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USACE / NAVFAC / AFCESA / NASA | **UFGS-27 52 32.00 10 (April 2006)**

Preparing Activity: USACE | **Replacing without change UFGS-16730A (November 2002)**

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated 1 April 2006
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DIVISION 27 - COMMUNICATIONS

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NURSE CALL TONE-VISUAL (NCTV) SYSTEM

04/06

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SECTION 27 52 32.00 10

NURSE CALL TONE-VISUAL (NCTV) SYSTEM
04/06

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NOTE: This guide specification covers the requirements for a NURSE CALL TONE-VISUAL (NCTV) SYSTEM in medical facilities. This guide specification does NOT cover the requirements for a NURSE CALL AUDIO-VISUAL SYSTEM, which is covered in Section 27 41 00.00 10 NURSE CALL AUDIO-VISUAL (NCAV) SYSTEM.

Comments and suggestions on this guide specification are welcome and should be directed to the technical proponent of the specification. A listing of technical proponents, including their organization designation and telephone number, is on the Internet.

Recommended changes to a UFGS should be submitted as a Criteria Change Request (CCR).

Use of electronic communication is encouraged.

Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.

****

PART 1 GENERAL

****

NOTE: This guide specification covers NCTV System requirements applicable to composite medical facilities for both inpatient and outpatient care, and stand-alone outpatient medical facilities. For stand alone outpatient medical facilities, such as troop clinics, the guide specifications that link the NCTV System to other systems, such as the NCAV System and Radio Paging System, will have to be deleted.

This Section may be used in conjunction with Section 27 41 00.00 10 NURSE CALL AUDIO-VISUAL SYSTEM,

Section 27 51 13.00 10 RADIO PAGING SYSTEM, and any other Sections required by the system design.

Communications requirements between caregivers and patients dictate the type of nurse call system to be installed, and nurse call system equipment locations.

The system designer developing the specifications and telecommunications drawings for the NCTV System should have at least five years of current experience in the application of similar nurse call systems, and have a good understanding of the capabilities and limitations of such nurse call systems currently available in the marketplace.

The NCTV System specification should reflect a thorough analysis of the facility design and the user requirements for the communications needed between caregivers and patients, and among caregivers.

If the NCTV System is to be procured and provided as part of the facility construction contract, the design drawings for the NCTV System that are part of the telecommunications systems drawings need to indicate the system legend, physical location of all equipment, cable tray sizes and routing, minimum conduit sizes, and zone plans that indicate the boundaries of each patient care area to be served by the system. Each zone light indicated on the drawings must include an individual identification number (ID) that is used in the Zone Light Activation Matrices that must be developed and included in this specification. Reference the Call Routing - Zone Lights paragraph, and the Schedule Zone Light Activation Matrices paragraphs for further requirement information.

If the NCTV System is to be provided as part of a separate procurement of telecommunications systems, two sets of design drawings are required: one set for the facility construction contract; and one set for the separate telecommunications systems contract.

The telecommunications systems design drawings for the facility construction contract need to indicate the infrastructure and rough-in required to accommodate the installation of the system equipment and cabling, including the system legend, physical location of all equipment, cable tray sizes and routing, minimum conduit sizes, typical empty conduit riser diagrams, and empty back box types and sizes.

The telecommunications systems design drawings for the separate procurement contract need to indicate the infrastructure and rough-in provided by the facility construction contract, the system legend, physical location of all equipment, and zone plans

that indicate the boundaries of each patient care area to be served by the system. Each zone light indicated on the drawings must include an individual identification number (ID) that is used in the Zone Light Activation Matrices that must be developed and included in this specification. Reference the Call Routing - Zone Lights paragraph, and the Schedule Zone light Activation Matrices paragraphs for further requirement information.

Throughout this specification requirements are indicated for a Radio Page interface capability and performance features. These capabilities and features are valid only if there is a Radio Paging System that is part of the project, or is provided by the medical facility. The system designer should verify that the Radio Paging System is available and coordinate the requirements and interface. If this system is not part of the project, or is not available from the medical facility, then the required Radio Page capability and performance need to be deleted throughout the specification.

****

1.1 REFERENCES

****

NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a RID outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

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The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ELECTRONIC INDUSTRIES ALLIANCE (EIA)

EIA ANSI/TIA/EIA-569-A	(2001) Commercial Building Standard for Telecommunications Pathways and Spaces**

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2005) National Electrical Code

NFPA 99 (2005) Health Care Facilities

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

47 CFR 15 Radio Frequency Devices

UNDERWRITERS LABORATORIES (UL)

UL 1069 (2001; Rev thru Mar 2004) Hospital Signaling and Nurse Call Equipment

UL 1778 (2003) Uninterruptible Power Systems

1.2 DEFINITIONS

****
NOTE: Add any new definitions needed for the specific project being specified.
****

1.2.1 General Definitions

The glossary of definitions, abbreviations and acronyms, and units set forth in EIA ANSI/TIA/EIA-569-A and UL 1069 shall apply to this Section, unless otherwise noted.

1.2.2 Additional Acronyms

For the purposes of this Section, the following definitions shall apply.

CFR	Code of Federal Regulations
COTS	Commercial-Off-The-Shelf (Products)
CPU	Central Processing Unit
LAN	Local Area Network
NC	Nurse Call (Subsystems)
NCAV	Nurse Call Audio-Visual (System)
NCTV	Nurse Call Tone-Visual (System)
O&M	Operation and Maintenance (Manuals)
UON	Unless Otherwise Noted
UPS	Uninterruptible Power Supply

1.2.3 Additional Terms

For the purposes of this Section, following definitions shall apply.

Call	Communications between patients and caregivers, and among caregivers, that are transmitted through the NCTV System [and interconnected supplementary systems]. Call communications modes for the NCTV System include alert tones, visual indicators, [and digital display of alphanumeric messages].
Caregiver	A person who is directly involved in the care of patients.
Pager	Radio Page Receiver.
Software	Operating systems and application programs that enable

a computer, or computer-based systems, to function as specified. Software shall include the documentation to describe, maintain and use the programs.

System	NCTV System, UON.
System Application Design	Contractor performed systems engineering to combine and configure a collection of hardware and software components into a functioning system that has been customized and tailored to satisfy all specified and indicated requirements. The system application design shall assure that the configuration and working relationships among all of the components of the system and all interfaces provides the specified capability and performance.
Telecommunications Systems	All low voltage and power limited Communications and Security systems installed in the facility. This does NOT include Fire Alarm Systems, Environmental Control Systems, and Special Building Alarm Systems.
Telecommunications Rooms	Controlled environment rooms on each floor level that provide the floor and wall space for the mounting of equipment and cable distribution terminations and devices for all telecommunications systems.
24x7 Staffed	A workplace that is constantly staffed 24 hours per day, 7 days per week, 365 days per year.

1.3 SUBMITTALS

****

NOTE: Review submittal description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project. Submittals should be kept to the minimum required for adequate quality control.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for

Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

Choose the first bracketed item for Navy, Air Force and NASA projects, or choose the second bracketed item for Army projects.

****

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for [Contractor Quality Control approval.][information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Qualifications[; G][; G, [_____]]

NCTV System Contractor, Installer, and Manufacturer qualifications. Proposed system information.

SD-02 Shop Drawings

Detail Drawings[; G][; G, [_____]]

Drawings and diagrams specifically prepared to indicate the work of this project.

Coordination Drawings[; G][; G, [_____]]

Coordination drawings indicating the details of all electronic and physical interfaces between the NCTV System and all interfaced telecommunications systems, including the exact point and type of demarcation.

As-Built System Drawings[; G][; G, [_____]]

As-built drawings including all approved detail drawings and coordination drawings that have been updated to indicate the final as-built configuration of all equipment and cables as installed. In addition to the architectural room names and numbers, as-built drawings shall indicate the medical facility user room names and numbers for all rooms where equipment has been installed.

SD-03 Product Data

Material and Equipment[; G][; G, [_____]]

The Manufacturer's product data and specifications, and other information in sufficient detail and scope to verify that each product item is in compliance with requirements of the contract documents. Include a description of the system operating characteristics and individual product data sheets for each item of equipment indicating descriptive and technical data, operating temperature limits, heat dissipated, electrical requirements, dimensions, and mounting restrictions. If a product data sheet covers several types or sizes of the product, the sheet shall be

marked to indicate the specific item provided. A letter from the Manufacturer, stating that the medical facility will be notified whenever system upgrades and enhancements are available, shall accompany the submittal. Listing of all hardware, software, cables, and materials products arranged in the order of the specification, including the specification paragraph number, name, Manufacturer and model for each item, and a reference to the Manufacturer's product data sheet for the item.

Warranty[; G][; G, [_____]]

Warranty document indicating the warranty period for the system and all component products.

Maintenance Service[; G][; G, [_____]]

For maintenance service after the warranty period, the system Contractor shall submit a service agreement proposal to the medical facility.

SD-04 Samples

Product Samples[; G][; G, [_____]]

****
NOTE: If the Design Agency or Using Service requests samples, include this submittal.
****

One sample unit of each type of station and light for approval.

SD-05 Design Data

Power Supply Design[; G][; G, [_____]]

a. Analysis and calculations to define power supply requirements for each Major Functional Component of the system in accordance with the Manufacturer's instructions, and the worst-case power loading conditions.

b. Analysis and calculations to define the type and size of all cables for each system in accordance with Manufacturer's instructions and power drop calculations.

c. Analysis and supporting result from specified preparation and application items, and all coordination items. Includes definition of all interface protocols.

d. AC power consumption and heat dissipation data under both normal and maximum operating conditions.

