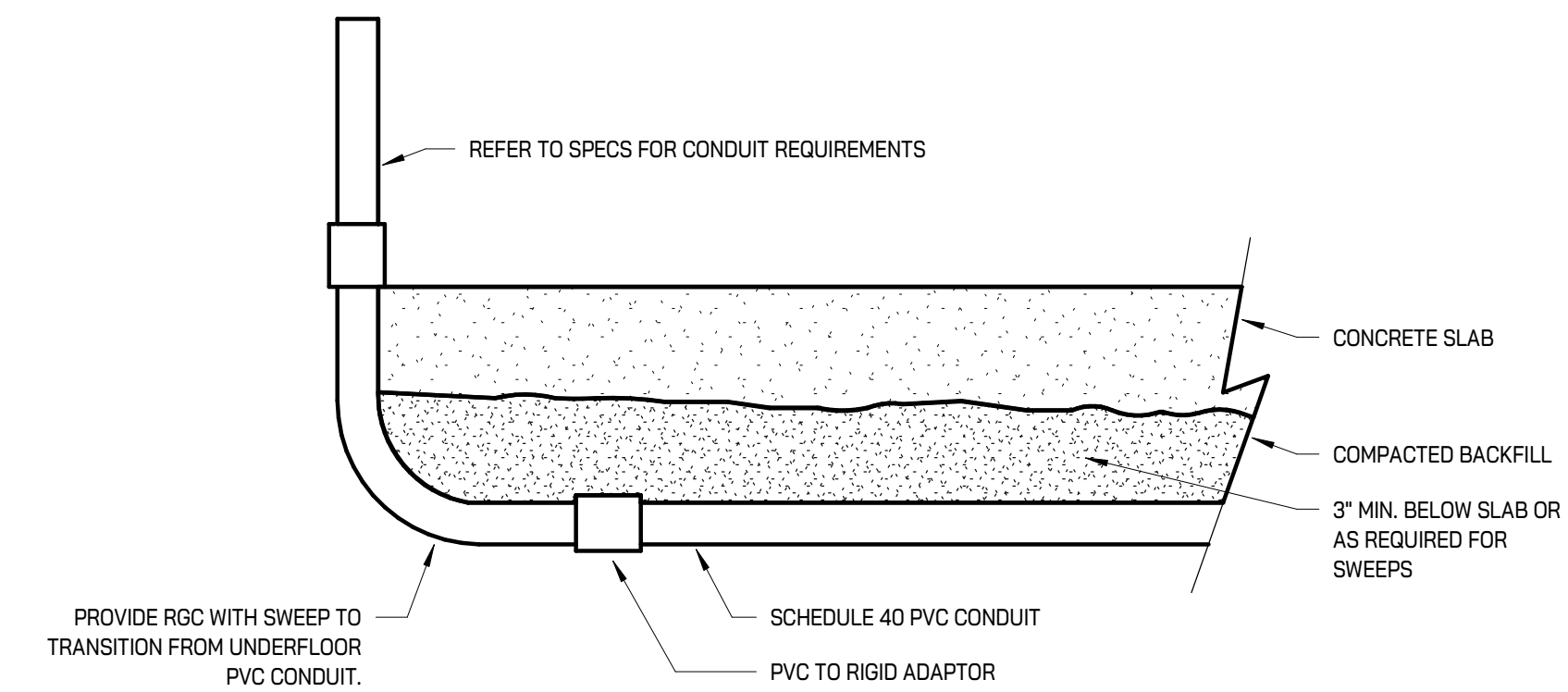
1 CONCRETE EQUIPMENT PAD DETAIL
E501 NOT TO SCALE



2 BUILDING GROUNDING ELECTRODE SYSTEM
E501 1/8" = 1'-0"



3 GENERATOR INTERCONNECTION DIAGRAM
E501 NOT TO SCALE



4 UNDERFLOOR CONDUITS IN SLAB ON GRADE INSTALLATION
E501 1/8" = 1'-0"

GENERATOR SOLUTION SUMMARY

PROJECT PARAMETERS

Frequency (Hz): 60.0	Number of Genset to Parallel: 1.0
Duty: Standby	Ambient Temperature (F): 77.0
Phase: Three	Altitude (ft): 360.99
Voltage: 277/480, Series Wye	Max Allowable Temperature Rise: 125.0
Fuel Type(s): Diesel	Max Allowable Project Voltage Dip (%): 35.0
Emissions Preference: US Stationary Emergency	Max Allowable Project Frequency Dip (%): 10.0
Country: United States	
Min Load Capacity (%): 30.0	
Max Load Capacity (%): 90.0	

