PREFAB CONFIGURATION-9

GENERAL NOTES:
1. REFER TO ONE LINE DIAGRAM ON SHEET E400 FOR ADDITIONAL DETAILS ON THE ELECTRICAL SYSTEM.
2. FOR ELECTRICAL SCHEDULES, SEE DRAWINGS ON SHEETS E600 AND E601.

PLAN NOTES:
1. CONCRETE PAD (TYPICAL). 
2. WMF0661 WALL MOUNT COOLING UNIT (TYPICAL OF 14 UNITS).
3. INSTALL A READILY ACCESSIBLE, LOCAL DISCONNECT NEAR EACH WALL MOUNT COOLING UNIT (TYPICAL OF 14).
4. GENERATOR SHALL INCLUDE A BUILT-IN CIRCUIT BREAKER. SEE ONE LINE DRAWING E400 FOR DETAILS.

ELECTRICAL SITE LAYOUT PLAN
CONFIGURATION-9

12150 MONUMENT DRIVE SUITE 150 FAIRFAX, VA. 22033
PH: 703-968-0300     FX: 703-654-3680

NOT FOR CONSTRUCTION
REFERENCE DESIGN
PREFAB CONFIGURATION-9

PREFAB FRAME SIZE (KW): 160
MAX IT LOAD (KW): 160
PREFAB MODULE DIMENSIONS (APPROXIMATE): 45.0 x 11.0 x 6.0
DEPTH (FT): WIDTH (FT): HEIGHT (FT):
480
10.0
11
2.0
SERIES SYSTEM MODEL: ASG 300
CPF 14 0.62 14
14
NO. OF WALL MOUNT COOLING UNITS WITH HEATERS: 
2.0
4
NO. OF IT RACKS: 6
IT RACK DIMENSIONS (APPROXIMATE): 10.0 x 6.0 x 7.0
NO. OF SINGLE PHASE POLLS IN POLE: 4
IT RACK DESTINATION UNIT MODEL: AIB685

PLAN DRAWN BY:
CHECKED BY:
PROJECT NUMBER:
DRAWING SCALE:
SHEET TITLE:
DATE:
DRAWING NUMBER:

---

PLAN DRAWN BY:
CHECKED BY:
PROJECT NUMBER:
DRAWING SCALE:
SHEET TITLE:
DATE:
DRAWING NUMBER:
GENERAL NOTES:
1. REFER TO ELECTRICAL GROUNDING DIAGRAM ON SHEET E410 FOR ADDITIONAL INFORMATION.
2. SEE DRAWING DETAIL ON SHEET E500.
3. ALL GROUNDING CONNECTIONS AND BONDINGS SHALL BE BY ARTICLE 250 OF NFPA 70.
4. ALL GROUND WIRES SHALL BE #2 AWG BARE COPPER, STRANDED.
5. ALL LIGHTNING PROTECTION WIRES SHALL BE #2 AWG BARE COPPER, STRANDED.
6. ALL LIGHTNING PROTECTION COMPONENTS SHALL BE PROPERLY SUPPORTED TO THE STRUCTURE WITH MIN. 8FT X 3/4IN DIAM. COPPER ROD. DRIVE TO A MINIMUM OF 10FT INTO THE EARTH.
7. ALL LIGHTNING PROTECTION CONNECTIONS AND BONDINGS SHALL BE PER NFPA 780.

