

SPECIFICATION FOR NURSE CALL SYSTEM**1 PART 1 GENERAL****1.01 OVERVIEW**

- A. Provide a complete working Nurse/Patient Communications Network based upon the specification outlined here to include all necessary devices that provide the functions listed in this specification for *Wm. Jennings Bryan Dorn VA Medical Center*. This facility will be referenced as the OWNER in this specification.
- B. All Nurse Communications Network devices shall be UL-1069 listed. This includes routers, hubs, switches, fiber optic cables and room control devices. The nurse call network shall be an FDA Registered Class II (or higher) medical device and the system's manufacturer shall be an FDA Registered Operator. Field wiring shall be CAT 6 cable, control wiring for power distributions and very long runs, and utilize an optional fiber backbone (when distances exceed normal Ethernet limitations). All station equipment shall use plug on connectors and all switches, routers and controllers shall utilize standard RJ-45 modular connections. All remote devices utilizing standard structured cabling shall be capable of PoE (Power over Ethernet) or power supplied within the CAT 6 cable jacket. Systems which require separate DC power to devices, remote power supplies, or heavy DC wiring to each individual room shall not be accepted. Wiring shall be capable of either being installed in conduit or cable trays, where shown on the plans. Nurse Communications cabling may be run along with other low voltage and data cables where permitted by code. Nurse Communications cabling to be separated out from any high voltage AC or DC wiring that exceeds 90 volts, or which violates any national or local electrical code. Computers, data servers and hospital network work is neither/nor part of this project.

1.02 SCOPE

- A. *Wm. Jennings Bryan Dorn VA Medical Center* is furnishing and installing a new nurse call system with the design based on a Rauland-Borg Responder Nurse Call system to connect to existing nurse call system as directed by RSS. Nurse Call system and components to be furnished and installed by the local system vendor. All conduit, wire, back boxes, AC power and associated electrical work shall be furnished and installed by the Electrical Contractor. Nurse Call terminal cabinets are to be furnished by the nurse call system vendor and installed by the electrical contractor. Elevations of Nurse Call devices are to be determined by the Architect prior to installation. The Architect will provide a drawing of the typical nurse call device locations.

SECTION 27 52 23

NURSE CALL SYSTEM

Other vendors must be pre-qualified twenty (20) days prior to bid. Alternate manufacturer to furnish and install a complete, working nurse call system for owners review and shall remain the property of the owner. Pre-submission and pre-approval does not guarantee system acceptance. Removal of any existing nurse call devices are to be included in this project and be done by a local Certified Rauland Borg System integrator. If any other manufacturer is pre-approved they must include the cost from an authorized local Rauland distributor to perform all the work associated with the demolition of the existing Nurse call System. Contact Ronco Specialized Systems, Inc. (RSS) at 803-739-8959 for information and pricing required for demolition.

- B. General Construction work associated with the nurse call system is not part of this scope of work. The electrical contractor, not the system supplier or product manufacturer, shall furnish and install all conduit, back boxes, raceways, modified device plates and critical power branch circuit wiring.

1.03 QUALIFICATIONS

- A. Authorized Distributor for product supplied. Authorized Distributor Letter from manufacturer required upon request of specifying authority. Proof of a local service center (with-in 20 miles of the facility) complete with certified technicians must be provided to the owner. Factory certifications for a minimum of 3 technicians that work at the local service center must be provided. No system will be approved without the certificates from the technicians. Local service center must provide 24/7 – 365 day service and have the ability to have a factory authorized technician on site (if required with-in 1 hour after the first service call is made).

1.04 SYSTEM DESCRIPTION

- A. System hardware shall consist of a nurse call network comprised of VoIP nurse consoles, nurse call network controllers, power supplies, battery back-up, dome lights, zone dome lights, duty stations, staff stations, staff terminals, high security plates, high security push buttons, and water resistant high security push buttons, key lock switches, nurse call cabinets, 990 call priorities, and wiring. Optional staff registration buttons and pull cord stations with audio, pillow speakers with and without TV and lighting controls, reporting software as manufactured by the nurse call manufacturer shall be currently available for implementation on future projects. All necessary equipment required to meet the intent of these specifications shall be supplied and installed to provide a complete and operating nurse call system. Optional software is not to be included, however must be currently available and supported by the local systems integrator.

