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**HOUSTON AIRPORT SYSTEM TECHNOLOGY SPECIFICATION**  
**SECTION 27 10 45**  
**RESTROOM MONITORING SYSTEM**  
(REV. 09-30-2024-BM)

**PART 1 – GENERAL**

**1.1 RELATED DOCUMENTS**

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1. Refer to “<https://www.fly2houston.com/biz/resources/building-standards-and-permits>” for a complete list of related specification sections.

B. Reference Symbols:

1. All device symbols are defined by the appropriate symbol schedule on the symbols and abbreviations sheet in the systems drawing package. Not all device symbols indicated may be required for the project.
2. Because of the scale of the drawings, symbols are shown on drawings as close as possible to the mounting location. Contractor shall coordinate exact locations with all drawings and affected trades prior to submittal of shop drawings.
  - a. The installing Contractor shall coordinate exact locations with all security and telecommunications drawings and site plan drawings as well as all affected trades prior to submittal of any shop drawings.

**1.2 SUMMARY**

A. An expansion to the existing Restroom Monitoring System / Smart Rest Room (SRR) shall be installed at each public restroom space planned in the project). The system shall be a reconfiguration and update of the existing “Smart Restroom” system manufactured by the existing vendor, INFAX/ TRAX.

B. The Smart Restroom System shall:

1. Count number users of at each Restroom using Bluetooth and video analytics, for the purpose of notification of Janitorial staff to inspect, service consumables and clean the spaces at predetermined thresholds of users. Provide airport maintenance and management with statistical data on Restroom usage patterns and trends using beacon interfaced to custodial carts.

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2. Provide touch-screen passenger experience at each restroom location support interface to system to collect positive and negative input from users.
  3. Provide restroom stall occupancy indicator system when stall is available, the light is green and when the stall is occupied, and smart latch is activated the light turns red.
  4. Provide monitor upon entrance of restroom to display gender and stall availability.
  5. Additionally, the scope of work shall include all necessary modifications, software upgrades and programming as required to seamlessly integrate the Existing HAS IT Smart Restroom platform. The work includes materials, infrastructure, equipment, software updates, and programming as required to provide a fully integrated and operational system as herein specified.
  6. The installation, performance, features, functions, software, and programming modifications as specified herein as well as all related specification sections have been designed to offer the maximum system efficiency ease of operation, occupant safety and enhance our guest experience.
- C. The initial deployment of the Smart Restroom System components shall consist of, but not be limited to, the following:
1. Each restroom shall be provisioned with:
    - i. User counting camera system with video analytics.
    - ii. Custodial frequency tracking
    - iii. Passenger experience touch screen
    - iv. Network interface and mini-PC
    - v. Occupancy Stall Indicator
    - vi. Monitor for restroom entrance
    - vii. (2) BLE Beacons for TRAX Enterprise Mobile Application
    - vii. Owner provided IOS devices for Mobile Application
  2. Equipment:
    - I. Throughput Counters and Mounts
      - a. Vendor: XOVIS - Model: PA-PC25 Sensor w/Flush Mount Brackets
    - II. Avius Feedback Solution
      - a. Vendor: Avius, Samsung, Bouncepad
      - b. Tablet Model: Samsung Galaxy Tab A7/A8
      - c. Wall Mounted Enclosure Model: Bouncepad Vesa Mount
    - III. Bluetooth Beacons
      - a. Vendor: Kontakt | Model: Anchor 2.0
    - IV. Monitor: LG SM 32-UHSF-H
    - V. Media Player: Model: DMPS-2200
    - VI. TV Mount: - MonoPrice Select Series
    - VII. POE 5-Port Switches
      - a. Vendor: NETGEAR | Model: GS108PEv3

