PALS ATLAS
Staff, Patient and Inmate Safety Systems

Engineering Specifications

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SECTION 28 XX XX - STAFF DURESS SYSTEM

PART 1 General

1.1 RELATED DOCUMENTS

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

1.2 BACKGROUND AND SCOPE

A. The contractor shall provide a complete Staff Duress system (the “System”) including Tags, locating devices, infrastructure and locating software, including, but not limited to all devices shown in Part 2 of this specification. The protected area shall be all areas within the buildings shown on the drawings (as defined by the Owner) unless otherwise noted. Outdoor protected areas shall be as shown on the drawings.

1.3 SUMMARY

A. This system includes Tags that can be worn by individuals or placed on assets. Throughout daily activities, Tags will transmit their ID number and status to the Locators that is then forwarded to Gateways positioned in the facility. The location engine appliance (‘HubSens’) translates incoming data from Gateways to determine the location and status of the Tag. Upon alarm activation, The Locating Appliance will interpret the data and publish the Tag, Locator and Gateway status via the HubSens API. This information is then forwarded to the appropriate PrismUI station(s). If you are using PrismUI for mapping, this information will also be displayed in the appropriate PrismUI maps.

1.4 DEFINITIONS

A. Insert as needed.

1.5 SUBMITTALS

A. Provide a complete finalized bill of materials, manufacturers data sheets, floor plans with paging areas and speaker interconnection, etc. to indicate the entire scope of what is being provided.

B. Provide complete CAD generated 1/8” scale drawings detailing installation locations of equipment. Symbols used shall match those shown on the contract drawings.

C. Provide detailed one-line drawings of systems. Each system drawing shall detail the field wiring and typical wiring termination details for all devices.

1. Include plans, elevations, sections, and attachment details.

2. Include details of equipment assemblies. Indicate dimensions, weights, required clearances, method of field assembly, components, and location and size of each field connection.

3. System Narrative that describes how the system is intended to operate.

4. Site Assessment report from the manufacturer and installation contractor.

5. Manufacturer’s data sheets and manuals for all hardware and software to be provided.

D. All diagrams required for installation of the system including, but not limited to system block diagrams and wiring diagrams for field terminated devices.

1. Console layouts.

2. Control panels.

3. Rack arrangements.

4. Calculations: For sizing backup battery.

5. Wiring Diagrams: For power, signal, and control wiring

6. Identify terminals to facilitate installation, operation, and maintenance.

7. Single-line diagram showing interconnection of components.

8. Cabling diagram showing cable routing.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data

B. Configuration and test results for the system after installation and calibration are complete.

1.7. QUALITY ASSURANCE

A. The Contractor shall be authorized to install the System by the Manufacturer.

B. The Contractor shall have at least Five (5) years of installation and engineering experience with the specified system on projects of not less than $500,000 and shall have successfully installed at least XX Systems in that time period.

C. The Contractor shall be fully trained and certified by the Manufacturer

D. The Manufacturer shall have a proven testing procedure established to properly commission and document the installation and performance of the System to project specifications.

1.8. SPARES

A. For each system component deployed, the contractor shall deliver (x) units or 10% of the number of the components used in the system, whichever is greater.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. The following products have been approved by the Owner ('Approved Products'). It is the Contractor's responsibility to provide a system using the Approved Products that meets or exceeds the performance specifications. All deviations from the performance specifications must be clearly identified in the product data submittal.

1. PALS ATLAS, Actall
2. <insert additional as approved>

B. The Contractor shall supply a Staff Duress System that meets or exceeds the performance requirements detailed in this Specification.

C. All products must be pre-approved by the owner prior to bid submittals. Vendors that feel their products meet the minimum performance requirements may submit their products for pre- approval by the Owner.

D. Any products submitted for approval shall not be proprietary. Non-proprietary products are defined as: Systems, products, replacement parts and/or services that are available from three or more un-related (competitive) vendors.