SECTION 27 52 23

NURSE CALL SYSTEM

- B. System hardware and firmware shall be the product of a Rauland-Borg with a proven history of product reliability and sole control over all source code. Manufacturer shall provide, free of charge, product firmware/software upgrades for a period of one year from date of installation for any product feature enhancements. Manufacturer shall provide a 5 year warranty on all manufactured hardware. All communications shall be full duplex audio, not only on handsets, but all loud speaking devices, including staff and duty stations. All wall mounted stations shall be flush mounted using snap tight cover plates. Sub plates shall be slotted and adjustable for trimming the mounting for “squaring” the vertical and horizontal fit. All screws shall be hidden.
- C. All main nurse call equipment shall be installed in Wall Mount Cabinets as manufactured by the Nurse Call Manufacturer #RSS-351102 or RSS-NC2828.

1.05 SUBMITTALS

- A. Any supplying contractor proposing equipment which is not the base standard for this specification must provide full submittals at the time of bid. This option shall be exercised at the discretion of the OWNER/specifying authority.
- B. Prior to submission of bid, the supplying contractor shall submit six (6) complete submittal sets. These sets are to be submitted in a three ring binder, a continuous spiral binder, or plastic binding that allows the booklet to lie flat while open. Each booklet shall consist of the following:
 - Page 1:** Name of supplying contractor and project name.
 - Page 2:** In the following order, a listing of: component quantities, equipment manufacturer, model number, and description of each component being supplied. If equipment being supplied is not the specified equipment manufacturer’s model, alongside the submitted model number and description, list the specification paragraph that corresponds to the equivalent specified model.
 - Page 3:** Recently dated support letter from manufacturer stating that the supplying contractor is an Authorized Distributor of the product being supplied.
 - Page 4:** Statement that warranty hardware from manufacturer for 5 years or statement of vendor extending manufacturer’s original warranty to 5 years.
 - Page 5:** Copy of the installing technician(s) certificate of completion from the manufacturer’s training school for the equipment being proposed.

SECTION 27 52 23

NURSE CALL SYSTEM

Page 6: One catalog sheet per product of equipment listed on page 2; in the exact order as listed on page 2. Each catalog sheet shall describe mechanical, electrical and functional equipment specifications. The catalog sheet must also include a photograph of the product. Photocopy duplications of the manufacturer's original equipment catalog sheets will be allowed as long as they provide adequate clarity of both the printed word and graphics/pictures. Submittals that are not of adequate clarity or content may be rejected and re-submission may not be allowed.

Last Page (s) or Separate: Provide all inter-equipment wiring diagrams and drawings necessary to install the equipment being supplied. The Architectural and Nurse Call drawings will be provided to the Electrical contractor in AutoCAD (.dwg format) at no cost to the Electrical Contractor for submittal preparation. These shop drawings will show all wiring types by wire gauge, conductors and wire manufacturer. Owner to furnish AutoCAD floor plans prior to submittal preparation.

1.06 PROJECT SITE VISIT

It is the responsibility of all prospective contractors to make an adequate inspection of the project site. Any contractor not registered as having attended the mandatory site visit tour will be disqualified and any bid proposal will automatically be rejected.

1.07 SCHEDULING

It is the responsibility of the contractor to coordinate all work with the other trades for scheduling, rough-in, and finishing all work specified. The coordination of the Nurse Call system is to be done by the general contractor and the electrical contractor with other trades. Nurse call system supplier shall provide all the over device information and conduit information in a "riser type" format. The actual conduit routings shall be shown on the floor plans by the electrical contractor not the nurse call system supplier.

1.08 WARRANTY

- A. The supplying contractor shall provide a warranty on the system which shall include all necessary labor and equipment to maintain the system(s) in full operation for a period of one year from the date of acceptance.
- B. Manufacturer shall provide product firmware/software upgrades throughout the 1 year warranty period for any product feature fixes.

SECTION 27 52 23

NURSE CALL SYSTEM

- C. The system supplier will provide the owner with any additional license fees at the 9 month date (from system turnover/final system inspection) and the owner will be responsible for any additional software maintenance fees for the software that is provided with this project.
- D. In addition, the equipment (parts) warranty for all core system components including control / switching equipment, power supplies, sub-stations, and nurse consoles shall extend to a total of at least five (5) years from the date the parts are delivered..
- E. After the acceptance of the system(s) service shall be provided on the following basis:

Emergency Service - Provided **24 hours a day**. When a **total or catastrophic failure** of equipment is reported to contractor, within **2 hours of notification**, a service person will be on site. (An example of a catastrophic failure would be a hub failure or a nurse console failure.)

