BEDFORD REGIONAL WATER AUTHORITY

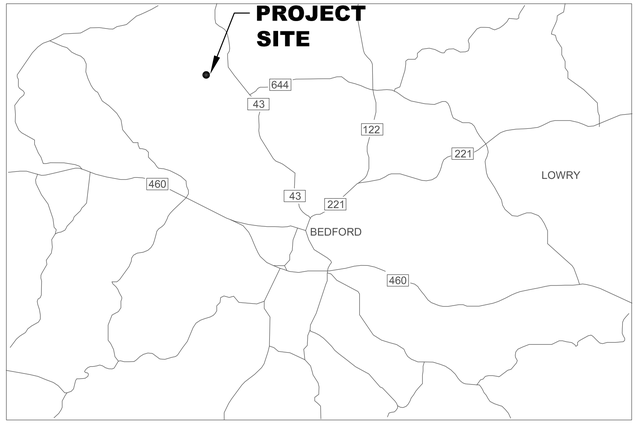
CENTRAL WATER TREATMENT PLANT ELECTRICAL EQUIPMENT REPLACEMENT

BEDFORD, VIRGINIA

IFC DESIGN SUBMITTAL

WILEY|WILSON COMM NO. : 230031.10

DATE: MAY 31, 2024



VICINITY MAP

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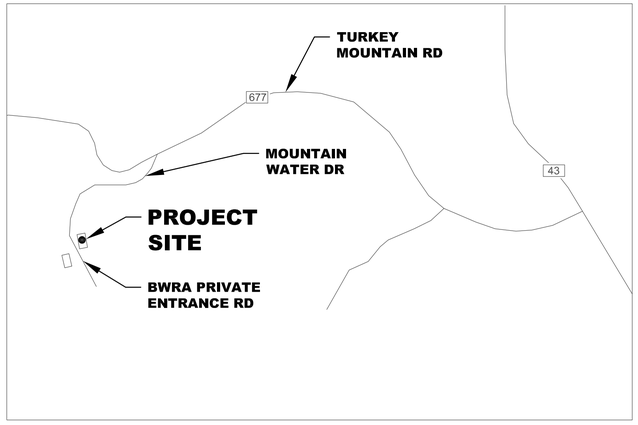

LOCATION MAP

NOT TO SCALE

OWNER

BEDFORD REGIONAL WATER AUTHORITY
1132 MOUNTAIN WATER DRIVE
BEDFORD, VA 24523

ENGINEER/DESIGNER

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COVER SHEET

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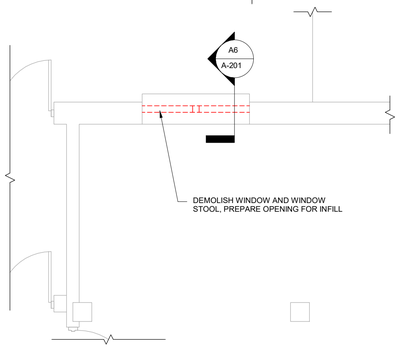
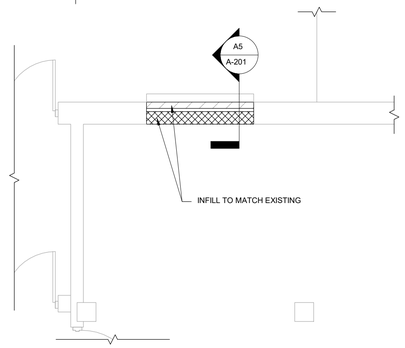


D6 DEMO ENLARGED PARTIAL FLOOR PLAN

SCALE: 1/4" = 1'-0"

0' 4' 8' 16'

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

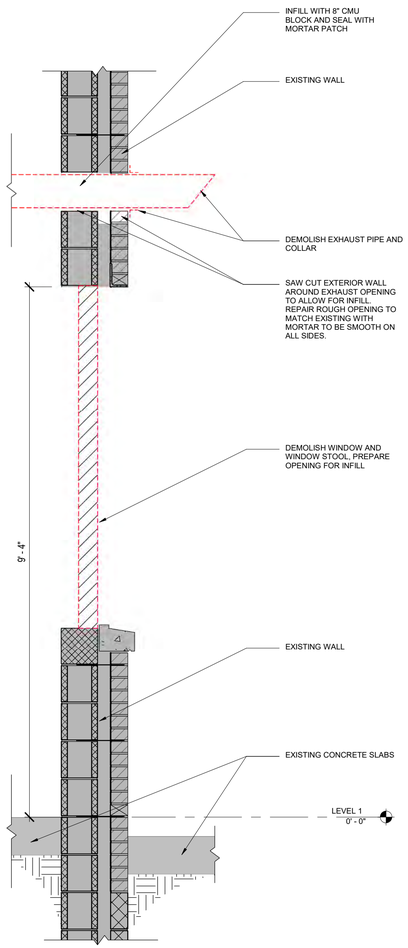


D5 ENLARGED PARTIAL FLOOR PLAN

SCALE: 1/4" = 1'-0"

0' 4' 8' 16'

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

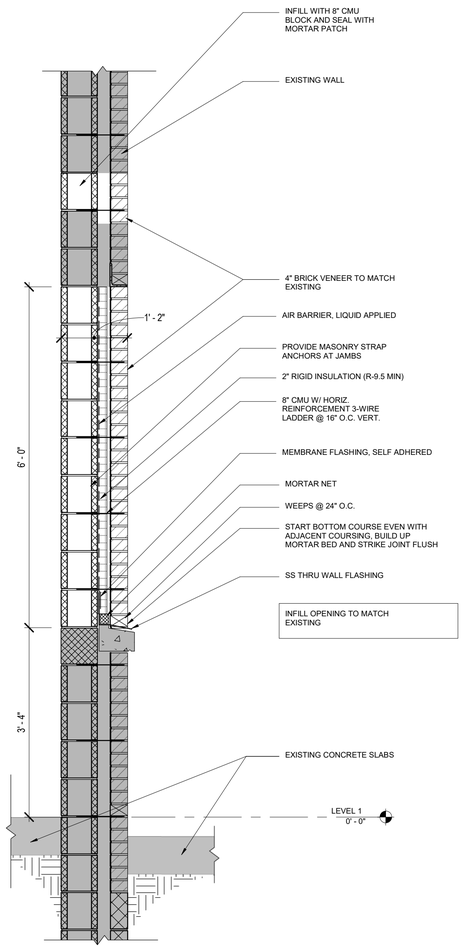


A6 DEMO WALL SECTION

SCALE: 3/4" = 1'-0"

0' 1' 2' 3'

SCALE: 3/4"=1'-0"



A5 INFILL WALL SECTION

SCALE: 3/4" = 1'-0"

0' 1' 2' 3'

SCALE: 3/4"=1'-0"

GENERAL NOTES - DEMOLITION

1 SCRAPE LOOSE PAINT, CLEAN, AND PREP BUILDING SURFACES TO RECEIVE NEW FINISHES.

DEMOLITION LEGEND

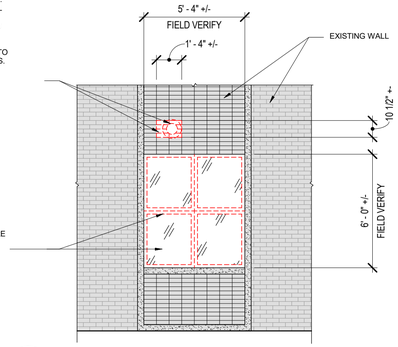
INDICATES REMOVAL OR DEMOLITION

INDICATES EXISTING TO REMAIN (ETR)

INDICATES REMOVAL OR DEMOLITION

DEMOLISH EXHAUST PIPE. SAW CUT EXTERIOR WALL AROUND EXHAUST OPENING TO ALLOW FOR INFILL. REPAIR ROUGH OPENING TO MATCH EXISTING WITH MORTAR TO BE SMOOTH ON ALL SIDES.

DEMOLISH WINDOW AND WINDOW STOOL, PREPARE OPENING FOR INFILL



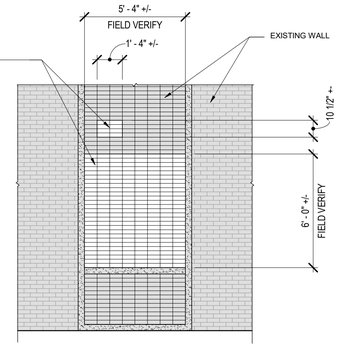
A3 DEMO ELEVATION

SCALE: 1/4" = 1'-0"

0' 2' 4' 8'

SCALE: 1/4"=1'-0"

INFILL OPENINGS WITH 4" BRICK VENEER TO MATCH EXISTING



A2 INFILL ELEVATION

SCALE: 1/4" = 1'-0"

0' 2' 4' 8'

SCALE: 1/4"=1'-0"

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ENLARGED PLANS, ELEVATIONS, AND SECTIONS

SHT. NO. A-201 | REV. NO. 0

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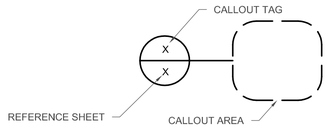
SINGLE LINE DIAGRAM LEGEND

CONTINUATION
NODE/LUG
BUS/FEEDER
SIGNAL WIRE
POWER METER
GENERATOR
ELECTRIC MOTOR
CURRENT TRANSFORMER
XXA/XP TM — CIRCUIT BREAKER, AMPERE RATING/ # POLES
DELTA CONFIGURATION
WYE CONFIGURATION
TRANSFORMER
MOTOR STARTER, ACROSS THE LINE
SOFT STARTER
MECHANICAL EQUIPMENT LOAD AS INDICATED
E N L — AUTOMATIC TRANSFER SWITCH
ELECTRICAL DISTRIBUTION EQUIPMENT AS INDICATED. SIZE AND SHAPE VARIES

MISCELLANEOUS POWER	
	CONDUIT
	CONDUIT TURN DOWN
	CONDUIT TURN UP
	EQUIPMENT AS INDICATED ON FLOOR PLAN
	COMBINATION MOTOR STARTER
	DISCONNECT SWITCH, NON-FUSED
PNL - CKT #	HOME RUN
	CONNECTION POINT
	GROUND ROD

SYMBOLS:



ABBREVIATIONS

*	PREFIX INDICATES EQUIPMENT PROVIDED IN PRIOR PHASE
A	AMPERE
AFG	ABOVE FINISHED GRADE
AGL	ABOVE GROUND LEVEL
ATS	AUTOMATIC TRANSFER SWITCH
CONS	CONSOLE
CTRL	CONTROL
(D)	DEMOLISH
DISC	DISCONNECT SWITCH
DWP	DOMESTIC WATER PUMP
(E)	EXISTING
ECB	ENCLOSED CIRCUIT BREAKER
FP	FINISH PUMP
GEN	GENERATOR
kVA	KILOVOLT-AMPERE
kW	KILOWATT
MCB	MAIN CIRCUIT BREAKER
MCS	MOLDED CASE SWITCH
NEC	NATIONAL ELECTRIC CODE
P	POLE
PH	PHASE
PNL	PANELBOARD
QC	QUALITY CONTROL
(R)	RELOCATE
SE	SERVICE ENTRANCE
SS	STAINLESS STEEL
SUPVR	SUPERVISOR
SWP	SURFACE WASH PUMP
TEL	TELEPHONE
TM	THERMAL MAGNETIC
UNK	UNKOWN
V	VOLTS
W	WIRE
WWP	WASH WATER PUMP
XFMR	TRANSFORMER

GENERAL DEMOLITION NOTES:

1. THESE DEMOLITION NOTES APPLY TO ALL ELECTRICAL SYSTEMS INCLUDING, BUT NOT LIMITED TO; POWER, AND GROUNDING. THE CONTRACT DOCUMENTS ARE BASED ON EXISTING RECORD DOCUMENTS AND FIELD OBSERVATION, AND SCHEMATICALLY INDICATE THE GENERAL SCOPE OF DEMOLITION BUT DO NOT DETAIL THE FULL EXTENT OF DEMOLITION REQUIRED TO COMPLETE THE WORK.
2. VISIT THE PROJECT LOCATION AND FIELD-VERIFY THE EXISTING CONDITIONS PRIOR TO BEGINNING WORK. FAILURE BY THE CONTRACTOR TO BECOME ACQUAINTED WITH AVAILABLE INFORMATION CONCERNING EXISTING CONDITIONS, INCLUDING EXISTING DRAWINGS, SHALL NOT RELIEVE THE CONTRACTOR FROM PERFORMANCE OF WORK RESPONSIBILITIES IN ACCORDANCE WITH REQUIREMENTS OF THE CONTRACT DOCUMENTS.
3. COORDINATE DEMOLITION WORK WITH THE OWNER OR THE OWNER'S REPRESENTATIVE AND DO NOT INTERFERE WITH ACTIVITIES IN OTHER BUILDING AREAS. DEMOLISHED MATERIALS, UNLESS SPECIFICALLY INDICATED TO REMAIN OR BE TURNED OVER TO THE OWNER, SHALL BE PROMPTLY REMOVED AND APPROPRIATELY DISPOSED OF, PARTICULARLY MATERIALS CONTAINING HAZARDOUS MATERIALS SUCH AS LAMPS CONTAINING MERCURY OR TRANSFORMERS CONTAINING PCB'S. CONTRACTOR SHALL COORDINATE APPROPRIATE STAGING AREA WITH THE OWNER. COORDINATE WITH OWNER FOR OWNER-REMOVAL OF PROPERTY FROM THE PROJECT LOCATION.
4. REPAIR DAMAGE WHICH OCCURS AS A RESULT OF CONSTRUCTION DURING THE COURSE OF DEMOLITION TO BUILDING AREAS IDENTIFIED TO REMAIN. REPAIR TO MATCH SURROUNDING SURFACES.
5. COORDINATE SHUTDOWNS OR SERVICE INTERRUPTIONS WITH THE OWNER. PROVIDE NOTICE AND WORK PLAN FOR APPROVAL A MINIMUM OF SEVEN (7) WORKING DAYS PRIOR TO SHUTDOWN OR SERVICE INTERRUPTION.
6. COORDINATE ELECTRICAL DEMOLITION WORK WITH WORK OF OTHER TRADES. SEE ARCHITECTURAL FOR RELATED WORK.
7. PROTECT EXISTING EQUIPMENT AND SYSTEMS INDICATED TO REMAIN WITHIN THE PROJECT AREA. DEMONSTRATE FUNCTIONALITY DURING TESTING OF THE NEW SYSTEMS.
8. PERFORM DEMOLITION IN PHASES WHERE INDICATED OR REQUIRED. PROVIDE TEMPORARY SERVICES TO AFFECTED SYSTEMS FROM SOURCES OUTSIDE AFFECTED AREA TO MAINTAIN SERVICE WHERE REQUIRED.
9. WHERE TEMPORARY REMOVAL OF EQUIPMENT IS REQUIRED TO ACCOMMODATE WORK OF THIS OR OTHER TRADES, REMOVE AND STORE ELECTRICAL ITEMS IN THE PATH OF WORK. REINSTALL AND RECONNECT IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND/OR AS DIRECTED AFTER COMPLETION OF THE WORK IN THE AREA. PROVIDE TEMPORARY SERVICES SUCH AS EGRESS LIGHTING AND EXIT SIGNAGE AND ASSOCIATED CIRCUITRY TO AN UNAFFECTED APPROPRIATE POWER SOURCE WHERE THE WORK AREA MUST BE MAINTAINED OPEN FOR EGRESS.
10. REMOVE EACH EQUIPMENT ITEM, DEVICE, AND FIXTURE INDICATED ON DEMOLITION PLANS. REMOVE ALL ASSOCIATED CIRCUITRY BACK TO THE PROTECTIVE DEVICE IN THE PANEL, SWITCHBOARD, OR CONTROLLER, EXCEPT AS OTHERWISE INDICATED.
    a. ASSOCIATED CIRCUITRY SHALL BE DEFINED TO INCLUDE ALL RACEWAYS, CONDUCTORS, BOXES, WIRING DEVICES, WALL PLATES, LAMPS, FIXTURES, SWITCHES, STARTERS, SUPPORTS, ETC. WHICH ARE ASSOCIATED WITH THE ITEM TO BE REMOVED.
    b. THE PROTECTIVE DEVICE SHALL REMAIN AS AN INTEGRAL PART OF THE EXISTING PANEL OR SWITCHBOARD. LABEL AS SPARE OR USE FOR NEW CIRCUITS AS INDICATED.
    c. WHERE CONDUIT ASSOCIATED WITH AN ITEM TO BE REMOVED IS INACCESSIBLE, SUCH AS WHERE ENCASED IN CONCRETE, THE INACCESSIBLE CONDUIT ONLY SHALL BE ABANDONED IN PLACE, UNLESS INDICATED TO BE REUSED. ALL CONDUCTORS SHALL BE REMOVED AND CONDUIT SHALL BE CUT OFF FLUSH AND SEALED OR CAPPED.
    d. WHERE SUCH INACCESSIBLE CONDUIT ENDS OR MUST BE TERMINATED IN FINISHED SPACE, REMOVE THE CONDUIT OR BOX TO BELOW THE FINISHED SURFACE OF WALL, CEILING OR FLOOR, FILL VOID WITH NON-SHRINKING GROUT AND FINISH TO MATCH SURROUNDING SURFACES.
11. WHERE A PORTION OF A CIRCUIT LOAD IS SCHEDULED TO BE REMOVED, REMOVE ONLY THAT PORTION ASSOCIATED WITH THE DEMOLISHED DEVICE OR EQUIPMENT TO A POINT WHERE THE REMAINING LOAD IS ACTIVE; MAINTAIN REMAINING PORTION OF CIRCUIT IN A GOOD OPERATING CONDITION.
12. WHERE EXTENSION OF AN EXISTING CIRCUIT IS REQUIRED TO MAINTAIN SERVICE, PROVIDE CIRCUITRY AS INDICATED FROM THE EXISTING CIRCUIT LOCATION TO THE NEW LOCATION.
13. WHERE AN ITEM OF EQUIPMENT IS INDICATED TO BE REMOVED AND RELOCATED, REMOVE ASSOCIATED CIRCUITRY, SWITCHES, DEVICES, ETC. WITH THE EQUIPMENT. RELOCATE THE EQUIPMENT TO THE LOCATION INDICATED AND PROVIDE CONNECTION OF ALL ASSOCIATED ITEMS.

GENERAL NOTES:

1. INSTALLATION SHALL COMPLY WITH NFPA 70, NEC VERSION 2020 AND LOCAL JURISDICTION REQUIREMENTS.
2. LIGHT LINE WEIGHT AND (E) BEFORE EQUIPMENT NAME INDICATES EQUIPMENT EXISTING PRIOR TO START OF CONSTRUCTION. HEAVY CONTINUOUS LINE AND (R) INDICATES EQUIPMENT BEING RELOCATED.
3. HEAVIER LINE WEIGHT INDICATES WORK TO BE PERFORMED.
4. HATCHING AND (D) DESIGNATION INDICATES EQUIPMENT TO BE DEMOLISHED.
5. LIGHTER LINE WEIGHT AND ASTERISK DESIGNATION IS AN INDICATION OF WORK PERFORMED DURING A PREVIOUS PHASE OF CONSTRUCTION.

