PART 1 - GENERAL

1.1   INTENT

1.1.1   It is the intent of this specification to describe the operation of specific equipment requirements for the audio-visual nurse call systems to be furnished as part of this project.

1.2   SUBSTITUTIONS

1.2.1   Substitute proposal shall include all items of labor, material and equipment required for the installation of the substitute equipment including all changes in conduit, wiring, etc.

1.2.2   Each bidder proposing to use substitute equipment shall advise electrical engineer (architect) at least 15 calendar days prior to bid date of changes required to wiring, conduit, back boxes and terminal cabinets, in order to utilize proposed equipment. Failure of bidder to notify electrical engineer (architect) of changes required shall make bidder responsible for any additional costs necessary to make proposed system function as specified.

1.3   SAFETY

1.3.1   Equipment to be installed must comply with all applicable codes and regulations including, but not limited to, NFPA 70,99. Each piece of equipment to be installed as part of the nurse call system must be listed under the current version of Underwriters Laboratories Inc. standard UL® 1069.

1.3.2   Proof of listing must be included with submittal.

1.3.3   Installation of equipment shall be in strict accordance with the current issues of ANSI/UL® 1069, the National Electrical Code (ANSI/NFPA 70), the Health Care Facilities Code (NFPA 99) in effect for the applicable jurisdiction, and with the manufacturer's installation manual together with all current technical information.

1.4   WARRANTY

1.4.1   Each piece of nurse call equipment shall be warranted by the equipment manufacturer to be free of defects in material and workmanship for a period of 12 months from the date of shipment from the manufacturer's facility.

PART 2 - SYSTEM OPERATING REQUIREMENTS

2.1   ACCEPTABLE MANUFACTURERS

2.1.1   TekTone® Sound and Signal Mfg., Inc. NC300 series TekMicroCare™, as supplied by **Alpha Communications®**, 42 Central Drive, Farmingdale NY 11735-1202, **TOLL-FREE 1-800-666-4800**, **(email: info@alpha-comm.com)**, or approved equal.

2.1.2   Model numbers are provided to establish the exact operation.

2.2   GENERAL

2.2.1   The nurse call systems to be furnished shall include the following minimum design and operating characteristics:

(1)   Microcomputer controlled nurses master station, central processing equipment, and composite video monitor

(2)   Multiplexed data and audio transmission

(3)   Asynchronous serial data communication

(4)   Menu-driven programmable functions

(5) Non-volatile software

(6) Electromechanical memory such as disk drives required for system operation will be considered unacceptable.

(7) Simultaneous speech capabilities at all nurses master stations

(8) Nurses master station indication of call source and type shall be in clear, readable English via the video monitor.

2.2.2 Unless otherwise noted, two-way voice and signaling capabilities shall be provided between the nurses master station/ monitor and all associated patient, staff, psychiatric, duty stations and other master stations.

2.3 CALL CLASSIFICATIONS

2.3.1 The nurse call system shall provide the following general call signaling capabilities:

(1) Routine bed call - bed #1

(2) Routine bed call - bed #2

(3) Personal attention bed call - bed #1

(4) Personal attention bed call - bed #2

(5) Duty station call

(6) Staff station call

2.3.2 Each of the above-listed calls shall automatically generate an overtime condition if not answered or canceled within a specific time period. The time period shall be field programmable to suit the owner's requirements.

2.3.3 The nurse call system shall provide the following medium priority, high priority, life threatening emergency call capabilities:

(1) Priority bed call - bed #1

(2) Priority bed call - bed #2

(3) Cord out - bed #1

(4) Cord out - bed #2

(5) Bath call

(6) Monitor (door or medical equipment alarm)

(7) Staff emergency call

(8) Fire

(9) Code call

2.3.4 Each of the above-listed calls shall automatically generate an overtime condition if not answered or canceled within a specific time period. The time period shall be field programmable to suit the owner's requirements.

2.3.5 System operation shall be monitored automatically by central processing equipment software and circuitry so as to provide continuous supervision of associated patient, staff, duty, psychiatric, code, multipurpose, and nurses master stations, and lamps in dome lights (LI380 series). The nurses master station shall monitor central processing equipment operation by CPE fault indicator. All circuits between the above equipment and defects detected by the system shall be reported to the nurses master station/CRT as follows:

(1) Communication fault

(2) Code fault

(3) Lamp fault

(4) Steady CPE fault

(5) Trouble: fan

(6) Trouble: master station

2.3.6   Individual station failures detected by the system shall be displayed at the CRT by room/location (and bed number if applicable) in addition to the messages indicated above.

2.3.7   Master station failures detected by the system shall be displayed at the CRT by a FAULT message located in the call window for the master station affected.

2.3.8   Each of the call classifications listed in 2.3.1 and the system status call indications in 2.3.3 shall provide its own unique display in English and shall be accompanied with specific light and tone signals so as to provide the nurse/attendant with an easily understood and fail safe means of call identification. All letters and numerals shall be at least 1/4" in height and shall be legible from a distance of at least 10 feet and shall be displayed on a video monitor (CRT). Systems that do not indicate call classifications in English shall not be considered acceptable. Systems using call numbers, letters or symbols to indicate call types are unacceptable. Systems that integrate call annunciation with the nurses master station shall be unacceptable. Systems that do not provide call identification from a distance of at least 10 feet shall not be considered acceptable.

2.4   AUDIO COMMUNICATION

2.4.1   Audio communication shall meet or exceed NEMA Audio Standard for Nurse Call Systems. Standard Publication No. SB10.

2.4.2   Unless otherwise noted, two-way audio communications shall be possible between the nurse master station and the following types of call stations:

(1) Single and dual-patient stations

(2) Staff stations

(3) Duty stations

(4) Psychiatric room speaker stations

2.4.3   Two-way audio communications shall be possible between nurse master stations.

2.4.4   In addition to two-way communications with the individual stations noted in 2.4.1 and nurse master stations noted in 2.4.2 above, it shall be possible to

(1) Group call preassigned groups of stations, and

(2) Selectively monitor or page to only those rooms that have nurses or aides checked into them via the presence stations and

(3) Group monitor preassigned groups of stations selectively, and

(4) All call entire preassigned group of stations associated with the paging master station, and

(5) All call all stations on the system regardless of preassigned groups.

2.4.5   Preassigned groups shall be determined by the nursing administration prior to system operation. It shall be possible to change the make-up of preassigned groups at any time through menu-driven programmable functions.

2.4.6   Selective monitoring shall be possible at the nurse's discretion at any time without the need for additional system programming.

2.4.7   Where necessary, an interface may be provided for the local corridor paging speakers so as to allow for local paging from the nurse master station.

