



## AMENDMENT #2

### RFP 2026-026

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**Effective:** March 31, 2026

**Solicitation Title:** Generator Replacement at Bohrer Activity Center and  
Department of Public Works

**Issued By:** City of Gaithersburg  
Procurement Division  
31 S Summit Avenue  
Gaithersburg, Maryland 20877

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This Amendment is incorporated into and made part of the above-named Request for Proposal ("Solicitation"). Except as amended herein, all terms and conditions of the Solicitation shall remain unchanged and in full force and effect. The purpose of this Amendment is to revise a few drawing sheets and specification sections in Exhibit A; the revised documents are attached hereto and to extend the submission deadline in section 3.1.

1. Section 3.1, E, Submission Deadline, is replaced in its entirety with:

**Submission Deadline: April 17, 2026 at 3:00 PM**

2. The following revised drawing sheets are revised,

A 101, A201, A202, A203, A302, ED002, ED021, E002, E101, E201, E202, E021, E701, see below change narrative and attached drawings.

3. The Specification sections revised,  
Section 00 00 00 (Table of Contents)  
Section 26 32 13.13 (Diesel Emergency Engine Generators)  
Section 26 33 00 (Docking Station)  
Section 26 43 00 (Surge Protective Devices)

4. The change narrative listed below,

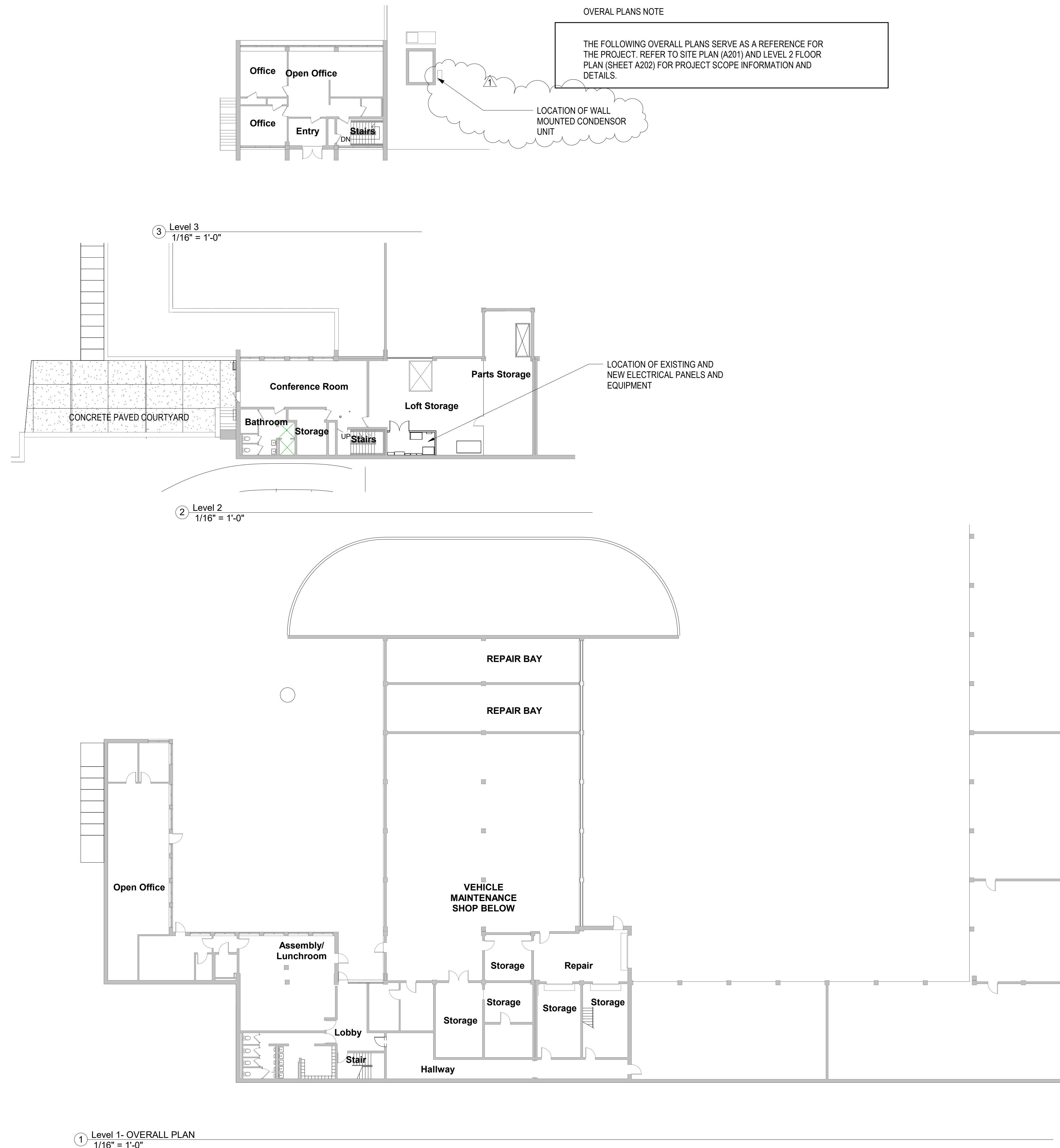
Drawing Sheet	Comments
A001	No change
A002	No change

A101	Added not on overall plan showing location of condenser unit.
A201	Site Plan Legend and drawing updated to shown approximate location of condenser unit for the HVAC split unit that serves the Main Electrical Room.
A202	Revised concrete house keeping pad in electrical room. Added an additional concrete house keeping pad in electrical room. Revisions needed to accommodate revised electrical equipment.
A202	Revise layout of electrical room to accommodate revised electrical equipment.
A202	Clarified location of wall mounted HVAC split unit, and added diagrammatic routing to skylight well.
A202	Revised interior elevations to show room changes.
A203	Note added for clarity the ceiling of electrical room shall be painted.
A302	Added diagrammatic pathway for HVAC piping between Main Electrical Room and condenser unit.
A401	No change
ED002	Added keynote #6 to the existing conduit.
ED021	<ul style="list-style-type: none"> <li>Added keynote #4 to the existing conduit.</li> <li>Removed text (E) from existing conduit.</li> </ul>
E002	<ul style="list-style-type: none"> <li>Added keynote #6 to the generator conduit.</li> <li>Removed existing conduit along with the junction box and pull box.</li> </ul>
E101	<ul style="list-style-type: none"> <li>Revised the electrical room layout as per the latest architectural background.</li> <li>Revised the audio/visual strobe to a ceiling-mounted type in Room #31.</li> </ul>
E201	<ul style="list-style-type: none"> <li>Revised the electrical room layout as per the latest architectural background.</li> <li>Revised the service rated ATS to standard ATS and revised model number to ASCO 300 Series in lieu of HARS 800A.</li> <li>Added a new type 2 SPD, disconnect switch and service entrance disconnect switch in main electrical Room #31.</li> <li>Revised generator remote annunciator panel location.</li> <li>Added keynote #4 to the service entrance disconnect switch.</li> <li>Added keynote #5 regarding sealed utility trough.</li> <li>Added new type 1 SPD for service disconnect switch(N).</li> </ul>
E202	<ul style="list-style-type: none"> <li>Revised the location of ACCU-1 and AC-1 as per the latest mechanical coordination.</li> <li>Revised the location of the disconnect and outlet.</li> <li>Added keynote #12 to refrigerant piping.</li> </ul>
E021	<ul style="list-style-type: none"> <li>Revised Keynote #1, 6,14 and 24.</li> <li>Removed the breaker in ATS-SB (N), along with grounding and the associated keynote.</li> <li>Added a new service-rated disconnect switch with a SPD type 1 concrete pad and grounding, along with the keynote.</li> <li>Revised the connection between ATS-SB, the service-rated disconnect switch, and the C/T cabinet.</li> </ul>

	<ul style="list-style-type: none"><li>• Added SPD type 2 (N) and disconnect switch for MDP along with keynote #25.</li></ul>
E701	<ul style="list-style-type: none"><li>• Updated detail #5 related to concrete pad detail for the ATS and service rated disconnect switch.</li><li>• Revised in detail #3 service rated disconnect(N) in lieu of service equipment ATS(N).</li></ul>

~ END OF AMENDMENT~

REVISED EXHIBIT A-DRAWINGS



OVERALL PLANS NOTE  
 THE FOLLOWING OVERALL PLANS SERVE AS A REFERENCE FOR THE PROJECT. REFER TO SITE PLAN (A201) AND LEVEL 2 FLOOR PLAN (SHEET A202) FOR PROJECT SCOPE INFORMATION AND DETAILS.

LOCATION OF WALL MOUNTED CONDENSOR UNIT

LOCATION OF EXISTING AND NEW ELECTRICAL PANELS AND EQUIPMENT

① Level 1- OVERALL PLAN  
 1/16" = 1'-0"

③ Level 3  
 1/16" = 1'-0"

② Level 2  
 1/16" = 1'-0"



CITY OF GAITHERSBURG  
 800 RABBIT ROAD  
 GAITHERSBURG, MD 20878

CONSULTANTS:  
 PRIME CONSULTANT / MEP ENGINEER:

**SETTY**  
 415 EAST MARKET STREET, SUITE 100  
 CHARLOTTESVILLE, VA 22902  
 P: 434-270-2201  
 www.SETTY.com  
 PROJECT NUMBER: SIPQ251916.02

ARCHITECTURAL:  
 CARONADO DESIGN  
 4509 WESTERN AVE NW  
 WASHINGTON, DC 20016

STRUCTURAL  
 SPYDER ENGINEERS  
 727 DOWERS ROAD  
 ABINGDON, MARYLAND 21009

CIVIL:  
 LANGAN  
 1300 WILSON BOULEVARD  
 SUITE 450 ARLINGTON, VA  
 22209-2323

PROJECT NAME:  
 CITY OF GAITHERSBURGH  
 PUBLIC WORKS GENERATOR  
 REPLACEMENT



Project Status

No.	Description	Date
1	100% Design Development	7/18/25
2	90% Construction Document	09/08/25
3	100% Construction Document	10/29/25
4	BID DOCUMENTS	01/21/2026
▲	Addendum #1	03/30/2026

OVERALL PLANS

Setty Project Number	SIPQ251916.02
Date	01/21/2026
Drawn By	JE
Checked By	KBL

**A101**

Scale 1/16" = 1'-0"



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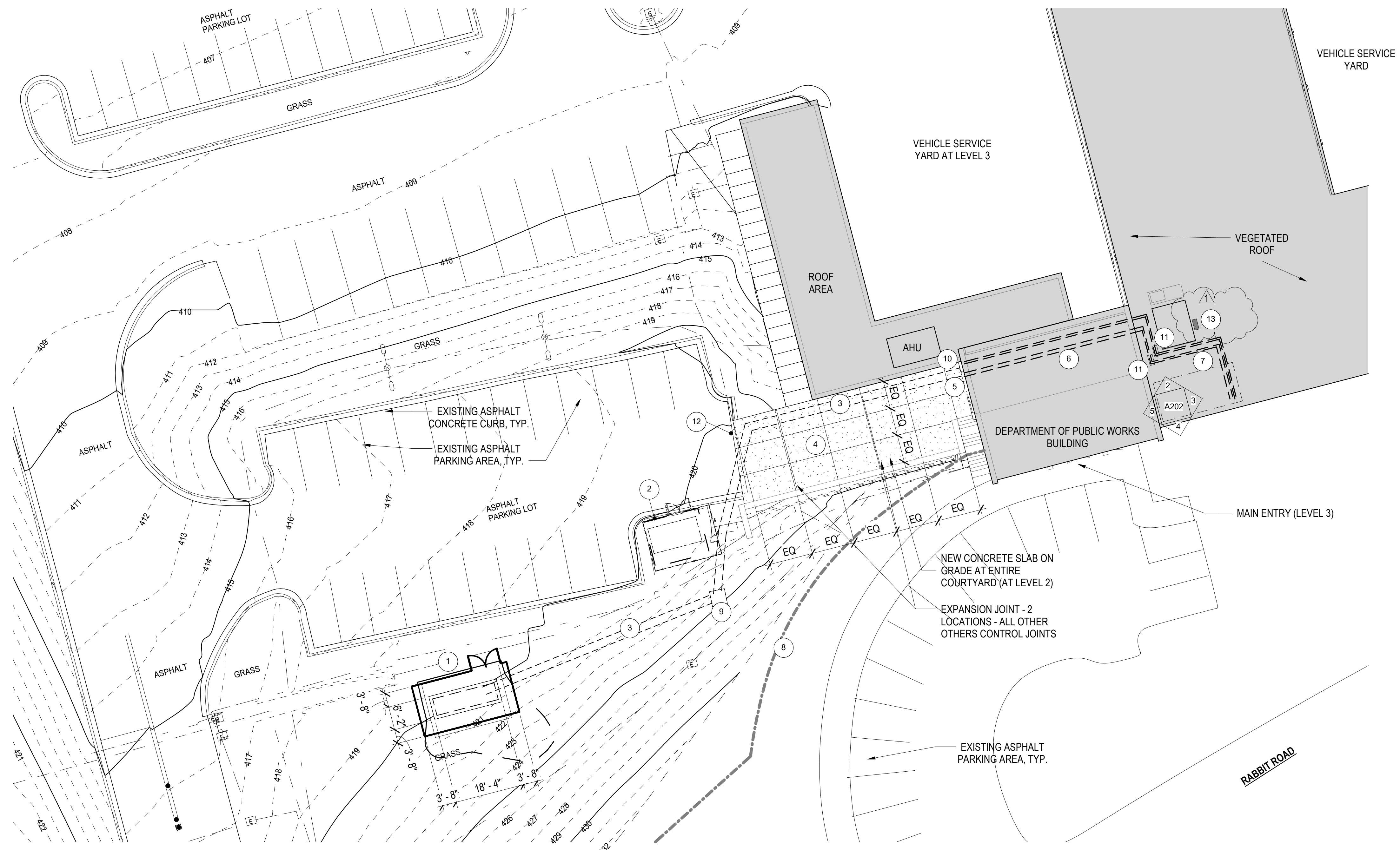


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### Site Plan

Setty Project Number	SIPQ251916.02
Date	01/21/2026
Drawn By	JE
Checked By	KBL
<b>A201</b>	
Scale	1/16" = 1'-0"



1 SITE PLAN  
1/16" = 1'-0"

### SITE PLAN LEGEND

- |   |   |   |
|---|---|---|
| <p>1 NEW CONCRETE PAD, NEW CHAINLINK ENCLOSURE, AND NEW ELECTRICAL GENERATOR - SEE CIVIL AND ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION</p> <p>2 ABANDON IN PLACE EXISTING CONCRETE GENERATOR PAD AND FENCING</p> <p>CONTRACTOR SHALL REMOVE EXISTING GENERATOR AND STORE IN LOCATION DESIGNATED BY OWNER - CONTRACTOR TO EMPTY GENERATOR OF FUEL AND RETURN FUEL TO OWNER</p> <p>3 NEW BELOW GRADE ELECTRICAL CONDUIT - SEE ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION</p> | <p>4 DEMO AND REPLACE EXISTING CAST IN PLACE SLAB ON GRADE. ENTIRE PLAZA AREA (APPROX 65'-0" X 24'-0")</p> <p>5 CONDUIT RISER AND PULLBOX MOUNTED TO EXTERIOR OF BUILDING</p> <p>6 NEW ELECTRICAL CONDUIT LINE IN CEILING OF LEVEL 2. SEE PLAN AND RCP FOR ADDITIONAL INFORMATION</p> <p>7 MAIN ELECTRICAL ROOM LOCATED AT LEVEL 2 (ONE LEVEL BELOW MAIN ENTRY LEVEL) SEE LEVEL 2 PLAN FOR ADDITIONAL INFORMATION</p> | <p>8 EXISTING CHAINLINK FENCE TO REMAIN</p> <p>9 5'-0" x 5'-0" CONCRETE PAD AND MOBILE GENERATOR DOCKING STATION</p> <p>10 CONTROL WIRING CONDUIT AND PULL BOX MOUNTED ON EXTERIOR OF BUILDING</p> <p>11 COORDINATE PULLBOX - VERIFY LOCATION IN FIELD</p> <p>12 COORDINATE GRADES BETWEEN PARKING AND NEW SLAB AT COURTYARD TO MEET ADA REQUIREMENTS</p> <p>13 ROOF TOP MOUNTED CONDENSER UNIT CONNECTED TO SPLIT HVAC IN MAIN ELECTRICAL ROOM</p> |
|---|---|---|



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FLOOR PLAN -  
LEVEL 2

Setty Project Number SIPQ251916.02

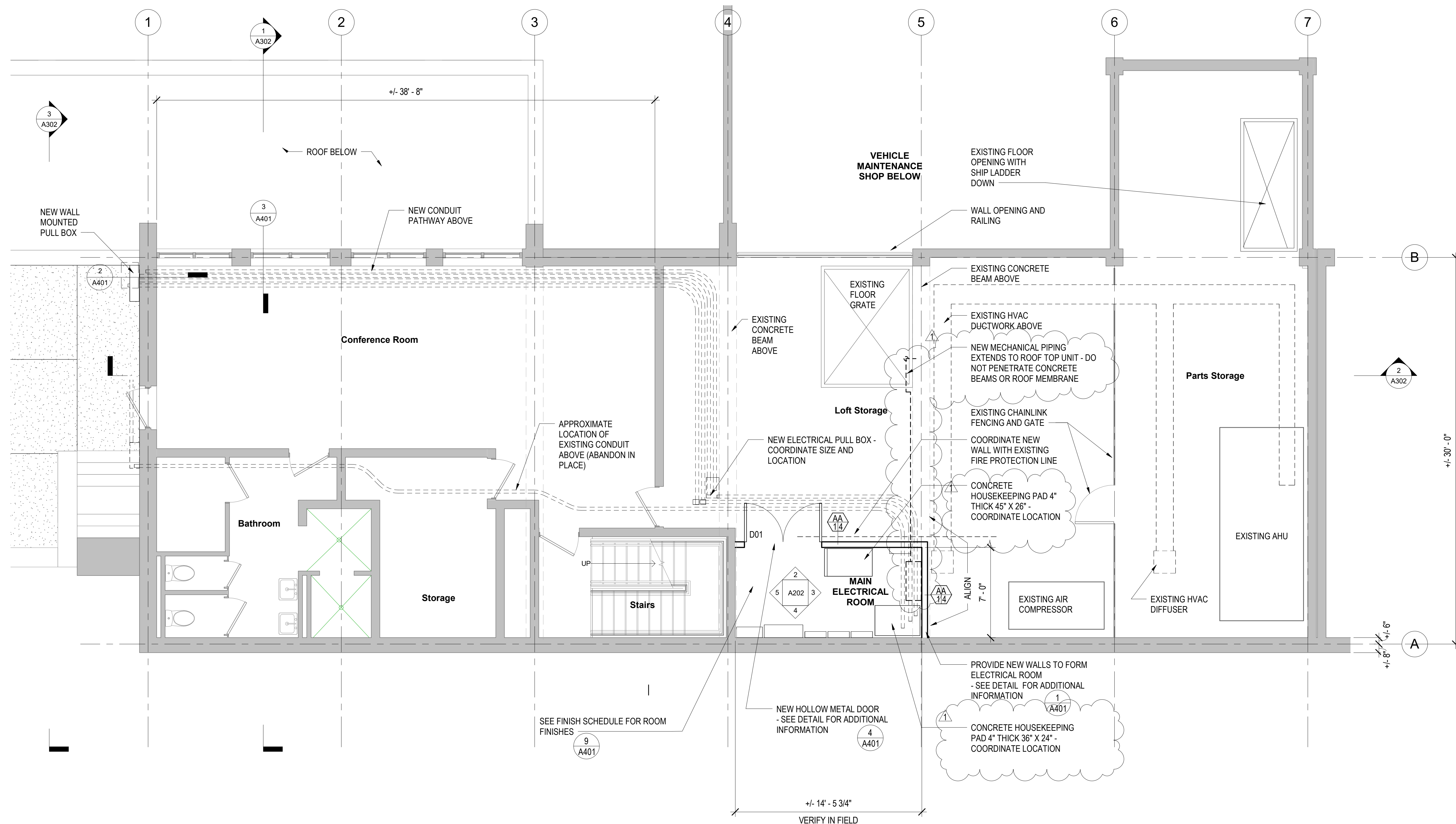
Date 01/21/2026

Drawn By JE

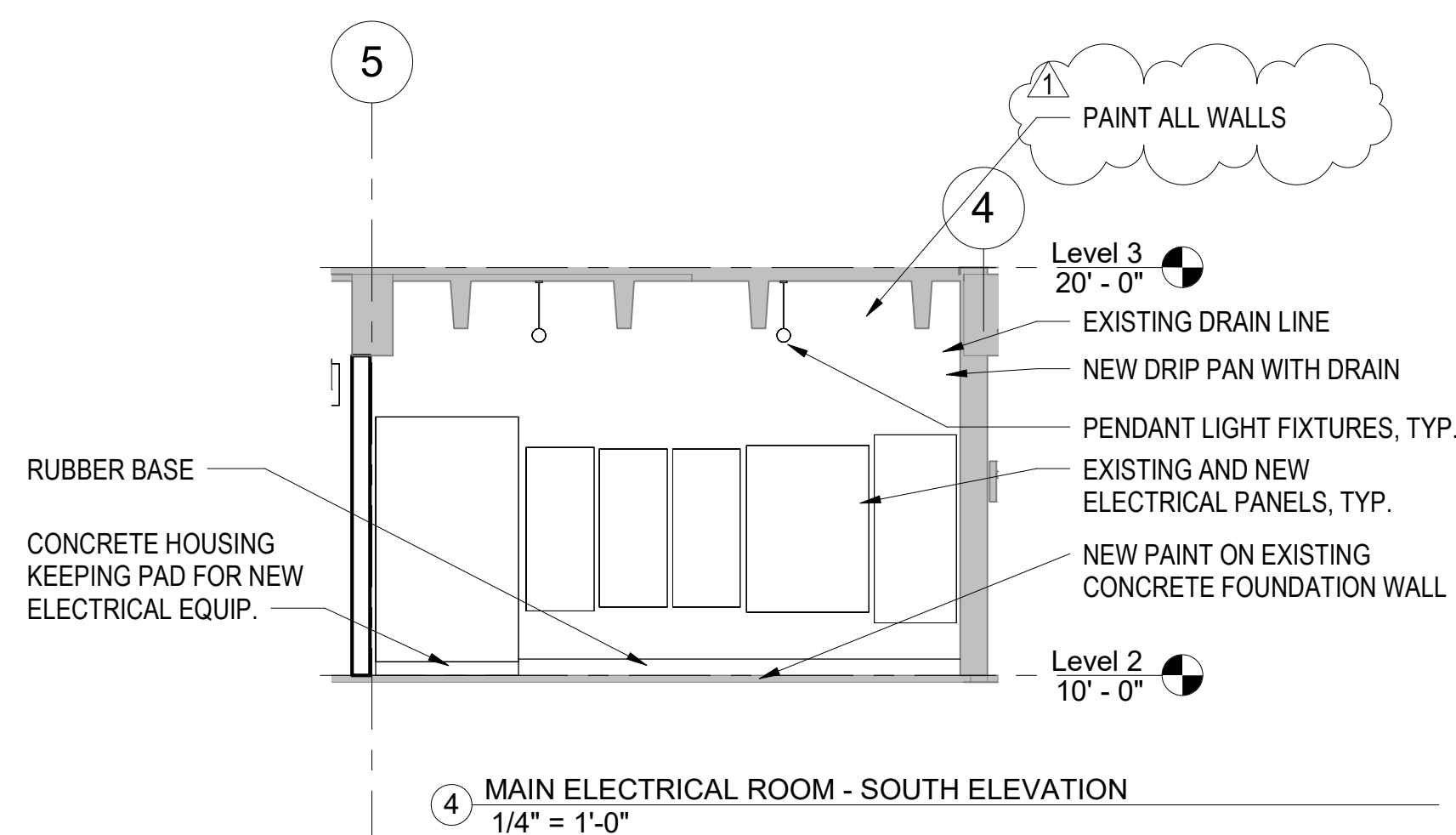
Checked By KBL

**A202**

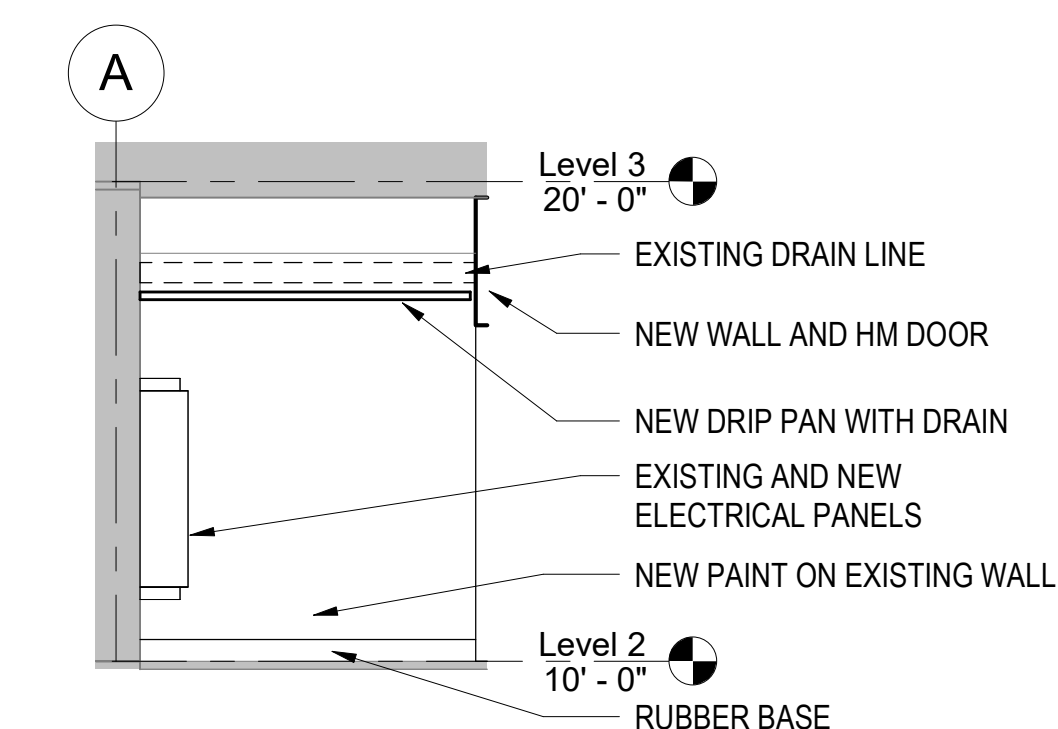
Scale 1/4" = 1'-0"



