

## PART 1 - GENERAL

### 1.1 SUMMARY

- A. Provide a complete and fully operational clock system complete with all secondary clocks, all required backboxes, clock relay cabinets with control relays, wireless receiver, and accessories necessary for a complete installation that provides clock correction via GPS receiver and accessories necessary for a complete installation.
- B. Provide elapsed time clocks in the ORs and other locations shown on the drawings.
- C. Related Sections
  - 1. 26 05 33 Raceways and Boxes for Electrical Systems

### 1.2 SUPPLIER AND/OR SUBCONTRACTOR

- A. Clock equipment supplier and/or subcontractor shall comply with the requirements of Section 27 10 00 – Communications Systems Infrastructure.

### 1.3 SCOPE

- A. The contract documents indicate the general nature of the clock system required. Devices have been selected to indicate the coverage desired. Contractor will determine the most suitable device and location for the particular equipment being provided and adjust the layout as necessary. Raceways, routing and wiring are not shown on the drawings, and shall be designed and provided by the contractor.
- B. Contractor to provide clock system with room clocks as shown on plans. System receives GPS signal and transmitter broadcasts the time to synchronize all clocks. Provide all other materials, hardware and wiring necessary for a completely installed and operational system.

### 1.4 SUBMITTALS

- A. Prepare and submit equipment submittals and shop drawings for review prior to manufacture. Shall include complete floor plans of system layout showing required connection diagrams. Complete description data including UL listings for each component used. Include plan views indicating equipment and device locations, wiring routes and junction boxes. Wiring diagrams for all components, typical device termination diagrams, wire numbers and colors for all conductors.

### 1.5 WARRANTY

- A. Provide a two year warranty to cover all labor, materials, freight, travel, transportation, permitting, inspections and testing necessary to diagnose, repair replace or otherwise adjust system to maintain original operation as described in the contract documents.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURER

- A. All components for the clock system shall be manufactured by an approved company. The Clock system to receive a "Wireless" GPS signal from an existing receiver, interface relays and 120V secondary clocks.

### 2.2 SECONDARY CLOCKS

- A. Clocks shall be 120 volt, 60 hertz, synchronous motor operated, automatically regulated type, equipped for automatic one and twelve hour individual and group time supervision and regulation. All clocks shall be furnished with required backbox for clock when so shown. Each clock shall be equipped with a dust cover for the mechanism and with flexible four wire cord and connector. Clocks shall have round metal cases with satin aluminum finish, aluminum dials, black hour and minute hands and red sweep second hands.
  - 1. Standard application: 12", 12 hour, shatterproof lens, semi-flush mounting unless noted otherwise.
  - 2. Special application; 12", 24-hour, Simplex Type 6310-9233.
  - 3. Clocks in small rooms and offices (less than 100 sq.ft.) shall be Simplex Type 6310-9211 (12 hr), 9" semi-flush mounting type unless noted otherwise.
- B. Flush wall boxes for separately mounted 9" clocks shall be Simplex type 2975-9034 (5923). Flush wall boxes for separately mounted 12" clocks shall be Simplex Type 2975-9038 (5928). Each clock box shall include depth adjustable hanger and four wire equipment ground type receptacle. Clock boxes shall not be used for wire junction purposes.

### 2.3 ELAPSED TIME CLOCK AND CONTROLLER

- A. Digital readout with one inch high LED Arabic numerals, 120 volt. The elapsed time clock shall be capable of being stopped and restarted without being reset. Simplex 6303-9101 clock.
- B. Remote control unit to include start button, stop button and reset button. Simplex #6303-9202 remote control unit.

### 2.4 CLOCK SYSTEM RELAY CABINET

- A. Hinged-Cover Enclosures: Surface, NEMA 250, Type 1, with continuous hinge cover and flush latch.
  - 1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
- B. Relays: Single pole, double throw - for control of the correction circuit to the clocks.
- C. Terminal Block: Sized for conductors shown.

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. Conform with the requirements of Section 26 05 33 - Raceways and Boxes for Electrical Systems. Provide all wiring contained in raceway separate from other systems. Raceway is not shown on the drawings and shall be provided as required. All cable terminations at the clock system relay cabinet shall be tagged as to junction and destination and shall be segregated and neatly laced. Provide minimum of one 3/4" homerun per fifteen clocks.
- B. Clocks shall be 12" diameter unless otherwise noted.

### 3.2 WIRING

- A. Provide all required wiring. Required wiring is not shown on the drawings. All wiring shall be color coded throughout. Clock wiring shall be 3 #12 with #12 ground common to all clocks.
- B. Provide a 120 volt power connection to each clock location from the clock receptacle circuit via interface relays.
- C. Provide wiring from the elapsed time controller and the elapsed time clock per manufacturer's requirements.

### 3.3 ACCEPTANCE TESTS

- A. On completion of the installation of the system, the Supplier/Contractor providing this equipment shall provide a qualified technician to perform the following tests:
- B. The overall system shall be tested free and clear of opens, grounds and crosses between conductors to all clocks in the system. The system shall deliver the minimum signal level required for proper operation at each outlet.
- C. A certification shall be made to the fact that the system is 100% operational and no conditions are present in the system which would affect any of the system operations.
- D. The Architect shall be notified forty-eight hours prior to testing so that he may at his discretion notify owner representatives to witness the test procedure and results.
- E. A report of the testing together with certification of operation shall be submitted on all the above required data, prior to final acceptance. Copies shall be included in the O & M manuals.

### 3.4 INSTRUCTION

- A. The Contractor shall (after one week (minimum) written notification to the Architect) conduct a 4 hour instruction session during which all maintenance and operational aspects of the system will be described and demonstrated to personnel selected by the Owner. The session shall be conducted by a contractor's and supplier's representative thoroughly familiar with the characteristics of the system. O & M manual information regarding the system shall be turned over to the Architect prior to scheduling the instruction session.

### 3.5 OPERATION AND MAINTENANCE MANUALS

- A. Provide per Section 27 10 00 – Communications Systems Infrastructure.

### 3.6 AS-BUILT DRAWINGS

- A. The Owner shall be provided with as-built drawings, included in the O & M manuals, which shall indicate:
  - 1. Actual routing of all raceways.
  - 2. Actual cable types and routing.
  - 3. Actual system wiring diagrams, connection diagrams, and interface of all components in the system.

**END OF SECTION**