PLAN NOTES:
1. MAIN GROUNDING ELECTRODE SYSTEM. SEE GROUNDING DETAIL ON SHEET E500.
2. MAIN GROUNDING ELECTRODE CONDUCTOR. INSTALL ENCASED IN CONCRETE SLAB, BUT IN DIRECT CONTACT WITH EARTH.
3. TRANSFORMER NEUTRAL SHALL BE INTERCONNECTED AT THE NEUTRAL BUS OF SERVICE ENTRANCE ATS (SOIL NEUTRAL SYSTEM). BOND ALL SERVICE AIR TERMINAL (TYPICAL). PROVIDE MIN. 8FT X 3/4IN DIAM. COPPER ROD. DRIVE TO A MINIMUM OF 10FT INTO THE EARTH.
4. MAIN GROUNDING BUS. REFER TO ELECTRICAL GROUNDING ONE LINE DIAGRAM ON SHEET E410 FOR DETAILS.
5. GROUND BAR AT THE SERVICE ENTRANCE ATS REFER TO ELECTRICAL GROUNDING ONE LINE DIAGRAM ON SHEET E410 FOR DETAILS.
6. GROUNDING ELECTRODE CONDUCTOR. PROVIDE MIN. 8FT X 3/4IN DIAM. COPPER ROD. DRIVE TO A MINIMUM OF 10FT INTO THE EARTH.
7. GROUNDING JUMPER. REFER TO ELECTRICAL GROUNDING ONE LINE DIAGRAM ON SHEET E410 FOR DETAILS.
8. CONNECT STRUCTURAL STEEL TO MAIN GROUNDING ELECTRODE SYSTEM (TYPICAL). CONTRACTOR SHALL ENSURE THAT ALL STRUCTURAL STEEL COMPONENTS WITHIN THE SLAB ARE PROPERLY BONDED WITH EACH OTHER.
9. CONNECT EQUIPMENT ENCLOSURE TO STRUCTURAL STEEL (TYPICAL).
10. LIGHTNING PROTECTION SYSTEM.see drawing E500 for details.
11. LIGHTNING PROTECTION WIRE.
12. LIGHTNING PROTECTION AIR TERMINAL (TYPICAL). PROVIDE MIN. 8FT X 3/4IN DIAM. COPPER ROD. DRIVE TO A MINIMUM OF 10FT INTO THE EARTH.
13. LIGHTNING PROTECTION ROOF WIRE. INSTALL ENCASED IN CONCRETE SLAB, BUT IN DIRECT CONTACT WITH EARTH.
14. LIGHTNING PROTECTION GROUNDING ELECTRODE (TYPICAL). PROVIDE MIN. 8FT X 3/4IN DIAM. COPPER ROD. DRIVE TO A MINIMUM OF 10FT INTO THE EARTH.
15. LIGHTNING PROTECTION GROUNDING CONDUCTOR. INSTALL ENCASED IN CONCRETE SLAB, BUT IN DIRECT CONTACT WITH EARTH.
16. LIGHTNING PROTECTION GROUNDING SYSTEM.

NOT FOR CONSTRUCTION

Mission Critical Services, Inc.
500KW DATA CENTER REFERENCE DESIGN PREFAB CONFIGURATION-9

GROUNDED ELECTRICAL SYSTEM WITHIN THE SLAB ARE PROPERLY BONDED WITH EACH OTHER.
LIGHTING FIXTURE SCHEDULE

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<th>TYPE</th>
<th>MANUFACTURER</th>
<th>VOLTAGE</th>
<th>WATTAGE</th>
<th>LAMP</th>
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<td>SURFACE</td>
<td>4&quot; LED VAPOR TIGHT FIXTURE</td>
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<td>LED COMBO</td>
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<td>4.5W</td>
<td>LED</td>
<td>1</td>
<td>SURFACE</td>
<td>(2) HEAD, BATTERY BACKED EMERGENCY LIGHT</td>
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</table>

GENERAL NOTES:
1. REFER TO ONE LINE DIAGRAMS ON SHEETS E400 AND E401 FOR ADDITIONAL DETAILS ON THE ELECTRICAL SYSTEM.
2. FOR ELECTRICAL SCHEDULES, SEE DRAWINGS ON SHEETS ERD AND ERH.

E104
**GENERAL NOTES:**

- See drawing E601 for abbreviations and symbols.
- See drawing E602 and E603 for electrical specifications.
- See drawings E602 and E603 for electrical schedules.

**CONTROLS NOTES:**

- Supply of control panels along with their integration services with the data center system shall be provided by Schneider Electric Division.
- Provide a separate conduit for connecting the SPD with PNB60 for SPD failure monitoring.
- Provide a UPS 208/120V CFF for providing 120V control power to control equipment on 100V AC supply.
- Provide a 120V AC to 24V DC power supply for 24V DC control power requirements.
- The circuit breaker inside the generator enclosure shall be equipped with a 24V DC shunt trip unit. Shunt trips are to be wired to EPO panel.
- Provide an Ethernet switch with sufficient ports for connecting the panel to generator control panel. Refer to panel schedule on drawing E-601 for details.

**PLAN NOTES:**

1. **Utility Meter** (to be provided by power company).
2. **ABB/General Electric Generator.**
3. Run two-phase wires, a neutral wire, and a ground wire in a 1-1/2" conduit from PDB-200 panel to generator power panel. Refer to panel schedule on drawing E-601 for details.
4. **800A, 300AT, 150kVA UPS (GALAXY VM 180KVA).**
5. Optional, 800A service entrance rated disconnect switch (provided by others).
6. Circuit breaker will be equipped with a modular 5.0 power trip unit and a shunt trip unit. Shunt trips shall be wired to EPO panel.
7. **ASCO-5210 Power Meter (Optionals).**
8. **450kVA Transformer Model EX45T3H.**
9. **208/120V, 125AMP NF Distribution Panel.** See drawing E-601 for details.
11. 45KVA Transformer Model EX45T3H.
12. **Dual 120V, 125AMP NF Distribution Panel.** See drawing E-601 for details.
14. **ASCO-5210 Service Entrance Rated Automatic Transfer Switch with Programmable Delayed Transition.**
15. Modular Power Distribution Unit Form 15/15GE. See drawing E-601 for distribution panel schedules within PDB-1 and PDB-2 for details.
16. Conductors from utility and generator shown as per wire schedule shall be run in 2" PVC Schedule 80 conduits.
**ELECTRICAL GROUNDING DIAGRAM:**

