

SECTION 27 52 23
TELECOMMUNICATION NURSE CALL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Nurse Call Systems
- B. Related Sections
 - 1. Comply with the Related Sections requirements of Section 270511.

1.2 REFERENCES

- A. Comply with the References requirements of Section 270511.
- B. In particular or addition to the codes and standards listed in Section 270511, comply with the latest edition of the following applicable specifications and standards except as otherwise shown or specified:
 - 1. Facilities Guidelines Institute (FGI):
 - a. "Guidelines for Design and Construction of Health Care Facilities"
 - 2. U.S. Department of Health and Human Services (HHS)
 - a. Health Insurance Portability and Accountability Act (HIPAA)
 - 3. National Fire Protection Agency (NFPA):
 - a. NFPA 70, "National Electrical Code", Article 517
 - b. NFPA 99, "Standard for Health Care Facilities"
 - 4. Underwriters Laboratories, Inc. (UL)
 - a. UL 13, "Power-Limited Circuit Cables"
 - b. UL 1069, "Hospital Signaling and Nurse Call Equipment"
 - 5. National Electrical Manufacturers Association (NEMA)
"Installation Guide for Nurse Call Systems", R2007
 - 6. U.S. Department of Veterans Affairs
 - 7. The Joint Commission
 - 8. Healthcare Information Technology Standards Panel (HITSP)

1.3 DEFINITIONS

- A. Definitions as described in Section 270511 shall apply to this section.
 - 1. System Description
- B. System shall be UL1069 listed.
- C. System components, hardware, accessories, software, and firmware shall be from a single manufacturer.
- D. The System manufacturer shall have sole control over all of the System's software source code.

- E. The System, in its entirety, shall facilitate for the Owner's compliance to HIPAA, and no software or other component shall inhibit or hinder such compliance.
- F. Base Bid Work
 - 1. The Work of this Section includes materials, accessories, fasteners, etc., and the labor and associated services necessary for a complete working nurse call system, herein "System". The Work also includes coordination through the General Contractor with other trades and with the VA Resident Engineer.
 - 2. Stations, equipment, software etc. (as described in this Article)
 - 3. Wires, cables, terminations, programming, commissioning, and user training.
- G. Coordination Requirements with Other Trades
 - 1. Coordinate wiring routes and maintenance access at locations listed below. Coordinate trim features and finishes at these locations to present a unified design appearance.
- H. System Features, Capabilities, and Stations
 - 1. Stations and other System elements shall feature non-volatile memory/storage of operating firmware and software.
- I. Services
 - 1. The installer shall provide final design services. These final design services include the following:
 - a. Verify the design shown in the Contract Documents and compatibility with existing nurse call and code blue system.
 - b. Conduct a meeting with the manager of each nursing unit. Meetings shall (at a minimum) gather details specific to each unit; document coverage and call priorities; and other pertinent details that will affect the final design.
 - c. Conduct a follow up meeting with the manager of each nursing unit. Meetings shall (at a minimum) review the shop drawings - floor plans, system diagrams, etc., confirm the function and operation of the System and equipment, and confirm System programming.
- J. The installer shall provide extended support services, including extended warranty, for a period of 5 years (labor and material).

1.4 SUBMITTALS

- A. Comply with the Submittal requirements of Section 270511.
- B. Quantity: Furnish quantities of each submittal as noted in Section 270511.
- C. Submittal Requirements Prior to the Start of Construction:
 - 1. "Authorized Distributor" certificate on manufacturer's letterhead
 - 2. Product Data, including complete bill of materials listing all components.
 - 3. System Operation Narrative Submittal.

4. Shop Drawings Submittal: Shop drawings to include:
 - a. Plans (floor and reflected ceiling as applicable), showing device locations and pathways
 - b. Point-to-point wiring diagram in block or riser format, showing System components, conduit and wire connections with legend (listing types and sizes), and signal, control, and power connections with legend (listing requirements)
 - c. Elevations, including equipment cabinets, wall-mounted equipment, central controller, elevations shall note installation heights.
 - d. Station installation details, including conduit and backbox requirements
 5. Schedule Submittal: Submit proposed schedule of work.
 6. Testing Procedures Submittal:
 - a. Submit a step-by-step manual for which the System will be tested.
- D. Submittal Requirements at Close Out:
1. As-Built Drawings
 2. Final testing documentation, listing test results of each station, device, etc.
 3. O&M Manual
 4. Warranty Certificate, including System manufacturer's obligations, services, terms, and conditions. Warranty certificate shall describe renewal options.

