1. All electrician works shall be done according to the applicable sections of the National Electrical Code (NEC), rules & regulations of the Department of Public Works, local power authority, & telephone authority.

2. All equipment & materials shall be in U.L. listed where listing is available for that type of equipment or conforms to ANSI or NEMA standards.

3. Workmanship shall conform to construction practices recommended by the American Electricians Handbook (latest edition) & shall be subjected to the approval of the agency who has the jurisdiction & the engineer.

4. Any device may relocated within ten feet of the location shown on the drawing prior to installation at the direction of the engineer & at no additional cost to the owner.

5. Metallic enclosures, raceways & electrical equipment shall be grounded according to the requirements of NEC Article 250, provide ground wire in every raceways. Size according to NEC Table 250-95. Obtain & pay for permits & arrange & pay for construction utilities.

6. Coordinate with the mechanical contractor for equipment requirements & provide all wiring & protection equipment required.

7. Conduit shall be EMT (dry locations concealed above grade), PVC enased in concrete & below grade, aluminum (exposed installation) flexible conduit shall be jacketed type & according to NEC Article 350.

8. Wiring shall be NEC type THWN, THHN, or XHHW, 600 V. Conductors shall be copper.

9. Panel board shall be complete with bus, enclosure & trim. Complete of molded plastic case circuit breakers (bolt on type), with ratings as indicated & complete type circuit directory.

10. Test in the presence of engineer results submitted for approval by the engineer.
   a. Operation test
   b. Insulation resistance test
   c. Ground resistance test

11. Any discrepancy in locations & ratings of equipment & apparatus shall be verified with the owner or any of his representatives & changes shall be made accordingly.

12. For each spare branch circuit in panel board provide 3/4" empty conduit terminated to 4" octagonal box above ceiling.

13. Provide GA. 16 G.I. pull wires in all spare duct & empty conduits.
GROUND FLOOR A/C POWER SUPPLY LAYOUT
### Recommended Conduit Fill

<table>
<thead>
<tr>
<th>Conduit Trade Size</th>
<th>Cable Outside Diameter (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAT 5e (0.18&quot;)</td>
<td>CAT 6 (0.23&quot;)</td>
</tr>
<tr>
<td>18mm (1/2 in.)</td>
<td>1</td>
</tr>
<tr>
<td>21mm (3/4 in.)</td>
<td>6</td>
</tr>
<tr>
<td>27mm (1 in.)</td>
<td>11</td>
</tr>
<tr>
<td>35mm (1 1/4 in.)</td>
<td>19</td>
</tr>
<tr>
<td>41mm (1 1/2 in.)</td>
<td>25</td>
</tr>
<tr>
<td>53mm (2 in.)</td>
<td>53</td>
</tr>
<tr>
<td>63mm (2 1/2 in.)</td>
<td>75</td>
</tr>
<tr>
<td>78mm (3 in.)</td>
<td>116</td>
</tr>
<tr>
<td>91mm (3 1/2 in.)</td>
<td>154</td>
</tr>
<tr>
<td>103mm (4 in.)</td>
<td>199</td>
</tr>
</tbody>
</table>

#### Wire Code

- 4t: Number of Cables
- t = CAT6 Cable

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**Ground Floor**

- Hallway
- Fireman's Quarters
- Apparatus Bay
- Outdoor

**Second Floor**

- Hallway
- Fireman's Quarters
- Apparatus Bay
- Outdoor

**Third Floor**

- Hallway
- Fireman's Quarters
- Apparatus Bay
- Outdoor

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**CCTV Single Line Diagram**
RECOMMENDED CONDUIT FILL

<table>
<thead>
<tr>
<th>CONDUIT TRADE SIZE</th>
<th>CABLE OUTSIDE DIAMETER (in)</th>
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<td>CAT 6 (0.23&quot;)</td>
<td>23</td>
</tr>
</tbody>
</table>

**WIRE CODE**

- 1 = CAT 6 CABLE
- 4 = NUMBER OF CABLE

**GROUND FLOOR**

- CAT6 CABLE
- TPB
- UPS
- PABX
- 1-48 PORT PATCH PANEL
- CONVENIENCE OUTLET 120V, 1Ø, 60Hz

**SECOND FLOOR**

- CAT6 CABLE
- TPB
- CONVENIENCE OUTLET 120V, 1Ø, 60Hz

**GROUND FLOOR**

- CAT6 CABLE
- TPB
- CONVENIENCE OUTLET 120V, 1Ø, 60Hz

**DIAGRAM**

- STRUCTURED CABLING SINGLE LINE DIAGRAM
NOTE:
The circuit breaker for FACP shall have red identification and shall be identified as "Fire Alarm Circuit".

GROUND FLOOR

SECOND FLOOR

TO 120V POWER SOURCE W/ AVR & SPD

MECHANICAL LIFT LOBBY

ELEC. ROOM

HALLWAY

FIREMAN'S QUARTER

MEDICAL STORAGE

APPARATUS BAY

MECHANICAL LIFT

FACP

BATTERY/CHARGER

TO FACP

CONTRACTOR BY OTHERS

MECHANICAL LIFT

FIRE ALARM CABLE, GAUGE #16 IN 20MMØ EMT CONDUIT

TWISTED PAIR FIRE ALARM CABLE, GAUGE #16 IN 20MMØ EMT CONDUIT

MECHANICAL LIFT

FIRE ALARM CABLE, GAUGE #16 THRU TRAVELING CABLE

FACP

BATTERY/CHARGER

TO FACP

CONTRACTOR BY OTHERS

MECHANICAL LIFT
### LOAD SCHEDULE & COMPUTATIONS

#### Part 1: Power Panel/Bond Fire Station - S1

**Load Schedule**

<table>
<thead>
<tr>
<th>Code</th>
<th>Phase</th>
<th>VA</th>
<th>HP</th>
<th>kW</th>
<th>kVA</th>
<th>kVAR</th>
<th>kVA consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</table>

**Computation**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>kVA</th>
<th>kW</th>
<th>kVAR</th>
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#### Part 2: Power Panel/Board Fire Station - S1

**Load Schedule**

<table>
<thead>
<tr>
<th>Code</th>
<th>Phase</th>
<th>VA</th>
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<th>kVA</th>
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<tbody>
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**Computation**

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#### Part 3: Power Panel/Board Fire Station - S1

**Load Schedule**

<table>
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<tr>
<th>Code</th>
<th>Phase</th>
<th>VA</th>
<th>HP</th>
<th>kW</th>
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**Computation**

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</table>

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**Note:**

- **Location:** Bond Fire Station - S1
- **Banking:** Single Phase
- **Rating:** 1000 kVA
- **Panel:** Substation Panel 3-Phase 600V
- **Computation:** Total Load Current = (Total kVA Consumption) / (Apparent Power Factor)
- **Minimum Arc Flash Protection:** 125 mAs
- **Generator Set Capacity:** 1000 kVA
- **Computation:** Load Calculation: Line Voltage x kVA x 1.75

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**Proposed New Fontaine State Emergency Operations Center (EOC) Presidio**