

*(Specifier Note: The purpose of this guide specification, is to assist the Specifier in correctly specifying Plantronics® Habitat Soundscaping™, an audio/visual communication system which enhances the workplace environment by making both a visual and auditory connection with the natural environment. The Specifier needs to edit these guide specifications to fit the needs of each specific project. Contact a Plantronics® representative to assist in appropriate product selection. Throughout the guide specification, there are Specifier Notes to assist in the editing of the file.*

*References have been made within the text of the specification to current MasterFormat Section numbers and titles. The Specifier needs to coordinate these numbers and titles with sections included for the specific project. Brackets []; “AND/OR”; and “OR” have been used to indicate when a selection is required, in most cases the first option is the standard feature. Contact a Plantronics® representative for further assistance.)*

**SECTION 27 51 21**  
**BIOPHILIC AUDIO-VISUAL ENVIRONMENTAL SYSTEM**  
**Plantronics® Habitat Soundscaping**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. Administrative Requirements
- B. Submittals
- C. Quality Assurance
- D. Delivery, Storage, and Handling
- E. Warranty
- F. Visual System Equipment
- G. Audio System Equipment
- H. Site Survey (Pre-Installation)
- I. Installation
- J. System Configuration and Start-up
- K. Commissioning
- L. Cleaning and Protection
- M. Demonstration and Training
- N. Maintenance

**1.2 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Coordinate work with other installers to provide connections and services necessary for system installation and operation including but not limited to the following:
    - a. Electrical: Provide 120V, 15A circuit  
*(Specifier’s note: DELETE this paragraph if water features are not project specific.)*
    - b. Plumbing: Provide minimum flow rate and pressure as required by water feature.
  - 2. Coordinate with Owner to provide connections and services necessary for system installation and operation including but not limited to the following:
    - a. On-site Provisions Network Coordination

- 1) Coordinate with Owner for network connection (RJ45 female; CAT5 or higher) in the equipment room for communication between System Controller and Plantronics cloud service.
- 2) Coordinate with Owner for configuration to network and gaining internet access.
- 3) Requirements from Owner's IT:
  - a) Outbound connection to internet.
  - b) Connection with external outbound access over port 433 (https).
  - c) Access to a DHCP server on the network.
  - d) No firewall configurations to allow incoming connections are necessary.
  - e) Network proxies are not supported by the System Controller

### 1.3 SUBMITTALS

- A. Refer to Section [01 33 00 Submittal Procedures] [Insert section number and title].
- B. Sample Maintenance Agreement:
  1. Standard: To be provided by Installer.
  2. Supplemental: Waterfall Maintenance by Pecan Grove Solutions.
- C. Sample Warranty for Owner review.
- D. Product Data: Submit product data sheets for all system components and accessories.
- E. Shop Drawings: Project specific mounting and connection details.
- F. Coordination Drawings: Include views, plumbing connection details (*Specifier's note: DELETE plumbing coordination if water features are not project specific.*), electrical connection details, structural connections and materials.
- G. Closeout Submittals
  1. Refer to Section [01 78 00 Closeout Submittals] [Insert section number and title].
  2. Project Record Documents indicating installed locations of audio and visual equipment including locations of storage devices and wiring connections.  
*(Specifier's note: MODIFY paragraph below for project specific maintenance agreement requirements).*
  3. Maintenance Agreement: Submit for standard [3] [#] year maintenance agreement in accordance with manufacturer's warranty requirements as indicated, starting on date of the executed warranty.
    - a. Indicate the services, obligations, conditions, and terms for agreement period and for renewal options.
  4. Operation and Maintenance Data:
    - a. Include detailed information on system operation, equipment programming and setup, replacement parts, and recommended maintenance procedures and intervals.
    - b. Operation and maintenance manual.
    - c. Schematic drawings of equipment and cabling of installed system with list of corresponding labels to identify markings on components.
  5. Warranty
    - a. Provide executed warranties.

### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Certified installer approved by the manufacturer.
- B. Comply with ASTM E1573 – 18, "Standard Test Method for Measurement and Reporting of Masking Sound Levels Using A-Weighted and One-Third Octave-Band Sound Pressure Levels".

- C. Regulatory Requirements
  - 1. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.
- 1.5 DELIVERY, STORAGE AND HANDLING
  - A. Refer to Section [01 60 00 Product Requirements] [Insert section number and title].
  - B. Inventory and inspect order upon receipt. Contact manufacturer if any items are missing or damaged.
  - C. Store all components as recommended by manufacturer.
- 1.6 WARRANTY
  - A. Refer to Section [01 78 36 Warranties] [Insert section number and title].  
*(Specifier Note: Warranty described below is for the original consumer. Owner to contact manufacturer representative regarding warranty in the event the building is to be sold to another owner.)*
  - B. Plantronics Habitat Soundscaping System Limited Warranty.
    - 1. Provide manufacturer's limited warranty covering repair or replacement due to defective materials or workmanship. *(Specifier's note: Contact manufacturer representative for current available warranty documentation.)*
    - 2. Include final Commissioning Report with manufacturer's warranty submission.
    - 3. Minimum 3-year maintenance agreement required to run concurrent with manufacturer's warranty.
  - C. Installer's Warranty: Correct defective Work within a [#] month period after Date of Substantial Completion.

## PART 2 - PRODUCTS

*(Specifier Note: Product information is proprietary to PLANTRONICS®. If additional products are required for competitive procurement, contact PLANTRONICS® for assistance in listing competitive products that may be available.)*

- 2.1 MANUFACTURER
  - A. PLANTRONICS® Habitat Soundscaping; Encinal Street, Santa Cruz, CA 95060; Phone 831-426-5858, fax 831-426-6098, Toll free 800-544-4660; website [www.Plantronics.com](http://www.Plantronics.com) and <http://habitat.plantronics.com>
- 2.2 VISUAL SYSTEM EQUIPMENT
  - (Specifier Note: DELETE paragraph below if Digital Skylights are not project specific.)*
  - A. Digital Skylights: Self-contained downward facing video displays of nature.
    - 1. Commercial Grade Direct-LED backlight and rated for 24/7/365 operability.
    - 2. Native Resolution 1920 x 1080 at 60Hz with a brightness of 700 nits.
    - 3. Color temperature presets and anti-glare coating.
    - 4. Capable of scaling and mirroring of video content.
    - 5. Mounting bracket: Heavy Duty Universal Projector Mount
      - a. Weight capacity: 150 lb./ 68 kg.
      - b. Slotted base with adjustable legs.
  - (Specifier's note: SELECT project specific attachment method.)*
    - c. Attachment:
      - 1) Wood Stud attachment
      - 2) Standard 1.5-inch NPT pipe

- 3) Direct to ceiling

*(Specifier's note: SELECT rotation adjustment according to project specific attachment method.)*

- d. Rotation adjustment:
  - 1) Secured to ceiling: 15 degrees
  - 2) Secured with NPT pipe: 360 degrees
- e. Color: Black
6. Enclosure: Plenum rated, powder-coated metal.
7. Frame finish: Standard White semi-gloss.

*(Specifier's Note: DELETE paragraph below if Digital Windows are not project specific.)*

B. Digital Windows: Vertical displays of nature.

1. Digital Window:

a. In Wall Digital Window

- 1) Size: 55"
- 2) Commercial Grade Direct-LED backlight and rated for 24/7/365.
- 3) Native Resolution 3840x2160 UHD 4K 4:4:4 HDR at 60Hz with a brightness of 700 nits.
- 4) Color temperature presets and anti-glare coating.
- 5) Capable of scaling and mirroring of video content.
- 6) Display Enclosure: 55-inch Portrait In-Wall Kiosk
  - a) Removeable front cover and pull-out mount
  - b) Complies with ADA requirements for profile protrusion from wall surface
  - c) Eight-way tool-less adjustment to quickly position display in kiosk window for flush alignment
  - d) VESA® 200 x 200 up to 600 x 400mm compatible
  - e) Pre-assembled to simplify installation of the entire solution
  - f) Weight capacity up to 75 lbs.