2.4.8   Two-way communication from the nurses master station shall be either of the following at the nurses discretion:

(1) Built in speaker/microphone; or

(2) Built-in telephone handset (without the need for operation of talk/listen controls).

2.4.9   The nurses' master station operator shall be able to monitor groups of up to 30 stations simultaneously.

2.4.10 It shall be possible to page during Medium and High priority calls. The Medium and High priority call tones shall only be cancelled during the 'page' function.

2.5   SIGNALING

2.5.1   Each call shall be signaled at the nurses master station by unique tone and light signals, and at the CRT by descriptive wording in such a manner as to clearly indicate call priority and point of origin. Accompanying light and tone signals shall also be received at all associated duty stations.

2.5.2   Descriptive wording shall be in English and shall be generated by a 40 character wide, 25 line CRT display. A minimum of sixteen lines shall be provided at the video monitor so as to allow for simultaneous display of up to sixteen calls. A "more calls waiting" message shall be displayed if more than sixteen calls are on the system at one time. Calls shall be automatically aligned from top to bottom by priority and time of call. Nurse master station/CRT's that do not display calls with priorities indicated in English, that do not align calls by priority and time of call, or that do not display a "more calls waiting" or equivalent message shall not be acceptable.

2.5.3   Tones generated at nurses' master station shall have a repetition rate and frequency that conforms to the highest priority call registered. A minimum of three different types of tone signals shall be provided.

2.5.4   Lights generated at nurses' master station shall have a flashing rate that conforms to the highest priority call registered. A minimum of three different rates (including steady) shall be provided.

2.5.5   Tone rates generated at associated duty stations shall also signal different call classes with different tone registration rates.

2.5.6   Lights generated at associated duty stations shall also signal different call classes with different flash rates and LED combinations.

2.5.7   Each calling station shall indicate call registration by illumination of its associated dome lamp. Color and flash rate of the dome lamp shall be as described elsewhere. Calls of the same type in different locations shall indicate in an identical manner on the respective dome lamps.

2.5.8   A dome lamp shall indicate the highest priority call currently active in the associated room.

2.5.9   Fault conditions shall be displayed without interrupting the operation of the non-affected devices.

2.6   PROGRAMMING

2.6.1   The nurse call system shall be designed so as to allow for field programming and for operator (nurse/attendant) programming. The following minimum programming features shall be provided:

(1) Field programming at time of installation

a)   Up to a 4-digit floor and room number assignments with beds assignable with an additional single character bed designator. Bed designators may be from 1 to 8 in either a clockwise or counterclockwise pattern (as seen when entering the room). Floor and room numbers shall correspond to the architectural room number unless otherwise noted and shall be changeable at any time.

b) Zone assignments for masters and stations

c) Group/zone call station assignments

d) Master assignments

e) System configuration

f) Paging address (if needed)

g) Clock format (12 or 24 hour)

h) Password requirement

i) Overtime requirement

(2) Operator (nurse/attendant) programming during day-to-day operation.

a) Patient call priorities
   1. Routine
   2. Personal attention
   3. Priority

b) Patient station privacy

c) Patient station paging on or off

d) Nurse and aide needed functions

e) Stat service needed by bed

f) Code call assignment by room

g) Nurse follower

h) Selective room monitoring of up to 30 rooms simultaneously

i) Group call preassigned groups

j) Ward transfer

k) Swing room transfer

l) Hold function

m) Menu-driven master station transfer for night mode operation. (See section 2.13.2 referring to master station transfer.)

2.6.2   All user programming shall be accomplished using an English language menu-driven program format to ensure full system utilization with an absolute minimum of operator training. It shall be possible to add, delete or "add back" stations to and from the system via programming from the Master Station without affecting all current station programming. Systems that require reprogramming of room numbering to add or delete stations shall be considered unacceptable.

2.6.3   System function shall not be interrupted during programming.

2.6.4   Programming format shall be user-friendly utilizing English language instructional prompts with built-in programming error indications. It shall not be possible for the operator to damage or alter the system operating software due to improper or

accidental data entry.

2.6.5   It shall not be possible for the user to halt system operation due to incomplete or incorrect data entry.

2.6.6   System configurations utilizing two or more nurses master stations shall allow for independent operation of each interconnected nurses master station regardless of the mode of operation of other nurses master stations. Systems allowing for operation of only one nurses master station at a time when multiple nurses master stations share the same central processing equipment are not acceptable.

2.6.7   System configuration shall not alter the ability of all CRTs to display all calls.

2.7   PATIENT STATIONS

2.7.1   Furnish single and dual patient stations as indicated on the plans with complete operating capabilities as described below.

2.7.2   Dual patient stations which do not indicate call registration by patient are not acceptable.

2.7.3   Each patient station shall be designed to accept any of the call cords or pillow speakers described elsewhere in these specifications without use of adapters.

2.7.4   Single and dual patient stations may be provided with only 1/4" jack call cord capability where pillow speakers may never be a requirement.

2.7.5   Two-way voice communication between the patient and the nurse shall be possible over the built-in speaker/microphone. Where indicated provide capabilities for two-way voice communication over pillow speaker. Speaker/microphone sensitivity shall allow the nurse to hear the patient without the patient having to turn to face the patient station, and without the patient having to raise his/her voice. The pillow speaker communication feature board shall be of a piggy-back board plug-in design. Addition or removal of this feature shall be possible at any time.

2.7.6   Patient station circuitry and system software shall allow the nurse to program any patient station for various call priorities. The minimum number of call priorities required for this project and their respective call indications are described below.

2.7.7   "Routine" calls shall be generated by momentary actuation of the patient's call cord or the red nurse button on the patient's pillow speaker, and shall:

    (1) Illuminate the call-placed LED on the patient station (on dual patient stations only the call-placed indicator for the patient originating the call shall illuminate)

    (2) Illuminate the white light in the corridor dome lamp outside the patient's room

    (3) Illuminate any associated white zone lamp

    (4) Display the room number (and bed number, if applicable) and the word "routine" on the CRT

    (5) Audibly and visually signal a routine-level call at the nurses' master station

    (6) Signal a routine-level call at all associated duty stations

    (7) Be canceled by any of the following:

        a) Answering the call from the nurses' master station; or

        b) A staff member entering the room and activating either the nurse or aide push-button on the staff presence station (where provided); or

        c) Momentarily pressing the reset push-button on the patient station.

2.7.8   "Personal Attention" shall be generated and signaled similarly as described for "routine" calls. CRT shall display the words "PERSONAL ATTENTION" adjacent to the room/bed number and the call shall not be cancelable from the nurses' master station. Systems that permit remote resetting of "personal attention" calls shall not be considered acceptable.