E. The warranty for all Approved Products will be Two (2) years from the date of Commissioning.

F. Manufacturer(s) of Approved Product(s) shall certify in writing that replacement components, parts and assemblies will be available for at least 10 years from the date of commissioning.

2.2 FUNCTIONAL DESCRIPTION OF SYSTEM

A. Provide a new System that provides the location and status of all Tags issued in the facility when queried. The Specification is performance based; it is up to the contractor to provide complete and operational system that meets the performance criteria to the Owner. The System shall identify and locate alarming Tags when activated within the desired protected area(s) of the Facility. The System shall operate using Radio Frequency (RF) technologies only. Systems using an alternate technology (or hybrid technologies) shall not be acceptable. Alarms shall be received from all the secure areas of the building, as defined by the owner. Due to the variations in system layouts, exact locations of devices may not be shown on the drawings.

B. All field devices will be placed to locate a Tag as follows:

1. Locate the event within an area that can be specifically and uniquely identified via the API so that responding personnel can locate the person(s) or asset(s) from inside the identified zone without extensive searching.

a. The event is in Hallway A. Person(s) responding to Hallway A can visually survey the entire area from any point and identify the Tag(s) associated with the event. Acceptable.

b. The location of the Tag is in Dayroom 100. A person responding to Dayroom 100 cannot visually survey the entire area from every point in the Dayroom. The Responder can go to the locator position associated with the event (indicated via the API) and visually identify the Tag(s) associated with the event. Acceptable.

2. Locate the event within area(s) that are attached to and accessed from an area can be specifically and uniquely identified via the API, so that responding personnel can locate the person(s) or asset(s) from inside the identified zone with minimal searching.

The location of the Tag is in a room attached to and entered through Dayroom 100. A person responding to Dayroom 100 cannot visually survey the attached room from every point in the Dayroom. The Responder can search the room(s) within Five (5) meters of the Locator associated with the event (indicated via the API) and visually identify the Tag(s). Acceptable.

3. Locate the event within a single zone identified via the API.

The location of the event is in Room 225. The API (when mapped) indicates that the Tag(s) associated with the event could be in adjacent areas/zones/floors. Unacceptable.

2.3 SYSTEM DESCRIPTION

A. Compatibility of Components: Coordinate component features to form an integrated system. Match components and interconnections for optimum performance of specified functions.

B. Equipment shall be modular and fully rated for continuous duty unless otherwise indicated. Select equipment for normal operation on input power supplied per Manufacturer's directives.

C. Equipment Mounting: Where rack, cabinet, or console mounting is indicated, equipment shall be designed to mount in a 19-inch housing complying with EIA/ECA310-E.

D. Weather-Resistant Equipment: Listed and labeled by a qualified testing agency for duty outdoors or in damp locations.

E. All conduit, exposed boxes, devices, etc., installed within this project must be anti-ligature conforming. Wherever possible, backboxes and conduit shall be in wall flush mounted. Where the only option available is surface mounting, the installation shall be done with standard EMT conduit with pick proof caulk installed around all surfaces and openings where ligature items may be looped through or secured. Flat device and box surfaces must be provided with angled blocks secured to the top of the box to ensure no ligature items may be looped over the top. All new installed conduit, boxes, devices, etc., will be subject to inspection to ensure these requirements are met.

F. Locating devices should be able to locate Persons carrying Tags in the following areas:

1. Dayrooms
2. Kitchen
3. Laundry
4. Program areas
5. Additional areas (as required)

G. The System shall be capable of identifying and locating non-alarming Tags as they are moving from zone to zone within the defined protected area. As the location of the Tag changes, the new information is updated in the API.

H. The System shall provide access to Tag location and status via Ethernet-based API for event display and resolution. The API shall include (at a minimum)

1. Zonal Tag location

2. Nearest Locator to Tag

3. Tag Status

4. Field Device Health

5. <Insert additional requirements as needed>

I. The System shall provide sufficient and reliable RF signal coverage to ensure 100% alarm and locating reception within the protected area.

