Basis of Design

This section applies to the design of variable speed drive installations.

Design Criteria

- VFDs can be a source of harmonics, which create system inefficiency and power quality problems. Perform studies and calculations to determine harmonic levels and if required specify harmonic filtering for VFDs.

Design Evaluation

The following information is required to evaluate the design:

- **Schematic Development Phase**: Description of quantity and location of motors requiring VFDs.
- **Design Development Phase**: Preliminary plans showing locations of the motors and VFDs. Preliminary elevation plans of cubicles of motor control centers feeding the VFDs. Draft specifications in the mechanical section. Harmonic level calculations. Harmonic filtering requirements
- **Construction Document Phase**: Final plans showing locations of the motors and VFDs. Final elevation plans of cubicles of motor control centers feeding the VFDs. Final drawings showing the VFD feeders and indicating conduit and conductor sizes. Final installation drawing details. Specifications in the mechanical section must be complete and coordinated with the electrical specification sections and drawings including the harmonic filters.

Submittals

- Provide standard industry submittal requirements.

Products, Materials and Equipment

- Provide an individual conduit for each motor feeder being fed by a variable speed drive. The intent here is to provide isolation of the feeders so crosstalk between the feeders does not affect the operation of the variable speed drives.

Installation, Fabrication and Construction

- Mount variable speed drives in individual enclosures that are appropriate for the environment where they are located.
- Locate variable speed drives as close as possible to the motors they power to minimize motor feeder length. Maximum feeder length shall be 50 feet.