2.7.9   "Priority" calls shall be generated as described for "routine" calls that shall provide the unique following indications:

   (1) Patient station call-placed indicator shall be steadily illuminated. (On dual bedside stations the call-placed indicator for the patient originating the calls shall illuminate).

   (2) The white dome light outside the room shall flash slowly.

   (3) All associated white zone lamps shall flash slowly.

   (4) The word "PRIORITY" shall appear on the CRT next to the room/bed number of the calling station.

   (5) A slow, pulsating tone shall sound at the nurses' master station and all associated duty stations; and

   (6) The call-placed LED at the nurses' master station shall flash slowly; and

   (7) The call-placed and emergency LEDs on all associated duty stations shall alternately flash slowly.

   (8) "Priority" calls shall be canceled only by one of the following:

      a) Having a staff member enter the room and pressing either the nurse or aide push-button on the staff presence station (where provided); or

      b) Momentarily pressing the reset push-button of the calling station.

   (9) Systems that permit remote resetting of "priority" calls shall not be considered acceptable.

2.7.10   Removal of a call cord or a pillow speaker from its station receptacle shall automatically generate a call to the master station. The call shall be signaled similarly as described above for "priority" calls. The CRT shall display the words "CORD OUT" adjacent to the room/bed number and the call shall not be cancelable until:

   (1) The cordset or pillow speaker is replaced; or

   (2) A dummy plug or some other type call device is inserted into the patient station receptacle. Pressing the reset button while changing cordsets shall prevent generation of "cord out" calls.
   (Note: a five second delay will be allowed before the "cord out" call is registered).

2.7.11   Each patient station in the system shall be capable of having any existing call upgraded at the nurses' master station to "stat" service request.

2.7.12   "Stat" urgent service request shall be generated from the nurses' master station without regard either to the presence of other calls or the preprogramed condition of the patient station. (Systems allowing the remote activation of either staff emergency calls or code calls shall be unacceptable. These are conditions that can only be determined by the presence of staff in the affected area.) Stat urgent service requests shall be generated from the nurses' master station and shall display in the following manner:

   (1) CRT shall flash the room/bed number under the stat column in the service request section of the CRT.

   (2) All associated duty stations shall pulsate a tone at a medium-priority level.

   (3) The call-placed and emergency LEDs on all associated duty stations shall alternately flash at the medium-priority rate.

   (4) The green and amber dome lamp outside the room shall flash at the medium-priority rate.

   (5) The call shall be canceled only by pressing the reset button on the patient station.

2.7.13   Each patient station shall be provided with a "in use" indicator which shall illuminate whenever the nurses' master station is in audio contact with the patient station. It shall be impossible for the nurses' master station to monitor a patient station without the "in use" indicator.

2.7.14   Each patient station shall be capable of being placed into a privacy mode. In this mode it shall be impossible for the nurses' master station to monitor the patient's room. The privacy mode shall be programmable from the nurses' master station.

2.7.15   Each patient station shall be designed so as to allow for direct interchangeability with any other patient station (single or dual) or with any staff or duty station without changes to the back box or to the system wiring. All such stations shall be of plug-in construction.

2.8   EMERGENCY/CODE STATIONS

2.8.1   Provide the following types of emergency/code stations where indicated on the plans:

(1)   Pull cord bath/shower emergency stations

(2)   Push-button bath/shower emergency stations

(3)   Code call stations

(4)   Staff assist staff emergency call stations

2.8.2   Each emergency/code station shall be designed to work either in conjunction with a patient, staff or duty station, zone light, psychiatric call station or multipurpose station.

2.8.3   Each emergency station shall be of all solid-state electronic circuitry and shall not contain incandescent lamps or relays.

2.8.4   Call indication provided by emergency stations shall be unique, and shall be displayed according to the priority at the CRT. The following call indication shall be provided for each type station:

(1)   Pull cord bath/emergency station when activated shall:

   a)   Flash the call-placed LED on the calling station at the medium-priority rate;

   b)   Flash the call-placed LED on the associated patient, duty or staff station at the medium-priority rate;

   c)   Flash the white lamp on the dome lamp outside the room containing the station at the medium-priority rate;

   d)   Flash the white lamp on any associated zone lamps at the medium-priority rate;

   e)   Display the word "BATH" adjacent to the room number on the CRT;

   f)   Pulsate the tone at the medium-priority rate at all associated duty stations and the nurses' master station;

   g)   Flash the call light at the nurses' master station at the medium-priority rate;

   h)   Alternately flash the call-placed and emergency LEDs at the medium-priority rate at all associated duty stations; and

   i)   Be cancelable only at the calling station by qualified personnel.

(2)   Push-button bath/emergency stations when activated shall:

   a)   Provide identical call indications as those shown by pull cord bath/emergency station (see above).

   b)   Be cancelable only at the calling station by qualified personnel.

(3)   Code call stations when activated shall:

   a)   Be fully supervised (either active or inactive);

   b)   Display the word "CODE FAULT" on the CRT adjacent to the room number should there be such a condition at the code station;

   c)   Flash the call-placed LED on the calling station at the high-priority rate;

d) Flash the call-placed LED on the associated patient, duty or staff station at the high- priority rate;

e) Alternately flash the red and white lamps on the dome lamp outside the room containing the station at the high-priority rate;

f) Alternately flash the red and white lamps on any associated zone lamps at the high- priority rate;

g) Display the word "CODE CALL" adjacent to the room number on the CRT;

h) Pulsate the tone at the high-priority rate at all associated duty stations and the nurses' master station;

i) Flash the call light at the nurses' master station at the high-priority rate;

j) Alternately flash the call-placed and emergency LEDs at a high-priority rate at all associated duty stations; and

k) Be cancelable only at the calling station by qualified personnel.

(4) Staff assist emergency stations when activated shall:

a) Flash the call-placed LED on the calling station at the high-priority rate;

b) Flash the call-placed LED on the associated patient, duty or staff station at the high- priority rate;

c) Flash the white lamp on the dome lamp outside the room containing the station at the high- priority rate;

d) Flash the white lamps on any associated zone lamps at the high-priority rate;

e) Display the word "EMERGENCY" adjacent to the room number on the CRT;

f) Pulsate the tone at the high-priority rate at all associated duty stations and the nurses' master station;

g) Flash the call light at the nurses' master station at the high-priority rate;

h) Alternately flash the call-placed and emergency LEDs at the high-priority rate at all associated duty stations; and

i) Be cancelable only at the calling station by qualified personnel.

