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NAVFAC **IGS-16725 (MARCH 2003)**

Preparing Activity: LANTNAVFACENGCOM **Based on UFGS-16725**

ITALIAN GUIDE SPECIFICATIONS

Use for ITALIAN projects only

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SECTION 16725

NURSE CALL SYSTEM
03/03

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NOTE: This guide specification is issued by the Atlantic Division, Naval Facilities Engineering Command for regional use in Italy.

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NOTE: This guide specification covers the requirements for nurse call systems in medical treatment facilities. The facility communications requirements will dictate the type system to be installed and the location of nurse call equipment. The designer should review the applicable standards, and develop a good understanding of the different systems available, and their limitations. In developing the project specification, bear two thoughts in mind: keep it simple; keep it generic. Where services are specified "as indicated," coordinate with the drawings. In development of the drawings, use the same nomenclature for an item of equipment as it appears in the specification. Electrical service to the nurse call system is required to be connected to the emergency power system. Verify environmental and servicing requirements for system components.

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

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.

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NOTE: The following information shall be shown on the project drawings:

1. Mounting method and height for all equipment.

2. Single line diagram to describe the relationship and quantities of materials.

3. Capacity of the equipment, along with other electrical ratings.

4. Conduit requirements.

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PART 1 GENERAL

1.1 REFERENCES

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

EUROPEAN COMMUNITY QUALITY MARKS (CE)

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NOTE: CE (European Community) is a European quality marking system indicating that the equipment or product conforms to EEC (European Economic Community) standards concerning quality of safety and health and conforms with all the Italian technical standards in force. All products (Electrical, Mechanical and Electronic Equipment and similar items) that are marked CE conform to the standards and Laws enforced in Europe. In Italy, the CE marking is a mandatory requirement and must be shown on all applicable equipment and products attesting to the conformity with the EEC standards.

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CE European Quality Mark

ITALIAN ELECTROTECHNICAL COMMITTEE (CEI)

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NOTE: A CEI Norm is an Italian technical normative for electrical systems recognized by Italian Law, submitted by a private organization "Comitato Electrotecnico Italiano" for the Italian territory, available in the Italian language and only in some cases in English.

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CEI 64-8	(1998; V1 2001; V2 2001) Electrical installations of buildings
CEI 20-20/3	(1996) Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V - Part 3: Non-sheathed cables for fixed wiring
CEI 20-20/4	(1996) Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V - Part 4: Sheathed cables for fixed wiring
CEI 20-22/2	(1999; V1 2001) Tests on electric cables under fire conditions - Part 2: Fire propagation
CEI 81-8	(2002) Electrical installations of buildings - Application guide for the selection and installation of the Surge Protective Devices
CEI EN 50265-1	(1999) Common test methods for cables under fire conditions - Test for resistance to vertical flame propagation for a single insulated conductor or cable - Part 1: Apparatus

1.2 DEFINITIONS

The principles and definitions of terms used herein shall be as set forth in CEI 64-8, but provisions of this section shall govern.

1.3 SYSTEM DESCRIPTION

Nurse call system, with subsystems as indicated, shall primarily provide means for a patient to signal the nursing staff that assistance is needed. Additionally, nurse call system shall provide means for communications between staff members to serve administrative as well as emergency signaling requirements.

1.3.1 Visual Nurse Call Subsystem (VS)

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NOTE: The use of visual systems in military facilities is limited. Verify user requirements, via the AIC/EIC.

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Hardwired system which shall provide audible signaling and visual annunciation of emergency or code calls, utilizing light and tone signals. Type and location of equipment shall be as indicated.

1.3.2 Audio-Visual Nurse Call Subsystem (AVS)

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NOTE: Audio-visual systems are primarily used in medical inpatient treatment areas. Hardwired systems are permitted in facilities with limited bed space. Microprocessor-controlled systems generally allow more system flexibility and are normally used when program-controlled features are desired. Verify user requirements, via the AIC/EIC.
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[Hardwired] [Microprocessor-controlled] system which shall provide audible signaling and visual annunciation of patient and staff calls, as well as audio communications. Type and location of equipment shall be as indicated.