b. On Wall Digital Window

- 1) Size: [65"] [75"] [85"] [98"]
- 2) Commercial Grade Direct-LED backlight and rated for 24/7/365.
- 3) Native Resolution 3840x2160 UHD 4K 4:4:4 HDR at 60Hz with a brightness of 700 nits.
- 4) Color temperature presets and anti-glare coating.
- 5) Capable of scaling and mirroring of video content.
- 6) On Wall Mounting: Adjustable Tilt Wall Mount.
  - a) Weight capacity: Up to 250 lbs.
  - b) 12-degree to 2-degree tilt
  - c) Mounting Pattern Compatibility (Universal Versions): 100 x 100 mm – 1070 x 600 mm
  - d) Overall Dimensions (H x W x D): 24.5 x 42.75 x 2.5" (622 x 1086 x 64 mm)

C. Digital Display Accessories

1. Digital Video Player:

- a. Commercial Grade rated for 24/7/365 use
- b. H.265 Decoding, Power supplied over PoE+
- c. Playback Native Resolution: Up to 3840x2160 4K
- d. Capable of scaling video content

2. Digital Player Storage Device:

- a. Commercial Grade rated for 24/7/365 use
  - b. Capacity: [8GB] [16GB] [32GB] [2TB]
  - c. Digital Skylight storage card: MicroSDHC, support up to 50MB/S transfer speed available in 8GB, 16GB and 32GB sizes.
  - d. Digital Window storage card: MicroSDXC, support up to 50MB/s transfer speeds available up to 2TB.
3. Digital Display Cables
- a. HDMI Video Cable: HDMI Category 2 compliant for 10.2 Gbps or greater data transfer speed to support up to and including 1080p60 resolutions
    - 1) 6' or less:
      - a) Type: [Plenum] [ Non-plenum]
    - 2) Passive and less than 50':
      - a) Type: [Plenum] [ Non-plenum] [Conduit]
  - b. HDMI Video Cable Extender:
    - 1) Type:
      - a) [Copper] [Fiber Optic]
      - b) [Plenum] [Non-plenum]
  - c. RS-232 Control Cable
  - d. Power over Ethernet: Cable lengths should meet EIA/TIA standards and not exceed 28 feet (horizontally)
- D. Waterfall Features: Real water features incorporated as part of system.
1. Glass Waterfall
- a. Size: [Small] [Medium] [Large]
  - b. Finish:
    - 1) Brushed Stainless Steel
    - 2) Powder Coating
      - a) Standard [black] [white] [copper] [bronze]
      - b) Custom color (RAL Standard)
  - c. Logo: [Etched] [Vinyl]
  - d. Waterfall surface: Tempered Clear Glass
  - e. Power requirements: Standard 110/120VAC 10AMP
  - f. Plumbing:
    - 1) External Water Line Required
    - 2) Auto Refill requires Inlet and Drain Line
2. Enclosed Waterfall
- a. Finish:
    - 1) Stainless Steel
    - 2) Powder Coating
      - a) Standard [black] [white] [copper] [bronze]
      - b) Custom color (RAL Standard)
  - b. Power requirements: Standard 110/120VAC 10 AMP
  - c. Plumbing: None, self-contained.
3. Mesh Waterfall
- a. Finish:
    - 1) Brushed Stainless Steel
    - 2) Powder Coating
      - a) Standard [black] [white] [copper] [bronze]
      - b) Custom color (RAL Standard)

- b. Power requirements: Standard 110/120VAC 10AMP
- c. Plumbing:
  - 1) External Water Line Required
  - 2) Auto Refill requires Inlet and Drain Line
- 4. Submersible Ultraviolet Clarifier (required): Pondmaster, 40 watts
- 5. Options:
  - a. LED lighting: 3W Tri-color Outdoor LED Light Bar (*Specifier's note: Consult Plantronics representative regarding custom LED displays and effects*).

