SECTION 16415

MOTOR CONTROLLERS

PART 1 - GENERAL

1.1 GENERAL

A. The provisions of Section 16010, General Requirements for Electrical Work apply to the Work of this Section.

B. The work of this section includes locally installed, enclosed combination magnetic motor starters and manual motor starters.

1.2 CODES AND STANDARDS

A. Products shall comply with the following codes and standards and shall be UL listed and labeled.

NEMA ICS-2	Industrial Control Devices, Controllers and Assemblies.
UL 508	Industrial Control Equipment.

1.3 SUBMITTALS

A. Manufacturers Product Data Sheets

B. Dimensioned Outline Drawings.

C. Control wiring diagrams.

1.4 MANUFACTURERS

Subject to compliance with the specification requirements.

Cutter Hammer
General Electric
Square D
Westinghouse

PART 2 - PRODUCTS

2.1 MAGNETIC MOTOR STARTERS

A. Unless otherwise noted, magnetic motor starters shall be NEMA rated full voltage type. The disconnecting means shall be circuit breaker type, nonfused or fused switch as shown on the Drawings. Minimum starter size shall be NEMA 1.

B. All components including the disconnecting means shall be installed in a single enclosure rated NEMA 1 for indoor locations and NEMA 3R for wet, damp and outdoor locations.

C. The disconnecting means shall be provided with an external operating handle which is interlocked to prevent opening the door when the handle is in the ON position and prevent closing the disconnect when the door is opened. The interlock shall be defeatable. The handle shall be padlockable in the OFF position.

D. Circuit breakers shall be adjustable magnetic trip, motor circuit protector type.

E. The short circuit rating of the assembly shall be 42,000 A RMS symmetrical.

F. Each motor starter shall be provided with a control power transformer to provide 120 VAC control power. The transformer shall be provided with two primary fuses and one secondary fuse. The transformer shall be extra capacity with a minimum rating of 100 VA.

G. Overload relays shall be three pole, trip free, manually reset Class 20, bimetallic, ambient compensated type with an external reset mechanism.

H. Contactor coils shall be provided with surge suppressors.

I. Sufficient auxiliary contacts shall be provided for all interlocks. A minimum of one normally opened and one normally closed spare contacts shall be provided.

J. Door mounted pilot devices shall be heavy duty oil tight. Pilot lights shall be transformer type. A HAND-OFF-AUTO maintained contact selector switch, red RUN and green READY pilot lights shall be provided on each enclosure.

K. All control wiring shall be brought to terminal blocks for connection of field cabling. Minimum wire size shall be #14 AWG.

L. Connections for motor leads shall be suitable for copper conductors applied at their 75 degree C rating.

2.2 MANUAL MOTOR STARTERS

A. Single phase fractional HP manual motor starters shall be toggle operated, enclosed, one or two pole switches as required by the installation.

B. The enclosure shall be NEMA 1 for indoor locations and NEMA 3R for outdoor, wet and damp locations. A handle guard shall be provided to allow the toggle operator to be padlocked in the OFF position.

C. Starters shall be provided with trip free melting alloy overloads.

PART 3 - EXECUTION

3.1 Equipment shall be installed in accordance with Section 16050, Installation of Electrical Equipment.

3.2 The Contractor shall verify motor nameplate amperes and motor service factors and shall provide all overload heater elements and fuses. Overload heater elements shall be sized in accordance with motor nameplate amperes.

3.3 The Contractor shall verify and provide the proper number of auxiliary contacts required by Division 15000 for control and interlocking.

END OF SECTION 16415