1.5 QUALITY ASSURANCE

- A. Comply with Quality Assurance requirements of Section 270511.
- B. Manufacturer Qualifications
 1. Manufacturer shall have at least 20 years of regular (non-interrupted) experience in manufacturing nurse call equipment similar to that required for this Project.
 2. Manufacturer shall provide to Owner, at no cost to the Owner, factory training and training manuals.
 3. Manufacturer shall provide to Owner, at no cost to the Owner, telephone technical support services on a 24-hour per day basis.
 4. Manufacturer shall maintain, at no cost to the Owner, access to parts and to emergency maintenance and repair on a 24-hour per day basis with a 24-hour maximum response time.
- C. Installer Qualifications
 1. Installer shall have successfully completed factory training and shall be authorized by the manufacturer as a distributor and installer for the proposed System. The Installer shall submit a copy of the manufacturer's authorization Certificate with proposal (during bid).
- D. The Installer shall be certified by the manufacturer for network equipment, software, components, etc. The Installer shall make a Certificate copy available upon request.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Comply with Delivery, Storage and Handling requirements of Section 270511.

1.7 WARRANTY

- A. Warrant System to perform as described within this Section for a period of 5 years from the date of Owner's written acceptance. Correct deficiencies within 24 hours of notification. Exceptions:
- B. Manufacturer shall warrant all manufactured hardware for a period of 5 years.
- C. Manufacturer shall provide, free of charge, firmware/software upgrades (for patches, product feature enhancements, etc.) for a period of 1 year from date of Owner's written acceptance.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS

- A. Components, parts, accessories, wires/cables, and similar System products shall be listed for their intended purpose and for flammability requirements.
- B. Flush-Mounted Devices
 - 1. Stations shall be flush mounted using snap-tight cover plates. Fasteners/screws shall be hidden. Sub-plates shall be slotted and adjustable for trimming the mounting for "squaring" the vertical and horizontal fit.

2.2 TOUCHSCREEN NURSE MASTER CONSOLE

- A. Manufacturer: Jeron #6865+TV

2.3 WALL PLATE RECEPTACLE FOR NURSE CONSOLE

- A. Manufacturer: Jeron #6869

2.4 LED DOME LIGHT

- A. Manufacturer: Jeron #8804

2.5 PRISM ZONE LIGHTS

- A. Manufacturer: Jeron #6807

2.6 PULL-CORD EMERGENCY CALL STATION

- A. Manufacturer: Jeron #6832-B

2.7 STAFF ASSIST CALL STATION

- A. Manufacturer: Jeron #6846

2.8 CODE BLUE STATION

- A. Manufacturer: Jeron #6846

2.9 WIRES AND CABLES

- A. Proprietary wires and cables shall be listed for nurse call systems and shall be plenum rated and listed as such.

1. Cable Requirements

a. From Main Control to Dome Junction Box:

- 1) A maximum of 32 bus stations can be connected to each of the four bus terminals on the Cat. 6850 Main Control for a maximum of 128 addresses.
- 2) Cable lengths should not exceed 425 feet between Cat. 6850 Main Control and the furthest bus station. This assumes a maximum of 32 stations per bus and 10% calls on the system. For longer distances or larger percentage of calls, bus wiring must compensate for higher voltage drops (DC losses).

b. Power Bus:

- 1) One Individually shielded and individually jacketed #18 ga. stranded, twisted pair.
 - a) Maximum capacitance 27 pf/ft.

c. Data and Audio Buses:

- 1) Two Individually shielded and individually jacketed #22 ga. stranded, twisted pair.
 - a) Maximum capacitance 24 pf/ft.
 - b) Note: A single cable with three individually shielded twisted pairs in a common jacket is not recommended.

d. From Dome Junction Box to Bus Station:

- 1) Three Individually shielded and individually jacketed #22 ga. stranded, twisted pair.
 - a) Maximum capacitance 24 pf/ft.
- 2) Five #22 ga. conductor
 - a) Note: A single cable with three individually shielded twisted pairs in a common jacket is not recommended.

2. From Bus Station to Bath Station:

- a. Four #22 ga. conductor

3. From Bus Station to Presence Station:

- a. Five #22 ga. conductor

4. From Main Control to Master

- a. One 9 pair #22 ga stranded with overall shield.

- 1) Use Cat. 6869 Nurse Master Cable Extender Block.

2.10 LABELS

A. Labels for Wires and Cables

1. Labels shall be machine-printable via a laser printer, ink jet printer, thermal transfer printer, or hand-held printer
2. Labels shall be adhesive-backed and have a self-laminating feature.
3. Printable Area: 2" x 0.5", minimum.
4. Color: White.