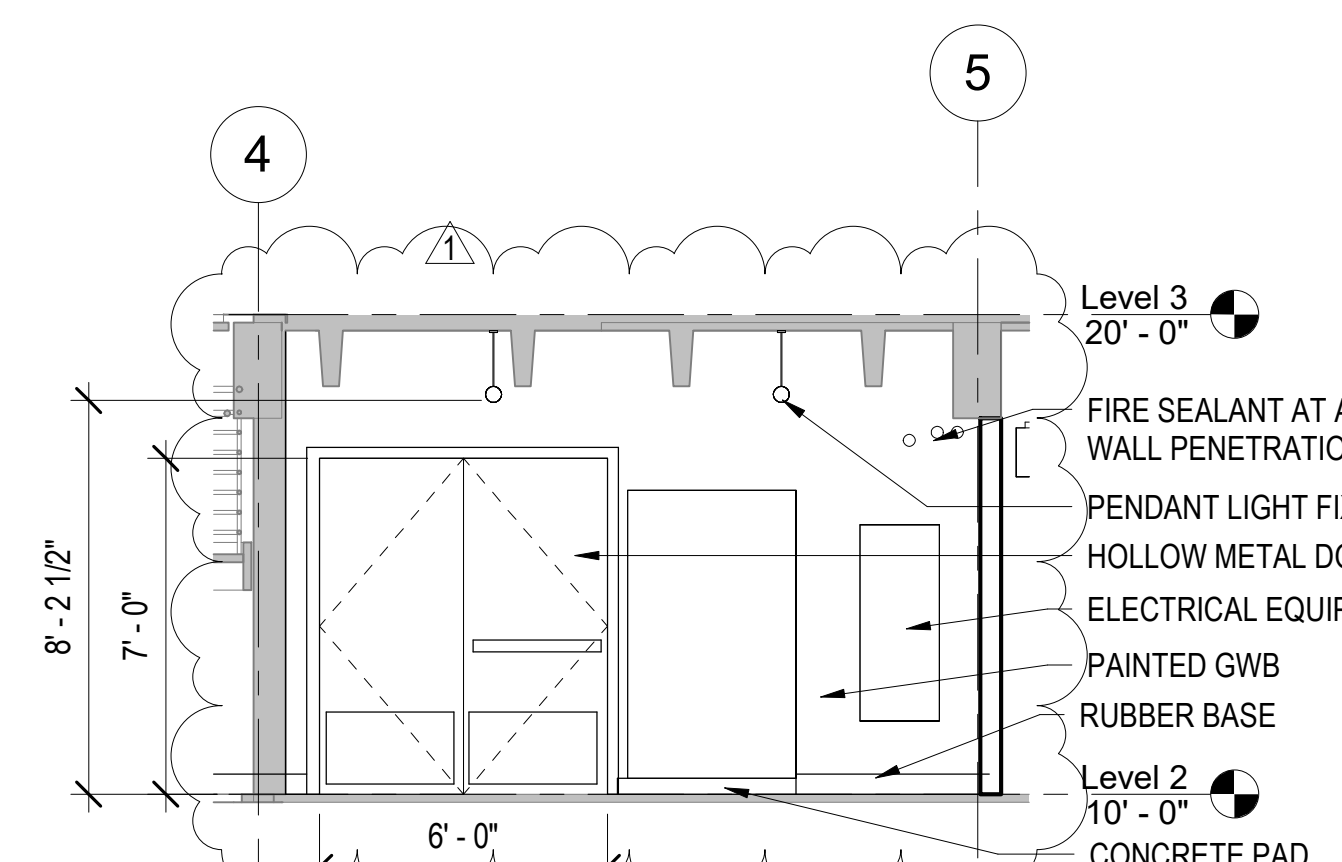
1 LEVEL 2 FLOOR PLAN  
1/4" = 1'-0"



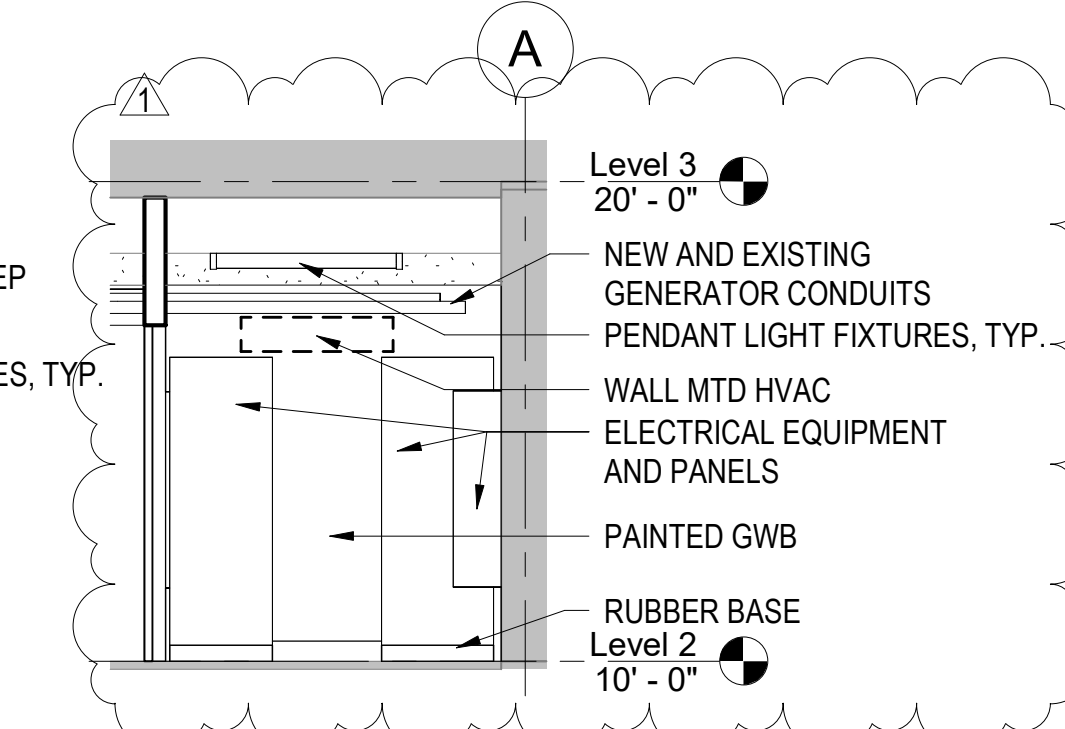
4 MAIN ELECTRICAL ROOM - SOUTH ELEVATION  
1/4" = 1'-0"



5 MAIN ELECTRICAL ROOM - WEST ELEVATION  
1/4" = 1'-0"



2 MAIN ELECTRICAL ROOM - NORTH ELEVATION  
1/4" = 1'-0"



3 MAIN ELECTRICAL ROOM - EAST ELEVATION  
1/4" = 1'-0"





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**SECTIONS**

Setty Project Number SIPQ251916.02

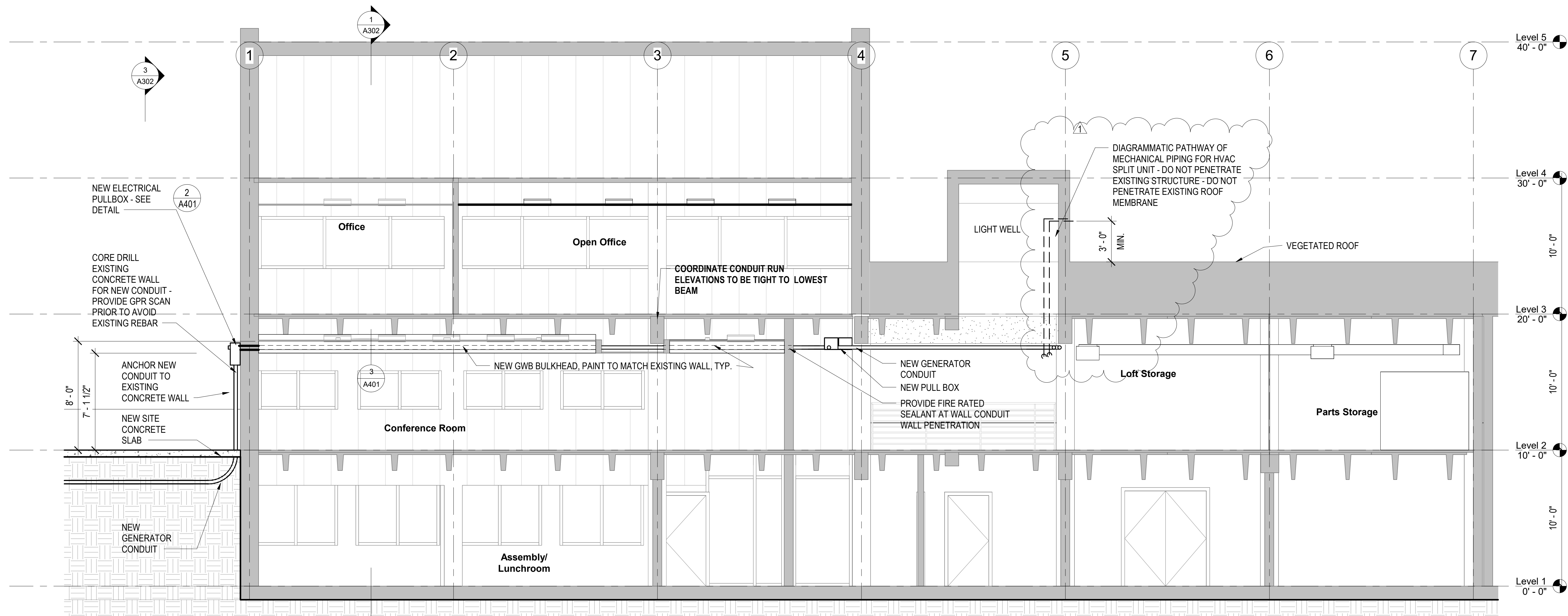
Date 01/21/2026

Drawn By JE

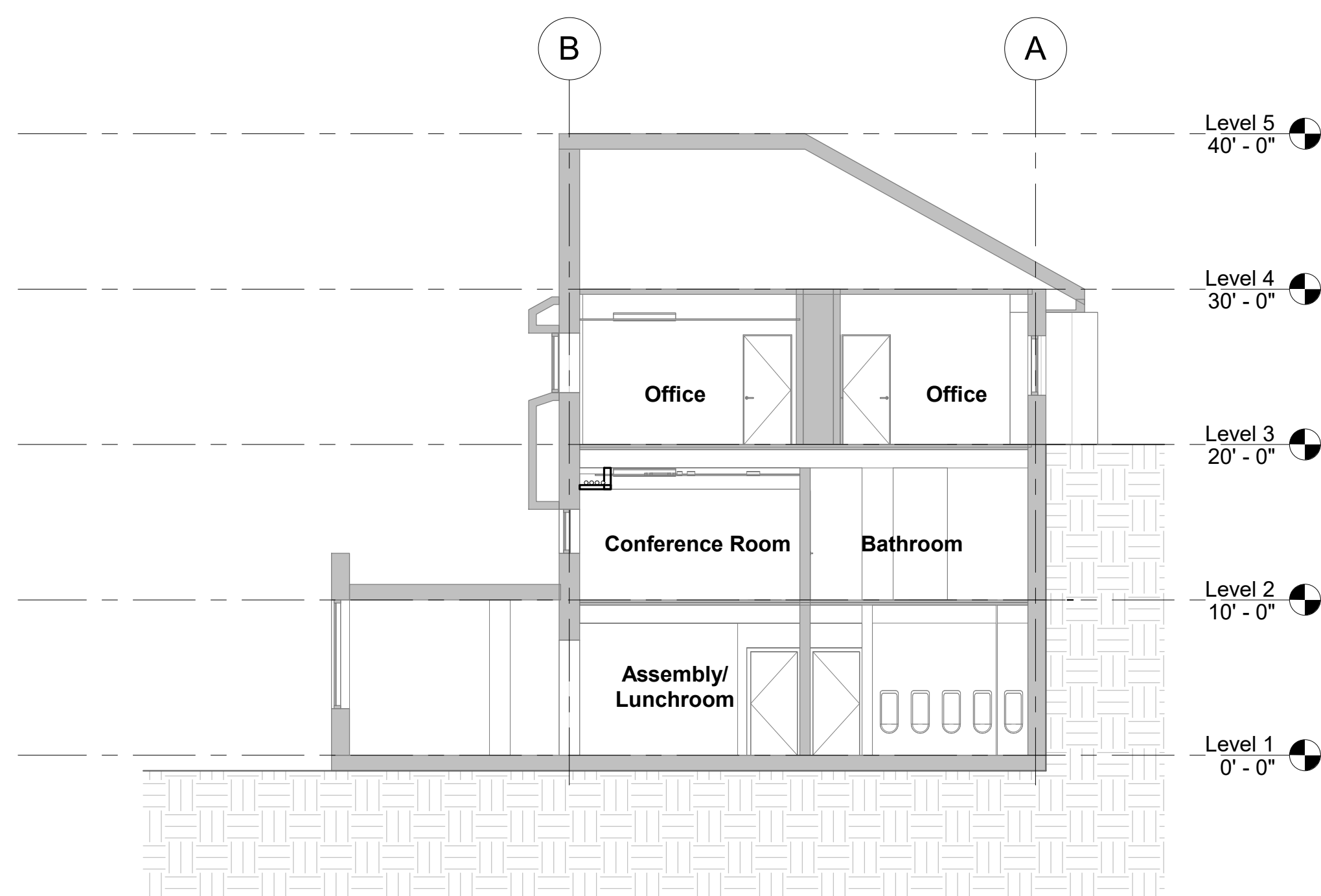
Checked By KBL

**A302**

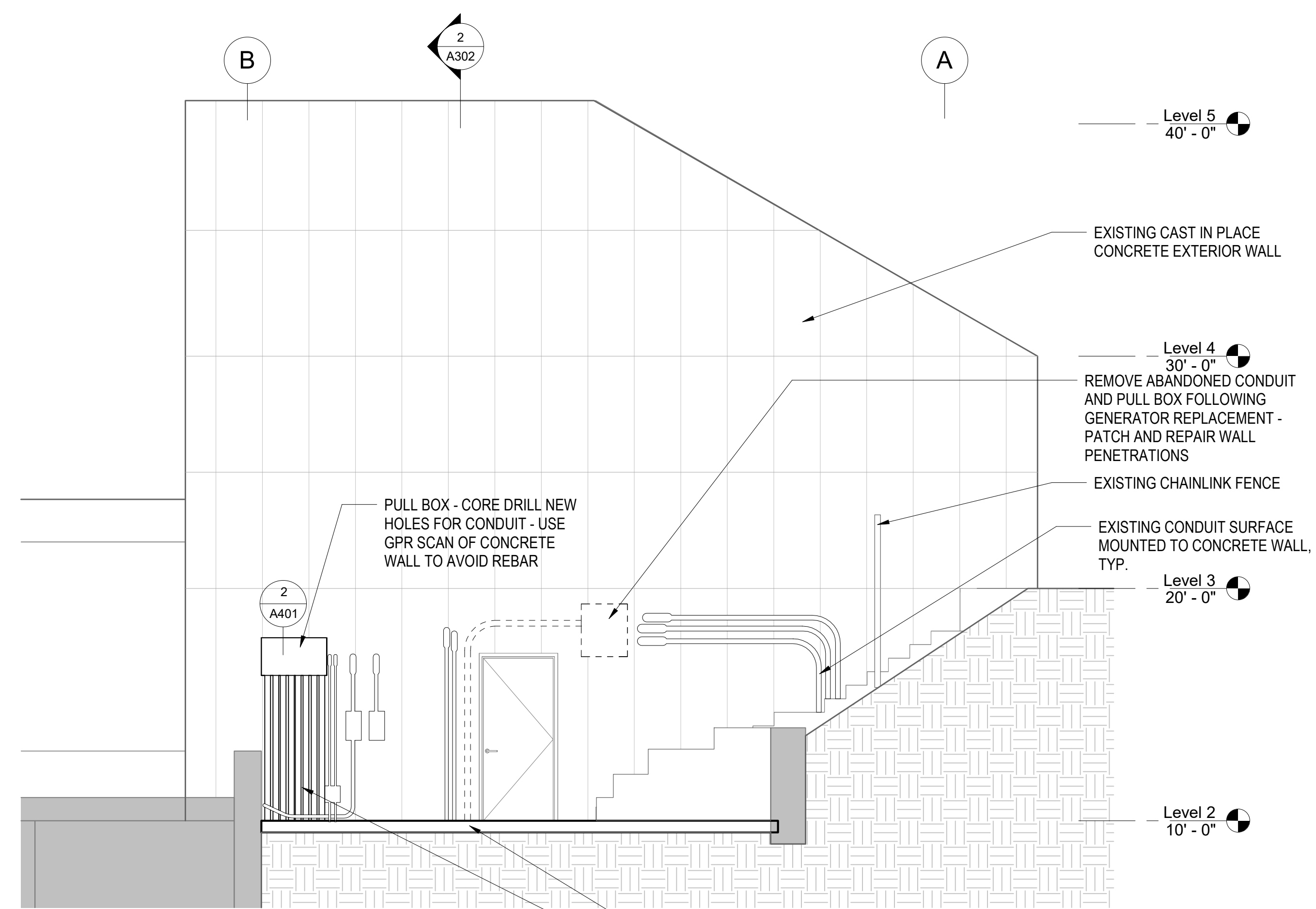
Scale As indicated



2 Section 3  
1/4" = 1'-0"



1 DIAGRAMMATIC CROSS SECTION  
1/8" = 1'-0"



3 EXTERIOR WEST ELEVATION  
1/4" = 1'-0"

#1  
N=537078.1381  
E=1246479.8899  
ELEV=405.60  
X-Cut Set

#2  
N=536943.6567  
E=1246515.5218  
ELEV=412.30  
X-Cut Set



1 DEMOLITION SITE PLAN - PUBLIC WORKS  
1/16" = 1'-0"

2 ELECTRICAL ENLARGED PLAN - DEMOLITION  
1/4" = 1'-0"

**GENERAL NOTES**

1. REFER TO DRAWING E001 FOR ELECTRICAL GENERAL NOTES, LEGEND, AND ABBREVIATIONS, TO DRAWINGS E021 FOR POWER RISER DIAGRAM.
2. SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION, MOUNTING HEIGHTS, AND ADDITIONAL INFORMATION, PRIOR TO ROUGH-IN WORK.
3. FIELD COORDINATE THE EXACT LOCATION OF UNDERGROUND CONDUITS WITH ALL OTHER UNDERGROUND UTILITIES AND THE SITE CONDITIONS.
4. INSTALLATION SHALL CONFORM TO N.E.C. ARTICLE 300-5.
5. UTILIZE HAND DIGGING WHERE WORK IS REQUIRED IN THE VICINITY OF KNOWN UNDERGROUND UTILITIES. TAKE ALL NECESSARY PRE CAUTIONS SO NO EXISTING UTILITIES GET ACCIDENTALLY DAMAGED.
6. THE CONTRACTOR IS RESPONSIBLE FOR THE IDENTIFICATION, VERIFICATION, AND PROTECTION OF ALL EXISTING UTILITIES WITHIN THE PROJECT SITE.

**SHEET KEY NOTES**

1. DEMOLISH EXISTING 100KW, 208V, 3PH, 4W DIESEL GENERATOR. REMOVE ALL ASSOCIATED ACCESSORIES BACK TO SOURCE OF SUPPLY. CONTRACTOR TO COORDINATE WITH COG TO TEMPORARILY STORE THE EXISTING GENERATOR. CONTRACTOR SHALL BE RESPONSIBLE FOR EXTRACTING AND DISPOSING OF THE FUEL.
2. DEMOLISH EXISTING LIGHT FIXTURE. REFER TO DRAWING E101 FOR ADDITIONAL NEW WORK INFORMATION.
3. DEMOLITION OF THE EXISTING GENERATOR AND ATS SHALL NOT COMMENCE UNTIL THE NEW GENERATOR AND ATS ARE FULLY INSTALLED, TESTED, AND PLACED INTO OPERATIONAL SERVICE.
4. DEMOLISH EXISTING 208V, 3PH, 400A ATS. DISCONNECT AND REMOVE ALL ASSOCIATED CONDUIT/WIRING BACK TO SOURCE OF SUPPLY.
5. DEMOLISH EXISTING 240V, 200A DISCONNECT SWITCH. DISCONNECT AND REMOVE ALL ASSOCIATED CONDUIT/WIRING BACK TO SOURCE OF SUPPLY.
6. CONTRACTOR TO ABANDON THE EXISTING CONDUIT IN PLACE AND REMOVE THE EXISTING WIRING.

**LINE TYPE LEGEND**

- EXISTING FEEDERS/EQUIPMENT TO REMAIN
- EXISTING FEEDERS/EQUIPMENT TO BE DEMOLISHED
- EXISTING UNDERGROUND CABLES/FEEDERS TO REMAIN

CONTRACTOR TO TRACE ALL EXISTING UNDERGROUND UTILITY FEEDER/CONDUITS PRIOR TO NEW WORK.



CITY OF GAITHERSBURG  
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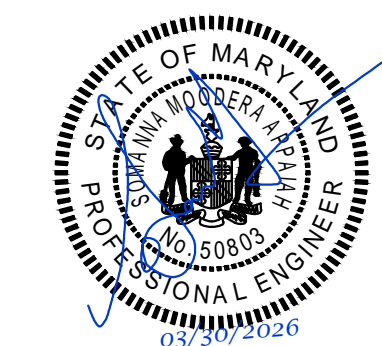


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CARBONADO DESIGN  
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WASHINGTON, DC 20016

STRUCTURAL  
SPYDER ENGINEERS  
727 DOWERS ROAD  
ABINGDON, MARYLAND 21009

CIVIL:  
LANGAN  
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SUITE 450 ARLINGTON, VA  
22209-2323

PROJECT NAME:  
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PUBLIC WORKS GENERATOR  
REPLACEMENT



Project Status

No.	Description	Date
1	100% DESIGN DEVELOPMENT	07/18/2025
2	90% CONSTRUCTION DOCUMENT	09/08/2025
3	100% CONSTRUCTION DOCUMENT	10/29/2025
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▲	ADDENDUM #1	03/30/2026

**ELECTRICAL SITE  
DEMOLITION PLAN**

Setty Project Number SIPO251916.02

Date 01/21/2026

Drawn By RK

Checked By SM

**ED002**

Scale As indicated

CONDUCTORS & CONDUITS SCHEDULE					
FEEDER SYMBOL	AMPACITY	WIRE SIZE AWG/KCMIL	CONDUIT SIZE	TYPE	REMARKS
①	230	4#4/0 AWG+1#4 AWG G	2 1/2"	EXISTING	
②	110	4#1 AWG+1#6 AWG G	1 1/2"	EXISTING	

**GENERAL NOTES**

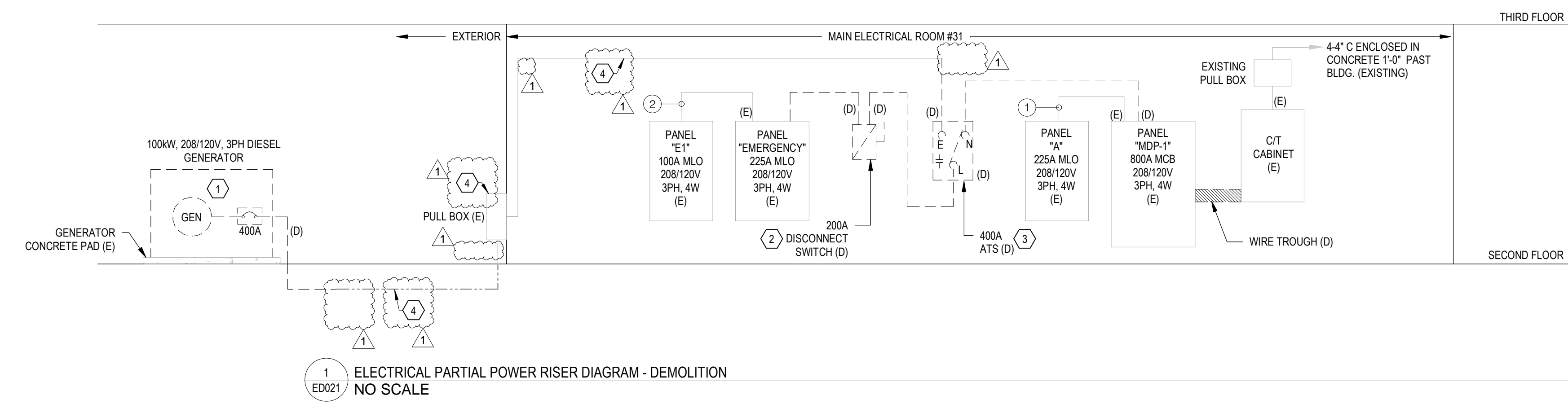
- EXISTING FEEDER SIZES ARE SHOWN FOR REFERENCE ONLY. IN ACCORDANCE WITH EXISTING BUILDING DRAWINGS, CONTRACTOR SHALL FIELD VERIFY EXISTING FEEDER SIZES AND IF FEEDER ARE COPPER OR ALUMINUM, WHERE FEEDERS ARE SMALLER THAN THE SIZE SHOWN ON THIS DRAWINGS, CONTRACTOR SHALL VERIFY WITH ARCHITECT AND BUILDING OWNER FOR CORRECTIONS ON EXISTING CONDITIONS.
- UNLESS OTHERWISE NOTED, ALL ELECTRICAL EQUIPMENT, PANELS AND FEEDERS ARE EXISTING TO REMAIN AND SHOWN FOR REFERENCE ONLY.

