

GENERAL:

The scope of this document is to provide general requirements for electrical work.

DESIGN GUIDELINES:

1. All electrical systems to buildings will be oversized for future requirements. A minimum of 20% spare capacity should be provided within each breaker panel board. Spare capacity is defined as 20% space feeder capacity and 20% spare poles within the panel.
2. Only UL or equivalent approved appliances and equipment shall be specified.
3. Electrical kilowatt-hour meters will be provided in new buildings.
4. Electrical panels, switchgear, transformers and distribution equipment shall be located in dedicated lockable rooms.
5. Electrical loads shall be fed from distribution panels located on the same floor as the load itself. Feeding power loads from floors above or below the connected load will not be permitted unless approved by the Project Manager.
6. Provide all electrical equipment with a local disconnecting means.
7. Power and control wiring systems including low voltage shall be provided using raceways as outlined in these guidelines. Bus Duct is not permitted unless approved by the Project Manager.
8. Exterior handicapped ramps will be electrically heated with self-regulating heat trace cable for snow/ice melting and monitored and controlled by the BAS.
9. Provide expansion fittings at expansion joints. Treat expansion joints as seismic joints for seismic movement and bracing purposes.
10. Distribution of power, lights, fire alarm, telephone, and miscellaneous signals will be in conduit. Conduit systems shall consist of rigid metal, EMT, or a combination of the two as required by applicable codes and standards. (Threaded IMC shall not be used.)
11. Service Entrance:
 - 11.1. In new installations, only one disconnect per voltage will be installed per service entrance or a double ended w/tie breaker setup may be installed, unless approved by the Project Manager.
 - 11.2. Where more than one section is required, a switchboard shall be used. If only one section is required, then a panelboard is acceptable.

- 11.3. All 480-volt service entrance main breakers or fused switches that are rated 1,000 amps or higher are required to have Ground Fault Protection (GFP). This equates to 665 KVA with a single main breaker of standard design.
- 11.4. Where the service entrance disconnect is equipped with GFP, the consultant shall provide time and current setting for the GFP. The service entrance GFP will coordinate with feeder circuits that have GFP and small feeder breakers (such as 20 or 30 amps) in insure the feeder circuit will open before the GFP can trip the main breaker. Where the service entrance disconnect has GFP, feeder breakers that supply motor loads without isolation transformers shall have GFP.
- 11.5. The service entrance disconnect will include sensing for a single-phase condition on the power system. A single-phase detection relay will have an adjustable time delay of 1 to 10 seconds before opening the main breaker and shall not operate for loss of voltage on all three phases. The relay shall only open the service entrance disconnect after loss of voltage to one phase has been detected for 10 seconds.