

LIVONIA PUBLIC SCHOOLS

CENTRAL OFFICE COMPLEX GENERATOR UPGRADES

LIVONIA, MICHIGAN

PROJECT NO. 2025-044

OCTOBER 2, 2025

ADDENDUM #2



FRENCH

LIST OF DRAWINGS

ARCHITECTURAL

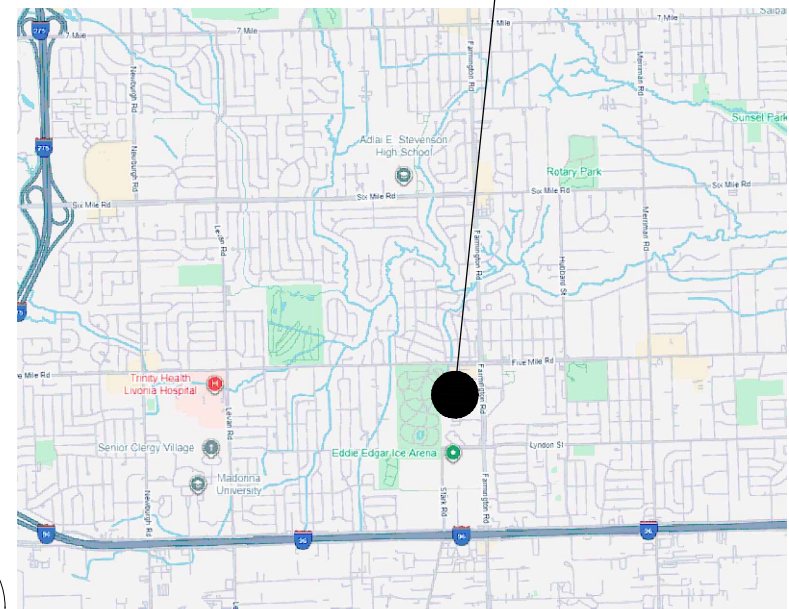
A0.01 ARCHITECTURAL REFERENCE SHEET
A0.02 COMPOSITE CODE PLAN

ELECTRICAL

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ED1.00 ELECTRICAL SITE DEMOLITION PLAN
ES100 ELECTRICAL SITE PLAN
E1.00 LOWER LEVEL ELECTRICAL PLAN
E4.01 ELECTRICAL ONE-LINE DIAGRAM - DEMOLITION
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E5.01 ELECTRICAL SCHEDULES AND DETAILS

REFERENCE LOCATION MAP

15125 FARMINGTON RD
LIVONIA MICHIGAN, 48154



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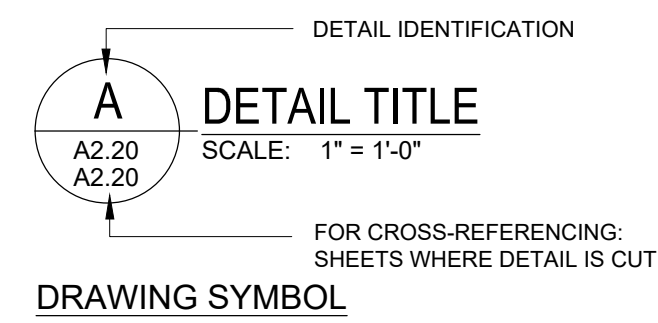
MATERIAL LEGEND

	SOIL
	ASPHALT AGGREGATE
	GRANULAR FILL
	STONE/GRAVEL
	CONCRETE
	CONCRETE MASONRY UNIT
	BRICK
	GLAZED HOLLOW CMU
	STRUCTURAL GLAZED TILE
	LIMESTONE
	MARBLE
	FINISH WOOD
	COMPOSITION/PLYWOOD
	CONTINUOUS WOOD BLOCKING
	BLOCKING OR SHIMS
	BATT INSULATION
	RIGID INSULATION
	PREMOLDED EXPANSION JOINT/ COMPRESSIBLE FILLER STRIP
	PLASTER OR GYPSUM BOARD
	CERAMIC OR QUARRY TILE
	TERRAZZO
	ACOUSTICAL PANEL OR ACOUSTICAL TILE
	EXISTING MATERIAL (IN SECTION)
	EXISTING MATERIAL (IN PLAN)
	DEMOLITION - TO BE REMOVED

