



## **Construction Specifications**

**for**

**SECTION 10 74 13**

**EXTERIOR CLOCKS**



## SECTION 10 74 13

### EXTERIOR CLOCKS

#### PART 1 GENERAL

##### 1.1 SUMMARY

A. This section includes:

1. Tower Clock Components
2. Remote Control System

B. Related Sections

1. Division 26 – Electrical: All raceways, junction boxes, and conduit wire required for a complete operational clock system

##### 1.2 PERFORMANCE REQUIREMENTS

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 SUBMITTALS

A. Product Data

1. Provide manufacturer's data sheets for all clock equipment and related devices
2. Include material descriptions, hardware, fittings and mounting accessories

B. Shop Drawings

1. Show materials, fabrication, full dimensions on clock components, face/hand/digit, case, mounting heights, blocking requirements, finish details, clearances and installation details
2. Provide coordination with electrical to include:
  - a) Wiring diagrams
  - b) Location of master clock controller (if known)
  - c) Responsibility of electrical contractor
  - d) Responsibility of clock installer

C. Operation & Maintenance Data

1. Provide instruction manual for master clock controller
2. Provide complete Operation and Maintenance manuals as per close-out requirements

D. Samples, if requested

1. Translucent dial material, 6" square
2. Dial digit, full size, in required finish
3. Metal for dial overlay, if applicable, in required finish, 6" digit
4. Hand, 12" minimum, in required finish and fabrication
5. Color chip samples of finishes

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: company specializing in manufacturing products specified in this section with no less than 10 years of documented experience

B. Installer Qualifications: Company specializing in performing the work of this section and approved by clock manufacturer

1.5 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with exterior clocks by field measurements before fabrication and indicate on shop drawings

B. Environmental Limitations: Do not deliver or install exterior clocks until wet work on facades and inside tower is complete and dry

C. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit installation of exterior clocks to be performed w/o damage to components or hazardous to installer

1.6 WARRANTY

A. Manufacturer's standard warranty for repair or replacement of components which fail in materials or workmanship within specified warranty period to include structural failures, faulty hardware operation, and deterioration of metals, finishes, and other materials beyond normal weathering

B. Provide standard three-year warranty for clock and controller

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Lumichron, Inc. <http://www.Lumichron.com>
- B. Americlock, Inc. <http://www.Americlock.com>
- C. Electric Time Company, Inc. <http://www.ElectricTime.com>

### 2.2 EXTERIOR CLOCKS

- A. Furnish complete clock system consisting of [ specify quantity ] fully enclosed, case clock[s], [alternate: Skeletal clock] and 1 remote fully automatic control system
- B. Tower Clock Components
  - 1. Clock Case:
    - a) As selected by Architect, fabricated all-aluminum, .063" min thickness, fully-enclosed case, nominal size [ specify ], built with an additional 1-1/2 mounting flange to lip-over rough opening (to be 1/4" larger (min) than case size).
    - b) Finish: case shall be either painted with exterior sign-grade acrylic enamel paint or Architectural grade powder coating. Interior of case shall be painted/powder coated white for optimum reflectivity
    - c) Case shall be serviceable either through the front or entirely through the back [ specify ]. If through the back, there shall be enough room accommodate complete access for removal of all parts, including the dial. If through the front, there must be provisions for easy crane/bucket truck access.
    - d) Case shall contain IP 66 minimum rated LED modules and power supply, in color temperature 3200k, 4100k, 5000k or 7100k [ specify ]. LED modules and power supplies shall be of a brand found in national sign supply distributors for ease of eventual replacement. LED spacing shall be laid-out to provide even illumination with no hot or dark spots.
    - e) Case shall provide adequate water egress, and ventilation
    - f) Clock crystal, in sizes less than 48" diameter, shall be 1/8" minimum thickness, tempered glass
    - g) No clock case, style is Skeletal [ specify ]