**SHEET KEY NOTES**

- DEMOLISH EXISTING 100KW, 208V, 3PH, 4W DIESEL GENERATOR. REMOVE ALL ASSOCIATED ACCESSORIES BACK TO SOURCE OF SUPPLY. CONTRACTOR TO COORDINATE WITH COG TO TEMPORARY STORE THE EXISTING GENERATOR. CONTRACTOR SHALL BE RESPONSIBLE FOR EXTRACTING AND DISPOSING OF THE FUEL.
- DEMOLISH EXISTING 240V, 200A DISCONNECT SWITCH. DISCONNECT AND REMOVE ALL ASSOCIATED CONDUIT/WIRING BACK TO SOURCE OF SUPPLY.
- DEMOLISH EXISTING 208V, 3PH, 400A ATS. DISCONNECT AND REMOVE ALL ASSOCIATED CONDUIT/WIRING BACK TO SOURCE OF SUPPLY.
- CONTRACTOR TO ABANDON THE EXISTING CONDUIT IN PLACE AND REMOVE THE EXISTING WIRING.

**LINE TYPE LEGEND**

- EXISTING FEEDERS/EQUIPMENT TO BE DEMOLISHED
- EXISTING FEEDERS/EQUIPMENT TO BE REMAIN
- EXISTING UNDERGROUND CABLES/FEEDERS TO REMAIN



1 ED021 ELECTRICAL PARTIAL POWER RISER DIAGRAM - DEMOLITION  
NO SCALE



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**ELECTRICAL  
PARTIAL POWER  
RISER DIAGRAM -  
DEMOLITION**

Setty Project Number SIPQ251916.02  
Date 01/21/2026  
Drawn By RK  
Checked By SM

**ED021**  
Scale 1/8" = 1'-0"



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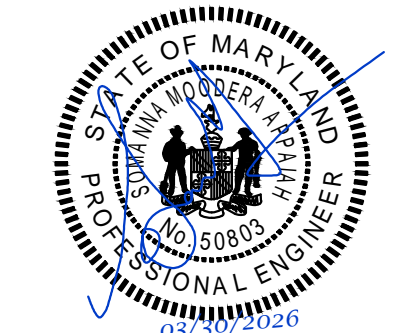
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## ELECTRICAL SITE PLAN - NEW WORK

Setty Project Number SIPQ251916.02

Date 01/21/2026

Drawn By RK

Checked By SM

# E002

Scale As indicated

### GENERAL NOTES

- REFER TO DRAWING E001 FOR ELECTRICAL GENERAL NOTES, LEGEND, AND ABBREVIATIONS. TO DRAWINGS E021 FOR POWER RISER DIAGRAM.
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- THE CONTRACTOR IS RESPONSIBLE FOR THE IDENTIFICATION, VERIFICATION, AND PROTECTION OF ALL EXISTING UTILITIES WITHIN THE PROJECT SITE.

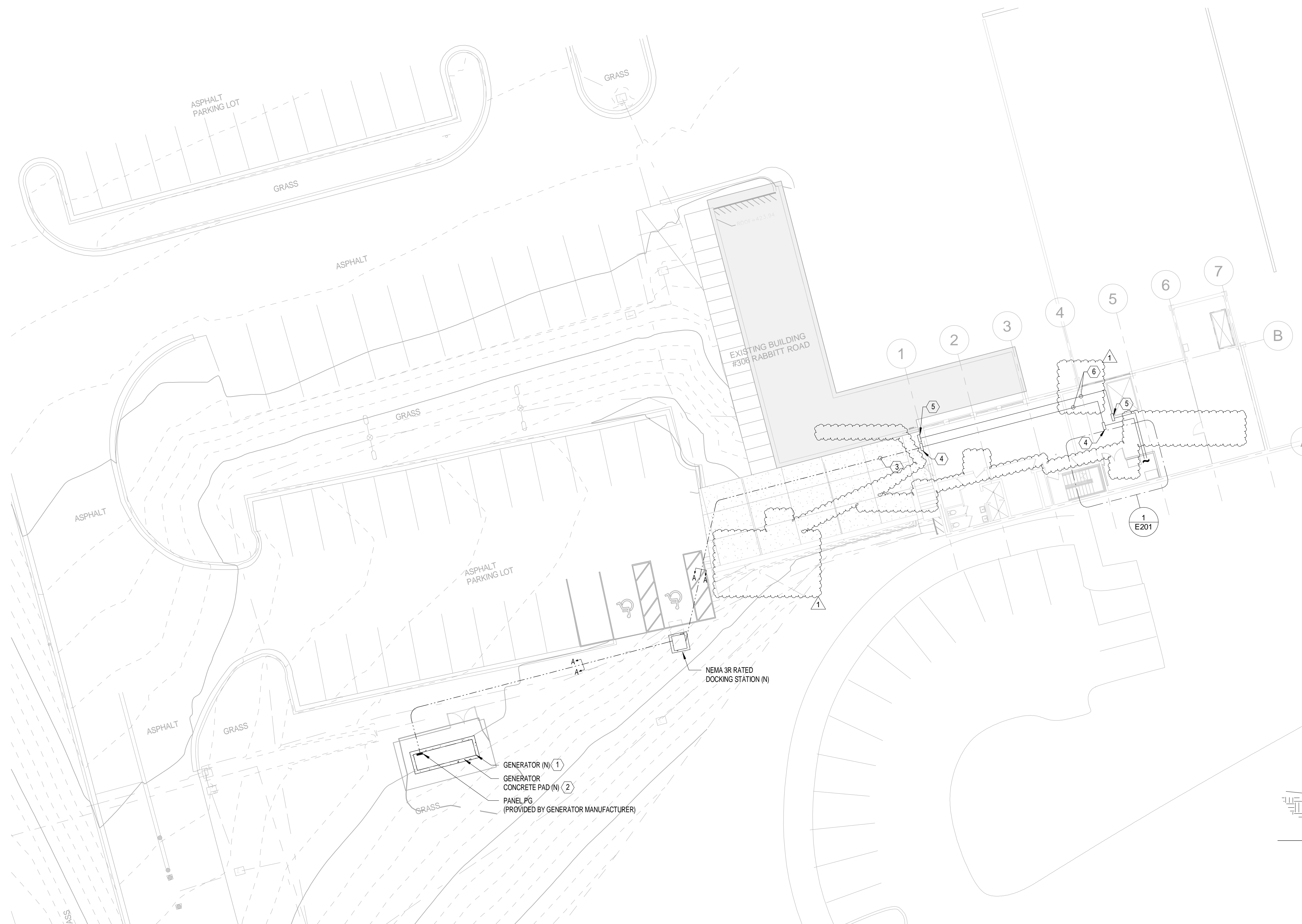
### SHEET KEY NOTES

- 200KW, 208/120V, 3PH, 4W, 60 HZ DIESEL ENGINE EMERGENCY/STANDBY GENERATOR ON CONCRETE EQUIPMENT PAD EQUIPPED WITH ELECTRONIC TRIP BREAKER AND SKID MOUNTED FUEL TANK SUFFICIENT FOR 48 HOURS OPERATION AT FULL LOAD. INSTALL GENERATOR IN MINIMUM LEVEL II SOUND ATTENUATING WEATHERPROOF ENCLOSURE. CONTRACTOR TO ENSURE SOUND LEVELS COMPLY WITH REQUIREMENTS OF ALL LOCAL ZONING ORDINANCES AND OF AUTHORITY HAVING JURISDICTION. THE ON-SITE GENERATOR IS NOT A SEPARATELY DERIVED SYSTEM AS THE NEUTRAL IS SOLIDLY CONNECTED TO A SERVICE SUPPLIED SYSTEM NEUTRAL. BREAKER SHALL BE LOCKABLE IN THE OPEN POSITION PER NEC ARTICLE 445.18 PROVIDE WARNING SIGN FOR GENERATOR GROUNDED AS NON-SEPARATELY DERIVED SYSTEM. FUEL TANK PROVIDED WITH FUEL LEAK DETECTION, LOW/HIGH WARNING, OVERFILL WARNING, SPILL PREVENTION, PROVIDED WITH LOCAL AUDIBLE AND VISIBLE ALARMS AND MONITORED VIA BAS. BASIS OF DESIGN: MANUFACTURER: GENERAC, MODEL: SD200.
- CONCRETE PAD TO HAVE CHAMFERED EDGES AND BE SIZED TO PROVIDE 6" EXTENSION PAST GENSET BASE ON ALL SIDES.
- CONTRACTOR TO FIELD VERIFY AND FOLLOW THE SAME PATHWAY FOR ADDITIONAL CONDUITS FOR 2" FOR CONTROLS AND GENERATOR ANNUNCIATOR AND 1 1/4" CONDUIT FOR PG PANEL INSIDE THE GENERATOR. REFER TO DUCT BANK DETAILS ON THIS DRAWING FOR ADDITIONAL INFORMATION. POWER THE PG PANEL FROM MDP. REPLACE 100A-3P SPARE CB WITH 60A-3P TO POWER PANEL PG.
- CONTRACTOR TO COORDINATE EXACT 24"X24"X8 PULL BOX LOCATION WITH FIELD CONDITIONS.
- CONTRACTOR TO PROVIDE (2) 2" FOR CONTROLS ROUTED THROUGH A 15"X12"X8" PULL BOX. COORDINATE EXACT PULL BOX LOCATION WITH FIELD CONDITIONS.
- CONTRACTOR SHALL FIELD-VERIFY ALL CEILING SPACE CONDITIONS AND COORDINATE ROUTING OF GENERATOR CONDUITS, DUCTWORK, AND ALL OTHER BUILDING SERVICES TO AVOID CONFLICTS. DUE TO LIMITED CLEARANCES, CONTRACTOR SHALL ALLOCATE ADEQUATE SPACE, SEQUENCING, AND INSTALLATION METHODS IN THEIR BID TO ENSURE ALL SYSTEMS CAN BE INSTALLED WITHOUT IMPACTING CEILING HEIGHTS, ACCESS CLEARANCES, OR ADJACENT TRADES. ANY REQUIRED OFFSETS, REROUTING, OR PROFILE ADJUSTMENTS SHALL BE INCLUDED IN THE CONTRACTOR'S COORDINATED INSTALLATION PLAN AT NO ADDITIONAL COST TO THE OWNER.

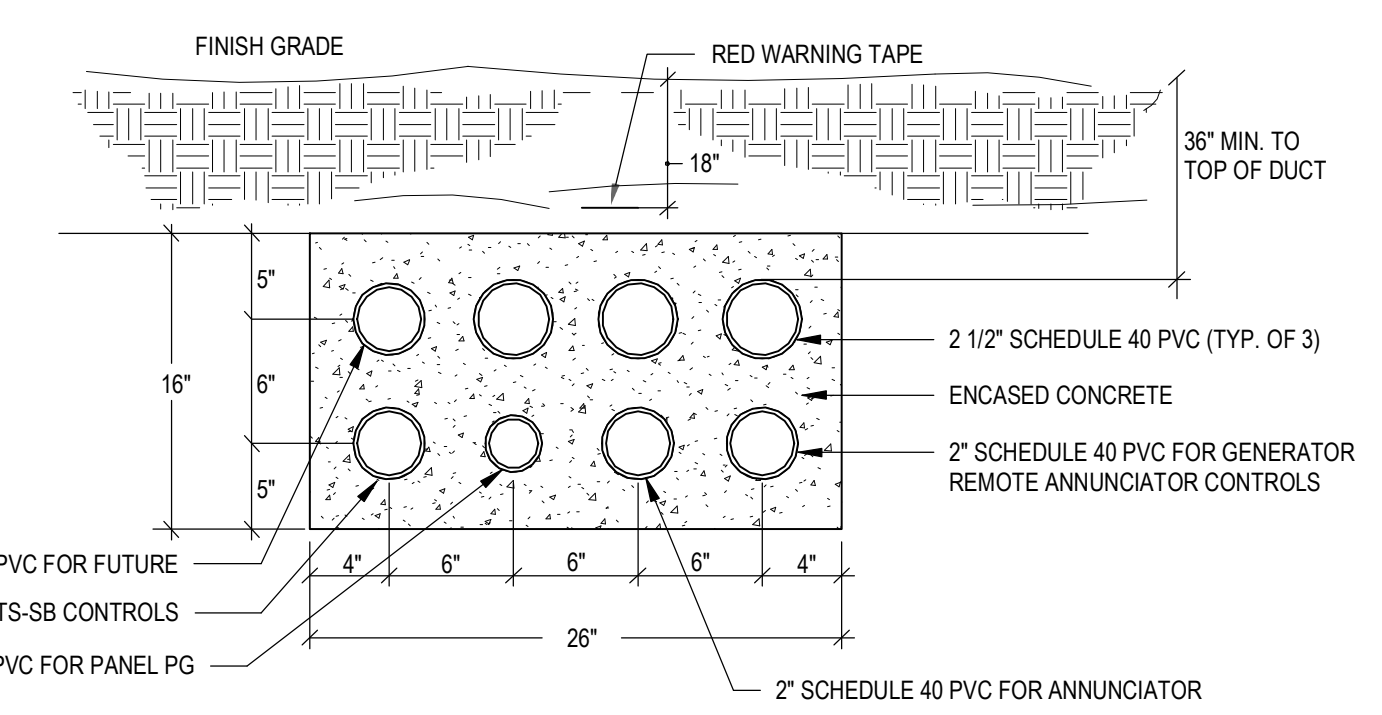
### LINE TYPE LEGEND

- NEW UNDERGROUND FEEDERS
- NEW FEEDERS/EQUIPMENT TO BE PROVIDED
- - - EXISTING UNDERGROUND CABLES/FEEDERS TO REMAIN
- EXISTING FEEDER/EQUIPMENT TO BE REMAIN

CONTRACTOR TO TRACE ALL EXISTING UNDERGROUND UTILITY FEEDER/CONDUITS PRIOR TO NEW WORK.



1 SITE NEW PLAN - PUBLIC WORKS  
E002 1/16" = 1'-0"



- NOTE:
- DUCT BANK DETAIL SHOWN FOR REFERENCE ONLY. COORDINATE IN FIELD FOR EXACT DUCT BANK CONFIGURATION AND ADDITIONAL REQUIREMENTS.
- 2 8 WAY (4HX2V) DUCT BANK (A-A)  
NO SCALE



CITY OF GAITHERSBURG  
800 RABBIT ROAD  
GAITHERSBURG, MD 20878

CONSULTANTS:

PRIME CONSULTANT / MEP ENGINEER:



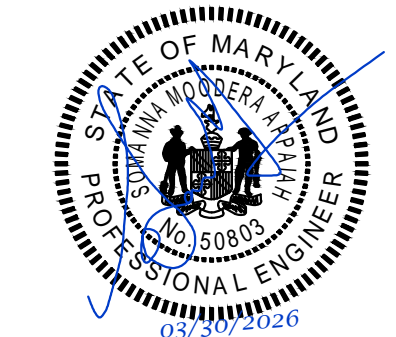
415 EAST MARKET STREET, SUITE 100  
CHARLOTTESVILLE, VA 22902  
P: 434-270-2201  
www.SETTY.com  
PROJECT NUMBER: SIPO251916.02

ARCHITECTURAL:  
CARBONADO DESIGN  
4509 WESTERN AVE NW  
WASHINGTON, DC 20016

STRUCTURAL  
SPYDER ENGINEERS  
727 DOWERS ROAD  
ABINGDON, MARYLAND 21009

CIVIL:  
LANGAN  
1300 WILSON BOULEVARD  
SUITE 450 ARLINGTON, VA  
22209-2323

PROJECT NAME:  
CITY OF GAITHERSBURG  
PUBLIC WORKS GENERATOR  
REPLACEMENT



Project Status

No.	Description	Date
1	100% DESIGN DEVELOPMENT	07/18/2025
2	90% CONSTRUCTION DOCUMENT	09/08/2025
3	100% CONSTRUCTION DOCUMENT	10/29/2025
4	BID DOCUMENTS	01/21/2026
▲	ADDENDUM #1	03/30/2026

ELECTRICAL  
LIGHTING AND FIRE  
ALARM PLAN -  
LEVEL 2 - NEW  
WORK

Setty Project Number SIPO251916.02

Date 01/21/2026

Drawn By RK

Checked By SM

E101

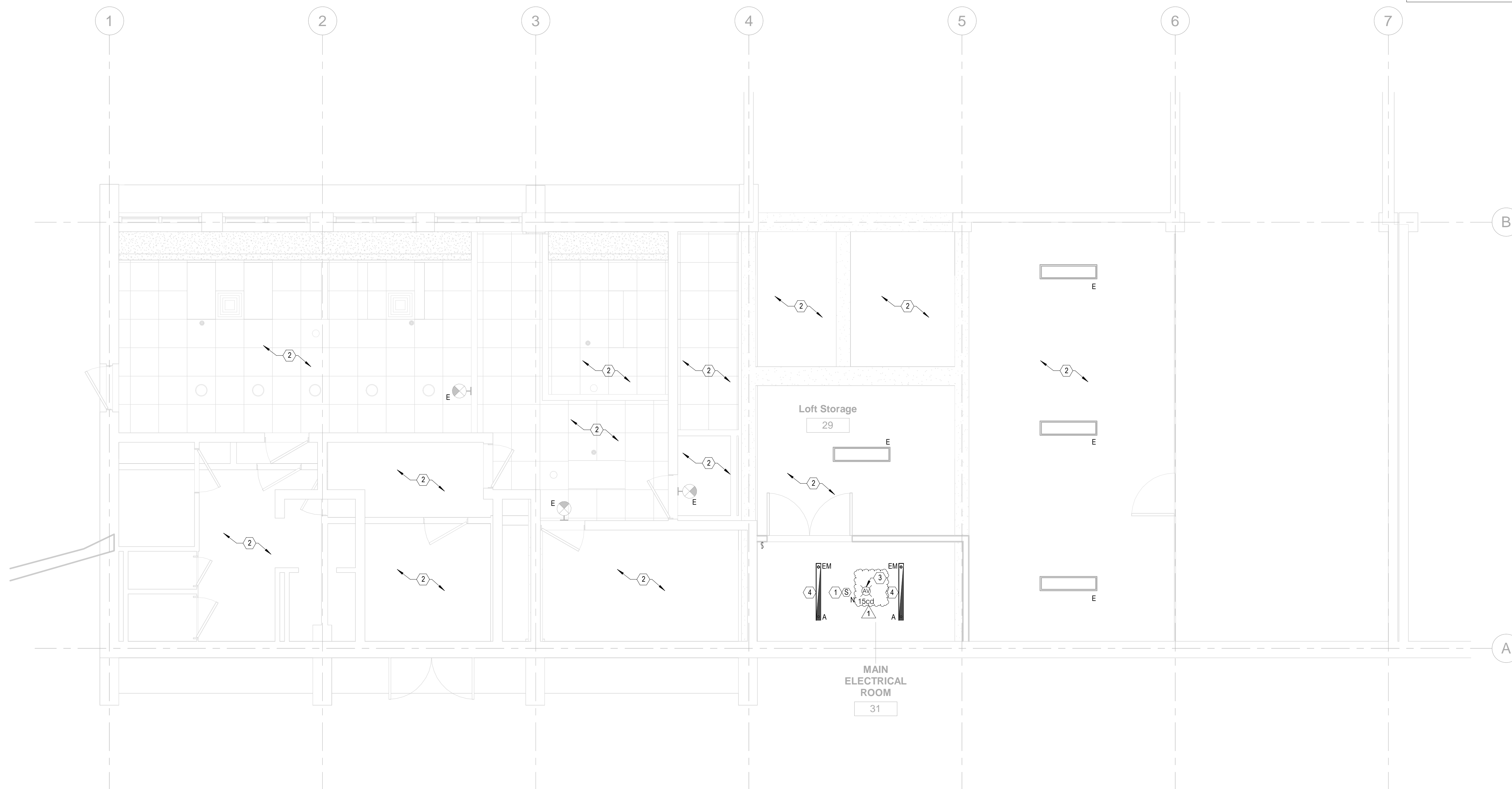
Scale As indicated

GENERAL NOTES

- REFER TO THE ELECTRICAL COVER SHEET DRAWING FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
- LOCATION OF FIXTURES AND DEVICES SHOWN ON PLANS ARE DIAGRAMMATIC ONLY. REFER TO ARCHITECTURAL DRAWINGS TO VERIFY THE ELEVATIONS, DETAILS, LOCATION, MOUNTING HEIGHTS AND ADDITIONAL INFORMATION PRIOR TO THE ROUGH-IN OF ELECTRICAL FIXTURES AND DEVICES.
- AT THE COMPLETION OF CONSTRUCTION, CLEAN LENSES AND REFLECTORS OF ALL LIGHTING FIXTURES IN THE CONTRACT AREA AND RENDER THEM FREE OF ANY MATERIAL, SUBSTANCE OR FILM FOREIGN TO THE FIXTURES. BLEMISHED, DAMAGED OR UNSATISFACTORY FIXTURES ARE TO BE REPLACED IN A SATISFACTORY MANNER.

# SHEET KEY NOTES

- SMOKE DETECTOR SHALL BE INTERFACED WITH THE EXISTING FIRE ALARM SYSTEM. CONTRACTOR TO MATCH THE EXISTING DEVICE SPECIFICATION AND REPROGRAM THE FIRE ALARM CONTROL PANEL FOR THE UPDATED SEQUENCE OF OPERATION.
- UNLESS OTHERWISE NOTED, ALL EXISTING LIGHT FIXTURES AND FIRE ALARM DEVICES SERVING THIS AREA ARE EXISTING TO BE REMAIN.
- FIRE ALARM COMBINATION AUDIO (SPEAKER/HORN)/VISUAL DEVICE SHALL BE INTERFACED WITH THE EXISTING FIRE ALARM SYSTEM. CONTRACTOR TO MATCH THE EXISTING DEVICE SPECIFICATION AND REPROGRAM THE FIRE ALARM CONTROL PANEL FOR THE UPDATED SEQUENCE OF OPERATION.
- CONNECT TO EXISTING LIGHTING CIRCUIT SERVING THIS AREA.



1 ELECTRICAL LIGHTING AND FIRE ALARM PLAN - LEVEL 2 - NEW WORK  
E101 1/4" = 1'-0"



CITY OF GAITHERSBURG  
800 RABBIT ROAD  
GAITHERSBURG, MD 20878

CONSULTANTS:

PRIME CONSULTANT / MEP ENGINEER:



415 EAST MARKET STREET, SUITE 100  
CHARLOTTESVILLE, VA 22902  
P: 434-270-2201  
www.SETTY.com  
PROJECT NUMBER: SIPQ251916.02

ARCHITECTURAL:  
CARONADO DESIGN  
4509 WESTERN AVE NW  
WASHINGTON, DC 20016

STRUCTURAL  
SPYDER ENGINEERS  
727 DOWERS ROAD  
ABINGDON, MARYLAND 21009

CIVIL:  
LANGAN  
1300 WILSON BOULEVARD  
SUITE 450 ARLINGTON, VA  
22209-2323

PROJECT NAME:  
CITY OF GAITHERSBURG  
PUBLIC WORKS GENERATOR  
REPLACEMENT



Project Status

No.	Description	Date
1	100% DESIGN DEVELOPMENT	07/18/2025
2	90% CONSTRUCTION DOCUMENT	09/08/2025
3	100% CONSTRUCTION DOCUMENT	10/29/2025
4	BID DOCUMENTS	01/21/2026
▲	ADDENDUM #1	03/30/2026

ENLARGED  
ELECTRICAL POWER  
PLAN - NEW WORK

Setty Project Number SIPQ251916.02

Date 01/21/2026

Drawn By RK

Checked By SM

E201

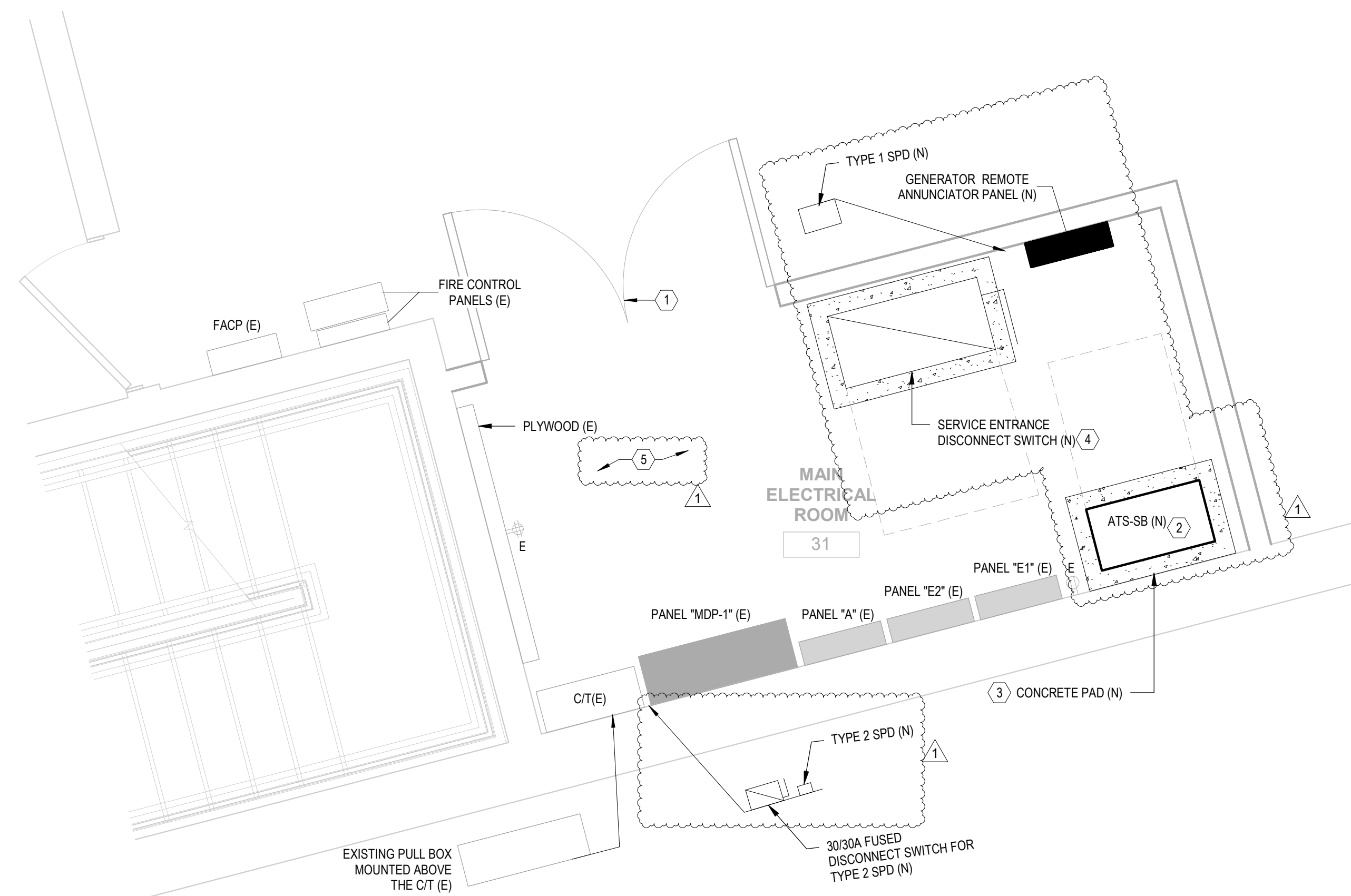
Scale As indicated

GENERAL NOTES

- REFER TO THE ELECTRICAL COVER SHEET DRAWING FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
- REFER TO ARCHITECTURAL DRAWINGS TO VERIFY THE ELEVATIONS, DETAILS, LOCATION, MOUNTING HEIGHTS AND ADDITIONAL INFORMATION PRIOR TO THE ROUGH-IN OF ELECTRICAL DEVICES.
- COORDINATE WITH CONTRACT DOCUMENTS FOR ALL OTHER DISCIPLINES AND TRADES FOR EXACT LOCATION OF ASSOCIATED EQUIPMENT.
- THE CONTINUITY OF EXISTING CIRCUITS SERVING EXISTING DEVICES AND EQUIPMENT TO REMAIN SHALL BE MAINTAINED.

