

## SECTION 107413

### MISCELLANEOUS SPECIALTIES EXTERIOR CLOCKS

#### PART 1 GENERAL

##### 1.1 SUMMARY

A. This section includes:

1. Two Tower Clocks and One Remote Control System.

##### 1.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Design, fabricate, and install exterior clocks to withstand loads from gravity, wind, seismic, and structural movement, including thermally induced movement, according to ASCE/SEI 7 and to resist without failure, other conditions of in-service use, including exposure to weather.

##### 1.3 ACTION SUBMITTALS

A. Product Data:

1. Provide detailed product information for all controllers, accessories, and operational clock devices.
2. Include construction details, material descriptions, edge and corner reinforcement descriptions, hardware, fittings, and mounting accessories for exterior clocks.

B. Shop Drawings:

1. Show materials, fabrication, dimensions, mounting heights, clearances, and installation details.
2. Show colors and graphic layout and content.
3. Show digit sizes and spacing, and other graphic forms; position on tower; and other information related to clock design.
4. Show locations for blocking, reinforcement, and supplementary structural support to be provided by clock manufacturer and installer for complete installation.
5. Provide coordination with electrical

6. Coordinate with structural steel, curtain wall framing and metal panel installations by others.
7. Show locations, connection, and operation of master clock, controllers and all operational clock devices

C. Samples for Initial Selection:

1. Samples of clock components, digits, hands, hardware, colors, finishes, and accessories involving selection.

D. Samples for Verification: For each of the following products and for full range of color, texture, and pattern variations required, prepared on Samples of Size indicated below.

1. Digits: Manufacturer's full-size unit
2. Hands: Sample of finish and substrate not less than 12 inch long.
3. Seam, Edge and Corner Condition: Not less than 12 inch-long section showing seam edge, and corner treatment where applicable

## 1.4 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Structural members and substrates to which each clock or clock controller will be attached.
2. Façade finishes.

B. Qualification Date: For qualified installer

## 1.5 CLOSEOUT SUBMITTALS

A. Operations and maintenance Date: For exterior clocks to include in maintenance manuals

B. Comply with Sections 01 7700 Closeout Procedures and 01 7839 Project Record Documents.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Comply with the manufacturer's written instructions.

## 1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Do not delivery or install exterior clocks until wet work on facades and inside tower is complete and dry.
- B. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit installation of exterior clocks to be performed according to manufacturer's written instructions and warranty requirements.
- C. Field Measurements: Verify actual dimensions of construction contiguous with exterior clocks by field measurements before fabrication.

## 1.9 WARRANTY

- A. Provide manufacturer's standard 3 year warranty.

## PART 2 – PRODUCTS

### 2.1 TOWER CLOCKS

- A. Basis-of-Design: Subject to compliance with requirements, provide full-enclosed inset-mounted case clock, illuminated with the following features:
  - 1. Cabinet: Fully-enclosed all-aluminum clock cabinet, painted in acrylic enamel color of choice. Cabinet shall feature rear service doors, fabricated aluminum, with 2" Styrofoam insulation centers. Rear doors shall be able to be removed completely for complete access to the dial assembly. Cabinet shall have weep holes on the bottom lip, and vents near the bottom and top front sides. There shall be no ventilation on the back doors. All inside surfaces to be finished, painted highly reflective white acrylic enamel.
  - 2. Illumination: Shall be long-life LED, IP 66 rated modules, 90 lumens per foot minimum, spaced appropriately for even illumination and set back far enough to avoid hot spots.

- Color temperature 6000k. LED power supplies to be enclosed in the cabinet, requires 120v, for power, control by owner or master clock (on/off dusk/dawn). Both components for replacement/service shall be easily obtainable from local sign supply sources.
3. Dial: 1-1/2" deep, pan-formed, translucent white 3/16" thick polycarbonate with indexes of 1/4" plate aluminum through-bolted. Indexes shall be powder coated in standard color of choice as selected by Architect. Dial shall be installed in such a manner so it can be removed from the inside for complete service access to the hands.
  4. Clock Movement: Type MR-10-MLC-RS Impulse-drive slave-type with fully-plated metal gear drive-train. Lubrication-free bearings, stainless steel central shafts, rated appropriately for size hands/dials. Operates on 120v with 24v impulse signal control from master clock. Provide power in accordance to manufacturers instructions.
  5. Clock Hands: Shall be fabricated aluminum, balanced about center, not to exceed ratings for clock movement, capable of withstanding high winds, ice and snow. .063 gage minimum, powder coated in standard color of choice as selected by Architect.
  6. Master clock, type ETC-14: Tower clocks shall operate as slave units to the master clock, resetting automatically for Daylight Saving changes and power interruptions. Master clock time shall be synchronized by means of a GPS antenna. Master clock to be installed in a climate controlled environment, secure and easily accessible. Requires 120v power and is furnished with a cord and plug. GPS antenna (type GPS-4500) shall be installed in such a position to view the sky for reception either outside or through a window. Master clock shall have the option to control illumination on/off dusk/dawn.
  7. Control: Individual 24v clock disconnect switches shall be provided at the master clock location in the event the two slave clocks are not synchronized. Clocks shall be wired individually, back to the switches.