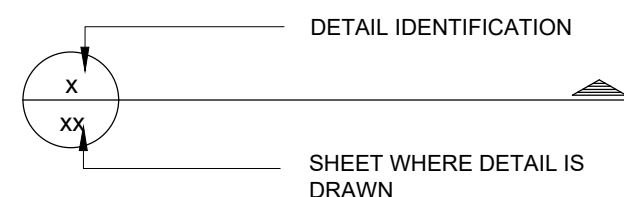
ABBREVIATIONS

	AIR CONDITIONING	L	LENGTH
ACCOUST	ACOUSTICAL	LAM	LAMINATE(D)
ACT	ACOUSTICAL CEILING TILE	LAV	LAVATORY
ADA	AMERICANS WITH DISABILITIES ACT	LB#	POUND
ADJ	ADJUSTABLE	LGF	LIGHT GAUGE FRAMING
AFF	ABOVE FINISHED FLOOR	LIN	LINOLEUM
AGG	AGGREGATE	LKR	LOCKER
ALT	ALTERNATE	LLH	LONG LEG HORIZONTAL
AL/ALUM	ALUMINUM	LLV	LONG LEG VERTICAL
ANOD	ANODIZED	LMC	LINEAR METAL CEILING
APC	ARCHITECTURAL PRECAST LINTEL	LOC	LOCATION(S)
APPROX	APPROXIMATE	LP	LOW POINT
ARCH	ARCHITECT(URAL)		
ASPH	ASPHALT	MANUF	MANUFACTURER
AV	AUDIO/VISUAL	MAR	MARBLE THRESHOLD
L	ANGLE	MB	MARKER BOARD
		MAS	MASONRY
B CMU	BURNISHED CMU	MAT	MATERIAL/MAT
BIT	BITUMINOUS	MAU	MAKE UP AIR UNIT
BD	BOARD	MAZ	MAXIMUM
BF	BARRIER FREE	MECH	MECHANICAL
BLDG	BUILDING	MEZZ	MEZZANINE
BLK	BLOCK	MIN	MINIMUM/MINUTE
BLKG	BLOCKING	MISC	MISCELLANEOUS
BMC	BIG MARK/BEAM	ML	MASONRY LINTEL
BOT	BOTTOM	MP	METAL PANEL
BRG	BEARING	MWP	METAL WALL PANEL
BUR	BUILT-UP ROOF	MO	MASONRY OPENING
		MT/MTL	METAL
CAB	CABINET	MSF	METAL STUD FRAMING
CUH	CABINET UNIT HEATER	MT	METAL THRESHOLD
CB	CHALKBOARD/CATCH BASIN		
CEM	CEMENT	NIC	NOT IN CONTRACT
CER	CERAMIC	NO/#	NUMBER
CFM	CUBIC FEET PER MINUTE	NOM	NOMINAL
CJ	CONTROL JOINT	NSF	NON-SLIP FINISH
CL	CENTERLINE	NTS	NOT TO SCALE
CLG	CEILING		
CLR	CLEAR	OC	ON CENTER
CMU	CONCRETE MASONRY UNIT	OD	OUTSIDE DIAMETER
COL	COLUMN	OHD	OVERHEAD DOOR
COMP	COMPACTED	OPNG	OPENING
CONC	CONCRETE	OPP	OPPOSITE
CONST	CONSTRUCTION	OS	OVERFLOW SUMP
CONT	CONTINUOUS/CONTINUE		
CONTR	CONTRACTOR	PART	PARTICLE
CORR	CORRUGATED	PART/N	MOVABLE PARTITION
CPL	CEMENT PLASTER	PC	PRECAST CONCRETE
CPT	CARPET	PL	PLATE/PROPERTY LINE
CT	CERAMIC TILE	PLAS	PLASTER
CU	CONDENSING UNIT	PLAM	PLASTIC LAMINATE
CUSP	CUSPIDOR	PLYWD	PLYWOOD
CWF	CURTAINWALL FRAMING	PREFAB	PREFABRICATED
		PREFIN	PREFINISHED
		PSF	POUNDS PER SQUARE FOOT
D	DEPTH/DEGREE	PSI	POUNDS PER SQUARE INCH
D	DEGREE	PTD	PAINTED
DEMO	DEMOLISH/DEMOLITION	PVC	POLYVINYL CHLORIDE
DTL	DETAIL		
DF	DRINKING FOUNTAIN	QT	QUARRY TILE
DIA/Ø	DIAMETER		
DIM	DIMENSION	R	RISER/RADIUM
DIV	DIVISION	RB	RESILIENT WALL BASE/RUBBER BASE
DS	DOWNSPOUT	RBf	RUBBER FLOORING
DWG	DRAWING	RC	RAIN CONDUCTOR
		RES	RESILIENT
EA	EACH	RS	ROOF SUMP
EJ	EXPANSION JOINT	REF	REFERENCE
EL	ELEVATION	REFR	REFRIGERATOR
ELEC	ELECTRIC(AL)	REINF	REINFORCING
ELEV	ELEVATOR	REQ'D	REQUIRED
EQ	EQUAL	REV	REVISION(S)
EQUIP	EQUIPMENT	RF	ROOF EXHAUST FAN
EIFS	EXTERIOR INSULATION FINISH	RM	REMOVABLE MULLION/ROOM
EW	ELECTRIC WATER COOLER	ROOF	ROOF DRAIN
EXH	EXHAUST	RWO	RIGHT OF WAY
EX/EXIST	EXISTING	RTU	ROOF TOP UNIT
EXP	EXPANSION	RV	ROOF VENT
EXT	EXTERIOR		
		S	SINK
FD	FLOOR DRAIN	SAAC	SPRAY APPLIED ACOUSTICAL COATING
FF	FIRE FIGHTING/ISHER CABINET	SCHED	SCHEDULE
FF	FORCED FLOW CABINET HEATER	SEAL	CONCRETE SEALER
FHC	FIRE HOSE CABINET	SEC	SECTION
FIN	FINISH	SFF	STOREFRONT FRAMING
FIN FL	FINISH FLOOR	SHT	SHEET
FLR	FLOOR	SHM	SIMILAR
FOUND	FOUNDATION	SPEC(S)	SPECIFICATIONS
FT	FEET	SP CMU	SPLIT FACE CMU
FTG	FOOTING	SPI	SPORTS IMPACT FLOORING
FRP	FIBERGLASS REINFORCED POLYESTER	SPK	SPEAKER
		SQR	SQUARE
		SS	SERVICE SINK/STAINLESS STEEL
GA	GAUGE	SSM	SOLID SURFACE MATERIAL
GALV	GALVANIZE(D)	STD	STANDARD
GB	GRAB BARS	STL	STEEL
GHT	GLAZED HOLLOW TILE	STRUCT	STRUCTURAL
GL	GLASS	SUSP	SUSPENDED
GLCMU	GLAZED CMU	SVT	SOLID VINYL TILE
GLZD	GLAZED	SV	SHEET VINYL
GYP	GYP SUM		
		T	TREAD
HI/HT	HEIGHT	T&B	TOP AND BOTTOM
HB	HOSE BIB	TB	TACK BOARD
HM	HOLLOW METAL	TC	TOP OF CURB
HORIZ	HORIZONTAL	TEMP	TEMPERED
HP	HIGH POINT	TER	TERRAZZO
HR	HOUR	TOC	TOP OF CONCRETE
HVAC	HEATING/VENTILATING/AIR CONDITIONING	TOF	TOP OF FOOTING
		TOM	TOP OF MASONRY
		TOS	TOP OF STEEL
ID	INSIDE DIAMETER	TS	TUBE STEEL
IN"	INCH	TV	TELEVISION
INCL	INCLUDE(D),(ING)	TYP	TYPICAL
INSUL	INSULATION/INSULATE(D)		
INT	INTERIOR	UNO	UNLESS NOTED OTHERWISE
		UV	UNIT VENTILATOR
JST	JOIST	VCT	VINYL COMPOSITION TILE
JT	JOINT	VOG	VINYL COVERED GYPSUM BOARD
		VERT	VERTICAL
KIT	KITCHEN	VIF	VERIFY IN FIELD
		VUV	VERTICAL UNIT VENTILATOR