SHEET KEY NOTES

- DOORS MUST BE EQUIPPED WITH LISTED PANIC HARDWARE PER NEC-110.26(C)(3).
- AUTOMATIC TRANSFER SWITCH 800A (ATS-SB), 240V, 3-POLE + SOLID NEUTRAL, 100WCR EQUIPPED WITH INTEGRAL TYPE 2 SURGE PROTECTIVE DEVICE. BASIS OF DESIGN: MANUFACTURER: ASCO, MODEL 300 SERIES ▲
- REFER TO DETAIL #5 ON DRAWING E701 FOR ATS CONCRETE PAD DETAILS.
- SERVICE RATED DISCONNECT SWITCH 800A, 240V, 3-POLE WITH 800A FUSES, 100KAIC. BASIS OF DESIGN: MANUFACTURER: SCHNEIDER, MODEL: H327N. ▲
- PROVIDE A SEALED UTILITY TROUGH TO ROUTE AND PROTECT THE WIRING BETWEEN THE CT AND SERVICE RATED DISCONNECT SWITCH.



1 ENLARGED ELECTRICAL POWER PLAN - LEVEL 2 - NEW WORK  
E201 1/2" = 1'-0"



CITY OF GAITHERSBURG  
800 RABBIT ROAD  
GAITHERSBURG, MD 20878

CONSULTANTS:  
PRIME CONSULTANT / MEP ENGINEER:

**SETTY**<sup>TM</sup>

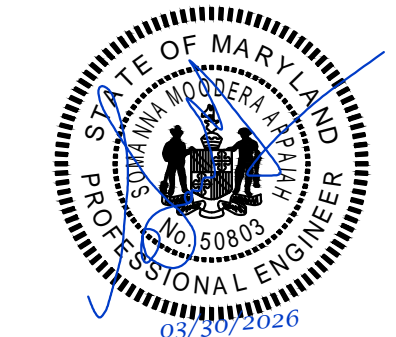
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STRUCTURAL  
SPYDER ENGINEERS  
727 DOWERS ROAD  
ABINGDON, MARYLAND 21009

CIVIL:  
LANGAN  
1300 WILSON BOULEVARD  
SUITE 450 ARLINGTON, VA  
22209-2323

PROJECT NAME:  
CITY OF GAITHERSBURG  
PUBLIC WORKS GENERATOR  
REPLACEMENT



Project Status

No.	Description	Date
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2	90% CONSTRUCTION DOCUMENT	09/08/2025
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4	BID DOCUMENTS	01/21/2026
▲	ADDENDUM #1	03/30/2026

## FLOOR PLAN, DETAILS, CONTROLS, AND SCHEDULE - MECHANICAL WORK

Setty Project Number SIPQ251916.02

Date 01/21/2026

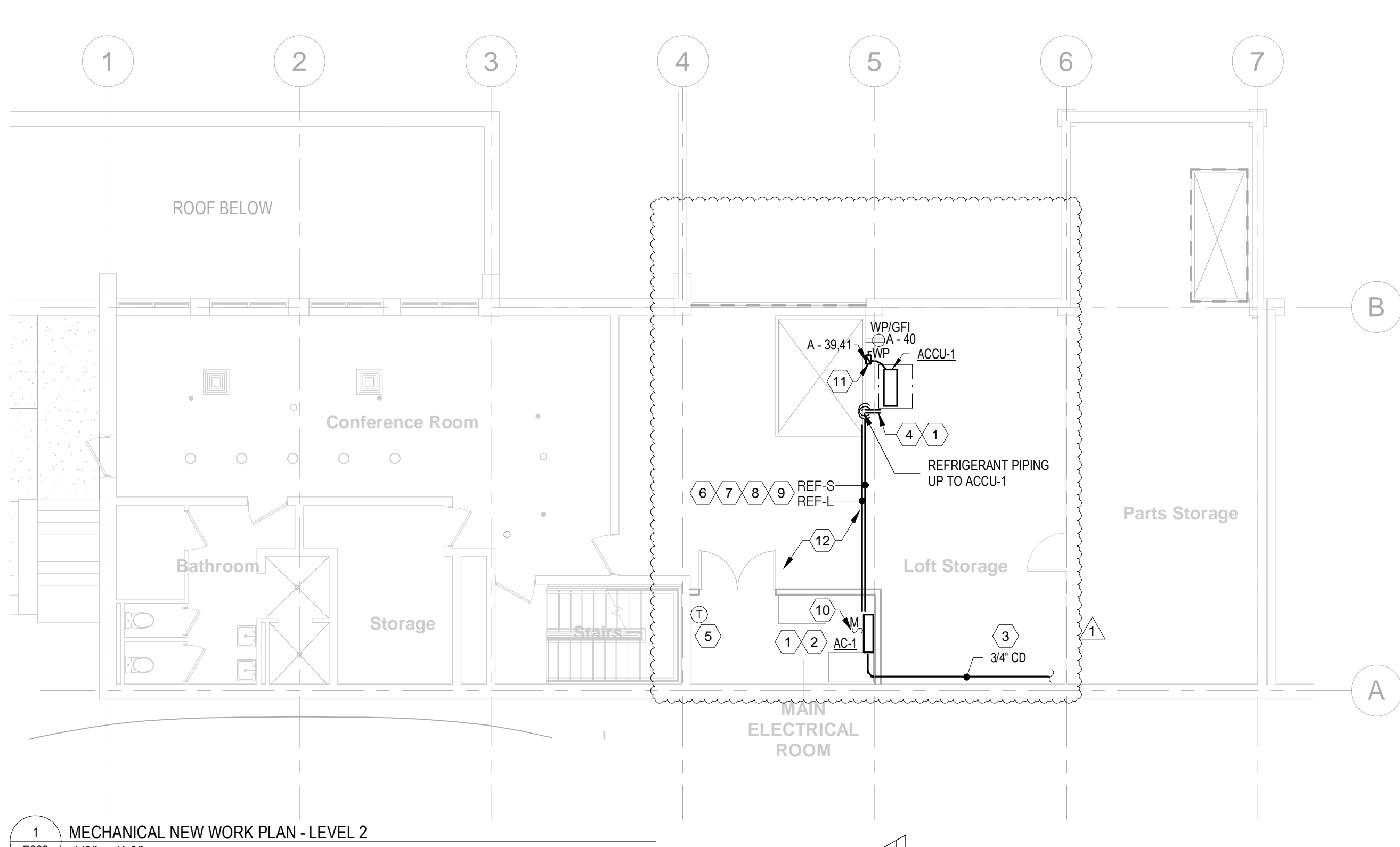
Drawn By RK

Checked By SM

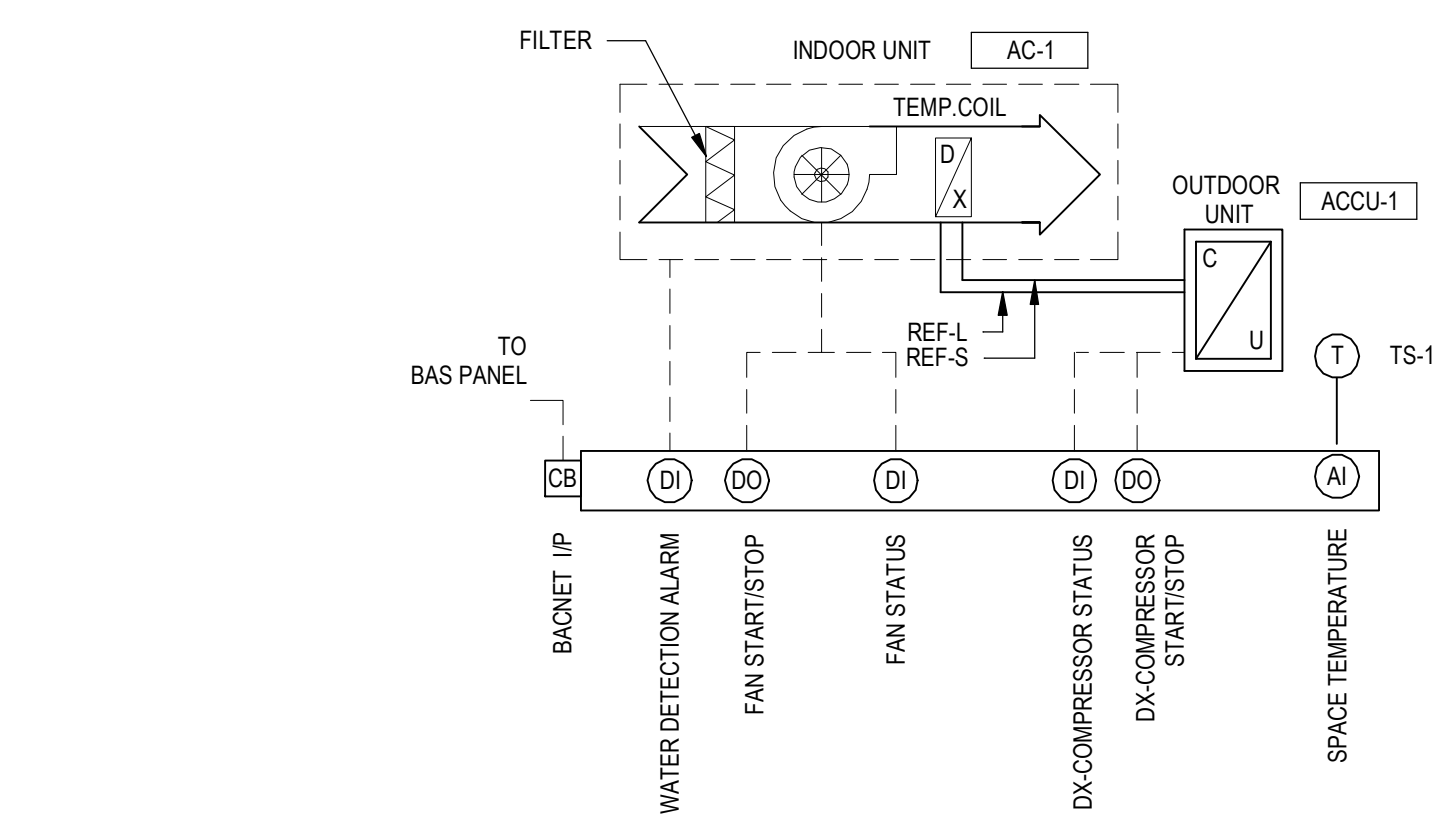
# E202

Scale 1/8" = 1'-0"

- ### # SHEET KEY NOTES
- PROVIDE INDOOR UNIT (AC-1) AND OUTDOOR UNIT (ACCU-1) WITH ASSOCIATED REFRIGERANT PIPING, CONTROLS, SUPPORTS, VIBRATION ISOLATORS, POWER CONNECTIONS, AND MAINTAIN SERVICE CLEARANCES PER MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS.
  - PROVIDE PUMPED CONDENSATE DRAIN FROM INDOOR UNIT (AC-1).
  - 3/4" CONDENSATE DRAIN PIPING SHALL BE CONNECTED TO THE NEAREST OPEN SITE DRAIN WITH AN AIR GAP. RUN CONDENSATE AT 1/8" SLOPE PER FOOT.
  - PROVIDE INSULATION WITH WEATHERPROOF JACKETING FOR ALL EXPOSED REFRIGERANT PIPING.
  - PROVIDE WALL-MOUNTED THERMOSTAT INSTALLED AT A MINIMUM HEIGHT OF 4'-0" A.F.F.
  - PROVIDE REFRIGERANT GAS (SUCTION) AND LIQUID PIPING BETWEEN INDOOR AND OUTDOOR UNITS. INSTALL INSULATION ONLY AFTER PIPING HAS BEEN PRESSURE TESTED.
  - INSULATE SUCTION (GAS) PIPING WITH CLOSED-CELL ELASTOMERIC INSULATION, 3/4" THICK FOR PIPE SIZES UP TO 1.5".
  - INSULATE LIQUID PIPING WITH CLOSED-CELL ELASTOMERIC INSULATION, 1" THICK FOR PIPE SIZES UP TO 1.5".
  - SEAL ALL INSULATION JOINTS VAPOR-TIGHT; INSULATE FITTINGS, VALVES, AND UNIONS SAME AS ADJACENT PIPE; PROVIDE UV-RESISTANT JACKET OUTDOORS.
  - INDOOR UNIT SHALL BE POWERED BY ASSOCIATED OUTDOOR UNIT. COORDINATE WITH MECHANICAL CONTRACTOR FOR ALL REQUIREMENTS AND FINAL CONNECTIONS.
  - POWER AND CONTROL WIRING TO FOLLOW THE SAME PATHWAY AS THE REFRIGERANT LINES. COORDINATE WITH MECHANICAL FOR THE LOCATION OF PENETRATION.
  - CONTRACTOR SHALL FIELD-VERIFY ALL CEILING SPACE CONDITIONS AND COORDINATE ROUTING OF REFRIGERANT PIPING TO AVOID CONFLICTS. DUE TO LIMITED CLEARANCES, CONTRACTOR SHALL ALLOCATE ADEQUATE SPACE, SEQUENCING, AND INSTALLATION METHODS IN THEIR BID TO ENSURE ALL SYSTEMS CAN BE INSTALLED WITHOUT IMPACTING CEILING HEIGHTS, ACCESS CLEARANCES, OR ADJACENT TRADES. ANY REQUIRED OFFSETS, REROUTING, OR PROFILE ADJUSTMENTS SHALL BE INCLUDED IN THE CONTRACTOR'S COORDINATED INSTALLATION PLAN AT NO ADDITIONAL COST TO THE OWNER.



1 MECHANICAL NEW WORK PLAN - LEVEL 2  
1/8" = 1'-0"



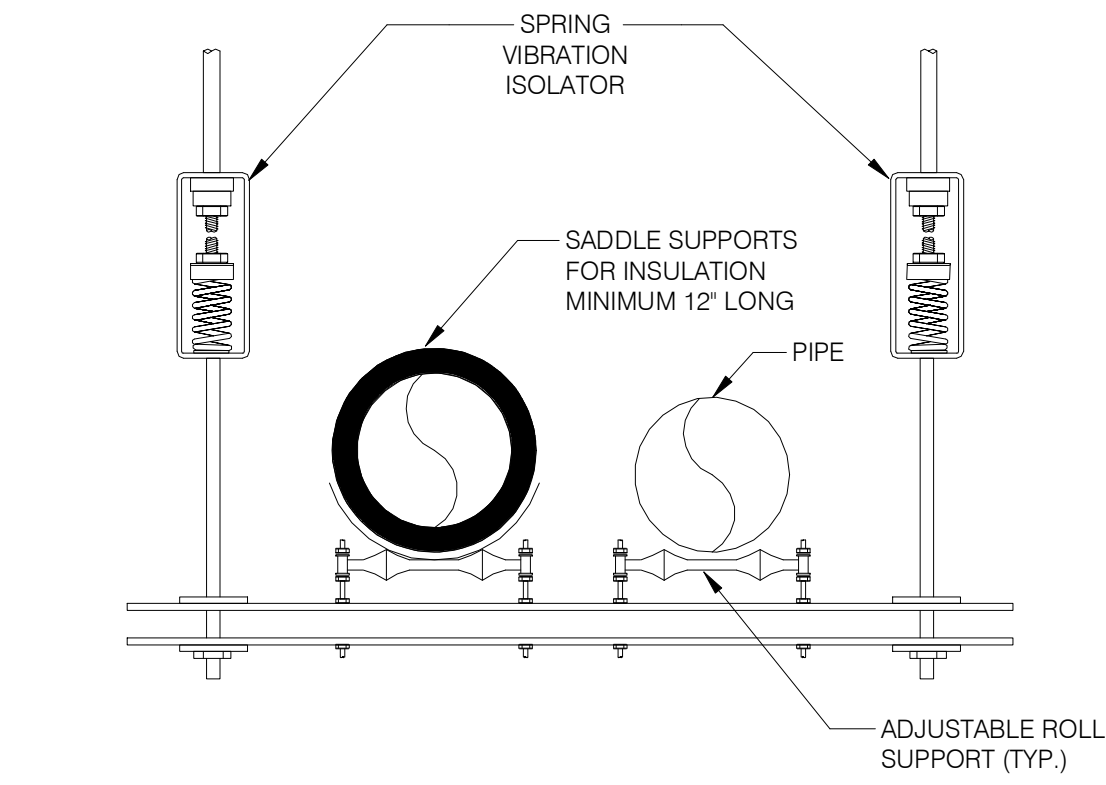
CONTRACTOR SHALL COORDINATE COMPLETE CONTROLS INTEGRATION WITH EQUIPMENT MANUFACTURERS PRIOR TO EQUIPMENT BEING RELEASED. DIAGRAM IS SINGLE LINE AND DOES NOT REPRESENT ACTUAL NUMBER OF POINTS OR THE NUMBER OF CONDUCTORS. CONTRACTOR IS THE CONTROLS INTEGRATOR AND SHALL SUPPLY ALL PARTS, LABOR, PROGRAMS, AND INTELLECTUAL PROPERTY WHICH MAY NOT HAVE BEEN SUPPLIED BY THE MANUFACTURER

#### INDOOR VRV SEQUENCE OF OPERATIONS:

THE UNIT SHALL RUN ACCORDING TO A USER DEFINABLE TIME SCHEDULE IN THE FOLLOWING MODES:  
THE UNIT SHALL MAINTAIN A TEMPERATURE BETWEEN 65 DEG F - 95 DEG F.

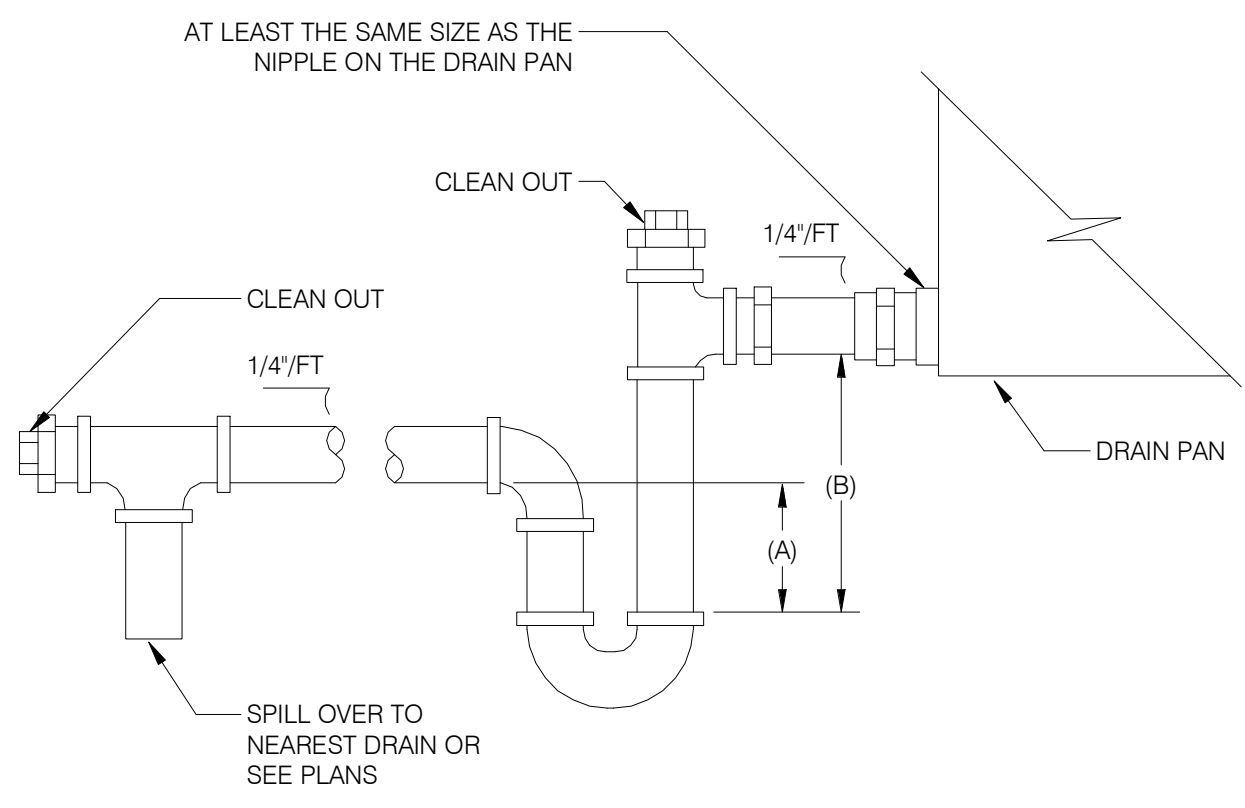
- ZONE SET POINT ADJUST:**
  - THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE COOLING SET POINTS AT THE ZONE SENSOR
- FAN:**
  - THE FAN SHALL RUN ANYTIME THE UNIT IS COMMANDED TO RUN, UNLESS SHUTDOWN ON SAFETIES.
- COIL VALVE:**
  - THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND CYCLE THE COIL VALVE TO MAINTAIN ITS COOLING SET POINT
  - THE COOLING SHALL BE ENABLED WHENEVER THE ZONE TEMPERATURE IS ABOVE COOLING SET POINT AND THE FAN IS ON.
- FAN STATUS:**
  - THE CONTROLLER SHALL MONITOR THE FAN STATUS.
- ALARMS SHALL BE PROVIDED AS FOLLOWS:**
  - HIGH ZONE TEMP. IF THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SET POINT BY A USER DEFINABLE AMOUNT (ADJ).
  - INDOOR FAN FAILURE
  - FILTER SERVICE ALERT
  - COMPRESSOR IMPROPER OPERATION.

2 AC-1 AND ACCU-1 CONTROL DIAGRAM  
NO SCALE



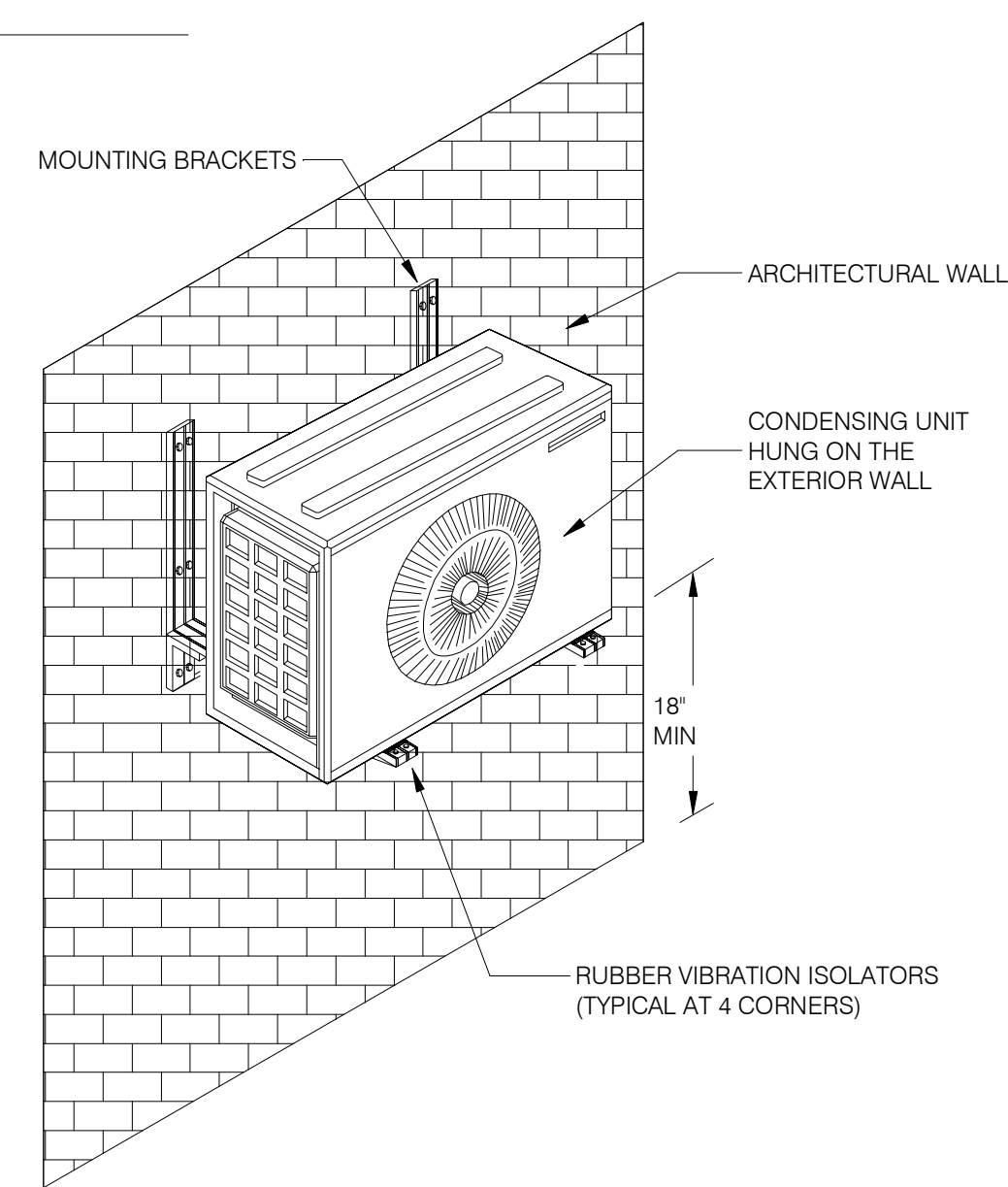
- NOTE:
- SUPPORT HORIZONTAL PIPE AT 10 FEET MAXIMUM INTERVALS.