[1.3.3 Centralized Nurse Call Subsystem (CS)

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NOTE: Centralized systems allow calls from different nurse call systems to be answered from another location. AVS microprocessor-controlled systems operating in slave or master mode are permitted as centralized systems so long as the combined systems occupy the same floor. Some type of staff locator feature may be desirable with centralized systems. The user may prefer radio or beeper equipment in lieu of staff locator stations. Verify user requirements, via the AIC/EIC.
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Consist of microprocessor-controlled audio-visual subsystems with the capability of each AVS to operate independently or in a slave/master mode, selectively. Type and location of equipment shall be as indicated.

][1.3.4 Central Processor Controlled Subsystem (CPCS)

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NOTE: The CPCS is the more sophisticated nurse call system which can provide information storage and retrieval capabilities which may be useful for drug, dietary, or other patient data. Printers are usually included with these systems. Do not specify CPCS equipment unless directed by the AIC/EIC. The text of this article (if used) must be developed to suit the particular project.
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]1.4 SUBMITTALS

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NOTE: Where a "G" in submittal tags follows a submittal item, it indicates Government approval for that item. Add "G" in tags following any added or existing submittal items deemed sufficiently

critical, complex, or aesthetically significant to merit approval by the Government. Submittal items not designated with a "G" will be approved by the QC organization.

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Submit the following in accordance with Section 01330, "Submittal Procedures."

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NOTE: The listings in the following subparagraphs may be incomplete, or may contain optional equipment which is not required for the project. Modify these listings to agree with products actually specified.

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SD-02 Shop Drawings

Visual nurse call subsystem; G

Audio-visual nurse call subsystem; G

[Centralized nurse call subsystem; G]

[Central processor controlled subsystem; G]

SD-03 Product Data

Master station annunciator; G

Staff station; G

Toilet emergency station; G

Shower station; G

Code call station; G

Patient bed station; G

Patient station cordsets; G

Duty station; G

Corridor/zone lights; G

Nurse assist station; G

Psychiatric room entrance station; G

Equipment panel; G

[Standby power supply; G]

Master control station; G

[Staff locator station; G]

[Central processor unit; G]

Wire/cable; G

SD-07 Certificates

Visual nurse call subsystem; G

Audio-visual nurse call subsystem; G

[Centralized nurse call subsystem; G]

[Central processor controlled subsystem; G]

SD-08 Manufacturer's Instructions

Qualifications of service facility; G

Manufacturer recommendations for protection of stored equipment; G

SD-10 Operation and Maintenance Data

Nurse call system, Data Package 5; G

Audio-visual nurse call subsystem, Data Package 5; G

[Centralized nurse call subsystem], Data Package 5; G

[Central processor controlled subsystem], Data Package 5; G

SD-11 Closeout Submittals

Operating manuals; G

1.5 QUALITY ASSURANCE

1.5.1 Regulatory Requirements

Nurse call systems and equipment shall conform to CEI 64-8 and meet requirements of the specified application.

1.5.2 Manufacturer Standard

Equipment shall be standard products of the same manufacturer, shall be the latest design by the manufacturer, and shall have been designed by the manufacturer to operate as a complete system for the intended use.

1.5.3 Service Facility

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NOTE: Generally, the 4-hour response time shown bracketed should be suitable for most projects. Consult with the AIC/EIC on projects at remote locations.

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Equipment shall be supplemented by a factory authorized service organization, reasonably convenient to the site, which will provide service at the site within [4] [_____] hours after service is requested.

1.5.4 Subsystem Equipment Requirements

Individual items of equipment employed to make up each subsystem shall conform to CEI 64-8. The CE label or listing will be acceptable as evidence of compliance.