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COMMONWEALTH OF VIRGINIA — RACHEL C. CROMWELL — Lic. No. 040203548 — PROFESSIONAL ENGINEER — 5/31/24

BEDFORD REGIONAL WATER AUTHORITY
CENTRAL WATER TREATMENT PLANT
ELECTRICAL EQUIPMENT REPLACEMENT
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LEGENDS, ABBREVIATIONS, AND NOTES

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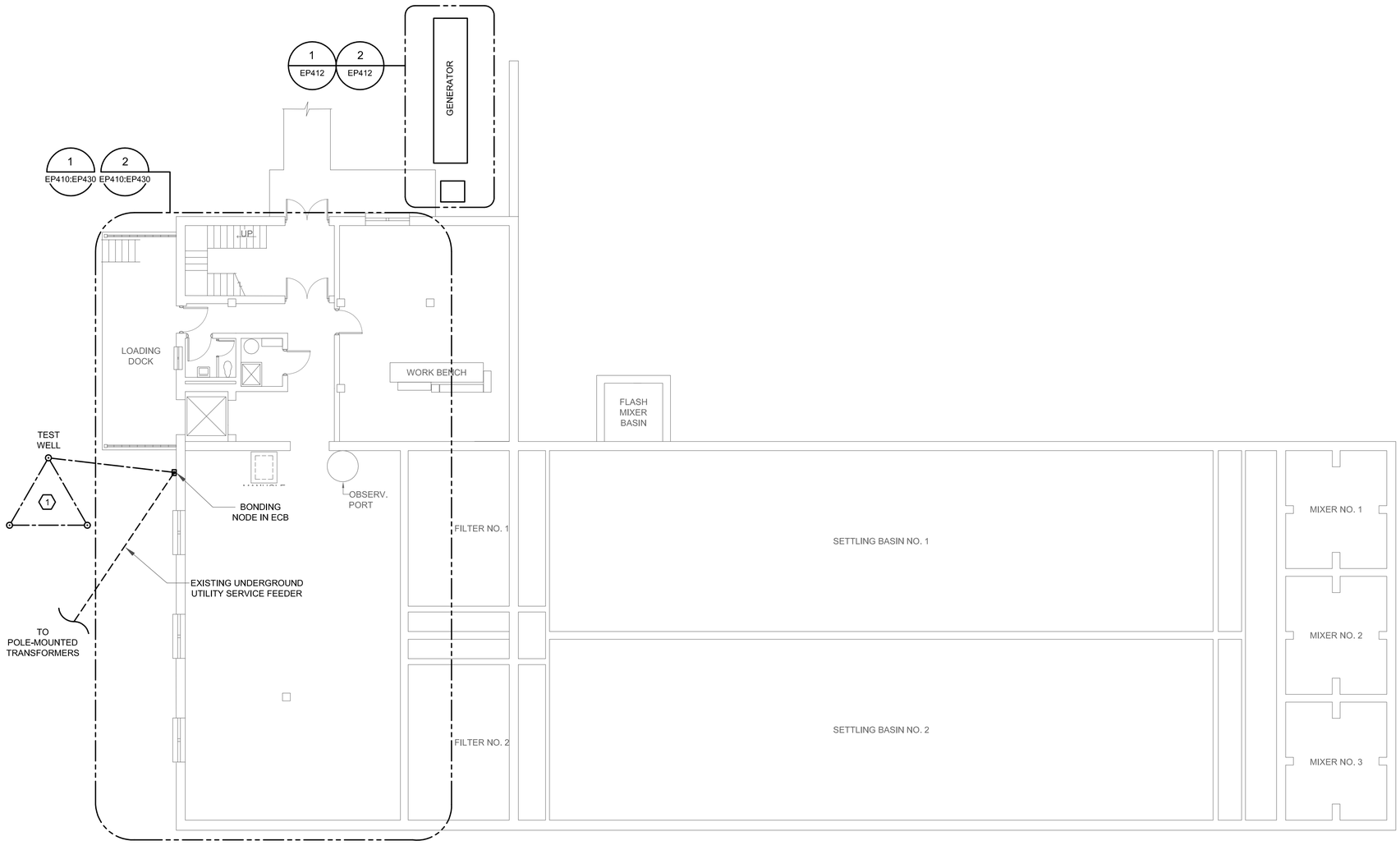

PLAN NORTH

1 FIRST FLOOR OVERALL POWER PLAN

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

GENERAL PLAN NOTES

1. REFER TO SHEET E-001 FOR CONSTRUCTION NOTES.
2. PROVIDE TEMPORARY GENERATOR POWER FOR POWER OUTAGE DURATION PERIODS GREATER THAN (4) HOURS.
3. FACILITY-WIDE POWER OUTAGES ARE LIMITED TO (2) OUTAGES PER PHASE OF CONSTRUCTION. COORDINATE LIMITED OUTAGES THAT AFFECT EQUIPMENT OPERATION WITH OWNER.
4. REFER TO SHEETS EP410 THROUGH EP431 FOR FLOOR PLAN CONSTRUCTION PHASING.
5. REFER TO SHEETS EP610 THROUGH EP630 FOR SINGLE LINE DIAGRAMS.

(X) SHEET KEYNOTES

1. PROVIDE GROUND TRIAD. BOND SERVICE ENTRANCE NEUTRAL AT MAIN SERVICE DISCONNECT. SEE DETAIL 1 ON SHEET E-501. COORDINATE LOCATION TO MAINTAIN REQUIRED SEPARATION FROM UNDERGROUND UTILITY SERVICE AND OTHER EXISTING UNDERGROUND UTILITIES.

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0' 4' 8' 16'

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

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SHEET TITLE

FIRST FLOOR OVERALL POWER PLAN

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EP100	0

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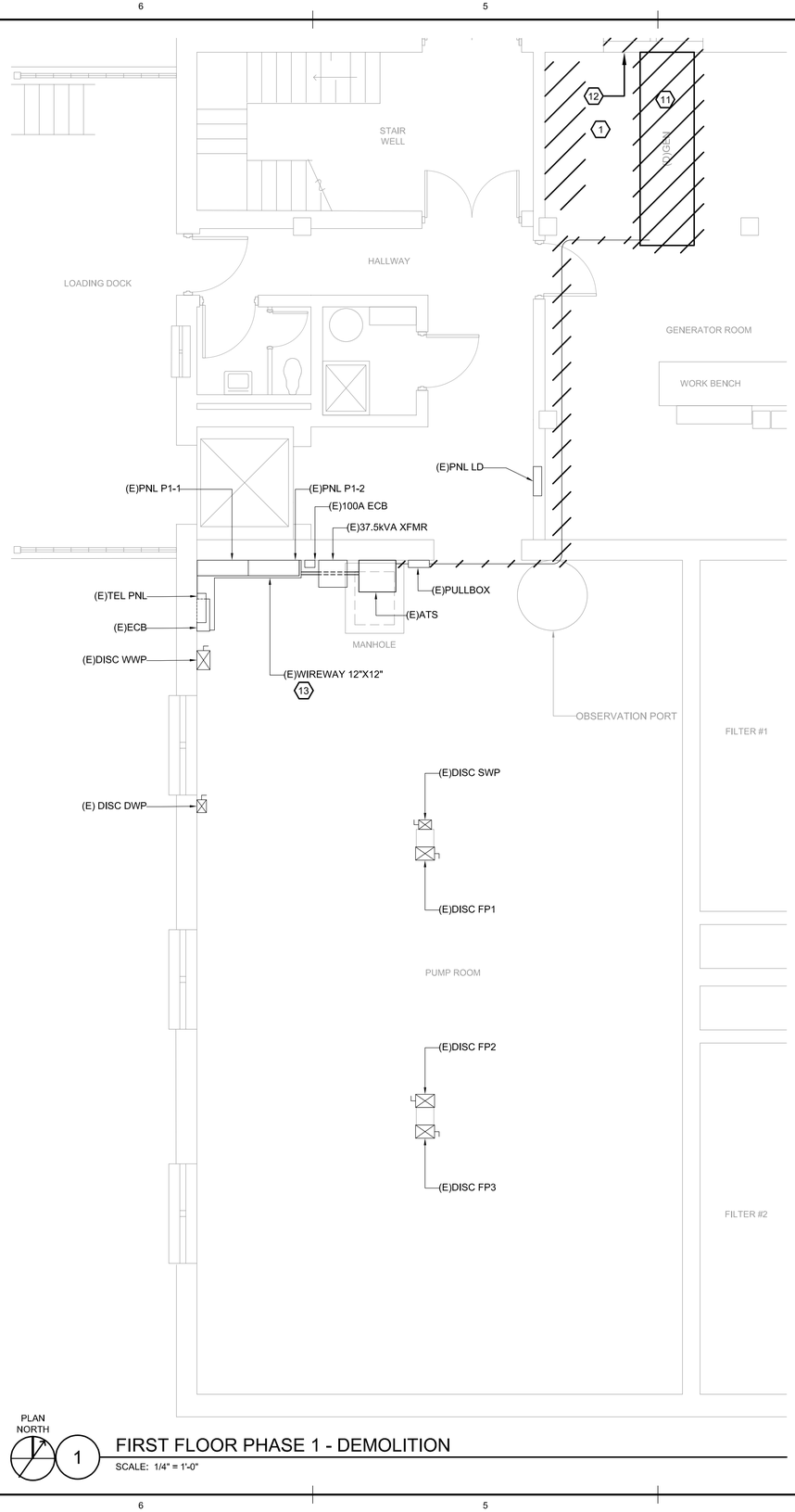
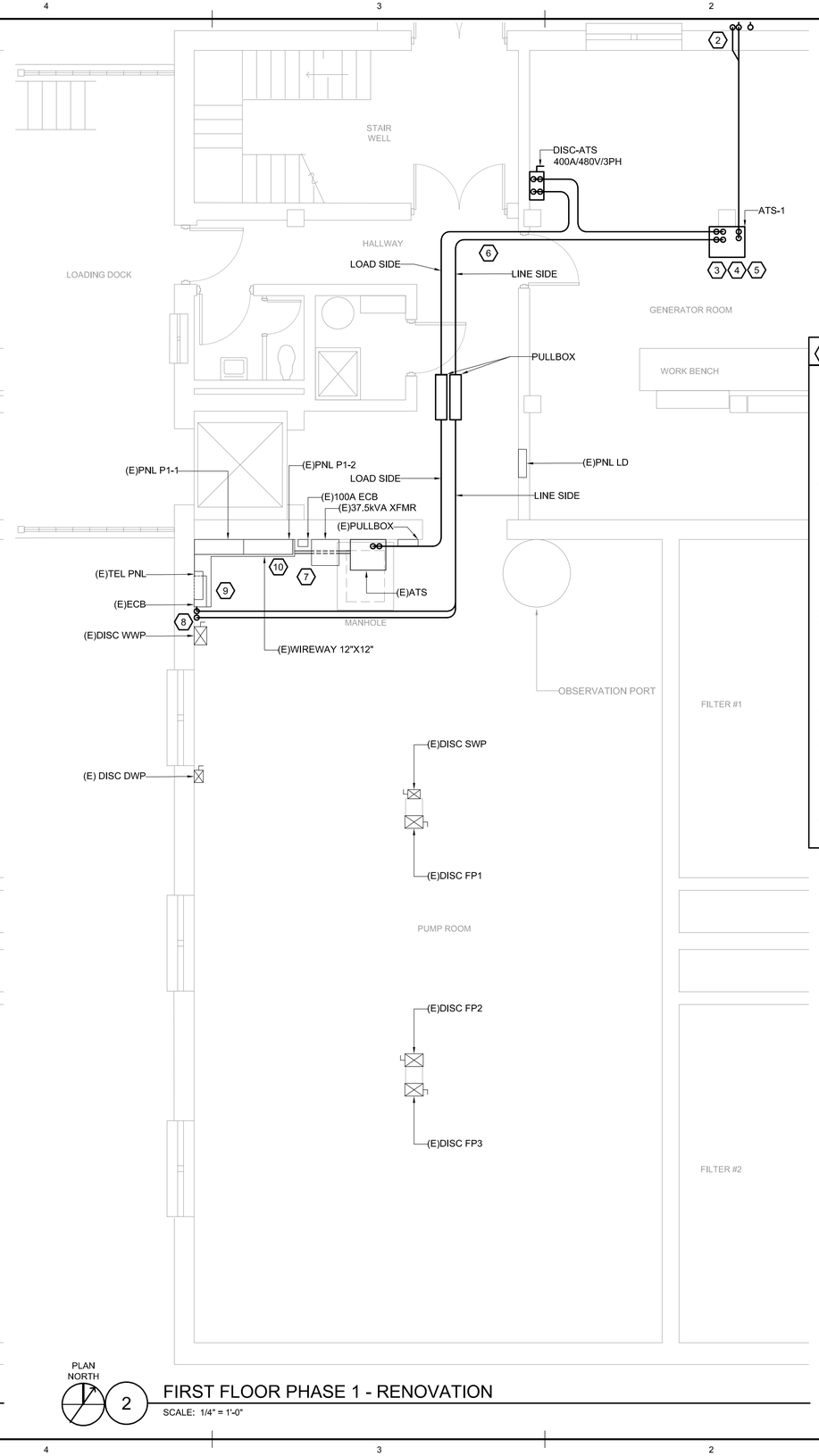


PLAN NORTH 1

FIRST FLOOR PHASE 1 - DEMOLITION

SCALE: 1/4" = 1'-0"



PLAN NORTH 2

FIRST FLOOR PHASE 1 - RENOVATION

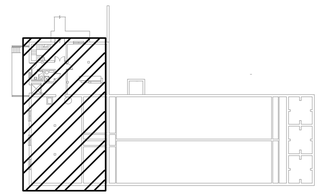
SCALE: 1/4" = 1'-0"

GENERAL PLAN NOTES

1. DASHED LINES INDICATE EQUIPMENT IS HIDDEN.
2. REFER TO SHEETS ED610 AND EP610 FOR PHASE 1 SINGLE LINE DIAGRAMS.
3. REFER TO SHEET EP412 FOR MTS-1 AND REPLACEMENT GENERATOR LOCATION.
4. PROPOSED CIRCUITRY ROUTINGS SHOWN ARE FOR REFERENCE ONLY. COORDINATE ROUTINGS WITH EXISTING CONDITIONS AND ADJUST AS REQUIRED TO MEET DESIGN INTENT.
5. REMOVE AND STORE ACOUSTICAL CEILING TILES, LUMINAIRES, AND OTHER CEILING-MOUNTED DEVICES AS NEEDED TO COORDINATE WITH ABOVE CEILING WORK. PROVIDE TEMPORARY LUMINAIRE SUPPORTS AND MAINTAIN EGRESS PATH INCLUDING EGRESS LIGHTING DURING WORK. REINSTALL CEILING TILES, LUMINAIRES AND EQUIPMENT. REPLACE DAMAGED TILES.
6. PROVIDE CONTROL CIRCUITRY FROM CONTROLLED/MONITORED DEVICES TO SCADA SYSTEM, SEE SHEET EP840 FOR DETAILS.

(X) PROPOSED CONSTRUCTION SEQUENCE

1. OWNER WILL MAKE OCCUPIED AREA AVAILABLE FOR THE PROJECT.
2. PREPARE EXTERIOR SITE AND PROVIDE REPLACEMENT GENERATOR SYSTEM AS INDICATED ON SHEET EP412.
3. PROVIDE AUTOMATIC TRANSFER SWITCH ATS-1. PROVIDE GALVANIZED STRUT STAND ANCHORED TO CONCRETE FLOOR AND COLUMN AND MOUNT TRANSFER SWITCH.
4. TERMINATE FEEDER AND CONTROL CIRCUITRY TO GENERATOR, MTS-1, AND ATS-1.
5. TEST GENERATOR AND ATS-1 EMERGENCY SOURCE OPERATIONS INCLUDING, BUT NOT LIMITED TO, PHASE ROTATION, LOAD BANK TEST, E-STOP OPERATIONS, AND REMOTE ANNUNCIATOR PANEL OPERATIONS.
6. PROVIDE CIRCUITRY FOR NORMAL INPUT AND LOAD SIDE FEEDERS FROM ATS-1 TO PUMP ROOM IN THE VICINITY OF EXISTING ECB AND ATS, RESPECTIVELY. PROTECT CIRCUITRY FOR TERMINATION IN PHASE 2. SEE SHEET EP420 FOR FURTHER INFORMATION.
7. DISCONNECT EMERGENCY AND NORMAL LINE SIDE CONDUCTORS FROM EXISTING ATS. MAKE ATS-1 LOAD FEEDER CONNECTION TO EXISTING ATS NORMAL INPUT. LOCK EXISTING ATS IN NORMAL SIDE POWER POSITION.
8. DISCONNECT CONDUCTORS FROM LOAD SIDE OF EXISTING ECB. MAKE ATS-1 NORMAL INPUT FEEDER CONNECTION TO LOAD SIDE OF EXISTING ECB. PROVIDE AT LEAST 5'0" CONDUCTOR SLACK TO COORDINATE WITH FUTURE CONNECTION - PROTECT CONDUCTORS WITHIN EXISTING WIREWAY IF PRACTICAL.
9. ENERGIZE FACILITY VIA ATS-1, PERFORM ATS-1 SOURCE TESTING. (FACILITY NOW POWERED FROM UTILITY AND REPLACEMENT GENERATOR VIA ATS-1.)
10. REMOVE ABANDONED CIRCUITRY ASSOCIATED WITH EXISTING ATS.
11. DEMOLISH EXISTING GENERATOR AND FUEL TANK. DEMOLISH CIRCUITRY ASSOCIATED WITH BATTERY CHARGER AND ENGINE HEATER.
12. REFER TO SHEET A-201 FOR WALL MODIFICATIONS.
13. DEMOLITION WITHIN WIREWAY NOT SHOWN FOR CLARITY, COORDINATE WITH EXISTING CONDITIONS.



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ENLARGED POWER PLAN - PHASE 1

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EP410	0

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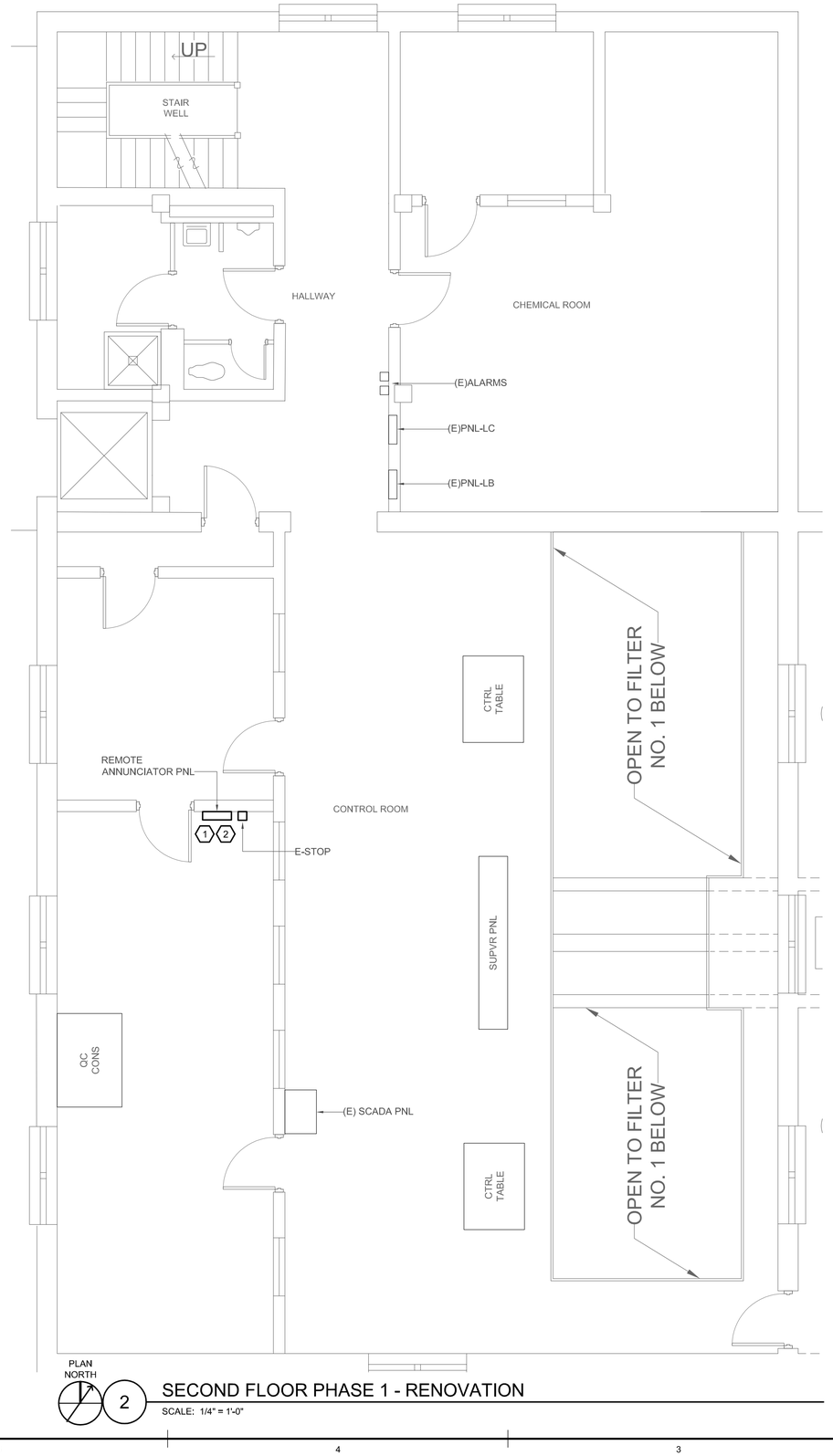


PLAN NORTH

2 SECOND FLOOR PHASE 1 - RENOVATION

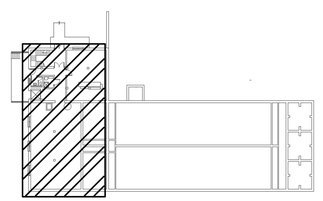
SCALE: 1/4" = 1'-0"

GENERAL PLAN NOTES

1. DASHED LINES INDICATE EQUIPMENT IS HIDDEN.
2. REFER TO SHEETS ED610 AND EP610 FOR PHASE 1 SINGLE LINE DIAGRAMS.
3. REFER TO SHEET EP412 FOR MTS-1 AND REPLACEMENT GENERATOR LOCATION.
4. REMOVE AND STORE ACOUSTICAL CEILING TILES, LUMINAIRES, AND OTHER CEILING-MOUNTED DEVICES AS NEEDED TO COORDINATE WITH ABOVE CEILING WORK. PROVIDE TEMPORARY LUMINAIRE SUPPORTS AND MAINTAIN EGRESS PATH INCLUDING EGRESS LIGHTING DURING WORK. REINSTALL CEILING TILES, LUMINAIRES AND EQUIPMENT. REPLACE DAMAGED TILES.
5. PROVIDE CONTROL CIRCUITRY FROM CONTROLLED/MONITORED DEVICES TO SCADA SYSTEM, SEE SHEET EP640.
6. AVOID WORK IN CHEMICAL ROOM. IF WORK IS REQUIRED COORDINATE ACCESS WITH OWNER.