J. The System shall identify, log, and report the current location (Zone and nearest Locator) and status for all Tags active in the system. Systems that report more than one location for an alarm or asset/tag shall not be acceptable under any condition.

K. Detection of Tag in alarm shall be independent of movement direction and speed.

L. The System shall be expandable.

M. Systems that rely on path of travel to determine location are unacceptable.

N. The System shall interface to all PLC and touch screen systems.

O. The System shall include hardware/software capable of testing safety devices by users in the areas that they are working. The testing capabilities shall include individual and multiple user access.

P. The System shall publish all events to its API within Three (3) seconds of physical occurrence.

2.4 LOCATING ENGINE AND ADMINISTRATIVE INTERFACE

The System shall provide a computing architecture that allows for administration and management of all hardware devices. This computing architecture shall also directly supervise all devices and manage all events created by the devices. It shall also manage all communications between the field hardware and the mapping interface used by the facility.

A. Locating Engine

1. Hardware shall be as specified by the System Manufacturer and rated for 24X7X365 operation. Current specifications can be found at www.actall.net/atlas.

2. The Location Engine shall use Linux Ubuntu 20.04 or Debian Operating System.

3. The Location Engine shall be capable of running in a virtual environment.

4. The Location Engine shall be capable of being configured for multiple computing redundancy architectures.

5. The Location Engine shall be capable of being configured for multiple storage redundancy architectures.

6. The Location Engine shall provide a RESTful API for communicating events and other necessary information to third party facility management user interfaces.

7. The Locating Engine shall be capable of interfacing with different locating technologies.

B. Administrative Workstations

1. Workstations shall use a Windows 11 Professional Operating System.

2. Administrative, testing and monitoring Workstations shall be installed with the same core software package and shall be interchangeable without re-installing software or changing hardware.

3. Workstations shall be capable of adding, deleting, and editing all the Actall RTLS hardware used for the System.

4. Workstations shall provide facility management with the status of all System devices in both a list and graphical format.

5. Workstations shall be capable of viewing and resetting events generated by the System.

6. Workstations shall be capable of being configured to a “TEST ONLY” mode for facility employees to test tags periodically.

7. Workstations shall be capable of configuring a hierarchy of users for access based upon predetermined roles. All user logins will be monitored and logged. All user access levels will include a password that can be changed in the Workstation interface.

2.5 GATEWAYS

A. Gateways Part #60004

1. Gateways will be installed as per manufacturer's design directives.

2. The quantity of Gateways will be installed to properly govern all Locator traffic and alarm traffic from Tags, per Manufacturer's design.

3. Each Gateway will be powered by Power over Ethernet (POE) at a minimum of 1.4A and will connect to the main Alarm Computer via Ethernet.

2.6 LOCATORS

A. Locators - Part #60003-XX

1. Locators shall be powered by 12VDC. Each Locator shall draw no more than 40mA under normal operations.

2. Locators will be installed on opposite sides of ingress and egress points between zones and in rooms where room-level location determination is desired.

3. Locators can be programmed to a maximum of 65,535 different ID codes via a hardware interface. Each ID will be associated with a zone or distinct area that will

relate to the software program to a specific data entry when an alarm transmission is received from a Tag.

4. No data or home run wiring is required for these units to properly function. Each unit can be powered separately or in parallel on the same supply circuit.

5. Locators will receive ID and status information from the Tags sent at 2.4 GHz, and relay that information wirelessly to the Gateway Network at 900MHz.

6. Locators are designed to mount onto standard, Two Gang (US) electrical boxes. Depth of electrical boxes shall be capable of housing a transformer to power a Locator when required.

7. Locators can be ceiling or wall mounted.

8. Locators specified for outdoor areas shall be mounted in weather-proof outdoor rated enclosures. Weeping holes shall be installed in outdoor boxes mounted in wintery environments.