SD-06 Test Reports

Acceptance Test Plan[; G][; G, [_____]]

Step-by-step actions and the expected results to demonstrate system compliance with the requirements of this specification. Include tests defined in the Manufacturer's installation instructions; list of all test equipment to be used, including

data indicating that calibration of the test equipment is current; test data sheets;.and names and qualifications of the person(s) who will perform the tests.

Acceptance Test Report[; G][; G, [_____]]

Test reports in both electronic media form and hard copy booklet form. Test reports shall indicate all field tests performed to adjust each component and to prove compliance with the specified performance criteria. Each test report shall indicate the final position of controls and operating mode of the system, and the Manufacturer, model number, and serial number of the test equipment used in each test. The final acceptance test report shall include a statement that all specified requirements and conditions have been satisfied.

SD-07 Certificates

Certificates of Compliance[; G][; G, [_____]]

Proof that the items conform to the specified codes or standards, including the requirements of CFR, NFPA, and UL.

SD-08 Manufacturer's Instructions

Installation[; G][; G, [_____]]

Preprinted material from the Manufacturer describing installation requirements and safety precautions. Manufacturer's requirements for the use of specific products.

SD-10 Operation and Maintenance Data

Operating and Maintenance Manuals[; G][; G, [_____]]

Submit O&M data in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA, Data Package 5. Reproduced copies of O&M Manuals will not be acceptable if a printed manual is available from the Manufacturer. O&M Manuals available from the Manufacturer on a CD shall be submitted in addition to the hard copy manuals. Submit addenda to the O&M Manuals from the Manufacturer that describe any part of the system application design that is either not covered by, or deviates from, the O&M Manuals from the Manufacturer.

Software Manuals[; G][; G, [_____]]

Software manual describing the functions of all software and including all other information necessary to enable proper loading, setup, testing, and operation. The software manual shall include:

a. Definition of terms and functions.

b. Use of system and applications software.

c. Procedures for system initialization, start-up and shutdown.

d. Alarm reports.

e. Reports generation.

f. Database format and requirements for data entry.

g. Directory of all disk files.

h. Description of all communications protocols, including data formats, command characters, and a sample of each type of data transfer.

Backup Software[; G][; G, [_____]]

Copy of all operating system and application software, on the type of electronic media acceptable to the Contracting Officer. Ghost copy of all hard disks in the system after all setup procedures have been completed, the system has been programmed for the required user operation, and acceptance tests have been successfully completed.

Training Plan[; G][; G, [_____]]

Description of the training programs and materials to be provided. Identification and qualification of training instructors. Instructional schedules for all classes. The Contractor shall submit training materials used as part of the specified training programs including all training media, such as video recordings, CDs, and DVDs, that are available from the Manufacturer.

1.4 SYSTEM DESCRIPTION

****
NOTE: Delete any specified system requirement that is not required for the project being specified. Add any system requirement that is required for the project being specified, but is not specified herein.
****

1.4.1 Design Requirements

1.4.1.1 System Application Design

The system Contractor shall perform the system application design required to provide a NCAV System that complies with and satisfies all of the requirements specified in this Section and indicated on the drawings for this application and project.

1.4.1.2 Standard Products

The system application design shall utilize a standard, UL 1069 listed NCTV System that is the product of a Manufacturer regularly engaged in the manufacture of NCTV Systems, and systems that have been in satisfactory use for at least six months. The system shall be supported by a service organization that is, in the opinion of the Contracting Officer, reasonably convenient to the medical facility installation site.

1.4.1.3 Minimal Requirements

Specifications are minimal requirements. If the provided system requires enhanced specifications that exceed those specified herein in order to satisfy the specified design, configuration, capability, and performance requirements, then a system with the enhanced specifications shall be provided at no additional cost to the Government.

1.4.1.4 Current State-Of-The-Art Technology

The NCTV System application design and products shall utilize current state-of-the-art computer, networking, and communications technology to provide the enhanced capability and performance specified herein.

1.4.1.5 Continuous Duty Design

All equipment shall be designed for 24 hours per day, 365 days per year continuous 100 percent duty operation.

1.4.1.6 Power Supply Design

a. Power supplies shall provide sufficient power capacity for the worst-case condition of system operation and signaling that could occur in the application environment without any loss or perceptible degradation of signal quality. Design analysis shall include calculations to size power supplies for worst-case conditions, and this calculation shall be included with the design data submittal.

b. AC powered equipment shall operate per specifications over the range of 105V to 130V, 60 Hz, unless otherwise noted.

c. All equipment connected to ac power circuits shall be protected from power line transients and surges as likely to be subjected in service from a commercial utility ac power system. Protection shall be integral to the equipment or installed as an accessory item in accordance with Manufacturer=s recommendations. Fuses shall not be used for this protection.

d. Power distributed over system cables shall be low voltage and power limited in accordance with NFPA 70 and UL 1069.

1.4.1.7 Shielding and Grounding

All products shall be shielded and grounded as required by the system design, Manufacturer's instructions, UL 1069 listing, and regulatory requirements.

1.4.1.8 Station Connectors

All stations shall plug into system cabling. Stations hardwired to system cabling are not acceptable.

1.4.1.9 User Room Numbers and Names

Architectural room numbers and names indicated on the contract documents may be used for the initial system application design and installation work. However, the final system application design, annunciator stations, installation, and as-built documentation shall utilize user room numbers and names that have been designated by the Contracting Officer. For

patient rooms, these user room numbers and names shall be consistent with the room numbers and names used in the medical facility information system ADT program, and on the medical facility signage.

a. User room numbers and names shall be consistent with the room numbers and names used in the medical facility information system ADT program, and on the medical facility signage.

b. Programmable assignment of patient room number identification shall provide for up to ten alphanumeric characters for each room. It shall be possible to program any identifying alphanumeric characters to any room in any sequence regardless of the physical location of the patient room.

1.4.2 System Capability and Configuration

1.4.2.1 System Capability

****

NOTE: If the NCTV System is being specified for a project or medical facility which has a Radio Paging System capability, then include the Radio Page interface capability in item "c." below and throughout this specification. If such a Radio Paging System capability is NOT available from the project or medical facility, then delete this requirement here and throughout this specification.

If the NCTV System is being specified for a medical facility that also requires a NCAV System that is specified with supplemental enhanced operations, then include the capability requirement in item "d." below.

If the NCAV System includes a Central Code Annunciator capability, then include the central code annunciation in item "d." and delete the requirement for a separate central code annunciator station throughout this specification.

If the NCAV System includes a Radio Page capability and Server, and the NCTV System is being specified with a radio page capability, then include the radio page operation in item "d." and delete the requirement for a separate radio page server as part of the NCTV System throughout this specification.

****

The NCTV System capabilities shall include the following:

a. Fundamental operation for communication of patient and caregiver calls for assistance from patient care spaces and areas.

b. Supplemental operation as an enhanced adjunct to the fundamental operation for networked call routing.

c. Supplemental enhanced communication of call data to alphanumeric pagers carried by appropriate medical facility staff.

d. Interface with Section 27 41 00.00 10 NURSE CALL AUDIO-VISUAL (NCAV)

SYSTEM for integrated use by the NCTV System of the supplemental enhanced operations provided by the NCAV System, including [radio page,] [central code annunciation] and call logging.

1.4.2.2 System Configuration and Major Functional Components

The NCTV System shall be an integrated configuration of the Major Functional Components listed below to provide the required system capability and performance. The capability and configuration of each of these Major Functional Components are defined below.

Nurse Call (NC) Subsystems
Central Code Annunciator Station
Local Area Network (LAN)
Radio Page Server

1.4.2.3 NC Subsystems

****
NOTE: List all patient care areas that require a NC Subsystem. These patient care areas should be clearly indicated on the telecommunications drawings, including the boundaries of the areas served.
****

a. Subsystems. A NC Subsystem shall serve each of the patient care areas listed below for the communication of patient and caregiver calls. The telecommunications drawings show the location and boundaries of the patient care areas listed.

NC Subsystem Number	Patient Care Area Served
[_____]	[_____]

b. Major NC Subsystem Components.

(1) The major components listed below shall be provided for the NC Subsystems at locations as indicated on the telecommunications drawings.

Code Blue Stations
Dome Lights
Duty Stations
Emergency Push Button Stations
Emergency Pull Cord Stations
Annunciator Stations
Zone Lights
Main Terminal/Equipment Panels

(2) The major components listed below, which are not indicated on the telecommunications drawings, shall be provided as required by the NC Subsystems design.

UPS for ac powered equipment
[_____]

c. Swing Capability

****
NOTE: If adjacent clinics are to be configured for a patient care room or total clinic Swing Capability, include either of the following paragraphs as applicable.
****

(1) Swing Capability - Total Clinics

****
NOTE: List the adjacent clinics that are to be configured for the total clinic Swing Capability, and define the swing configurations.
****

Adjacent clinics that, at various times, may to be operated as independent clinics or as a combined clinic, shall be configured with a Swing Capability that shall allow independent or combined operation from the annunciator stations in each clinic.

(2) Swing Capability - Individual Patient Care Rooms or Cubicles

****
NOTE: List the individual patient care rooms or cubicles in the adjacent clinics that are to be configured for the Swing Capability, and define the swing configurations.
****

Adjacent clinics that, at various times, may share individual patient care rooms or cubicles that are physically located at or near the common boundary of the clinics, shall be configured with a Swing Capability that shall allow operation of the shared spaces from the annunciator stations in each clinic.