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- b. Note: switches must be cabled to an HAS supported Cisco switch
- VIII. Zurn Occupancy Light Power
  - a. Supply Vendor: Zurn | Part Number: Z-PWRSUP-W1
  - b. Gateway Vendor: Thingsee | Part Number: ZGW-WRP-W1-LTE
  - c. Gateway Vendor: Thingsee | Part Number: ZGW-WRP-W1-ETH
- IX. TRAX Enterprise Mobile Application (Owner provided IOS devices)
  - a. iPad Air 8<sup>th</sup> Gen.
  - b. TRAX Application version 3.0
- 3. Local Area Network (LAN) and beacon integration shall be performed to support the deployment of all Smart Restroom components as described above.
- D. The Smart Restroom System shall be IP-based. The Contractor shall be responsible for all integration with the other trades and HAS IT for network and low voltage cabling, cable terminations, patch panels, media cabinet (TE) and necessary configuration to provide the functionality described within this document. SRR configuration shall be performed in coordination with HAS IT and the Project Management.
  - 1. In addition to SRR equipment procurement, installation, programming and activation, The Contractor shall furnish and provide the following tasks as part of the Work:
    - a. System training.
    - b. System warranty.
    - c. System testing and acceptance plans.
- E. The Division 27 integrator shall be responsible for providing all equipment, devices, system components, final cable terminations, programming, commissioning, and testing of all network communications cabling and equipment in accordance with all related Division 27 Specification Sections.

### 1.3 REFERENCES

- A. The following Houston Airport System Specification Sections that are not specifically covered in this section are incorporated by reference:
  - 1. Section 27 05 28: Interior Pathways for Communications Systems
  - 2. Section 27 05 43: Underground Ducts and Raceways for Communications
  - 3. Section 27 05 53: Identification for Communications Systems
  - 4. Section 27 11 00: Communications Equipment Room Fittings
  - 5. Section 27 13 00: Communications Backbone Cabling
  - 6. Section 27 15 00: Communications Horizontal Cabling
  - 7. Section 27 21 00: Data Communications Network Equipment
  - 8. Section 27 22 00: Data Communications Hardware
  - 9. Section 27 51 00: Distributed Audio-Video Communications Systems

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10. Section 28 10 00: Access Control
11. Section 28 20 00: Video Surveillance
12. HAS Design Manual

#### 1.4 SYSTEMS DESCRIPTIONS

- A. Refer to 27 10 24 > 1.2 > B for system requirements.

#### 1.5 SUBMITTALS

- A. Refer to HAS Standards and specific specification sections for additional information.
- B. Qualifications: Demonstrate compliance with requirements for Contractor certifications and trade skill sets.
- C. Submit Technical Implementation Plan.
- D. Submit manufacturer's technical data for each product provided.
- E. Submit technical and operations manuals.
- F. Include spares list to be approved by HAS IT Project Manager for approval.

#### 1.6 QUALITY ASSURANCE

- A. All equipment and material will be new, the latest design, and the first quality standard product of manufacturers regularly engaged in the production of such equipment and material.
- B. After installation is complete, contractor will inspect completed system on site to verify installation of hardware is complete and properly operating, in accordance with both the Contract Documents and final shop drawings.

#### 1.7 DELIVERY STORAGE AND HANDLING

- A. Refer to HAS Design Standards for requirements.
- B. Store SRR equipment so that it is protected from weather and so that condensation will not form on or in the components.

#### 1.8 RECORD DOCUMENTS

- A. Refer to HAS Design Standards for requirements.

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## 1.9 OPERATIONS AND MAINTENANCE

- A. Operations and maintenance manuals for all equipment will be a project deliverable provided by the Contractor and will contain applicable information facilitating the operation and maintenance of relevant equipment.

## 1.10 SOFTWARE AGREEMENT

- A. Networked systems will be programmed, initially by the Contractor, using a factory trained technician to perform the tasks. The program will be readily modified in the field either from a computer workstation or the local panel itself with the latest software or firmware versions. Moreover, the system will be web-enabled and will allow local system overrides.

## 1.11 EXTRA MATERIAL

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents. The quantity of materials will be an amount set by the HAS Project Manager once total quantities are assessed for each project.