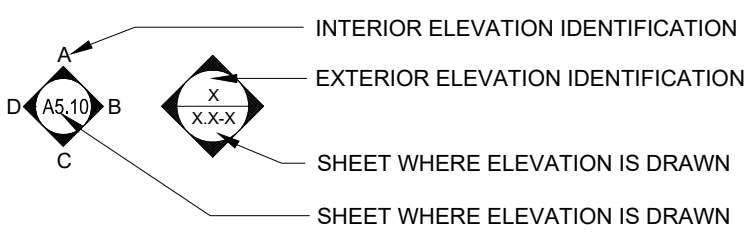
SYMBOL LEGEND



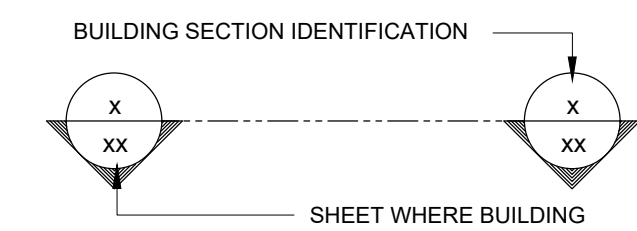
DRAWING SYMBOL



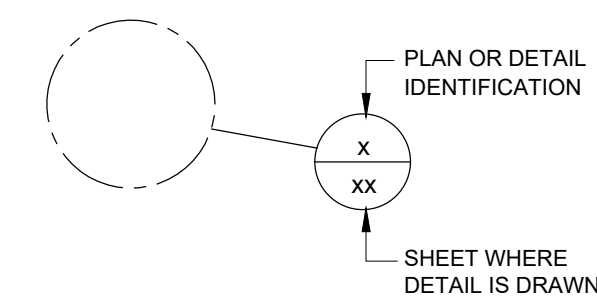
DETAIL LOCATOR



ELEVATION SYMBOL



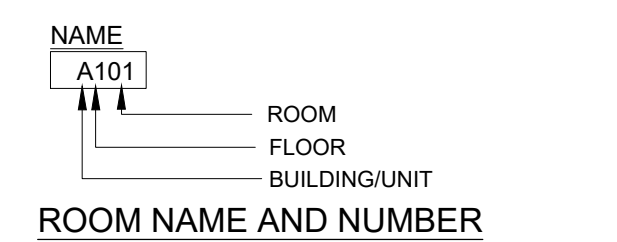
BUILDING SECTION LOCATOR



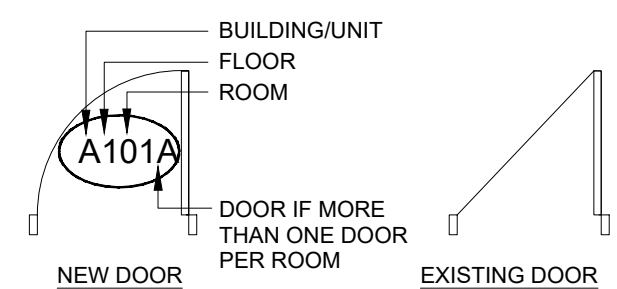
PLAN OR DETAIL BLOW-UP



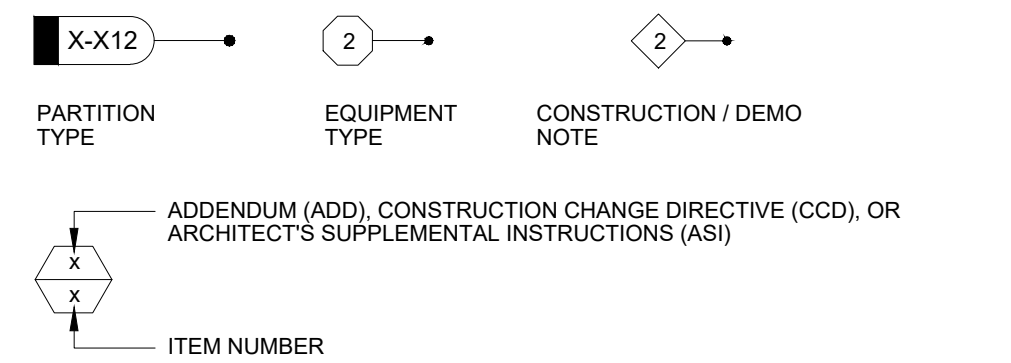
COLUMN GRID



ROOM NAME AND NUMBER

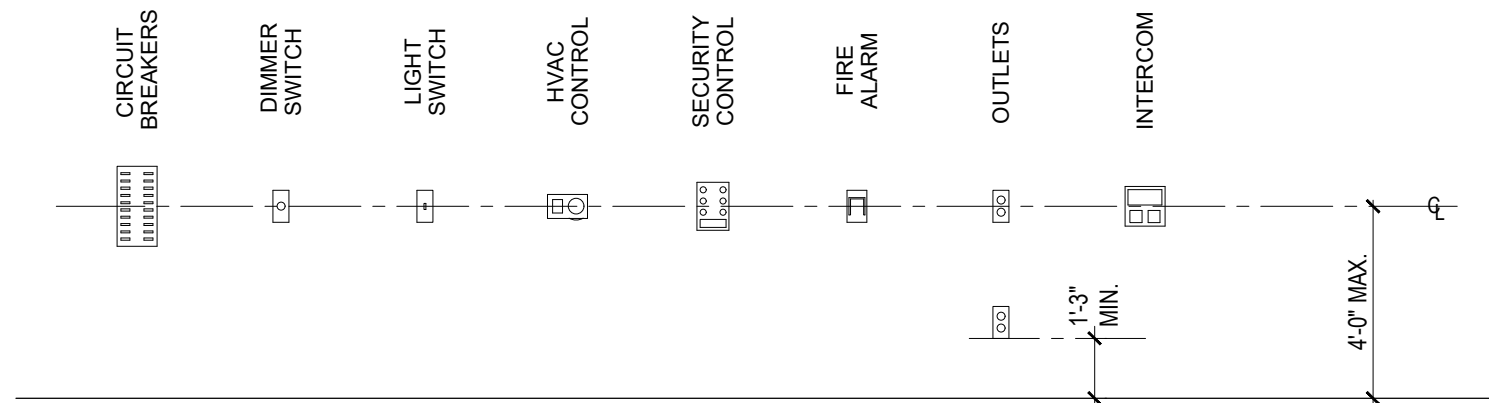


DOOR NUMBER AND SYMBOLS



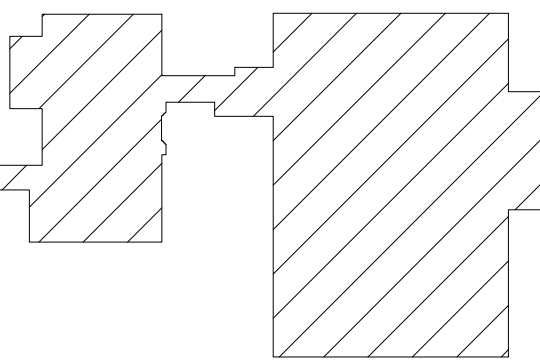
MISCELLANEOUS SYMBOLS

MOUNTING HEIGHTS



CONVENIENCE CONTROLS AND OUTLETS

KEY PLAN



ISSUE DATE	ISSUED FOR
09/10/2025	BIDS
10/02/2025	ADDENDUM #2
DRAWN	FA
CHECKED	FA
APPROVED	FA



FRENCH

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PROJECT

Livonia Public Schools
Central Office
Generator Upgrades

LIVONIA,
MICHIGAN

SHEET

ARCHITECTURAL REFERENCE SHEET

PROJECT NUMBER

2025-044

SHEET NUMBER

A0.01



0025-044 LPS CENTRAL OFFICE - GENERATOR UPGRADES

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
A	AMPERES	MAX	MAXIMUM
AF	AMPERES FRAME (BREAKER RATING)	MCB	MAIN CIRCUIT BREAKER
AFCI	ARC FAULT CIRCUIT INTERRUPTER	MCC	MOTOR CONTROL CENTER
A.F.F.	ABOVE FINISH FLOOR	MDP	MAIN DISTRIBUTION PANEL
AIC	AMPS INTERRUPTING CAPACITY	MECH	MECHANICAL
AL	AUDIENCE LEFT	MIN	MINIMUM
AR	AUDIENCE RIGHT	MISC.	MISCELLANEOUS
AT	AMPERS TRIP (BREAKER SETTING)	MLO	MAIN LOSS ONLY
ATS	AUTOMATIC TRANSFER SWITCH	MTD	MOUNTED
AUX	AUXILIARY	MTG	MOUNTING
		MTR	MOTOR
BKR	BREAKER		
BPS	BOLTED PRESSURE SWITCH	N	NEUTRAL
		NC	NORMALLY CLOSED
C	CONDUIT	NEC	NATIONAL ELECTRICAL CODE
CB	CIRCUIT BREAKER	NF	NON-FUSIBLE
CKT	CIRCUIT	NIC	NOT IN CONTRACT
CT	CURRENT TRANSFORMER	NL	NIGHT LIGHT
		NO	NORMALLY OPEN
DEMO	DEMOLITION	NTS	NOT TO SCALE
DIM	DIMENSION		
DISC	DISCONNECT	OC	ON CENTER
DP	DISTRIBUTION PANEL	OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
DS	DOWNSTAGE		
DWG	DRAWING	OFDI	OWNER FURNISHED, OWNER INSTALLED
EBU	EMERGENCY BATTERY UNIT	P	POLE
EC	ELECTRICAL CONTRACTOR	PB	PUSHBUTTON STATION
ELEC	ELECTRICAL	PH	PHASE
EM/ EMERG	EMERGENCY	PT	POTENTIAL TRANSFORMER
EMT	ELECTRICAL METALLIC TUBING	PDP	POWER DISTRIBUTION PANEL
EO	ELECTRICALLY OPERATED		
EPO	EMERGENCY POWER OFF	RECEPT.	RECEPTACLE
EW	ELECTRIC WATER COOLER	RCP	RECEPTACLE
EXIST	EXISTING	RDP	RECEPTACLE DISTRIBUTION PANEL
EXT	EXTERIOR	RDP	RECEPTACLE PANEL
FA	FIRE ALARM	RSC	RIGID STEEL CONDUIT
FLA	FULL LOAD AMPS	SCHED	SCHEDULE
FLR	FLOOR	SW	SWITCH
FOH	FRONT OF HOUSE	SWBD	SWITCHBOARD
FSEC	FOOD SERVICE EQUIPMENT	SWGR	SWITCHGEAR
FUSE	FUSE		
		TB	TERMINAL BOX
G/GRD/EG	GROUND	TELECOM	TELECOMMUNICATIONS
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	TR	TAMPER RESISTANT
GFP	GROUND FAULT PROTECTION	TTP	TELEPHONE TERMINAL BACKBOARD
		TYP	TYPICAL
HOA	HAND-OFF-AUTO		
HP	HORSEPOWER	UNO	UNLESS OTHERWISE NOTED
HV	HIGH VOLTAGE	US	UPSTAGE
HZ	HERTZ		
		V	VOLTS
IG	ISOLATED GROUND		
		W	WIRE OR WATTS
JB	JUNCTION BOX	WG	WIRE GUARD
		WP	WEATHERPROOF
KV	KILOVOLT		
KVA	KILOVOLT - AMPERES	XFMR	TRANSFORMER
KWATT	KILOWATT	XP	EXPLOSION PROOF
KWH	KILOWATT - HOURS		
		(E)	EXISTING
LA	LIGHTING ARRESTOR		
LP	LIGHTING PANEL	(R)	RELOCATED
LDP	LIGHTING DISTRIBUTION PANEL		