Routine Service - Provided **within 4 business hours** (9 a.m. to 5 p.m., Monday through Friday, excluding holidays) **of notification**. When a minor failure of equipment is reported to contractor, a service person will be on site within 24 hours of notification. (An example of a minor failure includes peripheral equipment such as control stations, entertainment speakers, corridor lights, pull-cord stations, etc. which normally affect only one patient or patient room.)

1.09 MAINTENANCE

- A. Provide the cost of tuition for ONE person designated by the OWNER to attend a service school held by the equipment manufacturer. Transportation to this school will be borne by the OWNER. Lodging, breakfast and lunch to be borne by the OWNER not the manufacturer or supplying contractor.
- B. The OWNER may choose to have the supplying contractor maintain the system(s) at an additional cost to the OWNER. The level of service provided during the maintenance contract period would be the same as the warranty period for routine and emergency service. All labor and equipment costs would be covered under this contract. Supplying contractor must state exact billing amounts, billing periods and all costs associated with this maintenance agreement and list any items that would not be covered under the service/maintenance agreement. Firmware/software upgrades would be available with a software maintenance agreement. This agreement will need to

SECTION 27 52 23
NURSE CALL SYSTEM

be compiled separately 10 months after the date of the nurse call system acceptance.

2 PART 2 PRODUCTS

2.01 MANUFACTURERS

The products specified shall be new and of the standard manufacture of a single reputable manufacturer. As a reference of standard and quality, functionality and operation, it is the request of the OWNER that bids be based on equipment manufactured by Rauland-Borg Corporation or an approved equal as this is an expansion of the existing Nurse Call system and the existing Nurse Call must be connected to the nurse call system being installed as part of this project. All connections to be done by Ronco Specialized Systems or approved equal and the cost for any required connections to the existing Rauland Nurse Call System shall be included in the cost of this project. Change orders will not be paid by the owner for any and all connections to existing nurse call system and are the complete responsibility of the system supplier. Prior approval required as listed in other sections of the nurse call specification.

2.02 NURSE CALL NETWORK WIRING

All Nurse Call Network wiring shall be only CAT 6. The entire Nurse Call System shall be installed in conduit and PVC cable shall be utilized. Plenum cable is not part of this project and if it is required additional costs will apply. System shall be capable of injecting DC power into a CAT 6 run, for additional rooms, or long runs, by running a separate DC cable pair to a remote location.

2.03 NURSE CALL CONTROLLER(S)

- A. Furnish as shown on the drawings or as required by the nurse call manufacturer nurse call network controller. Each controller shall provide the following:
1. Non-blocking, duplex communications between consoles and rooms, sub stations, within each 6 station loop. Provide four loops for a total of 12 dynamically allocated speech paths.
 2. CAT 6 wiring standard utilizing PoE (Power over Ethernet) between console and nurse call controllers and local wiring to power room station equipment and dome lights.
 3. VoIP audio to Nurse Call Network, VoIP Nurse Console, VoIP digital audio stream out to rooms without IP overhead signaling.

SECTION 27 52 23
NURSE CALL SYSTEM

4. Up to 96 corridor lights can be operated with a single controller.
- B. Controller must be life safety grade meaning that it shall not require regular rebooting for continued basic functions of system and it shall be possible for controller to act as a stand alone controller should loss of network communication occur.