ⓧ PROPOSED CONSTRUCTION SEQUENCE

1. PROVIDE REMOTE ANNUNCIATOR PANEL AND E-STOP. MAKE CONTROL CONNECTIONS TO GENERATOR SYSTEM. SEE SHEET EP412 FOR LOCATIONS.
2. TEST GENERATOR AND ATS-1 EMERGENCY SOURCE OPERATIONS INCLUDING, BUT NOT LIMITED TO, LOAD BANK TEST, E-STOP OPERATIONS, AND REMOTE ANNUNCIATOR PANEL OPERATIONS.



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5/31/24

BEDFORD REGIONAL WATER AUTHORITY
CENTRAL WATER TREATMENT PLANT
ELECTRICAL EQUIPMENT REPLACEMENT
1132 MOUNTAIN WATER DRIVE, BEDFORD, VIRGINIA 24523

MRK	DATE	REVISION DESCRIPTION

COMM NO:	230031.10
DATE:	05/31/2024
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CHECK: GSF	

SHEET TITLE

ENLARGED POWER PLAN - SECOND FLOOR PHASE 1

SHT. NO.	REV. NO.
EP411	0

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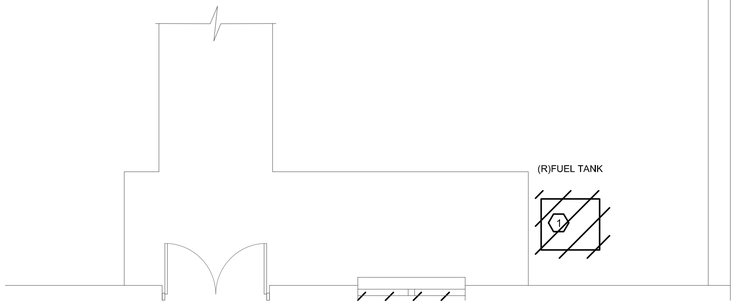
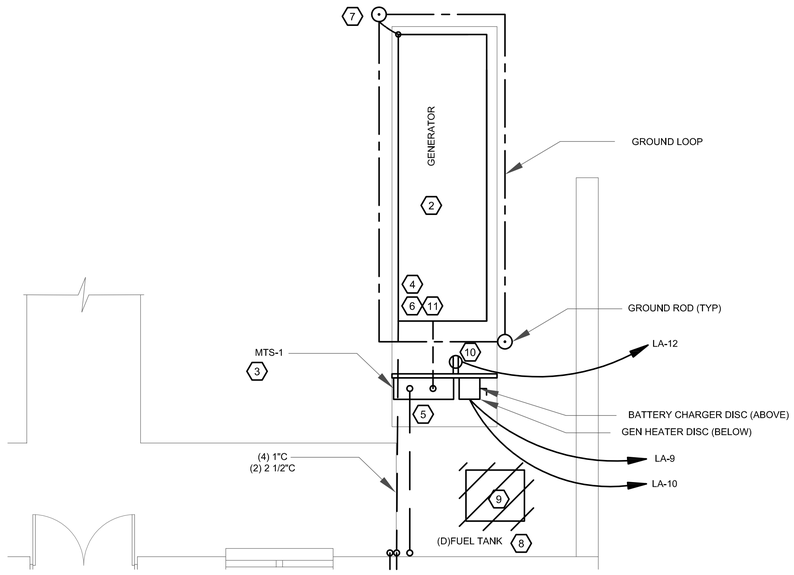


PLAN NORTH

1 EXTERIOR PHASE 1 - DEMOLITION

SCALE: 1/4" = 1'-0"



PLAN NORTH

2 EXTERIOR PHASE 1 - RENOVATION

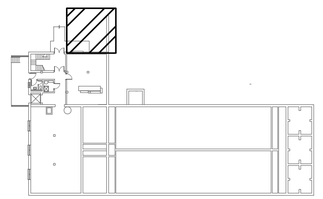
SCALE: 1/4" = 1'-0"

GENERAL PLAN NOTES

1. REFER TO SHEET E-001 FOR CONSTRUCTION NOTES.
2. PROVIDE TEMPORARY GENERATOR POWER FOR POWER OUTAGE DURATION PERIODS GREATER THAN (4) HOURS.
3. FACILITY-WIDE POWER OUTAGES ARE LIMITED TO (2) OUTAGES PER PHASE OF CONSTRUCTION. COORDINATE LIMITED OUTAGES THAT AFFECT EQUIPMENT OPERATION WITH OWNER.
4. REFER TO SHEETS EP410 THROUGH EP431 FOR FLOOR PLAN CONSTRUCTION PHASING.
5. REFER TO SHEET EP610 FOR SINGLE LINE DIAGRAMS
6. COORDINATE GENERATOR REMOVAL WITH CONSTRUCTION PHASING ON SHEET EP410.
7. PROVIDE CONTROL CIRCUITRY FROM CONTROLLED/MONITORED DEVICES TO SCADA SYSTEM, SEE SHEET EP640 FOR DETAILS.

(X) PROPOSED CONSTRUCTION SEQUENCE

1. TEMPORARILY SHIFT EXISTING FUEL TANK APPROXIMATELY 3' TOWARDS RETAINING WALL AS NEEDED TO COORDINATE WITH GENERATOR CIRCUITRY INSTALLATION. DISCONNECT AND EXTEND FUEL LINE AND GROUNDING CONNECTION AS REQUIRED TO ACCOMMODATE SHIFT AND RECONNECT. SAW CUT CONCRETE SIDEWALK AND TRENCH BETWEEN BUILDING AND GENERATOR EQUIPMENT PAD FOR BELOW GRADE GENERATOR CIRCUITRY (OUTPUT FEEDER, CONTROLS, SHORE POWER, ETC.)
2. PROVIDE DIESEL GENERATOR WITH BELLY TANK ON EQUIPMENT PAD. ORIENT GENERATOR SUCH THAT EXHAUST IS AWAY FROM BUILDING. COORDINATE PAD SIZE AND SPACING FROM MTS-1 TO MAINTAIN ALL NEC-REQUIRED CLEARANCES AND MANUFACTURER-REQUIRED MAINTENANCE ACCESS. SEE SHEET EP410 FOR CONSTRUCTION PHASING AND SHEET E-501 FOR DETAILS.
3. PROVIDE DUAL PURPOSE QUICK CONNECT POWER PANEL MTS-1,PROVIDE GALVANIZED STEEL STRUT STAND ANCHORED TO GENERATOR EQUIPMENT PAD. MOUNT PANEL 18" ABOVE FINISHED PAD TO BOTTOM OF PANEL. PROVIDE MAINTENANCE RECEPTACLE MOUNTED TO GALVANIZED STEEL STRUT STAND ADJACENT TO MTS-1. SEE SHEET E-701 FOR CIRCUIT INFORMATION.
4. PROVIDE CIRCUITRY FOR REMOTE ANNUNCIATOR PANEL AND SUSTAINED CONTACT RED MUSHROOM HEAD PUSHBUTTON WITH PROTECTIVE COVER LABELED "REMOTE GENERATOR EPO" IN SECOND FLOOR LAB. SEE SHEET E-411 FOR EQUIPMENT LOCATIONS.
5. PROVIDE POWER AND CONTROL CIRCUITRY FROM REPLACEMENT GENERATOR TO ATS-1 THROUGH MTS-1. ROUTE CIRCUITRY ASSOCIATED WITH GENERATOR (OUTPUT FEEDER CONTROLS, SHORE POWER, ETC.) UNDERGROUND FROM GENERATOR EQUIPMENT PAD TO BUILDING. TURN UP AND ROUTE ALONG EXTERIOR WALL. PENETRATE BUILDING AT THE FIRST FLOOR CEILING AS HIGH AS PRACTICAL IN COORDINATION WITH EXISTING CONDITIONS AND ROUTE TO COORDINATING EQUIPMENT. BACKFILL TRENCH AND REPAIR CONCRETE INCLUDING DAMAGED CONCRETE UNDER EXISTING FUEL TANK. SEE SHEET EP410 FOR FURTHER INFORMATION.
6. PROVIDE CONTROL WIRING FROM GENERATOR TO REMOTE E-STOP AND REMOTE ANNUNCIATOR PANEL. SEE SHEET EP411 FOR LOCATION.
7. PROVIDE GROUND RING AS INDICATED. CONNECT TO GENERATOR GROUND BUS. SEE DETAIL 1 ON SHEET E-501.
8. PROTECT SIGNAL WIRING ROUTED ALONG GROUND AND UP TO 2ND FLOOR DURING DEMOLITION.
9. DEMOLISH EXISTING GENERATOR AND FUEL TANK. DEMOLISH CIRCUITRY ASSOCIATED WITH CONTROLS, BATTERY CHARGER AND ENGINE HEATER.
10. PROVIDE DUPLEX RECEPTACLE WITH WEATHERPROOF WHILE IN USE COVER AND ASSOCIATED CIRCUITRY. MOUNT TO STRUCTURE. SEE SHEET E-701 FOR CIRCUIT DESIGNATION.
11. PROVIDE 2" CONDUIT BETWEEN GENERATOR AND MTS-1, BETWEEN MTS-1 TO ATS-1, AND BETWEEN ATS-1 AND AUXILLARY SCADA PANEL FOR CONTROL CIRCUITRY.



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SHEET TITLE

ENLARGED POWER PLAN - EXTERIOR PHASE 1

SHT. NO.	REV. NO.
EP412	0

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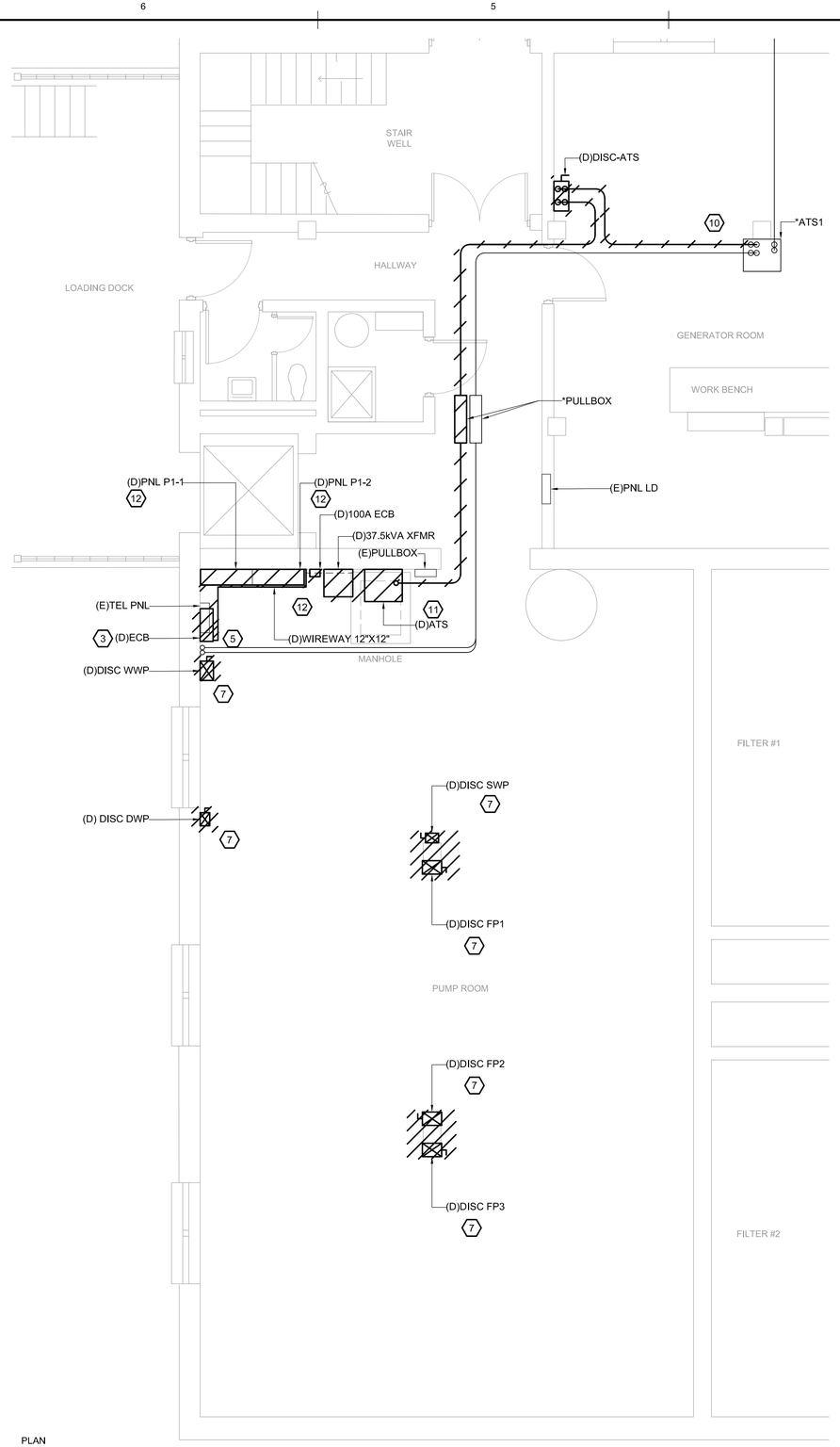
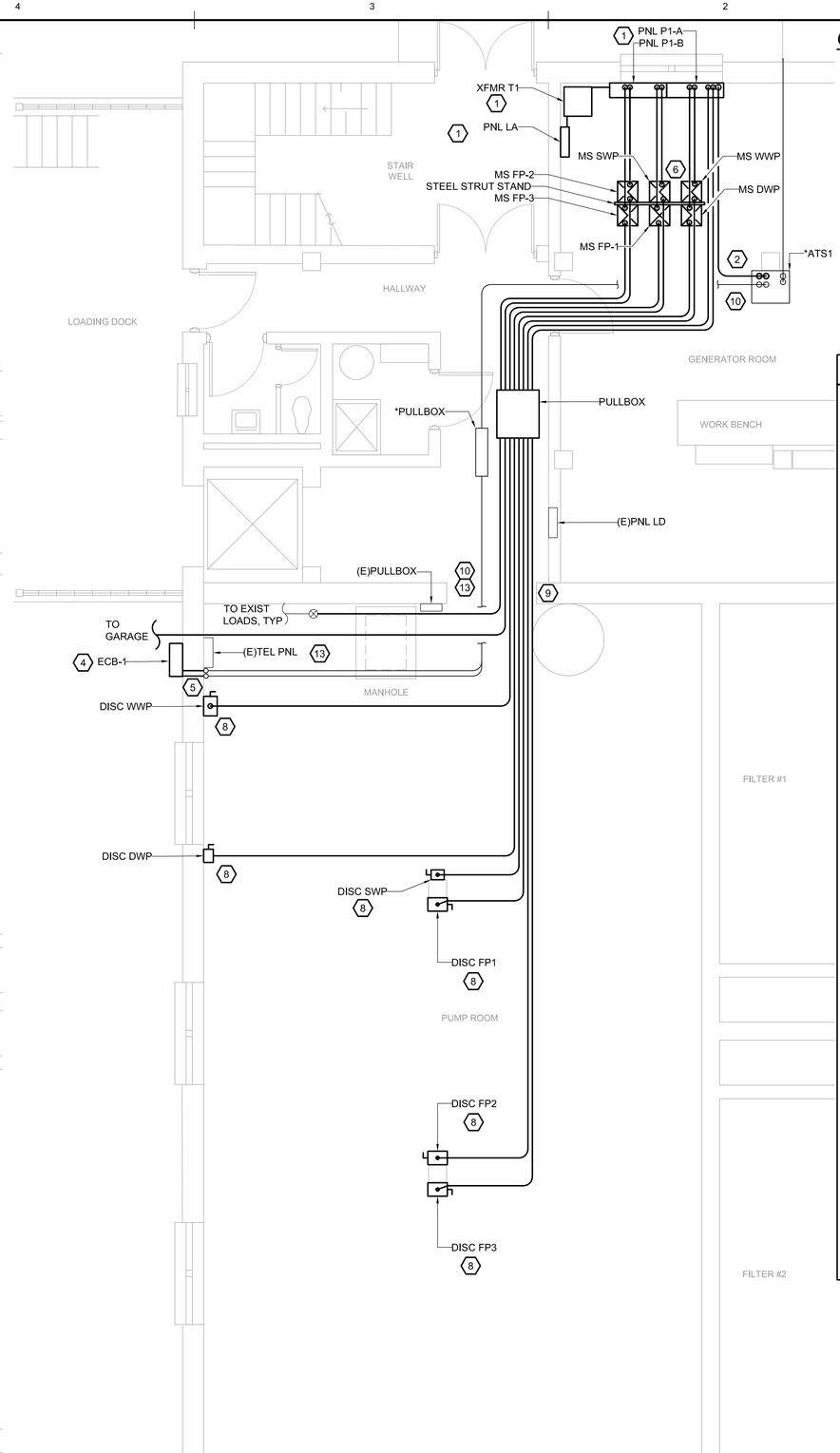


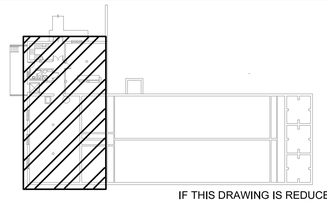


GENERAL PLAN NOTES

1. DASHED LINES INDICATE EQUIPMENT IS HIDDEN.
2. REFER TO SHEET ED620 AND EP620 FOR PHASE 2 SINGLE LINE DIAGRAMS.
3. REFER TO SHEET E-701 FOR PHASE 2 PANEL SCHEDULES.
4. CONDUIT ROUTING SHOWN IS ONE POSSIBLE SOLUTION AND DOES NOT CONSTITUTE THE ONLY CONDUIT ROUTING OPTION. FIELD VERIFY AVAILABLE ROUTING OPTIONS AND MAKE ADJUSTMENTS AS NECESSARY TO FACILITATE END DESIGN.
5. CONDUIT SHOWN IS INTENDED TO BE DIAGRAMMATIC AND DOES NOT SHOW ALL CONDUIT REQUIRED WITHIN SCOPE OF PROJECT. FIELD VERIFY QUANTITY AND PROVIDE CONDUIT AND JUNCTION BOXES AS NECESSARY TO RE-ESTABLISH EXISTING CIRCUITS AFFECTED AS A RESULT OF RENOVATION.
6. REMOVE AND STORE ACOUSTICAL CEILING TILES, LUMINAIRES, AND OTHER CEILING-MOUNTED DEVICES AS NEEDED TO COORDINATE WITH ABOVE CEILING WORK. PROVIDE TEMPORARY LUMINAIRE SUPPORTS AND MAINTAIN EGRESS PATH INCLUDING EGRESS LIGHTING DURING WORK. REINSTALL CEILING TILES, LUMINAIRES AND EQUIPMENT. REPLACE DAMAGED TILES.
7. PROVIDE CONTROL CIRCUITRY FROM CONTROLLED/MONITORED DEVICES TO SCADA SYSTEM, SEE SHEET EP640 FOR DETAILS.