(5) Staff assist emergency psychiatric stations shall be active only when the key switch on the associated psychiatric station is in the ON position, but when activated, shall:

a) Flash the call-placed LED on the calling station at the high-priority rate;

b) Flash the call-placed LED on the associated psychiatric station at the high-priority rate;

c) Flash the white lamp on the dome lamp outside the room containing the station at the high-priority rate;

d) Flash the white lamps on any associated zone lamps at the high-priority rate;

e) Display the word "EMERGENCY" adjacent to the room number on the CRT;

f) Pulsate the tone at the high-priority rate at all associated duty stations and the nurses' master station;

g) Flash the call light at the nurses' master station at the high-priority rate;

h) Alternately flash the call-placed and emergency LEDs at the high-priority rate at all associated duty stations; and

i) Be cancelable only at the calling station or at the associated psychiatric station by qualified personnel.

(6) Resetting emergency/code stations shall be accomplished as follows:

a) Pull cord emergency stations: Return red slide switch to the "up" position.

b) Push-button-type emergency stations: Push the centrally-located call/reset button again until orange "eye"

disappears.

    c)   Push-button type emergency psychiatric stations: Push the button indicated by "CANCEL" on the station faceplate.

2.9   STAFF STATIONS

2.9.1   Staff stations shall be provided in the locations shown on the plans and shall be designed to provide two-way signaling and two-way voice communication between the staff station and the nurses' master station/CRT.

2.9.2   Routine call indications provided by each staff station shall be unique to that station and shall be displayed at the nurse master station according to time of call. Calls registered from a staff station shall:

    (1) Illuminate the call-placed LED on the station;

    (2) Illuminate the white dome lamp outside the room containing the station (where provided);

    (3) Illuminate any associated white zone lamp;

    (4) Display the room number and the word "STAFF" at the CRT;

    (5) Illuminate the call-placed light at the nurses' master station;

    (6) Sound a tone at the nurses' master station and all associated duty stations; and

    (7) Illuminate the call-placed LED at all associated duty stations.

2.9.3   Calls from staff stations shall be cancelable by any of the following methods:

    (1) By answering the call from the nurses' master station;

    (2) By momentarily pressing the reset button on the staff station; or

    (3) By pressing the nurse or aide push-button on the staff presence station (where provided).

2.9.4   Two-way voice communication between the staff station and the nurses' master station shall be hands-free at the staff station.

2.9.5   Each staff station shall be provided with an "in use" LED which shall illuminate whenever the nurses' master station is in communication with the staff station.

2.9.6   Staff station calls shall be capable of being upgraded to a "stat" urgent service request as previously described for patient station.

2.9.7   Staff stations shall be field programmable to function as a single-bed patient station where call cords are not needed or desired.

2.10   DUTY STATIONS

2.10.1   Provide duty stations in the locations indicated by the plans.

2.10.2   Each duty station shall be designed to provide the functions described for staff stations above and shall, in addition, provide:

    (1) Visual indications of low-, medium- and high- priority calls with each type of call classification displayed using a low, medium or high priority flash rate.

    (2) Tones shall sound at a low-, medium- or high- priority rate as indicated previously.

    (3) Automatic silencing of the tone signal at the duty station whenever the duty station is in voice communication with the master station.

    (4) Return of the tone the instant communications with the nurses' master station is terminated by either party.

(5) A tone off switch to allow silencing of low- priority calls. (Tone returns automatically when a medium- or high- priority call is placed.)

(6) It shall be possible to program the duty station for selective annunciation of individual call types (i.e. code only).

2.10.3   Duty stations that provide for silencing of medium- or high-priority tones shall be considered unacceptable.

2.10.4   Duty stations that do not provide return of the tone when communications have been silenced and when a new call is placed, shall be considered unacceptable.

2.11   CORRIDOR LAMPS AND ZONE LAMPS

2.11.1   Corridor lamps and zone lamps shall be located as indicated on the plans and shall serve to provide visual indications of calls placed from within rooms containing call stations and from zones where direct visual contact with corridor lamps is not possible. Corridor lamps and zone lamps shall also provide visual indication of staff-needed and staff-presence when used in conjunction with nurse/aide presence station. Light signals from zone lamps shall correspond exactly to the light signals from associated dome lamps.

2.11.2   Each dome lamp and zone lamp shall contain four lamps. Colors shall be red, green, yellow and white.

2.11.3   Indications provided by corridor lamps and zone lamps shall be as follows:

(1) High priority:

    a)   Code call: Alternate flashing red/white at twice the speed of medium-priority calls.

    b)   Fire: Red flashing at twice the speed of medium-priority calls.

    c)   Emergency/staff assist: White flashing at twice the speed of medium-priority calls.

    d)   Code fault: Red flashing at twice the speed of medium-priority calls.

    e)   Stat/urgent service request: Green/amber flashing simultaneously

(2) Medium priority:

    a)   Monitor: Red flashing

    b)   Bath: White flashing

    c)   Cord out: White flashing

    d)   Priority: White flashing

    e)   Nurse service request: Green flashing

    f)   Aide service request: Amber flashing

(3) Low priority:

    a)   Staff: White steady

    b)   Duty: White steady

    c)   Personal attention: White steady

    d)   Routine: White steady

e)   Nurse present: Green steady

f)   Aide present: Amber steady

2.12   SUPERVISED CORRIDOR LAMPS AND ZONE LAMPS

2.12.1   All previous lamp indication information provided above shall be identical. The following additional indications shall be provided:

(1)   Red, yellow or green lamp out, white lamp flashing.

(2)   The words "LAMP FAULT" shall appear adjacent to the room number on the CRT.

(3)   All tones at the associated duty stations and nurses' master station shall be at a steady rate.

(4)   The call-placed LED at the nurses' master station shall be steadily illuminated.

(5)   Call-placed and emergency LEDs on all associated duty stations shall alternately flash at the medium-priority level.

2.13   NURSES' MASTER STATION

2.13.1   Nurses' Master Station shall be installed as indicated on the plans and with sufficient wall-mounted receptacles to permit locating the nurses' master station anywhere on the desk.

2.13.2   Each nurses' master station shall be designed to work in conjunction with the central processing equipment and the CRT to provide the following minimum functions:

(1)   Automatically answer highest priority calls by type and/or time of call displayed on the CRT (maximum of sixteen calls will be displayed by CRT; see 2.14).

(2)   Operate independently of CRT. Systems not allowing for the independent operation of nurses' master station and call display annunciation shall not be acceptable.

(3)   Store calls in excess of the sixteen calls displayed, prioritized by type and time of call.

(4)   Cause to display on CRT the location of sixteen nurse and/or sixteen aide service requests.

(5)   Direct selection of calls displayed by selecting the call number associated with that call or automatic answering of calls by priority and time of call. Direct input of room number may be used instead of utilizing call number.

