
USACE / NAVFAC / AFCEA UFGS-16725N (August 2003)

Preparing Activity: NAVFAC Superseding
UFGS-16725N (September 2000)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMLR dated 22 December 2004

Latest change indicated by CHG tags.

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SECTION 16725N

NURSE CALL SYSTEM 08/03

NOTE: This guide specification covers the requirements for nurse call systems in medical treatment facilities.

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.

NOTE: 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.

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.

PART 1 GENERAL

1.1 REFERENCES

NOTE: Issue (date) of references included in project specifications need not be more current than provided by the latest guide specification. Use of SpecsIntact automated reference checking is recommended for projects based on older guide specifications.

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.

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE Std 602 (1996) Recommended Practice for Electric Systems in Health Care Facilities - White Book

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (2005) National Electrical Code

UNDERWRITERS LABORATORIES (UL)

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

1.2 DEFINITIONS

The principles and definitions of terms used herein shall be as set forth in IEEE Std 602, along with UL 1069, 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)

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

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)

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.

[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)

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.

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)

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.

]1.4 SUBMITTALS

NOTE: Submittals must be limited to those necessary for adequate quality control. The importance of an item in the project should be one of the primary factors in determining if a submittal for the item should be required.

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 projects.

Submittal items not designated with a "G" are considered as being for information only for Army projects and for Contractor Quality Control approval for Navy projects.

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.] [for 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 01330 SUBMITTAL PROCEDURES:

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.

SD-02 Shop Drawings

Visual nurse call subsystem

Audio-visual nurse call subsystem

[Centralized nurse call subsystem]

[Central processor controlled subsystem]

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.

SD-03 Product Data

Master station annunciator

Staff station

Toilet emergency station

Shower station

Code call station

Patient bed station

Patient station cordsets

Duty station

Corridor/zone lights

Nurse assist station

Psychiatric room entrance station

Equipment panel

[Standby power supply]

Master control station

[Staff locator station]

[Central processor unit]

Wire/cable

Submit for each type and style of equipment.

SD-07 Certificates

Visual nurse call subsystem

Audio-visual nurse call subsystem

[Centralized nurse call subsystem]

[Central processor controlled subsystem]

SD-08 Manufacturer's Instructions

Qualifications of service facility

Manufacturer recommendations for protection of stored equipment

Manufacturer recommendations for protection of equipment from supply-line transients

SD-10 Operation and Maintenance Data

Nurse call systems, Data Package 5

Submit in accordance with Section 01781 OPERATION AND MAINTENANCE DATA.

SD-11 Closeout Submittals

Operating manuals

1.5 QUALITY ASSURANCE

1.5.1 Regulatory Requirements

Nurse call systems and equipment shall conform to UL 1069 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

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.

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 UL 1069. The UL label or listing will be acceptable as evidence of compliance.

1.6 STORAGE AND PROTECTION

Protect stored equipment as recommended by the manufacturer.

1.7 SUPPLY-LINE TRANSIENTS

Protect equipment from supply-line transients as likely to be subjected in

service from a commercial utility ac power system. Protection shall be integral to equipment or installed as an accessory item in accordance with manufacturer's recommendations.

1.8 MAINTENANCE

1.8.1 Data Package 5

Submit operation and maintenance data in accordance with Section 01781 OPERATION AND MAINTENANCE DATA.

1.8.2 Operating Manuals

Contents of each manual shall conform to the requirements for "Instructions and Installation Drawings" of UL 1069. 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. Submit 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]

PART 2 PRODUCTS

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) Design Manual (DM 33.02), "Naval Regional Medical Center Design and Construction Criteria"
 - (b) Design Manual (AF Regulation 88-50), "Criteria for Design and Construction of Air Force Health Facilities"
 - (c) Design Manual (DM 33.03), "Medical Clinics and

Dental Clinics - Design and Construction Criteria"

(d) NFPA 70, "National Electrical Code"

(e) UL 1069, "Standard for Safety, Hospital Signaling and Nurse Call Equipment"

(f) IEEE Std 602, "Recommended Practice for Electric Systems in Health Care Facilities"

(g) Unspecified Manufacturer Catalog Data

2.1 NURSE CALL EQUIPMENT

Equipment functions and operational characteristics shall conform to IEEE Std 602, UL 1069, and other requirements specified herein. ANSI and UL requirements are not repeated herein.

2.1.1 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.

2.1.2 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."

2.1.3 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.

2.1.4 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.

2.1.5 Duty Station (VS)

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

2.1.1.6 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."

2.1.1.7 Corridor/Zone Lights

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

2.1.1.8 Patient Bed Station (AVS)

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

[[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].

2.1.1.9 Patient Station Cordsets (AVS)

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

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.

<u>Cordset Type</u>	<u>Quantity</u>
Standard Call Button	[_____]
Pressure Pad Call Button	[_____]
Multipurpose Control Unit	[_____]

2.1.1.10 Staff Station (AVS)

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

2.1.1.11 Duty Station (AVS)

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

2.1.12 Psychiatric Room Entrance Station (AVS)

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

2.1.13 Psychiatric Patient Bed Station (AVS)

NOTE: Consult with the user to determine if either
a radio system or a nurse assist button will be
required.

[Wall recessed] [Surface mounted] tamperproof station, with facilities for normal and emergency call origination, and accommodations to selectively control call origination capabilities.

2.1.14 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.

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.

- b. Call Priorities (AVS): Station shall be equipped to handle standard types of priority level calls as listed below:

<u>Call Type</u>	<u>Priority Level</u>	<u>Dome Light Indication</u>
Code Blue	1	Flashing Blue
Code Call	1	Flashing Red
Nurse Assist	2	Flashing White, Steady Green
Emergency	3	Flashing White
Patient--Priority	3	Flashing White
Patient--Personal Attention	4	Steady White
Patient--Normal Call	4	Steady White
[Nurse Service		Flashing Green]
[Aide Service		Flashing Amber]

NOTE: At the text below, use
microprocessor-controlled facilities when
program-controlled features are needed by the user.

[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.]

NOTE: At the text below, specify centralized system controls only when requested by the user, via the AIC/EIC.

[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.]

2.1.15 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.

[2.1.16 Standby Power Supply

NOTE: Use only with microprocessor-controlled systems.

[Wall] [Shelf] [Floor] mounted uninterruptable power system, with integral rectifier/charger, and rated as indicated.

] [2.1.17 Staff Locator Station

NOTE: Use only when requested by the user.

[Wall recessed] [Surface mounted] pushbutton station.

] [2.1.18 Central Processor Unit

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

]2.2 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.

2.3 SIGNALS

NOTE: Verify the priority level of functions and associated signals in use at the facility. Modify these requirements as necessary.

Priority levels and dome light indications shall be as recommended in IEEE Std 602 [except that code call signals shall be flashing red and Code Blue signals shall be flashing blue].

2.4 WIRE/CABLE

Provide interconnecting wire/cable as accessory equipment and comply with the same standards as the equipment with which used.

2.5 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

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.

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 NFPA 70 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 --