(X) PROPOSED CONSTRUCTION SEQUENCE

1. PROVIDE REPLACEMENT DISTRIBUTION PANELBOARDS P1-A, P1-B, AND LA. PROVIDE REPLACEMENT TRANSFORMER T1. REFER TO SINGLE LINE DIAGRAM ON SHEET EP620.
2. PROVIDE LOAD SIDE TAP CONDUCTORS FROM ATS-1 TO P1-A. MAINTAIN LOAD SIDE CONDUCTORS INSTALLED IN PHASE 1 THAT SERVE EXISTING EQUIPMENT SUCH THAT BOTH THE EXISTING AND REPLACEMENT DISTRIBUTION IS POWERED.
3. DISCONNECT SERVICE DISCONNECT ECB LOAD SIDE CONDUCTORS (ATS-1 NORMAL INPUT), PULL BACK TO A PRACTICAL LOCATION AND MAKE SAFE. DISCONNECT ECB UTILITY LINE SIDE CONDUCTORS AND PULL BACK TO A POINT SUITABLE FOR REUSE. DEMOLISH THE CONDUIT BODIES AND ECB; COORDINATE DISCONNECTION/PROTECTION OF THE SERVICE CONDUCTORS WITH UTILITY.
4. PROVIDE NEMA 3R ENCLOSED CIRCUIT BREAKER ECB-1. MOUNT IN COORDINATION WITH THE EXISTING UTILITY SERVICE CONDUCTORS SUCH THAT THE HEIGHT OF THE CENTER POINT OF THE HANDLE GRIP DOES NOT EXCEED 6'-7" ABOVE FINISHED GRADE AT ITS HIGHEST POSITION PER NEC 240.24. EXTEND SERVICE CONDUCTORS INTO THE BOTTOM OF ECB-1 AND TERMINATE.
5. EXTEND ATS-1 NORMAL INPUT LINE CONDUCTORS TO LOAD SIDE OF ECB-1 AND TERMINATE. REWORK FEEDER CONDUIT PATHWAY SUCH THE THE CONDUIT ROUTES UP AND THROUGH WALL AND DOWN TO ECB-1 WITHOUT PASSING THROUGH THE WIREWAY.
6. PROVIDE SOFT START MOTOR STARTERS ON GALVANIZED STRUT STAND. PROVIDE LINE SIDE CIRCUITRY TO SOURCE PANEL. PROVIDE LOAD SIDE CIRCUITRY TO THE VICINITY OF THE SERVED EQUIPMENT - PROTECT FOR FINAL ROUTING AND TERMINATION.
7. DEMOLISH EXISTING COMBINATION MOTOR STARTER AND ASSOCIATED CIRCUITRY INCLUDING CIRCUITRY FROM MOTOR STARTER TO MOTOR. SEE SHEET E-640 FOR CONTROL WIRING.
8. PROVIDE NEMA 4X 316 SS NON-FUSED DISCONNECT. EXTEND AND TERMINATE CIRCUITRY FROM SOFT START MOTOR CONTROLLER. PROVIDE CIRCUITRY FROM DISCONNECT TO MOTOR.
9. PROVIDE CIRCUITRY FROM REPLACEMENT PANELS TO INTERCEPT EXISTING LOADS AT PRACTICAL LOCATIONS. TRANSFER LOADS FROM EXISTING PANELS TO REPLACEMENT PANELS INDIVIDUALLY TO MINIMIZE CIRCUIT OUTAGES. COORDINATE CIRCUIT TRANSITIONS WITH BRWA. SEE PANEL SCHEDULES ON E-701 AND E-702 FOR SUMMARY OF EXISTING LOADS. CORE DRILL WALL TO ROUTE CIRCUITRY TO LOADS WHERE NECESSARY. WALL PENETRATIONS ALONG ENTIRE WALL LENGTH (BEYOND EXTENT OF DOORWAY) ARE PERMITTED AS NEEDED PROVIDED THE PENETRATIONS ARE MADE AS DESCRIBED HEREIN AND ARE COORDINATED WITH THE MAINTENANCE ACCESS OF EXISTING EQUIPMENT.
10. PENETRATE WALL TO ROUTE CIRCUITRY TO LOADS WHERE NECESSARY. PRIOR TO DRILLING, CONTRACTOR MUST LOCATE WALL REINFORCING WITH A PACHOMETER OR SIMILAR EQUIPMENT. DO NOT CUT REINFORCING BARS AND KEEP 2" COVER ON EACH SIDE OF BAR. PENETRATE WALL NO LOWER THAN 24" ABOVE TOP OF DOORWAY.
11. REMOVE ATS-1 LOAD SIDE CONDUCTORS SERVING EXISTING ATS NORMAL SIDE POWER AND ATS DISCONNECT SWITCH.
12. ONCE EXISTING CIRCUITS HAVE BEEN TRANSFERRED TO THE REPLACEMENT EQUIPMENT, DEMOLISH EXISTING ELECTRICAL EQUIPMENT AND ASSOCIATED CIRCUITRY.
13. SEAL ALL CONDUIT PENETRATIONS USING NON-SHRINK GROUT. PAINT PATCHED AREAS TO MATCH SURROUNDINGS.



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SCALE: 1/4"=1'-0"

PLAN NORTH

1 FIRST FLOOR PHASE 2 - DEMOLITION

SCALE: 1/4" = 1'-0"

PLAN NORTH

2 FIRST FLOOR PHASE 2 - RENOVATION

SCALE: 1/4" = 1'-0"

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SHEET TITLE

ENLARGED POWER PLAN-PHASE 2

SHT. NO. EP420 | REV. NO. 0

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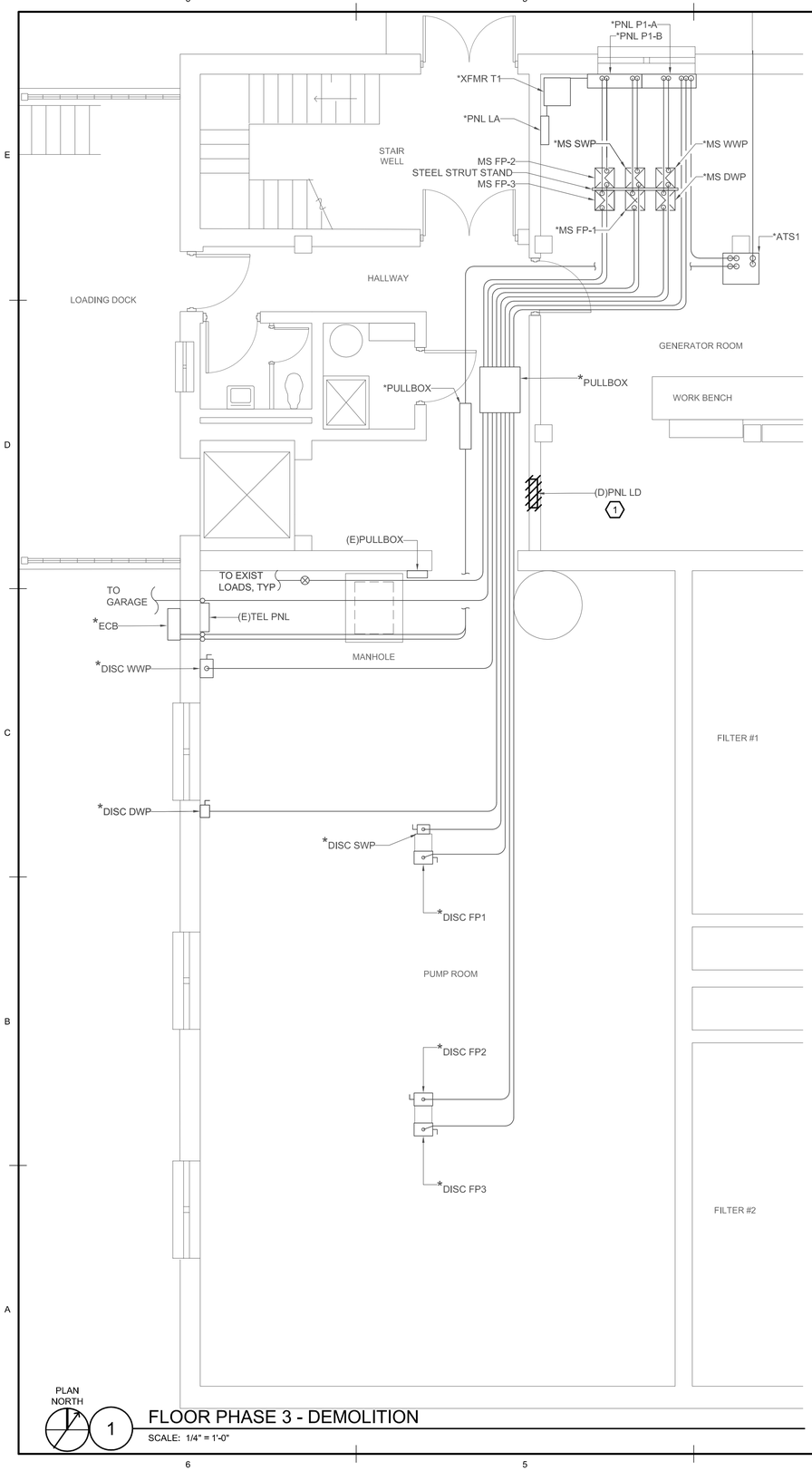
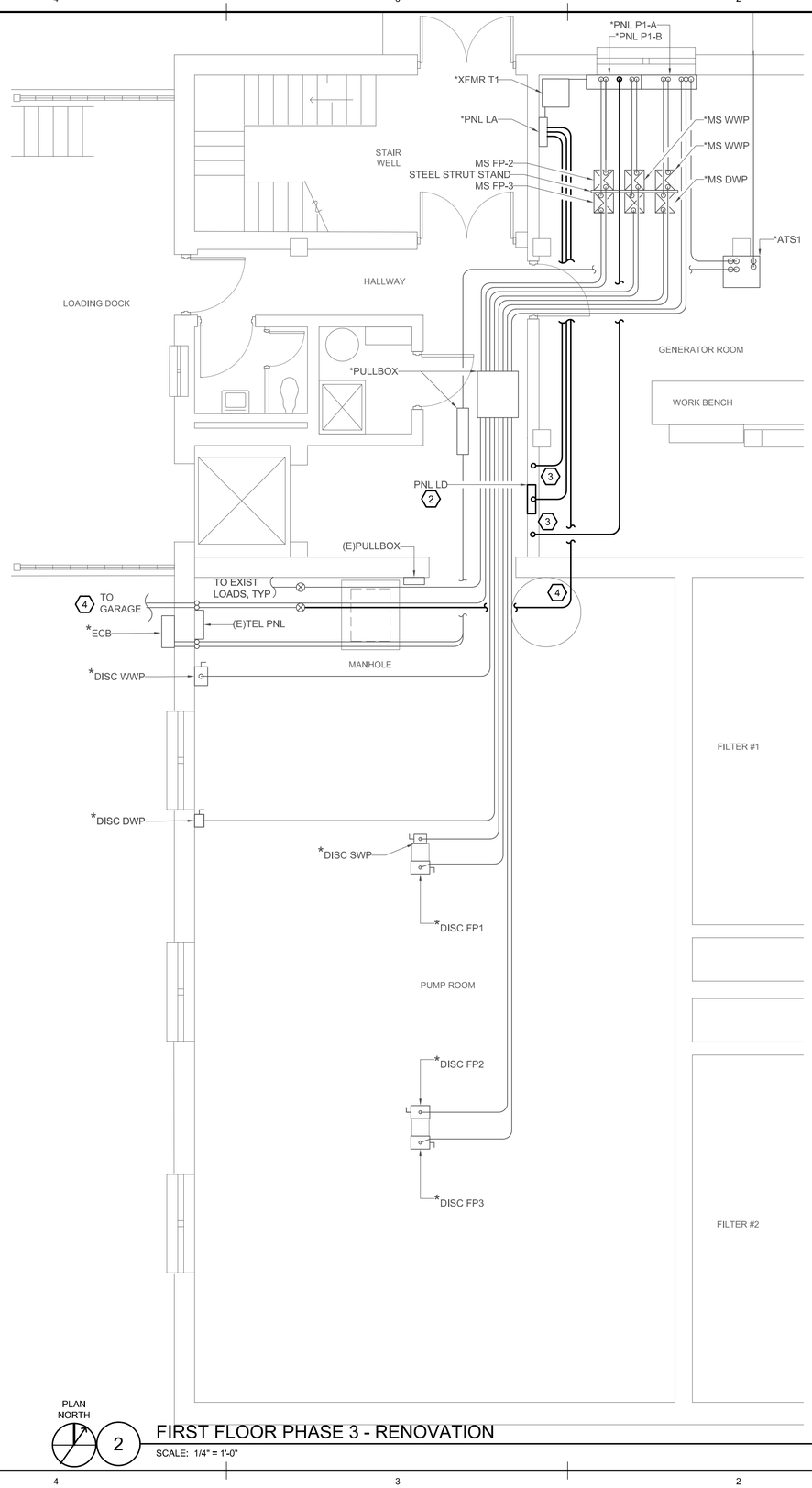


PLAN NORTH

1 FLOOR PHASE 3 - DEMOLITION

SCALE: 1/4" = 1'-0"



PLAN NORTH

2 FIRST FLOOR PHASE 3 - RENOVATION

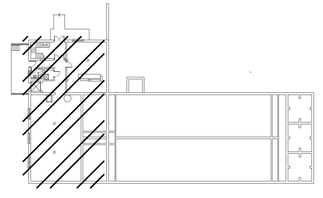
SCALE: 1/4" = 1'-0"

GENERAL PLAN NOTES

1. DASHED LINES INDICATE EQUIPMENT IS HIDDEN.
2. REFER TO SHEET ED630 AND EP630 FOR PHASE 3 SINGLE LINE DIAGRAMS.
3. REFER TO SHEET E-702 FOR PHASE 3 PANEL SCHEDULES.
4. CONDUIT ROUTING SHOWN IS ONE POSSIBLE SOLUTION AND DOES NOT CONSTITUTE THE ONLY CONDUIT ROUTING OPTION. FIELD VERIFY AVAILABLE ROUTING OPTIONS AND MAKE ADJUSTMENTS AS NECESSARY TO FACILITATE END DESIGN.
5. CONDUIT SHOWN IS INTENDED TO BE DIAGRAMMATIC AND DOES NOT SHOW ALL CONDUIT REQUIRED WITHIN SCOPE OF PROJECT. FIELD VERIFY QUANTITY AND PROVIDE CONDUIT AND JUNCTION BOXES AS NECESSARY TO RE-ESTABLISH EXISTING CIRCUITS AFFECTED AS A RESULT OF RENOVATION.
6. REMOVE AND STORE ACOUSTICAL CEILING TILES, LUMINAIRES, AND OTHER CEILING-MOUNTED DEVICES AS NEEDED TO COORDINATE WITH ABOVE CEILING WORK. PROVIDE TEMPORARY LUMINAIRE SUPPORTS AND MAINTAIN EGRESS PATH INCLUDING EGRESS LIGHTING DURING WORK. REINSTALL CEILING TILES, LUMINAIRES AND EQUIPMENT. REPLACE DAMAGED TILES.
7. PROVIDE CONTROL CIRCUITRY FROM CONTROLLED/MONITORED DEVICES TO SCADA SYSTEM, SEE SHEET EP640 FOR DETAILS.

(X) PROPOSED CONSTRUCTION SEQUENCE

1. DEMOLISH PANELBOARD. DEMOLISH PANEL LINE SIDE CONDUCTORS BACK TO PANEL LC AND ABANDON CONDUIT LOCATED IN WALL.
2. PROVIDE REPLACEMENT PANELBOARD. PROVIDE CIRCUITRY FROM PANEL LA TO PANEL. RECONNECT ALL LOADS. SEE SHEET E-702 FOR DETAILS.
3. PROVIDE CIRCUITRY TO REPLACEMENT PANEL. TURN UP CONDUIT INTO WALL BEFORE LEAVING THE GENERATOR ROOM TO AVOID ENTERING CHEMICAL ROOM. SEE SHEET EP431 FOR PANEL LOCATIONS.
4. EXTEND GARAGE PANEL CIRCUIT TO PANEL LA AND TERMINATE.



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ENLARGED POWER PLAN- PHASE 3

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EP430	0

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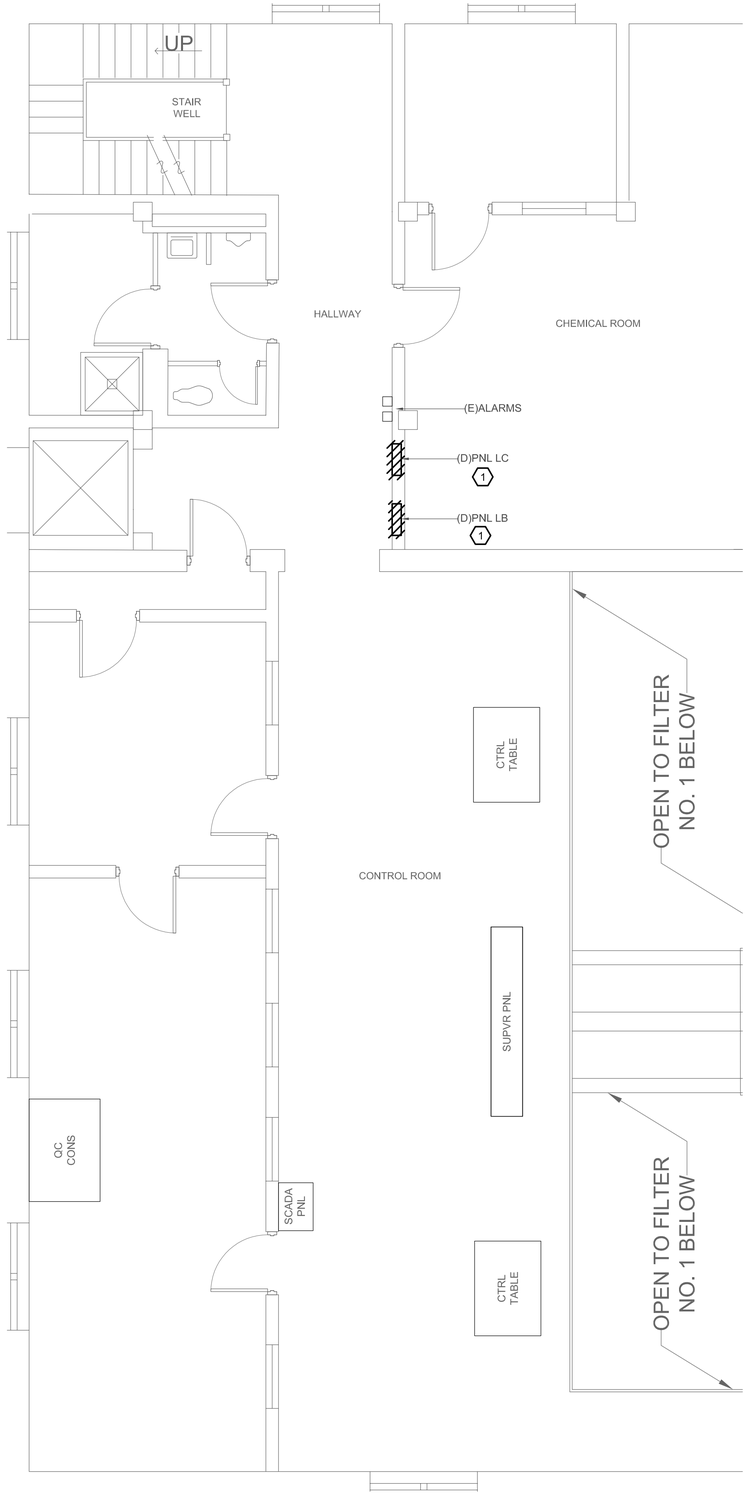
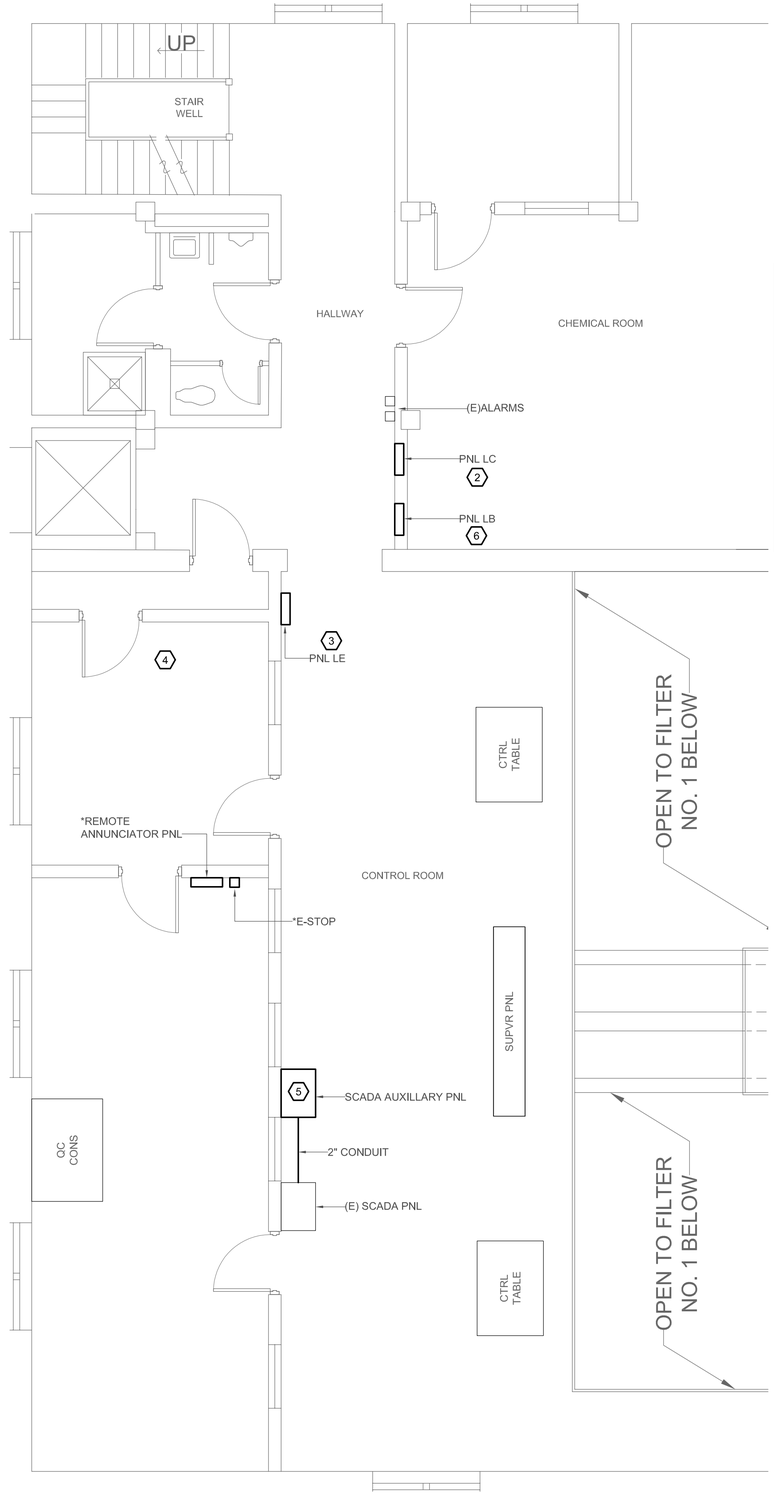