1.4.2.4 Central Code Annunciator Station

A Code Annunciation Station for the central annunciation of all code blue calls from all NC Subsystems equipped with code blue stations. The Code Annunciator Station shall be located at a central 24x7 staffed location as indicated on the telecommunications drawings.

1.4.2.5 LAN

****
NOTE: If the NCTV System is to be interfaced with a networked NCAV System in the same medical facility, include item "c." below.
****

a. A dedicated NCTV System LAN shall connect all Major Functional Components of the system into an integrated network for system wide data communications for the functions specified in this Section.

b. LAN equipment shall be located as required by the system application design.

c. Integrate the NCTV System LAN with the NCAV System LAN for data communications of calls to the NCAV System for [radio page,] [central code

annunciation] and call logging.

1.4.2.6 Servers

a. Servers, connected to the system LAN, shall be provided as required by the system application design for the following function:

(1) Radio Page Server. Provides the data interface with the Radio Paging System to communicate calls from throughout the system for transmission to alphanumeric pagers that are carried by the medical facility on-duty staff.

b. The location of servers shall be as required by the system application design.

1.4.3 Performance Requirements

1.4.3.1 NC Subsystem Functions and Features

a. The NCTV System shall communicate patient and caregiver calls for assistance from patient care spaces and areas in the form of alert tones and visual indicators at locations that are associated with the call station. The NCTV System shall also route alphanumeric messages to pagers carried by caregivers.

b. All NC Subsystems shall have the same basic feature package for standardization and to simplify maintenance problems. Features not required in a particular patient care area shall not be activated on the NC Subsystem serving the area at the time of installation. However, the medical facility user shall be able to easily program the activation of these inactive features at any time thereafter without any assistance from the system Contractor.

1.4.3.2 Call Types and Points of Origin

The NCTV System shall communicate the types of calls defined below from the noted points of origin.

a. Emergency Call. Patient or caregiver calls for emergency assistance from an emergency push button station or emergency pull cord station.

b. Code Blue Call. Caregiver calls for code blue assistance from a code blue station.

c. Failure Alarm Call. Failure alarm calls from all electronically supervised circuits and equipment, and from all failure diagnostic programs throughout the system.

1.4.3.3 Call Annunciation Modes

****

NOTE: If all dome lights and zone lights are not required to be equipped with an alert tone sound capability, include item "d." below.

If there is both a NCTV System and a NCAV System in the medical facility, then add item "j." below.

****

a. Each call shall annunciate throughout the system by various combinations of visual indicators and alert tones, and the digital display of alphanumeric data and messages. The specific annunciation for each call type shall be as specified herein for each call type and source of call.

b. When a call is placed from an emergency station or code blue station, a call assurance lamp on the station shall illuminate to indicate that the call has been registered on the system. This call assurance lamp shall remain illuminated until the call is cancelled at the station.

c. On dome lights and zone lights, a variety of colored lamps with steady or flashing illumination shall provide clear and absolute distinction between call priority levels [and sound an alert tone signal]. Call indications on zone lights shall be absolutely identical to the call indication on dome lights for each call type.

d. The dome light for any patient toilet room that opens into a procedure room shall be equipped with an electronic alert tone device that shall sound when a call is initiated.

e. On annunciator stations within a patient care area, the visual display shall indicate the call type and call origination room, and sound an alert tone. The visual display shall indicate all calls simultaneously. The user room name and number shall identify the call origination room.

f. On the central code annunciator station, the visual display shall indicate the code call and call origination patient care area and room, and sound an alert tone. The visual display shall either indicate all calls simultaneously, or scroll through multiple calls that are not simultaneously displayed. The user room name and number shall identify the call origination room.

g. Call alert tone signals on dome lights, zone lights, duty stations, and annunciator stations shall sound at different intermittent pulse rates to provide a clear and absolute distinction between call priorities. The volume level of alert tones shall be adjustable. The actual sound volume level setting for each device in each area shall be adjusted as coordinated with and defined by the medical facility user.

h. The alert tones and visual indication displays for all types and priorities of calls shall continue until the call has been answered and canceled. All calls shall be canceled only at the originating call station.

i. On pagers, an alert tone or vibration shall activate, and an alphanumeric data and text message shall indicate the identification of the room where the call originated, and the call type.

j. Tone and light signals for each call type on the NCTV System shall be consistent with the tone and light signals for the same call type on any NCAV System in the same medical facility.

1.4.3.4 Call Annunciation Priorities

a. The annunciation of call types shall be sequenced in a three level priority rank order, from a high of Number 1 to a low of Number 3, as listed below.

Priority Level	Call Type
#1 Code	Code Blue

#2 Emergency Emergency Failure Alarm

b. The system shall simultaneously process all calls regardless of the priority. However, when several different priority calls are present on the system at any one time, the highest priority call shall take precedence for annunciation on stations or lights that display all call categories.

(1) For annunciation on duty stations, dome lights, and zone lights that use common tone and visual indicators for multiple types of calls, the highest priority call shall override the lower priority call. For example, if dome or zone lights indicate an emergency call by a solid red light and a code blue by a flashing red light, the dome and zone lights shall display a flashing red light when there are both an emergency call and a code call at the same time.

(2) For annunciator stations that display calls in a list, the displayed list of calls shall be in priority order, with the highest priority calls at the top of the displayed list. Existing lower priority calls shall be displaced in the displayed list by the occurrence of a higher priority call. For example, if a emergency call is first in the list and a code call occurs, the code call shall jump ahead of the emergency call in the displayed list.

(3) When more then one call is being processed at the same time through the radio page server, the highest priority call type shall take precedence and be transmitted ahead of lower priority calls.

1.4.3.5 Call Routing

Call routing throughout the system shall be software programmable to provide the selectable call routing defined below.

a. Call Routing - Dome Lights

All call types from any call station within a patient care room or cubicle shall annunciate on the dome light(s) located outside the entry into the room or cubicle. Calls from patient toilet/shower or procedure room entered from another room shall annunciate on the dome light outside the entry to both rooms.

b. Call Routing - Zone Lights

(1) Within a patient care area, the routing of any call type from any call station to each zone light shall be programmable to allow annunciation of calls on a zone light from any combination of call stations. Each zone light shall be programmed to present a pattern of illuminated zone lights that the caregiver can follow from any corridor in the patient care area to get to the corridor where a call has been initiated from a patient care room along the corridor.

(2) Outside entries to patient care areas that are equipped with code blue stations, zone lights are provided to direct code response teams into the patient care area. These zone lights shall be programmed to only indicate code calls. Once the code response team is inside the patient care area, they will then follow the code call indications on the zone lights within the area.

****

NOTE: Prepare and add Zone Light Activation Matrices as noted below. Include the Matrices as part of Schedules as indicated at the end of this Section.

****

(3) The Zone Light Activation Matrices in 3.8.11 lists the identification (ID) number of all zone lights indicated on the telecommunications plans, and relates these to the patient care rooms where calls are originated that activate the zone lights.

****

NOTE: If the system requires annunciator stations within patient care areas, then include the following paragraph "c.".

****

c. Call Routing - Patient Care Area Annunciator Stations

(1) All calls from within a patient care area shall be routed to a master annunciator station in the area.

(2) In patient care areas that include functional sub zones, calls from within the sub zones shall be routed to a zone annunciator station in addition to the master annunciator station. Sub zone call routing shall be as listed below.

NC Subsystem Number	Sub Zone Area	Zone Annunciator Location
[_____]	[_____]	[_____]

****

NOTE: If any NC Subsystem includes the capability for code blue calls, then include the following paragraph "d.".

****

d. Call Routing - Central Code Annunciator Station

****

NOTE: If the NCTV System is being specified for a medical facility that also requires a NCAV System specified with a central code blue annunciator capability, the NCTV system shall be interfaced with the NCAV System central code annunciator capability instead of providing a separate NCTV System central code blue annunciator station.

****

All code blue calls from all NC Subsystems that are equipped with code blue stations shall be routed to the [central Code Annunciation Station] [Section 27 41 00.00 10 NURSE CALL AUDIO-VISUAL SYSTEM] in addition to the normal local annunciation in the patient care area. [Exceptions: identify all exceptions for code call routing].

e. Call Routing - Duty Stations

(1) All duty stations shall be equipped to annunciate all call types.

(2) Call routing from any call station to each duty station shall be programmable to allow annunciation of calls on a duty station from any combination of call stations within a patient care area.

****
NOTE: If a Radio Paging System is in the project, include the following paragraph "f.".
****

f. Call Routing - Radio Paging

All calls from throughout the entire system shall be routed by selectable duty assignment programming to radio pagers as described herein. All code blue calls shall be routed to pagers carried by the code response team.

****
NOTE: If a NCAV System is in the project, include the following paragraph "g.".
****

g. Call Routing - Call Logging Workstation

All calls from throughout the entire system shall be routed to the NCAV System Call Logging Workstation.

[h. Call Routing - Special

Identify any special call routing requirements].

1.4.3.6 System Call Processing Rates

a. The total elapsed time between the initiation of a call from a call station to the display of that call on an annunciator shall not exceed four (4) seconds.

b. The total elapsed time between the initiation of a call from a station to the input of that call to the Radio Paging System for radio paging shall not exceed four (4) seconds.