## 2.3 AUDIO SYSTEM EQUIPMENT

### A. System Controller

*(Specifier Note: SELECT one OPS option based on quantity of zones in project scope.)*

- 1. Zone Coverage requirement(s):
  - a. Services up to 64 zones
- 2. Dell R230 running Ubuntu 16.04 Server Edition; configured as a DHCP client
- 3. Connection to cloud application is secured via server-side SSL Certificate
- 4. Power supply: NEMA 5-15P to C13 Wall Plug, 125 Volt, 15 AMP, 10 Feet (3m), Power Cord, North America.
- 5. Rack support: Static rails for tool-less mounting in 4- post racks with **[[square] unthreaded] round holes] [tooled mounting]** in 4-post threaded and 2-post racks.

### B. Network switch

- 1. Forwarding Performance: 41.67 mpps (64-byte packets)
- 2. Switching Capacity: 56.0 Gbps
- 3. Rack-Mount: 23 in. (58.4 cm) EIA
- 4. Jumbo Frame Support: 9 KB
- 5. Routing Protocol: Static IPv4 routing
- 6. Capacity: 4K Active VLANs
- 7. MAC Address Table Size: 16k entries
- 8. Ports: 26-port Gigabit + 2 x combo Gigabit SFP
- 9. Device Type: Switch - 28 ports - L3 – managed
- 10. Interfaces: 8 x 10Base-T/100Base-TX - RJ-45 - PoE; 1 x console - 9 pin D-Sub (DB-9) - management; 2 x 10Base-T/100Base-TX/1000Base-T - RJ-45 / SFP (combo)
- 11. Flash Memory: 16 MB
- 12. Power Over Ethernet (PoE): POE and POE+
- 13. Status Indicators: Link activity, port transmission speed, system
- 14. Ram: 128 MB
- 15. Authentication Method: Secure Shell (SSH), RADIUS, TACACS+

### C. Speakers

- 1. In-tile speaker
  - a. Color: White
  - b. Mounting: Recommended Cutout Diameter: 114.3 mm/ 4.5 in. Rigging point for additional bracing. Lock-Ring for installation in acoustic ceiling tile (maximum tile thickness 38.1 mm/1.5 in).
  - c. Driver Type: Full-Range BMR
  - d. Driver Size: ≥ 3-in. diameter
  - e. Impedance: 4 ohms
  - f. Minimum Frequency Range: 120 Hz – 16 kHz (-10 dB)
  - g. Minimum Power Handling: 20 W

- h. Minimum Sensitivity:  $\geq 84$  dB SPL @ 1 W/1 m (1 kHz tone)
  - i. Coverage: 125° conical (nominal)
  - j. Connections: 2-pin terminal block on speaker provided with terminal plug for speaker cable.
  - k. Grille: perforated metal, white finish
  - l. Compliance: plenum-rated (UL-2043)
2. Pendant speaker
    - a. Color: **[Black]** **[White]**
    - b. Driver Type: Full-Range BMR
    - c. Driver Size:  $\geq 3$ -in. diameter
    - d. Impedance: 4 ohms
    - e. Minimum Frequency Range: 200 Hz – 16 kHz (-10 dB)
    - f. Minimum Power Handling: 20 W
    - g. Minimum Sensitivity:  $\geq 82$  dB SPL @ 1 W/1 m (1 kHz tone)
    - h. Coverage: 100° conical (nominal)
    - i. Connections: 2-pin terminal block on speaker provided with terminal plug for speaker cable.
    - j. Housing and Grille: white or black finish
    - k. Mounting:
      - 1) Single rigging point beneath top cover for suspension
  3. Cable: Shielded, plenum rated, 18 AWG, 1 pair.
- D. Distraction Sensors
1. In-tile Sensor
    - a. Color: White
    - b. Mounting: Flush ceiling tile mount with provided hex nut.
    - c. Output Impedance: 150 ohms
    - d. Type: Condenser
    - e. Minimum Frequency response: 100 Hz – 10 kHz (-10 dB)
    - f. Minimum Sensitivity: -37 dBV/Pa (open circuit)
    - g. Minimum SNR (relative to 1 Pa): 65 dB
    - h. Directivity: omnidirectional
  2. Pendant Sensor
    - a. Color: **[Black]** **[White]**
    - b. Mounting: Faceplate for Electrical Junction Box with Cable Strain Relief for Height Adjustment
    - c. Output Impedance: 150 ohms
    - d. Type: Condenser
    - e. Minimum Frequency response: 100 Hz – 10 kHz (-10 dB)
    - f. Minimum Sensitivity: -35 dBV/Pa (open circuit)
    - g. Minimum SNR (relative to 1 Pa): 60 dB
    - h. Directivity: cardioid
  3. Cable: Shielded, plenum rated, 22 AWG, 1 pair with drain wire.
- E. Zone Controller
1. Type: POE+ Powered Amplifier
  2. Color: White
  3. Enclosure material: Steel
  4. Mounting: Flanged sides with through-holes
  5. Amplifier Class: D