PART 3 - EXECUTION

3.1 GENERAL

- A. Comply with the Execution requirements of Section 270511.

3.2 EXAMINATION AND PREPARATION

- A. General: Prior to the start of this Section's Work, examine telecommunications rooms, nurse desks, patient areas, and other spaces to receive System components to ensure conditions are acceptable for System installation in conformance with manufacturer's instructions and Specification tolerances. Notify in writing the Owner's Representative of conditions that would adversely affect the installation, or subsequent utilization, of the system. Do not proceed with the installation until unsatisfactory conditions are improved to satisfactory conditions.
- B. Pathways Provided By Others: Prior to the start of this Section's Work, verify that pathways and supporting devices, provided under other Sections, are properly installed, and that temporary supports, devices, etc., have been removed. Verify pathway dimensions, including length (for example, "True Tape" the conduits).
- C. Pathways: Plan routes and locations of supplemental pathways in advance of the installation. Coordinate routes and locations through General Contractor with other trades (telecommunications pathways, electrical raceways, ductwork, plumbing, ceilings, wall construction, etc.). Pathways shall not unnecessarily cross other conduits or pipe, shall not prevent removal of ceiling tiles or panels, and shall not block access to mechanical or electrical equipment. Provide offsets as required to avoid obstruction of pathways with other trades.
1. Where possible, plan pathway routes parallel or at right angles to the centerlines of columns and beams.
 2. Pathways shall be no closer than 12 inches to a flue, parallel hot water, steam line or other heat producing source, or 3 inches from such lines when crossing perpendicular to the runs.

3.3 INSTALLATION

A. System Programming

1. Program into the System the call types and prioritizations according to the approved Submittals (pre-installation

requirements gathered during the 'final design' meetings with the nursing units).

- B. Provide integration of new and existing nurse call devices with existing nurse call system, panels and nurse master console.
- C. Touchscreen Nurse Master Console
 - 1. Coordinate device placement with VA Resident Engineer
 - 2. Set in place and connect master stations.
- D. Wall Plate Receptacle for Nurse Master Console.
 - 1. Provide receptacle for each master console location
- E. LED Dome Light
 - 1. Install square and plumb.
 - 2. Set "flush mounted" units with the face of the cover, bezel or escutcheon in the same plane as the surrounding finished surface.
 - 3. Mount boxes, panels and trim so that there are no gaps, cracks or obvious lines between the trim and the adjacent finished surface and ready them to receive final finish, as applicable.
- F. Prism Zone Lights
 - 1. Install square and plumb.
 - 2. Set "flush mounted" units with the face of the cover, bezel or escutcheon in the same plane as the surrounding finished surface.
 - 3. Mount boxes, panels and trim so that there are no gaps, cracks or obvious lines between the trim and the adjacent finished surface and ready them to receive final finish, as applicable.
- G. Pull-Cord Emergency Call Station
 - 1. Install square and plumb.
 - 2. Set "flush mounted" units with the face of the cover, bezel or escutcheon in the same plane as the surrounding finished surface.
 - 3. Mount boxes, panels and trim so that there are no gaps, cracks or obvious lines between the trim and the adjacent finished surface and ready them to receive final finish, as applicable.
- H. Staff Assist Call Station
 - 1. Install square and plumb.
 - 2. Set "flush mounted" units with the face of the cover, bezel or escutcheon in the same plane as the surrounding finished surface.
 - 3. Mount boxes, panels and trim so that there are no gaps, cracks or obvious lines between the trim and the adjacent finished surface and ready them to receive final finish, as applicable.
- I. Code Blue Station
 - 1. Install square and plumb.
 - 2. Set "flush mounted" units with the face of the cover, bezel or escutcheon in the same plane as the surrounding finished surface.

3. Mount boxes, panels and trim so that there are no gaps, cracks or obvious lines between the trim and the adjacent finished surface and ready them to receive final finish, as applicable.