1.4.3.7 Radio Paging

****
NOTE: If a Radio Paging System is in the project, and the radio page feature is required, the system designer should coordinate interface requirements with the Radio Paging System to be used with the NCTV System to assure that the Radio Paging System has the capability to provide the paging functions specified below.
****

a. The system shall be interfaced with the Radio Paging System so that calls are automatically transmitted to alphanumeric text pagers carried by the on-duty staff.

b. The Radio Paging System shall be able to transmit, and the pagers shall be able to receive, all call information as described below.

(1) Pager alert tones shall be identical for emergency and code calls. If the pager vibrator alert mode is used, there shall be no alert distinction between different priority calls.

(2) An alphanumeric text display message indicating the date and time of the message, identification of the room or cubicle where the call originated, and the type of call. The display message shall provide for at least 32 alphanumeric text characters. The user room name and number shall identify the call origination room.

(3) The room identification and call type message shall be full English words and not any abbreviation or code. The user room name and number shall identify the call origination room.

c. Call shall be processed in accordance with the priority requirements of the system.

d. Pager assignment programming shall be by radio page groups that are consistent with the patient care areas or sub zone areas (groups of rooms) for each system. Radio page groups shall be established with a single address per group regardless of the size of the group so that all pagers in the group simultaneously receive the same page.

e. The programming of all data for radio paging shall be entered from either the radio page server, or a laptop computer that is provided as part of the radio page capability. Programming shall be easy to perform, be "user friendly", be menu based, use plain English prompts, and shall not require extensive technical training to perform. A system that requires hexadecimal programming or extensive, laborious programming procedures or complicated routines shall not be acceptable.

1.4.3.8 Failure Modes, Alarms and Diagnostics

a. Failure of the LAN shall not affect the functional integrity of any other Major Functional Component connected to the LAN.

b. If any annunciator station fails, the dome lights and zone lights shall continue to indicate calls from patient care spaces.

c. At a minimum, a failure alarm shall be automatically initiated by a total failure of the NCTV System, by failure of any Major Functional Component of the system, by failure of any power supply, and by failure of any circuit or component monitored by built-in fault diagnostics.

d. Failure alarms shall be annunciated locally on the Major Functional Component, and transmitted to pagers carried by the medical facility maintenance staff.

1.4.3.9 Call Logging

****
NOTE: If the NCTV System is being specified for a medical facility that also requires a NCAV System that is specified with a Call Logging capability, then the following interface may be considered.
****

The system shall be interfaced with Section 27 41 00.00 10 NURSE CALL

AUDIO-VISUAL SYSTEM for logging of call data.

1.4.4 Detail Drawings

The Contractor shall submit Coordination Drawings as specified in the Submittals paragraph and detail drawings to scale including:

a. System block diagram, LAN diagram including all servers and interfaces, riser diagrams, wiring and schematic diagrams, run sheets including number of conductors and wire number (ID), custom assembly details, and installation details.

b. Riser diagrams shall indicate the identification number (ID) for all zone lights as shown on the plan drawings.

c. Installation details shall indicate layout and mounting of equipment, equipment relationship to other parts of the work, including clearances required for maintenance and operation, and plan and elevation details that indicate the exact and totally coordinated physical location and size of each individual item of equipment.

d. Details of the custom assembly of equipment shall indicate the assembly configuration, elevations and dimensions. Typical custom assembly details include equipment panels, and equipment mounted in a rack or cabinet.

1.5 QUALITY ASSURANCE

1.5.1 Qualifications

1.5.1.1 General Qualification Requirements

****
NOTE: If the NCTV System is to be procured and provided as part of the facility construction contract, include paragraph "(1)" under item "e."

If the NCTV System is to be provided as part of a separate RFP procurement of telecommunications systems, then delete paragraph "(1)" under item "e".
****

a. The NCTV System Contractor, Installer and Manufacturer shall each have the minimum qualifications specified, related to the type of system specified for this project.

b. The Government reserves the right to accept or reject the system Contractor, Installer or Manufacturer based upon qualifications and ability to conform to specified requirements of this Section. System Contractors, Installers and Manufacturers that do not have the specified qualifications will not be acceptable and shall not be allowed to perform the work of this Section.

c. The Government will determine the acceptability of any proposed system Contractor, Installer and Manufacturer based on submitted and verified documentation that substantiates that the proposed system Contractor, Installer and Manufacturer have the qualifications specified in this Section.

d. The project Electrical Contractor shall not procure or install the

system cabling or equipment unless said Electrical Contractor is separately and distinctly qualified as the system Contractor and/or Installer in accordance with the qualifications specified in this Section.

e. The system Contractor shall submit documented verification of the specified qualifications as part of the Preconstruction qualification submittal. The Government will have the right to request, inspect and verify references and resumes of all technical and managerial personnel assigned to the project. Qualification documentation shall include, but not be limited to the information outlined below.

(1) A list of projects performed by the system Contractor and Installer during the last five years explicitly involving the type of system specified in this Section. The list shall include the name of the facility where the work was done, and the name, title, address and telephone number of a point of contact for the listed facility that can verify the work done. Lists shall be restricted to the facilities where the type of systems delivered and installed are similar to and serve the same purpose as the system specified in this Section. Lists shall explicitly identify the make and model of the system provided, and the total scope of work done for each and every facility on the list.

(2) An organization chart for the system Contractor and Installer project team that will perform the work of this Section.

(3) List and resumes of the principal personnel that will be assigned to work on this project and their assigned work responsibility and relationship with the project management structure. This shall include the following personnel:

System Project Manager
System Application Designer
CAD Staff (that will prepare submittal drawings)
Installation Technical and Supervisory Personnel
Acceptance Testing Personnel
Training Personnel

For each individual, this shall include his or her education and experience explicitly relevant to their work assignment on this project, and also include the certificate for factory training where this qualification is specified. Experiences with other types of system unrelated to the type of system specified in this Section are irrelevant and shall not be included.

(4) Addresses of the system Contractor and Installer location where the work that is not done on the project site will be performed. This shall include, but not be limited to, the address for the following people, work, and services: principle responsible for this project; system application designer and documentation work; training personnel; repair and maintenance service; repair and maintenance supplies warehouse.

(5) Telephone number that will be answered by staff 24 hours per day, 365 days per year, to obtain repair parts and service.

(6) The Manufacturer's qualifications relative to the production of the type of system specified in this Section.

(7) A letter from the Manufacturer stating that the system Contractor is an authorized distributor and service organization for the Manufacturer of the provided system. The letter shall also state the length of time

that the system Contractor has been an authorized distributor.

(8) A letter from the Manufacturer stating that system being provided satisfies all functional and product requirements specified in this Section.

(9) A letter from the Manufacturer guaranteeing the availability of parts as specified.

1.5.1.2 System Contractor Qualifications

a. The system Contractor shall be regularly engaged in the system application design, documentation, installation, testing, training, and maintenance of the type of system specified in this Section, with a minimum of five years experience providing these services for systems having the same level of features and functions as the system being provided.

b. The system Contractor shall be an authorized distributor and service organization for the Manufacturer of the provided system for a minimum of at least five years.

c. System Contractor personnel assigned to this project shall be factory trained or certified for the make and model of the system provided by the system Contractor to satisfy the specifications in this Section and shall have a minimum of five years experience performing the services that they will perform for this project.

d. The system Contractor shall maintain a full complement of repair parts for the provided system and shall be able to furnish on-call maintenance service 24 hours per day, 365 days per year as specified herein.

1.5.1.3 Installer Qualifications

a. The Installer shall be regularly engaged in the business of installation of the type of system specified in this Section.

b. The installation supervisor that will be assigned to this project shall be factory trained or certified for the make and model of system provided by the system Contractor to satisfy the specifications in this Section and shall have a minimum of five years experience in the installation of the specified types of system equipment and cables.

c. Installer personnel that will be assigned to this project shall have a minimum of three years experience in the installation of the types of system equipment and cabling specified in this Section.

1.5.1.4 Manufacturer Qualifications

a. The Manufacturer shall have a minimum of five years of experience in producing the type of system specified in this Section.

b. The Manufacturer shall produce a system that satisfies all specified functional and product requirements.

c. The Manufacturer shall guarantee availability of replacement parts for a minimum of seven years from date of final acceptance of the installed system by the Contracting Officer.

1.5.2 Regulatory Requirements

1.5.2.1 UL 1069 Listing

a. Fundamental devices and operations of the NCTV System shall be UL 1069 listed and labeled.

b. Supplementary devices and operations of the NCTV System, that enhance the fundamental nurse call devices and operations, shall be electrically isolated in accordance with UL 1069, and shall not in any way defeat the UL 1069 listing.

1.5.2.2 Design and Installation Work

All design and installation work shall comply with UL 1069, NFPA 70 NEC, NFPA 99, and EIA ANSI/TIA/EIA-569-A.

1.5.2.3 Electromagnetic Interference (EMI)

a. The installed system shall conform to the EMI standards specified in 47 CFR 15 rules and regulations, for EMI caused by computing devices.

b. Within the normal medical facility environment, the installed system shall not generate nor be susceptible to any harmful electromagnetic emission, radiation, or induction that degrades, obstructs, or interrupts the operation of the installed system, and any computer system, life safety system, or patient monitoring system in the facility.

c. In the event that any part of the system is subject to CFR technical standards different from those set forth herein, including without limitation the requirement that those computing devices marketed for use in business or industrial environments are certified by the FCC to comply with the Class B limit of the FCC Rules, such CFR standards shall apply in lieu of those set forth herein.

d. In the event that, at the time of system acceptance testing, the applicable CFR technical standards shall differ from those set forth above, the system as installed shall conform to such then applicable CFR technical standards.

e. In the event of a breach of the representations and warranties contained herein, the system Contractor shall, at their own expense, take all measures necessary to put the offending system into compliance with the applicable CFR technical standards.