6 TRAPEZE PIPE HANGER  
NO SCALE



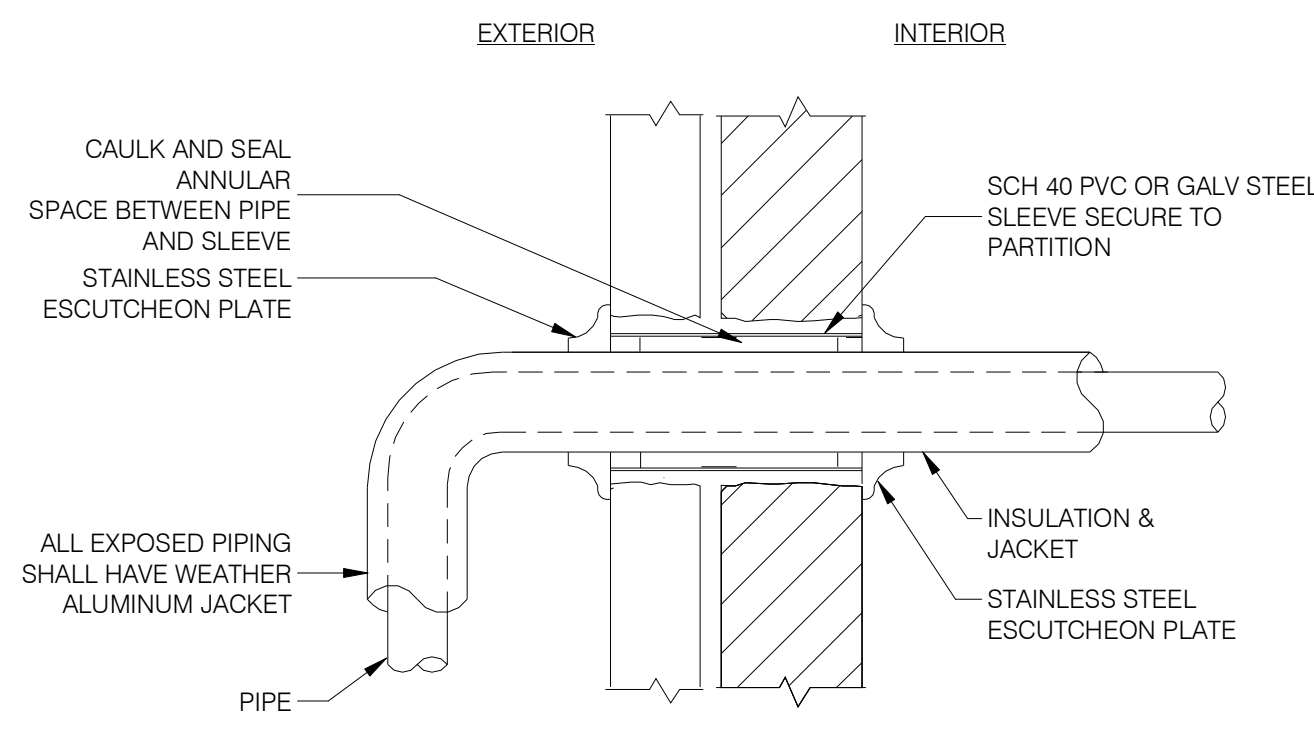
- NOTES:
- DIMENSION (A) SHALL BE A MINIMUM OF 0.5 TIMES DIMENSION (B).
  - DIMENSION (B), IN INCHES, SHALL BE A MINIMUM OF 1.5 TIMES THE MAXIMUM INTERNAL STATIC PRESSURE OF THE UNIT, IN INCHES WG.
  - FOR A DRAW THROUGH UNIT THE DIMENSION (A) SHALL BE NO LESS THAN THE MAXIMUM INTERNAL STATIC PRESSURE OF THE UNIT, INCHES WG, PLUS 1".

5 TYPICAL CONDENSATE DRAIN TRAP  
NO SCALE



- NOTES:
- INSTALLATION SHALL BE AS PER MANUFACTURER RECOMMENDATION.
  - REFRIGERANT SUCTION AND LIQUID PIPING. PROVIDE PROPER INSULATION TO BOTH PIPING & SHALL BE SIZED ACCORDING TO MANUFACTURER RECOMMENDATIONS.
  - INSTALL CONDENSING UNIT ON WALL AS PER MANUFACTURER RECOMMENDATION.

4 SINGLE CONDENSING UNIT SUPPORT  
NO SCALE



3 PIPE PENETRATION THRU WALLS  
NO SCALE

UNIT MARK	LOCATION	NOMINAL TONS	COOLING					HEATING			SOUND PRESSURE LEVEL - dB(A)	ELECTRICAL DATA			UNIT DIMENSIONS (H x W x D) (IN):	UNIT WEIGHT (LBS)	CONTROL	BASIS OF DESIGN		NOTES
			AIR FLOW (CFM)	TOTAL MBH	SENSIBLE MBH	EER	AIR FLOW (CFM)	TOTAL MBH	COP @ 47 °F	MCA		MOCP	FLA	VOLTS/PH/Hz				MANUFACTURER	MODEL	
AC-1	MAIN ELECTRICAL ROOM	1	400	12	9.88	12.5	400	13.5	-	46	-	-	-	208/1/60	11-1/4 x 30-5/8 x 8-3/4	20	#2/E202	DAIKIN	FTXF12BVJU9	ALL

NOTES:  
1. UNITS TO BE PROVIDED WITH CONDENSATE DRAIN PIPE.  
2. MECHANICAL CONTRACTOR SHALL COORDINATE WITH MANUFACTURER REPRESENTATIVE, WHETHER WATER LEVEL DETECTOR SENSOR COMES FROM THE FACTORY OR WILL IT BE FURNISHED BY THE MECHANICAL CONTRACTOR.  
3. PROVIDE UNIT WITH FACTORY SUPPLIED INSULATED ENCLOSURE, HEAT PUMP KIT AND ENCLOSURE CAP KIT.  
4. ALL UNITS SHALL USE R-454B OR R-32 REFRIGERANT.  
5. PROVIDE 7-DAY PROGRAMMABLE THERMOSTAT WITH ALL UNITS. COORDINATE COLOR WITH ARCHITECT  
7. UNITS SHALL BE PROVIDED WITH CRANK CASE HEATER.  
8. CORRECTED CAPACITIES OF COOLING AND HEATING DATA INDICATED ARE BASED ON FOLLOWING CONDITION:  
- COOLING: INDOOR -75 °F DB/ 62.4 °F WB, OUTDOOR 105 °F DB  
- HEATING: INDOOR -70 °F DB, OUTDOOR -0 °F DB

UNIT MARK	LOCATION	INDOOR UNIT SERVED	COOLING				SEER	EER	HSPF	ELECTRICAL DATA			UNIT DIMENSIONS (H x W x D) (IN):	UNIT WEIGHT (LBS)	CONTROL	BASIS OF DESIGN		NOTES
			NOMINAL TONS	AMBIENT TEMP (F)	MCA	MOCP				FLA	VOLTS/PH/Hz	MANUFACTURER				MODEL		
ACCU-1	ROOF	AC-1	1	95	21	12.5	10.2	14.60	-	15	-	208/1/60	21-15/16 x 26-9/16 x 11-3/16	80	#2/E202	DAIKIN	RXF12BVJU9	ALL

OUTDOOR UNIT:  
1. PROVIDE UNIT WITH THE FOLLOWING:  
- NEMA RATED INTEGRAL DISCONNECT SWITCH.  
- LOW AMBIENT CONTROLS AND CRANKCASE HEATER TO PERMIT UNIT OPERATION AT 0 °F AMBIENT OUTDOOR.  
- UNIT SHALL BE MOUNTED ON 1" SUPPORT ON ROOF.  
2. CONDENSING UNITS MUST HAVE MINIMUM 3" MINS. OF NON-VOLATILE OPERATION MEMORY FOR USE IN DIAGNOSTICS.  
3. CONTRACTOR'S INSTALLATION PERSONNEL MUST HAVE SUCCESSFULLY COMPLETED MANUFACTURER'S CERTIFIED INSTALLATION CLASS WITHIN PAST 24 MONTHS.  
4. CONTRACTOR TO PROVIDE LOCKING-TYPE TAMPER-RESISTANT CAPS ON THE REFRIGERANT CIRCUIT ACCESS PORTS LOCATED OUTDOORS TO PREVENT UNAUTHORIZED ACCESS.

CONDUCTORS & CONDUITS SCHEDULE					
FEEDER SYMBOL	AMPACITY	WIRE SIZE AWG/KCMIL	CONDUIT SIZE	TYPE	REMARKS
①	230	4#4/0 AWG-1#4 AWG G	2 1/2"	NEW	
②	110	4#1 AWG-1#6 AWG G	1 1/2"	EXISTING	
③	855	3 SETS (4#300 KCMIL-1#2/0 AWG G)	3-2 1/2"	NEW	
④	230	4#4/0 AWG-1#4 AWG G	2 1/2"	EXISTING	
⑤	855	3 SETS (3#300 KCMIL-1#2/0 AWG G)	3-2 1/2"	NEW	
⑥	30	3#10 AWG-1#10 AWG G	3/4"	NEW	

**GENERAL NOTES**

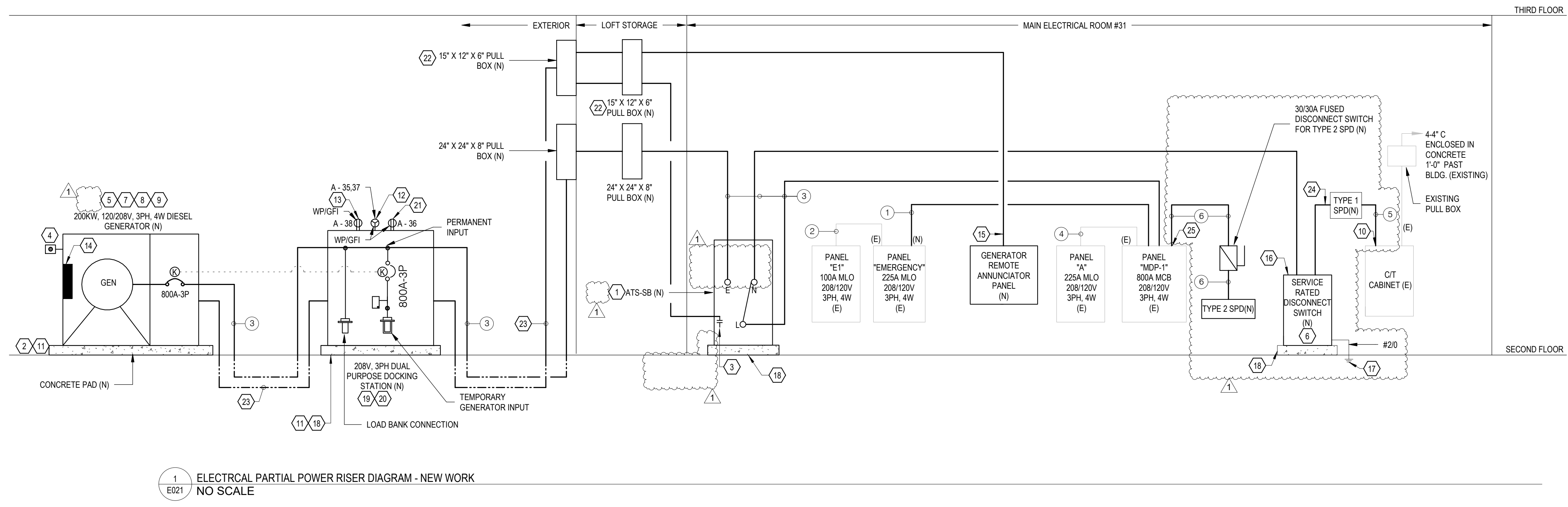
- EXISTING FEEDER SIZES ARE SHOWN FOR REFERENCE ONLY. IN ACCORDANCE WITH EXISTING BUILDING DRAWINGS. CONTRACTOR SHALL FIELD VERIFY EXISTING FEEDER SIZES AND IF FEEDER ARE COPPER OR ALUMINUM. WHERE FEEDERS ARE SMALLER THAN THE SIZE SHOWN ON THIS DRAWINGS, CONTRACTOR SHALL VERIFY WITH ENGINEER AND BUILDING OWNER FOR CORRECTIONS ON EXISTING CONDITIONS.

**SHEET KEY NOTES**

- AUTOMATIC TRANSFER SWITCH 800A (ATS-SB), 240V, 3-POLE + SOLID NEUTRAL, 100MCR EQUIPPED WITH INTEGRAL TYPE 2 SURGE PROTECTIVE DEVICE. BASIS OF DESIGN: MANUFACTURER: ASCO, MODEL: 300 SERIES.
- 6" HIGH CONCRETE HOUSEKEEPING PAD.
- ENGINE START CONTACTS AND ASSOCIATED CONTROL WIRING TO GENERATOR SET CONTROLLER.
- EMERGENCY PUSH BUTTON LOCATED EXTERNAL TO THE WEATHERPROOF ENCLOSURE AND SHOULD BE APPROPRIATELY IDENTIFIED PER NFPA 110.
- 200KW, 208/120V, 3PH, 4W, 60 HZ DIESEL ENGINE EMERGENCY/STANDBY GENERATOR ON CONCRETE EQUIPMENT PAD EQUIPPED WITH ELECTRONIC TRIP BREAKER AND SKID MOUNTED FUEL TANK (SUB BASE TANK DIMENSION SHALL BE 200"X49"X49") SUFFICIENT FOR 48 HOURS OPERATION AT FULL LOAD. INSTALL GENERATOR IN MINIMUM LEVEL II SOUND ATTENUATING WEATHERPROOF ENCLOSURE. CONTRACTOR TO ENSURE SOUND LEVELS COMPLY WITH REQUIREMENTS OF ALL LOCAL ZONING ORDINANCES AND OF AUTHORITY HAVING JURISDICTION. THE ON SITE GENERATOR IS NOT A SEPARATELY DERIVED SYSTEM AS THE NEUTRAL IS SOLIDLY CONNECTED TO A SERVICE SUPPLIED SYSTEM NEUTRAL. BREAKER SHALL BE LOCKABLE IN THE OPEN POSITION PER NEC ARTICLE 445.18. PROVIDE WARNING SIGN FOR GENERATOR GROUNDED AS NON-SEPARATELY DERIVED SYSTEM. FUEL TANK PROVIDED WITH FUEL LEAK DETECTION, LOW/HIGH WARNING, OVERFILL WARNING, SPILL PREVENTION, PROVIDED WITH LOCAL AUDIBLE AND VISIBLE ALARMS AND MONITORED VIA BAS. BASIS OF DESIGN: MANUFACTURER: GENERAC, MODEL: SD200. REFER TO DRAWING E002 FOR GENERATOR LOCATION AND ADDITIONAL INFORMATION.
- SERVICE RATED DISCONNECT SWITCH 800A, 240V, 3-POLE WITH 800A FUSES, 100KAIC. BASIS OF DESIGN: MANUFACTURER: SCHNEIDER, MODEL: H327N.
- PROVIDE WARNING LABEL FOR GENERATOR AS DISCONNECTING THE EQUIPMENT GROUNDING CONDUCTOR WILL LEAVE EQUIPMENT UNGROUNDED.
- EMERGENCY POWER SYSTEMS SHALL AUTOMATICALLY PROVIDE SECONDARY POWER AFTER PRIMARY POWER IS LOST, UNLESS SPECIFIED OTHERWISE IN THIS CODE. STANDBY POWER SYSTEMS SHALL AUTOMATICALLY PROVIDE SECONDARY POWER.
- THE ON-SITE GENERATOR IS NOT A SEPARATELY DERIVED SYSTEM AS THE NEUTRAL IS SOLIDLY CONNECTED TO A SERVICE SUPPLIED SYSTEM NEUTRAL. PROVIDE BONDING BETWEEN GENERATOR ENCLOSURE AND EQUIPMENT GROUNDING CONDUCTORS.
- CONTRACTOR TO COORDINATE WITH THE UTILITY COMPANY TO DE-ENERGIZE THE INCOMING SERVICE IN ORDER TO FACILITATE THE NEW CONNECTION TO THE SERVICE RATED DISCONNECT AND THEN AGAIN RE-ENERGIZE AFTER ALL CONNECTIONS MADE.
- COORDINATE WITH CIVIL AND STRUCTURAL DRAWINGS FOR CONCRETE PAD DETAILS INFORMATION.
- NEMA L6-30R, 208V RECEPTACLE FOR DOCKING STATION BLOCK HEATER CONNECT NEMA L6-30R RECEPTACLE TO PANEL A CIRCUIT#35,37 VIA 2 #10 AWG+ 1 #10 AWG IN 1".
- 20A, 125V DUPLEX RECEPTACLE FOR DOCKING STATION CONVENIENCE RECEPTACLE. CONNECT DUPLEX RECEPTACLE TO PANEL A CIRCUIT#36 VIA 2 #12 AWG + 1 #12 AWG IN 1".
- CONTRACTOR TO PROVIDE FACTORY INSTALLED 60A MCB, 208/120V, 1PH, 3W PANEL "PG" TO SERVE BATTERY CHARGER, HEATERS, GENERATOR CONTROLLER, MAINTENANCE OUTLETS, LIGHTS AND OTHER AUXILIARY CIRCUITS. COORDINATE WITH THE MANUFACTURE FOR ALL CONNECTION REQUIREMENTS. PANEL "PG" IS FED FROM MDP-1Y VIA 4 #4 AWG + 1 #6 AWG G IN 1 1/4" LOCATED IN SECOND FLOOR MAIN ELECTRICAL ROOM #31. REFER TO SITE PLAN DRAWING E002 FOR DUCT BANK DETAILS AND ADDITIONAL INFORMATION.
- CONTROL WIRING PER MANUFACTURER REQUIREMENTS IN 2" CONDUIT.
- PROVIDE IDENTIFICATION AS INDICATED FOR SERVICE ENTRANCE DISCONNECT AS PER NEC-230.2(E).
- CONNECT TO EXISTING BUILDING GROUNDING SYSTEM.
- 4" HIGH CONCRETE HOUSEKEEPING PAD.
- 800A, 208V, 3PH PAD MOUNTED DUAL PURPOSE GENERATOR DOCKING STATION IN NEMA 3R ENCLOSURE AND ACCESSORY MODULES FOR ATS START SIGNAL WIRING, MANUFACTURED BY TRYSTAR (SDS-7) FOR MOBILE GENERATOR AND LOAD BANK CONNECTION. BREAKER SHALL BE LOCKABLE IN THE OPEN POSITION PER NEC ARTICLE 445.18. REFER TO DRAWING E002 FOR MORE INFORMATION.
- ALL CIRCUIT BREAKERS SHALL BE ETU TYPE, FULLY SELECTIVE COORDINATED WITH DOWNSTREAM OVERCURRENT PROTECTIVE DEVICES.
- 20A, 125V DUPLEX RECEPTACLE FOR DOCKING STATION BATTERY CHARGER. CONNECT DUPLEX RECEPTACLE TO PANEL A CIRCUIT#38 VIA 2 #12 AWG + 1 #12 AWG IN 1".
- CONTRACTOR TO PROVIDE (2) 2"C FOR CONTROLS ROUTED THROUGH A 15"X12"X6" PULL BOX. REFER TO DRAWING E002 FOR ADDITIONAL INFORMATION.
- CONTROL CONTACTS AND ASSOCIATED CONTROL WIRING IN 1" CONDUIT.
- PROVIDE A SEALED UTILITY TROUGH TO ROUTE AND PROTECT THE WIRING BETWEEN THE CT AND SERVICE RATED DISCONNECT SWITCH.
- PROVIDE TAP CONNECTION ON THE LOAD SIDE OF THE 800A MAIN CIRCUIT BREAKER.

**LINE TYPE LEGEND**

- EXISTING FEEDER/EQUIPMENT TO BE REMAIN
- NEW FEEDER/EQUIPMENT TO BE PROVIDED
- - - - - NEW UNDERGROUND FEEDERS



1 ELECTRICAL PARTIAL POWER RISER DIAGRAM - NEW WORK  
E021 NO SCALE



CITY OF GAITHERSBURG  
800 RABBIT ROAD  
GAITHERSBURG, MD 20878

CONSULTANTS:  
PRIME CONSULTANT / MEP ENGINEER:



ARCHITECTURAL:  
CARBONADO DESIGN  
4509 WESTERN AVE NW  
WASHINGTON, DC 20016

STRUCTURAL  
SPYDER ENGINEERS  
727 DOWERS ROAD  
ABINGDON, MARYLAND 21009

CIVIL:  
LANGAN  
1300 WILSON BOULEVARD  
SUITE 450 ARLINGTON, VA  
22209-2323

PROJECT NAME:  
CITY OF GAITHERSBURG  
PUBLIC WORKS GENERATOR  
REPLACEMENT



Project Status

No.	Description	Date
1	100% DESIGN DEVELOPMENT	07/18/2025
2	90% CONSTRUCTION DOCUMENT	09/08/2025
3	100% CONSTRUCTION DOCUMENT	10/29/2025
4	BID DOCUMENTS	01/21/2026
①	ADDENDUM #1	03/30/2026

**ELECTRICAL  
PARTIAL POWER  
RISER DIAGRAM -  
NEW WORK**

Setty Project Number SIPO251916.02

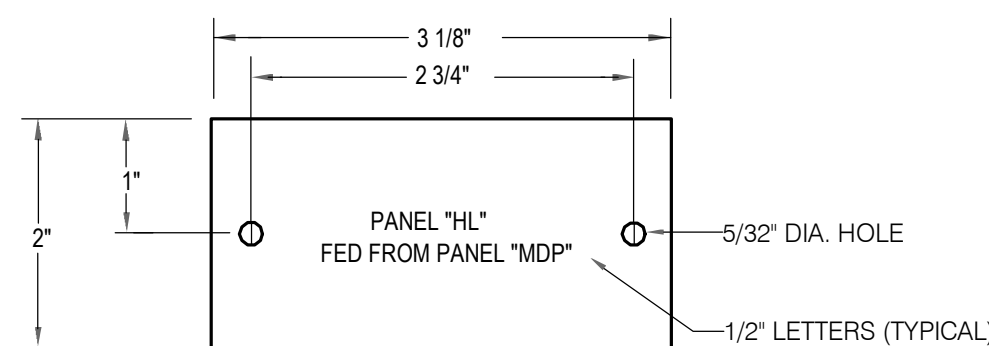
Date 01/21/2026

Drawn By RK

Checked By SM

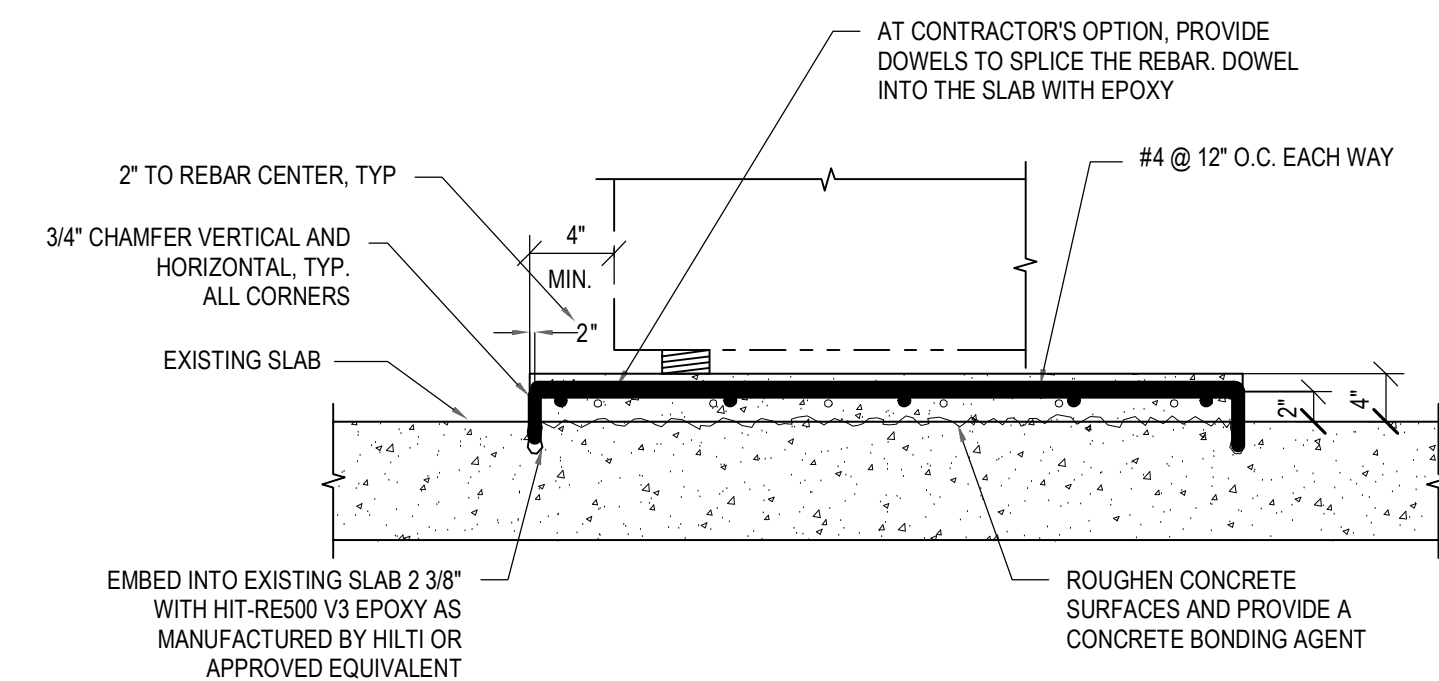
**E021**

Scale 1/8" = 1'-0"