## **PART 2 – PRODUCTS**

### 2.1 MANUFACTURED PRODUCTS

- A. Refer to HAS Design Standards in addition to the following:
  - 1. All products shall be compatible with the latest revision of existing HAS TRAX Smart Restrooms system product as integrated and provided by INFAX, no approved equal.

### 2.2 SYSTEM CONFIGURATION REQUIREMENTS

- A. Program and configure the Smart Restroom(s) to be a seamless reconfiguration and upgrade extension of the existing TRAX system.
- B. Perform all network-related work including but not limited to:
  - 1. HAS IT network assignments including port assignments and activation requirements.
- C. Coordinate with HAS network provider to provide optimal performance for the Smart restroom system and the HAS network.

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## 2.3 SYSTEM AND SOFTWARE REQUIREMENTS

- A. System software shall be INFAX TRAX Smart Restroom Systems, no approved equal.

## 2.4 HARDWARE REQUIREMENTS

- A. Network switch

- 1. Refer to Section 27 21 00 for HAS Network switch equipment.

- B. Mini PC or NUC

- 1. Processor equipment for Smart Rest Room shall be latest HAS IT adopted product offered by TRAX/INFAX for the SRR system.

- C. Beacons

- 1. Bluetooth beacons for Smart Rest Room shall be latest HAS IT adopted product offered by TRAX/INFAX for the SRR system.

- D. Passenger count Camera

- 1. Passenger Count cameras/ sensors for Smart Rest Room shall be latest HAS IT adopted product offered by TRAX/INFAX for the SRR system.

- E. Passenger feedback Screen

- 1. Passenger experience feedback touchscreen tablet for Smart Rest Room shall be latest HAS IT adopted product offered by TRAX/INFAX for the SRR system.

## **PART 3 – EXECUTION**

### 3.1 COORDINATION

- A. All site work will be coordinated and performed so there is minimal impact to airline and airport related operation. Removal of, modifications to, or replacement of any equipment and installation of new equipment and associated tie-in to the HAS Network must be carefully coordinated with HAS Technology and accomplished during periods coordinated with other construction and installation phasing.

### 3.2 EQUIPMENT PROTECTION

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- A. Protect all materials, equipment, devices, or components permanently installed and/or stored on the job site. Protect all materials, equipment, cabling, devices, or components during construction and after installation, provide appropriate protection of all materials, equipment, components and/or devices until All materials, equipment, components and/or devices shall be protected during shipment and storage against any physical damage, dirt, moisture, cold, snow or rain:

### 3.3 WORK PERFORMANCE

- A. Refer to HAS Design Standards and Technology Infrastructure specification sections in addition to the following:
  - 1. The contractor shall coordinate and meet all requirements addressed in Division 26, Division 27, and Division 28 Specification Sections.
  - 2. The contractor shall adjust and calibrate the system to provide performance acceptable to HAS.

### 3.4 EQUIPMENT INSTALLATION

- A. All system equipment installations shall be in accordance with good engineering practices, NEC, local building codes, and all manufacturer's requirements. Cable terminations at all equipment locations shall comply with all state and local electrical codes. All wiring shall test free from all grounds, shorts, stray voltages, and EMI.
- B. Follow manufacturers and integrator's instructions for installing, components and adjusting all equipment and cabling.

### 3.5 INSTALLATION REQUIREMENTS

#### A. General

- 1. SRR installation shall be configured, programmed, and commissioned by INFAX/TRAX certified programmer.

#### B. Software Installation

- 1. The Contractor shall provide, configure, and program all SRR software in compliance with HAS IT approval and existing SRR system by INFAX/TRAX.