PLAN NORTH

3 SECOND FLOOR PHASE 3 - DEMOLITION

SCALE: 1/4" = 1'-0"



PLAN NORTH

3 SECOND FLOOR PHASE 3 - RENOVATION

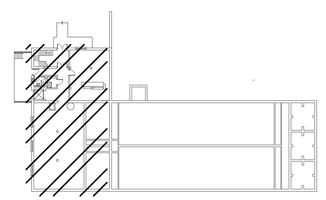
SCALE: 1/4" = 1'-0"

GENERAL PLAN NOTES

1. DASHED LINES INDICATE EQUIPMENT IS HIDDEN.
2. REFER TO SHEET ED630 AND EP630 FOR PHASE 3 SINGLE LINE DIAGRAMS.
3. REFER TO SHEET E-702 FOR PHASE 3 PANEL SCHEDULES.
4. AVOID WORK IN CHEMICAL ROOM. IF WORK IS REQUIRED COORDINATE ACCESS WITH BWRA.
5. REMOVE AND STORE ACOUSTICAL CEILING TILES, LUMINAIRES, AND OTHER CEILING-MOUNTED DEVICES AS NEEDED TO COORDINATE WITH ABOVE CEILING WORK. PROVIDE TEMPORARY LUMINAIRE SUPPORTS AND MAINTAIN EGRESS PATH INCLUDING EGRESS LIGHTING DURING WORK. REINSTALL CEILING TILES, LUMINAIRES AND EQUIPMENT. REPLACE DAMAGED TILES.
6. PROVIDE CONTROL CIRCUITRY FROM CONTROLLED/MONITORED DEVICES TO SCADA SYSTEM, SEE SHEET EP640 FOR DETAILS.

(X) PROPOSED CONSTRUCTION SEQUENCE

1. DEMOLISH PANELBOARD. DEMOLISH PANEL LINE SIDE CONDUCTORS BACK TO UPSTREAM SOURCE AND ABANDON CONDUIT LOCATED IN WALL.
2. PROVIDE REPLACEMENT PANELBOARD. PROVIDE CIRCUITRY FROM PANEL LA TO PANEL. RECONNECT ALL LOADS. SEE SHEET EP430 FOR INCOMING CIRCUITRY ROUTING FROM SOURCE.
3. PROVIDE PANELBOARD IN NEMA 3R ENCLOSURE. PROVIDE CIRCUITRY FROM PANEL LC TO PANELBOARD. SEE SHEET E-702 FOR DETAILS.
4. ISOLATE CIRCUITRY FEEDING MICROWAVE. EXTEND AND RECONNECT TO PANEL LE TO INDICATED DEDICATED CIRCUIT. SEE SHEET E-702 FOR CIRCUIT DESIGNATION.
5. PROVIDE SCADA AUXILLARY PANEL IN NEMA 3R ENCLOSURE. SEE SHEET EP640 FOR SCADA CONTROLS.
6. PROVIDE REPLACEMENT PANELBOARD. PROVIDE CIRCUITRY FROM PANEL P1-B. RECONNECT ALL LOADS. SEE SHEET EP430 FOR INCOMING CIRCUITRY.



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ENLARGED POWER PLAN- SECOND FLOOR PHASE 3

SHT. NO.	REV. NO.
EP431	0

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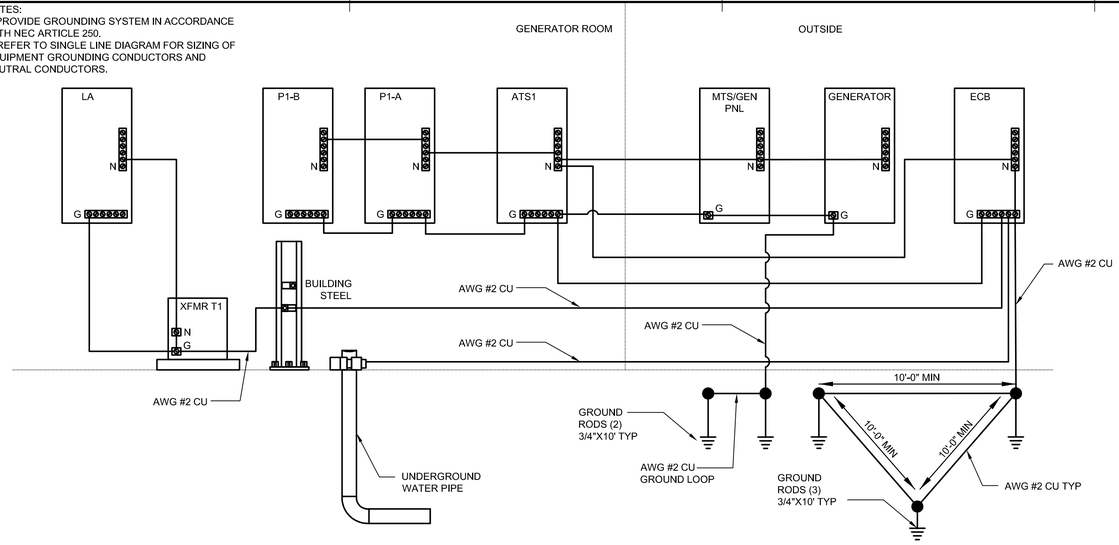
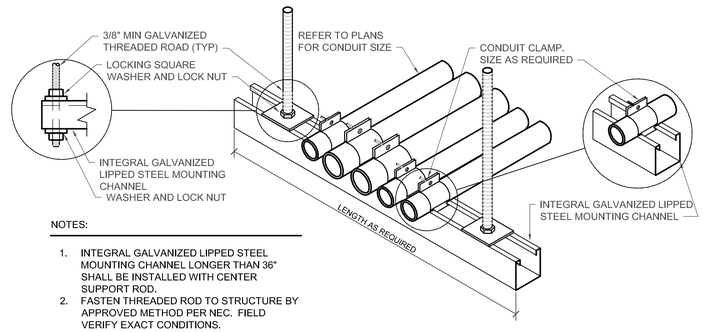
NOTES:
1. PROVIDE GROUNDING SYSTEM IN ACCORDANCE WITH NEC ARTICLE 250.
2. REFER TO SINGLE LINE DIAGRAM FOR SIZING OF EQUIPMENT GROUNDING CONDUCTORS AND NEUTRAL CONDUCTORS.

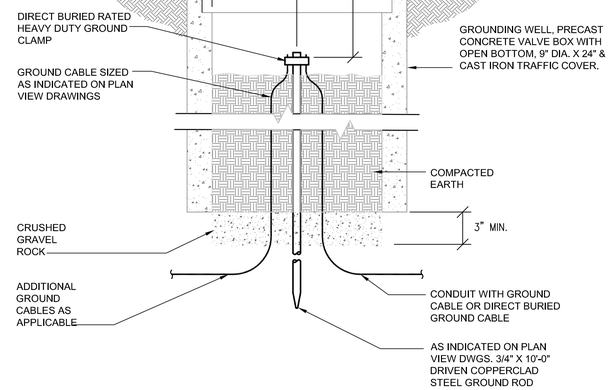


1 PARTIAL GROUNDING RISER DIAGRAM
SCALE: NONE

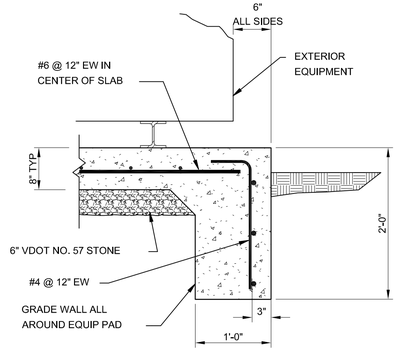


NOTES:
1. INTEGRAL GALVANIZED LIPPED STEEL MOUNTING CHANNEL LONGER THAN 36" SHALL BE INSTALLED WITH CENTER SUPPORT ROD.
2. FASTEN THREADED ROD TO STRUCTURE BY APPROVED METHOD PER NEC. FIELD VERIFY EXACT CONDITIONS.

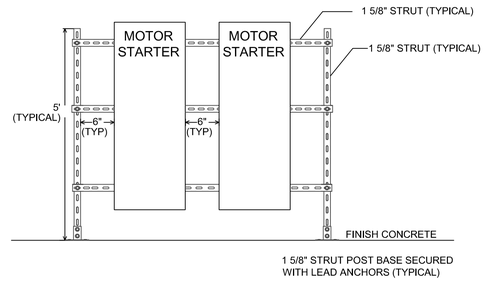
2 TRAPEZE MOUNTING DETAIL
SCALE: NONE



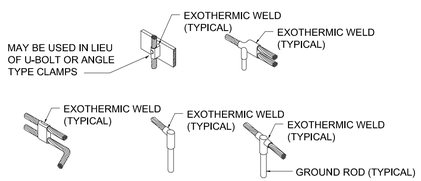
3 GROUND TEST WELL DETAIL
SCALE: NONE



4 GENERATOR EQUIPMENT PAD DETAIL
SCALE: NONE



5 TYPICAL UNISTRUT DETAIL
SCALE: NONE



6 EXOTHERMIC WELD DETAIL
SCALE: NONE

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BEDFORD REGIONAL WATER AUTHORITY
CENTRAL WATER TREATMENT PLANT
ELECTRICAL EQUIPMENT REPLACEMENT
1132 MOUNTAIN WATER DRIVE, BEDFORD, VIRGINIA 24523

MRK	DATE	REVISION DESCRIPTION

COMM NO:	230031.10
DATE:	05/31/2024
DRAWN: ACV	DESIGN: RSE
CHECK: GSF	

SHEET TITLE
ELECTRICAL DETAILS

SHT. NO.	REV. NO.
E-501	0

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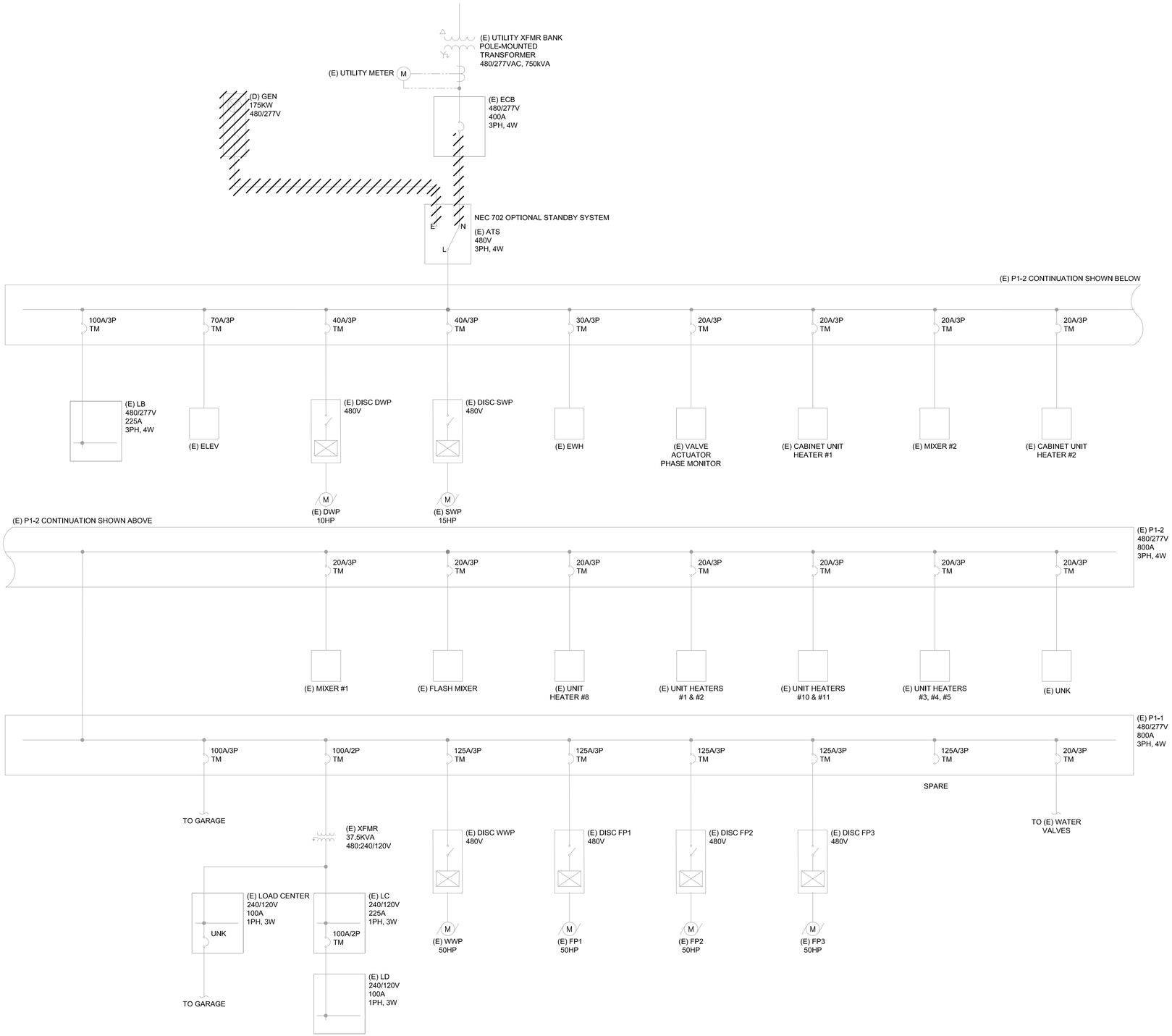

1 SINGLE LINE DIAGRAM: PHASE 1 - DEMOLITION

NOT TO SCALE

GENERAL PLAN NOTES

1. NOTIFY OWNER NO FEWER THAN (7) DAYS IN ADVANCE OF POWER OUTAGE.
2. PROVIDE TEMPORARY GENERATOR POWER FOR POWER OUTAGE DURATION PERIODS GREATER THAN (4) HOURS.
3. FACILITY WIDE POWER OUTAGES ARE LIMITED TO (2) OUTAGES PER PHASE OF CONSTRUCTION. COORDINATE MINOR OUTAGES OF OPERATIONS EQUIPMENT WITH OWNER.
4. REFER TO SHEET EP410 DETAIL 1 FOR PHASE 1 DEMOLITION FLOOR PLAN.

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1132 MOUNTAIN WATER DRIVE, BEDFORD, VIRGINIA 24523

NO.	REVISION DESCRIPTION	DATE	MRK

COMM NO: 230031.10
DATE: 05/31/2024
DRAWN: ACV | DESIGN: RSE
CHECK: GSF

SHEET TITLE
SINGLE LINE DIAGRAM
PHASE 1-DEMOLITION

SHT. NO. ED610 | REV. NO. 0

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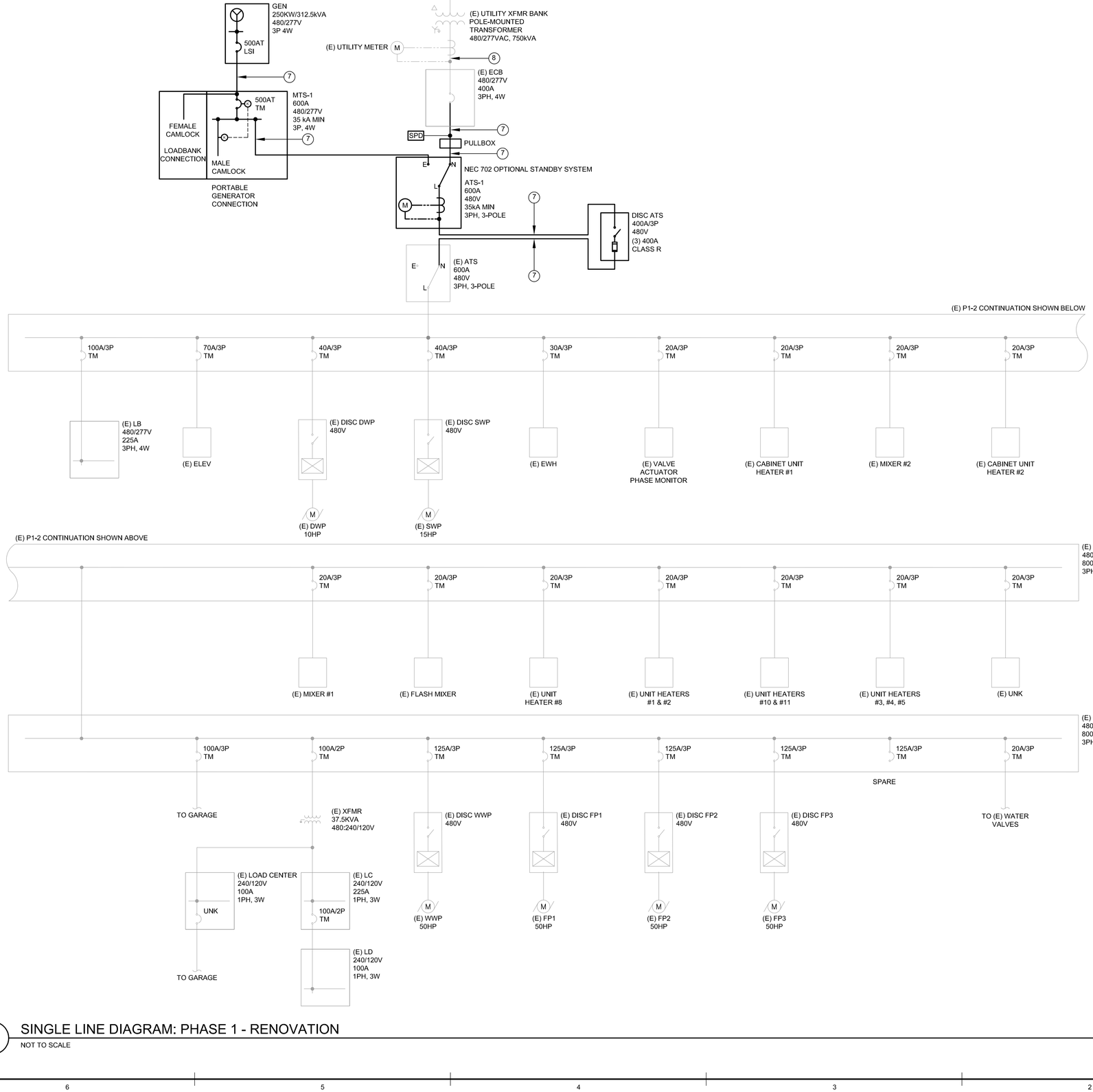

1 SINGLE LINE DIAGRAM: PHASE 1 - RENOVATION

NOT TO SCALE

GENERAL PLAN NOTES

1. NOTIFY OWNER NO FEWER THAN (7) DAYS IN ADVANCE OF POWER OUTAGE.
2. PROVIDE TEMPORARY GENERATOR POWER FOR POWER OUTAGE DURATION PERIODS GREATER THAN (4) HOURS.
3. FACILITY WIDE POWER OUTAGES ARE LIMITED TO (2) OUTAGE PER PHASE OF CONSTRUCTION. COORDINATE MINOR OUTAGES OF OPERATIONS EQUIPMENT WITH OWNER.
4. REFER TO SHEETS EP410 DETAIL 2 AND EP411 DETAIL 1 FOR PHASE 1 RENOVATION FLOOR PLANS.