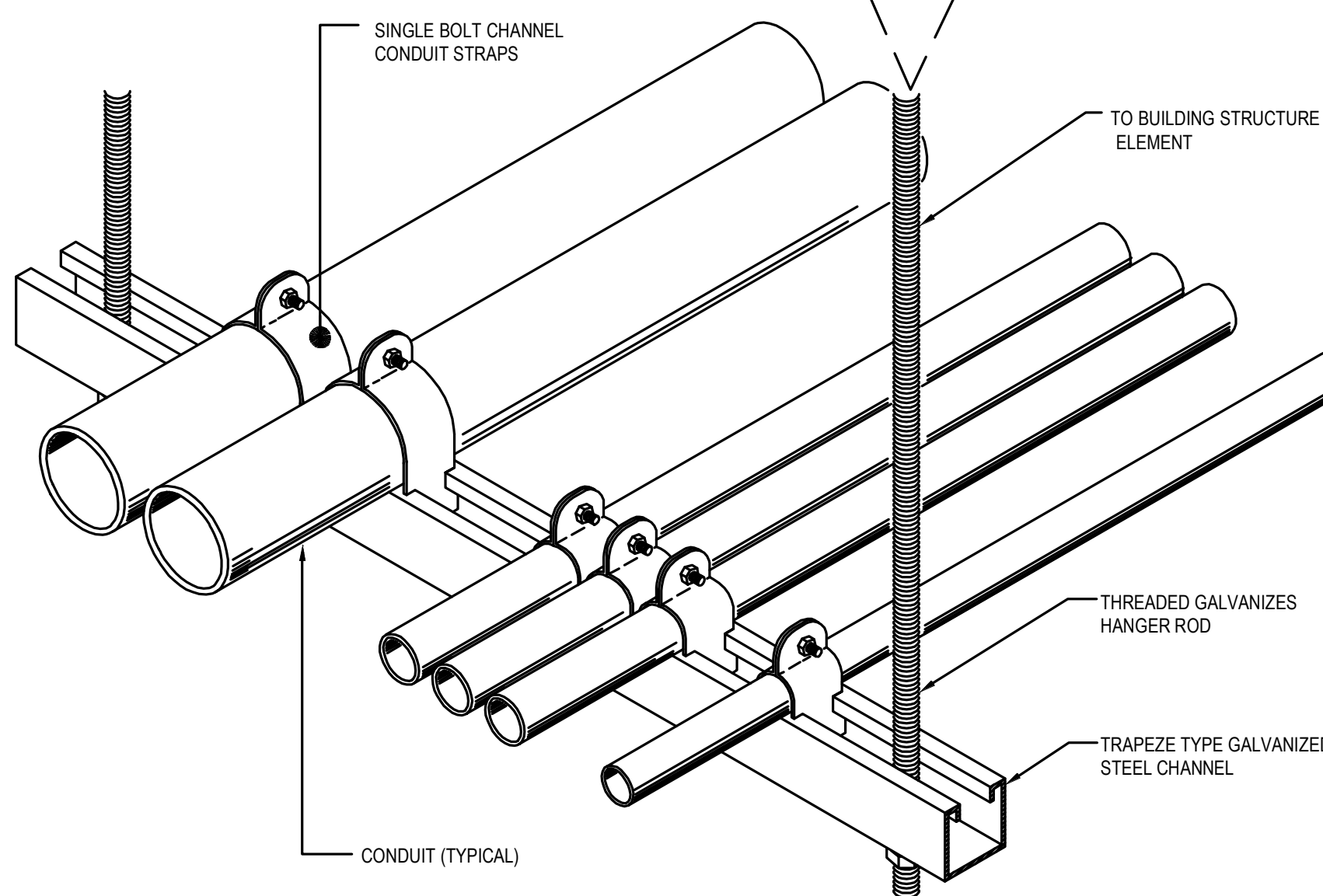
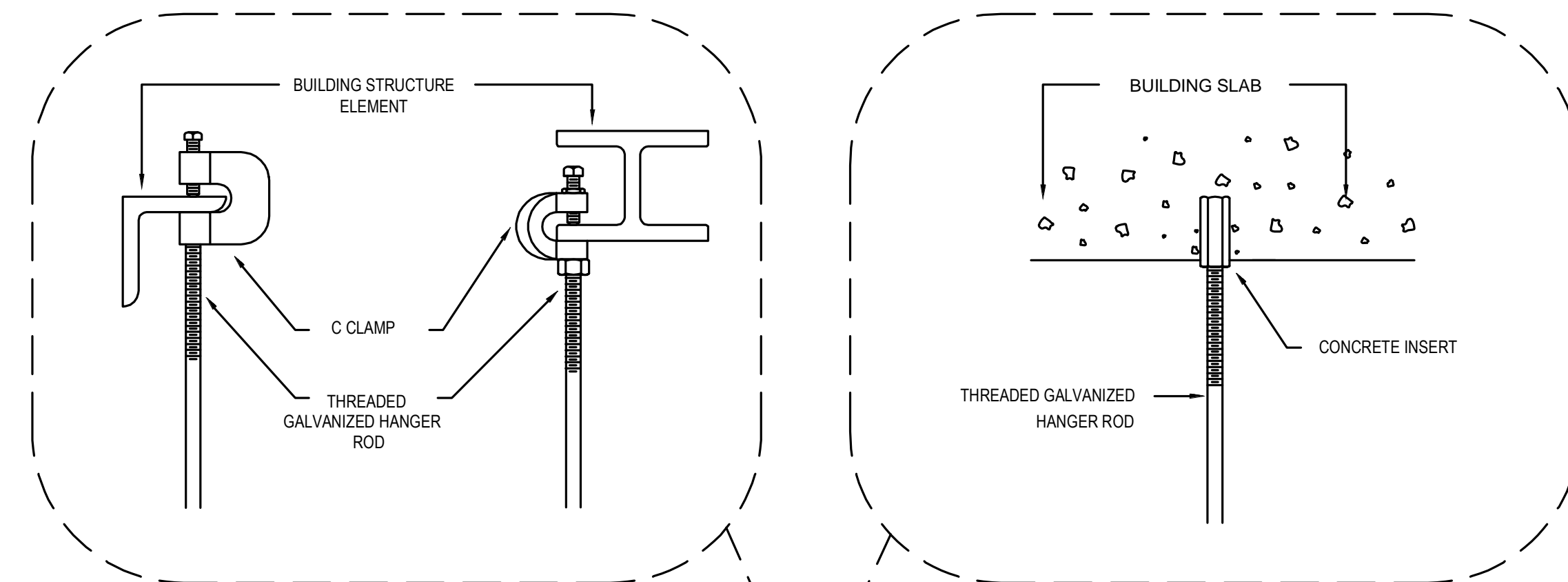
- NOTES:**
- REFER TO SPECIFICATIONS FOR ADDITIONAL NAMEPLATE REQUIREMENTS.
  - NAMEPLATE TO BE 1/16" THICK.
  - FOR TYPICAL PANELS, FACEPLATE TO BE WHITE LAMINATE WITH BLACK ENGRAVED LETTERS.
  - FOR EMERGENCY PANELS, FACEPLATE TO BE RED LAMINATE WITH WHITE ENGRAVED LETTERS.
  - SECURE NAMEPLATE TO SURFACES WITH (2) FLAT HEAD BRASS SCREWS.
  - UNLESS OTHERWISE INDICATED, PROVIDE A SINGLE LINE OF TEXT WITH 1/2 INCH (13 MM) HIGH LETTERS ON 1-1/2 INCH (38MM) HIGH LABEL; WHERE TWO LINES OF TEXT ARE REQUIRED, USE LABELS 2 INCHES (50 MM) HIGH.

4 NAMEPLATE DETAIL  
E701 NO SCALE



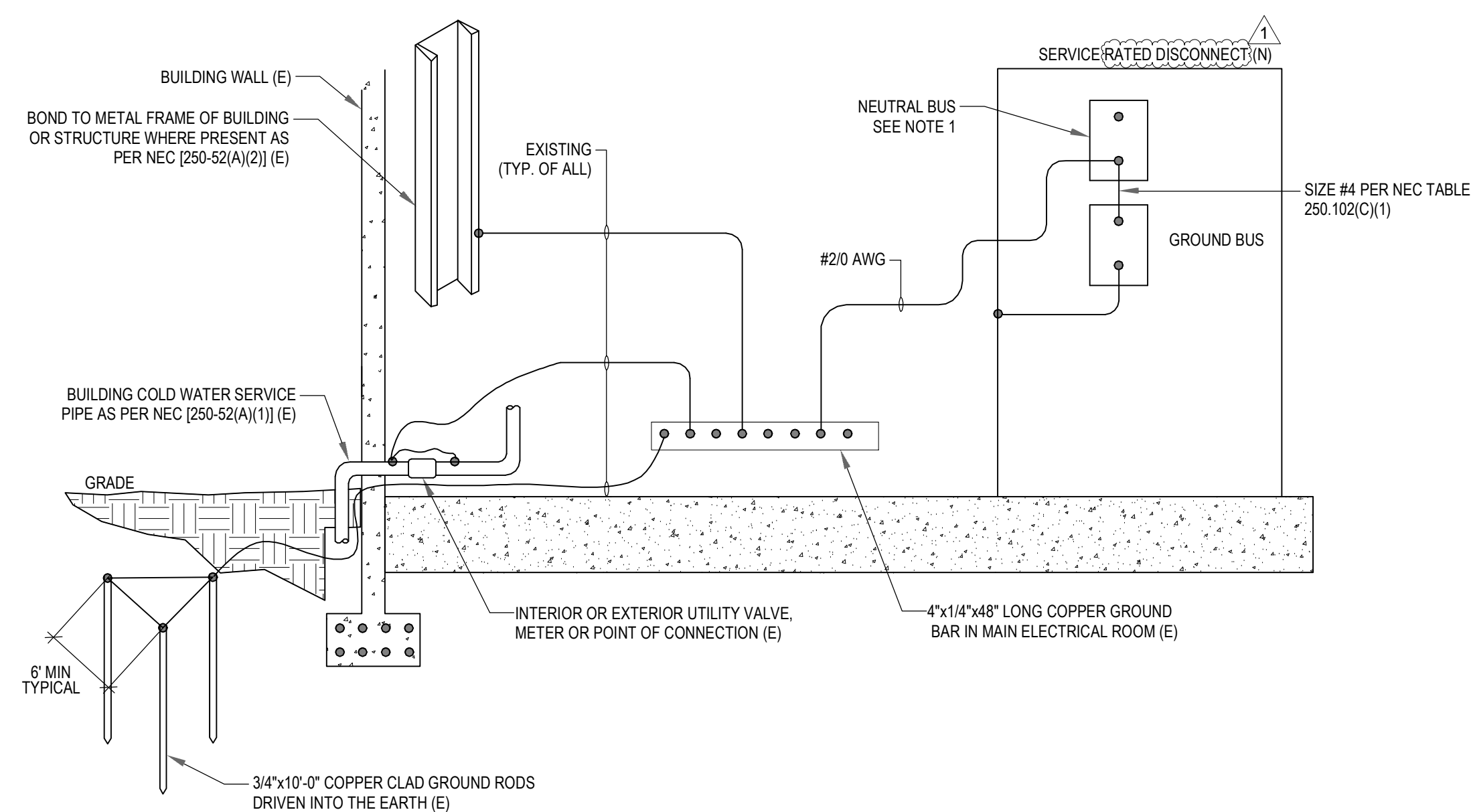
- NOTES:**
- CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI.
  - ALL REINFORCEMENT SHALL BE ASTM A-615 GRADE 60.

5 AT&S SERVICE RATED DISCONNECT SWITCH CONCRETE PAD DETAILS  
E701 NO SCALE



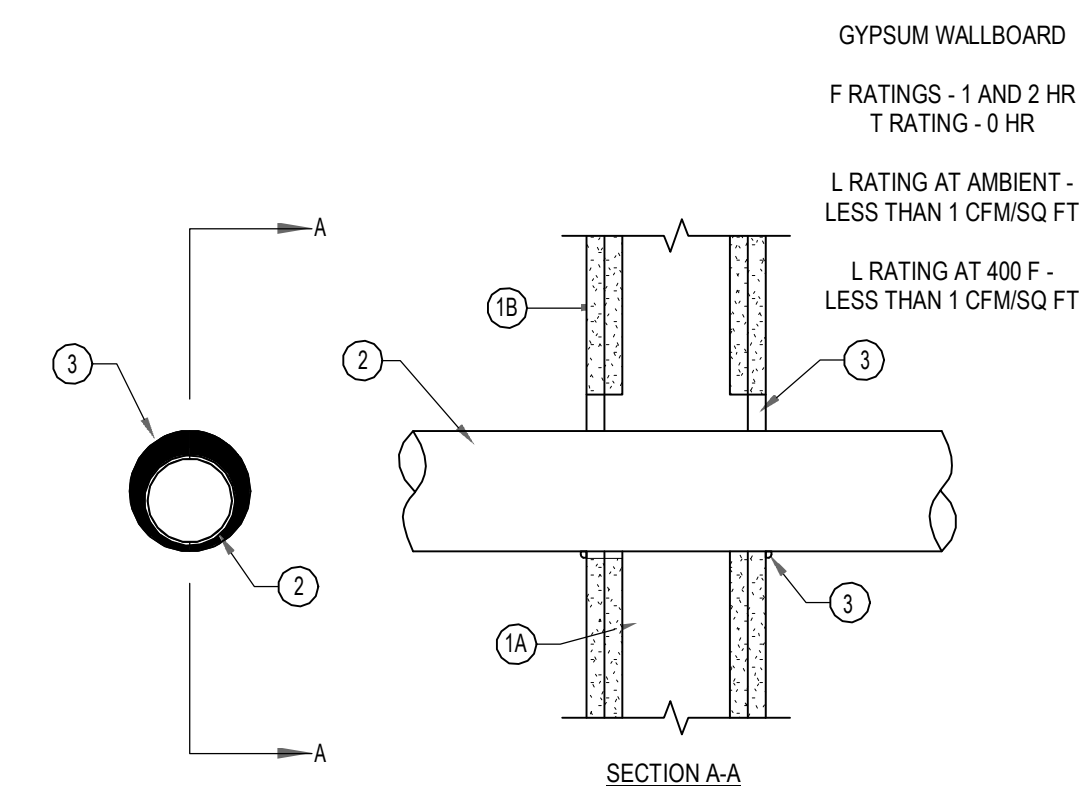
- NOTES:**
- CONTRACT MAY USE A CONDUIT SUSPENSION SYSTEM EQUIVALENT TO THAT WHICH IS DETAILED, HAVING THE FEATURES SHOWN AND APPROVED IN ADVANCE BY THE ENGINEER.
  - ALL ELECTRIC CONDUITS SHALL BE SECURELY FASTENED IN PLACE. CONDUIT SUSPENSION SYSTEM SHALL BE INDEPENDENT OF ANY OTHER SUSPENSION SYSTEM. HANGERS AND PIPING INSTALLED BY THE OTHER TRADES SHALL NOT BE USED FOR SUPPORTING ELECTRIC CONDUITS.
  - EACH MULTIPLE HANGER SHALL BE DESIGNED TO SUPPORT A LOAD EQUAL TO OR GREATER THAN THE SUM OF THE WEIGHTS OF THE CONDUITS, WIRES AND HANGER ITSELF, PLUS 200 POUNDS.

2 SUSPENDED SYSTEM - MULTIPLE CONDUITS  
E701 NO SCALE



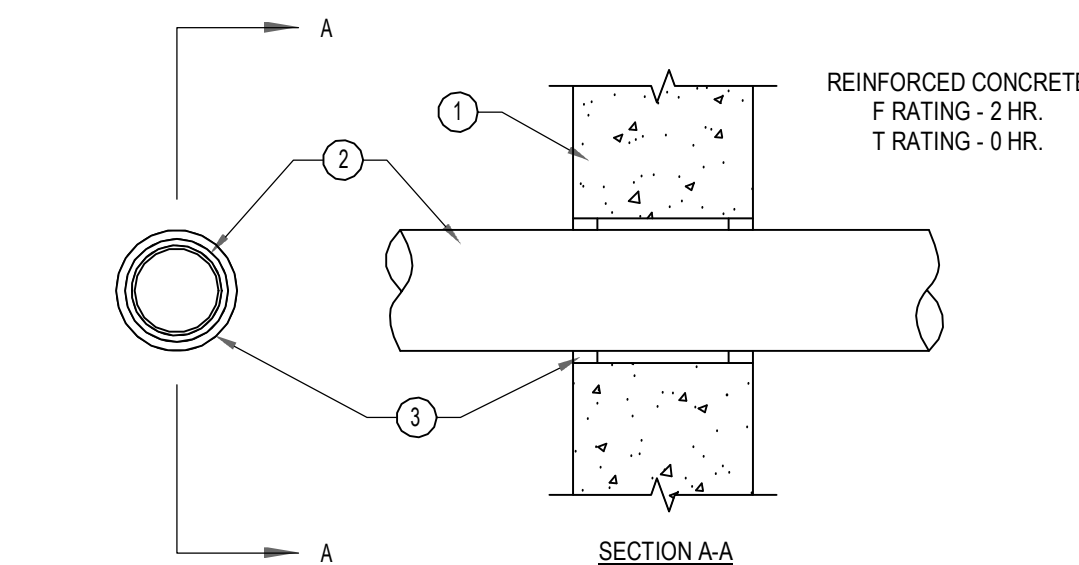
- NOTES:**
- BOND THE SERVICE SWITCH NEUTRAL BUS TO THE GROUND BUS.

3 BUILDING GROUNDING SYSTEM DETAIL  
E701 NO SCALE



- WALL ASSEMBLY - THE FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
  - STUDS - WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACED 16 IN. OC. STEEL STUDS TO BE MIN 3-5/8 IN. WIDE AND SPACED MAX 24 IN. OC.
  - GYPSUM BOARD - THICKNESS, TYPE, NUMBER OF LAYERS AND FASTENERS AS REQUIRED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. MAX DIAM OF OPENING IN WOOD STUD WALLS IS 8 IN. MAX DIAM OF OPENING IN STEEL STUD WALLS IS 14 IN. THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED.
- THROUGH PENETRANT - ONE METALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED WITHIN THE FIRESTOP SYSTEM. THE SPACE BETWEEN PIPE, CONDUIT OR TUBING AND PERIPHERY OF OPENING SHALL BE A MIN 0 IN. POINT CONTACT) TO A MAX 2 IN. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:
  - STEEL PIPE - NOM 12 IN. DIAM (OR SMALLER) SCHEDULE 5 (OR HEAVIER STEEL PIPE).
  - IRON PIPE - NOM 12 IN. DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE
  - CONDUIT - NOM 4 IN. DIAM (OR SMALLER) ELECTRICAL METALLIC TUBING, NOM 6 IN. DIAM (OR SMALLER) STEEL CONDUIT OR NOM 1 IN. DIAM (OR SMALLER) FLEXIBLE STEEL CONDUIT.
  - COPPER TUBING - NOM 6 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.
  - COPPER PIPE - NOM 6 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
- FILL VOID OR CAVITY MATERIAL - CAULK - MIN 3/8 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS. FLUSH WITH BOTH SURFACES OF WALL. A MIN 3/8 IN. DIAM BEAD OF FILL MATERIAL APPLIED AT POINT CONTACT LOCATION AT THE PENETRANT/GYPSUM BOARD INTERFACE ON BOTH SIDES OF WALL.
 

PENETRATIONS THROUGH STRUCTURE SHALL MAINTAIN FIRE RESISTANCE AND COMPLY WITH SECTION 714.4.1 OF THE IBC 2021. ALL ANNULAR SPACES BETWEEN RATED STRUCTURE/ENCLOSURE SHALL BE FILLED WITH APPROVED MATERIAL COMPLYING WITH REQUIREMENTS OF UL 1479.



- WALL ASSEMBLY - MIN 6 IN. (152 MM) THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF OR 1600-2400 KG/M3) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS\*. MAX DIAM OF OPENING IS 25 IN. (635 MM). SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR THE NAMES OF MANUFACTURERS.
- THROUGH PENETRANT - ONE METALLIC PIPE, TUBING OR CONDUIT TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN PIPES, TUBING OR CONDUITS AND PERIPHERY OF OPENING IS DEPENDENT UPON THE TYPE AND MAX DIAM OF THE THROUGH PENETRANT AS TABULATED BELOW. PIPE, TUBING OR CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, TUBING OR CONDUITS MAY BE USED:
  - STEEL PIPE - NOM 24 IN. (610 MM) DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE. IRON PIPE - NOM 24 IN. (610 MM) DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE.
  - COPPER TUBING - NOM 6 IN. (152 MM) DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.
  - COPPER PIPE - NOM 6 IN. (152 MM) DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE. CONDUIT - NOM 4 IN. (102 MM) DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING, NOM 6 IN. (152 MM) DIAM GALV STEEL CONDUIT OR NOM 1 IN. DIAM FLEXIBLE STEEL CONDUIT.

TYPE OF THROUGH PENETRANT	MAX DIAM OF THROUGH PENETRANT, IN. (MM)	MIN & MAX ANNULAR SPACE, IN. (MM)
STEEL OR IRON PIPE	4 (102)	0, 1-1/2 (38)
STEEL TUBING OR CONDUIT	4 (102)	0, 1-1/2 (38)
STEEL CONDUIT	6 (152)	1/8 (3), 1/2 (13)
STEEL OR IRON PIPE	24 (610)	1/8 (3), 1/2 (13)
COPPER TUBING OR PIPE	6 (152)	1/8 (3), 1/2 (13)

- FILL VOID OR CAVITY MATERIAL - SEALANT - MIN 5/8 IN. (16 MM) THICKNESS OF FILL MATERIAL APPLIED WITHIN ANNULUS. FLUSH WITH BOTH SURFACES OF WALL. AT THE POINT CONTACT LOCATION BETWEEN THROUGH PENETRANT AND CONCRETE, A MIN 3/8 IN. (10 MM) DIAM BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE CONCRETE/THROUGH PENETRANT INTERFACE ON BOTH SURFACES OF WALL.
 

PENETRATIONS THROUGH STRUCTURE SHALL MAINTAIN FIRE RESISTANCE AND COMPLY WITH SECTION 714.4.1 OF THE IBC 2021. ALL ANNULAR SPACES BETWEEN RATED STRUCTURE/ENCLOSURE SHALL BE FILLED WITH APPROVED MATERIAL COMPLYING WITH REQUIREMENTS OF UL 1479.

1 THROUGH-PENETRATION FIRE STOP DETAIL  
E701 NO SCALE



CITY OF GAITHERSBURG  
800 RABBIT ROAD  
GAITHERSBURG, MD 20878

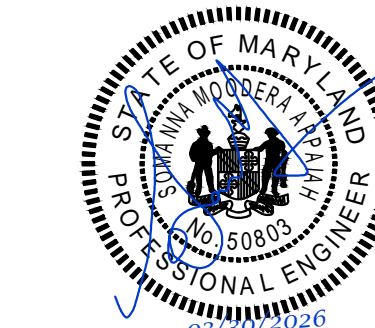
CONSULTANTS:  
PRIME CONSULTANT / MEP ENGINEER:  
**SETTY**  
415 EAST MARKET STREET, SUITE 100  
CHARLOTTESVILLE, VA 22902  
P: 434-270-2201  
www.SETTY.com  
PROJECT NUMBER: SIPO251916.02

ARCHITECTURAL:  
CARBONADO DESIGN  
4509 WESTERN AVE NW  
WASHINGTON, DC 20016

STRUCTURAL  
SPYDER ENGINEERS  
727 DOWERS ROAD  
ABINGDON, MARYLAND 21009

CIVIL:  
LANGAN  
1300 WILSON BOULEVARD  
SUITE 450 ARLINGTON, VA  
22209-2323

PROJECT NAME:  
CITY OF GAITHERSBURGH  
PUBLIC WORKS GENERATOR  
REPLACEMENT



Project Status

No.	Description	Date
1	100% DESIGN DEVELOPMENT	07/18/2025
2	90% CONSTRUCTION DOCUMENT	09/08/2025
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4	BID DOCUMENTS	01/21/2026
▲	ADDENDUM #1	03/30/2026

## ELECTRICAL DETAILS

Setty Project Number SIPO251916.02

Date 01/21/2026

Drawn By RK

Checked By SM

# E701

Scale 1/8" = 1'-0"

# REVISED EXHIBIT B- SPECIFICATIONS

SETTY & ASSOCIATES

CITY OF GAITHERSBURG-  
DEPARTMENT OF PUBLIC WORKS  
GENERATOR UPGRADES  
TASK ORDER – 2025 -001

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**SECTION 26 32 13.13**  
**DIESEL EMERGENCY ENGINE GENERATORS**

**PART 1 - GENERAL****1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.02 SUMMARY**

- A. Section includes packaged diesel engine generators for emergency use with the following features:
  - 1. Diesel engine.
  - 2. Diesel fuel-oil system.
  - 3. Control and monitoring.
  - 4. Generator overcurrent and fault protection.
  - 5. Generator, exciter, and voltage regulator.
  - 6. Outdoor engine generator enclosure.
  - 7. Vibration isolation devices.
  - 8. Finishes.

