LEGAL DESCRIPTION: LOTS ONE (1) AND TWO (2) AND OUTLOT ONE (1) OF CERTIFIED SURVEY MAP NO. 10488, RECORDED DECEMBER 21, 2007 IN THE OFFICE OF THE REGISTER OF DEEDS FOR WAUKESHA COUNTY, WISCONSIN AS DOCUMENT NUMBER 3534066; BEING PART OF LOT 1, BLOCK 13, IN SUNSET HEIGHTS SUBDIVISION, BEING A PART OF THE NORTHEAST 1/4 OF THE SOUTHWEST 1/4, THE SOUTHEAST 1/4 OF THE NORTHWEST 1/4, THE SOUTHWEST 1/4 OF THE NORTHEAST 1/4 AND THE NORTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 15, TOWNSHIP 6 NORTH, RANGE 19 EAST, IN THE CITY OF WAUKESHA, WAUKESHA COUNTY, WISCONSIN.

1250 KW DIESEL OPTIONAL STANDBY GENERATOR SYSTEM

FOR

Walmart

STORE 1635

2000 S WEST AVE
WAUKESHA, WI 53189

SEQUENCE OF CONSTRUCTION

- WEEK 1: "ROUGH-IN PHASE" CONCRETE PADS WILL BE POURED AND CONDUIT TRENCHING WILL BE DONE DURING THE FIRST WEEK
- WEEK 2: "TIE-IN PHASE" MOBILE GENERATOR WILL BE ROLLED UP TO POWER THE STORE DURING THE UTILITY OUTAGE. CONDUCTOR WILL BE PULLED AND NEW SWITCHGEAR AND GENERATORS WILL BE TIED INTO THE SYSTEM
- SCHEDULED START: 3/24/2025
- SCHEDULED END: 8/8/2025

PROJECT SHEET INDEX

VICINITY MAP

ravenvolt
ADDRESS: 2715 RONALD REAGAN BLVD. CUMMING, GA 30041
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2715 RONALD REAGAN BLVD STE 100, CUMMING, GA 30041

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2/12/2025

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CONFIDENTIAL AND COMPETITIVELY SENSITIVE

PERMITTING

Walmart
702 SW 8TH ST,
BENTONVILLE, AR 72716

GENSET SIZE:	1250 KW
SYSTEM VOLTAGE:	480Y/277V

PROJECT SITE:
WALMART - 1635
2000 S WEST AVE
WAUKESHA, WI 53189

DESIGNED BY: RAVENVOLT	REVIEWED BY: ----
DRAWN BY: EPHRAIM.C	ASSISTED BY: JOSEPH.B
PROJECT MANAGER: MOLLY LYDICK	
ELECTRIC UTILITY: WE ENERGIES	
AHJ: WAUKESHA CITY	

REVISION HISTORY

REV	REVISION DESCRIPTION	DATE
1	RV ENGINEERING REVIEW	05/15/2024
2	E-STOP ADDED	01/21/2025
3	AHJ SITE PLAN DETAILS ADDED	02/12/2025

SHEET TITLE
COVER PAGE
&
CONTACT INFORMATION

DRAWING NUMBER
G1

THIS DRAWING IS 11" X 17" AT FULL SIZE

SITE ID: 1635

I. DESCRIPTION OF PROJECT SCOPE & OPERATION

A. GENERAL

1. The purpose of this project is to provide Walmart with a 1250kW Optional Standby Generator System for electrical load management and standby purposes in accordance with NEC 702 and 705.

2. The Standby System will consist of the following:
   a. Two RavenVolt, 625kW (standby); 540kW (LTP); diesel engine generation systems, UL 2200.
   b. One 5000A 480Y/277V, 3Ø, 4W Switchgear, Service Entrance Rated, UL891.

3. The Switchgear is provided ahead of the main switchboard to enable interconnection of an optional standby system in accordance with NEC article 702. The Switchgear will also serve as the Main Disconnect and Point of Building Service Entrance Grounding Electrode.

4. Refer to sheet E2 for a Standby System Electrical Distribution Diagram. Note the Switchgear is provided with two source breakers, 52-U and 52-GT. The load breaker(s) provided in the switchgear serve to feed the Walmart building Main Switchboard. The over current functionality of 52-U will be set "above" the existing main circuit breaker as to not impede the function of the existing main circuit breaker.

5. The Switchgear will include one engine-generator control panel per engine-generator, Woodward Model EASYGEN 3500XT, to enable parallel operation with utility. The EG3500XT will include the following functions:

   a. ENGINE CONTROL
   b. GEN-SET SYNCHRONIZING (VOLTS & PHASE)
   c. AUTOMATIC START/STOP CONTROL
   d. DIGITAL DISPLAY OF ENGINE AND GENERATOR DATA
   e. KW LOAD CONTROL
   f. KVAR LOAD CONTROL
   g. GEN-SET PROTECTION
   h. LOAD SURGE PROTECTION
   i. ENGINE PROTECTION
   j. OVER/UNDER VOLTAGE (27/59)
   k. OVER/UNDER FREQUENCY (81O/U)
   l. REVERSE POWER (32)
   m. LOSS OF UTILITY POWER DETECTION
   n. FREQUENCY MISMATCH PROTECTION

6. Refer to sheet E5 for a Standby System Grounding Detail. The System will be grounded in accordance with all applicable provisions of NEC 702 and 250. The new Switchgear will be provided and will include a Utility Grade Protective Relay (SEL 700G) with the following minimum functions:

   a. OVER/UNDER VOLTAGE (27/59)
   b. OVER/UNDER FREQUENCY (81O/U)
   c. REVERSE POWER (32)
   d. PHASE OVERCURRENT (50/51)
   e. NEGATIVE SEQUENCE OVER VOLTAGE (47)
   f. SYNC CHECK (25C)
   g. PHASE DIRECTIONAL OVER CURRENT (67)

7. This project will include the minor site work and concrete pads necessary to install the Standby System adjacent to the Walmart building as shown in this drawing set.

B. STANDBY SYSTEM MODES OF OPERATION

1. The Standby System will have four modes of operation:
   a. Standby Mode - Enables the Standby System to send power to a dead and isolated service for the duration of an outage with an automatic synchronized Make-Before-Break Return to the Utility once service is restored.
   b. Load Curtailment Mode - Enables synchronized and short-term parallel operation of the Standby System with the Utility, followed by the automatic opening of 52-U to enable "blipless" isolated operation of the Standby System.
   c. Manual Mode - Enables the Standby System to be activated manually and allows the generator to run until shut down by an operator.
   d. Load Management Mode - Utility Follow - Enables synchronized and long-term parallel operation of the Standby System with the Utility to provide automatic, remote controlled electric load management capability up to the maximum generator capacity.
   e. Load Management Mode - Baseload - Enables synchronized and long-term parallel operation of the Standby System with the Utility to provide automatic, remote controlled electric load management capability up to a designated baseload value.

C. STANDBY SYSTEM SEQUENCE OF OPERATIONS

1. Normal Mode (Auto):
   a. Utility Breaker 52-U is closed.
   b. Generator Tie Breaker 52-GT is closed.
   c. Generator Breaker 52-G1 & 52-G2 are open.
   d. System Control Switch (SCS) is in Auto position.
   e. Generator Controls Switches (G1-CS, G2-CS) are in the AUTO position.
   f. The system is being fed by utility power, with generators ready to run.

2. Standby / Emergency Mode (Auto):
   a. Initial Switch Positions:
      i. SCS in Auto
      ii. G1-CS in AUTO
      iii. G2-CS in AUTO
   b. Entry to Standby:
      i. Woodward LS-6 Controller senses loss of utility power.
      ii. After 10 seconds, Generator Tie Breaker 52-GT is opened and a start signal is sent to the generators.
      iii. As the first generator reaches rated speed and voltage, its generator breaker is closed to the dead generator bus.
      iv. When the second generator reaches rated speed and voltage, the generator is synchronized to the generator bus and closes its generator breaker.
      v. Once minimum generator capacity is reached, Utility Breaker 52-U is opened.
      vi. Following a 3-second EMF delay, Generator Tie Breaker 52-GT is closed.
      vii. The system is being fed by generator power.
   c. Exit from Standby:
      i. Woodward LS-6 Controller senses a return of utility power and a stability timer (5-minutes) is started.
      ii. Once the timer has expired, the generators are synchronized to the utility source and Utility Breaker 52-U is closed.
      iii. The generators are soft ramp unloaded.
      iv. Generator Breakers 52-G1 and 52-G2 are each opened as they reach disconnect kW.
      v. The generators each complete a cooldown (5-minutes) and shutdown.
      vi. The system is now in Normal Mode.

3. Manual Engine Run (Manual):
   a. Initial Switch Positions:
      i. SCS in AUTO
      ii. G1-CS in AUTO
      iii. G2-CS in AUTO
   b. Entry to Manual:
      i. Operator places the SCS in the MANUAL position.
      ii. Operator places one Generator Control Switch Gx-CS in the OFF position.
      iii. Operator places the respective Easygen Controller in Manual by pushing the “MAN” button, and ensures the button is illuminated.
      iv. Operator presses the manual start button “I” on the Easygen Controller, and a start signal is sent to the generator.
      v. The generator will run with its breaker open until the start signal is removed.
   c. Exit from Manual:
      i. Operator presses the manual stop button “O” on the Easygen Controller, and a start signal is removed from the generator.
      ii. The generator shuts down.
      iii. Operator returns the Generator Control Switch Gx-CS to the AUTO position.
      iv. This automatically returns the Easygen Controller to “AUTO”, and the corresponding button is illuminated.
      v. Operator returns the SCS to the AUTO position.
      vi. The system is now in Normal Mode.

