SECTION 27 53 13 WIRELESS CLOCK SYSTEMS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The provisions of the General Conditions, Supplementary Conditions, and the Sections included under Division 01, General Requirements, are included as a part of this Section as though bound herein.
- B. Standards Conform to the requirements of the following:
 - 1. Federal Communications Commission FCC Part 15 Code of Federal Regulations
 - 2. NFPA 70E Standard for Electrical safety in the Workplace
 - 3. IEEE 802.3af [1998], Standard for Information Technology Telecommunications and Information Exchange Between Systems
 - 4. Bluetooth wireless technology standard 4.1.
- C. Licensing:
 - 1. The system must operate in accordance with a "Radio Station Authorization", Form FCC 601–LM, granted by the Federal Communications Commission (FCC). License will be issued to and held by the Owner.

1.2 DESCRIPTION

- A. Provide a wireless clock system that continually synchronizes clocks throughout the campus, complete with all bridging required for system functionality.
- B. The system shall provide wireless time from a master time source. This time source shall be from the clock of a defined NTP server that the transmitter can access via the owner's Ethernet. Hard wiring will not be required to the clocks installed for the system. Clocks shall automatically adjust for Daylight Saving Time in locations where DST is observed.
- C. The system shall have an internal clock reference so that a failure to detect the master time source shall not result in the clocks failing to indicate time.
- D. The system shall incorporate a "fail-safe" design so that failure of any component shall not cause failure of the system. Upon restoration of power or repair of failed component, the system shall resume normal operation without the need to reset the system or any component thereof.

1.3 WARRANTY

A. Provide a one (1) year manufacturer's warranty on all receivers, transmitters and clocks beginning from the date of final completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. Primex Wireless (XR clock and BC100-E bridge.

2.2 EQUIPMENT

- A. General: The system shall include a wireless transmitter with Ethernet port for NTP time input, a surge suppressor/battery backup, and a mounting shelf. Unit shall obtain current time via NTP through the Ethernet port. The clock system shall transmit time continuously to all clocks in the system.
- B. Bridge: Unit shall obtain current time from UTC/NTP through the Ethernet port. The unit shall transmit time continuously to all clocks in the system.
 - 1. Bridge shall meet the following specifications:
 - a. Enclosure: ABS plastic with 2 AA batteries
 - b. Display: Liquid crystal display (LCD), with LED status indicator (green, yellow, red)
 - c. Mounting: Keyhole slot with lock down screw holes in back panel for wall mount; or surface mount with supplied dual-lock adhesive mounting strips
 - d. Configuration: configured from system software or locally at device with supplied device configuration software
 - e. Backup Battery power: 3.0V Primex Lithium/Iron Disulfide Battery Pack or two standalone 1.5V lithium AA batteries. Use of alkaline batteries is not recommended.
 - f. Local memory storage capacity; configuration data for up to 1400 Bluetooth clocks.
 - g. Environment: Operating Temperature Operating range: 0° C to 50° C (32° F to 122°F)
 - h. Certifications: FCC, CE, and IC compliant
 - i. Technology: 802.11 Wireless.
- C. Power Supply:
 - 1. Input: 120 VAC, 50/60 Hz.
- D. Surge Protector/Battery Backup (included)
 - 1. Input: 120-volt AC 60 Hz +/- 1 Hz
 - 2. Output: 120-volt AC, 500 VA, 300 watts
 - 3. Surge Energy Rating: 365 joules.
- E. Clocks (traditional analog): Clocks 12-1/2 inch or 16-inch diameter as selected. Clocks shall be wall mounted with polycarbonate frame and lens; Face shall be white. Hour and minute hands shall be black with red sweep second hand. Color and finish as selected by the Architect.
 - 1. 12-1/2" and 16" clocks shall be battery operated and have a 5-year battery life.
 - 2. Clock shall be capable of automatically adjusting for Daylight Saving Time. An ON/OFF switch located on the transmitter shall disable this function if desired.
 - 3. Time shall be automatically updated from the transmitter once per day.
 - 4. Clocks shall remember time during changing of batteries
 - 5. Analog clock receivers shall be as follows:
 - a. Receiver power: battery, supplied by manufacturer, installed by contractor.
 - 6. If transmitter stops transmitting valid time signals due to power failure, the clocks will continue to function as accurate quartz clocks until a valid time signal is decoded.
- F. Wire guards: Provide wire guards for clocks located in Gymnasium or other areas as designated by the owner.
 - 1. A wire guard 14 by 14 inches shall be provided for nominal 12 1/2-inch diameter analog clocks.
 - 2. A wire guard 18 by 18 inches shall be provided for nominal 16-inch diameter analog clocks

PART 3 EXECUTION

3.1 INSTALLATION

- A. General:
 - 1. Install all equipment in accordance with manufacturer's instructions.
 - 2. Install equipment ensuring appropriate ventilation to meet manufacturer's requirements.
 - 3. Securely mount equipment plumb and square in place.
- B. Coordination:
 - 1. Coordinate installation with all existing conditions.
 - 2. Hardware shall be surface mounted to facilitate connections to relays for third-party systems.

3.2 FIELD QUALITY CONTROL

- A. Field Testing:
 - 1. Check the quality of signal and adjust locations as required.
- B. Testing and Demonstration:
 - 1. Upon completion of the system installation notify the Owner that the system is ready for testing and demonstration.
 - a. At this time, provide all system documentation; also, all Component and System warranties are to be presented to the Owner for prior evaluation.
 - b. The Owner, at his option, may select a specific time and date suitable to all parties and have a representative in attendance during the final testing and demonstration.
 - c. Conduct all tests and demonstrations in the presence of the Owner.
 - d. Demonstrate all system function to perform as specified.

3.3 DEMONSTRATION

- A. Provide two four (4) hour on-site training sessions and instruction to the Owner's designated representatives in the set-up, operation, and use of all system equipment.
 - 1. All instruction and training is to be given after completion of the installation and testing.
 - 2. Arrange instruction and training sessions at the Owner's convenience.
 - 3. The manufacturer shall provide a comprehensive training outline for the Owner & Engineer to review within 90 days of substantial completion.
 - 4. Provide operating and users' guides to the Owner's representatives at training sessions.
 - 5. Training sessions are to be video recorded with master and two (2) copies (MPEG 4 format) turned over to owner at the completion of the training session.

END OF SECTION