SECTION 16495
TRANSFER SWITCH

PART 1   GENERAL

1.1 SECTION INCLUDES:
   A. Automatic transfer switch.
   B. Manual transfer switch.

1.2 REFERENCES
   A. NEMA ICS 1 - General Standards for Industrial Control and Systems.
   B. NEMA ICS 2 - Standards for Industrial Control Devices, Controllers, and Assemblies.
   C. NEMA ICS 6 - Enclosures for Industrial Controls and Systems.
   D. NFPA 110 – Standards For Emergency And Stand-By Power Systems.

1.3 QUALITY ASSURANCE
   A. Manufacturer: Company specializing in automatic transfer equipment with three years experience.

1.4 SUBMITTALS
   A. Submit product data under provisions of Section 01300.
   B. Submit product data for transfer witches showing overall dimensions, electrical connections, electrical ratings, and environmental requirements.
   C. Submit manufacturer’s installation instructions under provisions of Section 01300.

1.5 OPERATION AND MAINTENANCE DATA
   A. Submit operation and maintenance data under provisions of Section 01700.
   B. Include instructions for operating equipment.
   C. Include instructions for operating equipment under emergency conditions.
   D. Identify operating limits, which may result in hazardous or unsafe conditions.
   E. Document ratings of equipment and each major component.
   F. Include routine preventive maintenance and lubrication schedule.
   G. List special tools, maintenance materials, and replacement parts.
   H. Submit manufacturer’s diagnostic literature and software package.

PART 2   PRODUCTS

2.1 MANUFACTURERS
   A. Onan
   B. Kohler
   C. Catpipler
   D. GE/Zenith
   E. ASCO
   F. Russelectric Inc.

2.2 AUTOMATIC TRANSFER SWITCH
   A. Description: NEMA ICS 2; automatic transfer switch.
   B. Configuration: Electrically-operated, mechanically-held transfer switch.

2.3 MANUAL TRANSFER SWITCH
   A. Description: NEMA ICS 2; manual transfer switch.
B. Configuration: Electrically-operated, mechanically-held transfer switch.
C. Sequence of Operation: Switch position is selected by control switch mounted in switch cover.

2.4 AUTOMATIC SEQUENCE OF OPERATION
A. Initiate Time Delay to Start Alternate Source Engine Generator: Upon initiation by normal source monitor.
B. Time Delay to Start Alternate Source Engine Generator: 0 to 10 seconds, adjustable.
C. Initiate Transfer Load to Alternate Source: Upon initiation by normal source monitor and permission by alternate source monitor.
D. Time Delay Before Transfer to Alternate Power Source: 0 to 5 minutes, adjustable.
E. Initiate Retransfer Load to Normal Source: Upon permission by normal source monitor.
F. Time Delay Before Transfer to Normal Power: 0 to 30 minutes, adjustable; bypass time delay in event of alternate source failure.
G. Time Delay Before Engine Shut Down: 0 to 30 minutes, adjustable, of unloaded operation.
H. Engine Exerciser: Start engine every 7 days; run for 30 minutes before shutting down. Bypass exerciser control if normal source fails during exercising period.
I. Alternate System Exerciser: Transfer load to alternate source during engine exercise period.
J. All other setting as per NFPA 110.

2.5 ENCLOSURE
A. Enclosure: ICS 6; Type as required to meet conditions of installation unless indicated on the Drawings.

2.6 ACCESSORIES
A. Indicating Lights: Mount in cover of enclosure to indicate NORMAL SOURCE AVAILABLE, ALTERNATE SOURCE AVAILABLE, and SWITCH POSITION.
B. Test Switch: Mount in cover of enclosure to simulate failure of normal source.
C. Return to Normal Switch: Mount in cover of enclosure to initiate manual transfer from alternate to normal source.
D. Transfer Switch Auxiliary Contacts: One normally open; One normally closed.
E. Normal Source Monitor: Monitor each line of normal source voltage and frequency; initiate transfer when voltage drops below 90% or frequency varies more than 3% from rated nominal value.
F. Alternate Source Monitor: Monitor alternate source voltage and frequency; inhibit transfer when voltage is below 90% or frequency varies more than 3% from rated nominal voltage.
G. In-Phase Monitor.
H. Switched Neutral: Non-Overlapping contacts.

PART 3 EXECUTION

3.1 EXAMINATION
A. Verify that surfaces are ready to receive work.
B. Verify field measurements are as shown on Drawings.
C. Verify that required utilities are available, in proper location, and ready for use.
D. Beginning of installation means acceptance of existing conditions.
A. Install in accordance with manufacturer's instructions.
B. Install in accordance with NFPA 110.

END OF SECTION