4. Isolate Mode (Online/Isolate):
   a. Initial Switch Positions:
      i. SCS in AUTO
      ii. G1-CS in AUTO
      iii. G2-CS in AUTO
   b. Entry to Isolate:
      i. Operator places the MCS in ISOLATE position, then places the SCS in the ONLINE position (or these are initiated remotely).
      ii. Generator Tie Breaker 52-GT is opened, and a start signal is sent to the generators.
      iii. As the first generator reaches rated speed and voltage, its generator breaker is closed to the dead generator bus.
      iv. When the second generator reaches rated speed and voltage, the generator is synchronized to the generator bus and closes its generator breaker.
      v. The generators are synchronized to the utility source and Generator Breaker 52-GT is closed.
      vi. The generators are soft ramp loaded.
      vii. Utility Breaker 52-U is opened as it reaches disconnect kW.
      viii. The system is being fed by generator power.
   c. Exit from Isolate:
      i. Operator returns the SCS to the AUTO position
      ii. The generators are synchronized to the utility source and Utility Breaker 52-U is closed.
      iii. The generators are soft ramp unloaded.
      iv. Generator Breakers 52-G1 and 52-G2 are each opened as they reach disconnect kW.
      v. The generators each complete a cooldown (5-minutes) and shutdown.
      vi. The system is now in Normal Configuration.
   d. Notes:
      i. Should the Woodward LS-6 Controller sense a loss of utility power while in Isolate Mode, the system will remain on generator power, even if the operator returns the SCS to AUTO.

5. Load Management Mode - Process (Online/Process):
   a. Initial Switch Positions:
      i. SCS in AUTO
      ii. G1-CS in AUTO
      iii. G2-CS in AUTO
   b. Entry to Process:
      i. Operator places the MCS in PROCESS position, then places the SCS in the ONLINE position (or these are initiated remotely).
      ii. A start signal is sent to generators.
      iii. As the generators reach rated speed and voltage, they are synchronized to the utility source and close their generator breakers to the bus.
      iv. The generators are soft ramp loaded to carry local load while maintaining a minimum utility import and not exceeding generator rated capacity.
      v. As the load changes, the generator power output will adjust dynamically while maintaining the minimum utility import. No power shall be exported.
   c. Exit from Process:
      i. Operator returns the SCS to the AUTO position.
      ii. The generators are soft ramp unloaded.
      iii. Generator Breakers 52-G1 and 52-G2 are each opened as they reach disconnect kW.
      iv. The generators each complete a cooldown (5-minutes) and shutdown.
      v. The system is now in Normal Mode.

6. Load Management Mode - Baseload (Online/Baseload):
   a. Initial Switch Positions:
      i. SCS in AUTO
      ii. G1-CS in AUTO
      iii. G2-CS in AUTO
   b. Entry to Baseload:
      i. Operator places the MCS in Baseload position and SCS in the ONLINE position (or these are initiated remotely).
      ii. A start signal is sent to generators.
      iii. As the generators reach rated speed and voltage, they are synchronized to the utility source and close their generator breakers to the bus.
      iv. The generators are soft ramp loaded to carry local load while maintaining a minimum utility import and not exceeding the baseload setpoint.
      v. As the load changes, the generator power output will adjust dynamically while maintaining the minimum utility import. No power shall be exported.
   c. Exit from Baseload:
      i. Operator returns the SCS to the AUTO position.
      ii. The generators are soft ramp unloaded.
      iii. Generator Breakers 52-G1 and 52-G2 are each opened as they reach disconnect kW.
      iv. The generators each complete a cooldown (5-minutes) and shutdown.
      v. The system is now in Normal Mode.

ravenvolt
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2/12/2025

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PERMITTING

Walmart
702 SW 8TH ST,
BENTONVILLE, AR 72716

GENSET SIZE:	1250 KW
SYSTEM VOLTAGE:	480Y/277V

PROJECT SITE:

WALMART - 1635
2000 S WEST AVE
WAUKESHA, WI 53189

DESIGNED BY: RAVENVOLT	REVIEWED BY: ----
DRAWN BY: EPHRAIM.C	ASSISTED BY: JOSEPH.B

PROJECT MANAGER: MOLLY LYDICK

ELECTRIC UTILITY: WE ENERGIES

AHJ: WAUKESHA CITY

REVISION HISTORY

REV	REVISION DESCRIPTION	DATE
1	RV ENGINEERING REVIEW	05/15/2024
2	E-STOP ADDED	01/21/2025
3	AHJ SITE PLAN DETAILS ADDED	02/12/2025

SHEET TITLE
PROJECT SCOPE & OPERATION

DRAWING NUMBER
E1

THIS DRAWING IS 11" X 17" AT FULL SIZE

SITE ID: 1635

II. PROJECT SPECIFICATIONS

A. GENERAL

1. This Project will be completed on a Design-Build basis.

2. Project Includes:
   a. Minor Site Preparation and Concrete Pads.
   b. Off Loading and Setting of Generac Generator and RavenVolt/IEM Switchgear equipment.
   c. Power Wiring and Utility Interconnect.
   d. Miscellaneous Electrical Construction.
   e. Control Wiring and Raceways.

3. Comply with applicable local, state, and federal code.

4. In addition to applicable local, state, and federal codes, perform work specified in this Division in accordance with standards listed below:
   a. Wisconsin Electrical Code 2017 (NFPA 70, 2017 with amendments)
   b. Wisconsin Building Code 2015 (IBC 2015 with amendments)
   c. Wisconsin Fire Code 2015 (IFC 2015 with amendments)

5. Maintain a record set of drawings on the job site.

6. Equipment and materials furnished shall be listed and labeled by UL.

7. Specifications and drawings indicate name, type, and/or catalog number of materials and equipment to establish standards of quality.

8. These drawings are diagrammatic and shall not be scaled for exact sizes. Equipment shall be installed in accordance with manufacturer's recommendations. Where conflicts occur between Contract Documents and these recommendations, a ruling shall be requested from the customer before proceeding with such work.

9. Repair or replace damage caused by cutting in performance of work. Holes cut through existing floor slabs shall be properly sealed, fire proofed, and waterproofed. Repairs shall be performed with materials which match existing materials and be installed in accordance with appropriate sections of these specifications.

10. Provide trenching, excavation, and backfilling necessary for performance of work under this Division. Provide foundations and pads for electrical equipment as shown on the drawings or specified herein.

11. On completion of work, installation shall be completely operational and entirely free from grounds, short circuits, and open circuits. Perform operational tests as required to demonstrate substantial completion of the work in the presence of customer and Authorities Having Jurisdiction, where required.

12. Obtain and pay for all necessary permits and inspection fees required for electrical installation.

13. Provide warning signs called for by NFPA 70 and by OSHA.

14. Provide a temporary electrical lighting and power distribution system of adequate size to properly serve the project. Temporary work shall be installed in a neat and safe manner in accordance with the National Electrical Code, Article 305, and as required by OSHA or applicable local safety codes.

B. RACEWAYS AND CONDUIT SYSTEMS

1. Provide a complete conduit system with associated couplings, connectors, and fittings. Rigid and EMT conduit shall be hot dipped, galvanized, or electrogalvanized steel by Allied, General Electric, Republic, Triangle, or Wheatland. Conduit, connectors, couplings, and fittings shall be UL listed and labeled.
2. PVC conduit shall be Carlon or equivalent, Schedule 40, 90°C rated.
3. Associated couplings, connectors, and fittings shall be PVC as manufactured by Carlon or equivalent.
4. Electrical metal tubing (EMT) will be used as follows:
   a. Above Ground
   b. EMT to be painted with corrosion resistant paint - silver or light gray in color.
5. Rigid steel conduit shall be used as follows:
   a. Feeders Exposed to severe mechanical damage
   b. Exterior above ground feeders within 5 miles of ocean.
6. Wireways that separate protected and unprotected feeders.
7. Polyvinyl chloride (PVC) shall be used as follows:
   a. Underground
8. Conduits which enter from outside the building shall be grouted-in to prevent entry of gases, vapors, insects, or rodents.
9. Conduits shall be mechanically and electrically continuous from cabinet to cabinet pull or junction boxes.
10. Provide conduit bushings where the termination enclosure does not provide protection.
11. Conduits that enter the building to be sealed just prior to building entry to prevent condensation.

C. CONDUCTORS - 600 VOLTS AND BELOW

1. All wiring for a complete working system.
2. Conductors shall be 98% conductivity copper conductors with 600 volt minimum insulation. Conductors shall be stranded type DLO, THW, THWN or stranded AL type AA-8000 series THHN, XHHW-2. (No AL for AWG #1 and smaller) Refer to plans.
3. Color code conductors for 480/277V systems as follows:
   a. Phase A - Brown
   b. Phase B - Orange
   c. Phase C - Yellow
   d. Neutral - Gray
   e. Ground - Green
4. Color code conductors for 208/120V systems as follows:
   a. Phase A - Black
   b. Phase B - Red
   c. Phase C - Blue
   d. Neutral - White
   e. Ground - Green
5. Cable shall be by Anaconda, General Cable, Okonite, Rome, Triangle, CME, Priority, or Southwire.
6. Conductors outdoors shall be listed for use in wet locations.
7. Conductors in transformer vaults to be UV rated.
8. Fine-stranded conductors to utilize compression lugs.
9. Terminations at generator to be compression lugs.

D. OUTLET BOXES PULL AND JUNCTION

1. Outlet boxes shall be National, Steel City, Appleton, Raco, or General Electric.
2. Provide junction boxes as shown on drawings and otherwise where required, sized according to numbers of conductors in box or type of service to be provided.

E. RAVENVOLT IEM PARALLELING SWITCHGEAR

1. RavenVolt will furnish one Switchgear lineup rated at 480Y/277V, 5000A, 3Ø, 4W, Service-Entrance rated.
2. Bus bars will be rigidly braced to comply with integrated equipment rating of switchboard for 100,000A RMS. Bus bars will be silver plated copper.
3. Breakers shall be ABB.
4. Overcurrent protection shall be minimum rated 100kAIC.
5. Termination lugs shall be rated at 90°C
6. The Switchgear includes a multifunction, digital, utility-grade SEL 700GT protective relay.
7. Receive, set, and install the switchboard per the drawings.
8. Rotation from generator and Utility transformer into switchgear must be clockwise. Rotation into store must match existing rotation into store.
9. Provide labeling per NFPA 70 Sec. 110.24 on switchgear enclosure.