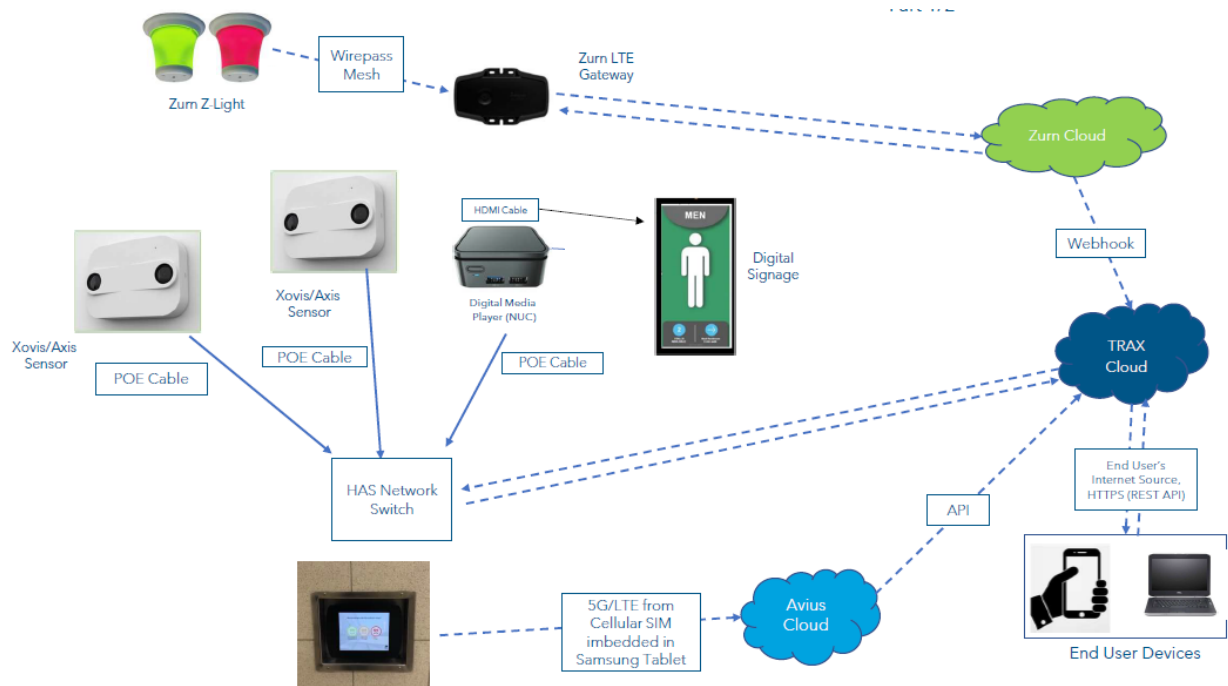
#### C. Hardware Installation

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1. The Contractor shall provide, configure, and install all SRR hardware in compliance with HAS IT approval and existing SRR system by INFAX/TRAX.

#### D. System Startup

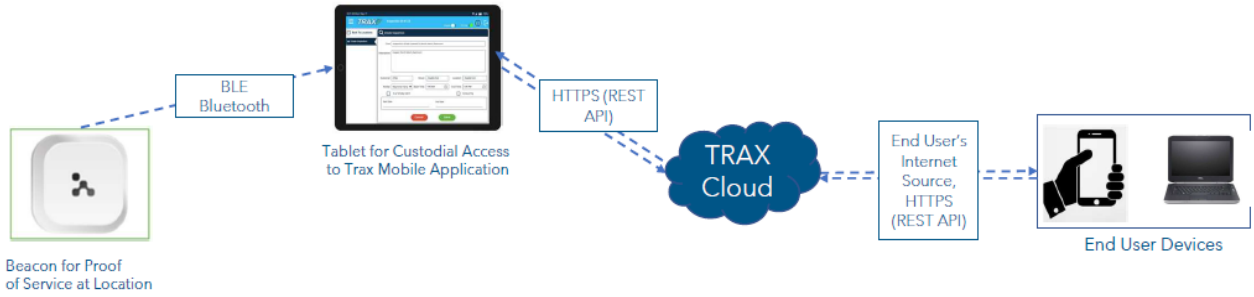
1. The Contractor shall not apply power to the system until after:
  - i. INFAX/TRAX representative has inspected and approved the SRR configuration and installation for compliance with HAS IT and integrator's system operational requirements.
  - ii. Smart Restroom Communication Diagram A:



- iii. Smart Restroom Communication Diagram B:



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End of Specification 27 10 45