1.5.5 Shop Drawings

Submit installation wiring diagrams for each subsystem. Identify equipment that includes manufacturer's cabinets or backboxes as part of the equipment. Show details and minimum enclosure requirements as recommended by manufacturer if enclosure is not furnished with equipment. Show minimum size conduit as recommended by the manufacturer for use with each wire/cable shown.

1.5.6 Product Data

Submit for each type and style of equipment.

1.6 STORAGE AND PROTECTION

Protect stored equipment as recommended by the manufacturer.

1.7 MAINTENANCE

1.7.1 Operation and Maintenance Data

Submit operation and maintenance data in accordance with Section 01781, "Operation and Maintenance Data" and as supplemented by this section.

1.7.1.1 Minimum Requirements

As a minimum, submit three manuals for each different type subsystem. Label one manual for use at each control unit or master station, and label two manuals for engineering and maintenance use. As a minimum, include manuals for the following subsystems:

a. Visual nurse call subsystem.

b. Audio-visual nurse call subsystem.

[c. Centralized nurse call subsystem.]

[d. Central processor controlled subsystem.]

1.7.2 Operating Manuals

Provide operating manuals with each nurse call system. If not clearly indicated on the unit, the manuals shall include the following information:

a. Instructions and wiring diagrams showing proper installation of each unit. If a signaling unit is to be mounted in a definite position in order to function as intended, the installation instructions or marking on the unit shall so specify.

b. Illustrations that show locations of controls.

c. Explanation of the function of each control.

d. Step-by-step procedures for proper use of the device.

e. Recommendations for periodic maintenance and servicing on each unit.

f. Safety considerations in application and in servicing.

g. Circuit diagrams for the particular device shipped.

h. Functional description of the circuit.

i. Name of manufacturer and model number of any back box or trim plate intended to be used with hospital signaling or nurse call equipment and shipped separately for installation. Information correlating the models of enclosure and trim plate with the equipment with which it is intended to be used shall be indicated on the installation drawing referenced in the equipment marking. It is not prohibited that this information also be included on the equipment in lieu of the installation instructions.

j. If a battery standby is provided by the manufacturer, the maximum duration for 10 percent and 100 percent of maximum signaling capability shall be included.

1.7.2.1 Wiring Diagrams

Provide an installation wiring diagram or diagrams with each nurse call system or signaling unit indicating the field connections to be made. The diagram or diagrams shall be attached to the main control unit or, if separate, shall be referenced in the marking attached to the main control unit with the diagram number and issue number or date.

1.7.2.2 Connection Diagrams

The installation wiring diagram shall show a pictorial view or equivalent of the installation terminals or leads to which field connections are made as they would appear when viewed from the front or normal connecting position. The terminal numbers on the unit shall agree with the numbers on the diagram. If a special tool is required for any terminal connection, its use shall be indicated by tool manufacturer and model number or

equivalent and the tool shall be provided. The range of wire sizes shall be indicated for low-voltage power-limited circuit terminals. An unattached diagram shall be marked with the name or trademark of the manufacturer, drawing number, and issue number or date.

1.7.2.3 Marking Information

The following marking information shall appear on the installation wiring diagram for the applicable circuits to which field connections are made:

a. Main Supply Circuit - Voltage, frequency, and maximum current or wattage input. A terminal or lead for the connection of a grounded conductor shall be identified.

b. Patient Connected Circuits - Circuit connections to specific devices shall be shown as well as an indication of the maximum number of units or maximum load that is able to be connected to a specific circuit.

c. Pendant Control Circuits - Circuits not intended specifically for nurse call signaling shall be marked to show connection either to a specific device by name of manufacturer and model number or by an electrical rating in volts, amperes, or watts, and frequency in hertz. The word "CAUTION" and the following or equivalent marking shall be provided at the terminals: "CONNECT ONLY TO LOW-VOLTAGE POWER-LIMITED CIRCUITS. MAKE PERIODIC LEAKAGE CURRENT MEASUREMENTS OF ALL PENDANT CONTROL/PILLOW SPEAKER CIRCUITS TO VERIFY THE VALUES ARE APPROPRIATE FOR INSTALLATION LOCATION."