9. Locators shall be capable of being powered by POE, if required.

2.7 TAGS

A. Heavy Duty Personal Tag (HT) – Part #60001

1. The HT shall be a compact (less than 6.75 inch^2) and lightweight unit capable of initiating three types of alarms:

   a. Push Button: Activation manually by pressing a momentary button. Button will be recessed to prevent accidental activation and reset condition will be transmitted automatically

   b. Pull Cord: Alarm activation by removal of pull cord mechanism from HT. Reset condition shall be transmitted by replacing the Pull Cord mechanism. HT shall be capable of operating without the pull cord mechanism, if desired by the Owner.

c. Person Down: Alarm Activation by tilting the HT more than 60 Degrees (=/- 15 degrees) from upright position. Reset condition is transmitted by returning the. HT to an upright position. This feature shall include the capability of setting a period of user-defined warning tones on the HT prior to alarm activation.

2. HT alarms shall be transmitted both at a frequency less than 1Ghz and at 2.4 Ghz. Events shall be capable of being received through two justice grade walls (filled concrete with steel rebar space not less than 6 inches apart), without the use of repeaters or amplifiers. On alarm the HT shall transmit:

a. HT ID

b. Method of Activation

c. Low Battery Condition (if applicable)

3. The HT shall transmit a non-alarm supervision signal on a frequency adjustable by the Owner. The device shall also display a notification that this transmission is being sent to the User.

4. The HT shall transmit a low battery signal when appropriate and continue to operate for a minimum of 7 days after the condition is set.

5. The HT shall display a low battery notification on the device itself.

6. The HT shall display a condition on the device alerting the User that the device is not connected to the network.

7. The HT shall display a condition on the device that the alarm has been sent. This display shall turn off once the alarm has been acknowledged at the appropriate PrismUI station.

8. The HT shall be constructed to withstand normal usage including drop (20ft), temperature (0-50C) and water exposure without breaking, failure to perform or malfunction. The Vendor shall provide all testing procedures and certify that the tests have been performed including all electronic components, clips and accessories.

9. The HT shall have an IP54 International Protection Rating

10. The HT shall include a spring-loaded plastic or pre-formed metal belt clip capable of being used on a standard duty belt.

11. The HT shall operate using a commercially available, disposable battery. Units using rechargeable batteries will not be acceptable.

12. The HT will have a 6-month battery life with normal usage on an 8-hour duty cycle. Vendor will provide calculations and assumptions used to arrive at this figure.

B. One Button Light Duty Staff Tag (LT-1) Parts #60007, 60007XL

1. The LT-1 shall be a small (less than 3.25 inches^2) and lightweight unit capable of activating a push button alarm. Button will be recessed to prevent accidental activation and reset condition will be transmitted automatically.

2. The LT-1 shall transmit a non-alarm supervision signal on a frequency adjustable by the Owner. The device shall also display a notification that this transmission is being sent to the User.

3. The LT-1 shall transmit a low battery signal when appropriate and continue to operate for a minimum of 4 days after the condition is set.

4. The LT-1 shall display a low battery notification on the device itself.

5. The LT-1 shall display a condition on the device that the alarm has been sent.

6. The LT-1 shall be constructed to withstand normal usage including drop (20ft), temperature (0-50C) and water exposure without breaking, failure to perform or malfunction. The Vendor shall provide all testing procedures and certify that the tests have been performed including all electronic components, clips and accessories.

7. The LT-1 shall have an IP65 International Protection Rating.

8. The LT-1 shall be capable of utilizing commercially available neck lanyards, badge reels or clips.

9. The LT-1 shall have the option to be fitted with a wristband for wear by either employees or patients.

10. The LT-1 shall operate using a commercially available, disposable battery. Units using rechargeable batteries will not be acceptable.

11. The LT-1 will have a 6-month battery life with normal usage on a 8 hour duty cycle. Vendor will provide calculations and assumptions used to arrive at this figure.