(X) FEEDER SCHEDULE

MARK	SETS	DESCRIPTION
1	1	3 - #12, #12 GND IN 3/4"C
2	1	3 - #10, #10 GND IN 3/4"C
3	1	3 - #8, #10 GND IN 1"C
4	1	3 - #4, #8 GND IN 1 1/4"C
5	1	4 - #2, #8 GND IN 1 1/2"C
6	1	3 - #2, #8 GND IN 1 1/2"C
7	2	4 - 250KCMIL, #1/0 GND IN 2 1/2"C
8	2	4 - 300KCMIL AL (EXIST)
9	1	3 - #2 #8 GND IN 1 1/4"C
10	1	4 - #4/0, #2 GND IN 2"C

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1132 MOUNTAIN WATER DRIVE, BEDFORD, VIRGINIA 24523

MRK	DATE	REVISION DESCRIPTION

COMM NO: 230031.10
DATE: 05/31/2024
DRAWN: RSE | DESIGN: RSE
CHECK: GSF

SHEET TITLE
SINGLE LINE DIAGRAM
PHASE 1-RENOVATION

SHT. NO. EP610 | REV. NO. 0

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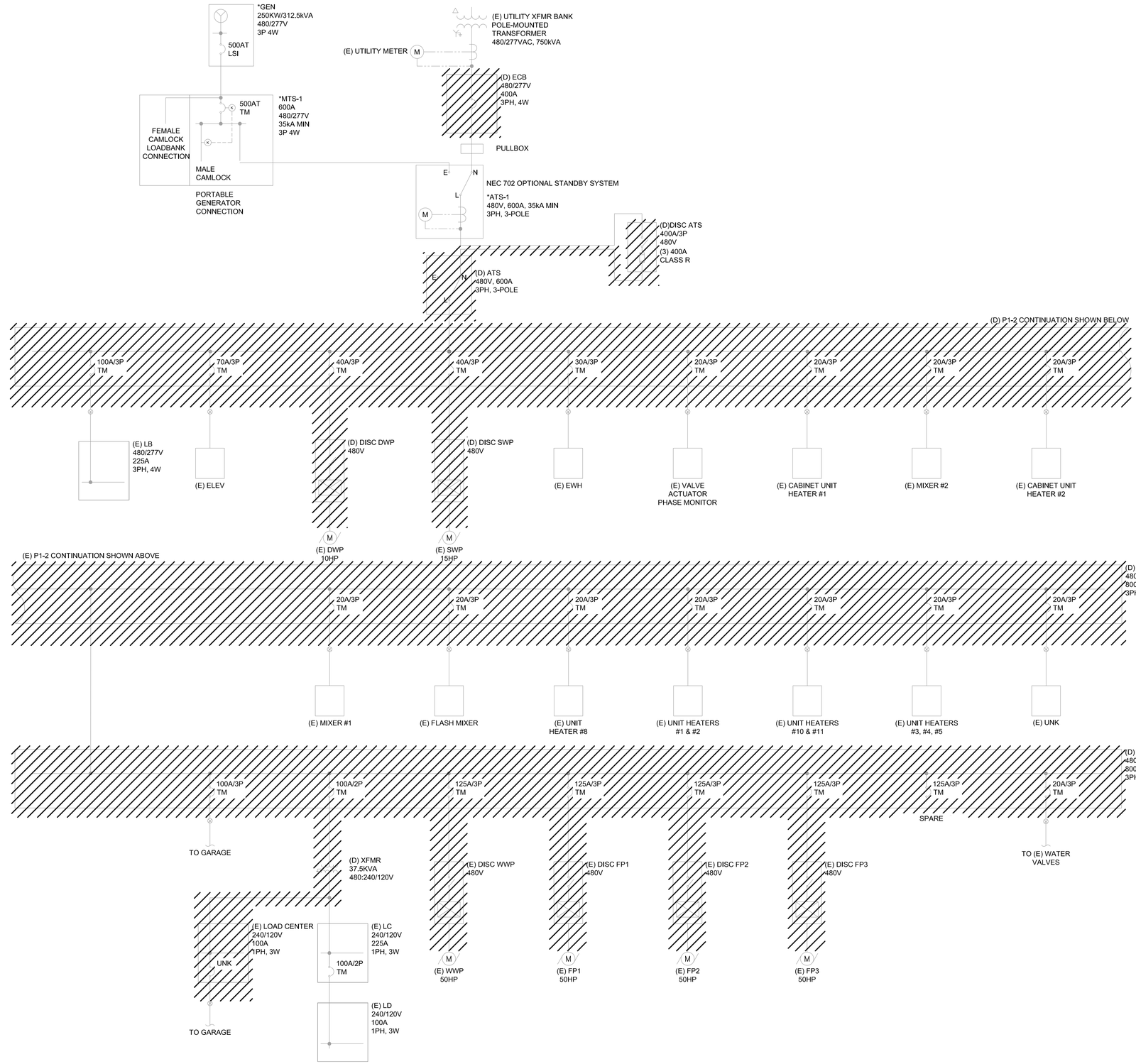

1 SINGLE LINE DIAGRAM: PHASE 2 - DEMOLITION

NOT TO SCALE

GENERAL PLAN NOTES

1. NOTIFY OWNER NO FEWER THAN (7) DAYS IN ADVANCE OF POWER OUTAGE.
2. PROVIDE TEMPORARY GENERATOR POWER FOR POWER OUTAGE DURATION PERIODS GREATER THAN (4) HOURS.
3. FACILITY WIDE POWER OUTAGES ARE LIMITED TO (2) OUTAGE PER PHASE OF CONSTRUCTION. COORDINATE MINOR OUTAGES OF OPERATIONS EQUIPMENT WITH OWNER.
4. REFER TO SHEET EP420 DETAIL 1 FOR PHASE 2 DEMOLITION FLOOR PLAN.

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COMM NO: 230031.10
DATE: 05/31/2024
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SHEET TITLE
SINGLE LINE DIAGRAM
PHASE 2 - DEMOLITION

SHT. NO. ED620 | REV. NO. 0

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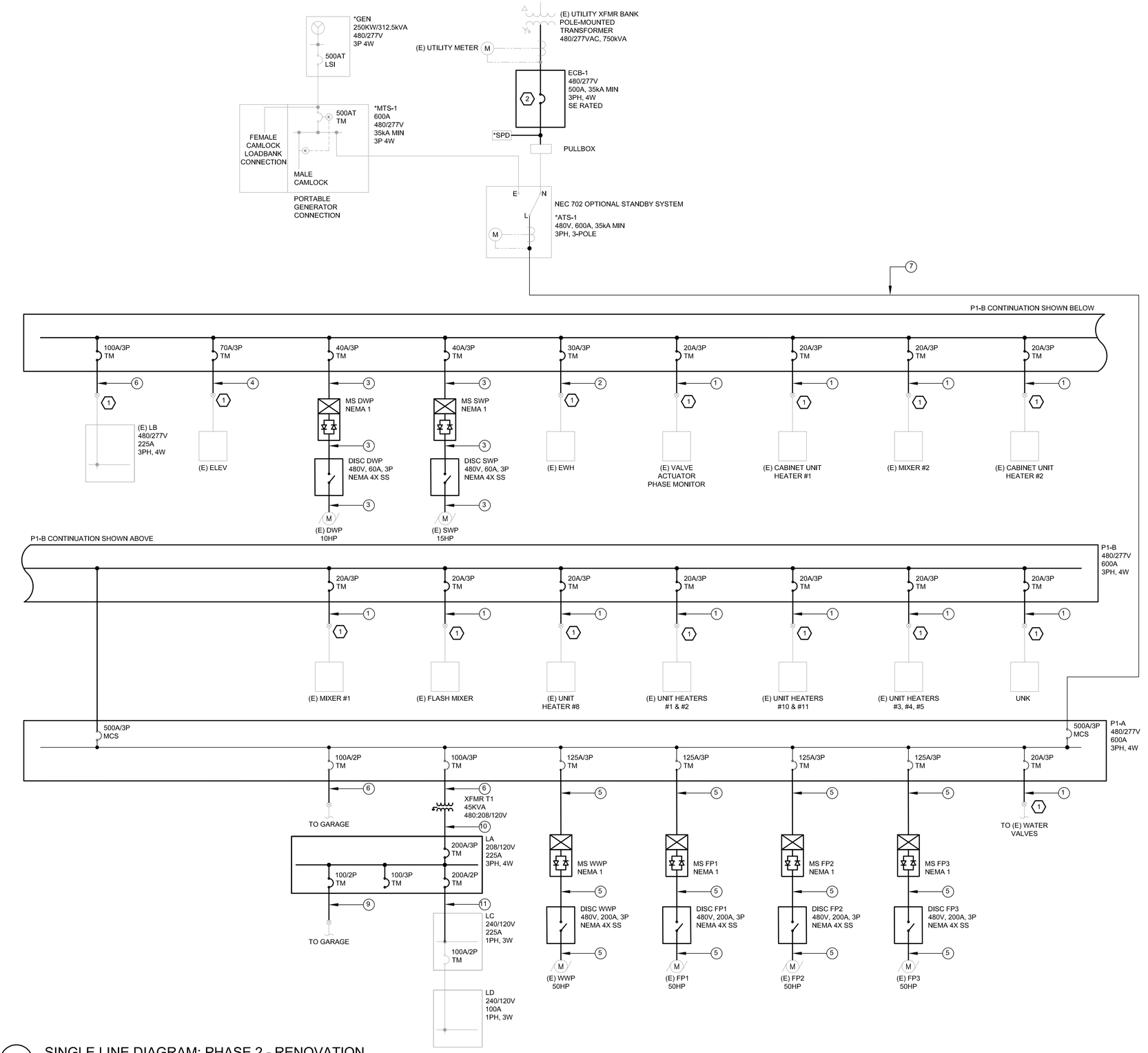

1 SINGLE LINE DIAGRAM: PHASE 2 - RENOVATION

NOT TO SCALE

GENERAL PLAN NOTES

1. NOTIFY OWNER NO FEWER THAN (7) DAYS IN ADVANCE OF POWER OUTAGE.
2. PROVIDE TEMPORARY GENERATOR POWER FOR POWER OUTAGE DURATION PERIODS GREATER THAN (4) HOURS.
3. FACILITY WIDE POWER OUTAGES ARE LIMITED TO (2) OUTAGES PER PHASE OF CONSTRUCTION. COORDINATE MINOR OUTAGES OF OPERATIONS EQUIPMENT WITH OWNER.
4. REFER TO SHEET EP420 DETAIL 2 FOR PHASE 2 RENOVATION FLOOR PLAN.
5. VERIFY PROVISION OF NEUTRAL CONDUCTOR FOR EXISTING CIRCUITS AND PROVIDE NEUTRAL CONDUCTORS AS REQUIRED FOR REPLACEMENT CIRCUITS.

(X) SHEET KEYNOTES

1. EXTEND CIRCUITRY WHERE NECESSARY TO FACILITATE LOAD TRANSFER, TYPICAL.
2. PROVIDE NEUTRAL KIT WITH ENCLOSED CIRCUIT BREAKER.

(X) FEEDER SCHEDULE

MARK	SETS	DESCRIPTION
1	1	3 - #12, #12 GND IN 3/4"C
2	1	3 - #10, #10 GND IN 3/4"C
3	1	3 - #8, #10 GND IN 1"C
4	1	3 - #4, #8 GND IN 1 1/4"C
5	1	4 - #2, #8 GND IN 1 1/2"C
6	1	3 - #2, #8 GND IN 1 1/2"C
7	2	4 - 250KCMIL, #1/0 GND IN 2 1/2"C
8	2	4 - 300KCMIL AL (EXIST)
9	1	3 - #2 #8 GND IN 1 1/4"C
10	1	4 - #4/0, #2 GND IN 2"C
11	1	3 - #4/0, #6 GND IN 2"C

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CHECK: GSF

SHEET TITLE
SINGLE LINE DIAGRAM
PHASE 2-RENOVATION

SHT. NO. EP620 | REV. NO. 0

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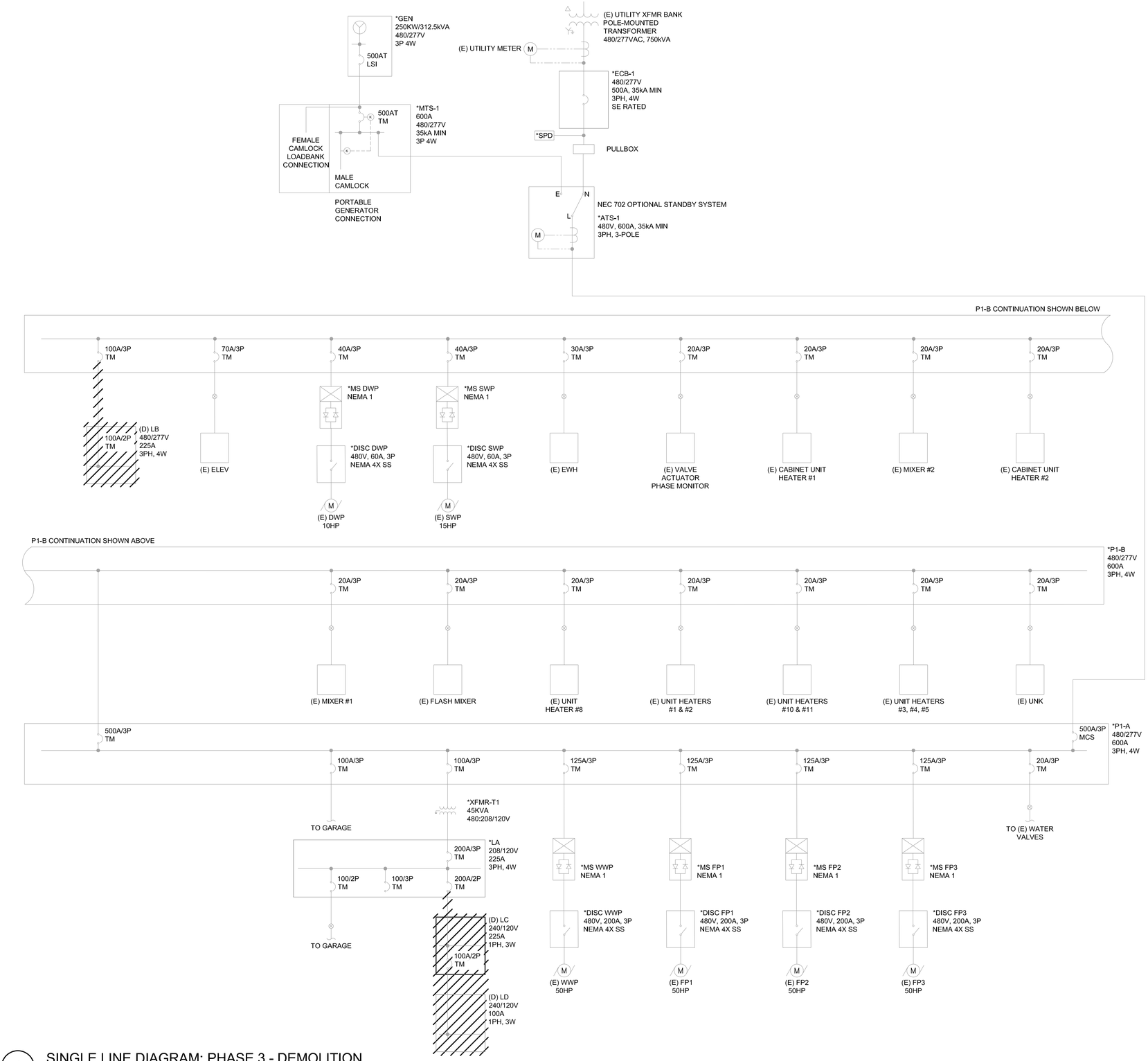

1 SINGLE LINE DIAGRAM: PHASE 3 - DEMOLITION

NOT TO SCALE

GENERAL PLAN NOTES

1. NOTIFY OWNER NO FEWER THAN (7) DAYS IN ADVANCE OF POWER OUTAGE.
2. PROVIDE TEMPORARY GENERATOR POWER FOR POWER OUTAGE DURATION PERIODS GREATER THAN (4) HOURS.
3. FACILITY WIDE POWER OUTAGES ARE LIMITED TO (2) OUTAGES PER PHASE OF CONSTRUCTION. COORDINATE MINOR OUTAGES OF OPERATIONS EQUIPMENT WITH OWNER.
4. REFER TO SHEET EP430 AND EP431 DETAIL 1 FOR PHASE 3 DEMOLITION FLOOR PLANS.