**1.03 DEFINITIONS**

- A. EPS: Emergency power supply.
- B. EPSS: Emergency power supply system.
- C. Operational Bandwidth: The total variation, from the lowest to highest value of a parameter over the range of conditions indicated, expressed as a percentage of the nominal value of the parameter.

**1.04 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
  - 2. Include thermal damage curve for generator.
  - 3. Include time-current characteristic curves for generator protective device.
  - 4. Include fuel consumption in gallons per hour (liters per hour) at 0.8 power factor at 0.5, 0.75, and 1.0 times generator capacity.
  - 5. Include generator efficiency at 0.8 power factor at 0.5, 0.75, and 1.0 times generator capacity.
  - 6. Include airflow requirements for cooling and combustion air in cubic feet per minute (cubic meters per minute) at 0.8 power factor, with air-supply temperature of 95, 80, 70, and 50 deg F (35, 27, 21, and 10 deg C). Provide Drawings indicating requirements and limitations for location of air intake and exhausts.
  - 7. Include generator characteristics, including, but not limited to, kilowatt rating, efficiency, reactances, and short-circuit current capability.
- B. Shop Drawings:
  - 1. Include plans and elevations for engine generator and other components specified. Indicate access requirements affected by height of subbase fuel tank.
  - 2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
  - 3. Identify fluid drain ports and clearance requirements for proper fluid drain.
  - 4. Design calculations for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.

5. Vibration Isolation Base Details: Detail fabrication, including anchorages and attachments to structure and supported equipment. Include base weights.
  6. Include diagrams for power, signal, and control wiring. Complete schematic, wiring, and interconnection diagrams showing terminal markings for EPS equipment and functional relationship between all electrical components.
- C. Contractor shall submit a “specifications compliance statement” for each manufactured piece of equipment. Contractor/Supplier shall add “redlined” line-by-line notations to a PDF of the Specifications Section indicating the product or actions required “complies”. Contractor/Supplier shall itemize all deviations from the specified requirement on a line-by-line basis. List of exceptions to product specification shall include proposed materials, methods and cost difference where substitutions are allowed. If product does not comply with the specification the Contractor/Supplier shall state what modifications and actions are being implemented to ensure the product shall comply per the substitution section of the contract documents.

#### **1.05 STATEMENT OF COMPLIANCE**

- A. Contractor shall submit a “specifications compliance statement” for each manufactured piece of equipment. Contractor/Supplier shall add “redlined” notations to a PDF of the Specifications Section indicating the product or actions required “complies”. If product does not comply the Contractor/Supplier shall state what modifications and actions are being implemented to ensure the product shall comply per the substitution section of the contract documents.

#### **1.06 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer and testing agency.
- B. Seismic Qualification Data: Certificates for engine generator, accessories, and components, from manufacturer.
1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
  2. Dimensioned Outline Drawings of Equipment Unit: With engine and generator mounted on rails, identify center of gravity and total weight and each piece of equipment not integral to the engine generator, and locate and describe mounting and anchorage provisions.
  3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- C. Source Quality-Control Reports: Including, but not limited to, the following:
1. Certified summary of prototype-unit test report.
  2. Certified Test Reports: For components and accessories that are equivalent, but not identical, to those tested on prototype unit.
  3. Certified Summary of Performance Tests: Certify compliance with specified requirement to meet performance criteria for sensitive loads.
  4. Report of factory test on units to be shipped for this Project, showing evidence of compliance with specified requirements.
  5. Report of sound generation.
  6. Report of exhaust emissions showing compliance with applicable regulations.
  7. Certified Torsional Vibration Compatibility: Comply with NFPA 110.
- D. Field quality-control reports.
- E. Warranty: For special warranty.

#### **1.07 CLOSEOUT SUBMITTALS**

- A. Operation and Maintenance Data: For engine generators to include in emergency, operation, and maintenance manuals.

1. In addition to items specified in other section for "Operation and Maintenance Data," include the following:
  - a. List of tools and replacement items recommended to be stored at Project for ready access. Include part and drawing numbers, current unit prices, and source of supply.
  - b. Operating instructions laminated and mounted adjacent to generator location.
  - c. Training plan.

#### **1.08 QUALITY ASSURANCE**

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.
- B. Testing Agency Qualifications: Accredited by NETA.
  1. Testing Agency's Field Supervisor: Certified by NETA to supervise on-site testing.

#### **1.09 WARRANTY**

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components of packaged engine generators and associated auxiliary components that fail in materials or workmanship within specified warranty period.
  1. Warranty Period: five (5) years from date of Substantial Completion.

### **PART 2 - PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. BOD: Make - Generac Power Systems, Inc, Model - SD200.
  2. Make - Cummins Power Generation, Model - C200D6D
  3. Make - Kohler Power Systems, Model - 200REOZJF
- B. Source Limitations: Obtain packaged engine generators and auxiliary components from single source from single manufacturer.

#### **2.02 PERFORMANCE REQUIREMENTS**

- A. Seismic Performance: Engine generator housing, subbase fuel tank, engine generator, batteries, battery racks, silencers, sound attenuating equipment, accessories, and components shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
  1. The term "withstand" means "the unit will remain in place without separation of any parts when subjected to the seismic forces specified."
  2. Shake-table testing shall comply with ICC-ES AC156. Testing shall be performed with all fluids at worst-case normal levels.
  3. Component Importance Factor: 1.0.
- B. B11 Compliance: Comply with B11.19.
- C. NFPA Compliance:
  1. Comply with NFPA 37.
  2. Comply with NFPA 70.
  3. Comply with NFPA 110 requirements for Level 1 and 2 EPSS.
- D. UL Compliance: Comply with UL 2200.
- E. Engine Exhaust Emissions: Comply with EPA Tier 2 or 3 requirements and applicable state and local government requirements.
- F. Noise Emission: Comply with applicable state and local government requirements for maximum noise level at adjacent property boundaries due to sound emitted by engine generator, including

engine, engine exhaust, engine cooling-air intake and discharge, and other components of installation.

- G. Environmental Conditions: Engine generator system shall withstand the following environmental conditions without mechanical or electrical damage or degradation of performance capability:
1. Ambient Temperature: 41 to 104 deg F (5 to 40 deg C)5 to 104 deg F (Minus 15 to plus 40 deg C).
  2. Relative Humidity: Zero to 95 percent.
  3. Altitude: Sea level to 1000 feet (300 m).

### **2.03 ENGINE GENERATOR ASSEMBLY DESCRIPTION**

- A. Factory-assembled and -tested, water-cooled engine, with brushless generator and accessories.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. EPSS Class: Engine generator shall be classified as a Class 6 (6-hours) or Class 48 (48-hours) or Class 96 (for 96-hours) according to NFPA 110.
- D. Service Load: As indicated on the contract drawing.
- E. Power Factor: 0.8, lagging.
- F. Frequency: 60 Hz
- G. Voltage: As indicated on the contract drawing.
- H. Phase: Three-phase, four-wire wye.
- I. Induction Method: Naturally aspirated.
- J. Governor: Adjustable isochronous, with speed sensing.
- K. Mounting Frame: Structural steel framework to maintain alignment of mounted components without depending on concrete foundation. Provide lifting attachments sized and spaced to prevent deflection of base during lifting and moving.
1. Rigging Diagram: Inscribed on metal plate permanently attached to mounting frame to indicate location and lifting capacity of each lifting attachment and engine generator center of gravity.
- L. Capacities and Characteristics:
1. Power Output Ratings: Nominal ratings as indicated at 0.8 power factor excluding power required for the continued and repeated operation of the unit and auxiliaries.
  2. Nameplates: For each major system component to identify manufacturer's name and address, and model and serial number of component.
- M. Engine Generator Performance:
1. Steady-State Voltage Operational Bandwidth: 3 percent of rated output voltage, from no load to full load.
  2. Transient Voltage Performance: Not more than 20 percent variation for 50 percent step-load increase or decrease. Voltage shall recover and remain within the steady-state operating band within three seconds.
  3. Steady-State Frequency Operational Bandwidth: 0.5 percent of rated frequency, from no load to full load.
  4. Steady-State Frequency Stability: When system is operating at any constant load within the rated load, there shall be no random speed variations outside the steady-state operational band and no hunting or surging of speed.
  5. Transient Frequency Performance: Less than 5 percent variation for 50 percent step-load increase or decrease. Frequency shall recover and remain within the steady-state operating band within five seconds.

6. Output Waveform: At no load, harmonic content measured line to line or line to neutral shall not exceed 5 percent total and 3 percent for single harmonics. Telephone influence factor, determined according to NEMA MG 1, shall not exceed 50 percent.
7. Sustained Short-Circuit Current: For a three-phase, bolted short circuit at system output terminals, system shall supply a minimum of 250 percent of rated full-load current for not less than 10 seconds and then clear the fault automatically, without damage to generator system components.
8. Start Time: Comply with NFPA 110, Type U system requirements.

**2.04 DIESEL ENGINE**

- A. Fuel: ASTM D 975 diesel fuel oil, Grade 2-D S15.
- B. Rated Engine Speed: 1800 rpm.
- C. Lubrication System: Engine or skid mounted.
  1. Filter and Strainer: Rated to remove 90 percent of particles 5 micrometers and smaller while passing full flow.
  2. Thermostatic Control Valve: Control flow in system to maintain optimum oil temperature. Unit shall be capable of full flow and is designed to be fail-safe.
  3. Crankcase Drain: Arranged for complete gravity drainage to an easily removable container with no disassembly and without use of pumps, siphons, special tools, or appliances.
- D. Jacket Coolant Heater: Electric-immersion type, factory installed in coolant jacket system. Comply with NFPA 110 requirements for Level 1 equipment for heater capacity and with UL 499.
- E. Cooling System: Closed loop, liquid cooled, with radiator factory mounted on engine generator mounting frame and integral engine-driven coolant pump.
  1. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
  2. Size of Radiator: Adequate to contain expansion of total system coolant, from cold start to 110 percent load condition.
  3. Expansion Tank: Constructed of welded steel plate and rated to withstand maximum closed-loop coolant-system pressure for engine used. Equip with gage glass and petcock.
  4. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.
  5. Coolant Hose: Flexible assembly with inside surface of nonporous rubber and outer covering of aging-, UV-, and abrasion-resistant fabric.
    - a. Rating: 50-psig (345-kPa) maximum working pressure with coolant at 180 deg F (82 deg C), and non-collapsible under vacuum.
    - b. End Fittings: Flanges or steel pipe nipples with clamps to suit piping and equipment connections.
- F. Muffler/Silencer: Critical type, sized as recommended by engine manufacturer and selected with exhaust piping system to not exceed engine manufacturer's engine backpressure requirements.
  1. Minimum sound attenuation of 25 dB at 500 Hz.
  2. Sound level measured at a distance of 25 feet (8 m) from exhaust discharge after installation is complete shall be 78 dBA or less and shall meet the maximum allowable sound attenuation level set forth by the authority having jurisdiction.
- G. Air-Intake Filter: Heavy-duty, engine-mounted air cleaner with replaceable dry-filter element and "blocked filter" indicator.
- H. Starting System: 24 V electric, with negative ground.

1. Components: Sized so they are not damaged during a full engine-cranking cycle, with ambient temperature at maximum specified in "Performance Requirements" Article.
2. Cranking Motor: Heavy-duty unit that automatically engages and releases from engine flywheel without binding.
3. Cranking Cycle: As required by NFPA 110 for system level specified.
4. Battery: Lead acid, with capacity within ambient temperature range specified in "Performance Requirements" Article to provide specified cranking cycle at least twice without recharging.
5. Battery Cable: Size as recommended by engine manufacturer for cable length indicated. Include required interconnecting conductors and connection accessories.
6. Battery Stand: Factory-fabricated, two-tier metal with acid-resistant finish designed to hold the quantity of battery cells required and to maintain the arrangement to minimize lengths of battery interconnections.
7. Battery-Charging Alternator: Factory mounted on engine with solid-state voltage regulation and 35-A minimum continuous rating.
8. Battery Charger: Current-limiting, automatic-equalizing, and float-charging type designed for lead-acid batteries. Unit shall comply with UL 1236 and include the following features:
  - a. Operation: Equalizing-charging rate of 10 A shall be initiated automatically after battery has lost charge until an adjustable equalizing voltage is achieved at battery terminals. Unit shall then be automatically switched to a lower float-charging mode and shall continue to operate in that mode until battery is discharged again.
  - b. Automatic Temperature Compensation: Adjust float and equalize voltages for variations in ambient temperature from minus 40 deg F (minus 40 deg C) to 140 deg F (plus 60 deg C) to prevent overcharging at high temperatures and undercharging at low temperatures.
  - c. Automatic Voltage Regulation: Maintain constant output voltage regardless of input voltage variations up to plus or minus 10 percent.
  - d. Ammeter and Voltmeter: Flush mounted in door. Meters shall indicate charging rates.
  - e. Safety Functions: Sense abnormally low battery voltage and close contacts providing low battery voltage indication on control and monitoring panel. Sense high battery voltage and loss of ac input or dc output of battery charger. Ei The condition shall close contacts that provide a battery-charger malfunction indication at system control and monitoring panel.
  - f. Enclosure and Mounting: NEMA 250, Type 1 wall-mounted cabinet.

## **2.05 DIESEL FUEL-OIL SYSTEM**

- A. Comply with NFPA 30.
- B. Piping: Fuel-oil piping shall be Schedule 40 black steel, complying with requirements in other section for "Facility Fuel-Oil Piping." Cast iron, aluminum, copper, and galvanized steel shall not be used in the fuel-oil system.
- C. Main Fuel Pump: Mounted on engine to provide primary fuel flow under starting and load conditions.
- D. Fuel Filtering: Remove water and contaminants larger than 1 micron.
- E. Relief-Bypass Valve: Automatically regulates pressure in fuel line and returns excess fuel to source.
- F. Subbase-Mounted, Double-Wall, Fuel-Oil Tank: Factory installed and piped, complying with UL
- G. 2085 fuel-oil tank. Features include the following:
  1. Tank level indicator.
  2. Leak detection in interstitial space.
  3. Vandal-resistant fill cap.

4. Containment Provisions: Comply with requirements of authorities having jurisdiction.

## 2.06 CONTROL AND MONITORING

- A. Automatic-Starting System Sequence of Operation: When mode-selector switch on the control and monitoring panel is in the automatic position, remote-control contacts in one or more separate automatic transfer switches initiate starting and stopping of engine generator. When mode-selector switch
- B. is switched to the on position, engine generator starts. The off position of same switch initiates engine generator shutdown. When engine generator is running, specified system or equipment failures or derangements au
- C. tomatically shut down engine generator and initiate alarms.
- D. Provide minimum run time control set for 30 minutes, with override only by operation of a remote emergency-stop switch.
- E. Comply with UL 508A.
- F. Configuration: Operating and safety indications, protective devices, basic system controls, and engine gages shall be grouped in a common control and monitoring panel mounted on the engine generator. Mounting method
- G. shall isolate the control panel from engine generator vibration. Panel shall be powered from the engine generator battery.
- H. Control and Monitoring Panel:
1. Digital controller with integrated LCD display, controls, and microprocessor, capable of local and remote control, monitoring, and programming, with battery backup.
  2. Load Shedding Capability: Generator controller shall be capable to prioritize connected loads. Generator controller shall be able to automatically disconnect optional standby loads, based on reverse priority order.
  3. Instruments: Located on the control and monitoring panel and viewable during operation.
    - a. Engine lubricating-oil pressure gage.
    - b. Engine-coolant temperature gage.
    - c. DC voltmeter (alternator battery charging).
    - d. Running-time meter.
    - e. AC voltmeter, connected to a phase selector switch.
    - f. AC ammeter, connected to a phase selector switch.
    - g. AC frequency meter.
    - h. Generator-voltage-adjusting rheostat.
  4. Controls and Protective Devices: Controls, shutdown devices, and common visual alarm indication as required by NFPA 110 for Level 1 and 2 system, including the following:
    - a. Cranking control equipment.
    - b. Run-Off-Auto switch.
    - c. Control switch not in automatic position alarm.
    - d. Overcrank alarm.
    - e. Overcrank shutdown device.
    - f. Low water temperature alarm.
    - g. High engine temperature pre-alarm.
    - h. High engine temperature.
    - i. High engine temperature shutdown device.
    - j. Overspeed alarm.
    - k. Overspeed shutdown device.
    - l. Low-fuel main tank.
      - 1) Low-fuel-level alarm shall be initiated when the level falls below that required for operation for the duration required for the indicated EPSS class.

- m. Coolant low-level alarm.
  - n. Coolant low-level shutdown device.
  - o. EPS load indicator.
  - p. Battery high-voltage alarm.
  - q. Low-cranking voltage alarm.
  - r. Battery-charger malfunction alarm.
  - s. Battery low-voltage alarm.
  - t. Lamp test.
  - u. Contacts for local and remote common alarm.
  - v. Low-starting air pressure alarm.
  - w. Remote manual-stop shutdown device.
  - x. Air shutdown damper alarm when used.
  - y. Air shutdown damper shutdown device when used.
  - z. Generator overcurrent-protective-device not-closed alarm.
- I. Connection to Datalink:
- 1. A separate terminal block, factory wired to Form C dry contacts, for each alarm and status indication.
  - 2. Provide connections for datalink transmission of indications to remote data terminals via ModBus. Data system connections to terminals are covered in other section for "Electrical Power Monitoring and Control."
- J. Common Remote Panel with Common Audible Alarm: Comply with NFPA 110 requirements for Level 1 and 2 systems. Include necessary contacts and terminals in control and monitoring panel. Remote panel shall be powered from the engine generator battery.
- K. Remote Alarm Annunciator: Comply with NFPA 99. An LED indicator light labeled with proper alarm conditions shall identify each alarm event, and a common audible signal shall sound for each alarm condition. Silencing switch in face of panel shall silence signal without altering visual indication. Connect so that after an alarm is silenced, clearing of initiating condition will reactivate alarm until silencing switch is reset. Cabinet and faceplate are flush-mounting type. Provide communication link via RS485 serial data link in ¾ inch conduit. Coordinate exact location with owner representative.
- 1. Overcrank alarm.
  - 2. Coolant low-temperature alarm.
  - 3. High engine temperature prealarm.
  - 4. High engine temperature alarm.
  - 5. Low lube oil pressure alarm.
  - 6. Overspeed alarm.
  - 7. Low-fuel main tank alarm.
  - 8. Low coolant level alarm.
  - 9. Low-cranking voltage alarm.
  - 10. Contacts for local and remote common alarm.
  - 11. Audible-alarm silencing switch.
  - 12. Air shutdown damper when used.
  - 13. Run-Off-Auto switch.
  - 14. Control switch not in automatic position alarm.
  - 15. Fuel tank derangement alarm.
  - 16. Fuel tank high-level shutdown of fuel-supply alarm.
  - 17. Lamp test.
  - 18. Low-cranking voltage alarm.
  - 19. Generator overcurrent protective device not closed.
- L. Supporting Items: Include sensors, transducers, terminals, relays, and other devices and include wiring required to support specified items. Locate sensors and other supporting items on engine or generator unless otherwise indicated.

- M. Remote Emergency-Stop Switch: Install at exterior generator enclosure or at an approved location outside the generator room unless otherwise indicated; and labeled. Push button shall be protected from accidental operation. Where a generator is installed in parallel with other generators, the disconnecting means shall be capable of isolating the generator output terminals from the paralleling equipment.

## **2.07 GENERATOR OVERCURRENT AND FAULT PROTECTION**

- A. Overcurrent protective devices for the entire EPSS shall be coordinated to optimize selective tripping when a short circuit occurs. Coordination of protective devices shall consider both utility and EPSS as the voltage source.
  - 1. Overcurrent protective devices for the EPSS shall be accessible only to authorized personnel.
- B. Generator Circuit Breaker: Molded-case, electronic-trip type; 100 percent rated; complying with UL 489.
  - 1. Tripping Characteristics: Adjustable long-time and short-time delay and instantaneous.
  - 2. Trip Settings: Selected to coordinate with generator thermal damage curve.
  - 3. Shunt Trip: Connected to trip breaker when engine generator is shut down by other protective devices.
  - 4. Mounting: Adjacent to or integrated with control and monitoring panel.
- C. Generator Protector: Microprocessor-based unit shall continuously monitor current level in each phase of generator output, integrate generator heating effect over time, and predict when thermal damage of alternator will occur. When sig
- D. naled by generator protector or other engine generator protective devices, a shunt-trip device in the generator disconnect switch shall open the switch to disconnect the generator from load circuits. Protector performs the following functions:
  - 1. Initiates a generator overload alarm when generator has operated at an overload equivalent to 110 percent of full-rated load for 60 seconds. Indication for this alarm is integrated with other engine generator malfunction alarms. Contacts shall be available for load shed functions.
  - 2. Under single- or three-phase fault conditions, regulates generator to 300 percent of rated full-load current for up to 10 seconds.
  - 3. As overcurrent heating effect on the generator approaches the thermal damage point of the unit, protector switches the excitation system off, opens the generator disconnect device, and shuts down the engine generator.
  - 4. Senses clearing of a fault by other overcurrent devices and controls recovery of rated voltage to avoid overshoot.

## **2.08 GENERATOR, EXCITER, AND VOLTAGE REGULATOR**

- A. Comply with NEMA MG 1.
- B. Drive: Generator shaft shall be directly connected to engine shaft. Exciter shall be rotated integrally with generator rotor.
- C. Electrical Insulation: Class H.
- D. Stator-Winding Leads: Brought out to terminal box to permit future reconnection for other voltages if required. Provide 12-lead alternator.
- E. Range: Provide extended range of output voltage by adjusting the excitation level.
- F. Construction shall prevent mechanical, electrical, and thermal damage due to vibration, overspeed up to 125 percent of rating, and heat during operation at 110 percent of rated capacity.
- G. Enclosure: Drip-proof.

- H. Voltage Regulator: Solid-state type, separate from exciter, providing performance as specified and as required by NFPA 110.
  - 1. Adjusting Rheostat on Control and Monitoring Panel: Provide plus or minus 5 percent adjustment of output-voltage operating band.
  - 2. Maintain voltage within 15 percent on one step, full load.
  - 3. Provide anti-hunt provision to stabilize voltage.
  - 4. Maintain frequency within 5 percent and stabilize at rated frequency within two seconds.
- I. Strip Heater: Thermostatically controlled unit arranged to maintain stator windings above dew point.
- J. Windings: Two-thirds pitch stator winding and fully linked amortisseur winding.
- K. Subtransient Reactance: 12 percent, maximum.

## **2.09 VIBRATION ISOLATION DEVICES**

- A. Restrained Spring Isolators: Freestanding, steel, open-spring isolators with seismic restraint.
  - 1. Housing: Steel with resilient, vertical-limit stops to prevent spring extension due to wind loads or if weight is removed; factory-drilled baseplate bonded to 1/4-inch- (6-mm-) thick, elastomeric isolator pad attached to baseplate underside; and adjustable equipment-mounting and -leveling bolt that acts as blocking during installation.
  - 2. Outside Spring Diameter: Not less than 80 percent of compressed height of the spring at rated load.
  - 3. Minimum Additional Travel: 50 percent of required deflection at rated load.
  - 4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
  - 5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
  - 6. Minimum Deflection: 1 inch (25 mm).
- B. Comply with requirements in other section for "Hydronic Piping Specialties" for vibration isolation and flexible connector materials for steel piping.
- C. Comply with requirements in other section for "Metal Ducts" for vibration isolation and flexible connector materials for exhaust shroud and ductwork.
- D. Vibration isolation devices shall not be used to accommodate misalignments or to make bends.

## **2.10 FINISHES**

- A. Indoor and Outdoor Enclosures and Components: Manufacturer's standard finish over corrosion-resistant pretreatment and compatible primer.

## **2.11 SOURCE QUALITY CONTROL**

- A. Prototype Testing: Factory test engine generator using same engine model, constructed of identical or equivalent components and equipped with identical or equivalent accessories.
  - 1. Tests: Comply with NFPA 110, Level 1 Energy Converters and with IEEE 115.
- B. Project-Specific Equipment Tests: Before shipment, factory test engine generator and other system components and accessories manufactured specifically for this Project.
- C. Perform tests at rated load and power factor. Include the following tests:
  - 1. Test components and accessories furnished with installed unit that are not identical to those on tested prototype to demonstrate compatibility and reliability.
  - 2. Test generator, exciter, and voltage regulator as a unit.
  - 3. Full-load run.
  - 4. Maximum power.
  - 5. Voltage regulation.
  - 6. Transient and steady-state governing.
  - 7. Single-step load pickup.
  - 8. Safety shutdown.

9. Report factory test results within 10 days of completion of test.

### **PART 3 - EXECUTION**

#### **3.01 EXAMINATION**

- A. Examine areas, equipment bases, and conditions, with Installer present, for compliance with requirements for installation and other conditions affecting packaged engine generator performance.
- B. Examine roughing-in for piping systems and electrical connections. Verify actual locations of connections before packaged engine generator installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.02 INSTALLATION**

- A. Comply with NECA 1 and NECA 404.
- B. Comply with packaged engine generator manufacturers' written installation and alignment instructions and with NFPA 110.
- C. Equipment Mounting:
  1. Install packaged engine generators on cast-in-place concrete equipment bases. Comply with requirements for equipment bases and foundations specified in other section for "Cast-in-Place Concrete."
  2. Coordinate size and location of concrete bases for packaged engine generators. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified with concrete.
  3. Install packaged engine generator with restrained spring isolators having a minimum deflection of 1 inch (25 mm) on 4-inch- (100-mm-) high concrete base. Secure sets to anchor bolts installed in concrete bases. Concrete base construction is specified in other section for "Seismic Controls for Electrical Systems."
- D. Install packaged engine generator to provide access, without removing connections or accessories, for periodic maintenance.
- E. Exhaust System: Install Schedule 40 black steel piping with welded joints and connect to engine muffler. Install thimble at wall. Piping shall be same diameter as muffler outlet.
  1. Piping materials and installation requirements are specified in other section for "Hydronic Piping."
  2. Install flexible connectors and steel piping materials according to requirements in other section for "Hydronic Piping Specialties."
  3. Insulate muffler/silencer and exhaust system components according to requirements in other section for "HVAC Piping Insulation."
  4. Install isolating thimbles where exhaust piping penetrates combustible surfaces with a minimum of 9 inches (225 mm) of clearance from combustibles.
- F. Drain Piping: Install condensate drain piping to muffler drain outlet with a shutoff valve, stainless-steel flexible connector, and Schedule 40 black steel pipe with welded joints.
  1. Piping materials and installation requirements are specified in other section for "Hydronic Piping."
  2. Drain piping valves, connectors, and installation requirements are specified in other section for "Hydronic Piping Specialties."
- G. Fuel Piping:
  1. Diesel storage tanks, tank accessories, piping, valves, and specialties for fuel systems are specified in other section for "Facility Fuel-Oil Piping."
  2. Copper and galvanized steel shall not be used in the fuel-oil piping system.
- H. Electrical Wiring: Install electrical devices furnished by equipment manufacturers but not specified to be factory mounted.