C. Two Button Light Duty Staff Tag (LT-2) Parts #60008, 60008XL

1. The LT-2 shall be a small (less than 3.25 inches^2) and lightweight unit capable of activating push button alarms. The LT-2 has two distinct buttons. Either button will be recessed to prevent accidental activation and reset conditions will be transmitted automatically.

2. The LT-2 shall have an option of an additional button to activate one alarm condition and two notification conditions. The additional conditions shall be configurable by the Owner in the RTLSS software.

3. The LT-2 shall transmit a non-alarm supervisory signal on a frequency adjustable by the Owner. The device shall also display a notification that this transmission is being sent to the User.

4. The LT-2 shall transmit a low battery signal when appropriate and continue to operate for a minimum of 4 days after the condition is set.

5. The LT-2 shall display a low battery notification on the device itself.

6. The LT-2 shall display a condition on the device that the alarm has been sent.

7. The LT-2shall be constructed to withstand normal usage including drop (20ft), temperature (0-50C) and water exposure without breaking, failure to perform or malfunction. The Vendor shall provide all testing procedures and certify that the tests have been performed including all electronic components, clips and accessories.

8. The LT-2shall have an IP65 International Protection Rating.

9. The LT-2 shall be capable of utilizing commercially available neck lanyards, badge reels or clips.

10. The LT-2 shall have the option to be fitted with a wristband for wear by either employees or patients.

11. The LT-2shall operate using a commercially available, disposable battery. Units using rechargeable batteries will not be acceptable.

12. The LT-2will have a 6-month battery life with normal usage on a 8 hour duty cycle. Vendor will provide calculations and assumptions used to arrive at this figure.

D. Light Duty Badge Tag (LT-B) Part # 60019

1. The LT-B shall be a small (approx. 3.5X2.25) and lightweight unit capable of holding a standard size ID or HID access card. The unit shall be capable of activating alarms via a pull-down slide switch and a push button alarm. Button will be recessed to prevent accidental activation and reset condition will be transmitted automatically.

2. The LT-B shall have an option of an additional button to activate one alarm condition and two notification conditions. The additional conditions shall be configurable by the Owner in the PrismUI software.

3. The LT-B shall transmit a non-alarm supervision signal on a frequency adjustable by the Owner. The device shall also display a notification that this transmission is being sent to the User.

4. The LT-B shall transmit a low battery signal when appropriate and continue to operate for a minimum of 4 days after the condition is set.

5. The LT-B shall display a low battery notification on the device itself.

6. The LT-B shall display a condition on the device that the alarm has been sent.

7. The LT-B shall be constructed to withstand normal usage including drop (20ft), temperature (0-50C) without breaking, failure to perform or malfunction. The LT-B is only water resistant. The Vendor shall provide all testing procedures and certify that the tests have been performed including all electronic components, clips and accessories.

8. The LT-B shall be capable of utilizing commercially available neck lanyards, badge reels or clips.

9. The LT-B shall operate using two commercially available, disposable batteries. Units using rechargeable batteries will not be acceptable.

10. The LT-B will have a 6-month battery life with normal usage on a 8-hour duty cycle. Vendor will provide calculations and assumptions used to arrive at this figure.

E. Asset Tracking Tags (AT) Part # 60006

1. The AT shall be a small (less than 3.25 inches^2) and lightweight unit and does not include any alarming capability.

2. The AT shall transmit a non-alarm supervision signal on a frequency adjustable by the Owner. The device shall also display a notification that this transmission is being sent to the User.

3. The AT shall transmit a low battery signal when appropriate and continue to operate for a minimum of 4 days after the condition is set.

4. The AT shall display a low battery notification on the device itself.

5. The AT shall be constructed to withstand normal usage including drop (20ft), temperature (0-50C) and water exposure without breaking, failure to perform or malfunction. The Vendor shall provide all testing procedures and certify that the tests have been performed including all electronic components, clips and accessories.

6. The AT shall be attached with either two-way tape or Velcro.

7. The AT shall have the option to be fitted with a wristband for wear by either employees or patients.

8. The AT shall operate using a commercially available, disposable battery. Units using rechargeable batteries will not be acceptable.