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1132 MOUNTAIN WATER DRIVE, BEDFORD, VIRGINIA 24523

MRK	DATE	REVISION DESCRIPTION

COMM NO:	230031.10
DATE:	05/31/2024
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SHEET TITLE

SINGLE LINE DIAGRAM
PHASE 3-DEMOLITION

SHT. NO.	REV. NO.
ED630	0

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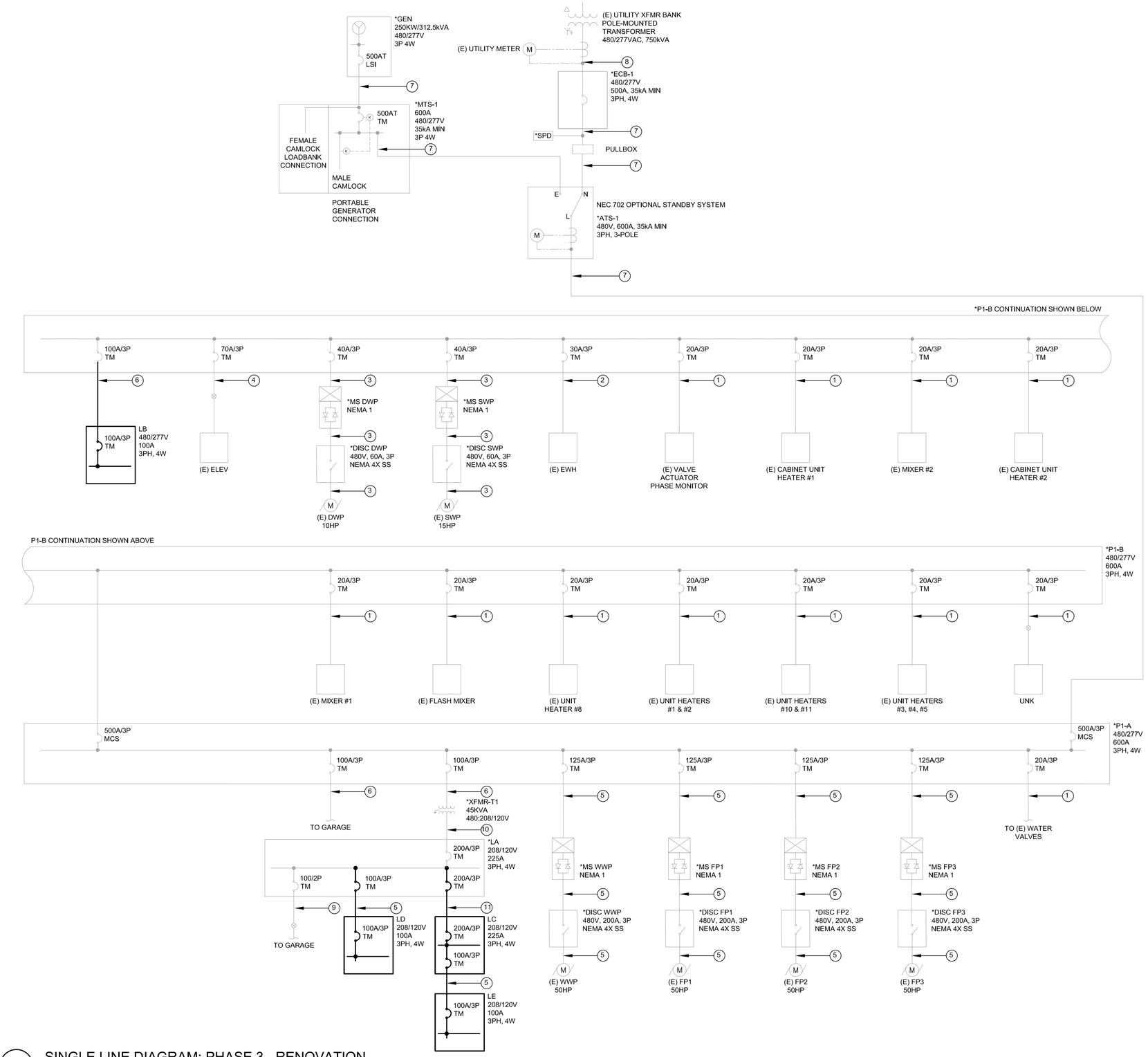

1 SINGLE LINE DIAGRAM: PHASE 3 - RENOVATION

NOT TO SCALE

GENERAL PLAN NOTES

1. NOTIFY OWNER NO FEWER THAN (7) DAYS IN ADVANCE OF POWER OUTAGE.
2. PROVIDE TEMPORARY GENERATOR POWER FOR POWER OUTAGE DURATION PERIODS GREATER THAN (4) HOURS.
3. FACILITY WIDE POWER OUTAGES ARE LIMITED TO (2) OUTAGES PER PHASE OF CONSTRUCTION.
4. REFER TO SHEETS EP430 AND EP431 DETAIL 2 FOR PHASE 3 RENOVATION PLANS.
5. THE PROJECT DOES NOT ADD ANY ADDITIONAL LOAD TO THE SYSTEM, THEREFORE NO LOAD CALCULATION IS PROVIDED.

(X) FEEDER SCHEDULE

MARK	SETS	DESCRIPTION
1	1	3 - #12, #12 GND IN 3/4"C
2	1	3 - #10, #10 GND IN 3/4"C
3	1	3 - #8, #10 GND IN 1"C
4	1	3 - #4, #8 GND IN 1 1/4"C
5	1	4 - #2, #8 GND IN 1 1/2"C
6	1	3 - #2, #8 GND IN 1 1/2"C
7	2	4 - 250KCMIL, #1/0 GND IN 2 1/2"C
8	2	4 - 300KCMIL AL (EXIST)
9	1	3 - #2 #8 GND IN 1 1/4"C
10	1	4 - #4/0, #2 GND IN 2"C
11	1	4 - #4/0, #6 GND IN 2"C

LOAD ANALYSIS:
HISTORIC MAXIMUM DEMAND: 121.3KW/151.8KVA (0.8PF, FEBRUARY 2022)
MAXIMUM DEMAND PER NEC 220.87: 189.6KVA (229A@480V)
LOAD ADDED BY THIS PROJECT: 3.2KVA
RESULTANT LOAD: 192.8KVA (232A@480V)
REPLACEMENT SERVICE: 500A @480V

DUE TO THE DIVERSITY IN THE PROCESS OPERATION, THE GENERATOR IS SIZED TO ACCOMMODATE THE FOLLOWING LOADS IN 4 STEPS:
A. MISCELLANEOUS RECEPTACLE/LIGHTING LOADS
B. ELEVATOR (25HP)
C. (2) 50HP PUMP SOFT START
D. (1) 15HP PUMP SOFT START
E. (1) 10HP PUMP SOFT START

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MRK	DATE	REVISION DESCRIPTION

COMM NO: 230031.10
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SHEET TITLE
SINGLE LINE DIAGRAM
PHASE 3-RENOVATION

SHT. NO. EP630 | REV. NO. 0

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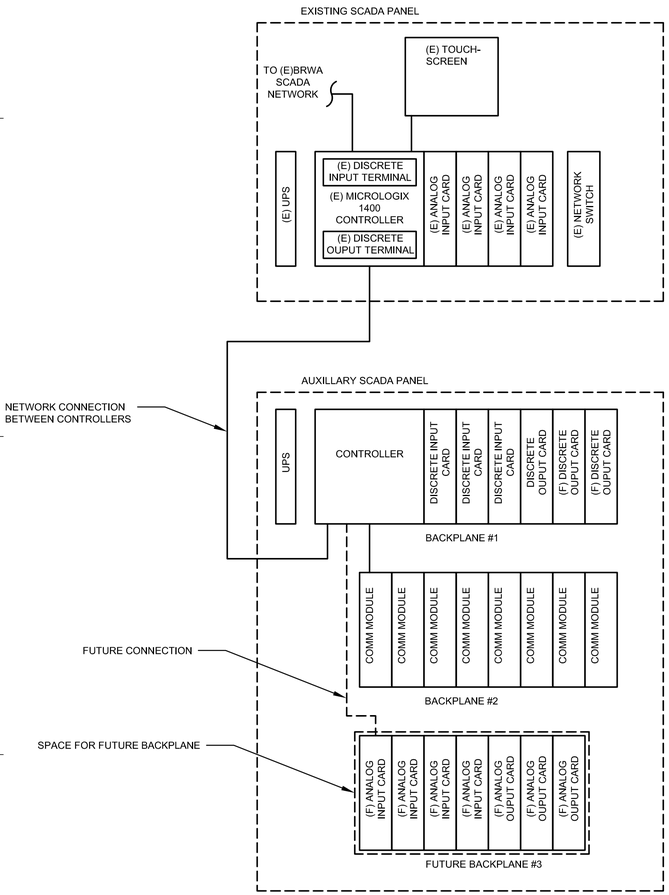

1 SCHEMATIC RISER DIAGRAM - SCADA SYSTEM

NOT TO SCALE

ABBREVIATIONS

AI = Analog Input
AO = Analog Output
DI = Discrete Input
DO = Discrete Output
COMM = Network Connection
(E) = Existing
(F) = Future Point
(R) = Reserved Point
HOA = Hand/Off/Auto Switch
VA = Valve Actuator

BRWA SCADA Points List

Point	Type	Source	Programming/Display	Notes
Power Monitoring Data - WWP	COMM	WWP Starter	Voltage: L-L each phase, L-N each phase, three-phase average; Current: each phase, three-phase average, neutral; Power: kW, kVA,kVAR; Power Factor; Frequency; Demand: peak	
MCP Trip - WWP	DI	WWP Starter	WWP Trip Alarm	
Motor Running - WWP	DI	WWP Starter	WWP Operational Status (Running/Not Running)	
WWP HOA	DI	WWP HOA	HOA in Auto/Not in Auto/Not in Auto	
WWP Remote Start	(F)DO	SCADA	WWP Remote Start Signal - Operator Initiated from Touchscreen	Relocate Signal from Existing Supervisory Control Panel
Power Monitoring Data - DWP	COMM	DWP Starter	Voltage: L-L each phase, L-N each phase, three-phase average; Current: each phase, three-phase average, neutral; Power: kW, kVA,kVAR; Power Factor; Frequency; Demand: peak	
MCP Trip - DWP	DI	DWP Starter	DWP Trip Alarm	
Motor Running - DWP	DI	DWP Starter	DWP Operational Status (Running/Not Running)	
DWP HOA	DI	DWP HOA	HOA in Auto/Not in Auto	
DWP Remote Start	(F)DO	SCADA	DWP Remote Start Signal - Operator Initiated from Touchscreen	
Power Monitoring Data - SWP	COMM	SWP Starter	Voltage: L-L each phase, L-N each phase, three-phase average; Current: each phase, three-phase average, neutral; Power: kW, kVA,kVAR; Power Factor; Frequency; Demand: peak	
MCP Trip - SWP	DI	SWP Starter	SWP Trip Alarm	
Motor Running - SWP	DI	SWP Starter	SWP Operational Status (Running/Not Running)	
SWP HOA	DI	SWP HOA	HOA in Auto/Not in Auto	
SWP Remote Start	DO	SCADA	DWP Remote Start Signal - Operator Initiated from Touchscreen	Relocate Signal from Existing Supervisory Control Panel
Power Monitoring Data - FP1	COMM	FP1 Starter	Voltage: L-L each phase, L-N each phase, three-phase average; Current: each phase, three-phase average, neutral; Power: kW, kVA,kVAR; Power Factor; Frequency; Demand: peak	
MCP Trip - FP1	DI	FP1 Starter	FP1 Trip Alarm	
Motor Running - FP1	DI	FP1 Starter	FP1 Operational Status (Running/Not Running)	
FP1 HOA	DI	FP1 HOA	HOA in Auto/Not in Auto	
FP1 Remote Start	(R)DO	SCADA	FP1 Remote Start Signal - Operator Initiated from Touchscreen	Utilize Reserved Point
Power Monitoring Data - FP2	COMM	FP2 Starter	Voltage: L-L each phase, L-N each phase, three-phase average; Current: each phase, three-phase average, neutral; Power: kW, kVA,kVAR; Power Factor; Frequency; Demand: peak	
MCP Trip - FP2	DI	FP2 Starter	FP2 Trip Alarm	
Motor Running - FP2	DI	FP2 Starter	FP2 Operational Status (Running/Not Running)	
FP2 HOA	DI	FP2 HOA	HOA in Auto/Not in Auto	
FP2 Remote Start	(R)DO	SCADA	FP2 Remote Start Signal - Operator Initiated from Touchscreen	Utilize Reserved Point
Power Monitoring Data - FP3	COMM	FP3 Starter	Voltage: L-L each phase, L-N each phase, three-phase average; Current: each phase, three-phase average, neutral; Power: kW, kVA,kVAR; Power Factor; Frequency; Demand: peak	
MCP Trip - FP3	DI	FP3 Starter	FP3 Trip Alarm	
Motor Running - FP3	DI	FP3 Starter	FP3 Operational Status (Running/Not Running)	
FP3 HOA	DI	FP3 HOA	HOA in Auto/Not in Auto	
FP3 Remote Start	(R)DO	SCADA	FP3 Remote Start Signal - Operator Initiated from Touchscreen	Utilize Reserved Point
Power Monitoring Data - ATS	COMM	ATS	Voltage: L-L each phase, three-phase average; Current: each phase, three-phase average; Power: kWh three-phase total	
(E) ATS - Preferred Source	(E)DI	ATS	ATS on Preferred Source	Update Existing Point
(E) ATS - Alternate Source	(E)DI	ATS	ATS on Alternate Source	Update Existing Point
MTS - Preferred Source	DI	MTS	MTS on Preferred Source	
MTS - Alternate Source	DI	MTS	MTS on Alternate Source	
(E) Generator Running	(E)DI	Generator	Generator Running	Update Existing Point
Generator Running	COMM	Generator	Voltage: L-L each phase, L-N each phase, three-phase average; Current: each phase, three-phase average, neutral; Power: kW, kVA,kVAR; Power Factor; Frequency; Fuel Level, Alarms, EPO status	
Start Signal - Generator	DO	SCADA	Generator Remote Start Signal - Operator Initiated from Touchscreen	Route Signal to ATS for Remote Startup
(F) Valve Actuator 1	(F)DO	SCADA	Open Signal - Operator Initiated from Touchscreen	
(F) Valve Actuator 1	(F)DO	SCADA	Close Signal - Operator Initiated from Touchscreen	
(F) Valve Actuator 1	(F)DI	SCADA	Valve Position Status	
(F) Valve Actuator 1 HOA	(F)DI	VA1 HOA	Actuator HOA in Auto/Not in Auto Position	
(F) Valve Actuator 2	(F)DO	SCADA	Open Signal - Operator Initiated from Touchscreen	
(F) Valve Actuator 2	(F)DO	SCADA	Close Signal - Operator Initiated from Touchscreen	
(F) Valve Actuator 2	(F)DI	SCADA	Valve Position Status	
(F) Valve Actuator 2 HOA	(F)DI	VA1 HOA	Actuator HOA in Auto/Not in Auto Position	
(F) Valve Actuator 3	(F)DO	SCADA	Open Signal - Operator Initiated from Touchscreen	
(F) Valve Actuator 3	(F)DO	SCADA	Close Signal - Operator Initiated from Touchscreen	
(F) Valve Actuator 3	(F)DI	SCADA	Valve Position Status	
(F) Valve Actuator 3 HOA	(F)DI	VA1 HOA	Actuator HOA in Auto/Not in Auto Position	
(F) Valve Actuator 4	(F)AO	SCADA	Position Signal	
(F) Valve Actuator 4	(F)AI	SCADA	Valve Position Status	
(F) Valve Actuator 4 HOA	(F)DI	VA1 HOA	Actuator HOA in Auto/Not in Auto Position	
(F) Valve Actuator 5	(F)AO	SCADA	Position Signal	
(F) Valve Actuator 5	(F)AI	SCADA	Valve Position Status	
(F) Valve Actuator 5 HOA	(F)DI	VA1 HOA	Actuator HOA in Auto/Not in Auto Position	
(F) Valve Actuator 6	(F)AO	SCADA	Position Signal	
(F) Valve Actuator 6	(F)AI	SCADA	Valve Position Status	
(F) Valve Actuator 6 HOA	(F)DI	VA1 HOA	Actuator HOA in Auto/Not in Auto Position	
Chemical Feeder	(F)DO	Chemical Feeder	Run Signal - Operator Initiated from Touchscreen	Utilize Reserved Point, Relocate Signal from Existing Supervisory Control Panel
Chemical Feeder	(F)DO	Chemical Feeder	Run Signal - Operator Initiated from Touchscreen	Utilize Reserved Point, Relocate Signal from Existing Supervisory Control Panel

2 SCADA SYSTEM - POINTS LIST

NOT TO SCALE

GENERAL NOTES

1. EXISTING SCADA PANEL LAYOUT IS SCHEMATIC AND DOES NOT REFLECT ALL EQUIPMENT INSTALLED WHICH SUPPORTS THE INDICATED INTERCONNECTIONS.
2. AUXILIARY SCADA PANEL LAYOUT IS SCHEMATIC AND DOES NOT REFLECT ALL ACCESSORIES. PROVIDE WIREWAYS, TERMINAL STRIPS, CIRCUIT BREAKERS, NETWORK DEVICES, AUXILIARY POWER SUPPLIES, ETC. AS APPROPRIATE AND REQUIRED FOR A COMPLETE AND FUNCTIONAL SYSTEM.
   2.1. ALL DISCRETE MODULES SHOWN AS 8 POINT. PROVIDE IN QUANTITY TO SUPPORT THE INDICATED POINTS.
   2.2. ALL ANALOG MODULES SHOWN AS 4 POINT. PROVIDE IN QUANTITY TO SUPPORT THE INDICATED POINTS.
3. INTERCONNECT AUXILIARY SCADA PANEL TO EXISTING SCADA SYSTEM. UPDATE OPERATOR INTERFACE TO INCORPORATE ALL POINTS AND CONTROLS INDICATED ON THE POINTS LIST. CONTROLLER SHALL BE SUITABLE FOR PROGRAMMING OF ALL INDICATED FUTURE POINTS BUT SHALL NOT INCLUDE ANY FUTURE LOGIC.
4. PROVIDE 15% SPARE FOR EACH TYPE OF POINT IN USE.
5. ENGAGE BRWA-APPROVED CONTROLS VENDOR TO PROVIDE SCADA SYSTEM UPGRADES. DIVISION OF WORK:
   5.1. SCADA EQUIPMENT, PROGRAMMING, NETWORKING, INTERNAL PANEL WIRING - BY SCADA VENDOR.
   5.2. WIRING BETWEEN SCADA PANEL TERMINALS AND FIELD DEVICES: BY CONTRACTOR.

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COMMONWEALTH OF VIRGINIA
RACHEL C. CROMWELL
Lic. No. 040203548
PROFESSIONAL ENGINEER
5/31/24

BEDFORD REGIONAL WATER AUTHORITY
CENTRAL WATER TREATMENT PLANT
ELECTRICAL EQUIPMENT REPLACEMENT
1132 MOUNTAIN WATER DRIVE, BEDFORD, VIRGINIA 24523

MRK.	DATE	REVISION DESCRIPTION

COMM NO: 230031.10
DATE: 05/31/2024
DRAWN: ACV | DESIGN: RSE
CHECK: GSF

SHEET TITLE
SCADA CONTROLS

SHT. NO. EP640 | REV. NO. 0

12/26/2013 6:33 AM
X:\2023\230031 BRWA Central WTP Study\700 Drawings\708 ElecCAD\230031_EP640.dwg

PANEL P1-A SCHEDULE

600A, MCS, 480/277V, 3PH, 4W, SN, GB — MOUNT: SURFACE — LOCATION: GENERATOR RM — 18.0 kaic MIN

LOAD DESCRIPTION	LOAD (KVA) A	B	C	BKR TRIP	WIRE SIZE	NEU SIZE	GND SIZE	COND SIZE	CKT NO.	PHASE A B C	CKT NO.	COND SIZE	NEU SIZE	GND SIZE	WIRE SIZE	BKR TRIP	LOAD (KVA) A	B	C	LOAD DESCRIPTION
XFMR T1		—	—	100	-	-	-	-	1	A								—	—	
	—		—							B	4	-	-	-	-	100	—		—	(E) GARAGE FEED
	—	—	**18.0**							C							—	—		
*WWP	**18.0**	—	—	125	-	-	-	-	7	A							**18.0**	—	—	
	—	**18.0**	—							B	10	-	-	-	-	125	—	**18.0**	—	*FP1
	—	—	**18.0**							C							—	—	**18.0**	
*FP2	**18.0**	—	—	125	-	-	-	-	13	A							**18.0**	—	—	
	—	**18.0**	—							B	16	-	-	-	-	125	—	**18.0**	—	*FP3
	—	—								C							—	—	**18.0**	
(E) WATER VALVES		—	—	20	-	-	-	-	19	A								—	—	
	—		—							B	22	-	-	-	-	500	—		—	*PANEL P1-B
	—	—								C							—	—		
SPARE		—	—	40	-	-	-	-	25	A								—	—	
	—		—							B	28	-	-	-	-	125	—		—	SPARE
	—	—								C							—	—		
SPARE		—	—	40	-	-	-	-	31	A								—	—	
	—		—							B	34	-	-	-	-	20	—		—	SPARE
SPACE	—	—		-	-	-	-	-	35	C							—	—		
SPACE		—	—	-	-	-	-	-	37	A	38	-	-	-	-	-		—	—	SPACE
SPACE	—		—	-	-	-	-	-	39	B	40	-	-	-	-	-	—		—	SPACE
SPACE	—	—		-	-	-	-	-	41	C	42	-	-	-	-	-	—	—		SPACE
TOTAL	**36.0**	**36.0**	**36.0**														**36.0**	**36.0**	**36.0**	TOTAL