2.04 VoIP NURSE CONSOLES

- A. Furnish as shown on plans, a UL-1069 listed VoIP nurse console capable of the following functions:
1. Full duplex audio
 2. Color display
 3. 12 or 24 hours time display and synchronization to hospital standard network time from the nurse call gateway server including any daylight savings time changes supported by the network.
 4. Display up to 3 incoming calls each with an individual elapsed timer which increments time since call was placed. Also provide the ability to scroll to see more incoming calls.
 5. Power over Ethernet powered connection to UL-1069 listed Ethernet controller. No local power supplies required.
 6. Choice of hands-free duplex communications through built in speaker and separate microphone or private handset conversation.
 7. Ability to create up to 32 soft keys, user-configurable, with 4 buttons, 8 screens deep.
 8. Console shall be interactive with an associated PC workstation (user provided) without the necessity of any interconnection to the PC. The work process relationship shall be software defined through the network connections.
 9. Optional tone/mute of calls in progress.
 10. Ability to block all nurse call loudspeaker paging to facilitate a low noise patient environment. Password protection can be enabled to only allow authorized access to audio paging.
 11. Ability to swing an individual room or any group of rooms by touching one labeled touch point. Room(s) and consoles may be located anywhere within hospital nurse/patient communications network.
 12. Console can be programmed to be the receiver of any call that is not answered by another console, or can be programmed to receive any call from a console that has failed or has been unplugged, or otherwise not receiving the call (call orphaning).

SECTION 27 52 23
NURSE CALL SYSTEM

13. Ability to dial through built in key pad.
14. Self-contained unit which shall not occupy more than 88 square inches of desk space and is desk or wall-mountable.
15. Support manual Staff Follow functions. When Staff Follow is enabled, call-tones for a prescribed area will automatically be forwarded to the room station speaker where staff members are located. Staff location may be determined manually by entering the room number into the console or automatically using staff register stations or registration via RTLS. Pressing the call button on that station shall silence the tones. When a new call is placed, the tones shall automatically be restored.
16. Furnish and install two Staff Terminals #RSS-351300-ST on this project. One to be installed at the police desk on the first floor by ER and one at the nurse station.

2.05 HIGH SECURITY STAFF STATION

Provide as shown on plans a staff station. Unit shall provide two-way hands free duplex intercom to its assigned nurse console(s) by pushing a call in button. Station shall support an optional module to feature bed side rail control on station to indicate bed connection. LED on station shall indicate bed connection. Unit shall mount in a standard 3-gang electrical box. Steel, welded and powder coated cover plate shall be provided per direction of RSS.

2.06 DUTY STATION

Provide as shown on plans a duty station. Unit shall provide remote annunciation of assigned patient stations and sub-stations via 4 LED's and multiple call tones. Duty station faceplate LED's shall mimic corridor light activity for the assigned nursing area. Also provides two-way duplex intercom to the assigned nurse console(s) through separate speaker and microphone. Call tones generated at duty station must be identical and repeat in synch with tones produced at closest nurse console. It shall be possible to mute the call in tone, without cancelling call. The next call in, assigned to this duty station, will un-mute the station. Muting feature may be defeated in those jurisdictions that do not allow muting of duty station. The duty station shall be capable of being programmed for a specific time that a day/night mode takes place, allowing a volume change to the call-in tones. This feature is required to minimize noise for patients. Unit shall mount in a standard 3-gang electrical box.

2.07 HIGH SECURITY STEEL COVER PLATE

SECTION 27 52 23

NURSE CALL SYSTEM

Provide as shown on plans a high security steel cover plate that is a 3 gang, 0.60", painted cold roll steel plate, designed to protect the R5 Staff Station when used in psychiatric wards or other high security hospital areas. The plate incorporates a vandal resistant switch which is wired to the R5KLS and is used to initiate an emergency call from the room. The plate installs over the R5 Staff Station without drilling or modification to the station.

2.08 KEY LOCK STATION

Provide as shown on plans a key lock station that is a flush-mounted unit for use in a psychiatric ward or other high security hospital area. It is generally positioned outside the entrance to a room or ward and is used to activate and emergency pushbutton located in the room. A built-in "LED" indicator will illuminate when a staff member turns the key to the "on" position, activating the entrance station and (optional) initiating a "Locking Station" priority call at the nurse console. A "Monitor" LED will illuminate when the nurse console is actively monitoring the room station. If a staff member should require assistance while in the room, a pushbutton is available to initiate an emergency call. When an emergency call is placed, a built-in "LED" and sounder will announce the call at the key lock station. Additionally, the call will be placed through the nurse call system, announcing the call on the nurse call console. The call is terminated when the staff member leaves the room and turns the key lock station to the "off" position.