**3.03 CONNECTIONS**

- A. Piping installation requirements are specified in other Sections. Drawings indicate general arrangement of piping and specialties.
- B. Connect fuel, cooling-system, and exhaust-system piping adjacent to packaged engine generator to allow space for service and maintenance.
- C. Connect cooling-system water piping to engine generator and heat exchanger with flexible connectors.
- D. Connect engine exhaust pipe to engine with flexible connector.
- E. Connect fuel piping to engines with a gate valve and union and flexible connector.
  - 1. Additional requirements for diesel storage tanks, tank accessories, piping, valves, and specialties for fuel systems are specified in other section for "Facility Fuel-Oil Piping."
- F. Ground equipment according to other section for "Grounding and Bonding for Electrical Systems."
- G. Connect wiring according to other section for "Low-Voltage Electrical Power Conductors and Cables." Provide a minimum of one 90-degree bend in flexible conduit routed to the engine generator from a stationary element.
- H. Balance single-phase loads to obtain a maximum of 10 percent unbalance between any two phases.

**3.04 IDENTIFICATION**

- A. Identify system components according to requirement in other sections for "Identification for HVAC Piping and Equipment" and for "Identification for Electrical Systems."

**3.05 FIELD QUALITY CONTROL**

- A. Testing Agency: Contractor will engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections.
- C. Tests and Inspections:
  - 1. Perform tests recommended by manufacturer and in "Visual and Mechanical Inspection" and "Electrical and Mechanical Tests" subparagraphs below, as specified in the NETA ATS. Certify compliance with test parameters.
    - a. Visual and Mechanical Inspection:
      - 1) Compare equipment nameplate data with Drawings and the Specifications.
      - 2) Inspect physical and mechanical condition.
      - 3) Inspect anchorage, alignment, and grounding.
      - 4) Verify that the unit is clean.
    - b. Electrical and Mechanical Tests:
      - 1) Perform insulation-resistance tests according to IEEE 43.
        - a) Machines Larger Than 200 hp (150 kW): Test duration shall be 10 minutes. Calculate polarization index.
        - b) Machines 200 hp (150 kW) or Less: Test duration shall be one minute. Calculate the dielectric-absorption ratio.
      - 2) Test protective relay devices.
      - 3) Verify phase rotation, phasing, and synchronized operation as required by the application.
      - 4) Functionally test engine shutdown for low oil pressure, overtemperature, overspeed, and other protection features as applicable.
      - 5) Perform vibration test for each main bearing cap.

- 6) Conduct performance test according to NFPA 110.
  - 7) Verify correct functioning of the governor and regulator.
2. NFPA 110 Acceptance Tests: Perform tests required by NFPA 110 that are additional to those specified here, including, but not limited to, single-step full-load pickup test.
  3. Battery Tests: Equalize charging of battery cells according to manufacturer's written instructions. Record individual cell voltages.
    - a. Measure charging voltage and voltages between available battery terminals for full-charging and float-charging conditions. Check electrolyte level and specific gravity under both conditions.
    - b. Test for contact integrity of all connectors. Perform an integrity load test and a capacity load test for the battery.
    - c. Verify acceptance of charge for each element of the battery after discharge.
    - d. Verify that measurements are within manufacturer's specifications.
  4. Battery-Charger Tests: Verify specified rates of charge for both equalizing and float-charging conditions.
  5. System Integrity Tests: Methodically verify proper installation, connection, and integrity of each element of engine generator system before and during system operation. Check for air, exhaust, and fluid leaks.
  6. Exhaust Emissions Test: Comply with applicable government test criteria.
  7. Voltage and Frequency Transient Stability Tests: Use recording oscilloscope to measure voltage and frequency transients for 50 and 100 percent step-load increases and decreases, and verify that performance is as specified.
  8. Harmonic-Content Tests: Measure harmonic content of output voltage at 25 percent and 100 percent of rated linear load. Verify that harmonic content is within specified limits.
  9. Noise-Level Tests: Measure A-weighted level of noise emanating from engine generator installation, including engine exhaust and cooling-air intake and discharge, at four locations on the property line, and compare measured levels with required values.
- D. Coordinate tests with tests for transfer switches, and run them concurrently.
  - E. Test instruments shall have been calibrated within the past 12 months, traceable to NIST Calibration Services, and adequate for making positive observation of test results. Make calibration records available for examination on request.
  - F. Leak Test: After installation, charge exhaust, coolant, and fuel systems and test for leaks. Repair leaks and retest until no leaks exist.
  - G. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation for generator and associated equipment.
  - H. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
  - I. Remove and replace malfunctioning units and retest as specified above.
  - J. Retest: Correct deficiencies identified by tests and observations, and retest until specified requirements are met.
  - K. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation resistances, time delays, and other values and observations. Attach a label or tag to each tested component, indicating satisfactory completion of tests.
  - L. Infrared Scanning: After Substantial Completion, but not more than 60 days after final acceptance, perform an infrared scan of each power wiring termination and each bus connection while running with maximum load. Remove all access panels, so terminations and connections are accessible to portable scanner.
  - M.
    1. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.

2. Record of Infrared Scanning: Prepare a certified report that identifies terminations and connections checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

**3.06 MAINTENANCE SERVICE**

- A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of manufacturer's authorized service representative. Include quarterly preventive maintenance and exercising to check for proper starting, load transfer, and running under load. Include routine preventive maintenance as recommended by manufacturer and adjusting as required for proper operation. Parts shall be manufacturer's authorized replacement parts and supplies.

**3.07 DEMONSTRATION**

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain packaged engine generators.

**END OF SECTION**

**SECTION 263300**

**DOCKING STATION**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this section and all other sections of Division 26.

**1.02 SUMMARY**

- A. Section Includes:
  - 1. Docking Station

**1.03 SUBMITTALS**

- A. Product Data: For each Docking Station and component indicated. Include dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.
  - 1. Enclosure types and details for types other than NEMA 250, Type 1.
  - 2. Current and voltage ratings.
  - 3. Short-circuit current ratings (interrupting and withstand, as appropriate).
  - 4. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices, accessories, and auxiliary components.
  - 5. Include time-current coordination curves (average melt) for each type and rating of overcurrent protective device; include selectable ranges for each type of overcurrent protective device
- B. Shop Drawings: For circuit breakers. Include plans, elevations, sections, details, and attachments to other work.
  - 1. Wiring Diagrams: For power, signal, and control wiring.
- C. Qualification Data: For qualified testing agency.
- D. Field quality-control reports.
  - 1. Test procedures used.
  - 2. Test results that comply with requirements.
  - 3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.
- E. Manufacturer's field service report.
- F. Operation and Maintenance Data: For enclosed circuit breakers to include in emergency, operation, and maintenance manuals and other specification sections.
  - 1. Manufacturer's written instructions for testing and adjusting enclosed circuit breakers.
- G. Time-current coordination curves (average melt) for each type and rating of overcurrent protective device; include selectable ranges for each type of overcurrent protective device.
- H. Contractor shall submit a "specifications compliance statement" for each manufactured piece of equipment. Contractor/Supplier shall add "redlined" line-by-line notations to a PDF of the Specifications Section indicating the product or actions required "complies". Contractor/Supplier shall itemize all deviations from the specified requirement on a line-by-line basis. List of exceptions

to product specification shall include proposed materials, methods and cost difference where substitutions are allowed. If product does not comply with the specification the Contractor/Supplier shall state what modifications and actions are being implemented to ensure the product shall comply per the substitution section of the contract documents.

**1.04 STATEMENT OF COMPLIANCE**

- A. Contractor shall submit a “specifications compliance statement” for each manufactured piece of equipment. Contractor/Supplier shall add “redlined” notations to a PDF of the Specifications Section indicating the product or actions required “complies”. If product does not comply the Contractor/Supplier shall state what modifications and actions are being implemented to ensure the product shall comply per the substitution section of the contract documents.

**1.05 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For testing agency.
- B. Field quality-control reports.

**1.06 CLOSEOUT SUBMITTALS**

- A. Operation and Maintenance Data: For each type of product to include in emergency shelter, operation, and maintenance manuals.
  - 1. In addition to items specified in other section for "Operation and Maintenance Data," include the following:
    - a. Features and operating sequences, manual.

**1.5 QUALITY ASSURANCE**

- A. Testing Agency Qualifications: Member company of NETA or an NRTL.
  - 1. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on- site testing.
- B. Source Limitations: Obtain enclosed circuit breakers, overcurrent protective devices, components, and accessories, within same product category, from single source from single manufacturer.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- D. Comply with NFPA 70.
- E. ETL/UL Listed to 1008 Standards.
- F. UL 50 Listed.

**1.6 PROJECT CONDITIONS**

- A. Environmental Limitations: Rate equipment for continuous operation under the following conditions unless otherwise indicated:
  - 1. Ambient Temperature: Not less than minus 22<sup>0</sup>F and not exceeding 104<sup>0</sup>F.
  - 2. Altitude: Not exceeding six thousand six hundred (6,600) feet.
- B. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by Owner or others unless permitted under the following conditions and then

only after arranging to provide temporary electric service according to requirements indicated:

1. Notify Owner no fewer than ten (10) days in advance of proposed interruption of electric service.
2. Indicate method of providing temporary electric service.
3. Do not proceed with interruption of electric service without Owner's written permission.
4. Comply with NFPA 70E.

**1.7 COORDINATION**

- A. Coordinate layout and installation of Docking Station with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

**1.8 WARRANTY**

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components of docking station or docking station components that fail in materials or workmanship within specified warranty period.
  1. Warranty Period: Two (2) years from date of Substantial Completion.

**PART 2 - PRODUCTS**

**2.1 GENERATOR DOCKING STATION:**

- A. Enclosure:
  1. NEMA 4X Metallic Enclosure.
  2. Pad-lockable front door shall include a hinged access plate at the bottom for entry of temporary cabling that prevents unauthorized tampering while in use.
  3. NEMA 3R Integrity shall be maintained while temporary cabling is connected during use.
  4. Front and Side shall be accessible for maintenance.
  5. Top, Side, and Bottom shall be accessible for permanent cabling.
  6. Life Safety Load Breaker shall be in separate compartment.
- B. Powder Coat
  1. Paint after fabrication shall be Hammer tone Gray.
- C. Phase, Neutral, and Ground Busbar:
  1. Material: Silver-plated Copper
  2. Equipment Ground Bus: bonded to box
  3. Ground Bus: 100% of phase size
  4. Neutral Bus: Neutral bus rated 100 percent of phase bus
- D. Temporary generator and Load Bank connectors shall be Camlok style mounted on gland plate.
  1. Camlok shall be 16 Series model and color coded according to system voltage requirements.
  2. Camlok connections shall be Bus Bar Style, Cabling or Double Set Screw is not acceptable.
  3. Camlok connections shall be protected against accidental contact while not in use.
  4. Camlok shall be suitable for wire size and quantities indicated on the drawings.
- E. Permanent Connection shall be factory installed board range set-screw mechanical type, located behind a physical barrier. Mechanical connectors shall be suitable for the wire size and quantities indicated on the drawings.
- F. Short Circuit & Withstanding Rating
  1. Shall be minimum 65 KAIC unless otherwise indicated on drawings.
- G. Voltage & Amperage
  1. 208/120V and 800A, 3 Phase, 4 Wire + Ground

- H. Factory Installed Phase Rotation Monitor Device:
  - 1. Must be UL 489 Listed Breaker – See drawings for additional information
  - 2. Breaker shall be removable for service and maintenance
  - 3. Breaker shall be equipped with LSI trip unit
  - 4. Breaker shall be key interlocked with permanent generator system
- I. Additional Accessories shall be included in submittal drawing as follows:
  - 1. Two Wire Auto Start
  - 2. Battery Charger Receptacle 20A GFCI 125V
  - 3. 100% Ground
  - 4. Phase Monitor Relay
  - 5. Strip heater Receptacle 30A GFCI 208V
  - 6. Load Dump Receptacle
- J. Approved Manufacture's: Subject to compliance with requirements, provide products by the following:
  - 1. Trystar
  - 2. ESL
  - 3. N.J.Sullivan

**PART 3 - EXECUTION**

**3.01 EXAMINATION**

- A. Examine elements and surfaces to receive Docking Stations for compliance with installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

**3.02 INSTALLATION**

- A. Provide housekeeping Pad for mounting Docking Station
- B. Install Pad Mounted Docking Station utilizing properly secured channels anchored to the housekeeping pad.
- C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.
- D. Comply with NECA 1.

**3.03 IDENTIFICATION**

- A. Comply with requirements with other specification sections.
  - 1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
  - 2. Label each enclosure with engraved metal or laminated-plastic nameplate.

**3.04 FIELD QUALITY CONTROL**

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.
- B. Perform tests and inspections.
  - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- C. Acceptance Testing Preparation:

1. Test insulation resistance for each enclosed switch and circuit breaker, component, connecting supply, feeder, and control circuit.
  2. Test continuity of each circuit.
- D. Tests and Inspections:
1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
  2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
  3. Perform the following infrared scan tests and inspections and prepare reports:
    - a. Initial Infrared Scanning: After Substantial Completion, but not more than sixty (60) days after Final Acceptance, perform an infrared scan of each enclosed circuit breaker. Remove front panels so joints and connections are accessible to portable scanner.
    - b. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each enclosed circuit breaker eleven (11) months after date of Substantial Completion.
    - c. Instruments and Equipment: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
  4. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.
  5. Verify Phase Rotation
- E. Enclosed circuit breakers will be considered defective if they do not pass tests and inspections.
- F. Prepare test and inspection reports including a certified report that identifies enclosed circuit breakers and that describes scanning results. Include notation of deficiencies detected, remedial action taken and observations after remedial action.

**3.05 ADJUSTING**

- A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.
- B. Set field-adjustable circuit-breaker trip ranges as specified in other specification sections.

**END OF SECTION**

**SECTION 264300**  
**SURGE PROTECTIVE DEVICES**

**PART 1 GENERAL**

1.01 SECTION INCLUDES

- A. Surge protective devices for service entrance locations.
- B. Surge protective devices for distribution locations.
- C. Surge protective devices for branch panelboard locations.

1.02 RELATED REQUIREMENTS

- A. Section 260526 - Grounding and Bonding for Electrical Systems.
- B. Section 262300 - Low-Voltage Switchgear.
- C. Section 262413 - Switchboards.
- D. Section 262416 - Panelboards.
- E. Section 262513 - Low-Voltage Busways.
- F. Section 271000 - Structured Cabling: Protectors for communications service entrance.

1.03 ABBREVIATIONS AND ACRONYMS

- A. EMI/RFI: Electromagnetic Interference/Radio Frequency Interference.
- B. SPD: Surge Protective Device.

1.04 REFERENCE STANDARDS

- A. MIL-STD-220 - Method of Insertion Loss Measurement; 2009c (Validated 2024).
- B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- C. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2024.
- D. NETA ATS - Standard for Acceptance Testing Specifications for Electrical Power Equipment And Systems; 2025.
- E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. UL 1283 - Standard for Electromagnetic Interference Filters; Current Edition, Including All Revisions.
- G. UL 1449 - Standard for Surge Protective Devices; Current Edition, Including All Revisions.

1.05 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate size and location of overcurrent device compatible with the actual surge protective device and location to be installed. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to ordering equipment.

1.06 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Include detailed component information, voltage, surge current ratings, repetitive surge current capacity, voltage protection rating (VPR) for all protection modes, maximum continuous operating voltage (MCOV), nominal discharge current (I-n), short circuit current rating (SCCR), connection means including any required external overcurrent protection, enclosure ratings, outline and support point dimensions, weight, service condition requirements, and installed features.
  - 1. SPDs with EMI/RFI filter: Include noise attenuation performance.

- C. Shop Drawings: Include wiring diagrams showing all factory and field connections with wire and circuit breaker/fuse sizes.
- D. Certificates: Manufacturer's documentation of listing for compliance with the following standards:
  - 1. UL 1449.
  - 2. UL 1283 (for Type 2 SPDs).
- E. Field Quality Control Test Reports.
- F. Manufacturer's Installation Instructions: Include application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- G. Operation and Maintenance Data: Include information on status indicators and recommended maintenance procedures and intervals.
- H. Warranty: Submit sample of manufacturer's warranty and documentation of final executed warranty completed in Owner's name and registered with manufacturer.
- I. Project Record Documents: Record actual connections and locations of surge protective devices.

1.07 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.08 DELIVERY, STORAGE, AND PROTECTION

- A. Store in a clean, dry space in accordance with manufacturer's written instructions.

1.09 FIELD CONDITIONS

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.10 WARRANTY

- A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
- B. Manufacturer's Warranty: Provide minimum five year warranty covering repair or replacement of surge protective devices showing evidence of failure due to defective materials or workmanship.
- C. Exclude surge protective devices from any clause limiting warranty responsibility for acts of nature, including lightning, stated elsewhere.

**PART 2 PRODUCTS**

2.01 MANUFACTURERS

- A. Field-Installed, Externally Mounted Surge Protective Devices:
  - 1. ABB: [www.electrification.us.abb.com/#sle](http://www.electrification.us.abb.com/#sle).
  - 2. Intermatic, Inc: [www.intermatic.com/#sle](http://www.intermatic.com/#sle).
  - 3. nVent ERICO: [www.nvent.com/#sle](http://www.nvent.com/#sle).
  - 4. Schneider Electric: [www.se.com/#sle](http://www.se.com/#sle).
  - 5. Surge Suppression, LLC (SSI): [www.surgesuppression.com/#sle](http://www.surgesuppression.com/#sle).
  - 6. Siemens
  - 7. Eaton
- B. Factory-installed, Internally Mounted Surge Protective Devices:
  - 1. Same as manufacturer of equipment containing surge protective device, to provide complete listed assembly including SPD.
- C. Substitutions: See Section 016000 - Product Requirements.

- D. Source Limitations: Provide surge protective devices produced by single manufacturer and obtained from single supplier.

## 2.02 SURGE PROTECTIVE DEVICES - GENERAL REQUIREMENTS

- A. Description: Factory-assembled surge protective devices (SPDs) for 60 Hz service; listed, classified, and labeled as suitable for the purpose intended; system voltage as indicated on the drawings.
- B. Unless otherwise indicated, provide factory-installed, internally-mounted SPDs.
- C. List and label as complying with UL 1449, Type 1 when connected on line side of service disconnect overcurrent device and Type 1 or 2 when connected on load side of service disconnect overcurrent device.
- D. Protected Modes:
  - 1. Wye Systems: L-N, L-G, N-G, L-L.
  - 2. Delta Systems: L-G, L-L.
- E. UL 1449 Voltage Protection Ratings (VPRs):
  - 1. 208Y/120V System Voltage: Not more than 1,200 V for L-N, L-G, and N-G modes and 1,500 V for L-L mode.
  - 2. 480Y/277V System Voltage: Not more than 2,000 V for L-N, L-G, and N-G modes and 2,500 V for L-L mode.
- F. UL 1449 Maximum Continuous Operating Voltage (MCOV): Not less than 115% of nominal system voltage.
- G. Enclosure Environment Type per NEMA EN 10250: Unless otherwise indicated, as specified for the following installation locations:
  - 1. Indoor clean, dry locations: Type 1.
  - 2. Outdoor locations: Type 4X.
- H. Mounting for Field-installed, Externally Mounted SPDs: Unless otherwise indicated, as specified for the following locations:

1. Provide surface-mounted SPD where mounted in non-public areas or adjacent to surface-mounted equipment.

- I. Equipment Containing Factory-installed, Internally Mounted SPDs: Listed and labeled as a complete assembly including SPD.

1. Switchgear: See Section 262300.
2. Switchboards: See Section 262413.
3. Panelboards: See Section 262416.

## 2.03 SURGE PROTECTIVE DEVICES FOR SERVICE ENTRANCE LOCATIONS

- A. Surge Protective Device:

1. Protection Circuits: Field-replaceable modular.
2. Surge Current Rating: Not less than 160 kA per mode/320 kA per phase.
3. UL 1449 Nominal Discharge Current (I-n): 20 kA.
4. UL 1449 Short Circuit Current Rating (SCCR): Not less than 200 kA.
5. EMI/RFI Filtering: Provide EMI/RFI filter to attenuate electrical noise; listed as complying with UL 1283 for Type 2 SPDs (UL 1283 listing not available for Type 1 SPDs).
  - a. Noise Attenuation: Not less than 40 dB at 100 kHz using MIL-STD-220 insertion loss test method.
6. Diagnostics:
  - a. Protection Status Monitoring: Provide indicator lights to report the protection for each phase.
  - b. Alarm Notification: Provide indicator light and audible alarm to report alarm condition. Provide button to manually silence audible alarm.
  - c. Remote Status Monitoring: Provide Form C dry type contacts (normally open and normally closed) for remote annunciation of status.
  - d. Surge Counter: Provide surge event counter with manual reset button, surge count retention upon power loss, and six digit LCD display that indicates quantity of surge events.
7. Provide surge rated integral disconnect switch for SPDs not connected to a dedicated circuit breaker or fused switch.

## 2.04 SURGE PROTECTIVE DEVICES FOR DISTRIBUTION LOCATIONS

- A. Distribution locations include SPDs connected to distribution panelboards, motor control centers, and busway.

## B. Surge Protective Device:

1. Protection Circuits: Field-replaceable modular.
2. Surge Current Rating: Not less than 120 kA per mode/240 kA per phase.
3. UL 1449 Nominal Discharge Current (I-n): 20 kA.
4. UL 1449 Short Circuit Current Rating (SCCR): Not less than 200 kA.
5. EMI/RFI Filtering: Provide EMI/RFI filter to attenuate electrical noise; listed as complying with UL 1283 for Type 2 SPDs (UL 1283 listing not available for Type 1 SPDs).
  - a. Noise Attenuation: Not less than 40 dB at 100 kHz using MIL-STD-220 insertion loss test method.
6. Diagnostics:
  - a. Protection Status Monitoring: Provide indicator lights to report the protection status for each phase.
  - b. Alarm Notification: Provide indicator light and audible alarm to report alarm condition. Provide button to manually silence audible alarm.
  - c. Remote Status Monitoring: Provide Form C dry type contacts (normally open and normally closed) for remote annunciation of status.
  - d. Surge Counter: Provide surge event counter with manual reset button, surge count retention upon power loss, and six digit LCD display that indicates quantity of surge events.
7. Provide surge rated integral disconnect switch for SPDs not connected to a dedicated circuit breaker or fused switch.

## 2.05 SURGE PROTECTIVE DEVICES FOR BRANCH PANELBOARD LOCATIONS

## A. Surge Protective Device:

1. Protection Circuits: Field-replaceable modular.
2. Surge Current Rating: Not less than 80 kA per mode/160 kA per phase.
3. UL 1449 Nominal Discharge Current (I-n): 20 kA.
4. UL 1449 Short Circuit Current Rating (SCCR): Not less than 200 kA.
5. EMI/RFI Filtering: Provide EMI/RFI filter to attenuate electrical noise; listed as complying with UL 1283 for Type 2 SPDs (UL 1283 listing not available for Type 1 SPDs).
  - a. Noise Attenuation: Not less than 40 dB at 100 kHz using MIL-STD-220 insertion loss test method.
6. Diagnostics:
  - a. Protection Status Monitoring: Provide indicator lights to report the protection status for each phase.
  - b. Alarm Notification: Provide indicator light and audible alarm to report alarm condition. Provide button to manually silence audible alarm.

- c. Remote Status Monitoring: Provide Form C dry type contacts (normally open and normally closed) for remote annunciation of status.
  - d. Surge Counter: Provide surge event counter with manual reset button, surge count retention upon power loss, and six digit LCD display that indicates quantity of surge events.
7. Provide surge rated integral disconnect switch for SPDs not connected to a dedicated circuit breaker or fused switch.

**PART 3 EXECUTION**

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that the service voltage and configuration marked on the SPD are consistent with the service voltage and configuration at the location to be installed.
- C. Verify that electrical equipment is ready to accept connection of the SPD and that installed overcurrent device is consistent with requirements of drawings and manufacturer's instructions.
- D. Verify system grounding and bonding is in accordance with Section 260526, including bonding of neutral and ground for service entrance and separately derived systems where applicable. Do not energize SPD until deficiencies have been corrected.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Perform work in accordance with NECA 1 (general workmanship).
- B. Install products in accordance with manufacturer's instructions.
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Provide conductors with minimum ampacity as indicated on the drawings, as required by NFPA 70, and not less than manufacturer's recommended minimum conductor size.

- E. Install conductors between SPD and equipment terminations as short and straight as possible, not exceeding manufacturer's recommended maximum conductor length. Breaker locations may be reasonably rearranged in order to provide leads as short and straight as possible. Twist conductors together to reduce inductance.
- F. Do not energize SPD until bonding of neutral and ground for service entrance and separately derived systems is complete in accordance with Section 260526 where applicable. Replace SPDs damaged by improper or missing neutral-ground bond.
- G. Disconnect SPD prior to performing any high potential testing. Replace SPDs damaged by performing high potential testing with SPD connected.

### 3.03 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Inspect and test in accordance with NETA ATS, except Section 4.
- C. Perform inspections and tests listed in NETA ATS Section 7.19.1.
- D. Procure services of a qualified manufacturer's representative to observe installation and assist in inspection, testing, and adjusting. Include manufacturer's reports with field quality control submittals.

### 3.04 CLEANING

- A. Repair scratched or marred exterior surfaces to match original factory finish.