F. GROUNDING

1. The entire system of extension of raceways and equipment shall be grounded in accordance with Article 702 and 250 of the NEC.
2. Refer to Grounding Diagram on Sheet E5.

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SHEET TITLE

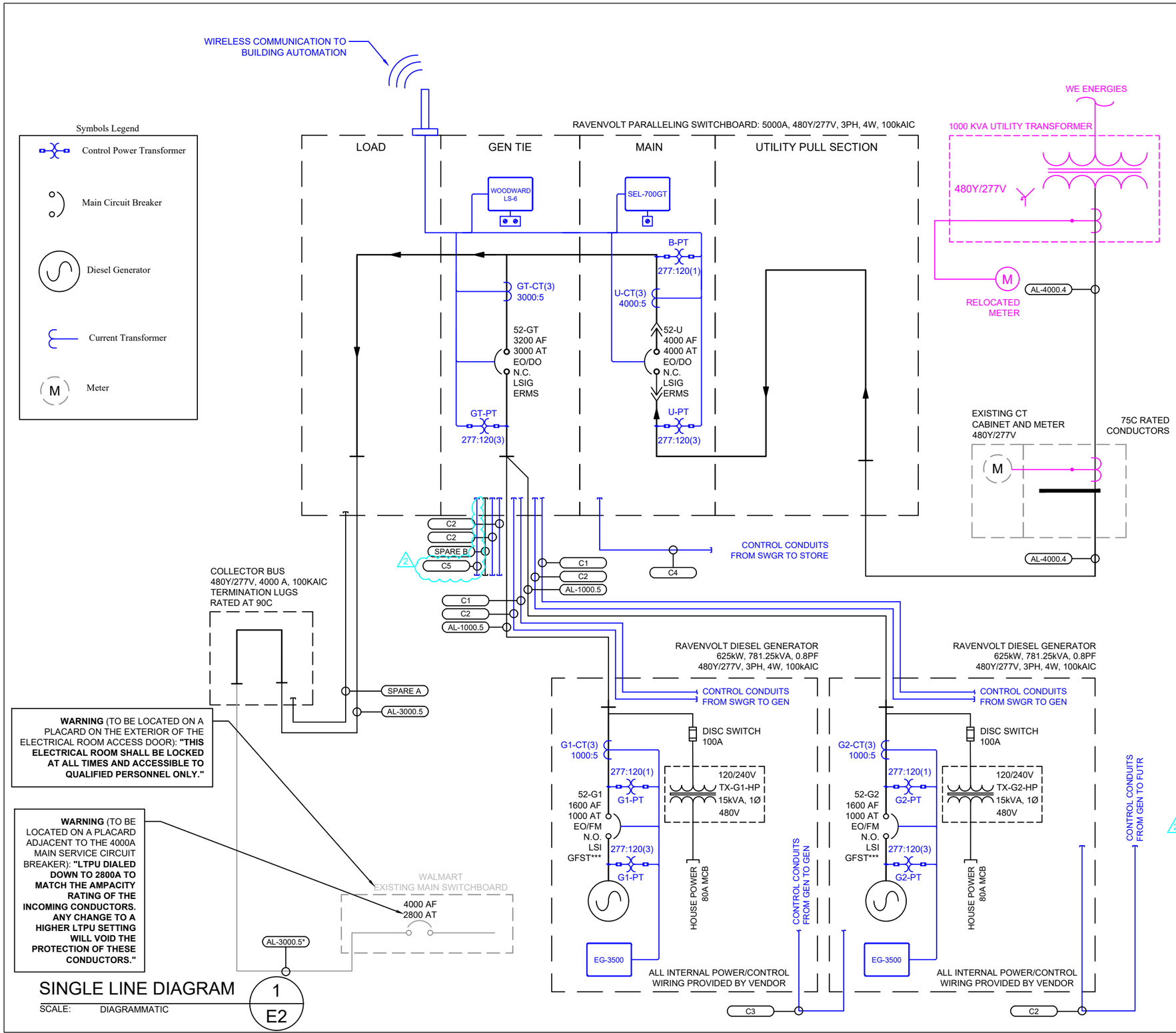
PROJECT SPECIFICATIONS

DRAWING NUMBER

E1.1

THIS DRAWING IS 11" X 17" AT FULL SIZE

SITE ID: 1635



SINGLE LINE DIAGRAM

SCALE: DIAGRAMMATIC

1 / E2

LINETYPE LEGEND

- NEW WIRING
- NEW EQUIPMENT
- EXISTING WIRING
- EXISTING EQUIPMENT
- NEW WIRING BY OTHERS
- NEW EQUIPMENT BY OTHERS
- NEW CONTROL WIRING
- NEW CONTROL EQUIPMENT

12 MONTH PEAK DEMAND (NEC 220.87)		
VOLTAGE	480	V
POWER	636	kW
POWER FACTOR	0.9	PF
CURRENT	850	A

90C RATED FEEDER SCHEDULE

FEEDER TAG	CONDUIT (#-SIZE)	CONDUCTORS PER CONDUIT		
		PHASE	NEUTRAL	GROUND
AL-4000.4	10-4"	3 #750kCMIL	1 #750kCMIL	-
AL-1000.5	3-4"	3 #600kCMIL	1 #600kCMIL	1 #600kCMIL
AL-3000.5	8-4"	3 #600kCMIL	1 #600kCMIL	1 #600kCMIL
AL-3000.5*	8-4"	3 #750kCMIL	1 #750kCMIL	1 #750kCMIL
SPARE A	4-4"	-	-	-
SPARE B	3-4"	-	-	-

CONTROLS FEEDER SCHEDULE

FEEDER TAG	CONDUIT (#-SIZE)	TYPE	PURPOSE
C1	1-2"	2- #12 AWG	24V DC POWER
		2 - #14 AWG	BELL ALARM INTERLOCKING TRIP
		1 - #22 TSP	WOODWARD CAN BUS 1 COMMS
		1 - #22 TSP	WOODWARD CAN BUS 3 COMMS
		2 - CAT 6	GEN COMMS + SPARE
		2 - #14 AWG	SPARE
C2	1-2"	SPARE	-
C3	1-2"	1 - #22 TSP	WOODWARD CAN BUS 1 COMMS
		1 - #22 TSP	WOODWARD CAN BUS 3 COMMS
		1 - CAT 6	SPARE
C4	1-2"	2 - #14 AWG	REMOTE SHUNT TRIP
		2 - #14 AWG	REMOTE START REQUEST
		2 - #14 AWG	LOAD SHED ENGAGED
		2 - #14 AWG	LOAD SHED DISENGAGED
		2 - #14 AWG	SPARE
C5	1-2"	2 - #14 AWG	GENERATOR E-STOP

GENERAL NOTES:

1. CONDUIT SIZES ARE MINIMUM SIZES BASED ON SCHEDULE 40 PVC. UPSIZE CONDUIT AS NEEDED IF ANOTHER APPROVED CONDUIT TYPE IS USED.

2. POWER CONDUCTOR SIZES ARE BASED ON 90°C COLUMN OF NEC TABLE 310.16 COPPER (CU) AND ALUMINUM (AL)

3. CONDUIT ROUTING AS DEPICTED ON THE DRAWINGS IS STRICTLY DIAGRAMMATIC. THE INSTALLING CONTRACTOR SHOULD ROUTE CONDUITS IN AN EFFECTIVE AND SAFE MANNER BASED ON THE EXISTING SITE CONDITIONS. INSTALLATION SHALL MEET THE REQUIREMENTS OF THE NEC CURRENT ADOPTED EDITION.

4. ALL ADJUSTABLE TRIP CIRCUIT BREAKERS DIALED TO A LOWER TRIP SETTING SHALL COMPLY WITH NEC 240.6(C)(3).

* REUSE EXISTING CONDUIT AND PROVIDE NEW FEEDERS

***GROUND FAULT SHUNT TRIP

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SHEET TITLE

SINGLE LINE DIAGRAM

DRAWING NUMBER

E2

THIS DRAWING IS 11" X 17" AT FULL SIZE

SITE ID: 1635

SITE REFERENCE PLAN

SCALE: 1" = 40' - 0"

1 / E3

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GENSET SIZE:	1250 KW
SYSTEM VOLTAGE:	480Y/277V

PROJECT SITE:

WALMART - 1635
2000 S WEST AVE
WAUKESHA, WI 53189

DESIGNED BY: RAVENVOLT	REVIEWED BY: ----
DRAWN BY: EPHRAIM.C	ASSISTED BY: JOSEPH.B

PROJECT MANAGER: MOLLY LYDICK

ELECTRIC UTILITY: WE ENERGIES

AHJ: WAUKESHA CITY

REVISION HISTORY

REV	REVISION DESCRIPTION	DATE
1	RV ENGINEERING REVIEW	05/15/2024
2	E-STOP ADDED	01/21/2025
3	AHJ SITE PLAN DETAILS ADDED	02/12/2025

SHEET TITLE

SITE REFERENCE PLAN

DRAWING NUMBER

E3

THIS DRAWING IS 11" X 17" AT FULL SIZE

SITE ID: 1635

GRADING & DRAINAGE PLAN

SCALE: 1" = 40' - 0"

1 / E3.1

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2715 RONALD REAGAN BLVD STE 100, CUMMING, GA 30041