1.6 DELIVERY, STORAGE AND HANDLING

1.6.1 Protection

All products delivered and placed in storage shall be stored with protection from the weather, humidity and temperature variation, dirt and dust, or other contaminants.

1.6.2 Delivery Coordination

Coordinate deliveries with the Contracting Officer to insure a timely installation.

1.6.3 Loss Liability

The system Contractor shall be liable for any loss due to delivery and storage problems.

1.6.4 Delivery Restrictions

a. No products or installation material shall be delivered to the job site more than one month prior to commencement of its installation.

b. System products shall not leave the factory prior to six months before the time that the facility is ready for installation of the products. Obtain prior written approval of the shipping date from the Contracting Officer.

1.6.5 Contractor Responsibility

The system Contractor shall be responsible for all handling and control of products provided under this contract.

1.7 SEQUENCING AND SCHEDULING

a. Each part of the system shall be installed and phased into operation as required by the project schedule.

b. Schedule and coordinate work with all other trades and suppliers whose work is critical to the successful installation of the system.

c. Furnish and install all required items for a complete and operating installation so as to cause no delay in work by others, or completion of the facility project.

d. Final inspection and acceptance testing of each system shall be performed after the system installation and commissioning has been completed.

1.8 WARRANTY

a. Guarantee the operational and physical integrity of the provided system, including a warranty against all defects in design, equipment, materials, software, workmanship, and improper installation and adjustments, for a period of at least one year from the date the operating system is accepted by the Government after satisfactory completion of final inspection and acceptance tests. This warranty shall not cover any malfunctions or damage caused by misuse, abuse or neglect. If the system Contractor or Manufacturer warranty is for a period longer than one year, the longest warranty period shall govern. The system Contractor shall furnish a warranty document with the Product Data submittal.

b. During the warranty period any maintenance, adjustments or repairs shall be made free of charge. Repair service response time shall be as specified herein under Maintenance and Repair Service. Warranty repair of minor malfunctions desired by the Government at other than normal working hours may be charged at current labor rates for the premium portion of time.

1.9 MAINTENANCE

1.9.1 Extra Materials

1.9.1.1 Off-The-Shelf Maintenance Parts

The system Contractor shall guarantee that a stock of the Manufacturer's parts required for maintenance service shall be available off-the-shelf from the system Contractor or Manufacturer, and can be express delivered to the medical facility if not available locally.

a. Parts that must be ordered from the Manufacturer for the repair of a major malfunction, as defined herein, shall be deliverable within one day after the major malfunction has been identified.

b. Parts that must be ordered from the Manufacturer for the repair of a minor malfunction, as defined herein, shall be deliverable within three days after the minor malfunction has been identified.

1.9.1.2 Installation Spare Parts

The system Contractor shall keep an adequate quantity of installation spare parts onsite to preclude work stoppages and to meet other contingencies that might arise prior to the final inspection and acceptance of the system.

1.9.1.3 Post Acceptance Spare Parts

****

NOTE: System designer should coordinate and validate with the Contracting Officer and user the onsite spare parts requirements to be itemized in "a." below, and the funding for these spare parts.

****

a. After the system has been acceptance tested and turned over to the Government for operation, furnish the minimum type and quantity of onsite spare parts as itemized below.

Quantity	Items
[_____]	Each type of incandescent lamp bulbs
[_____]	Each type of Station
[_____]	Each type of Light
[_____]	Each type of UPS
[_____]	Dummy Plugs
[_____]	Sets of Main Terminal/Equipment Panel plug-in modules

b. Spare parts shall be maintained onsite by the system Contractor during the warranty period to facilitate quick repair through plug-in module replacement of key system components, then replenished and turned over to the Government at the end of warranty period at no additional cost to the Government.

c. The system Contractor shall recommend any additional onsite spare parts deemed necessary by the Manufacturer and or the system Contractor. Furnish to the Contracting Officer the cost of recommended additional spare components as a separate line item.

1.9.1.4 Special Tools and Equipment

a. Furnish one (1) set of any special tools necessary for the installation or maintenance of any system component.

b. Furnish one (1) set of any special installation or maintenance equipment necessary for the proper setup, programming, and maintenance of any system component or function. This shall include any required computer equipment and any required setup or diagnostic software programs.

c. Deliver all special tools and equipment to the Government upon successful completion of the final inspection and acceptance testing of the system.

1.9.2 Maintenance Service

a. System Contractor shall perform warranty maintenance service on the system using qualified maintenance personnel that have been factory trained for the system being serviced.

b. For maintenance service after the warranty period, the system Contractor shall offer a Service Agreement to the medical facility. Include a copy of the proposed Service Agreement with the Product Data submittal.

c. As authorized by the medical facility, the system Contractor can utilize medical facility maintenance personnel that have been factory trained for maintenance of the provided system, for the first level of response to a call for service.

1.9.3 Service Availability and Response Time

****
NOTE: System designer should coordinate and validate with the responsible Design Agency the response times specified below.
****

a. Maintenance service shall be available on a 24 hour per day, 7 days per week basis for on-premises maintenance service within 4 hours after notification of a major malfunction and within 24 hours after notification of a minor malfunction.

b. A 24-hour telephone answering service shall be available to receive after hour maintenance service calls and dispatch on-call service personnel within the required response time.

c. Repair of a major malfunction shall be accomplished within 8 hours of the reported failure. The occurrence of any of the following events shall constitute a major malfunction:

(1) Complete failure of any Major Functional Component of the system, including:

NC Subsystem
Central Code Annunciator Station
Local Area Network (LAN)
Radio Page Server

(2) Failure of a power supply, exclusive of commercial ac power feed.

(3) Failure of 20% or more of all stations in any one NC Subsystem to function as specified.

(4) Failure of any NC Subsystem annunciator station, code blue station, or emergency station.

d. Repair of minor malfunctions shall be completed within 48 hours of the reported failure. A minor malfunction is any failure that does not constitute a major malfunction.

PART 2 PRODUCTS

2.1 MATERIAL AND EQUIPMENT

****
NOTE: Delete the specifications for any Product that is not part of the system design. Modify the specifications for any Product as required to conform to the specified performance requirements.
****

2.1.1 New Products

All products shall be new and free of defects.

2.1.2 Unspecified Products

If the provided system requires additional products that are not specified, or indicated on the drawings, in order to satisfy the specified performance requirements for the system, then these additional component products shall be provided at no additional cost to the Government.

2.1.3 Product Modifications

Modification of products that nullifies the UL listing or other agency approval is not permitted.

2.1.4 Identical Products

Products of the same classification shall be identical. This requirement includes all component equipment, modules, assemblies, parts, and materials.

2.1.5 Nameplates and Equipment Markings

a. Each major equipment component shall have the Manufacturer's name, model, and serial number on a plate secured to the equipment. Also, all compliance with regulatory requirements, such as UL and CFR, shall be indicated on the nameplate or on adjacent labels.

b. All controls on call stations shall be plainly and permanently labeled with the identification of the function served. Stick on marker tapes is not acceptable.

c. Markings on any exposed surfaces shall not be destroyed by housekeeping solutions normally used in medical facilities.

2.1.6 Mounting Alignment Capability

Wall mounted components shall have an adjustable mounting alignment capability to compensate for improperly aligned backboxes and to insure a level installation.

2.1.7 Model and Enhancements

a. The system and all product components shall be the Manufacturer's latest model, design, version, and quality in production at time of delivery and installation.

b. Any product hardware or software enhancement that becomes available after delivery and installation, and up to time of system acceptance, shall be brought to the attention of the Contracting Officer upon announcement by the Manufacturer and shall be made available to the medical facility. If such enhancements customarily are provided at no additional cost, the Government shall automatically be entitled to such enhancements. If such enhancements customarily are provided at additional cost, the Contracting Officer has the option to accept or reject such enhancements.

c. Submit a letter to the Contracting Officer from the Manufacturer guaranteeing that the Manufacturer shall inform the Government of, and make available to the Government, all commercially available enhancements to the system hardware or software at the then current price. Include the letter with the product data submittal.

d. Substitutions, modifications, or improvements to a system hardware and software are permissible provided that such substitution, modifications, or improvements shall not reduce or degrade the performance or product requirements, nor violate regulatory requirements. No such substitutions, modifications, or improvements shall be made without the written consent of the Manufacturer and Contracting Officer. Such consent shall not be unreasonably withheld or delayed.

2.1.8 Software and License

a. Provide all software required for the specified capability, configuration, performance, and operation of the system.

b. The Government shall be granted a nonexclusive, fully paid perpetual license to use software provided. The Government receives no title or ownership rights to such Software.

c. Software maintenance that is provided to any or all other customers without charge shall be provided to the Government at no additional cost to the Government.

2.1.9 Equipment Design for Wet Areas

All equipment that will be installed in wet areas shall be designed and constructed to withstand the UL 1069 Water Spray Test.

2.2 NC SUBSYSTEMS

2.2.1 Emergency Pull Cord Stations

a. Flush mount units.

b. An emergency call switch that is activated by pulling a nylon cord attached to the switch. The cord shall have a pendant attached to the end of the cord, and length extended to within 50 mm 2 inches of the floor. The term "PULL FOR HELP" shall be located directly adjacent to the call switch.

c. A call cancel push button switch that is clearly labeled either "CANCEL" or "RESET". Alternatively, the cancel function may be a toggle of the emergency call switch. For stations installed in showers or baths that are located in the same room as a toilet, it is acceptable to have the cancel function for the shower/bath station operated from the adjacent emergency pull cord toilet station.

d. An LED call assurance indicator.

e. Stations installed in wet areas shall be water resistant and shall comply with water spray exposure requirements of UL 1069.

f. Waterproof gaskets for stations installed in wet areas.