J. Wiring and Cabling

1. Wire and cable runs shall have continuous sheath continuity, homogenous in nature. Splices are not permitted anywhere.
2. Size wiring to conform to the equipment Manufacturer's requirements.
3. Wire color-coding shall remain the same throughout the system.
4. Placement
 - a. Place wires and cables within designated pathways.
 - b. Place and suspend wires and cables in a manner to protect them from physical interference or damage. Place wires and cables with no kinks, twists, or impact damage to the sheath. Replace wires and cables if damaged during installation.
 - c. Place wires and cables within manufacturer's minimum bend radius or 6 times the cable diameter during and after installation, whichever is larger.
 - d. Place wires and cables within manufacturer's pulling tension limits.
 - e. Place a pull string along with cables where run in conduit and spare capacity still exists in the conduit. Tie off ends of the pull rope.
5. Routing
 - a. Route wires and cables a minimum of 6" away from power sources (to reduce interference from EMI).
 - b. Within equipment rooms and/or at equipment enclosures, utilize the overhead and vertical cable support. On overhead cable support, do not provide cable ties; cables shall lie loosely. On vertical cable support, do provide cable ties every 24 inches on center.
6. Termination
 - a. Provide 1 to 2 feet of cable slack at each end of the run. Store slack in overhead cable support or as noted on Drawings.
 - b. Properly relieve strain from cables at termination points per manufacturer's instructions.
 - c. For cable shields, terminate shield and drain wire onto the termination apparatus in accordance with manufacturer's latest instructions.
7. Termination Apparatus
 - a. Provide accessories required for a complete installation.

3.4 LABELING

A. General Requirements

1. Labeling, identifier assignment, and label colors shall conform to TIA/EIA-606-A and as approved by Owner's Representative before installation.
2. Labels shall be permanent.

3. Labels shall be machine-generated; hand written labels will not be accepted.
- B. Wire and Cable Labels
1. Label Format:
 - a. Label type shall be wrap-around self-laminating.
 - b. Label color shall be white background with clear laminating window.
 - c. Text color shall be black; text height shall be 1/8" high, minimum, or #12 font size.
 2. Provide labels on both ends of wires and cables. Fully wrap label around the wire insulation and/or cable jacket. Install labels no more than 4 inches from the edge of the insulation/jacket. Install labels such that they are visible by a technician from a normal stance.
- C. Station Labels
1. Use labels included in the product packaging. For substitutions, request approval by the Engineer.
 2. Label color shall be white.
 3. Text color shall be black, 3/32" high, minimum, or #10 font size.

3.5 FINAL INSPECTION, START-UP, AND TESTING

- A. Initial Punch Walk
1. Execute an initial punch walk covering the Work of this Section, compliant to the requirements of Section 270511. Punch walk shall include installer's supervisor/foreman, prime contractor, Engineer, and (if applicable) Owner/Owner's Representative.
 2. Schedule punch walk approximately 2 weeks in advance.
 3. Plan initial punch walk with sufficient time to allow required adjustments.
 4. Produce a list of corrections, repairs, and adjustments. Issue to prime contractor, Engineer, and Owner/Owner's Representative.
 5. Complete the required corrections, repairs, and adjustments prior to System start-up.
- B. System Start-Up
1. Upon completion of installation, 'start up' the System. A factory-trained service representative shall perform initial start-up.
 2. Start up System prior to testing.

3.6 BASIC TESTS

- A. Pull-Cord Emergency Call Station
1. Activate call from station:
 - a. Verify appropriate indicator lights on corridor light
 - b. Verify designated nurse master station sounds. Confirm room labeling and call type
 - c. Cancel the call at the room station

- d. These calls can only be cancelled at the station initiating the call.
- B. Staff Assist Call
- 1. Activate call from station:
 - a. Verify appropriate indicator lights on corridor light
 - b. Verify designated nurse master station sounds. Confirm room labeling and call type
 - c. Cancel the call at the room station
 - d. These calls can only be cancelled at the station initiating the call.
- C. Code Blue Station
- 1. Activate call from station:
 - a. Verify appropriate indicator lights on corridor light
 - b. Verify designated nurse master station sounds. Confirm room labeling and call type
 - c. Cancel the call at the room station
 - d. These calls can only be cancelled at the station initiating the call.
- D. After completion of start-up and testing, thoroughly clean equipment, stations, etc.

3.7 ACCEPTANCE AND TURN OVER TO OWNER

- A. Demonstration for Final Acceptance
- 1. Execute a demonstration of the completed System to the Owner/Owner's Representative and Engineer, including presentation of the documented acceptance testing reports [see previous].
 - 2. Demonstrate to Owner and Engineer, at select locations, System operation and function, features, calling and alarming.
 - 3. Schedule demonstration approximately 2 weeks in advance.
 - 4. Should the demonstration fail, the Contractor shall bear all costs incurred by the Engineer and Owner for retesting and re-demonstration.
- B. Final Acceptance
- 1. Issue to Owner record documents, per "Submittals" requirements.

3.8 SYSTEM TRAINING

- A. Comply with training requirements of Section 270511.
- B. Provide training for Owner / Owner's representative. Factory-authorized service representative shall conduct the training. Schedule training approximately 30 days in advance. Training shall cover, at a minimum, the following:
- 1. 4 hours of training covering System interface and hands-on instruction of functions and capabilities

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