WISCONSIN
EDUARDO HIDALGO-REYES
E-100187
RALEIGH NC
PROFESSIONAL ENGINEER

2/12/2025

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PERMITTING

Walmart
702 SW 8TH ST,
BENTONVILLE, AR 72716

GENSET SIZE:	1250 KW
SYSTEM VOLTAGE:	480Y/277V

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GRADING & DRAINAGE PLAN

DRAWING NUMBER

E3.1

THIS DRAWING IS 11" X 17" AT FULL SIZE

SITE ID: 1635

SOIL SURVEY MAP

SCALE: 1" = 40' - 0"

1
E3.2

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PERMITTING

Walmart

702 SW 8TH ST,
BENTONVILLE, AR 72716

GENSET SIZE: 1250 KW
SYSTEM VOLTAGE: 480Y/277V

PROJECT SITE:

WALMART - 1635
2000 S WEST AVE
WAUKESHA, WI 53189

DESIGNED BY:	REVIEWED BY:
RAVENVOLT	----
DRAWN BY:	ASSISTED BY:
EPHRAIM.C	JOSEPH.B

PROJECT MANAGER:
MOLLY LYDICK

ELECTRIC UTILITY:
WE ENERGIES

AHJ:
WAUKESHA CITY

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SHEET TITLE

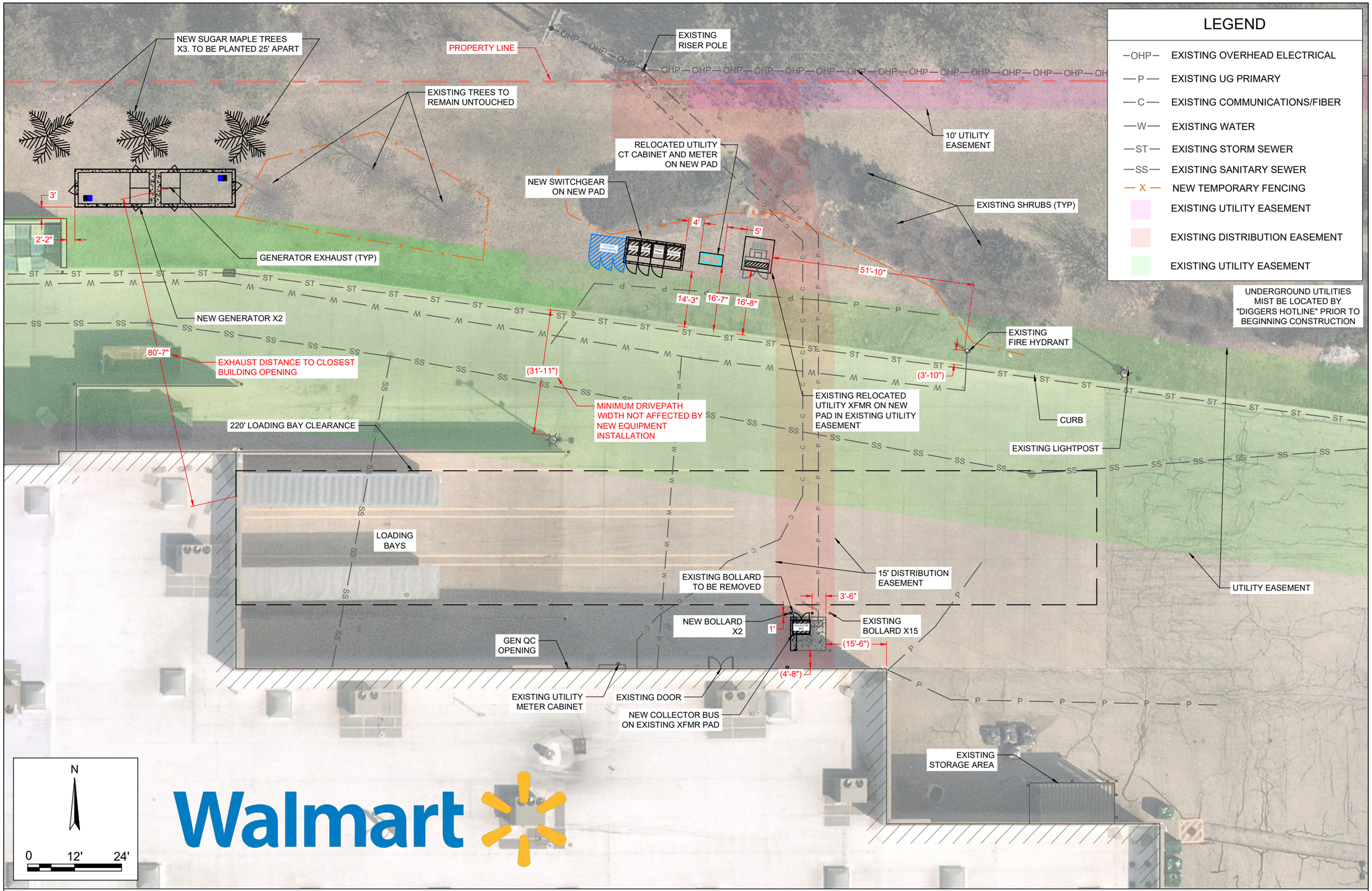
SOIL SURVEY MAP

DRAWING NUMBER

E3.2

THIS DRAWING IS 11" X 17" AT FULL SIZE

SITE ID: 1635



LEGEND

—OHP—	EXISTING OVERHEAD ELECTRICAL
— P —	EXISTING UG PRIMARY
— C —	EXISTING COMMUNICATIONS/FIBER
—W—	EXISTING WATER
—ST—	EXISTING STORM SEWER
—SS—	EXISTING SANITARY SEWER
— X —	NEW TEMPORARY FENCING
	EXISTING UTILITY EASEMENT
	EXISTING DISTRIBUTION EASEMENT
	EXISTING UTILITY EASEMENT

UNDERGROUND UTILITIES MIST BE LOCATED BY "DIGGERS HOTLINE" PRIOR TO BEGINNING CONSTRUCTION

ENLARGED PARTIAL SITE PLAN

SCALE: 1" = 24' - 0"

1 / E4

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SHEET TITLE

PARTIAL SITE PLAN,
EQUIPMENT LAYOUT

DRAWING NUMBER

E4

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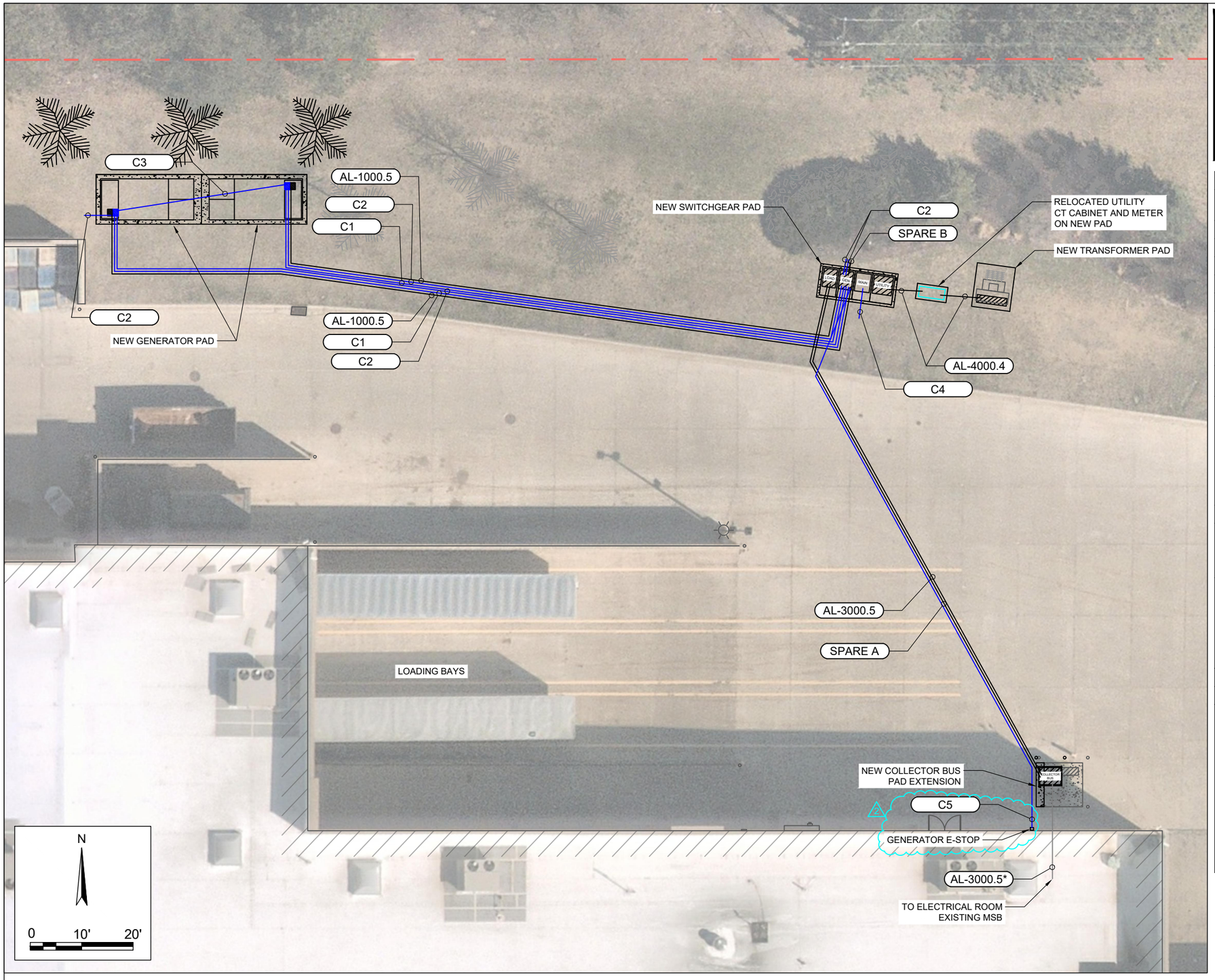

CONDUIT SITE PLAN

SCALE: 1" = 20' - 0"

