SECTION 16413

ENCLOSED TRANSFER SWITCHES

PART 1 GENERAL

1.01 SUMMARY

A. Section includes transfer switches in individual enclosures.

1.02 REFERENCES

A. National Electrical Manufacturers Association:
   1. NEMA ICS 10 - Industrial Control and Systems: AC Transfer Switch Equipment.

B. International Electrical Testing Association:
   1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

C. Underwriters Laboratories Inc.:
   1. UL 1008 - Transfer Switch Equipment.

1.03 SUBMITTALS

A. Division 1 - Submittal Procedures: Submittal procedures.

B. Product Data: Submit catalog sheets showing voltage, switch size, ratings and size of switching and overcurrent protective devices, operating logic, short circuit ratings, dimensions, and enclosure details.

1.04 CLOSEOUT SUBMITTALS

A. Division 1 - Execution Requirements: Closeout procedures.

B. Project Record Documents: Record actual locations of enclosed transfer switches.

C. Operation and Maintenance Data: Submit routine preventative maintenance and lubrication schedule. List special tools, maintenance materials, and replacement parts.

1.05 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience, with service facilities within 100 miles of Project.

B. Supplier: Authorized distributor of specified manufacturer with minimum three years experience.

1.06 MAINTENANCE SERVICE

A. Division 1 - Execution Requirements: Maintenance service.

B. Furnish service and maintenance of transfer switches for one year from Date of Substantial Completion.

PART 2 PRODUCTS

2.01 AUTOMATIC TRANSFER SWITCH

A. Manufacturers:
1. Asco.
2. Russelectric.
3. Zenith.
4. Substitutions: Division 1 - Product Requirements.

B. Product Description: NEMA ICS 10, automatic transfer switch, suitable for use as service equipment.

C. Configuration: Electrically operated, mechanically held transfer switch.

D. Rating: As indicated on drawings.

E. Interrupting Capacity: 100 percent of continuous rating.

F. Withstand Current Rating: 22,000 rms symmetrical amperes, when used with molded case circuit breaker.

G. Service Conditions: NEMA ICS 10.
1. Temperature: 105 degrees F.
2. Altitude: 740 feet above sea level.

H. Product Features:
1. Indicating Lights: Mount in cover of enclosure to indicate NORMAL SOURCE AVAILABLE, ALTERNATE SOURCE AVAILABLE, switch position.
2. Test Switch: Mount in cover of enclosure to simulate failure of normal source.
3. Return to Normal Switch: Mount in cover of enclosure to initiate manual transfer from alternate source to normal source.
4. Transfer Switch Auxiliary Contacts: 1 normally open; 1 normally closed.
5. Normal Source Monitor: Monitor each line of normal source voltage and frequency; initiate transfer when voltage drops below 90 percent or frequency varies more than 5 percent from rated nominal value.
6. Alternate Source Monitor: Monitor alternate source voltage and frequency; inhibit transfer when voltage is below 90 percent or frequency varies more than 5 percent from rated nominal value.
7. In-Phase Monitor: Inhibit transfer until source and load are within 5 electrical degrees.
8. Switched Neutral: Overlapping contacts.

I. Automatic Sequence of Operation:
1. Initiate Time Delay to Start Alternate Source Engine Generator: Upon initiation by normal source monitor.
2. Time Delay To Start Alternate Source Engine Generator: 0 to 4 seconds, adjustable.
3. Initiate Transfer Load to Alternate Source: Upon initiation by normal source monitor and permission by alternate source monitor.
4. Time Delay Before Transfer to Alternate Power Source: 0 to 5 minutes, adjustable.
5. Initiate Retransfer Load to Normal Source: Upon permission by normal source monitor.

6. Time Delay Before Transfer to Normal Power: 0 to 30 minutes, adjustable; bypass time delay in event of alternate source failure.
7. Time Delay Before Engine Shut Down: 0 to 5 minutes, adjustable, of unloaded operation.

J. Enclosure:
1. Enclosure: ICS 10, NEMA Type 1.
2. Finish: Manufacturer's standard gray enamel.

2.02 SOURCE QUALITY CONTROL

A. Furnish shop inspection and testing of each transfer switch.

B. Make completed transfer switch available for inspection at manufacturer's factory prior to packaging for shipment. Notify Owner at least seven days before inspection is allowed.

C. Allow witnessing of factory inspections and tests at manufacturer's test facility. Notify Owner at least seven days before inspections and tests are scheduled.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install housekeeping pads in accordance with Section 03300.

B. Install engraved plastic nameplates in accordance with Section 16075.

3.02 FIELD QUALITY CONTROL

A. Division 1 - Quality Requirements: Testing and Inspection Services.

B. Inspect and test in accordance with NETA ATS, except Section 4.

C. Perform inspections and tests listed in NETA ATS, Section 7.22.3.

3.03 MANUFACTURER'S FIELD SERVICES

A. Division 1 - Quality Requirements: Manufacturers' field services.

B. Check out transfer switch connections and operations and place in service.

3.04 ADJUSTING

A. Division 1 - Execution Requirements: Testing, adjusting, and balancing.

B. Adjust control and sensing devices to achieve specified sequence of operation.

3.05 DEMONSTRATION AND TRAINING

A. Demonstrate operation of transfer switch in normal and emergency modes.

END OF SECTION