RECOMMENDED GENERATOR SET CONFIGURATION

Generator Set Name: DFEJ	B-Code: B252
Engine Name: OSX15-G9 Nonroad 2	R-Code: R002
Fuel: Diesel	Number of Loads: 12.0
Cooling System: Enhanced High Ambient	Rectifiable: Yes
Alternator Frame: HC5D	Full Single Phase Output: No
Alternator Winding: 311.0	Increased Motor Starting: No
Alternator Excitation: PMG	Extended Stack: No
Temperature Rise: 125.0	
Max SkVA: 1896.0	

POWER SYSTEM SUMMARY

LOADS AND STEPS

Step #	Step Name	Starting kW	Starting kVA	Running kW	Running kVA	Amps	Cyclic Load	Non-Linear Load
1	Step 1	10.0	10.53	10.0	10.53	12.68		
1	Light Load 1	10.0	10.53	10.0	10.53	12.68		Y
2	Step 2	34.5	38.33	34.5	38.33	46.16		
1	UPS Load 1	34.5	38.33	34.5	38.33	46.16		Y
3	Step 3	264.0	293.33	244.0	271.11	326.48		
1	General load	144.0	160.0	144.0	160.0	192.68		
1	ATS1	120.0	133.33	100.0	111.11	133.8		Y

PRODUCT CAPACITY

Project Running (kW):	288.5	Project Max Starting(kW):	308.5
Base Product Rating (kW):	450	Project Effective Max Starting(kW):	294.16
Site Adjusted Product Rating (kW):	450	Max Starting kW:	516
Product kW Capacity (%):	64.11	Product Capacity (%):	57.01
Project Running (kVA):	319.97	Total Running Non-Linear kVA:	48.86
Base Alternator Rating (kVA):	643.8	Max Allowed THDV (%):	10
Site Adjusted Alternator Rating (kVA):	643.8	Total Voltage Harmonic Distortion (THDV)%:	2.54
Product kVA Capacity (%):	49.7		

Note: Capacity % values are within the user-selected project parameters for product capacity. If the number of generator sets is greater than one, the values here will reflect one generator set assuming the loads are evenly shared.

TRANSIENT PERFORMANCE

Step #	Step Name	Dip %	Recovery Time	Dip %	Recovery Time
1	Step 1	0.34	0.21	0.12	0.11
2	Step 2	1.17	0.74	0.4	0.37
3	Step 3	12.35	3.44	3.3	2.08

Note: Voltage and frequency dips and recovery times are estimates based on measured performance of prototype testing or advanced simulation. Recovery times may be assumed to be based on ISO8528-5 G2 class bandwidths unless otherwise stated in the model Spec Sheet. Typically, best practice may allow for approximately 5 seconds between application of load steps when designing your system. These values are within the user-selected project parameters for max allowable voltage and frequency dip performance.

General load ATS1

Load Type: General	
User Inputs	Load Requirements
Phase: Three	Running PF: 0.90
Voltage: 480.0	Running kW: 144.0
Running kW: 144.0	Running kVA: 160.0
Running kVA: 160.0	Starting PF: 0.9
Power Factor: 0.9	Starting kW: 144.0
Running Amps: 192.68	Running Amps: 192.68
Rectifier Type: None	Starting kVA: 160.00
Unit of Rating: KVA	