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	LIGHTING FIXTURE - ARCHITECTURAL TROFFER		CONTROL PANEL		SECURITY CAMERA
	EMERGENCY LIGHTING FIXTURE		MOTOR		MOTION DETECTOR
	LIGHTING FIXTURE - PENDANT		VARIABLE FREQUENCY DRIVE		SECURITY KEY SWITCH
	WALL MOUNTED LIGHTING FIXTURE		MANUAL CONTROLLER		DOOR CONTACT
	LIGHTING FIXTURE		MAGNETIC CONTROLLER		KEY PAD
	LIGHTING TRACK OR ROPE LIGHT		COMBINATION MAGNETIC CONTROLLER		CARD READER
	TRACK LIGHTING FIXTURE		NON-FUSIBLE DISCONNECT SWITCH		DURESS PUSH BUTTON STATION
	POLE MOUNTED LIGHTING FIXTURE		FUSIBLE DISCONNECT SWITCH		DELAYED EGRESS
	POLE MOUNTED LIGHTING FIXTURE - POST TOP		ENCLOSED CIRCUIT BREAKER		REQUEST TO EXIT STATION
	BOLLARD LIGHTING FIXTURE		PUSH BUTTON STATION		CIRCUIT BREAKER
	EMERGENCY LIGHTING UNIT		EMERGENCY POWER OFF BUTTON		DRAWOUT CIRCUIT BREAKER MANUALLY/ OPERATED
	EXIT LIGHTING FIXTURE WITH DIRECTIONAL ARROWS (SHADED AREA INDICATES FACE)		AUTOMATIC DOOR CONTROLLER		SWITCH
	EXIT LIGHTING FIXTURE WITH DIRECTIONAL ARROWS (SHADED AREA INDICATES FACE)		AUTOMATIC DOOR PUSH PAD OPERATOR		AUTOMATIC OR MANUAL TRANSFER SWITCH
	EXIT LIGHTING FIXTURE - WALL MOUNTED		GROUND ROD		FUSE
	GENERATOR TRANSFER DEVICE		GROUND CONNECTION		TRANSFORMER
	LIGHTING CONTROL DEVICE - REFER TO LIGHTING CONTROL SCHEDULE		CONDUIT SLEEVE WITH BUSHINGS LENGTH AS REQUIRED "X" INDICATES CONDUIT SIZE		CURRENT TRANSFORMER
	SINGLE POLE TOGGLE SWITCH		CONDUIT STUB - UP/DOWN		POTENTIAL TRANSFORMER
	TWO POLE TOGGLE SWITCH		EMPTY BOX FOR FUTURE TELECOMMUNICATION OUTLET		LIGHTNING ARRESTER
	3 WAY TOGGLE SWITCH		EMPTY BOX FOR FUTURE TELECOMMUNICATION OUTLET MOUNTED 4" ABOVE COUNTERTOP		PANELBOARD "X" INDICATES PANELBOARD NAME
	4 WAY TOGGLE SWITCH		EMPTY BOX FOR FUTURE CEILING MOUNTED TELECOMMUNICATION OUTLET		GROUND
	KEY OPERATED SWITCH		TELECOMMUNICATION OUTLET "X" INDICATES TYPE		SECURITY KEY INTERLOCK
	DIMMER SWITCH		SPEAKER		ENGINE GENERATOR
	DIMMER OCCUPANCY SENSOR SWITCH		SPEAKER - WALL MOUNTED		UTILITY METER
	LOW VOLTAGE DIMMER SWITCH		MICROPHONE		AMMETER
	PILOT SWITCH		VOLUME CONTROL		VOLTMETER
	TOUCH SCREEN SWITCH		SIGNALING BELL		AMMETER SWITCH
	OCCUPANCY SENSOR DEVICE - CEILING		SINGLE FACE CLOCK - CEILING MOUNTED		VOLTMETER SWITCH
	OCCUPANCY SENSOR DEVICE - WALL		SINGLE FACE CLOCK - WALL MOUNTED		SURGE PROTECTIVE DEVICE
	PHOTOCELL DEVICE - REFER TO ZONES SHOWN ON PLANS		DOUBLE FACE CLOCK - CEILING MOUNTED		TIME DELAY RELAY
	REMOTE GENERATOR ANNUNCIATOR PANEL		DOUBLE FACE CLOCK - WALL MOUNTED		THERMAL OVERLOAD RELAY
	AUTOMATIC TRANSFER SWITCH				NORMALLY OPEN CONTACTS
	GROUND BUS				NORMALLY CLOSED CONTACTS
					N.O. PUSH BUTTON SINGLE CIRCUIT
					N.C. PUSH BUTTON SINGLE CIRCUIT

FINISHED CEILING

CEILING HEIGHTS LESS THAN 8'-6" VISUAL LENS MOUNTING HEIGHT WILL BE WITHIN 6" OF THE CEILING

AUDIO/VISUAL & VISUAL ONLY DEVICES

SYNCHRONIZE MORE THAN TWO APPLIANCES IN ANY FIELD OF VIEW

ABOVE FINISHED FLOOR AUDIO/VISUAL (AV) (VBC)

FINISHED FLOOR

10'-6" OR APPROVED FROM AHJ 9'-0" MIN ABOVE FINISHED FLOOR

5'-0"

DISCONNECT SWITCH

6'-6"

BRANCH CIRCUIT PANELBOARDS

7'-6" (MIN.) - 8'-6" (MAX.)

8'-6"

3'-0"

5"

EMERGENCY BATTERY FIXTURE

DOOR WIDTH LESS THAN 3'-0" (MODIFY FOR DIFFERENT DOOR WIDTHS)

MAGNETIC DOOR HOLDER

EXIT-CEILING MOUNTED

EXIT

EXIT FIXTURE-BACK MOUNTED BOTTOM OF EXIT SIGN TO BE 4" ABOVE TOP OF DOOR FRAME

EXIT

EXIT-FIXTURE END MOUNTED

EXIT

A/C SUPPLY DIFFUSER

CEILING MOUNTED SMOKE/HEAT DETECTOR

3'-0" MIN

4"

DO NOT INSTALL HEAT DETECTOR IN SHADED AREA

4"

1'-0" MAX

WALL MOUNTED SMOKE/HEAT DETECTOR

FINISHED WALL

5' MAX TO EXIT DOOR

MANUAL PULL STATION

4'-0"

4'-0"

1'-6"