1 / E4.1

LINETYPE LEGEND

- NEW WIRING
- NEW EQUIPMENT
- EXISTING WIRING
- EXISTING EQUIPMENT
- NEW CONTROL WIRING

90C RATED FEEDER SCHEDULE

FEEDER TAG	CONDUIT (#-SIZE)	CONDUCTORS PER CONDUIT		
		PHASE	NEUTRAL	GROUND
AL-4000.4	10-4"	3 #750kCMIL	1 #750kCMIL	-
AL-1000.5	3-4"	3 #600kCMIL	1 #600kCMIL	1 #600kCMIL
AL-3000.5	8-4"	3 #600kCMIL	1 #600kCMIL	1 #600kCMIL
AL-3000.5*	8-4"	3 #750kCMIL	1 #750kCMIL	1 #750kCMIL
SPARE A	4-4"	-	-	-
SPARE B	3-4"	-	-	-

CONTROLS FEEDER SCHEDULE

FEEDER TAG	CONDUIT (#-SIZE)	TYPE	PURPOSE
C1	1-2"	2- #12 AWG	24V DC POWER
		2 - #14 AWG	BELL ALARM INTERLOCKING TRIP
		1 - #22 TSP	WOODWARD CAN BUS 1 COMMS
		1 - #22 TSP	WOODWARD CAN BUS 3 COMMS
		2 - CAT 6	GEN COMMS + SPARE
		2 - #14 AWG	SPARE
C2	1-2"	SPARE	-
C3	1-2"	1 - #22 TSP	WOODWARD CAN BUS 1 COMMS
		1 - #22 TSP	WOODWARD CAN BUS 3 COMMS
		1 - CAT 6	SPARE
C4	1-2"	2 - #14 AWG	REMOTE SHUNT TRIP
		2 - #14 AWG	REMOTE START REQUEST
		2 - #14 AWG	LOAD SHED ENGAGED
		2 - #14 AWG	LOAD SHED DISENGAGED
		2 - #14 AWG	SPARE
C5	1-2"	2 - #14 AWG	GENERATOR E-STOP

GENERAL NOTES:

1. CONDUIT SIZES ARE MINIMUM SIZES BASED ON SCHEDULE 40 PVC. UPSIZE CONDUIT AS NEEDED IF ANOTHER APPROVED CONDUIT TYPE IS USED.

2. POWER CONDUCTOR SIZES ARE BASED ON 90°C COLUMN OF NEC TABLE 310.16 COPPER (CU) AND ALUMINUM (AL)

3. CONDUIT ROUTING AS DEPICTED ON THE DRAWINGS IS STRICTLY DIAGRAMMATIC. THE INSTALLING CONTRACTOR SHOULD ROUTE CONDUITS IN AN EFFECTIVE AND SAFE MANNER BASED ON THE EXISTING SITE CONDITIONS. INSTALLATION SHALL MEET THE REQUIREMENTS OF THE NEC CURRENT ADOPTED EDITION.

4. ALL ADJUSTABLE TRIP CIRCUIT BREAKERS DIALED TO A LOWER TRIP SETTING SHALL COMPLY WITH NEC 240.6(C)(3).

* REUSE EXISTING CONDUIT AND PROVIDE NEW FEEDERS

***GROUND FAULT SHUNT TRIP

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WISCONSIN
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PERMITTING

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BENTONVILLE, AR 72716

GENSET SIZE: 1250 KW
SYSTEM VOLTAGE: 480Y/277V

PROJECT SITE:
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2000 S WEST AVE
WAUKESHA, WI 53189

DESIGNED BY: RAVENVOLT	REVIEWED BY: ----
DRAWN BY: EPHRAIM.C	ASSISTED BY: JOSEPH.B
PROJECT MANAGER: MOLLY LYDICK	
ELECTRIC UTILITY: WE ENERGIES	
AHJ: WAUKESHA CITY	

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SHEET TITLE
PARTIAL SITE PLAN,
CONDUIT LAYOUT

DRAWING NUMBER
E4.1

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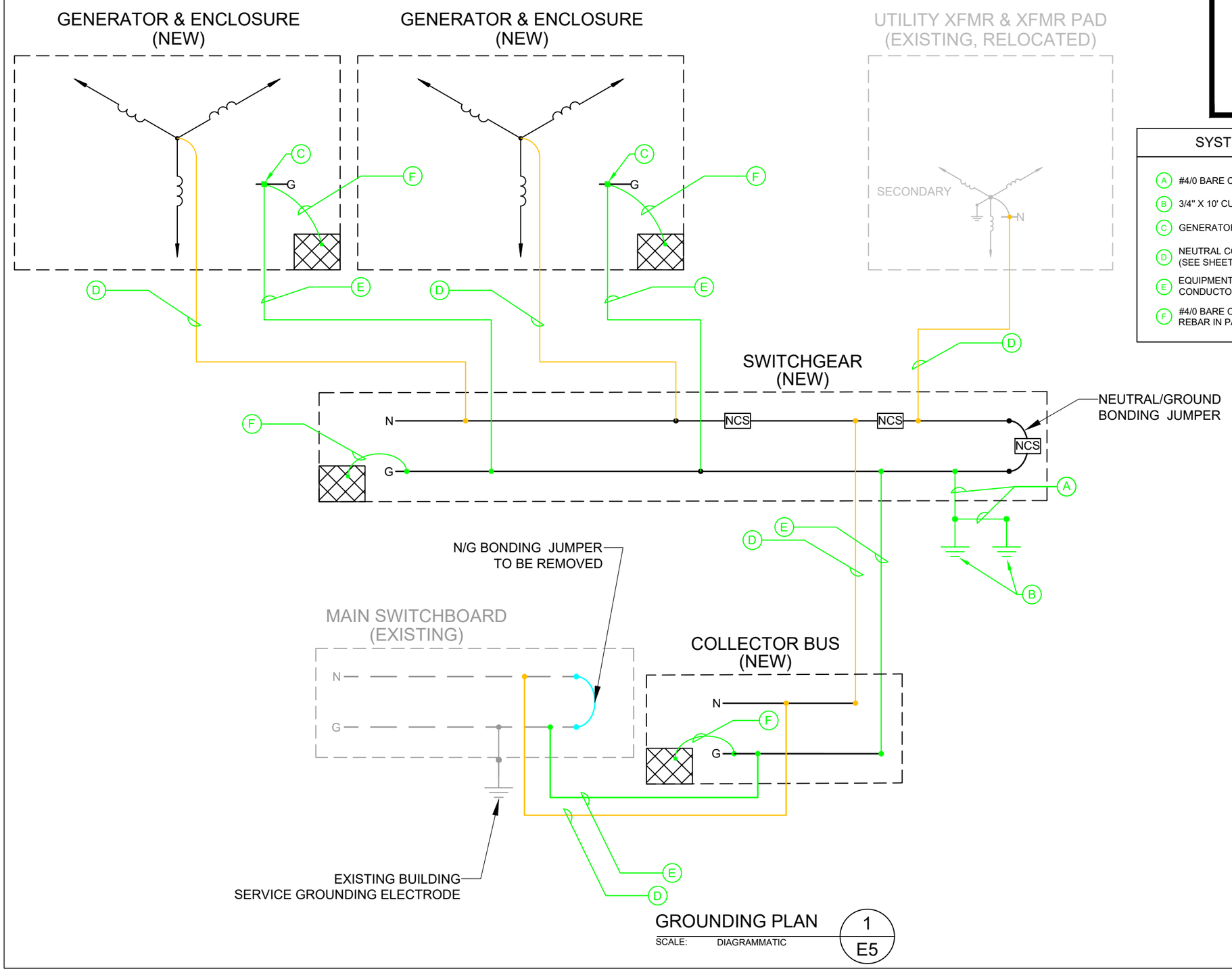
SITE ID: 1635



GROUNDING PLAN

SCALE: DIAGRAMMATIC

1 / E5

LINETYPE LEGEND

- NEW WIRING
- NEW EQUIPMENT
- EXISTING WIRING
- EXISTING EQUIPMENT
- GROUND WIRING
- NEUTRAL WIRING
- WIRING TO BE REMOVED

SYSTEM GROUNDING LEGEND

- (A) #4/0 BARE CU GROUNDING ELECTRODE CONDUCTOR
- (B) 3/4" X 10' CU GROUND ROD, MIN. 6' APART
- (C) GENERATOR ENCLOSURE GROUND LUG
- (D) NEUTRAL CONDUCTORS, ROUTED W/ PHASE CONDUCTORS (SEE SHEET E-2)
- (E) EQUIPMENT GROUND CONDUCTORS ROUTED W/ PHASE CONDUCTORS (SEE SHEET E-2)
- (F) #4/0 BARE CU GROUNDING ELECTRODE CONDUCTOR TO REBAR IN PAD

Symbols Legend

- Grounding Electrode
- Ground Grid

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Walmart
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BENTONVILLE, AR 72716

GENSET SIZE: 1250 KW
SYSTEM VOLTAGE: 480Y/277V

PROJECT SITE:
WALMART - 1635
2000 S WEST AVE
WAUKESHA, WI 53189

DESIGNED BY:	REVIEWED BY:
RAVENVOLT	----
DRAWN BY: EPHRAIM.C	ASSISTED BY: JOSEPH.B

PROJECT MANAGER: MOLLY LYDICK
ELECTRIC UTILITY: WE ENERGIES
AHJ: WAUKESHA CITY

REVISION HISTORY

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1	RV ENGINEERING REVIEW	05/15/2024
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3	AHJ SITE PLAN DETAILS ADDED	02/12/2025