1.7.2.4 Electrically Supervised Circuits

The installation wiring diagram shall specifically identify circuits that are electrically supervised.

1.7.2.5 Connection Tools

If low-voltage, power-limited circuit terminal configurations are used that require a special tool for connection, the tool shall be referenced in the instructions and the tool shall be provided.

1.7.2.6 Program Controlled System

For program controlled signaling equipment or systems, a section shall either be included in the installation instructions or a separate user's manual provided which describes the program changes permitted by the user as part of normal system operation.

PART 2 PRODUCTS

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NOTE: Users of this guide specification are cautioned as follows:

1. Where a reference standard description of an item of equipment is suitable for the intended

purpose, then a simple statement for the item to comply to that standard is used, without further description.

2. Where a reference standard contains optional performance characteristics that may be specified, then those optional characteristics are included as either options or required features as designated, but the basic functions or item characteristics are not repeated in the guide.

3. References listed below were used in the guide development. Listings are in priority sequence, and shall remain in the same priority status regardless of the issue date in effect.

(a) MIL-HDBK-1191, "Department of Defense Medical Military Facilities Design and Construction Criteria"

(b) CEI 64-8, "Electrical Installations of Buildings"

(c) Unspecified Manufacturer Catalog Data

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2.1 SOURCE MANUFACTURERS

2.1.1 Nurse Call Systems

The following manufacturers provide nurse call systems that generally comply with these specifications:

GCS S.r.l.
Via Crocefisso n. 25
20090 Vimodrone (MI)
Tel: 02-2504739
Fax: 02-2650451

SOSTEL S.p.A. TELECOMUNICAZIONI
Via Tonale 15
24061 Albano S. Alessandro (BG)
Tel: 035-580580
Fax: 035-580863
www.sostel.it

2.1.2 Wire/Cable

The following manufacturers provide wire and cable material and components for nurse call systems that generally comply with these specifications:

NEXANS Italia
Via del Crocefisso, 18
04010 Borgo Piave (LT)
Tel: 0773/6871

Fax: 0773/687440
www.nexans.com

PIRELLI
Via Sarca, 222
20126 Milano
Tel: 02/64421
Fax: 02/64429264
www.pirelli.it

2.2 NURSE CALL EQUIPMENT

Equipment functions and operational characteristics shall conform to CEI 64-8, and other requirements as indicated.

2.2.1 Master Station Annunciator (VS)

[Wall recessed] [Surface mounted] call annunciator panel providing audible and visual indication for up to [_____] emergency [and Code call] stations. [Two call priority levels shall be possible: emergency calls and code calls.] Panel shall contain indicators for call-placed annunciation, a system call placement indicator, and a combination solid-state tone generator with sound transducer with a distinct difference in signal rates for each priority signal level.

2.2.2 Nurse Assist Station

[Wall recessed] [Surface mounted] station for originating an emergency call at the medical treatment area indicated. Station shall be a red combination call and reset button, with a call origination/assurance indicator. An easily recognizable inscription or label shall be included on the faceplate to indicate that the station is intended for "staff use only."

2.2.3 Toilet Emergency Station

[Wall recessed] [Surface mounted] emergency call station, with a red combination call and reset button, and call origination/assurance indicator. White nomenclature and nurse symbol shall appear on the call button for easy recognition.

2.2.4 Shower Station

[Wall recessed] [Surface mounted] emergency call station, with a red combination call and reset button, with pull cord and call origination/assurance indicator. White nomenclature and nurse symbol shall appear on the call button for easy recognition. Additionally, pull cord operating instructions shall appear in red on faceplate for easy recognition.

2.2.5 Duty Station (VS)

[Wall recessed] [Surface mounted] remote call receiving station, with solid state tone signal circuitry for receipt of emergency and code calls.

2.2.6 Code Call Station

[Wall recessed] [Surface mounted] station for originating a code call at the medical treatment area indicated. The station shall be a [blue] [red] combination call and reset button, with a call origination/assurance indicator. An easily recognizable inscription or label shall be included on the faceplate to indicate that the station is intended for "staff use only."