B. Anchors, Fasteners, Fittings, Hardware, and Installation Accessories:

1. No exterior fasteners shall be visible in the final installation.
2. Provide of size and spacing to comply with performance

requirements indicated and suitable for exposure conditions, supporting structure, anchoring substrates, and installation methods indicated.

3. All fasteners through out clock and installation are stainless steel

## PART 3 – EXECUTION

### 3.1 EXAMINATION

- A. Inspect substrates, supporting items and related conditions to ensure they are ready to receive each item prior to commencement of installation.
- B. Examine areas and conditions, with the installer present, for compliance with requirements for supporting members, blocking, inserts, installation tolerances, clearances, lighting, and other conditions affecting exterior clocks installation or operations.
  1. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

- A. Install each item at locations indicated on drawings, as detailed, and in accordance with manufacturer's instructions.
- B. Install exterior clocks at locations and in position indicated, securely connected to supports, and in proper relation to adjacent construction. Use mounting methods of types described and in compliance with approved Shop Drawings and fabricators written instructions.
- C. Install exterior clocks after other finishing operations, including painting, have been completed.
- D. Anchoring to in-place construction: Use anchors, fasteners, fittings, hardware, and installation accessories for securing exterior clocks to the clock tower structure, properly transferring load to in-place construction.

- E. Connect clocks to master clock controller and electrical system in accordance to Shop Drawings
- F. Seal all perimeter openings with glazing sealant or caulking provided by general contractor

### 3.3 DEMONSTRATION AND TRAINING

A. INSTRUCT THE Owner in the operation and maintenance of exterior clocks and master clock controller. Comply with requirements in Section 01 7900 Demonstration and Training.

END OF SECTION 10 7413

## **PART 2 PRODUCTS**

### 2.1 CLOCKS

- A. Furnish complete clock system consisting of 4 inset-mounted clocks and 1 remote fully automatic control system
- B. Manufacturer: Lumichron, Inc. 2215 29<sup>th</sup> St. S.E. Grand Rapids, MI USA, 49508 (616) 245-8888. FAX (616) 245-1960  
<http://www.lumichron.com> , or other approved equal
- C. Tower Clock Components
  - 1. Clock Case:
    - a) As selected by Architect , custom inset style featuring fabricated “L” ring to fit inside existing brick opening. Powder-coated in satin black. Size: 60” OD, field verify.

- b) Dial: Laser-cut ¼" plate aluminum dial (Lumichron style RCC), backed with .177 thick translucent white polycarbonate, all stud mounted off the "L" return for complete inside assembly and service. Dial and "L" ring assembly shall be completely weatherproof
- c) Hands: Fabricated .090 aluminum, rated for weather & exposure, balanced, powder coated satin black, style Roman Spade
- d) Movement: Hi-torque, impulse-drive, 120v, with 24v impulse control. Furnished with 7' cord and plug (120v, .001 amp), type MR-10-RS-MLC
- e) Illumination panel: 60" diameter .090 aluminum panel, powder coated satin white with white LEDs, self-contained with power supply, 7' white cord and plug (120v, .7 amp). To be free-hanging from the inside brick opening. LED's to be \_\_\_\_\_ color temperature [3000k, 4000k, or 6300k - specify] and dimmable. Electrical provision by others. Clock manufacturer to provide dimmer switch, primary electrical wiring by others.
- f) Alternate: No illumination panels. Interior room illumination and control by electrical contractor

## 2. Automatic Clock Controller:

- a) Internal quartz time-base with 7 year lithium battery back-up memory, GPS synchronization, type Mobatime ETC-14, with GPS-4500 antenna
- b) Automatically reset the display clocks after power outages and Daylight Saving
- c) Programmable Daylight Saving parameters
- d) 2-line LCD display
- e) 24v bi-polar output impulse
- f) Mounted in a NEMA enclosure, IP 65 rating, furnished with a 7' cord and plug (primary power by others), 120v, .25 amp

## **PART 3 EXECUTION**

### 3.1 INSTALLATION

- A. Inspect substrates, supporting items and conditions to ensure they are ready to receive the clocks prior to installation. Clock manufacturer not responsible for repairing damaged bricks or existing glass removal

- B. Install the clocks as per installation instructions in provided openings, using rated sealant for complete weatherproofing
- C. Install clock controller in a secure, convenient location and provide necessary wiring to the clock movements as per manufacturer requirements (providing a receptacle at each location)
- D. Test and calibrate entire clock system, verifying GPS signal strength and accuracy with NIST
- E. Provide complete and detailed Operation and Maintenance manual

END OF SECTION