2.2.2 Emergency Push Button Stations

a. Flush mount units.

b. A red color emergency push button call switch that is permanently labeled as an Emergency call switch on or directly adjacent to the call switch.

c. A call cancel push button switch that is clearly labeled "CANCEL". Alternatively, the cancel function may be a toggle of the emergency call switch.

d. An LED call assurance indicator.

e. Stations installed in wet areas shall be water resistant and shall comply with water spray exposure requirements of UL 1069.

f. Waterproof gaskets for stations installed in wet areas.

2.2.3 Code Blue Stations

a. Flush mount units.

b. A blue color code blue push button call switch with the term "CODE" or "CODE BLUE" located on or directly adjacent to the push button.

c. A call cancel push button switch that is clearly labeled "CANCEL". Alternatively, the cancel function may be a toggle of the code blue call switch.

d. An LED call assurance indicator.

2.2.4 Duty Stations

a. Flush mount units.

b. An electronic alert tone device.

2.2.5 Annunciator Stations

****
NOTE: Preferred configuration is flush wall mount. Desk mount configuration should be specified only when required by special circumstances.
****

a. Configurations as shown:
[Type 1: Flush wall mount]
[Type 2: Desktop mount]

b. Visual Indicator Display

(1) Electronic programmable visual indicator display. Acceptable visual indicator display technologies include LED or LCD digital displays. Incandescent lamp displays are not acceptable.

(2) The font size of the alphanumeric text call information displayed shall be large enough to assure clear readability from the workstations in the area where the annunciator is located.

(3) The visual display shall either indicate all calls simultaneously, or scroll through multiple calls that are not simultaneously displayed so that all calls are visible at least every four seconds.

(4) The visual display capacity shall accommodate at least a 25 percent expansion in the quantity of call stations, or a minimum of 2 expansion stations, whichever is greater.

c. An electronic alert tone device. A momentary tone defeat switch shall temporarily silence the current call alert tone with automatic reset so that the alert tone will again sound when the next call is placed.

d. A system "POWER ON" indicator light.

2.2.6 Dome Lights

a. Flush mount units

b. Two (2) configurations as shown:
[Type 1: Light only]
[Type 2: Light with an electronic alert tone device]

c. Indicator lamps and color filters for each type of call, with heat resistant barriers between multiple lamps.

d. An electronic alert tone device. The alert tone device may be integral to the dome light or a separate unit mounted within the dome light enclosure.

e. The lens covers shall be shatterproof, heat resistant, and snap on and off for changing of lamps without the use of tools. Lens cover shall not deform, yellow, or craze with use or age.

2.2.7 Zone Lights

a. Flush mount units.

b. Two (2) configurations as shown:
[Type 1: Light only]
[Type 2: Light with an electronic tone device]

c. Indicator lamps and color filters for each type of call, with heat resistant barriers between multiple lamps.

d. An electronic alert tone device. The alert tone device may be integral to the zone light or a separate unit mounted within the zone light enclosure.

e. The lens covers shall be shatterproof, heat resistant, and snap on and off for changing of lamps without the use of tools. Lens cover shall not deform, yellow, or craze with use or age.

2.2.8 Main Terminal/Equipment Panels

a. Panel cabinets shall be surface mount units with knockouts and a hinged door with keyed lock. Each panel cabinet shall be plainly and permanently labeled with the identification of the function served.

b. Equipment shall provide system logic, control, switching, memory, timing, signaling, and power circuitry as required by system design. Equipment shall be of modular construction with all components as plug-in modules.

c. The system shall operate at or below 30V level. Provide overload and electronic short circuit protection for primary and secondary circuits.

d. Interruption or loss of ac power, or the failure of a power supply shall not cause the loss of any call registered prior to loss of power. When power is restored, all normal operations shall continue and all registered calls and associated signals shall be automatically restored.

e. A standby power supply shall automatically provide at least 15 minutes of full load uninterrupted power within 4 milliseconds of an ac power failure. Batteries used in the standby power supply shall be maintenance free, completely sealed, and continuously recharged during normal operation. Power calculations shall be included with design data submittal to verify power requirements.

f. Equipped capacity for each system shall provide at least a 25 percent expansion in the installed quantity of stations and lights, including swing capacity stations and lights, or a minimum of 2 expansion stations, whichever is greater.

2.3 CENTRAL CODE ANNUNCIATOR STATION

a. Flush mount unit.

b. The Central Code Annunciator Station shall annunciate all code blue calls from throughout the entire system until they are canceled at the call origination point.

c. Call information displayed shall include the type of call, and the call origination point by patient care area and room number.

d. Visual Indicator Display

(1) Electronic programmable display panel. Acceptable visual indicator display technologies include LED or LCD digital displays. Incandescent-lamp displays are not acceptable.

(2) The font size of the alphanumeric text call information displayed shall be large enough to assure clear readability from the workstations in the area where the annunciator is located.

(3) The visual display shall either indicate all calls simultaneously, or scroll through multiple calls that are not simultaneously displayed so that all code calls are visible at least every four seconds.

e. An electronic alert tone device. A momentary tone defeat switch shall temporarily silence the current call alert tone, with automatic reset so that the alert tone will again sound when the next call is placed.

f. Electronic supervision of the station to assure the annunciation of code calls.

2.4 LAN

a. The LAN shall be a dedicated network for the system. Use of the medical facility Information Systems LAN is not acceptable.

b. LAN hardware and software shall be as determined by the system Manufacturer and the system application design for the configuration, capability and performance specified in this Section.

c. The LAN shall be fault tolerant and include network administration with alarms that indicate any failures that would prevent the transmission of code calls and radio paging data. The alarms shall be indicated on the failed LAN hardware and transmitted to a 24/7 staffed location.

2.5 SERVERS

2.5.1 General

a. One or more servers shall be provided as required by the product and system application design.

b. Each server shall include a server computer, keyboard, mouse, video monitor, and UPS, and software.

(1) The computer shall be specifically designed for network server application. Server computers hardware shall include raid level 1 storage with 2 hard disk drives, a network interface card, and input/output drives as required for setup programming, date archiving, and maintenance.

(2) A 15-inch LCD monitor.

(3) UPS as specified herein.

c. Server operating system and application programs for each function served.

d. Servers shall provide the capability and performance specified in this Section.

e. All data communication across any interface shall be in real time.

2.5.2 Radio Page Server

a. Physical connection, protocol, and data communications as required to interface with the Radio Paging System.

b. Capacity for at least [____] pager addresses.

c. The Radio Page Server shall be 100 percent compatible with the input requirements of the Radio Paging System CPU.

d. Calls shall be processed in accordance with the priority requirements of the system, and forwarded to the Radio Paging System CPU with priority level inputs as required by the CPU.

2.6 UPS

a. UPS shall be UL 1778 listed, and comply with the requirements of 47 CFR 15.

b. UPS Volt-Amp capacity shall be at least 130 percent of the total volt-amp load of the equipment connected to the UPS. Power requirement calculations shall be included with the design data submittal to verify power requirements.

c. Upon ac power line outage, the UPS shall automatically transfer to battery power within 4.2 milliseconds of sensing ac power line loss, and provide at least 15 minutes of full power for operation of the equipment connected to the UPS. On-battery output voltage shall be 115 VAC, +/- 5 percent.

d. The UPS shall utilize sealed, maintenance free type batteries that have an expected life of at least three years. The batteries shall always be powered from a constant voltage or "float type" battery charger. Recharge time to 90 percent capacity after discharge to 50 percent capacity shall not exceed 10 hours.

e. Surge energy rating shall be at least 320 joules. Surge peak current capability shall be at least 26 ka.

f. UPS visual indicators on the UPS front panel shall indicate on-line operation, output overload, low battery, and replace battery.

2.7 SYSTEM CABLING

a. System cabling shall be of the type, size and specifications as required by: the system Manufacturer; the configuration of the installed equipment that is being interconnected by the cabling; the system application design; interconnecting wiring requirements of UL 1069; and the code requirements of NFPA 70 NEC.

b. The size of system power cable wires shall be as calculated using the system Manufacturer's instructions and guidelines, and system power requirements. Calculations shall be included with the design data submittal.

PART 3 EXECUTION

3.1 EXAMINATION

System Contractor shall perform a site survey to verify all field conditions, become familiar with the details of the work and working conditions, verify dimensions in the field, and advise the Contracting Officer of any discrepancies before performing the work.

3.2 PREPARATIONS

3.2.1 User Room Numbers and Names

a. User room numbers and names for the final system application design, all system functions, and indication on as-built drawings, shall be as directed by the Contracting Officer six months prior to the beneficial occupancy date for the medical facility.

b. The system Contractor shall verify that the user room numbers and names used in the system are consistent with the room numbers and names used on the medical facility signage and information system ADT program.

3.2.2 Annunciator Stations

****
NOTE: Include this paragraph if the NCTV System is required to have annunciator stations.
****

The exact display panel configuration and details for all annunciator stations shall be as coordinated with the Contracting Officer and the medical facility user. Submit details as part of the shop drawings.

3.2.3 Interface with Other Products

****
NOTE: Include this paragraph if the NCTV System is to be interfaced with a Radio Paging System and/or the NCAV System.
****

Coordinate and define the details of all interfaces and interconnections with other products. This shall include a detailed definition of all electronic and physical interface requirements, interface protocols, and physical demarcation points. Provide details as part of shop drawings and design data submittals.

