

SECTION 16300

ELECTRICAL DISTRIBUTION SYSTEM

REQUIREMENTS

Section 15050 GENERAL REQUIREMENTS FOR MECHANICAL AND ELECTRICAL WORK is hereby made an integral part of this division and section of the specifications.

SWITCHBOARDS

Furnish and install where indicated on the plans a dead front, metal enclosed, self-supporting switchboard of the required number of sections to form a complete structure incorporating front connected protective devices of the type, rating, and number shown on the plans. The switchboard shall include the necessary interconnections, instruments, and control wiring.

The switchboard framework shall consist of formed steel and pre-punched commercial channels bolted or welded together to form a flexible mounting framework for equipment, cover plates, and doors. All vertical sections shall be of the depth necessary to accommodate and connect the internal components. The sides, rear, and top shall be covered with removable code-gauge steel plates. Front plates shall be sectionalized and removable. Ventilation openings shall be provided where required. Adequate conduit space shall be provided to meet National Electric Code requirements. The exterior and interior steel surfaces of the switchboard shall be painted with a gray enamel over a primer coat. The switchboard shall be provided with adequate lifting means.

The bus shall be copper or tin plated aluminum of sufficient cross sectional area to limit the temperature rise to 55 deg.C. Bus arrangements shall be phase A-B-C, left to right, top to bottom, and front to rear as viewed from the front of the switchboard. Main horizontal buses shall be braced for short circuit stresses up to 50,000 rms amperes. All connections shall be tightly bolted. A ground bus shall be furnished to extend the full length of the switchboard.

Main Protective Device - Bolted Pressure Switch: Bolted pressure switches shall be quick make type with a frame and fuse rating as shown on the plans. The interrupting ratings shall be as shown on the plans. The switch shall be Underwriter's Laboratories (U.L.) Listed.

Branch Protective Devices - Molded Case Circuit Breakers: The molded case circuit breakers shall be thermal-magnetic type with frame and trip ratings as shown on the plans. The

interrupting capacity shall be as shown on the plans. The circuit breakers shall be front accessible mounted. All circuit breakers shall be U.L. Listed.

Ground Fault Protection - The main disconnect switch shall be provided with an electrical trip device and ground fault protection as required by Article 230-95 of the National Electric Code.

CIRCUIT BREAKER LIGHTING - APPLIANCE AND DISTRIBUTION PANELBOARDS

Panelboards shall be dead-front, safety type equipped with thermal-magnetic, molded case circuit breakers of frame and trip ratings as scheduled. Panelboards shall be manufactured in accordance with latest NEMA Standards and shall be listed by Underwriter's Laboratories and bear the U. L. Label.

Panelboard bus structure and main circuit breaker shall have current ratings as shown on the panelboard schedule. Such ratings shall be established by heat rise tests, conducted in accordance with U.L. Standard 67. The bus shall be copper or tin plated aluminum of sufficient cross sectional area to limit the temperature rise to 55 deg.C.

Circuit breakers shall be quick-make, quick-break, equipped with individually insulated, braced and protected connectors and shall be trip free on overload or short circuit. Circuit breakers shall be of the bolt-on type. Tripped indication shall be clearly shown by the breaker handle taking a position between ON and OFF. Breaker shall be "full size", nominal 1" width. Half size breakers are not acceptable.

Panelboard assembly shall be enclosed in a steel cabinet. The rigidity and gauge of steel to be as specified in U.L. Standard 50 for cabinets. Cabinets shall be equipped with spring latch and tumbler lock on door. All locks shall be keyed alike. A circuit directory frame and card with a clear plastic covering shall be provided on the inside of the door. All panels including distribution panels shall be equipped with hinged door.

The short circuit rating of the panelboard shall be established by short circuit testing in accordance with NEMA Standard PB-1-1971, and shall be unitary rated.

Panelboards shall be as manufactured by Square D, General Electric, Gould, I.T.E., or equal approved. Lighting and appliance panelboards shall be similar and equal to Square D type NQOD (250V). Distribution and subdistribution panelboards shall be similar and equal to Square D "I-Line".

Distribution and sub-distribution panelboards shall have branch circuits individually labeled with plastic laminated labels as specified herein these specifications.

Install on all surface mounted circuit panels and distribution panels (including those in mechanical areas), a 16 gauge easily removable sheet metal enclosure above and below panel (floor to ceiling). Enclosure shall be same width and depth as panel, painted to match panel and shall terminate neatly at floor and ceiling covering all conduit.

SAFETY SWITCHES

Furnish and install safety switches at each location shown on drawings and elsewhere as required by the N.E.C. Code. Safety switches shall be HEAVY DUTY, totally enclosed, externally operated, with provisions for padlocking the switch in the "OFF" position. Switch enclosures shall be NEMA Type I for indoor and NEMA Type III for outdoor installations.

Switches shall have dual cover interlock to prevent unauthorized opening of the switch door when handle is in the "ON" position.

All switches shall have metal nameplates on front cover giving permanent record of switch type, catalog number and HP ratings. Switches shall be as manufactured by Square D, General Electric, or I.T.E.

FUSES

Fuses of the proper size, rating, and electrical characteristics shall be provided in each fusible device. Fuses of ratings 600 ampere and below shall be U.L. Class RK- 1, current-limiting, time-delay, dual-element, 200,000 ampere interrupting capacity.

Approved Manufacturers: Bussman LPN-RK or Gould Shawmut A2D-R (All fuses shall be by same manufacturer to insure selective coordination.)

TRANSFORMERS

Transformers shall be in a heavy gauge, sheet steel, ventilated enclosure. be degreased, cleaned, primed, and finished with a grey, baked enamel.

Transformers shall have Class H insulation with temperature rise not deg.C. under full load in a 40 deg.C. ambient, 60 cycles. Transformers shall be in accordance with latest revisions to AIEE, ASA, and NEMA Standards.

Transformers sound levels shall not exceed:

10-50KVA -----	45db
50-150KVA -----	50db
150-300KVA -----	55db

Transformers shall be rated as shown on drawings and shall be arranged with 480 volts delta primary windings. Primary windings shall have four 2-1/2% full capacity taps above and below normal. Secondary windings shall be arranged for 120/208 grounded wye connection. All primary and secondary connections shall be arranged on suitable terminating members which are complete with appropriate wiring gutters or junction boxes of sheet metal for both primary and secondary terminals.

All floor mounted transformers shall be mounted on pad isolator at each corner.

- Electrical connections to all transformers shall be made using Liquidtite flexible conduit (12" 24" in length).

Transformers shall be as manufactured by G.E., Westinghouse, or I.T.E.

END OF SECTION