RECEPTACLE, DATA JACK OR TELEPHONE JACK

SWITCHBANK

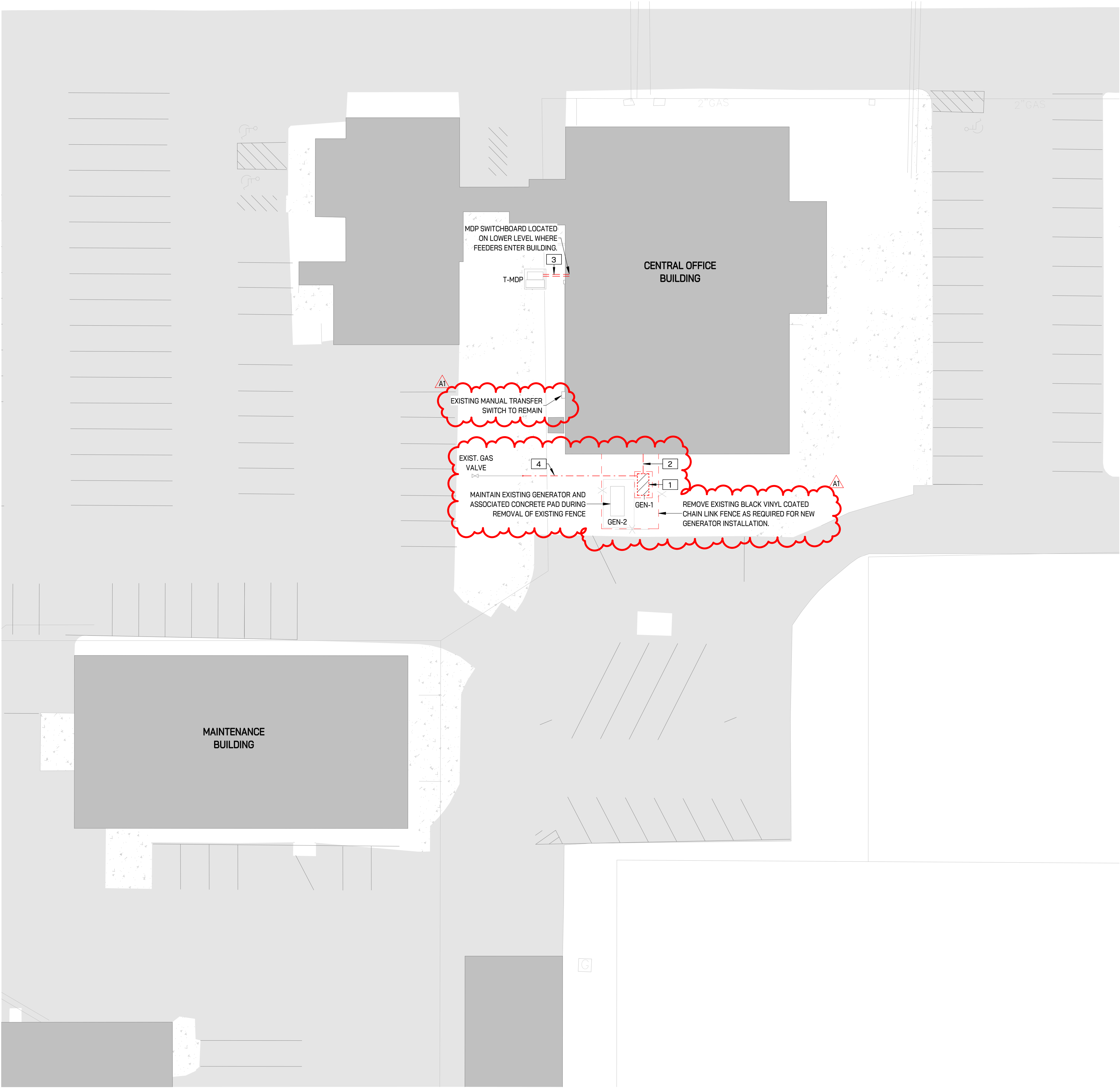
AUTOMATIC DOOR OPERATOR PUSH BUTTON

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SIMPLEX / DUPLEX RECEPTACLE		MANUAL FIRE ALARM PULL STATION
	SIMPLEX / DUPLEX RECEPTACLE CONTROLLED BY AUTOMATIC CONTROL DEVICE / SYSTEM		SMOKE DETECTOR
	QUAD RECEPTACLE		DUCT SMOKE DETECTOR
	ABOVE COUNTER DUPLEX RECEPTACLE (SIMILAR FOR TAMPER RESISTANT, QUADS, EMERGENCY AND GFI RECEPTACLES)		CARBON MONOXIDE DETECTOR
	DUPLEX RECEPTACLE-GROUND FAULT CIRCUIT INTERRUPTER		REMOTE TEST STATION (FOR DUCT DETECTOR)
	DUPLEX EMERGENCY RECEPTACLE		THERMAL DETECTOR
	USB RECEPTACLE		FIRE ALARM BELL
	CEILING MOUNTED DUPLEX RECEPTACLE		FIRE ALARM AUDIBLE NOTIFICATION - WALL MOUNT SPEAKER/STROBE
	POWER POLE - WIREMOLD TYPE		FIRE ALARM VISUAL NOTIFICATION - WALL MOUNT SPEAKER/STROBE
	SPECIAL RECEPTACLE - REFER TO ELECTRICAL STANDARD SCHEDULES		FIRE ALARM AUDIBLE NOTIFICATION - CEILING MOUNT SPEAKER/STROBE
	MULTI-OUTLET RACEWAY - LEGRAND AL3300 OR EQUAL		FIRE ALARM VISUAL NOTIFICATION - CEILING MOUNT STROBE
	POKE-THROUGH ASSEMBLY - LEGRAND EVOLUTION SERIES OR EQUAL		FIREFIGHTERS PHONE JACK
	FLOOR BOX ASSEMBLY - LEGRAND EVOLUTION SERIES OR EQUAL		FIRE ALARM CONTROL PANEL
	EQUIPMENT CONNECTION - REFER TO ELECTRICAL FEEDER AND PANEL SCHEDULE FOR BREAKER AND CONDUCTOR SIZE/QUANTITY		FIRE ALARM ANNUNCIATOR PANEL
	JUNCTION BOX		NOTIFICATION APPLIANCE CIRCUIT EXTENDER PANEL
	BRANCH CIRCUIT PANEL BOARD - 208/120V		TAMPER SWITCH
	DISTRIBUTION PANEL - 208/120V		FLOW SWITCH
	BRANCH CIRCUIT PANEL BOARD - 480/277V		
	DISTRIBUTION PANEL - 480/277V		
	SWITCHBOARD		
	TRANSFORMER		

KEY PLAN	
ISSUE DATE	ISSUED FOR
09/10/2025	Bids
10/02/2025	Addendum #2
DRAWN	NB
CHECKED	LB
APPROVED	MB



PROJECT	
Livonia Public Schools	
Central Office Generator Upgrades	
Livonia, Michigan	
SHEET	
ELECTRICAL SYMBOLS AND GENERAL NOTES	
PROJECT NUMBER	
2025-044	
SHEET NUMBER	



1
ED100
ELECTRICAL SITE DEMOLITION PLAN
1" = 20'-0"

- ELECTRICAL DEMOLITION KEYED NOTES**
- 1 REMOVE EXISTING 60KW NATURAL GAS GENERATOR AND ALL ASSOCIATED ELECTRICAL CONNECTIONS. REMOVE EXISTING CONCRETE PAD DEDICATED FOR GENERATOR BEING DEMOLISHED. PREPARE ELECTRICAL INFRASTRUCTURE FOR NEW WORK AS REQUIRED.
 - 2 REMOVE CONDUIT AND FEEDER FROM DISCONNECT SWITCH SERVING ATS-EM BACK TO GENERATOR. EXISTING FEEDER ENTERS BUILDING BELOW GRADE. FEEDER TO BE REPLACED IN NEW CONSTRUCTION.
 - 3 REMOVE CONDUIT AND FEEDER FROM MEDIUM VOLTAGE TRANSFORMER TO MDP. EXISTING SERVICE FEEDER ENTERS BUILDING BELOW GRADE. FEEDER TO BE REPLACED IN NEW CONSTRUCTION.
 - 4 DISCONNECT, REMOVE, AND CAP GENERATOR GAS PIPING BACK TO EXISTING SIDEWALK.