HVAC Loads

Load Type: User Defined	
User Inputs	Load Requirements
Phase: Three	Running PF: 0.90
Voltage: 480.0	Running kW: 100.0
Running kW: 100.0	Running kVA: 111.11
Running kVA: 111.11	Starting PF: 0.9
Starting kW: 120.0	Starting kW: 120.0
Power Factor: 0.9	Running Amps: 133.8
Running Amps: 133.8	Starting kVA: 133.33
Starting Amps: 160.57	Starting Amps: 160.57
Efficiency (%): 100.0	Rectifier Type: 6 pulse filtered
Rectifier Type: 6 pulse filtered	Running Unit of rating: KW
Starting Unit of rating: KW	Harmonic Content (THD%): 13.0

Light Load 1

Load Type: Light	
User Inputs	Load Requirements
Phase: Three	Running PF: 0.95
Voltage: 480.0	Running kW: 10.0
Light type: LED	Running kVA: 10.53
Running kW: 10.0	Starting PF: 0.95
Running kVA: 10.53	Starting kW: 10.0
Power Factor: 0.95	Running Amps: 12.68
Running Amps: 12.68	Starting kVA: 10.53
Rectifier Type: LED Driver (EN61000-3-2)	Running NLL kVA: 10.53
Unit of Rating: KW	
Harmonic Content (THD%): 33.0	

UPS Load 1

Load Type: UPS	
User Inputs	Load Requirements
Phase: Three	Running PF: 0.90
Voltage: 480.0	Running kW: 34.5
Rated kVA: 30.0	Running kVA: 38.33
Soft Ramp: None	Starting PF: 0.90
Load Factor: 100.0	Starting kW: 34.5
Power Factor: 0.9	Running Amps: 46.16
Efficiency (%): 90.0	Starting kVA: 38.33
Rectifier Type: 12 pulse	Running NLL kVA: 38.33
Unit of Rating: Output	
Battery Charge Rate (%): 15.0	
Harmonic Content (THD%): 10.0	

NOTE:
1. EQUALS MANUFACTURER(S) SHALL MEET OR EXCEED DESIGN PARAMETERS OF GENERATOR CALCULATION AS SHOWN. GENERATOR LOADING BASED ON EXISTING METERING DATA. CONTRACTOR SHALL PROVIDE COST IMPACTS COMPARED TO BASIS OF DESIGN FOR OWNER/ENGINEER REVIEW.
2. GENERATOR SHALL BE PROVIDED WITH BACNET IP GATEWAY FOR COMMUNICATION TO BUILDING BMS.
3. CONTRACTOR SHALL INVESTIGATE EXISTING AUTOMATIC TRANSFER SWITCHES AND EXISTING 100KW GENERATOR CONTROLLER TO ENSURE EMERGENCY SYSTEM OPERATES AS DESCRIBED IN THE SEQUENCE OF OPERATIONS. PROVIDE ALL SOFTWARE/HARDWARE UPDATES TO EXISTING EQUIPMENT AS REQUIRED.
4. MAXIMUM SOUND LEVEL SHALL BE 74dBA AT 7 METERS UNDER FULL LOAD PER DUMMINS REQUIREMENTS.
5. PROVIDE ANY START-UP AND TESTING VERIFICATION FOR ANY THIRD PARTY COMMISSIONING REQUIREMENT.
6. ELECTRICAL CONTRACTOR SHALL PROVIDE SEPARATE QUOTE FOR AN ALL INCLUSIVE SHORT CIRCUIT, COORDINATION AND ARC FLASH STUDY OF THE ENTIRE BUILDING SYSTEM FOR OWNER TO REVIEW.

KEY PLAN

ISSUE DATE ISSUED FOR

09/10/2025 Bids

09/23/2025 Addendum #1

10/27/2025 Addendum #3

DRAWN NB

CHECKED LB

APPROVED MB



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IGNYTE

MECHANICAL • ELECTRICAL DESIGN

PROJECT

Livonia Public Schools

Central Office
Generator Upgrades

Livonia,
Michigan

SHEET

ELECTRICAL
SCHEDULES AND
DETAILS

PROJECT NUMBER

2025-044

SHEET NUMBER

E501