SHEET TITLE: GROUNDING PLAN

DRAWING NUMBER: E5

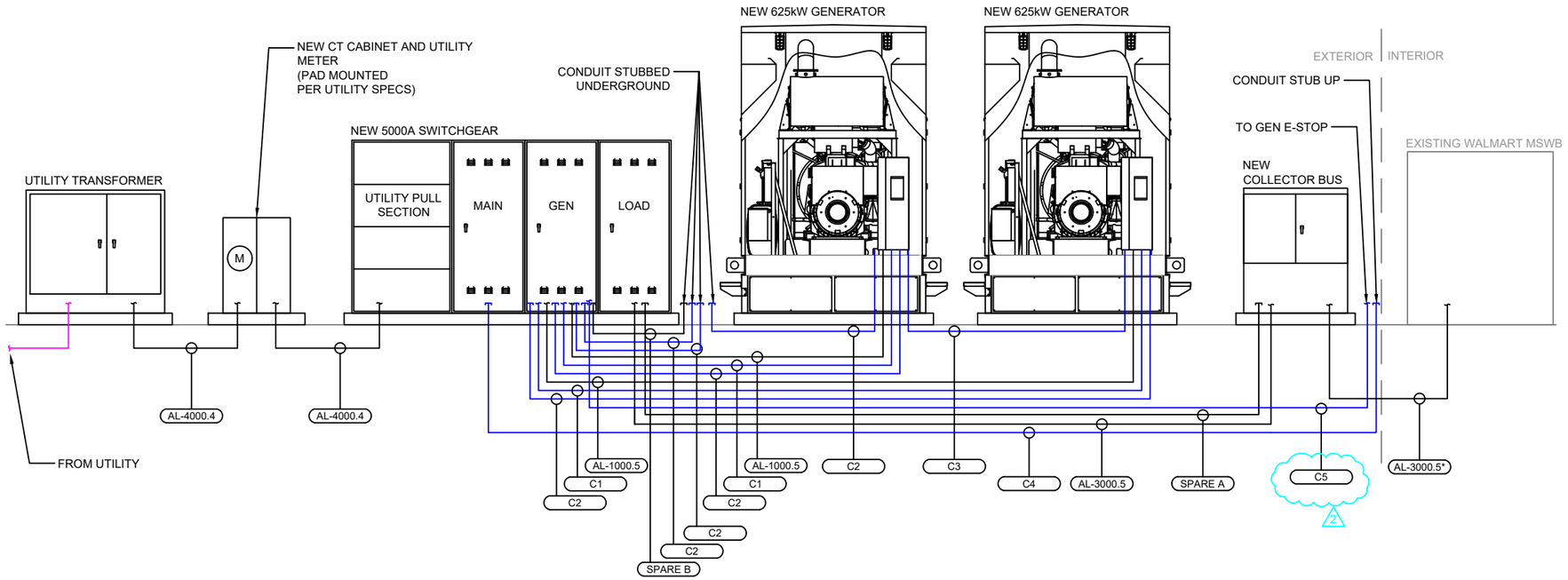
THIS DRAWING IS 11" X 17" AT FULL SIZE

SITE ID: 1635

Symbols Legend

M Utility Meter

NOTES
1. CONDUIT DEPTH IN RISER DIAGRAM IS DIAGRAMMATIC. ALL CONDUITS ARE TO BE BURIED IN ACCORDANCE TO NEC TABLE 300.5 MINIMUM COVER REQUIREMENTS.
2. CONDUCTOR TERMINATIONS ARE DIAGRAMMATIC.
3. SWITCHGEAR CABINET ORDER MAY DIFFER PER SITE CONDITIONS.
4. SEE SHEET E2 FOR BREAKER SIZING.
5. UTILITY METER LOCATION IS DIAGRAMMATIC AND WILL BE LOCATED ACCORDING TO UTILITY SPECS.



LINETYPE LEGEND

- NEW WIRING
- NEW EQUIPMENT
- EXISTING WIRING
- EXISTING EQUIPMENT
- NEW WIRING BY OTHERS
- NEW CONTROL WIRING

90C RATED FEEDER SCHEDULE

FEEDER TAG	CONDUIT (#-SIZE)	CONDUCTORS PER CONDUIT		
		PHASE	NEUTRAL	GROUND
AL-4000.4	10-4"	3 #750kCMIL	1 #750kCMIL	-
AL-1000.5	3-4"	3 #600kCMIL	1 #600kCMIL	1 #600kCMIL
AL-3000.5	8-4"	3 #600kCMIL	1 #600kCMIL	1 #600kCMIL
AL-3000.5*	8-4"	3 #750kCMIL	1 #750kCMIL	1 #750kCMIL
SPARE A	4-4"	-	-	-
SPARE B	3-4"	-	-	-

CONTROLS FEEDER SCHEDULE

FEEDER TAG	CONDUIT (#-SIZE)	TYPE	PURPOSE
C1	1-2"	2- #12 AWG	24V DC POWER
		2 - #14 AWG	BELL ALARM INTERLOCKING TRIP
		1 - #22 TSP	WOODWARD CAN BUS 1 COMMS
		1 - #22 TSP	WOODWARD CAN BUS 3 COMMS
		2 - CAT 6	GEN COMMS + SPARE
		2 - #14 AWG	SPARE
C2	1-2"	SPARE	-
C3	1-2"	1 - #22 TSP	WOODWARD CAN BUS 1 COMMS
		1 - #22 TSP	WOODWARD CAN BUS 3 COMMS
		1 - CAT 6	SPARE
C4	1-2"	2 - #14 AWG	REMOTE SHUNT TRIP
		2 - #14 AWG	REMOTE START REQUEST
		2 - #14 AWG	LOAD SHED ENGAGED
		2 - #14 AWG	LOAD SHED DISENGAGED
		2 - #14 AWG	SPARE
C5	1-2"	2 - #14 AWG	GENERATOR E-STOP

GENERAL NOTES:

1. CONDUIT SIZES ARE MINIMUM SIZES BASED ON SCHEDULE 40 PVC. UPSIZE CONDUIT AS NEEDED IF ANOTHER APPROVED CONDUIT TYPE IS USED.

2. POWER CONDUCTOR SIZES ARE BASED ON 90°C COLUMN OF NEC TABLE 310.16 COPPER (CU) AND ALUMINUM (AL)

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4. ALL ADJUSTABLE TRIP CIRCUIT BREAKERS DIALED TO A LOWER TRIP SETTING SHALL COMPLY WITH NEC 240.6(C)(3).

* REUSE EXISTING CONDUIT AND PROVIDE NEW FEEDERS

***GROUND FAULT SHUNT TRIP

POWER & CONTROL RISER DIAGRAM

SCALE: DIAGRAMMATIC

1 / E6

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PERMITTING

Walmart

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BENTONVILLE, AR 72716

GENSET SIZE: 1250 KW
SYSTEM VOLTAGE: 480Y/277V

PROJECT SITE:

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2000 S WEST AVE
WAUKESHA, WI 53189

DESIGNED BY: RAVENVOLT	REVIEWED BY: ----
DRAWN BY: EPHRAIM.C	ASSISTED BY: JOSEPH.B
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AHJ: WAUKESHA CITY	

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SHEET TITLE

POWER & CONTROL RISER DIAGRAM

DRAWING NUMBER

E6

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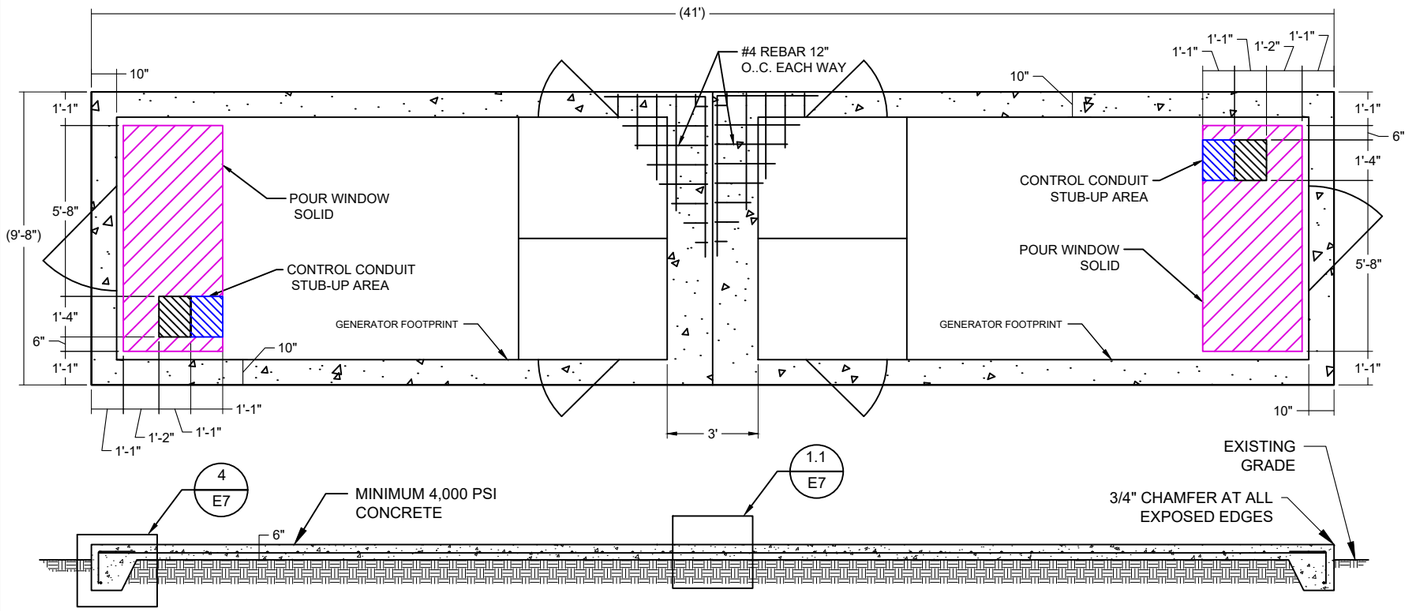
SITE ID: 1635

CONCRETE ANCHOR TABLE				
EQUIPMENT	QTY	SIZE	TYPE	TORQUE
GENERATOR (4 CORNERS)	4	3/4" x 4"	Titen HD 316 SS Screw Anchor	150 FT-LB
SWITCHGEAR (4 CORNERS)	16	3/8" x 4"	Titen HD 316 SS Screw Anchor	45 FT-LB

GENERAL NOTES

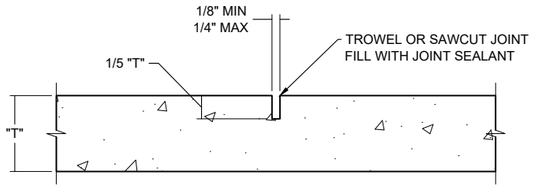
1. PAD LAYOUT DIMENSIONS ARE MINIMUMS AND CAN BE INCREASED BASED ON SITE CONDITIONS OR CONTRACTOR PREFERENCE.
2. CONTRACTOR CAN CHOOSE TO JOIN MULTIPLE PADS TOGETHER.
3. ALL PADS TO BE MINIMUM 6 INCHES ABOVE FINISHED GRADE. PADS LOCATED WITHIN OR ADJACENT TO FLOOD ZONES TO BE MINIMUM 2 FEET ABOVE BASE FLOOD ELEVATION.
4. ALL FILL SHALL BE COMPACTED TO A MINIMUM OF 95%.
5. MINIMUM ALLOWABLE SOIL BEARING PRESSURE: 1500 PSF.
6. REFER TO EQUIPMENT INSTALLATION GUIDES FOR MANUFACTURER SPECIFICATIONS.