KEY PLAN	
ISSUE DATE	ISSUED FOR
09/10/2025	Bids
09/23/2025	Addendum #1
10/02/2025	Addendum #2
DRAWN	NB
CHECKED	LB
APPROVED	MB



FRENCH

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IGNYTE

MECHANICAL • ELECTRICAL DESIGN

PROJECT
Livonia Public Schools

Central Office
Generator Upgrades

Livonia,
Michigan

SHEET
ELECTRICAL SITE
DEMOLITION PLAN

PROJECT NUMBER
2025-044

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ED100



A1

-

ISSUE DATE

ISSUED FOR

09/10/2025

Bids

09/23/2025

Addendum #1

10/02/2023

Addendum #

DRAWN

NB

CHECKER

1 B

ADDON

18



IGNYTE
MECHANICAL + ELECTRICAL DESIGN

PROJECT

Livonia,
Michigan

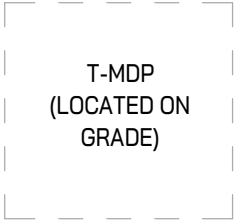
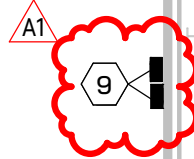
SHEET

PROJECT NUMBER

2025-044

SHEET NUMBER

ES100



A1

APPROVED

MR



Livonia Public Schools

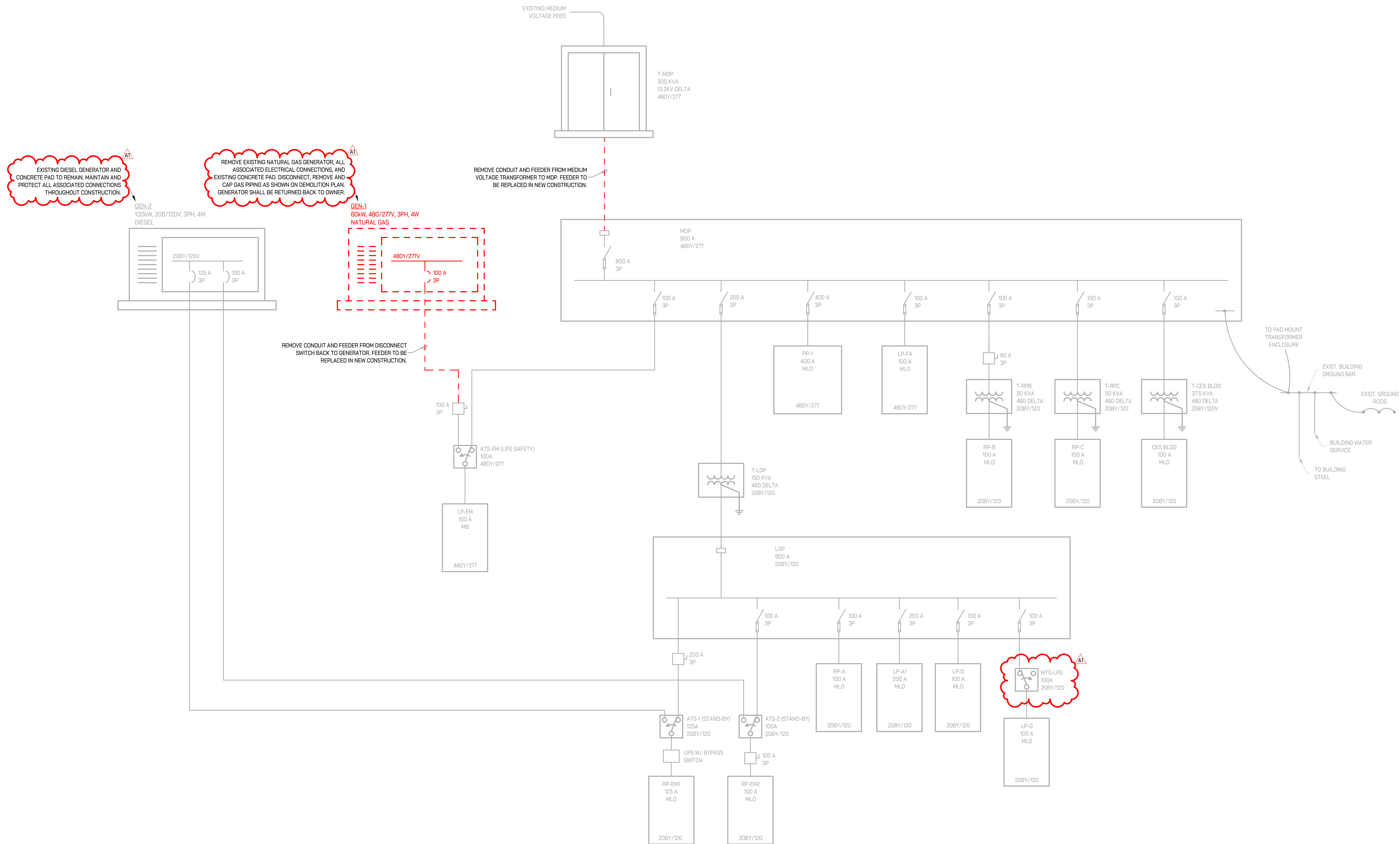
Livonia,
Michigan

LOWER LEVEL ELECTRICAL PLAN

2025-044

E100

ISSUE DATE	ISSUED FOR
09/10/2025	Bids
09/23/2025	Addendum #1
10/02/2025	Addendum #2
DRAWN	NB
CHECKED	LB
APPROVED	MB