6. Audio Outputs: 8 channels
  7. Minimum Output Impedance: 4 ohms
  8. Output Noise Floor: -92 dBV (A-wtd)
  9. Output Frequency Response: 100 Hz – 15 kHz
  10. Output THD: <1%
  11. Playback Resolution: 48 kHz, 16 bit
  12. Power Output: 1W per channel
  13. Audio Inputs: 2 channels
  14. Input Impedance: 15,000 ohms
  15. Input SNR: 90 dB
  16. Input THD+N: -1 dBFS
  17. Input Noise Floor: -106 dBV (A-wtd) (at 24 dB gain)
  18. Input Dynamic Range: 105 dB
  19. Input Frequency Response: 20 Hz – 20 kHz
  20. Power/Ethernet Connection: RJ45
  21. Connectors: Phoenix/Euroblock pluggable terminal blocks
  22. Cooling: Fanless
  23. Ethernet Speed: 10/100 Mbps
  24. Compliance: FCC Class A, CE, UL 2043, IEC 62368-1
- F. Software: Plantronics Habitat Soundscaping system software (SaaS, Web browser- based).

### **PART 3 - EXECUTION**

#### **3.1 GENERAL**

- A. Install system in accordance with manufacturer’s installation instructions.
  1. Install equipment level, plumb, true, and aligned with adjacent materials.

#### **3.2 SITE SURVEY** *(Specifier’s Note: For installation into existing space(s). NOT used for new construction.)*

- A. Pre-Installation Ambient Noise Survey
  1. Perform survey of ambient noise levels per manufacturer’s instructions.

#### **3.3 INSTALLATION**

*(Specifier Note: DELETE paragraph below if Digital Skylights are not project specific.)*

##### **A. Digital Skylight Installation**

1. Securely attach digital skylights to the building structure in accordance with safe installation practices and in accordance with manufacturer’s instructions.
2. Comply with all applicable structural and seismic code requirements.
3. Allow for fine-tune adjustments (+/- 1/8”) in all directions to ensure the Digital Skylight is properly centered and level in the ceiling tile opening.
4. Coordinate all power needs, ventilation requirements and cabling.

*(Specifier Note: DELETE paragraph below if Digital Windows are not project specific.)*

##### **B. Digital Window Installation**

1. Securely attach digital windows, mounts, and mounting systems to the building structure in accordance with safe installation practices and in accordance with manufacturer’s instructions.
2. Comply with all applicable structural and seismic code requirements.
3. Use a minimum general safe-working load (SWL) of at least 3:1 safety factor for each wall attachment point (or higher as required by code).



4. Allow for fine-tune adjustments (+/- 1/8") in all directions to ensure the Digital Window is properly plumb and level on the wall.
5. Coordinate all power needs, ventilation requirements and cabling.