GENERATOR PAD DETAIL

SCALE: 1" = 5' - 0"

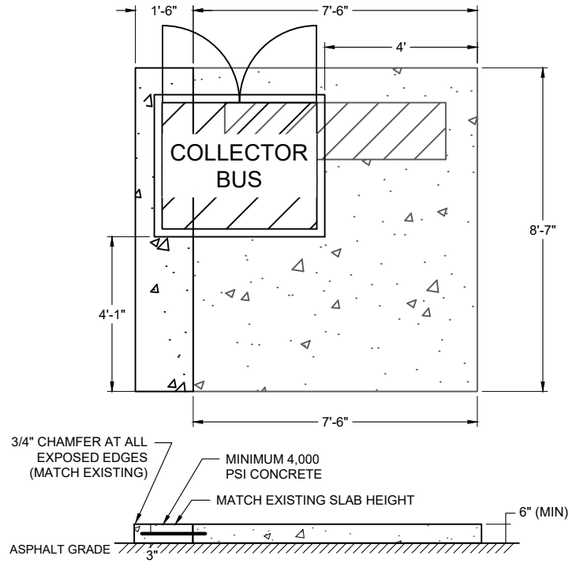
1 / E7



STANDARD CONTROL JOINT DETAIL

SCALE: 1" = 1' - 0"

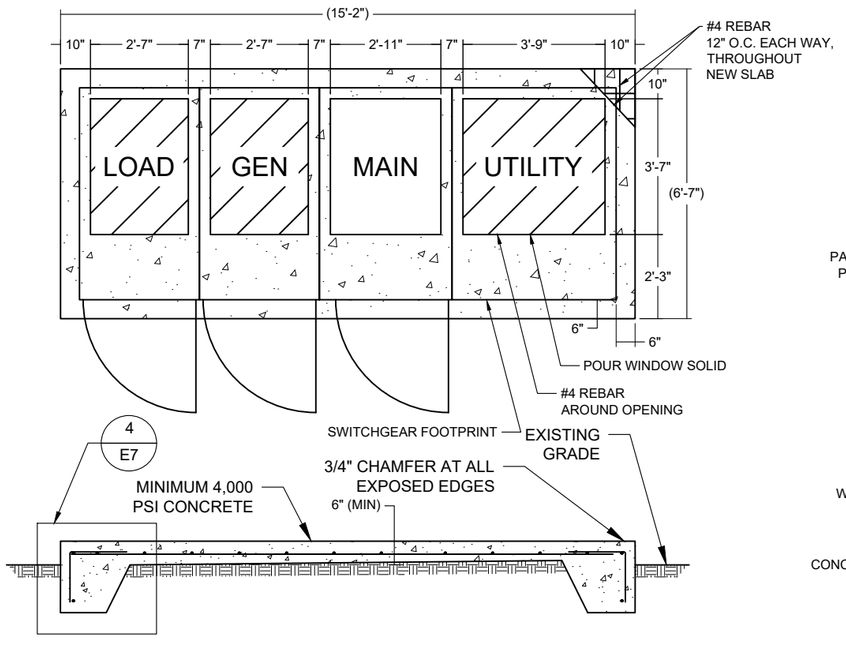
1.1 / E7



COLLECTOR BUS PAD EXTENSION DETAIL

SCALE: 1" = 4' - 0"

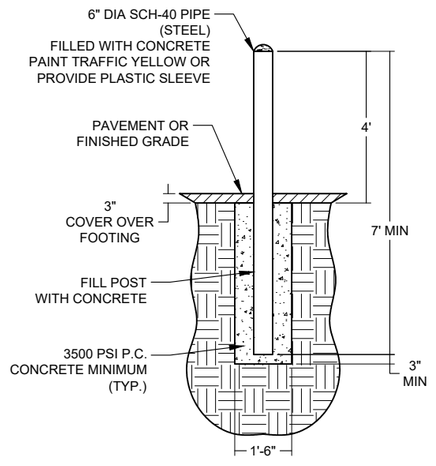
2.1 / E7



SWITCHGEAR PAD DETAIL

SCALE: 1" = 4' - 0"

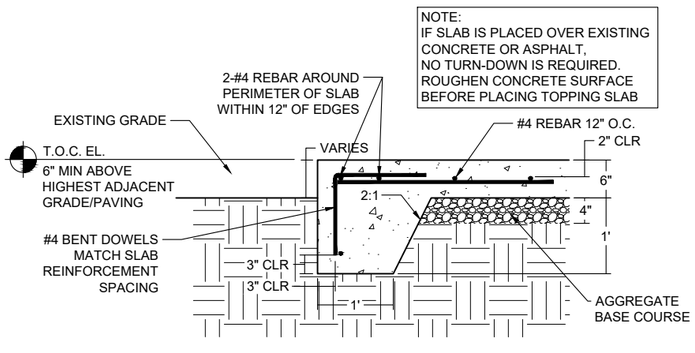
2 / E7



STANDARD BOLLARD DETAIL

SCALE: 1" = 4' - 0"

3 / E7



STANDARD PAD TURNDOWN DETAIL

SCALE: 1" = 2' - 0"

4 / E7

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SHEET TITLE

PAD & BOLLARD DETAILS

DRAWING NUMBER

E7

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SHEET TITLE

UTILITY SCOPE SPECIFICATIONS

DRAWING NUMBER

E7.1

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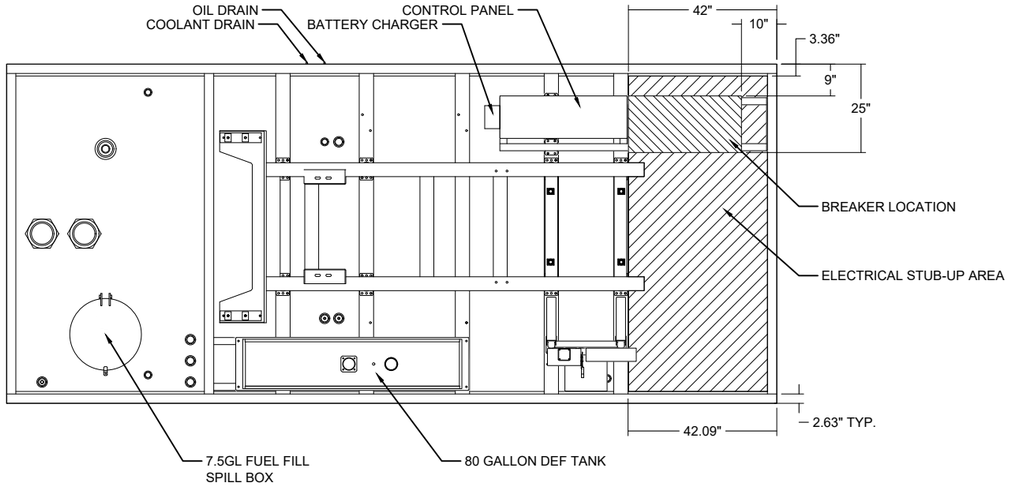
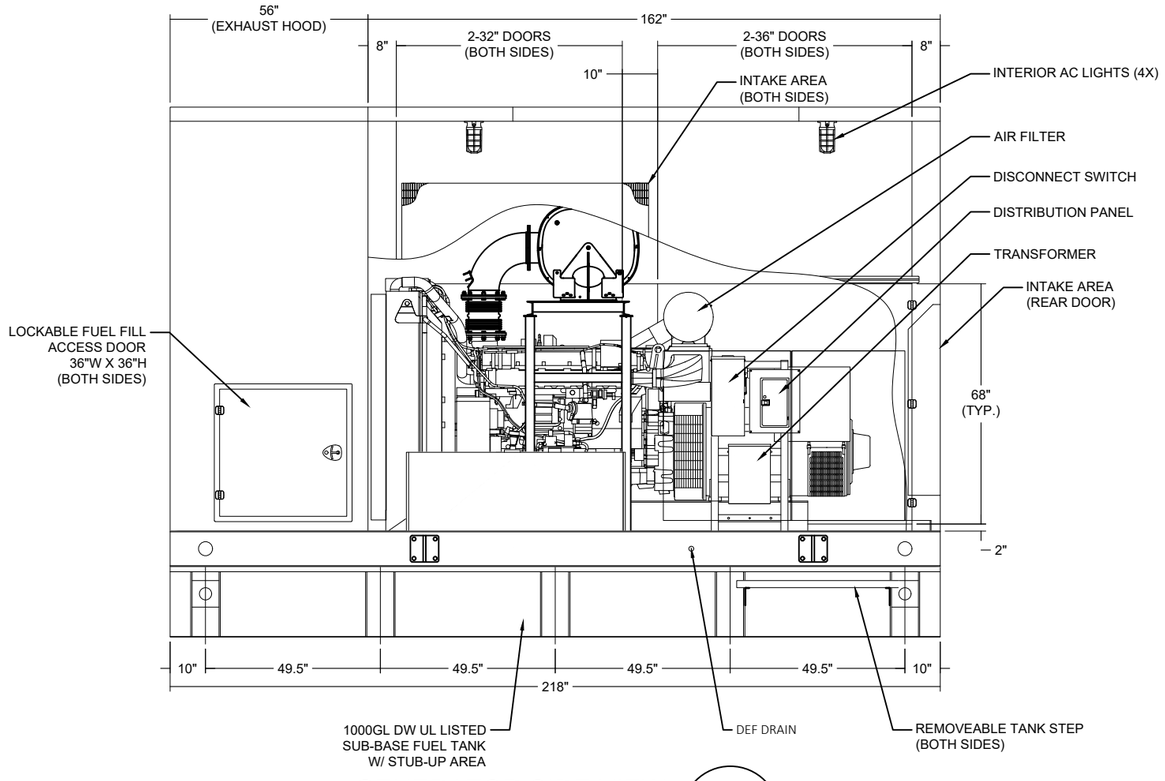
SITE ID: 1635