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PROJECT

ivonia Public Schools

Central Office Generator Upgrades

ivonia,
Michigan

SHEET

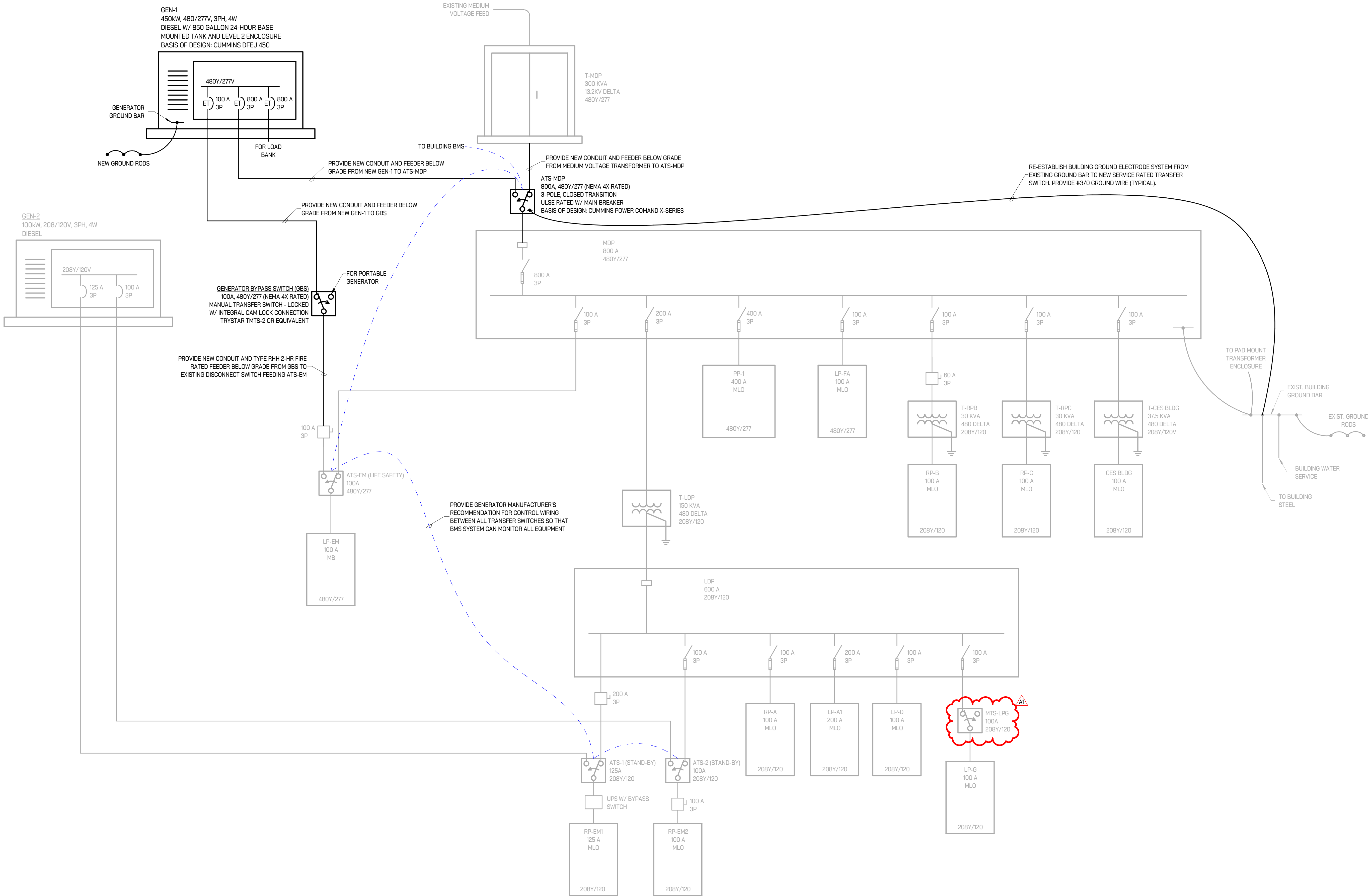
ELECTRICAL ONE-LINE DIAGRAM DEMOLITION

PROJECT NUMBER

2025-044

SHEET NUMBER

E401



1
E402 ELECTRICAL ONE LINE DIAGRAM
1" = 1'-0"

KEY PLAN

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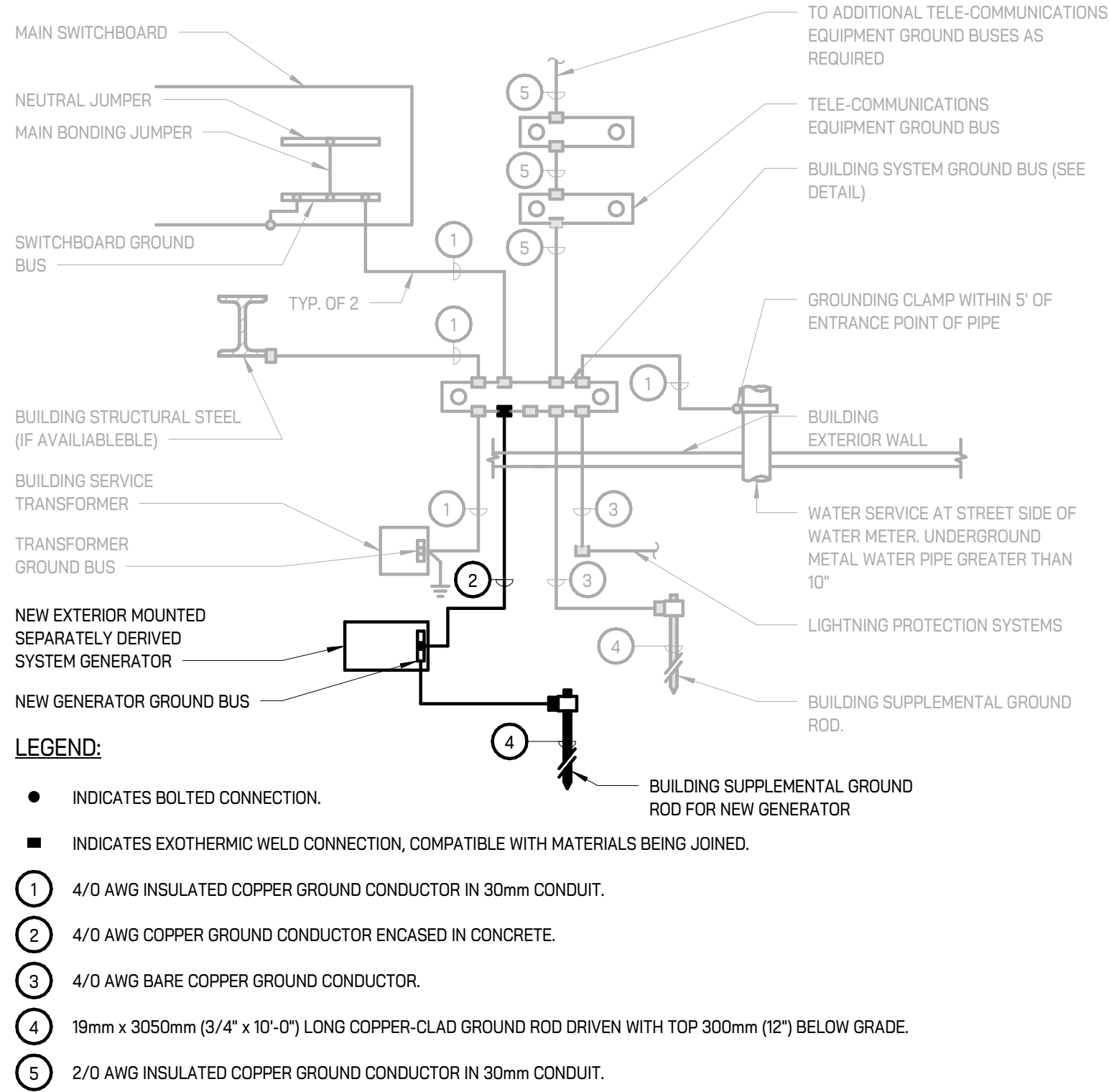
SHEET
ELECTRICAL
ONE-LINE DIAGRAM -
NEW CONSTRUCTION