*(Specifier Note: DELETE paragraph below if Waterfall Features are not project specific.)*

C. Waterfall Feature Installation

1. Install in accordance with manufacturer's installation instructions.

D. Speaker Installation

1. Install in accordance with manufacturer's installation instructions.
2. Clearly label each speaker cable pair within close proximity to the component rack. Include zone number and amplifier channel.

E. Distraction Sensor Installation

1. Install in accordance with manufacturer's installation instructions.
2. Clearly label each audio cable within close proximity to the component rack. Include zone number and amplifier channel.

F. Zone Controller Installation

1. Install in accordance with the manufacturer's installation instructions.
2. Terminate speaker cables per manufacturer's recommendation and label each cable pair with its zone ID.
3. Terminate distraction sensor cables per manufacturer's recommendation and label each cable with its zone ID.
4. Coordinate, as required, with connection to life safety system.

G. Rack Equipment Installation

1. Arrange and install rack components in accordance with manufacturer's installation instructions.
  - a. System Controller Installation
    - 1) Install in accordance with the manufacturer's installation instructions.
    - 2) Once on-site provisioning is complete, the System Controller is authenticated via a client-side SSL certificate generated for the specific installation.
  - b. Network Switch Installation
    - 1) Install in accordance with the manufacturer's installation instructions.

### 3.4 SYSTEM CONFIGURATION AND START-UP

A. Audio Configuration

1. Use the Habitat Soundscaping Service software to set up audio system within the space once equipment installation is complete.
2. Return after HVAC system has been commissioned and balanced, and should be operational during final audio configuration.
3. Conduct final Audio Configuration during off-hours when space is unoccupied.

B. Video Display Configuration

1. Use the Habitat Soundscaping Service software to set up video displays within the space once audio configuration has been completed.
2. Conduct final Video Configuration during off-hours when space is unoccupied.

### 3.5 COMMISSIONING

- A. Perform Ambient Noise Survey, as part of commissioning process, per manufacturer's instructions.
- B. Commissioning shall be performed by [manufacturer] OR [manufacturer approved installer].

- C. Tune and adjust audio levels of the Habitat Soundscaping system audio in an installed space per manufacturer's instructions.
  - D. Commissioning shall comply with ASTM 1573-09: Standard Test Method for Evaluating Masking Sound in Open Offices Using A-Weighted and One-Third Octave Band Sound Pressure Levels.
  - E. Coordinate with commissioning of Life Safety/Emergency systems.
- 3.6 CLEANING AND PROTECTION
- A. Clean all equipment and components in accordance with manufacturer instructions.
  - B. Protect equipment from damage during the work.
  - C. Ensure proper ventilation is maintain in the equipment room.
- 3.7 DEMONSTRATION AND TRAINING
- A. Demonstration: Demonstrate proper operation of system to Owner, and correct deficiencies or make adjustments as directed.
  - B. Training: Train Owner's personnel on operation, adjustment, and maintenance of biophilic audio-visual system.
    - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
    - 2. Instructor: Manufacturer's authorized representative.
- 3.8 MAINTENANCE
- A. Refer to Section [01 70 00 – Execution and Closeout Requirements] [Insert section number and title], for additional requirements relating to initial maintenance service.  
*(Specifier's note: Contact manufacturer representative for project specific maintenance requirements.)*
  - B. Provide Maintenance Agreement of Soundscaping system and components in accordance with manufacturer's warranty requirements as indicated for [36] [#] of months from Date of Substantial Completion.
  - C. Perform maintenance agreement services using competent and qualified personnel under the supervision and direct employ of the manufacturer or original installer.
  - D. Maintenance agreement services shall not be assigned or transferred to any agent or other entity without prior written consent of Owner.
  - E. Examine system components periodically.
  - F. Include systematic examination and adjustment of system.
  - G. Maintain and repair or replace parts, whenever required, using parts produced or procured by original equipment manufacturer or supplier.
  - H. Maintain an adequate stock of parts for replacement and have personnel available to ensure the fulfillment of this maintenance agreement without unreasonable loss of time.

**END OF SECTION**