GENERATOR TOP VIEW

SCALE: NTS

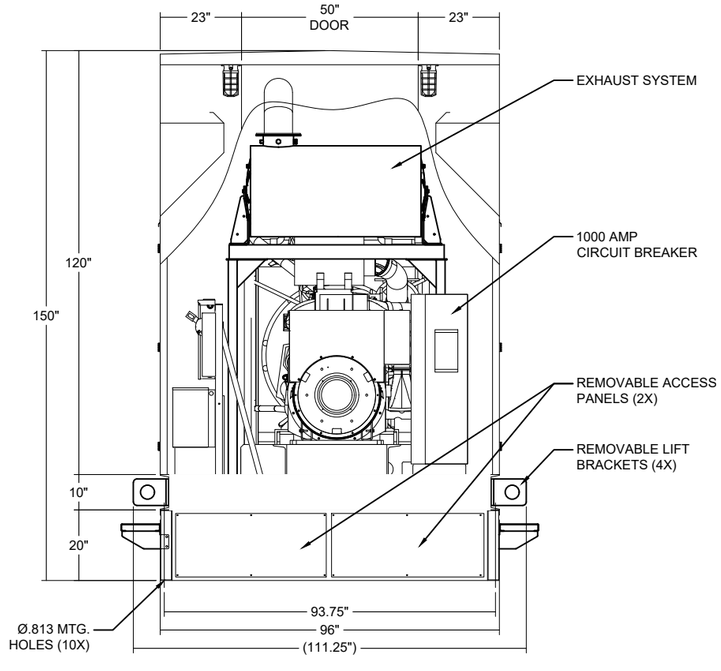
1 / D1



GENERATOR SIDE VIEW

SCALE: NTS

2 / D1



GENERATOR REAR VIEW

SCALE: NTS

3 / D1

NOTES:
1. BREAKER LOCATION IS APPROXIMATE
2. FUEL SUPPLY: 3/8" FUEL RETURN: 1/4"
3. ENGINE FRAME MOUNTED ON VIBRATION ISOLATORS
4. (XX.XX) DIMENSIONS ARE FOR REFERENCE ONLY

ravenvolt
An ABM Company
2715 RONALD REAGAN BLVD STE 100, CUMMING, GA 30041

WISCONSIN
EDUARDO HIDALGO-REYES
E-100187
RALEIGH NC
PROFESSIONAL ENGINEER

2/12/2025

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CONFIDENTIAL AND COMPETITIVELY SENSITIVE

PERMITTING

Walmart
702 SW 8TH ST.
BENTONVILLE, AR 72716

GENSET SIZE:	1250 KW
SYSTEM VOLTAGE:	480Y/277V

PROJECT SITE:

WALMART - 1635
2000 S WEST AVE
WAUKESHA, WI 53189

DESIGNED BY: RAVENVOLT	REVIEWED BY: ----
DRAWN BY: EPHRAIM.C	ASSISTED BY: JOSEPH.B

PROJECT MANAGER: MOLLY LYDICK

ELECTRIC UTILITY: WE ENERGIES

AHJ: WAUKESHA CITY

REVISION HISTORY

REV	REVISION DESCRIPTION	DATE
1	RV ENGINEERING REVIEW	05/15/2024
2	E-STOP ADDED	01/21/2025
3	AHJ SITE PLAN DETAILS ADDED	02/12/2025

SHEET TITLE

GENSET DETAIL

DRAWING NUMBER

D1

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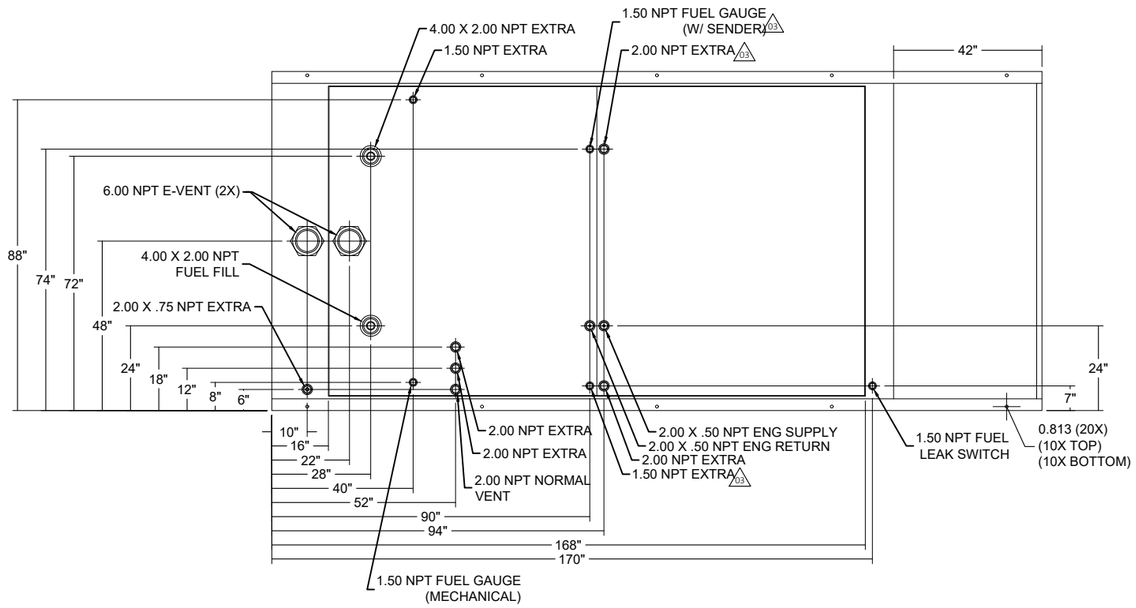
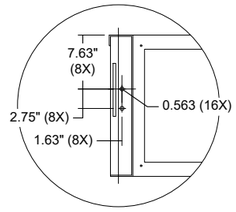


PLAN - SUB-BASE TANK

SCALE: NTS

1 / D2



STEP HOLE DETAIL
SCALE 2:1

TANK INFORMATION

TANK CAPACITY:	1,000	GL
APPROXIMATE DRY WEIGHT:	5,875	LBS

MINIMUM EMERGENCY VENTING CAPACITY:

PRIMARY TANK:	168,000	CFH
SECONDARY CONTAINMENT TANK:	265,000	CFH

PRIMARY TANK DIMENSIONS:

LENGTH:	152.00	INCHES
WIDTH:	88.00	INCHES
HEIGHT:	18.00	INCHES

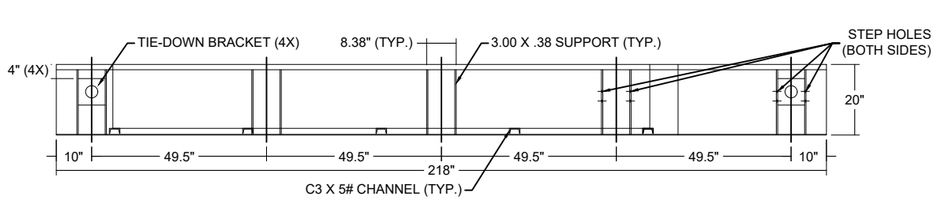
SECONDARY CONTAINMENT TANK DIMENSIONS:

LENGTH:	218.00	INCHES
WIDTH:	96.00	INCHES
HEIGHT:	20.00	INCHES

MAXIMUM TOP LOAD: 25,000 LBS

TANK TO BE CONSTRUCTED PER UL142 LISTED & LABELED

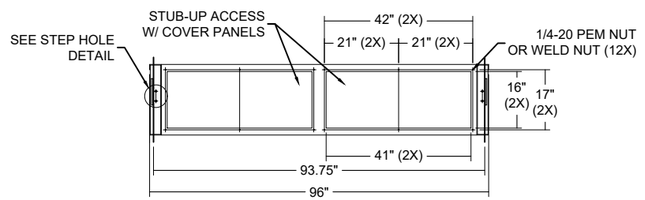
NOTES:
1. MATERIAL: PER UL/ULC REQUIREMENTS
2. SECONDARY CONTAINMENT TANK
3. TANK TO INCLUDE:
   -FUEL SUPPLY/RETURN DIP TUBES
   -LIFTING/TIE-DOWN BRACKETS



SIDE ELEVATION- SUB-BASE TANK

SCALE: NTS

2 / D2



REAR ELEVATION - SUB BASE TANK

SCALE: NTS

3 / D2

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SHEET TITLE
FUEL TANK DETAIL

DRAWING NUMBER
D2

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