PROJECT NUMBER
2025-044

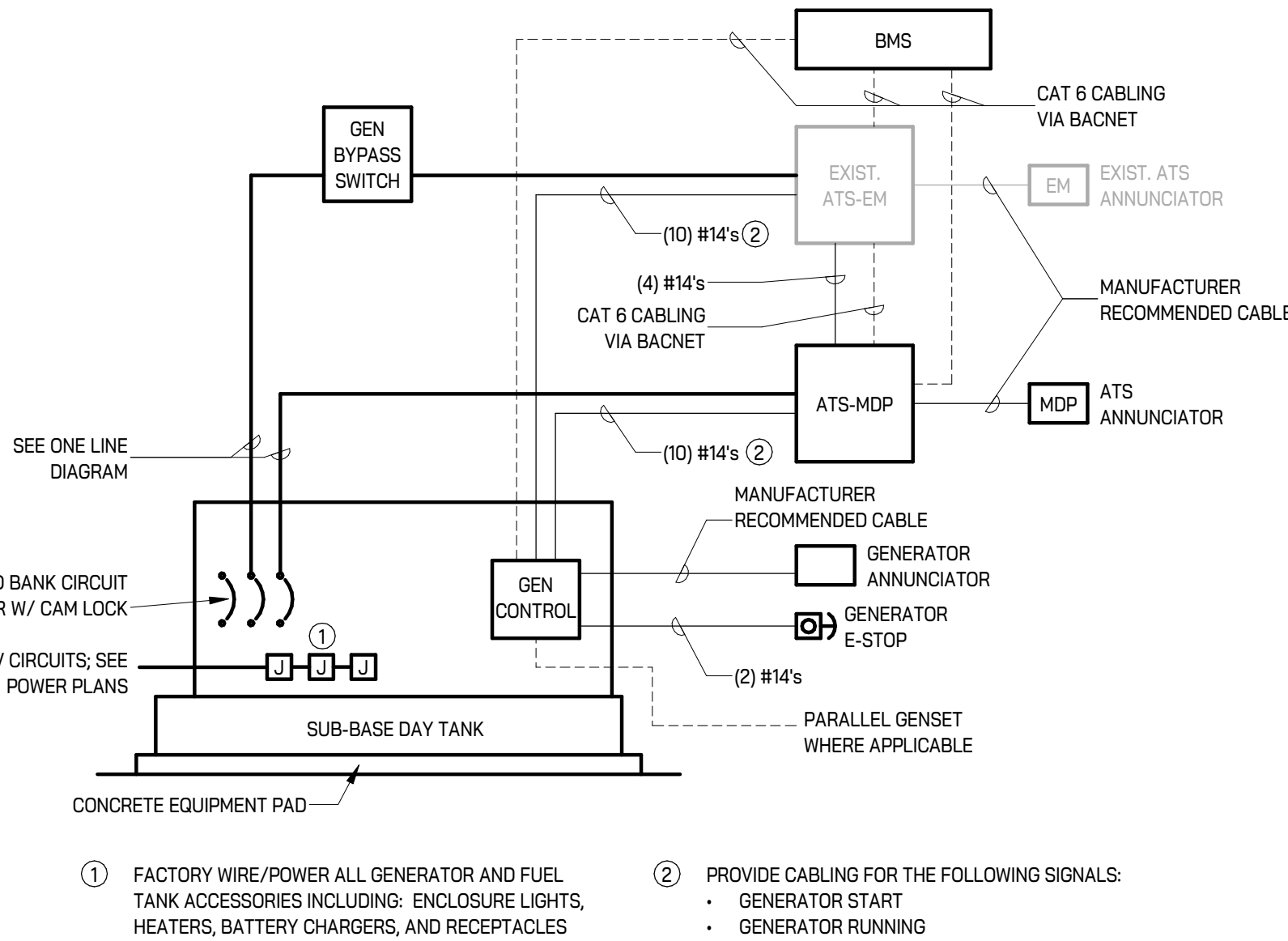
SHEET NUMBER
E402

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	

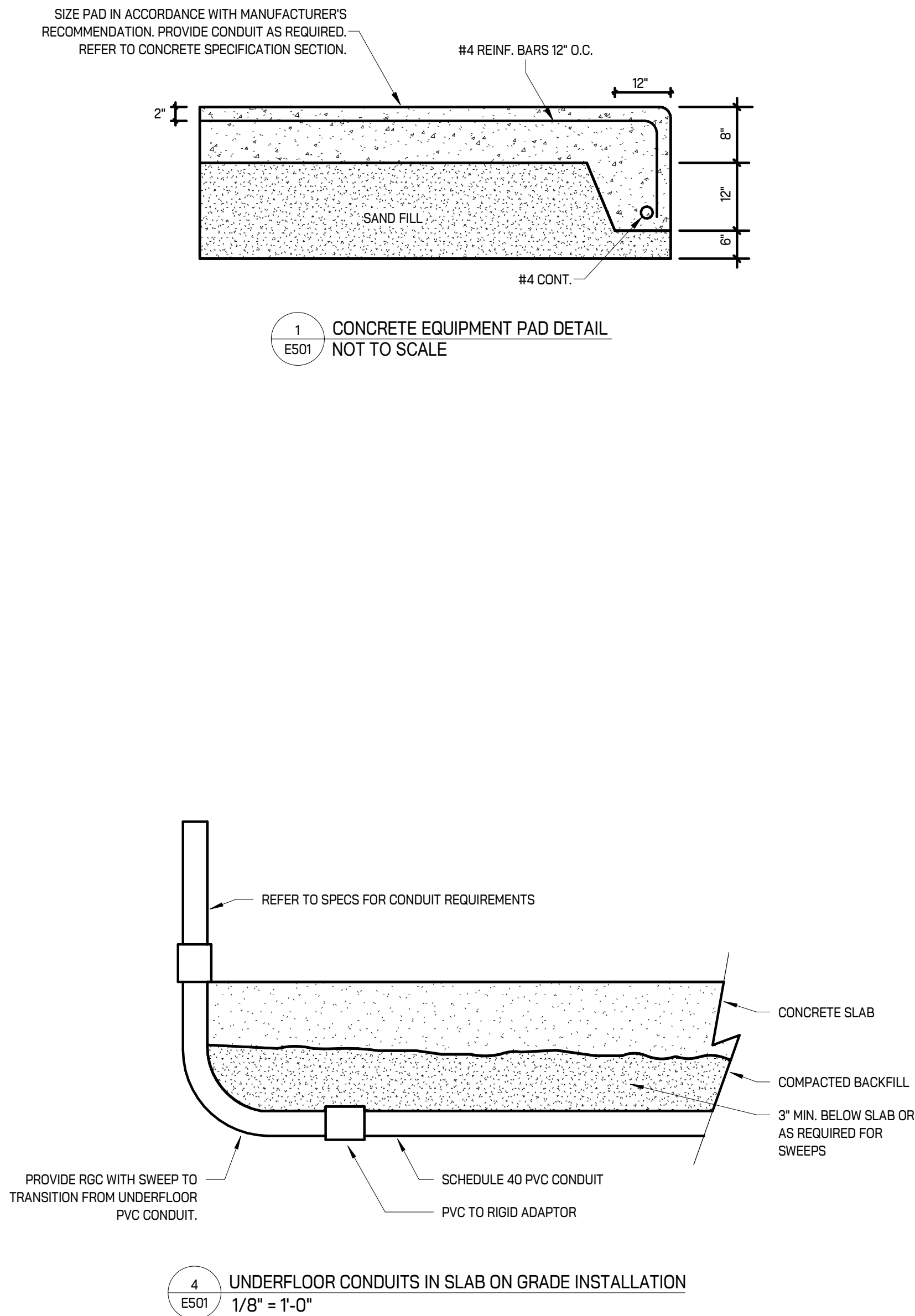
NOTES:
1. FOR ALL AUTOMATIC TRANSFER SWITCHES, PROVIDE CONDUIT AND FEEDER SIZES FROM BOTH NORMAL AND EMERGENCY SOURCES AS INDICATED IN THE SCHEDULE ABOVE.
2. FOR LIFE SAFETY FEEDERS, PROVIDE 2-HOUR RATED RHH TYPE CABLE WHEN ROUTED WITHIN BUILDING.



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



3 GENERATOR INTERCONNECTION DIAGRAM
E501 NOT TO SCALE



1 CONCRETE EQUIPMENT PAD DETAIL
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: Q5X15-G9 Nonroad 2	R-Code: R002
Fuel: Diesel	Number of Loads: 12.0
Cooling System: Enhanced High Ambient	Reconnectable: 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	Load Qty	kW	kVA	kW	kVA	Amps	Cyclic Load	NonLinear Load
1	Step 1		10.0	10.53	10.0	10.53	12.68		
	Light Load 1	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		
	UPS Load 1	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		
	General load	1	144.0	160.0	144.0	160.0	192.68		
	ATS1								
	HVAC Loads	1	120.0	133.33	100.0	111.11	133.8		Y

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 CUMMINS REQUIREMENTS.
5. PROVIDE ANY START-UP AND TESTING VERIFICATION FOR ANY THIRD PARTY COMMISSIONING REQUIREMENT.

PRODUCT CAPACITY

Project Running (kW): 288.5	Project Max Starting(kWe): 308.5
Base Product Rating (kW): 450	Project Effective Max Starting(kWe): 294.16
Site Adjusted Product Rating (kW): 450	Max Starting kWe: 516
Product kWe 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 %	Voltage Recovery Time	Dip %	Frequency 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 kVA: 120.0
Power Factor: 0.9	Running Amps: 133.8
Running Amps: 133.8	Starting kVA: 133.33
Starting kVA: 133.33	Starting Amps: 160.57
Efficiency (%): 100.0	
Rectifier Type: 6 pulse filtered	
Running Unit of rating: KW	
Starting Unit of rating: KW	
Harmonic Content (THDf%): 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 (THDf%): 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 (THDf%): 10.0	

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SHEET

ELECTRICAL
SCHEDULES AND
DETAILS

PROJECT NUMBER

2025-044

SHEET NUMBER

E501