(6)   Ability to originate a call to any station regardless of calls present using a built-in touch pad.

(7)   Program capability to allow for changing patient station call priorities, swinging room capabilities, patient privacy, staff follower and group page/monitor.

(8)   Ability to place calls on hold. Systems that force you to reset the call that you are currently connected to before you proceed to other functions, are not acceptable.

(9)   Ability to provide the following service requests: "Aide," "Nurse," and the top level priority urgent service request, "Stat." Systems allowing for the initiation of staff emergency and code calls from nurses' master station shall not be acceptable.

(10) Automatic tone muting when nurses' master station is in use.

(11) Automatic tone on after communications have been terminated.

(12) Automatically cause a call to be placed from any room where service request has gone into overtime.

(13) Completely independent operation of up to four nurses' master stations connected to the same CPE including four simultaneous talk paths.

(14) Group call capabilities allowing the attendant to call up to 30 preassigned stations and listen for replies from any of those stations.

(15) Group call capabilities allowing the attendant to call from 30 to 120 preassigned stations.

(16) Group monitor capabilities for stations selected at attendant's discretion.

(17) Continuous automatic polling of all bedside, staff, duty, multipurpose and psychiatric stations. Failure of any of these components shall be indicated at the nurses' master station by a medium-level priority tone, the words "Comm Fault" and the location number of the station. Associated duty stations shall also sound at medium-level priority.

(18) Interface with external paging systems, where provided, from nurses' master station.

(19) Ability to reset nurse/aide presence in rooms from nurses' master station. Note: Systems not forcing the attendant to first call the room to reset staff registration, shall not be acceptable.

(20) Menu key that will give the operator, in addition to all system programming functions, the ability to view all system and system/station parameters.

(21) Master-to-master, two-way communication capability.

(22) Separate tone and light signals for low-, medium- and high-priority calls.

(23) Manual tone silencing (low-priority calls only)

(24) Automatic tone signal to indicate placement of a medium- or high-priority call while communications are in use.

(25) Master station transfer capability when secondary master stations wired parallel to primary master stations are utilized. Master station transfer shall be implemented using the system menu for transfer to master wired in parallel only.

(26) It shall be possible to program the master station for selective annunciation of individual call types (i.e. code only).

(27) It shall be possible to add an active hookswitch to the master station Handset. The active hookswitch option shall make it possible to answer and communicate to the oldest or highest priority call first by simply lifting the handset. Upon replacing the handset in the cradle, a Routine type call will be reset.

(28) It shall be possible to select via programming either of two video channels.

2.13.3 Nurse call systems that do not provide for menu-driven programming functions shall not be acceptable.

2.14   VIDEO MONITOR (CRT)

2.14.1 CRT shall be installed as indicated on the plans with sufficient wall-mounted receptacles to permit locating the CRT anywhere on the desk.

2.14.2 Each CRT shall be designed to work in conjunction with the CPE and the nurses' master station to provide the following minimum functions:

(1) Simultaneously display the following:

   a) The words "ROOM" and "TYPE," the time of day, a dividing line between calls and service requests, and the words "NURSE," "AIDE," and "STAT";

   b) Up to four call windows marked 1, 2, 3, and 4 displaying the call that the associated nurses' master station is in communication with;

c) Up to sixteen calls prioritized by type and time of call;

d) Up to sixteen nurse/aide presence locations or requests for service locations;

e) Up to sixteen urgent service requests (Stat) locations; and

f) The words "MORE CALLS WAITING" should there be more than sixteen calls placed.

(2) Display the following system parameters, if so requested by the attendant:

a) View all master stations in the system; and

b) View all stations in a zone.

(3) Display the following system station parameters, if so requested by the attendant:

a) View all stations connected in the system and provide station addresses, port connections, room and bed numbers, assigned zones, station priority, and paging, privacy and code status;

b) View individual stations to obtain the above information;

c) View all patient stations that have code call stations connected to them;

d) View all "Routine" patient stations;

e) View all "Personal Attention" patient stations;

f) View all "Priority" patient stations;

g) View all "Privacy" patient stations;

h) View all "Page Off" patient stations; and

i) View all staff stations (includes duty and multipurpose stations).

Note: Systems showing the above information without being so requested shall not be acceptable.

(4) All characters and numerals shall be at least 1/4" high and shall be visible from a distance of ten feet.

(5) The CRT may be wall mounted.

(6) The CRT may be shared by more than one nurses' master station.

(7) The CRT will operate independently and in tandem with the nurses' master stations.

2.14.3 Nurse call systems that do not provide call priorities displayed in English shall not be acceptable.

2.15   CENTRAL PROCESSING EQUIPMENT (CPE)

2.15.1 Central processing equipment shall be installed where shown on plans.

2.15.2 CPE shall provide for total plug-in connections from all station field wiring, nurses' master station wiring, and CRT wiring.

2.15.3 Central processing equipment software shall provide the nurse call system with the following minimum features:

(1) 128-station capacity with a maximum of 256 beds.

(2) Up to four nurses' master stations to operate independently. System shall provide four talk paths per CPE.

(3) Up to four nurses' secondary master stations wired parallel to primary nurses' master stations.

(4) Provide for additional in/out communications port for future multiple system interface

(5) Allow for interconnection to an uninterruptable power supply that is rated at a minimum of 250 VA, 150 watts, to provide for system operation at maximum load for ten minutes and minimum load for 30 minutes. Transfer time shall not exceed four milliseconds.

(6) Non-volatile software.

(7) Provide for four 10-watt RMS amplifiers with short and overload protection in each system.

(8) Provide enough video output for at least eight video monitor/CRTs.

(9) Provide two video outputs to allow for selectable displays at the CRTs. Selection of video channel shall be via menu driven programming at a master station.

2.15.4   CPE cabinet shall not exceed the following dimensions: 19-1/2" x 15-1/2" x 5-1/4".

2.15.5   All outputs shall be protected by self-resetting, current limiting devices.

2.15.6   Software shall be on EPROMs that will be located on an EPROM card that can easily be removed for future software updates. Systems not allowing for field update of software shall not be considered acceptable.

2.16   PSYCHIATRIC STATIONS

2.16.1   Furnish psychiatric stations as indicated on the plans with complete operating capabilities as described below:

2.16.2   Psychiatric station circuitry and system software shall allow the nurse to program any psychiatric station for various call priorities. The minimum number of call priorities required and their respective call indications are described in 2.7.7 through 2.7.9 except that calls may not be reset until the key switch is turned to the off position.

2.16.3   Each psychiatric station in the system shall be capable of having an existing call upgraded at the nurses' master station to "stat" service request.