2.2.7 Corridor/Zone Lights

[Wall] [Ceiling] [Surface] mounted, with colored lens or bulbs as indicated.

2.2.8 Patient Bed Station (AVS)

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NOTE: The call selector switch is not needed with a microprocessor-controlled system. Call priority level programming is not applicable in hardwired systems.

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[[Wall] [Panel] recessed] [Surface mounted] station for patient/staff communications. Stations shall be for single patient use only, with privacy mode, [and call selector switch] [and calling priority levels which can be programmed at the Master Control station] in addition to the standard AVS features. A receptacle on the station shall accept a cordset with a single prong plug [or multi-purpose controls as indicated].

2.2.9 Patient Station Cordsets (AVS)

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NOTE: Consult with the user to determine the type and quantity of units required.

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A cordset, pendant control, shall be provided at each patient bed station, with the required operational capabilities as indicated. Additional cordsets of the quantity listed below shall be furnished to allow user flexibility.

Cordset Type	Quantity
Standard Call Button	[_____]
Pressure Pad Call Button	[_____]
Multipurpose Control Unit	[_____]

2.2.10 Staff Station (AVS)

[Wall recessed] [Surface mounted] station, with privacy mode in addition to the standard AVS features.

2.2.11 Duty Station (AVS)

[Wall recessed] [Surface mounted] station, with standard AVS features.

2.2.12 Psychiatric Room Entrance Station (AVS)

[Wall recessed] [Surface mounted] corridor switch for use with special treatment areas, as indicated.

2.2.13 Psychiatric Patient Bed Station (AVS)

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NOTE: Consult with the user to determine if either a radio system or a nurse assist button will be required.
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[Wall recessed] [Surface mounted] tamperproof station, with facilities for normal and emergency call origination, and accommodations to selectively control call origination capabilities.

2.2.14 Master Control Station

[Wall recessed] [Desk top] master station annunciator and control station, for handling up to [_____] calling stations, with the following performance features:

a. Basic Operating Requirements (AVS): Station shall provide standard audio-visual call registration and response features for use with associated patient, staff, and duty stations. Additionally, station shall provide for visual registration for other calling stations. Separate distinguishable tones shall be provided to identify the priority status of incoming calls.

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NOTE: At the text below, discuss the standard dome light colors and flashing schemes with the user. If the standard is not adequate, modify to suit the project. Notify the AIC/EIC of any variance from the standard.
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b. Call Priorities (AVS): Station shall be equipped to handle standard types of priority level calls as listed below:

Call Type	Priority Level	Dome Light Indication
Code Blue	1	Flashing Red
Nurse Assist	2	Flashing White, Steady Green
Toilet Emergency	3	Flashing White
Patient--Priority	3 [4][ ]	Flashing White
Patient--Personal Attention	4 [5][ ]	Steady White

Call Type	Priority Level	Dome Light Indication
Patient--Normal Call	4 [6][ ]	Steady White
[Stat Service]	[ ]	[Flashing Green, flashing amber]
[Nurse Service]	[ ]	[Flashing Green]
[Aide Service]	[ ]	[Flashing Amber]
[Nurse present]	[ ]	[Steady Green]
[Aide present]	[ ]	[Steady Amber]

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NOTE: At the text below, use microprocessor-controlled facilities when program-controlled features are needed by the user.
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[c. Microprocessor-Controlled (AVS): Control station shall be equipped with its own built-in microprocessor and shall respond to commands through a touch sensor control panel. A digital display shall register incoming calls in priority status sequence. Control station shall contain facilities for monitoring and calling stations in groups, as indicated. Control panel surface shall be glare free and of scratch-resistant, easy to clean, spill-proof construction.]