3.3 INSTALLATION

3.3.1 General

a. Installation shall be accomplished as indicated and specified, and in accordance with acknowledged industry and professional standards and practices, and the Manufacturer's instructions.

b. Installation shall comply with the requirements of NFPA 70, NFPA 99, and EIA ANSI/TIA/EIA-569-A.

c. The Installer as qualified in Paragraph QUALITY ASSURANCE, subparagrah

Installer Qualifications, shall install and connect all equipment and system cabling.

d. During the entire installation the system Contractor shall maintain onsite a supervisor as qualified in Paragraph QUALITY ASSURANCE, subparagraph Installer Qualifications.

e. Provide all tools and equipment needed to install the system.

f. All ac power plugs shall be tightly strapped to the ac power receptacle to prevent accidental unplugging of the ac power.

3.3.2 Equipment Installation

a. Appropriate waterproof gaskets shall be used for station installations in wet areas (toilet rooms, showers, etc.).

b. Main Terminal/Equipment Panels shall be surface mounted in the telecommunications rooms indicated on the drawings. Mounting of these panels in any other room, area or above finished ceilings shall not be acceptable. Panels shall be marked by the NC Subsystem number and function served.

c. The system LAN, server, and UPS equipment housed in telecommunications rooms shall be [rack] [cabinet] mounted. Under no circumstance shall any of this equipment be mounted on the floor.

d. Mount equipment firmly secured in place, plumb and square.

e. Provide adequate equipment ventilation and adequate equipment accessibility for service and repair.

3.3.3 System Cabling Installation

****
NOTE: If the NCTV System is to be procured as part of a facility construction project contract, include item "c." below.
****

a. Installation of system cabling shall be by the qualified Installer.

b. System cables shall be installed without kinks, sharp bends or deformations, in a manner to prevent abrasion.

[c. System cabling shall be installed in cable trays, conduits and boxes specified in Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM.]

3.3.4 Grounding

Equipment enclosures and all other non-current carrying metal parts of electric equipment shall be grounded.

3.3.5 Related Trades

****
NOTE: If the NCTV System is to be procured as part of a facility construction project contract, include this paragraph.

****

a. Coordinate all efforts with those of related trades. In the event of any conflicts, delayed or improper preparatory work by others, notify the Contracting Officer for resolution; the Contracting Officers= decision shall be binding.

b. The Electrical Contractor for the project shall furnish and install all cable trays, conduits, boxes, grounding system and buss bars, and all primary power wiring required to accommodate the installation of the system specified in this Section.

c. Coordinate the system cable routing with the cable routing of other systems to assure that there will not be any EMI problems that will adversely affect the performance of this system or any other specified project system.

3.3.6 Infrastructure and Rough-in - Facility Construction Project

****

NOTE: If the NCTV System is to be installed in a facility construction project (new, addition or renovation), but is to be procured by the Government directly from a system Contractor and completely separate from the facility construction project contract, then include this paragraph.

****

a. Coordinate all efforts with those of related trades that have provided the infrastructure and rough-in, as indicated below, in the facility construction project to accommodate the installation of the system. In the event of any conflicts, delayed or improper preparatory work by Others, notify the Contracting Officer for resolution. The Contracting Officers= decision shall be binding.

b. The infrastructure and rough-in provided by the facility construction project are generically designed to accommodate the installation of typical system available in the marketplace. This includes cable trays, conduits, boxes, grounding system and buss bars, and all primary power wiring, as indicated in the facility construction project contract documents.

c. If the provided NCTV System requires any infrastructure or rough-in, in addition to or different from what has been provided as part of the facility construction project contract, then the NCTV System Contractor shall provide all such additional infrastructures and rough-in at no additional cost to the Government.

d. Provide trim plates as required to adapt faceplates to the boxes provided by the facility construction project at no additional cost to the Government.

3.3.7 Infrastructure and Rough-in - Existing Facility

****

NOTE: If the NCTV System is to be procured by the Government directly from a system Contractor for installation as a replacement system in an existing facility, and not associated in any way with a facility construction project (new, addition or

renovation), then include this paragraph.
****

a. Installation of the NCTV System shall utilize existing [cable trays,] conduits, boxes, grounding system and buss bars, and all primary power wiring to the maximum extent possible, provided these items accommodate the installation and operation of the system as specified in this Section.

b. If the provided NCTV System requires any infrastructure or rough-in that is in addition to, or different from, available existing conditions, then the NCTV System Contractor shall provide all such additional infrastructures and rough-in at no additional cost to the Government. The system Contractor shall be responsible for any costs associated with the installation of these items by Others.

c. Provide trim plates as required to adapt faceplates to existing boxes at no additional cost to the Government.

d. Completely remove and discard all existing system cabling that is not being reused as part of the NCTV System being installed.

e. Completely remove all existing system equipment that is not being reused as part of the NCTV System being installed, and dispose of the equipment as directed by the Contracting Officer.

3.4 APPLICATION

3.4.1 AC Power Connections

****
NOTE: If the NCTV System is to be installed in a stand-alone clinic facility that does not have emergency power, delete this paragraph.
****

AC power for all equipment shall be circuited to the emergency system critical branch in accordance with NFPA 70 and NFPA 99.

3.4.2 Zone Lights

Zone lights shall be mounted and oriented in each corridor to assure that the zone indicator lamps can be clearly seen anywhere in the corridor by the caregivers that need to respond to a call.

3.4.3 Installation Setup

Contractor shall make all adjustments and perform all application programming as necessary to setup the system to function in accordance with specific user requirements for the overall system and each patient care area. Coordinate all such setup details with the medical facility users prior to system commissioning, install them as part of the system setup, and include the setup details in the O&M documentation. Examples of installation setup details that require user coordination include the following:

a. Sound volume level for alert tone signals that have adjustable settings.

b. Default call routing for patient care areas that have multiple annunciator stations.

c. Setup and default settings for system networking, and for interface with the Radio Paging System.

d. Preprogrammed pager service messages for each NC Subsystem.

e. Default duty assignments.

f. Default pager lists and assignments.

3.5 FIELD QUALITY CONTROL

3.5.1 Inspection, Checkout and Testing Services

a. Furnish required test equipment, tools, consumable supplies, and technically qualified personnel to perform inspections, checkout and tests of installed system.

b. Qualified NCTV System Contractor personnel conducting acceptance tests shall be factory trained or certified and shall be completely knowledgeable regarding the system design, installation, and operation.

c. The Contracting Officer reserves the right to approve the system Contractor's choice of testing personnel, and, upon rejection of any testing personnel by the Contracting Officer at any time, system Contractor shall replace such testing personnel as soon as reasonably possible. Upon request, the system Contractor shall provide the Contracting Officer the opportunity to interview and review the qualifications of each person proposed for testing work.

d. The system Contractor shall conduct all testing in accordance with submitted and approved test plans and procedure, and requirements specified herein.

e. Notification of any planned testing shall be given to the Contracting Officer at least 15 days prior to any test, and in no case shall notice be given until after the system Contractor has received written Government approval of the test plans and procedures.

f. Inspection and testing shall be conducted during normal working hours with prior notice to the Contracting Officer so as not to interfere with orderly work processes.

g. System Contractor shall allow inspection of all work and workmanship, and witnessing of system Contractor performed acceptance testing.

h. Any work that is enclosed or covered up before being inspected and tested shall be uncovered as required and, after it has been inspected and approved, shall be restored to its original condition at no additional cost to the Government.

i. Results of each inspection and test shall be reported in electronic and hard copy form to the Contracting Officer.

3.5.2 Periodic Inspection and Testing

a. All work and workmanship shall be subject to inspection and testing as requested by the Contracting Officer at any and all times during preparation and installation.

b. The Contracting Officer, in his or her sole discretion, may reject defective work and workmanship and require its correction. The Government right to inspect, test, and reject, or its failure to exercise such right, as provided herein, shall in no way diminish the Contractor's duty to inspect and reject work as necessary to comply fully with the requirements of the contract documents.

3.5.3 System Commissioning

Prior to the start of final inspection and acceptance testing, the system shall be brought into complete working order in full compliance with all specified requirements. This commissioning shall include all necessary programming, adjustments, tuning and testing of the installed system.

3.5.4 Final Inspection and Acceptance Testing

a. Acceptance tests of the installed system shall be [phased] in accordance with the project [phasing] schedule.

b. After installation [for each phase] has been completed, and the system installed [during the phase] has been completely inspected and checked out, the system Contractor shall conduct acceptance tests in accordance with the approved Acceptance Test Plan.

c. The system Contractor shall notify the Contracting Officer when the installation of a system is completed and operating per specifications and ready for final inspection and acceptance testing.

d. Draft as-built system drawings, and O&M manuals shall be made available by the system Contractor for use during performance of final inspection and acceptance testing. Final inspection or acceptance testing shall not be scheduled nor performed without this documentation.

e. The system Contractor shall demonstrate proper installation and performance [of each phase] of each system in full compliance with all contract documents.

f. Final acceptance tests shall demonstrate that the system operates in full accordance with all specified requirements for the system. Each system operating mode shall be demonstrated to perform as specified by operation of each individual system component under simulated normal system loading.

g. Upon successful completion of [all phased] final acceptance tests, and 30 calendar days of consecutive operation in accordance with specified requirements without the occurrence of any major malfunctions, the system Contractor shall submit the final acceptance test report, including certificates of compliance stating that all specified requirements and conditions have been satisfied. The effective date for completion of the final system acceptance shall be the date when the system has satisfied the 30 days of operation without a major malfunction as specified above.