9. The AT will have a 12-month battery life with normal usage on a 24-hour duty cycle. Vendor will provide calculations and assumptions used to arrive at this figure.

F. Patient Tag (PT) Part # 60017

1. The PT shall be a small (less than 3.25 inches^2) and lightweight unit and does not include any alarming capability.

2. The PT shall transmit a non-alarm supervision signal on a frequency adjustable by the Owner. The device shall also display a notification that this transmission is being sent to the User.

3. The PT shall transmit a low battery signal when appropriate and continue to operate for a minimum of 4 days after the condition is set.

4. The PT shall display a low battery notification on the device itself.

5. The PT shall be constructed to withstand normal usage including drop (20ft), temperature (0-50C) and water exposure without breaking, failure to perform or malfunction. The Vendor shall provide all testing procedures and certify that the tests have been performed including all electronic components, clips and accessories.

6. The PT shall be attached with either removable or cut resistant bands.

7. The PT shall operate using a commercially available, disposable battery. Units using rechargeable batteries will not be acceptable.

8. The PT will have a 12-month battery life with normal usage on a 24-hour duty cycle. Vendor will provide calculations and assumptions used to arrive at this figure.

G. Inmate/Patient Secure Tracking Tags (IT) Part #60018

1. The IT shall be a small (less than 3.25 inches^2) and lightweight unit and does not include any direct alarming capability.

2. The IT shall transmit a non-alarm supervision signal on a frequency adjustable by the Owner. The device shall also display a notification that this transmission is being sent to the User.

3. The IT shall transmit a low battery signal when appropriate and continue to operate for a minimum of 4 days after the condition is set.

4. The IT shall display a low battery notification on the device itself.

5. The IT shall be constructed to withstand normal usage including drop (20ft), temperature (0-50C) and water exposure without breaking, failure to perform or malfunction. The Vendor shall provide all testing procedures and certify that the tests have been performed including all electronic components, clips and accessories.

6. The IT shall have an IP67 International Protection Rating.

7. The IT shall be equipped with a no-cut band and generate an alarm condition when the band is cut or removed from the housing.

8. The process to attach the band and activate the IT shall be less than 30 seconds and require no special tools.

9. The IT shall operate using a commercially available, rechargeable, and swappable battery. The process to change the battery and re-activate the IT shall be less than 30 seconds. Changing the battery shall not require any additional programming.

10. The IT will have a minimum of 120 day battery life with normal usage on a 24 hour duty cycle. Vendor will provide calculations and assumptions used to arrive at this figure.

2.8 TEST STATIONS

Tag Test Station

A. Provide Tag Testing station that a user can perform a self-test at any time after being issued a Tag.

B. The Tag Test stations shall allow the Tag to be activated by the user and will not generate a Tag alarm on the RTLS.

2.9 CONDUCTORS AND CABLES

A. Locators

Jacketed, 18 AWG minimum, not greater than 16 AWG, 2 conductors, shielded plenum.

B. Gateways

Category 6A or higher performance 4-pair balanced twisted-pair cabling as specified in ANSI/TIA-568-C.2 and ANSI/TIA-568-C.2-1 is recommended.

PART 3 – EXECUTION

3.1 WIRING METHODS

A. Wiring Method:

1. Install cables in pathways and cable trays except within consoles, cabinets, desks, and counters. Conceal pathway and cables except in unfinished spaces.

2. Conceal conductors and cables in accessible ceilings, walls, and floors where possible.

B. Wiring within Enclosures:

A. Bundle, lace, and train cables to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Provide and use lacing bars and distribution spools.

3.2 INSTALLATION OF CABLES

3.3 INSTALLATION

3.4 GROUNDING

3.5 FIELD QUALITY CONTROL

3.6 SYSTEM STARTUP

3.7 ADJUSTMENTS

3.8 DEMONSTRATION/TRAINING

END OF SECTION