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NOTE: At the text below, specify centralized system controls only when requested by the user, via the AIC/EIC.
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[d. Centralized Controls (CS): Each control station shall contain a capture/recapture feature for centralized operation where indicated. Individual control stations shall have the ability to capture other control station areas, with combined control stations capable of handling up to [_____] stations, and to provide service when required. Each control station shall be capable of releasing itself from the capture mode, at any time. Captured areas shall be displayed at the captured and at the capturing control station. Controls and indicators shall be provided for all functions.]

2.2.15 Equipment Panel

[Wall] [Shelf] mounted enclosed panel containing power supply modules and other auxiliary equipment needed to provide for the complete and usable nurse call system.

[2.2.16 Standby Power Supply

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NOTE: Use only with microprocessor-controlled systems.
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[Wall] [Shelf] [Floor] mounted uninterruptable power system, with integral

rectifier/charger, and rated as indicated.

][2.2.17 Staff Locator Station

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NOTE: Use only when requested by the user.
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[Wall recessed] [Surface mounted] pushbutton station.

][2.2.18 Central Processor Unit

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NOTE: Do not use unless requested by the user, via the AIC/EIC. If used, the text must be developed to suit the project.
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]2.3 AUDIO EQUIPMENT

Audio functions of nurse call equipment shall be built-in features. Each control station shall contain an amplifier with sufficient output to address all patient stations within the control area, simultaneously. Provide two-way hands-free communications to the control station from each patient, staff, or duty station. Patient, or staff, shall be able to converse with the control station attendant without moving, without directing toward the transmitter, without using controls, and without raising the voice above a normal speaking level. Adjustable volume controls shall be contained in the control station.

2.4 SIGNALS

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NOTE: Verify the priority level of functions and associated signals in use at the facility. Modify these requirements as necessary.
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Priority levels and dome light indications shall be as follows:

Call Type	Priority Level	Dome Light Indication
Code Blue	1	Flashing Red
Nurse Assist	2	Flashing White, Steady Green
Toilet Emergency	3	Flashing White
Patient--Priority	3 [4][ ]	Flashing White
Patient--Personal Attention	4 [5][ ]	Steady White
Patient--Normal Call	4 [6][ ]	Steady White
[Stat Service]	[ ]	[Flashing Green, flashing amber]
[Nurse Service]	[ ]	[Flashing Green]
[Aide Service]	[ ]	[Flashing Amber]
[Nurse present]	[ ]	[Steady Green]
[Aide present]	[ ]	[Steady Amber]

2.5 Power Line Surge Protection

All equipment connected to ac circuits shall be protected from power line surges. Equipment protection shall meet the requirements of CEI 81-8. Fuses shall not be used for surge protection.

2.6 WIRE/CABLE

CEI 20-20/3, CEI 20-20/4, CEI 20-22/2, and CEI EN 50265-1. Provide interconnecting wire/cable as accessory equipment and comply with the same standards as the equipment with which used.

2.7 RACEWAYS

Provide metal raceways conforming to Section 16402, "Interior Distribution System." Fittings for EMT shall be compression type with ferrule and gland nut, not set screw.

PART 3 EXECUTION

3.1 INSTALLATION

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NOTE: This guide was prepared for use in preparing project specifications primarily for new building construction. The guide should be modified as appropriate if used for a remodeling or retrofit type project. In retrofit projects, the designer should become familiar with as-built conditions, and maximize the use of existing conduits and raceway components to the practical extent. Use extreme care in retrofit specifications to avoid proprietary statements. Add specifications to provide for repair of existing areas that are disturbed by the retrofit. Show additional drawing details sufficient to allow the prospective contractor to bid all aspects of the job.

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Provide a complete and operational nurse call system, with subsystems, to satisfy the specified performance. Install equipment and accessory items to suit manufacturer's instructions and recommendations. Provide insulated conductors in electrical metallic tubing as the wiring method. Comply with CEI 64-8 for the electrical installation.

3.2 DEMONSTRATION

Upon completion of the work and at a time designated by the Contracting Officer, furnish services of a manufacturer's representative to perform an operational checkout of the system, and to demonstrate operational and other system features of the work in place.

-- End of Section --