3.5.5 Corrective Action for Rejected Work

a. All deficiencies shall be corrected at no cost to the Government and another inspection and test performed as required to demonstrate compliance with all specifications to the Contracting Officer.

b. All corrective action shall be completed in a reasonable time consistent with project schedules and acceptable to the Contracting Officer.

c. If, after 30 calendar days from the start of acceptance testing, any system or any equipment component thereof fails to demonstrate complete and proper performance, the Government shall have the right to return the total system or any equipment component to the system Contractor. The system Contractor shall refund all costs thereof to the Government and shall indemnify the Government from damages, costs, and expenses incurred in connection with such activity.

d. The actual date of return of any rejected system or equipment component shall be under the absolute control of the Government. The Government shall have the right to continue to utilize such system and equipment until the actual date of removal.

3.5.6 Warranty Period Inspection and Testing

a. At the end of 3rd and 7th months of operation, the system Contractor shall, at no cost to Government, observe the system in operation and conduct tests to assure that system is performing as specified. Include interviews of users to determine if each system is satisfying specified requirements and that training is adequate. This service shall be coordinated with the Contracting Officer and the results reported in writing to the Contracting Officer.

b. During the 11th month of operation an inspection and test of each system shall be conducted by the system Contractor to identify and correct any deficiencies before the end of warranty period. A medical facility representative shall witness this procedure and the system Contractor shall certify that all necessary corrective actions have been taken.

c. Results of each warranty period inspection and test shall be reported in writing to the Contracting Officer.

3.6 DEMONSTRATION AND TRAINING

All specified demonstration and training shall be provided at no additional cost to the Government. This includes all specified onsite training, and factory training at the Manufacturer's facility.

3.6.1 Training Plan

a. Develop and submit a training plan for approval by the Contracting Officer. The training plan shall include the basic training requirements set forth below.

b. Provide training to the medical facility staff in accordance with the approved training plan.

3.6.2 General Preparations

During the week prior to the start of training for any system, check the system to assure that it as been commissioned and is in full-specified operation condition.

3.6.3 Training Personnel

a. Furnish qualified factory trained or certified instructors to train

designated medical facility staff in the operation and maintenance of the provided system.

b. The Contracting Officer reserves the right to approve the system Contractor's choice of training personnel, and, upon rejection of a trainer by the Contracting Officer at any time, the system Contractor shall immediately replace such trainers. Upon request, the system Contractor shall provide the Contracting Officer the opportunity to interview and review the qualifications of each proposed trainer.

3.6.4 Training Instructions

a. Training instructions shall cover all specified features and capabilities of the system, and all of the items contained in the operating and maintenance manuals.

b. Maintenance technician training shall also include preventive maintenance, routine maintenance, repair and troubleshooting procedures.

c. Training shall continue until the system Contractor is advised by the Contracting Officer that all training has been satisfactorily completed in accordance with the approved training plan.

3.6.5 Training Materials

a. Furnish all training materials and handouts. Handouts shall be provided in the quantity needed for all of the medical facility technicians, operations and user staff that will receive training.

b. [_____] copies of all standard training media, such as video recordings, CDs, and DVDs, that are available from the Manufacturer shall be furnished to the Contracting Officer at no additional cost to the Government.

c. Video recordings of onsite training sessions shall be made and [_____] copies furnished to the Contracting Officer. This shall be a coordinated effort between the system Contractor training staff and the medical facility education department staff.

3.6.6 Onsite Training Programs and Requirements

a. Training shall be provided onsite to all medical facility staff as required throughout the contract and warranty period to train operations and maintenance staff for the provided system.

b. The onsite training program shall include two training courses, one for maintenance technicians and one for user and operations staff.

c. Each course shall include classroom training and field training. Field training for medical facility staff shall take place in the area where the staff will be working.

d. Multiple instructional units for each onsite course shall be conducted on a three shift, seven days a week basis as required to train all staff during their normal on-duty working hours.

e. The Contracting Officer shall designate qualified personnel to be instructed in the operation and maintenance of each system, schedule instructional sessions, and provide suitable onsite instruction facilities.

3.6.7 User and Operational Staff Training

a. User and operational staff training shall commence at a time acceptable to the Contracting Officer and near the time the system is scheduled for operational use by the medical facility.

b. User and operational staff training shall be a minimum of [_____] hour(s) of classroom instructions for all Major Functional Components of the system, and [_____] hour(s) of field instructions in each area where equipment is installed.

c. Eleven months after the system is installed and accepted by the Government, the user and operational staff shall be given a refresher course. This refresher course shall include at least [_____] hour(s) of instruction for each group of trainees.

3.6.8 Technician Training

****
NOTE: If the system is to be phased into operation, add paragraph "c." below.

If factory training of the technicians is required, include paragraph "e." below.
****

a. Before the system is turned over to the Government for operational use, training shall be provided for [_____] maintenance technicians designated by the Contracting Officer.

b. The onsite technician training course shall provide the number of instructional hours necessary to cover all aspects of system setup, programming, operations, preventive maintenance, routine maintenance, routine repair, and troubleshooting procedures for the system as installed.

c. Immediately after the phased installation of each part of the system the technician staff shall be given additional classroom and field instructions as required to advance their training up the latest overall configuration.

d. Eleven months after the system is installed and accepted by the Contracting Officer, the technician staff shall be given a comprehensive refresher course covering the final configuration for the system. This refresher course shall include at least [_____] hour(s) of instruction.

e. Technician training shall be provided for [_____] technicians at the Manufacturer's factory at no additional cost to the Government. Training shall include comprehensive instruction for complete setup, operation, maintenance and repair of the system, including the theory of operation, software installation and setup, maintenance programs, failure diagnostic programs, trouble shooting and repair. The hours of instruction shall be as required by the Manufacturer for complete and comprehensive training and certification.

3.7 PROTECTION

Items that can be easily stolen, such as desktop computer and monitor equipment, shall not be permanently installed until such time as the system

Contractor has been notified by the Contracting Officer that the facility is secured.

3.8 SCHEDULES

3.8.1 NCTV System

a. Provide a complete and operational NCTV System as specified in this Section and indicated on the project drawings.

b. Deliver and install all product items as required to comply with the approved installation schedule.

3.8.2 Indicated Items

Provide the quantity and type of system components, such as stations, lights, and outlets, as indicated on the project drawings.

3.8.3 Main Terminal/Equipment Panels

The telecommunication drawings indicate space in telecommunications rooms that has been designated for the installation of system main terminal/equipment panels. As required by the system application design, furnish and install the type and quantity of main terminal/equipment panel(s) in these designated locations.

3.8.4 UPS

Provide an UPS for all equipment that operates directly off of ac line power. At locations where the installed equipment includes both a computer and a monitor, the UPS shall be used to power both the computer and the monitor.

3.8.5 Software

Provide all software programs, as required for all specified capabilities and performance, and pertinent software manuals. Include all operating system(s), application programs, and a complete set of backup software.

3.8.6 LAN

****

NOTE: If the system includes or interfaces with an LAN, include this paragraph and requirements as appropriate.

****

Provide all LAN hardware, software and cabling throughout the system as required by the system application design. Install all LAN hardware in telecommunications rooms.

3.8.7 Servers

****

NOTE: If the system includes interfaces with other systems, include this paragraph as applicable.

****

a. Provide and interconnect all servers as required by system application

design.

b. The telecommunication drawings indicate space in telecommunications rooms that has been designated for the installation of system equipment. As required by the system application design, furnish and install the type and quantity of servers in these designated locations.

3.8.8 Pagers

Provide [Qty.] [Make], [Model] alphanumeric text pagers. Furnish the pagers to the Contracting Officer.

3.8.9 Product Samples

****
NOTE: If the Design Agency or Using Service requests samples, include this paragraph.
****

Provide one sample unit of each type of station and light for approval as part of the Samples submittal.

3.8.10 Temporary Wireless Nurse Call Systems

****
NOTE: If the system is a replacement for an existing system in existing facilities where ongoing patient care is to remain operational during the replacement installation, then include this paragraph.
****

Provide temporary wireless nurse call systems as required to keep the nurse call function operating in patient care areas during phased installation activities.

3.8.11 Zone Lights Activation Matrices

****
NOTE: Prepare and add a Zone Light Activation Matrix as noted below for each NC Subsystem. An example matrix is shown.
****

On the telecommunications plan drawings each Zone Light is identified by an ID Number (#). Each Zone Light shall be programmed to indicate calls originating from the patient care Calling Rooms as defined below in the Zone Lights Activation Matrix for each NC Subsystem serving a patient care area. In the following Table the "X" relates each Zone Light with the calling rooms from which calls shall be indicated on the Zone Light.

ZONE LIGHTS ACTIVATION MATRIX
NC SUBSYSTEM NO. 01: [PRIMARY CARE CLINIC] [EXAMPLE]

CALLING ROOM		ZONE LIGHTS						
	ID #	101	102	103	104	105	106	107
	RM #	108-03	115-13	115-13	121-01	121-01	116-08	121-01

ZONE LIGHTS ACTIVATION MATRIX

NC SUBSYSTEM NO. 01: [PRIMARY CARE CLINIC] [EXAMPLE]

108-01			X			X		X	
108-02									
115-01		X		X			X	X	
115-02									
121-02		X			X			X	
121-03									
117-31		X			X			X	X

-- End of Section --