CONN. LOAD: 216.0 KVA — 260.1 A

TOTAL PHASE KVA: A: 72.0 B: 72.0 C: 72.0

TOTAL PHASE AMPS: A: 259.9 B: 259.9 C: 259.9

PANEL P1-B SCHEDULE

600A, MLO, 480/277V, 3PH, 4W, SN, GB — MOUNT: SURFACE — LOCATION: GENERATOR RM — 18.0 kaic MIN

LOAD DESCRIPTION	LOAD (KVA) A	B	C	BKR TRIP	WIRE SIZE	NEU SIZE	GND SIZE	COND SIZE	CKT NO.	PHASE A B C	CKT NO.	COND SIZE	NEU SIZE	GND SIZE	WIRE SIZE	BKR TRIP	LOAD (KVA) A	B	C	LOAD DESCRIPTION
		—	—							A								—	—	
*PANEL LB	—		—	100	-	-	-	-	3	B	4	-	-	-	-	70	—		—	(E) ELEVATOR
	—	—								C							—	—		
	5.8	—	—							A								—	—	
*SWP	—	**5.8**	—	40	-	-	-	-	9	B	10	-	-	-	-	30	—		—	(E) EWH
	—	—	**5.8**							C							—	—		
		—	—							A								—	—	
(E) VALVE ACUATOR PHASE MONITOR	—		—	20	-	-	-	-	15	B	16	-	-	-	-	20	—		—	(E) CABINET UH 1
	—	—								C							—	—		
		—	—							A								—	—	
(E) MIXER 2	—		—	20	-	-	-	-	21	B	22	-	-	-	-	20	—		—	(E) CABINET UH 2
	—	—								C							—	—		
		—	—							A								—	—	
(E) MIXER 1	—		—	20	-	-	-	-	27	B	28	-	-	-	-	20	—		—	(E) FLASH MIXER
	—	—								C							—	—		
		—	—							A								—	—	
(E) UH 8	—		—	20	-	-	-	-	33	B	34	-	-	-	-	20	—		—	(E) UH 1 & 2
	—	—								C							—	—		
		—	—							A								—	—	
(E) UH 10 & 11	—		—	20	-	-	-	-	39	B	40	-	-	-	-	20	—		—	(E) UH 3, 4, 5
	—	—								C							—	—		
		—	—							A								—	—	
SPARE	—		—	40	-	-	-	-	45	B	46	-	-	-	-	20	—		—	SPARE
	—	—								C							—	—		
		—	—							A								—	—	
SPARE	—		—	20	-	-	-	-	51	B	52	-	-	-	-	20	—		—	SPARE
	—	—								C							—	—		
TOTAL	**5.8**	**5.8**	**5.8**														**0.0**	**0.0**	**0.0**	TOTAL

CONN. LOAD: 17.4 KVA — 21.0 A

TOTAL PHASE KVA: A: 5.8 B: 5.8 C: 5.8

TOTAL PHASE AMPS: A: 20.9 B: 20.9 C: 20.9

① PANEL LA SCHEDULE

225A, MCB, 208/120V, 3PH, 4W, SN, GB — MOUNT: SURFACE — LOCATION: GENERATOR ROOM — 22.0 kaic MIN

LOAD DESCRIPTION	LOAD (KVA) A	B	C	BKR TRIP	WIRE SIZE	NEU SIZE	GND SIZE	COND SIZE	CKT NO.	PHASE A B C	CKT NO.	COND SIZE	NEU SIZE	GND SIZE	WIRE SIZE	BKR TRIP	LOAD (KVA) A	B	C	LOAD DESCRIPTION
(E) GARAGE FEED		—	—	100	-	-	-	-	1	A	2	-	-	-	-	100		—	—	SPARE
	—		—							B							—		—	
PANEL LD	—	—		100	-	-	-	-	5	C	6	-	-	-	-	200	—	—		PANEL LC
		—	—							A								—	—	
*BATTERY CHARGER	—	**1.8**	—	20	12	12	12	3/4"	9	B	10	3/4"	12	12	12	20	—	**1.8**	—	*JACKET HEATER
SPARE	—	—		20	-	-	-	-	11	C	12	3/4"	12	12	12	20	—	—	**0.2**	GEN RECEPTACLE
SPARE		—	—	20	-	-	-	-	13	A	14	-	-	-	-	20		—	—	SPARE
SPACE	—		—	-	-	-	-	-	15	B	16	-	-	-	-	20	—		—	SPARE
SPACE	—	—		-	-	-	-	-	17	C	18	-	-	-	-	-	—	—		SPACE
SPACE		—	—	-	-	-	-	-	19	A	20	-	-	-	-	-		—	—	SPACE
SPACE	—		—	-	-	-	-	-	21	B	22	-	-	-	-	-	—		—	SPACE
SPACE	—	—		-	-	-	-	-	23	C	24	-	-	-	-	-	—	—		SPACE
SPACE		—	—	-	-	-	-	-	25	A	26	-	-	-	-	-		—	—	SPACE
SPACE	—		—	-	-	-	-	-	27	B	28	-	-	-	-	-	—		—	SPACE
SPACE	—	—		-	-	-	-	-	29	C	30	-	-	-	-	-	—	—		SPACE
SPACE		—	—	-	-	-	-	-	31	A	32	-	-	-	-	-		—	—	SPACE
SPACE	—		—	-	-	-	-	-	33	B	34	-	-	-	-	-	—		—	SPACE
SPACE	—	—		-	-	-	-	-	35	C	36	-	-	-	-	-	—	—		SPACE
		—	—							A								—	—	
FUTURE USE ②	—		—	200	-	-	-	-	39	B	40	-	-	-	-	100	—		—	FUTURE USE ②
	—	—								C							—	—		
TOTAL	**0.0**	**1.8**	**0.0**														**0.0**	**1.8**	**0.2**	TOTAL

CONN. LOAD: 3.8 KVA — 9.1 A

TOTAL PHASE KVA: A: 0.0 B: 3.6 C: 0.2

TOTAL PHASE AMPS: A: 0.0 B: 30.0 C: 1.5

GENERAL PLAN NOTES

1. MATCH CONDUCTORS AND CONDUIT SIZES FOR NEW CIRCUITRY TO EXISTING CIRCUITRY SIZES.

ⓧ SHEET KEYNOTES

1. PANEL SCHEDULE SHOWN IS THE PHASE 2 DISPOSITION OF THE PANEL. SEE SHEET E-702 FOR FINAL DISPOSITION.
2. SEE SHEET E-702 FOR PHASE 3 PANEL DISPOSITION.

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1132 MOUNTAIN WATER DRIVE, BEDFORD, VIRGINIA 24523

MRK	DATE	REVISION DESCRIPTION

COMM NO: 230031.10
DATE: 05/31/2024
DRAWN: ACV | DESIGN: RSE
CHECK: GSF

SHEET TITLE

PANEL SCHEDULES - PHASE 2

SHT. NO. E-701 | REV. NO. 0

12/26/2013 6:33 AM
X:\2023\230031 BRWA Central WTP Study\700 Drawings\708 ElecCAD\230031_E-701.dwg

GENERAL PLAN NOTES

1. MATCH CONDUCTORS AND CONDUIT SIZES FOR NEW CIRCUITRY TO EXISTING CIRCUITRY SIZES.
2. ALL CIRCUITS ARE EXISTING UNLESS NOTED OTHERWISE.

ⓧ SHEET KEYNOTES

1. PANEL SCHEDULE SHOWN IS THE PHASE 3 DISPOSITION OF THE PANEL. SEE SHEET E-701 FOR PHASE 2 DISPOSITION.

PANEL LB SCHEDULE

225A, MCB, 480/277V, 3PH, 4W, SN, GB — MOUNT: SURFACE — LOCATION: 2ND FLOOR CORRIDOR — 18.0 kaic MIN

LOAD DESCRIPTION	LOAD (KVA) A	B	C	BKR TRIP	WIRE SIZE	NEU SIZE	GND SIZE	COND SIZE	CKT NO.	PHASE A B C	CKT NO.	COND SIZE	NEU SIZE	GND SIZE	WIRE SIZE	BKR TRIP	LOAD (KVA) A	B	C	LOAD DESCRIPTION
ELEC CONVECTORS HALL/BATH		—	—	20	-	-	-	-	1	A	2	-	-	-	-	20		—	—	LTS SETTLING BASIN/FRONT
ELEC CONVECTORS TOILET/STAIRS	—		—	20	-	-	-	-	3	B	4	-	-	-	-	20	—		—	LTS OPERATING GALLERY
ELEC CONVECTOR DOWNSTAIRS HALL	—	—		20	-	-	-	-	5	C	6	-	-	-	-	20	—	—		LTS LABORATORY & OFFICE
ELEC CONVECTOR FOYER		—	—	20	-	-	-	-	7	A	8	-	-	-	-	20		—	—	CEILING HEATERS LABORATORY
LTS 2ND FLOOR & UPSTAIRS BATH	—		—	20	-	-	-	-	9	B	10	-	-	-	-	20	—		—	ELEC CONVECTOR OFFICE
LTS 1ST FLOOR SHOP	—	—		20	-	-	-	-	11	C	12	-	-	-	-	20	—	—		CEILING HEATERS LABORATORY
UNIT HEATER 6 CHLORINATOR RM		—	—	20	-	-	-	-	13	A	14	-	-	-	-	20		—	—	UNIT HEATER 7 CHEM FEED RM
LTS PARKING LOT & GATE	—		—	20	-	-	-	-	15	B	16	-	-	-	-	20	—		—	HEAT FLUORIDE ROOM
LTS PIPE GALLERY	—	—		20	-	-	-	-	17	C	18	-	-	-	-	20	—	—		LTS SETTLING BASIN REAR
LTS 3RD FLOOR		—	—	20	-	-	-	-	19	A	20	-	-	-	-	20		—	—	SPARE
SPARE	—		—	20	-	-	-	-	21	B	22	-	-	-	-	20	—		—	SPARE
SPARE	—	—		20	-	-	-	-	23	C	24	-	-	-	-	20	—	—		SPARE
SPARE		—	—	20	-	-	-	-	25	A	26	-	-	-	-	20		—	—	SPARE
SPARE	—		—	20	-	-	-	-	27	B	28	-	-	-	-	20	—		—	SPARE
SPARE	—	—		20	-	-	-	-	29	C	30	-	-	-	-	20	—	—		SPARE
SPARE		—	—	20	-	-	-	-	31	A	32	-	-	-	-	20		—	—	SPARE
SPARE	—		—	20	-	-	-	-	33	B	34	-	-	-	-	20	—		—	SPARE
SPARE	—	—		20	-	-	-	-	35	C	36	-	-	-	-	20	—	—		SPARE
DUCT HEATER 1	—		—	40	-	-	-	-	39	A B C	40	-	-	-	-	40	—		—	DUCT HEATER 2
TOTAL	**0.0**	**0.0**	**0.0**														**0.0**	**0.0**	**0.0**	TOTAL

CONN. LOAD: 0.0 KVA 0.0 A — TOTAL PHASE KVA: A: 0.0 B: 0.0 C: 0.0 — TOTAL PHASE AMPS: A: 0.0 B: 0.0 C: 0.0

PANEL LC SCHEDULE

200A, MCB, 208/120V, 3PH, 4W, SN, GB — MOUNT: SURFACE — LOCATION: SECOND FLOOR CORRIDOR — 22.0 kaic MIN

LOAD SERVED	LOAD (KVA) A	B	BKR TRIP	WIRE SIZE	NEU SIZE	GND SIZE	COND SIZE	CKT NO.	PHASE A B	CKT NO.	COND SIZE	NEU SIZE	GND SIZE	WIRE SIZE	BKR TRIP	LOAD (KVA) A	B	LOAD SERVED
ALUM FEEDER		—	20					1	A	2					20		—	LTS ELEV SHAFT
CARBON FEEDER	—		20					3	B	4					20	—		RCPTS ELEV SHAFT
LIME SODA ASH FEEDER		—	20					5	A	6					20		—	EX FAN 2 UPSTAIRS BATH
FLUORIDE FEEDER	—		20					7	B	8					20	—		RCPTS
RCPTS PIPE GALLERY		—	20					9	A	10					20		—	EX FAN 1 DOWNSTAIRS BATH
LTS CLEARWELL & BATH	—		20					11	B	12					20	—		CHLORINATOR
EX FAN 5 FLUORIDE RM		—	20					13	A	14					20		—	TURBIDIMETERS
EX FAN 3 & SUPPLY FAN 6	—		20					15	B	16					20	—		PARKINGLOT LTS
EX FAN 4 & SUPPLY FAN 7		—	20					17	A	18					20		—	AIR COMP & WATER TANK
RCPTS 3RD FLOOR	—		20					19	B	20					20	—		POLYELECTROLYTE MIXER
POLYELECTROLYTE MIXER		—	20					21	A	22					20		—	RCPTS SHOP & FOYER
RCPTSCHLORINE FEED RM	—		20					23	B	24					20	—		RCPTS 1ST FLR BATH
RCPTS BATH AND HALL		—	20					25	A	26					20		—	LIME FEEDER FINISHED WATER
ATUOCLAVE	—		20					27	B	28					20	—		WASH WATER CONTROL
RCPTS FEEDER RM		—	20					29	A	30					20		—	CALGON PUMP
RCPTS OPERATING RM	—		20					31	B	32					20	—		CALGON PUMP
RCPTS OFFICE PHONE		—	20					33	A	34					20		—	RCPTS CL STORAGE
RCPTS OPERATING RM	—		20					35	B	36					20	—		DRINKING FOUNTAIN
RCPTS LAB		—	20					37	A	38							—	
RCPTS LAB	—		20					39	B	40	-	-	-	-	100	—		PANEL LE
DISTILLING UNIT		—	20					41	A	42							—	
TOTAL	**0.0**	**0.0**														**0.0**	**0.0**	TOTAL

CONN. LOAD: 0.0 KVA 0.0 A — TOTAL PHASE KVA: A: 0.0 B: 0.0 — TOTAL PHASE AMPS: A: 0.0 B: 0.0

PANEL LD SCHEDULE

100A, MCB, 208/120V, 3PH, 4W, SN, GB — MOUNT: SURFACE — LOCATION: FIRST FLOOR CORRIDOR — 22.0 kaic MIN

LOAD SERVED	LOAD (KVA) A	B	BKR TRIP	WIRE SIZE	NEU SIZE	GND SIZE	COND SIZE	CKT NO.	PHASE A B	CKT NO.	COND SIZE	NEU SIZE	GND SIZE	WIRE SIZE	BKR TRIP	LOAD (KVA) A	B	LOAD SERVED
RAW WATER SAMPLE PUMP		—	20					1	A	2					20		—	QAULITY CTRL CONSOLE
TREATED WATER PUMP	—		20					3	B	4					20	—		DEPTH GAUGE/RAW WATER CTRL
SETTLED WATER PUMP		—	20					5	A	6					20		—	SPARE
FILTERED WATER PUMP	—		20					7	B	8					20	—		SPARE
CLEARWELL SAMPLE PUMP		—	20					9	A	10					20		—	SPARE
RCPTS SETTLING BASIN	—		20					11	B	12					20	—		MG TANK ACTUATOR
CHLORINE SAMPLE PUMP		—	20					13	A	14					20		—	SPARE
EXISTING LOAD	—		20					15	B	16					20	—		SIR SUPPLY COMPRESSOR
WATER HEATER	—	—	30					17	A B	20					20	—	—	SPARE
SPARE		—	20					21	A	22					20		—	SPARE
SPARE	—		20					23	B	24					20	—		SPARE
TOTAL	**0.0**	**0.0**														**0.0**	**0.0**	TOTAL

CONN. LOAD: 0.0 KVA 0.0 A — TOTAL PHASE KVA: A: 0.0 B: 0.0 — TOTAL PHASE AMPS: A: 0.0 B: 0.0

① PANEL LA SCHEDULE

225A, MCB, 208/120V, 3PH, 4W, SN, GB — MOUNT: SURFACE — LOCATION: GENERATOR ROOM — 22.0 kaic MIN

LOAD DESCRIPTION	LOAD (KVA) A	B	C	BKR TRIP	WIRE SIZE	NEU SIZE	GND SIZE	COND SIZE	CKT NO.	PHASE A B C	CKT NO.	COND SIZE	NEU SIZE	GND SIZE	WIRE SIZE	BKR TRIP	LOAD (KVA) A	B	C	LOAD DESCRIPTION
(E) GARAGE FEED		—	—	100	-	-	-	-	1	A	2	-	-	-	-	100		—	—	SPARE
	—		—							B	4						—		—	
SPARE	—	—		100	-	-	-	-	5	C	6	-	-	-	-	100	—	—		SPARE
		—	—							A								—	—	
*BATTERY CHARGER	—	**1.8**	—	20	12	12	12	3/4"	9	B	10	3/4"	12	12	12	20	—	**1.8**	—	*JACKET HEATER
SPARE	—	—		20	-	-	-	-	11	C	12	3/4"	12	12	12	20	—	—	**0.2**	GEN RECEPTACLE
SPARE		—	—	20	-	-	-	-	13	A	14	-	-	-	-	20		—	—	SPARE
SPACE	—		—	-	-	-	-	-	15	B	16	-	-	-	-	20	—		—	SPARE
SPACE	—	—		-	-	-	-	-	17	C	18	-	-	-	-	-	—	—		SPACE
SPACE		—	—	-	-	-	-	-	19	A	20	-	-	-	-	-		—	—	SPACE
SPACE	—		—	-	-	-	-	-	21	B	22	-	-	-	-	-	—		—	SPACE
SPACE	—	—		-	-	-	-	-	23	C	24	-	-	-	-	-	—	—		SPACE
SPACE		—	—	-	-	-	-	-	25	A	26	-	-	-	-	-		—	—	SPACE
SPACE	—		—	-	-	-	-	-	27	B	28	-	-	-	-	-	—		—	SPACE
SPACE	—	—		-	-	-	-	-	29	C	30	-	-	-	-	-	—	—		SPACE
SPACE		—	—	-	-	-	-	-	31	A	32	-	-	-	-	-		—	—	SPACE
SPACE	—		—	-	-	-	-	-	33	B	34	-	-	-	-	-	—		—	SPACE
SPACE	—	—		-	-	-	-	-	35	C	36	-	-	-	-	-	—	—		SPACE
PANEL LC		—	—	200	-	-	-	-	39	A								—	—	PANEL LD
	—		—							B	40	-	-	-	-	100	—		—	
	—	—								C							—	—		
TOTAL	**0.0**	**1.8**	**0.0**														**0.0**	**1.8**	**0.2**	TOTAL

CONN. LOAD: 3.8 KVA 10.5 A — TOTAL PHASE KVA: A: 0.0 B: 3.6 C: 0.2 — TOTAL PHASE AMPS: A: 0.0 B: 30.0 C: 1.5

PANEL LE SCHEDULE

100A, MCB, 208/120V, 3PH, 4W, SN, GB — MOUNT: SURFACE — LOCATION: SECOND FLOOR CONTROL ROOM — 22.0 kaic MIN

LOAD SERVED	LOAD (KVA) A	B	BKR TRIP	WIRE SIZE	NEU SIZE	GND SIZE	COND SIZE	CKT NO.	PHASE A B	CKT NO.	COND SIZE	NEU SIZE	GND SIZE	WIRE SIZE	BKR TRIP	LOAD (KVA) A	B	LOAD SERVED
WATER HEATER		—	20	12	12	12	3/4"	1	A	2	3/4"	12	12	12	20		—	MICROWAVE
SCADE CTRL PANEL	—		20	-	-	-	-	3	B	4	-	-	-	-		—		SPARE
SPARE		—		-	-	-	-	5	A	6	-	-	-	-			—	SPARE
SPARE	—			-	-	-	-	7	B	8	-	-	-	-		—		SPARE
SPARE		—		-	-	-	-	9	A	10	-	-	-	-			—	SPARE
SPARE	—			-	-	-	-	11	B	12	-	-	-	-		—		SPARE
SPARE		—		-	-	-	-	13	A	14	-	-	-	-			—	SPARE
SPARE	—			-	-	-	-	15	B	16	-	-	-	-		—		SPARE
SPARE		—		-	-	-	-	17	A	18	-	-	-	-			—	SPARE
SPARE	—			-	-	-	-	19	B	20	-	-	-	-		—		SPARE
SPARE		—		-	-	-	-	21	A	22	-	-	-	-			—	SPARE
SPARE	—			-	-	-	-	23	B	24	-	-	-	-		—		SPARE
TOTAL	**0.0**	**0.0**														**0.0**	**0.0**	TOTAL

CONN. LOAD: 0.0 KVA 0.0 A — TOTAL PHASE KVA: A: 0.0 B: 0.0 — TOTAL PHASE AMPS: A: 0.0 B: 0.0

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COMMONWEALTH OF VIRGINIA — RACHEL C. CROMWELL — Lic. No. 040203548 — PROFESSIONAL ENGINEER — 5/31/24

BEDFORD REGIONAL WATER AUTHORITY
CENTRAL WATER TREATMENT PLANT
ELECTRICAL EQUIPMENT REPLACEMENT
1132 MOUNTAIN WATER DRIVE, BEDFORD, VIRGINIA 24523

MRK	DATE	REVISION DESCRIPTION

COMM NO: 230031.10
DATE: 05/31/2024
DRAWN: ACV | DESIGN: RSE
CHECK: GSF

SHEET TITLE
PANEL SCHEDULES - PHASE 3

SHT. NO. E-702 | REV. NO. 0

12/26/2013 6:33 AM
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