2.16.4   Stat urgent service requests shall be generated as described in 2.7.12.

2.16.5   Each psychiatric station shall be provided with the following features:

(1) A combination reset switch and in-use indicator. In-use indicator shall illuminate whenever the nurses' master station is in audio contact with the psychiatric speaker station.

(2) A on/off key switch that when turned to the on position shall activate a staff assist emergency push-button station in the room. This key switch shall not affect the operation of the psychiatric speaker station. Systems not allowing for the monitoring of psychiatric speaker stations from the nurses' master station with the psychiatric speaker station key switch in the off position shall be considered unacceptable.

(3) A call-placed yellow LED that shall illuminate when the key is in the on position.

2.17   PSYCHIATRIC SPEAKER STATION

2.17.1   Furnish psychiatric speaker stations as indicated on the plans.

2.17.2   Psychiatric speaker stations shall be designed to provide two-way voice communication between the psychiatric speaker station and the nurses' master station when used in conjunction with a psychiatric station.

2.17.3   Psychiatric speaker stations shall be monitored by the nurses' master station at the attendant/operator's discretion regardless of the key switch position on the psychiatric station.

2.18   PRESENCE STATIONS

2.18.1   Furnish presence stations as indicated on the plans.

2.18.2   Presence stations shall provide for the following features when used in conjunction with a patient, staff, duty or multipurpose station:

(1)   When the green nurse push-button is pressed, the associated green LED on the presence station will illuminate and the associated green lamp on the dome lamp will illuminate; and

(2)   The room number will appear on the CRT underneath the column marked "NURSE."

(3)   When the green nurse push-button is pressed upon exit, the associated LED on the presence station and lamp on the corridor light will extinguish; and

(4)   The room number will disappear on the CRT underneath the column marked "NURSE."

(5)   When the nurses' master station has requested "nurse" service for that specific room, the green LED on the presence station will flash. When the nurse presence push-button has been pressed the LED will go from a flashing status to a steady status.

(6)   The yellow "aide" push-button and the associated yellow "aide" LED will function exactly the same as above except:

a)   The room number will appear under the "AIDE" column on the CRT

b)   The yellow dome lamp will light

(7)   When an urgent "stat" service request has been initiated by the nurses' master station to the patient station associated with this presence station, the green LED and the yellow LED will flash alternately at a high-priority rate on the presence station.

2.19   BATTERY CHARGER ASSEMBLY

2.19.1   Furnish battery charger assembly as indicated on plans.

2.19.2   Battery charger assembly shall provide voltage to the nurses' master station in the event of a power supply failure at the CPE and shall cause the CPE fault light to illuminate and a steady tone at the nurses' master station

2.20   MULTIPURPOSE STATION

2.20.1   Multipurpose stations shall be provided in the locations shown on the plans and shall be designed to provide audible, visual and digital communication to and from the central processing equipment, including the nurses' master station/CRT.

2.20.2   Each multipurpose station shall also be capable of supporting remote devices such as switches, contact closures, loudspeakers, or other signal-originating devices.

2.20.3   No operator controls or indicators shall be provided with the multipurpose station.

PART 3 - EQUIPMENT REQUIREMENTS AND CONSTRUCTION

3.1   NURSES' MASTER STATION

3.1.1   Nurses' master station shall be desk or wall mounted in an ABS flame retardant, high impact plastic housing. It shall include an integral speaker/microphone, handset, keypad and multicolored control switches.

3.1.2   Nurses' master station housing must withstand a drop of no less than four feet without any damage occurring to the plastic housing.

3.1.3   The nurses' master station shall have the following controls:

(1) Cradle for handset (Active hookswitch as an option)

(2) CPE fault light;

(3) Volume control for incoming volume only;

(4) Tone-off switch;

(5) Call-placed light;

(6) Numeric keypad;

(7) Multicolored function buttons colored and labeled as follows with operation assurance LEDs included:

(Systems that do not provide function buttons logically colored as described below, shall not be considered acceptable.)

   a) "Reset" button - BLACK

   b) "Aide" service request button - YELLOW

   c) "Nurse" service request button - GREEN

   d) "Stat" urgent service request button - RED

   e) "Menu" button - BLUE

   f) "Page" button - GRAY

   g) "Nurse Follow" button - ORANGE

   h) "Talk" button - WHITE (Talk button shall be one-third larger than all the remaining buttons).

3.1.4   Nurses' master station shall be provided with a 3-1/2" x 2-1/2" speaker/microphone.

3.1.5   Nurses' master station shall be provided with a six-foot cable terminated with a nine-pin D-subminiature connector, and wall receptacle for cable termination.

3.1.6   Nurses' master station dimensions shall not exceed 9" x 7" x 3".

3.2   VIDEO MONITOR (CRT)

3.2.1   CRT shall display all nurse call system functions and system calls as described in section 2.

3.2.2   Video monitor must be of standard monochrome type with composite video input and a minimum of 350 lines of resolution.

3.2.3   The screen must not exceed 12 inches in diagonal measurements and it must be amber or green in color and provide for contrast and brightness controls.

3.2.4   The CRT must provide for video output to one additional monitor, if so required. A total of eight video monitors can be

connected to the system. Additional monitors may be connected with the use of video distribution and amplification equipment.

3.2.5 The video monitor shall be fully tested and "burned in" for 72 hours to meet Underwriters Laboratories 1069 requirements.

3.2.6 Dimensions must not exceed 12" x 10" x 11-1/2".

3.3 PATIENT STATIONS

3.3.1 Patient stations shall be provided where indicated on the plans and shall be provided with call cords or pillow speakers as indicated.

3.3.2 Patient stations shall be single or dual type as shown on the plans and shall be interchangeable without additions or changes to wiring (entertainment and/or remote control circuits shall be added via plug-in modules).

3.3.3 Each patient station shall be provided with the following features:

(1) Multiplex circuitry so as to minimize system wiring and maintenance;

(2) All connections to be plug-in (screw terminal or hard-wired stations are unacceptable);

(3) Flame-retardant white TYPE KJB Cycolac permanently marked with the words "CALL" and "RESET." (The word "CALL" shall be stamped twice on dual patient stations). Dimensions shall permit installation into a standard electrical box supplied by others.

(4) Highly-sensitive speaker/microphone for two-way voice communication. Speaker/microphone shall be 2-1/2" x 2-1/2" square design.

(5) Yellow call-placed LED (provide two for dual bedside stations).

(6) Combination in-use light/reset button.

(7) Receptacle for call cord or pillow speaker (provide two for dual patient stations) with facilities for generating cord-out condition. Eight conductor modular jack receptacles shall be used and be compatible with all specified call cords and pillow speakers without the need for adapters. In facilities never requiring pillow speakers, patient stations may be provided with standard 1/4" jack receptacle.