2.09 CORRIDOR LIGHTS AND DOMELESS CONTROLLERS

- A. Provide as shown on plans, the proper type of corridor light or domeless controller. Corridor lights shall contain four sections, each lighted by a long life, RGB LED capable of producing 7 colors. Each section shall have a diffusion lens which allows for 180 degree horizontal visibility of call lights. The corridor lights shall be capable of the following:
 - 1. All segments of corridor light can indicate a call in any of the following 7 colors: Blue, Red, White, Green, Orange, Yellow, or Pink.
 - 2. Custom call patterns (any combination of light segments, such as all segments blue for code blue).
 - 3. Flash any single color or strobe the sections of the light in any color pattern.
- B. Intelligence in the corridor light and domeless controller shall support up to 16 room devices and allow for the ability of any room station to be associated with any other room in the system. This allows special functions where needed, such as associated call stations and cancelling options, (i.e. door monitoring).
- C. Domeless controllers shall have all the function of the corridor light, less LED's.

SECTION 27 52 23

NURSE CALL SYSTEM

- D. In the unexpected event of communications loss with the nurse call controller, corridor lights and domeless controllers shall enter a local room failsafe mode showing all calls in the hallway via the LED indicators.
- E. Corridor lights and domeless controllers may be hot-swapped on the room-to-room communication line without the loss of communications to other devices on the local network.

3 PART 3 EXECUTION

3.01 SUPERVISION

- A. Only factory certified installers shall install, service and maintain the specified network system.
- B. Manufacturer shall have the equipment manufacturer's engineer or their designated agent inspect the installation and operation of this network to determine that the network complies with all standards listed in Part 1.03.

3.02 TRAINING

Contractor shall provide thorough training of all nursing staff assigned to those nursing units receiving new networked nurse/patient communications equipment. This training shall be developed and implemented to address two different types of staff. Floor nurses/staff shall receive training from their perspective, and likewise, unit secretaries (or any person whose specific responsibilities include answering patient calls and dispatching staff) shall receive operational training from their perspective. A total of 16 on-site training hours shall be included in the cost of this project and must be done by a Factory Certified Trainer. The system supplier shall offer additional training to be quoted outside of this project.

3.03 WIRING

- A. The system supplier shall terminate all wiring with manufacturer approved connectors and in accordance with the manufacturers' recommendations.
- B. All wiring shall be free from shorts and faults. Wiring shall be UL listed, NEC and NFPA 70, Article 25 approved.
- C. Nurse patient communications network wiring shall not be run in the same conduit with other systems (i.e. Class 1 AC power distribution, fire alarm, entertainment systems, lighting controls, etc.).

3.04 ELECTRICAL POWER CONNECTIONS

- A. It shall be the responsibility of the hospital to provide a minimum of two dedicated critical power branch circuits, 120 VAC, 60 HZ and the required conduit into the equipment cabinet. This power feed shall not have any other

SECTION 27 52 23

NURSE CALL SYSTEM

devices connected directly to it. Circuit breakers shall be 20 AMPS and shall be located in the critical power electrical sub-panel labeled "nurse call" will control this circuit. This electrical circuit will be connected to the hospital's emergency critical power system for automatic power switch over during loss of utility power.

- B. The electrical contractor, not the nurse call system supplier shall connect all network system power supplies and equipment cabinets to a common earth ground utilizing a 14 AWG, or larger, solid conductor which is at minimum the same conductor size as the AC feed wires. The electrical contractor, not the equipment supplier is responsible for conduit, raceways and all associated electrical items to be done in accordance with the current codes and the requirements of the Authority Having Jurisdiction (AHJ).

3.05 ENVIRONMENTAL PROTECTION

Make certain that all network control equipment is accessible for service. Contractor shall notify specifying authority if designated equipment closet does not meet manufacturer's requirements for heat, radiation or static electricity.

3.06 PROTECTION OF NETWORK DEVICES

Contractor shall protect network devices during unpacking and installation by wearing manufacturer approved ESD wrist straps tied to chassis ground. The wrist strap shall meet OSHA requirements for prevention of electrical shock, should technician come in contact with high voltage.

3.07 CLEANING AND PATCHING

- A. It shall be the responsibility of the contractor to keep their work area clear of debris and clean area daily at completion of work.
- B. It shall be the responsibility of the contractor to patch and paint any wall or surface that has been disturbed by the execution of this work.

3.08 DRAWINGS

The Electrical Contractor, not the system supplier, shall provide as built drawings of all installed network components and associated wiring on building plans. Final payment will be made by the owner prior to the submission of the as-built drawings and Owners and Maintenance manuals.

END OF SECTION