2. Clock Dial:
  - a) Number style [ specify ]
  - b) Material [ specify ]:
    1. Flat .177 thick translucent white sign-grade (UV Protected) polycarbonate
    2. Specify numbers:
      - a. Applied cast vinyl numbers
      - b. ¼" thick plate aluminum numbers, powder coated and through-bolted to polycarbonate
    3. Pan-formed 1-1/2" deep .177 thick translucent white sign-grade (UV Protected) polycarbonate with embossed number scheme, fully inside decorated
    4. Full metal dial overlay (contingent of dial number style), backed with flat .177 thick translucent white sign-grade (UV Protected) polycarbonate
    5. Fabricated aluminum background dial, size [ specify ], for non-illuminated 'skeletal' clock
    6. No background dial, for Skeletal clock [ specify ]
  - c) Clock dial shall be free to expand/contract with temperature, secured within a retainer to allow for such movement
3. Clock Digits/Indices for Skeletal Dial
  - a) Non-illuminated: ¼" plate aluminum or #4 Brushed Stainless steel with studs for mounting.
  - b) Illuminated: .063 fabricated aluminum or #4 brushed Stainless Steel, face with 2" return, fully enclosed translucent white polycarbonate backs with IP 66 rated LED's for halo-lighting, set on 1-1/2" posts
  - c) Finish: Architectural Grade powder coating, color [ specify ]
3. Clock Hands:
  - a) Style [ specify ]
  - b) Fabricated .063 aluminum or #4 brushed stainless steel, balanced and rated for weather & exposure
  - c) Illuminated, halo-lit: Fabricated .063 aluminum or #4 brushed stainless steel with 1-1/2" returns, fully enclosed translucent white polycarbonate backs with IP 66 rated LED's
  - d) Finish: Architectural grade powder coated color [ specify ]
4. Clock Movement:
  - a) Slave-type, hi-torque, impulse-drive, 24v impulse control – shall move only once a minute.
  - b) Shall feature lubrication-free bearings, plated gear or phenolic drive-train
  - c) Shall be rated by movement manufacturer for dial size

- d) 24v powered
- e) Rings and brushes for power transmission to clock hands in the case of illuminated skeletal type of clocks

5. Fasteners:

- a) All fasteners to be of Stainless Steel throughout clock case
- b) All fasteners to be hidden from ground view

6. Automatic Master Clock controller:

- a) Internal quartz time-base
- b) 7-year lithium battery back-up memory
- c) Available GPS synchronization
- d) Automatically reset the display clock(s) after power outages and Daylight Saving
- e) Programmable Daylight-Saving parameters
- f) 2-line LCD display
- g) 24v bi-polar output impulse
- h) Mounted in a NEMA wall-mounted enclosure, furnished with a 7' cord and UL Listed 120v/24v AC Class 2 50VA plug-in transformer

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Inspect substrates, supporting items and conditions to ensure they are ready to receive the clocks prior to installation.
- B. Examine areas and conditions with installer present for compliance with requirements for supporting members, blocking, inserts, installation tolerances, clearances, lighting and other conditions affecting exterior clocks installation or operations
- C. Proceed with installation if conditions meet requirements

### **3.2 INSTALLATION**

- A. Install each item at locations indicated on drawings, as detailed and in accordance with manufacture's written instructions and recommendations. Provide accessories necessary for complete installation
- B. Install exterior clocks after other finishing operations, including masonry cleaning, have been completed

C. Install exterior clocks 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

D. Anchoring to in-place constructions: 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. Install master clock controller in a convenient, accessible, secure, dry location

F. Connect clocks to master clock controller and electrical system in accordance with approved shop drawings

G. Seal all perimeter openings with glazing sealant or caulking

H. Test and calibrate entire clock system, verify GPS signal strength and accuracy with NIST

### 3.3 DEMONSTRATION AND TRAINING

A. Demonstrate functionality of clock system, operation and maintenance of exterior clocks and master clock controller to Owner's designated representative

END OF SECTION