3.3.4 Each patient station shall provide the owner with all of the features previously outlined without the need for modification or reprogramming of the station. Station shall identify itself by room number and bed designation without the need for the nurse to cross- reference from preassigned numbers. Stations that do not allow for a minimum of four characters plus bed designation call assignment are not acceptable.

3.3.5 Patient Stations with the modular jacks shall have the necessary inputs to provide for Hill-Rom® Sidecom® adaptors and interface.

3.4 BATH STATIONS - PULL CORD TYPE

3.4.1 Install bath stations where indicated on the plans. Each bath station shall have the following minimum features:

(1) Nylon pull cord with

    a) Maximum 1-1/2 pound pull to activate

    b) White plastic tassel at end of cord

(2) Call-placed LED

(3) Stainless steel, single-gang plate

(4) The word "EMERGENCY" stamped in 1/4" letters

(5) All connections to be plug-in

3.4.2　Calls registered from bath station shall be reset only by restoring the activated switch to the up or off position and shall not be possible to reset such calls remotely.

3.5　BATH STATIONS - PUSHBUTTON TYPE

3.5.1　Install bath pushbutton type stations where indicated on plans.

3.5.2　Each bath pushbutton type station shall be provided with the following minimum features:

(1) Heavy-duty push on/push off mechanically latching switch

(2) Switch shall have a built-in orange call-placed assurance "eye." In addition to this mechanical call-assurance indication, it shall have

(3) A call-placed LED

(4) Stainless steel single gang plate

(5) The word "EMERGENCY" stamped in 1/4" lettering

(6) All connections to be plug-in

3.5.3　Calls registered from bath pushbutton-type stations shall be reset only at the calling station. Systems that permit remote resetting of pushbutton stations are not acceptable.

3.6　EMERGENCY CALL/SHOWER STATIONS - PULL CORD/PULL DOWN TYPE

3.6.1　Install stations where indicated on plans.

3.6.2　Each station shall be provided with the following minimum features.

(1) UL listed under UL 1069 Rev. 4 standard for "EMERGENCY CALL SHOWER STATION" as needed.

(2) Shall be installed as a "BATH STATION - PULL CORD TYPE" or "BATH STATION PULL DOWN LEVER - TYPE" or "STAFF ASSIST EMERGENCY STATION" as needed.

(3) Completely waterproof when installed as per manufacturers instructions.

(4) White FLAME-RETARDANT Type KJB CYCOLAC plastic single gang face plate.

(5) 1.5 inch wide red PULL DOWN LEVER permanently marked "EMERGENCY ", with feed through hole for nylon cord if desired.

(6) Call placed LED sealed into face plate.

(7) Nylon pull cord with:

a)　Maximum 1-1/2 pound pull to activate

b)　White Tassel

c)　Eyelet for field installation

(8) Rubber gasket for sealing station to wall surface.

(9) Stainless steel mounting screws with rubber grommets.

(10) All connections to be plug-in.

(11) A plastic non-waterproof version of the above shall be available for area not requiring station to be waterproof.

3.7   CODE CALL STATIONS

3.7.1   Install code call stations where indicated on the plans.

3.7.2   Code call stations shall function as described elsewhere and shall be constructed to the same standards set forth for other emergency pushbutton-type stations except:

(1)   The word "CODE" shall be stamped on plate in 1/4" lettering.

(2)   Code call stations shall be fully-supervised

(3)   A plastic version station pull down type shall be available as an option.

3.8   STAFF ASSIST EMERGENCY PUSHBUTTON STATIONS

3.8.1   Install staff assist emergency pushbutton stations where indicated on the plans.

3.8.2   Staff assist emergency stations shall function as described elsewhere and shall be constructed to the same standards set forth for other emergency pushbutton-type stations except:

(1)   The words "STAFF ASSIST" shall be stamped on the plate in 1/4" lettering.

3.9   STAFF ASSIST EMERGENCY PSYCHIATRIC STATIONS

3.9.1   Install staff assist psychiatric stations where indicated on the plans.

3.9.2   Staff assist emergency psychiatric stations shall function as described elsewhere and shall be constructed to the same standards set forth for other emergency pushbutton-type stations except:

(1)   Pushbutton switches shall be active only when the key switch on the psychiatric station is in the ON position.

(2)   A single button version shall be available which will have an emergency call button only, no cancel button.

3.10   STAFF STATIONS

3.10.1   Install staff stations where indicated on the plans.

3.10.2   Staff stations shall function as indicated elsewhere.

3.10.3   Staff stations shall be constructed like patient stations except:

(1)   It shall have a combination call button/call- placed yellow LED.

(2)   Calls placed by the staff station shall be identified at the CRT with up to a four-digit room number and the word "STAFF." All the features indicated above and elsewhere shall be available without reprogramming of staff stations or system. Staff stations not identifying themselves by a four-digit room number and the word "STAFF" shall be considered unacceptable.

(3)   The words "RESET" and "CALL" shall be permanently marked on panel.

3.11   DUTY STATIONS

3.11.1   Install duty stations where indicated on the plans.

3.11.2   Duty stations shall function as indicated elsewhere.

3.11.3   Duty stations shall be constructed like patient stations except:

(1) It shall have a combination call button/call- placed yellow LED.

(2) An emergency call-placed indicator red LED.

(3) A combination reset switch/red in-use light/tone off button.

(4) 2-1/2"" x 2-1/2" speaker shall also function as a tone speaker.

(5) The words "RESET," "EMERGENCY" and "ROUTINE" shall be permanently marked on panel.

(6) Calls placed by the duty station shall be identified at the CRT with up to a four-digit room number and the word "DUTY." All the features indicated above and elsewhere shall be available without reprogramming of duty stations or system. Duty stations not identifying themselves by a four-digit room number and the word "DUTY" shall be considered unacceptable.

3.11.4   Duty stations shall be designed to automatically silence tone signals when communicating with the nurses' master station. Automatic silencing features shall be deactivated after communication.

3.11.5   Duty stations shall be provided with a tone off switch and shall permit manual silencing of low-priority calls only. Tones shall automatically be reactivated when new calls are registered. Duty stations that permit the silencing of medium- and high-priority call tones shall be considered unacceptable.

3.12   CORRIDOR LAMPS AND ZONE LAMPS

3.12.1   Install corridor lamps and zone lamps where indicated on the plans. Place devices for maximum visibility where mounting height is not indicated. Check with architect, if questions exist, particularly concerning excessive ambient light.