**GENERAL NOTES:**
- See drawings E001 for abbreviations and symbols.
- See drawings E003 and E004 for electrical specifications.
- See drawing E401 for electrical, one-line diagrams.
- See drawing E606 for electrical details.
- See drawing E607 and E608 for electrical schedules.
- All grounding connections and bondings shall be in accordance with Article 250 of NFPA 70, Equipment grounding conductors. See drawing E401 and E606 for one-line diagrams and basic electrical schedules for EGC sizing details.
- Refer to electrical grounding and lightning protection drawing for additional details.

**PLAN NOTES:**
1. (1) WALL MOUNT COOLING UNIT WITH HEATER-TYPE 1
2. (2) GENERATOR GROUNDING SYSTEM IS BASED ON A NON-SEPARATELY DERIVED SYSTEM.
3. See drawing E103 grounding and lightning protection for details.
4. Bonding jumper (providing by others) to be installed as required. All grounding connections and bondings shall be by main bonding jumper. Size per NEC.

**LEGEND:**
- EGC = Equipment grounding conductor.
- GEC = Grounding electrode conductor.
- BJK = Bonding jumper, size per NEC.
- MBJ = Main bonding jumper.
- NGB = Main grounding bar.
- N = Neutral bar.
- G = Ground bar.

**GENERAL NOTES:**
- See drawing E001 for abbreviations and symbols.
- See drawings E003 and E004 for electrical specifications.
- See drawing E401 for electrical, one-line diagrams.
- See drawing E606 for electrical details.
- See drawing E607 and E608 for electrical schedules.
- All grounding connections and bondings shall be in accordance with Article 250 of NFPA 70, Equipment grounding conductors. See drawing E401 and E606 for one-line diagrams and basic electrical schedules for EGC sizing details.
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**PLAN NOTES:**
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2. (2) GENERATOR GROUNDING SYSTEM IS BASED ON A NON-SEPARATELY DERIVED SYSTEM.
3. See drawing E103 grounding and lightning protection for details.
4. Bonding jumper (providing by others) to be installed as required. All grounding connections and bondings shall be by main bonding jumper. Size per NEC.

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- GEC = Grounding electrode conductor.
- BJK = Bonding jumper, size per NEC.
- MBJ = Main bonding jumper.
- NGB = Main grounding bar.
- N = Neutral bar.
- G = Ground bar.
Power shall be distributed from PDB-300 panel through cable trays to the two PDU groups PDU-A1 and PDU-A2 through cable trays.

**Isolated Ground Conductor**

Isolated ground conductor sized to match the 'IG', the feeder shall be provided with a separate isolated grounding conductor sized to match the equipment ground.

**Conduit Sizing**

- **3-Wire Feeder Sizing**
  - Symbol: E600
  - # of Sets: 2
  - Conductors (Copper): #12
  - Gnd.: 6/2

- **4-Wire Feeder Sizing**
  - Symbol: E600
  - # of Sets: 2
  - Conductors (Copper): #12
  - Gnd.: 6/2

---

### Distribution Panelboard 'MPD-100' Schedule

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<th>CURRENT</th>
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**Distribution Panelboard 'PDB-300' Schedule**

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**Notes:**

- This panelboard is for conceptual drawings.
- Not for construction.

---

### Electrical Schedules Configuration 9

**3-Wire Feeder Sizing Schedule**

- Symbol: E600
- # of Sets: 2
- Conductors (Copper): #12
- Gnd.: 6/2

**4-Wire Feeder Sizing Schedule**

- Symbol: E600
- # of Sets: 2
- Conductors (Copper): #12
- Gnd.: 6/2
### DISTRIBUTION PANELBOARD 'PDU-A1' SCHEDULE

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**Notes:**
- Demand factor in accordance with NEC.
- Rack shall have 9 in. distribution. Optional upgrade to 12 in. distribution shall be available on request.

### DISTRIBUTION PANELBOARD 'PDU-A2' SCHEDULE

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**Notes:**
- Demand factor in accordance with NEC.
- Rack shall have 9 in. distribution. Optional upgrade to 12 in. distribution shall be available on request.

### SYSTEM LOAD CALCULATION

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**Notes:**
- Power shall be distributed to IT racks and control panel load through cable trays.

### DISTRIBUTION PANELBOARD 'PDUB-200' SCHEDULE

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**Notes:**
- Demand factor in accordance with NEC.
- Rack shall have 12 in. distribution. Optional upgrade to 20 in. distribution shall be available on request.