3.12.2   Zone lamps are to be connected with duty stations or multipurpose stations to provide call indications as previously described. Zone lamps need not be connected in any specific manner to indicate calls from a specific zone. The multipurpose station or duty station may be programmed after installation to indicate calls from any specific zones. The necessity of hard wiring zone lamps to stations in a specific zone shall be considered unacceptable.

3.12.3   Zone lamps shall indicate calls similarly to dome lamps. Systems having different signals on zone lamps for similar calls, shall be considered unacceptable.

3.12.4   Each dome lamp and zone lamp shall have the following minimum features:

(1) Four individually barriered lamps. Colors shall be red, green, yellow and white. Painting or dying of bulbs is considered to be unacceptable.

(2)   Lens cover(s) shall be high-impact plastic which shall not deform, yellow or craze.

(3) Bayonet-base type bulbs, changeable without the need for tools.

3.12.5   Where indicated on the plans, provide zone lamps with duty stations for tone signaling purposes.

3.13   CENTRAL PROCESSING EQUIPMENT (CPE)

3.13.1   All system power supplies, plug-in connections, audio amplification, signaling circuitry, and software shall be installed in the CPE.

3.13.2   CPE shall have a system power on/off switch (117 VAC).

3.13.3 Each CPE shall be desktop mounted, shelf mounted (with the appropriate hardware), or surface wall mounted and shall contain the following features:

(1) Microcomputer design using standard 8088 central processor;

(2) Non-volatile user-programmable memory;

(3) Self-contained as described above;

(4) Total plug-in field wiring;

(5) Capability to support up to four nurses' master stations, four nurses' master secondary stations, eight CRTs;

(6) Plug-in design of the following circuitry:

    a) Port boards for connection to all systems' stations

    b) Link board for digital communication to nurses' master stations

    c) Amp boards for audio amplification and system control circuitry

    d) Video boards to provide video signals to CRTs

    e) EPROM board to provide system operational software

(7) Systems not allowing for plug-in replacement of all of the above types of circuitry shall be considered unacceptable.

(8) Each CPE shall be fully tested and "burned-in" for 168 hours to meet UL 1069 requirements.

3.13.4 Install CPE as indicated on plans.

3.13.5 CPE dimensions shall not exceed 19-1/2" x 15-1/2" x 5-1/4".

3.14 BATTERY CHARGER ASSEMBLY

3.14.1 Install battery charger assembly as indicated on plans.

3.14.2 The battery charger assembly shall consist of the following components:

(1) 12 volt rechargeable gel-cell battery

(2) Battery charger

(3) 24 volt AC transformer

(4) Cabinet to house the above components

3.14.3 The above equipment shall be furnished to complete full supervision of all system components for code blue circuitry as per new 1989 UL Standard 1069.

3.14.4 Battery and battery charger circuitry shall supply voltage to nurses' master station to indicate CPE fault in the event of such a condition.

3.15 PSYCHIATRIC STATIONS

3.15.1 Install psychiatric stations as shown on plans. Psychiatric stations should be located at the entrance of psychiatric wards and/or high security patient rooms.

3.15.2 Each psychiatric station shall be provided with the following features:

(1) Multiplex circuitry so as to minimize system wiring and maintenance.

(2) All connections to be plug-in. (Screw terminal or hard-wired stations are unacceptable.)

(3) Scratch-resistant anodized aluminum faceplate permanently stamped with the words "RESET," "CALL," "ON" and "OFF." Dimensions shall permit installation into a standard electrical box supplied by others.

(4) Combination in-use light/reset button.

(5) Yellow call-placed LED.

(6) Two-position key switch.

3.15.3 Each psychiatric station shall provide the owner with all the features previously outlined without the need for modification or reprogramming of the stations. Station shall identify itself by room number without the need for the nurse to cross reference from preassigned numbers. Psychiatric stations that do not allow for a minimum of four character call assignments are not acceptable.

3.16   PSYCHIATRIC SPEAKER STATIONS

3.16.1 Install psychiatric speaker stations where indicated on the plans; normally located in the ceiling or out of reach on the wall in the psychiatric ward or high- security patient rooms.

3.16.2 Psychiatric speaker stations shall work in conjunction with psychiatric stations.

3.16.3 Each psychiatric speaker station shall have the following minimum features:

(1) Double-gang stainless steel plate.

(2) 3-1/2" x 2-1/2" speaker microphone that will not be affected by the on or off position of the psychiatric station. Systems that require the psychiatric station key switch to be in the on position to activate speaker microphone in psychiatric speaker station shall be considered unacceptable.

3.16.4 Psychiatric speaker stations shall receive "all page" and "zone page" from nurses' master station, unless otherwise programmed.

3.17   PRESENCE STATIONS

3.17.1 Install presence stations as indicated on the plans.

3.17.2 Presence stations are to be connected to associated patient, staff, duty or multipurpose stations and shall have the following minimum features:

(1) Shall have a green "NURSE" momentary-action push-button. The word "NURSE" will be stamped directly below the pushbutton.

(2) This pushbutton shall be associated with a green LED.

(3) Shall have a yellow "AIDE" momentary-action push-button. The word "AIDE" will be stamped directly below the pushbutton.

(4) This pushbutton shall be associated with a yellow LED.

(5) Stainless steel single-gang plate.

(6) All connections to be plug-in.

3.18   MULTIPURPOSESTATION

3.18.1   Install multipurpose stations where indicated on the plans.

3.18.2   Multipurpose stations shall function as indicated elsewhere.

3.18.3   Multipurpose stations shall be constructed like patient stations except:

(1) It shall not include speaker/microphone.

(2) It shall not include operator controls or indicators.

3.19   WIRING

3.19.1   All nurse call system wiring shall conform to the following:

(1) UL® Standard 1069

(2) NFPA 70, the National Electrical Code

(3) NFPA CL2, and be marked as such

3.19.2   Wiring shall be of the size and type to conform to the exact requirements set forth by the nurse call equipment manufacturer. Cable used shall be approved by the manufacturer for NC300 use. Provide wire size calculations for electrical engineer's review with submittal.

3.19.3   All wiring shall be documented with respect to

(1) Wire color vs. function

(2) Terminations at CPE location

(3) Terminations at all junction boxes

(4) Terminations at all individual devices

3.19.4   Splicing of system wiring shall be accomplished only in equipment back boxes or designated junction boxes using pressure-type connectors: wire nuts, twisting and taping or soldering methods shall not be used in this system.

3.19.5   Documentation detailing all splices, color codes used, and signals assigned to each conductor, shall be furnished to the owner's representative prior to final acceptance of the nurse call system.

3.20   TRAINING

3.20.1   Manufacturer's representative shall provide training and all instructional material as required by owner.